NUREG-1437, Supplement 30
Vol. 2

Generic Environmental Impact Statement for License Renewal of Nuclear Plants

Supplement 30

Regarding
Vermont Yankee Nuclear Power Station

Final Report – Appendices

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, DC 20555-0001

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Office of Nuclear Reactor Regulation
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Abstract

The U.S. Nuclear Regulatory Commission (NRC) considered the environmental impacts of renewing nuclear power plant operating licenses (OLs) for a 20-year period in its *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2, and codified the results in Title 10, Part 51, of the *Code of Federal Regulations* (10 CFR Part 51). In the GEIS (and its Addendum 1), the NRC staff identifies 92 environmental issues and reaches generic conclusions related to environmental impacts for 69 of these issues that apply to all plants or to plants with specific design or site characteristics. Additional plant-specific review is required for the remaining 23 issues. These plant-specific reviews are to be included in a supplement to the GEIS.

This Supplemental Environmental Impact Statement (SEIS) has been prepared in response to an application submitted to the NRC by Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Entergy), to renew the OL for Vermont Yankee Nuclear Power Station (VYNPS) for an additional 20 years under 10 CFR Part 54. This SEIS includes the NRC staff's analysis that considers and weighs the environmental impacts of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures available for reducing or avoiding adverse impacts. It also includes the NRC staff's recommendation regarding the proposed action.

Regarding the 69 issues for which the GEIS reached generic conclusions, neither Entergy nor the NRC staff has identified information that is both new and significant for any issue that applies to VYNPS. In addition, the NRC staff determined that information provided during the scoping process and the public comments on the draft SEIS did not call into question the conclusions in the GEIS. Therefore, the NRC staff concludes that the impacts of renewing the VYNPS OL would not be greater than the impacts identified for these issues in the GEIS. For each of these issues, the NRC staff's conclusion in the GEIS is that the impact is of SMALL[(a)] significance (except for collective offsite radiological impacts from the fuel cycle and high-level waste and spent fuel, which were not assigned a single significance level).

Regarding the remaining 23 issues, those that apply to VYNPS are addressed in this SEIS. For each applicable issue, the NRC staff concludes that the significance of the potential environmental impacts of renewal of the OL is SMALL. The NRC staff also concludes that no additional mitigation is warranted. However, under the provisions of the Clean Water Act 316(b) regulations, the Vermont Department of Environmental Conservation may impose further restrictions or require modifications to the cooling system to reduce the impacts on aquatic

(a) Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

resources from entrainment and impingement under the National Pollutant Discharge Elimination System permitting process. The NRC staff determined that information provided during the scoping process and the public comments on the draft SEIS did not identify any new issue that has a significant environmental impact.

The NRC staff's recommendation is that the Commission determine that the adverse environmental impacts of license renewal for VYNPS are not so great that preserving the option of license renewal for energy-planning decisionmakers would be unreasonable. This recommendation is based on (1) the analysis and findings in the GEIS; (2) the Environmental Report submitted by Entergy; (3) consultation with Federal, State, and local agencies; (4) the NRC staff's own independent review; and (5) the NRC staff's consideration of public comments received during the scoping process and the draft SEIS public comment period.

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Executive Summary

By letter dated January 25, 2006, Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc. (Entergy), submitted an application to the U.S. Nuclear Regulatory Commission (NRC) to renew the operating license (OL) for Vermont Yankee Nuclear Power Station (VYNPS) for an additional 20 years. If the OL is renewed, State regulatory agencies and Entergy will ultimately decide whether the plant will continue to operate based on factors such as the need for power or other matters within the State's jurisdiction or the purview of the owners. If the OL is not renewed, then the plant must be shut down at or before the expiration date of the current OL, which is March 21, 2012. Should the NRC staff's license renewal review not be completed by this date, the plant may continue to operate past that date until the NRC staff has taken final action to either approve or deny the license renewal.

The NRC has implemented Section 102 of the National Environmental Policy Act (NEPA), Title 42, Section 4321, of the *United States Code* (42 USC 4321) in Title 10, Part 51, of the *Code of Federal Regulations* (10 CFR Part 51). In 10 CFR 51.20(b)(2), the Commission requires preparation of an Environmental Impact Statement (EIS) or a supplement to an EIS for renewal of a reactor OL. In addition, 10 CFR 51.95(c) states that the EIS prepared at the OL renewal stage will be a supplement to the *Generic Environmental Impact Statement for License Renewal of Nuclear Plant*s (GEIS), NUREG-1437, Volumes 1 and 2.[(a)]

Upon acceptance of the Entergy application, the NRC began the environmental review process described in 10 CFR Part 51 by publishing a Notice of Intent to prepare an EIS and conduct scoping on April 21, 2006. The NRC staff visited the VYNPS site in May 2006, conducted an open house on June 6, 2006, at which comments were accepted, and held public scoping meetings on June 7, 2006, in Brattleboro, Vermont. In the preparation of this Supplemental Environmental Impact Statement (SEIS) for VYNPS, the NRC staff reviewed the Entergy Environmental Report (ER) and compared it with the GEIS, consulted with other agencies, conducted an independent review of the issues following the guidance set forth in NUREG-1555, Supplement 1, *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal*, and considered the public comments received during the scoping process. The public comments received during the scoping process that were considered to be within the scope of the environmental review are provided in Appendix A, Part 1, of this SEIS.

The draft SEIS was published in December 2006. The NRC staff held two public meetings in Brattleboro, Vermont, on January 31, 2007, to describe the preliminary results of the NRC environmental review, to answer questions, and to provide members of the public with

(a) The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the "GEIS" include the GEIS and its Addendum 1.

information to assist them in formulating comments on the draft SEIS. On February 27, 2007, members of the NRC staff met with members of the Vermont State Legislature in Montpelier, Vermont, to present the findings of the draft SEIS. No formal comments were received from the legislators at this meeting based on their oral statements because no transcript was recorded. The NRC staff did, however, receive written comments for formal consideration from some of the legislators and members of the public who observed the meeting.

When the comment period ended on March 7, 2007, the NRC staff considered and addressed all of the comments received. These comments are addressed in Appendix A, Part 2, of this SEIS.

This SEIS includes the NRC staff's analysis that considers and weighs the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures for reducing or avoiding adverse effects. It also includes the NRC staff's recommendation regarding the proposed action.

The Commission has adopted the following statement of purpose and need for license renewal from the GEIS:

> The purpose and need for the proposed action (renewal of an operating license) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by State, utility, and, where authorized, Federal (other than NRC) decisionmakers.

The evaluation criterion for the NRC staff's environmental review, as defined in 10 CFR 51.95(c)(4) and the GEIS, is to determine

> . . . whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy-planning decisionmakers would be unreasonable.

Both the statement of purpose and need and the evaluation criterion implicitly acknowledge that there are factors, in addition to license renewal, that will ultimately determine whether an existing nuclear power plant continues to operate beyond the period of the current OL.

NRC regulations (10 CFR 51.95(c)(2)) contain the following statement regarding the content of SEISs prepared at the license renewal stage:

> The supplemental environmental impact statement for license renewal is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such benefits

and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation. In addition, the supplemental environmental impact statement prepared at the license renewal stage need not discuss other issues not related to the environmental effects of the proposed action and the alternatives, or any aspect of the storage of spent fuel for the facility within the scope of the generic determination in § 51.23(a) ("Temporary storage of spent fuel after cessation of reactor operation–generic determination of no significant environmental impact") and in accordance with § 51.23(b).

The GEIS contains the results of a systematic evaluation of the consequences of renewing an OL and operating a nuclear power plant for an additional 20 years. It evaluates 92 environmental issues using the NRC's three-level standard of significance – SMALL, MODERATE, or LARGE – developed using the Council on Environmental Quality guidelines. The following definitions of the three significance levels are set forth in footnotes to Table B-1 of 10 CFR Part 51, Subpart A, Appendix B:

SMALL – Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE – Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE – Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

For 69 of the 92 issues considered in the GEIS, the analysis in the GEIS reached the following conclusions:

(1) The environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristics.

(2) A single significance level (i.e., SMALL, MODERATE, or LARGE) has been assigned to the impacts (except for collective offsite radiological impacts from the fuel cycle and from high-level waste and spent fuel disposal).

(3) Mitigation of adverse impacts associated with the issue has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are not likely to be sufficiently beneficial to warrant implementation.

These 69 issues were identified in the GEIS as Category 1 issues. In the absence of new and significant information, the NRC staff relied on conclusions as amplified by supporting

information in the GEIS for issues designated as Category 1 in Table B-1 of 10 CFR Part 51, Subpart A, Appendix B.

Of the 23 issues that do not meet the criteria set forth above, 21 are classified as Category 2 issues requiring analysis in a plant-specific supplement to the GEIS. The remaining two issues, environmental justice and chronic effects of electromagnetic fields, were not categorized. Environmental justice was not evaluated on a generic basis and must be addressed in a plant-specific supplement to the GEIS. Information on the chronic effects of electromagnetic fields was not conclusive at the time the GEIS was prepared.

This SEIS documents the NRC staff's consideration of all 92 environmental issues identified in the GEIS. The NRC staff considered the environmental impacts associated with alternatives to license renewal and compared the environmental impacts of license renewal and the alternatives. The alternatives to license renewal that were considered include the no-action alternative (not renewing the OL for VYNPS) and alternative methods of power generation. Based on projections made by the U.S. Department of Energy's Energy Information Administration, gas- and coal-fired generation appear to be the most likely power-generation alternatives if the power from VYNPS is replaced. These alternatives are evaluated assuming that the replacement power-generation plant is located at either the VYNPS site or at some other unspecified alternate location.

Entergy and the NRC staff have established independent processes for identifying and evaluating the significance of any new information on the environmental impacts of license renewal. Neither Entergy nor the NRC staff has identified information that is both new and significant related to Category 1 issues that would call into question the conclusions in the GEIS. Similarly, neither the scoping process nor the NRC staff has identified any new issue applicable to VYNPS that has a significant environmental impact. Therefore, the NRC staff relies upon the conclusions of the GEIS for all of the Category 1 issues that are applicable to VYNPS.

Entergy's license renewal application presents an analysis of the Category 2 issues. The NRC staff has reviewed the Entergy analysis for each issue and has conducted an independent review of each issue. Three Category 2 issues are not applicable because they are related to plant design features or site characteristics not found at VYNPS. Four Category 2 issues are not discussed in this SEIS because they are specifically related to refurbishment. Entergy has stated that its evaluation of structures and components, as required by 10 CFR 54.21, did not identify any major plant refurbishment activities or modifications as necessary to support the continued operation of VYNPS for the license renewal period. In addition, any replacement of components or additional inspection activities are within the bounds of normal plant operation and are not expected to affect the environment outside of the bounds of the plant operations evaluated in the U.S. Atomic Energy Commission's 1972 *Final Environmental Statement*

Related to Operation of the Vermont Yankee Nuclear Power Station, Vermont Yankee Nuclear Power Corporation.

Fourteen Category 2 issues related to operational impacts and postulated accidents during the renewal term, as well as environmental justice and chronic effects of electromagnetic fields, are discussed in detail in this SEIS. Five of the Category 2 issues and environmental justice apply to both refurbishment and to operation during the renewal term and are only discussed in this SEIS in relation to operation during the renewal term. For all 14 Category 2 issues and environmental justice, the NRC staff concludes that the potential environmental effects are of SMALL significance in the context of the standards set forth in the GEIS. In addition, the NRC staff determined that appropriate Federal health agencies have not reached a consensus on the existence of chronic adverse effects from electromagnetic fields. Therefore, no further evaluation of this issue is required. For severe accident mitigation alternatives (SAMAs), the NRC staff concludes that a reasonable, comprehensive effort was made to identify and evaluate SAMAs. Based on its review of the SAMAs for VYNPS and the plant improvements already made, the NRC staff concludes that several candidate SAMAs are potentially cost-beneficial. However, none of these SAMAs relate to adequately managing the effects of aging during the period of extended operation. Therefore, they need not be implemented as part of license renewal pursuant to 10 CFR Part 54.

Mitigation measures were considered for each Category 2 issue. Current measures to mitigate the environmental impacts of plant operation were found to be adequate, and no additional mitigation is warranted. However, under the provisions of the Clean Water Act 316(b) Phase II regulations, the Vermont Department of Environmental Conservation[(a)] may impose further restrictions or require modifications to the cooling system to reduce the impacts on aquatic resources from entrainment and impingement.

Cumulative impacts of past, present, and reasonably foreseeable future actions were considered, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. For purposes of this analysis, where VYNPS license renewal impacts are deemed to be SMALL, the NRC staff concluded that these impacts would not result in significant cumulative impacts on potentially affected resources.

If the VYNPS OL is not renewed and the plant ceases operation on or before the expiration of its current OL, then the adverse impacts of likely alternatives would not be smaller than those associated with continued operation of VYNPS. The impacts may, in fact, be greater in some areas.

(a) The Vermont Department of Environmental Conservation is part of the Vermont Agency of Natural Resources.

The recommendation of the NRC staff is that the Commission determine that the adverse environmental impacts of license renewal for VYNPS are not so great that preserving the option of license renewal for energy-planning decisionmakers would be unreasonable. This recommendation is based on (1) the analysis and findings in the GEIS; (2) the ER submitted by Entergy; (3) consultation with other Federal, State, and local agencies; (4) the NRC staff's own independent review; and (5) the NRC staff's consideration of public comments.

Abbreviations/Acronyms

µg	microgram(s)
µm	micrometer(s)
ac	acre(s)
AC	alternating current
ACC	averted cleanup and decontamination costs
AD	Anno Domini
ADAMS	Agencywide Documents Access and Management System
AEA	Atomic Energy Act
AEC	U.S. Atomic Energy Commission
ALARA	as low as reasonably achievable
AOC	averted offsite property damage costs
AOE	averted occupational exposure
AOSC	averted onsite costs
APCD	Air Pollution Control Division
APE	averted public exposure
AQCR	Air Quality Control Region
ATWS	anticipated transient without scram
Btu	British thermal unit(s)
BWR	boiling water reactor
BWROG	Boiling Water Reactor Owners Group
°C	degrees Celsius
CAA	Clean Air Act
CBS	Connecticut Botanical Society
CDC	Centers for Disease Control and Prevention
CDF	core damage frequency or combined disposal facility
CDEP	Connecticut Department of Environmental Protection
CEQ	Council on Environmental Quality
CFR	*Code of Federal Regulations*
cfs	cubic feet per second
Ci	curie(s)
cm	centimeter(s)
CO	carbon monoxide
CO_2	carbon dioxide
COE	cost of enhancement
CVDEM	Code of Virginia, Department of Emergency Management
CWA	Clean Water Act

d	day(s)
dBA	“A-weighted” decibel level
DBA	design-basis accident
DC	direct current
DDT	dichloro-diphenyl-trichloroethane
DOC	U.S. Department of Commerce
DOE	U.S. Department of Energy
DOI	U.S. Department of Interior
DOL	U.S. Department of Labor
Dominion	Dominion Nuclear North Anna, LLC
DOT	U.S. Department of Transportation
DPR	demonstration project reactor
DSM	demand-side management
EA	environmental assessment
EDG	emergency diesel generator
EFH	essential fish habitat
EIA	Energy Information Administration
EIS	Environmental Impact Statement
ELF-EMF	extremely low frequency-electromagnetic field
Entergy	Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc.
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute, Inc.
EPU	extended power uprate
ER	Environmental Report
ESA	Endangered Species Act
Exelon	Exelon Generation Company, LLC
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
FERC	Federal Energy Regulatory Commission
FES	Final Environmental Statement
FONSI	Finding of No Significant Impact
FR	*Federal Register*
FSAR	Final Safety Analysis Report
ft	foot (feet)
FWS	U.S. Fish and Wildlife Service
g	gram(s)
gal	gallon(s)
GEIS	Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437

gpd	gallon(s) per day
gpm	gallon(s) per minute
HAC	hazardous air contaminant
HAP	hazardous air pollutant
HCLPF	high confidence low probability of failure
HEPA	high-efficiency particulate air
HLW	high-level waste
hp	horsepower
hr	hour(s)
Hz	Hertz
ICE	internal combustion engine
IEEE	Institute of Electrical and Electronic Engineers
in.	inch(es)
INEEL	Idaho National Engineering and Environmental Laboratory
ISLOCA	interfacing systems loss-of-coolant accident
J	joule(s)
kg	kilogram(s)
km	kilometer(s)
kV	kilovolt(s)
kW	kilowatt(s)
kWh	kilowatt hour(s)
L	liter(s)
lb	pound(s)
LLC	limited liability company
LOCA	loss-of-coolant accident
LOOP	loss of offsite power
m	meter(s)
m^2	square meter(s)
m^3	cubic meter(s)
mA	milliampere(s)
MAAP	Modular Accident Analysis Program
MACCS2	MELCOR Accident Consequence Code System 2
MDFW	Massachusetts Department of Fisheries and Wildlife
MEI	maximally exposed individual
mg	milligram(s)
mi	mile(s)

mi^2	square mile(s)
min	minute(s)
mm	millimeter(s)
mph	mile(s) per hour
mrem	millirem(s)
mR	milliRoentgen(s)
MSL	mean sea level
MTU	metric ton(s)-uranium
MW	megawatt(s)
MWd	megawatt-day(s)
MW(e)	megawatt(s) electric
MW(t)	megawatt(s) thermal
MWh	megawatt hour(s)
NAAQS	National Ambient Air Quality Standards
NAS	National Academy of Sciences
NCDC	National Climatic Data Center
NEC	New England Coalition
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
ng	nanogram(s)
NHDHR	New Hampshire Division of Historic Resources
NHFGD	New Hampshire Fish and Game Resources Department
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health Sciences
NMFS	National Marine Fisheries Service
NO_x	nitrogen oxides
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NREL	National Renewable Energy Laboratory
NRHP	*National Register of Historic Places*
NRO	Office of New Reactors
NYSDEC	New York State Department of Environmental Conservation
ODCM	Offsite Dose Calculation Manual
OL	operating license
PCB	polychlorinated biphenyl
PCE	tetrachloroethylene
pCi	picocurie(s)
PGQS	Primary Groundwater Quality Standards

$PM_{2.5}$	particulate matter, 2.5 microns or less in diameter
PM_{10}	particulate matter, 10 microns or less in diameter
PNNL	Pacific Northwest National Laboratory
ppm	part(s) per million
PRA	Probabilistic Risk Assessment
PSA	Probabilistic Safety Assessment
PSD	Prevention of Significant Deterioration
PTE	potential to emit
RAI	request for additional information
REMP	radiological environmental monitoring program
RM	river mile
ROI	region of interest
ROW(s)	right(s)-of-way
RPC	replacement power cost
RRW	risk reduction worth
s	second(s)
SAMA	severe accident mitigation alternative
SAR	Safety Analysis Report
SBO	station blackout
SCDHEC	South Carolina Department of Health and Environmental Control
SCR	selective catalytic reduction
SECA	Solid State Energy Conservation Alliance
SEIS	Supplemental Environmental Impact Statement
SER	Safety Evaluation Report
SERI	Systems Energy Resources, Inc.
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SO_x	sulfur oxides
SRHP	*State Register of Historic Places*
Sv	sievert
TBCCW	turbine building closed cooling water
TLAA	time-limited aging analysis
TLD	thermoluminescent dosimeter
UFSAR	Updated Final Safety Analysis Report
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	*United States Code*
USCB	U.S. Census Bureau

USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
UST	underground storage tank
VANR	Vermont Agency of Natural Resources
VDEC	Vermont Department of Environmental Conservation
VDH	Vermont Department of Health
VELCO	Vermont Electric Power Company, Inc.
VOC	volatile organic compound
VYNPS	Vermont Yankee Nuclear Power Station
W	watt(s)
yr	year(s)

Appendix A

Comments Received on the Environmental Review

Appendix A

Comments Received on the Environmental Review

Part I – Comments Received During Scoping

On April 21, 2006, the U.S. Nuclear Regulatory Commission (NRC) published a Notice of Intent in the *Federal Register* (Volume 71, page 20733) to notify the public of the NRC staff's intent to prepare a plant-specific supplement to the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2, to support the renewal application for the Vermont Yankee Nuclear Power Station (VYNPS) operating license and to conduct scoping. The plant-specific supplement to the GEIS has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Council on Environmental Quality (CEQ) guidance, and Title 10, Part 51, of the *Code of Federal Regulations* (10 CFR Part 51). As outlined by NEPA, the NRC initiated the scoping process with the issuance of the *Federal Register* Notice. The NRC invited the applicant; Federal, State, and local government agencies; Native American Tribal organizations; local organizations; and individuals to participate in the scoping process by providing oral comments at the scheduled public meetings and/or by submitting written suggestions and comments no later than June 23, 2006.

The scoping process included two public scoping meetings that were held at the Latchis Theatre in Brattleboro, Vermont, on June 7, 2006. Additionally, the NRC held an informal open house at the Quality Inn and Suites, Brattleboro, Vermont, on Tuesday, June 6th. Approximately 200 members of the public attended the meetings. During the open house on June 6th, oral comments from 3 attendees were recorded and transcribed by a certified court reporter. The scoping meeting sessions began with NRC staff members providing a brief overview of the license renewal process and the NEPA process. After the NRC's prepared statements, the meetings were open for public comments. Forty-seven attendees provided oral statements that were recorded and transcribed by a certified court reporter. In addition to the comments received during the public meetings, eighteen comment letters were received by the NRC in response to the Notice of Intent.

At the conclusion of the scoping period, the NRC staff and its contractors reviewed the transcripts and all letters to identify specific comments and issues. Each set of comments from a given commenter was given a unique identifier (Commenter ID), so that each set of comments from a commenter could be traced back to the transcript or letter by which the comments were submitted. Specific comments were numbered sequentially within each comment set. Several commenters submitted comments through multiple sources (e.g., afternoon and evening scoping meetings). All of the comments received and the NRC staff responses are included in the VYNPS Scoping Summary Report dated October 30, 2006.

Table A.1 identifies the individuals who provided comments applicable to the environmental review and the Commenter ID associated with each person's set(s) of comments. The individuals are listed in the order in which they spoke at the public meeting, and in alphabetical order for the comments received by letter or e-mail. To maintain consistency with the Scoping Summary Report, the unique identifier used in that report for each set of comments is retained in this appendix.

Specific comments were categorized and consolidated by topic. Comments with similar specific objectives were combined to capture the common essential issues raised by the commenters. The comments fall into one of the following general groups:

- Specific comments that address environmental issues within the purview of the NRC environmental regulations related to license renewal. These comments address Category 1 or Category 2 issues or issues that were not addressed in the GEIS. They also address alternatives and related Federal actions.

- General comments (1) in support of or opposed to nuclear power or license renewal or (2) on the renewal process, the NRC's regulations, and the regulatory process. These comments may or may not be specifically related to the VYNPS license renewal application.

- Questions that do not provide new information.

- Specific comments that address issues that do not fall within or are specifically excluded from the purview of NRC environmental regulations related to license renewal. These comments typically address issues such as the need for power, emergency preparedness, security, current operational safety issues, and safety issues related to operation during the renewal period.

Comments applicable to this environmental review and the NRC staff's responses are summarized in this appendix. The parenthetical alphanumeric identifier after each comment refers to the comment set (Commenter ID) and the comment number. This information, which was extracted from the VYNPS Scoping Summary Report, is provided for the convenience of those interested in the scoping comments applicable to this environmental review. The comments that are general or outside the scope of the environmental review for VYNPS are not included here. More detail regarding the disposition of general or inapplicable comments can be found in the Scoping Summary Report. The Agencywide Document Access and Management System (ADAMS) accession number for the Scoping Summary Report is ML063030576.

This accession number is provided to facilitate access to the document through the Public Electronic Reading Room (http://www.nrc.gov/reading-rm.html).

Table A-1. Individuals Providing Comments During Scoping Comment Period

Commenter ID	Commenter	Affiliation (If Stated)	Comment Source [(a)]
VS-A	Michael Mulligan		Open House
VS-B	Nancy Crompton		Open House
VS-C	Ellen Kaye		Open House
VS-D	Raymond Shadis	New England Coalition (NEC)	Afternoon Scoping Meeting
VS-E	Evan Mulholland		Afternoon Scoping Meeting
VS-F	Chris Williams	Nuclear Information and Resources Service (NIRS)	Afternoon Scoping Meeting
VS-G	Shawn Banfield	Vermont Energy Partnership	Afternoon Scoping Meeting
VS-H	Dan MacArthur	Marlboro County Emergency Management Director	Afternoon Scoping Meeting
VS-I	Bill Burton		Afternoon Scoping Meeting
VS-J	Robert English		Afternoon Scoping Meeting
VS-K	Carol Boyer		Afternoon Scoping Meeting
VS-L	Nancy Nelkin		Afternoon Scoping Meeting
VS-M	Sally Shaw	NEC	Afternoon Scoping Meeting
VS-N	Sarah Kotkov	NEC	Afternoon Scoping Meeting
VS-O	Gary Sachs		Afternoon Scoping Meeting
VS-P	Ann Elizabeth Howes		Afternoon Scoping Meeting
VS-Q	David McElwee	Entergy Nuclear Vermont Yankee (Entergy)	Afternoon Scoping Meeting
VS-R	Deborah Reger	Leftovers Affinity	Afternoon Scoping Meeting
VS-S	Cora Brooks		Afternoon Scoping Meeting
VS-T	Beth Adams	CAN	Afternoon Scoping Meeting
VS-U	Jane Newton		Afternoon Scoping Meeting
VS-V	Governor Thomas B. Salmon		Evening Scoping Meeting
VS-W	Deb Katz	CAN	Evening Scoping Meeting
VS-X	Sunny Miller	Traprock Peace Center	Evening Scoping Meeting
VS-Y	Beth McElwee		Evening Scoping Meeting
VS-Z	Ellen Cota	Entergy	Evening Scoping Meeting
VS-AA	Michael Flory	Entergy	Evening Scoping Meeting
VS-BB	Shawn Banfield	Vermont Energy Partnership	Evening Scoping Meeting
VS-CC	Claire Change	CAN	Evening Scoping Meeting
VS-DD	Raymond Shadis	NEC	Evening Scoping Meeting
VS-EE	Bernard Buteau	Entergy	Evening Scoping Meeting
VS-FF	Marian Kelner		Evening Scoping Meeting
VS-GG	Ted Sullivan		Evening Scoping Meeting
VS-HH	John Dreyfuss		Evening Scoping Meeting
VS-II	Mike Hamer		Evening Scoping Meeting

Table A-1. (contd)

Commenter ID	Commenter	Affiliation (If Stated)	Comment Source [(a)]
VS-JJ	Chris Nord	CAN	Evening Scoping Meeting
VS-KK	Dart Everett	Brattleboro Development Center	Evening Scoping Meeting
VS-LL	Bill Pearson	VT Earth Institute	Evening Scoping Meeting
VS-MM	Emily Tinkham	Entergy	Evening Scoping Meeting
VS-NN	Clay Turnbill	Nuclear Free Vermont/CAN/NEC	Evening Scoping Meeting
VS-OO	Dennis Girroir	Entergy	Evening Scoping Meeting
VS-PP	Emma Stamas		Evening Scoping Meeting
VS-QQ	George Iselin		Evening Scoping Meeting
VS-RR	Sherry Zabriskie		Evening Scoping Meeting
VS-SS	Gary Sachs		Evening Scoping Meeting
VS-TT	Larry Lukens		Evening Scoping Meeting
VS-UU	Joan Horman		Evening Scoping Meeting
VS-VV	Beth Adams		Evening Scoping Meeting
VS-WW	Jon Block	Attorney	E-mail (ML061770066)
VS-XX	Cora Brooks		Letter (ML061840614)
VS-YY	Tina Emery-Howe		E-mail (ML061730420)
VS-ZZ	Dart Everett	Brattleboro Development Center	Evening Scoping Meeting
VS-AAA	Catherine Gjessing	Vermont Agency of Natural Resources	E-mail (ML061770066)
VS-BBB	Mike Hebert		E-mail (ML061730415)
VS-CCC	Jacob Iselin		Letter (ML061840615)
VS-DDD	Becca King		E-mail (ML061730399)
VS-EEE	Thomas Matsuda		E-mail (ML061740035)
VS-FFF	Sunny Miller	Traprock Peace Center	E-mail (ML061770071)
VS-GGG	Massachusetts Attorney General Thomas F. Reilly		Letter (ML061780088)
VS-HHH	Sally Shaw	NEC	E-mail (ML061770056)
VS-III	William Sherman	Vermont Department of Public Service (same comments in the letter and e-mail)	E-mail (ML061770052) Letter (ML061840612)
VS-JJJ	E. Stamas		Letter (ML061920474)
VS-KKK	Edward and Emma Stamas		Letter (ML061840613)
VS-LLL	Jonathon Von Ranson		E-mail (ML061730427)
VS-MMM	Pam Walker	CAN	E-mail (ML061730431)
VS-NNN	Dory Zelman		E-mail (ML061770078)

(a) The open house, afternoon and evening transcripts can be found in ADAMS under accession numbers: ML061840036, ML061840033, and ML061840029, respectively.

Comments in this section are grouped in the following categories:

A.1.1 License Renewal and Its Processes
A.1.2 NRC Hearing Process
A.1.3 Support of License Renewal at Vermont Yankee Nuclear Power Station
A.1.4 Opposition to License Renewal at Vermont Yankee Nuclear Power Station
A.1.5 Support of Nuclear Power
A.1.6 Opposition to Nuclear Power
A.1.7 Ecology
A.1.8 Threatened and Endangered Species
A.1.9 Surface-Water Quality, Hydrology, and Use
A.1.10 Human Health
A.1.11 Socioeconomics
A.1.12 Postulated Accidents
A.1.13 Uranium Fuel Cycle and Waste Management
A.1.14 Alternative Energy Sources

A.1 Comments and Responses

A.1.1 Comments Concerning License Renewal and Its Processes

Comment: I was interested, the person before me was going through the benefits of nuclear energy, but, as we all know, there are many, many hidden costs included in producing energy from nuclear power. One of them being that there is a sizeable payroll at the Federal level, paid for by our taxes, which is specifically for the purpose of seeing that nuclear energy continues to operate fairly cheaply. So just think of that. The people who are here today getting paid by us, the citizenry, we're paying for that in our taxes, but it's really a cost that should be associated with the electric costs of nuclear power. (VS-H-4)

Comment: I think part of the problem is, as taxpayers, we're paying the NRC as our employees, to be the knowledgeable representatives of public interest. The NRC is responsible for overseeing the nuclear industry. And when they do a poor job, they risk our health and well being, when you do not rigorously and objectively evaluate the impacts of nuclear power on us. (VS-L-1)

Comment: The Executive Summary of the 600 some odd page Environmental Impact Statement, is full of little items like that. Here's another. The staff concludes that the generic analysis of a severe accident, applies to all reactors.

The probability weighted consequences of atmospheric releases fall out onto open bodies of water, groundwater releases and the societal and economic impacts are of small significance, for all reactors.

That, with the stroke of a pen, wipes out all our concerns. They also conclude that the environmental impacts of design-basis accidents, are of small significance for all plants.

And, because additional measures to reduce such impacts would be costly, don't worry, they won't burden the Licensee with extra mitigations. (VS-M-3)

Comment: And one of my concerns, when I hear the NRC at this meeting, in regard to the data that they use for their studies, is that they take much of their data, not from their own sources, but from the Licensee. And, in my opinion, that's poor practice. (VS-O-2)

Comment: One of the problems that citizens have and citizen-intervenors have is that when issues like this are found within a plant, typically a condition report will be written. That is not public. That does not go into the NRC public document room. And then the item may or may not be entered into the company's Corrective Action Program. That's a place where NRC buries a lot of issues too. They sort of hand it back to the company and say you guys fix it and make sure you keep records. But those records are not public and there's really no way to access them unless you get involved in a legal proceeding and then maybe you can touch them. (VS-DD-8)

Comment: I'd like to recite a couple of excerpts right from your own website, that I think help support the position to allow Vermont Yankee to consider operation. It's the NRC primary mission to protect the public health and safety and the environment. That's what we're talking about tonight is the environmental effects. In the environment, the effects of radiation from nuclear reactors, materials and waste facilities and you also regulate these nuclear materials and facilities to promote the common defense and security. There's also a section there that talks about reactor license renewal overview. And it states that the Atomic Energy Act and the NRC regulations limit commercial power reactor licenses to an initial 40-year -- 40 years, as you said, but also permits such licenses to be renewed. That original 40-year term for reactor licenses was based on economic and anti-trust considerations and not on limitations of nuclear technology. Due to this selective period, however, some structures and components may have been engineered on the basis of a 40-year service life. The NRC has established a timely license renewal process which we've heard something about tonight and clear requirements codified in 10 CFR parts 51 and 54 that are needed to assure safe plant operation for extended plant life.

The timely renewal of licenses for an additional 20 years, where appropriate to renew them, may be important to ensuring an adequate energy supply for the United States during the first half of the 21st century. (VS-EE-1)

Comment: Another point is that we are regulated in this industry and when you're regulated, there's rules that you have to follow and those -- and we are governed by the NRC and we have to follow all those rules. As we apply for this application, the look that is given to the site and to all the processes that it has is exhaustive. It's a mess. And all of those rules have to be met. So let's let the facts decide what it is. If the NRC after their investigation into what's going on at the plant and whether or not we're following the rules, if they conclude that we will have an effect on the environment that are of such a nature that it doesn't meet the regulations, then they need to not approve this license application. But if it does meet the rules and regulations, then it needs to be approved. (VS-GG-3)

Comment: They have a very, very large team of inspectors looking at every possible aspect you can look at for aging management, for how we're going to handle aging management. It's the future replacement of certain parts that wear out, things like that, based on operating experience, etcetera and everything. It's a very involved process. It's not taken lightly by the NRC or Vermont Yankee. (VS-II-6)

Comment: I'll go back to my original question, who do you actually work for? Are these meetings, these public meetings, merely an appeasement so you have the general public come up to the microphone, make a few statements, and then they go away and you get to go on your merry business and decide in collusion with this industry how it's going to go. Or are you actually taking into account the real concerns that are obvious, if you just sit and think about them, we're talking about 35 million curies of Cesium-137 sitting in that spent-fuel pool. (VS-JJ-7)

Comment: I think that in every meeting that the NRC is a part of, they had better rethink who they're working for and start thinking about the children and grandchildren who are going to have to get out of this technology of nuclear energy and nuclear waste proliferation, and get into something safer and more sustainable. (VS-PP-3)

Comment: I've spoken many times against nuclear power and I'm at the point where I feel like nobody's listening as far as Vermont Yankee or Entergy. The government, the NRC for sure. (VS-RR-1)

Comment: Dozens of Entergy (Vermont Yankee) employees and their family members were allowed to speak and citizens who had come on their own had to wait until late in the evening and cut their comments short and questions short (earlier in the evening when questions were taken). (VS-KKK-1)

Response*: The comments are in regard to license renewal and its processes in general. The Commission has established a process, by rule, for the environmental and safety reviews to be conducted to review a license renewal application. The development of the Commission's regulations governing the license renewal process was already subject to public review and comment. The comments provide no new information; therefore, they will not be evaluated further.*

A.1.2 Comments Concerning NRC Hearing Process

Comment: I think that many of us are quite disgusted by the fact that the Atomic Safety and Licensing Board has recently refused to hear, or refused to accept the contentions, the new contentions of New England Coalition, based solely on their lack of timeliness in filing. And yet, in a few weeks, we'll have another one of these public meetings. We think that these decisions, the decisions on uprate and on re-licensing, are based, and should be based on science and engineering, and to have a show of soliciting the views of the citizens, many of us believe is a sham and a travesty and I think that is why people have not shown up today, not because it's a little bit rainy. (VS-N-1)

Response*: The Atomic Safety and Licensing Board rules on petitions and motions in accordance with NRC regulations. The comment provides no new and significant information; therefore, the comment will not be evaluated further.*

A.1.3 Comments in Support of License Renewal at Vermont Yankee Nuclear Power Station

Comment: In closing, the Vermont Yankee has an important and crucial role to play in the future of your state. It is both environmentally and economically appropriate to grant the plant a license extension. We know that there is a wide array of support for the continued operation of this plant, for the reasons I have articulated here today. Its essential economic benefits. Its environmentally sound operations, and its important role as a component of the Vermont energy portfolio. (VS-G-4)

Comment: I'm probably one of the few people here from Windham County that endorses the re-licensing of Vermont Yankee, and its, and hopefully looks upon with the environmental issues, favorably. (VS-I-1)

Comment: Vermont Yankee is a safe, well run plant and is a great asset to the area. It provides good paying jobs, provides an infrastructure to attract new businesses to the area. To help, and help eliminate tons of pollutants that would otherwise be put into the air that we breathe. And I look forward to another 20 years of operation at Vermont Yankee, and hope that the NRC will approve the license renewal application. (VS-Q-2)

Comment: Since 1972, when the Vernon plant came online, the State of Vermont has avoided some 100 million metric tons of fossil fuel pollution and that's not an inconsequential environmental effect of life, particularly given the realities of potential replacement power later in this century with the candidates principally being natural gas and coal, both of which cause gaseous greenhouse emissions into the environment.

Point two is the fact that we're in the midst of a global warming debate in this country. And in my view, decisions ultimately made by regulatory bodies such as the NRC must factor in the realities of global warming and the clear and present danger suggested by unnecessary and unwanted ingestions of improper pollution into the Vermont and the environment of the country.

Now I have an old-fashioned view, having watched this plant grow, having been in the legislature of Vermont when it was authorized many years ago and that view is not likely accepted by all, maybe viewed as heresy in some quarters, but it speaks to the notion that this plant has been both safe and environmentally friendly over these many years and in that context in terms of its contribution or I should say noncontribution to pollution in this state, has helped make Vermont a cleaner place in which to live. Now we're engaged in our state in a conversation about energy as we speak and this meeting tonight is an exceedingly important meeting on that subject. Now there are some interesting participants in this discussion and I'm aware of one. The Sharon Academy up in Sharon, Vermont, senior class, this past winter, put together an energy plan and they went up to Montpelier and introduced the plan before the House Natural Resources Committee. We had opportunity in the Vermont Energy Partnership, myself and Amanda Eiby, got to visit with the students and offer a critique of their remarkable work, but what we learned is this. These students in their analysis of Vermont's energy future included that nuclear energy is “clean, reliable, affordable and long lasting.” And in opting for renewal of the license issue before us tonight and beyond, to describe the “cultural negativity about nuclear power as unjustified.” That was the students' view in their words.

The point is this. People of all ages and perspectives are entitled to participate in this debate and maybe, just maybe, our kids might teach us a lesson or two on this important subject.

Now this Commission will travel many miles before it sleeps on these issues. You begin the process here in Brattleboro tonight and I for one wish you well in your profoundly important work. (VS-V-1)

Comment: Vermont Yankee provides the needed infrastructure to attract other businesses to this area, so that young adults like me will be able to stay in Vermont and enjoy the area we've grown to appreciate. We need to make sure that there are jobs available here to support those who wish to make this area our home. Vermont Yankee goes a long way in helping to secure this future for Vermonters. Vermont Yankee should stand tall in this community. In addition to providing the most reliable, clean and safe source of energy throughout New England, their commitment to community involvement, youth development, and vast employment opportunities

makes them a crucial and highly beneficial component of this community. A renewal of their operating license is integral to the continuation of the flourishing New England rural communities that we've all come to love. (VS-Y-1)

Comment: It make sense to approve the license renewal. Entergy is committed to being environmentally and socially responsible and has given a lot to this community. The financial impact of not extending the license would affect Vermont negatively for many years. But more importantly, the environmental impact of closing Vermont Yankee would pose even greater threat. People have been told not to eat the fish out of the Connecticut River because of the mercury levels. Well, Vermont Yankee and other nuclear power plants do not emit the poisons or greenhouse gases which are slowly devastating our environment.

In addition, Vermont Yankee has a proven record of safe operations. Safety is and has been its number one priority. Entergy is a business. Corporate Entergy is a business. And I can assure you that Corporate Entergy would not put money into this license renewal process if they did not believe that Vermont Yankee was a well run, well maintained, safe facility. Vermont Yankee is committed to safe operation and if I did not believe this, I would not work there.

The environmental benefits of generating electricity without emitting greenhouse gases is a wonderful legacy for our children and our grandchildren. I believe that we should approve the license renewal process. (VS-Z-1)

Comment: Vermont Yankee's value to my home state can only become more valuable as time goes on. As global warming becomes more and more destructive, we can remain an environmentally friendly source of power with zero greenhouse gas emissions. As the world energy market has become more competitive, we can continue to be a source of reliable, economic, baseload power and that is why we encourage the NRC to renew Vermont Yankee's license. (VS-AA-3)

Comment: Vermont Yankee has an important and crucial to play in the future of our state. It is both economically and environmentally appropriate to grant the plant's license extension. We know there's a wide array of support for the continued operation of this plant for the reasons I have articulated here tonight: its essential economic benefits, its environmentally sound operations and its important role as a component in the Vermont energy portfolio. (VS-BB-5)

Comment: Considering what I've presented, the worldwide recognition of the need for additional nuclear power to help save our environment from the effluence of fossil fuels and to help establish energy security and I would go on to say world peace, and considering the existing guidance for granting license extensions, I would submit that it would be arbitrary and in defiance of the rules and guidelines already in place to not grant Vermont Yankee an operating license extension if all requirements established in 10 CFR Parts 51 and 54 are met. (VS-EE-3)

Comment: You know, we're very proud of the impeccable environmental record that this plant currently enjoys. We've had a sustained, safe, operational record with excellent environmental stewardship. We pledge to continue that going forward. I'm also very proud of the people and the processes we have in place that helps sustain that environmental performance. The scope of the environmental audit conducted by the NRC was very broad. It touched on many subjects. There were many people here, both NRC staff and the contractors. They were very challenging. They were very rigorous. They were very thorough. And we've resolved the issues and we're answering questions, many questions that came up. Again, I am satisfied that the process will hold true and the questions will be answered. And if we can provide satisfactory record and good answers to the questions that came up, the license should be renewed. (VS-HH-1)

Comment: I truly believe that the only way to keep this amazing area that we live in environmentally friendly, while producing 34 percent of Vermont's electricity is to continue the safe and reliable operation of Vermont Yankee. (VS-MM-1)

Comment: I look at the overall impact of Vermont Yankee, environmentally, economically, and very personally, and I've got some pretty significant observations over the last 30-35 years, and I'm still waiting to identify one that is truly negative, truly negatively impacting all of us. (VS-OO-1)

Comment: I haven't heard anything tonight that says there's anything new and significant. Actually, I haven't heard anything new, and I haven't heard anything that sounds significant. We have met all the requirements. We have exceeded many of them. We continue to meet the environmental requirements. We continue to be, as John Dreyfus said, good stewards of our environment. This plant emits no carbon dioxide. In fact it emits nothing that would be considered a hazard. We don't emit radioactivity. And the people who have spoken tonight have, as far as I can tell, not raised a substantive issue that identifies a new or significant environmental impact that would be an obstacle to the renewal of this plant's license. (VS-TT-1)

Comment: This letter is in support of renewing the operating license of the Vermont Yankee nuclear facility. I believe the environmental benefits that Vermont Yankee provides are a crucial part of ensuring that Vermont’s landscape remains clean and pristine. It has not gone unnoticed that Vermont has one of the lowest emissions ratings in the country, largely because of our nuclear plant in Vernon.

Nuclear energy avoids the emissions of harmful toxins or other pollutants into the atmosphere that other large power facilities, like coal or natural gas are guilty of. More and more environmental scientists have concluded that nuclear energy is the only power source that can help combat global warming.

Vermont and the entire New England region is in need of this plant, and as long as it maintains its high level of safe operations, there is no reason why this plant should not remain online. Vermont Yankee is a necessary component to this state's current and future energy portfolio, and I hope that the NRC rules in favor of a license extension. (VS-YY-1)

Comment: It is estimated that by mid-century, the world will require a doubling of the current worldwide energy demand of 14 terawatts of power. To achieve this demand will require the equivalent of one 1,000 megawatt power plant going on line every day for nearly 38 years (article from Discover, February 2005, pp 16-17 attached).

Although I assume the initial mandate to the NRC regarding environmental issues 30 to 40 years ago concerned the rather micro impact, that is of a limited area surrounding a nuclear plant, certainly now the issue is equally the global concern of greenhouse gasses, foremost carbon dioxide.

I am not an expert. I am a concerned citizen, concerned about the future of energy for the State of Vermont, the future energy requirement for the world and the environmental impact the sources of that energy will have.

Dr. Arthur Westing, a resident of Putney, VT, 10 miles up the road, is an expert. He has served on the faculty of, or been a research fellow at several education institutions, including Harvard University and the Stockholm International Peace Research Institute, served as the director of the United Nationals Environmental Programme project on "Peace, Security, & the Environment," and is the author of many articles and books on the environment. At the moment, Dr. Westing is in Sweden. He told me he wished he could be here to testify on the importance of Vermont Yankee to the energy future of Vermont, and give his wholehearted support to the relicensing. I am submitting an email from Dr. Westing to me giving me the authority to give you two letters he has written on energy and environmental issues, as well as his resume. His latest letter cites a British report on *The Role of Nuclear Power in a Low Carbon Economy* which he uses to calculate the impacts shown on the following page.

Thank you for beginning this lengthy process for the relicensing of the Entergy Nuclear Vermont Yankee Nuclear Plant. I hope the evidence shows a positive decision. (VS-ZZ-1)

Comment: The Vermont Yankee nuclear power plant plays an integral role in Vermont's current energy portfolio, and must be part of our future. Vermont Yankee is a clean, emissions free generating facility that provides stable, low-cost power to our state. These are all crucial factors that businesses take into consideration when determining whether to remain here, or relocate to Vermont. If Vermont Yankee goes off-line in 2012 where will we find replacement power that is as clean and reliable? Vermont Yankee is critical to Windham County and

Southeast Vermont in particular. Currently, the plant and its contractors employ full time approximately 600 men and women, and provides $80 million to local Vermont businesses through the purchase of goods and services.

Its clean power, sound operations, well paying jobs, and community participation and support helps make the region a great place to live and work. For all of these reasons, I encourage the Nuclear Regulatory Commission to extend the license of Vermont Yankee for another 20 years. (VS-BBB-1)

Response: *The comments support license renewal at VYNPS. The comments are general in nature and provide no new information; therefore, they will not be evaluated further.*

A.1.4 Comments in Opposition to License Renewal at Vermont Yankee Nuclear Power Station

Comment: Because we have to live with the effects on the Connecticut River. We have to live with the effects on our health, increased cancers. These are things that need to be looked

seriously, by the NRC, in this process. Not to mention the nuclear waste that's stored in our backyard. It's bad enough that it's already there, it's at risk by an accident. It's at risk by criminal act. (VS-L-3)

Comment: I do not believe that Vermont Yankee should be open one more day. We need to close Vermont Yankee, not just think about extending licensing for 20 years. (VS-T-1)

Comment: I want to end with this notion of a vision. We envision a future of safety, prosperity and health for all. People generate their own electricity in their own homes. Local energy production is easy and accessible for all. We live in a world where safety, prosperity and human health are what we value above all and it is something that we have to hold sacred for all of us, not relicensing Vermont Yankee. (VS-W-4)

Comment: Until and unless we can ensure the health and safety of human beings, and of all the environment, and all forms of life, we shouldn't even be using nuclear power. Let me register my vote as not being in favor of a 20 year extension of Vermont Yankee. (VS-LL-7)

Comment: I think that the main issue is whether we are gonna let this outfit produce more waste, contributing hot water to the rivers, and things that actually do contribute to the global warming, and we need to decide whether it's suicidal, actually murderous, to allow these wastes to be put on to future generations. (VS-QQ-3)

Comment: At what point do we take responsibilities for the damage we are doing with nuclear energy and radiation? At what point do we say to ourselves, that we have gone too far, and that

this is not about profit or power or comfort but about safety for us, our world, and its future? Do we want to risk another Chernobyl, or another Three Mile Island? Safety is defined as a state of being safe, freedom from injury or damage, the quality of ensuring against hurt, injury, danger or risk, or the state of being protected from harm. Do we want to risk our safety with toxic nuclear byproducts that jeopardize our future generations and ourselves? Please. I hope you can take a moment and hear me from my heart to your heart, and then act from that place.

Do our personal comforts, and your profits, justify the risk of proceeding with nuclear power, particularly at this staging facility? (VS-UU-1)

Comment: I think this plant should be closed as soon as possible, and that planned into the closing of it should be planning for jobs for the people that have worked so well at Vermont Yankee. (VS-VV-3)

Comment: Maybe you could allow the reactor at Vernon, VT be shut down and ask Entergy to decommission as was promised. The radioactive waste is a serious, unresolved problem. Hazardous. No reason to increase our risk to cancer and catastrophy. No reason to approve Entergy's plant. (VS-XX-1)

Comment: I deeply oppose the 20 year lease renewal and the uprate in power. Please do not approve either of these. Please listen to the citizens you are supposed to represent and protect. (VS-EEE-1)

Comment: Please respond to reason and our concern for the safety of our population, our tourist industry, organic farms, our colleges, and our homes. All these things would be severely and adversely affected by even a small release of nuclear radiation due to human error, aging machinery or pipes, or terrorism. Please help us by closing and decommissioning this facility in 5 or 6 years as originally planned. Please help us reduce the risks to our health and safety instead of increasing them. (VS-JJJ-5)

Comment: Please let our region become an example to the rest of the nation. Many regions are growing in population and energy usage. Our region is stable and able to reduce our usage through conservation. Please let us try. Please give us the incentive to try by closing this nuclear plant by 2012. Please stop saying that we need nuclear power and there is not a cleaner, safer solution. This is untrue in a region like ours where the population is stable, highly educated, and extremely concerned about the risks of aging nuclear power plants and poorly stored, highly radioactive "spent" fuel rods. Please listen to our concerns and respond by closing down this plant as planned. (VS-JJJ-7)

Comment: I am writing to express my grave concern about the re-authorization of the Vermont Yankee Nuclear Power Plant. I want the plant closed. Cheap, renewable and alternative sources of power need to be supported by the government. Nuclear power is not the answer. I

do not want to be irradiated. Nor my rivers, farmlands, children. I am a fisherman, an organic gardener living a wholesome rural lifestyle. You may not know what this lifestyle is like. It is about connecting with the land, with the seasons, with the ways of the earth. I am honored to work with children with special needs. Don't you realize that all these environmental insults cause diseases in our children? Why do you think so many have diseases like autism, mental retardation, cancer? It is no coincidence, our modern practices of poisoning earth, air and water have made us sick, literally.

We must learn to live with greater integrity. Please stop this nuclear madness. There is no safe way to store the spent fuel rods. There is no safe way to mine the uranium. There is no safe level of radiation sent down our rivers and streams. There is many other ways to address energy needs. Please help us protect our beautiful valley from further harm. Close the plant. Now. (VS-NNN-1)

Response: *The comments oppose license renewal at VYNPS. The comments are general in nature and provide no new and significant information; therefore, they will not be evaluated further.*

A.1.5 Comments in Support of Nuclear Power

Comment: We've had no national energy policy. We're talking about 20 years down the road. That's short-term, 40 years down the road is short-term. I started out dealing with energy in 1962, and one of my students made a hydrogen fuel cell, that's how I got enlightened in this thing. 1962, that's a lot of years ago. And I've been involved in learning about energy for all these years. All right, now, what's going to happen? I really feel we not only need to re-license Vermont Yankee, but we need more nuclear power plants throughout the country. (VS-I-3)

Comment: In surfing the web recently, I found an interesting article. It was an excerpt from Physics Today. It was dated June 4th. It states, “Some two dozen power plants are scheduled to be built or refurbished during the next five years in Canada, China, several European Union countries, India, Iran, Pakistan, Russia, South Africa. In the U.S. and U.K., government preparations are underway that may lead to 15 new reactor orders by 2007. The new interest in civilian nuclear energy results from attempts to reduce carbon dioxide emissions and increasing concerns about energy security.” (VS-EE-2)

Response: *The comments support nuclear power. The comments are general in nature and provide no new and significant information; therefore, they will not be evaluated further.*

A.1.6 Comments in Opposition to Nuclear Power

Comment: We need to be forward thinking. And my sense is that nuclear power is kind of passe. We've all looked at this. We see what the risks are, and there are huge chunks in

Russia that have been, in their terms, withdrawn from public use, for the foreseeable future because of an accident. And, as far as I know, nobody has repealed Murphy's Law. So I'd like to suggest that we be responsible and that we get this message today that we are asking all of you to look beyond what has become an old mantra, and make use of the truly up-to-date technology, that could allow all of us to feel good about living our lives without adding to the environmental burdens. (VS-K-2)

Comment: Nobody knows what's going to happen in the future. There are people who believe that this plant is safe. There are other people who believe that it’s not safe. There's no way to determine this, I guess. Time will tell, but the criteria that I'd like to present is what happens for each side if that side is wrong? If the people who believe the nuclear power plant is safe and they're wrong, the land becomes polluted, thousands of people die. This will be an effect that will be in effect for hundreds of thousands of years. If the people who believe that the nuclear power plant is unsafe and they're wrong, what will be the effect? The effect will be that there will be other sources of power, conservation and nobody gets hurt. So since nobody on the planet knows which side is correct, I think that using this criteria might guide us in the right direction. (VS-FF-1)

Response*: The comments oppose nuclear power. The comments are general in nature and provide no new and significant information; therefore, they will not be evaluated further*.

A.1.7 Comments Concerning Ecology

Comment: Issues 18, 20, 23, 24, and 28 through 30 (Thermal plume barrier to migrating fish, Premature emergence of aquatic insects, Losses among organisms exposed to sublethal stresses, Stimulation of nuisance organisms, Entrainment, Impingement, and Heat shock) As we understand it, these issues are associated with intake structures and thermal discharge issues which require a NPDES permit. The requirements of the Clean Water Act and the NPDES permit will provide assurance that the impacts of permitted intake structures and discharges meet the applicable federal and state requirements. It would be helpful, however, to have some limited site specific review of these issues. For example, have recent scientific studies regarding intake structure and thermal impacts on migrating fish species and aquatic organisms, in similar habitats or within this region, led to new knowledge applicable to these issues? Are there any organisms present in the Vernon area which are particularly susceptible to sublethal stresses or heat shock? Are there any specific study protocols recommended for determining the impacts of intake and discharges on species present in the affected regions of the Connecticut River? (VS-AAA-1)

Comment: Specifically, I've got concerns about the effect on the Connecticut River and on the fish and other wildlife that live in and on the river. According to the environmental report drafted for this license renewal process, Entergy states that it withdraws water to cool the reactor, from the river, at a rate of up to 360,000 gallons per minute when using once through cooling. The

majority of this water is discharged back into the river at temperatures that can reach 100 degrees Fahrenheit, at the point of discharge. The recently issued NPDES Permit Amendment, which New England Coalition is appealing, allows for Vermont Yankee to increase the temperature of the river by an additional one degree Fahrenheit over what it was previously allowed. The environmental impact of this extra thermal waste discharged into the river, is potentially significant. Temperature is critical for American Shad and other fish species, particularly during migration and spawning.

Even this one degree increase in water temperature may adversely effect the Shad and other species, reducing their population in the river system. In its report, however, Entergy does not assess these impacts. Entergy's conclusion that the impact on the environment is small, is based on the fact that the discharge complies with state and Federal pollution limits. There's no further discussion of what effect another 20 years of increased thermal discharge will have on the eco-system. Whether or not the discharge from Vermont Yankee is in compliance with its State and Federal permits, Entergy should be required to take a hard look at, and assess a direct, indirect and cumulative impacts on the river eco-system of 20 more years of increased thermal discharge. (VS-E-1)

Comment: I am concerned that the continued release of heated water into the Connecticut River from Vermont Yankee is adversely affecting aquatic life in the river. Several school and citizen awareness groups have measured temperatures as high as 10 degrees Fahrenheit warmer below the plant than above, and it is my understanding that only 1-2 degrees Fahrenheit is allowed. Since this has continued for many years, I fear that plant officials do not plant to stop this. I ask that you please address this ongoing problem in your considerations of whether or not to extend the license of the Vermont Yankee Nuclear Power Plant. (VS-CCC-1)

Comment: The increase in the river temperature needs to be fully analyzed for the affects over the new 20 year lease period. This raise could seriously affect the environment. (VS-EEE-3)

Comment: Please save the Connecticut River from overheating. Many of us are also concerned about the hot water that is being released into the Connecticut River. Studies have shown that the current levels of hot water are harmful and with the 20% “uprate” the temperatures are rising to much higher levels. Why do you want to destroy the ecology of this beautiful river? (VS-JJJ-6)

Response: *The comments relate to aquatic ecology issues. Some of the comments specifically relate to the potential impact on aquatic biota of the heated water that will be released from VYNPS when once through cooling is used. This issue will be evaluated and addressed in Section 4.7 of the SEIS. In addition, heat shock, entrainment, and impingement will be evaluated and discussed in Chapters 2 and 4 of the SEIS.*

Comment: As an ecologist, I'm compelled to point out that environmental impacts are multi-variate impacts. They are not generic. Life is not generic. And although biological systems are resilient and they recover from damage, radiation exposure causes genetic impacts that will change life forever. Genetic damage can be passed on to our offspring and theirs. It can change biological communities forever. I submit that the very idea of a GEIS is sheis. In NRC's Executive Summary of their Generic Environmental Impact Statement, which I consider an oxymoron. (VS-M-1)

Comment: I ask NRC to revisit the permitting of this defacto LLRW dumping ground, and consider the impact of nuclides in river sediments which are the spawning beds for American Shad and Salmon. I learned from VT Dept. of Health employee Larry Crist that Cobalt 60 and Cesium 137 levels have been found in river sediments. Embryonic exposure to these isotopes by fish or other aquatic biota have not been sampled or quantified. Laboratory experimentation might reveal the potential for ecological impact. (VS-HHH-2)

As an organic farmer with livestock and vegetable crops, I consider the radiation emissions from the plant's operation to be one more degrading influence in the environment, added to a number of others, that affects both crop plants and livestock raised in this area. It is difficult to quantify but I am confident from reading about the experiences of farmers in the area of this plant and others that the radiation stressor exists. For these reasons, I strongly oppose the relicensing of the Vernon nuclear plant beyond 2012. I am willing to use less electricity if the license extension is denied, and to pay more for it. (VS-LLL-2)

Response*: The comments relate to the effects of radiation from plant effluents on biota other than man. The effects of radiation from VYNPS effluents on biota is not one of the 92 issues evaluated by the NRC for license renewal. The levels of plant effluents are limited by radiation standards for human exposure, and those limitations are generally considered to be sufficiently protective of biota other than man. The NRC staff will review the reports of the environmental radiological monitoring programs conducted by Entergy and the Vermont Department of Health for the last several years to ensure that the levels of radioactive concentrations in the environment are within expected levels. Entergy's environmental radiological monitoring program will be discussed in Section 2.2.7 of the SEIS.*

Comment: Issues 43 and 46 (Bird collisions). The Agency is interested in bird mortality rates. In particular, the Agency is interested in whether the numbers and species of birds which have experienced mortalities with the cooling towers and the power lines are an issue of concern. This concern is also applicable to the met towers on site. (VS-AAA-2)

Response: *The comment relates to Category 1 terrestrial ecology issues. Bird collisions with power lines will be discussed in Section 4.2 of the SEIS.*

A.1.8 Comments Concerning Threatened and Endangered Species

Comment: Issue 45 (Power line right of way management). The Agency is interested in this issue as it relates to rare, threatened and endangered species which may be present in proximity to the power lines. In addition, the Agency is interested in preserving undisturbed riparian buffers in areas of surface water or stream crossings. (VS-AAA-3)

Response*: The comment relates to threatened and endangered species and terrestrial resources, particularly riparian buffers. The NRC conducts an analysis of the impacts of license renewal on aquatic and terrestrial resources including threatened and endangered species, flood plains, and wetlands. The occurrence of Federally- and State-listed species on the VYNPS site and associated transmission line rights-of-way will be discussed in Sections 2.2.5 and 2.2.6 of the SEIS. An analysis of impacts to these listed species is presented in Section 4.6 of the SEIS. The environmental impacts of power line rights-of-way management on flood plains and wetlands will be discussed in Section 4.2 of the SEIS.*

A.1.9 Comment Concerning Surface-Water Quality, Hydrology, and Use

Comment: I am an ecologist and mother living in the 10-mile EPZ, downstream of the VT Yankee Nuclear Reactor. I would like the NRC to expand the scope of the EIS to examine the consequences of the surface spreading of radioactive septic waste and stockpiling of tons of contaminated soil on fields adjacent to the Connecticut River. I think it is important to consider the possibility that some radionuclides wash into the river in heavy rains and spring melt. A 1991 study of the suitability of the VY site for low level radioactive waste commissioned by the VT Low-Level Radioactive Waste Authority, and conducted by Batelle Company, concluded that it was not a promising LLRW site due to short groundwater travel time, a shallow groundwater depth, seeps discharging to the riverbank and springs discharging south of the site, poor drainage in parts of the site, jurisdictional wetlands on the site, with one apparently significant wetland under VT wetland law, potential liquifaction of some soils on the site during an earthquake, and the need to remove and replace existing soils to meet the regulatory requirement to enhance the retardation of the movement of radionuclides. (Battelle. 1991. Site Characterization Data Report for the Vernon/VT Yankee Site Volume I - The Report. Wagner Heindel and Noyes, Inc.) (VS-HHH-1)

Response*: The comment is related to Category 1 surface-water quality, hydrology, groundwater, and water use issues evaluated in the GEIS. These issues will be addressed in Chapter 2 of the SEIS. The comment regarding soil liquifaction is addressed as a design basis issue in Section 15 of the Appendix.*

A.1.10 Comments Concerning Human Health Issues

Comment: I'm raising a child here. I hear that cancer rates near the plant are higher than in other places. There's some studies. I hear that Strontium-90 turns up in baby teeth. So this is an experimental thing and we're being experimented on. I don't think it should continue. (VS-C-2)

Response: *The comment concerns Strontium-90 in baby teeth. In 2000, a report entitled, "Strontium-90 in Deciduous Teeth as a Factor in Early Childhood Cancer," was published by the Radiation and Public Health Project. The report alleges there has been an increase in cancer incidence due to strontium-90 released from nuclear power facilities. Elevated levels of strontium-90 in deciduous (baby) teeth was claimed in the report as the evidence for the increase in childhood cancer. This study has been largely discredited by the scientific community for a number of reasons including the lack of controls, small sample sizes, and the lack of environmental sampling and analysis (see http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/tooth-fairy.html). The assessment of human health impacts in the SEIS will determine if the facility is currently limiting and will continue to limit radiological releases to within Federal limits, which are considered protective of the public. The comment provides no new and significant information; therefore, it will not be evaluated further.*

Comment: I would like to submit the BEIR 7 Report of the National Academy of Sciences. The biological effects of ionizing radiation. The National Academy of Sciences told us that, in fact, there is not a threshold dose phenomenon. The GEIS presupposes a threshold dose phenomenon. Therefore, it claims that it does make sense to normalize early fatalities. That's based on the BEIR 5 Report, not BEIR 7. I would like to suggest that you recalculate using the conclusions of BEIR 7. What does BEIR 7 say about radiation risks to workers under exposure of one REM per year. That was another little nugget in the Appendices of the GEIS. I'm just curious. I would love to see that calculated. I think your Appendix E.4.1.2 is faulty, also based on BEIR 7, because it's based on the notion of a threshold of effects. That does not seem to be the case. Your Appendices E.8.2, these Appendices show the tables and the calculations behind a lot of their conclusions in the GEIS.

Quantities and units, assumes non-stochastic effects will not occur if the dose equivalent from internal and external sources combined, is less than 50 rems or fewer in a year. This, too, contradicts the conclusions of the BEIR 7 Study. Your cost estimates also use BEIR 5, not 7, and the costs are based on 1980 costs, or maybe they were updated to 1994, 12 years ago. (VS-M-6)

Comment: In Appendix E, I think it was Page E-43, we talk about ALARA limits. That stands for As Low As Reasonably Achievable. These are radiation exposure limits for workers. And they were derived using analytic techniques to identify the approximate point at which the cost of providing additional protection, would exceed the risk averted. But what dollar value do you

place on a workers life? I'm just curious. I guess I'll conclude with saying that it seems to me that your Generic Environmental Impact Statement is fatally flawed, in many ways. Recalculations of early fatalities and latent fatalities, are biased. They are based on old information, BEIR 5, not BEIR 7, and I humbly request that you recalculate them based on the most currently available knowledge on the effects of radiation. Particularly, low level radiation. (VS-M-9)

Comment: I have a question that comes up, that I didn't ask in the beginning of the meeting, which is, on what do you base radiation exposure? Is it the ICRP? International Committee on Radiological Protection? Or is it on the European, on the European Committee on Radiation Risk? (VS-O-9)

Comment: In July of 2005, and this has already been brought up tonight, the U.S. National Academy of Sciences released its latest biological effects of ionizing radiation report, otherwise known as BEIR VII. Basically what it pointed out was that no amount of radiation can be considered safe. How ethical and moral is it then to site an elementary school directly across the street from Vermont Yankee? Children are far more vulnerable to radiological damage that adults. (VS-LL-4)

Comment: Regarding the Generic Environmental Impact Statement (the GEIS), I would like to request that you consider the National Academy of Sciences Biological Effects of Ionizing Radiation VII report new and significant information and recalculate early fatalities, latent fatalities and any injury projections based on this information.

Herewith and in these comments I formally petition the NRC for a 2.802 rulemaking to reconcile with current science, in particular, but not exclusively, The National Academy of Sciences BEIR VII Report, the Part 100 tables in 10 CFR for radiation exposure. BEIR VII was published in 2005. Throughout the Generic Environmental Impact Statement you cite BEIR V, which came out in 1990. This is not acceptable. If you insist on using a Generic EIS, an oxymoron at best, you must at least reference the latest and best available science in your calculations of risk and consequences.

“In 1990, the NAS estimated that the risks of dying from cancer due to exposure to radiation were about five percent higher for women than for men,” said Dr. Arjun Makhijani, president of the Institute for Energy and Environmental Research. “In BEIR VII, the cancer mortality risks for females are 37.5 percent higher. The risks for all solid tumors, like lung, breast, and kidney, liver, and other solid tumors added together are almost 50 percent greater for women than men, though there are a few specific cancers, including leukemia, for which the risk estimates for men are higher.” (Summary estimates are in Table ES-1 on page 28 of the BEIR VII report prepublication copy, on the Web at http://books.nap.edu/books/030909156X/html/28.html.)

Unlike the 1990 NAS report, BEIR VII estimates risks for cancer incidence rates as well as mortality and also provides detailed risk figures according to age of exposure for males and females, by cancer type. This is a great advance over the previous report. The BEIR VII report has thoroughly reviewed available human and animal cancer data and scientific understanding arrived at using cellular level studies. Cancer risk incidence figures for solid tumors for women are also about double those for men.

The BEIR VII report estimates that the differential risk for children is even greater. For instance, the same radiation in the first year of life for boys produces three to four times the cancer risk as exposure between the ages of 20 and 50. Female infants have almost double the risk as male infants. (Table 12 D-1 and D2, on pages 550-551 of the prepublication copy of the report, on the Web starting at http://books.nap.edu/books/030909156X/html/550.html).--IEER July 2005. (VS-HHH-3)

Comment: In the GEIS you mention: "Because of a threshold dose phenomenon, it does not make sense to normalize early fatalities." I believe you reference BEIR V and other sources. It is my understanding that the BEIR reports never proved the existence of a threshold dose phenomenon, and the current BEIR VII report explicitly concludes that there is no evidence that such a phenomenon exists. Therefore the NRC's attitude that public or worker exposure to radiation from nuclear power plants can be "below regulatory concern" MUST be re-examined, and revised. I call upon you to suspend the license renewal process for VT Yankee until such a time as this re-examination and recalculation of all tables in the GEIS related to radiation exposure and projected consequences is completed. (VS-HHH-5)

Comment: Third, the actual human health impacts of an accident with radiation release should be recalculated using assumptions from BEIR VII, not an arbitrary and false threshold dose model. The GEIS reports radiation risks to nuclear workers of 1 REM/year based on BEIR V. These should be recalculated using BEIR VII and the latest science in medical journals which include exposure to internal radiation sources--alpha and beta emitters, via inhalation or ingestion. Recent work on people exposed to depleted uranium might be enlightening. In the Appendices of the GEIS, Appendix E.4.1.2. is faulty in that it is based on the notion of a threshold dose. This should be entirely re-done in the light of BEIR VII which definitively states there is no evidence of such a threshold dose. The calculations on page E-39 in the appendices assumes non-stochastic effects will not occur if the dose equivalent from internal and external sources combined is less than 50 REM in a year. This too must be recalculated in the light of BEIR VII.

RE page E-43: ALARA limits were derived using analytic techniques to identify the approximate point at which the cost of providing additional protection would exceed the cost consequences of the risk averted. If BEIR VII is correct, any exposure to extra radiation from nuclear reactors is costly in terms of human health, and the consequences are cumulative. What dollar value does the NRC place on worker's lives? (VS-HHH-7)

Response*: The comments relate to the NRC's radiation protection standards. NRC and the Environmental Protection Agency (EPA) consider available information and recommendations from a number of sources in the development and periodic reassessment of radiation standards in the United States. Those sources include the National Commission on Radiation Protection and Measurements (NCRP), International Committee on Radiation Protection (ICRP), National Academy of Sciences, and others.*

In spring 2006, the National Research Council of the National Academies published, "Health Risks from Exposure to Low Levels of Ionizing Radiation, Biological Effects of Ionizing Radiation (BEIR) VII Phase 2." A pre-publication version of the report was made public in June 2005. The major conclusion of the report is that current scientific evidence is consistent with the hypothesis that there is a linear, no-threshold dose response relationship between exposure to ionizing radiation and the development of cancer in humans. This conclusion is consistent with the system of radiological protection the NRC uses to develop its regulations. Therefore, the NRC's regulations continue to be adequately protective of public health and safety and the environment. None of the findings in the BEIR VII report warrant changes to the NRC regulations. The BEIR VII report does not say there is no safe level of exposure to radiation; it does not address "safe versus not safe." It does continue to support the conclusion that there is some amount of cancer risk associated with any amount of radiation exposure and that the risk increases with exposure and exposure rate. It concludes that the risk of cancer induction at the dose levels in NRC's and EPA's radiation standards is very small. Similar conclusions have been made in all of the associated BEIR reports since 1972 (BEIR I, III, and V). The BEIR VII report does not constitute new and significant information; therefore, the comments will not be evaluated further.

The petition for rulemaking made by Sally Shaw, in comment VS-HHH-3, has been forwarded to the Office of the Secretary for the Commission for appropriate action.

Comment: I believe we have to take responsibility right now for the effect that we are having because we are already seeing its effects upon our children and grandchildren. We know that mercury in the ponds in the fish that we happily go out and catch on a Sunday already in Vermont, we can't allow the children to eat more than four ounces a month and we have seen the effects of children who have more than that. The illnesses and cancers and neurological damage already caused by different kinds of pollutants in Vermont is staggering. We certainly don't need any more. (VS-B-5)

Comment: But what I want the NRC to weigh heavily, it's the waste issue, environmentally, and the cancer issue. Are there cancer clusters around nuclear power plants? Are there elevated rates of breast cancer around nuclear power plants? I read reports that say that there are and it is unfair to experiment with a population when these are questions hanging in the air. It's unconscionable. (VS-C-4)

Comment: As you know, the state of Vermont posts radiation measuring devices, TLDs, around the plant perimeter. And the state reports that three times in the last decade or so, that the state limit of 20 millirem per year has been exceeded at the fence line. And we took a quick look at those reports for those three years, and then also at a study, I believe, done by Duke Engineering for Vermont Yankee, and found that the TLDs in the same sector were the ones that read high in each of those instances. And, you know, this is not an anomaly for a bad detection instrument, because they are changed out quarterly, and the excess is the average over a year.

The other thing that we noticed is that the only other abnormally high reading, that occurred in each of those three instances, was at the interior of the Vernon Elementary School. The other thing that we noticed was that the turbine hall and the offending TLD, and the elementary school, line up axially. There's a straight line to be drawn from the turbine hall, to the one monitor that read high, to the elementary school reading high.

The state folks thought this might be an artifact of excess of radon in the school. But, of course, we don't generally use TLDs to go chasing radon. The other thing that we noticed, was that there was no correlation between the measured amount of radon in the school, for those instances, and the high TLD readings. From an amateur science point of view, we believe there's enough here to warrant real investigation. I should point out to you that we have not looked for correlation on weather or meteorological conditions, but it might well be a consideration that these high readings are a result of temperature inversion and downdraft from the release stack. (VS-D-2)

Comment: Here at Vernon, as in the rest of the country, it's part of the operating license that the Nuclear Regulatory Commission gives the companies that operate these power plants, as part of that process and part of that license, they're allowed to routinely emit radioactive releases, in both the air and water. I'm sure everybody in this room knows that. Long-term, that's a problem. We'd like to know how much has been released by the operation of Vermont Yankee, year-to-date, or operational lifetime to date. And how much is projected under routine operational conditions? How much is going to be released over the proposed license extension? (VS-F-3)

Comment: They state that among the 150 million people who live within 50 miles of a U.S. Nuclear Power Plant, I prefer to call it a reactor, not a plant. About 30 million who will die of spontaneous cancers. That's one in five people, by their calculations. And they say that since we can't prove a one of them was caused by radiation, therefore the NRC doesn't have to worry about them, note bene. They admit that five calculated fatalities associated with nuclear powered induced cancers will occur. So I ask which one of us, or our children, living within 50 miles, will die of radiation induced cancer, over the lifetime of this plant. That's the cost of progress. Tough luck, sucker. Most of the people who die of radiation induced cancers, will live within ten miles. Thus, there's a very good possibility that we will know, we in this room, will

know some of them. At last count, my husband and I counted, between us, 28 people we know who have died or are living with cancer, in our extended community. Can I prove that their cancers are radiation related? No. Therefore, the effects, the impact of these deaths, on our life, is considered by the NRC to be of small significance. (VS-M-2)

Comment: Richard Monson of the Harvard School of Public Health stated, quote, the scientific research base shows that there is no threshold below which low levels of ionizing radiation can be demonstrated to be harmless or beneficial. I'm going to repeat that. There is no threshold below which low levels of ionizing radiation can be demonstrated to be harmless or beneficial. The health risks, particularly the development of solid cancers in organs, rise proportionately with exposure. At low doses of radiation, the risk of inducing solid cancers is very small. As the overall lifetime exposure increases, so does the risk. Every nuclear reactor emits small amounts of radiation. Even, supposedly, zero-emission reactors. (VS-O-4) (VS-SS-2)

Comment: There's an article about Vermont Yankee from 1980, about the town of Vernon, and how much anxiety--1980, we're talking about. How much anxiety exists in the communities around this plant. And not only does this plant--let's say it--causes cancer, causes cancer of unborn, yet unborn children. Not only does it cause cancer, it causes heart attacks for the anxiety that people live with. (VS-S-1)

Comment: Secondly, radiation monitoring is now inadequate and will be inadequate. In Western Massachusetts, the Department of Health is doing no radiological monitoring. (VS-X-1)

Comment: Thirdly, health monitoring is inadequate. And it will be inadequate. (VS-X-2)

Comment: Vermont Yankee routinely emits radioactive material into the air, soil and water. Presumably these emissions are permissible. But who knows? Permissible emissions are not the same thing as safe emissions. (VS-LL-3)

Comment: Let me give you a quick review of some results from accidents at other nuclear facilities.

A 400 percent increase in leukemia incidents in the population living downwind of the Pilgrim nuclear power reactor in Massachusetts in the first five years after fuel was known to have leaked excess radioactivity.

Three to 400 percent increase in lung cancer in the general population within the plume of the Three Mile Island accident.

Six to 700 percent increase in leukemia in the general population within the plume of Three Mile Island.

Eight thousand percent increase in thyroid cancer in Belarus children living near Chernobyl, reported six years after the meltdown.

Further effects found in victims of the Chernobyl accident, less than 10 years after the meltdown include the following. A 500 percent increase in thyroid cancer in children in Ukraine. A 75 percent increase, incidence of heart disease.

A 200 percent increase in respiratory and digestive disease. A 200 percent increase in birth defects.

Among atomic workers, a 250 percent increase in all cancers. And finally, a 1200 percent increase in all cancers exist around the Sheffield [sic] reprocessing facility in England. (VS-LL-5)

Comment*:* 1. Subjects to include in a supplement to the GEIS for Vermont Yankee and analyze in depth:

1.5 Extent of groundwater contamination on (and beneath) site, including, but not limited to tritium contamination.

1.6 Extent of any off-site groundwater contamination, including, but not limited to tritium contamination of drinking water wells and other off site ground water locations. (VS-WW-2)

Comment*:* there is ample evidence in the publicly available records for Vermont Yankee that numerous spills occurred during operations under the original license and the facility engaged in shoddy record keeping to document the extent and location of such events.1 Thus, including a complete inventory and analysis of all the items in the list within the scope of the EIS for Vermont Yankee license renewal makes good practical sense based on the historical record for this licensee. Further, as the NRC is aware, tritium contamination--which is a part of the historical record for this facility--has become a major issue at reactor sites across the country. Thus, on and off site tritium contamination due to past (and continued) operation of the Vermont Yankee Nuclear Power Station should be thoroughly investigated, including all sources and pathways on and off site, to assure if the NRC renews VY's license it will not permit continued radioactive contamination of groundwater. (VS-WW-5)

Comment: In July of 1975, did faulty valves discharge radioactive water into the Connecticut River and Atlantic fisheries? In 1995 did faulty fuel assemblies interfere with valve closing? An adequate scope of environmental assessment will require an extensive period for assessing contamination levels in air, water, soil, plant, animal tissues. Adequate scope will establish radiation monitoring in a 100-mile radius of the Vernon reactor in Massachusetts, New Hampshire and Vermont, on an ongoing basis for the remainder of the license period. (VS-FFF-3)

Response*: The comments relate to potential health effects from radiation exposure. The GEIS concluded that public radiation exposure is a Category 1 issued based on the assumption that the plant continues to meet NRC and EPA dose regulations. As part of its search for new and significant information, the NRC staff will review recent results from the licensee's effluent and environmental radiological monitoring programs. In addition, the NRC staff will review recent reports from the environmental radiological monitoring program conducted by the Vermont Department of Health (VDH) around Vermont Yankee. The staff regards information from the effluent and environmental reports over the last several years as the best source of information to use to assess the expected levels of radiological impact during the license renewal period. The radiological effluent and environmental monitoring programs and the impacts from VYNPS's radiological effluents will be discussed in Chapters 2 and 4 of the SEIS.*

In 1990, the U.S. Congress requested that the National Cancer Institute study cancer rates in the areas surrounding nuclear facilities, such as nuclear power plants, to determine if there are detrimental effects on the population. VYNPS was included in the study. This extensive report found no evidence that nuclear facilities may be linked causally with excess deaths from leukemia or from other cancers in populations living nearby. The comments concerning cancer provide no new and significant information; therefore, they will not be evaluated further.

Comment*:* The company uses an oxidizer called glutaraldehyde in small parts, two-tenths of a part per million. It triggers asthma. Two-tenths of a part per million exceeds California's occupational exposure standards. In all the regulation, we don't find any place that the regulation anticipates spray. It anticipates fumes. It anticipates skin contact, but I don't think any regulator ever figured you would spray people with this stuff. The glutaraldehyde plus, surfactant, anti-rust compounds, other pesticides, other biocides, and fluorine and bromine compounds are used by the company. The water gets circulated in the cooling towers. It flows out in spray. It goes up to a mile downwind. And I just want to point out that in terms of concentrations as those droplets travel, they dry and we don't know what the concentrations are when they land on the skin, but unless it's quantified, we have to assume that it's toxic. Unless it's quantified, we have to assume that there are health effects and those things need to be measured in the Village of Vernon and across the river in Hinsdale. (VS-DD-10)

Response*: The comment relates to potential releases of chemicals in the cooling tower drift from Vermont Yankee. Specifically, the comment relates to a chemical called glutaraldehyde that Entergy added to the cooling water as part of a commercially available biocide mixture. Entergy discontinued use of the glutaraldehyde in the fall of 2005. The use of chemicals in the cooling water at Vermont Yankee is regulated by air and water permits, such as the National Pollutant Discharge Elimination System permit, issued by the Vermont Agency for Natural Resources. The NRC staff will review those permits and discuss the environmental impacts of chemical releases in the cooling tower drift in Chapters 2 and 4 of the SEIS.*

Comment: Issue 89 (Water Quality) The Agency believes that groundwater and surface water quality are issues of great importance to Vermonters and should be subject to a site specific analysis. With respect to groundwater, it would be very useful to determine the natural background levels of radionuclides at the Entergy Vermont Yankee facility and in the vicinity of regional monitoring devices. What is the potential contribution to groundwater of constituents from land spreading of low-level constituents on site? How will both the natural and anthropogenic background levels be used when determining whether future releases from the facility exceed health standards? (VS-AAA-6)

Response*: The comment concerns potential radiological contamination in ground and surface water. Groundwater is monitored by Entergy both within the boundaries of the VYNPS site and outside. Entergy has installed test wells for monitoring the ground water around the periphery of the on-site land-spreading plot where the sludge from the on-site septic tanks is periodically disposed. The State of Vermont also monitors the ground water at several locations in the vicinity of the site. The results of Entergy's and the State's monitoring programs are published annually. These monitoring programs will be described in Section 2.2.7 of the SEIS. Cumulative radiological impacts will be discussed in Section 4.8.3 of the SEIS.*

A.1.11 Comments Concerning Socioeconomics

Comment: From an economic standpoint, I would just quickly say that a stable, relatively low-cost power provider will help to maintain and expand businesses here in Vermont, while at the same time providing for an opportunity to bring and attract new businesses to the state. In a time where Vermont faces an increasing, aging population, the plant provides employment to 600 highly skilled men and women. These individuals and the company provide more than 200 million in economic benefits to the Windham County Region and the state as a whole. According to the Vermont Public Board, I'm sorry, the Public Service Department, the company, through the State's Power Purchase Agreement, will provide customers in Vermont, approximately 250 million dollars in savings over the life of the contract. (VS-G-2)

Comment: We have seen and been instrumental in the plant's continued enhancements and upgrades, most recently during the power uprate process. The cost of Vermont Yankee's power to Vermont consumers like myself is also far below regional market prices. As a baseload generator, we are able to provide lower cost power which is so critical for this state. (VS-AA-2)

Comment: From an economic standpoint, a stable, relatively low-cost power provider helps to maintain and expand businesses in Vermont, while at the same time providing an opportunity to attract new business. In a time when Vermont faces an increasing, aging population the plant provides employment to 600 highly skilled men and women. Those individuals in the company provide more than $200 million in economic benefits to the Wyndham County region and the State of Vermont as a whole. (VS-BB-2)

Comment: According to the Vermont Public Service Department, the company through the power purchase agreement, will provide Vermont customers approximately $250 million in savings over the life of the contract. This estimate, it should be noted, was made when energy prices were far lower than they are today. And in fact, at 3.95 cents per kilowatt hour, Vermont Yankee power today costs Vermonters 40 percent less than other sources of electricity. This matters most to Vermont's elderly and the poor. (VS–BB-3)

Comment: The economic impact of shutting down or not granting a license extension for Vermont Yankee is very, very severe. To take one third of the electricity out of the state, one third of what it needs to run, that electricity has to be generated somewhere and come from some other means. (VS-GG-1)

Comment: Living within about 14 miles of a nuclear plant weighs on the minds of people, and my friends and neighbors virtually unanimously feel a strain whenever they think about Vermont Yankee. I am in both the construction trades and farming, self-employed in both fields, and as a contractor, dealing with others in that line of work, I have seen how strongly many people in construction feel an aversion to the Vernon, Vt., area because of uneasiness about the nuclear plant. I have heard builders voice scruples against building spec housing in that area. They wouldn't want to live there themselves and don't feel right about selling a family a house so close to the potential danger of meltdown, or the actual, ongoing radiation health hazard from the plant's operation. The town of Vernon remains quite sparsely populated despite taxes being low, and I believe appropriate concern about the nuclear power plant explains why. The effects of worry don't cease at the town boundary, either—by harming the peace of mind, they negatively influence the choices of home buyers, adders-on and renovators, and of businesses looking to relocate in a radius of easily a dozen or perhaps 20 miles. (VS-LLL-1)

Response: *The comments relate to socioeconomic issues. Socioeconomic issues will be discussed in Chapters 2 and 4 of the SEIS.*

A.1.12 Comments Concerning Postulated Accidents

Comment: I'm very concerned about dry-cask storage, alongside the Connecticut River which flows through Massachusetts and Connecticut to the Long Island Sound and just the idea that nuclear radioactivity could be carried by that water all the way to Long Island Sound should give us great pause. I believe we have to take responsibility right now for the effect that we are having because we are already seeing its effects upon our children and grandchildren. (VS-B-4)

Comment: We, there's many of us in the local citizenry know that our environment, our homes, our farms, our entire livelihood are at risk here. If there's ever a sizeable release of radioactivity, then our property values will plummet. Our ability to sell, possibly even eat our

own produce, will be diminished. And I can't imagine a greater environmental impact than that. I mean we're talking about all or nothing, here. And I don't know whether you want to try to do a mathematical analysis of all or nothing, or not.

But from my perspective, it doesn't make any sense. If there's any possibility, that there's going to be any kind of impact like that, then I think that the NRC can only include that in the environmental scoping. (VS-H-2)

Comment: At a recent ACRS hearing in Rockville, Maryland, NRC staff, I think maybe it was NRR staff, testified that in a design-basis accident or loss of cooling accident, under upgraded conditions, which they're not looking at, of course, with this re-licensing thing. The entire quantity of the core would be released in about 30 seconds. And accident impacts after uprate, are greater than the 20 percent uprate, they may approach 40 percent, maybe more. And this might result in a 500 roentgen exposure at the limiting location, which happens to be very near a residence, which happens to be on the plant perimeter. I submit that such an accident would have a significant impact on the person or family living there. So I would ask the NRC to recalculate. That goes on and on, I'm going to skip. (VS-M-4)

Comment: The other thing, quarrel I have with your cost estimates, is that you skip Indian Point, hypothetical accident costs for Indian Point. I don't blame the NRC for skipping Indian Point. Lots of folks live down there. The cost of an accident would be astronomical, but it's not good science to leave out a big outlier like that, in this case. (VS-M-7)

Comment: This afternoon is the first time, maybe the second time I've heard that the reactor is 70 feet in the air, which is a decision as to whether or not any kind of explosion would suck water and dirt into the air and emit, you know, to the hills, but it would probably be buffeted. Like there is a higher rate of survivor-hood, on the other side of the mountains from Hiroshima. That it's at, you're buffeted by the earth. (VS-P-1)

Comment: I urgently request that you refuse to re-license the VT Yankee Nuclear Power Plant I am extremely worried about the dangers of this aging plant and all the harm it can do to us, as residents of the Pioneer Valley. I live immediately downwind, to the S. of Vernon, and I am an educator. We all know we will not be protected from the radiation of a nuclear accident. Yes, we need cheap electrical power. I am unwilling however, to risk our lives for this. I will insure my car, my home, etc, but there is no insurance to protect us from radiation damage to our health, or from a terrorist attack. Already there are radiation and chemical leaks. What are you trying to do to us? (VS-DDD-1) (VS-MMM-1)

Comment: Another quarrel I have with the GEIS is that early fatality calculations are based on a 50-mile radius from reactors, however graphs in the report only show numbers for a 150-mile radius. Where are the numbers for a 50-mile radius?

The GEIS cost estimates on an accident at a reactor, based on outdated cost information from 1980 updated only to 1994, 12 years ago, is flawed for a number of reasons. First, the outdated cost information, aforementioned, should be updated to reflect current reality. Second, you did not include Indian Point. This is disingenuous. Although it may be an “outlier” due to the large population living within 50 miles of its reactors, nevertheless an accident there would have an enormous impact on the economy of New England, and the entire country. It should not be left out of your accident consequence cost calculations. (VS-HHH-6)

Response*: The comments relate to Category 1 design-basis and severe accidents issues. Environmental impacts of postulated design basis and severe accidents will be discussed in Chapter 5 of the GEIS.*

A.1.13 Comments Concerning Uranium Fuel Cycle and Waste Management

Comment: Vermont Yankee had gotten permission to store contaminated soil on site, starting back, I think in 1998, maybe a little earlier. And, at the time, the amount was some excavated soil from a construction project, about 135 cubic yards. And then roughly at 35 or 40 cubic yards per year, they anticipated generating through contaminated sanding salts from the roads from silt in the cooling towers, and also from waste sludge. And, in 2004, Entergy received permission to increase that amount. They had accumulated, they thought, about 500 cubic meters of contaminated soil on site, and they wished to dispose of, on-site, an additional 150 cubic meters per year. That's about ten big dump truck loads. And this disposal site or, excuse me, this storage site is on the south end of the site, just south of the cooling towers. It is constantly sprayed down with what is called drift, sideways spray from the cooling towers. It is on the riverbank. We believe that the phenomenon of bio uptake, of sedimentary separation, of chemical combination, can leach and separate and concentrate the radioactive material in that disposed of or stored soil, complicating decommissioning, polluting the river, winding up in the biota. And so we believe that should also be investigated as part of the environmental assessment. (VS-D-3)

Comment: So we have to run the other way to nuclear. You have to really think hard about all of the nuclear waste that's going to be with us forever. And will Entergy be with us forever. As long as it takes for the radiation to dissipate. (VS-L-5)

Comment: Especially if Entergy gets its way and does not even have to provide berms around the casks. And, of course, there's also a flooding danger. In 1991, there was a study regarding the construction of a low-level waste repository down on the plant grounds, and it was deemed not wise. (VS-N-3)

Comment: Nuclear is not cheap electricity. Protect the waste for 100,000 years, tell us how much that's going to cost. Spend some of that money to protect that waste, and then tell us it's cheap, affordable or inexpensive electricity. I challenge you on that. To anyone who claims that

there was a benefit to nuclear power, please show me this cost benefit analysis, including the price of dealing with this waste. Because the rate we're given as for the power purchase agreement, from 2002, does not tell us the true cost of the economics behind this. (VS-O-1)

Comment: But we know that this is not clean, there's no answer for the waste. You know Vermonters don't want this. (VS-RR-2)

Comment: We were asking the same questions then that we're asking the NRC now, and that is, why produce power when you don't know what to do with the waste? When you don't know what to do with the waste. When you don't know what to do with the waste. When the waste, now, has become subject to the possibility of a terrorist attack. (VS-VV-2)

Comment: CAN contends that the following are proper subjects of environmental concern that should be fully investigated prior to renewal of the Vermont Yankee license to operate:

1. Subjects to include in a supplement to the GEIS for Vermont Yankee and analyze in depth:

1.1 Accumulation of low-level radioactive waste on site.

1.2 Accumulation of chemical wastes on site.

1.3 Extent of on and off site contamination due to radioactive materials, chemicals and other VY waste in on and off site locations, including, but not limited to disposal in the Brattleboro and other area landfills that are now part of the Windham Solid Waste Management District and/or out of state landfills utilized by the WSWMD.

1.4 Extent of site contamination due to chemical and other hazardous wastes, including, but not limited to PCB contamination in paint, accumulated TCE, PERC and other organic solvents, lead, and asbestos. (VS-WW-1)

Comment: 1. Subjects to include in a supplement to the GEIS for Vermont Yankee and analyze in depth:

1.7 Extent of radionuclide inventory and location of radioactive waste accumulated in on-site disposal locations for contaminated silt, sand, soil, sewage and other materials. (VS-WW-3)

Comment: In the event that Vermont Yankee is given an additional twenty years (or less) of operation under license renewal, now is the time to access the above listed environmental issues in order to inventory and fully analyze the extent of these problems at the originally contemplated end-of-life for this reactor. This inventory and analysis is appropriate, as the use and improper disposal of many of the environmental hazards listed above, along with on-site disposal of construction waste during construction of the facility, were commonly accepted and customary business and industrial practices during a major portion of the original license period. (VS-WW-4)

Comment: Issue 87 (Waste Management) The Agency is suggesting that low level radioactive waste issue should be evaluated on a site specific basis. Title 10 Vermont Statue Annotated contains §7066 (c) states:

No generator of low-level radioactive waste in the state existing on the date of enactment of this action may increase its generation of waste in a year by more than 20 percent of the total annual volume of waste from all generators estimated for disposal by the secretary of natural resources, under subdivision 7065(a)(3) of this title, unless that generator receives a favorable determination from the secretary of natural resources that disposal capacity will be available as provided by section 3.04(11) of the compact agreement.

The Agency would like to know whether Entergy Vermont Yankee will increase production of low-level radioactive waste as a consequence of the renewal and, if so, will any increase remain in compliance with the state statutory requirements regarding low level radioactive waste generation, minimization, and reporting. (VS-AAA-5)

Comment: Assessors will compare cultural willingness to isolate materials no longer in use, when those materials pose a health risk, whether is no longer interest in those materials, or whether substantial bribes are available to sell nuclear remains illegally, in both prosperous and desperate times. An adequate assessment team will include sociologists who can assess the human factors relevant for environmental protection for the length of time needed for isolating wastes produced in a twenty year period, not the environmental protection needed in a twenty year period. (VS-FFF-5)

Comment: I think the uranium that's mined to operate this nuclear power plant, is coming from native land, from very, people that have lived for over 30, what, 40 years, with the tailings of the uranium mining. And why doesn't the environmental scoping include the people that live, you know, with these tailings, with the still births and the water, from the water, from the polluted water, from the polluted air. (VS-R-1)

Comment: For the people who are trying to tell us that nuclear energy is clean and it doesn't contribute to greenhouse gases, are not taking into consideration the amount of nonrenewable energy used to dig up and process the uranium, to make it into a fissionable form. (VS-U-1)

Comment: In the uprate proceeding before the Vermont Public Service Board, Entergy presented quite a remarkable witness, Dr. Ernest Moniz, M-O-N-I-Z, from MIT and he is a former Assistant Secretary of Energy and I had the privilege of cross examining the good doctor and he made some startling admissions. Number one is that all of the fuel, commercial nuclear fuel produced in the United States to his best recollection was produced at the Portsmouth enrichment plant and the Paducah enrichment plant and both of those plants, which absorb enormous quantities of electricity in the process, are supplied by coal-fired stations.

My question for Dr. Moniz was well, then the pollution gets here ahead of the fuel, doesn't it? And in fact, the mercury that some speaker referred to earlier, those heavy, heavy coal-fired plants in Ohio and the ones that provide electricity to enrich nuclear fuel, among the dirtiest, do send their mercury to our waters and our fish. (VS-DD-1)

Comment: The facts show us that huge amounts of pollution are released during the mining and processing of uranium for fuel rods. (VS-JJJ-2)

Response*: The comments relate to Category 1 uranium fuel cycle and waste management issues. The environmental impacts of the uranium fuel cycle including waste disposal will be addressed in Chapter 6 of the SEIS.*

A.1.14 Comments Concerning Alternative Energy Sources

Comment: We also do not have to demand so much electricity. We don't really require it. Our inflated desires for the expansion of electrical power have been -- are a 20th century notion of progress at any cost. The cost is now coming due and we are going to have to begin paying for the expansion....And I very much want to hear the NRC, the Regulatory Commission and other leaders in our country talking about conservation. This is indeed a war. It's as if we are at war against our unchecked desire to progress at the expense of other nations and at the expense of the environment. And we can indeed change our ways and show a willingness to conserve. (VS-B-2)

Comment: I don’t think it should continue. It should be closed down. We should be looking for safer forms of energy production and we should be conserving. (VS-C-3)

Comment: The Partnership fully supports the re-licensing of the Vermont Yankee Nuclear Power Plant in Vernon and I will explain to you why. It is no secret that Vermont's demand for energy is continuing to grow. It may be a less known fact, however, that Vermont faces uncertainty over its future energy supply. Currently, one-third of Vermont's electric supply comes from Hydro Quebec. These long-term contracts with the state will begin to expire in 2014, and there is no guarantee that these contracts will either be renewed or renegotiated given the company's, Hydro Quebec's more local business opportunities in the province. Another approximate one-third of our supply here in Vermont, is made up of a wide array of both in-state and out-of-state sources, renewable and non-renewable. The Partnership supports the in-state development of renewable sources, and we encourage the increased used of energy efficiency in the expansion on conservation measures. However, the fact remains a reliable energy portfolio, here in Vermont, must be made up elsewhere, of base load sources of power. Vermont Yankee accounts for the last one-third of our Vermont portfolio.

About 34 percent of Vermont's total electricity supply needs are met by the Vermont Yankee Plant. So let me put this debate into proper context. Vermont has not brought on a single,

significant power generating facility in over 20 years. And there are no plans to do so in the near term. To make matters worse, proposals to develop small scale generation in Vermont, have been met with sharp criticism and serious opposition.

In a time when energy costs are at their highest, Vermont Yankee will not only play an essential role in our state's energy portfolio, it is critically important to the Vermont economy and environment. (VS-G-1)

Comment: In 2005, alone, according to the Nuclear Energy Institute, Vermont Yankee avoided emissions of 7,700 tons of sulphur dioxide, 2,000 tons of nitrogen oxides, and 2.5 million tons of carbon dioxide. Emissions of sulphur dioxide, lead to the formation of acid rain. Nitrogen oxide is the precursor to both ground-level ozone and smog. And greenhouse gases, like carbon dioxide, contribute to global warming.

We live in a country where half the electricity generated comes from coal-burning sources. Yet, in Vermont, we can be very proud to say that that's not the case. Vermont Yankee does not release harmful greenhouse gases or other toxins into the atmosphere which are the primary cause for global warming. The issue of global warming, a climate change, has rapidly reached alarming levels.

And power-generated facilities have been at the heart of that crisis. In the United States, coal is the leading power provider with over 600 plants operating. Of these plants, of the 600 plants, 36 percent of all U.S. emissions are accounted by those plants' generation. It has become abundantly clear that the nuclear energy is the only emission-free source that can meet consumer demand, reliably and at a reasonable cost. Leading environmentalists, from around the world, like Dr. Patrick Moore, Co-Founder of Green Peace, have come to the conclusion that nuclear power is the only source that can help remedy and save the planet from catastrophic climate change.

Just last month, Dr. Moore said in the Washington Post, nuclear energy is the only large scale, cost effective energy source that can reduce these emissions, while continuing to satisfy the growing demand for power. And these days, in these days it can do so safely. He went on to say that it's extremists who fail to consider the enormous and obvious benefits of nuclear power, also fail to understand that nuclear energy is practical, safe and environmentally friendly.

Without Vermont Yankee, Vermont utilities would be forced to buy additional power on the spot market that would be less reliable and certainly considerably more expensive. So the Partnership asks, do Vermonters really want to pay more and to depend on power from fossil fuel sources, such as natural gas and coal, which contribute to the global warming and the earth's degradation? The Vermont Partnership thinks not. (VS-G-3)

Comment: I feel that in any electrical generation, no matter what type of process you are using, there are benefits and risks. And I firmly believe that the benefits of nuclear power, greatly exceed the risks. I know a lot of you are in disagreement. The main reason that I feel this way is other than hydro-electric power, all of the other forms of electrical generation involve carbon fuels. Either coal, oil, natural gas, biomass, you name it. All of these are going to produce gases that are going to be harmful to the environment. They are going to produce greenhouse gases. And I know some people don't believe in global warming, certainly the President of the United States doesn't agree about global warming, but it does exist. (VS-I-2)

Comment: Because fossil fuels are going to diminish. China wants them, everybody else wants them. They're polluting the atmosphere. They're going to kill the earth in just a very, very few decades. Now with nuclear power we have the ability to get the fuel right here in North America. We can use nuclear power to generate electricity. We can use nuclear power to electrolyze water and get hydrogen. And hydrogen is going to be the fuel of the future. (VS-I-4)

Comment: About 30 years ago the Union of Concerned Scientists developed a program that provided the way that the United States could be 70 percent solar-powered by the year 2000. Well, here it's 2006, and we're talking about energy problems and energy shortages.

Well, for the last 25 years, I've lived in a solar home that I built, and I've lived off the grid with solar electricity from portable tag panels. If you came into my house, you wouldn't notice much difference from your house. I have computers, I have monitors, I have televisions, I have a microwave. I have a washing machine. I cook on electric hot plates in the summer and I cook on a wood cook stove in the winter. I don't use any oil to heat my house. So when people tell you that we need to risk the very ground that we stand on, that we need to risk making it uninhabitable for 15 generations, in order to heat our homes and have electricity, it simply isn't true. Technologically we can solve energy problems, we can do it without destroying the environment. The problem is political and social. We need to say we want renewable energy, we are not willing to pay the price of the destruction of the earth, to heat our homes. (VS-J-1)

Comment: And I would like to suggest that we follow up and that each of us become responsible for learning that, for example, our own Department of Energy has very firm studies that clearly tell us that if we exerted the political and social will, we would have no need for any of the risky enterprises that we use now to meet our needs for energy and heat. (VS-K-1)

Comment: I want to add that I question this assumption that we need more and more energy and that the only choices are centralized forms of energy that use fossil fuels, coal that uses, uranium. This is not an automatic assumption. One aspect of this renewal, as I understand it, is to consider alternatives. And I want to ask my neighbors, who live in this area, to really look seriously at alternatives. There are so many renewable options. There's solar, there's wind, and people have a way of making it sound like, oh, well you know you really can't do that, that's

not practical. That's not true. It's very practical, it's very doable. This is an article that's very low researched. It's being done in other countries. It's being done in Western Europe. People are putting solar panels on their homes and getting paid by the utility for producing that electricity. So we need to open our minds and not get into an either/or situation where people saying well coal plants are so bad for the environment and it's making, causing global warming. (VS-L-4)

Comment: No other power generation source comes close to having to expend so much money and so much energy, just to convince us that it won't kill thousands of us. If Entergy, Excelon and others just invested in wind and solar, none of this would be necessary. I do hope that you will consider that possibility in your NEPA required look at alternatives to re-licensing ENVY. (VS-M-8)

Comment: In order for nuclear to cover the carbon-based emissions, better used in coal and in natural gas plants, etcetera, we would have to have a new nuclear power plant built every two weeks, between now and 2050. I don't think that's going to happen, sir. (VS-O-3)

Comment: But if we were to stop the creation of nuclear waste, and stop our mental dependence on extremely bright street lights. Over, hugely over air-conditioned environments and brought our electrical usage, personally at home, down to seriously conservative levels, that we would feel some relaxation of social economic status stress, that is the equation of the success of industrial America. And it's, you know, you're at that big decision point in your life, where you straighten up and start respecting incredible simplicity, and really learn solar panel. Really contemplate wind farms and harness the hydro-electric potential in the rivers and streams and waterfalls. And gauge down to accepting that as the amount of electricity that you can look at and use. (VS-P-2)

Comment: Greenhouse gas emissions are a real problem and we need to do something about it. We need to stop relying on fossil fuels for the generation of electricity and turn more towards nuclear energy. Nuclear energy is safe, clean and readily available for use in this country, and it does not contribute to the greenhouse gas emissions and helps keep our green mountains green. To not allow Vermont Yankee to operate an additional 20 years, would be a significant impact on our environment. (VS-Q-1)

Comment: I want to speak to alternatives. In my home town of Corinth, we publish Northern Woodlands magazine. Last month--I want to give these, I don't have enough for all 25 employees, but I want to give you all a copy to read tonight in your hotel. “Energy From Wood: Turning Woodchips Into Power, Heat and Ethanol.” We have the answers. We have the alternatives. We've listened to Amory Levans* [phonetic], Rocky Mountain Institute, and other experts. We can use energy efficiency. (VS-R-3)

Comment: And, you know you do have a choice. Every worker has a choice. I don't think it's our job to provide alternative jobs, but we can convert that plant, we can still have a good economy, we can convert that plant, run it on gas, like I said we can use alternatives and provide the same amount of energy. (VS-R-4)

Comment: We can develop the technology at a reasonable price, relatively much more reasonable price than creating nuclear, keeping this plant alive, create wind power, geothermal, which hasn't been mentioned. Geothermal energy and hydro energy to create sustainable energy resources. I came from Maine. We closed Maine Yankee [sic]. They have a viable renewal energy plan in Maine. They have a dam that actually has little elevators that lift the fish uphill and people can buy into energy produced by that type of energy. Geothermal. There's a lot of hope in what that can do. We have a heated core from the center of the Earth, that we're not utilizing, we're not resourcing ourselves with that yet, except in areas of--when I say “we” I'm thinking of this area. But other areas of the world and other parts of the country rely on geothermal energy for electricity and fuel already. So there are things that we can do and that's what I think we should be focusing on, and it should be a regional discussion since it affects regional issues. (VS-T-4)

Comment: In New York State, Congresswoman Nita Lowey commissioned a study by the National Academy of Sciences about whether Indian Point could be replaced, the Indian Point reactors. And it, in fact, found that Indian Point reactors could be replaced in the State of New York. It wouldn't be easy, but it was possible. But why don't we have a National Academy of Science study here? Why haven't our legislators called for that so that we can have an look at what it would take to replace Vermont Yankee, not done by the NRC as part of their environmental impact study which is set up to permit Vermont Yankee to go ahead, not done just by the Public Service Commission which has mixed loyalties in terms of this, but a real study. It is the will that we have to exert on our legislators to do what's right. We need a clear vision at this point of a safe energy future, a future that we know is safe for our children. (VS-W-3)

Comment: Our work at the plant helps to make Vermont a cleaner, more prosperous place to live. Without Vermont Yankee, the 620 megawatts that we currently supply to the New England grid would have to come from a fossil fuel power plant. Wind power, the Connecticut River hydro project and energy conservation, while all nice ideas, simply cannot replace the steady, reliable, baseline power that we produce. Since opening in 1972, Vermont Yankee has prevented more than 100 million tons of fossil fuel emissions from entering the atmosphere. This has been prevented not only by rendering an in-state coal plant unnecessary, but also from reducing the amount of out-of-state electricity that we have to purchase, most of which would come from coal plants, as coal still accounts for half of the power produced in America today. In 2005, Vermont Yankee avoided the emissions of 7,700 tons of sulphur dioxide; 2,000 tons of nitrogen oxide and 2.5 million metric tons of carbon dioxide. Emissions of sulphur dioxide lead to the formation of acid rain. Nitrogen oxides are a key precursor of both ground level ozone

and smog and greenhouse gases like carbon dioxide contribute to global warming. The 2,000 tons of nitrogen oxide prevented by Vermont Yankee last year is the equivalent of what would have been generated by 105,000 vehicles. For comparison, in Vermont, we have 280,000 registered cars. (VS-AA-1)

Comment: The partnership [Vermont Energy Partnership] fully supports the relicensing of the Vermont Yankee nuclear power plant in Vernon and I will explain why. It is no secret that Vermont's demand for energy is continuing to grow. But it may be a less known fact that Vermont faces uncertainty over its future energy supply. Currently, one third of Vermont's electric supply comes from the Hydro Quebec -- from Hydro Quebec. And these long-term contracts will begin to expire starting in 2014. There is no guarantee that the contracts will either be renewed or renegotiated, given the other more local business opportunities Hydro Quebec has in the province. Another approximate one third of Vermont's electric supply is made up of a wide array of both in-state and out-of-state renewable sources and nonrenewable sources. The Partnership supports the in-state development of renewable energy supplies, encourages the increased use of energy efficiency and the expansion of conservation measures. However, the fact remains a reliable energy portfolio must be made up of a baseload source of power. Vermont Yankee accounts for the last one third of the Vermont portfolio, energy portfolio. About 34 percent of Vermont's total electricity supply needs are met by Vermont Yankee today. So let me put this debate in further context. Vermont has not brought online a significant power generating facility in over 20 years and there are no plans to date to do so in the near future. To make matters worse, proposals to develop small-scale generation in Vermont have been met with sharp criticism and severe opposition.

In a time when energy costs are at their highest, the Vermont Yankee plant will not only play an essential role in our state's energy portfolio, it is critically important to Vermont's economy and environment. (VS-BB-1)

Comment: Today, we live in a country where half of the electricity generated comes from coal-burning sources, yet Vermonters can be proud to say that that is not true here. Vermont Yankee is a clean, emissions-free facility. Unlike fossil fuel-generating facilities, nuclear power does not release harmful greenhouse gases and other toxins into the atmosphere that are the primary cause for global warming.

It is becoming abundantly clearly that nuclear energy is the only emissions-free source that can meet consumers' demand for reliability and at a reasonable cost. Leading environmentalists around the world, like Dr. Patrick Moore, co-founder of Greenpeace, have come to the conclusion that nuclear power is the only source that can help remedy and save the planet from catastrophic climate change. Just last month, Dr. Moore said in the Washington Post “nuclear energy is the only large-scale, cost-effective energy source that can reduce these greenhouse emissions while continuing to satisfy a growing demand for power. In these days, it can do so safely.” He went on to say, “the extremists who fail to consider the enormous and obvious

benefits of nuclear power also fail to understand that nuclear energy is practical, safe and environmentally friendly." In closing, without Vermont Yankee, Vermont utilities will be forced to buy additional power on the spot market that would be less reliable and considerably more expensive.

Do Vermonters really want to pay more and be dependent on power from fossil fuel sources such as natural gas and coal which now contribute to global warming and the earth's degradation? The Vermont Energy Partnership thinks not. (VS-BB-4)

Comment: Entergy, because it's also a public -- not a public, but a privately-owned utility company, also sells its electricity out on the market and trades. Traders buy it and compete for whatever can be generated. So for Vermont Yankee, all of its electrical generating capacity has been planned out for 2006. That's the rest of this year and for part of 2007. All that electricity has already been sold and paid for, speculatively, by traders, by the national grid, by whoever Entergy can sell the power to.

So there isn't any way that they can now change the cost of that electricity that they've sold it for and I don't know the numbers. I just know that it was sold. So it's committed to this generation of a set price of baseload power and baseload power means that it's running 24/7 at a very even amount and I think Vermont Yankee is now at 650 kilowatt hours or something -- huh? Megawatt hours, right, sorry. So they've already sold all this to the grid and the grid has already agreed to a price, but the national grid or the regional grid actually for New England currently has a surplus. There's extra electricity out there. We don't actually have to have part of the electricity that's coming from VY right now. And I don't know the technical aspects of how the grid works, what happens to this extra electricity.

But what we need to do is to investigate other ways of producing this electricity and to make it economically unfeasible for Entergy to continue running Vermont Yankee at its rate right now, which does not mean firing all the workers. (VS-CC-1)

Comment: Energy efficiency and conservation are the easiest and lowest cost ways of reducing that energy demand. It's already been estimated that even in Vermont, if we replace five lightbulbs with compact fluorescents and a refrigerator or other major appliance like an air conditioner or home heating, other large electrical demand with energy-efficient or EnergyStar-rated appliances, we could reduce the demand in Vermont by 25 percent. Now this does require the participation of every household or double participation by half the households. But I don't think that that's an unreasonable goal to have, especially since it would mean that we would no longer have to depend on Vermont Yankee's electrical generation. (VS-CC-2)

Comment: So in order to think about what other choices we have and what we need to do, as individuals, it's really hard to think about wind power and solar power and what can we do as individuals. The best thing that I can think of that we need to do is to read. Read books, read

magazines, read articles, go to the web and Harvey Wasserman has a wonderful book out called Solar Topia which is a fantasy, but it gives you something to hold on to and something to dream about and something to think about of how you can apply it to your every day life. In it he says that basically wind power right now, as it is technologically developed is capable of replacing a majority of the electrical generation in the United States from fossil fuels and nuclear power. We're not just talking about only nuclear. (VS-CC-3)

Comment: Now some of the complaints about wind power are that it kills birds. Well, the first wind towers that went up and I can't remember where the path in California where they went up, those wind towers were placed -- yes -- those wind towers were designed without thinking about the birds. They were like the erector set towers that have lots of braces, four legs and cross bracing and then finally the wind turbine at the top. Well, what was happening was that the birds were resting on these bracings and then when they'd see a squirrel or a chipmunk or whatever they wanted to get, these birds of prey would then fly down and get knocked out by the blades as they were coming around. Well, now the towers are not built like that. They're single pole structures, so there's nothing the birds can rest on. The other thing is that the turbines turn so slowly now that you'd really have to have a suicidally-depressed bird to fly into one of these and get knocked out. So the arguments about birds is really unfounded [sic]. (VS-CC-4)

Comment: the other thing about nuclear power, not nuclear power, wind power is that it's not something that's just a dream. In 2002, the Conference on American Wind Power Generating Association, was attended by maybe 1500 people. Last year, it was attended by more than 5,000 people. It had grown so much that it is not something that's just a pipe dream. You can go and visit wind towers that are installed in Vermont, in New Hampshire and in Massachusetts right now and see how they operate. You can listen that they're not noisy and you can talk to the residents there who live next to them who really like their wind power. (VS-CC-5)

Comment: And if it is a fossil means, whether it's oil, coal or gas, it's going to increase the pollutants that are going in the air. It will affect the environment, much, much, more worse than what the effect is of nuclear power. The 100 million tons that the government talked about, that is a very, very significant amount of pollutants in the air and there's empirical data that supports that that has caused global warming and that is now causing the oceans to heat up and that is having a dramatic effect on things like hurricanes. The number of hurricanes that we're having now is a direct result of this global warming. (VS-GG-2)

Comment: Another thing I wanted to touch on here, just very briefly, is that there was a report by the National Academy of Sciences that talked about Indian Point. One of the key conclusions of that report are that the economic and environmental impact of closing those plants, shutting those plants down, was very significant. And that was the key conclusion of it. So I urge you to educate yourself, read about it, and understand, you know, the impact of closing down a plant like Vermont Yankee. (VS-HH-2)

Comment: When we first started making power in this country, a lot of heavy polluters. We're all ruining the environment. We're damming up rivers for hydro, a lot of coal-fired power plants, the most abundant source of electricity in this country is coal. Fifty-eight percent of our power in the United States is made from coal. We're the largest coal burning country in the world, as a matter of fact. We're starting to see a lot of the results of that over the years. (VS-II-1)
Comment: We're looking at 20 more years of operation from this facility right here. I believe that there will be a better technology one day and than our current technology for making power. I honestly believe that. We're on the verge of a lot of those things right now to this. Hydrogen cell power, but scientists are predicting right now that maybe ten years, possibly twenty years to be able to make megawatts of hydrogen cells. Ironically, nuclear power plants produce hydrogen. But then we use some more energy to take that hydrogen and re-combine it back with the oxygen and make water out of it and put it back to the power plant. So imagine if you have a hydrogen cell sitting outside a nuclear power plant to make power from that hydrogen. Stepping stones of technology. I think that we can't get from one point to another point to being completely nuclear free without going through that process. We started out with plants years ago, but we've improved on those technologies. We've made them more efficient. We've learned from our lessons of the past and made better plants to continue on in the future with. (VS-II-2)

Comment: One day, we'll reach that point where we can probably start shutting down these plants. But that day isn't today. Six hundred twenty megawatts of power electric. What scares me is how are going to, if we shut this plant down in 2012, where are going to produce that power from right now? That's baseload electricity. That's not wind power with a 20 percent efficiency factor. Those numbers you can look them up on NEPAX. It's a website that tells how much power the capacity, how much those places actually stay online. (VS-II-3)

Comment: I'll support any power made from any source that's safe like that. I believe Vermont Yankee is a very safe plant having worked there for as long as I have. But I don't believe that we're going to be ready in the next 10 or 15 years to get away from nuclear power. It's not feasible. We're not going to be able to produce 620 megawatts without going to coal, without going to gas power, which gas has been touted as being the clean source of energy, it's not. It produces half of the amount of waste that our coal plants produce. (VS-II-4)

Comment: Oil is out of the question. Oil is like less than 10 percent, less than 5 percent of the entire production of power in this country, just because of the unavailability of it and that we need it for automobiles and other things like that, other smaller, small-type things. But consider that. Consider where we're going to get our power from if we shut this plant down. We have to get it from somewhere. It's not in my back yard. It's here. It's safe. We have a proven track record of being safe. Why not continue for 20 more years. (VS-II-5)

Comment: I wanted to address first an issue that has come up over and over again that Governor Salmon, I think was the first to speak to the issue of global warming and how nuclear

is purported to be a solution, a near-term solution for global warming, just to say that it has been shown in numerous studies, chief among them, out of Rocky Mountain Institute which is run by world renown Emory Lovins and his wife, Hunter, a couple of researchers back in the late 1990s looked at global carbon mitigation strategies, using nuclear and using renewables as two alternative paths. And they discovered a finding that they put two different ways which I think are provocative. One, that for every $100 spent on nuclear that could otherwise have been spent on what we call renewables, an extra ton of carbon is released to the atmosphere that would have otherwise been prevented. And that's because, as Ray Shadis pointed out earlier, it's going to take many, many years of many, many hundreds of nuclear plants to begin to cut back on the acceleration of global carbon using nuclear. And the energy efficiency and renewable strategy is a much simpler, more direct, cost-effective way to go about it. (VS-JJ-1)

Comment: According to Rich Smalley, who is a Nobel Peace Prize winner for chemistry in 1996 for his work on nanotechnology by mid-century the world will require a doubling of its current world-wide energy demand of 14 terawatts of power. To achieve this demand will require the equivalent of one 1,000 megawatt power plant going online every day for nearly 38 years. And this is from Discover of February 2005 and I have it in the testimony here. Although I assume the initial mandate of the NRC regarding environmental issues 30 to 40 years ago concerned the rather micro impact that is of the areas immediately surrounding a nuclear plant, certainly now the issue is equally a global concern of greenhouse gases, foremost carbon dioxide. (VS-KK-1)

Comment: Dr. Arthur Westing, a resident of Putney, Vermont, 10 miles up the road, is an expert. He has served on the faculty or been a research fellow at several education institutions, including Harvard University, the Stockholm International Peace Research Institute. He has served as the director of the United Nations Environmental Program Project, Peace, Security and the Environment, and is the author of many articles and several books on the environment. At the moment, unfortunately, he is in Sweden. He told me he wished he could be here to testify on the importance of Vermont Yankee to the energy future of Vermont and give his wholehearted supported to the relicensing. I am submitting an email from him to me giving me the authority to give you two letters he has written on energy and the environmental issues, as well as his résumé. His latest letter cites a British report on the role of nuclear power and low carbon economy which he uses to calculate the impact shown on the following page.

Thank you for beginning this lengthy process for the relicensing of Entergy and Nuclear Vermont Yankee Power Plant. I hope the evidence supports a positive decision.

I think this is very important. It shows that for CO_2 production from various sources of power, that kilograms of CO_2 per kilowatt of electricity for cradle to grave or a full production cycle. Coal, it's 891. Natural gas is 356. Photovoltaics, interestingly enough is 50, while wind and nuclear are 16. Nuclear power is very important to the future energy of this world and this state and please, I hope you consider relicensing it. (VS-KK-2)

Comment: They were also in error to dismiss as, quote, inadequate, alternative energy sources. We need to understand that solar wind, biomass, geothermal and others are safe, clean, dependable, and most important, sustainable. Conservation and efficiency should also be added to the list. If given the billions in Federal subsidies that nuclear has enjoyed over the years, these alternative energies could easily meet our energy needs without harming the environment. (VS-LL-6)

Comment: Vermont Yankee produces enough electricity to power about 620,000 homes and it does not burn fossil fuel. Over the years, this has avoided millions of tons of fossil air pollution.

If Vermont Yankee were to close, it would be replaced with large amounts of fossil fuel generation and greenhouse gas emissions that lead to global warming. (VS-MM-2)

Comment: Global warming. Are you concerned about global warming? Twenty years ago, folks were, scientists were making quite a bit of noise about it, and the administrator at the time said, nah. Do you believe it? And if you do believe global warming is an issue, and you think it's upon us, do you want your power coming from coal-burning facilities that generate greenhouse gases and smog? We know that our use of electricity contributes to global warming. If you believe we can fulfill our electric needs in Vermont without Vermont Yankee's baseload electricity, if you want economical power, then please listen closely. If you are concerned about greenhouse gases, we can't afford this distraction of dangerous, dirty, expensive source of electricity. Low cost, safe, clean power, zero greenhouse gases emissions. That must be wind and solar. (VS-NN-1)

Comment: But I do believe that in the long run, we really need to embrace safe, clean energy--wind, solar, and other sustainable long-term renewables....A reliable source of power must include baseload power, so let's buy windpower from New York, if Governor Douglas won't get out of the way and let the public get their wind generation in Vermont, when the wind's not blowing we'll use hydro, and as a last resort, we'll use the power that we get off the open market, not spot market, though. Vermonters overwhelmingly embrace renewable energy. 75 percent want wind. There's probably even more that want solar. Small-scale renewables. When the first incentive program came out in Vermont two years ago, they thought it would last for two years. In seven months, it was all used up. People wanted solar. People wanted wind. Our elderly, who must choose between electricity, or food, or medicine, they need solar hot water systems. They need energy audits. They need efficiency upgrades of their homes and their apartments. And there's jobs in doing that. Lots of jobs. Vermont needs jobs. We need plumbers, carpenters, engineers, concrete workers, electricians, energy planners, and that's exactly why we need to implement a clean, renewable energy program today, putting nice tradespeople to work. (VS-NN-2)

Comment: We're making that bet, and I think that that's a foolish bet because I think we're not so dumb, that we're willing to take that risk, and I also think we're not so dumb that we can't

create better technologies, safer technologies, other than continuing to rely on fossil fuels and nuclear power and all the old standbys that we've continued to try to pretend are our only choices. We have lots of choices to make, lots of decisions to make, and they can create jobs, they can create energy, they can create a better life for the future inhabitants of this region. If we're so smart to create this technology, so well, that we can be positive it's gonna be safe over the next 20 years, why aren't we smart enough to make it better, to create safer nuclear power plants with safer designs, and to close those that are no longer capable of operating safely? And why aren't we capable of beginning to create more wind and solar and conservation technologies that could create immediate jobs for many more people who wouldn't have to be as highly educated as the people who build nuclear power plants or decommission them? (VS-PP-2)

Comment: I think the solution, even better than soft-path technology of windmills and solar and photovoltaics, which we need, is conservation. (VS-QQ-2)

Comment: We know there's other answers. I, for one, live off the grid. I don't rely on this power, we don't need it, and like Clay said, 75 percent of Vermonters know this, and we can move on. (VS-RR-3)

Comment: So let's take Commissioner David O'Brien who's the head of the state department of Public Service. He put a $60 million figure on the cost that would come to Vermont ratepayers if VY closed in 2008. Vermont Yankee provides roughly 250 megawatts to Vermont. That represents one-third of our Vermont total energy demand, which is about 750 megawatts.

A recent PSB study determined that energy efficiency measures could reduce Vermont's total electricity use by 20 percent, or 150 megawatts. Let's apply that savings to what VY provides. Then we'd reduce the amount of power needed to replace VY to 100 megawatts. That's 250 minus 150. If it would cost Vermont 60 million bucks to replace the 250 megawatts over four years, it would cost us 40 percent of that or $24 million to replace the 100 megawatts that would remain, if we implemented all the efficiency measures we could. Now we're down to $24 million. Spread that over four years. That's $6 million a year, divided by 250,000 households in Vermont, and the increase in each household's electricity bill for the entire year would be roughly $24.00. That's not even considering the contribution from industrial and commercial users. That doesn't sound like a lot of money to invest in freeing Vermont from this role in the production of hundreds of tons and millions, hundreds of tons of radioactive waste, millions of curies of deadly nuclear substances created by the Vermont Yankee nuclear reactor, stored on the banks of the Connecticut River. It doesn't sound like a lotta money to spend to get rid of Vermont Yankee. (VS-SS-1)

Comment: in 18 years in Princeton, all those years we have a windmill, thanks to the citizens of that town, and they've now decided to improve on the windmill that has been there, and it has provided well for, without any pollution at all, for 30 percent of the energy needed for that

community. And I believe they're adding another windmill. I'm not sure of the statistics. But I then went to Maine. Maine got rid of its nuclear power plant, Maine Yankee, I'm not sure what year, and the governor of Maine has led the people that work for the government to create a plan, a 50-point plan of creating renewable energies in the state of Maine. They're encouraging cities and towns to develop renewable energies that they will market elsewhere, that universities can use, that can provide jobs for people, that can be safe and viable for the next generations. Why don't we go that direction? I attended a recent conference at Smith College at which there was all different kinds of renewables presented, and for the first time, I found out about geothermal energy and that people in Massachusetts, at least there, I'm not sure about Vermont or anywhere else, are utilizing geothermal energy for commercial buildings as well as residential properties, either by going straight down to the center of the Earth, not the center, but down where it's hotter than it is on the surface--I'm not sure how many feet down you have to go--but going straight down or else spreading out along a piece of land next to your building and creating energy right from the Earth itself, with of course no pollutants in that process at all. (VS-VV-1)

Comment: The assessment team will compare the environmental impact of wind, solar, hydro and geo-thermal alternatives as if they enjoyed the full insurance and financial benefits enjoyed by nuclear energy utilities, and report those comparisons year by year for operations for 10,000 generations-- or for the length of time future generations will need to manage our waste without benefit. (VS-FFF-4)

Comment: The facts show that our region could produce power more cheaply and without any pollution or risk of pollution by starting to install wind towers offshore or in the hills of our region over the next 5 years. The facts show that this region could reduce its power needs significantly by educating people about compact fluorescent bulbs, insulation, heat pumps, more efficient appliances, solar hot water heaters, and hundreds of ways of conserving energy. The mere price of electricity is currently a huge incentive for conservation, but other tax incentives could also help us to reduce our power needs to a level that would allow the Vernon facility to close in 5 years. (VS-JJJ-4)

Response*: The comments relate to alternative energy development and conservation. The environmental impacts of alternatives to license renewal will be addressed in Chapter 8 (alternatives) of the SEIS; they include conservation (demand-side management) and renewable energy sources such as wind and solar energy.*

Part II – Comments Received on the Draft SEIS

Pursuant to 10 CFR Part 51, the NRC staff transmitted the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Regarding Vermont Yankee Nuclear Power Station, Draft Report for Comment (NUREG-1437, Supplement 30, referred to as the draft

Supplemental Environmental Impact Statement [SEIS]) to Federal, State, and local government agencies; certain Indian tribes; and interested members of the public. As part of the process to solicit public comments on the draft SEIS, the NRC staff:

- Placed a copy of the draft SEIS into the NRC's Public Electronic Reading Room, its license renewal website, and at the Vernon Free Library in Vernon, Vermont; the Brooks Memorial Library, in Brattleboro, Vermont; the Hinsdale Public Library in Hinsdale, New Hampshire; and the Dickinson Memorial Library in Northfield, Massachusetts.

- Sent copies of the draft SEIS to the applicant; members of the public who requested copies; representatives of certain Indian tribes; and certain Federal, State, and local agencies;

- Published a Notice of Availability of the draft SEIS in the Federal Register on December 22, 2006 (71 FR 76706);

- Issued public announcements, such as advertisements in local newspapers and postings in public places, of the availability of the draft SEIS;

- Announced and held two public meetings at the Latchis Theater in Brattleboro, Vermont, on January 31, 2007, to describe the results of the environmental review and answer related questions;

- Issued public service announcements and press releases announcing the issuance of the draft SEIS, the public meetings, and instructions on how to comment on the draft SEIS; and

- Established an e-mail address to receive comments on the draft SEIS through the Internet.

During the comment period, the NRC staff received a total of 32 comment letters and e-mail messages in addition to the comments received during the public meetings.

The NRC staff has reviewed the public meeting transcripts and the 32 comment letters and e-mail messages that are part of the docket file for the application, all of which are available in the NRC's Public Document Room. Appendix A, Part II, Section A.2, contains a summary of the comments and the NRC staff's responses. Related issues are grouped together. Appendix A, Part II, Section A.3, contains references cited in the NRC staff's responses. Appendix A, Part II, Section A.4, contains excerpts of the January 31, 2007, public meeting transcripts, and Section A.5 contains the comment letters.

Each comment identified by the NRC staff was assigned a specific alphanumeric identifier. That identifier is typed in the transcript at the end of the discussion of the comment or in the margin at the beginning of the discussion of the comment in a letter. The speakers at the meetings are

listed in speaking order. Table A-2 gives the commenter's ID and affiliation (if stated) and the source of the comment (i.e., public meeting transcript or comment letter).

The NRC staff made a determination on each comment that it was one of the following:

- A comment that was actually a question and introduces no new information.
- A comment that was either related to support or opposition of license renewal in general (or specifically, VYNPS) or that makes a general statement about the licensing renewal process. It may make only a general statement regarding Category 1 and/or Category 2 issues. In addition, it provides no new information and does not pertain to 10 CFR Part 54.
- A comment about a Category 1 issue that provided new information that required evaluation during the review, or provided no new information.
- A comment about a Category 2 issue that provided information that required evaluation during the review, or provided no such information.
- A comment regarding alternatives to the proposed action.
- A comment that raised an environmental issue that was not addressed in the GEIS or the draft SEIS.
- A comment outside the scope of license renewal (not related to 10 CFR Parts 51 or 54)
- A comment on safety issues pertaining to 10 CFR Part 54.
- A comment that was editorial in nature.

There was no new and significant information provided on Category 1 issues, and for most Category 2 issues, no information that required further evaluation. Therefore, the conclusions in the GEIS and draft SEIS remained valid and bounding for most issues, and no further evaluation was performed.

Comments without a supporting technical basis or without any new information are discussed in this appendix, and not in other sections of this report. Relevant references that address the issues within the regulatory authority of the NRC are provided where appropriate. Many of these references can be obtained from the NRC Public Document Room.

Within each section of Part II of this appendix (A.2.1 through A.2.15), similar comments are grouped together for ease of reference, followed by the NRC staff's response. Where the comment or question resulted in a change in the text of the draft report, the corresponding

Table A-2. Comments Received on the Draft SEIS

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
A-1	Sally Shaw	Afternoon Meeting Transcript	A.2.4
A-2	Sally Shaw	Afternoon Meeting Transcript	A.2.1
A-3	Sally Shaw	Afternoon Meeting Transcript	A.2.9
B-1	Dr. Patrick Moore	Afternoon Meeting Transcript	A.2.3
B-2	Dr. Patrick Moore	Afternoon Meeting Transcript	A.2.13
B-3	Dr. Patrick Moore	Afternoon Meeting Transcript	A.2.12
B-4	Dr. Patrick Moore	Afternoon Meeting Transcript	A.2.3
B-5	Dr. Patrick Moore	Afternoon Meeting Transcript	A.2.13
C-1	Thomas P. Salmon	Afternoon Meeting Transcript	A.2.2
C-2	Thomas P. Salmon	Afternoon Meeting Transcript	A.2.13
D-1	Gary Sachs	Afternoon Meeting Transcript	A.2.15
D-2	Gary Sachs	Afternoon Meeting Transcript	A.2.1
D-3	Gary Sachs	Afternoon Meeting Transcript	A.2.15
D-4	Gary Sachs	Afternoon Meeting Transcript	A.2.1
D-5	Gary Sachs	Afternoon Meeting Transcript	A.2.15
E-1	Claire Chang	Afternoon Meeting Transcript	A.2.15
E-2	Claire Chang	Afternoon Meeting Transcript	A.2.11
E-3	Claire Chang	Afternoon Meeting Transcript	A.2.4
E-4	Claire Chang	Afternoon Meeting Transcript	A.2.13
E-5	Claire Chang	Afternoon Meeting Transcript	A.2.13
F-1	Amanda Ibey	Afternoon Meeting Transcript	A.2.2
F-2	Amanda Ibey	Afternoon Meeting Transcript	A.2.13
F-3	Amanda Ibey	Afternoon Meeting Transcript	A.2.2
F-4	Amanda Ibey	Afternoon Meeting Transcript	A.2.10
F-5	Amanda Ibey	Afternoon Meeting Transcript	A.2.13
F-6	Amanda Ibey	Afternoon Meeting Transcript	A.2.2
G-1	Howard Shaffer	Afternoon Meeting Transcript	A.2.15
H-1	Paul Bousquet	Afternoon Meeting Transcript	A.2.15
H-2	Paul Bousquet	Afternoon Meeting Transcript	A.2.9
H-3	Paul Bousquet	Afternoon Meeting Transcript	A.2.15
H-4	Paul Bousquet	Afternoon Meeting Transcript	A.2.12
H-5	Paul Bousquet	Afternoon Meeting Transcript	A.2.5
I-1	Daniel Marx	Afternoon Meeting Transcript	A.2.7
I-2	Daniel Marx	Afternoon Meeting Transcript	A.2.2
J-1	Arthur Greenbaum	Afternoon Meeting Transcript	A.2.2
J-2	Arthur Greenbaum	Afternoon Meeting Transcript	A.2.13
K-1	Emma Stamas	Afternoon Meeting Transcript	A.2.13
K-2	Emma Stamas	Afternoon Meeting Transcript	A.2.15
K-3	Emma Stamas	Afternoon Meeting Transcript	A.2.13

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
K-4	Emma Stamas	Afternoon Meeting Transcript	A.2.5
K-5	Emma Stamas	Afternoon Meeting Transcript	A.2.4
K-6	Emma Stamas	Afternoon Meeting Transcript	A.2.13
K-7	Emma Stamas	Afternoon Meeting Transcript	A.2.13
K-8	Emma Stamas	Afternoon Meeting Transcript	A.2.15
L-1	Sarah Kotkov	Afternoon Meeting Transcript	A.2.11
L-2	Sarah Kotkov	Afternoon Meeting Transcript	A.2.11
L-3	Sarah Kotkov	Afternoon Meeting Transcript	A.2.12
L-4	Sarah Kotkov	Afternoon Meeting Transcript	A.2.4
M-1	Teresa Caldwell	Afternoon Meeting Transcript	A.2.4
M-2	Teresa Caldwell	Afternoon Meeting Transcript	A.2.15
M-3	Teresa Caldwell	Afternoon Meeting Transcript	A.2.12
M-4	Teresa Caldwell	Afternoon Meeting Transcript	A.2.4
M-5	Teresa Caldwell	Afternoon Meeting Transcript	A.2.1
M-6	Teresa Caldwell	Afternoon Meeting Transcript	A.2.4
N-1	Diana Sidebotham	Evening Meeting Transcript	A.2.15
N-2	Diana Sidebotham	Evening Meeting Transcript	A.2.11
N-3	Diana Sidebotham	Evening Meeting Transcript	A.2.15
N-4	Diana Sidebotham	Evening Meeting Transcript	A.2.15
N-5	Diana Sidebotham	Evening Meeting Transcript	A.2.12
N-6	Diana Sidebotham	Evening Meeting Transcript	A.2.1
N-7	Diana Sidebotham	Evening Meeting Transcript	A.2.4
N-8	Diana Sidebotham	Evening Meeting Transcript	A.2.11
N-9	Diana Sidebotham	Evening Meeting Transcript	A.2.1
O-1	Deb Katz	Evening Meeting Transcript	A.2.15
O-2	Deb Katz	Evening Meeting Transcript	A.2.9
O-3	Deb Katz	Evening Meeting Transcript	A.2.12
O-4	Deb Katz	Evening Meeting Transcript	A.2.9
O-5	Deb Katz	Evening Meeting Transcript	A.2.1
O-6	Deb Katz	Evening Meeting Transcript	A.2.13
P-1	Beth McElwee	Evening Meeting Transcript	A.2.2
Q-1	Bruce Wiggett	Evening Meeting Transcript	A.2.10
Q-2	Bruce Wiggett	Evening Meeting Transcript	A.2.2
Q-3	Bruce Wiggett	Evening Meeting Transcript	A.2.2
R-1	Andy Davis	Evening Meeting Transcript	A.2.12
R-2	Andy Davis	Evening Meeting Transcript	A.2.12
S-1	Chris Williams	Evening Meeting Transcript	A.2.12
S-2	Chris Williams	Evening Meeting Transcript	A.2.4

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
S-3	Chris Williams	Evening Meeting Transcript	A.2.13
T-1	Michael LaPorte	Evening Meeting Transcript	A.2.2
U-1	Bill Maguire	Evening Meeting Transcript	A.2.2
V-1	Ed Sprague	Evening Meeting Transcript	A.2.2
V-2	Ed Sprague	Evening Meeting Transcript	A.2.12
W-1	Norman Raymond	Evening Meeting Transcript	A.2.2
X-1	Ann Howes	Evening Meeting Transcript	A.2.4
Y-1	Bernie Buteau	Evening Meeting Transcript	A.2.3
Y-2	Bernie Buteau	Evening Meeting Transcript	A.2.12
Y-3	Bernie Buteau	Evening Meeting Transcript	A.2.2
Z-1	Jim Herrick	Evening Meeting Transcript	A.2.15
Z-2	Jim Herrick	Evening Meeting Transcript	A.2.11
Z-3	Jim Herrick	Evening Meeting Transcript	A.2.4
Z-4	Jim Herrick	Evening Meeting Transcript	A.2.1
Z-5	Jim Herrick	Evening Meeting Transcript	A.2.15
AA-1	Larry Cummings	Evening Meeting Transcript	A.2.2
AA-2	Larry Cummings	Evening Meeting Transcript	A.2.3
BB-1	Dave Mannai	Evening Meeting Transcript	A.2.2
BB-2	Dave Mannai	Evening Meeting Transcript	A.2.2
CC-1	Nick Caristo	Evening Meeting Transcript	A.2.2
CC-2	Nick Caristo	Evening Meeting Transcript	A.2.15
CC-3	Nick Caristo	Evening Meeting Transcript	A.2.2
DD-1	William Schulze	Evening Meeting Transcript	A.2.2
EE-1	Dick Brigham	Evening Meeting Transcript	A.2.12
EE-2	Dick Brigham	Evening Meeting Transcript	A.2.9
EE-3	Dick Brigham	Evening Meeting Transcript	A.2.4
FF-1	Ida Belivet	Evening Meeting Transcript	A.2.12
GG-1	Kent Belivet	Evening Meeting Transcript	A.2.4
HH-1	Roy Ramsdell	Evening Meeting Transcript	A.2.2
II-1	Brian Tietze	Evening Meeting Transcript	A.2.2
JJ-1	Karen Murphy	Evening Meeting Transcript	A.2.1
JJ-2	Karen Murphy	Evening Meeting Transcript	A.2.9
JJ-3	Karen Murphy	Evening Meeting Transcript	A.2.8
JJ-4	Karen Murphy	Evening Meeting Transcript	A.2.12
JJ-5	Karen Murphy	Evening Meeting Transcript	A.2.11
JJ-6	Karen Murphy	Evening Meeting Transcript	A.2.15
KK-1	Nina Keller	Evening Meeting Transcript	A.2.15
KK-2	Nina Keller	Evening Meeting Transcript	A.2.13

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
KK-3	Nina Keller	Evening Meeting Transcript	A.2.4
KK-4	Nina Keller	Evening Meeting Transcript	A.2.15
KK-5	Nina Keller	Evening Meeting Transcript	A.2.1
LL-1	Norm Redemacher	Evening Meeting Transcript	A.2.2
MM-1	Clay Turnbull	Evening Meeting Transcript	A.2.13
MM-2	Clay Turnbull	Evening Meeting Transcript	A.2.1
MM-3	Clay Turnbull	Evening Meeting Transcript	A.2.15
MM-4	Clay Turnbull	Evening Meeting Transcript	A.2.9
NN-1	Gary Sachs	Evening Meeting Transcript	A.2.12
NN-2	Gary Sachs	Evening Meeting Transcript	A.2.15
NN-3	Gary Sachs	Evening Meeting Transcript	A.2.12
NN-4	Gary Sachs	Evening Meeting Transcript	A.2.12
NN-5	Gary Sachs	Evening Meeting Transcript	A.2.15
NN-6	Gary Sachs	Evening Meeting Transcript	A.2.15
NN-7	Gary Sachs	Evening Meeting Transcript	A.2.1
OO-1	Sally Shaw	Evening Meeting Transcript	A.2.9
OO-2	Sally Shaw	Evening Meeting Transcript	A.2.15
OO-3	Sally Shaw	Evening Meeting Transcript	A.2.15
OO-4	Sally Shaw	Evening Meeting Transcript	A.2.6
OO-5	Sally Shaw	Evening Meeting Transcript	A.2.6
OO-6	Sally Shaw	Evening Meeting Transcript	A.2.12
OO-7	Sally Shaw	Evening Meeting Transcript	A.2.12
OO-8	Sally Shaw	Evening Meeting Transcript	A.2.9
OO-9	Sally Shaw	Evening Meeting Transcript	A.2.9
PP-1	Len Akin	Evening Meeting Transcript	A.2.2
QQ-1	Howard Shaffer	Evening Meeting Transcript	A.2.15
RR-1	John Shadis	Evening Meeting Transcript	A.2.4
SS-1	Jesse Andersen	Letter (ML070670094)	A.2.10
SS-2	Jesse Andersen	Letter (ML070670094)	A.2.2
SS-3	Jesse Andersen	Letter (ML070670094)	A.2.9
SS-4	Jesse Andersen	Letter (ML070670094)	A.2.13
SS-5	Jesse Andersen	Letter (ML070670094)	A.2.12
SS-6	Jesse Andersen	Letter (ML070670094)	A.2.15
SS-7	Jesse Andersen	Letter (ML070670094)	A.2.13
SS-8	Jesse Andersen	Letter (ML070670094)	A.2.2
TT-1	Marcia Bourne	Letter (ML070660048)	A.2.5
TT-2	Marcia Bourne	Letter (ML070660048)	A.2.1
TT-3	Marcia Bourne	Letter (ML070660048)	A.2.15
TT-4	Marcia Bourne	Letter (ML070660048)	A.2.12

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
UU-1	Walston Chubb	Letter (ML070730161)	A.2.9
VV-1	Pam Clark	Letter (ML070670098)	A.2.15
VV-2	Pam Clark	Letter (ML070670098)	A.2.13
WW-1	Jessica Culliry	Letter (ML070730192)	A.2.12
XX-1	Diane Curran	Letter (ML070730200)	A.2.11
YY-1	Sarah Edwards	Letter (ML070730163)	A.2.11
YY-2	Sarah Edwards	Letter (ML070730163)	A.2.11
ZZ-1	Eleanor Gavin	Letter (ML070730196)	A.2.9
ZZ-2	Eleanor Gavin	Letter (ML070730196)	A.2.9
ZZ-3	Eleanor Gavin	Letter (ML070730196)	A.2.9
ZZ-4	Eleanor Gavin	Letter (ML070730196)	A.2.9
ZZ-5	Eleanor Gavin	Letter (ML070730196)	A.2.9
ZZ-6	Eleanor Gavin	Letter (ML070730196)	A.2.9
ZZ-7	Eleanor Gavin	Letter (ML070730196)	A.2.9
AAA-1	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-2	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-3	Eleanor Gavin	Letter (ML071130167)	A.2.15
AAA-4	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-5	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-6	Eleanor Gavin	Letter (ML071130167)	A.2.1
AAA-7	Eleanor Gavin	Letter (ML071130167)	A.2.1
AAA-8	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-9	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-10	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-11	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-12	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-13	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-14	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-15	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-16	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-17	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-18	Eleanor Gavin	Letter (ML071130167)	A.2.9
AAA-19	Eleanor Gavin	Letter (ML071130167)	A.2.9
BBB-1	Eleanor Gavin	Letter (ML070790165)	A.2.9
BBB-2	Eleanor Gavin	Letter (ML070790165)	A.2.9
BBB-3	Eleanor Gavin	Letter (ML070790165)	A.2.9
BBB-4	Eleanor Gavin	Letter (ML070790165)	A.2.15
BBB-5	Eleanor Gavin	Letter (ML070790165)	A.2.9
BBB-6	Eleanor Gavin	Letter (ML070790165)	A.2.9

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
BBB-7	Eleanor Gavin	Letter (ML070790165)	A.2.9
BBB-8	Eleanor Gavin	Letter (ML070790165)	A.2.1
BBB-9	Eleanor Gavin	Letter (ML070790165)	A.2.1
BBB-10	Eleanor Gavin	Letter (ML070790165)	A.2.9
CCC-1	Catherine Gjessing	Letter (ML070730207)	A.2.1
CCC-2	Catherine Gjessing	Letter (ML070730207)	A.2.12
CCC-3	Catherine Gjessing	Letter (ML070730207)	A.2.12
CCC-4	Catherine Gjessing	Letter (ML070730207)	A.2.11
CCC-5	Catherine Gjessing	Letter (ML070730207)	A.2.11
CCC-6	Catherine Gjessing	Letter (ML070730207)	A.2.11
CCC-7	Catherine Gjessing	Letter (ML070730207)	A.2.7
CCC-8	Catherine Gjessing	Letter (ML070730207)	A.2.6
CCC-9	Catherine Gjessing	Letter (ML070730207)	A.2.6
CCC-10	Catherine Gjessing	Letter (ML070730207)	A.2.6
CCC-11	Catherine Gjessing	Letter (ML070730207)	A.2.6
CCC-12	Catherine Gjessing	Letter (ML070730207)	A.2.7
CCC-13	Catherine Gjessing	Letter (ML070730207)	A.2.7
CCC-14	Catherine Gjessing	Letter (ML070730207)	A.2.6
CCC-15	Catherine Gjessing	Letter (ML070730207)	A.2.14
CCC-16	Catherine Gjessing	Letter (ML070730207)	A.2.14
CCC-17	Catherine Gjessing	Letter (ML070730207)	A.2.7
DDD-1	Jim Herrick	Letter (ML070670096)	A.2.11
DDD-2	Jim Herrick	Letter (ML070670096)	A.2.4
DDD-3	Jim Herrick	Letter (ML070670096)	A.2.1
DDD-4	Jim Herrick	Letter (ML070670096)	A.2.15
EEE-1	Sarah Hofmann	Letter (ML070790146)	A.2.12
FFF-1	Sherrill Hogen	Letter (ML070670179)	A.2.1
FFF-2	Sherrill Hogen	Letter (ML070670179)	A.2.4
GGG-1	George Iselin	Letter (ML070670099)	A.2.12
GGG-2	George Iselin	Letter (ML070670099)	A.2.13
HHH-1	Mariana Leonard	Letter (ML070660049)	A.2.5
HHH-2	Mariana Leonard	Letter (ML070660049)	A.2.4
HHH-3	Mariana Leonard	Letter (ML070660049)	A.2.12
III-1	John Linville	Letter (ML070670101)	A.2.15
JJJ-1	Daniel J. Marx	Letter (ML070790160)	A.2.6
JJJ-2	Daniel J. Marx	Letter (ML070790160)	A.2.7
JJJ-3	Daniel J. Marx	Letter (ML070790160)	A.2.6
KKK-1	Sunny Miller	Letter (ML070730156)	A.2.1
KKK-2	Sunny Miller	Letter (ML070730156)	A.2.4

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
KKK-3	Sunny Miller	Letter (ML070730156)	A.2.15
KKK-4	Sunny Miller	Letter (ML070730156)	A.2.6
KKK-5	Sunny Miller	Letter (ML070730156)	A.2.7
KKK-6	Sunny Miller	Letter (ML070730156)	A.2.9
KKK-7	Sunny Miller	Letter (ML070730156)	A.2.12
KKK-8	Sunny Miller	Letter (ML070730156)	A.2.12
KKK-9	Sunny Miller	Letter (ML070730156)	A.2.15
KKK-10	Sunny Miller	Letter (ML070730156)	A.2.1
LLL-1	Sunny Miller	Letter (ML070730158)	A.2.1
LLL-2	Sunny Miller	Letter (ML070730158)	A.2.6
LLL-3	Sunny Miller	Letter (ML070730158)	A.2.7
LLL-4	Sunny Miller	Letter (ML070730158)	A.2.9
MMM-1	Amos Newton	Letter (ML070670186)	A.2.1
NNN-1	Bill Pearson	Letter (ML070670173)	A.2.9
OOO-1	Lee Perry	Letter (ML071130166)	A.2.6
PPP-1	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-2	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-3	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-4	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-5	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-6	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-7	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-8	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-9	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-10	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-11	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-12	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-13	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-14	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-15	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-16	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-17	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-18	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-19	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-20	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-21	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-22	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-23	Andrew L. Raddant	Letter (ML070730154)	A.2.7

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
PPP-24	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-25	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-26	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-27	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-28	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-29	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-30	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-31	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-32	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-33	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-34	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-35	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-36	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-37	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-38	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-39	Andrew L. Raddant	Letter (ML070730154)	A.2.7
PPP-40	Andrew L. Raddant	Letter (ML070730154)	A.2.6
PPP-41	Andrew L. Raddant	Letter (ML070730154)	A.2.13
QQQ-1	Raymond Shadis	Letter (ML070810232)	A.2.1
QQQ-2	Raymond Shadis	Letter (ML070810232)	A.2.1
QQQ-3	Raymond Shadis	Letter (ML070810232)	A.2.1
QQQ-4	Raymond Shadis	Letter (ML070810232)	A.2.1
QQQ-5	Raymond Shadis	Letter (ML070810232)	A.2.1
QQQ-6	Raymond Shadis	Letter (ML070810232)	A.2.12
QQQ-7	Raymond Shadis	Letter (ML070810232)	A.2.12
QQQ-8	Raymond Shadis	Letter (ML070810232)	A.2.9
QQQ-9	Raymond Shadis	Letter (ML070810232)	A.2.12
QQQ-10	Raymond Shadis	Letter (ML070810232)	A.2.9
QQQ-11	Raymond Shadis	Letter (ML070810232)	A.2.9
QQQ-12	Raymond Shadis	Letter (ML070810232)	A.2.7
QQQ-13	Raymond Shadis	Letter (ML070810232)	A.2.8
QQQ-14	Raymond Shadis	Letter (ML070810232)	A.2.7
QQQ-15	Raymond Shadis	Letter (ML070810232)	A.2.12
QQQ-16	Raymond Shadis	Letter (ML070810232)	A.2.12
QQQ-17	Raymond Shadis	Letter (ML070810232)	A.2.13
QQQ-18	Raymond Shadis	Letter (ML070810232)	A.2.13
QQQ-19	Raymond Shadis	Letter (ML070810232)	A.2.13
QQQ-20	Raymond Shadis	Letter (ML070810232)	A.2.13

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
QQQ-21	Raymond Shadis	Letter (ML070810232)	A.2.13
QQQ-22	Raymond Shadis	Letter (ML070810232)	A.2.13
QQQ-23	Raymond Shadis	Letter (ML070810232)	A.2.13
QQQ-24	Raymond Shadis	Letter (ML070810232)	A.2.11
QQQ-25	Raymond Shadis	Letter (ML070810232)	A.2.11
QQQ-26	Raymond Shadis	Letter (ML070810232)	A.2.15
QQQ-27	Raymond Shadis	Letter (ML070810232)	A.2.1
RRR-1	Sally Shaw	Letter (ML070730204)	A.2.9
RRR-2	Sally Shaw	Letter (ML070730204)	A.2.9
RRR-3	Sally Shaw	Letter (ML070730204)	A.2.15
RRR-4	Sally Shaw	Letter (ML070730204)	A.2.6
RRR-5	Sally Shaw	Letter (ML070730204)	A.2.6
RRR-6	Sally Shaw	Letter (ML070730204)	A.2.12
RRR-7	Sally Shaw	Letter (ML070730204)	A.2.12
RRR-8	Sally Shaw	Letter (ML070730204)	A.2.9
RRR-9	Sally Shaw	Letter (ML070730204)	A.2.6
RRR-10	Sally Shaw	Letter (ML070730204)	A.2.7
RRR-11	Sally Shaw	Letter (ML070730204)	A.2.7
RRR-12	Sally Shaw	Letter (ML070730204)	A.2.9
RRR-13	Sally Shaw	Letter (ML070730204)	A.2.9
RRR-14	Sally Shaw	Letter (ML070730204)	A.2.9
RRR-15	Sally Shaw	Letter (ML070730204)	A.2.9
RRR-16	Sally Shaw	Letter (ML070730204)	A.2.9
RRR-17	Sally Shaw	Letter (ML070730204)	A.2.11
RRR-18	Sally Shaw	Letter (ML070730204)	A.2.11
RRR-19	Sally Shaw	Letter (ML070730204)	A.2.13
SSS-1	Ed Stamas	Letter (ML070670105)	A.2.15
TTT-1	Emma Stamas	Letter (ML070660081)	A.2.1
TTT-2	Emma Stamas	Letter (ML070660081)	A.2.13
TTT-3	Emma Stamas	Letter (ML070660081)	A.2.13
TTT-4	Emma Stamas	Letter (ML070660081)	A.2.4
TTT-5	Emma Stamas	Letter (ML070660081)	A.2.13
TTT-6	Emma Stamas	Letter (ML070660081)	A.2.13
UUU-1	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-2	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-3	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-4	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-5	Ted A. Sullivan	Letter (ML070710215)	A.2.14

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
UUU-6	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-7	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-8	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-9	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-10	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-11	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-12	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-13	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-14	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-15	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-16	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-17	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-18	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-19	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-20	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-21	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-22	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-23	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-24	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-25	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-26	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-27	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-28	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-29	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-30	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-31	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-32	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-33	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-34	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-35	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-36	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-37	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-38	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-39	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-40	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-41	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-42	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-43	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-44	Ted A. Sullivan	Letter (ML070710215)	A.2.14

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
UUU-45	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-46	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-47	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-48	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-49	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-50	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-51	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-52	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-53	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-54	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-55	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-56	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-57	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-58	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-59	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-60	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-61	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-62	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-63	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-64	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-65	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-66	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-67	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-68	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-69	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-70	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-71	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-72	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-73	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-74	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-75	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-76	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-77	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-78	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-79	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-80	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-81	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-82	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-83	Ted A. Sullivan	Letter (ML070710215)	A.2.13

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
UUU-84	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-85	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-86	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-87	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-88	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-89	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-90	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-91	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-92	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-93	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-94	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-95	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-96	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-97	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-98	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-99	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-100	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-101	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-102	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-103	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-104	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-105	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-106	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-107	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-108	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-109	Ted A. Sullivan	Letter (ML070710215)	A.2.13
UUU-110	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-111	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-112	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-113	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-114	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-115	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-116	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-117	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-118	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-119	Ted A. Sullivan	Letter (ML070710215)	A.2.7
UUU-120	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-121	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-122	Ted A. Sullivan	Letter (ML070710215)	A.2.14

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[a]	Section(s) Where Addressed
UUU-123	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-124	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-125	Ted A. Sullivan	Letter (ML070710215)	A.2.14
UUU-126	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-127	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-128	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-129	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-130	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-131	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-132	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-133	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-134	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-135	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-136	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-137	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-138	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-139	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-140	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-141	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-142	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-143	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-144	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-145	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-146	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-147	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-148	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-149	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-150	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-151	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-152	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-153	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-154	Ted A. Sullivan	Letter (ML070710215)	A.2.11
UUU-155	Ted A. Sullivan	Letter (ML070710215)	A.2.11
VVV-1	Robert W. Varney	Letter (ML070670187)	A.2.6
VVV-2	Robert W. Varney	Letter (ML070670187)	A.2.7
VVV-3	Robert W. Varney	Letter (ML070670187)	A.2.7
VVV-4	Robert W. Varney	Letter (ML070670187)	A.2.7
VVV-5	Robert W. Varney	Letter (ML070670187)	A.2.7
VVV-6	Robert W. Varney	Letter (ML070670187)	A.2.7

Table A-2. (contd)

Commenter ID	Commenter	Comment Source[(a)]	Section(s) Where Addressed
VVV-7	Robert W. Varney	Letter (ML070670187)	A.2.7
VVV-8	Robert W. Varney	Letter (ML070670187)	A.2.7
VVV-9	Robert W. Varney	Letter (ML070670187)	A.2.7
VVV-10	Robert W. Varney	Letter (ML070670187)	A.2.7
WWW-1	Eleanor Gavin	Letter (ML071430102)	A.2.11
WWW-2	Eleanor Gavin	Letter (ML071430102)	A.2.12
WWW-3	Eleanor Gavin	Letter (ML071430102)	A.2.15
WWW-4	Eleanor Gavin	Letter (ML071430102)	A.2.12
WWW-5	Eleanor Gavin	Letter (ML071430102)	A.2.12
WWW-6	Eleanor Gavin	Letter (ML071430102)	A.2.12
WWW-7	Eleanor Gavin	Letter (ML071430102)	A.2.12
XXX-1	Raymond Shadis	Letter (ML071430101)	A.2.7

(a) The afternoon and evening transcripts can be found under accession numbers ML070530012 and ML070530014, respectively.

response refers the reader to the appropriate section of this SEIS where the change was made. Revisions to the text in the draft SEIS are designated by vertical lines beside the text in the final SEIS.

A.2 Comments and Responses

Comments in this section are grouped in the following categories:

A.2.1 Comments Concerning the License Renewal Process, p. A-65

A.2.2 Comments in Support of License Renewal at Vermont Yankee Nuclear Power Station, p. A-73

A.2.3 Comments in Support of Nuclear Power, p. A-79

A.2.4 Comments in Opposition to License Renewal at Vermont Yankee Nuclear Power Station, p. A-79

A.2.5 Comments in Opposition to Nuclear Power, p. A-83

A.2.6 Comments Concerning Surface-Water Quality, Hydrology, and Use Issues, p. A-84

A.2.7 Comments Concerning Aquatic Ecology, Terrestrial Ecology, and Threatened and Endangered Species Issues, p. A-93

A.2.8 Comments Concerning Air Quality Issues, p. A-119

A.2.9 Comments Concerning Human Health Issues, p. A-121

A.2.10 Comments Concerning Socioeconomic Issues, p. A-142

A.2.11 Comments Concerning Postulated Accidents, p. A-143

A.2.12 Comments Concerning Uranium Fuel Cycle and Waste Management Issues, p. A-157

A.2.13 Comments Concerning Alternatives, p. A-177

A.2.14 Comments Concerning Editorial Issues, p. A-196

A.2.15 Issues Outside the Scope of the Environmental Review for License Renewal: Safeguards and Security; Operational Safety; Aging Management; Emergency Preparedness and Response; Cost-Benefit; and Energy Policy, p. A-208

A.2.1 Comments Concerning the License Renewal Process

Comment: We hope very much that you will address some of the issues which I've raised and which other members of the public will in a reevaluation of your environmental statement because, at this point, many of us feel it is quite deficient. (N-9)

Comment: There is a great opportunity but it won't be found in this NEPA review, or in the environmental impact statement or in the dog and pony shows that the NRC comes out and tells us that we are really privileged that they come here to hear us complain about what they are doing. That's an insult. (O-5)

Comment: The NRC presentation was totally lifeless. The use of the word “generic” to apply to measures used by the NRC to evaluate environmental impact says to me that NRC is using a boiler plate approach to this reactor. I believe you have made up your minds to approve the license extension, and mold the “facts” to fit your decision. (FFF-1)

Comment: It's been my understanding that any nuclear power plant that has come up for an uprate or a license extension has been granted one automatically. I know a number of people who wanted to come to this meeting who didn't want to bother because they felt that it was a foregone conclusion, the NRC has made up their mind, and that they just have to listen to us complain and that it's already been decided. (M-5)

Comment: The only thing clear is that nobody without a vested interest in the plant's continued operation supports relicensing it. The NRC has proven that it is not a regulatory entity, rather it is an industry-run public relations propaganda machine, interested only in preserving and protecting corporate profit. Public safety and long term sustainability have been forgotten. (MMM-1)

Comment: To this purpose you stifle my voice and power as a citizen by building a regulatory maze of ever shifting aisles with no attainable objective except your own. Where logic degrees a straight continuous line of purpose that ends at Shut it down, you the NRC break that line into an infinite number of points, each of which must be dealt with as a separate battle, each which must be fought in endless tedious meetings and hearings that break the will and finances of committed individuals and groups who fight for the future of community, home, neighbor and child. Against all sanity you have designed a glide path for this tired old reactor to increase its output and waste generation by 20% and extend its life for another 20 years.

As has been the case over the past 35 years, our comments and concerns regarding issues will be voiced with absolute sincerity but have no chance of achieving amelioration of your pre-determined result. The 670 page environmental impact statement will be absorbed into the dull gray labyrinth of your calculated process, calculated to render us powerless and useless against your total control of the outcome. (DDD-3)

Comment: To this purpose, you stifle my voice and power as a citizen by building a regulatory maze of ever shifting aisles with no attainable objective except your own. Where logic decrees a straight, continuous line of purpose that ends at shut it down, you, the NRC, break that line into an infinite number of points, each of which must be dealt with as a separate battle and each which must be fought in endless, tedious meetings and hearings that break the will and finances of committed individuals and groups who fight for a future of community, home, neighbor and child.

Against all sanity, you have designed a glide path for this tired old reactor to increase its output in waste generation by 20 percent and extend its life for another 20 years. As has been the case over the past 35 years, our comments and concerns regarding issues will be voiced with absolute sincerity but have no choice, excuse me, have no chance of achieving amelioration of your predetermined result. The 670 page environmental impact statement will be absorbed into the dull grey labyrinth of your calculated process, calculated to render us powerless and useless against your total control of the outcome. (Z-4)

Comment: It is clear that the title given naming these discussions as "License Renewal" is prejudicial. In all future references, let's agree to name deliberations and comments as related to Vermont Yankee Nuclear's License Renewal/Non-renewal. (KKK-1; LLL-1)

Comment: They and we understand that an Agency, must have guide lines, but this is a Democracy and people have a right to demand oversight, hear both sides and decide on their own if they want to see these old reactors to be pushed to 120% more power and to be pushed beyond their original licensing period. (BBB-8; AAA-6)

Comment: The extent to which this EIS is site-specific is called into doubt by what appears to be a cookie-cutter approach, fill in the blanks review. To the extent that this canned EIS, it is non-conservative. If we were to look at the environmental assessment for another plant license renewal, for example Pilgrim Nuclear Power Station (Plymouth, MA) how much of the language would be the same? Vermont citizens at a the SEIS public meeting were surprised to find NRC Staff blithely reading from presentation view-graphs captioned, Pilgrim License Renewal EIS. If NRC is working from a template then care must be exercised to avoid the checklist, fill-in-the-boxes mentality. This is not good regulation. In order for the public to better understand the depth of NRC review, copy of that template should be provided at the beginning of the process and in advance of the scoping meeting so that the public can most efficiently and effectively provide comment (play the game). (QQQ-4)

Comment: NRC has not produced a Site-Specific Environmental Impact Statement that is credible to the people of Vermont and those living in the vicinity of Vermont Yankee. The SEIS is neither comprehensive nor put forth in appropriate detail. It is instead in almost every way perfunctory, lacking in rigor. We have cited but a few examples of where the SEIS was errant, but they are indicative of the poor quality of the entire document and NRC process which remains a disservice to the citizenry and their natural environment. (QQQ-27)

Comment: This letter is a complaint to the NRC that the Vermont Yankee Nuclear Station in Vernon, VT has been negligent and misleading in their GEIS Supplement 30. (TTT-1)

Comment: In the environmental scoping process, the New England Coalition raised new, significant and site-specific issues affected by license renewal which the NRC, in responding to scoping meeting comments, ignored, trivialized or otherwise failed to answer. (JJ-1)

Comment: On June 23, 2006, the Vermont Agency of Natural Resources (VANR) filed scoping comments with the Nuclear Regulatory Commission regarding the relicensing of the Entergy Vermont Yankee Nuclear Power Station (VYNPS). The scoping comments requested a site specific, rather than generic, analysis of several issues in the context of the license renewal process for Vermont Yankee Nuclear Power facility. The Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 30, Regarding Vermont Yankee Nuclear Power Station was received by VANR on December 27, 2006. The majority of issues and questions raised by VANR have not been addressed in Supplement 30. These issues include; bird collision, power line right-of-way management, design basis accidents, waste management, and water quality concerns, as well as, the plant design basis for external events such as, flood and earthquake. As such, the EIS does not entail a site specific evaluation of the

potential impacts of extending the VYNPS license on several issues of importance to VANR and the citizens of Vermont. The EIS represents a lost opportunity to assess potential impacts, identify whether any of these issues could have real impacts, and if so, address them -appropriately. It is not clear whether some of these issues will be resolved in the context of ongoing NRC oversight if the plant relicense request is approved. (CCC-1)

Comment: NRC Staff held a scoping meeting over six months ago and they have now incorporated responses to citizen comments in the SEIS. Many commenters were disappointed that their comments were not answered individually and directly. We observed that NRC Staff grouped excerpts from various comments in ways that obviated the meaning of that individual comment and then often responded in a dismissive or overly legalistic (gotcha) manner. (QQQ-2)

Response: *The NRC staff performed a comprehensive and thorough review in preparing the draft SEIS. As part of NRC's National Environmental Policy Act (NEPA) process, the NRC seeks to engage the public prior to developing a draft SEIS as well as after publishing the draft SEIS and prior to publishing the final SEIS. The NRC staff relies on these comments to help identify new and significant issues or updated information sources. Following receipt of environmental scoping and draft SEIS comments, the NRC staff evaluates the input to determine whether changes are necessary in the scope of its review, or whether to make changes to the draft SEIS prior to publishing the final SEIS. The NRC staff determined that these comments either did not include new and significant information to challenge the generic conclusions reached in the GEIS, or did not provide updated information for the NRC staff to use in reaching site-specific conclusions.*

Even though the complete comment may not be presented in the SEIS, all of the comments are carefully considered. In an effort to provide concise responses to comments received, the NRC staff identifies the essence of the comments and categorizes them by issue. The NRC staff does not change the comment; it merely applies the response more broadly to similar comments. This approach enables the NRC staff to address comments in an efficient manner and is a standard practice for license renewal environmental reviews. The complete transcripts for the scoping and draft SEIS meetings can be found in ADAMS (accession nos. ML061840036, ML061840033, ML061840029, ML070530012, and ML070530014). The ADAMS Public Electronic Reading Room is accessible at http://adamswebsearch.nrc.gov/dologin.htm.

Comment: The public comment form provided for tonight's meeting by the NRC expired on 6/30/06. (NN-7)

Response: *Although the form "NRC Public Meeting Feedback" provided at the January 2007 public meetings in Brattleboro, Vermont, did show an expired expiration date, the NRC staff did evaluate all comments submitted on those forms. The form has since been revised with an updated expiration date.*

Comment: Both Paul and I are curious what you mean when you said at the meeting in the Montpelier Pavillion Bldg. that the original licensing was made "short" i.e. 40 years for economic and anti-trust reasons, that they are really constructed to run for 60 years, on average. (BBB-9; AAA-7)

Response: *Extensive studies and experience have shown that commercial nuclear power facilities can be safely operated for more than 40 years. As a result, the NRC has provided an option in Title 10 of the* Code of Federal Regulations *(10 CFR) that allows owners of nuclear power reactors to seek license renewal for up to an additional 20 years with no limitations on the number of times the license may be renewed. The decision whether to seek license renewal, including the length of the renewal period, rests entirely with nuclear power reactor owners and typically is based on the plant's economic viability and whether it can continue to meet NRC safety and environmental requirements. The NRC bases its decision regarding license renewal on whether the facility will continue to meet the requirements for safe operation and whether the protection of the environment can be assured during the renewal term.*

Comment: 1. The SEIS should state for scale and comparison purposes, how many license renewals have been applied for, and how many have been completed.
2. The SEIS should state for scale and comparison purposes how many license renewal applications have been turned down and the reasons for which they were rejected.
3. The NRC Staff should have documented and explained to the public the cases where did NRC Staff find significant site-specific environment issues. Knowing what those issues were, if any, and how they were addressed would have, along with the review template, assisted the public in choosing what issues, if any, to explore in the NRC process at Vermont Yankee. (QQQ-5)

Response: *As of May 2007, 32 nuclear power plants have applied for license renewal. Twenty-four facilities have received renewed operating licenses, and eight applications are still being evaluated. Information regarding how many nuclear power plants have applied for and received renewed licenses can be found on the NRC's website at www.nrc.gov/reactor/operating/licensing/renewal/applications.html. Additionally, "NUREG-1850: Frequently Asked Questions on License Renewal of Nuclear Power Plants" provides an overview of the license renewal process and discusses new environmental issues identified during NRC reviews.*

Comment: On review of the draft environmental impact statement ("SEIS"), it appears that NRC staff limited outside verification of Entergy environmental impact data and conclusions to

historical observations of such entities as the National Fisheries and Wildlife Service, National Marine Fisheries, The Vermont Department of Health, and Vermont Agency for Natural Resources.

a. There is no record that NRC Staff ly confirmed the data and conclusions upon which it based its draft EIS? Nor did NRC Staff appear to develop any of its own data?
b. No NRC staff measures, observations, or studies are included?
c. In estimating health impacts, for example, NRC Staff consult and/or apply no locally focused epidemiological studies, disease registries, or other health statistical resources.
d. In detailing radioactive off-gas releases to the atmosphere from Entergy Vermont Yankee's 300-foot tall release stack (Section 2.1.4.2), for example, NRC does not address the fact that neither NRC nor the State of Vermont maintains their own detection equipment on the stack to verify Entergy's reported measurements?
e. Given that in NRC's historical experience nuclear plant owner-operators, including Vermont Yankee have on occasion provided the NRC with inadvertently or purposefully false or incomplete data, NRC Staff's uncritical wholesale acceptance of such data in licensing without is unwarranted. (QQQ-3)

Response: *The comment questions the independence of the environmental review conducted by the NRC staff. The NRC staff has indicated throughout the SEIS the efforts made to verify the validity of the information used as bases for conclusions regarding impact. The NRC staff conducts a review of available data; it does not conduct measurement or research programs or develop new data. As part of the NRC reactor oversight program, NRC inspectors review licensee programs and observe a licensee's implementation of those programs, including the effluent and environmental radiological monitoring programs.*

The NRC staff also reviews environmental data and reports from a wide range of sources including Federal and State agencies. For example, the NRC staff examined cancer data published by VDH (http://healthvermont.gov/pubs/cancerpubs/cancer_in_Vermont2005.pdf) and discussed with VDH additional studies that VDH has conducted.

The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: My primary concern here is that the GEIS, the generic environmental impact statement, which I've already spoken about at an earlier meeting, and the assumptions behind your supplemental environmental impact statement are based on erroneous and incomplete information, and therefore, your environmental review is neither thorough nor conservative. It has not been properly done. (A-2)

Comment: These flaws are fatal, they are not particularly difficult to understand. Information that allows the environmental impact statement to avoid these flaws is readily available on the

record. If that information is rejected and this document is deemed adequate, it's only, it will only be because decision makers are intent on substituting their opinions, the privileges of nuclear theology for common sense, common decency, verifiable substance and the rule of law. This draft environmental impact statement includes the NRC's staff's analysis that considers and weighs the environmental impacts of the proposed action, its environmental impacts of alternatives to the proposed action and mitigation measures available for reducing and avoiding adverse impacts, that's taken directly from the abstract.

This recommendation made in the environmental impact statement is based on the analysis and findings in the GEIS, which was written ten years ago, it's not site-specific and among other things, it's written based on the NRC staff's consideration of public comments received during the scoping process. One of those public comments was mine in reference to the BEIR 7 report released by the National Academy of Science in 2006. Apparently the NRC decided that this new study by America's top scientists was not good enough to warrant consideration to upset the generic environmental impact statement. (D-4)

Comment: The Nuclear Regulatory Commission has bifurcated the environment review process for license renewal of aging nuclear power stations into a Generic Environmental Impact Statement (GEIS) and a Site Specific Environmental Impact Statement (SEIS). In 1996, NRC engaged in rulemaking and issued a GEIS, which stated, in sum, that 20 years of additional operation generally would not result in significantly increased environmental impacts. On all of the environmental issues raised and dismissed in the GEIS, NRC takes the position that the public had its chance to comment back in 1996. At the time Vermont Yankee was slated for decommissioning like its sister plants in the region: Yankee Rowe, Maine Yankee, Connecticut Yankee, and Millstone L In that setting, it would not have dawned on the people of Vermont or the region to have scanned the Federal Register looking for Notice of Rulemaking, or to have participated had they stumbled across the notice. NRC now rules that any issue covered in the GEIS may not be raised in the site-specific process unless it is new and significant information though it is anybody's guess as to what might qualify. Objections or issues ostensibly covered in the GEIS may be raised only in a petition for rulemaking. (QQQ-1)

Response: *These comments address perceived shortcomings in the NRC's GEIS. The NRC developed the GEIS to address issues that arise at most or all nuclear power plants. The GEIS separates issues into two categories. Category 1 issues are those issues that are generic to all nuclear power plants or certain classes of nuclear power plants and that have SMALL environmental impacts. Category 2 issues are those issues that must be evaluated for each nuclear power plant or those with certain characteristics. Although the GEIS draws generic conclusions and provides a significant body of information, the NRC staff seeks out and evaluates new and significant information, as well as updated information, in the course of each license renewal review.*

These comments are related to the overall license renewal process. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: I believe Vermont Yankee deserves an , site-specific analysis. In this environmental impact statement, any environmental, economic, employment, sociological impacts and costs of routine radiation releases that will, as the course of operation, result from this license extension, they are simply denied with no evaluation. (D-2)

Comment: Among other things, an safety assessment is an absolute, fundamental minimum requirement for any possibility of license renewal. (N-6)

Comment: There must be an safety assessment, there must be. (KK-5)

Comment: I believe it's imperative that we have an independent safety assessment, just like they had in Maine. I'm very pleased to see that there are some senators in New York that are moving in that direction on the national level and I would think that any employee at Entergy would be pleased to see an independent safety assessment as well. (MM-2)

Comment: The NRC Generic Environmental Impact Statement is inadequate, and should have been preceded by an independent safety assessment of all the plant's components. (TT-2)

Response: *The comments propose that an Independent Safety Assessment (ISA) be performed at Vermont Yankee as part of the license renewal process. At the direction of the Commission, the NRC staff performed a very thorough and detailed comparison of the inspections performed today pursuant to the NRC's Reactor Oversight Process (ROP) to those areas inspected during the Maine Yankee ISA to determine where gaps, if any, in the ROP may exist. The comparison confirmed that the current ROP inspection procedures, coupled with NRC review standards, effectively examine all key aspects of the Maine Yankee ISA. This means that the NRC staff is essentially performing the inspection elements of an ISA at each operating nuclear power plant in the country on a routine basis. After review of the results of the staff's efforts, the Commission remains convinced that the ROP, as currently implemented, effectively embodies the inspection elements of the Maine Yankee ISA and that it provides better oversight than an ISA since an ISA is a one time, "snapshot" inspection whereas the ROP provides continual evaluation.*

Comment: As our public servants, please use freedom of information act inquiries independently conducted site visits, recorded interviews and anonymous interviews as necessary to paint clear pictures of what our future in New England will look like, if your collective findings and/or your personal recommendations are true, and if they are in error; if they prevail, or if human factors or acts of nature defy your predictions.

WE REQUIRE THAT YOU INCLUDE DIVERGENT VIEWS WITHIN YOUR AGENCY'S RESPONSE. (KKK-10)

Response: *The NRC is an independent agency established by the Energy Reorganization Act of 1974 to regulate civilian use of nuclear materials. The NRC's mission is to regulate the nation's civilian use of by-product, source, and special nuclear materials to ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment. As part of this mission, the NRC is responsible for the review and issuance of initial licenses and renewed licenses for nuclear power facilities.*

The Advisory Committee on Reactor Safeguards (ACRS) is an advisory committee under the Federal Advisory Committee Act (FACA) mandated by the Atomic Energy Act of 1954, as amended. The ACRS is independent of the NRC staff and reports directly to the Commission, which appoints ACRS members. The operational practices of the ACRS are governed by the provisions of the FACA. The ACRS is composed of recognized technical experts in their fields. It is structured so that experts representing many technical perspectives can provide independent advice, which can be factored into the Commission's decision-making process. Most ACRS meetings are open to the public, and any member of the public may request an opportunity to make an oral statement during the committee meeting.

During the license renewal process, the ACRS acts as an independent, third-party, oversight group that reviews and makes recommendations to the Commission on the safety aspects of renewal applications. The ACRS mandate does not include NEPA reviews.

In conducting the environmental evaluation presented in the SEIS, the NRC uses information from a variety of sources, including the applicant's Environmental Report (ER), data and information collected during a site audit, information provided by local, State, and other Federal agencies, and published scientific literature. The NRC's role in the environmental review process is to provide a fair and unbiased evaluation of the impacts of operations during the license renewal term.

The environmental assessment conducted by the NRC for license renewal is mandated by NEPA. NEPA requires that the assessment be conducted by the agency that takes the action, in this case, the NRC. NEPA does not require an independent review of environmental assessments by the National Academy of Sciences or another independent scientific body. The EPA has the responsibility to review EISs that are prepared by other Federal agencies (including the NRC). This review responsibility is a requirement placed on the EPA by NEPA. The EPA's review provides a measure of the NRC's adherence to NEPA. Additionally, the EPA comments on draft EISs under its statutory areas of responsibility such as clean water and clean air. Other Federal agencies are invited to participate in the scoping process and are afforded the opportunity to review and comment on the draft EISs.

The comment is related to the overall license renewal process. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.

A.2.2 Comments in Support of License Renewal at Vermont Yankee Nuclear Power Station

Comment: The brave little State of Vermont leads this nation in the context of its energy portfolio contributing the very least of carbon dioxide and other noxious substances ingested into the environment.

And that's something that all of us, all of us, ought to care about and ought to be concerned about and the reason for that again was covered but it relates to, yes, this nuclear facility in Vernon, a few short miles down the road, and it relates to the wisdom of entering into long-term contracts with Hydro Quebec for hydroelectric power. And now the issue is how can Vermont, which is now number one, as the cleanest state in the Union on the CO2 and related issues front, somehow strive diligently to hold onto its position and to hold onto that position. It is not rocket science to understand that relicensure of this nuclear facility would add vitally to our quest for continuing baseload reliable and cost effective energy, as would success in artful negotiations with our friends in Quebec to replicate in some significant way the hydroelectric contracts of the 1980s.

Now even if we are hugely successful in this quest, we can make a contribution to the nation, we can make a contribution by showing our leadership here in this state. Our contribution will not show up so much as a speck on the horizon in terms of reversing the trend of climate change in this country but our leadership potential is significant and greatly in a significant potential fulfillment. (C-1)

Comment: The need for Vermont to secure a reliable, affordable and clean electricity portfolio has never been greater which leads the partnership to reiterate its support for the license renewal of Vermont Yankee. (F-1)

Comment: While the partnership believes these steps outlined above should be implemented, we cannot ignore nor deny that the foundation for any successful electricity portfolio starts with baseload sources of power, this is why it is vital that we continue to secure HydroQuebec and Vermont Yankee beyond their current operating licenses. Vermont Yankee, our state's lone significant in-state source of power, has been safely and reliably providing Vermonters with electricity for over 30 years. It has continually met the NRC's highest safety standards largely due to the dedicated men and women who work at the plant and live with their families in the surrounding communities.

It is important to keep in mind the public safety issues that are sure to arise if Vermont does not have an adequate supply of baseload power. With the New England Region strapped for power as it is, we cannot responsibly close the plant and cavalierly assume that our neighbors will provide us with sufficient let alone reasonably priced power. Should rolling blackouts and brownouts have to be implemented, the stress it will place on our public safety and health will be enormous. (F-3)

Comment: Vermont Yankee is a safe, is safe and good for the environment and economy, it has provided Vermonters with reliable, affordable and clean power for more than three decades and it has done so safely. We know there is a strong array of support throughout the state for the plant's continued operation and we believe that granting Vermont Yankee a license extension is a responsible and necessary action. (F-6)

Comment: Vermont Yankee has been a very low environmental impact baseload, 24/7 producer of a major portion of Vermont's electrical energy, it deserves to be a part of Vermont's energy future along with green renewables, hydroelectric, wind, solar, biomass and conservation. Let's get off all fossil fuels to generate electricity. (I-2)

Comment: I support an environmentally sound electric portfolio, nuclear and Vermont Yankee are part of it. I've been driving a hybrid car for two years, home heating with wood for over 25 years and have replaced oil furnaces at six residences that we rent to local folks. I've done replacement windows and I purchase 25 percent of all of my electric through Vermont Cow Power. I've had the opportunity to see firsthand the amount of safety technology and training the plant, the industry and the NRC has put into Vermont Yankee to allow it to be safe and reliable.

From the original design of the plant, with concrete walls several feet thick, to the ongoing upgrades and maintenance of the plant, I believe it is a safe plant, the millions of dollars spent on security, plant upgrades and training is part of the reason for this. Another part of its success is the process here today. The NRC, other industry organizations learn, listen and implement ideas from concerns raised. The development of technology needs to continue with power generation, as it is doing in other fields. Nuclear power, I believe, is a safe, cost effective component of our energy needs.

It is also a key component in solving greenhouse emissions and I encourage you to continue having Vermont Yankee to be part of our Vermont energy portfolio, keeping prices affordable and promoting economic development in the state while contributing to our economy. (J-1)

Comment: Vermont has played a vital role in the sustainability, Vermont Yankee has played a vital role in the sustainability of the lifestyle we all enjoy here. By supplying a clean, reliable and renewable source of energy, Vermont Yankee has lessened our dependency on fossil fuel and thus helped us to keep our environment free of these added pollutants. I have worked as a

contractor at Vermont Yankee for the past eight months and have had the opportunity to interact with many of their employees. In doing so, my confidence in their ability to run a safe and efficient nuclear power plant has only grown.

I have seen first hand the accountability, ownership and level of personal involvement the employees of Vermont Yankee take in all of their daily work activities. I have learned of their outstanding track record of safely providing energy at fair and favorable prices. And I know firsthand the importance of the economic infrastructure they provide to attract and retain employees from many surrounding communities. To extend the operating license for Vermont Yankee would be to continue supporting an environmentally, economically and socially responsible culture that has been established here.

It is this type of community which we want to encourage, as our global energy requirements become greater and our environmental responsibility larger, nuclear power is a clear path to aid in tackling both of these very ominous issues. I encourage the NRC to look around this community and take note of the many positive influences from Vermont Yankee and I ask them to extend the operating license for another 20 years so we can all share in the benefits of this community for many years to come. (P-1)

Comment: Vermont Yankee supplies 34 percent of Vermont's electricity consumption and, without it, Vermont would be even more dependent on out of state sources to meet its electricity needs. Currently, Vermont purchases approximately 50 percent of its power from outside sources. (Q-2)

Comment: Long-term safe operation, a major source of energy for the State of Vermont, significant contributions to the State of Vermont green energy fund, substantial local and statewide expenditures during, directly into the economy, it's for these reasons that I believe VY should receive an extension of its operating license. (Q-3)

Comment: I know it's a good plant and I know that adding another 20 years to its license is a good thing, it's good for a number of reasons. First of all, it's good for my company, Entergy, it's also good for my fellow employees that I love dearly, and a lot of them probably now will be able to have a career like I have had there. But foremost, foremost, it's good for Vermont, it's a good thing for Vermont, it's good for the United States and it's good for our Planet Earth, believe it or not. (T-1)

Comment: The reliability of the plant is ensured by a robust corrective action program, it's also ensured by a robust predictive and preventive maintenance program to ensure our plant runs reliably day in and day out. Vermont Yankee is a reliable source of economic power generation to the New England grid. As such, we supply electricity to the power grid 24 hours a day and have done so for the last 447 days continuously, since our last scheduled refueling and maintenance outage which, by the way, was Vermont Yankee's best.

I'm proud to be part of the committed and dedicated Vermont Yankee team of professionals and I look forward to providing a clean, safe and reliable source of energy into this community well into the future. (U-1)

Comment: I stand here tonight to recommend to relicense the nuclear plant here in Vernon. (V-1)

Comment: I want to voice to the NRC that I believe that we should extend the license to Vermont Yankee, not just to save my job, but in my time being there, I received lots of training and have come to understand the preparation and the work that goes into running this plant to make it safe and reliable. I also believe that nuclear power is a safe, clean alternative with low and no emissions. (W-1)

Comment: I just want to say one thing about safety...it profoundly has effected the way that I do things in my own life and I know it has the same effect on the folks who work at Vermont Yankee and that innately permeates the culture that we have there that continues us to be able to operate the plant safely, to design new and different ways of operating the plant, the systems that we maintain that you've heard, the systems that we add to the site, everything is done with safety in mind. (Y-3)

Comment: And I would recommend that we extend the license of Vermont Yankee for another 20 years. (AA-1)

Comment: In the last ten years at Vermont Yankee, I've had responsibility here in fuel cycle management, core design, core management, reactor engineering and some involvement with the dry fuel storage project that is presently ongoing. I understand and view the license renewal of Vermont Yankee from the perspective and insights as a local resident, a farmer, a former NRC regulator and that of a Vermont Yankee employee. Not many people here tonight can say they share that same vantage point and perspective. And from each and every one of those perspectives, I can only reach one conclusion and that's the license renewal for Vermont Yankee is the best environmentally sound choice to meet Vermont's energy needs, since it's safe, it's non-greenhouse gas emitting, it's clean, reliable, efficient and cost effective, and it's local, a source of vitally needed baseload supply of electricity. (BB-1)

Comment: And since 1972, safe, clean, reliable operation of Vermont Yankee has prevented millions of greenhouse emissions, millions of metric tons of greenhouse gas emissions, including carbon dioxide, from entering the Vermont environment.

In conclusion, looking at Vermont's future energy needs and the impacts on our environment, there is no alternative that is more beneficial to both the environment and the ability to meet the energy demands of Vermont. When all the facts are considered, not just part of them, simply said, it's the green choice. (BB-2)

Comment: The citizens of the State of Vermont can be proud that they have the lowest per capita greenhouse gas emissions in the United States, I think that was hard work and it wasn't done overnight. The State of Vermont can be very proud of that rating and the culture at Vermont Yankee to operate safely directly contributes to this status of the lowest overall greenhouse emissions, we don't produce any. (CC-1)

Comment: I'm asking the people of Vermont and the NRC to maintain the State of Vermont's status as the lowest emission of greenhouse gasses per capita and to keep Vermont electric rates competitive, so I ask the NRC to continue and to approve, to approve the continued safe and efficient operation of Vermont Yankee. (CC-3)

Comment: A large reason why the Vermont environment is where it is today is because of our operation, it produces no acid rain or greenhouse gasses. In a year, a typical 1,000 megawatt coal fired plant emits 100,000 tons of sulfur dioxide, 75,000 tons of nitrogen oxides and 5,000 tons of fly ash into the environment. It also contributes large amounts of CO2 to the global warming problem. Going forward in Vermont, we need to have a diverse mix of energy options for the good of the state and the people. Solar, wind power, hydro and nuclear should all play a role in Vermont's energy future. Extending Vermont Yankee's license is the smart thing to do both economically and environmentally. (DD-1)

Comment: There is a lot of technology, a lot of data, a lot of number crunching that went into the study that the NRC is looking at, I would like to focus on the human face at Vermont Yankee. I have a human factors background, it's also what I think makes it at the end of the day is the people.

We look at our community and a number of folks have acknowledged that it isn't the people we don't like, it's nuclear power. Well guess what? It's the people that run the nuclear power plant, it's the same people that are in the community, the same people that are teachers, the same people that lead scouting groups, the same ones that volunteer at the hospital or Rescue, Inc. These are the people that work at the power plant, they are not different than the other folks. The one thing they have in common is the common purpose to run that plant safely and keep it that way for another 20 years.

They are in the fabric of this community, they are here to stay, they live in the three surrounding states and they are not going to endanger their homes because this is home. So, at the end of the day, we have all the technology and all the studies, but what we are really left with is the people and it's the people that run that and keep it safe. (HH-1)

Comment: On balance, over the last 35 years, if you look at the current proposed environmental impact, it provides a strong report card for Vermont Yankee relative to being an environmental and economically sound unit. What other kind of facility operates for almost 35 years and still is considered by experts, both within the federal government, and local and state

government, as an economically sound, safe and environmentally friendly source of electric power? In my opinion, we should renew the license for Vermont Yankee. (LL-1)

Comment: I do encourage that you consider us with a licensed extension for the next 20 years so that we can continue to be an important player in the community. (II-1)

Comment: And my point tonight is every time I see a bald eagle flying over an intake structure, or cruising over our buildings or up the river fishing, I look around and I am proud to work at a company that I feel is green and that proves it by the wildlife around there. That's the only place in Vermont I have seen a bald eagle, and that's all I've got to say. (PP-1)

Comment: I want to register my agreements with your major conclusions. The environmental impacts from VY are small. (SS-2)

Comment: Considered from the narrow perspective of the environment and leaving out for the moment safety and economics, licensing VY for another twenty years is really an easy call. The very, very remotely potential catastrophic negative affects are all to people and property. Since people can move it is really just property. The environment will be secure no matter what. (SS-8)

Response: *The comments are supportive of license renewal at VYNPS and are general in nature. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

A.2.3 Comments in Support of Nuclear Power

Comment: The 103 nuclear plants that are now operating in the United States, producing 20 percent of the U.S.'s electricity, half of that, by the way, is using dismantled Soviet warheads, Russian warheads, for the power source as a result of the reduction in nuclear arms, the equivalent of 100 million cars taken off the road, if that same power was being produced by coal, which 50 percent of our power is produced by. That's a lot of cars, that's a lot of CO2.

There is no other power source that results in a larger mitigation of greenhouse gas emissions than nuclear energy, so at least it must be given credit on that count. (B-1)

Comment: I believe that nuclear energy is the only large baseload source of electricity that can effectively reduce fossil fuel consumption while at the same time satisfying the growing global demand for power. (B-4)

Comment: I believe there will be a resurgence, there is a resurgence already going on across the globe, we just need to get on board here in the U.S., and Entergy is one of the companies that is pursuing new technology, ESBWR, looking at sites down in Mississippi.

One of the things I was thinking about and I guess I subconsciously dressed in all green tonight for a reason, and I've always considered myself to be concerned about the environment and I think that nuclear power is an overall positive contributor to the environment in that it does not create gasses, global warming. (Y-1)

Comment: [At] refineries, you just burn the oil and burn the gas and put the sulfur dioxide into the atmosphere without thinking about it, but if you witness it and see what's going on, you will appreciate the environmental friendliness of nuclear power. (AA-2)

Response: *The comments are supportive of nuclear power and are general in nature. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

A.2.4 Comments in Opposition to License Renewal at Vermont Yankee Nuclear Power Station

Comment: My primary concern is that, as was in evidence with the slides that referred to Pilgrim and not from Yankee, that this is really not an environmental impact statement for Vermont Yankee and the communities who are suffering the effects of Vermont Yankee, but it is more accurately terms an environmental insult statement. The good news is that, as an ecologist, I can tell you that environmental systems are very resilient, natural systems are very resilient, but they only restore themselves if you stop the environmental insults, and then they can restore themselves. If you continue to insult them, they will continue to degrade. (A-1)

Comment: Now Hellen Caldecott has written this book, it's called Nuclear Power is not the Answer, it's not the answer to our energy problem, it's not the answer to global warming and it's, but it is the answer for Entergy to make lots and lots of money and it is the answer for us, as the common people, to stay beholden to the corporation and to the central government. The only way we can get out from underneath this is if each one of us takes personal responsibility for all of our actions every day from this day on and that's the only way we are ever going to make any change. (E-3)

Comment: The fact of the matter is we cannot afford to keep these aging plants going, we must gradually phase them out. We are not asking for Vermont Yankee to shut down tomorrow, we are asking for it to phase out over a five year period and, during that five year period, we here in this part of the world are very, very fortunate to have several factors that can allow us to replace that plant. (K-5)

Comment: So I think that, to call this green is, this plant that is producing, that is leaking radiation and producing highly toxic waste that will last basically forever and will be here forever is just absurd. (L-4)

Comment: I think that this plant is unsafe and it should be decommissioned, I do not believe it should have a 20-year license extension. (M-1)

Comment: I'm here to urge the NRC not to relicense Vermont Yankee. (M-4)

Comment: And I'm afraid of this plant and I know that there is a lot of people who think that I'm hysterical or that I'm misguided and uninformed, and I think I'm very informed and I think I'm very aware of the risks that this plant raises. So all of you, when you go to bed tonight, I hope that you don't sleep near this plant and I hope that you're not downwind from it but, if you are, think to yourself could I be making a mistake? Could I be wrong in supporting this plant? And if I am, then I am subjecting an entire community to unacceptable risks. (M-6)

Comment: The New England Coalition on Nuclear Pollution is entirely opposed to license renewal. (N-7)

Comment: I would rather see this decommissioned as soon as possible because there is no waste answer, but I would also like to make sure that Mr. Leonard uses his power, as your boss, to see to it that all of you are employed until it's time to retire and employed in the capacity of diligently, prudently and professionally decommissioning the high level radioactive waste dump in Vernon. (S-2)

Comment: When you come into Vermont, you have the opportunity to try the older forms of lifestyles that are wood burning stoves and a pedestrian lifestyle. I do have great worry about nuclear waste storage and I don't think that it's a money issue because it's not going to, it's not going to phase my life as a money issue, it's something to do. I don't think that it's, I don't think it's insurmountable to dismantle and I do think that this community would feel excited by transforming our engineering capability into a very large hydro electric community, starting with this project. (X-1)

Comment: As a logical pragmatist who loves and honors this paradise in which I live, my response is simple, shut it down, secure the waste, decommission it and never build another. But you, the NRC, the hired guns of a very profitable industry, don't view the issues from the same perspective and you bend your full energy towards making the beast ever bigger and giving it life without end. (Z-3)

Comment: For the life of your grandchildren and the health of the world, we demand the NRC deny Vermont Yankee the relicensing permit. As we say in Vermont, smarten up, NRC, we all see through your charade. (EE-3)

Comment: The things I look forward to with 20 more years of Vermont Yankee running here 15 miles from where I was born and raised are pretty exciting, I look forward to my children or perhaps my wife getting breast cancer, I look forward to the time when I can hug them and feel

only one of their breasts up against my breast because the other has been removed because of a tumor because there is 88,300 cubic yards of radioactive waste stored on the Connecticut River.

I look forward to my kids having Downs Syndrome and I look forward to this community growing in all its new and mutated ways. I look forward to spending a hard life with my father or perhaps my children as they die a slow death of prostate cancer. I look forward to swimming in a warmer Connecticut River. I look forward to my friends returning from the Iraq War with post traumatic stress syndrome and something unknown, something that's killing them that's caused by depleted uranium which comes from nuclear power. I'm really into that, I think that will be great to hang out with my friends as they die a slow and painful death.

I'm looking forward to more wars, I'm looking forward to more waste reprocessing and more efficient smart weaponry, and increased infant mortality is something I can barely hide my excitement about. And finally, I look forward to a time when I can abandon my home, the place where I grew up, because of a nuclear accident or simply because too much waste has accumulated and the environment becomes unsuitable for human habitation. (GG-1)

Comment: I proposed this before and someone mentioned it this evening, that the workers who are keeping us safe right now and doing as good a job as can be done at the reactor, that you be retrained as part of the shutting down of Vermont Yankee because I know it's going to be shut down, it's not going to be relicensed. (KK-3)

Comment: I took the opportunity to travel to the Ukraine and went on a tour of the now infamous exclusion zone. So, if any of you would care to get the full sensation of what the environmental impact of nuclear power is, take a little waltz around there, it's huge, it's global, it's absolutely terrifying. These people, it's not only the land that's been corrupted, they have been corrupted. They're entire genetic heritage has been given the short end of the stick, their children are deformed and will continue to be so.

This is the risk, it's that simple. Yes, things are profitable, things are leaning this way or that way for where the energy is coming from and how comfortable you can live, but the true environmental impact inevitably and invariably is what you are seeing over there in Belarus and it in cities like Gomol in Pripyat, which is eerie. It was a, the people there too, the workers there, that was the flagship plant for them, that was the a number one, biggest, safest producer for the Soviets, and it ruined their empire and that's what you are flirting with here. (RR-1)

Comment: I urge the NRC to refuse to renew Vermont Yankee's license, so that the citizens of this region can work hard to conserve 200 MW of energy each year and produce 400 MW of clean and SAFE energy over the next 5 years instead! (TTT-4)

Comment: We urge you to close this facility as soon as it is possible. (HHH-2)

Comment: This response to dissent is almost as scary as allowing Entergy to make money from an upgrade to an aged reactor and probably to extend its license. (FFF-2)

Comment: As a logical pragmatist who loves and honors this paradise my response is simple—shut it down, secure the waste, decommission it and never build another. But you, the NRC, the hired guns of a very profitable industry, don't view the issues from the same perspective and you bend your full energy towards making the beast ever bigger and giving it life without end. (DDD-2)

Comment: The existence of this reactor threatens our continued existence. To close nuclear reactors as their life-expectancy diminishes is appropriate. Don't put this reactor on life-support. (KKK-2)

Response: *The comments oppose license renewal at VYNPS and are general in nature. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

A.2.5 Comments in Opposition to Nuclear Power

Comment: You people of the industry should be ashamed, you've placed good paying jobs and careers ahead of responsibility. You've read your pipeline of propaganda and you feel reasonably sure you can keep your bomb material and cancer causing waste out of our environment, you must feel somewhat sure or you couldn't sleep at night.

Have you ever wondered why your industry needs to dump so much time and money on the public relations around the reactor towns? Are you abnormally, are your abnormally large donations intended more as bribery than charity? Of course they are, you are trying to pacify the public while you shove your dirty industry down their throats. You know the majority of people don't want anything to do with this dangerous form of energy, so they have to be bribed. The bottom line is that this power plant and all the others are a liability to our future.

You are poisoning not only ourselves and our environment but also the coming generation's. Every day, every minute that you are generating electricity, you are creating an obscene amount of atomic bomb making material and cancer causing toxins stored in temporary vessels seemingly without a clue as to what to do next. I've heard people from the outside of the fence refer to the people inside the fence as evil. I think of you more as greedy and misinformed. People, you've been lied to, there is no nuclear renaissance, there are no new safe waste-free reactors ready to go on line, just a dying industry treading water until the final science shuts them down.

We need help in figuring out how on earth to ever clean up the mess your industry has created. I leave you with a misinformed quote from my ex-brother in law who was known to encourage

other workers to go deeper into hotter areas of the plant to make more money. He was an electrician at Vermont Yankee for 14 years before he died, middle-aged, of leukemia. He said, in all seriousness, don't worry, nukes melt down, not up. Don't be misinformed, people, you know your industry is biased, maybe a career change is in order. Vermont is at the edge of creating true renewable energy, careers, and they should use some of you bright minds currently being wasted on your poisonous, gluttonous industry. (H-5)

Comment: We do not need this kind of power and we can do better than it, it's old fashioned, it's not sustainable, it's expensive. (K-4)

Comment: Because we understand our connection to Earth and the need for Earth and human to work together in harmony and balance, we reject nuclear technology as a cancer on Earth. We have been poisoning ourselves for some time. (HHH-1)

Comment: There is no way that the nuclear industry can guarantee that New England's air, water, soil, trees, plants, animals and humans are safe from the lethal contamination of a meltdown or terrorist attack No chorus of loyal Vermont Yankee employees, no stack of fine print will serve to convince me or my friends that our land and persons are safe. (TT-1)

Response: *The comments oppose nuclear power and are general in nature. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

A.2.6 Comments Concerning Surface-Water Quality, Hydrology, and Use Issues

Comment: I'm concerned also about the NRC's inability to grasp that the use of open cooling or once-through cooling is a violation of the Clean Water Act. The 2nd U.S. Circuit Court of Appeals in Manhattan ruled Thursday, I think it was last week, that it was improper for the EPA to let power plants circumvent environmental laws. This decision was a rejection of EPA's refusal to adopt closed-cycle cooling as the best technology available.

About half of the nation's power plants, these are both nuclear and fossil fuel plants, use the closed-cycle method which operates like a car radiator, reusing the same water and only requiring small amounts of new water to replace what is lost to evaporation. The system uses at least 95 percent less water than once-through systems, these systems draw from waterways and expel warmed water back into these waterways. It's only common sense that if a technology exists to minimize or mitigate the impacts on the natural environment that a responsible corporation would want to use them and a responsible regulatory agency would want to require that they use them. This may, again, be up to the courts to enforce and that's really sad, that's really sad because we are paying the salaries of these people who are refusing to regulate. (OO-4)

Comment: (Pg. 2-8). The DSEIS identifies three modes of operation for the circulation of cooling water through Vermont Yankee: open-cycle, hybrid-cycle, and closed-cycle. Open-cycle withdraws 518 million gallons of water per day (mgd) from the Connecticut River. Closed-cycle mode requires only 14.4 mgd. Hybrid-cycle mode utilizes a range of flows from 14.4 mgd to 518 mgd. According to the DSEIS, the applicant selects the mode of operation needed to comply with temperature limits established in the NPDES permit issued by the VTDEC. Therefore, while the technology is in place at this facility to reduce the withdrawal of water from the Connecticut River by over 97 percent compared to the flow required for open-cycle mode (and consequently minimize entrainment and impingement mortality of aquatic organisms), it is only used when temperature limits dictate. Thus, we recommend that the FSEIS fully discuss and evaluate the comparative environmental impacts of the alternative modes for the circulation of cooling water. While the FSEIS need not suggest the answers to the ultimate permitting questions to be answered by the VTDEC under the Clean Water Act, it should characterize the relative impacts of the alternatives, such as the differing amounts of heat to be discharged, the differing extent and intensities of the thermal plumes, the differing numbers of organisms to be impinged and/or entrained by the intake structure under the different alternatives. (VVV-1)

Comment: Page 2-8: In this section there is no mention of how the plant's operation has changed since it first went on-line. It is the Department's understanding that initially the plant operated in closed cycle year-round. Then, gradually the plant operated in open or hybrid cycle more often as variances to the state's thermal discharge limits were granted through the Environmental Protection Agency's (EPA) 316(a) process. We recommend that the FSEIS contain a chronology of how the plant has operated from the 1970s up through today. (PPP-1)

Comment: The Department recommends that the FSEIS evaluate at least two more alternatives: (1) continued operation of VY under a year-round closed-cycle mode of operation; and (2) continued operation of VY under the present NPDES permit requirements, but with removal of the Vernon Dam. (PPP-40)

Comment: Your SEIS fails to grasp that Entergy's use of open cooling or once through cooling is a violation of the Clean Water Act. The 2nd U.S. Circuit Court of Appeals in Manattan recently ruled that it was improper for the EPA to let power plants circumvent environmental laws. This decision was a rejection of the EPA's refusal to adopt closed-cycle cooling as the best technology available. About half of the nation's power plants use the closed-cycle method, which operates like a car radiator, reusing the same water and only requiring small amounts of new water to replace what is lost to evaporation. The system uses at least 95 percent less water than once-through systems, which draw from waterways and expel warmed water back into those waterways." source: http://www.thejournalnews.com/apps/pbcs.dll/article?AID=/20070127/NEWS01/701270339/1025/NEWS09 (RRR-4)

Response: *The Clean Water Act (CWA) establishes environmental programs, including the National Pollutant Discharge Elimination System (NPDES) permit program (Section 402), to protect domestic waters and directs the EPA to issue implementing regulations. The EPA has delegated responsibility for administering the NPDES permit program to the Vermont Agency of Natural Resources (VANR). It is through the NPDES permit program that the VANR authorizes Entergy to discharge cooling water from the VYNPS to the Connecticut River and sets discharge limitations, monitoring requirements, and other conditions for the protection of receiving waters.*

Section 316 of the CWA requires the thermal component of any discharge to be controlled to protect indigenous shellfish, fish, and wildlife on the body of water into which the discharge is to be made (Part a) and requires that cooling water intake structures reflect the best technology available to minimize adverse impacts to these populations (Part b). The requirements of Sections 316(a) and 316(b), as well as relevant portions of the Vermont Water Quality Standards, are implemented through the NPDES permit program on a case-by-case basis. Only July 9, 2004, the EPA issued the Phase II regulations that addressed cooling water systems at power stations. The 316(b) Phase II regulations requiring best technology available were recently remanded by the 2nd Circuit Court, and effective July 09, 2007, the EPA suspended the Phase II rule (72 FR 37107).

On February 20, 2003, Entergy applied for an amendment to its existing thermal effluent limitations to increase the temperature of the Connecticut River by 1 °F at downstream Station 3 relative to the upstream temperatures as measured at Station 7 for the NPDES summer period (May 16 through October 14). In support of its application, Entergy also submitted a 316(a) Demonstration Report and other documents and follow-up information as requested by the VANR. After reviewing the information, the VANR issued an amended NPDES permit to Entergy on March 30, 2006 (which was stayed by the State of Vermont Environmental Court on August 28, 2006). The permit granted the 1 °F temperature increase only for the period of June 16 through October 14, citing insufficient information regarding impacts to migrating salmon smolt during the period of May 16 through June 15.

The Commission considers the findings of the VANR to be a bona fide Section 316(a) determination and interprets CWA Section 511(c)(2) as requiring it to take this determination at face value. Because the VANR has already assessed the thermal impacts related to the variance request as part of the NPDES permitting process, an independent analysis of impacts (including cooling options and the heat equation used to calculate plant-induced temperatures) is not required as part of the evaluation presented in this SEIS in support of license renewal. (Commission Memorandum and Order CLI-07-16, Entergy Nuclear Vermont Yankee, LLC. and Entergy Nuclear Operations, Inc.-License Renewal For Vermont Yankee Nuclear Generating Station, dated April 11, 2007. ADAMS Accession No. ML0710102170).

The SEIS provides the NRC staff's assessment of impact and is not required to document past cooling operation modes. Approval of such changes was granted by the NPDES issuing authority, after a thorough assessment of impact. The NRC staff did not evaluate alternative cooling water operation modes because the applicant has a valid NPDES permit that specifies the cooling water mode of operation on an annual basis. The NRC staff's evaluation is conservative since continuous closed-cycle cooling would result in less impact. The NRC staff believes that the Vernon Dam, built in 1909, would likely continue to produce power during the license renewal period, and removal of the dam was not considered a likely alternative.

Comment: Page 2-9: The dimensions of the discharge structure are provided, but not for the intake structure. The FSEIS should include intake dimensions so that approach velocities can be determined. (PPP-2)

Response: *The dimensions of the intake structure have been added to Section 2.1.3 of the SEIS.*

Comment: Page 2-21: The dSEIS states that TransCanada (owner of the Vernon Project) regulates the river discharge to maintain a minimum sustained flow of 1,250 cfs. A more appropriate characterization is that TransCanada regulates river flow to maximize power production, while maintaining a minimum flow of 1,250 cfs (or inflow, if less) below the dam at all times. (PPP-3)

Response: *The purpose of Section 2.2.2.1 is only to describe the seasonal and regulated flow rates of the Connecticut River. No change was made to the SEIS in response to this comment.*

Comment: Page 2-23: The dSEIS notes that "Vernon Pond" may fluctuate as much as 8 feet. However, according to the Order Amending License for the Vernon Project, dated June 22, 1992, "NEP responded that their ability to regulate a wider range of river flows could actually reduce pool level fluctuations. They further responded that their ability to fluctuate the pond would be small, on the order of one foot, and that any fluctuations would be gradual..." [Federal Energy Regulatory Commission. June 22, 1992. Order Amending License, Project No. 1904-008.] The Department recommends that the FSEIS verify the licensed operating range and the actual operating range of the Vernon Project with TransCanada. (PPP-4)

Response: *The statement quoted from the FERC (1992) document referred to in this comment relates to concerns about river flows and pond elevations downstream of the Vernon Project (i.e., Vernon Dam). The New England Power Company expressed concern about their ability to regulate flow at Turners Falls because of the operations at Vernon Dam. Their statement does not relate to the surface elevations of Vernon Pool, which is upstream of Vernon Dam.*

Comment: Page 2-23: The Cooling Water Use section discusses the recent power uprate at VY and its potential impact on consumptive water use. However, NRC staff bases its

determination on the current NPDES permit limits, not the amended limits presently under appeal. Depending on how the appeal is decided, this evaluation may not be valid. Also, the determination in this section appears to be inconsistent with the evaluation on page 2-32, which considers an outcome resulting in an increased thermal limit.

The dSEIS does not adequately or clearly discuss the uprate, the 316(a) variance request, the license extension, or how these actions relate to each other, including operationally. The environmental implications may include effects of an increased thermal limit, and entrainment and impingement. This should be remedied in the FSEIS. (PPP-5)

Response: *The recent power uprate is discussed briefly in the "Cooling Water Use" section to show its contribution to the rate of water withdrawal from Vernon Pool during the NPDES summer and winter periods. Plant operations (i.e., cooling water withdrawal and discharge rates) under the power uprate must comply with the limits set forth in the NPDES permit requirements for VYNPS (as amended or renewed).*

The NEPA evaluation presented in this SEIS focuses on the renewal of the operating license (OL) for the VYNPS, operated by Entergy under OL DPR-28, which expires on March 21, 2012. The licensee (Entergy) has applied for an additional 20 years of operation (i.e., until March 21, 2032). Additional information on the NEPA process as it relates to license renewal can be found in Section 1.2 of the SEIS. In a separate and earlier action, Entergy applied to the NRC on September 10, 2003, for a power increase of approximately 20 percent for the VYNPS (from 1593 to 1912 megawatts-thermal). A NEPA evaluation (Environmental Assessment [EA]) was conducted for this action. The EA and its finding of no significant impact were published in the Federal Register (FR) on November 9, 2005. The notice of issuance was published in the FR on January 27, 2006. Thermal discharges, required by Section 316(a) of the CWA to be protective of indigenous shellfish, fish, and wildlife, are regulated through the permitting process of the NPDES program. See the response for OO-4, VVV-1, PPP-1, PPP-8, PPP-40, OOO-1, and RRR-3 (Section A.2.6) for further discussion on the NPDES program.

Comment: Page 2-27: The section discussing the NPDES permit should clarify that the EPA, or a delegated state, has the ability to include restrictions on cooling water intake structures. The current language suggests that conditions are limited to discharge standards and monitoring requirements for effluents from outfalls. (PPP-6)

Response: *Text has been added to this section to indicate that the NPDES program (as outlined in CWA, Sec. 402) also regulates the location, design, construction, and capacity of cooling water intake structures.*

Comment: Page 2-28: The dSEIS states that the New England Coalition appealed the NPDES permit amendment that was issued on March 30, 2006. It is the Department's understanding that Entergy also appealed the permit (over the denial of a thermal increase for the period May

16 through June 15). Therefore, there may be a third outcome; if Entergy wins its appeal, the thermal limits would increase for the entire summer period. In fact, this scenario is the one explicitly contemplated and evaluated by NRC staff in the SEIS (page 2-32). The FSEIS should explain why all three possibilities were not considered in the evaluation of the environmental impact of the plant. (PPP-7)

Response: *The text of Section 2.2.3.1 has been revised to reflect the fact that Entergy challenged the State's decision to restrict the 1 °F thermal discharge increase to the period June 16 through October 14. The aquatic ecology evaluation presented in this SEIS does consider the 1 °F increase for the time period May 16 through October 14 (see also Section 4.1.4). The evaluation is conservative in that it identifies potential impacts under each of three possible scenarios: (1) no temperature increase in discharge for the entire period (May 16 through October 14); (2) temperature increase in discharge for the period June 16 through October 14 only; and (3) temperature increase in discharge for the entire period (May 16 through October 14).*

Comment: Page 2-34, Table 2-6: The NPDES permit does not contain a condition regarding a maximum temperature exceedance rate for the summer period; therefore, the Department is unclear why the last column is included. (PPP-9)

Response: *The data were included in Table 2-6 because Entergy provides it in its monthly NPDES monitoring reports to the State (even though, as the commenter points out, it is not required for the summer months). However, to avoid confusion, the last column of Table 2-6 has been deleted.*

Comment: Page 2-38 [2-36]: The FSEIS should clarify that the thermistor data were not collected with the intent to "characterize the circulation and distribution of heated water," but were used to develop and calibrate a hydrothermal model, which was then used to estimate how raising the thermal limits would affect water temperatures within the LVP and at Station 3. The hydrothermal model showed that under existing conditions, the thermal plume from VY extends across the river over to New Hampshire and downstream to Vernon Dam. (PPP-10)

Response: *The sentence states that thermistor data were collected* as part of a study *to characterize the circulation and distribution of heated water. While it's true that the data were collected to calibrate a hydrothermal model, they are presented in this section to illustrate a snapshot of temperature variations with depth across Vernon Pool under "expected" summer conditions (June-July) and under low-flow conditions (August), which represent a worst-case scenario in terms of impacts to aquatic biota.*

Comment: Page 4-13, lines 17-19: The operation of downstream dams would have no effect on the water surface elevation of the Vernon impoundment. (PPP-21)

Response: *The sentence was modified to indicate that the surface elevation of the pool fluctuates as much as 8 ft due to operations at upstream dams, Vernon Dam, and runoff inflow.*

Comment: Page 4-51, lines 15-18: Regarding the discussion of solar radiation's contribution to the difference in river temperature between monitoring stations, please refer to our comments under the Water Quality section above. (PPP-37)

Comment: Page 2-32:The dSEIS refers to the equation developed decades ago to calculate the plant-induced temperature increase. While NRC staff provides a concise overview of how the model was developed, the Department recommends that the FSEIS explain why it is still appropriate to use a very old model when many conditions on the river are different than they were in the 1970s. From the Department's perspective, it would be a very useful exercise to revisit the concept and parameters that go into the equation and to validate it under present-day conditions. VY's compliance with its thermal limits is determined based on calculated temperature at Station 3, not by measured temperature. To date, any discrepancy between the two numbers has been attributed to atmospheric loading. While this may be true, Entergy has not provided any data to support that contention. (PPP-8)

Comment: NHFGD agrees with all the statements made by the U.S. Department of Interior, especially those related to water quality and entrainment/impingement. Of particular concern is the use of an equation, as stated on page 2-32 of the dSEIS, to determine the discrepancy between calculated and measured temperatures at Site 3. NHFGD notes that the Department of Interior stated on page 5 of their letter that "it would be a very useful exercise to revisit the concept and parameters that go into the equation and to validate it under present-day conditions". NHFGD recommends that water temperature data be collected much closer to the outfall, but upstream and outside of the influence of the outfall's discharge. This will provide a more accurate and precise understanding of the plant's true contribution to the thermal conditions in the Connecticut River. (OOO-1)

Response: *The NRC staff has evaluated the equation used by the applicant to calculate the plant-induced temperature increase in the river. The changes in river conditions over the past several decades have been accounted for by the applicant's 316a demonstration and model, which utilized river conditions and data collected in 2002. The equation utilized by the applicant was verified with measured data and current river conditions within this model. Although the equation utilized to calculate temperature increase in the river is old, it continues to provide a reasonable approximation of temperature increase downstream and is continually verified by river temperatures collected at Station 3 on an hourly basis. As water moves downstream, it becomes thoroughly mixed as it passes over Vernon Dam, and thus reduces the influence of VYNPS at Station 3. During the summer, the river will continue to increase in temperature primarily due to solar insolation as it continues south. With the exception of five exceedances since 2000, all less than 1 hour in duration, the applicant has been in compliance with the river temperature limits set by its NPDES permit.*

Comment: VYNPS is currently operating under a NPDES permit dated September 28, 2004 (not the permit dated June 9, 2003 referenced in the Draft Supplement 30). As such, many references to the 2003 amendment are incorrect; among them:
Table 2-1 p. 2-24, line 9 is incorrect. The 2004 permit allows 46,500 gpd not 14,000 gpd.
p. 2-27; lines 27,28
p. 2-28; lines 17, 35, 38
p. 4-14; lines 17 -21
p. 4-17;-lines 35 -36 (CCC-9)

Response: *The September 28, 2004, version of the NPDES permit has been obtained from Entergy; all recommended text changes have been made.*

Comment: As correctly noted in Supplement 30 page 2-28, an amended permit was issued on March 30, 2006 approving an increase in the thermal discharge limitations. This amended permit was temporarily stayed by the Vermont Environmental Court for the year 2006. Motions to renew the stay indefinitely have been filed with the Court, an evidentiary hearing has tentatively been set for April 10 to 13, 2007 and the matter is pending a final decision by the Court. (CCC-10)

Response: *The comment provided no new and significant information; therefore, no change was made in the SEIS in response to this comment.*

Comment: P. 2-28; line 32 mentions only NEC. The appeal was initiated by the Connecticut River Watershed Council, Trout Unlimited and the Citizens Awareness Network (referred to collectively here in as CRWC) on April 21, 2006. (CCC-11)

Response: *The sentence has been modified as follows: "In May 2006, the New England Coalition (NEC), along with the Connecticut River Watershed Council, Trout Unlimited, and the Citizens Awareness Network, appealed the NPDES permit amendment that was issued on March 30, 2006."*

Comment: Section 2.2.3, page 2-39, line 17 -18. The reported iron concentration of .425 mg/l may be inaccurate. Total zinc is reported to range up to .425 mg/I. (CCC-14)

Response: *The 0.425 mg/L value for iron was reported in error; the value should be 117 mg/L. The text has been corrected.*

Comment: In recognition of the uncertainties of the local effects of increasing climate change, so-called 'global warming', it would be prudent to place (for the period May 16-October 14) a figure on ambient river temperature (measured at up-river Station 7) ABOVE which the plant should operate in a cooling mode which would result in NO increase in the mixed river temperature measured at down-river Station 3, ABOVE the number measure at Station 7.

I believe that the State of Vermont (relative to the NPDES Permit) has proposed 85 ºF. The exact details could be worked-out between the three state's members on the Vermont Yankee"Environmental Advisory Committee" (re: NPDES Permit) and Vermont Yankee. I would note that there already is such a limit (65 °F) in effect for the winter period of October 15-May 15.

Historical data collected by Aquatec, Inc. between 1967 and 1995 have shown that ambient river temperatures rarely exceeded the low-mid 80 °F range. However, global warming could push those temperatures higher in the future. (JJJ-3)

Comment: This is issue is NOT raised in the Draft GEIS as far as I remember. But it IS an issue between the VT Agency of Natural Resources, who issues the NPDES Permit, and VY. The VT Agency wants a limit (85 °F) and VY opposes it. I agree with the Agency. I may be in error raising the issue with the NRC. (JJJ-1)

Response: *The commenter is referred to Table 2-4, which lists the discharge temperature requirements under the NPDES permit as amended March 30, 2006. In that amended permit, the VDEC included an 85 °F upper limit at downstream Station 3 during the period June 16 through October 14. While global warming may make it difficult for the applicant to meet State river temperature limits in the future, the applicant would still have to comply with the limits set in NPDES permits, and this may entail additional periods of hybrid- or closed-cycle operations of the station cooling system.*

Comment: Page 2-40, lines 6-16. It is unknown whether the UST referenced in this paragraph is the source of the PCE (chlorinated solvent) contamination. (CCC-8)

Response: *The paragraph was modifed to include the following statement: "Tetrachloroethylene (PCE), a metal degreasing agent, was also detected in this area; its source is unknown."*

Comment: In Section 2.2.2.2, p. 2-26, NRC claims that groundwater is 30 feet below surface at the south end of the site. This is deceptive and incomplete information, since that is certainly not true of the entire site, and is directly contradicted by the Battelle (1991) study cited above. The SEIS seems to repeat a pattern of bait and switch--substituting less damning information for information that would be more relevant ecologically. (RRR-9)

Response: *The text in Section 2.2.2.2 describes the variation in depth to groundwater across the site. The text has been modified to describe the occurrence of perched groundwater at different areas on the site, which ranges in depth from 8 to 16 ft at the southern portion of the site.*

Comment: The surface hydrology at the Vernon reactor shows nine of ten storm drains with no monitors for radioactive or chemical run-off into the CT. River watershed. (KKK-4; LLL-2)

Comment: You claim ENVY releases nearly no liquid effluents. In Sec. 2.2.31 of the SEIS you reveal that ENVY has 11 outflow pipes (and is requesting a permit for a 12th one) that release directly into the CT River, one for cooling water, and the others apparently from storm drains. But then your table shows that with the exception of the outfall pipe that releases cooling water, there are no radiation limits, and no monitoring required for effluents from most of the outfalls--all but two are unmonitored (SEIS section 2.2.31). (RRR-5; OO-5)

Response: *This is correct; according to the NPDES permit in effect, only the discharge at Outfall S/N 002 (Station Low Level Radioactive Liquid Waste System) is required to be monitored for radioactivity (along with pH). The permit also sets maximum annual quantities of radionuclides released and dose limits of effluents, and requires reporting of any abnormal releases. See also response to comment RRR-6.*

A.2.7 Comments Concerning Aquatic Ecology, Terrestrial Ecology, and Threatened and Endangered Species Issues

Aquatic Ecology

Comment: This is a permitting system driven by the Federal Clean Water Act and the EPA. I spearheaded the renewal of the discharge permit every five years, I also guided two combined 316A, 316B demonstrations which resulted in modification of thermal discharge temperature criteria being permitted under very specific conditions of overflow and temperature to adequately protect river biota. During my 24-year tenure, all the data collected from the river, with associated analysis and interpretation, was conducted for Vermont Yankee by the environmental consulting firm Aquatech Incorporation out of South Burlington.

Vermont Yankee and Aquatech actually began the studies pre-operationally in 1967 before I was on the scene. From day one, the early environmental program was crafted with consultant, with consultation and input from the state environmental agencies from Vermont, New Hampshire and Massachusetts. In the very early days, up to about 1972 or `73, the Atomic Energy Commission, now the NRC, you guys, was also on board in proffering the studies. The programs always remained flexible with an eye to modifications, as might be required in the future.

Incidentally, it was also in 1967 that the New England states, which host the Connecticut River, launched a long term project to attempt to restore the Atlantic Salmon to the river, along with the collaboration of the U.S. Fish and Wildlife Service. The area of the river included in the Vermont Yankee study zone extends from up river in Brattleboro where the West River enters to the

south, down river, at the old abandoned Shell Bridge at Northfield, Massachusetts. This 26-mile stretch of river is without question the most intensively and extensively studied section of the entire river.

In conclusion, my 24-year tenure, `72 to `96, in charge of the Vermont Yankee river studies, it's my professional judgement, opinion, that it has been adequately demonstrated that Vermont Yankee's impact on the ecosystem of the river has been negligible, not zero but negligible, very low, or, in the parlance of the NRC, very small. (I-1)

Response: *The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: (Pgs. 2-8, 2-9). According to the DSEIS, the authorized intake and discharge flow limit for both the open-and hybrid-cycle cooling modes is 543 mgd. The amount of water withdrawn when in hybrid-mode varies depending in part on the water temperature of the Connecticut River. The NRC concludes on page 4-17 that potential impacts from entrainment of fish and shellfish by Vermont Yankee would be "SMALL," based in part by the utilization of the closed-or hybrid-cycle mode during much of the spawning season. Since the hybrid-mode can utilize up to the same flow as open-cycle mode (360,000 gallons per minute), its use does not necessarily assure a reduction in fish entrainment mortality. The FSEIS should include historical flow data for the hybrid-cycle mode during peak periods of icthyoplankton presence in order provide a better assessment of entrainment potential as compared to closed-cycle (10,000 gpm) and open-cycle modes. It should also discuss the impacts that would result if the high end of the intake flows that are permitted were, in fact, withdrawn from the river. Of course, to the extent that those higher flows are not permitted, then impacts from them do not need to be evaluated. (VVV-2)

Comment: Page 4-17: According to the dSEIS, the authorized discharge flow limit for both the open-and hybrid-cycle cooling modes is 543 mgd. The amount of water withdrawn when in hybrid-cycle mode varies depending in part on the water temperature of the Connecticut River. NRC staff concludes that potential impacts from entrainment of fish and shellfish by VY would be "SMALL," based in part on the utilization of the closed-or hybrid-cycle mode during much of the spawning season. However, since hybrid-cycle mode can utilize up to the same flow as open-cycle mode (360,000 gallons per minute), its use does not necessarily assure a reduction in fish entrainment mortality. The FSEIS should include historical flow data for the hybrid-cycle mode during peak periods of ichthyoplankton presence in order provide a better assessment of entrainment potential as compared to closed-cycle (10,000 gpm) and open-cycle modes. (PPP-28)

Comment: (Pg. 4-16). Table 4-3 presents percentages and numbers of fish eggs and larvae entrained at Vermont Yankee. According to the DSEIS (pg. 4-15), sampling for larvae is conducted weekly from early May through mid-July. While Table 4-3 includes quantities of eggs

and larvae collected during the sampling period,. it does not provide a clear sense of the number of eggs and larvae that are actually entrained. The DSEIS does not describe the sampling procedures so it is unclear what these numbers represent. To develop representative estimates of entrainment, time and flow rates would have to be factored in with larval concentrations on a weekly basis. We recommend that the FSEIS provide total entrainment estimates for the species listed in Table 4-3. Comments related to the assessment of environmental impact from the impingement of fish and other aquatic organisms. (VVV-5)

Comment: Page 4-16, Table 4-3: The Table presents percentages and numbers of fish eggs and larvae entrained at VY. According to the dSEIS (pg. 4-15), sampling for larvae is conducted weekly from early May through mid-July. While Table 4-3 includes quantities of eggs and larvae collected during the sampling period, it does not provide a clear sense of the number of eggs and larvae that are actually entrained. The dSEIS does not describe the sampling procedures, therefore it is unclear what these numbers represent. To develop representative estimates of entrainment, time and flow rates would have to be factored in with larval concentrations on a weekly basis. The FSEIS should provide total entrainment estimates for the species listed in Table 4-3. (PPP-23)

Response: *In its March 9, 2007, letter providing comments on the draft SEIS, the VANR generally agreed with NRC's conclusion that the impacts of entrainment from VYNPS are likely to be SMALL. This is regardless of whether VYNPS is operating in a closed-, hybrid-, or closed-cycle. In part, the VANR based its conclusion on the NPDES process that includes the ongoing monitoring and review that allows VANR to adjust permit conditions regarding cooling water intake. Entergy is currently involved in a multi-year sampling program to quantify potential intake impacts on the fish community. This includes an assessment of total entrainment estimates. The results of this investigation may be submitted to the VANR and Environmental Advisory Committee (EAC), and could be used, in part, for the NPDES permitting process. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: (Pg. 4-15). The DSEIS states, "When ichythoplankton are at their peak in the Connecticut River (e.g., late spring through early summer), VYPNS is generally operating in an open-cycle or hybrid mode." However, NRC concludes on page 4-17 that potential impacts from entrainment of fish and shellfish by Vermont Yankee would be "SMALL," based in part on the utilization of the closed-or hybrid-cycle mode during much of the spawning season. These statements appear to contradict each other. If the first statement erroneously states "open-cycle" instead of the intended "closed-cycle", then the FSEIS should reflect that. If, however, the first statement is accurate, then the NRC should re-evaluate its basis for a conclusion of SMALL impact. (VVV-3)

Comment: Page 4-15, 4-17: The dSEIS states, "When ichthyoplankton are at their peak in the Connecticut River (e.g., late spring through early summer), VYNPS is generally operating in an

open-cycle or hybrid mode." However, NRC staff concludes on page 4-17 that potential impacts from entrainment of fish and shellfish by VY would be "SMALL," based in part by the utilization of the closed-or hybrid-cycle mode during much of the spawning season. These statements contradict each other. If the first statement erroneously states "open-cycle" instead of the intended "closed-cycle", then the FSEIS should reflect that. If, however, the first statement is accurate, the NRC should re-evaluate its basis for a conclusion of SMALL impact. (PPP-25)

Response: *The text in Section 4.1.2 has been changed to correct the conflicting statements mentioned in the comments. In its March 9, 2007, letter providing comments on the draft SEIS, the VANR generally agreed with NRC's conclusion that the impacts of entrainment from VYNPS are likely to be SMALL. In part, the VANR based this opinion on the NPDES process that entails ongoing monitoring and review that allows VANR to adjust permit conditions regarding cooling water intake. Entergy is currently involved in a multi-year sampling program to quantify potential intake impacts on the fish community. The results of this investigation may be submitted to the VANR and EAC, and could be used, in part, for the NPDES permitting process.*

Comment: (Pg. 4-17). The NRC's conclusion related to entrainment potential over the 20-year renewal period suggests that plant operations will continue as they have historically. According to the DSEIS (page 2-6) Vermont Yankee requested and received authorization from the NRC (authorization was granted on March 2, 2006) for a power uprate to increase the gross electrical output of the facility from 540MW to 650MW. It seems that such an increase in electrical output would result in a proportionate increase in waste heat, resulting in additional cooling water withdrawal. If so, this would lead to a corresponding increase in entrainment and impingement, and in the scope of the thermal discharge, possibly during periods when early lifestages of fish and other aquatic organisms are present in the water column. In addition, Vermont Yankee requested and received a seasonal temperature increase from VTDEC that would allow the plant to operate in the closed-cycle mode less frequently during periods when larval and juvenile fish are most vulnerable to entrainment and impingement. The FSEIS should identify and assess impacts from any new or planned modifications in plant operations that may increase impacts to aquatic organisms. (VVV-4)

Comment: Page 4-15, 4-17: The NRC's conclusion related to entrainment potential over the 20-year renewal period suggests that plant operations will continue as they have historically. However, within the last year, two significant changes to plant operations have occurred that change entrainment dynamics. First, if the power uprate results in a proportionate increase in waste heat, additional cooling water withdrawal may be needed, which, in turn, could increase entrainment. In addition, VY requested and received from the VANR a seasonal temperature increase [the amended permit has been stayed while the appeal is resolved] that would allow the plant to operate less frequently in the closed-cycle mode during periods when larval and juvenile fish are most vulnerable to entrainment and impingement. The FSEIS should fully evaluate the potential entrainment impacts of these new or planned modifications in plant operations. (PPP-26)

Response: *Under the power uprate, the rate of river water withdrawal is not affected. In fact, the cooling towers may need to be operated more often to meet thermal discharge impacts set forth in the NPDES permit. Therefore, entrainment and impingement rates would not be expected to increase. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to this comment*.

Comment: (Pg. 4-17). The DSEIS provides no specific information on the cooling water intake structure (CWIS) by which to assess its potential to impinge fish, or assess the likelihood that impinged fish are returned to the river alive and unharmed. The FSEIS should include a detailed description of the CWIS, including the intake velocities under the various operational modes, the water pressure(s) of the spray wash system used to remove fish and debris from the traveling screens, the mesh size and operation frequency of traveling screens, and the design of the fish return system. (VVV-6)

Response: *A description of the cooling water intake has been added to Section 2.1.3 and a description of intake velocities has been added to Section 4.1.3 in response to the comment.*

Comment: (Pg. 4-19). Table 4-4 provides the annual percentages and numbers of fish impinged at Vermont Yankee. The same concerns we provided above about the entrainment data provided in Table 4-3 also apply to the impingement data. While impingement is more difficult to estimate than entrainment given the sporadic nature of impingement events, impingement at a particular location is still largely a function of flow, intake flow velocity, and the unique characteristics of the CWIS. We recommend that the FSEIS provide more information on how many of each species may be impinged in a given year. In addition, an assessment of the fish return system should be included that describes the system's ability to return impinged fish to the river uninjured. (VVV-7)

Response: *VYNPS does not have a fish return system for impinged fish. Nevertheless, impingement losses are low. For example, impingement of Atlantic salmon and American shad has not exceeded yearly limits set by the VANR. In its March 9, 2007, letter providing comments on the draft SEIS, the VANR generally agreed with NRC's conclusion that the impacts of impingement from VYNPS are likely to be SMALL. In part, the VANR based this opinion on the NPDES process that entails ongoing monitoring and review that allows VANR to adjust permit conditions regarding cooling water intake. Entergy is currently involved in a multi-year sampling program to quantify potential intake impacts on the fish community. This includes an assessment to more accurately quantify yearly impingement losses. The results of this investigation may be submitted to the VANR and EAC, and could be used, in part, for the NPDES permitting process. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: (Pg 4-20). This section of the DSEIS provides a discussion of some potential environmental impacts associated with the discharge of heated effluent. As we have

commented to the NRC in other EIS reviews, the use of the term “heat shock” implies a fairly limited scope of review for a pollutant (i.e., heat) that can affect aquatic organisms and their habitats in many ways other than “shock.” We recommend that the discussion in FSEIS on this subject be expanded to address heat’s less conspicuous ability to: 1) prevent the use of affected areas by temperature-sensitive species; 2) attract and expose organisms to areas of elevated temperature during spawning periods; and 3) expose eggs and larvae to water temperatures above levels that are optimal for the affected species and life stage or would be typical in the absence of the thermal discharge. (VVV-8; PPP-33)

Response: *With the exception of heat shock, the GEIS concluded that impacts from thermal discharges from power plants are SMALL and are considered Category 1 issues not requiring a site-specific analysis (see Section 4.1 of the SEIS). Heat shock, a Category 2 issue requiring a site-specific analysis, is evaluated in Section 4.1.4. The NRC staff did provide additional information on thermal effects to migratory fishes in Section 4.7.2 and Appendix E. The NRC staff concluded that there was no new and significant information beyond that considered in the GEIS; therefore, no changes were made to the SEIS in response to this comment.*

Comment: (Pg. 4-50). While the DSEIS provides some discussion of the thermal plume’s potential to restrict migration of Atlantic salmon and American shad, the fact that fish are passing upstream at the Vernon Dam does not, in itself, demonstrate that migration has not been impeded by elevated temperatures caused by the plant. It’s unclear how a delay in upstream migration may ultimately affect the spawning success of American shad or Atlantic salmon, but these species have not been able to re-establish themselves in the Connecticut River basin. There are multiple stressors contributing to their low numbers, and any additional stressors can only further delay the rebuilding of their stocks. We recommend that the FSEIS provide more discussion on the status of these important fish populations, and provide a range of alternatives for Vermont Yankee to further reduce impacts to these species. (VVV-9)

Comment: (Pg. 4-21). The DSEIS focuses on potential thermal impacts to the Vernon Pool, in particular the Lower Vernon Pool, but there is very little information about thermal impacts to habitat below the Vernon Dam. The FSEIS should include temperature data that graphically depicts the spatial extent of the thermal plume below the Vernon Dam, and its behavior within the water column, under various seasonal and flow conditions. This information would provide a sense of when and how much habitat may be unsuitable to certain species less tolerant of heat. (VVV-10)

Response: *The NRC staff provides a comprehensive evaluation of the migration of anadromous fish species in the Connecticut River in Sections 4.1.4 and 4.7.2 of the SEIS and concludes that the impacts of continued operation on these species would be SMALL. Any impacts would not result in detectable changes to anadromous fish stocks. The NRC staff acknowledges that thermal discharges from VYNPS may result in some slight incidental stress to certain species, but such stress would be inconsequential when compared to other stresses*

due to human activities on the Connecticut River. The EPA has delegated the responsibility for compliance with Section 316(a) of the CWA to the VANR. Therefore, compliance with this regulation is the responsibility of the state of Vermont. The NRC's regulatory jurisdiction is limited to the characterization of impacts in accordance with NEPA. The NRC does not have the regulatory authority to require VYNPS compliance with the requirements of the CWA. The need to mitigate impacts on aquatic resources due to thermal discharges from VYNPS is subject to a determination by the State under Section 316(a) of the CWA, and could become a condition of future NPDES permitting. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: Page 4-20, lines 5-15: NRC staff asserts that VY operates in closed-or hybrid-cycle modes during much of the year. The Department recommends that the FSEIS provide supporting information showing, on an annual basis, the percentage of time that VY operates in each mode. The NRC's conclusion related to impingement potential over the 20-year renewal period suggests that plant operations will continue as they have historically. However, the two significant changes to plant operations referred to above (i.e., the uprate and thermal increase) could change impingement dynamics. The FSEIS should fully evaluate the potential fish impingement impacts of these new or planned modifications in plant operations. (PPP-32)

Comment: Page 4-50, lines 26-30: NRC staff concludes that because impingement of shad and salmon has always been below annual limits stipulated in the NPDES permit, these species do not frequent the LVP [Lower Vernon Pool]; therefore, VY's thermal plume does not delay shad or salmon movements or function as an attraction to these species. First, as noted above, in 2005, the number of shad impinged greatly exceeded the number collected by seining and electroshocking. A conservative conclusion that could be drawn from this information is that shad production in the LVP is low to begin with, and many of those juveniles end up impinged on the traveling screens. Second, salmon and shad must frequent the LVP in order to migrate downstream. Third, no information provided in the dSEIS supports the contention that VY does not delay shad or salmon movements; those data simply do not exist for shad under the present thermal limits. Moreover, salmon smolt studies show a longer maximum residency time at Vernon than at Wilder or Bellows Falls Dams [Table 5-23 of the Section 316(a) Demonstration in Support of a Request for Increased Discharge Temperature Limits at Vermont Yankee Nuclear Power Station during May through October, Normandeau Associates, April 2004], which could lead one to conclude that VY is a contributing factor to migration delay. In order to sort out whether, and to what extent, Vernon and VY each contribute to migration delay, a rigorous scientific study designed specifically to address the issue is needed.

While we know that shad are able to ascend the Vernon fish ladder, we do not know if they are delayed at the entrance due to any temperature differential, or in the LVP as they migrate upstream to spawn. We also do not know whether temperatures in the LVP affect spawning success. The trend analysis referred to above [Table 5-23 of the Section 316(a) Demonstration in Support of a Request for Increased Discharge Temperature Limits at Vermont Yankee

Nuclear Power Station during May through October, Normandeau Associates, April 2004], showed declining juvenile shad abundance, which could be attributed to one or more factors, possibly including the thermal regime of the LVP. Directed studies like those done during Project SHARE have not been undertaken since the most recent thermal limits went into effect. (PPP-35)

Response: *The results of fish investigations that have been done over the years at VYNPS (including 36 annual reports and three Section 316 Demonstrations) have been reviewed by the VANR. The VANR is responsible for the NPDES permit, and the EAC reviews and evaluates the environmental monitoring and studies program at VYNPS. These reviewed reports and demonstrations have shown the fish community in the vicinity of VYNPS (including migratory species) to be healthy and relatively stable. In its March 9, 2007, letter providing comments on the draft SEIS, the VANR generally agreed with NRC's conclusion that the impacts of the thermal discharge, impingement, and entrainment from VYNPS are likely to be SMALL. In part, the VANR based this opinion on the NPDES process that entails ongoing monitoring and review that allows VANR to adjust permit conditions regarding intake and thermal discharges. Entergy is currently involved in a multi-year sampling program to quantify potential intake impacts on the fish community, including American shad and Atlantic salmon. The results of this investigation may be submitted to the VANR and EAC, and could be used, in part, for the NPDES permitting process. Under the power uprate, the rate of river water withdrawal is not affected. Therefore, entrainment and impingement rates would not be expected to increase. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

Comment: Another issue the Department recommends the FSEIS investigate is the geographic extent of VY's influence on water temperature. Presently, the thermal effluent is considered "fully mixed" at Station 3, for the purposes of the NPDES permit. However, at that point the water temperature is still up to 2°F higher than ambient. In order to fully understand the impact VY's thermal effluent has on the aquatic community of the Connecticut River, resource agencies need to know how far downstream the raised river temperature extends. This is especially pertinent to Atlantic salmon smolts, that could be adversely impacted by extended periods at elevated temperatures. (PPP-11)

Comment: Another example of misleading information is your conclusion regarding "Heat Shock" of native fish populations, when COLD SHOCK is the more relevant concern for juvenile shad prevented from downstream passage by the heat plume which covers the downstream passage entrance, and which may stay in the Vernon pool later in the season because their normal thermal signals are disrupted by ENVY's waste heat. Then when they do head south to the ocean, they will be met with unaccustomed colder water due to the late migration. This is when many will die from cold shock. It appears the NRC did not evaluate any data that might elucidate this potential problem, it was merely mentioned and dismissed. The impact on federally endangered shortnosed sturgeon in the areas below the Turners Falls Dam where they

are known to habituate, where a thermal influence from ENVY may still be detectable (no data to the contrary was presented in the SEIS), was likewise not evaluated by USFWS or NRC, it was simply dismissed with a pro forma letter. This is not an environmental impact assessment, it is an exercise in guesswork and passing the buck. What is the effect of the thermal plume on benthic biota? No mention in the SEIS. (RRR-10)

Response: *The comments refer to the Category 1 issue related to thermal plume barriers to migratory fish species, premature emergence of aquatic insects, and the distribution of aquatic organisms in the receiving waters. The NRC staff evaluated the information provided to determine if it represents new and significant information related to these three issues.*

Section 4.7.2 discusses the potential effects of the thermal discharge from VYNPS on out-migrating anadromous fish species. The NRC staff concluded that it is unlikely that a thermal discharge plume that partially extends across the river would result in an impact to juveniles moving downstream.

Although the thermal plume due to VYNPS operations extends some distance downstream of Vernon Dam, it is quickly masked by heat loading to the river from solar insolation and from inflows from river tributaries. Fish are mobile and seek out optimal conditions and avoid harmful temperatures. Shortnose sturgeon are likewise unlikely to be affected by any small river temperature increase in Holyoke Pool (the upstream portion of Holyoke Pool is located more than 20 river mi downstream of the Vernon Dam).

The surface plume discharge from VYNPS would have no effect on benthic organisms inhabiting Vernon Pool. The heated water is buoyant and typically remains near the surface. The slight increase in temperature experienced by benthic organisms below Vernon Dam is well within the temperature tolerance of organisms inhabiting the river. The monitoring of benthic organisms over many years has shown no detectable population changes.

The NRC staff concludes that the comments provide no new and significant information related to impacts of Category 1 issues of thermal plume barriers on migratory fish, premature emergence of aquatic insects, or the distribution of aquatic organisms beyond those discussed in the GEIS. Therefore, no changes were made to the SEIS in response to these comments.

Comment: Page 2-47, lines 3-4: The dSEIS states that fish are routinely sampled as part ofthe NPDES monitoring requirements, and that samples are collected by electroshocking in May, June, September and October. The FSEIS should note that in addition to the resident fish collections, American shad are sampled downstream of Vernon Dam by electroshocking and upstream of Vernon Dam by beach seine hauls, from July through October. (PPP-12)

Response: *The text in Section 2.2.5.1 has been changed to reflect information provided in the comment.*

Comment: Page 2-47, lines 6-35: This section summarizes the species assemblage at VY for the pre-operational period and for the period 1991-2004. Based on this information, NRC staff concludes that "The fish community near the VYNPS has remained relatively stable...," yet the two communities compared are quite disparate:

Period	
Pre-Operational[(a)]	1991-2004[(b)]
smallmouth bass	yellow perch
white sucker	bluegill
yellow perch	pumpkinseed
rock bass	spottail shiner
walleye	largemouth bass
white perch	white sucker

(a) assumed decreasing abundance
(b) identified in decreasing abundance

As part of the 316(a) process, the FWS recommended that VY analyze the entire long-term fisheries data set; however, VY declined to use data prior to 1991 for its statistical analyses. While some indication of change to the fish communities upstream and downstream of Vernon Dam can be ascertained by comparing the percent composition of selected species over time (Figures 1and 2, below),[(a)] the full extent of VY's thermal effluent impact cannot be determined until a thorough evaluation of the entire data set is conducted, including pre-operational data and data collected under different permit limits. (PPP-13)

Comment: Page 4-51, lines 10-12: The dSEIS concludes that none of the observed changes in fish community composition or distribution in over 30 years of study in the LVP and upper Turners Falls Pool can be reasonably attributed to operations of VY. Based on the available information, the Department does not agree that the conclusion can be made that the changes to the fish community structure upstream and downstream of Vernon Dam since VY began operating [Table 5-14 of the Section 316(a) Demonstration in Support of a Request for Increased Discharge Temperature Limits at Vermont Yankee Nuclear Power Station during May through October, Normandeau Associates, April 2004] or the recent declining trends in several fish species [Ecological Studies of the Connecticut River, Vernon, Vermont, Report 35, January-December 2005, DRAFT, May 2006, Normandeau Associates] are not, at least in part, due to impacts caused by VY's impingement, entrainment, and/or thermal effluent. The FSEIS should provide documentation to support NRC staff's conclusion. (PPP-36)

(a) See letter from the Department of the Interior (Accession No. ML070730154) for Figures 1 and 2.

Response: *Changes in the fish community observed in over 30 years of extensive surveys at VYNPS are due to a number of factors. Early studies involved a number of netting and trapping techniques, whereas current collections primarily involve electroshocking at reduced frequency of sampling. The use of different sampling gear on the same body of water will result in differences in the occurrence and abundance of fish taken. Changes in fish communities have also occurred due to the addition to fish passage facilities at the dams and due to introductions (accidental or intentional) of various fish species to the river. These changes can cause variations in fish community composition that are independent of any impacts of VYNPS operations. Section 2.2.5 has been changed to reflect these influences. The results of fish investigations that have been done over the years at VYNPS (including 36 annual reports and three Section 316 Demonstrations) have been reviewed by the VANR, which is responsible for the NPDES permit, and the EAC, which reviews and evaluates the environmental monitoring and studies program at VYNPS. These reviewed reports and demonstrations have shown the fish community in the vicinity of VYNPS to be healthy and relatively stable. Nevertheless, Entergy has initiated a multi-year sampling program to quantify potential intake impacts on the fish community. The results of this investigation may be submitted to the VANR and EAC, and could be used, in part, for the NPDES permitting process. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

Comment: Page 2-50, lines 22-23: The citation used for optimal temperature range of salmon smolts appears to be based on somewhat dated references, with the most recent being Shepherd 1991. The FSEIS should consider more recent research that shows a relationship between temperature and smolt physiology (McCormick et al. 1999) and temperature and smolt behavior (Barbin Zydlewski el al. 2005). These studies relate directly to potential impacts of VY's thermal effluent on smolt physiology. Higher water temperature increases the degree days experienced by smolts, which narrows the smolt window (the opportunity for smolts to successfully migrate to the estuary while they still retain their salinity tolerance). In addition, as the dSEIS points out, dams can delay migrating smolts. Given the extent of VY's thermal plume and its proximity to Vernon Dam and the downstream bypass facility, it is highly likely that the two projects, in combination, act to adversely affect smolt behavior and physiology (although the extent to which this impacts smolt survival has not been documented, to date). (PPP-14)

Response: *The citation for optimal temperature range for Atlantic salmon smolts has been updated in Section 2.2.5. Appendix E provides a discussion of potential thermal effects on smolt physiology. It should be mentioned that even if smolts originating from upstream portions of the Connecticut River lose their salinity tolerance (undergo desmoltification) due to delays in downstream passage (due principally to delays in multiple dam passage and distance of migration) and, therefore, remain in the river, they can successfully undergo smoltification the following year. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: Page 2-50, lines 33-35: Although adult Atlantic salmon returns had declined to less than 100 prior to 2005, the returns for 2005 and 2006 were 186 and 211, respectively [http://www.fws.gov/v5crc/fish/daily.html]. (PPP-15)

Response: *Section 2.2.5.1 has been changed to reflect 2005 and 2006 Atlantic salmon returns.*

Comment: Page 2-51, lines 7-14: Given that downstream bypass facilities at hydroelectric projects on the river have only improved over time, presumably reducing turbine mortality, it does not appear that citing turbine mortality as a factor for declining American shad returns is accurate. Likewise, while the increase in the Connecticut River striped bass stock is a valid concern, no real habitat modifications to the impoundments have occurred in the past two decades. The FSEIS should either delete the reference to predation pressure in the impoundments or provide documentation to support the contention. (PPP-16)

Response: *The American shad has been in decline throughout the East Coast coincident with the significant increase in the striped bass population. Research is ongoing to determine if there is a relationship between the abundance of the two fish stocks. Although most information available at the present time is anecdotal, experts generally accept that there is a predator-prey relationship between the two species; however, that relationship needs to be quantified. The text of Section 2.2.5 has been changed to more thoroughly discuss factors that may be contributing to American shad decreases throughout its range and within the Connecticut River*.

Comment: Page 2-51, lines 20-25: In addition to the passage problems noted for the Cabot (Turners Falls) fish ladder, the FSEIS should identify that a second passage problem exists at the Gatehouse fishway (located at the upstream end of the hydropower canal). Efforts are underway to correct both issues. With respect to passage efficiency between hydro projects, from 2004-2006, 17 percent of the shad that passed Turners Falls Dam also passed Vernon Dam [2006 data are still preliminary]. (PPP-17)

Response: *The text in Section 2.2.5.1 has been revised in response to the information provided in the comment.*

Comment: Page 2-51, lines 25-29: The Department does not dispute the changes noted to the population structure of American shad on the Connecticut River. However, ascribing these changes solely to the implementation of fish passage facilities is not appropriate. The Department is aware of studies on other rivers without large dams or fish passage facilities that have shown similar changes in the structure of river herring stocks [Justin Davis, presentation at the Connecticut River Atlantic Salmon Commission Research Forum, February 16, 2007]. (PPP-18)

Response: *The discussion of the American shad in Section 2.2.5.1 has been revised to more clearly indicate that various factors have adversely affected the American shad throughout its range. Nevertheless, dams within the Connecticut River do have a major influence on the distribution and abundance of the American shad within the river.*

Comment: Page 2-55, lines 9-11: This statement requires clarification. While American eel are common in many rivers and streams in Massachusetts and Connecticut, there are some notable exceptions; no eels have been collected recently upstream of the third dam (Shepaug) on the Housatonic River in Connecticut, and no eels have been collected recently in the Massachusetts portion of the Blackstone watershed. (PPP-19)

Response: *The text in Section 2.2.5.1 of this SEIS has been changed based on the information provided in the comment.*

Comment: Pages 4-14, 4-15: NRC staff provides a clear, concise summary of the 316(b) statutory requirements. However, since the dSEIS was issued, new developments have occurred (detailed below) that the FSEIS should address.

On January 26, 2007, the U.S. Second Circuit Court of Appeals ruled on a lawsuit Waterkeeper Alliance and other parties filed against the EPA over the Phase II 316(b) regulations issued in 2004. In its decision, the court remanded to EPA the provision establishing Best Technology Available and the site-specific cost-cost variance. The court remanded based on impermissible constructions of the statute, including those provisions that (1) set performance standards as ranges without requiring facilities to achieve the greatest reduction of adverse impacts they can; (2) allow compliance through restoration measures; and, (3) authorize a site-specific cost-benefit variance [Riverkeeper, Inc., et al. vs. U.S. EPA, United States Court of Appeal for the Second Circuit, January 26, 2007].

VY has cooling towers but is only required to use them in order to meet the thermal limits specified in the NPDES permit. As part of the long-term biological monitoring that has been required at the plant, impingement and ichthyoplankton samples are collected annually during the summer period to document the extent of impingement and entrainment at the intake. Under the existing NPDES permit, there are no limits on impingement and entrainment rates of resident fish, but there are limits set for Atlantic salmon and American shad.

Given that VY has always had cooling towers, which is commonly accepted as the Best Technology Available (BTA), the Department recommends that the FSEIS give thorough consideration to an alternative that requires Entergy to operate VY in closed-cycle mode year-round. The Department's position is that this alternative would meet the statutory standard of "minimizing adverse environmental impact" pursuant to 316(b). (PPP-22)

Response: *There have been further developments related to EPA's Phase II regulations since the submission of the above comment. As a result of the 2nd Circuit Court ruling, EPA has suspended the Phase II rule, effective July 09, 2007 (72 FR 37107). The summary of 316(b) Phase II requirements has been modified in Section 4.1.2. The responsibility for compliance with Section 316(b) of the CWA has been delegated to the VANR. Therefore, compliance with this regulation is the responsibility of the state of Vermont. The NRC's regulatory jurisdiction is limited to the characterization of impacts in accordance with NEPA. The NRC does not have the regulatory authority to require VYNPS compliance with the requirements of the CWA. The need to operate under a closed system to mitigate impacts on aquatic resources is subject to a determination by the State under Section 316(b) of the CWA and could become a condition of future NPDES permitting. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: Page 4-17, lines 11-13: Although Entergy believes no observable adverse impacts to any fish species or to the overall fish community of Vernon Pool due to entrainment by VY has been demonstrated, the fact remains that Figures 1 and 2[(a)] above show a decline in the percent composition of white sucker and white perch in the LVP, and both of these species do show up in entrainment collections. Whether this relationship is causal or coincident is unknown. (PPP-24)

Response: *Changes in the fish community observed in over 30 years of extensive surveys at VYNPS are due to a number of factors. Early studies near VYNPS involved a number of netting and trapping techniques whereas current collections primarily involve electroshocking at reduced levels of collection. Collection techniques introduce bias in sampling that affects assessment of both species composition and abundance. Changes in fish communities over time have also occurred due to the addition to fish passage facilities at the dams and due to introductions (accidental or intentional) of various fish species to the river. These changes can cause variations if fish community composition that are independent of any impacts of VYNPS operations. Section 2.2.5 has been changed to reflect these influences. The results of fish investigations that have been done over the years at VYNPS (including 36 annual reports and three Section 316 Demonstrations) have been reviewed by the VANR, which is responsible for the NPDES permit, and the EAC, which reviews and evaluates the environmental monitoring and studies program at VYNPS. These reviewed reports and demonstrations have shown the fish community in the vicinity of VYNPS to be healthy and relatively stable.*

In its March 9, 2007, letter providing comments on the draft SEIS, the VANR generally agreed with NRC's conclusion that the impacts of entrainment from VYNPS are likely to be SMALL. In part, the VANR based this opinion on the NPDES process that entails ongoing monitoring and review that allows VANR to adjust permit conditions regarding cooling water intake. Entergy is

(a) See letter from the Department of the Interior (Accession No. ML070730154) for Figures 1 and 2.

currently involved in a multi-year sampling program to quantify potential intake impacts on the fish community. The results of this investigation may be submitted to the VANR and EAC, and could be used, in part, for the NPDES permitting process.

Comment: Page 4-17: The dSEIS provides no specific information on the cooling water intake structure (CWIS) to use in assessing its potential to impinge fish, or in assessing the likelihood that impinged fish are returned to the river alive and unharmed. The FSEIS should include a detailed description of the CWIS, including the intake velocities under the various operational modes, the water pressure(s) of the spray wash system used to remove fish and debris from the traveling screens, the mesh size and operation frequency of traveling screens, and the design of the fish return system. (PPP-27)

Response: *A description of the cooling water intake has been added to Section 2.1.3 and a description of intake velocities has been added to Section 4.1.3 in response to the comment. VYNPS does not have a fish return system; therefore, impingement mortality is assumed to be 100 percent.*

Comment: Page 4-18, lines 25-42: NRC staff provides impingement data from the 1970s and 1980s in numbers of fish impinged per day. For later data, the number reported is apparently total number collected. This method of reporting is confusing and makes it difficult to compare data sets. The FSEIS should standardize units and note any differences in sampling methodology between time periods. (PPP-29)

Comment: Page 4-20, lines 5-15: The NPDES permit calls for weekly and 24-hour sampling. On the first day, the traveling screens are backwashed and the debris is examined for salmon and shad only. This provides the quantity of shad and salmon impinged during the previous six days. [The inherent assumption is that all impinged fish stay on the traveling screens and are not passively or actively (e.g., predation) removed prior to sampling.] Then, 24 hours later, the process is repeated, except the debris is examined for all impinged fish [Ecological Studies of the Connecticut River, Vernon, Vermont, Report 35, January-December 2005, DRAFT. May 2006, Normandeau Associates]. In the most recent draft biological monitoring report, [Ecological Studies of the Connecticut River, Vernon, Vermont, Report 35, January-December 2005, DRAFT, May 2006, Normandeau Associates] during the summer period over 2,000 fish were impinged, with a total weight of over 65 kg. This number represents approximately 21 days of sampling (or less than 6 percent of a year). In comparison, only 376 fish were sampled via electrofishing during that same period (335 upstream of Vernon Dam). American shad had the highest impingement rate (577), yet no shad were collected in the general electrofishing sample upstream of Vernon Dam, and only 120 were caught in the beach seining conducted specifically for American shad [Vermont Yankee/Connecticut River System, Analytical Bulletin 83: Abundance of Juvenile American Shad in the Vernon Pool during 2005, May 2006, Normandeau Associates]. The report contains a scatter plot of juvenile American shad

abundance for the period 1991 through 2005, showing a statistically significant negative trend (i.e., decreasing shad stock). Impingement of shad could be a contributing factor in the stock decline. (PPP-31)

Response: *The impingement samples collected during the 1970s and most of the 1980s were primarily 24-hour collections made to assess impingement losses due to open-cycle and hybrid-cycle operations. Therefore, data were available for discrete single-day samples. Starting about 1988, impingement sampling requirements set forth in the NPDES permit required impingement samples to be collected weekly from April 1 through June 15 and from August 1 through October 31. Prior to the start of a weekly sample, the intake screens are backwashed and the debris checked for American shad and Atlantic salmon. On the following day, the screens are backwashed and all fish are identified, counted, measured, and weighed. Thus, for total fish analyses, there are about 23 impingement samples collected per year; whereas, a total census is obtained for American shad and Atlantic salmon. From Table 4-4 in the SEIS, it can be seen that the number of outmigrating American shad is very low and has never exceeded limits established in the NPDES permit.*

The results of fish investigations that have been done over the years at VYNPS (including 36 annual reports and three Section 316 Demonstrations) have been reviewed by the VANR, which is responsible for the NPDES permit, and the EAC, which reviews and evaluates the environmental monitoring and studies program at VYNPS. These reviewed reports and demonstrations have shown the fish community in the vicinity of VYNPS (including migratory species) to be healthy and relatively stable. In its March 9, 2007, letter providing comments on the draft SEIS, the VANR generally agreed with NRC's conclusion that the impacts of impingement from VYNPS are likely to be SMALL. In part, the VANR based this opinion on the NPDES process that entails ongoing monitoring and review that allows VANR to adjust permit conditions regarding intake and thermal discharges. Entergy is currently involved in a multi-year sampling program to quantify potential intake impacts on the fish community, including American shad. This will include estimates of equivalent losses of adult American shad due to impingement losses of outmigrating juveniles. The results of this investigation may be submitted to the VANR and EAC, and could be used, in part, for the NPDES permitting process. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: Page 4-19, Table 4-4: This Table provides the percentages and numbers of fish impinged at VY during the summer period. It is unclear why data are combined for years 1988 and 1990-1997. It would be more helpful to include the information for each individual year. Under the current NPDES permit, no impingement monitoring is required during the winter period, which makes it impossible to determine annual impingement rates. Unlike ichthyoplankton entrainment, which is fairly discreet in its periodicity, impingement could occur year-round. In fact, impingement during the winter period may be higher than during the summer, if the heated effluent acts to attract resident species such as yellow perch. (PPP-30)

Response: *Data are combined for years 1988 and 1990–1997 in Table 4-4 of the SEIS for simplification of the table and because of the way in which the data were summarized by the applicant. Detailed analysis of the data is unnecessary because of the consistently low daily impingement rates. The 685 impingement samples collected for the initial 316 Demonstration were made between early September to early June, with many collected during the winter months. The daily impingement totals were only 23 fish/day (0.55 lb/day). Therefore, even if the thermal discharge was attracting resident fish during winter, it was not apparently resulting in high impingement losses. The text of Section 4.1.3 has been revised to indicate the months during which the initial 316 Demonstration impingement samples were collected. The NRC staff recognizes that VANR could, through requirements in the NPDES permitting process, require year-round impingement sampling. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: Page 4-50, lines 12-21: The dSEIS identifies an upper feeding limit for salmon of 72.5°F, an upper limit for survival of 82°F, and a smolt residency time of 12 hours. First, neither of the temperatures referenced relates to salmon smolts. The upper feeding limit mentioned is for parr, and the survival limit is for adults. Little, if any, information exists on temperature thresholds of smolts. However, as mentioned previously, recent research has shown a relationship between temperature and smolt physiology and temperature and smolt behavior. Second, the radiotelemetry studies done by Aquatec were conducted prior to the most recent thermal limits going into effect. The conclusions reached may or may not be valid under present-day conditions. Third, the 12-hour residency time is an average, and some smolts had residency times of up to 3 1/2 days [Table 5-23 of the Section 316(a) Demonstration in Support of a Request for Increased Discharge Temperature Limits at Vermont Yankee Nuclear Power Station during May through October, Normandeau Associates, April 2004].

The radiotelemetry studies conducted in the 1990s were intended to assess the efficiency of the downstream bypass facility at Vernon Dam, not to evaluate the thermal impact of VY on smolt behavior or physiology. Smolts are surface-oriented, and while they may indeed sound down to avoid the warmest water in the LVP, no data exist to support that presumption. Unfortunately, the configuration of the two projects (Vernon and VY) presents a worst-case scenario for smolts (and shad) because the fishways are located on the same side of the river as VY's discharge and the plume extends across the river. Whether migrants travel through the plume (the most direct route, but warmest water), or negotiate a path around the plume (cooler water, but longer residency time), ultimately they are exposed to elevated temperatures that could influence their survival. (PPP-34)

Comment: Page 4-51, lines 23-28: The dSEIS focuses on potential thermal impacts to the Vernon Pool, in particular the LVP, but there is very little information about thermal impacts to habitat below the Vernon Dam. The FSEIS should include temperature data that graphically

depict the spatial extent of the thermal plume below the Vernon Dam under various seasonal and flow conditions. This information would provide a sense of when and how much habitat may be unsuitable to certain species less tolerant of heat.

The dSEIS states that no observable adverse impacts to any fish species or to the overall fish community of Vernon Pool due to thermal discharges from VY have been demonstrated. Again, the most recent biological monitoring report, the first to include a long-term trend analysis, shows statistically-significant declining catch-per-unit-effort for three species, including American shad in the LVP, walleye in the Vernon tailrace, and white sucker both upstream and downstream of Vernon Dam. The Department is concerned by these results, and does not concur with the reasons put forth by Entergy that attribute the declines to factors other than VY. [Entergy's consultant argues that catch per unit effort (CPUE) of shad and white sucker upstream of VY's thermal influence also declined; therefore, the trend cannot be attributed to VY. However, this rationale assumes that fish do not move between the two areas, which is not a reasonable assumption, given these species' mobility.] At a minimum, these data highlight the need for a more detailed investigation of possible causes for the declines. (PPP-38)

Comment: Page 4-54, lines 16-19: The dSEIS states that VY impacts are localized and have a minimal contribution to the cumulative impact on aquatic resources in the Connecticut River. The Department respectfully disagrees, especially with regard to Atlantic salmon. Roughly 70 percent of all salmon-rearing habitat in the watershed is located upstream of VY, and that habitat produces nearly 60 percent of the system's smolts [Jay McMenemy, personal communication; smolt production based on a five-year average (range 55.6-67.4)], which must pass through VY. Research has shown that higher water temperature increases the degree days experienced by smolts, which narrows the smolt window (the opportunity for smolts to successfully migrate to the estuary while they still retain their salinity tolerance). VY's thermal effluent and the location of the discharge within the Vernon impoundment could contribute significantly to the cumulative impact on Atlantic salmon smolts migrating from upstream tributaries. If exposure to elevated temperatures at VY contributes to a reduction in at-sea survival of post-smolts, fewer adults may return to the river.

The dSEIS notes that "if a resource is regionally declining or imperiled, even a SMALL individual impact could be important if it contributes to or accelerates the overall resource decline." NRC staff goes on to conclude that the cumulative impact of continued operation of VY would be SMALL and no additional mitigation is warranted. The Department does not agree that the cumulative impact would be SMALL. However, even if the impact was SMALL, the fact that the resource (e.g., American shad, blueback herring) is declining argues strongly for mitigation measures. In this instance, the obvious mitigation would be to require VY to operate in closed-cycle mode year-round, which would greatly reduce impacts associated with impingement, entrainment and thermal effluent. (PPP-39)

Comment: Massachusetts Commonwealth efforts to reestablish Salmon spawning in the watershed are likely to be damaged by operations at the Vernon reactor. (KKK-5; LLL-3)

Response: *The results of fish investigations conducted over the years at VYNPS (including 36 annual reports and three Section 316 Demonstrations) have been reviewed by the VANR, which is responsible for the NPDES permit, and the EAC, which reviews and evaluates the environmental monitoring and studies program at VYNPS. These reviewed reports and demonstrations have shown the fish community in the vicinity of VYNPS (including migratory species) to be healthy and relatively stable. In its March 9, 2007, letter providing comments on the draft SEIS, the VANR generally agreed with NRC's conclusion that the impacts of thermal discharges from VYNPS are likely to be SMALL. In part, the VANR based this opinion on the NPDES process that entails ongoing monitoring and review that allows VANR to adjust permit conditions regarding intake and thermal discharges. Entergy is currently involved in a multi-year sampling program to quantify potential impacts on the fish community, including Atlantic salmon and other migratory species. A preliminary review by the NRC staff of the data collected for this multi-year study supports previous conclusions that the impact of the operation of VYNPS on fish species in the Connecticut River is SMALL. The results of this investigation may be submitted to the VANR and EAC, and could be used, in part, for the NPDES permitting process.*

Appendix E provides a discussion of potential thermal effects on smolt physiology. It should be mentioned that even if smolts originating from upstream portions of the Connecticut River lose their salinity tolerance (i.e., undergo desmoltification) due to delays in downstream passage, they can successfully undergo smoltification the following year. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: Another error on p. 2-85., regarding consultation with appropriate federal and state agencies, required under NEPA: You neglected to consult with the US Geological Survey, which provides ongoing scientific study of the river's chemistry, physical parameters and biota and cooperates in research at the Conte Anadromous fish Research Station in Tuimers Falls, MA. This is a serious oversight, as Shad and Short-nosed Sturgeon research are ongoing by USGS scientists and years of data on temperature ranges and their normal range of variation are available there. Please remedy this oversight in the final SEIS. (RRR-11)

Response: *Consultation with the U.S. Geological Survey (USGS) is not required under NEPA. Nevertheless, the NRC staff did visit the USGS S.O. Conte Anadromous Fish Research Center to discuss the anadromous fish restoration efforts underway in the river and to obtain the opinions of its staff on the potential influences of VYNPS operations (e.g., thermal discharges) relative to other influences (e.g., fish passage impacts at the dams) in the river. In response to the comment, the USGS has been added to the list of organizations contacted in Appendix D.*

Comment: The VANR generally agrees with the NRC conclusions regarding the Environmental Impacts of Operation set forth in Section 4 of the Draft Supplement 30. For example, the NRC appropriately examined the potential impacts to threatened and endangered species in proximity to the project site. VANR believes that assessing the potential impacts associated with the cooling water operations over the life of the license is difficult, given the number of variables and the dynamic nature of the affected ecosystems. However, because the Clean Water Act (CWA) requires that the discharge and the cooling water operations and structures comply with stringent standards which assure the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife; VANR concurs with the NRC conclusion that the impacts of the thermal discharge and fish impingement and entrainment is likely to be small. This is true, in large part, because the process associated with the NPDES permit is iterative in that it entails ongoing monitoring and review, and allows VANR to adjust the permit conditions regarding the cooling system operations and thermal regime. As noted by the NRC, VANR "may impose further restrictions or require modifications to the cooling system," as well as to the thermal regime to reduce or eliminate any impacts, in accordance with the CWA. The applicable state and federal standards under the CWA are protective of water quality and the environment, and the permit must be renewed every five years. (CCC-7)

Response: *The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: Page 2-54. Also, it is worth noting that the sea lamprey has been extirpated from Vermont and from the Connecticut River. (CCC-13)

Response: *As discussed in Section 2.2.5.1, the sea lamprey was extirpated from Vermont two centuries ago. However, once fish passages were added to the mainstream dams on the Connecticut River, the sea lamprey became re-established in the river and now occurs as far upstream as Wilder Dam. In 2006, nearly 2900 sea lamprey passed Vernon Dam (see Table 2-8). The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: Page 2-54, line 24: Shad are not likely to have been found spawning in a vernal pool as printed. This is should probably refer to the "Vernon" pool. (CCC-17)

Response: *The text in Section 2.2.5.1 of this SEIS has been changed based on the information provided in the comment.*

Comment: I have reviewed the "Aquatic Resources" sections of the Report and agree with the conclusions that the environmental impact of VY operation on aquatic biota and the overall aquatic ecosystem of the Connecticut River would be, in the language of the Report, 'small'. (The term that I use is 'negligible'.) I believe that the requirements of US EPA Sections 316a and 316b have been met. (JJJ-2)

Response: *The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: Page iii & iv, Line 36-38 & 1
"The Phase II Rule requires a permittee to submit substantial information regarding the operation of its intake structure and the interaction of the intake structure and the aquatic ecosystem. The permittee then develops a plan for compliance with the Rule's national performance standards, which may include operational modifications or the installation of additional technology for organism protection. Therefore, would recommend revising the sentence; "However, under the provisions of the Clean Water Act 316(b) Phase II regulations, the Vermont Department of Environmental Conservation may impose further restrictions or require modifications to the cooling system to reduce the impacts on aquatic resources from entrainment and impingement". Revise to read as follows; "However, under the provisions of the Clean Water Act 316(b) Phase II regulations, one or a combination of compliance measures specified in the regulations may be implemented at VYNPS, if needed, in coordination with the Vermont Department of Environmental Conservation to meet the numerical performance standards outlined in the Phase II regulations, thereby ultimately reducing entrainment and impinqement from plant operations even further." (UUU-1)

Comment: Page xix, Line 12-15
"The Phase II Rule requires a permittee to submit substantial information regarding the operation of its intake structure and the interaction of the intake structure and the aquatic ecosystem. The permittee then develops a plan for compliance with the Rule's national performance standards, which may include operational modifications or the installation of additional technology for organism protection. Therefore, would recommend revising the sentence; "However, under the provisions of the Clean Water Act 316(b) Phase II regulations, the Vermont Department of Environmental Conservation may impose further restrictions or require modifications to the cooling system to reduce the impacts on aquatic resources from entrainment and impingement". Revise to read as follows; "However, under the provisions of the Clean Water Act 316(b) Phase II regulations, one or a combination of compliance measures specified in the regulations may be implemented at VYNPS, if needed, in coordination with the Vermont Department of Environmental Conservation to meet the numerical performance standards outlined in the Phase II regulations, thereby ultimately reducing entrainment and impingement from plant operations even further." (UUU-2)

Comment: Page 4-14, Line 38-41
"The Phase II Rule requires a permittee to submit substantial 4-15 1-3 information regarding the operation of its intake structure and the interaction of the intake structure and the aquatic ecosystem. The permittee then develops a plan for compliance with the Rule's national performance standards, which may include operational modifications or the installation of additional technology for organism protection. Therefore, would recommend revising the sentences, starting with "As part of the NPDES renewal....." on Page 4-14 and going through

"during the license renewal period" on Page 415 to read as follows: "As part of the NPDES renewal, licensees may implement one or a combination of compliance alternatives, in coordination with the permitting agency, to meet the performance standards outlined in the 316(b) regulations. The new performance standards are designed to reduce entrainment losses due to water withdrawals associated with cooling water intake structures used for power production. Any additional site-specific measures implemented as a result of the 316(b) Phase II reviews at VYNPS would result in a reduction of entrainment during the license renewal period." (UUU-37)

Comment: Page 4-17, Line 19-21
"The Phase II Rule requires a permittee to submit substantial information regarding the operation of its intake structure and the interaction of the intake structure and the aquatic ecosystem. The permittee then develops a plan for compliance with the Rule's national performance standards, which may include operational modifications or the installation of additional technology for organism protection. Therefore, would recommend revising the sentence; "However, under the provisions of the Clean Water Act 316(b) Phase II regulations, the VDEC may impose further restrictions or require modifications to the cooling system to reduce the impacts of entrainment'. Revise to read as follows; "However, under the provisions of the Clean Water Act 316(b) Phase II regulations, VYNPS may implement additional measures, if needed, in coordination with the VDEC to meet the numerical performance standards outlined in the regulations, thereby ultimately reducing entrainment from plant operations even further." (UUU-39)

Comment: Page 4-18, Line 1-4
Revise sentence to read as follows: 'The new performance standards are designed to reduce impingement losses resulting from plant operation. Any site-specific measures implemented, if needed, would result in a reduction of impingement as a result of continued plant operation." (UUU-40)

Comment: Page 4-20, Line 14-16
Revise sentence to read as follows; "However, under the provisions of the CWA 316(b) Phase II regulations, VYNPS may implement additional measures, if needed, in coordination with the VDEC to meet the impingement numerical performance standards outlined in the regulations, thereby ultimately reducing impingement from plant operations even further." (UUU-41)

Comment: Page 4-54, Line 19-21
Revise sentence to read as follows:"However, under the provisions of the CWA 316(b) Phase II regulations, VYNPS may implement additional measures, if needed, in coordination with the VDEC to meet the numerical performance standards outlined in the regulations, thereby ultimately reducing entrainment and impingement from plant operations even further." (UUU-48)

Comment: Page 9-5, Line 26-29
Recommend revising the sentence; "However, under the provisions of the Clean Water Act 316(b) Phase II regulations, the Vermont Department of Environmental Conservation may impose further restrictions or require modifications to the cooling system to reduce the impacts on aquatic resources from entrainment and impingement". Revise to read as follows: "However, under the provisions of the Clean Water Act 316(b) Phase II regulations, VYNPS may implement additional measures, if needed, in coordination with the VDEC to meet the numerical performance standards outlined in the regulations, thereby ultimately reducing entrainment and impingement from plant operations." (UUU-94)

Comment: Page 9-6, Line 7-11
Recommend revising the sentence; "However, under the provisions of the Clean Water Act 316(b) Phase II regulations, the Vermont Department of Environmental Conservation may impose further restrictions or require modifications to the cooling system to reduce the impacts on aquatic resources from entrainment and impingement'. Revise to read as follows; "However, under the provisions of the Clean Water Act 316(b) Phase II regulations, VYNPS may implement additional measures, if needed, in coordination with the VDEC to meet the numerical performance standards outlined in the regulations, thereby ultimately reducing entrainment and impingement from plant operations." (UUU-95)

Response: *The Phase II regulations related to Section 316 of the CWA were recently remanded by the 2nd Circuit Court, and the EPA plans to suspend the Phase II regulations. The appropriate sections of the document have been changed to reflect this information. In response to the comments, the text has also been changed to reflect that any site-specific mitigation (regarding entrainment or impingement) required under the NPDES permitting process would result in less impact. The NRC staff concludes that impacts due to entrainment and impingement are SMALL. Any lessening of impacts due to further mitigation (e.g., lowered impingement) would not be expected to have a significant effect at the population level.*

Comment: Page 1-4, Line 39-40
The sentence; "The NRC staff has identified a new issue that was not previously addressed in the GEIS related to essential fish habitat (EFH)" should be deleted since the EFH consultation and associated EFH assessment has already been identified by the NRC as being necessary in previous industry SEIS's. Therefore, it is not "new information." (UUU-4)

Response: *The need to perform an EFH assessment was not addressed in the GEIS that was published in May of 1996, as the Magnuson-Stevens Act was not passed until October of 1996 and the EFH Final Rule was published by the National Marine Fisheries Service (NMFS) in June of 2002. Thus, although an EFH assessment has been included in several previous SEISs, it is still a "new issue" relative to the GEIS. As the comment provides no new and significant information, no changes were made to the SEIS in response to this comment.*

Comment: Page E-53, Line 34
As a suggestion, change "could install a fish return system or operate the station in the closed-cycle cooling mode" to "could implement technology or operational measures." (UUU-119)

Response: *The EFH assessment includes the NRC's analysis of the impact of continued operation of VYNPS on Atlantic salmon essential habitat. The EFH assessment has not been revised within the final SEIS as suggested because the EFH was already transmitted to the National Marine Fisheries Service by letter dated December 12, 2006.*

Comment: On page 4-7, the draft EIS reports that NRC has generically found "Cold shock [of fish] has been satisfactorily mitigated at nuclear plants with once-through cooling systems... [later] Therefore, the staff concludes that there are no impacts of cold shock during the renewal term beyond those discussed in the GEIS." The staff should define cold-shock, and explain, "once-through." The Monticello nuclear plant in Michigan had to shutdown recently when a valve bank broke loose and fell onto a main steamline. News accounts reported a large fish kill due to cold-shock. NRC Staff should consider amending its report in light of this information. (QQQ-12)

Response: *Cold shock to aquatic organisms occurs when the thermal discharge from a power plant abruptly stops, subjecting organisms acclimated to the higher water temperatures in the thermal plume to a rapid drop in temperature. If this occurs during winter, fish that inhabit the thermal plume can be adversely affected by the instantaneous drop in temperature. However, at VYNPS, any normal (i.e., planned) plant shutdowns are gradual in nature and allow fish to acclimate to slowly decreasing temperatures. Off-normal shutdowns resulting in rapid temperature changes are infrequent but could occur at VYNPS. However, the lack of a discharge canal and the low density of fish in Vernon Pool would likely result in minimal cold-shock losses. No incidents of cold shock have been observed at VYNPS since it began operations. Once-through cooling (open-cycle cooling) is discussed in Section 2.1.3. It essentially involves the continuous intake of river water by the plant, flow of the cooling water through the plant, and the discharge of water back to the river. In contrast, when cooling towers are used (closed-cycle or hybrid-cycle cooling), some to most of the water is recycled through the plant. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: NRC Staff provides extensive discussion of Entergy's filed, granted, and appealed once-through water discharge permits, but is NRC Staff unaware of the recent US (2nd District) Court of Appeals decision that requires regulators to consider best available technology for power plant cooling? Further there is no discussion of cooling alternatives. Why is the draft EIS silent, for example, on dry cooling technologies? (QQQ-14)

Response: *The 316(b) Phase II regulations requiring best technology available were recently remanded by the 2nd Circuit Court, and suspended by the EPA on July 09, 2007 (72 FR 32107). Section 4.1.2 has been revised to reflect the current status of the Phase II regulations.*

The comment questions why the NRC staff did not consider alternative cooling technologies. The NRC staff assessed the potential impacts related to the current cooling system based on the likely future operating restrictions placed upon VYNPS by the NPDES permit issued by VANR. The permit allows station operation using once-through, hybrid-cycle, and closed-cycle cooling during various times of the year. The NRC staff determined that the impacts related to this operating scheme would be SMALL and would likely continue during the renewal period; therefore, an assessment of alternatives to the cooling scheme is not necessary.

The comment specifically recommended the consideration of dry cooling. The EPA conducted a full analysis of the dry cooling alternative for large power-producing facilities and concluded that dry cooling was not an economically practicable option for existing facilities on a national basis. (U.S. Environmental Protection Agency [EPA]. 2001. *Technical Development Document for the Final Regulations Addressing Cooling Water Intake Structures for New Facilities.* Chapter 3. EPA-821-R-01-036. [November].) *Therefore, the NRC staff did not consider dry cooling as an alternative. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: These comments were filed as a proposed contention in New England Coalition's Motion to Intervene, May 26, 2006, and accepted for litigation as NEC Contention One by the Atomic Safety and Licensing Board (ASLB) on December 13, 2006. However, the Commission has now seen fit to overrule the ASLB and exclude litigation of Contention One by CLI 07 16, issued April 11, 2007.

Therefore, in as much as New England Coalition is now on notice that the very serious environmental issues in Contention One will NOT be considered by the ASLB, New England Coalition now submits Contention One as Comment on the NRC environmental review of Entergy Vermont Yankee's License Renewal Application and the Draft EIS[(a)]. (XXX-1)

Response: *By letter dated May 14, 2007, NEC requested that the NRC staff consider NEC's filings related to their contention on cumulative impacts of thermal discharges from VYNPS's once-through cooling system during the license renewal period as comments on the draft SEIS. The NRC staff has reviewed the technical information in the filings related to thermal effects on migratory fish species inhabiting the Connecticut River and concluded that no new and significant information was provided. The NRC staff concludes that there would be no impacts*

(a) Attachments to the comment are not included in the SEIS. They are available for download from NRC's ADAMS website at http://www.nrc.gov/reading-rm/adams/web-based.html under accession nos. ML061640032, ML061870497, ML070330217, and ML070450033.

related to thermal plume barriers on migratory fish during the renewal term beyond those discussed in the GEIS. The NRC staff has provided supplemental information on this issue in Section 4.7.2 of the SEIS.

Terrestrial Ecology

Comment: Chapter 2. Page 2-59. Red backed salamanders do not breed in vernal pools. (CCC-12)

Response: *The text has been changed in response to this comment.*

Threatened and Endangered Species

Comment: Page 2-57, lines 18-19: Although the shortnose sturgeon population downstream of Turners Falls Dam is 20 miles away from VY, the impact of the thermal effluent may still persist at that location. (PPP-20)

Response: *The maximum temperature permitted at the VYNPS downstream monitoring station (Station 3) is 85 °F. Between 1998 and 2002, the maximum measured temperature at Station 3 was 84 °F for only 2 hours during these five years. Predicted maximum temperatures under the requested thermal increase would reach the 85 °F permitted limit for only 6 hours per year. The maximum temperature measured at the upstream monitoring station (Station 7) between 1988 and 2002 was 79 °F. Solar warming of the river between Station 7 and 3 accounted for about an equal component of river warming as the thermal effluent from VYNPS. The stringent upper thermal limit placed upon VYNPS by the VANR, coupled with the heat addition to the river due to solar insolation and the influence of additions to the river from downstream tributaries, make any impact due to thermal discharge from VYNPS to any species in Holyoke Pool very unlikely. It is, therefore, unlikely that warm water from VYNPS would have a thermal effect 20 mi downstream or that an effect that would not be within the natural and dam influenced variation in river temperatures. Within the lower Connecticut River, shortnose sturgeon have been frequently collected at river depths less than 3 ft and at temperatures as high as 86 °F. Thus, no adverse thermal impacts to shortnose sturgeons would be expected. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: Page, 2-60, Line 3-4 Change “on the VYNPS site” to “near the VYNPS site” since eagles have not been seen roosting on site property and there are no large trees on the VYNPS property. (UUU-16)

Response: *There are a number of large trees in the riparian habitat along the VYNPS boundary on the Connecticut River. These trees are suitable roosting sites for bald eagles. At*

least one eagle was seen roosting in this area during the NRC staff's site audit in May 2006. No change was made to the text of the SEIS in response to this comment.

Comment: Page 4-47, Line 19
Change "(Table 2-11)" to "(Tables 2-11 and 2-12)" to capture all State-listed threatened or endangered species. Table 2-11 shows only a partial listing. (UUU-43)

Response: *The text has been changed in response to this comment.*

A.2.8 Comments Concerning Air Quality Issues

Comment: Staff has concluded that cooling tower drift (spray) is confined to the area immediately around the cooling towers. Is staff unaware that according to discovery materials provided by Entergy in a proceeding before the Vermont Public Service Board (Docket 6812), in the normal course of operation, Vermont Yankee NPP cooling towers discharge "drift" or spray at the rate of 183 gallons per minute. According to Entergy ground deposition of this drift has been measured at 1/10 of inch per year at a distance of 1000 meters. and the amount of drift will increase as thermal power is increased at the plant. Within the droplets of spray (drift) emanating from the towers are several, or all of the following substances in unknown formulas (mixes and chemical combinations), unmeasured point of discharge concentrations, and unmeasured point of deposition concentrations:

1. Bulab 8006: penetrant/biodispersant to remove fouling in Service Water System (SWS).
2. Bulab 7034 or Depositol BL530: corrosion inhibitor for use in SWS and circulating water (CW).
3. Bulab 9027 or Inhibitor AZ8103: Copper corrosion inhibitor (CW).
4. Dianodic DN2301; a dispersant (SWS and CW)
5. Spectrus NX-1104: biocide, as an alternative or in addition to bromine/chlorine. (SWS)
6. Cortrol 087700: oygen scavenger and pH control agent w/ hydroquinone (Boiler).
7. Ferroquest FQ7101: to correct biological/corrosion fouling (SWS).
8. Ferroquest FQ7102: a pH control agent (SWS)
9. Oxidizing Biocides (Chlorine, Bromine) (SWS)

These materials permitted for discharge (liquid) direct to the Connecticut River under Vermont Agency for Natural Resources Discharge Permit No. 3-1199. There is no permit that we could find regulating the discharge of chemicals from the cooling towers and there appears to be no regulatory standard for topical application or ingestion (as droplets) for these chemicals and biocides. In addition, the cooling towers are constructed of pressure treated wood. We presume from their appearance that this is chromated copper arsenate (CCA) treated wood. Under increased thermal power conditions the cooling tower water will undergo, according to

Entergy, an overall temperature rise of approximately 4 ºf potentially, in combination with the additive chemicals, increasing the leach-rate of the CCA of VY cooling tower drift studies that were provided in the Vermont Public Service Board uprate case showing cooling tower spray deposition at distances of up to a mile. Arsenate control regulations have changed since the cooling towers were constructed and a credible environmental impact statement should take that into consideration. Also, the question remains why NRC staff characterized cooling tower droplets containing biocides and other toxins as air pollutants when they were in fact spray droplets applied topically and ingested by area biota. (QQQ-13)

Comment: In 2002 Entergy Nuclear Vermont Yankee amended its discharge permits to include water treatment with a new list of chemical additives including proprietary formulas of biocides, detergents, surfactants and anti-corrosives to be applied, along with chlorine and fluorine compounds. These toxins and otherwise harmful materials may be incorporated in cooling tower drift, these are droplets which are expelled laterally from the towers as spray which have been found to travel and deposit up to a mile from the plant.

There has been no formal evaluation of the environmental and human health impact Vermont Yankee's cooling tower drift, which is site-specific with respect to the chemical mix, solution, periods of use, tower spray physical characteristics, characterization and susceptibility of effected biota, weather patterns, terrain, and characterization and location of potentially affected human populations. The impact of cooling tower drift over 20 additional years of operation at extended power uprate conditions must be quantified and verified prior to any assertions of no significant environmental impact for license renewal. (JJ-3)

Response: *Text has been added in Section 4.7.1 to acknowledge the drift study that was performed during the uprate and to summarize its conclusions. Potential for offsite adverse impact from the chemicals contained in drift is very small.*

A.2.9 Comments Concerning Human Health Issues

Comment: Since there is a petition for rule making questioning the scientific basis of the radiation standards and calculations in the GEIS, which is still in the comment period until February 5th, you can find information about this petition on the Federal Register web site, the environmental review cannot be considered complete until those issues are resolved and a decision is made whether the generic environmental impact statement accurately reflects risks or needs to be revised.

Therefore, I hereby petition you to halt the license renewal process of Vermont Yankee while the petition for rule making on the adequacy of radiation standards and risk factors in the GEIS is pending and until a full review and reconciliation of the radiation standards consistent with BEIR 7 and other current scientific studies of health effects of low-level ionizing radiation, external and internal, is undertaken. Then you can apply these more realistic standards to your

estimates of early fatalities, latent mortality and radiation caused injuries that would be expected from continued operation of Entergy-Vermont Yankee under normal operating and accident scenarios.

These data are of intimate concern to those of us living in Windham, Cheshire and Franklin Counties, the Vermont Yankee sacrifice zone. I would also like to present to you for your consideration this new and significant information. From 1999 to 2002, the Windham County cancer death rate was 12.7 percent above other Vermont counties based on 451 deaths during this four-year period. However, the death rate for all other causes in Windham County was only 1.7 percent greater. The source of this information is the National Center for Health Statistics at the Centers for Disease Control. Some factors causing Windham County residents to die in excessive numbers from cancer and not from other causes, reasons for the high death rates need to be understood.

Number two. Since 1979, the Windham County death rate exceeded the rest of the state by 19 percent for infants, 38 percent for children and adolescents and 30 percent for young adults. High death rates for these 243 persons include cancer, birth defects and other causes. This information came from the same source, the CDC. Why should Windham County have high death rates? There is no obvious reason. The county is nearly identical to the state in percent of minorities and foreign born residents and educational, poverty and income levels. Reasons accounting for the high death rates need to be understood. Emissions from Vermont Yankee must be considered as one possible factor. For years, scientists have agreed that radiation is much more toxic to the very young. Our local children and young adults have lived all their lives with Vermont Yankee releasing radioactivity and have never breathed air or drunk water without this radioactivity. How do the infant mortality rates compare to the rest of the state? How do the premature births and, what do you call them, miscarriages rates compare to the rest of the state? This information needs to be systematically investigated. (A-3)

Comment: These data are of intimate concern to those of us living in Windham, Cheshire, and Franklin counties, the VY sacrifice zone. I would also like to present to you for your consideration this new and significant information:

1. From 1999 to 2002, the Windham County cancer death rate was 12.7% above other Vermont Counties, based on 451 deaths during the four year period. However, the death rate for all other causes was only 1.7% greater (Source: National Center for Health Statistics, http://wonder.cdc.gov). Some factor is causing Windham County residents to die in excessive numbers from cancer, and not from other causes. Reasons for the high death rates need to be understood.

2. Since 1979 the Windham county death rate exceeded the rest of the state by 19% for infants, 38% for children and adolescents, and 30% for young adults. High death rates for these 243 persons include cancer, birth defects, and other causes. (Source: same as above)

Why should Windham County have high death rates? There's no obvious reason. The county is nearly identical to the state in percent of minorities and foreign born residents, and educational, poverty and income levels. Reasons accounting for the high death rates, need to be understood. Emissions from Vermont Yankee must be considered as one factor. For years, scientists have agreed that radiation is much more toxic to the very young. Our local children and young adults have lived all their lives with Vermont Yankee releasing radioactivity, and have never breathed air or drank water without this radioactivity.

3. Preliminary results show that radioactive Strontium-90 in baby teeth in Windham County is 62% greater than levels elsewhere in the state. Results for only 26 teeth reported thus far, but the pattern is consistent with those near other U.S. reactors. (Source: RPHP) (RRR-2)

Comment: In estimating health impacts, the NRC appears not to have undertaken any locally focused epidemiological studies, disease registries or other health statistical resources. If your staff had, they would have found the unusual patterns of cancer deaths and mortality of young adults in Windham County Vermont I addressed in the second paragraph on page one of my comments, above. Have studies of disease incidence of Vernon Elementary School children 1972 -present been done? If not available from reputable sources, it is incumbent upon NRC to make sure the studies are done before expounding on the health risks or lack thereof. Given historically high gamma radiation levels inside the Vernon Elementary School, coincident in direction and time with high readings on ENVY's fenceline TLD's in 2004 (most recently documented in Vermont Public Service Board hearings in the dry cask case), and since these readings are clearly NOT due to Radon (daughters) as originally surmised (William Irwin, Vermont Department of Health, Radiological Division Chief, pers. comm.), it is clear more investigation is urgently needed. If no one has submitted these anomalous interior radiation readings in an elementary school just 300 yards from the reactor as new and significant information, I do so now.

It is imperative that NRC not only determine the source of these extremely high radiation levels, but honestly and impartially determine whether there are or have been unusual trends in disease incidence in children who live in Vernon and/or have attended the Vernon School over the past 30+ years. (RRR-15)

Comment: In my community, living in the shadow of the Yankee Rowe and Vermont Yankee reactor, there is an empty chair at too many dinner tables, there are too many lost lives. This human cost is not insignificant to the husbands, wives, children, friends left behind to carry on, there is no relief here, there is no satisfaction available. (O-4)

Comment: My comments are directly pertaining to the environmental impact statement, as that's what I thought this hearing was supposed to be about, and I talked earlier about new and significant information regarding epidemiological statistics from the National Center for Health

Statistics at the CDC that indicate that death rates in Windham County are higher than they are in the other counties in the state during the period that Vermont Yankee has been operating. (OO-1)

Comment: The incidence of breast cancer has increased in the last decades to one in every eight women. It is not surprising that this statistic resonates with the more recent statistic that women are 52 percent more likely to contract cancer than men. (ZZ-3; AAA-11)

Comment: The claims of ongoing health effects from our operation are completely unsubstantiated. (SS-3)

Comment: What is essentially important for future life on earth is what poison we produce in making electricity. Obviously Vermont Yankee produces the worst type of poison that man can fathom, carbon in the atmosphere is nothing compared to radioactivity. All this talk of millions of dollars for the green fund is total manure compared to any small radioactive mishap or your grandchild's cancer. (EE-2)

Comment: The off-gassing of nuclear power plants, including the Vermont Yankee, contain these and other radioactive isotopes that fall on the grass, get into milk and plants that humans and other mammals consume. Humans in turn consume the meat from some of those mammals who consumed contaminated plants. We are at the top of the food chain in most incidences. Though low level radiation from isotopes is the worst form of cancer-causing agents, other types of radiation also weaken the mammal's immune system, more specifically the militias of T Cells that can help combat the effects of this ionizing radiation. Human mammals sit in front of computers, televisions, fly in planes, and handle and ingest immune system depleting chemicals. All, over time, affect immune systems. Humans thus become much more likely not to have the T cells needed to combat the effect of ingested-and-lodged, ionizing, radioactive isotopes from the off-gassing of nuclear power plants such as the Vermont Yankee. (ZZ-2; AAA-10)

Comment: Those who are economically challenged cannot afford organic food and supplemental vitamins and minerals that can boost immune system T cells and control nascent formation of cancerous cells. This fact should be considered in the environmental justice evaluations that are done in NRC Environmental Impact Statements. I would strongly recommend that all economically challenged people especially women and children -living in the shadow of nuclear facilities should receive free immune booster supplements and extra allowances for certified organic food and milk, free from chemicals and radioactive isotopes. This should be kept up until 12.5 years have past after the decommissioning that region's reactor. (ZZ-4; AAA-12)

Comment: When reactors shut down the amount of leukemia in young children goes down. (BBB-6)

Response: *The amount of radioactive material released from nuclear power facilities is well measured, well monitored, and known to be very small. The doses of radiation that are received by members of the public as a result of exposure to nuclear power facilities are so low that resulting cancers have not been observed and would not be expected. Although a number of studies of cancer incidence in the vicinity of nuclear power facilities have been conducted, there are no studies to date that are accepted by the scientific community that show a correlation between radiation dose from nuclear power facilities and cancer incidence in the general public. A number of studies that have been conducted and accepted by the scientific community are described below.*

In 1990, at the request of Congress, the National Cancer Institute conducted a study of cancer mortality rates around 52 nuclear power plants and 10 other nuclear facilities. The study covered the period from 1950 to 1984 and evaluated the change in mortality rates before and during facility operations. The study concluded that there was no evidence that nuclear facilities may be linked causally with excess deaths from leukemia or from other cancers in populations living nearby.

In January 2001, the Connecticut Academy of Sciences and Engineering issued a report on a study around the Haddam Neck nuclear power plant in Connecticut and concluded that radiation emissions were so low as to be negligible.

The American Cancer Society in 2001 concluded that although reports about cancer clusters in some communities have raised public concern, studies show that clusters do not occur more often near nuclear plants than they do by chance elsewhere in the population. Likewise, there is no evidence that links strontium-90 with increases in breast cancer, prostate cancer, or childhood cancer rates. Radiation emissions from nuclear power plants are closely controlled and involve negligible levels of exposure for nearby communities.

Also in 2001, the Florida Bureau of Environmental Epidemiology reviewed claims that there are striking increases in cancer rates in southeastern Florida counties caused by increased radiation exposures from nuclear power plants. However, using the same data to reconstruct the calculations on which the claims were based, Florida officials were not able to identify unusually high rates of cancers in these counties compared with the rest of the State of Florida and the nation.

In 2000, the Illinois Public Health Department compared childhood cancer statistics for counties with nuclear power plants to similar counties without nuclear plants and found no statistically significant difference.

With respect to VYNPS, The Vermont Department of Health released a report in 2006 called Cancer in Vermont (http://healthvermont.gov/pubs/cancerpubs/cancer_in_Vermont2005.pdf,

NRC ADAMS Accession No. ML061740117), in which the Department provided a statistical analysis of cancer rates in all Vermont counties including the Windham county in which VYNPS is located. This study showed that the age-adjusted cancer rates in Windham county for most cancer types were not statistically different than the U.S. rate for the same type of cancer for both males and females. For lung cancer in females and prostate cancer in males, the study found that the rates were actually lower in Windham county than the U.S. average.

The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: I respectfully submit that your GEIS, and the assumptions behind your SEIS are based on erroneous and incomplete information, and therefore your environmental review is neither thorough nor conservative. It has not been properly done. Since there is a petition for rulemaking questioning the scientific basis of the radiation standards and calculations in the GEIS, which is still in the comment period until Feb. 5, your environmental review cannot be considered complete until those issues are resolved, and a decision is made whether the GEIS accurately reflects risks or needs to be revised. Therefore, I hereby petition you (ok, it's a 2.802 petition) to halt the license renewal process of Vermont Yankee while the petition for rulemaking on the adequacy of radiation standards and risk factors in the GEIS is pending, and until a full review and reconciliation of your radiation standards, consistent with BEIR VII and other current scientific studies of the health effects of low level ionizing radiation, external AND INTERNAL, is undertaken. Then you can apply those more realistic standards to your estimates of the early fatalities, latent mortality, and radiation-caused injuries that would be expected from continued operation of Entergy Vermont Yankee, under normal operating and accident conditions. (RRR-1)

Comment: I am more and more convinced, the more time I spend googling, that all the reactors in the world must find ways to prevent tritium from escaping. Since the escapes were uncovered in Illinois last summer, it is evident that this is a weak point that an agency (the NRC) with mission to assure the safety and security of nuclear power plants, must pursue vigorously. If there is no adequate solution, these plants must not be relicensed and they should all decommission as soon as the grid they support has found through efficiency and alternative energies, ways to assure adequate supply to the customers.

Tritium is hard to remove from emissions. There must be invented a cost effective way to remove it and isolate it from the environment for the 12.3 half life and double that. In fact it should be isolated from the environment for 250 years, or 20 half-lifes.

Women, embryos, fetuses, babies, toddlers and young children have more water per mass unit in their bodies than the 30 year old Caucasian male. Up until recently, since Tritium is a type of water, it was assumed that it would spread out equally in the body and thus the targeted ionization of cells in any specific organ of the body would be low. But it turns out that Tritium

goes to areas where the percent of water that fills any given space is the highest. All human life evolved from the sea. The ova and embryo are filled with water, the fetus floats in water. The Tritium passes the placenta and enters these structures at one time or another of their development. Tritium isotopes have an affinity for the nucleii of cells and they lodge right near them, irradiating the DNA inside the nucleii. The DNA is damaged. Later, up to five to ten years later, the child can develop leukemia. (BBB-2; AAA-1)

Comment: But I would like to speak today not only to the NRC folks but also to all the employees at all the remaining reactors around our vast country. I challenge all of you to read up on the changing science behind the nuclear industry, the National Academy of Sciences and the Union of Concerned Scientists have recent information that you need to know. Whatever information that your bosses are feeding you is incomplete and one-sided, the effects of ionizing radiation are greater than previously thought. It's all but proven that scheduled and accidental release are poisoning our surroundings. (H-2)

Comment: Human health standards continue to reflect the adult-male bias of the regulators. The acutely increased vulnerabilities of the young child, the adolescent, the elder and even greater vulnerabilities of the sperm and egg of all living creatures require a reevaluation. (KKK-6; LLL-4)

Comment: My specific concern for this comment period is as follows: The National Research Council of the National Academies report has highly pertinent information about the effect of low level ionizing radiation on women, embryos, fetuses, and children. This information is also found in the BEIR VII report (Biological Effects of Ionizing Radiation, 7th report, issued October 18th, 2006. This information was not given its due by those who wrote the SEIS draft report for the VY relicensing process.

The NRC mission, as Mr. Neil Sheehan and Mr. Emch said, is nuclear plant safety and security. Sheehan stipulated that the NRC has been given the last word by the Federal Government to decide what is safe and what is not safe In the area of nuclear safety. If so, the NRC should explain in the report why it can ignore the science that proves that:

1. Low level ionizing radiation -radiating over a long period of time in the area it lodges in body tissue -causes cancer and can alter DNA in eggs and embryos.

2. Women, embryos, fetuses, toddlers and children are more susceptible to radiation exposure in general. Among the culprits is the low level ionizing radiation from unstable radioactive isotopes such as Strontium 90 and Tritium that are ingested and lodge in the body, in teeth, near bone marrow that builds immunity, and finally near the nucleii of female eggs and embryos. (ZZ-1; AAA-9)

Comment: Before it is relicensed, the Vermont Yankee should change its regulation criteria from "Reference Man' to "Reference Woman-Embryo-Fetus-Toddler-Child.

In paragraphs 5 and 6, Makhijani shows that the Connecticut Yankee Atomic Power Company was able to conserve the Reference Man, the young White male, as the a basic underlying document governing the regulations" (Please see #11 (FRG1 1). The NRC permitted the CY Atomic Power Company to argue that a white male, 20-30 should be the basis for calculation, and that their"regulations prohibit considering doses to children" despite the fact 'the plain language of the regulation itself does not restrict the terms 'critical group,' 'individual',or 'human being' to mean any specific age, race, or gender.

I take this to mean that the overall language of the fully written regulation uses nonspecific words in talking about one person, people and groups of people but, when it comes to setting the regulation for the standard for acceptable levels of ionizing radiation, its template is age-race-gender specific. (ZZ-6; AAA-14)

Comment: Our whole family is grateful for Paul's gainful employment in this area, which would not have been possible without the devotion and indefatigable efforts by nuclear engineers to exploit this type of energy, as responsibly as they could. But now we would like them to be put to bed as soon as possible. Maybe in century or so there will be new way of handling ionizing radiation. Adult males do tolerate well a certain background level, but we are finding for --women, ova, embryos, fetuses, babies, toddlers and children --that going beyond that in targeted area of the body, i.e. receiving low level beta radiation over a period of time is extremely dangerous and should be avoided at all costs. Women now have a 58% greater chance of coming down with cancer.. One of 8 women contract breast cancer.. both of these are very substantial increases and they happened in a time span of a few decades, I believe. I think it is only over the past 4 decades that this kind of epidemiology has been done so assiduously.

I realize there are other factors, mainly hazardous substances, some are even natural, that depress the immune system and make a body more sensitive to cancer. I realize that people are getting radiation if they fly a lot. But all those areas have to be addressed too. (BBB-10; AAA-8)

Comment: Recognize "allowable" levels are not safe: Tell the NRC that their "allowable" levels of radionuclides are NOT conservative or protective enough. They are based only on the obsolete "standard man", a healthy, white male in the prime of life, and ignore the more vulnerable fetus, growing infant and child, the aged, those in poor health, and women who are, according to the BEIR VII report, 37- 50% more vulnerable than standard man to the harmful effects of ionizing radiation. (AAA-16)

Comment: Now the National Academy of Science, in its BEIR 7 report, determined that there is no safe exposure to radiation, there is none. Is the BEIR 7 incorporated into the NRC's review of the environmental effects on our communities? I didn't see it. (O-2)

Comment: In addition, the regulatory limits are called into question by the biological effects of ionizing radiation BEIR 7 report and a number of other recent scientific studies, they are called into question because they are based on standard man and not the more vulnerable child, woman or fetus who are 30 to 50 percent more sensitive to the cancers and other biological effects of ionizing radiation.

These regs are called into question because the risk factor for these carcinogens, both toxic and radioactive, which are emitted by nuclear power stations is far more lenient than for all other chemical carcinogens. Perhaps your review of radiation standards will finally change all that but I think, until the review is done, the environmental impact statement is incomplete and it is not investigating health impacts based on the numbers that it should be. (OO-9)

Comment: Protect the most vulnerable: Tell the NRC to exercise precaution by accounting for more vulnerable populations in their standards. Since no level of radiation dose is safe (see BEIR VII quote below), the best precaution would be no exposure. However recognizing and regulating for vulnerable populations is a start.

"In BEIR VII, the cancer mortality risks for females are 37.5 percent higher. The risks for all solid tumors, like lung, breast, and kidney, liver, and other solid tumors added together are almost 50 percent greater for women than men, though there are a few specific cancers, including leukemia, for which the risk estimates for men are higher."
(Summary estimates are in Table ES-1 on page 28 of the BEIR VII report prepublication copy, on the Web at http://books.nap. edu/books/030909156X/html/28.html.)

The BEIR VII report estimates that the differential risk for children is even greater. For instance, the same radiation in the first year of life for boys produces three to four times the cancer risk as exposure between the ages of 20 and 50. Female infants have almost double the risk as male infants. (Table 12 D-1 and D-2, on pages 550-551 of the prepublication copy of the report, on the Web starting at http://books.nap.edu/books/030909156X/html/550.html)." (excerpted from http://www.ieer.org/comments/beiribeir7pressrel.html) (AAA-15)

Comment: The National Academy of Sciences–BIER VII Report states that no amount of radiation is safe. The radiation routinely produced by VY let alone the plutonium, cesium, tritium, and "D.U.," are therefore not safe. Why are otherwise intelligent people supporting an industry that condemns 10,000 future generations to illness and death? That is "untimely illness and death! (NNN-1)

Comment: NRC's regulatory limits themselves are called into question by the National Academy of Science's BEIR VII report and a number of other recent scientific studies. [Makhijani, Arjun. August 2005. Bad to the Bone: Analysis of the Federal Maximum Contaminant Levels for Plutonium-239 and Other Alpha-EmittingTransuranicRadionuclides in Drinking Water. Institute for Energy and Environmental Research. Russ, Abel; Casey Burns, Seth Tuler, and Octavia Taylor. March 2006. Health Risks of Ionizing Radiation: An Overview of Epidemiological Studies Community-Based Hazard Management, The George Perkins Marsh Institute, Clark University, Worcester, MA 01610. Makhijani, Arjun, Brice Smith and Michael C. Thorne. Feb., 2007. "Healthy from the Start: Building a better Basis for Environmental Health Standards -Starting with Radiation," in Science for Democratic Action, Volume 14, Number 4. (*I hereby adopt and incorporate by reference as a supplement to my comments the aforementioned issue in its entirety.*)] They are called into question because they are based on "standard man" and not the more vulnerable baby, child, woman, or fetus. They are called into question because the risk factors for radioactive carcinogens, many of them toxic as well as radioactive, are far more lenient than for all other chemical carcinogens. Perhaps your review of radiation standards will finally improve this deplorable standard. Until you do, the SEIS must be considered incomplete and lacking crucial health and risk data. (RRR-14)

Comment: Recognize there is no safe dose: Further, regarding low dose radiation, the BEIR VII panel has concluded, "it is unlikely that a threshold exists for the induction of cancers... Further, there are extensive data on radiation-induced transmissible mutations in mice and other organisms. There is therefore no reason to believe that humans would be immune to this sort of harm." (AAA-18)

Response: *Based on their reading of studies such as the BEIR VII report, commenters questioned whether the NRC staff's assessment of the impact of radiation dose from the operation of VYNPS during the license renewal period accounts for differences in dose impact on the young, the elderly, and women.*

In 2006, the National Research Council of the National Academies published Health Risks from Exposure to Low Levels of Ionizing Radiation, BEIR VII Phase 2*. The major conclusion of the report is that current scientific evidence is consistent with the hypothesis that there is a linear, no-threshold dose-response relationship between exposure to ionizing radiation and the development of cancer in humans. This conclusion is consistent with the system of radiological protection that the NRC uses to develop its regulations. Therefore, the NRC's regulations continue to be adequately protective of public health and safety and the environment. None of the findings in the BEIR VII report warrant immediate changes to the NRC regulations.*

Moreover, the BEIR VII report does not say that there is no safe level of exposure to radiation; it does not address "safe versus not safe." It does continue to support the conclusion that there is some amount of cancer risk associated with any amount of radiation exposure and that the risk increases with exposure and exposure rate. It does conclude that the risk of cancer induction at

the dose levels in the NRC's and EPA's radiation standards is very small. Similar conclusions have been made in all of the associated BEIR reports since 1972 (BEIR I, III, and V); the BEIR VII report does not constitute new and significant information.

As discussed in Section 4.3, the GEIS concluded that radiation exposure to the public is a Category 1 issue with a SMALL impact. Based on the GEIS, the NRC staff concludes the impact is SMALL because doses to members of the public from VYNPS effluents are well within the NRC and EPA radiation dose standards. The doses are also smaller than the dose that members of the public receive from other sources of radiation, such as natural background radiation and medical procedures.

The dose standards were set conservatively by NRC and EPA based on the conclusions and recommendations of numerous national and international expert panels. These dose standards are based on the linear, no-threshold dose-response model described in the BEIR VII.

The dose standards were set conservatively by NRC and EPA in part to account for the potential uncertainties noted by the commenters. The information and studies put forth by the commenters did not change the NRC staff's bases or conclusions; therefore, no changes were made to the SEIS in response to these comments.

Comment: On page 2-14, line 14-15 of the SEIS states "except for the impact of EPU, no increases in radioactive gaseous releases are expected during the license renewal period." This is a HUGE caveat, since the impact of the 20%(e) uprate may be an increase of 40% in radiation leaving the site (US NRC Advisory Committee on Reactor Safeguards, Meeting Transcript, 12/11/2006). It is an outrageous abdication of regulatory responsibility to condition a license renewal on the reactor's original license, and not AS IT IS CURRENTLY BEING OPERATED. Does the NRC include the impact of the doubling of the MSL leak rate, a pre-Uprate license amendment? Does it include the impacts of any number of behind the scenes license amendments to the designed-for operation of the reactor and turbines? I hereby petition the NRC with a 2.802 Petition for Rulemaking, requesting that the policy on license renewals be revised such that all reactors applying for license renewal be evaluated based on current configuration and projected future performance and operating parameters, where those differ from their design bases and historical operation.

Especially where radiological releases may be doubled by Uprate, a conscientious Environmental Impact Statement must consider the impacts of 20 to 40 more years of those increased radioactive pollution levels, as well as 20-40 more years accumulation of high-level nuclear waste. Refusing to look at this is probably a violation of NEPA. (RRR-12)

Response: *The SEIS evaluates the environmental impacts of the current VYNPS design including the 20 percent power uprate that was implemented in 2006, the alternative source term amendment, and the Independent Spent Fuel Storage Installation that is being*

constructed. In Section 2.1.4.2, the power uprate is addressed by indicating that the estimate of gaseous effluents based on the annual average from 2001 through 2005 could be increased by as much as 20 percent due to the extended power uprate. The resulting effluents would still meet NRC limits and result in a SMALL impact.

As indicated in Section 2.2.7 of the SEIS, the NRC staff estimated that the offsite dose rate attributable to nitrogen-16 would increase by up to 26 percent due to the 20 percent extended power uprate. In addition, the NRC staff discussed actual measurements of the increased dose rates after the extended power uprate was implemented and the new shield plate was installed over the high-pressure turbine. The dose rates continue to meet NRC and EPA dose standards.

The alternative source term amendment (NRC ADAMS Accession No. ML041280490) increased allowable leakage through the main steam isolation valves in design-basis-accident dose assessment for VYNPS. The Safety Evaluation supporting the amendment concluded that VYNPS continues to meet the design-basis-accident dose criteria in 10 CFR 50.67. The GEIS concluded that the environmental impacts of design-basis accidents are of small significance for all plants; therefore, design-basis accidents are a Category 1 issue. This conclusion is discussed in Section 5.1 of the SEIS and did not change based on this comment.

This comment was also referred to the Secretary of the Nuclear Regulatory Commission to determine if it constitutes a petition for rulemaking under the requirements of 10 CFR 2.802.

The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.

Comment: It seems right perhaps to have them run a bit longer, but only if you can be 100 percent sure that the emissions of Tritium, Strontium 90, radioactive Cesium and Iodine, etc. are prevented from being exhaled from the emission stacks. (BBB-5; AAA-4)

Comment: Consider radiation damage from inhaling or ingesting radionuclides: NRC does not consider the effects of internal radiation from ingested or inhaled alpha and beta emitters. The amount of polonium-210 that recently killed a former Russian intelligence officer was considered by IAEA and NRC to be of the lowest possible risk because they failed to account for internal radiation damage. (AAA-17)

Comment: The Vermont Yankee does not have state-of-the-art filters in its 300 foot high smoke stack. Even if it did have them, it would still not be able to filter out tritium, a short-lived (half life -12.5 years) isotope that lodges near the nucleus of cells and radiates the DNA inside. This has been shown to cause aberrations in the DNA that result in miscarriage, deformities and it may be responsible for breast cancer developing during the life of that embryo/fetus. Ido not have the most recent IEER SDA issue that explains this. Please see Mr. Emch's copy

If tritium can be somehow precipitated out of the gasses before emission and disposed of appropriately, this must be done. I do not have the IEER SDA issue that talks about this. Please see Mr. Emch's copy. I have tried to Google this but without much success. Before it is relicensed, the Vermont Yankee should replace its filters with the most modem technology possible and also find a way to take out the tritium and have it isolated from the environment for its half life of 12. 5 years and then some. This is because of the recent discovery of its affinity for the nucleus of the cell where it is able to modify the DNA. (ZZ-5; AAA-13)

Comment: At page 2-14, the draft EIS shows that 8.55 curies of tritium per year are release from the stack. NRC Staff should answer in the SEIS the following: What is tritium? If it is in the form of hydrogen gas, why is it not recombined to form water before the scavenged reactor gases (page 2-13) go to the dryer? If it is in the form of tritiated water, how does it get past the dryer and where is it deposited after it leaves the release stack? Are the releases continuous and uniform or episodic? How much tritium does an individual have to ingest or inhale before there are risk implications? (QQQ-11)

Comment: See especially: *Health Risks of Tritium*, pg 1, 10, 11 and 12 by Arjun Makhijani, Brice Smith, and Michael C. Thorne.

Pg. 12, 2nd Paragraph
"In addition, following revelations of tritium leaks from a nuclear power plant in Illinois, it has come to light that deliberate discharges and accidental leaks may be a more widespread concern at commercial nuclear power plants than previously suspected. Significantly, even in the midst of the scandal in the summer of 2006, the NRC did not yet fully understand all of the sources of the tritium entering the environment or the full extent of the leaks."

Then go back to pg 10: and read paragraphs under *Deficiencies in the Regulations* how tritiated water and organically bound tritium can cross the placental barrier. Gamma vs. alpha vs. beta emitting radionuclides. I enclose the *Health Risks of Tritium: the Case for Strengthened Standards* article. (ZZ-7)

Comment: I found out that the highly respected Harvard Professor, Stephen J. Gould wrote along with Golding in the 1990s a book called Deadly Deceit . This proved beyond a shadow of doubt that radioactive, beta emitting isotopes that lodge in the body over a long time are, by far, the most powerful source of cancer causing radiation coming out of a reactor. That a short but high release, is less dangerous than a long term release such as we have with the huge quantities of tritiated water that have been released from the Illinois reactor and which was brought to the attention of the Atty. General of Illinois last summer (2006). It was said in papers I read that these releases of Tritiated water can well be frequent for many reactors and that it is a real problem that has to be addressed somehow. Does the Vermont Yankee have released of tritiated water? (BBB-1)

Response: *All nuclear plants were licensed with the expectation that they would release radioisotopes to both the air and water during normal operation. Tritium is one of the radionuclides routinely released to the atmosphere from nuclear power plants, including VYNPS. Releases of radionuclides from nuclear power plants must meet radiation dose-based limits specified in 40 CFR Part 190, 10 CFR Part 20, and 10 CFR Part 50, Appendix I. The regulations specify that the dose to individual members of the public from all exposure pathways, including both internal and external exposure, due to nuclear fuel cycle facilities be less than 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ (40 CFR Part 190 and 10 CFR Part 20). In 10 CFR Part 50, dose design objectives are specified for both air and liquid effluents consistent with the requirements of 40 CFR Part 190 and 10 CFR Part 20.*

Licensees are required to report liquid, gaseous, and solid effluent releases annually to the NRC. As part of the preparation of the draft SEIS, the NRC staff visited the site and reviewed the effluent releases reported in the VYNPS Annual Radioactive Effluent Release Reports for the years 2001 through 2005. Average gaseous emissions from VYNPS are discussed in Section 2.1.4.2 of the SEIS. The releases and radiation doses to members of the public from all airborne radioactive emissions from VYNPS are within the regulatory limits specified above. VYNPS has not released any radionuclides in liquid effluents over the last 5 years and does not plan to release any in the future.

NRC found no records of any leakage of tritium in water from VYNPS to the environment similar to those reported for the Braidwood plant in Illinois. Additional information about the health effects of tritium and the technical bases for the regulatory standards can be found in the NRC fact sheet, "Tritium, Radiation Protection Limits, and Drinking Water Standards" (http://www.nrc.gov/reading-rm/doc-collections/fact-sheet/tritium-radiation-fs.pdf). This fact sheet also provides background information about tritium and its formation in and release from nuclear power plants.

The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: The enclosed plot[(a)] of data from Chernobyl shows that it takes-about 500 Rem of nuclear radiation to kill a person. It takes about 200 Rem to put a person in the hospital. There, in accord with the law of life, he will recover at a rate of about 100 Rem per week. This recovery rate can be deduced from the rate at which patients were discharged; and by the fact that persons receiving less than about 200 Rem didn't feel sick enough to require hospitalization. Those persons were being damaged and recovering at the same time at a rate of 100 Rem per week.

(a) See letter from Walston Chubb (ADAMS Accession No. ML070730161) for referenced plot.

100 Rem per week is 1043 times 5 Rem per year. 5 Rem per year is the Nuclear Regulatory Commission's limit of exposure for nuclear workers. It is their estimate of the hazard of nuclear radiations, an estimate of a reasonably safe dose. But, that estimate is based upon the feudal, Shinto, religious belief in seeds of death. That fact makes it and all regulations based upon it unConstitutional under the first amendment. It also makes the estimate illogical. The estimate would have us believe that a person who receives 5 Rem per year continuously would become 1% dead in one year, 50% dead in 50 years, and 90% dead in 90 years.

If human beings can absorb 100 Rem per week without feeling excessively fatigued, then nuclear reactors and spent fuel need much less shielding. Spent fuel can be stored above ground. After all, the penetrating gamma, nuclear radiations from spent fuel will be 99.9% decayed away in 300 years. The remaining alpha and beta radiations can't penetrate the fuel cladding. (UU-1)

Response: *The comment discusses radiation health effects. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: High radiation readings inside the Vernon elementary school have correlated by vector and occurrence with high radiation readings on certain fence line instruments. New England Coalition expressed our belief that these high radiation readings in the school because of high correlation by vector and occurrence with high TLD readings on the site fence line warrant investigation in order to determine if licensee off-site radiation dose estimates are correct and then to quantify the actual off-site radiation dosages as they would be effected by 20 years of additional operation at extended power uprate levels. (JJ-2)

Comment: And I really would like to see some additional radiation monitoring. There was an incorrect, some discussion between the state, and Entergy and the NRC about whose numbers were accurate, and they haven't gone into, followed that in depth. I would like to see radiation monitors in a grid pattern throughout a ten mile radius of Vermont Yankee. (MM-4)

Comment: In talking to Larry Krist and Carla White at the Vermont Department of Health, that Cobalt-60 and other radioisotopes have been found in Connecticut River sediments. How do we know, if no monitoring is occurring, whether these effluents are from Vermont Yankee? On the section that talks about radiological impacts, section 2.2.7, the NRC says that the radiological monitoring plan, which they abbreviate as RUMP, REMP, for the last five years, indicates that radiation and radioactivity in the environmental medium monitored around the plant have been "well within regulatory limits" and the citation is an Entergy report.

This is all that's really said here about this environmental monitoring and I just want to submit that Entergy is not independent and should be backed up by more credible independent sources. (OO-8)

Comment: Demand that the NRC protect all members of the public from all types of excess radiation exposure from nuclear power and its fuel cycle, gamma, alpha, beta, neutron, particulate, fission products, noble gases, etc. and that measurement and monitoring should include all forms and pathways, not just gamma at the fence line. Argue that their radiation limits should include accidental releases as well as planned emissions. (AAA-19)

Comment: Larry Crist or Carla White at VT DOH admitted that Cobalt 60 has been found in CT River sediments (pers. comm; confirmed by Battelle 1991). How do you know, if you don't monitor, whether this and/or any other radioactive environmental contaminants come from ENVY? Where are the shallow groundwater wells on the ENVY site and what is found in them? Are they of the appropriate depth to measure percolation of surface contaminants with precipitation? Wells tapping a deep aquifer, such as those supplying drinking water, are not suitable monitoring wells in that they are not in contact with the surface water or subsurface ground water which drains the site and carries any contaminants to the nearest seep, open stream or river. Where is the monitoring of groundwater wells reported? (RRR-8)

Response: *As discussed in Section 2.2.7 of the SEIS, the radiation is being monitored in the vicinity of VYNPS by both Entergy and the Vermont Department Health (VDH), Office of Radiological Health. Section 2.2.7 summarizes the monitoring programs conducted by Entergy and VDH. Details about the monitoring locations and the measurements over the last 5 years can be found in the references cited in Section 2.2.7. Both the Entergy and VDH monitor direct radiation, air pathway, as well as the water pathways (including river water and groundwater wells), vegetation, river bed sediments, and soils. All environmental radiological measurements by Entergy and VDH for the time period 2001–2005 were within the expected range. Samples of some media such as sediment often show detectable levels of cesium-137 from atmospheric nuclear testing. Measurements of other radionuclides such as cobalt-60 in river sediments are either below or slightly above the lower limit of detectability. All of these measurements were within NRC guidelines and limits. The radiation exposure measurements outside of the Vernon Elementary School have been found to be smaller than the measurements inside the school; therefore, NRC concludes that the higher measurements inside the school are due to natural radiation originating in the construction materials (e.g., the bricks) used for the school rather than due to VYNPS. The NRC concludes that the current monitoring programs are adequate. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

Comment: As for the Strontium 90, that too is rising around reactors as statistics show. It lodges in teeth and near bones. The marrow of bones produces the cells (T cells, etc) that form the Immune system. The immune system is the body's defense against colds, the flu, asthma, cancer, etc. I fit is weakened, these diseases may be expressed, or in the case of colds and the flu.. there is less defense and once contracted less T cells to fight the infection. If the T Cell's DNA is affected, it is possible that these cells would attack functioning tissues as if they were

the enemy, and this would manifest itself as one of the many horrible, chronic auto-immune diseases such as Multiple Sclerosis. I have not read the latter anywhere but it stands to reason. (BBB-3; AAA-2)

Comment: Here is the part that could well pertain to the Vermont Yankee and Strontium 90. even though it is based on other reactors. (Joseph Mangano and associates have had 21 peer reviewed articles accepted in scientific journals including Lancet.)

I took the following from: International Journal of Health Services March, 2006

A SHORT LATENCY BETWEEN RADIATION EXPOSURE FROM NUCLEAR PLANTS AND CANCER IN YOUNG CHILDREN Joseph J. Mangano, MPH, MBA

I tried but could not cut and paste the graphs that went along with it. The second part of this report examines the effects of radioactive emissions, as detected in the bodies of children. The average Strontium-90 concentration in baby teeth was measured for over 4,000American children, most residing near nuclear power plants. The ratio of Sr-90 per gram of calcium at birth in each baby tooth was measured in a radio chemistry laboratory, using a scintillation counting technique.

Average Sr-9O concentrations were analyzed by the birth year of the tooth donor, since much of the Sr-90 uptake in deciduous teeth occurs during pregnancy and early infancy. Temporal trends in Sr-90averages were compared with trends in cancer incidence for children under age ten in counties near nuclear plants with the largest numbers of teeth. These plants include Suffolk County NY (near the Brookhaven National Laboratories); Monmouth and Ocean Counties NJ (near the Oyster Creek plant); and Putnam, Rockland, and Westchester NY Counties (near the Indian Point plant). The correlation between these two trends will be assessed using a Poisson regression analysis testing the hypothesis that they are related. Linear and quadratic correlations will be tested, using the actual value, square root, and fourth root of Sr-90 averages.

The specific methodology to calculate Sr-90 concentrations for each tooth has been described previously (66) (67). Teeth from Suffolk County were analyzed using a Wallac WDY 1220X Quantulus low-level scintillation spectrometer, while a Perkin-Elmer 1220-003 Quantulus Ultra Low-Level Liquid Scintillation Spectrometer was used for other teeth. In addition, the method used to clean teeth before testing differed between Suffolk and other teeth; a more sophisticated preparation for non-Suffolk teeth, plus use of a different counter, allowed more Sr-9O to be detected. However, results for each area are internally consistent, allowing Sr-90 patterns and trends to be analyzed.

Sr-90 results are compared with cancer incidence diagnosed in children age 0-9 who resided in counties near nuclear plants at the time of diagnosis. Cancer registries from the states of New

Jersey and New York provided counts of incident cases, while the U.S. Census Bureau counts and inter-censal estimates for resident population were used. Three-year moving averages, rather than individual years, are used for both Sr-9O and cancer rates, to increase statistical power of the comparison.

RESULTS

1. Three Mile Island

In the 34 downwind (north and northeast) counties closest to of Three Mile Island, the SMR for cancer in children age 0-9 rose 23.8% (0.87 to 1.08) from 1979-1983 to 1984-1988, the periods 1-5 years and 6-10 years after the accident. The crude cancer mortality rate age 0-9 in the 34 counties increased 3.6%, compared to a national decline of 16.4%. Because the number of local deaths in each five-year period (127 and 135) was relatively small, the rise in SMVR is of borderline significance at p<.09. (Table 4)While the SMVR for leukemia fell from 0.95 to 0.88, the ratio for all other cancers combined rose from 0.83 to 1..17, statistically significant at p<.03.

Table 4

Change in Standard Mortality Ratio (SMR), Children Age 0-9
After the 1979 Accident, 1979-1983 vs. 1984-1988
34 Counties North/Northeast and Closest to Three Mile Island

SMR (Deaths)				
Type of Cancer	1979-1983	1984-1988		
All Cancers Combined	0.87 (127)	1.08 (135)	+23.8	p<.09
Leukemia	0.95 (48)	0.88 (35) -	-6.8	p<.90
All Other Cancers	0.83(79)	1.17 (100)	+41.0	p<.03

Source: U.S. Centers for Disease Control and Prevention, http://wonder.cdc.gov, underlying cause of death. Uses ICD-9 codes 140.0-239.9.

2. Chernobyl

From 1986-1990 to 1991-1995 (1-5 years and 6-10 years after the accident, the SMVR for cancers age 0-9 in the 18 states with the most fallout from the Chernobyl accident rose from 0.97 to 1.06, a significant increase (p<.02). The crude cancer death rate age 0-9 declined 6.6% in the 18 states, compared to a reduction of 14.0% elsewhere in the U.S. The SMVR rise for leukemia (0.90 to 1.01) exceeded that for all other cancers (1.00 to 1.07). Neither increase achieved statistical significance (p<. 10 and p<.13). (Table 5)

Table 5

Change in Standard Mortality Ratio, Children Age 0-9
After the Chernobyl Accident (May/June 1986), 1986-1990 vs. 1991-1995
18 States With Sites With Highest Average 1-131 Measurements

SMR (Deaths)

Type of Cancer	1986-1990	1991-1995	%Change	SMR
All Cancers Combined	0.97 (1501)	1.06(1466)	+ 8.7	p<.02
Leukemia	0.90(434)	1.01 (422)	+11.5	p<.10
All Other Cancers	1.00 (1067)	1.07 (1040) +	7.0	p<. 13

Source: U.S. Centers for Disease Control and Prevention, http://wonder.cdc.gov, underlying cause of death. Uses ICD-9 codes 140.0-239.9.

3. Counties Near Nuclear Plants (startup before 1982)

The SMR for all cancers in children dying before their 10Oth birthday in the most populated 20 areas near nuclear power plants cited in the 1990 National Cancer Institute report increased, for 17 of the 20 areas, from 1-5 to 6-10 years after plant startup. Table 6 shows the total Standard Mortality Ratio rose from 0.99 to 1.18.

Because of the large number of deaths in each period (587 and 590), the change was statistically significant at p<.003. Only one of the 20 changes near individual plants (Shippingport) was statistically significant. The increase in SMR for leukemia (1.00 to 1.22) exceeded that for all other cancers (0.98 to 1.15). Both increases achieved statistical significance (p<.03 and p<.05, respectively). (BBB-7; AAA-5)

Response: *The NRC has reviewed a number of studies by the Radiation Public Health Project (RPHP) that assert that levels of radioactive strontium-90 are rising in the environment and that these increased levels are responsible for increases in cancers, particularly cancers in children, and infant mortality. The group claims that radioactive effluents from nuclear power plants are directly responsible for the increases in strontium-90. In one study, researchers reported that strontium-90 concentrations in baby teeth are higher in areas around nuclear power plants than in other areas. This has sometimes been referred to as "The Tooth Fairy Project."*

However, as discussed in a background paper prepared by the NRC, (http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/tooth-fairy.pdf), numerous peer-reviewed, scientific studies do not substantiate the RPHP claims, and the NRC finds that there is little or no credibility in the RPHP's studies. Approximately 99 percent of strontium-90 in the environment came from atmospheric testing of nuclear weapons. The second largest source of strontium-90 in the environment was the Chernobyl accident. The amount of strontium-90 from all commercial nuclear power plants is a tiny fraction of the amount from Chernobyl. The estimated radiation dose from all sources of strontium-90 in the environment is approximately 0.3 percent of the dose that the average person in the United States receives

from natural background radiation. These dose levels are well below the levels that are known to cause any health effects. The NRC requires nuclear power plant licensees to monitor the releases of radioactivity from their facilities to the environment and to annually report these releases to the NRC. Additionally, these licensees are required to monitor the environment around their facilities and report results annually to the NRC. The NRC routinely inspects these aspects of nuclear power plant licensee performance.

The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: At page 2-14 the draft EIS shows that 31.7 curies per year of fission and activation gases are released from the release stack. These fission and activation gases are released because they can't be trapped in filters nor can they be economically removed through cryogenic distillation. NRC Staff should explain to the public the following: How much is a curie? How many curies of fission and activation gases would be released in a major accident if the reactor were opened to the atmosphere? Since the reactor is opened every 18 months for refueling, please explain why there is a difference, if there is one, in the amount released? (QQQ-10)

Response: *In 1 curie of radioactive material, 3.7×10^{10} atoms decay or disintegrate per second. Section 2.1.4.2 of the SEIS indicated that 31.7 curies of fission and activation gases are released from routine operation of VYNPS on an annual average basis. Releases during refueling every 18 months are included in this average. The reactor is at low temperature and pressure when it is opened during refueling. Potential impacts associated with releases of radioactive material from an accident are discussed in Section 5 and Appendix G of the SEIS.*

Comment: NRC reports radioactive off-gas releases to the environment from ENVY's 300-foot tall stack. However, neither NRC nor the state of Vermont has any way to verify these releases, because neither maintains their own detection equipment to verify Entergy's reported measurements. Given the history of false or incomplete data provided to the NRC and the State of Vermont (of which there are many examples in inspection reports; also the preparations for constructing a new building in anticipation of the Uprate which violated State codes.) This is an unacceptable abdication of oversight. (RRR-16)

Comment: NRC has not independently confirmed through its own measurements and analysis the Entergy reported radiation levels and types of radioactive materials in this contaminated soil. Without independently confirmed data, NRC cannot credible state that there will be no significant environmental impact from this activity. (QQQ-8)

Comment: NRC incorrectly assumes current NRC regulations are being met by the licensee and that the regulations themselves reflect current scientific realities and are protective of public health and safety. For example, the SEIS claims that the REMP (radiological environmental

monitoring report) for the last 5 years were reviewed, and the radiation and radioactivity in the environmental media monitored around the reactor have been well within regulatory limits. Then an Entergy report is cited. Entergy is not an independent or impartial source of information. How do you know their reports are credible? Not only is this called into question by the lack of verifiable data, (Entergy has to resort to indirect calculations to claim that it stays within fenceline radiation limits, despite multiple averaged readings on distributed TLDs at the fenceline. By calculating only MSL gamma from inside the reactor building, they are ignoring other radiation sources (fission products, gases, hot particles, etc.) generated by the reactor, escaping the building, that may be deposited on site. Might these escaped radionuclides be the source of the 150 cubic meters/year of contaminated soil that is swept up ENVY's sidewalks and roads and deposited on site rather than being sent to a licensed low level radiation dump as it should be? Entergy has failed to meet Vermont's fenceline standards a number of times prior to uprate, and are anticipated, despite promises to the contrary, to be in excess (as measured by the state's fenceline TLD's) for much of the period dating from the Uprate. This is unacceptable. Can NRC permit a plant that is inviolation of state pollution laws? How can NRC accept the substitution of equations over actual instrument readings--equations which ignore radionuclides which do not emanate from the steam lines or turbine but nonetheless escape into the environment and contaminate the site (hence the 150 cu. meters of contaminated soil PER YEAR) and may be transported offsite by water or wind? (RRR-13)

Response: *As required by NRC regulations, the amounts of radioactive isotopes released from VYNPS in liquid and gaseous effluents are continuously monitored and recorded by Entergy. Health physics experts from NRC's Region I office routinely inspect these monitoring programs to ensure that they are being properly implemented. In addition, Entergy conducts an environmental radiological monitoring program in the area around VYNPS and measures the level of contamination in soil and silt that is disposed of onsite. These programs have also been reviewed and approved by the NRC and are inspected by the health physics experts from NRC's Region I office. The environmental radiological monitoring program samples and measures the amount of radioactive isotopes in the air, water, soil, agricultural products, river sediments, and aquatic biota and measures direct radiation from the plant using thermoluminescent dosimeters (TLDs). In addition to the TLDs, Entergy uses information from the main steam line radiation monitors to assess dose rates at the fenceline using a correlation method approved by NRC. At the request of VDH, Oak Ridge Associated Universities (ORAU) evaluated this correlation method and concluded that it is viable in a report entitled* An Evaluation of Direct Gamma Dose at the Site boundary of the Vermont Yankee Nuclear Power Station *(http://healthvermont.gov/news/2007/031207yankee.aspx). These programs confirm that the levels of radiation and radioactive isotopes in the environment are consistent with the results of the effluent monitoring results. In addition, VDH conducts an environmental radiological monitoring program around VYNPS. These comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

A.2.10 Comments Concerning Socioeconomic Issues

Comment: The steady stream of electricity Vermont Yankee has supplied has been crucial for consumers and, at a time when Vermont must contend with an aging work force and an exodus of young people, the plant employs over 600 highly skilled men and women full time. Vermont Yankee provides more than $200 million of economic benefit annually to Windham County and the State of Vermont through state and local taxes, its payroll and the purchase of local goods and services, but the economics of the plant and its contributions are simply one piece of this discussion. (F-4)

Comment: Economic contributions from Vermont Yankee are felt throughout the state and have impact on just about every citizen within the state, relicensing of VY will have clear economic benefits to the state and the region. When VY was sold, a long-term purchase power agreement was a critical part of that sale, that agreement established the price of power from the plant to Vermont utilities. Due to that power purchase agreement, from 2002 to the present, they have already saved consumers in the State of Vermont $157 million, and that's in real dollars as compared to the purchase power, the cost of purchase power on the open market. And the Vermont Department of Public Service has estimated that savings to Vermont customers through 2012 will total about $250 million.

In addition to the savings associated with the purchase power agreement, VY spends between $55 and $60 million on direct expenses within Windham County and the state annually, those expenditures are for taxes, payroll, contracted services, and supplies and equipment. These local expenditures will continue throughout any life extension period. By 2012, Vermont Yankee will have invested about $25 million to the, or paid about $25 million to the state's green energy fund, that's at a rate of about $4.5 million a year. The green energy fund supports energy efficiency efforts and the development of renewable energy sources in Vermont. (Q-1)

Response: *The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

Comment: Nuclear power plants are major sources of light pollution. I understand that a certain number of lumens per square foot are necessary for security inside the fence. Unfortunately, the way this is achieved now is inefficient. It causes the site to be highly visible from the air at night from a long distance off. This is bad aircraft security and bad for the environment. There is an alternative. It would require more light fixtures, each having full cutoff light shields to block ambient light. Over a twenty year life the energy savings from such a system would pay for it. The site would still have the required number of lumens per square foot and the vast majority of the ambient light leaving the site would be stopped. (SS-1)

Response: *Suggestions about reducing the nighttime visibility of VYNPS, while maintaining a high degree of security on the ground, and both conserving energy and reducing light pollution*

to the benefit of the environment will be forwarded to the owners of VYNPS. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.

A.2.11 Comments Concerning Postulated Accidents

Comment: The ENVY SEIS states that NRC staff has concluded that the environmental impacts of design-basis or severe accidents are of small significance, as they have concluded for all plants in the GEIS. However they do not define how many potential fatalities are included in the definition of "small significance". At an anticipated population dose of 15 REM (averaged over 50 miles), and no elucidation of how the dose would vary over distance, it is likely that people near the reactor at the time of a severe accident would receive a lethal dose of radiation. I submit that ENVY may be the only operating reactor with an elementary school within 300 yards of its turbine building. I submit that this poses an inordinate risk to the health and safety of the children of Vernon, citizens most vulnerable to the harmful effects of radiation exposure, in the event of a DBA or severe radiological accident. At 300 yards away, there is no likelihood that all the children and staff and parents at this school would escape exposure to radiological releases. Just one fatal exposure would be one too many. I request that the NRC revisit their generic conclusion in light of the unfortunate proximity to a school where young children are present 180+ days out of the year, and apply the precautionary principle, not just cold-blooded PRA. I request that Entergy be required to fund a new site and building for the Vernon Elementary school as far from the reactor as possible. This is a reasonable mitigation (SAMA) for the awful possibility of severe harm to the youngest citizens of Vernon in the event of a severe or design basis accident. (RRR-17)

Response: *The comment proposes that the Vernon Elementary School be moved away from VYNPS as a severe accident mitigation alternative (SAMA). Section 5.2 and Appendix G of the SEIS address the SAMA analysis. Movement of the school was not considered as a SAMA because SAMAs only address actions within the licensee's control. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: While license extension of itself may not add to accident source term considerations, license extension in combination with extended power uprate adds to both likelihood and consequences of a major release. NRC Staff is well aware that studies performed for the Swiss Liebstadt reactor indicated that for a 14.7 percent uprate, available fission products increased by more than 30 percent. NRC Staff, in a classic example of cherry picking, quotes Liebstadt in the case of exemption from large transient testing, but does not refer to it in the case of greatly increased source term. The Liebstadt experience is new information with site specific implications for Vermont Yankee and should have been considered in the SEIS. (QQQ-24)

Response: *The source terms used by Entergy to estimate the doses to the population from severe accidents at VYNPS in the SAMA analyses were adjusted to account for the impact of the extended power uprate. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: VYNPS is located on the Connecticut River, on a post-glacial alluvial terrace consisting primarily of fine, non-cohesive alluvial sediments (silt and sand). The facility is approximately one-half mile upstream of the Vernon Dam, a hydroelectric facility. The left (easterly) abutment of Vernon Dam is founded on a peninsula of land known as Vernon Neck which narrows to as little as 60 feet across from top of bank to top of bank. The banks on each side of the peninsula slope downward to the Connecticut River.

Since the 1970s, there have been advances in scientific data, understanding and prediction of flood events. In addition, the advent and pace of global climate change may call into question the accuracy of flood frequency and volume projections., The potential for off-the-scale events that occur beyond accepted hydrologic and meteorological modeling projections may be increasing.

The Design Basis for External Events (DB) represents the Probable Maximum Flood (PMF) to consist of a discharge of 480,100 cfs. The PMF discharge was not determined in accordance with current NRC standards or methodology and falls significantly below the discharge volume determined through the current NRC standard of analysis. In addition, it is unclear how the PMF was calculated. What assumptions were made to calculate the PMF for this plant? What NRC standards and/or methodologies were used to arrive at this PMF? Does the DB analysis for External Events consider the impacts of inundation related to changes in the river channel including sedimentation, debris deposition and catastrophic erosion potential? If not, why not? Referrals to the FSAR and other NRC documents have not provided answers to these questions.

The DB analysis for External Events consists of a hydrologic and hydraulics (H&H) analysis which considers that, other than the failure of the Vernon dam powerhouse, the river channel cross section and profile remains static throughout the event. In consideration of the magnitude and catastrophic upstream consequences of a PMF discharge, it appears that the existing analysis of resultant flood elevations are suspect. The tremendous influx of sediment and debris into the Vernon pool is apparently not considered in the H&H analysis and as such the results are questionable.

In the context of license renewal, this facility should be evaluated in accordance with current regulations and; current scientific knowledge, technology and/or standards related to the floods and Design Basis for External Events assessments. Finally, the license renewal should

consider whether the age and physical condition of the plant is relevant to the potential impacts of an External Event. Severe Accident Mitigation Alternatives (SAMA) should be considered depending on the results of the analysis. (CCC-6)

Comment: Please review the issue of the flood plain. Since the original license was issues there has been new and significant information regarding the flood plain. In 2004 FEMA issued new flood plain maps for the entire Connecticut River. Please reconsider this in your environmental review impact. (YY-1)

Comment: Since 1972 when VYNPS was licensed, the science of earthquake prediction has advanced. Probabilistic earthquake analysis that looks at all possible events at once of a certain size in a region are analyzed to predict accelerations at a given locality i.e. Vermont Yankee. A reanalysis of the earthquake catalogue used to make predictions in the northeast has occurred since 1972. Strong motion instruments have been placed in the eastern United States to record response spectra for eastern events (Example -the 6.2 magnitude event of Nov 25, 1988 in Sagueney, Quebec). The following are listing of various earthquake risk analysis approaches that are relevant to predictions in southeastern Vermont.

1972	VYNPS is built using the response spectra from a 1952 Taft, California event.
1980s	USGS developed the first probabilistic seismic hazard maps.
1995	“A Report on the Seismic Vulnerability of the State of Vermont”, John Ebel etal., Weston Observatory of Boston College -contains Horizontal Peak Ground Acceleration maps
1996	USGS Probabilistic National Seismic Hazard Maps -Guidance maps of record (minor updates through 2002)

The USGS interpolated probabilistic 2002 ground motions for a latitude-longitude in the town center of Vernon are as follows:

LOCATION 42 46 35 Lat. -72 31 08 Long.

The interpolated probabilistic ground motion values, in %g:

	I0%PE in 50 yr	2%PE in 50 yr
PGA	3.60	11.12

(PGA) -Peak Ground Acceleration, (PE) -Probability of Exceedance, (SA)

Since 1999, a Vermont seismic consideration in geotechnical design uses the BOCA National Building Code (1996) in structural designs. The seismic provisions in BOCA include Peak Ground Accelerations (PGA) comparable to that by the USGS for a 500-year return period earthquake event (10% probability of exceedance in 50 years). Though not adopted in Vermont yet, the International Building Code (IBC) is the governing code in 26 states, the District of Columbia and for the Department of Defense. The IBC recommends peak ground accelerations comparable to those by the USGS for a return period of 2500 years (2% probability of exceedance in 50 years).

A letter of November 22, 1966 from John A. Blume and Associates, Engineers (Blume) to the General Electric Company, Atomic Power Equipment Department, concerning Vermont Yankee raises a concern about ground accelerations at the Vermont Yankee site. It states: "[A] moderate shock located about 10-20 miles away is a possibility that should be considered. Based on this assumption we recommend that the earthquake spectrum corresponding to the N69W component of the 1952 Taft Earthquake, normalized to the 0.07 gravity, be used for design." (Blume had reviewed a Weston Geophysical Research report and stated -"Using the seismic history data, the report establishes that maximum ground acceleration at the proposed site to be 0.03 to 0.04 gravity".)

Regulatory Guide 1.60, December 1973, defines a regulatory position for determining the Operating Basis Earthquake (OBE) and the Safe Shutdown Earthquake (SSE). In the Blume letter, it is not clear how 0.07 gravity was used or should be "used for design" in the analysis of OBE and SSE. Calculations for establishing OBE and SSE are tied to site conditions and the Blume letter raises the question as to whether the starting place in calculations should be "0.03 to 0.04" gravity or "0.07 gravity".

The additional concerns represented in International Building Codes and the uncertainty as to whether "0.07 gravity" was used in calculations for OBE and SSE suggests that Entergy analyze for a severe accident scenario that could exceed OBE and SSE. Severe nuclear accidents are those that have the potential to be more severe than the Design Basis Accidents. Severe Accident Mitigation Alternatives (SAMA) should be considered depending on the results ofthe analysis. (CCC-5)

Response: *The VANR and others provided comments suggesting that the seismic and flood design bases of VYNPS should be updated as part of license renewal. As the NRC staff indicated in the Vermont Yankee Scoping Summary Report, "it is assumed the safety design basis of the plant will be maintained and the plant will continue to meet all NRC regulations. Therefore, NRC's license renewal review does not re-examine the design basis of the plant. The license renewal safety review focuses on programs to manage aging. However, the NRC routinely searches for and examines new information that could affect the safety design-basis of nuclear power plants including information about seismic and flooding events to determine if changes in the design-basis are needed generically or for an individual plant."*

The NRC staff responsible for such examination has been in communication with the VANR staff to fully understand VANR's operating reactor design-basis concerns. If any revisions to the design basis for VYNPS are determined to be necessary, those revisions would be part of the VYNPS design basis during the license renewal period.

Entergy's SAMA analysis did consider potential improvements to reduce the risk of internal events such as seismic and flood events in addition to the internal events.

No changes were made to the SEIS in response to these comments.

Comment: And the National Academy of Sciences has already said that the spent fuel pool, which isn't included, I didn't see it on the slide, but maybe the gentleman hadn't prepared the slide and so the spent fuel pool isn't included in the slides, about it being 70 feet up in the air, outside of containment, in a tin swimming pool, basically.

And if that swimming pool were breached, the water would start leaking out, and it doesn't all have to disappear, just some of that water needs to go and those fuel rods would start igniting on their own because even though they are spent fuel rods, they are actually highly radioactive, more radioactive than the fuel rods that go into the reactor. And those fuel rods would start igniting and there would not be an explosion but there would be a fire, a very, very long lasting fire that would basically release radioactivity into the air and potentially contaminate 25,000 square miles. That's about 90 miles radius and, depending on how wind blows that day, who would get affected, but it would be a majority of New England, and that's all of us sitting in this room and I think that needs to be included in the environmental impact statement. (E-2)

Comment: Admittedly, it is a low probability that terrorists will attack the fuel pool, probably because Vermont is a little bit boring, but the consequences would be extremely severe. As Claire said, 25,000 miles would be contaminated by such an event.

If some of the water drains out of the fuel pool, the chimney effect of the effect of cool air passing through the cladding would be stopped and therefore the zirconium would self-ignite, that's the cladding of the fuel would self-ignite and spew radioactive contamination over three states. Of course, assuming we got out, which is, which is quite an assumption of course because the evacuation plans are really laughable, assuming we got out, we could of course never come back, and neither could our children, grandchildren, etcetera, these areas would be basically permanently contaminated. (L-1)

Comment: The fuel pool could also be damaged in the case of an earthquake and this area is subject to earthquakes. (L-2)

Comment: In 1987, at the re-racking process, the second, the New England Coalition's expert witness Dr. Gordon Thompson's testimony was not allowed because, at that point, Dr.

Thompson's contention that the possibility of a self-sustaining zirconium fire in a spent fuel pool in the event of a loss of coolant accident was not credible. Years passed and Dr. Thompson took this proposition to several reracking proceedings and, finally, in about 2000 to 2001, the NRC decided, oh, he is right, it could happen.

The thing that bothers me about your EIS or one of them is that NUREG-1738 I believe was promulgated in 1996. You speak of new and significant information which might change your view, 1996 was before the NRC realized that Dr. Thompson could be correct. NUREG-1783 bases its calculation on lower density storage, which is not relevant now at Vermont Yankee, and also on instantaneous loss of coolant, rather than slow partial loss which will yield a much more severe accident. Consequently, your EIS for this relicense proposal does not have a factual basis.

As I understand changes can be made, I would certainly encourage you to do a recalculation on the basis of what is in the pool, what will probably remain in the pool if Vermont Yankee continues to operate. (N-2)

Comment: We live in a society that is so sensitized to danger that report of a knife on a schoolground or a screwdriver in an airport will shut down the entire system, yet the shockingly vulnerable spent fuel pool at Vermont Yankee, with enough potential radiation released to make uninhabitable this entire three-state region, sits within sight of two school systems, sits on the very banks of our only river system which carries an entire multistate watershed south to our neighbors, sits on the unstable tectonic fault line that once divided two separate continental land masses, and finally, sits at the very gateway to the economy of all points north, and as always, the NRC and the power industry finds this all acceptable. (Z-2; DDD-1)

Comment: The NRC fails to consider the potential environmental effects of the spent fuel pool accident or major spent fuel pool radiological release as a result of an act of terror. NUREG-1738 characterizes potential impacts as up to 25,000 fatalities at a distance of up to 500 miles and this presumes 95 percent early evacuation. The model plant chosen for this study referenced in NUREG-1738 was Millstone One, a plant very similar to VY, albeit in an area of high population density. NUREG-1738 also references seismic fragility of the Vermont Yankee spent fuel pool specifically. It also admits that BWR Mark 1 containments would present no substantial obstacle to aircraft penetration. (JJ-5)

Comment: Spent fuel pool accident and/or sabotage risk. NUREG-1 738 was generated in 2000. Many of its conclusions were not available when Vermont Yankee was originally licensed and have not been included in Vermont Yankee's Updated Final Safety Analysis Report or other Licensing documents. In particular, the report includes up to date spent fuel pool accident consequences modeled on Millstone I, a sister plant and quite similar to Vermont Yankee. Consideration of the radiological impact of mid-term releases shows that even with a presumed 95% evacuation, up to 20,000 fatalities might be expected out to distances of 500 miles. The

report also shows that Mark I containments, such as Vermont Yankee, present no substantial barrier to aircraft penetration and, further, that the bottom of Vermont Yankee's spent fuel pool could "drop out" in the event of an extreme seismic event (QQQ-25)

Comment: The ignored risk of a spent fuel pool fire due to malicious or accidental water loss also poses an unacceptable risk to the citizens of Vernon and children at the school, both at current spent fuel stocking levels and the unimaginable potential doubling of this quantity by the time of eventual decommissioning. (RRR-18)

Response: *Onsite spent storage is considered a Category 1 issue, which was evaluated in the GEIS, NUREG-1437; therefore, accidents would be encompassed by the analysis of the Category 1 issue of onsite spent fuel storage. The safety and environmental effects of spent fuel storage onsite have been evaluated by the NRC and, as set forth in the Waste Confidence Rule (10 CF 51.23), the NRC generically determined that such storage could be accomplished without significant environmental impacts. In the Waste Confidence Rule, the Commission determined that spent fuel can be safely stored onsite for at least 30 years beyond the plant's life, including license renewal. The GEIS, NUREG-1437, is based upon the assumption that storage of the spent fuel onsite is not permanent.*

The issue of security and risk from malevolent acts at nuclear power plants is considered out of the scope of the environmental review and was addressed in the October 30, 2006, Vermont Yankee Nuclear Power Station Scoping Summary Report (ADAMS Accession No. ML063030576). These matters will continue to be addressed through the ongoing regulatory oversight process as current and generic regulatory issues that affect all nuclear facilities. Appropriate safeguards and security measures have been incorporated into the site security and emergency preparedness plans. Any required changes to emergency and safeguards contingency plans related to terrorist events will be incorporated and reviewed under the operating license.

It should be noted that the Massachusetts Attorney General is currently petitioning the NRC for rulemaking regarding the evaluation of environmental impacts of severe spent fuel pool accidents. Information regarding the Massachusetts Attorney General's rulemaking petition, can be found at the following NRC website: http://ruleforum.llnl.gov/cgi-bin/rulemake?source=prm51108st=petition-a.

The comments do not provide new and significant information; therefore, no changes were made to the SEIS based on these comments.

Comment: The Draft Supplemental GEIS is inadequate to satisfy the requirements of the National Environmental Policy Act ("NEPA") or NRC regulations for the implementation NEPA,

because it fails to address new and significant information regarding the potentially severe adverse environmental impacts of continued high-density pool storage of spent fuel at the Vermont Yankee nuclear power plant.

We hereby renew the Attorney General's June 15, 2006, comments on the scope of the Draft Supplemental GEIS, including our previous request that you consider the technical information contained in the Hearing Request which was attached to our Scoping comments[(a)]. [Letter from Diane Curran and Matthew Brock to Chief, NRC Rules and Directives Branch (June 15, 2006) ("Scoping Comments"), enclosing Massachusetts Attorney General's Request for a Hearing and Petition to Intervene With Respect to Entergy Nuclear Operations Inc.'s Application for Renewal of the Vermont Yankee Nuclear Plant Operating License, etc. (May 26, 2006) ("Hearing Request"). The Attorney General is not re-submitting the Scoping Comments or the Hearing Request, because the NRC already has copies.] Our Scoping Comments were ignored in the NRC Staff's October 30, 2006, scoping decision. [Letter from Richard L. Emch, Jr., Senior Project Manager, Environmental Branch B, Division of License Renewal, Office of Nuclear Reactor Regulation, to Michael R. Kansler, President of Entergy Nuclear Operations, Inc. ("Entergy")] They were also ignored in the relevant portion of the Draft Supplemental GEIS. [Draft Supplemental GEIS, Section 4.7 ("Evaluation of New and Potentially Significant Information on Impacts of Operations During the Renewal Term")]

As stated in our Scoping Comments, the Supplemental GEIS for the Vermont Yankee nuclear power plant should address the environmental impacts of a severe accident in the Vermont Yankee fuel pool, including accidents caused by equipment failures, natural disasters, and intentional malicious acts. The Supplemental GEIS should also consider a reasonable array of alternatives for avoiding or mitigating the impacts of a severe pool fire, including combined low-density pool storage and dry storage of spent fuel. [In addition, we wish to inform you that on January 16, 2007, the U.S. Supreme Court denied a petition for review of a decision by the U.S. Court of Appeals for the Ninth Circuit that was cited in our Scoping Comments, San Luis Obispo Mothers for Peace v. Nuclear Regulatory Commission, 449 F.3d 1016 (9th Cir. 2007). The decision is reported at 2007 U.S. LEXIS 1028.]

In addition, the Draft Supplemental GEIS should incorporate the Commission's decision to consider the issues raised by the Attorney General's Scoping Comments and Hearing Request in a generic rulemaking proceeding [Entergy Nuclear Vermont Yankee L.L.C. and Entergy Nuclear Operations, Inc. (Vermont Yankee Nuclear Power Station) and Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc. (Pilgrim Nuclear Power Station), CLI-07-03, NRC ,slip op. at 8 (January 22, 2007)]. The Commission initiated the rulemaking proceeding in November of 2006 by publishing the Attorney General's August 29, 2006

(a) The scoping comments referred to in the comments are not included in the SEIS. They are available for download from NRC's ADAMS website at http://www.nrc.gov/reading-rm/adams/web-based.html under Accession No. ML061780088.

rulemaking petition in the Federal Register for public comment [see Notice of Petition for Rulemaking, Docket No. PRM-51-10, 71 Fed. Reg. 64,169 (November 1, 2006)]. It is therefore premature for the Draft Supplement GEIS to reach any conclusions regarding the environmental impacts of high-density pool storage of spent fuel at the Vermont Yankee nuclear power plant.

Finally, the Staff should confirm that under NEPA, the Staff is precluded from issuing a permit for renewed operation of the Vermont Yankee nuclear power plant unless and until the results of the rulemaking proceeding have been taken into account in the Vermont Yankee license renewal case. (XX-1)

Comment: Because Vermont Yankee is so near his state, I support the Massachusetts Attorney General's request that the National Environmental Policy Act (NEPA) include in its decision-making documents the consideration of the impacts of intensely radioactive spent fuel rods. (WWW-1)

Response: *The Massachusetts Attorney General commented in its intervention petition and during the scoping period that the EIS should include an evaluation of the environmental impact of a spent fuel pool accident. Onsite spent fuel storage is considered a Category 1 issue, which was evaluated in the GEIS, NUREG-1437; therefore, the analysis of accidents would be encompassed by the analysis of the Category 1 issue of onsite spent fuel storage. The safety and environmental effects of spent fuel storage onsite have been evaluated by the NRC and, as set forth in the Waste Confidence Rule (10 CFR 51.23), the NRC generically determined that such storage could be accomplished without significant environmental impacts. In the Waste Confidence Rule, the Commission determined that spent fuel can be stored onsite for at least 30 years beyond the plant life, including license renewal. The GEIS, NUREG-1437, is based upon the assumption that storage of the spent fuel onsite is not permanent. In addition, the NRC staff did not identify any new and significant information that would call the Category 1 issue, raised by the Massachusetts Attorney General, into question. Therefore, the Attorney General's comments were not evaluated as part of the draft SEIS.*

The Massachusetts Attorney General is currently petitioning the NRC for rulemaking regarding the evaluation of environmental impacts of severe spent fuel pool accidents. Information regarding the Massachusetts Attorney General's rulemaking petition, can be found at the following NRC website: http://ruleforum.llnl.gov/cgi-bin/rulemake?source=prm5110&st= petitions-a.

These comments provide no new and significant information; therefore, no changes have been made to the SEIS.

Comment: Severe accident mitigation alternatives also need to be seriously addressed as, again, we don't think that they have been. (N-8)

Response: *The NRC staff performed a detailed evaluation of potential SAMAs for VYNPS. This evaluation, documented in Appendix G of the SEIS, is based on the analysis of SAMAs contained in Entergy's ER and information provided in several responses to requests for additional information (RAIs). Of the 302 candidate SAMAs evaluated in the ER, Entergy found two SAMAs to be potentially cost-beneficial. Based on a further evaluation, four additional potentially cost-beneficial SAMAs were identified. The NRC staff reviewed the Entergy analysis and concludes that the methods used and the implementation of those methods were sound. The treatment of SAMA benefits and costs support the general conclusion that the SAMA evaluations performed by Entergy are reasonable and sufficient for the license renewal submittal. The comment does not provide new or significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: Of the 302 SAMAs, please break down the 236 by reason they were screened out, i.e. how many for design differences (not applicable at VY), because they have already been mitigated by VY, how many addressed by a similar SAMA. (YY-2)

Response: *An initial set of 302 candidate SAMAs was identified by Entergy. In Phase I of the evaluation, Entergy performed a qualitative screening in which 236 SAMAs were eliminated from further consideration. Of the 236 SAMAs eliminated, 57 were eliminated because the SAMA is not applicable at VYNPS due to design differences, 175 were eliminated because the SAMA has already been implemented at VYNPS, and 4 were eliminated because the SAMA is similar in nature and could be combined with another SAMA candidate. The comment does not provide new or significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: Licensee renewal applicants are to consider alternatives to mitigate severe accidents. The purpose of this consideration is to ensure that plant changes (i.e. hardware, procedures, and training) with the potential for improving severe accident safety performance are identified and evaluated. The EIS notes that the cost beneficial SAMAS identified by VYNPS need not be implemented as part of license renewal. NRC does not indicate whether or not VYNPS would be required to implement cost beneficial SAMAS outside ofthe scope of the license renewal process. Will VYNPS be required to implement these SAMAS and, if not why not?

New scientific knowledge and technology should be applied to the examination of external events, such as, earthquake and flood to determine whether these new standards can inform the evaluation of potential impacts, if any. If potential impacts are identified the NRC should determine whether there are appropriate mitigation strategies to address potential impacts. In addition, the age and current physical condition of the facility may be relevant to the analysis of the potential impacts of an external event, including design basis external events, such as, flood and earthquake. (CCC-4)

Response: *The potentially cost-beneficial improvements identified through the SAMA evaluation do not relate to adequately managing the effects of aging during the period of extended operation, and, therefore, are not required to be implemented as part of license renewal. The licensee has indicated that it will further evaluate these improvements for possible implementation. As a result, it may decide to voluntarily implement certain improvements. The NRC retains the option under 10 CFR 50.109 (i.e., the backfit rule) to require licensees to implement plant improvements if it is determined that there would be a substantial increase in the overall protection of the public health and safety, and that the costs of implementation are justified in view of this increased protection. Any decision to pursue a plant-specific backfit would not be made until the licensee has completed its further evaluation and dispositioning of the cost-beneficial SAMAs. However, such a decision would not generally be expected given that plants meet the Commission's safety goals and that the level of risk reduction afforded by typical cost-beneficial SAMAs is relatively modest.*

The results of the Individual Plant Examination of External Events (IPEEE) for VYNPS were explicitly considered in the SAMA evaluation to identify any additional mitigation alternatives for external events. The IPEEE included consideration of all relevant external events, including seismic, fire, high winds, and floods. The accepted methodologies for performing these assessments, described in NUREG-1407, "Procedural and Submittal Guidance for the IPEEE for Severe Accident Vulnerabilities," are considered sufficient for identifying plant-specific vulnerabilities to severe accidents from external events and cost-effective safety improvements to reduce or eliminate important vulnerabilities.

The comment does not provide new or significant information; therefore, no changes were made to the SEIS in response to this comment.

Comment: Sections 5 and G, Line N/A
The draft VYNPS SEIS notes (Page G-33, Lines 16-18) that SAMA 63 is cost-beneficial because, "when the impact of uncertainties is included, the benefit of SAMA 63 becomes approximately $250,000." However, the first paragraph on page G-27 of the draft VYNPS SEIS states that the revised assumptions for this SAMA are reasonable and acceptable. The revised assumptions for SAMA 63 (presented on page 22 of Entergy 2006d) resulted in a baseline benefit estimate of $116,000. Multiplying this value by the uncertainty factor of 2.15 (draft VYNPS SEIS Page G-32, line 26) results in a benefit with uncertainty of $249,400, which rounds to $249k. The estimated cost is $250k. Thus, SAMA 63 is very close to being cost beneficial when uncertainty is included. However, the reason uncertainty is applied is to include SAMAs that are close to being cost-beneficial. There is no basis for including SAMAs that are close after applying uncertainty. Therefore, SAMA 63 is not potentially cost-beneficial. (UUU-54)

Comment: Page 5-5, Line 29
Change four to three. (UUU-58)

Comment: Page 5-9, Line 26
Change four to three. (UUU-59)

Comment: Page 5-9, Line 29
Delete bullet for SAMA 63 (UUU-60)

Comment: Page G-25, Line 7-10
Change from bold to normal font. (UUU-140)

Comment: Page G-31, Line 32
Change four to three. (UUU-144)

Comment: Page G-33, Line 6 delete
"Of particular note is the revised evaluation of Phase II SAMA 63." (UUU-145)

Comment: Page G-33, Line 16 -18
Replace "The NRC staff notes that when the impact of uncertainties is included, the benefit of SAMA 63 becomes approximately $250,000. Therefore, SAMA 63 is potentially cost-beneficial.," with "Since the cost of implementing this SAMA is larger than the associated benefit, SAMA 63 is not cost-beneficial for VYNPS." (UUU-146)

Comment: Page G-34, Line 31-32
Delete "(1) control containment venting within a narrow pressure band (SAMA 63)," and change subsequent bullet numbers. (UUU-147)

Comment: Page G-34, Line 41
Change "four" to "three" (UUU-148)

Comment: Page G-34, Line 42 -43
Delete "(1) control containment venting within a narrow pressure band (SAMA 63)," and change subsequent bullet numbers (UUU-149)

Comment: Page G-35, Line 30
Change "four" to "three". (UUU-151)

Response: *Based on the risk reduction values provided in the ER and subsequent RAI responses, the NRC staff estimated the baseline benefits for this SAMA to be slightly more than $116,000 and the benefits with uncertainty to be slightly more than $250,000. Thus, the NRC staff concluded that this SAMA is potentially cost-beneficial. Even if the benefit values were slightly less (e.g., $249,400), the costs and benefits should be viewed as equivalent given the precision of the analysis. The comments do not provide new or significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: Page G-18, Line 4
Change “1" to “<1" to be consistent with Lines 42 and 43 of Page G-22 (UUU-134)

Comment: Page G-24, Line 10
change “1" to “<1" in CDF column [to be consistent with other SAMAs} (UUU-135)

Comment: Page G-24, Line 14
Change “1" to “<1" in Population Dose column (to be consistent with other SAMAs} (UUU-136)

Comment: Page G-24, Line 20
The clarification of the response to RAI 5.j (page 7 of Entergy 2006d) states that re-evaluation of the benefit of SAMA 59 results in a revised baseline benefit with uncertainty of $1,424. In the draft VYNPS SEIS, this value has inadvertently been used for the benefit using 7%discount rate without uncertainty. The value for the 7% discount rate benefit is $663 and the 3% discount rate value is $745. (UUU-137)

Comment: Page G-24, Line 20
Change 1,400 to 600 (UUU-138)

Comment: Page G-24, Line 20
Change 1,900 to 700 (UUU-139)

Comment: Page G-25, Line 9
Change “remover” to “remove” in assumptions column (UUU-141)

Response: *The text in Table G-4 has been modified in response to these comments.*

Comment: Page G-6, Line 2
Insert “(Entergy 2006b)” after “improvements” (UUU-126)

Comment: Page G-6, Line 30
Insert “(Entergy 2006c)” after “Table G-3" (UUU-127)

Comment: Page G-7, Line 10
Change “4.2 x 10-“”to “4.3 x 10""(Page 13 of Entergy 2006c states the CDF for VY02RO is 4.28E-06} (UUU-128)

Comment: Page G-8, Line 46
Change “0.25" to ‘0.25g” to be consistent with Line 46 of Page G-15 (UUU-129)

Comment: Page G-9, Line 1
Change “0.29"to ‘0.29g” (UUU-130)

Response: *The text in Section G.2.2 has been modified in response to these comments.*

Comment: Page G-15, Line 22
Change “contributes” to “contribute” (UUU-131)

Comment: Page G-16, Line 24 & 25
Change “282 through 284" to “214 through 224 and 282 through 284" [See pages 20 and 21 of Entergy 2006b} (UUU-133)

Response: *The text in Section G.3.2 has been modified in response to these comments.*
Comment: Page G-16, Line 11
Change “205 through 224" to “205 through 211 and 212" {See pages 18 and 19 of Entergy 2006b} (UUU-132)

Response: *The text in Section G.3.2 has been modified in response to this comment, but the value was changed to “205 through 210 and 212.”*

Comment: Page G-28, Line 30 & 31
Separate paragraphs by one line. (UUU-142)

Comment: Page G-30, Line 29
Change “megawatt electrics” to “megawatts electric” (UUU-143)

Response: *The text in Section G.6.1 has been modified in response to these comments.*

Comment: Page G-35, Line 10
Delete colon after “of”. (UUU-150)

Response: *The text in Section G.7 has been modified in response to this comment.*

Comment: Page G-36, Line N/A
Add “10 CFR Part 54. Code of FederalRegulations,Title 10, Energy, Part 54, “Requirements for Renewal of Operating Licenses for Nuclear Power Plants” to the Section G.8 references in Appendix G of the Draft SEIS since it is in the section write-up and is consistent with other regulations listed in this section. (UUU-152)

Comment: Page G-37, Line 6
Change “U.S. Department of Agriculture to “U.S. Department of Agriculture (USDA)” to accurately reflect listing in section write-up. (UUU-153)

Comment: Page G-37, Line 40 -42
"NRC 2003" is not referenced in the Appendix G write-up (Pages G-1 through G-36) of the Draft SEIS. (UUU-154)

Comment: Page G-38, Line N/A "VYNPC 2000" is not referenced in the Appendix G write-up (Pages G-1 through G-36) of the Draft SEIS. (UUU-155)

Response: *The text in Section G.8 has been modified in response to these comments.*

A.2.12 Comments Concerning Uranium Fuel Cycle and Waste Management Issues

Comment: The environ, this industry has a cycle to it, we like to talk about it for electrical generation, the uranium is pulled out of the ground, there is a whole mining process.

It doesn't take but a few minutes of looking at a web, at the worldwide web, to find the environmental problems wherever the uranium is mined. There are connections between the fuel cycle and military uses. You look at the countries that have nuclear power, many of them have nuclear weapons, that's the history of it, depleted uranium, all kinds of things. It just feels like what you all do with your environmental impact statement is you narrow it down to just this tiny little thing and then say it's all fine, but environmental deals with the fuel cycle, the final resting place of the waste and those questions. I have not heard them addressed by the Nuclear Regulatory Commission in a public meeting. (R-2)

Comment: Vermont has one if not the highest, one of if not the highest rates per capita of radioactive waste in the nation, maybe in the world. This radioactive poison is, as we all know, stored in an overfull, unprotected precarious place in our state. Obviously the NRC is wanting to relicense a dangerous old plant to add to an unsolvable problem. We have seen this same NRC fox guarding our hen house of health before. To those of you at the NRC wanting to add to an unsolvable problem, to relicense Vermont Yankee, it is past time your consciences, obviously based on tilted education and money, begin to kick in since, no matter how much electricity we produce, it will never be enough. (EE-1)

Comment: Please assess levels of cancer, heart disease, genetic damage to off-spring among workers and family members engaged in mining, refinement, and transportation of uranium. (KKK-7)

Comment: Please assess quality of life indicators for persons living downwind of the uranium mines. (KKK-8)

Response: *The comment is related to the uranium fuel cycle and waste management issues. Uranium fuel cycle and waste management issues were evaluated in the GEIS and were determined to be Category 1 issues. The Commission is confident that all nuclear waste*

generated will be handled, stored, and disposed of in a manner that ensures public health and safety. The NRC has specific regulations for releases of radioactive materials from the uranium fuel cycle to the environment. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: I have a concern that the NRC accepted Entergy's recommendation that the spent fuel canisters be stored outside along the Connecticut River. A concern there has to do with I have a concern with the NRC's awareness that the proposed location is in a flood plain. I'm not sure how long the flood plain is, there is some variation there. I have concern regarding that such a location means that at least one every few hundred, five hundred, thousand more years, a flood is going to occur high enough to wash those 90 ton casks directly into the Connecticut River. Mathematically speaking, I have a concern whether or not the NRC has evaluated the fact that if those canisters stay there in the flood plain for 20 years, 50 years, there is a higher increased chance of that flood occurring and/or washing those casks into the Connecticut River. I'm certain the NRC is aware that that flood plain designation is based on historical meteorological data.

I have a great concern that world renowned and credentialed meteorologists and environmental experts are now stating that global warming will undoubtedly change historical weather data, bigger storms occurring far more frequently than charted or anticipated. I certainly hope the NRC has done its due diligence and research to make sure that 1, 5, 10 casks, 90 tons a piece, 50 feet away from the banks of the river, who knows when that next flood is coming? So the historical weather data is likely no longer accurate.

I have a concern regarding the steps the NRC has taken to reevaluate the critical environmental data and its impact on the storage of the spent fuel at Vermont Yankee. I also question what environmental modeling data the NRC has used and is available for these utilities to use to evaluate these upcoming environmental changes. I would love to know what regulations the NRC has put in place to ensure that all utilities are considering the new environmental issues of significant climate change in their evaluations and permits for long-term waste storage.

What steps will the NRC take to assure that the new environmental modeling will be used to assure Vermont's citizens of protection from exposure to this new risk to this long-term storage which, since the beginning of the reactor has been temporary of course, the pool, the dry casks or "interim spent fuel storage installation"? What steps has the NRC taken to review these new hazardous waste measures with the States of Mass. and Connecticut, each of which would be severely impacted by the release of radioactive spent fuel into the Connecticut River? (NN-1)

Comment: I have concerns for the lack of thermal syphoning ability when a 90 ton cask slides or turns over into muddy, silty water. (NN-3)

Comment: The waste must never be moved, must be secured in the best way we can devise and monitored. (HHH-3)

Comment: What is the problem with making more nuclear waste? It takes up to 250,000 years to decompose to safe levels and it causes cancer and genetic defects it it leaks in to our air and water. (GGG-1)

Comment: I must conclude that not enough is known for you to adequately relicense this aging plant. For one, the waste storage facility at the Vermont Yankee plant is at capacity! The plant, when first constructed, was due to close this year because of the issue of waste. Until there is a definitive plan, I must agree with all of those who voiced opposition to this plant and all nuclear power plants continuing to generate more waste. You must as the regulatory agency look at alternatives seriously and face the problem of spent fuel waste by stopping the increased production of waste. (WW-1)

Comment: The highly toxic waste, with the national repository not going to open, is already at its final resting place, and that place happens to be in my backyard close to where both my father and my grandfather are buried, a place worth fighting for. (H-4)

Comment: The fuel must remain in the fuel pools for five years to cool down, so even if the plant operates until 2012, the fuel would be there for another five years. Now, if the plant is relicensed, this situation will continue for 20 more years beyond that, of course. The fuel is, once it's taken out of the fuel pool, it is then placed in dry casks, so I think that now we have permission to have six dry casks on the banks of the river, then this would add another 20 more years of fuel that would be stored on the banks of the Connecticut River.

This is of course high level waste, meaning that it is extremely long lasting, as well as highly radioactive. One of the lovely misnomers of the lingo is that low-level waste, we think that sounds not too dangerous, of course it's extremely radioactive, just as radioactive as the high level waste, it just won't last quite as many generations. I think that we can expect that this waste will be permanently on the banks of the river and this, the banks of the river, in 1991, were studied for a low-level radioactive storage facility, as it's called, and were deemed inappropriate because of the, because it's a wetland, basically.

So now we would have a high level dump, with greatly more waste, if the plant is allowed to relicense, on the banks of the river permanently because Yucca Mountain of course is in nowheresville, that's probably never going to happen. Another issue of course is the fence line dose. Because of the uprate, the fence line dose is being exceeded and of course this is another situation that would then continue for 20 more years. (L-3)

Comment: I believe there is no solution to the high level waste that is being created that will be deadly for thousands of years. (M-3)

Comment: So, while there is a great deal more to say, 36 years later, with Vermont Yankee's spent fuel pool stuffed dangerously full, at elevation, with no foreseeable repository anywhere in the world, the people of Vermont, and New Hampshire and Massachusetts are left with what was not part of the original bargain, it is now a true Faustian bargain and no consideration of nuclear waste in an EIS is complete on this issue, it is dismissed as a small effect. (N-5)

Comment: And what about all of that high level waste sitting on the banks of the Connecticut River, potentially for 100 years or more, with no solution, with the bankrupt waste confidence rule that is still just dragged out to justify allowing the nuclear corporations to do what they want? The only protection available here tonight is for a foreign corporation and its shareholders. (O-3)

Comment: This [spent fuel] is the number one environmental concern of people in this area, besides, you know, fence-line radiation and some other things, but the long-term health of this community. Our governor still believes, I asked him on the radio, he still thinks the federal government is coming to get this. Harry Reid, the senator from Nevada, the most powerful man in the United States Senate has on his web site, unequivocally, that Yucca Mountain will not open. Where is it being taken that our governor still believes it's being removed?

This is an environmental review, environmental as in ecological, one of the rules of ecological science is that there is no away in throw away, away does not exist. They don't want it in Nevada and Harry Reid, the senator from Nevada, says the reason they don't want it is the health and safety of the people of Nevada. Well if they don't want it in Nevada, why do we want it here? (R-1)

Comment: I read recently where Commissioner McGaffigan, who I understand is the longest sitting Commissioner on the NRC, is that correct? Right, he is the Commissioner who is still on the Commission and is the longest serving, has basically publicly stated that Yucca Mountain was mismanaged from the get-go and that they ought to give the order to stop digging. This isn't coming from me, an anti-nuclear activist, clean energy advocate, it's coming from the longest sitting Commissioner at the NRC. That information I think is relevant to this process, as previous witnesses have pointed out, because we are still dealing with the frustrating problem of the waste. (S-1)

Comment: What I'm really here to talk about is my main concern which is the radioactive waste that will outdate this reactor by tens of thousands of years. I wanted to bring down a diagram of the kind of waste that I produce in this community, it's a bag of returnables. Trading recyclables for radioactive waste can't really compare, no one has ever died from exposure to returnables. I don't think Entergy can say the same for their waste.

Despite this fact, I was not permitted to bring my bag of trash into this room, while that reactor continues to produce some of the most dangerous materials on this planet. I don't think there is any negotiation for relicensing before anyone can anything to say about what's going to happen with that waste. (FF-1)

Comment: In reaching your conclusion that the environmental impacts from VY are small you obviously have assumed that the spent fuel will be sent off site before the dry cask's one hundred year life has elapsed. I certainly agree with this assumption given the legal arrangements with the DOE, the progress (halting as it has been) on Yucca Mountain and new initiatives for reprocessing. The technical solutions to spent fuel storage have been known to be viable for a long time. The obstacles are primarily political. (SS-5)

Comment: VANR is aware that the Vermont Department of Public Service (VDPS) will be filing comments on this issue. VANR concurs with the VDPS position that the potential impacts of long term storage of spent fuel on site should be subject to rigourous site-specific EIS evaluation. The prospect of long term spent fuel storage on site constitutes new and significant information which justifies a site specific EIS evaluation of the potential impacts in the relicensing process. (CCC-2)

Comment: As presently drafted the GEIS and the Draft EIS conclude that the non-radiological impacts of on-site spent fuel storage at any nuclear plant, including Vermont Yankee, will be small. GEIS, Section 3.2; Draft EIS at 6-8. Neither document analyzes the impact on land use and land values for the facility land and adjacent land in the event that spent fuel is required to be maintained at the reactor site for an indefinite time but assumes that either an off-site temporary storage facility or a permanent disposal facility, with sufficient capacity to receive all spent fuel from all reactors now seeking license extensions, will exist no later than 30 years after reactor operations conclude under those extended licenses. GEIS, Sections 6.4.6.2, 3; Draft EIS at 6-8. Even if temporary storage of spent fuel at a reactor site for no more than 30 years after the reactor ceases to generate electricity would have approximately the same impact on land use and land values at every reactor site - an assumption that underlies the GEIS but is not analyzed in it - that assumption is demonstrably insupportable if the temporary spent fuel storage is indefinite, with no reliably predictable end. In such a case, the character of the land itself, the local and state laws relevant to the land and the impacts on local land use and land values will necessarily vary from site to site. It is in this critical, site specific aspect, that the Draft EIS is seriously deficient.

Undeniably, the task of predicting the future for the handling, storage and disposal of high level nuclear wastes is fraught with uncertainty. Since this issue was first addressed by the NRC in developing the S-3 Table, no important prediction has proven accurate. The one common thread has been that no matter how cautiously the statement is worded, any prediction

of an outer bound for the date by which high level nuclear waste would be disposed of in a permanent high level waste facility has been wrong. Repeated failure to correctly predict the date should have led to one of two conclusions:

1. No permanent high level nuclear waste facility and no off-site spent fuel storage facility of sufficient size and for a indefinite period of storage will ever exist and thus, evaluations of the environmental impact of storing spent nuclear fuel must at least evaluate the impact of indefinitely managing high level nuclear wastes at the reactor site until such time as the waste no longer poses any significant threat to the public health and safety; **or**

2. Although there is confidence that at some time in the future a permanent high level nuclear waste facility or off-site spent fuel storage facility of sufficient size and for a indefinite period of storage will exist, it is not possible to reasonably determine when such a facility will be operational and thus it is necessary to consider that the storage of high level nuclear wastes will continue indefinitely at the reactor site.

The State of Vermont (Vermont) through its Department of Public Service (DPS) has identified its concern with the uncertainty associated with the question of when, if ever, a permanent solution will be found to the spent fuel disposal or off-site storage problem in numerous filings with the NRC, the most recent of which was its June 23,2006 comments submitted regarding the scoping of the Draft EIS for the proposed 20 year extension of the operating license for Vermont Yankee. The comments contained extensive information and analysis demonstrating the error in the GEIS assumption that because spent fuel would not have to be stored at Vermont Yankee for more than 30 years after the reactor ceases to operate, there would be, at most, a small non-radiological impact from storage of spent fuel at the Vermont Yankee site. Notwithstanding this submission, no mention is made of the information submitted or the analysis provided in the draft EIS. Rather the draft EIS persists in quoting the now outdated and inaccurate assertion in the GEIS that spent fuel storage at the reactor site will be small “if a permanent repository or monitored retrievable storage is not available.” Draft EIS at 6-8.

The draft EIS does not acknowledge that the quoted statement from the GEIS is based upon an assumption that the longest possible time that spent fuel would have to remain at a reactor site is 30 years after expiration of its license. GEIS, Sections 6.4.6.2, 3. The draft EIS does not address the fact that events that have arisen since that conclusion was reported in the GEIS, which events were neither anticipated or analyzed in the GEIS, have created a substantial possibility that the hoped for 30 year maximum storage time for spent fuel will not be achieved. GEIS, Section 3.2 (referring to GEIS Chapter 6); GEIS, Section 6.4.6.2. By ignoring this new and significant information the Draft EIS fails to comply with Commission regulations and the requirements of the National Environmental Policy Act (NEPA).

The only lawful manner in which the EIS can address these problems is to provide an in depth evaluation of the new and significant information offered by Vermont, to gather additional

evidence related to these issues in the possession of Entergy, the applicant in this proceeding, and others and, consistent with NRC regulations, to advise the Commission of these facts and recommend appropriate Commission action. Although Vermont believes this new and significant information requires a modification to the GEIS as well as changes in the proposed Supplement 30 for Vermont Yankee, it recognizes that the Staff may conclude that although there is new and significant information it does not warrant any modifications. Whether that position will withstand scrutiny cannot be determined until the Staff fulfills it legal obligation to evaluate the relevant data and provide a reasoned analysis of the bases for its conclusions.

DISCUSSION

NEPA imposes on every federal agency certain obligations to gather and analyze information in order to determine the environmental impacts of any proposed major federal action. 42 U.S.C. 5 4332(2)(C). In this case that environmental analysis, with respect to the non-radiological impacts of on-site spent fuel storage was undertaken in the GEIS. The issue for consideration when a specific plant is seeking a specific license extension, is whether a supplemental impact statement is required. The NRC has determined, by rule, that supplementation, is required when a specific application is being considered but has limited the scope of that review to certain issues that involve more than what it characterizes in the GEIS as small environmental impacts. The Draft EIS takes the position that the environmental impact of on-site spent fuel storage does not require any further environmental analysis because it is has already been generically determined that such impacts will be small. However, that position cannot be sustained because, contrary to well-established law, even though there is new and significant information suggesting that the basis for the GEIS conclusion is no longer viable, the Draft EIS does not even address, much less provide a reasoned analysis, of the new and significant information and its impact on the GEIS finding. In Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 109 S.Ct. 1851 (1989) the Court concluded:

> NEPA does require that agencies take a “hard look” at the environmental effects of their planned action, even after a proposal has received initial approval. . . Application of the “rule of reason” thus turns on the value of the new information to the still pending decisionmaking process.

Id. 490 U.S. at 374, 109 S.Ct. at 1859. That same year the Court emphasized the importance of a full discussion of the potential environmental impacts as a vital prerequisite to a proper analysis of steps that could be taken to mitigate those impacts and alternative actions:

> Implicit in NEPA’s demand that an agency prepare a detailed statement on “any adverse environmental effects which cannot be avoided should the proposal be implemented,” 42 U.S.C. 5 4332(C)(ii), is an understanding that the EIS will discuss the extent to which adverse effects can be avoided. . . . More generally, omission of a reasonably complete discussion of possible mitigation measures would undermine the “action-forcing” function of

> NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects. An adverse effect that can be fully remedied by, for example, an inconsequential public expenditure is certainly not as serious as a similar effect that can only be modestly ameliorated through the commitment of vast public and private resources. Recognizing the importance of such a discussion in guaranteeing that the agency has taken a "hard look" at the environmental consequences of proposed federal action, CEQ regulations require that the agency discuss possible mitigation measures in defining the scope of the EIS, 40 CFR § 1508.25(b) (1987), in discussing alternatives to the proposed action, § 1502.14(f), and consequences of that action, 5 1502.16(h), and in explaining its ultimate decision, §1505.2©

Robertson v. Methow Vallev Citizens Council, 490 U.S. 332, 35 1-52, 109 S.Ct. 1835, 1846-47 (1989)(citation omitted). [Footnote (1): Because the Draft EIS does not consider the potential adverse impacts on land use and land value, it does not explore alternatives to indefinite on-site storage or mitigation measures.]

The Draft EIS takes no look, much less a "hard look", at the new and significant information brought to its attention by Vermont in its comments on the scope of issues for the Draft EIS. [Footnote (2):By submitting its comments at an early stage in the process and not waiting for publication of the Draft EIS, Vermont was fulfilling its duty to alert the agency at an early date to relevant information that may impact on the decisionmaking process. This long-standing duty and its value in creating an iterative process was recently reconfirmed by the Supreme Court: Persons challenging an agency's compliance with NEPA must "structure their participation so that it ... alerts the agency to the [parties'] position and contentions," in order to allow the agency to give the issue meaningful consideration. Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc., 435 U.S. 519, 553, 98 S.Ct. 1197, 55 L.Ed.2d 460 (1978). Department of Transp. v. Public Citizen,. 541 U.S. 752, 764, 124 S.Ct. 2204, 2213 (2004). By ignoring Vermont's comments in its Draft EIS the Staff has frustrated the purpose of NEPA.] Because there is no discussion of the potential for indefinite storage of spent fuel on the land used by Vermont Yankee, there is no discussion of the environmental and economic impact of such indefinite use on the Vermont Yankee land or surrounding land nor of alternatives or mitigation measures. The Commission has made clear, in adopting the regulations that govern license extensions, that the Staff has a much greater responsibility when new and significant information is brought to its attention than what the Staff has undertaken in this case:

> The major changes adopted as a result of these discussions are as follows:
>
> 1. The NRC will prepare a supplemental site-specific EIS, rather than an environmental assessment (as initially proposed), for each license renewal application. This SEIS will be a supplement to the GEIS. Additionally, the NRC will review comments on the draft SEIS and determine whether such comments introduce new and significant information not considered

in the GEIS analysis. All comments on the applicability of the analyses of impacts codified in the rule and the analysis contained in the draft supplemental EIS will be addressed by NRC in the final supplemental EIS in accordance with 40 CFR 1503.4, regardless of whether the comment is directed to impacts in Category 1 or 2. Such comments will be addressed in the following manner:

a. NRC's response to a comment regarding the applicability of the analysis of an impact codified in the rule to the plant in question may be a statement and explanation of its view that the analysis is adequate including, if applicable, consideration of the significance of new information. A commenter dissatisfied with such a response may file a petition for rulemaking under 10 CFR 2.802. If the commenter is successful in persuading the Commission that the new information does indicate that the analysis of an impact codified in the rule is incorrect in significant respects (either in general or with respect to the particular plant), a rulemaking proceeding will be initiated.

b. If a commenter provides new information which is relevant to the plant and is also relevant to other plants (i.e., generic information) and that information demonstrates that the analysis of an impact codified in the final rule is incorrect, the NRC staff will seek Commission approval to either suspend the application of the rule on a generic basis with respect to the analysis or delay granting the renewal application (and possibly other renewal applications) until the analysis in the GEIS is updated and the rule amended. If the rule is suspended for the analysis, each supplemental EIS would reflect the corrected analysis until such time as the rule is amended.

c. If a commenter provides new, site-specific information which demonstrates that the analysis of an impact codified in the rule is incorrect with respect to the particular plant, the NRC staff will seek Commission approval to waive the application of the rule with respect to that analysis in that specific renewal proceeding. The supplemental EIS would reflect the corrected analysis as appropriate.

Statement of Considerations upon issuance of amendments to Part 51 addressing rules to apply in proceedings involving applications for license renewal (61 FR 28467,28470 (1996)). Since the comments regarding the indefinite storage of spent nuclear fuel at the Vermont Yankee site' were filed by Vermont with its comments on the proposed scope of the Draft EIS, the Staff should have addressed those concerns in the Draft, rather than seek to shut off a meaningful dialogue on the issues by either ignoring the matter completely or putting its comments into the Final EIS.

Federal case law underscores the duty of the NRC Staff to fully discuss, at the earliest point in the process, information brought to its attention regarding the potential environmental impacts of its proposed action. The Fifth Circuit underscored the important role that the NEPA process plays in allowing a meaningful exchange of information between the agency and the public:

> This case arises under the network of NEPA, a statute drafted to ensure that federal agencies "carefully consider detailed information concerning significant environmental impacts," and at the same time "guarantee[ ] that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision." Robertson v. Methow Vallev Citizens Council, 490 U.S. 332, 109 S.Ct. 1835, 1845, 104 L.Ed.2d 35 1 (1989); accord North Buckhead Civic Ass'n v. Skinner, 903 F.2d 1533, 1540 (11 th Cir.1990). It is a procedural statute that demands that the decision to go forward with a federal project which significantly affects the environment be an environmentally conscious one.

Sabine River Authority v. U.S. Dept. of Interior, 951 F.2d 669, 676 (5th Cir., 1992). By failing to address the concerns raised by Vermont in its comments on the scope of the proposed Draft EIS in the document itself, the Staff frustrates the ability of Vermont and others to "play a role in both the decisionmaking process and the implementation of that decision" because Commission rules restrict the ability of a party to present these considerations in the licensing proceeding. The Staff position also deprives the Staff of the benefit of feedback from Vermont and others with regard to its position on these important questions regarding the environmental impact of indefinite spent fuel storage at the Vermont Yankee facility.

Finally, the regulations promulgated by the President's Council on Environmental Quality (CEQ) governing implementation of NEPA, which are binding on all federal agencies (40 CFR Section 1500.3) and entitled to substantial deference (Robertson v. Methow Vallev Citizens Council, 490 U.S. at 355-56,109 S.Ct. at 1849), underscore the importance of an agency addressing new information.

> c) Agencies:
>
> 1. Shall prepare supplements to either draft or final environmental impact statements if:
>
> (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

40 CFR Section 1502.9(c); Marsh v. Oregon Natural Resouces Council, 490 U.S. at 372, 109 S.Ct. at 1858. In addition, where, as here, the new information bears on an issue for which a precise determination is not possible, the agency must meet additional obligations to disclose and discuss such information. When "an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information" and

> the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:
>
> (1) A statement that such information is incomplete or unavailable;
> (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment, and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, "reasonably foreseeable" includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

40 CFR Section 1502.22(b). There is no question that there is a reasonably foreseeable adverse environmental impact if spent fuel remains at the Vermont Yankee site long after the reactor has ceased to operate. As noted in the several filings by Vermont and without contradiction from the Staff or any party, there will be substantial impact on the use of this valuable land (bordering the Connecticut River, one of the most important natural resources enjoyed by Vermont residents and others) and on the land of adjacent property owners who cannot realize the full potential of their own land so long as the site is used for nuclear activities. Thus, once it becomes apparent that there is new and significant information that spent fuel storage may continue indefinitely at the site, CEQ regulations imposes on NRC a duty to fully discuss that information and to fully explore the nature of the uncertainty about when and whether spent fuel will ever be removed from the Vermont Yankee site. NRC may not, as the Draft EIS assumes, merely reference a now outdated conclusion that, because there has to be an off-site solution to the nuclear waste problem, there will be one. The events of the last decades demonstrate that such "necessity" has not produced a solution and those events strongly suggest that "necessity" may not ever produce a solution.

Contrary to all of these case, statutory and regulatory authorities, and although the Staff was fully aware of Vermont's concerns about the environmental impacts 'of indefinite spent fuel storage at the Vermont Yankee site and the substantial body of new information that supports those concerns, there is not a single reference to this new information or to the issues raisedby it in the Draft EIS. In derogation of the duties imposed by the Commissions own regulations, as fully explained in the Statement of Considerations accompanying those regulations, the Draft EIS totally ignores the significant new information that, at a minimum, throws considerable doubt on the validity of the prior assumption that spent nuclear fuel will not have to be stored at the Vermont Yankee site for more than 30 years after the reactor ceases operation. At a minimum

the Draft EIS should have addressed the issue and the new information and presented, as a draft, for further comment, the Staffs analysis of this information and the Staffs conclusion as to whether further action should be taken by the Commission.

To remedy the defect in the Draft EIS, the Staff must issue a supplement to the Draft EIS to enable Vermont, the Applicant and other interested parties to file comments on the Staffs tentative conclusions regarding the new and significant information presented by Vermont (and any other relevant of which the Staff is aware) and to comment on the Staffs tentative recommendations regarding the need for additional action by the Commission.

NEW AND SIGNIFICANT INFORMATION

The relevant new and significant information which should have been addressed in the Draft EIS is referenced and identified in the following documents which are attached to these comments and made a part of them: [(a)]

1. June 23,2006 letter and attachments from William K. Sherman, State Nuclear Engineer, to Chief, Rules and Directives Branch, Division of Administrative Services Office of the Administration of the NRC;
2. Vermont Department of Public Service Notice of Intention to Participate And Petition to Intervene in Entergy's application for License Renewal in Docket No. 50-271 filed on May 26,2006 at pp. 12-3 1, including all attachments referenced in those pages;
3. Vermont Department of Public Service Reply to Answers of Applicant and NRC Staff to Notice of Intention to Participate and Petition to Intervene corrected copy filed July 6, 2006, at pp. 17-40, including all attachments referenced in those pages.

In addition, Entergy possesses substantial new information directly relevant to the issue of whether it will have to store spent fuel at the Vermont Yankee site for an indefinite period. As Vermont observed in its Reply to Answers of Applicant and NRC Staff to Notice of Intention to Participate and Petition to Intervene:

> In *Entergy Nuclear Generating Co.v. U.S.*, 64 Fed.Cl. 336 (2005) Entergy successfully sued the United States on the theory that DOE had breached a contractual duty to take possession of, and title to, spent nuclear fuel (SNF) within 63 months after a utility submitted a delivery commitment schedule (DCS) with regard to such SNF. In that suit, and at the urging of Entergy, the Court of Claims, in reliance on the stipulation of the parties and otherwise undisputed facts reached the following conclusion:

(a) The documents referred to in the comment are not included in the SEIS. They are available for download from NRC's ADAMS website at http://www.nrc.gov/reading-rm/adams/web-based.html under Accession No. ML070790146.

> This aborted effort in 2004 to reinstitute the DCS process signals that no disposal of SNF will occur during 2010, taking into account the 63-month period between designation and collection, and moreover that disposal may not occur within any foreseeable time in the future. No repository is available.

Id. 64 Fed.Cl. at 340 (citation omitted)(the chaotic nature of the entire spent fuel storage management scheme is detailed in the Court's opinion at footnotes 3 and 4). Entergy was fully capable of setting forth these new and significant facts, plus we suspect much more information not readily available from the printed case, in order to meet its obligations under 10 CFR $5la53(c)(3)(iv) but failed to do so, thus depriving the NRC, potential intervenors, and this Board of the truth about the uncertainty in how Entergy will manage the spent fuel it proposes to generate over the extended 20 years of operation of VY.

Id. at 21-2. As part of its NEPA responsibilities the Staff should obtain whatever information is available to Entergy and which supported its successful claim against the government and resulted in its obtaining a federal court ruling that "[off-site] disposal [of spent nuclear fuel] may not occur within any foreseeable time in the future. No repository is available." Enterm Nuclear Generating Co. v. U.S., 64 Fed.Cl. at 340.

CONCLUSION

For the reasons stated above, we urge the Staff to issue a supplemental Draft EIS which fully discusses the new and significant information provided by Vermont and otherwise available to the Staff, including information it seeks and obtains from Entergy, regarding whether spent fuel will have to be stored at the Vermont Yankee site indefinitely, the environmental impact of such indefinite spent fuel storage on land use and land values for the Vermont Yankee site and surrounding land, all is presented in more detail in the attached documents and references, and alternatives to avoid or mitigate these anticipated adverse impacts. (EEE-1)

Comment: The Federal, long term nuclear waste facility at Yucca Mountain, Nevada is still in construction and already over committed. In September, 2005, there were 210,000 tons of spent fuel waiting to be disposed of. Yucca Mountain is designed to accept only one-third of that, i.e. 70,000 tons. There is no prospect for the long term storage of the other 140,000 metric tons. The Vermont Yankee, between 2005 to the end of first license, 2012, will have produced an additional 140 metric tons of spent fuel assemblies. By 2012 many cooled assemblies will have been removed and stored in short term dry cask canisters on site. If Entergy is given the go-ahead by the Vermont State Legislature, the Vermont Yankee will be permitted to operate until 2032. It will have produced an additional 540 metric tons of spent fuel. By that time, with the spent fuel build-up at the other 102 reactors across the nation, many more long term storage sites must be accepting.

The Massachusetts Attorney General, and other attorneys general across the country, are concerned about how the short term packaging will endure the elongated waiting period. The Connecticut River could rise and flood the area. With global warming this is a growing concern. If these casks eventually join the other reactors' casks on the long trip to Nevada, they will have to be further hardened before transport. How will they be reinforced? How much will it cost? Who will pay?

These are "new and significant problems" that pertain to storage. They have emerged during the 35 years of Vermont Yankee's first license period. They need to be solved before the Vermont Legislature can consider a twenty year relicensing. I list just two:

1. It is new and significant that there is still strong resistance against storage at Yucca Mountain. Other states, New Hampshire, for example --have flatly refused to take it. Over time, "short term" dry cask storage units stored near reactors will deteriorate. A nation stressed by global warming reparations will be hard put to restore all these storage units, and there may be moisture seeping in, due to a recent flood. Highly radioactive Strontium, Cesium, Plutonium, etc. may be already breaking through the cask barrier. (WWW-2)

Comment: I, for one, urge that NEPA's decision making documents include deep scrutiny of the new, significant and very possible impacts of spent fuel storage, namely:

2. -the growing need, since global warming, for dry-cask units to be kept on high ground, completely isolated from a flooding Connecticut River or any other flood water seepage, in hardened bunker pits with regular human monitoring to prevent diversion by ground attack (WWW-4)

Comment: In conjunction with the above, please, Mr. Secretary, support the exclusion of the Waste Confidence Rule, so that the NRC will be in the position to take on, without delay, its responsibility for the security and safety of spent fuel rod assemblies. AU this because the mission of the NRC is, first and foremost, public health and safety. (WWW-6)

Comment: I have been working all my life on the design of nuclear reactors, under the assumption that Yucca Mountain would be ready on time. Now I realize that it is not and is already over committed. I would like to see all reactors reach their end of life safely, and see that the final spent fuel disposal is secured. (WWW-7)

Response: *Onsite storage of spent nuclear fuel is a Category 1 issue. The safety and environmental effects of long-term storage of spent fuel onsite have been evaluated by the NRC, and, as set forth in the Waste Confidence Rule at 10 CFR 51.23 (available at http://www.nrc.gov/reading-rm/doc-collections/cfr/part051/part051-0023.html), the NRC generically determined that "if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the licensed*

life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent spent fuel storage installations. Further, the Commission believes there is reasonable assurance that at least one mined geologic repository will be available within the first quarter of the twenty-first century and sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor to dispose of the commercial high-level waste and spent fuel originating in any such reactor and generated up to that time." As stated in Section 6.1, no repository application has been completed or reviewed. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: NRC Staff should have included an environmentally oriented definition of low-level radioactive waste, that is, a physical, not a legal definition.

We believe that properly stated, contaminated soil low-level would have been included in that definition. (QQQ-6)

Comment: Section 6-7 of Supplement 30 states that the "Commission concludes that there is a reasonable assurance that sufficient low-level waste disposal capacity will be made available when needed..."

The States through the Low-level Radioactive Waste Policy Act and its Amendments are responsible for providing disposal capacity. The basis for NRC conclusions is not explained. Under federal law, without the state's involvement, no reasonable assurance can be made that waste disposal capacity will be available. It is requested that NRC obtain detailed waste volume and activity projections from Entergy for the license renewal period so as to fairly assess the potential impacts of license extension, support the conclusions in Section 6-7 of Supplement 30, and assist Vermont in meeting its compact responsibilities.

In accordance with the compact system, the State of Vermont has a responsibility to provide disposal capacity for generators of low-level radioactive waste (LLW) in Vermont. Vermont is a member of the Texas Low-Level Radioactive Waste Compact. Under Vermont statute waste generation must be minimized and waste volumes tracked to ensure proper disposal. As such, any increases in waste generation are of concern to the State. Title 10 VSA Section 7066 (c) governs the disposal of LLW and states as follows:

"No generator of low-level radioactive waste in the state existing on the date of enactment of this section may increase its generation of waste in a year by more than 20 percent of the total annual volume of waste from all generators estimated for disposal by the secretary of natural resources, under subdivision 7065(a)(3) of this title, unless that generator receives a favorable determination from the secretary of natural resources that disposal capacity will be available as provided by section 3.04(11) of the compact agreement."

In addition, Section 7065 (a) (3) directs the Secretary of the Agency of Natural Resources to "....establish the annual projected volume of low-level radioactive waste from each generator in Vermont to be disposed in the compact facility for the years 1995-2045, to determine compliance with section 3.04(11) of the compact agreement."

The proposed extended life (2012-2032) will shift decommissioning volumes to after 2032. Operational volumes will continue adjusted for the previously granted extended power uprate. During the license renewal period many of the plant components will be 40 years or older. In the context of re-licensing, it is expected that VYNPS will plan for replacement of components for engineering considerations and predict maintenance costs. When components are replaced there could be spikes in waste volumes for any particular year. Any increase in waste stream impacts on low-level waste disposal capacity has the potential to impact on human health and the environment. VANR would like access to this information to facilitate the determination that disposal capacity is available for LLW generation as per State statute. (CCC-3)

Response: *Low-level waste storage and disposal were evaluated in the GEIS and were determined to be Category 1 issues. The impact was determined to be SMALL. Licensees are required to store and dispose of low-level radioactive wastes in accordance with NRC regulations, including 10 CFR Parts 20 and 61. In addition, NRC inspectors observe the licensee's storage and disposal of low-level waste to ensure that the regulations are met. Therefore, the NRC is confident that all nuclear waste generated will be handled, stored, and disposed of in a manner that ensures public health and safety. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

Comment: At page 2-13, the draft EIS explains that VY installed an incinerator to burn, "slightly radioactive waste oil for space heating purposes." NRC cannot credibly quantify environmental impact from this activity without answering the following questions: Is the oil radiologically or chemically analyzed before incineration? Does this oil heater ever experience flame-outs or back draft episodes? Is the heater's intake monitored for leaks and blow-backs? Does NRC directly confirm any of this? It does not appear so. (QQQ-9)

Response: *The radiological doses discussed in Section 2.2.7 of the SEIS include any radioactive emissions resulting from the burning of contaminated used oil on site. The oil is well characterized before burning. The management of used oil and its chracterization are discussed in Section 2.2.4.2 of the SEIS. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: The Draft EIS states at page 7-3 decommissioning at the end of a 20 year renewal period would generate no more solid wastes than at the end of the current license term. NRC staff has apparently failed to considered the obvious fact that the VY steam dryer is in poor condition and, while it may last until 2012, is not likely to last until 2032; thus joining the waste

stream. NRC review has not projected the service life of other components in the steam system as well and has not considered the phenomena of increased failure rates as these components approach the end of design life. NRC considered the increased stresses on reactor internals and increased replacement rates due to uprate and extended service. (QQQ-16)

Response: *The statement referenced in the comment is taken from Chapter 7.0, Environmental Impacts of Decommissioning, of the SEIS and it pertains to the amount of waste generated at the time of decommissioning. Wastes generated during the operation of the plant, including any wastes resulting from the maintenance and replacement activities, prior to decommissioning are addressed in Chapter 6.0 of the SEIS. Some amount of contaminated components are replaced every year at VYNPS to maintain safe operation of the plant. These components become solid radioactive waste. Neither the extended power uprate or license renewal is expected to significantly increase this source of waste. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

Comment: PCB, heavy metal, and hazardous chemical runoff from coated surfaces has been an issue at other nuclear plants of Vermont Yankee's vintage when undertaking environmental review for decommissioning. The draft EIS is negligently silent about the potential for additional accelerated coatings breakdown and PCB, lead, arsenate, and mercury leaching during the extended 20 years of exposure under re-licensing? (QQQ-15)

Response: *The NRC staff is not aware of any significant environmental issues related to chemical runoff from coated surfaces at VYNPS. In the GEIS, the discharge of sanitary wastes and minor chemical spills and the discharge of other metals in wastewater were considered Category 1 issues and were determined to have a SMALL impact at all operating nuclear plants. The NRC staff's environmental review did not identify any information that would call into question these conclusions in the GEIS. Monitoring of surface water contaminants of concern is covered under the NPDES permitting process. In the VYNPS NPDES permit, the State has identified copper, zinc, and iron for monitoring. VYNPS also must comply with State and Federal requirements for the proper storage and handling of toxic and hazardous chemicals to minimize potential releases to the environment. The comment provides no new and significant information, and, therefore, no changes were made to the SEIS.*

Comment: There is legitimate concern about the future of the used nuclear fuel stored on-site at Vermont Yankee. Thankfully, there is a new impetus to establish a nuclear fuel recycling industry in the United States, as has already been established in France, the U.K., Japan and Russia. Ninety-five percent of the original energy is still contained in the used fuel, recycling or reprocessing, as it is also known, allows the recovery of this energy in the form of uranium and plutonium, results in a much reduced and shorter-lived waste in the form of the fission products that can be glassified and buried. (B-3)

Comment: We are in the process of building a recycling or reprocessing plant in Salt Lake City, so there is hope on the horizon for reprocessing all of this waste that everybody is so concerned about. It will turn the waste into a resource which will keep our nuclear power plants running for hundreds of years. (V-2)

Comment: The fuel that we have, you've heard people talk about it tonight, and they classify it as waste. Those that might have heard Dr. Moore speak last night, they said a very profound statement in that because of recycling, it's not waste at all.

And we, as humans, have relatively short life spans on this planet and, over the course of time, our lives are very small, compared to the ecology itself, and I fully believe that the fuel that we are taking out of the reactor now that has not been used will be able to be used in the future in mixed oxide fuels and other ways that we may not even perceive right now. (Y-2)

Comment: The idea of recycling the waste, as suggested at the meeting, would lead to nuclear proliferation and the production of weapons grade materials -just what the world does not need. (TT-4)

Response: *The comments discuss potential recycling of nuclear waste. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments.*

Comment: In the mid 1990s, Vermont Yankee applied for and received permission for outdoor on-site storage of up to 35 cubic yards of radiological contaminated soil per year, this soil is drawn from building excavations and from traction sand and salt that have been applied to and gather from VY roads during winter. In 2003, Entergy Nuclear Vermont Yankee applied for and received permission for outdoor on-site storage of a one-time dump of approximately 300 cubic meters and an annual deposit of up to 150 cubic meters of radiological contaminated soil.

This soil will be stored south of the cooling towers on what may be fairly characterized as the banks of the Connecticut River, VY irradiating 20 percent more uranium under increased flow turbulence will produce in excess of 20 percent additional low-level waste and contamination due to extended power uprate. NRC cannot credibly assert that this excess site contamination will remain within regulatory bounds with quantification and verification of potential radiological effects, as they may be aggravated by leeching, stratification, migration and bio accumulation. The presence of this low-level waste dump on the banks of the Connecticut is a new, since the original licensing and not included in any license amendments and it is site-specific, it should be considered in any license renewal evaluation. (JJ-4)

Comment: I also have a great concern regarding the back 40 that was mentioned earlier, that low-level waste dump allowed once on the south side by the cooling towers, and how close it is to the water, given the potential for being near the flood plain. (NN-4)

Comment: Just preceding the uprate application, Entergy was given permission to stockpile 150 cubic yards of radioactive soil per year on-site, that's about eight large dump truck loads per year dumped apparently in an unlined and uncovered location near the Connecticut River. These piles of radioactive dirt will be subject to erosion and over land flow, rain and snow melt tend to wash into the river. The storm drains are designed to collect over land flow but no monitoring is done on the storm drains, so how do we know that the effluent that discharges from these storm drains is within regulatory limits or that there is no environmental impact from it? (OO-6)

Comment: Septic sludge too hot to send to commercial septic haulers is also surface spread in three or four locations on the site. This is a site, by the way, that was deemed unsuitable for a low-level waste dump by an independent environmental review a number of years back, I think it was in the `80s. If you don't monitor the outflow pipes that collect storm drain run off from the site, how can the NRC claim in this supplemental environmental impact statement that there are no radioactive liquid effluents? (OO-7)

Comment: Just preceding the Uprate application, Entergy was granted permission to stockpile 150 cu. meters of radioactive soil per year outside on site (that's eight LARGE dumptruck loads per year) in uncovered, unlined piles. There is no mention of this large quantity of radioactive soil in the SEIS, nor an explanation of where it comes from. The soil is apparently in the open, exposed to rain, snow, overland flow, erosion. Storm drains tend to pick up overland flow-but no monitoring is done so how do you know that the outfall effluent from the storm drains is within regulatory limits? I submit as new and significant information the Site Characterization Data Report for the Vernon/Vermont Yankee Site Volume 1, November 1991 prepared for the Vermont Low-Level Radioactive Waste Authority by Battelle [Battelle, 1991, Site Characterization Data Report for the Vernon/Vermont Yankee Site Volume, prepared for the Vermont Low-Level Radioactive Waste Authority]. The study concluded that due to a number concerns the site should be removed from consideration for siting a low level rad waste facility. Concerns included jurisdictional wetlands (VYWI, VYW2, VYW3 and VYW4) which meet federal criteria under Section 404 of the Clean Water Act (in addition, the palustrine wetlands are likely to be within the 100-year flood limit of the Connecticut River, under the new FEMA floodplain delineation);depth to water table (water level data from spring 1990 indicated groundwater within 4 inches of land surface at one location (103S in Battelle, table 3.1-1); travel times to river, to shallow domestic wells south of the site, and to surface seeps south of the site (preliminary minimum travel time (along most conservative pathway to riverbank estimate: 3 months to 9 yrs; to domestic wells uncertain. This travel time for leachate is not enough for Cobalt 60 and other long half-life radioisotopes WHICH WERE FOUND IN SEDIMENTS IN THE 1989 VYNPS RADIOLOGICAL SURVEY, ALONG WITH "DETECTABLE LEVELS OF HUMAN-MADE RADIONUCLIDES IN MILK, MIXED VEGETATION, AND FISH." (p. 2.9-1, Battelle). The study's conclusion was to recommend that the Authority suspend further characterization at this site and consider other alternatives. Why then is ENVY allowed to turn the site into a de facto low level radioactive waste dump with its open air radioactive soil

stockpiles and septic sludge (see below)? Yet NRC concludes that low-level waste storage will have small impacts. At 150 cu. meter/year times up to 40 additional years, 6000 cubic meters of radioactive soil will have accumulated on a site deemed unsuitable for low level radioactive waste. How can this be of small significance? (RRR-6)

Comment: Septic sludge too hot to send to commercial septic haulers is also surface-spread on site. Exactly which isotopes does this septic waste contain? Any runoff from the fields where septic sludge is spread in spring or during a heavy rainstorm (that which does not percolate down and reach the riverbank in just a matter of months) would be collected by the storm drains and flow out the outfall pipes in a matter of hours. If the outfall pipes are not regulated or monitored, how can NRC claim in this SEIS that there are no radioactive liquid effluents? (RRR-7)

Comment: Entergy Vermont Yankee has obtained NRC permission to yard or pile in the open 150 cubic meters per year of radioactively contaminated soil per year. If VY has no discharge of radioactive solid effluents, as SEIS says, then the NRC Staff should explain how so much soil becomes radioactively contaminated to measurable levels or levels distinguishable from background. What radioactive elements or isotopes are in this soil? What is to prevent runoff to the river or migration as dust in the wind? (QQQ-7)

Response: *Text has been added to Sections 2.1.4.3 and 2.2.7 of the SEIS to clarify that, under an approval granted by the NRC, slightly contaminated septic waste, cooling tower silt, soils, and sand are being disposed of onsite by land spreading. The text added to Section 2.2.7 also provides a discussion of doses resulting from these disposal activities.*

Comment: I, for one, urge that NEPA's decision making documents include deep scrutiny of the new, significant and very possible impacts of spent fuel storage, namely:

3.--the assurance that the long trips to Yucca Mountain be safe and secure, without use of tunnels where fires could be compounded as in the recent Baltimore tunnel fire. (WWW-5)

Response: *Transportation of spent fuel is addressed in Section 6.1 of the SEIS. The impacts associated with transportation of spent fuel are identified as a Category 1 issue and are bounded by the impacts discussed in Addendum 1 to the GEIS. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment.*

A.2.13 Comments Concerning Alternatives

Comment: You have an environmentally enviable record and you've got to keep Vermont Yankee running if you want to keep that record because there is no plans for any non-CO2 emitting alternatives at present and certainly none under construction. Again, I suggest that you try and figure out your little argument about where the wind power should be and get some

windmills in this state, maybe you can get five percent of your electricity from wind, if you actually build some wind farms, and Vermont should engage with the heightened national dialogue on climate change.

Now that the democrats are in control of Congress, there is going to be a much larger emphasis on environmental issues, climate change being the most important one. You can demonstrate that you are a model with the lowest CO2 emissions in the country, and you should get the credit for this in the ongoing dialogue so that people can see how you did it. The people who decided to buy the hydro and build a nuclear didn't even know about climate change when those decisions were made, but they were rather prescient; in retrospect, they made decisions that gave you the best carbon footprint in the country. (B-2)

Comment: Perhaps right now an even greater benefit of the plant is its low environmental impact, especially as it relates to the issue of global warming and climate change. Many claim, including Vermont's own legislature, that global warming is possibly the most serious environmental issue we face. Today, the United States is largely dependent on coal fired plants; approximately 600 coal fired plants supply 50 percent of this country's electricity. Unfortunately, these plants also release harmful toxins and greenhouse gases into our atmosphere.

Now, while the country looks to reduce its reliance on carbon emitting sources like coal, here in Vermont our story is different, we have one of the cleanest electricity portfolios, one of the lowest carbon emitting portfolios because our two main sources of power, including Vermont Yankee, do not release carbon emissions when producing electricity. Should Vermont Yankee's operating license not be extended, then our utilities would be forced to purchase power from the spot market at a high economic and environmental cost, as the only realistic alternatives to replacing Vermont Yankee lie in other baseload sources of power such as coal. (F-5)

Comment: A final point on efficiency and conservation, both of which are very important, efficiency being improvements in technology, conservation being changes in behavior. As I like to put it, conservation is turning a light out when you leave the room, efficiency is swapping out the incandescent bulb for a compact fluorescent one.

Since 1973, the U.S. economy has grown by 157 percent. In that same time, energy production and consumption has increased by only 32 percent, that is a very clear measure of the effectiveness of conservation and efficiency practiced by American individual citizens and businesses. This will continue into the future, no doubt. (B-5)

Comment: Now if the decision were, for whatever set of reasons, not to relicense this plant and an inability to renew the Hydro Quebec contracts, the natural and probable consequence of that is rather clear, we would move for our energy supplies, with no plans whatsoever to pursue

other alternatives at the present time, to the spot market of America, when it comes to electric energy, and we would find that market inordinately expensive.

And we would find the enviable position we find ourselves in, as a non-toxic state, moving sadly the other way and such would not enure well from either an environmental or an economic perspective to the people of the State of Vermont because arguably beneath the surface, in my view at least, the most compelling issue facing our people here and now is our demographic profile. We our losing our young people between the ages of 25 and 44 and people between 45 and 65 are emerging as the dominant class in the state and, if that trend continues, in very, very few years, we'll have the most senior population in all of these United States per capita, and that is a subject of profound and considerable concern in terms of how we, with a reduced base of citizens, remain capable to serve the needs of all of our citizens. (C-2)

Comment: Each one of us has to start turning off the lights, changing our light bulbs to compact fluorescents, driving at least half less than we drive now. Every gallon of gasoline puts out 18 to 19 pounds of carbon into the air, every gallon. Now what's your fuel efficiency, 12, 15, 20, maybe 35 or 40? But that's very few people.

And this includes anyone from the NRC or from Entergy, no one is exempt, every car puts out that much carbon, unless of course you are driving an electric vehicle or you are driving one that has a high fuel efficiency, like the new hybrids or whatever, but we need to each one of us take into account what we do and how we can make a change. And the only reason Entergy and all the other corporations who run nuclear power plants are trying to put this as a green, clean solution to global warming is because we are all scared, and we have reason to be scared, but the thing is that nuclear is not going to dig us out of the hole.

We are so far in the hole, we have to take every measure to get out of the hole, and electricity generation only accounts for maybe a third of the carbon dioxide that is going into the air, transportation accounts for another third and another third, amazingly enough, is attributed to natural, such as forest fires, actually, it's really scary. (E-4)

Comment: Now, this is my question to you folks who are so proud of your nuclear power industry and what wealth and wonder it has brought to us, when we have 600 milliwatts or megawatts of power produced by one facility and suddenly, just like that, as happened in Monticello, in the dead of winter when it is the coldest part of the winter it suddenly goes off line, what happens? You lose 600 megawatts of power.

The irony here is we have been told time and time again that we can't possibly go to wind, solar, methane, hydro because those produce too little power. The fact of the matter is we need to have small power plants scattered throughout the land, providing jobs throughout the

land--providing power that may not be huge in its amount, it may vary from moment to moment in the amount it feeds to the grid, but it will not suddenly cut out just like that, 600 megawatts gone in a moment in the dead of winter. (K-3)

Comment: I refuse to believe that we can't do better, I refuse to believe that we have to stay on this same course that we've been on. I'm still seeing way more lights on than we need and I see it in every aspect of our society, we are gluttonous consumers of energy in all of its different forms. (MM-1)

Comment: Decommissioning the Vermont Yankee Nuclear Facility before any serious or minor leakages or cracks occur would provide more local jobs than running the plant because local, non-college educated workers could be hired and paid more than minimum wage. If decommissioning is postponed more than 10 years, the Entergy company could become bankrupt if any of their many aging plants have a serious operational problem or terrorist attack or expensive repairs to make while other energy alternatives get built and start producing power at more economical rates over the long run. The statement on p. 8-2 of Draft NUREG-1437, Supplement 30, Dec. 2006 says, "The impacts of decommissioning after 60 years of operation are not expected to be significantly different from those that would occur after 40 years of operation." What kind of an analytical, scientific, fact based statement is that? No documentation or facts are given t o explain this statement which sounds more like a child's wish than a scientific analysis of reality! (TTT-3)

Comment: The environmental impacts from the alternatives are at least moderate to large. (SS-4)

Comment: Finally, only the deluded could conclude that the potential environmental impacts of nearly doubling radioactive emissions and high level nuclear waste on a site within the 100 year floodplain are small compared to the impacts of implementing efficiency coupled with the development of wind, solar, cogeneration or even one new biomass plant in Vermont or elsewhere in New England. I find this conclusion extraordinary. I hope you will revisit it. (RRR-19)

Response: *The commenters express their views on the United States government energy policy. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments*.

Comment: Well Vermont gets maybe 200 to 250 kilowatt hours from that power plant. Megawatts, sorry, I made the same mistake the last time too, I saw it in the transcripts. So, megawatts. I want it to be small, I'm trying to make it really small. So, of those 250 megawatts, we can actually replace tomorrow, this is not in 10, or 15 or 20 years, we can replace tomorrow 25 percent of it just through conservation and energy efficiency. If the State of Vermont decided it was the will of the people and the will of the state, we could replace our washing machines,

our dishwashers, our refrigerators, our air conditioners and other appliances with energy efficient ones and we could immediately drop 25 percent of our demand.

Now that takes care of more than half of Vermont Yankee, what Vermont uses from Vermont Yankee. Massachusetts uses another 25 percent of Vermont Yankee, approximately, I don't know the numbers exactly, so Massachusetts could do the same thing, poof, we could shut Vermont Yankee down tomorrow and it would be amazing. So it's not inconceivable, it's not this unreachable solution, it is within our power, the people can decide. That's all it takes and that's all it's ever taken is the people deciding that they want to do something different and they are going to do it now. We can't sit on our duffs anymore. (E-5)

Response: *The comment speculates about the ability of demand-side management (DSM) to reduce the amount of electricity needed in the region. An evaluation of DSM is provided in Section 8.2.5.11 of the SEIS. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to these comments*.

Comment: I haven't heard much talk, except the last fellow talked about methane being produced and used as an energy source. One of the things that many people do not realize is that we are pouring huge amounts of methane as well as carbon dioxide into the atmosphere and both of these greenhouse gasses contribute to greenhouse warming; you can read more about it in The Inconvenient Truth and other web sites.

The problem is that, in farming communities, such as we still have in Vermont and Massachusetts, we have the opportunity to reduce the methane that we put into the atmosphere by simply making containment types of facilities on farms that can produce methane and generate electricity, thus reducing the amount of methane that goes into the atmosphere during farm, that type of farming production. There is, the leftovers from the digestion tanks can then be used by fertilizer, they are less odoriferous because the methane has been used, drawn off, and they are just as good as fertilizers, if not better, because they are not raw, they have been digested and, in doing this type of change, we can create an avenue for our farms to remain economically viable.

Why isn't this happening like wild fire all over New England and other parts of the United States? Because forces within our generation industry our power generation industry, have a vested interest in making sure that our power is produced by huge facilities that can be controlled by huge corporations. These people do not have a vested interest in allowing small generation facilities to develop and proliferate across the United States, even if scientists could do a very thorough study and prove that this would be a more efficient, effective, cost, both cost effective and an economically effective way of producing energy that could be sustainable into the future, not only providing jobs in areas that are rural and sustaining farming in areas that are barely able to have their farmers make a living, but by making a whole, a much cleaner, safer form of energy production. (K-1)

Comment: The key to Vermont's future prosperity is through a broad, diversified electricity portfolio. To this end, the partnership urges the state to work to permit and develop new in-state generating sources like wind, solar, small scale hydro, biomass and other environmentally friendly resources. The partnership also feels it is equally important that Vermonters incorporate more energy efficient products into their homes and businesses, as well as looking for ways to increase their conservation practices. (F-2)

Comment: But if the majority of the people here would spend their time and effort promoting wind power and implementing many of the good ideas that have been expressed here today, we would all be further ahead. (J-2)

Comment: We have a motivated New England Yankee ingenuity to start using methane, hydro. We have vast hydro resources not just in Canada, right here in Vermont and Massachusetts.

And we don't have to make huge dams and flood property to make, we have the technology to take a little tiny stream that I have next to my house, I could generate all the electricity I need in that house, in my household, with a little micro hydro system the size of this speaker platform, and it only costs a few thousands dollars. Why isn't everybody doing it? Because we don't have the knowledge, but we do, in this area, have some well educated ingenuity, people with a lot of ingenuity that also have time on their hands because we don't have a lot of job growth here. (K-6)

Comment: We don't need Vermont Yankee's power to lull us into submission and continue on the track that most of the United States is on, thinking that we can't possibly do anything except keep this power plant going as long as possible. We can show the rest of the United States a different way, we also have huge wind resources. It breaks my heart when I hear that people will not accept wind power because it's aesthetically unpleasing and therefore it's not a viable alternative. How aesthetically pleasing is any power plant that you've ever seen? How aesthetically pleasing is any electrical line running over a mountain top? None of it is. (K-7)

Comment: The potential for anything to take place will happen at a state level in which the State of Vermont has the power to transform energy production, but the truth is it's not the State of Vermont, it's the people of Vermont that will determine the course of history not just for the State of Vermont but actually for Massachusetts, Vermont, New Hampshire and Maine, since we all dip our beak into Vermont Yankee's power. And the truth is it can be transformed and what it will take is people getting engaged to make sure that, at this legislative session in Vermont, that a green energy portfolio is passed and that we commit to a life that includes jobs, prosperity and respect for our human family, as well as our environment. (O-6)

Comment: I would like to urge everybody in the State of Vermont, and I just heard the former CEO of Vermont Yankee talk about Vermont Yankee's commitment to green energy, the $25 million contribution to the green energy fund. Well there is something we can all do as Vermonters if we care about the energy future of this state and it's to contact our legislators, all of you, please, and those of you that don't want to, you won't, but I'm going to implore all of you to call your legislators and ask them to support House Bill 127, currently under consideration in Montpelier by the legislature.

House Bill 127 provides for an expanded portfolio standard for renewable energy, which I know my colleagues in the clean energy and anti-nuclear movement agree, as well as Patrick Moore, who was here earlier, the folks from the Vermont Energy Partnership, as well as the Entergy Corporation which has made a generous $25 million contribution to clean, green energy here in the State of Vermont.)

Comment: There are there realistic energy alternatives to coal or nuclear power: In Iceland geothermal, in Denmark windmills, hydroelectric on rivers around the world, etc.. (GGG-2)

Response: *The commenters support the use of alternative technologies for energy production. The comments provide no new and significant information; therefore, no changes were made to the SEIS in response to these comments*.

Comment: I also was somewhat stunned, actually disgusted to see a slide up there that said it would have a large impact to go alternative. Well they are comparing all kinds of interesting little financial tidbits but, if you read the papers, if you understand more about the reactor sitting right over there and it not creating greenhouse gasses, then you are forgetting the entire, the entirety of the nuclear process, the mining, the milling, the tailing, the reprocessing, the storage, the transportation, the transmission, the decommission and so on, and all the multi megawatts that are consumed in those processes, so don't tell me that nuclear is green. (KK-2)

Response: *The indirect effects of operating a nuclear power plant such as mining are discussed in Section 8.2.3 of the SEIS. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment*.

Comment: I have attached 4 pieces of specific information that explain how much potential exists for the development of 200 to 600 MW of NEW hydro, methane, wind, and solar produced power into the grid in the region within 100 miles of Vernon, VT over the next 5 years. The statements made in the GEIS Supplement 30 about hydro and wind potential for development are false and totally undocumented with local facts. There is also a very real push to conserve energy in this region. Massachusetts has several programs for residents and municipalities that are encouraging and supplying grant money to do all kinds of projects from replacing lights with compact fluorescents, to insulating and weatherstripping, to adding solar hot water units, to generating electricity with methane produced at dairy farms in this region and from wood and

other biomass. None of these projects were even considered or mentioned in the GEIS Supplement. Some of these savings are small but added together, there are significant energy savings. Small energy production projects that produced .25MW (from methane on a dairy farm such as Blue Spruce Farm in Bridgeport, VT) seem small, but if 100 farms were to do similar projects, 25 MW would be produced. Five "new" hydropower projects using existing small dams on the North River or Deerfield River could produce 20 to 40 MW each or a total of 100 to 200 MW of power that could be quickly adjusted according to demand. Two new wind projects of 12 new 2 MW turbines each are proposed in Florida, MA and Searsburg, VT. These projects could produce about 40 MW of power or more. Add these together and there is a total of 150 to 300 MW of new power potential in just these proposed projects alone! These facts were omitted from the GEIS Supplement and deserve to be considered by the NRC before granting any license renewal for the Vermont Yankee Nuclear Station. The scientists at Argonne National Labs did not appear to spend any time actually researching any of the projects that groups such as CET, NESEA, Co-op Power, and smaller environmental groups have proposed. National Energy & Gas Transmission, Inc.and wind power companies were also left out of the GEIS. If they did any research about clean, safe, alternative energy in the Vernon, VT region, they left that information out of their report and their resulting conclusions are misleading and false. The jobs that could be created by many small hydro and methane and wind projects would be significant for our region as well. (TTT-2)

Comment: Why was this information totally excluded from the GEIS Supplement 30 alternative energy and energy conservation section?

Clean Energy Plan for the Pioneer Valley

Plan Summary

As part of Massachusetts' electric utility restructuring legislation in 1997, the state passed several new policy programs which require a small, but increasing, amount of electricity sold to Massachusetts customers to come from new, qualified renewable energy sources. These renewable energy sources are defined as solar photovoltaic, wind energy, landfill methane gas, biomass, and fuel cells using a renewable fuel.

Beginning in the fall of 2005, the Pioneer Valley Planning Commission (PVPC) and the Franklin Regional Council of Governments (FRCOG) have been working with the Pioneer Valley Renewable Energy Collaborative and vast public input to develop a regional strategic plan for clean energy with funding from the Massachusetts Technology Collaborative. The purpose of this two-year project is to develop a community-based, yet regional, strategic plan to implement shared goals (the following are draft goals):

Create new clean energy in the range of 75-100 MW /year in the Pioneer Valley (Franklin, Hampshire, and Hampden counties) by 2010;

Increase energy efficiency across the board on the order of reducing year 2000 energy demand by 100-200 MW/year; and,
Create jobs associated with clean energy technologies.

Our Clean Energy Planning Process involves the following:

Update an inventory of renewable energy (RE) activities and efforts in the Pioneer Valley;
Create, administer, and compile the results from a public Web-based RE opinion survey;
Create, administer, and compile the results from a survey of municipal officials in 69 cities and towns;
Create, administer, and compile the results of a detailed SWOT (strengths, weaknesses, opportunities,and threats) analysis surveying 30 regional stakeholders including municipal officials, business owners, environmentalists, RE experts, and RE advocates;

During Clean Energy Month October 2006:

Nine Clean Energy Education Sessions on topics ranging from small-scale biomass to energy audits;
Four weeks of on-line discussions to develop consensus on goals, guiding principles, selection criteria, strategies, and an implementation plan; and
3 Strategic Planning Sessions in October to confirm on-line work.

In the spring of 2007, as each of the Plan partners begins to implement the strategies, PVPC and FRCOG will be inviting all 69 cities and towns the region to endorse the Clean Energy Plan in principle and to commit to pursuing a few specific activities. PVPC and FRCOG will also apply to MTC and work with other supporters to secure funding to implement recommendations of the Plan.

Note: This report is about the region from 10 to 50 miles to the south of Vermont Yankee Nuclear Station. This is the region that uses much of the power currently generated there AND it is the region that shares the electricity “grid” with all other consumers of electricity that use Vermont Yankee’s power. Over 5 yrs. this region would be able to do without 800 MW/year of power (or even more than this amount to) make up for any unexpected growth or problems metting goals. Vermont Yankee could close down in 2012. (TTT-6)

Comment: NRC does not consider the impact of replacement power sources from a regional perspective. Inasmuch as Entergy Vermont Yankee is no longer owned by Vermont’s regulated utilities, it may during the duration of license renewal sell its power on the open market rather than through contract to Vermont utilities. Thus it is a regional “asset” and not a Vermont “asset” solely. (QQQ-17)

Comment: When the draft EIS considers available resources for alternative electrical general such as wood fired generation, it confines itself to an assay of Vermont's capacity and not regional (New England) capacity and invokes the burden of replacing 650 Megawatts (e); not Vermont's contracted share of half that amount Why is that? (QQQ-18)

Comment: The draft EIS does not contemplate in perspective Entergy Vermont Yankee's contribution to New England ISO electrical generation capacity. At 650 Megawatts (e) to the ISO capacity of 35,000 Megawatts(e), Vermont Yankee's capacity is less that 1.8 percent of what is available in New England. While we are at one hand talking about replacing more than 30 percent of Vermont's power supply, we are silent that this means replacing only 1.8 percent of New England's power supply. Why is that? (QQQ-19)

Comment: When discussing the availability of alternative power options (for Vermont), the draft EIS ignores initiatives in other New England states and initiatives in near-by Canadian provinces. For example, the State of Maine is currently exploring the potential benefits to regular and economical power supply of leaving New England ISO and interconnecting with New Brunswick province. For example, dual cycle gas plants built over the last decade and scattered across New England may have the capacity to uprate or add new units. None of this is explored. Why? (QQQ-20)

Response: *The commenters state that several proposed or potential projects along with some demand-side management could alleviate the need for the power provided by VYNPS. The potential for wind and hydropower in the region surrounding VYNPS is discussed in Sections 8.2.5.2 and 8.2.5.4. The large amount of land needed for a wind park and the limited potential for wind development in the region makes this technology unfeasible for replacing VYNPS power levels. Likewise, the lack of new hydroelectric development potential makes this technology untenable as a replacement source for the power generated by VYNPS.*

The NRC staff analysis focuses on the impact of alternatives available to replace the electrical power generated by VYNPS. Discussions on the need for power or electric power strategies in the region are the exclusive purview of any State and local governments.

Comment: This [Not to compete with Vermont utilities] is direct evidence that your GEIS statements about the small potential for future development of hydropower in the Vernon, VT region, are misleading and NOT based on facts. The only thing holding back hydropower development in this region is the Vermont Yankee Nuclear Facility itself because hydropower would "compete" with that power utility company unless it is closed in the near future. (TTT-5)

Response: *The NRC staff based its analysis on information available from State agencies. The NRC staff believes that the information provided by these agencies is current and valid. The commenter does not identify a specific dispute with the data used; therefore, no changes were made to the SEIS in response to this comment.*

Comment: You stated at the meeting that the major reasons that the alternative environmental impacts were considered moderate to large was construction of new facilities. I would hope that the ongoing activities of these postulated new facilities would be considered too. It seems to me that the greenhouse gas effects of a new natural gas plant would far out weigh the damage from construction activities. I would call these impacts severe. I also do not think that conservation and exotic alternative sources are a legitimate alternative to base load power given the costs and technical uncertainties involved. Cheap clean power is the holy grail of inventors and investors. If it exists there is a huge incentive to find-it. So far no one has. (SS-7)

Response: *The impacts of construction and ongoing operation of a new natural gas facility were discussed in Section 8.2.2 and summarized in Table 8-4.*

Comment: There are so many more options that are available: hydro with the Conn. River, solar, wind. It's all sitting there for the taking and it's safe and better for the environment and people. All the money wasted on fighting to keep Yankee operating could be put to better use in these new forms. Let's move on and make a change. (VV-2)

Response: *The potential for the increased use of hydropower, solar power, and wind power is discussed in Sections 8.2.5.4, 8.2.5.3, and 8.2.5.2, respectively, in the SEIS. These alternatives do not currently appear to be viable options for replacement of VYNPS, primarily due to lack of viable hydropower sites and a lack of viable power storage technologies to complement intermittent wind and solar power generation. The comment provides no new and significant information; therefore, no changes were made to the SEIS in response to this comment*.

Comment: Page 9-7, line 19: The dSEIS states that closed-cycle cooling systems were assumed for all power-generation alternatives. The FSEIS should explain why closed-cycle operation was assumed for other power generation alternatives, but not for VY. (PPP-41)

Response: *As required in 40 CFR Parts 9, 122, 123, 124, and 125, any new plant construction would be required to use closed cycle cooling to minimize its impact. The water analysis conducted for the SEIS used data provided on past plant operation. The plant can operate with a range of cooling modes and, therefore, the analysis was not restricted to any one cooling mode*. *The NRC staff assessed the potential impacts related to the cooling system based on the likely future operating restrictions placed upon VYNPS by the NPDES permit issued by VDEC. The permit allows station operators to use once-through, hybrid-cycle, and closed-cycle cooling during various times of the year. The NRC staff has determined that the impacts related to this operating scheme would be SMALL and would likely continue during the renewal period. Therefore, the NRC staff did not assess impacts using only closed-cycle cooling throughout the year.*

Comment: Page 8-11, Line 8
Under the Impact Column, change “MODERATE to LARGE” to “SMALL to LARGE” based on the conclusions reached for transportation on Page 8-17 of the Draft SEIS. (UUU-68)

Response: *Although impacts associated with rail transportation may range from SMALL to LARGE, transportation impacts from commuting workers during construction are MODERATE. Therefore, the overall impact from transportation cannot be SMALL. No change was made to the SEIS in response to this comment.*

Comment: Page 8-22, Line 8
Under the VYNPS Site Impact Column, change “SMALL to MODERATE” to “MODERATE to LARGE” based on the conclusions reached for ecology on Page 8-26 of the Draft SEIS. (UUU-70)

Response: *The text has been changed to reflect information provided in the comment.*

Comment: Page 8-23, Line 9
Under the VYNPS Site Comments Column, change “ during construction would be SMALL” to “.....during construction would be MODERATE” since the conclusions reached for transportation during construction on Page 8-29 of the Draft SEIS was classified as “MODERATE”. (UUU-71)

Comment: Page 8-23, Line 9
Under the Alternate Site Comments Column, change “Impacts during construction would be SMALL” to “Impacts during construction would be MODERATE” since the conclusions reached for transportation during construction on Page 8-29 of the Draft SEIS was classified as “MODERATE.” (UUU-72)

Response: *The conclusions reached for transportation during construction on Page 8-29 refer to impacts associated with commuting construction workers. The construction impacts on Page 8-23, Line 9, refer to impacts from fugitive dust and emissions from vehicles during construction, which are determined to be SMALL. No change was made to the SEIS in response to this comment.*

Comment: Page 8-24, Line 1
Under the VYNPS Site Impact Column, change “MODERATE” to “SMALL to MODERATE” based on the conclusions reached for socioeconomics on Page 8-29 of the Draft SEIS. (UUU-73)

Response: *Text was changed to clarify that operational socioeconomic impacts are SMALL. The overall socioeconomic impacts of a natural-gas-fired plant using closed-cycle cooling at the VYNPS plant remain MODERATE.*

Comment: Page 8-24, Line 1
Under the Alternate Site Impact Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached for socioeconomics on Page 8-29 of the Draft SEIS. (UUU-74)

Response: *Text was changed to reflect that operational socioeconomic impacts are SMALL. The overall socioeconomic impacts of a natural-gas-fired plant using closed-cycle cooling at an alternate site remain MODERATE.*

Comment: Page 8-24, Line 2
Under the VYNPS Site Impact Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached for transportation on Page 8-29 of the Draft SEIS. (UUU-75)

Response: *Although transportation impacts during operation are considered SMALL, the impacts associated with transportation during construction are MODERATE. Therefore, the overall impact from transportation would be MODERATE. No change was made to the SEIS in response to this comment.*

Comment: Page 8-24, Line 2
Under the Alternate Site Impact Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached for transportation on Page 8-29 of the Draft SEIS. (UUU-76)

Response: *Although transportation impacts during operation are considered SMALL, the impacts associated with transportation during construction are MODERATE. Therefore, the overall impact of transportation during construction and operations would be MODERATE. No change was made to the SEIS in response to this comment.*

Comment: Page 8-32, Line 18 -20
Delete the sentence "An evaluation of the impacts of a new nuclear generating plant to replace VYNPS was not included in the Entergy ER (Entergy 2006)" since the statement is incorrect. Section 8.1.3 of the Entergy ER contained an evaluation of the impacts of a new nuclear generating plant at an alternate site to replace VYNPS. (UUU-77)

Response: *The text in Section 8.2.3 has been changed to reflect information provided in the comment*.

Comment: Page 8-33, Line 11
Under the Impact Column, change “SMALL” to “SMALL to MODERATE” based on the conclusions reached for air quality on Page 8-35 of the Draft SEIS. (UUU-78)

Comment: Page 8-33, Line 11
Under the Comments Column, change “....during construction would be SMALL” to “....during construction would be MODERATE” based on the conclusions reached for air quality on Page 8-35 of the Draft SEIS. (UUU-79)

Response: *Recent analysis performed for early site permit reviews concludes that the impacts on air quality from construction of a new nuclear power plant using closed-cycle cooling at an alternate site are SMALL. The text in Section 8.2.3.1 has been modified to reflect this new information.*

Comment: Page 8-33, Line 15
Under the Impact Column, change “MODERATE to LARGE” to “SMALL to LARGE” based on the conclusions reached for transportation on Page 8-36 of the Draft SEIS. (UUU-80)

Response: *Although transportation impacts during operation could be SMALL to MODERATE, the impacts associated with transportation during construction could be MODERATE to LARGE. Therefore, the overall impact of transportation during construction and operations would be MODERATE to LARGE. No change has resulted in response to this comment.*

Comment: Page 8-34, Line 4
Under the Comments Column, change “.....impacts ranging from SMALL to MODERATE” to only “.....”.....MODERATE impacts” to be consistent with the conclusions reached for aesthetics on Page 8-36 of the Draft SEIS. (UUU-81)

Response: *Although the overall aesthetic impacts of a new nuclear power plant using closed cycle cooling at an alternate site are characterized as MODERATE to LARGE, the impacts from intermittent noise are expected to range from SMALL to MODERATE. In response to this comment, additional information was added to Section 8.2.3.1 to clarify the conclusions reached.*

Comment: Page 8-34, Line 7
Under the Impact Column, change “SMALL to LARGE” to “SMALL” only based on the conclusions reached for environmental justice on Page 8-37 of the Draft SEIS. (UUU-82)

Response: *Text has been added to Section 8.2.3.1 to clarify the range of environmental justice impacts of a new nuclear plant using closed-cycle cooling at an alternate site. The impact would range from SMALL to LARGE depending on the characteristics of the site.*

Comment: Page 8-35, Line 25
Would recommend deleting "(see Section 2.2.2)" since it is not clear why the Draft SEIS is referencing this section here and it appears to be inappropriate at the end of the sentence. (UUU-83)

Response: *The reference to Section 2.2.2 has been deleted based on information provided in this comment.*

Comment: Page 8-48, Line 9
Under the VYNPS Site Impact Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached under the VYNPS Site Comments Column for this category. (UUU-85)

Response: *Although air quality impacts during construction would be SMALL, the impacts associated with operation are expected to be MODERATE. Therefore, the overall air quality impact during construction and operations would be MODERATE. No change to the text was made in response to this comment.*

Comment: Page 8-49, Line 1
Under the VYNPS Site Impact Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached under the VYNPS Site Comments Column for this category. (UUU-86)

Response: *Although socioeconomic impacts during operation would be SMALL, the impacts during construction would be MODERATE. Therefore, the overall socioeconomic impact during construction and operations would be MODERATE. No change to the text was made in response to this comment.*

Comment: Page 8-49, Line 1
Under the Alternate Site Impact Column, change "MODERATE" to "SMALL to MODERATE" since operational impacts would be the same as that for the VYNPS site (SMALL). (UUU-87)

Response: *Although socioeconomic impacts during operation would be SMALL, the impacts during construction would be MODERATE. Therefore, the overall socioeconomic impact during construction and operations would be MODERATE. No change to the text was made in response to this comment.*

Comment: Page 8-49, Line 1
Under the Alternate Site Comments Column, add the sentence "Impact during operation would be SMALL." (UUU-88)

Response: *The text in Section 8.2.6 has been changed to reflect information provided in the comment*.

Comment: Page 8-49, Line 2
Under the VYNPS Site Impact Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached under the VYNPS Site Comments Column for this category. (UUU-89)

Response: *Although transportation impacts during operation would be SMALL, the impacts associated with transportation during construction would be MODERATE. Therefore, the overall impact to transportation during construction and operations would be MODERATE. No change was made to the text in response to this comment.*

Comment: Page 8-49, Line 2
Under the Alternate Site Impact Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached under the Alternate Site Comments Column for this category. (UUU-90)

Response: *Although transportation impacts during operation would be SMALL, the impacts associated with transportation during construction would be MODERATE. Therefore, the overall impact to transportation during construction and operations would be MODERATE. Table 8-8 in the SEIS has been modified in response to this comment.*

Comment: Page 9-8, Line 19
Under the Coal-Fired Generation (Alternate Site) Column, change "MODERATE to LARGE" to "SMALL to LARGE" based on the conclusions reached for transportation on Page 8-17 of the Draft SEIS. (UUU-96)

Response: *See response to comment UUU-68 for explanation. No change to the text was made in response to this comment.*

Comment: Page 9-8, Line 8
Under the Natural Gas-Fired Generation (VYNPS Site) Column, change "SMALL to MODERATE" to "MODERATE to LARGE" based on the conclusions reached for ecology on Page 8-26 of the Draft SEIS. (UUU-97)

Response: *Table 9-1 has been changed to be consistent with the text in Section 8.2.2.1*.

Comment: Page 9-8, Line 18
Under the Natural Gas-Fired Generation (VYNPS Site) Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached for socioeconomics on Page 8-29 of the Draft SEIS. (UUU-98)

Response: *See response to comment UUU-73. No change to the text was made in response to this comment.*

Comment: Page 9-8, Line 19
Under the Natural Gas-Fired Generation (VYNPS Site) Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached for transportation on Page 8-29 of the Draft SEIS. (UUU-99)

Response: *See response to comment UUU-75. No change to the text was made in response to this comment.*

Comment: Page 9-8 , Line18
Under the Natural Gas-Fired Generation (Alternate Site) Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached for socioeconomics on Page 8-29 of the Draft SEIS. (UUU-100)

Response: *See response to comment UUU-74. No change to the text was made in response to this comment.*

Comment: Page 9-8, Line 19
Under the Natural Gas-Fired Generation (Alternate Site) Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached for transportation on Page 8-29 of the Draft SEIS. (UUU-101)

Response: *See response to comment UUU-76. No change to the text was made in response to this comment.*

Comment: Page 9-8, Line 15
Under the New Nuclear Generation (Alternate Site) Column, change "SMALL" to "SMALL to MODERATE" based on the conclusions reached for air quality on Page 8-35 of the Draft SEIS. (UUU-102)

Response: *See response to Comment UUU-78. The text in Table 9-1 of the SEIS was modified in response to this comment.*

Comment: Page 9-8, Line 19
Under the New Nuclear Generation (Alternate Site) Column, change "MODERATE to LARGE" to "SMALL to LARGE" based on the conclusions reached for transportation on Page 8-36 of the Draft SEIS. (UUU-103)

Response: *See response to comment UUU-80. No change to the text was made in response to this comment.*

Comment: Page 9-8, Line 24 -25
Under the New Nuclear Generation (Alternate Site) Column, change “SMALL to LARGE” to “SMALL” only based on the conclusions reached for environmental justice on Page 8-37 of the Draft SEIS. (UUU-104)

Response: *See response to comment UUU-82*. *No change to the text was made in response to this comment.*

Comment: Page 9-8, Line 15
Under the Combination of Alternatives (VYNPS Site) Column, change “MODERATE” to “SMALL to MODERATE” based on the conclusions reached for air quality in Table 8-8 on Page 848 of the Draft SEIS. (UUU-105)

Response: *See response to comment UUU-85*. *No change to the text was made in response to this comment.*

Comment: Page 9-8, Line 18
Under the Combination of Alternatives (VYNPS Site) Column, change “MODERATE” to “SMALL to MODERATE” based on the conclusions reached for socioeconomics in Table 8-8 on Page 8-49 of the Draft SEIS. (UUU-106)

Response: *See response to comment UUU-86*. *No change to the text was made in response to this comment.*

Comment: Page 9-8, Line 19
Under the Combination of Alternatives (VYNPS Site) Column, change “MODERATE” to “SMALL to MODERATE” based on the conclusions reached for transportation in Table 8-8 on Page 8-49 of the Draft SEIS. (UUU-107)

Response: *See response to comment UUU-89*. *No change to the text was made in response to this comment.*

Comment: Page 9-8, Line 18
Under the Combination of Alternatives (Alternate Site) Column, change “MODERATE” to “SMALL to MODERATE” based on the conclusions reached for socioeconomics in Table 8-8 on Page 8-49 of the Draft SEIS. (UUU-108)

Response: *See response to comment UUU-87*. *No change to the text was made in response to this comment.*

Comment: Page 9-8, Line 19
Under the Combination of Alternatives (Alternate Site) Column, change "MODERATE" to "SMALL to MODERATE" based on the conclusions reached for transportation in Table 8-8 on Page 8-49 of the Draft SEIS. (UUU-109)

Response: *See response to comment UUU-90. No change to the text was made in response to this comment.*

Comment: NRC Staff does not discuss the simply alternative of seeking new long-term competitive power contracts for Vermont utilities from existing or expanding regional generators. Why? (QQQ-21)

Response: *Section 8.2.4 examines the possibility of purchasing the power from existing sources to replace the power provided by VYNPS.*

Comment: NRC Staff discusses the hypothetical installation of a dual-cycle natural gas fuel generator on the Vermont Yankee site but does not refer to the data produced by two gas generation developers that explored just that possibility just before Entergy bought the plant. Why? (QQQ-22)

Response: *The commenter does not provide the source of the information cited. The analysis provided in the SEIS is based on currently available technologies that are consistent with the information used in the GEIS. The commenter does not state any dispute with the data used by the NRC staff. No change to the text was made in response to this comment.*

Comment: NRC Staff rates the environmental impact, including socio-economics, of taking no action and letting VY close in 2012 as "SMALL." [Page 8-3]. A single "LARGE" impact is assigned under the topic of taxes. NRC Staff should define or quantify the impact categories used in the draft EIS: SMALL, MODERATE. LARGE. NRC Staff included no comparisons of taxes paid, revenue to local business, or work force size and wages paid during the 7-15 year period of decommissioning at other New England power stations. Why? There's plenty of data there, about taxes, employment, cost of replacement power, economic growth, and employment Wouldn't it be fair to assess for comparison purposes how reactor closure and decommissioning affected other New England areas? (QQQ-23)

Response: *Even though the no-action alternative (not renewing the VYNPS operating license) would impact employment, wages, business revenues, and taxes, the relative impact of closure of VYNPS on the economy of the State and on State tax collections would be small, because of the size of the impact of no action compared to total employment in the State, and to State tax revenues. At the local level, however, impacts of the no-action alternative on property taxes*

paid to local jurisdictions would be large because of the importance of these revenues relative to total property tax collections by these jurisdictions. The text in the SEIS has been modified to clarify socioeconomic impacts at both geographic levels.

A.2.14 Comments Concerning Editorial Issues

Comment: Page 2-6, lines 1-5: Text generally describes land uses within a 5 mile radius of VYNPS. On the other hand, Figure 2-2 (pg. 2-3) illustrates a 6 mile radius. (CCC-15)

Response: *There is no correspondence between the textual description on page 2-6 and Figure 2-2. There is also no reference to Figure 2-2 in the mentioned text. No change has resulted in response to this comment.*

Comment: Page 2-45, lines 30-31: Flalladay Brook should be Halladay brook; Whetstone creek should be Whetstone Brook. (CCC-16)

Response: *Text in Section 2.2.5.1 has been changed to reflect information provided in the comment*.

Comment: Page 1-2, Line 32
Change “Table E-I” to “Table E-2" to accurately reflect the table in Appendix E. (UUU-3)

Response: *Text in Section 1.1 has been changed to reflect information provided in the comment.*

Comment: Page 2-1, Line 17
Delete “larger” to correct a typographical error. (UUU-5)

Response: *Text in Section 2.1 has been changed to reflect information provided in the comment.*

Comment: Page 2-8, Line 42
Change “(Entergy 2006j)” to “(Entergy 2006h)” to accurately reflect the reference source in the Section 2.3 references of the Draft SEIS. (UUU-6)

Response: *The reference callout has been changed in Section 2.1.3 to reflect information provided in the comment.*

Comment: Page 2-15, Line 30
Change “pulled out” to “removed”. (UUU-7)

Response: *Text in Section 2.1.5 has been changed to reflect information provided in the comment.*

Comment: Page 2-20, Line 20
Change "(Entergy 2006b)" to "(Entergy 2006a)" to accurately reflect the reference source in the Section 2.3 references of the Draft SEIS. (UUU-8)

Response: *The reference callout has been changed in Section 2.2.1 to reflect information provided in the comment.*

Comment: Page 2-36, Line 24
Change "station"to "Station" to correct a typographical error. (UUU-9)

Response: *Text in Section 2.2.3.1 has been changed to reflect information provided in the comment.*

Comment: Page 2-36, Line 25
Change "station"to "Station" to correct a typographical error. (UUU-10)

Response: *Text in Section 2.2.3.1 has been changed to reflect information provided in the comment.*

Comment: Page 2-43, Line 28
Delete "or oil from any offsite source" since VYNPS does not receive used oil from any offsite source. (UUU-11)

Response: *The text in Section 2.2.4.2 has been changed to reflect information provided in the comment*.

Comment: Page 2-52, Line 33 Insert "River' between "Connecticut" and "Atlantic" to correct a typographical error. (UUU-12)

Response: *The text in Section 2.2.5.1 has been changed to reflect information provided in the comment.*

Comment: Page 2-52, Line 34
There is no "FWS 2005d" listing in the Section 2.3 references of the Draft SEIS. (UUU-13)

Response*: Reference citations in Section 2.2.5.1 and Section 2.3 have been changed to reflect information provided in the comment.*

Comment: Page 2-53, Line 5
Change “Salmon” to “States”to correct a typographical error. (UUU-14)

Response: *Text in Section 2.2.5.1 has been changed to reflect information provided in the comment.*

Comment: Page 2-53, Line 35
Change “(Table 2-5)” to “(Table 2-9)” to accurately reflect table showing Blueback Herring counted. (UUU-15)

Response: *Text in Section 2.2.5.1 has been changed to reflect information provided in the comment.*

Comment: 2-66, Line 11
Insert a space between “of” and “other”to correct a typographical error. (UUU-17)

Response: *Text in Section 2.2.6.2 has been changed to reflect information provided in the comment.*

Comment: Page 2-70, Line 2
Delete “of” prior to “0.0063" to correct a typographical error. (UUU-18)

Response: *Text in Section 2.2.7 has been changed to reflect information provided in the comment.*

Comment: Page 2-76, Line 11
There is no “USDA 2006" listing only in the Section 2.3 references of the Draft SEIS. Section 2.3 references list “USDA 2006a, USDA 2006b and USDA 2006c”. (UUU-19)

Response: *The reference has been added to Section 2.2.8.3 to reflect information provided in the comment*.

Comment: Page 2-85, Line N/A
Add “10 CFR Part 51. Code of Federal Regulations, Title 10, Energy, Part 51, “Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions” to the Section 2.3 references since it is in the section write-up and is consistent with other regulations listed in this section. (UUU-20)

Response: *The reference has been added to Section 2.3 to reflect information provided in the comment*.

Comment: Page 2-85, Line N/A
Add "40 CFR Part 70. Code of Federal Regulations, Title 40, Protection of Environment, Part 70, "State Operating Permit Programs" to the Section 2.3 references since it is in the section write-up and is consistent with other regulations listed in this section. (UUU-21)

Response: *The reference has been added to Section 2.3 to reflect information provided in the comment*.

Comment: Page 2-85, Line N/A
Add "Clean Air Act of 1970, as amended (CAA) 42 USC 7401, et seq." to the Section 2.3 references since it is in the section write-up and is consistent with other Acts listed in this section. (UUU-22)

Response: *The reference has been added to Section 2.3 to reflect information provided in the comment*.

Comment: Page 2-85, Line N/A
Add "National Environmental Policy Act of 1969, as amended (NEPA) 42 USC 4321, et seq." to the Section 2.3 references since it is in the section write-up and is consistent with other Acts listed in this section. (UUU-23)

Response: *The reference has been added to Section 2.3 to reflect information provided in the comment*.

Comment: Page 2-88, Line 7 -8
There is no "DeWald 2006b" reference listing in the Section 2.0 write-up (Pages 2-1 through 2-85). (UUU-24)

Response: *The reference DeWald (2006b) is now cited in Tables 2-5 and 2-6.*

Comment: Page 2-88, Line 13 -15
There is no "DeWald 2006d" reference listing in the Section 2.0 write-up (Pages 2-1 through 2-85). (UUU-25)

Response: *The reference callout in Section 2.3 has been changed to reflect information provided in the comment.*

Comment: Page 2-89, Line 31 -33
There is no "Entergy 2005f" reference listing in the Section 2.0 write-up (Pages 2-1 through 2-85). (UUU-26)

Response: *The reference callout in Section 2.3 has been changed to reflect information provided in the comment.*

Comment: Page 2-90, Line 38 -39
There is no “Entergy 2006k” reference listing in the Section 2.0 write-up (Pages 2-1 through 2-85). (UUU-27)

Response: *The reference callout in Section 2.3 has been changed to reflect information provided in the comment.*

Comment: Page 2-92, Line 31
Insert “Division” between “Massachusetts” and “of” to correct a typographical error. (UUU-28)

Response: *Text in Section 2.3 has been changed to reflect information provided in the comment.*

Comment: Page 2-93, Line 17 -19
There is no “NCDC 2006a” reference listing in the Section 2.0 write-up (Pages 2-1 through 2-85). (UUU-29)

Response: *The reference callout in Section 2.2.4.1 has been changed to reflect information provided in the comment.*

Comment: Page 2-96, Line 38 -39
There is no “USDA 2006a” reference listing in the Section 2.0 write-up (Pages 2-1 through 2-85). (UUU-30)

Response: *The reference callout in Section 2.2.8.3 has been changed to reflect information provided in the comment.*

Comment: Page 2-97, Line 9 -11
There is no “EPA 2006a” reference listing in the Section 2.0 write-up (Pages 2-1 through 2-85). (UUU-31)

Response: *The reference callout in Section 2.2.3.1 has been changed to reflect information provided in the comment.*

Comment: Page 2-97, Line 37 -40
There is no “FWS 2001" reference listing in the Section 2.0 write-up (Pages 2-1 through 2-85). (UUU-32)

Response: *The reference callout in Section 2.3 has been changed to reflect information provided in the comment.*

Comment: Page 2-100, Line 24 -27
There is no “VDEC 2005b” reference listing in the Section 2.0 write-up (Pages 2-1 through 2-85). (UUU-33)

Response: *The reference callout in Section 2.2.2.1 has been changed to reflect information provided in the comment.*

Comment: Page 2-100, Line 41 -42
There is no “VDEC 2006c” reference listing in the Section 2.0 2-101 1 -2 write-up (Pages 2-1 through 2-85). (UUU-34)

Response: *The reference callout in Section 2.3 has been changed to reflect information provided in the comment.*

Comment: Page 2-101, Line 4 -6
There is no “VDEC 2006d” reference listing in the Section 2.0 write-up (Pages 2-1 through 2-85). (UUU-35)

Response: *The reference callout in Section 2.3 has been changed to reflect information provided in the comment.*

Comment: Page 4-14, Line 16
Change “Normandeau 2004" to “Normandeau 2004a” to accurately reflect the reference source in the Section 4.10 references of the Draft SEIS. (UUU-36)

Response: *Text in Section 4.1.2 has been changed to reflect information provided in the comment.*

Comment: Page 4-15, Line 39
Insert a space between “salmon” and “(Salmo” to correct a typographical error. (UUU-38)

Response: *Text in Section 4.1.2 has been changed to reflect information provided in the comment.*

Comment: Page 4-44, Line 18
Change “2.2.5.5" to “2.2.5.2" to correct a typographical error. (UUU-42)

Response: *Text in Section 4.6 has been changed to reflect information provided in the comment.*

Comment: Page 4-48, Line 17
Change “Entergy 2005e” to “Entergy 2005a” to accurately reflect the reference source in the Section 4.10 references of the Draft SEIS. (UUU-44)

Response: *The reference callout in Section 4.7.1 has been changed to reflect information provided in the comment.*

Comment: Page 4-48, Line 9
Change the spelling of Spectruc to Spectrus NX-1 104 to accurately reflect the name of the product. (UUU-45)

Response: *Text in Section 4.7.1 has been changed to reflect information provided in the comment.*

Comment: Page 4-49, Line 39
Change “NRC 1999" to “NRC 1996" to accurately reflect the reference source in the Section 4.10 references of the Draft SEIS. (UUU-46)

Response: *Text in Section 4.7.2 has been changed to reflect information provided in the comment.*

Comment: Page 4-53, Line 5
Change “Savoy et al. 2004" to “Savoy and Crecco 2004" to accurately reflect the reference listing in the Section 4.10 references of the Draft SEIS. (UUU-47)

Response: *The reference callout in Section 4.8.1 has been changed to reflect information provided in the comment.*

Comment: Page 4-58, Line 2 Change “(as listed in Table 2-1)” to “(as listed in Table 2-2)” to accurately reflect the source for the onsite wells. (UUU-49)

Response: *Text in Section 4.8.5 has been changed to reflect information provided in the comment.*

Comment: Page 4-59, Line N/A Add “36 CFR Part 800. Code of Federal Regulations, Title 36, Parks, Forests and Public Property,Part 800, “Protection Of Historic Properties” to the Section 4.10 references since it is in the section write-up and is consistent with other regulations listed in this section. (UUU-50)

Response: *The reference has been added to Section 4.10 to reflect information provided in the comment*.

Comment: Page 4-59, Line N/A Add “40 CFR Part 1508. Code of Federal Regulations, Title 40, Protection of Environment, Part 1508, “Terminology And Index” to the Section 4.10 references since it is in the section write-up and is consistent with other regulations listed in this section. (UUU-51)

Response: *The reference has been added to Section 4.10 to reflect information provided in the comment*.

Comment: Page 4-59, Line N/A Add “Federal Water Pollution Control Act of 1977 33 USC 1326, et seq. (Also known as the Clean Water Act [CWA])” to the Section 4.10 references since it is in the section write-up and is consistent with other Acts listed in this section. (UUU-52)

Response: *The reference has been added to Section 4.10 to reflect information provided in the comment*.

Comment: Page 4-59, Line N/A Add “National Historic Preservation Act of 1966, as amended (NHPA) 16 USC 470, et seq.” to the Section 4.10 references since it is in the section write-up and is consistent with other Acts listed in this section. (UUU-53)

Response: *The reference has been added to Section 4.10 to reflect information provided in the comment*.

Comment: Page 5-3, Line 17
Change “Entergy 2006" to “Entergy 2006a” to accurately reflect the reference source in the Section 5.3 references of the Draft SEIS. (UUU-55)

Response: *The reference callout in Section 5.1.1 has been changed to reflect information provided in the comment.*

Comment: Page 5-3, Line 33
Delete “(NRC 1996)” {Footnote on page 5-1 states that all GEIS references are to the GEIS and Addendum 1) (UUU-56)

Response: *Text in Section 5.1.2 has been changed to reflect information provided in the comment.*

Comment: Page 5-4, Line 25
Change “Entergy 2006" to “Entergy 2006a” to accurately reflect the reference source in the Section 5.3 references of the Draft SEIS. (UUU-57)

Response: *The reference callout in Section 5.1.2 has been changed to reflect information provided in the comment.*

Comment: Page 5-11, Line 1 4
There is no “Entergy 2006b” reference listing in the Section 5.0 write-up (Pages 5-1 through 5-10). (UUU-61)

Comment: Page 5-11, Line 16 -19
There is no “Entergy 2006e” reference listing in the Section 5.0 write-up (Pages 5-1 through 5-10). (UUU-62)

Response: *The reference to Entergy 2006b, Entergy 2006c, and Entergy 2006d have been revised. The reference to Entergy 2006e has been removed.*

Comment: Page 6-6, Line 16
Need to add “(NRC 2005)” after “(70 FR 53313)” to tie it to the reference source in the Section 6.2 references of the Draft SEIS. (UUU-63)

Response: *Text in Section 6.1 has been changed to reflect information provided in the comment.*

Comment: Page 6-10, Line 8
Need to reconcile the “September 28, 2005" date with the “September 8, 2005" date shown on Page 6-6 (Line 16) of the Draft SEIS which states”...proposed revisions to 10 CFR Part 63 on September 8, 2005 (70 FR 53313)”. (UUU-64)

Response: *Text in Section 6.2 has been changed to reflect information provided in the comment.*

Comment: Page 6-10, Line 6 -8
There is no “NRC 2005" reference listing in the Section 6.0 write-up (Pages 6-1 through 6-8). Refer to Comment 59 to correct this item. (UUU-65)

Response: *Text in Section 6.1 has been changed to reflect information provided in the comment.*

Comment: Page 8-7, Line 34
Change “(Section 3.2.1; Entergy 2005)” to “(Entergy 2006)” to accurately reflect the reference source in the Section 8.4 references of the Draft SEIS. As a note, there is no “Entergy 2005" in the Section 8.4 references of the Draft SEIS. (UUU-66)

Response: *The reference callout in Section 8.2 has been changed to reflect information provided in the comment.*

Comment: Page 8-7, Line 37
Change "(Entergy 2005)" to "(Entergy 2006)" to accurately reflect the reference source in the Section 8.4 references of the Draft SEIS. (UUU-67)

Response: *The reference callout in Section 8.2 has been changed to reflect information provided in the comment.*

Comment: Page 8-14, Line 22
Change "(Entergy 2005)" to "(Entergy 2006)" to accurately reflect the reference source in the Section 8.4 references of the Draft SEIS. (UUU-69)

Response: *The reference callout in Section 8.2.1.1 has been changed to reflect information provided in the comment.*

Comment: Page 8-40, Line 11
Change "(PNNL 1986)" to "(PNL 1986)" to correct a typographical error and to accurately the reference listing in the Section 8.4 references of the Draft SEIS. (UUU-84)

Response: *Text in Section 8.4 has been changed to reflect information provided in the comment.*

Comment: Page 8-51, Line N/A
Add "Tax Reform Act of 1986, Pub. L. 99-514; 99th Cong., H.R. 3838 (JCS-10-87)" to the Section 8.4 references since it is in the section write-up and to be consistent with typical Acts listed in this section. (UUU-91)

Response*: The reference has been added to Section 8.4 to reflect information provided in the comment*.

Comment: Page 8-55, Line 20 -22
There is no "NRC 2001" reference listing in the Section 8.0 write-up (Pages 8-1 through 8-51). (UUU-92)

Response: *The reference callout in Section 8.4 has been changed to reflect information provided in the comment.*

Comment: Page 8-55, Line 31 -33
Change '"Walsh, M.E., et al. 2000" to "Walsh, M.E., Perlack, R.L., Turhollow, A., Ugarte, D.T., Becker, D.E., Graham, R.L., Slinsky, S.E. and Ray, D.E. 2000" to capture all authors. (UUU-93)

Response: *Text in Section 8.4 has been changed to reflect information provided in the comment.*

Comment: Page 9-9, Line 17 -18
There is no “Entergy 2006c” reference listing in the Section 9.0 write-up (Pages 9-1 through 9-8). (UUU-110)

Response: *The reference callout in Section 9.4 has been changed to reflect information provided in the comment.*

Comment: Page E-5, Line 5
Change “0002-44-04-X” to “”0002-44-07" under Number Column, “01/01/06" to “01/01/07" under Issue Date Column and “12/31/06" to “12/31/07" under Expiration Date Column on Table E-2. (UUU-111)

Response: *Text in Table E-2 has been changed to reflect information provided in the comment.*

Comment: Page E-5 , Line 6
Change “T-VTO01 -L06" to “”T-VTO01 -L07" under Number Column, “01/01/06" to “11/20/06" under Issue Date Column and “12/31/06"to “12/31/07" under Expiration Date Column on Table E-2. (UUU-112)

Response*: Text in Table E-2 has been changed to reflect information provided in the comment.*

Comment: Page E-27, Line 33
Change “(NRC 2006a)” to “(NRC 2006b)” to accurately reflect the reference source in the Section 9.0 references in Appendix E of the Draft SEIS. (UUU-113)

Comment: Page E-35, Line 34 “Marcy (2004c (1976c)” is not listed in the Section 9.0 references in Appendix E of the Draft SEIS. (UUU-14)

Comment: Page E-40, Line 8 “(Entergy 2005e)” is not listed in the Section 9.0 references in Appendix E of the Draft SEIS. (UUU-115)

Comment: Page E-40, Line 11
Change “(VDEC 2005a)” to “(VDEC 2005)” to accurately reflect the listing in the Section 9.0 references in Appendix E of the Draft SEIS. (UUU-116)

Comment: Page E-42, Line 32 “(DeWald 2006c)” is not listed in the Section 9.0 references in Appendix E of the Draft SEIS. (UUU-117)

Comment: Page E-52, Line 29 "(VFWD 2006)" is not listed in the Section 9.0 references in Appendix E of the Draft SEIS. (UUU-118)

Comment: Page E-55, Line 6
Under the Expected Effect of VYNPS Operations on EFH Column, change "Parr habitat no present" to "Parr habitat not present" to correct a typographical error. (UUU-120)

Comment: Page E-56, Line N/A
Add "Magnuson-Stevens Fishery Conservation and Management Act of 1976, 16 U.S.C. 1801-1882, as amended 1996" to the Section 9.0 references in Appendix E of the Draft SEIS since it is in the section write-up and is consistent with other Acts listed in this section. (UUU-121)

Comment: Page E-56, Line 39 -40
"Dewald 2006a" is not listed in the Section 9.0 references in Appendix E of the Draft SEIS. (UUU-122)

Comment: Page E-56, Line 33 & 36
Change "Dewald" to "DeWald" to correct a typographical error. (UUU-123)

Comment: Page E-57, Line 1
Change "Dewald" to "DeWald" to correct a typographical error. (UUU-124)

Comment: Page E-60, Line 17-19
"NRC 2006a" is not listed in the Section 9.0 references in Appendix E of the Draft SEIS. (UUU-125)

Response: *The NRC's EFH assessment was transmitted to the NMFS by letter dated December 12, 2006, and includes the NRC's assessment of the impacts of continued operation of VYNPS on Atlantic salmon EFH. Therefore, the EFH assessment contained in the Final SEIS has not been revised as suggested.*

A.2.15 Issues Outside the Scope of the Environmental Review for License Renewal: Safeguards and Security; Operational Safety; Aging Management; Emergency Preparedness and Response; Cost-Benefit; and Energy Policy

Safeguards and Security

Comment: Of the 32 boiling water reactors that are still in operation, there are 24 that have mark one containments, it's only this one that interests me, the one that's five miles from here. The NRC is attempting to conceal the fact that a large release of radioactivity as a result of a

terrorist attack on this structure is entirely possible, which is according to a Congressionally mandated study by the National Academy of Science. There is no mention of the word terrorism in the entire EIS, I've read it.

Nearly 3,000 Americans died on 9/11. Since then, more than 3,000 Americans have died fighting terrorism. Roughly 70,000, if we could know, Iraqi civilians have died, I'm sorry, civilians, terrorists, insurgents, whatever one chooses to call them, have died, Iraqi citizens, and the NRC considers it okay to not include the word terrorism in it's environmental impact statement. (D-1)

Comment: There is no evaluation of the probability that security protocol is adequate, this is even though, in 2001, not even one month prior to 9/11, Vermont Yankee had the notorious rating as the least secure reactor in the country, that's as the result of the operational safety response evaluation test of the NRC. Vermont Yankee has repeatedly said, since 9/11, that they have invested $8 million strengthening their defenses, upgrading their security systems. So what? I don't know if that's any more or any less than the Pilgrim reactor, or the Monticello reactor, or any other boiling water reactor or PWR, pressurized water reactor, for that matter, in this country.

All we here can know is that we started on 9/11/01 with the least secure reactor in the country, as determined by NRC tests. Maybe it's more secure now, maybe not. There is no assessment of the environmental, the economic, employment or sociological impacts and costs if this environmental impact study, or your regulation or your insight, or your oversight of this industry, excuse me, is not adequate to prevent an uncontrolled and catastrophic release of radioactive nuclides. You have no analysis of the probability the plant management procedures actually can prevent an uncontrolled catastrophic release of radiation or of the environmental, economic, employment and sociological impacts if those procedures are not sufficient to prevent such a release. (D-3)

Comment: Terrorism must be considered here on a site-specific basis. (D-5)

Comment: One of the things that Congress did right away, which has not gotten very much good coverage in the press, was take a quick look at our most vulnerable infrastructure in the country to see what measures ought to be taken right away, and they found the most vulnerable infrastructure and they took action.

That most vulnerable infrastructure was our public water supply system, reservoirs are wide open and so forth. The electric transmission system has had damage to it on a far greater scale by ice storms than terrorists could ever do. Natural gas pipelines are designed for sectionalizations because, as the representatives told us, our worst enemy is somebody with a backhoe, people are digging up natural gas pipelines all the time, so they are designed for accidents, terrorists couldn't possibly do worse.

And nuclear power plants were not on the list at all because of, as Mr. Sachs proved by his remarks, there was a formal process in place since 1979 to guard against terrorism, as the court mentioned in the Diablo Canyon decision, 1979 is when the NRC started formally looking at terrorism, and there were bullet proof steel shields in the hallways of the plants and so forth during the 1980s when I was back here working again on the plant. So, as I found in Washington, at the end, all decisions are based on personal value judgements, all the important ones, not science and engineering alone.

As a matter of fact, there are no scientific formulas or engineering processes that can tell you whether something is safe or not, science and engineering can only tell you how something works and what the consequences are. Whether that's safe or whether it's acceptable is a personal value judgement and that's what politics is all about in this country, but making the right value judgements depends on public education and the industry, and I want to say to the staff members here, and I hope you'll take it back, the Commission has a long way to go on public education on these matters.

Even though people may still continue to disagree with us forever or with the Commission and the majority view on nuclear power and other things forever, we have an obligation to continue the public education. I realize, in a politically charged environment like Washington, particularly when there is a hostile majority in Congress or hostile administration in the White House, how difficult it is to not seem to be an advocate, but I would offer for the Commission's consideration that telling the whole truth in things that have happened is not advocacy.

There is nothing wrong with saying that the Commission's activity on concerns on terrorism began in 1979 so, when 2001 came, we are not starting from ground zero. There is nothing wrong with saying, when you look at health and safety of radioactivity and radiation, that the research and development began over 100 years ago and the regulatory process began in 1928. There is nothing wrong with saying those things to continue to reach out to people, so my message is we must continue the public education process but at the end know that there will still be people who disagree with us, but remember what one of the founders of our country said, I may disagree with what you say but I would defend with my life your right to say it. (G-1)

Comment: I do believe that the NRC is aware that there are increased risks for us who live downwind and that a catastrophic accident is possible, the likes of Chernobyl or Three Mile Island. It could be a terrorist target. (M-2)

Comment: So terrorism must be included in the environmental impact statement and in relicensing. (KK-4)

Comment: I have a concern regarding the terrorist issue regarding these spent fuel casks. (NN-2)

Comment: My second concern with the inadequacy and incompleteness of the supplemental environmental impact statement is the NRC's refusal to consider the environmental effects of an act of terrorism upon the spent fuel pool. I think this stance that the NRC is taking is not only tantamount to criminal negligence, it's silly, they know that it's only a matter of time before the Supreme Court or Congress catches up with them on this issue. Saying it's up to the military to protect nuclear facilities, which I read in the paper just a couple of days ago, that was supposedly a decision on the part of the Commissioners themselves, is irresponsible when there are technologies readily available today that could make these predeployed weapons of mass destruction, the vulnerable spent fuel pools, much safer, hardened on-site storage, for one. (OO-2)

Comment: The statement should deal openly with the threat of attack instead of sweeping it under the rug. (TT-3)

Comment: Regards the terrorist threat, I don't know which option is safer, the spent fuel pool or dry casks. If the dry casks are deemed to be safer, and if we need to transfer our spent fuel to transport casks at some point in the future anyways, then I would support moving the fuel to the casks now. If this is considered a decommissioning cost then I would support allowing the utilities to use decommissioning funds to do this.

If there are mitigation strategies that are cost effective I would support those too. These would seem to me to be sensible anti-terrorist measures. Evaluating these small probability events with unknowable consequences is difficult. They must be balanced against the severe consequences that are certainties when considering fossil fueled alternatives. I would ask you to weigh the comparison as if your office was in the Netherlands (and to be fair, down wind from a dry cask storage facility). (SS-6)

Comment: Why can't the nuclear industry use a little bit of the $12 billion corporate welfare package they were given in the Energy Act of 2005 to show us that they are responsible corporate citizens by stopping the overfilling of spent fuel pools and putting the fuel in hardened storage casks in bounds, far enough apart that they are not likely to bonk into each other in a terrorist attack, tip over and cause a cladding fire? (OO-3)

Response: *The issue of security and risk from malevolent acts at nuclear power plants is considered out of scope for license renewal. These matters continue to be addressed through the ongoing regulatory oversight process as current and generic regulatory issues that affect all nuclear facilities. Appropriate safeguards and security measures have been incorporated into the site security and emergency preparedness plans. Any required changes to emergency and safeguards contingency plans related to terrorist events will be incorporated and reviewed under the operating license.*

Comment: My understanding is that the general security has been beefed up since 9/11, yet nothing has been added for security from the air. If this plant is relicensed, how can we feel secure from an attack on the spent fuel pool? (H-1)

Comment: The spent fuel pool is radically more dangerous and susceptible to terrorism than previously thought. (H-3)

Comment: In 1971, at Vermont Yankee operating license hearings before the Atomic Energy Commission, the matter of nuclear waste was excluded. The Natural Resources Defense Council, the State of Kansas and the New England Coalition all attempted to raise it repeatedly and were always told it would be dealt with later.

The plan, at that point, was that 600 irradiated fuel bundles would remain in the spent fuel pool for a few months only. As we know, all the spent fuel ever generated at Vermont Yankee now remains in the spent fuel pool. Now we know the spent fuel pool is even more vulnerable because of its density. I'm not quite sure of the number but it's something like 2,800 fuel bundles are more which are there at elevation and we now know more clearly than we did before that the possibility of a terrorist attack is very real. (N-1)

Comment: I'm aware that a rule making is underway for Massachusetts and, a rule making, yes, for Massachusetts and its license extension and at Vermont Yankee. However, it's exceedingly important that this sort of thing be completed before any relicensing, if it were to occur, is considered. The results of course of a spent fuel pool fire would be catastrophic. We learned a few days ago that the NRC has also declined to provide protection for reactors from an air crash, it can't happen. Together, these illustrate a serious either disregard or unwillingness to address very certain serious issues within your agency. (N-4)

Comment: Further, it admits that it is impossible to assign probability to acts of terror. This is new information and has yet not been considered for its VY site-specific references and implications. No credible assessment of potential accident consequences or mitigation at Vermont Yankee can be undertaken without including consideration of the information in NUREG-1738. (JJ-6)

Comment: When I read recently that the NRC had ruled that guarding against the threat of a terrorist air attack on the reactor was the responsibility of the Dept. of Defense, thus rendering Entergy as not accountable for efforts in that direction, I knew the shell game had just been ramped up a few notches. Entergy cannot protect the exposed fuel pool against air attack; the Dept of Defense will not protect the fuel pool against air attack, so the NRC states that the core containment structure is of a robust nature to withstand most air attacks and totally ignores the real danger, the fuel pool. (DDD-4; Z-5)

Comment: The comparably narrow benefits to continuing the production of tons of radioactive wastes can be understood in a broad way, but I doubt they can be readily quantified. We assert this broad understanding: Nuclear waste piles are likely targets in a time of war. We need you to report this reality to all levels of government by asserting this in your findings. We need you to report that the radioactive contamination that would result from an attack on the spent fuel pool and an ensuing fire lasting from one to three months would threaten all species living down-wind in New England and beyond. (KKK-3)

Comment: Your refusal to consider the environmental effects of an act of terrorism upon the spent fuel pool is not only tantamount to criminal negligence, it is silly. You know it is only a matter of time before the Supreme Court or U.S. Congress catches up with you. Saying it is up to the military to protect nuclear facilities is irresponsible when there are technologies readily available to the reactor and spent fuel owners today that could make these pre-deployed nuclear weapons MUCH safer. Hardened on-site storage for one. (RRR-3)

Comment: According to a NATO Draft Report, NATO Parliamentary Assembly Report AV 118 STC/MT (02) 3, (April 25, 2002),

> A Brookhaven National Laboratory study showed that a spent pool fire could cause contamination for 188 square miles, approximately 30,000 cancer fatalities and $ 59 billion in damage An even greater threat to civilian nuclear facilities may come from ground assault or sabotage, with or without the help of insiders.

The Report states further, that,

> Experts from Stanford University's CISAC indicated that, given the increase in truck bomb attacks over the last decade, terrorist attacks with conventional explosives against nuclear power plants, spent fuel pools or spent fuel in transport are major sources of concern

Given that NRC Staff is well aware of the information above, it remains disturbing that the NRC obdurately refuses to newly consider the vulnerability of elevated spent fuel pools to malevolent acts and the potential consequences of those acts, even in defiance of the intent of the recent SO Circuit Federal Appeals Court decision. (QQQ-26)

Comment: The 9th Circuit Court of Appeals decision is very clear that environmental assessment must be done in regard to storage of spent fuel, the NRC should pay attention and do it across the board for all spent fuel storage facilities, and I know you are going to say that's not entirely within your purview and it probably isn't. However, it is something that I think you should make very clear to your superiors and everyone in the NRC. (N-3)

Comment: The NRC is basically once again attempting to operate outside the rules and outside the law. The 9th Circuit came to a decision that the NRC had to address the

vulnerability of its spent nuclear fuel in terms of the National Environmental Policy Act, in terms of the movement of fuel into dry cask storage, at a site in California. The NRC objected and there the court rejected their position and in fact Pacific Gas and Electric, the corporation that has the fuel, appealed to the Supreme Court and was soundly rejected by the Supreme Court.

At this point, the NRC has been ordered to rewrite its rules and regulations in terms of incorporating the issue of the vulnerability of spent fuel into the National Environmental Policy Act review, this effects all reactor licenses under NEPA review. We are in a NEPA review, aren't we? Isn't that what we are here to do tonight? Then why are we here? If this is now under rewriting the regulations, why hasn't the NRC suspended its evaluation? Why doesn't it take the hard look that the National Environmental Policy Act requires it to do, instead of avoiding the issue? Because the truth is when you have a problem and you have no solution, then you have no problem. (O-1)

Comment: The Supreme Court recently ruled, they ruled --. Are they not the highest court in the land? They ruled that relicensing must include the consideration of terrorism, period, not for the NRC to then say, no. The Supreme Court ruled it so it must be included in the relicensing consideration of Vermont Yankee, period. (KK-1)

Comment: It is new and significant that polarization against the U.S. has increased since the second Iraq war and attack from the air is of greater concern. The Vermont Yankee storage pool is seven stories high and is hardened against impact from the side but its roof is not hardened to withstand a plane crash or bombing.

In conclusion, Mr. Secretary of the NRC, I, for one, urge that NEPA's decision making documents include deep scrutiny of the new, significant and very possible impacts of spent fuel storage, namely:

1. -an attack on the cooling pool from above --causing the pool to drain, the hot fuel assemblies to be exposed, the radioactive assemblies' zirconium cladding to burn, and the ionizing radiation to be released in smoke causing death and a sharp increase in cancer throughout Vermont into lower Quebec, and into New Hampshire, most of central and western Massachusetts and northern Connecticut. (WWW-3)

Response: *The Ninth Circuit Court of Appeals in San Luis Obispo Mothers for Peace, et al. v. NRC, No. 03-74628 (June 2, 2006), upheld the Commission's decision on the Atomic Energy Act issues, but, as to the NEPA issues, concluded that "the NRC's determination that NEPA does not require a consideration of the environmental impact of terrorist attacks does not satisfy reasonableness review," and held that "the EA prepared in reliance on that determination is inadequate and fails to comply with NEPA's mandate." San Luis Obispo at 6096. In the recent Commission Memorandum and Order CLI-07-08, Amergen Energy Company, LLC - License Renewal for Oyster Creek Nuclear Generating Station, dated February 26, 2007 (ADAMS*

Accession No. ML070570511), the Commission reaffirms its decision "that NEPA demands no terrorism inquiry." Specifically, the Commission "respectfully... disagrees" with the Ninth Circuit Court of Appeals' decision and will follow the decision of the court as applicable to Diablo Canyon.

In the Memorandum and Order, CLI-07-08 (Feb. 26, 2007), the Commission stated several conclusions. First, the environmental effect caused by terrorists is simply too far removed from the natural or expected consequences of agency action to require a study under NEPA. Second, a NEPA-driven review of the risks of terrorism would not be necessary because the NRC has undertaken extensive efforts to enhance security at nuclear facilities. These ongoing post-9/11 enhancements provide the best vehicle for protecting the public. Third, substantial practical difficulties impede meaningful NEPA-terrorism review, while the problem of protecting sensitive security information in the quintessentially public NEPA and adjudicatory process presents additional obstacles. Finally, the GEIS has already performed a discretionary analysis of terrorist acts in connection with license renewal and concluded that the damage and radiological release from such acts would be no worse than the damage and release to be expected from postulated accidents.

Safety

Comment: The ironic thing about the whole study of the effect of the nuclear power plant as being so much safer and more wonderful for our region because it produces enough power and we aren't going to have the lights to out or the heat go off, the ironic thing about that is that, this month, in Monticello, at the Monticello facility in St. Cloud, Minnesota, a nuclear facility that is just about the same type and age as the Vermont Yankee plant and the Pilgrim plant, in a facility that was just recently granted their 20-year renewal, a 13 ton control box fell and hit, it didn't cause a serious amount of damage but it caused the steam lines to dent and the steam pressure to drop, and that power plant had to be suddenly closed down. (K-2)

Comment: Evidently, in the pharmaceutical field, people are more concerned about quality assurance than the NRC is because it is a known fact that quality cannot be inspected into a facility. In other words, you can inspect a facility every single day, that does not make it safer or more quality than it already is, what it does is it lets you see the problems as they come up.

And in the pharmaceutical industry, there is a rule that when any major change is made in a facility, a whole new quality assurance program must be written because when any retrofit, or upgrade or change is made in the facility, everything in the facility is effected by that change and it is impossible to know what the quality is going to be, whether it's safe, whether there is going to be a potential problem, unless you completely redo your whole quality analysis.

Now, if this is done in the pharmaceutical industry where there is time to call back medicines that are found to be poorly made, and poorly designed and so forth, before people actually

swallow them, why isn't it the policy in a field like nuclear energy production where when a problem occurs, time can be of the essence and people who may have inspected the plant years ago or may have some inkling of what the problem is may have retired or may not be there, they may have died. The plant is way beyond its original life span and yet we aren't requiring this kind of quality inspection and assurance from this industry? (K-8)

Comment: My concern is how many guys like him are retiring that are familiar with the idiosyncracies of that facility? I know how to drive my car, I know it might pull a little bit to the left because of the brakes up front, I know what to expect in operating that vehicle. The retiring folks are the ones that have that ingrained knowledge and they are leaving, and they are replaced by someone else who has been here for, you know, the fellow from Maine who has been here for I think 12 years, and that's a drop in the bucket. (MM-3)

Comment: Vermont Yankee has served its purpose and is at the stage that too many things are in question with its operation. It just doesn't seem safe to be living near that plant. Pushing operations up to 120% on an old plant. Vibration problems, warming of the river water, etc. How do you think that make people feel to be living in the shadow of that? The envelope is being pushed on that thing and do we keep pushing till something tragic happens. I have never like nuclear energy for safety reasons. (VV-1)

Comment: The recent occurrence at the Monticello Nuclear Plant where a large cabinet of safety related circuitry fell from a girder due to weld fatique is a good example of the folly of relicensing older plants. I worked for Northern States Power and knew a lot of the startup crew for Monticello. Back then most of the startup personnel were utility folks who had worked at the Pathfinder Plant in the Dakotas for NSP. Quality Assurance for such items as I&C circuit boxes and such were virtually non-existant. Piping of course was controlled but there was little thought to welding the hangers for electrical boxes onto structural steel. As a result, I feel the Monticello occurrence was just a bellweather of what is to come with these older generation plants. To allow them to run past their original license period is not in the public interest unless the utility is willing to spend a considerable sum of money upgrading even mundane items like electrical box mounting)

Comment: I have the following questions for the NRC as related to the renewal of the Vermont Yankee Facility:

1. How do you plan to assure that any upgrades, retrofits or system componentry changes to the exiting system will not have a detrimental effect on another system which may then become a major problem that was overlooked by inspectors?
2. How will you ensure that inspections are carried out not only by well trained, experienced individuals, but by teams that are unbiased and looking at things without prior observations creating a mindset that everything is OK?

3. How can you be sure that your quality inspections are looking at 100% of every plant system. If you admit that they are not, how can you justify using a random inspection as being representative of the entire facility?
4. And finally, how will you guarantee to the public, that if the Vermont Yankee is given a 20 year renewal, that we will be assured of honest decisions related to these inspections and not let greed, money and jobs interfere with the truth? (SSS-1)

Response: *The NRC's ongoing safety program focuses on prevention of safety problems so that potential issues such as the weld failures on the control instrumentation box at the Monticello Nuclear Plant do not lead to accidents and subsequent environmental impacts. To the extent that the comments pertaining to safety are within the scope of license renewal, these issues will be addressed during the parallel safety review performed under 10 CFR Part 54. Operational safety issues are outside of the scope of the license renewal review. Although a topic may not be within the scope of review for license renewal, the NRC is responsible for protecting public health and safety. Any matter affecting safety can be addressed under processes currently available for an existing operating license absent a license renewal application.*

The comments are outside the scope of the license renewal review; therefore, they will not be evaluated further. However, the comments will be forwarded to the project manager for the license renewal safety review for consideration.

Aging Management

Comment: Moniz and Deutsch are these professors from MIT, were the professors who were the cosponsors of the 2003 future of nuclear power MIT white paper. They also, however, in the September, `06 edition of Scientific American, which was the future of nuclear, the future of energy, they stated in the Scientific American, September `06 edition, that the current generation of nuclear reactors have a safe life span of 50 years. Correct me if I'm wrong but Vermont Yankee Entergy is currently seeking a 60-year life span. (NN-5)

Response: *The NRC's environmental review focuses on environmental impacts relevant to the extended period of operation requested by the applicant. Safety matters related to aging are addressed as a part of the NRC safety review for the license renewal, which is conducted separately, and will be documented in an NRC staff Safety Evaluation Report. The safety review looks at the applicant's aging management programs for passive long-lived systems, structures, and components. The VYNPS Safety Evaluation with Confirmatory Items was published March 30, 2007, and can be accessed in ADAMS at Accession No. ML070890638. The comment is outside the scope of the environmental review for license renewal.*

Emergency Preparedness

Comment: If we had a catastrophic event at Vermont Yankee, we need an evacuation plan, we need a number of first responders, we need a number of measures that we need to take but, if we have a catastrophic event at a wind turbine or at a solar panel array, would we need evacuation routes or first emergency responders? I don't think so. Louder? Really? Do we need that repeated, what I said previously, to those in the back? So, if there is a catastrophic event at a wind turbine or at a solar panel array, would we need first responders, or an evacuation route, or FEMA, or the Vermont Emergency Management Association or agency to come down and rescue us? No.

But from Vermont Yankee, we do, and that is part, I think, of what the impact is of having that power plant within sight, and within smell and within hearing range, because we hear the sirens every Saturday at noon telling us what we might do if there was a catastrophic event. Yet none of those plans or measures are taken into account in the environmental impact statement, neither is the event of a terrorist attack and even not a terrorist attack, if there is any other kind of mishap that happens. (E-1)

Comment: I live in Marlboro, Vermont and, for those of you that might not be familiar with that town, it's a little area that Vermont Yankee's emergency evacuation map for years showed as a non-town. It was a little airbrushed white space sort of stuck to the side of Brattleboro. We are to the west of Brattleboro and the north of Halifax, and part of our town extends within the ten mile circle which is the evacuation zone.

Because our town fathers, in their wisdom, decided that the evacuation plan was really bogus and was nothing more than a placebo to try to appease the demands of the citizenry, the nuclear power plant decided we just weren't there, and I've always used that as a sort of a pivotal point in my process of looking at the way the nuclear industry works. Because we didn't get shown on the map, we weren't there. Therefore, there was no problem. (Z-1)

Response: *The Commission considered the need for a review of emergency planning issues in the context of license renewal during its rulemaking proceedings on 10 CFR Part 54, which included public notice and comment. As discussed in the Statement of Consideration for rulemaking (56 FR 64966), the programs for emergency preparedness at nuclear power facilities apply to all nuclear power facility licensees and require the specified levels of protection from each licensee regardless of plant design, construction, or license date. Requirements related to emergency planning are in the regulations at 10 CFR 50.47 and Appendix E to 10 CFR Part 50. These requirements apply to all operating licenses and will continue to apply to facilities with renewed licenses. Through its standards and required exercises, the Commission reviews existing emergency preparedness plans throughout the life of any facility, keeping up with changing demographics and other site-related factors. Therefore, the Commission has determined that there is no need for a special review of*

emergency planning issues in the context of an environmental review for license renewal. The comments are outside the scope of the license renewal review; therefore, they will not be evaluated further.

Offsite entities such as State and local governments and the U.S. Federal Emergency Management Agency have responsibility for offsite emergency planning. Perceived deficiencies in the offsite emergency plans should be directed to the government entities that have responsibility for the specific portions of the plan judged to be deficient.

Cost-Benefit

Comment: In addition, the efficient operation of Vermont Yankee also contributes to affordable electricity in Vermont. I ask you to learn from the mistake that the State of Maine has allowed to happen, closure of our nuclear power plant, which I believe has contributed to the escalating costs, 300 percent, to the people of the State of Maine. And I haven't even mentioned what impact this has had on the economy which has not recovered in midcoast Maine as a result of the closure and the thousand people who were displaced because of the closure of the plant. (CC-2)

Comment: No one in this room has a clue what the price of electricity will be if this license is renewed, so any talk of how great our electric rates have been, we have the cheapest electricity in the New England Region, I know that's been big news for Entergy this year or last year, excuse me. None of us have a clue what we are going to get charged after 2012, if the license is allowed to be renewed or extended, and the same is true for who knows what the cost to the State of Vermont would be if the hydro energy, by the way, when the talk has been so great tonight on how we have the cleanest portfolio, I have heard nothing of the fact that one third of our energy comes from hydro electric. (NN-6)

Comment: Please assess the cost effectiveness of waste storage operations at Padukah, Kentucky for the next several hundred thousand years. (KKK-9)

Comment: Reactors are amazing things but -unfortunately they are not cost effective and Wall Street knows this. They are being forced to operate longer to pay for their decommissioning and/or the safe storage of waste, etc. (BBB-4; AAA-3)

Response: *The Commission determined that an applicant for license renewal need not provide an analysis of the economic costs or economic benefits of the proposed or alternative actions. The comments are outside the scope of the license renewal environmental review as set forth in 10 CFR Part 51 and Part 54 and will not be evaluated further.*

Energy Policy

Comment: In 1954, Congress decided they were the decider, along with the president, that we ought to have nuclear power as part of national energy policy, before there was a Department of Energy.

That has continued through every Congress, they have not changed the national policy, and it is the Nuclear Regulatory Commission's job to make sure that we carry out that policy in a safe fashion, it is not their job to decide we should not have nuclear power and to shut it down. If you want to do that, which is something that citizens can do and have had that kind of effect in the past, you need to convince a majority of congress and a super majority in the senate to block a filibuster and whoever is in the White House to change national energy policy. (QQ-1)

Response: *The NRC makes its decision whether or not to renew the license based on safety and environmental considerations. The final decision on whether or not to continue operating the nuclear plant will be made by the utility, State, and Federal (non-NRC) decision makers. This final decision may be based on economics, energy reliability goals, and other objectives over which the other entities may have jurisdiction. The comment is outside the scope of the license renewal review and will not be evaluated further.*

A.3 Public Meeting Transcript Excerpts

Transcripts of the Afternoon Public Meeting on January 31, 2007, in Brattleboro, Vermont

[Introduction by Mr. Cameron]
[Presentation by Mr. Emch]
[Presentation by Dr. Miller]

MR. CAMERON: And are we ready to go to questions? Just to emphasize what we said before is that all of the information on these slides, and of course all of the information in the draft environmental impact statement, are specific to the Vermont Yankee license renewal and we apologize for any confusion that might be caused. We have time for some questions on process, whatever, and if you could just please introduce yourself to us?

MS. CASA: My name is Kate Casa, I'm with the *Commons* newspaper. What happens if the NRC approves the license extension but the state does not, in fact the state says no?

MR. CAMERON: This sounds like we should probably turn to our representative from the Office of General Counsel who is here, Steve Hamrick.

Steve, can we provide any information on that?

MR. HAMRICK: At this point, there are a number of aspects of the regulation that are state governed. It is not clear, at this point, whether or not the state has authority to keep the renewal from happening. The federal government has what's known as preemption on certain issues, health and safety issues, and so it's the federal government that takes care of the license, so it's the federal government that issues the license and, as far as the federal government is concerned, the plant can, if the license is issued and renewed, the plant can proceed.

MR. CAMERON: And just to clarify on that, Kate, there are certain permits that the license applicant has to get from either state agencies or other federal agencies and if they, they need to get those permits to operate, okay? That's correct, right?

MR. HAMRICK: Yes, there are NPDES permits, which is the water permits under the Clean Water Act, it's a State of Vermont issue. There is also a Certificate of Public Good, which is a State of Vermont issue, which has to do with the need for power and electrical generation; that's a state issue. So there are other aspects that belong in the state's court.

MR. CAMERON: So, generally, the license applicant also has to get those permits. There may be some state approvals that fall into this preemption area that Steve was talking about, but generally, the license applicant has to get the other permits in order to be able to operate.

MS. CASA: Thank you.

MR. CAMERON: You're welcome.

Yes, ma'am? And can you just introduce yourself?

MS. STAMAS: I'm Emma Stamas and I'm not affiliated with any particular organization, but I recently read that the courts decided that the nuclear power industry did indeed have to evaluate the threat of terrorism for each nuclear plant, especially those under review for extension of licenses and so forth, but even every plant and every storage facility. And I would like to know why the threat of terrorism wasn't specifically evaluated and reviewed for this particular plant, not only for the plant but also for the control rods, the spent fuel rods that are in makeshift storage pools?

MR. CAMERON: Okay, thanks, Emma.

We are going to go to Steve Hamrick again from our Office of General Counsel to explain that. It is a little bit confusing.

Steve?

MR. HAMRICK: That's correct, there was a decision that came out of the 9th Circuit Court of Appeals, which is out in California, with respect to a spent fuel storage facility and, in that case, they, that court said that the NRC, when it does an environmental impact statement, should address the impacts of terrorism. The Commission has not yet, that decision was appealed by the licensee in that case to the Supreme Court and the Supreme Court decided not to hear the appeal. That happened very recently, like last week, I believe.

At this point, the Commission has not decided, they have not told us how they would like to deal with that situation, they have not given us guidance yet so, at this point, we are awaiting guidance from the Commission for them to tell us how we should be going about interpreting that decision in our EISs.

MR. CAMERON: And one of the important things, I guess two important things to understand about the decision is, I guess first of all and most importantly, it dealt with how the NRC would look at security issues, terrorism issues, in the context of an environmental impact statement and we do look at security considerations as a part of regulating any of these plants.

MR. HAMRICK: This case was limited strictly to the evaluation in an EIS, an environmental impact statement. The court went to great pains to make sure that everyone understood, when they're reading it, that it was not a discussion of the NRC's security requirements, it was limited strictly to the NRC's evaluation of these risks and impacts in an EIS.

MR. CAMERON: So that discussion was right in the court's opinion?

MR. HAMRICK: Correct, yes.

MR. CAMERON: Let me go to Sally, and then Gary has a question and I think we probably, all right. Well that's up to you, if you want to go home, but we are here after the meeting, if you want to talk further to Steve. But let me just get these couple other questions and then let's go to comments and, if we have time before the end of the meeting, we can go back to questions, including back to explaining this in more detail.

Sally? Sally Shaw.

MS. SHAW: May I have permission to go from a question right into my comment because I have to leave to pick up my daughter at the school bus?

MR. CAMERON: Let me, yeah, do that.

MS. SHAW: All right, I'll make it quick. I have to leave in three minutes.

MR. CAMERON: Okay.

MS. SHAW: Okay. The process question is I thought this meeting was for the purpose of the NRC hearing from the public, so I think the back and forth with questions and answers does not serve that interest very well in that there are a lot of people here and you are going to run out of time. So, after saying that, I'm going to try to make it quick. My primary concern is that, as was in evidence with the slides that referred to Pilgrim and not from Yankee, that this is really not an environmental impact statement for Vermont Yankee and the communities who are suffering the effects of Vermont Yankee, but it is more accurately terms an environmental insult statement. A-1

The good news is that, as an ecologist, I can tell you that environmental systems are very resilient, natural systems are very resilient, but they only restore themselves if you stop the environmental insults, and then they can restore themselves. If you continue to insult them, they will continue to degrade.

My primary concern here is that the GEIS, the generic environmental impact statement, which I've already spoken about at an earlier meeting, and the assumptions behind your supplemental environmental impact statement are based on erroneous and incomplete information, and therefore, your environmental review is neither thorough nor conservative. It has not been properly done. A-2

A-3 Since there is a petition for rule making questioning the scientific basis of the radiation standards and calculations in the GEIS, which is still in the comment period until February 5th, you can find information about this petition on the *Federal Register* web site, the environmental review cannot be considered complete until those issues are resolved and a decision is made whether the generic environmental impact statement accurately reflects risks or needs to be revised.

Therefore, I hereby petition you to halt the license renewal process of Vermont Yankee while the petition for rule making on the adequacy of radiation standards and risk factors in the GEIS is pending and until a full review and reconciliation of the radiation standards consistent with BEIR 7 and other current scientific studies of health effects of low-level ionizing radiation, external and internal, is undertaken. Then you can apply these more realistic standards to your estimates of early fatalities, latent mortality and radiation caused injuries that would be expected from continued operation of Entergy-Vermont Yankee under normal operating and accident scenarios.

These data are of intimate concern to those of us living in Windham, Cheshire and Franklin Counties, the Vermont Yankee sacrifice zone. I would also like to present to you for your consideration this new and significant information. From 1999 to 2002, the Windham County cancer death rate was 12.7 percent above other Vermont counties based on 451 deaths during this four-year period. However, the death rate for all other causes in Windham County was only 1.7 percent greater. The source of this information is the National Center for Health Statistics at the Centers for Disease Control. Some factors causing Windham County residents to die in excessive numbers from cancer and not from other causes, reasons for the high death rates need to be understood.

Number two. Since 1979, the Windham County death rate exceeded the rest of the state by 19 percent for infants, 38 percent for children and adolescents and 30 percent for young adults. High death rates for these 243 persons include cancer, birth defects and other causes. This information came from the same source, the CDC. Why should Windham County have high death rates? There is no obvious reason. The county is nearly identical to the state in percent of minorities and foreign born residents and educational, poverty and income levels.

Reasons accounting for the high death rates need to be understood. Emissions from Vermont Yankee must be considered as one possible factor. For years, scientists have agreed that radiation is much more toxic to the very young. Our local children and young adults have lived all their lives with Vermont Yankee releasing radioactivity and have never breathed air or drunk water without this radioactivity. How do the infant mortality rates compare to the rest of the state? How do the premature births and, what do you call them, miscarriages rates compare to the rest of the state? This information needs to be systematically investigated.

I'm going to stop there, although I have pages more, because I need to go pick up my dear daughter at the bus.

MR. CAMERON: Thank you very much, Sally.

We are going to continue on with the comments and hopefully we'll be able to answer questions later on. Our next two speakers, we are going to go to Dr. Patrick Moore, and if you want to come up, and then we are going to go to Thomas Salmon. Go ahead, right up. Okay, Sally, let's, Sally, you can perhaps be able to do that some time or later, but let's let him talk and we'll see you later tonight. Then we are going to go to--

MR. MOORE: Cat calls and derision have actually no impact on my statement.

MR. CAMERON: Okay, let's hear Dr. Moore's statement, please.

MR. MOORE: And in fact my comments are relatively generic with regard to the nuclear energy industry in general and energy in general.

I would just like to point out off the top that I've spent the last 35 years as an environmental activist and Ph.D. ecologist trying to understand how we can continue to gain the energy, materials, food that we require for survival every day while at the same time working to change our behaviors and our technologies in ways that result in reduced negative impacts to the environment. To me, that is basically, in a nutshell, the definition of sustainability.

We have to face the fact that there are six and a half billion people who wake up every morning on this planet who need resources in order to survive. We have to keep mining, logging, fishing, growing food and all these other things, and producing energy, and we have to do it in ways, intelligently, where we can hope that it will be more sustainable for the future, especially when that means technologies that we apply.

The 103 nuclear plants that are now operating in the United States, producing 20 percent of the U.S.'s electricity, half of that, by the way, is using dismantled Soviet warheads, Russian warheads, for the power source as a result of the reduction in nuclear arms, the equivalent of 100 million cars taken off the road, if that same power was being produced by coal, which 50 percent of our power is produced by. That's a lot of cars, that's a lot of CO_2. B-1

There is no other power source that results in a larger mitigation of greenhouse gas emissions than nuclear energy, so at least it must be given credit on that count. Coming to the State of Vermont, Vermont can be proud of the fact that it has the lowest carbon dioxide emissions per capita of any state in the country. In the case of many states, twice as low. There is only one reason for that and that is the mix of your electric supply, the fact that over two thirds of your electric supply is non-greenhouse gas emitting, the hydro and the nuclear, the largest ones by

far, and then a small amount of biomass, such as heating the state capital, which is also carbon neutral, and a little bit of wind, you could use more of that.

B-2 You have an environmentally enviable record and you've got to keep Vermont Yankee running if you want to keep that record because there is no plans for any non-CO_2 emitting alternatives at present and certainly none under construction. Again, I suggest that you try and figure out your little argument about where the wind power should be and get some windmills in this state, maybe you can get five percent of your electricity from wind, if you actually build some wind farms, and Vermont should engage with the heightened national dialogue on climate change.

Now that the democrats are in control of Congress, there is going to be a much larger emphasis on environmental issues, climate change being the most important one. You can demonstrate that you are a model with the lowest CO_2 emissions in the country, and you should get the credit for this in the ongoing dialogue so that people can see how you did it. The people who decided to buy the hydro and build a nuclear didn't even know about climate change when those decisions were made, but they were rather prescient; in retrospect, they made decisions that gave you the best carbon footprint in the country.

MR. CAMERON: Excuse me, this is, let's listen to his comment and just like we are going to listen to everybody's comments.

B-3 MR. MOORE: There is legitimate concern about the future of the used nuclear fuel stored on-site at Vermont Yankee. Thankfully, there is a new impetus to establish a nuclear fuel recycling industry in the United States, as has already been established in France, the U.K., Japan and Russia. Ninety-five percent of the original energy is still contained in the used fuel, recycling or reprocessing, as it is also known, allows the recovery of this energy in the form of uranium and plutonium, results in a much reduced and shorter-lived waste in the form of the fission products that can be glassified and buried.

The nuclear renaissance is a worldwide phenomenon, from Finland to Canada, to Australia to China, Russia, and India and many other countries are planning new nuclear construction now. In fact the stigma against nuclear energy has largely been a North American phenomenon over the past 30 years, another area are the German speaking countries, but most countries have moved ahead with nuclear during the time that the United States has been more or less calm on the subject.

Vermont should be part of the renaissance, both as a way of reducing CO_2 and the threat of climate change, yes, indeed, I think a lot of energy should be spent on ending the war in Iraq, the way to reduce reliance of fossil fuels from politically unstable, speaking of Iraq, and potentially hostile regions, so it's got to do with energy security, just as much as it has to do with climate change.

I believe that nuclear energy is the only large baseload source of electricity that can effectively reduce fossil fuel consumption while at the same time satisfying the growing global demand for power. A final point on efficiency and conservation, both of which are very important, efficiency being improvements in technology, conservation being changes in behavior. As I like to put it, conservation is turning a light out when you leave the room, efficiency is swapping out the incandescent bulb for a compact fluorescent one. B-4 B-5

Since 1973, the U.S. economy has grown by 157 percent. In that same time, energy production and consumption has increased by only 32 percent, that is a very clear measure of the effectiveness of conservation and efficiency practiced by American individual citizens and businesses. This will continue into the future, no doubt. With that, I'll end my comments. Thank you very much.

MR. CAMERON: Okay, thank you, thank you. Thank you very much, Dr. Moore.

And please, just like everybody is going to have their chance, everybody is going to have their chance to come down here and comment, and we are not going to let anybody heckle someone up here, okay?

So now we have the next three speakers, we are going to go to former Governor Thomas Salmon, and then we are going to go to Claire Chang and then to Gary Sachs.

Governor Salmon?

MR. SALMON: Good afternoon. My name is Thomas P. Salmon, I live in Rockingham in this county. I served two terms as Vermont Governor in the `70s and at least six years as President of the University of Vermont in the `90s. Along life's pathway, served some 17 years as Chair of the Board of Green Mountain Power Company, Vermont's second largest investor-owned utility, and I'll try to be very brief.

Unlike Dr. Moore, I am not a scientist. Dr. Moore is one of the most gifted scientists I have ever met. And frankly, these snide comments don't add anything to this public hearing where the NRC is attempting to get a broad range of everybody's perspective, everybody's point of view, consistent with a great Vermont tradition of inordinate respect for the ideas, the thoughts, the perspectives of all of its citizens.

Let me simply, let me simply say this, there is a quite amazing phenomena going on in Vermont here and now and Dr. Moore alluded to it, and the buzz words are about climate change. Can you believe that the first three weeks, the first three full weeks of Vermont legislative session has been dedicated to bringing in whole series of speakers from a variety of perspectives on the subject of climate change? And what is most remarkable about this, as again was largely

C-1 covered in Dr. Moore's remarks, is that the brave little State of Vermont leads this nation in the context of its energy portfolio contributing the very least of carbon dioxide and other noxious substances ingested into the environment.

And that's something that all of us, all of us, ought to care about and ought to be concerned about and the reason for that again was covered but it relates to, yes, this nuclear facility in Vernon, a few short miles down the road, and it relates to the wisdom of entering into long-term contracts with Hydro Quebec for hydroelectric power. And now the issue is how can Vermont, which is now number one, as the cleanest state in the Union on the CO_2 and related issues front, somehow strive diligently to hold onto its position and to hold onto that position. It is not rocket science to understand that relicensure of this nuclear facility would add vitally to our quest for continuing baseload reliable and cost effective energy, as would success in artful negotiations with our friends in Quebec to replicate in some significant way the hydroelectric contracts of the 1980s.

Now even if we are hugely successful in this quest, we can make a contribution to the nation, we can make a contribution by showing our leadership here in this state. Our contribution will not show up so much as a speck on the horizon in terms of reversing the trend of climate change in this country but our leadership potential is significant and greatly in a significant potential fulfillment.

C-2 Now if the decision were, for whatever set of reasons, not to relicense this plant and an inability to renew the Hydro Quebec contracts, the natural and probable consequence of that is rather clear, we would move for our energy supplies, with no plans whatsoever to pursue other alternatives at the present time, to the spot market of America, when it comes to electric energy, and we would find that market inordinately expensive.

And we would find the enviable position we find ourselves in, as a non-toxic state, moving sadly the other way and such would not enure well from either an environmental or an economic perspective to the people of the State of Vermont because arguably beneath the surface, in my view at least, the most compelling issue facing our people here and now is our demographic profile. We our losing our young people between the ages of 25 and 44 and people between 45 and 65 are emerging as the dominant class in the state and, if that trend continues, in very, very few years, we'll have the most senior population in all of these United States per capita, and that is a subject of profound and considerable concern in terms of how we, with a reduced base of citizens, remain capable to serve the needs of all of our citizens.

Thank you.

(Applause)

MR. CAMERON: Thank you. Thank you very much, Governor Salmon.

Now let's go to Gary, Gary Sachs, and then we'll go to Claire Chang.

MR. SACHS: First off, if I might, I'm Gary Sachs, resident of Brattleboro. I'd like to respond to something I heard Dr. Moore say, which is that we do not currently have, developed any replacement sources for our electrical generation here in Vermont, to which I would say, since 1940, roughly 1948 to 1999, there was $150 billion put to energy research and development, $145 billion of that went to nuclear, $5 billion went to replacement sources. I believe that is one of the reasons why we currently are behind the eight ball, as is everywhere in the country. I do wish you would get your facts and your science straight, sir.

Of the 32 boiling water reactors that are still in operation, there are 24 that have mark one containments, it's only this one that interests me, the one that's five miles from here. The NRC is attempting to conceal the fact that a large release of radioactivity as a result of a terrorist attack on this structure is entirely possible, which is according to a Congressionally mandated study by the National Academy of Science. There is no mention of the word terrorism in the entire EIS, I've read it. D-1

Nearly 3,000 Americans died on 9/11. Since then, more than 3,000 Americans have died fighting terrorism. Roughly 70,000, if we could know, Iraqi civilians have died, I'm sorry, civilians, terrorists, insurgents, whatever one chooses to call them, have died, Iraqi citizens, and the NRC considers it okay to not include the word terrorism in it's environmental impact statement.

I believe Vermont Yankee deserves an independent, site-specific analysis. In this environmental impact statement, any environmental, economic, employment, sociological impacts and costs of routine radiation releases that will, as the course of operation, result from this license extension, they are simply denied with no evaluation. D-2

There is no evaluation of the probability that security protocol is adequate, this is even though, in 2001, not even one month prior to 9/11, Vermont Yankee had the notorious rating as the least secure reactor in the country, that's as the result of the operational safety response evaluation test of the NRC. Vermont Yankee has repeatedly said, since 9/11, that they have invested $8 million strengthening their defenses, upgrading their security systems. So what? I don't know if that's any more or any less than the Pilgrim reactor, or the Monticello reactor, or any other boiling water reactor or PWR, pressurized water reactor, for that matter, in this country. D-3

All we here can know is that we started on 9/11/01 with the least secure reactor in the country, as determined by NRC tests. Maybe it's more secure now, maybe not. There is no assessment of the environmental, the economic, employment or sociological impacts and costs if this environmental impact study, or your regulation or your insight, or your oversight of this industry, excuse me, is not adequate to prevent an uncontrolled and catastrophic release of

radioactive nuclides. You have no analysis of the probability the plant management procedures actually can prevent an uncontrolled catastrophic release of radiation or of the environmental, economic, employment and sociological impacts if those procedures are not sufficient to prevent such a release.

D-4 These flaws are fatal, they are not particularly difficult to understand. Information that allows the environmental impact statement to avoid these flaws is readily available on the record. If that information is rejected and this document is deemed adequate, it's only, it will only be because decision makers are intent on substituting their opinions, the privileges of nuclear theology for common sense, common decency, verifiable substance and the rule of law. This draft environmental impact statement includes the NRC's staff's analysis that considers and weighs the environmental impacts of the proposed action, its environmental impacts of alternatives to the proposed action and mitigation measures available for reducing and avoiding adverse impacts, that's taken directly from the abstract.

This recommendation made in the environmental impact statement is based on the analysis and findings in the GEIS, which was written ten years ago, it's not site-specific and among other things, it's written based on the NRC staff's consideration of public comments received during the scoping process. One of those public comments was mine in reference to the BEIR 7 report released by the National Academy of Science in 2006. Apparently the NRC decided that this new study by America's top scientists was not good enough to warrant consideration to upset the generic environmental impact statement.

D-5 Terrorism must be considered here on a site-specific basis. Oh, actually, I did have, I wanted to briefly, if I could, respond to something you said, Counselor, when you said that you do not believe the state has the ability to intervene or, I forget the verb you used, to, oh, that the federal government has precedent, can, preemptive power over, in terms of approval, what the state's ability is, for health and safety, correct. We are in a regulated state.

When Entergy took over and purchased this reactor in 2002, very clearly on July 2nd of that year, in the Public Service Board hearing room, they said to the Public Service Board that if the Public Service Board determines that Entergy stop, they will heed what the Public Service Board says, thus the state level, not the federal level.

I thought I would clarify that for you.

(Applause)

MR. CAMERON: Okay, thank you. Thank you very much, Gary.

And now we are going to go to Claire. This is Claire Chang.

MS. CHANG: Hi. I'm Claire Chang. I have a PowerPoint presentation, I would like to invite, please, come up on stage. I have a PowerPoint presentation that I would like to have up on stage.

MR. CAMERON: Claire, what are you doing?

MS. CHANG: They will just be my PowerPoint presentation. I don't, I'm not allowed to have slides up there, so these are my slides.

MR. CAMERON: Okay, I'll tell you what, let's get them up here and let's do your presentation.

MS. CHANG: Thank you.

MR. CAMERON: Come on, ladies, and then we are going to ask you to step down after that. Okay, Claire, go ahead.

MS. CHANG: So my name is Claire Chang and one thing I wanted to say was if we had a catastrophic event at Vermont Yankee, we need an evacuation plan, we need a number of first responders, we need a number of measures that we need to take but, if we have a catastrophic event at a wind turbine or at a solar panel array, would we need evacuation routes or first emergency responders? I don't think so. Louder? Really? Do we need that repeated, what I said previously, to those in the back? So, if there is a catastrophic event at a wind turbine or at a solar panel array, would we need first responders, or an evacuation route, or FEMA, or the Vermont Emergency Management Association or agency to come down and rescue us? No. E-1

But from Vermont Yankee, we do, and that is part, I think, of what the impact is of having that power plant within sight, and within smell and within hearing range, because we hear the sirens every Saturday at noon telling us what we might do if there was a catastrophic event. Yet none of those plans or measures are taken into account in the environmental impact statement, neither is the event of a terrorist attack and even not a terrorist attack, if there is any other kind of mishap that happens.

And the National Academy of Sciences has already said that the spent fuel pool, which isn't included, I didn't see it on the slide, but maybe the gentleman hadn't prepared the slide and so the spent fuel pool isn't included in the slides, about it being 70 feet up in the air, outside of containment, in a tin swimming pool, basically. E-2

And if that swimming pool were breached, the water would start leaking out, and it doesn't all have to disappear, just some of that water needs to go and those fuel rods would start igniting on their own because even though they are spent fuel rods, they are actually highly radioactive, more radioactive than the fuel rods that go into the reactor. And those fuel rods would start igniting and there would not be an explosion but there would be a fire, a very, very long lasting

fire that would basically release radioactivity into the air and potentially contaminate 25,000 square miles. That's about 90 miles radius and, depending on how wind blows that day, who would get affected, but it would be a majority of New England, and that's all of us sitting in this room and I think that needs to be included in the environmental impact statement.

E-3 Now Hellen Caldecott has written this book, it's called *Nuclear Power is not the Answer*, it's not the answer to our energy problem, it's not the answer to global warming and it's, but it is the answer for Entergy to make lots and lots of money and it is the answer for us, as the common people, to stay beholden to the corporation and to the central government. The only way we can get out from underneath this is if each one of us takes personal responsibility for all of our actions every day from this day on and that's the only way we are ever going to make any change.

And that's why I've invited these women to come up, because they take personal responsibility every day for trying to figure out how to make the world a better place for themselves, and for
E-4 everyone in this room, and for everyone in the state and for everyone in New England. Each one of us has to start turning off the lights, changing our light bulbs to compact fluorescents, driving at least half less than we drive now. Every gallon of gasoline puts out 18 to 19 pounds of carbon into the air, every gallon. Now what's your fuel efficiency, 12, 15, 20, maybe 35 or 40? But that's very few people.

And this includes anyone from the NRC or from Entergy, no one is exempt, every car puts out that much carbon, unless of course you are driving an electric vehicle or you are driving one that has a high fuel efficiency, like the new hybrids or whatever, but we need to each one of us take into account what we do and how we can make a change. And the only reason Entergy and all the other corporations who run nuclear power plants are trying to put this as a green, clean solution to global warming is because we are all scared, and we have reason to be scared, but the thing is that nuclear is not going to dig us out of the hole.

We are so far in the hole, we have to take every measure to get out of the hole, and electricity generation only accounts for maybe a third of the carbon dioxide that is going into the air, transportation accounts for another third and another third, amazingly enough, is attributed to natural, such as forest fires, actually, it's really scary. So I'm not saying up here, well maybe I am, sorry. Okay, so, another thing I just remembered was that Patrick Moore said that we, and also the former governor said that we in Vermont need to have this power plant because we can't possibly replace it with anything else.

E-5 Well Vermont gets maybe 200 to 250 kilowatt hours from that power plant. Megawatts, sorry, I made the same mistake the last time too, I saw it in the transcripts. So, megawatts. I want it to be small, I'm trying to make it really small. So, of those 250 megawatts, we can actually replace tomorrow, this is not in 10, or 15 or 20 years, we can replace tomorrow 25 percent of it just through conservation and energy efficiency. If the State of Vermont decided it was the will

of the people and the will of the state, we could replace our washing machines, our dishwashers, our refrigerators, our air conditioners and other appliances with energy efficient ones and we could immediately drop 25 percent of our demand.

Now that takes care of more than half of Vermont Yankee, what Vermont uses from Vermont Yankee. Massachusetts uses another 25 percent of Vermont Yankee, approximately, I don't know the numbers exactly, so Massachusetts could do the same thing, poof, we could shut Vermont Yankee down tomorrow and it would be amazing. So it's not inconceivable, it's not this unreachable solution, it is within our power, the people can decide. That's all it takes and that's all it's ever taken is the people deciding that they want to do something different and they are going to do it now. We can't sit on our duffs anymore. Thank you very much.

MR. CAMERON: Thank you. Thank you, Claire.

All right, ladies, if you could just go back and thank you very much. All right, the next three speakers, we are going to go to Amanda Ibey, and then Howard Shaffer and then Paul Bousquet.

Amanda?

MS. IBEY: Good afternoon. My name is Amanda Ibey, I was born and raised here in Vermont, I came back after graduating from college and today I'm here in my capacity as the Executive Director for the Vermont Energy Partnership. The partnership is a diverse group of 75 business, community and labor leaders, as well as individual energy experts, committed to addressing Vermont's impending electricity supply gap. The need for Vermont to secure a reliable, affordable and clean electricity portfolio has never been greater which leads the partnership to reiterate its support for the license renewal of Vermont Yankee. F-1

First, though, let me be clear, the key to Vermont's future prosperity is through a broad, diversified electricity portfolio. To this end, the partnership urges the state to work to permit and develop new in-state generating sources like wind, solar, small scale hydro, biomass and other environmentally friendly resources. The partnership also feels it is equally important that Vermonters incorporate more energy efficient products into their homes and businesses, as well as looking for ways to increase their conservation practices. F-2

While the partnership believes these steps outlined above should be implemented, we cannot ignore nor deny that the foundation for any successful electricity portfolio starts with baseload sources of power, this is why it is vital that we continue to secure HydroQuebec and Vermont Yankee beyond their current operating licenses. Vermont Yankee, our state's lone significant in-state source of power, has been safely and reliably providing Vermonters with electricity for over 30 years. It has continually met the NRC's highest safety standards largely due to the F-3

dedicated men and women who work at the plant and live with their families in the surrounding communities.

It is important to keep in mind the public safety issues that are sure to arise if Vermont does not have an adequate supply of baseload power. With the New England Region strapped for power as it is, we cannot responsibly close the plant and cavalierly assume that our neighbors will provide us with sufficient let alone reasonably priced power. Should rolling blackouts and brownouts have to be implemented, the stress it will place on our public safety and health will be enormous.

F-4 The steady stream of electricity Vermont Yankee has supplied has been crucial for consumers and, at a time when Vermont must contend with an aging work force and an exodus of young people, the plant employs over 600 highly skilled men and women full time. Vermont Yankee provides more than $200 million of economic benefit annually to Windham County and the State of Vermont through state and local taxes, its payroll and the purchase of local goods and services, but the economics of the plant and its contributions are simply one piece of this discussion.

F-5 Perhaps right now an even greater benefit of the plant is its low environmental impact, especially as it relates to the issue of global warming and climate change. Many claim, including Vermont's own legislature, that global warming is possibly the most serious environmental issue we face. Today, the United States is largely dependent on coal fired plants; approximately 600 coal fired plants supply 50 percent of this country's electricity. Unfortunately, these plants also release harmful toxins and greenhouse gases into our atmosphere.

Now, while the country looks to reduce its reliance on carbon emitting sources like coal, here in Vermont our story is different, we have one of the cleanest electricity portfolios, one of the lowest carbon emitting portfolios because our two main sources of power, including Vermont Yankee, do not release carbon emissions when producing electricity. Should Vermont Yankee's operating license not be extended, then our utilities would be forced to purchase power from the spot market at a high economic and environmental cost, as the only realistic alternatives to replacing Vermont Yankee lie in other baseload sources of power such as coal.

F-6 In closing, Vermont Yankee is a safe, is safe and good for the environment and economy, it has provided Vermonters with reliable, affordable and clean power for more than three decades and it has done so safely. We know there is a strong array of support throughout the state for the plant's continued operation and we believe that granting Vermont Yankee a license extension is a responsible and necessary action.

On behalf of the members of the Vermont Energy Partnership, I would like to thank you for this opportunity.

MR. CAMERON: Okay, thank you. Thank you, Amanda.

And next, we are going to Howard Shaffer. Mr. Shaffer, excuse me, introduce yourself to us, okay?

MR. SHAFFER: Good afternoon again. Can everybody hear me? My name is Howard Shaffer, I am a retired nuclear engineer now living in Enfield, New Hampshire, but continuing my license in nuclear engineering and professional engineering in Vermont, and New Hampshire, and Massachusetts and Illinois where I have worked. I have come back here for retirement, my first retirement activity was in public service as an American Association for the Advancement of Science Congressional Fellow in Washington in the year 2001, a very interesting year there.

During that time, the House wrote and completed its energy bill and I was on the energy subcommittee of the House Committee on Science. That energy bill finally got passed in the last Congress, it went over to the Senate in September, 2001, but then they got their attention diverted by the events of September 11th. And interestingly enough, one of the things that G-1
Congress did right away, which has not gotten very much good coverage in the press, was take a quick look at our most vulnerable infrastructure in the country to see what measures ought to be taken right away, and they found the most vulnerable infrastructure and they took action.

That most vulnerable infrastructure was our public water supply system, reservoirs are wide open and so forth. The electric transmission system has had damage to it on a far greater scale by ice storms than terrorists could ever do. Natural gas pipelines are designed for sectionalizations because, as the representatives told us, our worst enemy is somebody with a backhoe, people are digging up natural gas pipelines all the time, so they are designed for accidents, terrorists couldn't possibly do worse.

And nuclear power plants were not on the list at all because of, as Mr. Sachs proved by his remarks, there was a formal process in place since 1979 to guard against terrorism, as the court mentioned in the Diablo Canyon decision, 1979 is when the NRC started formally looking at terrorism, and there were bullet proof steel shields in the hallways of the plants and so forth during the 1980s when I was back here working again on the plant. So, as I found in Washington, at the end, all decisions are based on personal value judgements, all the important ones, not science and engineering alone.

As a matter of fact, there are no scientific formulas or engineering processes that can tell you whether something is safe or not, science and engineering can only tell you how something works and what the consequences are. Whether that's safe or whether it's acceptable is a personal value judgement and that's what politics is all about in this country, but making the right value judgements depends on public education and the industry, and I want to say to the

staff members here, and I hope you'll take it back, the Commission has a long way to go on public education on these matters.

Even though people may still continue to disagree with us forever or with the Commission and the majority view on nuclear power and other things forever, we have an obligation to continue the public education. I realize, in a politically charged environment like Washington, particularly when there is a hostile majority in Congress or hostile administration in the White House, how difficult it is to not seem to be an advocate, but I would offer for the Commission's consideration that telling the whole truth in things that have happened is not advocacy.

There is nothing wrong with saying that the Commission's activity on concerns on terrorism began in 1979 so, when 2001 came, we are not starting from ground zero. There is nothing wrong with saying, when you look at health and safety of radioactivity and radiation, that the research and development began over 100 years ago and the regulatory process began in 1928. There is nothing wrong with saying those things to continue to reach out to people, so my message is we must continue the public education process but at the end know that there will still be people who disagree with us, but remember what one of the founders of our country said, I may disagree with what you say but I would defend with my life your right to say it. Thank you.

MR. CAMERON: Okay, thank you very much, Howard.

And I think Paul is making his way up to the microphone now.

MR. BOUSQUET: Hello. My name is Paul Bousquet, I live in West Townsend. This is the
H-1 question I asked last meeting and I didn't quite understand the answer then, so I'll repeat it. My understanding is that the general security has been beefed up since 9/11, yet nothing has been added for security from the air. If this plant is relicensed, how can we feel secure from an attack on the spent fuel pool? Then my speech goes, of course I don't see too many employees, but I thought they would have brought the bus and packed them in, like one meeting years ago.

H-2 But I would like to speak today not only to the NRC folks but also to all the employees at all the remaining reactors around our vast country. I challenge all of you to read up on the changing science behind the nuclear industry, the National Academy of Sciences and the Union of Concerned Scientists have recent information that you need to know. Whatever information that your bosses are feeding you is incomplete and one-sided, the effects of ionizing radiation are greater than previously thought. It's all but proven that scheduled and accidental release are poisoning our surroundings.

The spent fuel pool is radically more dangerous and susceptible to terrorism than previously thought. The highly toxic waste, with the national repository not going to open, is already at its final resting place, and that place happens to be in my backyard close to where both my father and my grandfather are buried, a place worth fighting for. You people of the industry should be ashamed, you've placed good paying jobs and careers ahead of responsibility. You've read your pipeline of propaganda and you feel reasonably sure you can keep your bomb material and cancer causing waste out of our environment, you must feel somewhat sure or you couldn't sleep at night. H-3 H-4 H-5

Have you ever wondered why your industry needs to dump so much time and money on the public relations around the reactor towns? Are you abnormally, are your abnormally large donations intended more as bribery than charity? Of course they are, you are trying to pacify the public while you shove your dirty industry down their throats. You know the majority of people don't want anything to do with this dangerous form of energy, so they have to be bribed. The bottom line is that this power plant and all the others are a liability to our future.

You are poisoning not only ourselves and our environment but also the coming generation's. Every day, every minute that you are generating electricity, you are creating an obscene amount of atomic bomb making material and cancer causing toxins stored in temporary vessels seemingly without a clue as to what to do next. I've heard people from the outside of the fence refer to the people inside the fence as evil. I think of you more as greedy and misinformed. People, you've been lied to, there is no nuclear renaissance, there are no new safe waste-free reactors ready to go on line, just a dying industry treading water until the final science shuts them down.

We need help in figuring out how on earth to ever clean up the mess your industry has created. I leave you with a misinformed quote from my ex-brother in law who was known to encourage other workers to go deeper into hotter areas of the plant to make more money. He was an electrician at Vermont Yankee for 14 years before he died, middle-aged, of leukemia. He said, in all seriousness, don't worry, nukes melt down, not up. Don't be misinformed, people, you know your industry is biased, maybe a career change is in order. Vermont is at the edge of creating true renewable energy, careers, and they should use some of you bright minds currently being wasted on your poisonous, gluttonous industry.

Thank you.

(Applause)

MR. CAMERON: Okay, thank you for those opinions, Paul.

And we are going to go to Daniel Marx, and then Art Greenbaum and then Emma next, Emma Stamas after that. This is Daniel, Daniel Marx.

MR. MARX: My name is Dan Marx, I live in Dummerston, the next town up the road a bit. I'm a member of the Vermont Energy Partnership for about a month. For 24 years, from 1972 to 1996, I was the chief biologist at Vermont Yankee, I retired from Vermont Yankee in `96. I came to Vermont Yankee from the University of Minnesota with a Ph.D. in zoology. In Minnesota, I had some prior experience with aquatic environmental monitoring at the Monticello and Prairie Island Nuclear plants, both on the Mississippi River, I also worked with large coal fired generating plants.

With Vermont Yankee, my primary function from day to day was management and implementation of the aquatic environmental monitoring program on the Connecticut River, my responsibilities including sampling, monitoring, surveillance of a large number of parameters, physical, chemical biological. Near the top of the list was temperature of the river at many fixed locations in the river and the plant discharge cooling water. I was also responsible for the management and maintenance of the environmental discharge permit, so called NPDES permit, which means National Pollutant, not Pollution, Discharge Elimination System, a minor bit of trivia there.

I-1 This is a permitting system driven by the Federal Clean Water Act and the EPA. I spearheaded the renewal of the discharge permit every five years, I also guided two combined 316A, 316B demonstrations which resulted in modification of thermal discharge temperature criteria being permitted under very specific conditions of overflow and temperature to adequately protect river biota. During my 24-year tenure, all the data collected from the river, with associated analysis and interpretation, was conducted for Vermont Yankee by the environmental consulting firm Aquatech Incorporation out of South Burlington.

Vermont Yankee and Aquatech actually began the studies pre-operationally in 1967 before I was on the scene. From day one, the early environmental program was crafted with consultant, with consultation and input from the state environmental agencies from Vermont, New Hampshire and Massachusetts. In the very early days, up to about 1972 or `73, the Atomic Energy Commission, now the NRC, you guys, was also on board in proffering the studies. The programs always remained flexible with an eye to modifications, as might be required in the future.

Incidentally, it was also in 1967 that the New England states, which host the Connecticut River, launched a long term project to attempt to restore the Atlantic Salmon to the river, along with the collaboration of the U.S. Fish and Wildlife Service. The area of the river included in the Vermont Yankee study zone extends from up river in Brattleboro where the West River enters to the south, down river, at the old abandoned Shell Bridge at Northfield, Massachusetts. This 26-mile stretch of river is without question the most intensively and extensively studied section of the entire river.

In conclusion, my 24-year tenure, `72 to `96, in charge of the Vermont Yankee river studies, it's my professional judgement, opinion, that it has been adequately demonstrated that Vermont Yankee's impact on the ecosystem of the river has been negligible, not zero but negligible, very low, or, in the parlance of the NRC, very small. Vermont Yankee has been a very low I-2
environmental impact baseload, 24/7 producer of a major portion of Vermont's electrical energy, it deserves to be a part of Vermont's energy future along with green renewables, hydroelectric, wind, solar, biomass and conservation. Let's get off all fossil fuels to generate electricity.

Thank you.

(Applause)

MR. CAMERON: Thank you, Dan.

Is Art Greenbaum here? Okay, great, and then we'll go next to Emma Stamas.

MR. GREENBAUM: My name is Arthur Greenbaum. I'm a resident here of Brattleboro since 1971, 36 years. My wife Susan and I have raised our two daughters here. I am also a part owner of a local 33-year old construction company, we employ approximately 15 people and work geographically within 60 miles of the Brattleboro area, and we do a small percentage of work with Vermont Yankee. I'm an active local businessman who has been part of the Rotary, the Chamber, serves also as a team member for the evacuation plan at the Bellows Falls Reception Center and I spend my free time with my family enjoying the outdoors.

I support an environmentally sound electric portfolio, nuclear and Vermont Yankee are part of it. J-1
I've been driving a hybrid car for two years, home heating with wood for over 25 years and have replaced oil furnaces at six residences that we rent to local folks. I've done replacement windows and I purchase 25 percent of all of my electric through Vermont Cow Power. I've had the opportunity to see firsthand the amount of safety technology and training the plant, the industry and the NRC has put into Vermont Yankee to allow it to be safe and reliable.

From the original design of the plant, with concrete walls several feet thick, to the ongoing upgrades and maintenance of the plant, I believe it is a safe plant, the millions of dollars spent on security, plant upgrades and training is part of the reason for this. Another part of its success is the process here today. The NRC, other industry organizations learn, listen and implement ideas from concerns raised. The development of technology needs to continue with power generation, as it is doing in other fields. Nuclear power, I believe, is a safe, cost effective component of our energy needs.

It is also a key component in solving greenhouse emissions and I encourage you to continue having Vermont Yankee to be part of our Vermont energy portfolio, keeping prices affordable and promoting economic development in the state while contributing to our economy. Thank you very much. I do have one other comment, it's not written.

MR. CAMERON: Go ahead.

MR. GREENBAUM: But if the majority of the people here would spend their time and effort promoting wind power and implementing many of the good ideas that have been expressed here today, we would all be further ahead. Thank you.

MR. CAMERON: Thank you very much, Art, for those comments.

And this is Emma.

MS. STAMAS: I'm Emma Stamas, I'm not paid to be here. I hope there are some NRC people in the audience that are willing to listen. I noticed that a lot of the scientists who spoke left promptly, I guess we don't have, as citizens, anything that could possibly be interesting or informative to them, they know it all, I guess. Some of them seem pretty arrogant in terms of their long range views.

I am here to represent hundreds, literally hundreds of friends, relatives and teenagers who work with my, I know several teachers and I'm representing people from just south of the State of Vermont in the hill towns of Massachusetts.

We are just as concerned as those that live a little bit over the border in Vermont, many of us are closer than most of the residents in Vermont and I think it's pretty arrogant for the Governor of Vermont, from many years ago, to be so sure that he is doing the right thing in supporting
K-1 this aging plant. I haven't heard much talk, except the last fellow talked about methane being produced and used as an energy source. One of the things that many people do not realize is that we are pouring huge amounts of methane as well as carbon dioxide into the atmosphere and both of these greenhouse gasses contribute to greenhouse warming; you can read more about it in The Inconvenient Truth and other web sites.

The problem is that, in farming communities, such as we still have in Vermont and Massachusetts, we have the opportunity to reduce the methane that we put into the atmosphere by simply making containment types of facilities on farms that can produce methane and generate electricity, thus reducing the amount of methane that goes into the atmosphere during farm, that type of farming production. There is, the leftovers from the digestion tanks can then be used by fertilizer, they are less odoriferous because the methane has been used, drawn off, and they are just as good as fertilizers, if not better, because they

are not raw, they have been digested and, in doing this type of change, we can create an avenue for our farms to remain economically viable.

Why isn't this happening like wild fire all over New England and other parts of the United States? Because forces within our generation industry our power generation industry, have a vested interest in making sure that our power is produced by huge facilities that can be controlled by huge corporations. These people do not have a vested interest in allowing small generation facilities to develop and proliferate across the United States, even if scientists could do a very thorough study and prove that this would be a more efficient, effective, cost, both cost effective and an economically effective way of producing energy that could be sustainable into the future, not only providing jobs in areas that are rural and sustaining farming in areas that are barely able to have their farmers make a living, but by making a whole, a much cleaner, safer form of energy production.

The ironic thing about the whole study of the effect of the nuclear power plant as being so much safer and more wonderful for our region because it produces enough power and we aren't going to have the lights to out or the heat go off, the ironic thing about that is that, this month, in Monticello, at the Monticello facility in St. Cloud, Minnesota, a nuclear facility that is just about the same type and age as the Vermont Yankee plant and the Pilgrim plant, in a facility that was just recently granted their 20-year renewal, a 13 ton control box fell and hit, it didn't cause a serious amount of damage but it caused the steam lines to dent and the steam pressure to drop, and that power plant had to be suddenly closed down. K-2

I don't even know if it's up and running again because there has been so little publicity about this event. I have heard one report on NPR, did a Google search on the Internet and found out, that same report I got written up but very little else, and I have not heard what has happened since this happened several weeks ago.

Now, this is my question to you folks who are so proud of your nuclear power industry and what wealth and wonder it has brought to us, when we have 600 milliwatts or megawatts of power produced by one facility and suddenly, just like that, as happened in Monticello, in the dead of winter when it is the coldest part of the winter it suddenly goes off line, what happens? You lose 600 megawatts of power. K-3

The irony here is we have been told time and time again that we can't possibly go to wind, solar, methane, hydro because those produce too little power. The fact of the matter is we need to have small power plants scattered throughout the land, providing jobs throughout the land--

(Applause)

MS. STAMAS: --providing power that may not be huge in its amount, it may vary from moment to moment in the amount it feeds to the grid, but it will not suddenly cut out just like that,
K-4 600 megawatts gone in a moment in the dead of winter. We do not need this kind of power and we can do better than it, it's old fashioned, it's not sustainable, it's expensive. The Rowe power plant not far from here, it took 20 years to decommission that plant and it cost three times as much money to decommission that plant than it cost to build it, and that is adjusted for inflation, look it up on the Internet. These are facts that are not from some wild group, these are facts from the industry web sites, check them out.

K-5 The fact of the matter is we cannot afford to keep these aging plants going, we must gradually phase them out. We are not asking for Vermont Yankee to shut down tomorrow, we are asking for it to phase out over a five year period and, during that five year period, we here in this part of the world are very, very fortunate to have several factors that can allow us to replace that
K-6 plant, and those factors are we have a motivated New England Yankee ingenuity to start using methane, hydro. We have vast hydro resources not just in Canada, right here in Vermont and Massachusetts.

(Applause)

K-7 MS. STAMAS: And we don't have to make huge dams and flood property to make, we have the technology to take a little tiny stream that I have next to my house, I could generate all the electricity I need in that house, in my household, with a little micro hydro system the size of this speaker platform, and it only costs a few thousands dollars. Why isn't everybody doing it? Because we don't have the knowledge, but we do, in this area, have some well educated ingenuity, people with a lot of ingenuity that also have time on their hands because we don't have a lot of job growth here.

We don't need Vermont Yankee's power to lull us into submission and continue on the track that most of the United States is on, thinking that we can't possibly do anything except keep this power plant going as long as possible. We can show the rest of the United States a different way, we also have huge wind resources. It breaks my heart when I hear that people will not accept wind power because it's aesthetically unpleasing and therefore it's not a viable alternative. How aesthetically pleasing is any power plant that you've ever seen? How aesthetically pleasing is any electrical line running over a mountain top? None of it is.

MR. CAMERON: Emma, could you just sum up for us?

MS. STAMAS: Okay, one final summation.

My husband has worked for 30 years as a quality assurance manager in a pharmaceutical company. Evidently, in the pharmaceutical field, people are more concerned about quality assurance than the NRC is because it is a known fact that quality cannot be inspected into a facility. In other words, you can inspect a facility every single day, that does not make it safer or more quality than it already is, what it does is it lets you see the problems as they come up. K-8

And in the pharmaceutical industry, there is a rule that when any major change is made in a facility, a whole new quality assurance program must be written because when any retrofit, or upgrade or change is made in the facility, everything in the facility is effected by that change and it is impossible to know what the quality is going to be, whether it's safe, whether there is going to be a potential problem, unless you completely redo your whole quality analysis.

Now, if this is done in the pharmaceutical industry where there is time to call back medicines that are found to be poorly made, and poorly designed and so forth, before people actually swallow them, why isn't it the policy in a field like nuclear energy production where when a problem occurs, time can be of the essence and people who may have inspected the plant years ago or may have some inkling of what the problem is may have retired or may not be there, they may have died. The plant is way beyond its original life span and yet we aren't requiring this kind of quality inspection and assurance from this industry?

And I think that is something we are going to have to apologize to our grandchildren about when they have to deal with decommissioning the mess--

MR. CAMERON: Okay, thank you.

MS. STAMAS: --that we've created.

(Applause)

MR. CAMERON: Thank you, Emma.

We are going to go to Harvey, Harvey Schaktman? He is not here, okay. David McElwee?

How about Sarah, Sarah Kotkov? Sarah? This is Sarah Kotkov.

MS. KOTKOV: My name is Sarah Kotkov, I'm on the Board of New England Coalition but these remarks are my own. I was going to talk about the fuel pool fire, but Claire Chang already has discussed that. However, I haven't gone to these NRC meetings, I know that they talk about probabilistic risk assessment. Admittedly, it is a low probability that terrorists will attack the fuel pool, probably because Vermont is a little bit boring, but the consequences would be extremely severe. As Claire said, 25,000 miles would be contaminated by such an event. L-1

If some of the water drains out of the fuel pool, the chimney effect of the effect of cool air passing through the cladding would be stopped and therefore the zirconium would self-ignite, that's the cladding of the fuel would self-ignite and spew radioactive contamination over three states. Of course, assuming we got out, which is, which is quite an assumption of course because the evacuation plans are really laughable, assuming we got out, we could of course never come back, and neither could our children, grandchildren, etcetera, these areas would be basically permanently contaminated.

L-2 The fuel pool could also be damaged in the case of an earthquake and this area is subject to
L-3 earthquakes. The fuel must remain in the fuel pools for five years to cool down, so even if the plant operates until 2012, the fuel would be there for another five years. Now, if the plant is relicensed, this situation will continue for 20 more years beyond that, of course. The fuel is, once it's taken out of the fuel pool, it is then placed in dry casks, so I think that now we have permission to have six dry casks on the banks of the river, then this would add another 20 more years of fuel that would be stored on the banks of the Connecticut River.

This is of course high level waste, meaning that it is extremely long lasting, as well as highly radioactive. One of the lovely misnomers of the lingo is that low-level waste, we think that sounds not too dangerous, of course it's extremely radioactive, just as radioactive as the high level waste, it just won't last quite as many generations. I think that we can expect that this waste will be permanently on the banks of the river and this, the banks of the river, in 1991, were studied for a low-level radioactive storage facility, as it's called, and were deemed inappropriate because of the, because it's a wetland, basically.

So now we would have a high level dump, with greatly more waste, if the plant is allowed to relicense, on the banks of the river permanently because Yucca Mountain of course is in nowheresville, that's probably never going to happen. Another issue of course is the fence line dose. Because of the uprate, the fence line dose is being exceeded and of course this is
L-4 another situation that would then continue for 20 more years. So I think that, to call this green is, this plant that is producing, that is leaking radiation and producing highly toxic waste that will last basically forever and will be here forever is just absurd.

I think that's all I have to say, thank you.

(Applause)

MR. CAMERON: Thank you. Thank you, Sarah.

Ed Sprague and Connie Burton? Ed Sprague? How about Connie Burton? And Bill Maguire?

And Teresa Caldwell? Here is Teresa.

MS. CALDWELL: Hi everyone. I'm speaking off the cuff here and I'm going to try not to ramble. This is such a polarizing topic for people, and I don't think I'm going to change anybody's mind and I don't think anybody has said here before me is going to change my mind.

I wish that Dr. Moore and the former governor hadn't left so soon because I did want to apologize to them for people who are heckling them and being disrespectful. I think that people get so emotional because we are afraid and that people who are opposed to this plant hear people expressing points of view that it's safe, and it doesn't emit carbon, you know, CO_2s, and we are angry and afraid and so that we were disrespectful and I wanted to say I was sorry for that.

I have to disagree with Dr. Moore because I think his point of view could kill me. I think that this M-1
plant is unsafe and it should be decommissioned, I do not believe it should have a 20-year license extension. I think that I've been coming to these meetings with the NRC for about 30 years and I know there are some people here who truly believe nuclear power is the wave of the future. Most of the people I hear who speak on behalf of nuclear power have a financial investment in the industry and therefore I have to disagree with them just because I think that they're not thinking straight.

I do believe that the NRC is aware that there are increased risks for us who live downwind and M-2
that a catastrophic accident is possible, the likes of Chernobyl or Three Mile Island. It could be a terrorist target, and I believe there is no solution to the high level waste that is being created M-3
that will be deadly for thousands of years and I'm here to urge the NRC not to relicense M-4
Vermont Yankee. It's been my understanding that any nuclear power plant that has come up for M-5
an uprate or a license extension has been granted one automatically.

I know a number of people who wanted to come to this meeting who didn't want to bother because they felt that it was a foregone conclusion, the NRC has made up their mind, and that they just have to listen to us complain and that it's already been decided. So, if there is any person here, who has any influence, who is with the NRC, I want you to think of me, look at my face, remember me. My name is Teresa Caldwell, and I live 12 miles from this plant and I sleep with my bedroom window open and when I go to bed at night, I think which way is the wind blowing? What is the wind carrying? Are they having a release today? Should I close the window? Has there been an accident?

And I'm afraid of this plant and I know that there is a lot of people who think that I'm hysterical or M-6
that I'm misguided and uninformed, and I think I'm very informed and I think I'm very aware of the risks that this plant raises. So all of you, when you go to bed tonight, I hope that you don't sleep near this plant and I hope that you're not downwind from it but, if you are, think to yourself could I be making a mistake? Could I be wrong in supporting this plant? And if I am, then I am subjecting an entire community to unacceptable risks.

Thank you.

(Applause)

MR. CAMERON: Thank you. Thank you, Teresa.

Did I miss anybody who signed up to speak today, this afternoon? We are going to be here tonight, open house starts at 6:00 until 7:00 and then the meeting is going to go from 7:00 to 10:00. There were a number of issues raised that I would like the NRC staff to, if the people are willing to talk about them, Paul had raised the question about aircraft and I think there is some recent Commission action that discussed aircraft, and at least we can tell him what that is.

There may be people who want to find out more about the 9th Circuit decision and what the NRC might do about that, and Emma raised a question about Monticello and what has been going on with that, and it may be that perhaps one of our residents might be able to talk about that. But the staff is here to talk to all of you and I would just thank all of you for coming out and your comments.

And I want to ask Rani Franovich, who is the chief of the environmental branch who does these reviews for license renewal, to close the meeting out for us this afternoon.

[Presentation by Ms. Franovich]

Transcripts of the Evening Public Meeting on January 31, 2007, in Brattleboro, Vermont

[Introduction by Mr. Cameron]
[Presentation by Mr. Emch]
[Presentation by Dr. Miller]

MR. CAMERON: Okay, thank you, Rich.

We don't have much time for questions during the formal part of the meeting, but I do need to ask if there is any question you need answered in order to either make your comments tonight or to submit written comments. We did have one question along those lines that I will ask for Gary Sachs and it had to do with the information on the SAMAs, and the term cost-beneficial was used in that connection and the question is what does that mean? What does cost-beneficial mean? And I'm going to ask Bob Palla from the NRC staff to try to simply explain that to all of us.

Bob?

MR. PALLA: Okay. When we look at a severe accident mitigation alternative, we look at its impact on the likelihood of core damage. We would expect these plant enhancements to reduce the likelihood of a core damage event and also we look at the impact of the improvement on the off-site consequences, and we generally would expect the consequences to be reduced by implementing the improvement. We then, so we would associate a reduction in core damage frequency and a reduction in population dose with each SAMA, we use the probabilistic risk assessment study to assign these values.

And then we use what's called regulatory analysis guidance, it's basically a protocol developed by the NRC for assigning dollar values to the reduction in core damage frequency and off-site consequences, so we basically derive a dollar benefit and then we separately look at the costs to actually implement the improvement. It might be hardware costs, maintenance costs, all the things that would go into the cost to the utility to implement this, and so we compare the benefits achieved against the cost, and something that's called cost-beneficial would generally have benefits that exceed the costs.

MR. CAMERON: Thank you very much, Bob.

And thank you, Gary, for that question.

We are going to, we are going to start with Diana Sidebotham, and then go to Deb Katz. And as I said, we are going to have to try to be a little bit strict with the three to five minute rule. For those of you who weren't here this afternoon though, we can err on the farther side of that, even though it's not very fair. This is Diana Sidebotham who is coming up and then we'll go to Deb Katz.

Diana?

MS. SIDEBOTHAM: Thank you very much. Good evening. My name is Diana Sidebotham, I'm one of a group of scientists and citizens from Vermont, New Hampshire, Massachusetts and New York who founded the New England Coalition on Nuclear Pollution in February, 1971, I am currently president. Our object then was to inform the public on issues of nuclear power plants and alternatives and to intervene in the then existent Vermont Yankee operating license proceeding, not to oppose at first but to question. We asked many questions and received full few, few full answers.

I wish to give a brief historical perspective tonight relative to the EIS under consideration as, in 36 years, certain issues and actions have come full circle, I'll concentrate on one particular matter tonight. In 1971, at Vermont Yankee operating license hearings before the Atomic Energy Commission, the matter of nuclear waste was excluded. The Natural Resources Defense Council, the State of Kansas and the New England Coalition all attempted to raise it repeatedly and were always told it would be dealt with later. N-1

The plan, at that point, was that 600 irradiated fuel bundles would remain in the spent fuel pool for a few months only. As we know, all the spent fuel ever generated at Vermont Yankee now remains in the spent fuel pool. Now we know the spent fuel pool is even more vulnerable because of its density. I'm not quite sure of the number but it's something like 2,800 fuel bundles are more which are there at elevation and we now know more clearly than we did before that the possibility of a terrorist attack is very real.

N-2 In 1987, at the re-racking process, the second, the New England Coalition's expert witness Dr. Gordon Thompson's testimony was not allowed because, at that point, Dr. Thompson's contention that the possibility of a self-sustaining zirconium fire in a spent fuel pool in the event of a loss of coolant accident was not credible. Years passed and Dr. Thompson took this proposition to several reracking proceedings and, finally, in about 2000 to 2001, the NRC decided, oh, he is right, it could happen.

The thing that bothers me about your EIS or one of them is that NUREG-1738 I believe was promulgated in 1996. You speak of new and significant information which might change your view, 1996 was before the NRC realized that Dr. Thompson could be correct. NUREG-1783 bases its calculation on lower density storage, which is not relevant now at Vermont Yankee, and also on instantaneous loss of coolant, rather than slow partial loss which will yield a much more severe accident. Consequently, your EIS for this relicense proposal does not have a factual basis.

As I understand changes can be made, I would certainly encourage you to do a recalculation on the basis of what is in the pool, what will probably remain in the pool if Vermont Yankee
N-3 continues to operate. The 9th Circuit Court of Appeals decision is very clear that environmental assessment must be done in regard to storage of spent fuel, the NRC should pay attention and do it across the board for all spent fuel storage facilities, and I know you are going to say that's not entirely within your purview and it probably isn't. However, it is something that I think you should make very clear to your superiors and everyone in the NRC.

N-4 I'm aware that a rule making is underway for Massachusetts and, a rule making, yes, for Massachusetts and its license extension and at Vermont Yankee. However, it's exceedingly important that this sort of thing be completed before any relicensing, if it were to occur, is considered. The results of course of a spent fuel pool fire would be catastrophic. We learned a few days ago that the NRC has also declined to provide protection for reactors from an air crash, it can't happen. Together, these illustrate a serious either disregard or unwillingness to address very certain serious issues within your agency.

So, while there is a great deal more to say, 36 years later, with Vermont Yankee's spent fuel pool stuffed dangerously full, at elevation, with no foreseeable repository anywhere in the world, the people of Vermont, and New Hampshire and Massachusetts are left with what was not part of the original bargain, it is now a true Faustian bargain and no consideration of nuclear waste in an EIS is complete on this issue, it is dismissed as a small effect. Among other things, an independent safety assessment is an absolute, fundamental minimum requirement for any possibility of license renewal. N-5 N-6

The New England Coalition on Nuclear Pollution is entirely opposed to license renewal and severe accident mitigation alternatives also need to be seriously addressed as, again, we don't think that they have been. We hope very much that you will address some of the issues which I've raised and which other members of the public will in a reevaluation of your environmental statement because, at this point, many of us feel it is quite deficient. N-7 N-8 N-9

Thank you for the opportunity to speak tonight. You will continue to hear from the New England Coalition on Nuclear Pollution and others on these and other issues essential to our lives, health, environment, economy and good of our entire community. Thank you very much.

MR. CAMERON: Thank you, Diana.

(Applause)

MR. CAMERON: Next we are going to hear from Deb Katz, Citizens Awareness Network.

MS. KATZ: Well thank you for turning the microphone around so that people can see the person who is talking, instead of seeing their back.

We'll get no satisfaction here tonight, let's get that clear from the get-go. The NRC is basically once again attempting to operate outside the rules and outside the law. The 9th Circuit came to a decision that the NRC had to address the vulnerability of its spent nuclear fuel in terms of the National Environmental Policy Act, in terms of the movement of fuel into dry cask storage, at a site in California. The NRC objected and there the court rejected their position and in fact Pacific Gas and Electric, the corporation that has the fuel, appealed to the Supreme Court and was soundly rejected by the Supreme Court. O-1

At this point, the NRC has been ordered to rewrite its rules and regulations in terms of incorporating the issue of the vulnerability of spent fuel into the National Environmental Policy Act review, this effects all reactor licenses under NEPA review. We are in a NEPA review, aren't we? Isn't that what we are here to do tonight? Then why are we here? If this is now under rewriting the regulations, why hasn't the NRC suspended its evaluation? Why doesn't it take the hard look that the National Environmental Policy Act requires it to do, instead of

avoiding the issue? Because the truth is when you have a problem and you have no solution, then you have no problem.

O-2 Now the National Academy of Science, in its BEIR 7 report, determined that there is no safe exposure to radiation, there is none. Is the BEIR 7 incorporated into the NRC's review of the
O-3 environmental effects on our communities? I didn't see it. And what about all of that high level waste sitting on the banks of the Connecticut River, potentially for 100 years or more, with no solution, with the bankrupt waste confidence rule that is still just dragged out to justify allowing the nuclear corporations to do what they want? The only protection available here tonight is for a foreign corporation and its shareholders.

O-4 In my community, living in the shadow of the Yankee Rowe and Vermont Yankee reactor, there is an empty chair at too many dinner tables, there are too many lost lives. This human cost is not insignificant to the husbands, wives, children, friends left behind to carry on, there is no
O-5 relief here, there is no satisfaction available. There is a great opportunity but it won't be found in this NEPA review, or in the environmental impact statement or in the dog and pony shows that the NRC comes out and tells us that we are really privileged that they come here to hear us complain about what they are doing. That's an insult.

O-6 The potential for anything to take place will happen at a state level in which the State of Vermont has the power to transform energy production, but the truth is it's not the State of Vermont, it's the people of Vermont that will determine the course of history not just for the State of Vermont but actually for Massachusetts, Vermont, New Hampshire and Maine, since we all dip our beak into Vermont Yankee's power. And the truth is it can be transformed and what it will take is people getting engaged to make sure that, at this legislative session in Vermont, that a green energy portfolio is passed and that we commit to a life that includes jobs, prosperity and respect for our human family, as well as our environment.

Thank you.

(Applause)

MR. CAMERON: Thank you, Deb.

Next we are going to go to Beth McElwee, then Bruce Wiggett and Andy Davis.

Beth?

MS. MCELWEE: Good evening. My name is Beth McElwee and I have been a resident of Brattleboro, Vermont for most of my 25 years. I'm here tonight to share with you my perspective on the Vermont Yankee license renewal initiative as a community oriented young adult and a recent addition to the local job force.

I returned to the Brattleboro area one year ago, after spending a year in Boston and some time traveling. It was during this period I realized how fortunate I am to have been raised in this healthy, rural Vermont community.

Vermont has played a vital role in the sustainability, Vermont Yankee has played a vital role in the sustainability of the lifestyle we all enjoy here. By supplying a clean, reliable and renewable source of energy, Vermont Yankee has lessened our dependency on fossil fuel and thus helped us to keep our environment free of these added pollutants. I have worked as a contractor at Vermont Yankee for the past eight months and have had the opportunity to interact with many of their employees. In doing so, my confidence in their ability to run a safe and efficient nuclear power plant has only grown. P-1

I have seen first hand the accountability, ownership and level of personal involvement the employees of Vermont Yankee take in all of their daily work activities. I have learned of their outstanding track record of safely providing energy at fair and favorable prices. And I know firsthand the importance of the economic infrastructure they provide to attract and retain employees from many surrounding communities. To extend the operating license for Vermont Yankee would be to continue supporting an environmentally, economically and socially responsible culture that has been established here.

It is this type of community which we want to encourage, as our global energy requirements become greater and our environmental responsibility larger, nuclear power is a clear path to aid in tackling both of these very ominous issues. I encourage the NRC to look around this community and take note of the many positive influences from Vermont Yankee and I ask them to extend the operating license for another 20 years so we can all share in the benefits of this community for many years to come.

Thank you.

(Applause)

MR. CAMERON: Thank you, thank you, Beth.

And I believe this is Mr. Wiggett.

MR. WIGGETT: Bruce Wiggett, yes.

MR. CAMERON: Okay, Bruce Wiggett.

MR. WIGGETT: Thank you. Thank you for being here to recognize the input from the citizens of the area of Vermont Yankee. My name is Bruce Wiggett and I am the former CFO of Vermont Yankee, that is, I was the CFO prior to the sale. In that role, I had the opportunity to

know and work with the operating employees of Vermont Yankee, my experience with those employees is that they are very knowledgeable, hard working, dedicated employees whose primary focus is on the safe and reliable operation of that unit.

During the sale, I also had the opportunity to work with many of the executives and managers of Entergy and I feel that their purchase only strengthened the focus and provided a learning and an expanded environment for those employees to operate within. However, my background is finance, so I am here this evening to talk a little bit about the economic benefits of Vermont Yankee and what it contributes to the economy of Southern Vermont, Windham County and the entire State of Vermont.

Q-1 Economic contributions from Vermont Yankee are felt throughout the state and have impact on just about every citizen within the state, relicensing of VY will have clear economic benefits to the state and the region. When VY was sold, a long-term purchase power agreement was a critical part of that sale, that agreement established the price of power from the plant to Vermont utilities. Due to that power purchase agreement, from 2002 to the present, they have already saved consumers in the State of Vermont $157 million, and that's in real dollars as compared to the purchase power, the cost of purchase power on the open market. And the Vermont Department of Public Service has estimated that savings to Vermont customers through 2012 will total about $250 million.

In addition to the savings associated with the purchase power agreement, VY spends between $55 and $60 million on direct expenses within Windham County and the state annually, those expenditures are for taxes, payroll, contracted services, and supplies and equipment. These local expenditures will continue throughout any life extension period. By 2012, Vermont Yankee will have invested about $25 million to the, or paid about $25 million to the state's green energy fund, that's at a rate of about $4.5 million a year. The green energy fund supports energy efficiency efforts and the development of renewable energy sources in Vermont.

Last night I had the opportunity to speak with Dr. Moore, who I understand spoke earlier today before this meeting, and he feels that our energy future will require a combination of conservation, renewable energy sources and nuclear power to meet our energy needs. The green fund is a major source of funds for development of the non-nuclear aspects of that approach here in Vermont, $25 million will go a long way in Vermont towards future
Q-2 developments throughout the state. Vermont Yankee supplies 34 percent of Vermont's electricity consumption and, without it, Vermont would be even more dependent on out of state sources to meet its electricity needs. Currently, Vermont purchases approximately 50 percent of its power from outside sources.

Long-term safe operation, a major source of energy for the State of Vermont, significant contributions to the State of Vermont green energy fund, substantial local and statewide expenditures during, directly into the economy, it's for these reasons that I believe VY should receive an extension of its operating license. Q-3

Again, thank you for all you do and for listening, being here to listen to our thoughts this evening.

MR. CAMERON: Thank you. Thank you very much, Bruce.

(Applause)

MR. CAMERON: Is Andy Davis here? Okay, we are going to go to Chris Williams, then Anthony Stevens and then Mike LaPorte. Oh, this is Andy Davis? Great.

MR. DAVIS: Good evening.

MR. CAMERON: Good evening.

MR. DAVIS: I think it's always unfortunate when people say things that kind of cast this as neighbor against neighbor. We all know that good people work at Vermont Yankee, good people have worked at Ford Motor Company, General Motors and we still have global warming from all the release of all the automobiles. It's not about who works at Vermont Yankee and how good they are, it's not about how much it contributes to the economy, obviously a large company contributes a great deal. S.D. Organ Factory for many, many years was the major employer in Brattleboro, it's not today, Brattleboro is still a thriving community.

I think it's wrong to mix those kinds of issues into an environmental impact statement review, we know those of you here tonight that work for Vermont Yankee are great folks, that's not why we are here. I know we are not supposed to ask questions, I always seem to come to a meeting when I can ask a question, and I ask it and it doesn't get an answer, and then I come to other meetings where I have questions and I'm told it's not a meeting to ask questions. This has been going on since I moved to Vermont in 1976, and Diana Sidebotham did a good review of some of the frustrations and the shell game that has been played with issues of great concern.

There are many people not here tonight, but each of these empty seats represents many people in this community who are extremely concerned about the long-term environmental impacts that we are passing on to our children's children, children's, children's, it goes on and on.

Excuse me, sir, I've listened to you politely many times.

I have a simple question and I hope the NRC can answer this because it's, who owns the spent fuel? Is there an answer to that question? I mean who owns it?

MR. CAMERON: Andy, if you could--

MR. DAVIS: I just want, that's a simple question and it would just help me clarify the final comment I want to make before I sit down.

MR. CAMERON: Okay.

MR. DAVIS: But is there an answer to that?

MR. CAMERON: I believe that the--

MR. DAVIS: Who owns the spent fuel?

MR. CAMERON: The contracts, there is contracts between the Department of Energy and each company that has spent fuel where the Department of Energy will take the spent fuel and I believe take title to that.

MR. DAVIS: We have a lot of really knowledgeable people from the Nuclear Regulatory Commission here, that seems like a simple question, who owns the spent fuel? Like if I have a used car in my backyard, I own it.

MR. CAMERON: The Department of Energy is going to take title to the spent fuel.

MR. DAVIS: It's going to take title? When is it going to take title? Does it, who has title to it
R-1 now? Because this is the number one environmental concern of people in this area, besides, you know, fence-line radiation and some other things, but the long-term health of this community. Our governor still believes, I asked him on the radio, he still thinks the federal government is coming to get this. Harry Reid, the senator from Nevada, the most powerful man in the United States Senate has on his web site, unequivocally, that Yucca Mountain will not open. Where is it being taken that our governor still believes it's being removed?

This is an environmental review, environmental as in ecological, one of the rules of ecological science is that there is no away in throw away, away does not exist. They don't want it in Nevada and Harry Reid, the senator from Nevada, says the reason they don't want it is the health and safety of the people of Nevada. Well if they don't want it in Nevada, why do we want it here? Okay, we are not sure who owns it now, who will own it in 100 years? Someone from the Nuclear Regulatory Commission, who will own the spent fuel in 100 years when the casks need to be replaced? Who will own them?

And that's only the first little baby step in the life of this material. Who will own it? Simple question, someone from the Nuclear Regulatory Commission? There is a lot of people here making a lot of money.

MR. CAMERON: Andy, I'm going to have to ask you to finish your comments, instead of sitting here--

MR. DAVIS: Yeah, but these are the issues--

MR. CAMERON: --asking your questions, I'm sorry.

MR. DAVIS: --that concern me and my neighbors and until you approach them and take them seriously, many of us walk out of this meeting with the same kind of frustration that has been expressed by other speakers. And it's not about the good people that work at Vermont Yankee, I love you all dearly as fellow members of this community, but that's not why we are here tonight. The environ, this industry has a cycle to it, we like to talk about it for electrical generation, the uranium is pulled out of the ground, there is a whole mining process. R-2

It doesn't take but a few minutes of looking at a web, at the worldwide web, to find the environmental problems wherever the uranium is mined. There are connections between the fuel cycle and military uses. You look at the countries that have nuclear power, many of them have nuclear weapons, that's the history of it, depleted uranium, all kinds of things. It just feels like what you all do with your environmental impact statement is you narrow it down to just this tiny little thing and then say it's all fine, but environmental deals with the fuel cycle, the final resting place of the waste and those questions. I have not heard them addressed by the Nuclear Regulatory Commission in a public meeting.

And I'm just pleading with you to really respond to these concerns because, so far, the generic environmental impact statement, the environmental impact statement don't seem to address these questions and they don't give me confidence that we should be parking this stuff on the banks of the Connecticut River for an indeterminate period of time, and we are not quite sure where it's going and it doesn't seem like that scenario deserves a little check, okay. Thank you very much.

(Applause)

MR. CAMERON: Thank you.

Chris Williams?

MR. WILLIAMS: Good evening. My name is Chris Williams, I live in Hancock, which is in Addison County, probably about 100 miles from here.

I'm happy to be on the record with the NRC tonight, I want to state for the record that I'm not compensated for my appearance here tonight, there is no compensation connected to my words here tonight. I want to start out by thanking our new senator, Senator Sanders, Senator Sanders has recently sent a letter to the Nuclear Regulatory Commission requesting that a meeting just like this one be held in the very near future in the state capitol, in Montpelier, where all of our legislators are now in session, that's why many of them aren't here tonight. It makes a lot of sense to me, I think the NRC can afford it. It's happening? Well, that's great.

I would like to, just for the record, again, put a little information into the record that I think is new and relevant to this process. By the way, I was here for the matinee today, there was lots of
S-1 great testimony and they have a very impressive record here. I read recently where Commissioner McGaffigan, who I understand is the longest sitting Commissioner on the NRC, is that correct? Right, he is the Commissioner who is still on the Commission and is the longest serving, has basically publicly stated that Yucca Mountain was mismanaged from the get-go and that they ought to give the order to stop digging. This isn't coming from me, an anti-nuclear activist, clean energy advocate, it's coming from the longest sitting Commissioner at the NRC. That information I think is relevant to this process, as previous witnesses have pointed out, because we are still dealing with the frustrating problem of the waste.

As for a nuclear renaissance, which I believe people at Entergy and possibly people at the NRC may be interested, in the last two weeks, in financial reports coming out of Wall Street, two CEOs in this country, one by the name of Jim Rogers, who is the CEO of Duke Energy, and another by the name of John Rowe, who is the CEO of Excelon Corporation which, for the most part, is made up of Commonwealth Edison, serving the City of Chicago, both of these high powered CEOs who control a significant portion of the nuclear fleet in this country have stated for the record that they think building new plants is risky, that they've been sold a bill of goods about waste disposal and that they are not convinced, at this point, that their companies should go ahead and build new ones. Which brings us to the Entergy Corporation.

Is Wayne Leonard in the house? I wish he was. Wayne Leonard, the CEO of Entergy Corporation, is somebody that I've actually been dealing with for about 20 years, I think he is a pretty straightforward guy. As a matter of fact, Wayne got his accounting degree at Ball State University in Muncie, Indiana, he is a pretty straightforward, bean counting kind of guy. I know I could have a conversation with Wayne Leonard about the good employees of Entergy Vermont Yankee here in Brattleboro, Vermont and their concerns about their jobs.

S-2 I would rather see this decommissioned as soon as possible because there is no waste answer, but I would also like to make sure that Mr. Leonard uses his power, as your boss, to see to it that all of you are employed until it's time to retire and employed in the capacity of diligently, prudently and professionally decommissioning the high level radioactive waste dump in Vernon.

In closing, I would like to urge everybody in the State of Vermont, and I just heard the former CEO of Vermont Yankee talk about Vermont Yankee's commitment to green energy, the $25 million contribution to the green energy fund. Well there is something we can all do as Vermonters if we care about the energy future of this state and it's to contact our legislators, all of you, please, and those of you that don't want to, you won't, but I'm going to implore all of you to call your legislators and ask them to support House Bill 127, currently under consideration in Montpelier by the legislature. S-3

House Bill 127 provides for an expanded portfolio standard for renewable energy, which I know my colleagues in the clean energy and anti-nuclear movement agree, as well as Patrick Moore, who was here earlier, the folks from the Vermont Energy Partnership, as well as the Entergy Corporation which has made a generous $25 million contribution to clean, green energy here in the State of Vermont.

And finally, I just want to say something that in my community, which stretches around the world, in terms of people committed to stopping the production of high level nuclear waste and providing for clean electricity with renewable, sustainable sources, we've already won.

Thank you.

(Applause)

MR. CAMERON: Thank you. Thank you, Chris. Is Anthony Davis with us?

Okay, Mike, why don't you go up and we'll find out if Anthony is here. This is Mike LaPorte

MR. LAPORTE: Good evening. My name is Michael LaPorte, and I'm an employee of Vermont Yankee and I'm here to lend my support for renewal of Vermont Yankee's license.

I would like to let you get a little bit of my credibility by making that statement, I've been working at Vermont Yankee for over 30 years. For the last 30 years, I've been a member of the operations department, part of my career there, I obtained an NRC license to operate the controls in the control room of the reactor and the plant. I feel that, working in the operations department for as long as I have, I really know the equipment of that plant and how it operates, how it's been maintained, how it's been surveilled and tested and inspected.

Based on that knowledge that I have, and I'm telling you that, that I feel that Vermont Yankee is a good candidate for license extension. And you know what? I don't have to stand here in front of you people right now because, in a couple of months, I'm going to go to that happy place called retirement, but I did feel that I'm passionate about my plant, I love Vermont Yankee, I've

T-1 been working there my whole life, and I know it's a good plant and I know that adding another 20 years to its license is a good thing, it's good for a number of reasons.

First of all, it's good for my company, Entergy, it's also good for my fellow employees that I love dearly, and a lot of them probably now will be able to have a career like I have had there. But foremost, foremost, it's good for Vermont, it's a good thing for Vermont, it's good for the United States and it's good for our Planet Earth, believe it or not.

Thank you very much.

(Applause)

MR. CAMERON: Thank you, Mike, thank you very much.

Our next three speakers are going to be Dart Everett, Bill McKin and Bill Maguire. Is Dart Everett here? Okay, how about Bill McKin? You're not Bill McKin, right? Okay, Bill Maguire?

Mr. Maguire is here.

MR. MAGUIRE: Good evening. My name is Bill Maguire and I'm the general manager of plant operations at the Vermont Yankee Nuclear Power Plant. I started in the power generation industry 24 years ago and I spent the last 20 years in nuclear power generation.

And I want to tell you a little bit about the people at Vermont Yankee and how we conduct our business at the plant. First, I want to tell you that the employees are committed to excellence, by that I mean they are committed to their continuing education and training. I, myself, have received thousands of hours of training in my career in this industry, I have also been supported in attaining a masters degree.

Our employees are also committed to continuous process improvement, something that existed at Vermont Yankee long before Entergy purchased the plant but is now part of the Entergy culture as a result of the process improvement culture that existed at Vermont Yankee. Employees are dedicated to safety and reliability, all employees start their day with a safety briefing not only for their personal safety but for plant safety. Every task starts with a safety briefing, again reviewing their personal safety and the plant's safety.

U-1 The reliability of the plant is ensured by a robust corrective action program, it's also ensured by a robust predictive and preventive maintenance program to ensure our plant runs reliably day in and day out. Vermont Yankee is a reliable source of economic power generation to the New England grid. As such, we supply electricity to the power grid 24 hours a day and have done so for the last 447 days continuously, since our last scheduled refueling and maintenance outage which, by the way, was Vermont Yankee's best.

I'm proud to be part of the committed and dedicated Vermont Yankee team of professionals and I look forward to providing a clean, safe and reliable source of energy into this community well into the future.

Thank you.

(Applause)

MR. CAMERON: Okay, thank you, Bill.

We are going to go to Mr. Ed, we are going to go to Ed Sprague, then we are going to go to Norman Raymond, Bernie Buteau and Ann Howes.

So this is Mr. Sprague.

Mr. Sprague?

MR. SPRAGUE: My name is Ed Sprague, I stand here tonight to recommend to relicense the nuclear plant here in Vernon. I have, my property is bounded on two sides by Vermont Yankee, I have never been one of their employees, their list of employees, I've certainly been a resident next door to them and I can say this, that in all the time that they've been there, and I've been, I moved in in 1955, when it was a diary farm. So we have lived there throughout the entire life of Vermont Yankee and I can say this, the only thing that's been disagreeable for me, personally, is the poison pens up at *The Reformer* and all the poison pens that they sponsor. It is just, you can't pick up a newspaper and find anything positive said about Vermont Yankee, it's a shame, it's a crime. V-1

Changing a little bit here, I was very, very upset when President Carter shut down a brand new reprocessing plant in South Carolina, about to come on line, and he just did two things with that one move, he took away the initiative of our people to run reprocessing and he also gave a hammer to the people who oppose nuclear energy, namely disposing of waste.

Now I was in attendance last night when Dr. Patrick Moore gave his presentation and I came away with two things, one, we are in the process of building a recycling or reprocessing plant in Salt Lake City, so there is hope on the horizon for reprocessing all of this waste that everybody is so concerned about. It will turn the waste into a resource which will keep our nuclear power plants running for hundreds of years. It also, another thing I came away with was, one, that ten percent of the energy, of the fuel now going into our power plants is coming from Russian made bombs, it's taking away the threat of terrorists or abuse of that raw material. V-2

So, to me, the future is great, we don't have to worry about storing fuel for hundreds of years when we can reuse it and come away with a token amount of fuel that could be put in glass and buried deep in the earth. I think they've taken away, the weapons is about to be taken away.

Thank you for letting me speak.

(Applause)

MR. CAMERON: Okay, thank you. Thank you, Ed.

Norman, Norman Raymond? How about, is this Norman? Okay.

MR. RAYMOND: Good evening. My name is Norman Raymond, I'm a resident of Putney since 1999, currently a new employee to Entergy since `05 as a technical instructor.

W-1 I want to voice to the NRC that I believe that we should extend the license to Vermont Yankee, not just to save my job, but in my time being there, I received lots of training and have come to understand the preparation and the work that goes into running this plant to make it safe and reliable. I also believe that nuclear power is a safe, clean alternative with low and no emissions.

And also I would like to thank Mr. Sprague for bringing up the recycling using of fuel, I think that's a very positive way to handle that situation for the future.

Thank you.

(Applause)

MR. CAMERON: Thank you, Norman.

Okay, Ann Howes is stepping up to the microphone right now.

Ann Howes?

MS. HOWES: I'm Ann Howes, I'm a resident of Brattleboro, I grew up outside of Detroit in Michigan and I've been in this area some portion of every year of my life. I think of energy or the generation of energy as a hidden art and I see it only in my dreams. I'm concerned for safety because I have, you know, found radioactive substance in day to day living with no personal connection to environmentally sensitive areas. That factor of felonious use of waste materials is something that is of I think paramount concern to the individual in our society, but the generation of energy is something that we correlate to personal betterment through warmer homes, and clean hot water and those factors of comfort and domestic maintenance.

When you come into Vermont, you have the opportunity to try the older forms of lifestyles that are wood burning stoves and a pedestrian lifestyle. I do have great worry about nuclear waste storage and I don't think that it's a money issue because it's not going to, it's not going to phase my life as a money issue, it's something to do. I don't think that it's, I don't think it's insurmountable to dismantle and I do think that this community would feel excited by transforming our engineering capability into a very large hydro electric community, starting with this project. X-1

We know we like electricity a lot and we know we have a water system that we can harness. Packing radioactive substance for infamy is a task we can do, I don't, I'm very selfish, I don't want to store it in this soft loam. I think I was convinced in the `70s that we were going to put it in a desert far, far from where we are living, but I'm most afraid of it being used against humanity in a kind of vengeance of psychological neglect.

Those who work in the plant feel that it's safe, I think there are some members of the employment league who think that it would be exciting to shut it down, and clean it up and take it away, that we don't even think we had one, and to concurrently figure out how to generate the hydroelectric potential that we have to compensate our needs with probably a small interaction of just shutting off the highway lights and I guess, in the winter time, the ski resorts, which constrains your night behavior, and that's all I have to say.

Thank you.

(Applause)

MR. CAMERON: Okay, thank you, Ann. Thank you.

Bernie, Bernie Buteau?

MR. BUTEAU: Good evening. My name is Bernie Buteau, I too work at Vermont Yankee, I've worked there for over 30 years, although I'm not as old as Mike, if Mike is still here.

I think it is the people and I think that, as part of the process, you need to consider that and consider some of the things that you've heard from Vermont Yankee employees tonight, consider the mentality that has developed over the 30 years that I've been involved in the business. When I got my nuclear engineering degree way back when, I was very excited about nuclear power and remain so today, and I believe there will be a resurgence, there is a resurgence already going on across the globe, we just need to get on board here in the U.S., and Entergy is one of the companies that is pursuing new technology, ESBWR, looking at sites down in Mississippi. Y-1

One of the things I was thinking about and I guess I subconsciously dressed in all green tonight for a reason, and I've always considered myself to be concerned about the environment and I think that nuclear power is an overall positive contributor to the environment in that it does not
Y-2 create gasses, global warming. The fuel that we have, you've heard people talk about it tonight, and they classify it as waste. Those that might have heard Dr. Moore speak last night, they said a very profound statement in that because of recycling, it's not waste at all.

And we, as humans, have relatively short life spans on this planet and, over the course of time, our lives are very small, compared to the ecology itself, and I fully believe that the fuel that we are taking out of the reactor now that has not been used will be able to be used in the future in mixed oxide fuels and other ways that we may not even perceive right now.

Y-3 I just want to say one thing about safety, and working in the nuclear power industry has had a very profound effect on me, and Bill Maguire spoke to you and told you a moment ago about how we start everything off with safety, and the safety moments and that type of thing.

From my own personal perspective, when I'm at home, I think more about safety than I ever would have if I had not worked in the nuclear power industry. I go out to mow my lawn and go out, I have two acres of grass, so I go out to get my John Deere, I've got a little John Deere that I drive around in but, before I do that, I grab my leather gloves. People from Vermont Yankee are snickering, going oh, I've heard this before, but I grab my leather gloves, I grab my hearing protection, my eye protection, sometimes I'll put my steel-toed shoes on, which I have on now, but I have to admit not always.

Y-3 But it profoundly has effected the way that I do things in my own life and I know it has the same effect on the folks who work at Vermont Yankee and that innately permeates the culture that we have there that continues us to be able to operate the plant safely, to design new and different ways of operating the plant, the systems that we maintain that you've heard, the systems that we add to the site, everything is done with safety in mind.

So I think it is the people that has to be considered in the equation when we are looking at the environmental impact, it's the people, it's the people. Thank you.

MR. CAMERON: Thank you, Bernie.

(Applause)

MR. CAMERON: We are going to go to our next three speakers who are Jim Herrick, Larry Cummings and David Mannai.

Is Jim Herrick here? Okay, Jim?

MR. HERRICK: My name is Jim Herrick, I live in Marlboro, Vermont and, for those of you that might not be familiar with that town, it's a little area that Vermont Yankee's emergency evacuation map for years showed as a non-town. It was a little airbrushed white space sort of stuck to the side of Brattleboro. We are to the west of Brattleboro and the north of Halifax, and part of our town extends within the ten mile circle which is the evacuation zone. Z-1

Because our town fathers, in their wisdom, decided that the evacuation plan was really bogus and was nothing more than a placebo to try to appease the demands of the citizenry, the nuclear power plant decided we just weren't there, and I've always used that as a sort of a pivotal point in my process of looking at the way the nuclear industry works. Because we didn't get shown on the map, we weren't there. Therefore, there was no problem.

My remarks tonight are aimed at the NRC and directly really to them, mainly. I'm here tonight with a real feeling of embarrassment and shame. As a responsible adult member of this community, I am once again, by my presence, complicit in this process of charade, this circus of obfuscation, this shell game without end to which you, the NRC, write the rules. One simple clear question stands front and center and towering over these interminable Kafkaesqe theater sessions, would sensible, caring people choose to live with a massive, huge bomb in their midst which, should it ever explode, would destroy lives, homes, lands and the future of all for many generations?

Of course the answer is a resounding no and yet, for 35 years, we have been manipulated and forced into accepting that very condition by you hired men of power who write the rules, mark the cards, set the time clock and, at the end of the day, pack up and ride far away to live comfortably distant from the consequences of your machinations. We live in a society that is so sensitized to danger that report of a knife on a schoolground or a screwdriver in an airport will shut down the entire system, yet the shockingly vulnerable spent fuel pool at Vermont Yankee, with enough potential radiation released to make uninhabitable this entire three-state region, sits within sight of two school systems, sits on the very banks of our only river system which carries an entire multistate watershed south to our neighbors, sits on the unstable tectonic fault line that once divided two separate continental land masses, and finally, sits at the very gateway to the economy of all points north, and as always, the NRC and the power industry finds this all acceptable. Z-2

Sitting on my doorstep and considering the nuclear reactor and its endless spew of deadly radioactive waste, it is easy to enclose the scenario in one simple metaphor, that of some loathsome, hell sprung beast risen to paradise to sow ruination. As a logical pragmatist who loves and honors this paradise in which I live, my response is simple, shut it down, secure the waste, decommission it and never build another. But you, the NRC, the hired guns of a very profitable industry, don't view the issues from the same perspective and you bend your full energy towards making the beast ever bigger and giving it life without end. Z-3

Z-4 To this purpose, you stifle my voice and power as a citizen by building a regulatory maze of ever shifting aisles with no attainable objective except your own. Where logic decrees a straight, continuous line of purpose that ends at shut it down, you, the NRC, break that line into an infinite number of points, each of which must be dealt with as a separate battle and each which must be fought in endless, tedious meetings and hearings that break the will and finances of committed individuals and groups who fight for a future of community, home, neighbor and child.

Against all sanity, you have designed a glide path for this tired old reactor to increase its output in waste generation by 20 percent and extend its life for another 20 years. As has been the case over the past 35 years, our comments and concerns regarding issues will be voiced with absolute sincerity but have no choice, excuse me, have no chance of achieving amelioration of your predetermined result. The 670 page environmental impact statement will be absorbed into the dull grey labyrinth of your calculated process, calculated to render us powerless and useless against your total control of the outcome.

Z-5 When I recently read that the NRC had ruled that guarding against the threat of a terrorist air attack on the reactor was the responsibility of the Department of Defense, thus rendering Entergy as not accountable for efforts in that direction, I knew the shell game had been ramped up a few notches. Entergy cannot protect the exposed fuel pool against an air attack, the Department of Defense will not protect the fuel pool against an air attack, so the NRC states that the core containment structure is of a robust nature to withstand most air attacks and totally ignores the real danger of the spent fuel pool.

I end up by just asking this rhetorical question, is there anything that could get you, the NRC, to care more about the many people whose lives and future your hold in the palm of your hand and less about the industry robber barons who own you as shield and armor?

Thank you.

(Applause)

MR. CAMERON: Thank you.

Larry Cummings?

MR. CUMMINGS: Good evening. My name is Larry Cummings, I'm a employee at Vermont Yankee, I've been here for about two years and two months, but I've been in nuclear power for
AA-1 a little over 20 years. And I would recommend that we extend the license of Vermont Yankee for another 20 years.

I want to share with you a couple of my experiences outside of nuclear power. In the late `70s, I was working in Southwestern Pennsylvania, I was actually working on a nuclear power plant

construction project, but I lived in a town that had three coal fired units, those units had 960-foot smokestacks so that they could deliver the sulfur dioxide and the coal dust to Vermont, New Hampshire and places like that.

In 1996, I was living and working in Louisiana and I had an opportunity to go to work in the chemical industry. After about five months of witnessing the environmental and safety issues there, I decided that I should tuck my tail between my legs and go back to the safety of the nuclear power industry. Of course you don't know much about refineries, you just burn the oil AA-2 and burn the gas and put the sulfur dioxide into the atmosphere without thinking about it, but if you witness it and see what's going on, you will appreciate the environmental friendliness of nuclear power.

And I can assure you, as an employee of Vermont Yankee, that the people that work there are very, very dedicated to the safety and health of the environment and the people of this community.

Thank you.

(Applause)

MR. CAMERON: Okay, thank you. Thank you very much.

And, David, David Mannai?

MR. MANNAI: Good evening. My name is Dave Mannai.

First of all, I would like to let you know I'm a resident of Vermont, I live in Westminster West, which is located just west of Putney, it's an agricultural part of Windham County. I'm also the father of two children. About ten years ago, I moved to Vermont. I'm a native New Englander, originally a flatlander, and I wanted to live and raise a family in Vermont, I have two children, and I mentioned, and I wanted to live in the Green Mountain State because of the great things I can do here.

I also happen to be a farmer and I raise sheep, I have about 30 acres of land out there and I'm in the process of turning it into certified organic pasture. I consider myself an environmentalist and also a good environmental steward of the farm and land that I own and operate. I have also been employed in the nuclear industry for the last 25 years in various capacities. Prior to moving to Vermont ten years ago, I was a resident inspector for the U.S. Nuclear Regulatory Commission at a couple plants that were not Vermont Yankee but were in Region I.

BB-1 In the last ten years at Vermont Yankee, I've had responsibility here in fuel cycle management, core design, core management, reactor engineering and some involvement with the dry fuel storage project that is presently ongoing. I understand and view the license renewal of Vermont Yankee from the perspective and insights as a local resident, a farmer, a former NRC regulator and that of a Vermont Yankee employee. Not many people here tonight can say they share that same vantage point and perspective. And from each and every one of those perspectives, I can only reach one conclusion and that's the license renewal for Vermont Yankee is the best environmentally sound choice to meet Vermont's energy needs, since it's safe, it's non-greenhouse gas emitting, it's clean, reliable, efficient and cost effective, and it's local, a source of vitally needed baseload supply of electricity.

There has been mention here tonight the fuel is going to be recycled in our lifetimes, that's going to be happening, that will happen. Vermont Yankee has a strong, safe, high quality and reliable performance record over the last 35 years, it's a real testament to the men and women of Vermont Yankee and Entergy who are absolutely committed to both safety, and quality and continuous improvement, as was mentioned earlier this evening, that's who we are.

BB-2 And since 1972, safe, clean, reliable operation of Vermont Yankee has prevented millions of greenhouse emissions, millions of metric tons of greenhouse gas emissions, including carbon dioxide, from entering the Vermont environment.

In conclusion, looking at Vermont's future energy needs and the impacts on our environment, there is no alternative that is more beneficial to both the environment and the ability to meet the energy demands of Vermont. When all the facts are considered, not just part of them, simply said, it's the green choice.

Thank you.

(Applause)

MR. CAMERON: Thank you.

We are going to go to Judy Miller, then Nick Caristo, then W.H. Schulze. Judy Miller?

Okay, Nick, Nick Caristo?

MR. CARISTO: Good evening. My name is Nick Caristo and I've been employed at Vermont Yankee for the last 12 years. I came here from the State of Maine where I previously worked at Maine Yankee. I'm still a resident of the State of Maine and, since the closing of our nuclear power plant, my electric bill has increased 300 percent over the past ten years. We now receive two combined electric bills each month, one from Central Maine Power and the other one from Constellation Power Company which doesn't even reside in our state.

I'll give you a little history of what happened to Maine after the power plant was shut down, the nuclear power plant was shut down. Two gas power plants were built in Maine to replace the Maine Yankee's production of electricity, these two power plants cannot run on a routine basis because of the escalating costs of gas today, they only operate when the peak demands require their electricity, which costs a lot more than the regular price, so Maine Yankee now imports a majority of its electricity from surrounding states and Canada.

I started my career in nuclear power in 1965, 42 years ago, I have a bachelors degree in radiological health, and working at Vermont Yankee for the past 12 years, it is my observation that its management and my coworkers, me included, their top priority is to operate the plant safely and efficiently.

The citizens of the State of Vermont can be proud that they have the lowest per capita greenhouse gas emissions in the United States, I think that was hard work and it wasn't done overnight. The State of Vermont can be very proud of that rating and the culture at Vermont Yankee to operate safely directly contributes to this status of the lowest overall greenhouse emissions, we don't produce any. CC-1

In addition, the efficient operation of Vermont Yankee also contributes to affordable electricity in Vermont. I ask you to learn from the mistake that the State of Maine has allowed to happen, closure of our nuclear power plant, which I believe has contributed to the escalating costs, 300 percent, to the people of the State of Maine. And I haven't even mentioned what impact this has had on the economy which has not recovered in midcoast Maine as a result of the closure and the thousand people who were displaced because of the closure of the plant. CC-2

I'm asking the people of Vermont and the NRC to maintain the State of Vermont's status as the lowest emission of greenhouse gasses per capita and to keep Vermont electric rates competitive, so I ask the NRC to continue and to approve, to approve the continued safe and efficient operation of Vermont Yankee. CC-3

Thank you.

(Applause)

MR. CAMERON: Okay, thank you. Thank you very much, Nick. Okay, great, we can put that in the transcript.

We have W.H. Schulze and then we are going to go to, we are going to go to Dick Brigham and then we are going to go to Ida Belivet, and I'm sorry if I mispronounced that, and to Kent Belivet. And this is W.H. Schulze.

MR. SCHULZE: Representatives of the NRC, ladies and gentlemen, good evening. My name is William Schulze, 27 years ago this month I started work at Vermont Yankee in the operations department, I later transferred to the training department where I've worked for the last 11 years.

I came here for two reasons, Vermont Yankee had a good reputation as a well run plant and the State of Vermont seemed like the idea place to start and raise a family. I'm very proud to be part of a company that has provided safe, clean and reliable energy to Vermont for 35 years.

DD-1 A large reason why the Vermont environment is where it is today is because of our operation, it produces no acid rain or greenhouse gasses. In a year, a typical 1,000 megawatt coal fired plant emits 100,000 tons of sulfur dioxide, 75,000 tons of nitrogen oxides and 5,000 tons of fly ash into the environment. It also contributes large amounts of CO_2 to the global warming problem. Going forward in Vermont, we need to have a diverse mix of energy options for the good of the state and the people. Solar, wind power, hydro and nuclear should all play a role in Vermont's energy future. Extending Vermont Yankee's license is the smart thing to do both economically and environmentally.

For 27 years, I have been sincerely and graciously thankful for the opportunity to give my absolutely best to the State of Vermont and my coworkers at Vermont Yankee, it continues to be my pleasure and privilege to do so.

Thank you for the opportunity to speak.

(Applause)

MR. CAMERON: Thank you. Dick? Dick Brigham?

For those of you who were with us this afternoon, I'm going through the people who have not had a chance to speak today, but we will get to Gary Sachs, and Sally Shaw and others. This is Dick Brigham.

MR. BRIGHAM: First off, I would like to say to the workers at Vermont Yankee, we look at you as Simon and Peter, whether you are fishermen or whether you are not, we are all fishing for the right thing, that's not part of my testimony, particularly. My name is Dick Brigham, I'm here representing myself, my family and hundreds of Vermonters who could not be here, we are addressing the relicensing of Vermont Yankee. We complement the NRC and review board for doing a wonderful job, doing a wonderful job of playing charades.

Vermont has one if not the highest, one of if not the highest rates per capita of radioactive waste in the nation, maybe in the world. This radioactive poison is, as we all know, stored in an overfull, unprotected precarious place in our state. Obviously the NRC is wanting to relicense a dangerous old plant to add to an unsolvable problem. We have seen this same NRC fox guarding our hen house of health before. To those of you at the NRC wanting to add to an unsolvable problem, to relicense Vermont Yankee, it is past time your consciences, obviously based on tilted education and money, begin to kick in since, no matter how much electricity we produce, it will never be enough. EE-1

What is essentially important for future life on earth is what poison we produce in making electricity. Obviously Vermont Yankee produces the worst type of poison that man can fathom, carbon in the atmosphere is nothing compared to radioactivity. All this talk of millions of dollars for the green fund is total manure compared to any small radioactive mishap or your grandchild's cancer. For the life of your grandchildren and the health of the world, we demand the NRC deny Vermont Yankee the relicensing permit. As we say in Vermont, smarten up, NRC, we all see through your charade. EE-2 EE-3

(Applause)

MR. CAMERON: Thank you, Dick. Ida?

And are you bringing Kent down with you? Okay, and if you could just give is the correct pronunciation of your last name? Belivet? Belivet, this is Ida Belivet and Kent.

MR. BELIVET: Ida Belivet and Kent Belivet.

MR. CAMERON: Thank you.

MS. BELIVET: Good night, everybody. I just wanted to come down and say that this isn't actually a public hearing at all, this is gigantic, steaming pile of shit. I'm tired of hearing a bunch of bureaucrats blowing hot air up each others asses, I'm not buying it. What I'm really here to talk about is my main concern which is the radioactive waste that will outdate this reactor by tens of thousands of years. I wanted to bring down a diagram of the kind of waste that I produce in this community, it's a bag of returnables. Trading recyclables for radioactive waste can't really compare, no one has ever died from exposure to returnables. I don't think Entergy can say the same for their waste. FF-1

Despite this fact, I was not permitted to bring my bag of trash into this room, while that reactor continues to produce some of the most dangerous materials on this planet. I don't think there is any negotiation for relicensing before anyone can anything to say about what's going to happen with that waste. Thank you.

(Applause)

MR. CAMERON: And now we are going to hear from Kent.

MR. BELIVET: Good evening, everybody. I, unlike my wife, am a proponent of nuclear power. I would like to thank Chip, you are doing a great job tonight emceeing. I would like to thank Bill Maguire for coming up here, he said some wonderful things. Patrick Moore, I heard him earlier, star on performance. I liked what he had to say about green effects, and Rich and really the whole NRC, thanks for coming and putting us on. I'm glad and I hope we can get this relicensing to pass.

My favorite part of the PowerPoint was the four references to the small environmental impacts of nuclear power, I really liked that and that truly is what I appreciate most about nuclear power is its effect on the environment, and that's why I'm here tonight at this environmental impact study, hearing or whatever.

I'll get on with my comment here.

GG-1 The things I look forward to with 20 more years of Vermont Yankee running here 15 miles from where I was born and raised are pretty exciting, I look forward to my children or perhaps my wife getting breast cancer, I look forward to the time when I can hug them and feel only one of their breasts up against my breast because the other has been removed because of a tumor because there is 88,300 cubic yards of radioactive waste stored on the Connecticut River.

I look forward to my kids having Downs Syndrome and I look forward to this community growing in all its new and mutated ways. I look forward to spending a hard life with my father or perhaps my children as they die a slow death of prostate cancer. I look forward to swimming in a warmer Connecticut River. I look forward to my friends returning from the Iraq War with post traumatic stress syndrome and something unknown, something that's killing them that's caused by depleted uranium which comes from nuclear power. I'm really into that, I think that will be great to hang out with my friends as they die a slow and painful death.

I'm looking forward to more wars, I'm looking forward to more waste reprocessing and more efficient smart weaponry, and increased infant mortality is something I can barely hide my excitement about. And finally, I look forward to a time when I can abandon my home, the place where I grew up, because of a nuclear accident or simply because too much waste has accumulated and the environment becomes unsuitable for human habitation. So thanks a lot and thanks for everyone for encouraging this relicensing, keep it up, NRC.

(Applause)

MR. CAMERON: Okay, Kent.

We're going to go to Roy Ramsdell, Brian Tietze, Karen Murphy and Gail Elnell. Is this Roy? All right.

MR. RAMSDELL: Good evening. My name is Roy Ramsdell, I am an employee of Vermont Yankee.

I want to thank the NRC for holding the hearings to talk where everybody in the community can get together and share their view. Not all views are the same, it's good to hear the differences and work out those differences. There is a lot of technology, a lot of data, a lot of number crunching that went into the study that the NRC is looking at, I would like to focus on the human face at Vermont Yankee. I have a human factors background, it's also what I think makes it at the end of the day is the people. HH-1

We look at our community and a number of folks have acknowledged that it isn't the people we don't like, it's nuclear power. Well guess what? It's the people that run the nuclear power plant, it's the same people that are in the community, the same people that are teachers, the same people that lead scouting groups, the same ones that volunteer at the hospital or Rescue, Inc. These are the people that work at the power plant, they are not different than the other folks. The one thing they have in common is the common purpose to run that plant safely and keep it that way for another 20 years.

They are in the fabric of this community, they are here to stay, they live in the three surrounding states and they are not going to endanger their homes because this is home. So, at the end of the day, we have all the technology and all the studies, but what we are really left with is the people and it's the people that run that and keep it safe.

Thank you.

(Applause)

MR. CAMERON: All right, thank you. Is Brian here? Brian? And then we are going to go to Karen Murphy, if she is still here, and Nina, Nina Keller who is definitely here.

MR. TIETZE: Good evening, thank you. My name is Brian Tietze, I am an employee of Vermont Yankee and have been for 25 years.

A lot of people have made a lot of comments and I'm not going to repeat it, I know some people think that we shouldn't talk about the people but I would like to talk about the people. In the 25 years I've been with Vermont Yankee, I've been on a lot of different assignments, one of the ones I'm currently involved with is our donations committed. We work very hard, working in the tristate area, looking at all the people that need our help and we diligently review, and we go out and we help these people.

Last year, we gave over $250,000 to the tristate area and a lot of it had environmental impact. A lot of the things we do are with scouts, with other organizations that are doing great things in the town. Without our finances, and our help and our employees, those initiatives wouldn't
II-1 happen, so I do encourage that you consider us with a licensed extension for the next 20 years so that we can continue to be an important player in the community and that we can show you, as we have, as I've listened to comments for over 10 years for every time we try to do something, that we just show you that we are doing better and better, I guarantee you the employees that I work with are dedicated to doing that.

As was stated, we work safely, we are well controlled and we do want to be a part of your future.

Thank you.

(Applause)

MR. CAMERON: Thanks, Brian. And this is Karen.

MS. MURPHY: Good evening. My name is Karen Murphy, I do not work at Vermont Yankee, I'm also not going to be giving my own comments tonight, I've been asked to read a document sent by Ray Shadis, he is a consultant for the New England Coalition, and I have agreed to do
JJ-1 that. I am not going to read the entire document but I do have a copy to submit. In the environmental scoping process, the New England Coalition raised new, significant and site-specific issues affected by license renewal which the NRC, in responding to scoping meeting comments, ignored, trivialized or otherwise failed to answer.

JJ-2 The relevant comments are four in number, high radiation readings inside the Vernon elementary school have correlated by vector and occurrence with high radiation readings on certain fence line instruments. New England Coalition expressed our belief that these high radiation readings in the school because of high correlation by vector and occurrence with high TLD readings on the site fence line warrant investigation in order to determine if licensee off-site radiation dose estimates are correct and then to quantify the actual off-site radiation dosages as they would be effected by 20 years of additional operation at extended power uprate levels.

JJ-3 Number two, in 2002 Entergy Nuclear Vermont Yankee amended its discharge permits to include water treatment with a new list of chemical additives including proprietary formulas of biocides, detergents, surfactants and anti-corrosives to be applied, along with chlorine and fluorine compounds. These toxins and otherwise harmful materials may be incorporated in cooling tower drift, these are droplets which are expelled laterally from the towers as spray which have been found to travel and deposit up to a mile from the plant.

There has been no formal evaluation of the environmental and human health impact Vermont Yankee's cooling tower drift, which is site-specific with respect to the chemical mix, solution, periods of use, tower spray physical characteristics, characterization and susceptibility of effected biota, weather patterns, terrain, and characterization and location of potentially affected human populations. The impact of cooling tower drift over 20 additional years of operation at extended power uprate conditions must be quantified and verified prior to any assertions of no significant environmental impact for license renewal.

Three. In the mid 1990s, Vermont Yankee applied for and received permission for outdoor on-site storage of up to 35 cubic yards of radiological contaminated soil per year, this soil is drawn from building excavations and from traction sand and salt that have been applied to and gather from VY roads during winter. In 2003, Entergy Nuclear Vermont Yankee applied for and received permission for outdoor on-site storage of a one-time dump of approximately 300 cubic meters and an annual deposit of up to 150 cubic meters of radiological contaminated soil. JJ-4

This soil will be stored south of the cooling towers on what may be fairly characterized as the banks of the Connecticut River, VY irradiating 20 percent more uranium under increased flow turbulence will produce in excess of 20 percent additional low-level waste and contamination due to extended power uprate. NRC cannot credibly assert that this excess site contamination will remain within regulatory bounds with quantification and verification of potential radiological effects, as they may be aggravated by leeching, stratification, migration and bio accumulation. The presence of this low-level waste dump on the banks of the Connecticut is a new, since the original licensing and not included in any license amendments and it is site-specific, it should be considered in any license renewal evaluation.

And number four, the NRC fails to consider the potential environmental effects of the spent fuel pool accident or major spent fuel pool radiological release as a result of an act of terror. NUREG-1738 characterizes potential impacts as up to 25,000 fatalities at a distance of up to 500 miles and this presumes 95 percent early evacuation. The model plant chosen for this study referenced in NUREG-1738 was Millstone One, a plant very similar to VY, albeit in an area of high population density. NUREG-1738 also references seismic fragility of the Vermont Yankee spent fuel pool specifically. It also admits that BWR Mark 1 containments would present no substantial obstacle to aircraft penetration. JJ-5

Further, it admits that it is impossible to assign probability to acts of terror. This is new information and has yet not been considered for its VY site-specific references and implications. No credible assessment of potential accident consequences or mitigation at Vermont Yankee can be undertaken without including consideration of the information in NUREG-1738. JJ-6

And last, New England Coalition's preceding comments, as presented during the June, 2006 scoping meeting, are site-specific and present new and significant considerations. Although we can find no place in the regulations that specifies how comments taken on the draft part shall be considered and incorporated, New England Coalition now respectfully requests that the NRC staff give these comments individual evaluation for potential environmental impact before the license renewal process goes forward.

Thank you.

(Applause)

MR. CAMERON: Thank you for putting that on the record, thank you for putting that on the record for us.

And this is Nina, Nina Keller.

MS. KELLER: I'm Nina Keller and I live about 14 miles from the Vermont reactor.

I've been to many hearings before and usually the NRC is seated where we can see them, and tonight they are kind of dispersed into the crowd, and it makes me feel like some of our words are melting into a shroud of dark mist. I don't know exactly who I'm talking to, I didn't really come to talk to an audience.

So the NRC said, and it was on the slide show, that they really wanted to hear us, that that's part of their job, to listen to us responsibly, and yet, if the NRC is not listening to the Supreme Court of this nation, then how are we to believe that we are being respected? That we are being heard? I don't quite get it.

KK-1 The Supreme Court recently ruled, they ruled --. Are they not the highest court in the land? They ruled that relicensing must include the consideration of terrorism, period, not for the NRC to then say, no. The Supreme Court ruled it so it must be included in the relicensing
KK-2 consideration of Vermont Yankee, period. I also was somewhat stunned, actually disgusted to see a slide up there that said it would have a large impact to go alternative. Well they are comparing all kinds of interesting little financial tidbits but, if you read the papers, if you understand more about the reactor sitting right over there and it not creating greenhouse gasses, then you are forgetting the entire, the entirety of the nuclear process, the mining, the milling, the tailing, the reprocessing, the storage, the transportation, the transmission, the decommission and so on, and all the multi megawatts that are consumed in those processes, so don't tell me that nuclear is green.

People think they are talking to idiots when they say things like that and we are no longer stupid, we are educated, we are reading more than what the NRC is professing, and it's an insult to talk to us like that. I proposed this before and someone mentioned it this evening, that the workers who are keeping us safe right now and doing as good a job as can be done at the reactor, that you be retrained as part of the shutting down of Vermont Yankee because I know it's going to be shut down, it's not going to be relicensed. KK-3

So wake up all you people who came up here tonight and said you work at Vermont Yankee and you have masters degrees and whatever, the wonderful education and training you've had, wake up because you should not be put out of a job, you should be retrained, and you should start being your own advocates right now and make sure that Entergy, your bosses, your company who you are so loyal to, that they are going to retrain you and they are starting to look at that immediately. And it shouldn't be up to the alternative energy people to come up with jobs for you, we are going to work with you, but we need to hear that you are thinking about the future too because some people need it the way they want it.

Well we have, the environmentalists haven't had it the way we want it, and the tide is turning and it's going to happen, and Vermont Yankee is shutting down. So terrorism must be included in the environmental impact statement and in relicensing, and there must be an independent safety assessment, there must be. KK-4 KK-5

Thanks.

(Applause)

MR. CAMERON: Okay, thanks, Nina.

We are going to go to Norm Redemacher, Clay Turnbull, Chuck Edwards, and then we are going to go to Gary Sachs and Sally Shaw.

And this is Norm? All right.

MR. REDEMACHER: Good evening. My name is Norm Redemacher, I'm an Entergy employee and we are here to talk about the environmental impact of Vermont Yankee.

On balance, over the last 35 years, if you look at the current proposed environmental impact, it provides a strong report card for Vermont Yankee relative to being an environmental and economically sound unit. What other kind of facility operates for almost 35 years and still is considered by experts, both within the federal government, and local and state government, as an economically sound, safe and environmentally friendly source of electric power? In my opinion, we should renew the license for Vermont Yankee. LL-1

Thank you.

(Applause)

MR. CAMERON: Thank you, Norman.

And Clay? Clay Turnbull?

How about Chuck Edwards?

MR. TURNBULL: Good evening. This is a great document, I wish I had time to read all of it front to back twice, but I've only had a chance to browse through it. I refuse to believe that we
MM-1 can't do better, I refuse to believe that we have to stay on this same course that we've been on. I'm still seeing way more lights on than we need and I see it in every aspect of our society, we are gluttonous consumers of energy in all of its different forms. Before any discussion of a license extension or relicensing, is it, can someone clarify is it relicense or license extension? Is it a whole new license or is it an extension?

MM-2 Well, whatever it is, before we have any additional discussion on that, I believe it's imperative that we have an independent safety assessment, just like they had in Maine. I'm very pleased to see that there are some senators in New York that are moving in that direction on the national level and I would think that any employee at Entergy would be pleased to see an independent safety assessment as well.

One concern I have is that, as I've heard employees speaking, there is a gentleman that spoke earlier who said he will be retiring in two years and two months, and that he thinks of Vermont
MM-3 Yankee as his nuclear power plant. My concern is how many guys like him are retiring that are familiar with the idiosyncracies of that facility? I know how to drive my car, I know it might pull a little bit to the left because of the brakes up front, I know what to expect in operating that vehicle. The retiring folks are the ones that have that ingrained knowledge and they are leaving, and they are replaced by someone else who has been here for, you know, the fellow from Maine who has been here for I think 12 years, and that's a drop in the bucket.

I would like to follow the course of Maine Yankee in several respects, one of having an independent safety assessment. The State of Maine right now is contemplating withdrawing from the ISO New England because they, I believe, considered, I believe the reason that they are considering withdrawing is they have their energy needs met in the state. We've heard some scare tactics about what's happening in Maine, perhaps the gentleman that spoke should buy his electricity from a renewable energy source, clean, safe, reliable, conservation, solar, wind, biomass.

And I really would like to see some additional radiation monitoring. There was an incorrect, some discussion between the state, and Entergy and the NRC about whose numbers were accurate, and they haven't gone into, followed that in depth. I would like to see radiation monitors in a grid pattern throughout a ten mile radius of Vermont Yankee. MM-4

That concludes my comments.

(Applause)

MR. CAMERON: Thank you, thank you very much.

Gary, Gary Sachs?

MR. SACHS: My opinion, I'm Gary Sachs, a resident of Brattleboro, not affiliated, opposing Entergy and opposing relicensing, opposing Vermont Yankee.

Hi, Dave. Your EIS is flawed and inadequate, I say that for starters. Vermont is the only state where there have been interveners both in the uprate case and the dry cask case, and I believe now in the license, relicensing case as well.

Now I've got some concerns I want to raise here, I have a concern that the NRC accepted Entergy's recommendation that the spent fuel canisters be stored outside along the Connecticut River. A concern there has to do with I have a concern with the NRC's awareness that the proposed location is in a flood plain. I'm not sure how long the flood plain is, there is some variation there. I have concern regarding that such a location means that at least one every few hundred, five hundred, thousand more years, a flood is going to occur high enough to wash those 90 ton casks directly into the Connecticut River. Mathematically speaking, I have a concern whether or not the NRC has evaluated the fact that if those canisters stay there in the flood plain for 20 years, 50 years, there is a higher increased chance of that flood occurring and/or washing those casks into the Connecticut River. I'm certain the NRC is aware that that flood plain designation is based on historical meteorological data. NN-1

I have a great concern that world renowned and credentialed meteorologists and environmental experts are now stating that global warming will undoubtedly change historical weather data, bigger storms occurring far more frequently than charted or anticipated. I certainly hope the NRC has done its due diligence and research to make sure that 1, 5, 10 casks, 90 tons a piece, 50 feet away from the banks of the river, who knows when that next flood is coming? So the historical weather data is likely no longer accurate.

I have a concern regarding the steps the NRC has taken to reevaluate the critical environmental data and its impact on the storage of the spent fuel at Vermont Yankee. I also question what environmental modeling data the NRC has used and is available for these utilities to use to

evaluate these upcoming environmental changes. I would love to know what regulations the NRC has put in place to ensure that all utilities are considering the new environmental issues of significant climate change in their evaluations and permits for long-term waste storage.

What steps will the NRC take to assure that the new environmental modeling will be used to assure Vermont's citizens of protection from exposure to this new risk to this long-term storage which, since the beginning of the reactor has been temporary of course, the pool, the dry casks or "interim spent fuel storage installation"? What steps has the NRC taken to review these new hazardous waste measures with the States of Mass. and Connecticut, each of which would be severely impacted by the release of radioactive spent fuel into the Connecticut River?

NN-2 I have a concern regarding the terrorist issue regarding these spent fuel casks. I have
NN-3 concerns for the lack of thermal syphoning ability when a 90 ton cask slides or turns over into
NN-4 muddy, silty water, and I also have a great concern regarding the back 40 that was mentioned earlier, that low-level waste dump allowed once on the south side by the cooling towers, and how close it is to the water, given the potential for being near the flood plain.

So, in regard to the license extension, much of the recent talk of renaissance, rebirth, relapse, if you will, of the nuclear industry is based on the 2003 study by Moniz and Deutsch, MIT professors and former government people, Department of Energy was one of them, one of
NN-5 them was the Director of Intelligence. And Moniz and Deutsch are these professors from MIT, were the professors who were the cosponsors of the 2003 future of nuclear power MIT white paper. They also, however, in the September, `06 edition of *Scientific American*, which was the future of nuclear, the future of energy, they stated in the *Scientific American*, September `06 edition, that the current generation of nuclear reactors have a safe life span of 50 years. Correct me if I'm wrong but Vermont Yankee Entergy is currently seeking a 60-year life span.

NN-6 No one in this room has a clue what the price of electricity will be if this license is renewed, so any talk of how great our electric rates have been, we have the cheapest electricity in the New England Region, I know that's been big news for Entergy this year or last year, excuse me. None of us have a clue what we are going to get charged after 2012, if the license is allowed to be renewed or extended, and the same is true for who knows what the cost to the State of Vermont would be if the hydro energy, by the way, when the talk has been so great tonight on how we have the cleanest portfolio, I have heard nothing of the fact that one third of our energy comes from hydro electric.

NN-7 And I guess, to finish up, I would state that the public comment form provided for tonight's meeting by the NRC expired on 6/30/06 and, if you don't mind my saying, so too did Vermont's desire for nuclear power, it expired years ago.

Thank you.

(Applause)

MR. CAMERON: Thank you, Gary, thank you. Yeah, that's a good suggestion, thank you. Sally, do you have a --.

MS. SHAW: I did speak earlier today, but I had to leave before I got to hear a lot of the other comments because I had to meet a school bus, so I am going to pick up where I left off. My comments are directly pertaining to the environmental impact statement, as that's what I thought this hearing was supposed to be about, and I talked earlier about new and significant information regarding epidemiological statistics from the National Center for Health Statistics at the CDC that indicate that death rates in Windham County are higher than they are in the other counties in the state during the period that Vermont Yankee has been operating. There are some questions about that, I'm not going to read the whole thing again. OO-1

My second concern with the inadequacy and incompleteness of the supplemental environmental impact statement is the NRC's refusal to consider the environmental effects of an act of terrorism upon the spent fuel pool. I think this stance that the NRC is taking is not only tantamount to criminal negligence, it's silly, they know that it's only a matter of time before the Supreme Court or Congress catches up with them on this issue. Saying it's up to the military to protect nuclear facilities, which I read in the paper just a couple of days ago, that was supposedly a decision on the part of the Commissioners themselves, is irresponsible when there are technologies readily available today that could make these predeployed weapons of mass destruction, the vulnerable spent fuel pools, much safer, hardened on-site storage, for one. OO-2

It's not clear to me why the nuclear industry, in fact that amounts to just five companies nationwide, there is no free market competition here. Why can't the nuclear industry use a little bit of the $12 billion corporate welfare package they were given in the Energy Act of 2005 to show us that they are responsible corporate citizens by stopping the overfilling of spent fuel pools and putting the fuel in hardened storage casks in bounds, far enough apart that they are not likely to bonk into each other in a terrorist attack, tip over and cause a cladding fire? Can't the NRC show some backbone and require the nuclear industry to use this money and do this? We have all said it before, it's really puzzling to understand who the NRC is really working for. OO-3

I'm concerned also about the NRC's inability to grasp that the use of open cooling or once-through cooling is a violation of the Clean Water Act. The 2nd U.S. Circuit Court of Appeals in Manhattan ruled Thursday, I think it was last week, that it was improper for the EPA to let power plants circumvent environmental laws. This decision was a rejection of EPA's refusal to adopt closed-cycle cooling as the best technology available. OO-4

About half of the nation's power plants, these are both nuclear and fossil fuel plants, use the closed-cycle method which operates like a car radiator, reusing the same water and only requiring small amounts of new water to replace what is lost to evaporation. The system uses at least 95 percent less water than once-through systems, these systems draw from waterways and expel warmed water back into these waterways. It's only common sense that if a technology exists to minimize or mitigate the impacts on the natural environment that a responsible corporation would want to use them and a responsible regulatory agency would want to require that they use them. This may, again, be up to the courts to enforce and that's really sad, that's really sad because we are paying the salaries of these people who are refusing to regulate.

OO-5 A few more specific criticisms, you claim in the EIS that Vermont Yankee releases nearly no liquid effluents. In section 2.2.31, you reveal that Vermont Yankee has 11, and they are asking for a 12th, outfall pipes that release directly into the Connecticut River, one for cooling water and the others apparently from storm drains, but it's also apparent in your table in that section that there are no radiation limits and no monitoring requirements at most of the 11 outfalls. I think 9 of the 11 have no limits set and no monitoring.

OO-6 Just preceding the uprate application, Entergy was given permission to stockpile 150 cubic yards of radioactive soil per year on-site, that's about eight large dump truck loads per year dumped apparently in an unlined and uncovered location near the Connecticut River. These piles of radioactive dirt will be subject to erosion and over land flow, rain and snow melt tend to wash into the river. The storm drains are designed to collect over land flow but no monitoring is done on the storm drains, so how do we know that the effluent that discharges from these storm drains is within regulatory limits or that there is no environmental impact from it? That's one.

OO-7 Number two, septic sludge too hot to send to commercial septic haulers is also surface spread in three or four locations on the site. This is a site, by the way, that was deemed unsuitable for a low-level waste dump by an independent environmental review a number of years back, I think it was in the `80s. If you don't monitor the outflow pipes that collect storm drain run off from the site, how can the NRC claim in this supplemental environmental impact statement that there are no radioactive liquid effluents? They don't know.

OO-8 However, I did hear, in talking to Larry Krist and Carla White at the Vermont Department of Health, that Cobalt-60 and other radioisotopes have been found in Connecticut River sediments. How do we know, if no monitoring is occurring, whether these effluents are from Vermont Yankee? On the section that talks about radiological impacts, section 2.2.7, the NRC says that the radiological monitoring plan, which they abbreviate as RUMP, REMP, for the last five years, indicates that radiation and radioactivity in the environmental medium monitored around the plant have been "well within regulatory limits" and the citation is an Entergy report.

This is all that's really said here about this environmental monitoring and I just want to submit that Entergy is not independent and should be backed up by more credible independent sources. In addition, the regulatory limits are called into question by the biological effects of ionizing radiation BEIR 7 report and a number of other recent scientific studies, they are called into question because they are based on standard man and not the more vulnerable child, woman or fetus who are 30 to 50 percent more sensitive to the cancers and other biological effects of ionizing radiation. OO-9

These regs are called into question because the risk factor for these carcinogens, both toxic and radioactive, which are emitted by nuclear power stations is far more lenient than for all other chemical carcinogens. Perhaps your review of radiation standards will finally change all that but I think, until the review is done, the environmental impact statement is incomplete and it is not investigating health impacts based on the numbers that it should be. Yeah, I can submit the rest in writing, it goes on for pages and pages.

Thank you.

(Applause)

MR. CAMERON: And how about Mr. Akin and then Howard Shaffer?

MR. AKIN: I didn't plan to speak tonight, but I am Len Akin, a native Vermonter for 53 years, a licensed electrician by trade. I've worked up and down the Connecticut River Valley most of my working life, the last seven years have been at Entergy.

Like I said, I am a licensed electrician, I don't need Entergy, I work there because I want to. And be assured of the point tonight what environmental impact means to me, over my life, back in the early `60s, `70s, a lot of talk about losing a national treasure, the bald eagle, to DDT, and I'd never seen one until I worked at Vermont Yankee.

And my point tonight is every time I see a bald eagle flying over an intake structure, or cruising over our buildings or up the river fishing, I look around and I am proud to work at a company that I feel is green and that proves it by the wildlife around there. That's the only place in Vermont I have seen a bald eagle, and that's all I've got to say. PP-1

(Applause)

MR. SHAFFER: Thank you.

Howard Shaffer from Enfield, New Hampshire, a retired nuclear engineer, I've consulted for the Brattleboro Select Board, and I am licensed in Vermont, and New Hampshire, and Massachusetts in Illinois in nuclear engineering as a professional engineer. We are here

tonight as creatures of our congress, the Nuclear Regulatory Commission, before them the
QQ-1 Atomic Energy Commission, all the environmental regulations. In 1954, Congress decided they were the decider, along with the president, that we ought to have nuclear power as part of national energy policy, before there was a Department of Energy.

That has continued through every Congress, they have not changed the national policy, and it is the Nuclear Regulatory Commission's job to make sure that we carry out that policy in a safe fashion, it is not their job to decide we should not have nuclear power and to shut it down. If you want to do that, which is something that citizens can do and have had that kind of effect in the past, you need to convince a majority of congress and a super majority in the senate to block a filibuster and whoever is in the White House to change national energy policy.

In that debate in Congress, should it take place, and I don't think that it will because there would be too many hard questions that would be asked about how can you guarantee that the alternative scenarios which are presented are going to take place? And what shall we do if these rosy alternatives which are presented don't take place on the schedule you have recommended? And why is it that you think that radiation from nuclear power plants is unsafe when it's a small part of the natural exposure we get from the environment and have before there ever was nuclear power?

So, if you don't want nuclear power, start with Senator Sanders and just convince a majority of Congress and the White House to change national energy policy.

Thank you.

(Applause)

MR. CAMERON: Thank you, Howard. Is Harvey Schaktman still here?

Well then let's go to Claire, Claire Chang. Did you want to speak again, Claire? And Claire is our final speaker. You want one minute? Okay. Come on up and get on the mic so we can get you on the transcript, okay?

MR. SHADIS: I've heard a lot of questionable facts and figures here tonight and they will
RR-1 continue to be questionable, no doubt. Be that as it may, I took the opportunity to travel to the Ukraine and went on a tour of the now infamous exclusion zone. So, if any of you would care to get the full sensation of what the environmental impact of nuclear power is, take a little waltz around there, it's huge, it's global, it's absolutely terrifying. These people, it's not only the land that's been corrupted, they have been corrupted. They're entire genetic heritage has been given the short end of the stick, their children are deformed and will continue to be so.

This is the risk, it's that simple. Yes, things are profitable, things are leaning this way or that way for where the energy is coming from and how comfortable you can live, but the true environmental impact inevitably and invariably is what you are seeing over there in Belarus and it in cities like Gomol in Pripyat, which is eerie. It was a, the people there too, the workers there, that was the flagship plant for them, that was the a number one, biggest, safest producer for the Soviets, and it ruined their empire and that's what you are flirting with here. RR-1 (contd)

So enjoy it while you can because, one of these days, you are all going to be regretting your adamancy for your position that it is safe, clean and reliable, it ain't. And some of that fall out came all the way around and dropped over here, more of it dropped in Western Europe than in Eastern Europe, that's why the European Union is so hot to get the thing wrapped up again before it blows again because it is going to. Once one of these puppies burns down, it doesn't stop burning down for a very long time.

And I'm really happy to hear all the employees going on about how safe they are, that's good because that's your job and, God damn it, you'd better be safe because, without all that, you are risking hell on Earth.

Thank you.

(Applause)

MR. SHADIS: My name is John Shadis, I live in Westminster. Thank you.

MR. CAMERON: Thank you, John.

Thank you all for comments, and for courtesy and following ground rules.

And I'm going to turn it over to Rani Franovich who is the chief of the environmental section to close the meeting out for us.

[Presentation by Ms. Franovich]

Appendix B

Contributors to the Supplement

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Contributors to the Supplement

The overall responsibility for the preparation of this supplement was assigned to the Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission (NRC). The supplement was prepared by members of the Office of Nuclear Reactor Regulation with assistance from other NRC organizations and Argonne National Laboratory and Information Systems Laboratories, Inc.

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Appendix C

Chronology of NRC Staff Environmental Review Correspondence Related to the Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. Application for License Renewal of Vermont Yankee Nuclear Power Station

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Chronology of NRC Staff Environmental Review Correspondence Related to the Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. Application for License Renewal of Vermont Yankee Nuclear Power Station

This appendix contains a chronological listing of correspondence between the U.S. Nuclear Regulatory Commission (NRC) and Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Entergy), and other correspondence related to the NRC staff's environmental review, under Title 10, Part 51, of the *Code of Federal Regulations* (10 CFR Part 51), of Entergy's application for renewal of the Vermont Yankee Nuclear Power Station (VYNPS) operating license. All documents, with the exception of those containing proprietary information, have been placed in the Commission's Public Document Room, at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland, and are available electronically from the Public Electronic Reading Room found on the Internet at the following web address: http://www.nrc.gov/reading-rm.html. From this site, the public can gain access to the NRC's Agencywide Document Access and Management Systems (ADAMS), which provides text and image files of NRC's public documents in the Publicly Available Records (PARS) component of ADAMS. The ADAMS accession numbers for each document are included below.

January 25, 2006	Letter from Entergy to NRC, forwarding the application for renewal of the operating license for VYNPS, requesting an extension of the operating license for an additional 20 years (Accession No. ML060300082).
January 31, 2006	Letter from NRC to Entergy, "Receipt and Availability of the License Renewal Application for the Vermont Yankee Nuclear Power Station" (Accession No. ML060310684).
March 21, 2006	Letter from NRC to Entergy, transmitting "Determination of Acceptability and Sufficiency for Docketing, Proposed Review Schedule, and Opportunity for a Hearing Regarding the Application from Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. for Renewal of the Operating License for the Vermont Yankee Nuclear Power Station" (Accession No. ML060800664).

April 12, 2006	Letter from NRC to Entergy, forwarding the *Federal Register* "Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process for License Renewal for the Vermont Yankee Nuclear Power Station" (Accession No. ML061040142).
May 5, 2006	Letter from NRC to Ms. Patricia A. Kurkul, National Marine Fisheries Service (NMFS), Northeast Regional Office, "Request for List of Protected Species and Essential Fish Habitat Within the Area Under Evaluation for the Vermont Yankee Nuclear Power Station License Renewal Application Review" (Accession No. ML061280184).
May 5, 2006	Letter from NRC to Mr. Marvin Moriarty, U.S. Fish and Wildlife Service (FWS), Northeast Regional Office, "Request for List of Protected Species Within the Area Under Evaluation for the Vermont Yankee Nuclear Power Station License Renewal Application Review" (Accession No. ML061280128).
May 8, 2006	Letter from NRC to Mr. Don L. Klima, Director, Advisory Council on Historic Preservation, "Vermont Yankee Nuclear Power Station License Renewal Application Review" (Accession No. ML061290255).
May 8, 2006	Letter from NRC to Ms. Jane Lendway, Vermont Historic Preservation Officer, "Vermont Yankee Nuclear Power Station License Renewal Application Review" (Accession No. ML061300034).
May 10, 2006	Letter to The Honorable April St. Francis-Rushlow, Chief, Abenaki Nation of Missisquoi, St. Francis/Sokoki Band, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Vermont Yankee Nuclear Power Station (Accession No. ML061300680).
May 10, 2006	Letter to The Honorable Nelson Bolding, Chief, Boldwing Clan, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Vermont Yankee Nuclear Power Station (Accession No. ML061310133).
May 10, 2006	Letter to The Honorable Tom Eagle Rising Libby, Chief, Greater Lowell Indian Cultural Association, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Vermont Yankee Nuclear Power Station (Accession No. ML061300677).

May 10, 2006	Letter to The Honorable Paul Pouliot, Council Chief, Cowasuck Band-Pennacook Abenaki People, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Vermont Yankee Nuclear Power Station (Accession No. ML061310144).
May 10, 2006	Letter to The Honorable Peter Newell, Council Chief, NH Intertribal Native American Council, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Vermont Yankee Nuclear Power Station (Accession No. ML061310108).
May 10, 2006	Letter to The Honorable Charles True, Chief, Abenaki Nation of New Hampshire, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Vermont Yankee Nuclear Power Station (Accession No. ML061300684).
May 10, 2006	Letter to Ms. Nancy Lyons, Ambassador, First Nation of New Hampshire, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Vermont Yankee Nuclear Power Station (Accession No. ML061300480).
May 10, 2006	Letter to Mr. Steven Montembeault, President, Laconia Indian Historical Association, inviting participation in the scoping process related to NRC's environmental review of the license renewal application for Vermont Yankee Nuclear Power Station (Accession No. ML061300282).
June 1, 2006	Letter to Entergy from NRC, "Request for Additional Information (RAI) Regarding Severe Accident Mitigation Alternatives (SAMAs) for Vermont Yankee Nuclear Power Station" (Accession No. ML061520506).
July 11, 2006	"Summary of Public Scoping Meetings Conducted Related to the Review of Vermont Yankee Nuclear Power Station License Renewal Application" (Accession No. ML061920495).

July 21, 2006	Letter from NRC to Mr. Marvin Moriarty, FWS, Northeast Regional Office, “Amended Request for List of Protected Species Within the Area Under Evaluation for the Vermont Yankee Nuclear Power Station License Renewal Application Review” (Accession No. ML062020755).
August 1, 2006	Letter from Entergy to NRC, “Vermont Yankee Nuclear Power Station License No. DPR-28 (Docket No. 50-271) License Renewal Application, Amendment 7” (Accession No. ML062160079).
August 10, 2006	Letter from FWS to Rani Franovich, NRC, regarding threatened and endangered species (Accession No. ML062370102).
August 25, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “Appendix 3 to 316a Demonstration” (Accession No. ML062920340).
September 15, 2006	Letter from NMFS to Rani Franovich, NRC, “Vermont Yankee Nuclear Power Station Renewal Application Review” (Accession No. ML063260338).
September 18, 2006	E-mail from Bob West, FTN Associates, to Richard Emch, NRC, “VYNPS ER - Supplemental Information Chestnut Hill 115-kV Transmission Line” (Accession No. ML062850144).
September 18, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “Air Emissions Inventory Report for 2005 and MSDS for Nalco H-550” (Accession No. ML062850148).
September 19, 2006	Letter from Entergy to NRC, “Vermont Yankee Nuclear Power Station License No. DPR-28 (Docket No. 50-271) License Renewal Application, Amendment 13” (Accession No. ML062680034).
September 27, 2006	E-mail from Richard L. Emch, Jr., NRC to Michael Hamer, Entergy, “Request for Clarification Regarding Responses to RAIs for Severe Accident Mitigation Alternatives for the Vermont Yankee Nuclear Power Station (TAC No. MC9670)” (Accession No. ML062920434).
September 30, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “VY 2005 DMR’s” (Accession No. ML062910400).

September 30, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “VY 2006 DMR’s to date” (Accession No. ML062920270).
October 3, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “Waste Minimization Plan” (Accession No. ML062920265).
October 3, 2006	E-mail from Jill Brochu, Entergy, to Richard Emch, NRC, “Figures 3-2 and 3-3 ER” (Accession No. ML062920352).
October 3, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “Current Air Certification and Fishway Temperature Table form 2003 Annual Report” (Accession No. ML062920385417).
October 3, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “Cooling Tower Report for VY” (Accession No. ML062920423).
October 3, 2006	E-mail from Rick Buckley, Entergy, to Richard Emch, NRC, “Thermophilic Microorganisms” (Accession No. ML062920358).
October 5, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “VY Cooling Tower Operation” (Accession No. ML062920372).
October 5, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “VY Drift” (Accession No. ML062920377).
October 5, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “Current IDP Permit” (Accession No. ML062920385).
October 12, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “Ecological Studies of the Connecticut River Vernon/Vermont Report X” (Accession No. ML062920069).
October 12, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “VY Annual Ecological reports from 1980's” (Accession No. ML062980249).
October 12, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “Ecological Studies of the Connecticut River Vernon,Vermont Report 31” (Accession No. ML062920329).

October 17, 2006	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, "Ecological Studies of the Connecticut River Vernon/Vermont Report XIV" (Accession No. ML062920075).
October 20, 2006	Letter from Entergy to NRC, "Vermont Yankee Nuclear Power Station License No. DPR-28 (Docket No. 50-271) License Renewal Application, Amendment 18" (Accession No. ML062990155).
October 30, 2006	Letter from NRC to Entergy, "Issuance of Environmental Scoping Summary Report Associated with the Staff's Review of the Application by Entergy Nuclear Operations, Inc. For Renewal of the Operating License for Vermont Yankee Nuclear Power Station (TAC NO. MC9670)" (Accession No. ML063030576).
October 30, 2006	Letter from NRC to Mr. John Fisk, Vermont Electric Power Company, "Vermont Yankee Nuclear Power Station License Renewal Application Review" (Accession No. ML062970318).
November 6, 2006	Letter from Entergy to NRC, "Vermont Yankee Nuclear Power Station License No. DPR-28 (Docket No. 50-271) License Renewal Application, Amendment 21" (Accession No. ML063170080).
December 5, 2006	E-mail from Mike Hamer, Entergy, to Johnathan Rowley and Richard Emch, NRC, "VY License Renewal Application Amendment 22" (Accession No. ML063420178).
December 12, 2006	Letter from NRC to Ms. Patricia Kurkul, NMFS, Northeast Regional Office, "Request Initiation of an Essential Fish Habitat Consultation Regarding License Renewal of Vermont Yankee Nuclear Power Station (TAC No. MC9670)" (Accession No. ML063120067).
December 13, 2006	Letter from NRC to Entergy, "Notice of Availability of the Draft Plant-Specific Supplement 30 to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Vermont Yankee Nuclear Power Station (TAC NO. MC9670)" (Accession No. ML063110007).
December 13, 2006	Letter from NRC to U.S. Environmental Protection Agency (EPA), "Notice of Availability of the Draft Plant-Specific Supplement 30 to the Generic Environmental Impact Statement for License Renewal of

	Nuclear Plants (GEIS) Regarding Vermont Yankee Nuclear Power Station" (Accession No. ML063120031).
December 13, 2006	Letter from NRC to Ms. Jane Lendway, Vermont Historic Preservation Officer, "Vermont Yankee Nuclear Power Station License Renewal Application Review (DHP NO. WD03-01)" (Accession No. ML063170344).
January 4, 2007	Letter from Mr. Peter D. Colosi, Jr., NMFS, Northeast Regional Office, to Mr. P.T. Kuo, NRC, "Re: EFH Assessment for the Vermont Yankee Nuclear Power Station (TAC No. MC9670) License Renewal" (Accession No. ML070230041).
January 25, 2007	E-mail from Representative Mike Mrowicki, Vermont House of Representatives, to Richard Emch, NRC, "NRC Mtg. In Montpelier" (Accession No. ML070530184).
January 25, 2007	E-mail from Representative Robert Dostis, Vermont House of Representatives, to Richard Emch, NRC, "NRC Visit to Brattleboro" (Accession No. ML070530145).
January 26, 2007	Letter from Senators Bernard Sanders and Patrick Leahy and United States Representative Peter Welch to NRC, requesting a public meeting on the Draft SEIS in Montpelier, VT" (Accession No. ML070310283).
February 02, 2007	E-mail from Mr. Ricky Buckley, Entergy, to Jessie Muir, NRC, "Vermont Yankee Hazardous Waste Generation" (Accession No. ML070530187).
February 13, 2007	Letter from NRC to The Honorable Patrick Leahy, United States Senate, The Honorable Bernard Sanders, United States Senate, and The Honorable Peter Welch, U.S. House of Representatives, responding to their request for a public briefing of the Vermont Legislature" (Accession No. ML 070400085).
February 15, 2007	Letter from NRC to Ms. Emma Stamas, "Response to E-mail in Regards to the License Renewal Review of the Vermont Yankee Nuclear Power Station" (Accession No. ML070100108).

February 27, 2007	NRC presentation for the Vermont Legislature. "Preliminary Results of Environmental Review, Vermont Yankee Nuclear Power Station" (Accession No. ML070700003).
March 2, 2007	Letter from Robert W. Varney, EPA, to NRC, "Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 30 Regarding Vermont Yankee Nuclear Power Station, Draft Report for Comment, CEQ #20060521" (Accession No. ML070670187).
March 05, 2007	E-mail from Richard Emch, NRC, to Senator Jeanette White "Information regarding SAMA Screening" (Accession No. ML070860297).
March 5, 2007	Letter from Senators Bernard Sanders and Patrick Leahy, and United States Representative Peter Welch to NRC, requesting a 30-day extension for public comment on the Draft SEIS" (Accession No. ML070650306).
March 6, 2007	Letter from Andrew L. Raddant, U.S. Department of the Interior, to NRC, "NUREG 1437, Supplement 30, draft, Vermont Yankee Nuclear Power Station, Comments" (Accession No. ML070730154).
March 7, 2007	Letter from Lee Perry, New Hampshire Fish and Game Department, "NUREG 1437, Supplement 30, draft, Vermont Yankee Nuclear Power Station, Comments" (Accession No. ML071130166).
March 8, 2007	Letter from NRC to The Honorable Bernard Sanders, United States Senate, The Honorable Patrick Leahy, United States Senate, and The Honorable Peter Welch, U.S. House of Representatives, responding to their request for a 30-day extension for public comment on the Draft SEIS" (Accession No. ML 070660313).
March 9, 2007	Letter from Catherine Gjessing, Vermont Agency of Natural Resources, to NRC, "Comments on the Draft GEIS for Vermont Yankee Nuclear Power Station License Renewal" (Accession No. ML070730207).
March 16, 2007	Letter from Richard L. Emch, Jr., NRC, "Summary of Public Meetings on the Draft Supplemental Environmental Impact Statement Regarding the Vermont Yankee Nuclear Power Station License

	Renewal Review (TAC NO. MC9670)" (Accession No. ML070660383).
March 22, 2007	Letter from Richard L. Emch, Jr., NRC, "Summary of Meeting with Members of Vermont State Legislature on the Draft Supplemental Environmental Impact Statement Regarding the Vermont Yankee Nuclear Power Station License Renewal Review (TAC NO. MC9670)" (Accession No. ML070720607).
April 02, 2007	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, "Correspondence that you requested" (Accession Nos. ML070950498, ML070950500).
April 06, 2007	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, "FW: response" (Accession Nos. ML070990386, ML070990397).
April 06, 2007	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, "Vermont Yankee Question (cooling tower drift)" (Accession No. ML070990410).
April 24, 2007	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, "Current NPDES permit and fact sheet" (Accession No. ML071450108).
May 1, 2007	Memorandum from Nathan Goodman, NRC, to Eric Benner, NRC, and Richard Emch, NRC, "Trip Report for Travel to Vermont, Massachusetts, and New Hampshire" (Accession No. ML070610180).
May 07, 2007	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, "Additional Information as requested (salmon, shad impingement)" (Accession No. ML071500153).
May 21, 2007	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, "Nalco H550" (Accession No. ML071500496).
May 24, 2007	Email from Lynn DeWald, Entergy, to Richard Emch, NRC, "VY Proposal for Information Collection" (Accession No. ML071500503).
July 10, 2007	Memorandum from Nathan Goodman, NRC, to Eric Benner, NRC, and Richard Emch, NRC, "Trip Report Summarizing May 29, 2007 Visit to Vermont Yankee Nuclear Power Station Regarding the License Renewal Environmental Review" (Accession No. ML071630370).

July 10, 2007	E-mail from Lynn DeWald, Entergy, to Richard Emch, NRC, “2007 Air Emissions Certificate for VY” (Accession No. ML071920453)

Appendix D

Organizations Contacted

Appendix D

Organizations Contacted

During the course of the U.S. Nuclear Regulatory Commission staff's independent review of environmental impacts from operations during the renewal term, the following Federal, State, regional, local, and Native American Tribal agencies were contacted:

Abenaki Nation of Missisquoi, St. Francis/Sokoki Band, Swanton, Vermont

Abenaki Nation of New Hampshire, Whitefield, New Hampshire

Advisory Council on Historic Preservation

Boldwing Clan, Goffstown, New Hampshire

Cheshire County, Keene, New Hampshire

Cowasuck Band-Pennacook Abenaki People, Forestdale, Massachusetts

First Nation of New Hampshire, Franconia, New Hampshire

Franklin Council of Governments, Greenfield, Massachusetts

Greater Lowell Indian Cultural Association, Lowell, Massachusetts

Laconia Indian Historical Association, Laconia, New Hampshire

National Marine Fisheries Service, Gloucester, Massachusetts

New Hampshire Fish and Game Department, Concord, New Hampshire

New Hampshire Intertribal Native American Council, Laconia, New Hampshire

Town of Brattleboro, Brattleboro, Vermont

Town of Hinsdale, Hinsdale, New Hampshire

Town of Vernon, Vernon, Vermont

U.S. Fish and Wildlife Service, Hadley, Massachusetts

U.S. Geological Survey, S.O. Conte Anadromous Fish Research Center, Turners Falls, Massachusetts

Vermont Agency of Natural Resources, Waterbury Vermont

Vermont Department of Environmental Conservation, Waterbury, Vermont

Vermont Department of Health, Division of Radiological Health, Burlington, Vermont

Vermont Division of Historic Preservation, Montpelier, Vermont

Vermont Fish and Wildlife Program, Waterbury, Vermont

Vermont Nongame and Natural Heritage Program, Waterbury, Vermont

Vernon Schools, Brattleboro, Vermont

Windham Regional Commission, Brattleboro, Vermont

Appendix E

Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc. Compliance Status and Consultation Correspondence

Appendix E

Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc. Compliance Status and Consultation Correspondence

Consultation correspondence related to the evaluation of the renewal of the operating license for Vermont Yankee Nuclear Power Station (VYNPS) is identified in Table E-1. Copies of the correspondence are included at the end of this appendix.

The licenses, permits, consultations, and other approvals obtained from Federal and State authorities for VYNPS are listed in Table E-2.

Table E-1. Consultation Correspondence

Source	Recipient	Date of Letter
U.S. Nuclear Regulatory Commission (R.L. Franovich)	National Marine Fisheries Service (P. Kurkul)	May 5, 2006
U.S. Nuclear Regulatory Commission (R.L. Franovich)	U.S. Fish and Wildlife Service (M. Moriarty)	May 5, 2006
U.S. Nuclear Regulatory Commission (R.L. Franovich)	Director, Advisory Council on Historic Preservation (D. Klima)	May 8, 2006
U.S. Nuclear Regulatory Commission (R.L. Franovich)	Vermont State Historic Preservation Officer (J. Lendway)	May 8, 2006
U.S. Nuclear Regulatory Commission (R.L. Franovich)	Boldwing Clan (N. Bolding)	May 10, 2006[(a)]
U.S. Nuclear Regulatory Commission (R.L. Franovich)	U.S. Fish and Wildlife Service (M. Moriarty)	July 21, 2006
U.S. Fish and Wildlife Service (M.J. Amaral)	U.S. Nuclear Regulatory Commission (R.L. Franovich)	August 10, 2006
National Marine Fisheries Service (L.A. Chiarella)	U.S. Nuclear Regulatory Commission (R.L. Franovich)	September 15, 2006
U.S. Nuclear Regulatory Commission (P.T. Kuo)	National Marine Fisheries Service (P. Kurkul)	December 12, 2006
U.S. Nuclear Regulatory Commission (R.L. Franovich)	U.S. Environmental Protection Agency	December 13, 2006

Table E-1. (contd)

Source	Recipient	Date of Letter
U.S. Nuclear Regulatory Commission (R.L. Franovich)	Vermont State Historic Preservation Officer (J. Lendway)	December 13, 2006
National Marine Fisheries Service (P.D. Colosi)	U.S. Nuclear Regulatory Commission (P.T. Kuo)	January 4, 2007
U.S. Environmental Protection Agency (R.W. Varney)	U.S. Nuclear Regulatory Commission	March 2, 2007
U.S. Department of the Interior (A.L. Raddant)	U.S. Nuclear Regulatory Commission (M. Lesar)	March 6, 2007

(a) Similar letters were sent to seven other Native American Tribes listed in Appendix C.

In the letter to the National Marine Fisheries Service (NMFS) dated May 5, 2006, the NRC requested that the NMFS determine if any species needed to be evaluated under the essential fish habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act for the VYNPS license renewal review. In the letter to the NRC dated September 15, 2006, the NMFS indicated that the Connecticut River and tributaries are designated essential fish habitat for Atlantic salmon; therefore, the NMFS instructed the NRC to evaluate the impact of the operation of VYNPS on the essential fish habitat of the Atlantic salmon. The NRC staff's assessment of impacts to essential fish habitat for the Atlantic salmon is included in this appendix for review by the NMFS. The draft SEIS, which included the EFH assessment, was submitted to the NMFS by letter dated December 12, 2006, requesting concurrence on the determination. The NMFS stated in a letter dated January 4, 2007, that it would be unable to undertake an EFH consultation for the VYNPS license renewal review.

Table E-2. Federal, State, Local, and Regional Licenses, Permits, Consultations, and Other Approvals for Vermont Yankee Nuclear Power Station

Agency	Authority	Description	Number	Issue Date	Expiration Date	Remarks
NRC	10 CFR Part 50	Operating license, Vermont Yankee Nuclear Power Station	DPR-28	04/09/72	03/21/12	Authorizes operation of the VYNPS.
FWS	Section 7 of the Endangered Species Act (16 USC 1536)	Consultation	NA	NA	NA	Requires a Federal agency to consult with the FWS regarding whether a proposed action will affect endangered or threatened species.
NMFS	Section 7 of the Endangered Species Act and Essential Fish Habitat	Consultation	NA	NA	NA	Requires a Federal agency to consult with the NOAA fisheries regarding whether a proposed action will affect endangered or threatened species and essential fish habitat.
Vermont Division of Historic Preservation	Section 106 of the National Historic Preservation Act	Consultation	NA	NA	NA	The National Historic Preservation Act requires Federal agencies to take into account the effect of any undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the *National Register of Historic Places*.
VDEC	Section 112 of the Clean Air Act	Air Contaminant Source Registration Certificate	WM2335	03/08/07	06/30/08	Operation of air emission sources (diesel generators, boilers, and oil burners).
VDEC	Section 402 of the Federal Water Pollution Control Act	NPDES Permit	VT0000264 (VDEC #3-1199)	09/28/04	03/31/06[a]	Plant wastewater discharges to Connecticut River.

Table E-2. (contd)

Agency	Authority	Description	Number	Issue Date	Expiration Date	Remarks
VDEC	Subtitle C of the Resource Conservation and Recovery Act	Hazardous Waste Generator	VTR000504167	NA	NA	Hazardous waste generation.
VDEC	Title 10 V.S.A., §1259 and §1263	Indirect Discharge Permit	ID-9-0036-2	12/14/05	09/30/10	Indirectly discharge treated domestic sewage and other wastes to the groundwater and indirectly into the Connecticut River.
VDEC	Title 10 V.S.A., §1671 and §1675(b)	Public Water System Permit to Operate (Construction Office Building Water System)	20559	05/21/02	05/21/08	Withdrawal of groundwater for drinking and plant purposes.
VDEC	Title 10 V.S.A., §1671 and §1675(b)	Public Water System Permit to Operate (Main Plant Water System)	8332	05/21/02	05/21/08	Withdrawal of groundwater for drinking and plant purposes.
VDEC	Title 10 V.S.A., §1671 and §1263	Public Water System Permit to Operate (New Engineering Office Building Water System)	20738	05/21/02	05/21/08	Withdrawal of groundwater for drinking and plant purposes.
USACE	Section 404 of the Clean Water Act	Dredging Permit	200302129	10/15/02	10/15/07	Fill in of the Connecticut River in conjunction with the maintenance of security wires at the intake structure.
VDEC	RCRA-Subtitle 1	Underground Storage Permit	806	10/01/04	10/01/09	Underground diesel and gasoline storage.
VDEC	Section 405 (d) and 40 CFR 503 of the Clean Water Act	Solid Waste Management Facility Certification	F9906-A1	12/03/04	09/30/09	Land application of septage.
DOT	49 CFR 107, Subpart G	Hazardous Materials Certificate of Registration	063003 006 013LN	03/21/72	03/21/12	Radioactive and hazardous materials shipments.

Table E-2. (contd)

Agency	Authority	Description	Number	Issue Date	Expiration Date	Remarks
CVDEM	Title 44, Code of Virginia, Chapter 3.3, Section 44-146.30	Application for Registration to Transport Hazardous Radioactive Materials	VY-S-123107	12/27/05	12/21/07	Transportation of radioactive waste into the Commonwealth of Virginia.
SCDHEC	Act No. 429 of 1980, South Carolina Radioactive Waste Transportation and Disposal Act	South Carolina Radioactive Waste Transport Permit	0002-44-04-07	01/01/07	12/31/07	Transportation of radioactive waste into the State of South Carolina.
TDEC	Tennessee Department of Environment and Conservation Regulations	Tennessee Radioactive Waste-License-for-Delivery	T-VT001-L07	11/20/06	12/31/07	Shipment of radioactive material into Tennessee to a disposal/processing facility.

(a) Application pending.

CFR = *Code of Federal Regulations*
CVDEM = Code of Virginia, Department of Emergency Management
DOT = U.S. Department of Transportation
FWS = U.S. Fish and Wildlife Service
NA = not applicable
NMFS = National Marine Fisheries Service
NPDES = National Pollutant Discharge Elimination System
NRC = U.S. Nuclear Regulatory Commission
RCRA = Resource Conservation and Recovery Act
SCDHEC = South Carolina Department of Health and Environmental Control
TDEC = Tennessee Department of Environment and Conservation
USACE = U.S. Army Corps of Engineers
USC = *United States Code*
VDEC = Vermont Department of Environmental Conservation
VNNHP = Vermont Nongame and Natural Heritage Program
VYNPS = Vermont Yankee Nuclear Power Station

May 5, 2006

Ms. Patricia A. Kurkul, Regional Administrator
NOAA's National Marine Fisheries Service
Northeast Regional Office
One Blackburn Drive
Gloucester, MA 09130-2298

SUBJECT: REQUEST FOR LIST OF PROTECTED SPECIES AND ESSENTIAL FISH HABITAT WITHIN THE AREA UNDER EVALUATION FOR THE VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION REVIEW

Dear Ms. Kurkul:

The U.S. Nuclear Regulatory Commission (NRC) is reviewing an application submitted by Entergy Nuclear Operations, Inc. (Entergy) for the renewal of the operating license for the Vermont Yankee Nuclear Power Station (VYNPS). VYNPS is located in the town of Vernon, Vermont, in Windham County on the west shore of the Connecticut River. As part of the review of the license renewal application (LRA), the NRC is preparing a Supplemental Environmental Impact Statement (SEIS) under the provisions of Title 10 of the *Code of Federal Regulations* Part 51 (10 CFR Part 51), the NRC regulation that implements the National Environmental Policy Act (NEPA) of 1969. The SEIS includes an analysis of pertinent environmental issues, including endangered or threatened species and impacts to marine resources and habitat. This letter is being submitted under the provisions of the Endangered Species Act of 1973, as amended, and the Fish and Wildlife Coordination Act of 1934, as amended, and the Magnuson-Stevens Fishery Conservation and Management Act.

The proposed action would include the use and continued maintenance of existing plant facilities and transmission lines. VYNPS stated that no major refurbishment activities have been identified as necessary to support the continued operation of VYNPS beyond the end of the existing operating license term. VYNPS is situated on approximately 125 acres of land on the west shore of the Connecticut River 0.75 miles upstream of the Vernon Hydroelectric Station. This section of the river is known as Vernon Pool. The areas adjacent to the station are primarily farm and pasture lands. The area within a five mile radius is predominantly rural with the exception of a portion of the town of Brattleboro, Vermont, and the town of Hinsdale, New Hampshire. Between 75 percent and 80 percent of the area within five miles of the station is wooded. The remainder is occupied by farms and small industries. Enclosure 1 shows the layout of the general area near the VYNPS site and Enclosure 2 presents an overview of the site location.

The VYNPS utilizes a once-through cooling system and mechanical draft cooling towers to remove waste heat from the condensers. The three circulating water pumps are located in the enclosed intake structure at the river bank. Water from the main condensers is returned to the discharge structure where it is either discharged through an aerating structure to the river or is diverted to the cooling towers. Water circulated through the towers may be either discharged through the aerating structure to the river or recirculated in a closed loop path to the intake structure, or a combination of both, known as hybrid cycle mode. The discharge path is manually selected by the operator and is contingent upon seasonal variation in environmental parameters.

The only transmission lines considered to be in scope for the review are located inside the 125 acre plant site. These transmission lines were constructed to connect VYNPS to the New England transmission grid. The transmission lines exiting the switchyards are part of the New England transmission grid that was constructed to supply purchased power to the State of Vermont. The New England transmission grid is not considered to be in scope of the license renewal review.

To support the SEIS preparation process and to ensure compliance with Section 7 of the Endangered Species Act, the NRC requests information on Federally listed, proposed and candidate species, and critical habitat under the jurisdiction of the National Marine Fisheries Service that may be in the vicinity of the VYNPS site.

In addition, please provide any information you consider appropriate under the provisions of the Fish and Wildlife Coordination Act. Also in support of the SEIS preparation and to ensure compliance with Section 305 of the Magnuson-Stevens Fishery Conservation and Management Act, the NRC requests a list of essential fish habitat that has been designated in the vicinity of the VYNPS site.

From May 23-25, 2006, the NRC staff plans to conduct a site audit at the VYNPS. On June 7, 2006, the NRC staff plans to hold two public NEPA scoping meetings at the Latchis Theatre, 50 Main Street, Brattleboro, Vermont 05301. The first session will convene at 1:30 p.m. and will continue until 4:30 p.m., as necessary. The second session will convene at 7:00 p.m., with a repeat of the overview portions of the meeting, and will continue until 10:00 p.m., as necessary. In addition to the environmental scoping meeting described above, the NRC will hold an informal open house at the Quality Inn & Suites, 1380 Putney Road, Brattleboro, Vermont 05301, on Tuesday, June 6, 2006, from 2:00-8:00 p.m., as necessary. You and your staff are invited to attend both the site audit and the public meetings. Your office will receive a copy of the draft SEIS along with a request for comments. The anticipated publication date for the draft SEIS is December 2006.

P. Kurkul - 3 -

If you have any questions concerning the NRC staff review of this LRA, please contact Mr. Richard L. Emch Jr., Senior Environmental Project Manager at 301-415-1590 or RLE@nrc.gov.

Sincerely,

/RA/

Rani Franovich, Branch Chief
Environmental Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures:
1. Layout of General Area near VYNPS Site
2. Overview of the Site Location

cc w/encls.: See next page

May 5, 2006

Mr. Marvin Moriarty, Regional Director
Northeast Regional Office
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035-9589

SUBJECT: REQUEST FOR LIST OF PROTECTED SPECIES WITHIN THE AREA UNDER EVALUATION FOR THE VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION REVIEW

Dear Mr. Moriarty:

The U.S. Nuclear Regulatory Commission (NRC) is reviewing an application submitted by Entergy Nuclear Operations, Inc. (Entergy) for the renewal of the operating license for the Vermont Yankee Nuclear Power Station (VYNPS). VYNPS is located in the town of Vernon, Vermont, in Windham County on the west shore of the Connecticut River immediately upstream of the Vernon Hydroelectric Station. As part of the review of the license renewal application (LRA), the NRC is preparing a Supplemental Environmental Impact Statement (SEIS) under the provisions of Title 10 of the *Code of Federal Regulations* Part 51 (10 CFR Part 51), the NRC regulation that implements the National Environmental Policy Act (NEPA) of 1969. The SEIS includes an analysis of pertinent environmental issues, including endangered or threatened species and impacts to fish and wildlife. This letter is being submitted under the provisions of the Endangered Species Act of 1973, as amended, and the Fish and Wildlife Coordination Act of 1934, as amended.

The proposed action would include the use and continued maintenance of existing plant facilities and transmission lines. VYNPS stated that no major refurbishment activities have been identified as necessary to support the continued operation of VYNPS beyond the end of the existing operating license term. VYNPS is situated on approximately 125 acres of land on the west shore of the Connecticut River 0.75 miles upstream of the Vernon Hydroelectric Station. This section of the river is known as Vernon Pool. The areas adjacent to the station are primarily farm and pasture lands. The area within a five mile radius is predominantly rural with the exception of a portion of the town of Brattleboro, Vermont, and the town of Hinsdale, New Hampshire. Between 75 percent and 80 percent of the area within five miles of the station is wooded. The remainder is occupied by farms and small industries. Enclosure 1 shows the layout of the general area near the VYNPS site and Enclosure 2 presents an overview of the site location.

The VYNPS utilizes a once-through cooling system and mechanical draft cooling towers to remove waste heat from the condensers. The three circulating water pumps are located in the enclosed intake structure at the river bank. Water from the main condensers is returned to the discharge structure where it is either discharged through an aerating structure to the river or is diverted to the cooling towers. Water circulated through the towers may be either discharged through the aerating structure to the river or recirculated in a closed loop path to the intake structure, or a combination of both, known as hybrid cycle mode. The discharge path is manually selected by the operator and is contingent upon seasonal variation in environmental parameters.

The only transmission lines considered to be in scope for the review are located inside the 125 acre plant site. These transmission lines were constructed to connect VYNPS to the New England transmission grid. The transmission lines exiting the switchyards are part of the New England transmission grid that was constructed to supply purchased power to the State of Vermont. The New England transmission grid is not considered to be in scope of the license renewal review.

To support the SEIS preparation process and to ensure compliance with Section 7 of the Endangered Species Act, the NRC requests information on Federally listed, proposed, and candidate species and critical habitat that may be in the vicinity of the VYNPS site. In addition, please provide any information you consider appropriate under the provisions of the Fish and Wildlife Coordination Act.

From May 23-25, 2006, the NRC staff plans to conduct a site audit at the VYNPS. On June 7, 2006, the NRC staff plans to hold two public NEPA scoping meetings at the Latchis Theatre, 50 Main Street, Brattleboro, Vermont 05301. The first session will convene at 1:30 p.m. and will continue until 4:30 p.m., as necessary. The second session will convene at 7:00 p.m., with a repeat of the overview portions of the meeting, and will continue until 10:00 p.m., as necessary. In addition to the environmental scoping meeting described above, the NRC will hold an informal open house at the Quality Inn & Suites, 1380 Putney Road, Brattleboro, Vermont 05301, on Tuesday, June 6, 2006, from 2:00 p.m.-8:00 p.m., as necessary. You and your staff are invited to attend both the site audit and the public meetings. Your office will receive a copy of the draft SEIS along with a request for comments. The anticipated publication date for the draft SEIS is December 2006.

M. Moriarty -3-

If you have any questions concerning the NRC staff review of this LRA, please contact Mr. Richard L. Emch Jr., Senior Environmental Project Manager at 301-415-1590 or RLE@nrc.gov.

Sincerely,

/RA Michael Masnik For/
Rani Franovich, Branch Chief
Environmental Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures:
1. Layout of General Area near VYNPS Site
2. Overview of the Site Location

cc w/encls.: See next page

May 8, 2006

Mr. Don L. Klima, Director
Advisory Council on Historic Preservation
Office of Federal Agency Programs
1100 Pennsylvania Ave, NW, Suite 803
Washington, DC 20004

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION REVIEW

Dear Mr. Klima:

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing an application to renew the operating license for the Vermont Yankee Nuclear Power Station (VYNPS). VYNPS is located in the town of Vernon, Vermont, in Windham County on the west shore of the Connecticut River. VYNPS is operated by Entergy Nuclear Operations, Inc. (Entergy). The application for renewal was submitted by Entergy in a letter dated on January 25, 2006, as supplemented by letter dated March 15, 2006, pursuant to Title 10 of the *Code of Federal Regulations* Part 54 (10 CFR Part 54).

The NRC has established that, as part of the staff's review of any nuclear power plant license renewal action, a site-specific Supplemental Environmental Impact Statement (SEIS) to its "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS), NUREG-1437, will be prepared under the provisions of 10 CFR Part 51, the NRC regulation that implements the National Environmental Policy Act of 1969 (NEPA). In accordance with 36 CFR 800.8, the SEIS will include analyses of potential impacts to historic and cultural resources.

On June 7, 2006, the NRC will conduct two public NEPA scoping meetings at the Latchis Theatre, 50 Main Street, Brattleboro, Vermont 05301. In addition to the environmental scoping meeting described above, the NRC will hold an informal open house at the Quality Inn & Suites, 1380 Putney Road, Brattleboro, Vermont 05301, on Tuesday, June 6, 2006, from 2:00 p.m. to 8:00 p.m., as necessary. You and your staff are invited to attend. Your office will receive a copy of the draft SEIS along with a request for comments. The staff expects to publish the draft SEIS in December 2006.

D. Klima 2

If you have any questions or require additional information, please contact the Senior Environmental Project Manager, Mr. Richard L. Emch, Jr., by telephone at 301-415-1590 or by e-mail RLE@nrc.gov.

Sincerely,

/RA/

Rani L. Franovich, Branch Chief
Environmental Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-271

cc: See next page

May 8, 2006

Ms. Jane Lendway
State Historic Preservation Officer
Vermont Division for Historic Preservation
National Life Building, Drawer 20
Montpelier, VT 05620-0501

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION REVIEW (SHPO NO. DHP NO. WD03-001)

Dear Ms. Lendway:

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing an application to renew the operating license for the Vermont Yankee Nuclear Power Station (VYNPS). VYNPS is located in the town of Vernon, Vermont, in Windham County on the west shore of the Connecticut River. VYNPS is operated by Entergy Nuclear Operations, Inc. (Entergy). The application for renewal was submitted by Entergy in a letter dated on January 25, 2006, as supplemented by letter dated March 15, 2006, pursuant to Title 10 of the *Code of Federal Regulations* Part 54 (10 CFR Part 54).

The NRC has established that, as part of the staff's review of any nuclear power plant license renewal action, a site-specific Supplemental Environmental Impact Statement (SEIS) to its "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS), NUREG-1437, will be prepared under the provisions of 10 CFR Part 51, the NRC regulation that implements the National Environmental Policy Act of 1969 (NEPA). In accordance with 36 CFR 800.8, the SEIS will include analyses of potential impacts to historic and cultural resources.

In the context of the National Historic Preservation Act of 1966, as amended, the NRC staff has determined that the area of potential effect (APE) for a license renewal action is the area at the power plant site and its immediate environs that may be impacted by post-license renewal land-disturbing operations or projected refurbishment activities associated with the proposed action. The APE may extend beyond the immediate environs in those instances where post-license renewal land-disturbing operations or projected refurbishment activities specifically related to license renewal may potentially have an effect on known or proposed historic sites. This determination is made irrespective of ownership or control of the lands of interest.

On June 7, 2006, the NRC will conduct two public NEPA scoping meetings at the Latchis Theatre, 50 Main Street, Brattleboro, Vermont 05301. In addition to the environmental scoping meeting described above, the NRC will hold an informal open house at the Quality Inn & Suites, 1380 Putney Road, Brattleboro, Vermont 05301, on Tuesday, June 6, 2006, from 2:00 p.m.- 8:00 p.m., as necessary. You and your staff are invited to attend. Your office will receive a copy of the draft

Ms. Lendway -2-

SEIS along with a request for comments. The staff expects to publish the draft SEIS in December 2006.
If you have any questions or require additional information, please contact Mr. Richard L. Emch, Jr., Senior Environmental Project Manager, by telephone at 301-415-1590 or by e-mail at RLE@nrc.gov.

Sincerely,
/RA/

Rani L. Franovich, Branch Chief
Environmental Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-271

cc: See next page

May 10, 2006

The Honorable Nelson Bolding, Chief
Boldwing Clan
357 Tirrell Hill Road
Goffstown, NH 03045

SUBJECT: REQUEST FOR COMMENTS CONCERNING THE VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION REVIEW

Dear Chief Bolding:

The U.S. Nuclear Regulatory Commission (NRC) is seeking input for its environmental review of an application from Entergy Nuclear Operations, Inc. (Entergy) for the renewal of the operating license for the Vermont Yankee Nuclear Power Station (VYNPS), located in the town of Vernon, Vermont, in Windham County on the west shore of the Connecticut River. VYNPS is in close proximity to lands that may be of interest to the Boldwing Clan. As described below, the NRC's process includes an opportunity for public and inter-governmental participation in the environmental review. We want to ensure that you are aware of our efforts and, pursuant to Title 10 of the *Code of Federal Regulations* Part 51.28(b) (10 CFR 51.28(b)), the NRC invites the Boldwing Clan to provide input to the scoping process relating to the NRC's environmental review of the application. In addition, as outlined in 36 CFR 800.8, the NRC plans to coordinate compliance with Section 106 of the National Historic Preservation Act of 1966, through the requirements of the National Environmental Policy Act of 1969.

Under NRC regulations, the original operating license for a nuclear power plant is issued for up to 40 years. The license may be renewed for up to an additional 20 years, if NRC requirements are met. The current operating license for VYNPS will expire in March 21, 2012. Entergy submitted its application for renewal of the VYNPS operating license in a letter dated January 25, 2006, as supplemented by letter dated March 15, 2006.

The NRC is gathering information for a VYNPS site-specific supplement to its "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS), NUREG-1437. The supplement will contain the results of the review of the environmental impacts on the area surrounding the VYNPS site that are related to terrestrial ecology, aquatic ecology, hydrology, cultural resources, and socioeconomic issues (among others) and will contain a recommendation regarding the environmental acceptability of the license renewal action. Provided for your information is the layout of the general area near the VYNPS site (Enclosure 1) and an overview of the site location (Enclosure 2).

Chief Bolding -2-

The NRC will hold two public scoping meetings for the VYNPS license renewal supplement to the GEIS on June 7, 2006, at the Latchis Theatre, 50 Main Street, Brattleboro, Vermont 05301. There will be two sessions to accommodate interested parties. The first session will convene at 1:30 p.m. and will continue until 4:30 p.m., as necessary. The second session will convene at 7:00 p.m., with a repeat of the overview portions of the meeting, and will continue until 10:00 p.m., as necessary. Additionally, the NRC staff will host informal discussions one hour before the start of each session. To be considered, comments must be provided either at the transcribed public meetings or in writing. No formal comments on the proposed scope of the supplement to the GEIS will be accepted during informal discussions.

In addition to the environmental scoping meeting described above, the NRC will hold an informal open house at the Quality Inn & Suites, 1380 Putney Road, Brattleboro, Vermont 05301, on Tuesday, June 6, 2006, from 2:00 p.m. to 8:00 p.m., as necessary. At the open house, NRC staff will be available to provide information about the environmental review process for license renewal of nuclear plants. During the open house, members of the public will have the opportunity to provide formal comments on the proposed scope of the supplement to the GEIS either verbally or in writing to a transcriptionist. Comments provided to the transcriptionist will be considered in the same manner as comments provided during the scoping meetings described above. No formal comments on the proposed scope of the supplement to the GEIS will be accepted at the open house during informal discussions with the staff.

The license renewal application (LRA) is publicly available at the NRC Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike, Rockville, Maryland, 20852, or from the NRC's Agencywide Documents Access and Management System (ADAMS). The ADAMS Public Electronic Reading Room is accessible at http://adamswebsearch.nrc.gov/dologin.html. The Accession Number for the LRA is ML060300086. Persons who do not have access to ADAMS, or who encounter problems in accessing the documents located in ADAMS, should contact the NRC's PDR Reference staff by telephone at 1-800-397-4209, or 301-415-4737, or by e-mail at pdr@nrc.gov.

The VYNPS license renewal application is also available on the Internet at www.nrc.gov/reactors/operating/licensing/renewal/applications/vermont-yankee.html. In addition, the LRA is available for public inspection near the VYNPS site at the following four public libraries: Vernon Free Library, 567 Governor Hunt Road, Vernon, VT 05354; Brooks Memorial Library, 224 Main Street, Brattleboro, VT 05301; Hinsdale Public Library, 122 Brattleboro Road, Hinsdale, NH, 03451; and Dickinson Memorial Library, 115 Main Street, Northfield, MA 01360.

The GEIS, which assesses the scope and impact of environmental effects that would be associated with license renewal at any nuclear power plant site, also can be found on the NRC's website or at the NRC's PDR.

Please submit any comments that the Boldwing Clan may have to offer on the scope of the environmental review by June 23, 2006. Written comments should be submitted by mail to the Chief, Rules and Directives Branch, Division of Administrative Services, Mail Stop T-6D59, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Electronic comments may be submitted to the NRC by e-mail at VermontYankeeEIS@nrc.gov. At the conclusion of the scoping process, the NRC staff will prepare a summary of the significant issues identified and the conclusions reached, and mail a copy to you.

The staff expects to publish the draft supplement to the GEIS in December 2006. The NRC will hold another set of public meetings in the site vicinity to solicit comments on the draft. A copy of the draft supplemental environmental impact statement (SEIS) will be sent to you for your review and comment. After consideration of public comments received on the draft, the NRC will prepare a final SEIS. The issuance of a final SEIS for VYNPS is planned for August 2007. If you need additional information regarding the environmental review process, please contact Mr. Richard L. Emch, Jr., Senior Environmental Project Manager, at 301-415-1590 or by e-mail at RLE@nrc.gov.

Sincerely,
/RA/

Rani L. Franovich, Branch Chief
Environmental Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures:
1. Layout of General Area near VYNPS Site
2. Overview of the Site Location

cc w/encls: See next page

July 21, 2006

Mr. Marvin Moriarty, Regional Director
Northeast Regional Office
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035-9589

SUBJECT: AMENDED REQUEST FOR LIST OF PROTECTED SPECIES WITHIN THE AREA UNDER EVALUATION FOR THE VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION REVIEW

Dear Mr. Moriarty:

In a letter dated May 5, 2006, the U.S. Nuclear Regulatory Commission (NRC) staff requested information on Federally listed, proposed, and candidate species and critical habitat that might be in the vicinity of the Vermont Yankee Nuclear Power Station (VYNPS) site. In that letter the staff indicated that the only area considered to be in scope for the license renewal environmental review was the 125 acre plant site. The letter further stated that no transmission lines were considered to be in scope for the review.

After obtaining additional information related to the construction of the transmission lines, the staff has reconsidered its initial position and come to the conclusion that two transmission lines exiting the VYNPS will be considered within the scope of the environmental review.

The reconsidered transmission lines are the 115 Kv transmission lines from VYNPS to the Coolidge Substation in Vermont (51 miles) and from VYNPS to the Chestnut Hill Substation in New Hampshire (2 miles).

To support the Supplemental Environmental Impact Statement (SEIS) preparation process and to ensure compliance with Section 7 of the Endangered Species Act of 1973, the NRC requests information on Federally listed, proposed, and candidate species and critical habitat that might be in the vicinity of the VYNPS site and the previously mentioned transmission lines. In addition, please provide any information you consider appropriate under the provisions of the Fish and Wildlife Coordination Act.

M. Moriarty - 2 -

VYNPS is situated on approximately 125 acres of land on the west shore of the Connecticut River 0.75 miles upstream of the Vernon Hydroelectric Station. This section of the river is known as Vernon Pool. Enclosure 1 shows the transmission line from VYNPS to the Coolidge Substation in Vermont. Enclosure 2 shows the transmission line from VYNPS to the Chestnut Hill Substation in New Hampshire.

Sincerely,

/RA/

Rani Franovich, Branch Chief
Environmental Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures:
As stated

cc w/encls: See next page

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

SEP 15 2006

Rani Franovich, Branch Chief
Environmental Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

RE: Vermont Yankee Nuclear Power Station Renewal Application Review

Dear Mr. Franovich:

The National Marine Fisheries Service (NMFS) has reviewed the letter dated May 5, 2006 pertaining to the Vermont Yankee Nuclear Power Station (VYNPS) license renewal application. VYNPS is located on the Connecticut River in Vernon, Vt. The Nuclear Regulatory Commission (NRC) is preparing a Supplemental Environmental Impact Statement (SEIS) as part of the license renewal application. As part of the development of the SEIS, the NRC is seeking comments from NMFS pertaining to the Endangered Species Act (ESA), Fish and Wildlife Coordination Act, and Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Therefore, NMFS has the following comments.

Endangered Species

While a population of the federally endangered shortnose sturgeon (*Acipenser brevirostrum*) occurs in the Connecticut River, this species does not occur upstream of the dam at Turners Falls. As such, no federally listed or proposed threatened or endangered species and/or designated critical habitat for listed species under the jurisdiction of NMFS are known to exist in the project area. Therefore, no further consultation pursuant to section 7 of the ESA is required. If project plans change or new information becomes available that changes the basis for this determination, then consultation should be reinitiated.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) requires federal agencies to consult with federal and state natural resource agencies regarding activities or licensing that impact fish and wildlife resources. The Connecticut River supports a diverse array of aquatic species that help maintain a healthy ecosystem. American shad and sea lamprey, for instance, pass above the Vernon dam. Impacts on anadromous fish resources from facility operations should be fully evaluated in the SEIS.

Essential Fish Habitat

The EFH provisions of the MSA require federal agencies to consult with NMFS on projects such

as this which may adversely affect EFH. The consultation process is guided by the requirements of our EFH regulation at 50 CFR 600.905, which mandates the preparation of EFH assessments and generally outlines each agency's obligations in this consultation procedure. The Connecticut River and tributaries are designated EFH for Atlantic salmon. Impacts on Atlantic salmon and their habitat occurring from facility operations should be fully evaluated in the SEIS.

Should you have any questions about this matter, please contact Sean McDermott at 978-281-9113.

Sincerely,

Louis A. Chiarella

Louis A. Chiarella
New England Field Office Supervisor
for Habitat Conservation

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

August 10, 2006

Rani Franovich
Division of License Renewal
Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Mr. Franovich:

This responds to your recent correspondence requesting information on the presence of federally-listed and/or proposed endangered or threatened species in relation to the Vermont Yankee Nuclear Power Station.

Bald eagles (*Haliaeetus leucocephalus*) are known to nest less than 1 mile downstream of the plant. No other federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area. Preparation of a Biological Assessment or further consultation with us under Section 7 of the Endangered Species Act is not required.

Based upon our knowledge, no impacts to the eagles are known to occur at this site that could be attributed to the power station or its transmission lines. This concludes our review of listed species and critical habitat in the project location and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

We will be providing comments with regard to the Fish and Wildlife Coordination Act under separate cover.

Thank you for your coordination. Please contact us at 603-223-2541 if we can be of further assistance. **In the future, in order to expedite your reply, please direct any inquiries of this nature to this office at the above address.**

Sincerely yours,

Michael J. Amaral

Michael J. Amaral
Endangered Species Specialist
New England Field Office

December 12, 2006

Ms. Patricia Kurkul
Regional Administrator
NOAA Fisheries Service
Northeast Regional Office
One Blackburn Drive
Gloucester, MA 01930-2237

SUBJECT: REQUEST INITIATION OF AN ESSENTIAL FISH HABITAT CONSULTATION REGARDING LICENSE RENEWAL OF VERMONT YANKEE NUCLEAR POWER STATION (TAC NO. MC9670)

Dear Ms. Kurkul:

The U.S. Nuclear Regulatory Commission (NRC) staff has completed the enclosed draft Supplement 30 to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS), to evaluate the proposed renewal of the Vermont Yankee Nuclear Power Station (VYNPS) operating license for a period of an additional 20 years. The Supplemental Environmental Impact Statement (SEIS) evaluates the proposed action of license renewal for VYNPS, and the NRC is requesting initiation of an essential fish habitat (EFH) consultation regarding this proposed action of license renewal.

We have enclosed a copy of the VYNPS draft SEIS for your review. The VYNPS draft SEIS contains the EFH assessment in Appendix E. We are requesting your concurrence with our determination and look forward to receiving any conservation recommendations you may submit. In reaching our conclusion, the NRC staff relied on information provided by the applicant, on research performed by NRC staff, and on information from National Marine Fishery Service. If you have any questions regarding the enclosed EFH assessment or the staff's request, please contact Mr. Richard L. Emch, Jr., Senior Project Manager, at 301-415-1590 or via e-mail at rle@nrc.gov.

Sincerely,

/RA/

Pao-Tsin Kuo, Acting Director
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosure:
as stated

cc w/encl: See next page

Vermont Yankee Nuclear Power Station

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December 13, 2006

U.S. Environmental Protection Agency
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NEPA Compliance Division
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1200 Pennsylvania Avenue, NW
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SUBJECT: NOTICE OF AVAILABILITY OF THE DRAFT PLANT-SPECIFIC SUPPLEMENT 30 TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR LICENSE RENEWAL OF NUCLEAR PLANTS (GEIS) REGARDING VERMONT YANKEE NUCLEAR POWER STATION

Dear Sir or Madam:

The following documents are enclosed for official filing with the U.S. Environmental Protection Agency:

1. Five copies of the draft Supplement 30 to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," regarding the license renewal of Vermont Yankee Nuclear Power Station.

2. Five copies of the U.S. Nuclear Regulatory Commission's distribution list for the draft Supplement 30 to NUREG-1437.

Simultaneously with this filing, a copy of the draft Supplement 30 is being mailed to interested Federal and State agencies, industry organizations, interest groups, and members of the public. A copy of this document also has been placed in the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is located on the NRC's Website at http://adamswebsearch.nrc.gov/dologin.htm. The Accession Number for the draft Supplement 30 to the GEIS is ML063390344. Please note that the public comment period for the draft Supplement 30 to the GEIS ends on March 7, 2007.

-2-

If further information is required, please contact Mr. Richard L. Emch, Jr., Senior Project Manager, at 301-415-1590 or by e-mail at rle@nrc.gov.

Sincerely,

/RA/

Rani L. Franovich, Branch Chief
Environmental Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures:
As stated

cc w/encls: See next page

Vermont Yankee Nuclear Power Station

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December 13, 2006

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SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION REVIEW (DHP NO. WD03-01)

Dear Ms. Lendway:

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing an application to renew the operating license for Vermont Yankee Nuclear Power Station, which is located in the town of Vernon, Vermont, in Windham County on the west shore of the Connecticut River. Vermont Yankee (VY) is operated by Entergy Nuclear Operations, Inc. (Entergy). As part of its review of the proposed action, the NRC staff has prepared a site-specific Supplemental Environmental Impact Statement (SEIS) to its "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS), NUREG-1437. The SEIS includes analyses of relevant environmental issues, including potential impacts to historic, archaeological, and cultural properties for the extended period of operation. In accordance with our letter to you dated May 8, 2006, a copy of the draft supplement is enclosed. Pursuant to 36 CFR 800.8(c), we are requesting your comments on the draft supplement and on our preliminary conclusions regarding historic properties.

As stated in our May 8, 2006 letter, the NRC staff has determined the area of potential effect (APE) for a license renewal action is the area at the power plant site and its immediate environs, which may be impacted by post-license renewal land disturbing operation or projected refurbishment activities associated with the proposed action. The staff views the APE for the Vermont Yankee license renewal as including the VY site and the immediate environs.

The NRC staff has conducted an environmental audit at the site and has reviewed historic and archaeological records. The NRC staff also contacted eight Native American Tribes identified as having potential interest in the proposed undertaking. To date, no comments have been received.

In the context of the National Environmental Policy Act of 1969, under which the draft environmental impact statement was prepared, the NRC staff's preliminary determination is that the impact of license renewal on historical and archaeological resources is small and additional mitigation is not warranted. The Governor Hunt House, which is eligible for listing under the National Historic Preservation Act, is located within the APE; however, Entergy has a protective procedure to ensure proper care of the house. Under the provisions of the National Historic Preservation Act of 1966, the NRC staff's preliminary determination is that there will be no historic properties affected by the proposed action.

J. Lendway -2-

Please note that the period for public comment expires on March 7, 2007. If your office requires additional time, or if there are any other questions regarding this correspondence, please have your representative contact Mr. Richard L. Emch, Jr., Senior Project Manager, at 301-415-1590 or via email at rle@nrc.gov.

Sincerely,

/RA/

Rani Franovich, Branch Chief
Environmental Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosure:
As stated

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

JAN - 4 2007

Pao-Tsin Kuo, Acting Director
Division of License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 2055-0001

Re: EFH Assessment for the Vermont Yankee Nuclear Power Station (TAC No. MC9670) License Renewal

Dear Mr. Kuo:

The National Marine Fisheries Service (NMFS) has received the Essential Fish Habitat (EFH) assessment contained within the Supplemental Environmental Impact Statement (SEIS) for the Vermont Yankee Nuclear Power Station (VYNPS) prepared by the U.S. Nuclear Regulatory Commission (NRC). According to the information provided to NMFS, the NRC proposes the license renewal of the VYNPS for a period of an additional 20 years. The NRC has determined that the license renewal of the VYNPS would result in minimal adverse effect on EFH for Atlantic salmon.

We appreciate the opportunity to provide comments regarding this project. However, at this time NMFS does not have sufficient staff resources to evaluate the effects of the proposed action on EFH and other NMFS trust resources. Therefore, NMFS will not be able to undertake an EFH consultation for the proposed license renewal of the VYNPS. Related correspondence should be addressed to the attention of Michael Johnson at the letterhead address above, or by phone at (978) 281-9130.

Sincerely,

Louis A. Chiarella
for Peter D. Colosi, Jr.
Assistant Regional Administrator
for Habitat Conservation

cc:
EPA: Mel Cote
USFWS: Marvin Moriarty
PRD: Mary Colligan

From: <Timmermann.Timothy@epamail.epa.gov>
To: <RLE@nrc.gov>, <VermontYankeeEIS@nrc.gov>
Date: Fri, Mar 2, 2007 12:46 PM
Subject: EPA comments on the Vermont Yankee DSEIS

12/21/06
71FR76706

(7)

Rich:

our comments on the Vermont Yankee DSEIS. Could you please send me confirmation that you received our comments?

Thanks,

Tim

RECEIVED
2007 MAR -2 PM 4:36
RULES AND DIRECTIVES BRANCH USNRC

Timothy L. Timmermann
Environmental Scientist
Office of Environmental Review

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50USI Review Complete
Template=ADM-013

E-RIDS=ADM-03
Add=R. Elwood (RLE)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

March 2, 2007

Chief, Rules Review and Directives Branch
U. S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

Re: Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 30 Regarding Vermont Yankee Nuclear Power Station, Draft Report for Comment, CEQ #20060521

Dear Sir/Madam:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act we have reviewed the Nuclear Regulatory Commission's (NRC's) Draft Supplemental Environmental Impact Statement (DSEIS) for relicensing of the Vermont Yankee Nuclear Power Station (Vermont Yankee) in Vernon, Vermont.

As described in the DSEIS, Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Entergy) has submitted an application to the NRC for renewal of the operating license for an additional 20 years. Vermont Yankee began operations in 1972 and the current operating license will expire in 2012. Vermont Yankee is a 650 MW nuclear power steam electric-generating facility located on the western shore of the Connecticut River. Cooling water is drawn from the Connecticut River and is then circulated through the plant in one of three operation modes: open-cycle, hybrid-cycle or closed-cycle.

The DSEIS was prepared to provide site specific information to supplement NRC's 1996 Generic EIS for License Renewal of Nuclear Plants. It contains the NRC staff's preliminary recommendation that adverse environmental effects of license renewal at Vermont Yankee "are not so great that preserving the option of license renewal for energy-planning decisionmakers would be unreasonable."

Our comments on the DSEIS, which are contained in the attachment to this letter, highlight areas where we believe additional information is needed to more fully describe the impacts of Vermont Yankee. Specifically, these comments address the impacts of operation, including entrainment and impingement of fish and other aquatic organisms, and impacts from heat shock. We recommend that the NRC address these issues in the Final Supplemental Environmental Impact Statement (FSEIS). We also recognize that the intake and discharge of water at Vermont Yankee are regulated under the Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permit, administered in Vermont by the Vermont Department of Environmental

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Conservation (VTDEC). Entergy has submitted an application to the VTDEC for renewal of the NPDES permit. The comments in this letter are based solely on a review of the information in the DSEIS from the standpoint of what is required by NEPA and are not intended to address the requirements of the Clean Water Act NPDES permit.

For the reasons discussed above (and in the attachment which follows), EPA has rated this DSEIS "EC-2 Environmental Concerns-Insufficient Information" in accordance with EPA's national rating system, a description of which is attached to this letter. We look forward to reviewing responses to the issues highlighted in this letter and technical attachment in the Final Supplemental Environmental Impact Statement (FSEIS). My staff is available to provide additional input, as necessary, to help the NRC respond to the issues discussed in this letter. Please feel free to contact Timothy Timmermann of the Office of Environmental Review at 617/918-1025 if you wish to discuss these comments further.

Sincerely,

Robert W. Varney
Regional Administrator

Attachment

2

Summary of Rating Definitions and Follow-up Action

Environmental Impact of the Action

LO--Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate
EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

3

Detailed Comments
Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 30 Regarding Vermont Yankee Nuclear Power Station
Draft Report for Comment

Comment related to Cooling and Auxiliary Water Systems

1. (Pg. 2-8). The DSEIS identifies three modes of operation for the circulation of cooling water through Vermont Yankee: open-cycle, hybrid-cycle, and closed-cycle. Open-cycle withdraws 518 million gallons of water per day (mgd) from the Connecticut River. Closed-cycle mode requires only 14.4 mgd. Hybrid-cycle mode utilizes a range of flows from 14.4 mgd to 518 mgd. According to the DSEIS, the applicant selects the mode of operation needed to comply with temperature limits established in the NPDES permit issued by the VTDEC. Therefore, while the technology is in place at this facility to reduce the withdrawal of water from the Connecticut River by over 97 percent compared to the flow required for open-cycle mode (and consequently minimize entrainment and impingement mortality of aquatic organisms), it is only used when temperature limits dictate. Thus, we recommend that the FSEIS fully discuss and evaluate the comparative environmental impacts of the alternative modes for the circulation of cooling water. While the FSEIS need not suggest the answers to the ultimate permitting questions to be answered by the VTDEC under the Clean Water Act, it should characterize the relative impacts of the alternatives, such as the differing amounts of heat to be discharged, the differing extent and intensities of the thermal plumes, the differing numbers of organisms to be impinged and/or entrained by the intake structure under the different alternatives.

Comments related to the assessment of environmental impact from the entrainment of fish and other aquatic organisms

2. (Pgs. 2-8, 2-9). According to the DSEIS, the authorized intake and discharge flow limit for both the open- and hybrid-cycle cooling modes is 543 mgd. The amount of water withdrawn when in hybrid-mode varies depending in part on the water temperature of the Connecticut River. The NRC concludes on page 4-17 that potential impacts from entrainment of fish and shellfish by Vermont Yankee would be "SMALL," based in part by the utilization of the closed- or hybrid-cycle mode during much of the spawning season. Since the hybrid-mode can utilize up to the same flow as open-cycle mode (360,000 gallons per minute), its use does not necessarily assure a reduction in fish entrainment mortality. The FSEIS should include historical flow data for the hybrid-cycle mode during peak periods of icthyoplankton presence in order provide a better assessment of entrainment potential as compared to closed-cycle (10,000 gpm) and open-cycle modes. It should also discuss the impacts that would result if the high end of the intake flows that are permitted were, in fact, withdrawn from the river. Of course, to the extent that those higher flows are not permitted, then impacts from them do not need to be evaluated.

3. (Pg. 4-15). The DSEIS states, "When ichythoplankton are at their peak in the Connecticut River (e.g., late spring through early summer), VYPNS is generally operating in an open-cycle or hybrid mode." However, NRC concludes on page 4-17 that potential impacts from entrainment of fish and shellfish by Vermont Yankee would be "SMALL," based in part on the utilization of

4

the closed- or hybrid-cycle mode during much of the spawning season. These statements appear to contradict each other. If the first statement erroneously states "open-cycle" instead of the intended "closed-cycle", then the FSEIS should reflect that. If, however, the first statement is accurate, then the NRC should re-evaluate its basis for a conclusion of SMALL impact.

4. (Pg. 4-17). The NRC's conclusion related to entrainment potential over the 20-year renewal period suggests that plant operations will continue as they have historically. According to the DSEIS (page 2-6) Vermont Yankee requested and received authorization from the NRC (authorization was granted on March 2, 2006) for a power uprate to increase the gross electrical output of the facility from 540MW to 650MW. It seems that such an increase in electrical output would result in a proportionate increase in waste heat, resulting in additional cooling water withdrawal. If so, this would lead to a corresponding increase in entrainment and impingement, and in the scope of the thermal discharge, possibly during periods when early lifestages of fish and other aquatic organisms are present in the water column. In addition, Vermont Yankee requested and received a seasonal temperature increase from VTDEC that would allow the plant to operate in the closed-cycle mode less frequently during periods when larval and juvenile fish are most vulnerable to entrainment and impingement. The FSEIS should identify and assess impacts from any new or planned modifications in plant operations that may increase impacts to aquatic organisms.

5. (Pg. 4-16). Table 4-3 presents percentages and numbers of fish eggs and larvae entrained at Vermont Yankee. According to the DSEIS (pg. 4-15), sampling for larvae is conducted weekly from early May through mid-July. While Table 4-3 includes quantities of eggs and larvae collected during the sampling period, it does not provide a clear sense of the number of eggs and larvae that are actually entrained. The DSEIS does not describe the sampling procedures so it is unclear what these numbers represent. To develop representative estimates of entrainment, time and flow rates would have to be factored in with larval concentrations on a weekly basis. We recommend that the FSEIS provide total entrainment estimates for the species listed in Table 4-3.

Comments related to the assessment of environmental impact from the impingement of fish and other aquatic organisms.

6. (Pg.4-17). The DSEIS provides no specific information on the cooling water intake structure (CWIS) by which to assess its potential to impinge fish, or assess the likelihood that impinged fish are returned to the river alive and unharmed. The FSEIS should include a detailed description of the CWIS, including the intake velocities under the various operational modes, the water pressure(s) of the spray wash system used to remove fish and debris from the traveling screens, the mesh size and operation frequency of traveling screens, and the design of the fish return system.

7. (Pg. 4-19). Table 4-4 provides the annual percentages and numbers of fish impinged at Vermont Yankee. The same concerns we provided above about the entrainment data provided in Table 4-3 also apply to the impingement data. While impingement is more difficult to estimate than entrainment given the sporadic nature of impingement events, impingement at a particular location is still largely a function of flow, intake flow velocity, and the unique characteristics of the CWIS. We recommend that the FSEIS provide more information on how many of each

5

species may be impinged in a given year. In addition, an assessment of the fish return system should be included that describes the system's ability to return impinged fish to the river uninjured.

Comments related to the assessment of environmental impact from Heat Shock

8. (Pg 4-20). This section of the DSEIS provides a discussion of some potential environmental impacts associated with the discharge of heated effluent. As we have commented to the NRC in other EIS reviews, the use of the term "heat shock" implies a fairly limited scope of review for a pollutant (i.e., heat) that can affect aquatic organisms and their habitats in many ways other than "shock." We recommend that the discussion in FSEIS on this subject be expanded to address heat's less conspicuous ability to: 1) prevent the use of affected areas by temperature-sensitive species; 2) attract and expose organisms to areas of elevated temperature during spawning periods; and 3) expose eggs and larvae to water temperatures above levels that are optimal for the affected species and life stage or would be typical in the absence of the thermal discharge.

9. (Pg. 4-50). While the DSEIS provides some discussion of the thermal plume's potential to restrict migration of Atlantic salmon and American shad, the fact that fish are passing upstream at the Vernon Dam does not, in itself, demonstrate that migration has not been impeded by elevated temperatures caused by the plant. It's unclear how a delay in upstream migration may ultimately affect the spawning success of American shad or Atlantic salmon, but these species have not been able to re-establish themselves in the Connecticut River basin. There are multiple stressors contributing to their low numbers, and any additional stressors can only further delay the rebuilding of their stocks. We recommend that the FSEIS provide more discussion on the status of these important fish populations, and provide a range of alternatives for Vermont Yankee to further reduce impacts to these species.

10. (Pg. 4-21). The DSEIS focuses on potential thermal impacts to the Vernon Pool, in particular the Lower Vernon Pool, but there is very little information about thermal impacts to habitat below the Vernon Dam. The FSEIS should include temperature data that graphically depicts the spatial extent of the thermal plume below the Vernon Dam, and its behavior within the water column, under various seasonal and flow conditions. This information would provide a sense of when and how much habitat may be unsuitable to certain species less tolerant of heat.

From: <Andrew_Raddant@ios.doi.gov>
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Date: 03/06/2007 12:34:55 PM
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Please find attached our comments on the Vermont Yankee Nuclear Power Station, EIS/Supplement 30.

Please call with questions.

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March 6, 2007

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Mr. Michael Lesar, Chief
Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

REF: NUREG-1437 Supplement 30, draft
Vermont Yankee Nuclear Power Station
COMMENTS

Dear Mr. Lesar:

This is in response to the Nuclear Regulatory Commission's (NRC) draft Generic Environmental Impact Statement for License Renewal of Nuclear Plants-Supplement 30 (dSEIS) for the Vermont Yankee Nuclear Power Station (Vermont Yankee), dated December, 2006. The Department of the Interior (Department) has reviewed the dSEIS and offers the following comments.

BACKGROUND

Entergy Nuclear Vermont Yankee, LLC (Entergy) owns and operates Vermont Yankee, located on the Connecticut River in Vernon, Vermont. The plant is licensed to operate through March, 2012. On January 25, 2006, Entergy filed an application with the NRC to renew the operating license for an additional 20 years.

Under the NRC's environmental protection regulations in Title 10, Part 51, renewal of a nuclear power plant operating license requires the preparation of an EIS. The NRC considered the environmental impacts of renewing an operating license in its Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS), NUREG-1437, Volumes 1 and 2. The GEIS identifies 92 environmental issues and reaches generic conclusions related to environmental impacts for 69 of these issues that apply to all plants or those with specific design or site characteristics. The dSEIS evaluates a subset of the remaining 23 issues that apply to Vermont Yankee.

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Add = R. Emch (RLE)

In the dSEIS, NRC staff concludes that for all issues evaluated, the significance of the potential environmental impacts of renewal of the operating license is SMALL,[1] and that no additional mitigation is warranted.

PROJECT DESCRIPTION

VY is located on the banks of the Connecticut River in Vernon, Vermont. The plant was originally licensed with an electrical capacity of 540 MW. In March 2006 the NRC authorized a 20 percent uprate to bring the plant's output to 650 MW. Approximately 0.75 mile downstream of VY is the Vernon Hydroelectric Project, which includes the Vernon Dam. All of VY's cooling water intake and discharge points are located within the lower portion of the Vernon Project's impoundment (Lower Vernon Pool, or LVP), which extends upstream 25 miles to the base of the Bellows Falls Hydroelectric Project Dam.

Throughout the year, VY is operated in open, closed, or hybrid cycle. Under closed cycle, cooling water is withdrawn from the river, pumped through an array of mechanical draft cooling towers, then returned to the intake area for reuse as cooling water until a portion is discharged to the river as cooling tower blowdown. Under open cycle, the plant is operated in a "once through" cooling mode, with all cooling water passing through the condenser cooling system and then discharged to the LVP. Under hybrid cycle, VY may modify the amount of cooling water that passes through the cooling towers and the amount that is recirculated, such that the discharge to the river may vary in both temperature and volume.[2]

VY's current National Pollution Discharge Elimination System (NPDES) permit sets limits on the amount of heated effluent allowed to be released to the Connecticut River. During the winter period (October 15 through May 15), the plant-induced temperature at downstream River Monitoring Station 3 shall not exceed 65°F, the rate of change of temperature at Station 3 shall not exceed 5°F per hour, and the increase in temperature above ambient at Station 3 shall not exceed 13.4°F. During the summer period (May 16 through October 14), the temperature increase at Station 3 is required to be less than 2°F above ambient for water that is above 63°F and less than 5°F above ambient for water that is below 55°F.

GENERAL COMMENTS

While the Department has many and varied interests in this proceeding, it is limiting the scope of its comments on the dSEIS to potential impacts that extending the operating license of VY may have on the aquatic resources of the Connecticut River.

The U.S. Fish and Wildlife Service (FWS) has been actively involved in VY through the Environmental Advisory Committee (EAC) established by the Vermont Agency of Natural Resources (VANR) via the NPDES permit it issues for the project. The NPDES permit requires Entergy to meet with the EAC at least annually to review and evaluate the aquatic environmental monitoring and studies program established in Part IV of the permit. The purpose of the EAC is to review environmental data and provide comments and recommendations to the VANR.

---

1 SMALL is defined as "Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource."

2 Normandeau Associates. April 2004. §316(a) Demonstration in Support of a Request for Increased Discharge Temperature Limits at Vermont Yankee Nuclear Power Station during May through October.

In addition to its role on the EAC, the FWS is a founding member of the Connecticut River Atlantic Salmon Commission (CRASC), and has actively participated in the licensing and post-licensing proceedings of the federally-regulated hydroelectric projects within the watershed.

Interjurisdictional Fisheries Management

The Connecticut River watershed is a resource of tremendous importance. The Department has been actively involved in interjurisdictional fisheries management on the Connecticut River since 1951, when the FWS began consultation on the first upstream passage facilities at the Holyoke Hydroelectric Project.

In 1967, a partnership between the FWS, the National Marine Fisheries Service (NMFS), and the states bordering on the Connecticut River was established to restore Atlantic salmon to the Connecticut River. The partnership was formally authorized by Congress in 1983 as the Connecticut River Atlantic Salmon Commission. The CRASC administers the inter-jurisdictional, cooperative effort to restore Atlantic salmon to the Connecticut River Basin (Public Law 98-138). CRASC's mission is to protect, conserve, restore and enhance the Atlantic salmon population in the Connecticut River Basin. Both the Departments of the Interior through the FWS and the Department of Commerce through the NMFS are members of the CRASC.

The CRASC released a revised *Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River* in 1998. The goals, objectives and strategies outlined in the plan, broad in scope and flexible, are designed to guide restoration activities by providing a framework that supports actions intended to increase the abundance of Atlantic salmon in the basin and define expectations and benchmarks for program evaluation. One specific goal (No. 2) defined in the plan is to "enhance and maintain the quantity, quality and accessibility of salmon habitat necessary to support re-established spawning populations." The third objective under this goal is relevant to the subject proceeding:

> Minimize passage obstructions, migratory delays and mortality of Atlantic salmon smolts and kelts downstream of areas stocked with fry, parr, smolts or adults.

In 1991, an updated plan for shad management in the Connecticut River was completed by the CRASC Shad Studies Subcommittee.[3] The goal of the management plan is to achieve the restoration and maintenance of a spawning population of American shad within its historical range in the Connecticut River Basin. Seven management objectives are listed in support of the restoration goal. In short summary, the CRASC calls for an adult return population of 1.5 to 2 million individuals, a maximum rate of exploitation of 40 percent of the population, annual passage of 40 to 60 percent of the spawning run at each successive upstream barrier on the mainstem river, and the maximization of outmigrant survival of juvenile and spent adult shad.

---

3 CRASC. February 4, 1992. A Management Plan for American Shad in the Connecticut River Basin.

SPECIFIC COMMENTS

2.1.3 Cooling and Auxiliary Water Systems

Page 2-8: In this section there is no mention of how the plant's operation has changed since it first went on-line. It is the Department's understanding that initially the plant operated in closed cycle year-round. Then, gradually the plant operated in open or hybrid cycle more often as variances to the state's thermal discharge limits were granted through the Environmental Protection Agency's (EPA) 316(a) process. We recommend that the FSEIS contain a chronology of how the plant has operated from the 1970s up through today.

Page 2-9: The dimensions of the discharge structure are provided, but not for the intake structure. The FSEIS should include intake dimensions so that approach velocities can be determined.

2.2.2 Water Use

Page 2-21: The dSEIS states that TransCanada (owner of the Vernon Project) regulates the river discharge to maintain a minimum sustained flow of 1,250 cfs. A more appropriate characterization is that TransCanada regulates river flow to maximize power production, while maintaining a minimum flow of 1,250 cfs (or inflow, if less) below the dam at all times.

Page 2-23: The dSEIS notes that "Vernon Pond" may fluctuate as much as 8 feet. However, according to the Order Amending License for the Vernon Project, dated June 22, 1992, "NEP responded that their ability to regulate a wider range of river flows could actually reduce pool level fluctuations. They further responded that their ability to fluctuate the pond would be small, on the order of one foot, and that any fluctuations would be gradual…"[4] The Department recommends that the FSEIS verify the licensed operating range and the actual operating range of the Vernon Project with TransCanada.

Page 2-23: The Cooling Water Use section discusses the recent power uprate at VY and its potential impact on consumptive water use. However, NRC staff bases its determination on the current NPDES permit limits, not the amended limits presently under appeal. Depending on how the appeal is decided, this evaluation may not be valid. Also, the determination in this section appears to be inconsistent with the evaluation on page 2-32, which considers an outcome resulting in an increased thermal limit.

The dSEIS does not adequately or clearly discuss the uprate, the 316(a) variance request, the license extension, or how these actions relate to each other, including operationally. The environmental implications may include effects of an increased thermal limit, and entrainment and impingement. This should be remedied in the FSEIS.

2.2.3 Water Quality

Page 2-27: The section discussing the NPDES permit should clarify that the EPA, or a delegated state, has the ability to include restrictions on cooling water intake structures. The current language suggests that conditions are limited to discharge standards and monitoring requirements for effluents from outfalls.

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[4] Federal Energy Regulatory Commission. June 22, 1992. Order Amending License, Project No. 1904-008.

Page 2-28: The dSEIS states that the New England Coalition appealed the NPDES permit amendment that was issued on March 30, 2006. It is the Department's understanding that Entergy also appealed the permit (over the denial of a thermal increase for the period May 16 through June 15). Therefore, there may be a third outcome; if Entergy wins its appeal, the thermal limits would increase for the entire summer period. In fact, this scenario is the one explicitly contemplated and evaluated by NRC staff in the SEIS (page 2-32). The FSEIS should explain why all three possibilities were not considered in the evaluation of the environmental impact of the plant.

Page 2-32: The dSEIS refers to the equation developed decades ago to calculate the plant-induced temperature increase. While NRC staff provides a concise overview of how the model was developed, the Department recommends that the FSEIS explain why it is still appropriate to use a very old model when many conditions on the river are different than they were in the 1970s. From the Department's perspective, it would be a very useful exercise to revisit the concept and parameters that go into the equation and to validate it under present-day conditions. VY's compliance with its thermal limits is determined based on *calculated* temperature at Station 3, not by *measured* temperature. To date, any discrepancy between the two numbers has been attributed to atmospheric loading. While this may be true, Entergy has not provided any data to support that contention.

Page 2-34, Table 2-6: The NPDES permit does not contain a condition regarding a maximum temperature exceedance rate for the summer period; therefore, the Department is unclear why the last column is included.

Page 2-38: The FSEIS should clarify that the thermistor data were not collected with the intent to "characterize the circulation and distribution of heated water," but were used to develop and calibrate a hydrothermal model, which was then used to estimate how raising the thermal limits would affect water temperatures within the LVP and at Station 3. The hydrothermal model showed that under existing conditions, the thermal plume from VY extends across the river over to New Hampshire and downstream to Vernon Dam.

Another issue the Department recommends the FSEIS investigate is the geographic extent of VY's influence on water temperature. Presently, the thermal effluent is considered "fully mixed" at Station 3, for the purposes of the NPDES permit. However, at that point the water temperature is still up to 2°F higher than ambient. In order to fully understand the impact VY's thermal effluent has on the aquatic community of the Connecticut River, resource agencies need to know how far downstream the raised river temperature extends. This is especially pertinent to Atlantic salmon smolts, that could be adversely impacted by extended periods at elevated temperatures.

2.2.5 Aquatic Resources

Page 2-47, lines 3-4: The dSEIS states that fish are routinely sampled as part of the NPDES monitoring requirements, and that samples are collected by electroshocking in May, June, September and October. The FSEIS should note that in addition to the resident fish collections, American shad are sampled downstream of Vernon Dam by electroshocking and upstream of Vernon Dam by beach seine hauls, from July through October.

Page 2-47, lines 6-35: This section summarizes the species assemblage at VY for the pre-operational period and for the period 1991-2004. Based on this information, NRC staff concludes that "The fish community near the VYNPS has remained relatively stable…," yet the two communities compared are quite disparate:

Period	
Pre-Operational[a]	1991-2004[b]
smallmouth bass	yellow perch
white sucker	bluegill
yellow perch	pumpkinseed
rock bass	spottail shiner
walleye	largemouth bass
white perch	white sucker

[a] assumed decreasing abundance
[b] identified in decreasing abundance

As part of the 316(a) process, the FWS recommended that VY analyze the entire long-term fisheries data set; however, VY declined to use data prior to 1991 for its statistical analyses. While some indication of change to the fish communities upstream and downstream of Vernon Dam can be ascertained by comparing the percent composition of selected species over time (Figures 1 and 2, below), the full extent of VY's thermal effluent impact cannot be determined until a thorough evaluation of the entire data set is conducted, including pre-operational data and data collected under different permit limits.

Page 2-50, lines 22-23: The citation used for optimal temperature range of salmon smolts appears to be based on somewhat dated references, with the most recent being Shepherd 1991. The FSEIS should consider more recent research that shows a relationship between temperature and smolt physiology (McCormick *et al.* 1999) and temperature and smolt behavior (Barbin Zydlewski *et al.* 2005). These studies relate directly to potential impacts of VY's thermal effluent on smolt physiology. Higher water temperature increases the degree days experienced by smolts, which narrows the smolt window (the opportunity for smolts to successfully migrate to the estuary while they still retain their salinity tolerance). In addition, as the dSEIS points out, dams can delay migrating smolts. Given the extent of VY's thermal plume and its proximity to Vernon Dam and the downstream bypass facility, it is highly likely that the two projects, in combination, act to adversely affect smolt behavior and physiology (although the extent to which this impacts smolt survival has not been documented, to date).

Page 2-50, lines 33-35: Although adult Atlantic salmon returns had declined to less than 100 prior to 2005, the returns for 2005 and 2006 were 186 and 211, respectively.[5]

Page 2-51, lines 7-14: Given that downstream bypass facilities at hydroelectric projects on the river have only improved over time, presumably reducing turbine mortality, it does not appear that citing turbine mortality as a factor for declining American shad returns is accurate. Likewise, while the increase in the Connecticut River striped bass stock is a valid concern, no real habitat modifications to the impoundments have occurred in the past two decades. The FSEIS should either delete the reference to predation pressure in the impoundments or provide documentation to support the contention.

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[5] http://www.fws.gov/r5crc/fish/daily.html.

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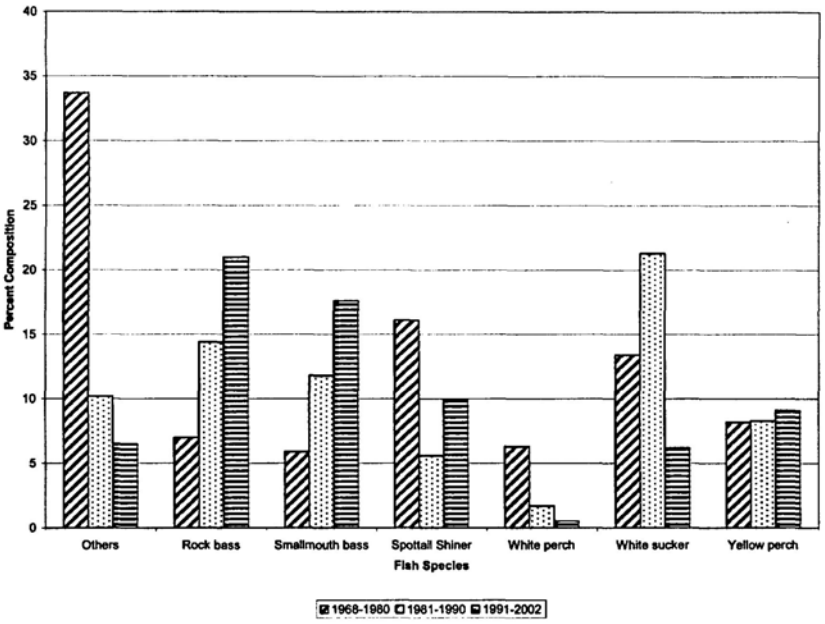

Figure 1. Percent composition of numerically important species collected downstream of Vernon Dam [from Table 5-14 of the 316(a) Demonstration, April, 2004].

Page 2-51, lines 20-25: In addition to the passage problems noted for the Cabot (Turners Falls) fish ladder, the FSEIS should identify that a second passage problem exists at the Gatehouse fishway (located at the upstream end of the hydropower canal). Efforts are underway to correct both issues. With respect to passage efficiency between hydro projects, from 2004-2006, 17 percent of the shad that passed Turners Falls Dam also passed Vernon Dam.[6]

Page 2-51, lines 25-29: The Department does not dispute the changes noted to the population structure of American shad on the Connecticut River. However, ascribing these changes solely to the implementation of fish passage facilities is not appropriate. The Department is aware of studies on other rivers without large dams or fish passage facilities that have shown similar changes in the structure of river herring stocks.[7]

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6 2006 data are still preliminary.

7 Justin Davis, presentation at the Connecticut River Atlantic Salmon Commission Research Forum, February 16, 2007.

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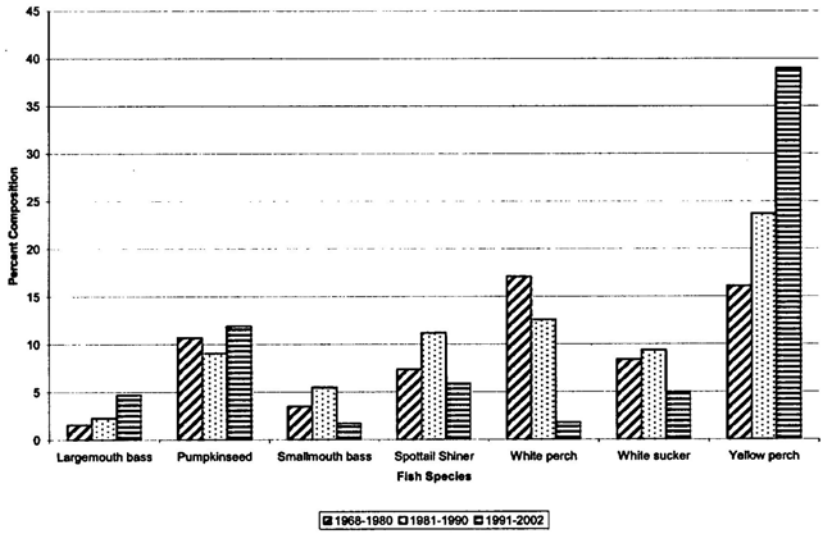

Figure 2. Percent composition of numerically important species collected upstream of Vernon Dam [from Table 5-14 of the 316(a) Demonstration, April, 2004].

Page 2-55, lines 9-11: This statement requires clarification. While American eel are common in many rivers and streams in Massachusetts and Connecticut, there are some notable exceptions; no eels have been collected recently upstream of the third dam (Shepaug) on the Housatonic River in Connecticut, and no eels have been collected recently in the Massachusetts portion of the Blackstone watershed.

2.2.5.2 Threatened and Endangered Aquatic Species

Page 2-57, lines 18-19: Although the shortnose sturgeon population downstream of Turners Falls Dam is 20 miles away from VY, the impact of the thermal effluent may still persist at that location.

4.1.1 Water Use Conflicts

Page 4-13, lines 17-19: The operation of downstream dams would have no effect on the water surface elevation of the Vernon impoundment.

4.1.2 Entrainment of Fish and Shellfish in Early Life Stages

Pages 4-14, 4-15: NRC staff provides a clear, concise summary of the 316(b) statutory requirements. However, since the dSEIS was issued, new developments have occurred (detailed below) that the FSEIS should address.

On January 26, 2007, the U.S. Second Circuit Court of Appeals ruled on a lawsuit Waterkeeper Alliance and other parties filed against the EPA over the Phase II 316(b) regulations issued in 2004. In its decision, the court remanded to EPA the provision establishing Best Technology Available and the site-specific cost-cost variance. The court remanded based on impermissible constructions of the statute, including those provisions that (1) set performance standards as ranges without requiring facilities to achieve the greatest reduction of adverse impacts they can; (2) allow compliance through restoration measures; and, (3) authorize a site-specific cost-benefit variance.[8]

VY has cooling towers but is only required to use them in order to meet the thermal limits specified in the NPDES permit. As part of the long-term biological monitoring that has been required at the plant, impingement and ichthyoplankton samples are collected annually during the summer period to document the extent of impingement and entrainment at the intake. Under the existing NPDES permit, there are no limits on impingement and entrainment rates of resident fish, but there are limits set for Atlantic salmon and American shad.

Given that VY has always had cooling towers, which is commonly accepted as the Best Technology Available (BTA), the Department recommends that the FSEIS give thorough consideration to an alternative that requires Entergy to operate VY in closed-cycle mode year-round. The Department's position is that this alternative would meet the statutory standard of "minimizing adverse environmental impact" pursuant to 316(b).

Page 4-16, Table 4-3: The Table presents percentages and numbers of fish eggs and larvae entrained at VY. According to the dSEIS (pg. 4-15), sampling for larvae is conducted weekly from early May through mid-July. While Table 4-3 includes quantities of eggs and larvae collected during the sampling period, it does not provide a clear sense of the number of eggs and larvae that are actually entrained. The dSEIS does not describe the sampling procedures, therefore it is unclear what these numbers represent. To develop representative estimates of entrainment, time and flow rates would have to be factored in with larval concentrations on a weekly basis. The FSEIS should provide total entrainment estimates for the species listed in Table 4-3.

Page 4-17, lines 11-13: Although Entergy believes no observable adverse impacts to any fish species or to the overall fish community of Vernon Pool due to entrainment by VY has been demonstrated, the fact remains that Figures 1 and 2 above show a decline in the percent composition of white sucker and white perch in the LVP, and both of these species do show up in entrainment collections. Whether this relationship is causal or coincident is unknown.

Page 4-15, 4-17: The dSEIS states, "When ichthyoplankton are at their peak in the Connecticut River (e.g., late spring through early summer), VYNPS is generally operating in an open-cycle or hybrid mode." However, NRC staff concludes on page 4-17 that potential impacts from entrainment of fish and shellfish by VY would be "SMALL," based in part by the utilization of the closed- or hybrid-cycle mode during much of the spawning season. These statements contradict each other. If the first statement erroneously states "open-cycle" instead of the intended "closed-cycle", then the FSEIS should reflect that. If, however, the first statement is accurate, the NRC should re-evaluate its basis for a conclusion of SMALL impact.

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[8] Riverkeeper, Inc., *et al.* v. U.S. EPA, United States Court of Appeal for the Second Circuit. January 26, 2007.

The NRC's conclusion related to entrainment potential over the 20-year renewal period suggests that plant operations will continue as they have historically. However, within the last year, two significant changes to plant operations have occurred that change entrainment dynamics. First, if the power uprate results in a proportionate increase in waste heat, additional cooling water withdrawal may be needed, which, in turn, could increase entrainment. In addition, VY requested and received from the VANR a seasonal temperature increase[9] that would allow the plant to operate less frequently in the closed-cycle mode during periods when larval and juvenile fish are most vulnerable to entrainment and impingement. The FSEIS should fully evaluate the potential entrainment impacts of these new or planned modifications in plant operations.

4.1.2 Impingement of Fish and Shellfish

Page 4-17: The dSEIS provides no specific information on the cooling water intake structure (CWIS) to use in assessing its potential to impinge fish, or in assessing the likelihood that impinged fish are returned to the river alive and unharmed. The FSEIS should include a detailed description of the CWIS, including the intake velocities under the various operational modes, the water pressure(s) of the spray wash system used to remove fish and debris from the traveling screens, the mesh size and operation frequency of traveling screens, and the design of the fish return system.

According to the dSEIS, the authorized discharge flow limit for both the open- and hybrid-cycle cooling modes is 543 mgd. The amount of water withdrawn when in hybrid-cycle mode varies depending in part on the water temperature of the Connecticut River. NRC staff concludes that potential impacts from entrainment of fish and shellfish by VY would be "SMALL," based in part on the utilization of the closed- or hybrid-cycle mode during much of the spawning season. However, since hybrid-cycle mode can utilize up to the same flow as open-cycle mode (360,000 gallons per minute), its use does not necessarily assure a reduction in fish entrainment mortality. The FSEIS should include historical flow data for the hybrid-cycle mode during peak periods of ichthyoplankton presence in order provide a better assessment of entrainment potential as compared to closed-cycle (10,000 gpm) and open-cycle modes.

Page 4-18, lines 25-42: NRC staff provides impingement data from the 1970s and 1980s in numbers of fish impinged per day. For later data, the number reported is apparently total number collected. This method of reporting is confusing and makes it difficult to compare data sets. The FSEIS should standardize units and note any differences in sampling methodology between time periods.

Page 4-19, Table 4-4: This Table provides the percentages and numbers of fish impinged at VY during the summer period. It is unclear why data are combined for years 1988 and 1990-1997. It would be more helpful to include the information for each individual year. Under the current NPDES permit, no impingement monitoring is required during the winter period, which makes it impossible to determine annual impingement rates. Unlike ichthyoplankton entrainment, which is fairly discreet in its periodicity, impingement could occur year-round. In fact, impingement during the winter period may be higher than during the summer, if the heated effluent acts to attract resident species such as yellow perch.

Page 4-20, lines 5-15: The NPDES permit calls for weekly and 24-hour sampling. On the first day, the traveling screens are backwashed and the debris is examined for salmon and shad only.

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9 The amended permit has been stayed while the appeal is resolved.

This provides the quantity of shad and salmon impinged during the previous six days.[10] Then, 24 hours later, the process is repeated, except the debris is examined for all impinged fish.[11] In the most recent draft biological monitoring report,[12] during the summer period over 2,000 fish were impinged, with a total weight of over 65 kg. This number represents approximately 21 days of sampling (or less than 6 percent of a year). In comparison, only 376 fish were sampled via electrofishing during that same period (335 upstream of Vernon Dam). American shad had the highest impingement rate (577), yet no shad were collected in the general electrofishing sample upstream of Vernon Dam, and only 120 were caught in the beach seining conducted specifically for American shad.[13] The report contains a scatter plot of juvenile American shad abundance for the period 1991 through 2005, showing a statistically significant negative trend (i.e., decreasing shad stock). Impingement of shad could be a contributing factor in the stock decline.

NRC staff asserts that VY operates in closed- or hybrid-cycle modes during much of the year. The Department recommends that the FSEIS provide supporting information showing, on an annual basis, the percentage of time that VY operates in each mode. The NRC's conclusion related to impingement potential over the 20-year renewal period suggests that plant operations will continue as they have historically. However, the two significant changes to plant operations referred to above (i.e., the uprate and thermal increase) could change impingement dynamics. The FSEIS should fully evaluate the potential fish impingement impacts of these new or planned modifications in plant operations.

4.1.4 Heat Shock

Page 4-20: This section of the dSEIS provides a discussion of some potential environmental impacts associated with the discharge of heated effluent. The use of the term "heat shock" implies a fairly limited scope of review for a pollutant (i.e., heat) that can affect aquatic organisms and their habitats in many ways. We recommend that the discussion in the FSEIS on this subject be expanded to address heat's less conspicuous ability to: 1) prevent the use of affected areas by temperature-sensitive species; 2) attract and expose organisms to areas of elevated temperature during spawning periods; and 3) expose eggs and larvae to water temperatures well above levels that are typical under ambient conditions.

4.7.2 Evaluation of Potential New and Significant Information Concerning Thermal Discharges to the Connecticut River

Page 4-50, lines 12-21: The dSEIS identifies an upper feeding limit for salmon of 72.5°F, an upper limit for survival of 82°F, and a smolt residency time of 12 hours. First, neither of the temperatures referenced relates to salmon smolts. The upper feeding limit mentioned is for parr, and the survival limit is for adults. Little, if any, information exists on temperature thresholds of smolts. However, as mentioned previously, recent research has shown a relationship between temperature and smolt physiology and temperature and smolt behavior. Second, the radiotelemetry studies done by Aquatec were conducted prior to the most recent thermal limits

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10 The inherent assumption is that all impinged fish stay on the traveling screens and are not passively or actively (e.g., predation) removed prior to sampling.

11 Ecological Studies of the Connecticut River Vernon, Vermont, Report 35, January-December 2005, DRAFT. May 2006. Normandeau Associates.

12 Ecological Studies of the Connecticut River Vernon, Vermont, Report 35, January-December 2005, DRAFT. May 2006. Normandeau Associates.

13 Vermont Yankee/Connecticut River System, Analytical Bulletin 83: Abundance of Juvenile American Shad in the Vernon Pool during 2005. May 2006. Normandeau Associates.

going into effect. The conclusions reached may or may not be valid under present-day conditions. Third, the 12-hour residency time is an average, and some smolts had residency times of up to 3½ days.[14]

The radiotelemetry studies conducted in the 1990s were intended to assess the efficiency of the downstream bypass facility at Vernon Dam, not to evaluate the thermal impact of VY on smolt behavior or physiology. Smolts are surface-oriented, and while they may indeed sound down to avoid the warmest water in the LVP, no data exist to support that presumption. Unfortunately, the configuration of the two projects (Vernon and VY) presents a worst-case scenario for smolts (and shad) because the fishways are located on the same side of the river as VY's discharge and the plume extends across the river. Whether migrants travel through the plume (the most direct route, but warmest water), or negotiate a path around the plume (cooler water, but longer residency time), ultimately they are exposed to elevated temperatures that could influence their survival.

Page 4-50, lines 26-30: NRC staff concludes that because impingement of shad and salmon has always been below annual limits stipulated in the NPDES permit, these species do not frequent the LVP; therefore, VY's thermal plume does not delay shad or salmon movements or function as an attraction to these species. First, as noted above, in 2005, the number of shad impinged greatly exceeded the number collected by seining and electroshocking. A conservative conclusion that could be drawn from this information is that shad production in the LVP is low to begin with, and many of those juveniles end up impinged on the traveling screens. Second, salmon and shad must frequent the LVP in order to migrate downstream. Third, no information provided in the dSEIS supports the contention that VY does not delay shad or salmon movements; those data simply do not exist for shad under the present thermal limits. Moreover, salmon smolt studies show a longer maximum residency time at Vernon than at Wilder or Bellows Falls Dams,[15] which could lead one to conclude that VY is a contributing factor to migration delay. In order to sort out whether, and to what extent, Vernon and VY each contribute to migration delay, a rigorous scientific study designed specifically to address the issue is needed.

While we know that shad are able to ascend the Vernon fish ladder, we do not know if they are delayed at the entrance due to any temperature differential, or in the LVP as they migrate upstream to spawn. We also do not know whether temperatures in the LVP affect spawning success. The trend analysis referred to above[16] showed declining juvenile shad abundance, which could be attributed to one or more factors, possibly including the thermal regime of the LVP. Directed studies like those done during Project SHARE have not been undertaken since the most recent thermal limits went into effect.

Page 4-51, lines 10-12: The dSEIS concludes that none of the observed changes in fish community composition or distribution in over 30 years of study in the LVP and upper Turners Falls Pool can be reasonably attributed to operations of VY. Based on the available information, the Department does not agree that the conclusion can be made that the changes to the fish

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14 Table 5-23 of the §316(a) Demonstration in Support of a Request for Increased Discharge Temperature Limits at Vermont Yankee Nuclear Power Station during May through October. 23 Normandeau Associates. April 2004.

15 See Footnote #14.

16 See Footnote #14.

community structure upstream and downstream of Vernon Dam since VY began operating,[17] or the recent declining trends in several fish species,[18] are not, at least in part, due to impacts caused by VY's impingement, entrainment, and/or thermal effluent. The FSEIS should provide documentation to support NRC staff's conclusion.

Page 4-51, lines 15-18: Regarding the discussion of solar radiation's contribution to the difference in river temperature between monitoring stations, please refer to our comments under the Water Quality section above.

Page 4-51, lines 23-28: The dSEIS focuses on potential thermal impacts to the Vernon Pool, in particular the LVP, but there is very little information about thermal impacts to habitat below the Vernon Dam. The FSEIS should include temperature data that graphically depict the spatial extent of the thermal plume below the Vernon Dam under various seasonal and flow conditions. This information would provide a sense of when and how much habitat may be unsuitable to certain species less tolerant of heat.

The dSEIS states that no observable adverse impacts to any fish species or to the overall fish community of Vernon Pool due to thermal discharges from VY have been demonstrated. Again, the most recent biological monitoring report, the first to include a long-term trend analysis, shows statistically-significant declining catch-per-unit-effort for three species, including American shad in the LVP, walleye in the Vernon tailrace, and white sucker both upstream and downstream of Vernon Dam. The Department is concerned by these results, and does not concur with the reasons put forth by Entergy that attribute the declines to factors other than VY.[19] At a minimum, these data highlight the need for a more detailed investigation of possible causes for the declines.

4.8.1 Cumulative Impacts on Aquatic Resources

Page 4-54, lines 16-19: The dSEIS states that VY impacts are localized and have a minimal contribution to the cumulative impact on aquatic resources in the Connecticut River. The Department respectfully disagrees, especially with regard to Atlantic salmon. Roughly 70 percent of all salmon-rearing habitat in the watershed is located upstream of VY, and that habitat produces nearly 60 percent of the system's smolts,[20] which must pass through VY. Research has shown that higher water temperature increases the degree days experienced by smolts, which narrows the smolt window (the opportunity for smolts to successfully migrate to the estuary while they still retain their salinity tolerance). VY's thermal effluent and the location of the discharge within the Vernon impoundment could contribute significantly to the cumulative impact on Atlantic salmon smolts migrating from upstream tributaries. If exposure to elevated temperatures at VY contributes to a reduction in at-sea survival of post-smolts, fewer adults may return to the river.

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17 Table 5-14 of the §316(a) Demonstration in Support of a Request for Increased Discharge Temperature Limits at Vermont Yankee Nuclear Power Station during May through October. Normandeau Associates. April 2004.

18 See Footnote #11.

19 Entergy's consultant argues that CPUE of shad and white sucker upstream of VY's thermal influence also declined; therefore the trend cannot be attributed to VY. However, this rationale assumes that fish do not move between the two areas, which is not a reasonable assumption, given these species' mobility.

20 Jay McMenemy, personal communication. Smolt production based on a five-year average (range 55.6-67.4).

The dSEIS notes that "if a resource is regionally declining or imperiled, even a SMALL individual impact could be important if it contributes to or accelerates the overall resource decline." NRC staff goes on to conclude that the cumulative impact of continued operation of VY would be SMALL and no additional mitigation is warranted. The Department does not agree that the cumulative impact would be SMALL. However, even if the impact was SMALL, the fact that the resource (e.g., American shad, blueback herring) is declining argues strongly for mitigation measures. In this instance, the obvious mitigation would be to require VY to operate in closed-cycle mode year-round, which would greatly reduce impacts associated with impingement, entrainment and thermal effluent.

8.0 Environmental Impacts of Alternatives

The Department recommends that the FSEIS evaluate at least two more alternatives: (1) continued operation of VY under a year-round closed-cycle mode of operation; and (2) continued operation of VY under the present NPDES permit requirements, but with removal of the Vernon Dam.

9.2 Relative Significance of the Environmental Impacts of License Renewal and Alternatives

Page 9-7, line 19: The dSEIS states that closed-cycle cooling systems were assumed for all power-generation alternatives. The FSEIS should explain why closed-cycle operation was assumed for other power generation alternatives, but not for VY.

Thank you for the opportunity to comment on the dSEIS. Please do not hesitate to contact me at (617) 223-8565, or Melissa Grader of the U.S. Fish and Wildlife Service at (413) 548-8002, extension 124, if we can be of further assistance.

Sincerely,

Andrew L. Raddant
Regional Environmental Officer

Congress of the United States
Washington, DC 20515

March 5, 2007

Mr. Dale Klein
Chairman
United States Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Klein:

We appreciate the Nuclear Regulatory Commission's response to our request to hold a public meeting with Members of the Vermont Legislature and other interested parties in Montpelier, VT regarding the Environmental Impact Statement (EIS) for the Vermont Yankee nuclear facility. We understand that the February 27, 2007 meeting was well attended.

Based on the feedback we have received following this meeting, we request that you grant a 30-day extension of the deadline for public comment on the EIS. The current deadline is March 7, 2007. Such an extension will provide state Legislators a sufficient amount of time to review and comment on the EIS. We understand that an informal extension of the public comment deadline was agreed to by NRC staff during the meeting. Therefore, we are hopeful that you will act favorably on this request and we hank you in advance for your cooperation.

Sincerely,

Bernard Sanders
United States Senator

Patrick Leahy
United States Senator

Peter Welch
United States Representative

3/5...To EDO to Prepare Response for Signature of the EDO...Date due: March 19...
Copy to: Mike Lesar, OGC, RF, OCA to Ack...07-0151
(NOTE: The current deadline for public comment is March 7, 2007)

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Background

[Federal Register: December 21, 2006 (Volume 71, Number 245)]
[Notices]
[Page 76706-76707]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr21de06-104]

NUCLEAR REGULATORY COMMISSION

[Docket No. 50-271]

Vermont Yankee Nuclear Power Station; Notice of Availability of the Draft Supplement 30 to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, and Public Meeting for the License Renewal of **Vermont Yankee** Nuclear Power Station

Notice is hereby given that the U.S. Nuclear Regulatory Commission (NRC, Commission) has published a draft plant-specific supplement to the Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS), NUREG-1437, regarding the renewal of operating licenses DPR-28 for an additional 20 years of operation for the **Vermont Yankee** Nuclear Power Station (**Vermont Yankee**). **Vermont Yankee** is located in the town of Vernon, **Vermont**, in Windham County on the west shore of the Connecticut River. Possible alternatives to the proposed action (license renewal) include no action and reasonable alternative energy sources.

[[Page 76707]]

The draft Supplement 30 to the GEIS is publicly available at the NRC Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike, Rockville, Maryland, 20852, or from the NRC's Agencywide Documents Access and Management System (ADAMS). The ADAMS Public Electronic Reading Room is accessible at http://www.nrc.gov/reading-rm/adams/ The Accession Number for the draft

Supplement 30 to the GEIS is ML063390344. Persons who do not have access to ADAMS, or who encounter problems in accessing the documents located in ADAMS, should contact the NRC's PDR reference staff by telephone at 1-800-397-4209, or 301-415-4737, or via e-mail at pdr@nrc.gov. In addition, the following libraries have agreed to make

the draft supplement to the GEIS available for public inspection: Vernon Free Library, 567 Governor Hunt Road, Vernon, **Vermont**; Brooks Memorial Library, 224 Main Street, Brattleboro, **Vermont**; Hinsdale Public Library, 122 Brattleboro Road, Hinsdale, New Hampshire; and Dickinson Memorial Library, 115 Main Street, Northfield, Massachusetts.

Any interested party may submit comments on the draft supplement to the GEIS for consideration by the NRC staff. To be considered, comments on the draft supplement to the GEIS and the proposed action must be received by March 7, 2007; the NRC staff is able to assure consideration only for comments received on or before this date. Comments received after the due date will be considered only if it is practical to do so. Written comments on the draft supplement to the GEIS should be sent to: Chief, Rules and Directives Branch, Division of Administrative Services, Office of Administration, Mailstop T-6D59, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

Comments may be hand-delivered to the NRC at 11545 Rockville Pike, Room T-6D59, Rockville, Maryland, between 7:30 a.m. and 4:15 p.m. on Federal workdays. Electronic comments may be submitted to the NRC by e-mail at VermontYankeeEIS@nrc.gov. All comments received by the Commission, including those made by Federal, State, local agencies, Native American Tribes, or other interested persons, will be made

available electronically at the Commission's PDR in Rockville, Maryland, and through ADAMS.

The NRC staff will hold a public meeting to present an overview of the draft plant-specific supplement to the GEIS and to accept public comments on the document. The public meeting will be held on January 31, 2007, at the Latchis Theatre, 50 Main Street, Brattleboro, **Vermont**. There will be two sessions to accommodate interested parties. The first session will convene at 1:30 p.m. and will continue until 4:30 p.m., as necessary. The second session will convene at 7 p.m. with a repeat of the overview portions of the meeting and will continue until 10 p.m., as necessary. Both meetings will be transcribed and will include:

(1) A presentation of the contents of the draft plant-specific supplement to the GEIS, and (2) the opportunity for interested government agencies, organizations, and individuals to provide comments on the draft report. Additionally, the NRC staff will host informal discussions one hour prior to the start of each session at the same location. No comments on the draft supplement to the GEIS will be accepted during the informal discussions. To be considered, comments must be provided either at the transcribed public meeting or in writing. Persons may pre-register to attend or present oral comments at the meeting by contacting Mr. Richard L. Emch, Jr., the Senior Project Manager, at 1-800-368-5642, extension 1590, or via e-mail at VermontYankeeEIS@nrc.gov no later than January 24, 2007. Members of the public may also register to provide oral comments within 15 minutes of the start of each session. Individual, oral comments may be limited by the time available, depending on the number of persons who register. If special equipment or accommodations are needed to attend or present information at the public meeting, the need should be brought to the attention of Mr. Emch's attention no later than January 24, 2007, to provide the NRC staff adequate notice to determine whether the request can be accommodated.

FOR FURTHER INFORMATION CONTACT: Mr. Richard L. Emch, Jr., Environmental Branch B, Division of License Renewal, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Mail Stop O-11F1, Washington, DC, 20555-0001. Mr. Emch may be contacted at the aforementioned telephone number or e-mail address.

Dated at Rockville, Maryland, this 13th day of December, 2006.

For the Nuclear Regulatory Commission,
Rani L. Franovich,
Branch Chief, Environmental Branch B, Division of License Renewal,
Office of Nuclear Reactor Regulation.
[FR Doc. E6-21805 Filed 12-20-06; 8:45 am]
BILLING CODE 7590-01-P

ESSENTIAL FISH HABITAT ASSESSMENT FOR PROPOSED RENEWAL OF THE VERMONT YANKEE NUCLEAR POWER STATION OPERATING LICENSE

1.0 INTRODUCTION

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), which was reauthorized and amended by the Sustainable Fisheries Act of 1996, sets forth the essential fish habitat (EFH) provisions designed to protect important habitats of Federally managed marine and anadromous species. The Act requires the eight regional fishery management councils to describe and identify EFH, and to minimize the adverse effects of fishing on EFH. Pursuant to the Act, Congress has defined EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Federal agencies that fund, permit, or undertake activities that may adversely affect EFH are required to consult with the National Marine Fisheries Service (NMFS) regarding the potential effects of their actions on EFH, and respond in writing to NMFS's conservation recommendations. For the purpose of consultation, an adverse effect includes any impact that reduces the quality and/or quantity of EFH. The consultation document must include the following information:

- A description of the proposed action;
- An analysis of the potential adverse effects of the action on EFH and the managed species;
- The Federal agency's conclusions regarding the effects of the action on EFH; and
- Proposed mitigation, if applicable.

On January 25, 2006, Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Entergy), submitted an application for renewal of the operating license (OL) of the Vermont Yankee Nuclear Power Station (VYNPS) to the U.S. Nuclear Regulatory Commission (NRC) (Energy 2006a). The current OL expires at midnight on March 21, 2012. As part of the application, Entergy submitted an Environmental Report (ER) (Entergy 2006b) prepared in accordance with the requirements of Title 10, Part 51, of the *Code of Federal Regulations* (10 CFR Part 51).

On April 21, 2006, the NRC staff published a Notice of Intent (NRC 2006a) to prepare a plant-specific supplement to the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS) (NRC 1996,1999).[(a)] During the development of the Supplemental Environmental Impact Statement (SEIS), the NRC staff visited the site, visited the Conte Anadromous Fish Lab, met with members of Federal and State regulatory agencies, spoke to local citizens, interviewed individuals who had conducted environmental research in the

(a) The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the "GEIS" include the GEIS and its Addendum 1.

Connecticut River, and reviewed a variety of technical reports, journal articles, and other relevant information to determine whether renewal would result in adverse environmental impacts. This information and other sources relevant to EFH issues were consulted during the development of this document. This EFH assessment has been developed to fulfill the NRC requirement under the MSFCMA for the VYNPS license renewal review.

2.0 PROPOSED FEDERAL ACTION

The proposed Federal action is renewal of the OL for VYNPS, a nuclear power plant that is located in southeastern Vermont in the town of Vernon, Windham County, on the western shore of the Connecticut River at River Mile (RM) 142. VYNPS is a single-unit plant with a boiling water reactor manufactured by General Electric. The unit was originally licensed for a reactor core power of 1593 megawatts-thermal (MW[t]), with a net electrical capacity of 540 megawatts-electric (MW[e]). VYNPS submitted, and the NRC approved, a power uprate to increase the maximum core power level to 1912 MW(t) on March 2, 2006. The gross electrical output at this core power level would be approximately 650 MW(e). The Connecticut River is the source for cooling water for the main condensers at the VYNPS. Cooling river water can be circulated through the system in one of three modes of operation: closed-cycle, open-cycle (also referred to as once-through cooling), or hybrid-cycle. Cooling towers are used when the plant operates in closed- or hybrid-cycle modes. The current OL for VYNPS expires on March 21, 2012. On January 25, 2006, Entergy submitted an application (Entergy 2006a) to the NRC to renew the OL for an additional 20 years of operation (i.e., until March 21, 2032).

3.0 ENVIRONMENTAL SETTING

VYNPS is located in southeastern Vermont, approximately 5 mi southeast of Brattleboro, Vermont and 28 mi north of Amherst, Massachusetts (Figure 1). The plant site is located on the western shore of the Connecticut River (Figure 2). VYNPS is located 0.75 mi upstream of the Vernon Dam, which is located at RM 142 (Figure 3). Two other dams, Turners Falls (RM 123) and Holyoke (RM 86) are also downstream of VYNPS on the main stem of the Connecticut River. The area upstream of Vernon Dam is known as Vernon Pool. Vernon Pool covers 2250 acres (at full-pond elevation of 220.13 ft behind the Vernon Dam) and extends upstream to Bellows Falls Dam at RM 174. Maximum water depth at Vernon Dam is 40 ft (Entergy 2006b). The Connecticut River near Vernon Dam is about 0.5 mi wide (AEC 1972). The minimum sustained flow from the Vernon Dam is 1250 cfs, or the inflow, if river flow is less than this. Average daily flow is about 10,500 cfs with an average annual flow of 3.3×10^{11} ft^3 (Entergy 2006b). During 2004, the lowest daily river discharge at Vernon Dam was 1757 cfs and the highest was 50,618 cfs. Monthly flow rate averages from 6347 cfs in August to 23,570 cfs in April (Normandeau 2005).

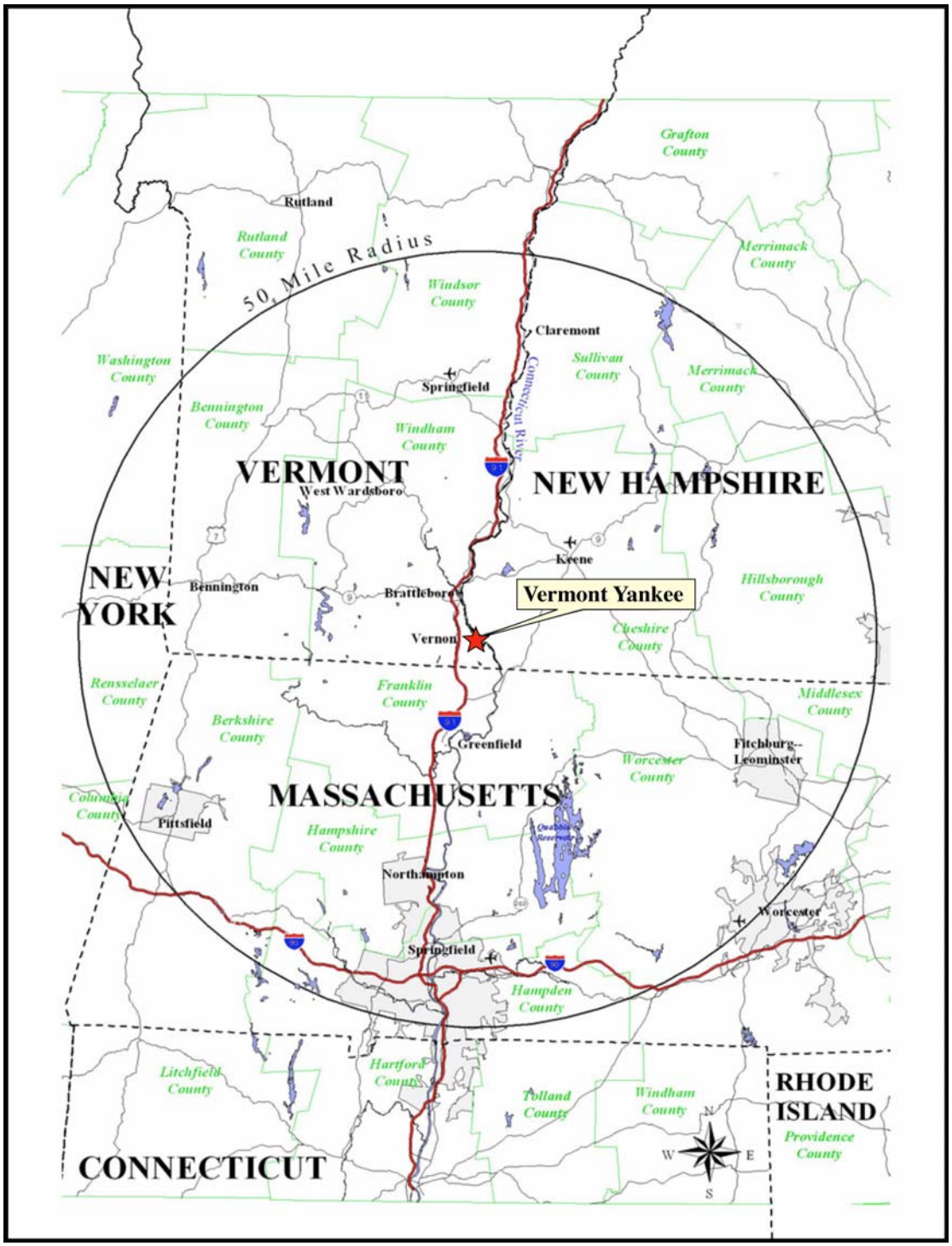

Figure 1. Location of Vermont Yankee Nuclear Power Station, 50-mi Region (Source: Entergy 2006b)

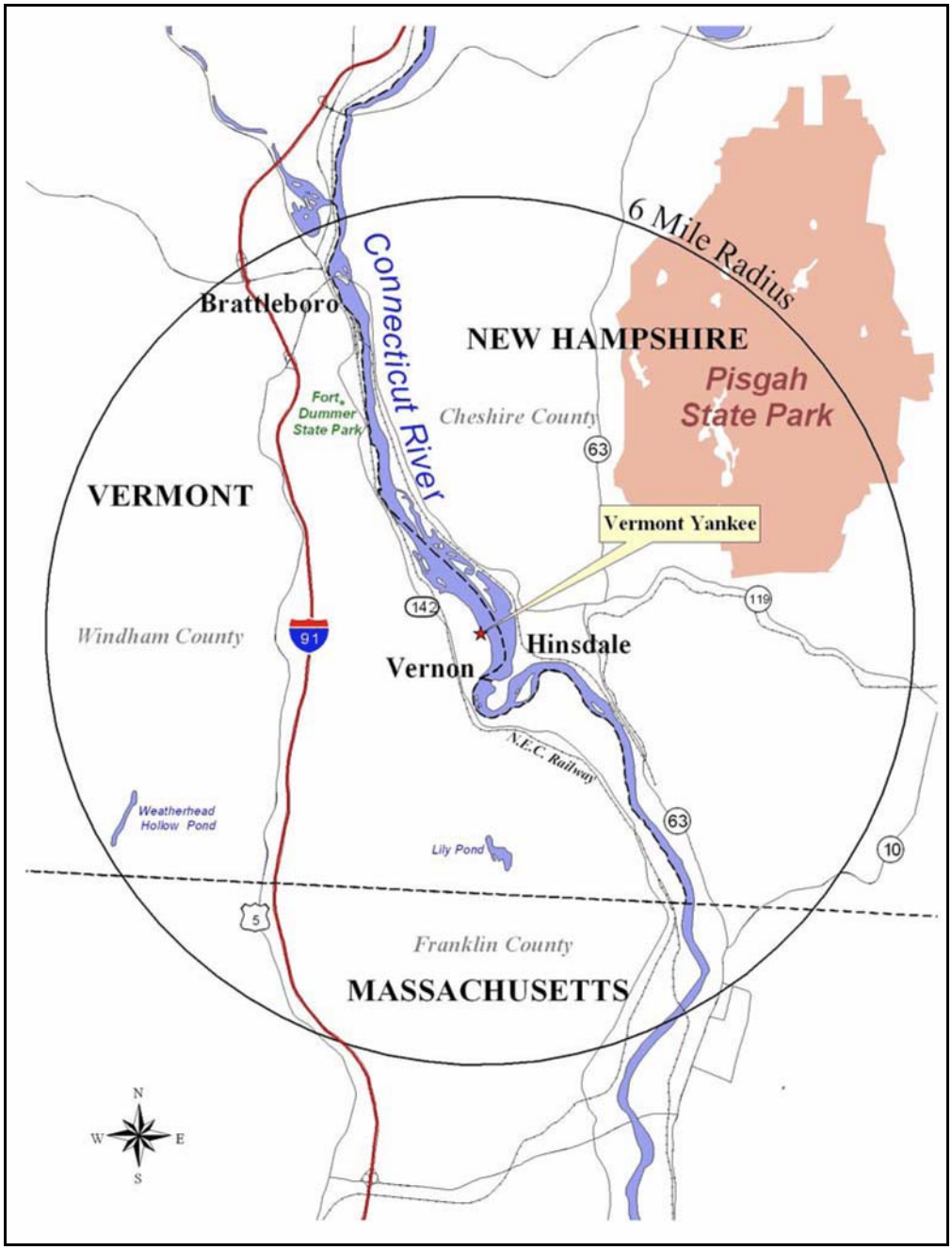

Figure 2. Location of Vermont Yankee Nuclear Power Station, 6-mi Region (Source: Entergy 2006b)

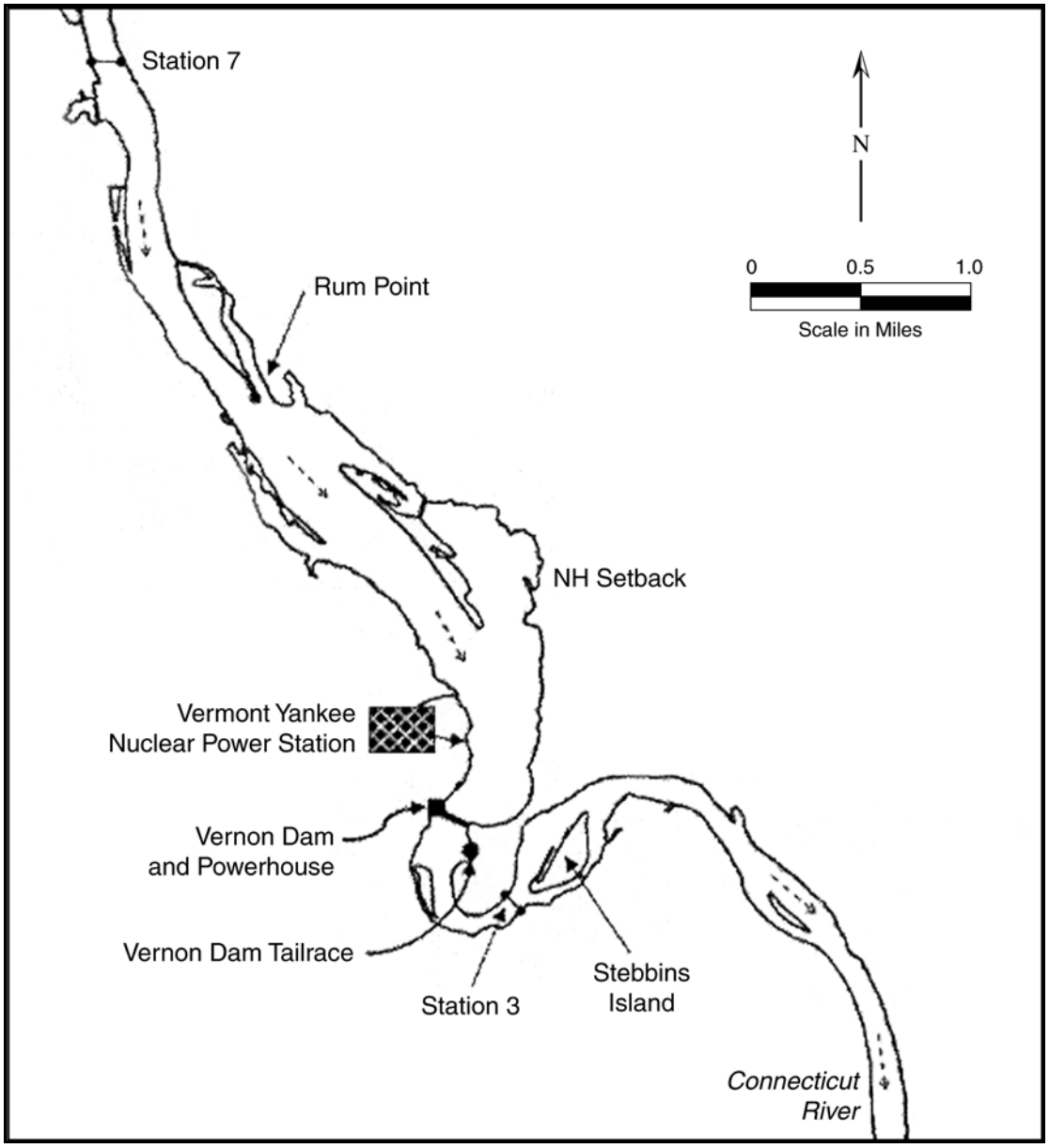

Figure 3. Location of Vernon Dam and River Monitoring Stations 3 and 7 Relevant to VYNPS (Source: Entergy 2006b)

Yearly ambient water temperatures in the vicinity of VYNPS vary from 32 to 84°F with daily variations rarely exceeding 2°F (Entergy 2006b). During 2004, the monthly average daily river temperature upstream of VYNPS ranged from a low of 32.5°F in February to 72.7°F in July. The lowest daily river temperature was 32.4°F on February 22, 2004 while the highest daily river temperature was 76.4°F on August 5, 2004 (Normandeau 2005).

A number of physical and chemical stresses have caused major changes and modifications to the aquatic resources within the Connecticut River. The major industrial use of the river is the 12 hydroelectric dams (9 are upstream of VYNPS) and 4 storage dams (3 are upstream of VYNPS) located on the mainstream of the river. Vernon Dam creates a lentic (lake-like) condition above the dam and a lotic (flowing) condition below the dam. A fishway was constructed at Vernon Dam in 1981. Prior to that time, the dam was a barrier to fish movement. The fishway is a concrete structure that consists of a vertical slot ladder from the tailrace to a fish trap and viewing gallery. An Ice Harbor-style ladder provides passage from there to Vernon Pool. The fishway is supplied with a flow of 65 cfs while it operates. An attraction flow of 40 cfs is also discharged near the foot of the ladder (Normandeau 2004a). A downstream fish conduit was first operated in 1991 (Normandeau 2004a). The primary downstream conduit, located in the center of the powerhouse, has a 350-cfs bypass flow through a 9-ft by 6-ft gate and tube that narrows to a 4-ft by 5-ft opening at its discharge end. An alternative or supplemental pipe that supplies the 40 cfs attraction flow at the foot of the fishway was converted to a “fish pipe” in 1994 for additional downstream passage of fish (Normandeau 2004a). Both warmwater and coolwater fish exist upstream and downstream of Vernon Dam. Fish are routinely sampled upstream and downstream of Vernon Dam as part of the National Pollutant Discharge Elimination System (NPDES) permit monitoring requirements (VANR 2006).

4.0 PLANT COOLING WATER SYSTEM DESCRIPTION

The Connecticut River is the source for cooling water for the main condensers at the VYNPS. Cooling river water can be circulated through the system in one of three modes of operation: closed-cycle, open-cycle (also referred to as once-through cooling), or hybrid-cycle. Cooling towers are used when the plant operates in closed- or hybrid-cycle modes. Unless otherwise noted, the discussion of the circulating-water system was obtained from the Final Environmental Statement for VYNPS operations (AEC 1972) and the applicant’s ER (Entergy 2006b,c).

In all three modes, the circulating water exits the condenser and flows into the discharge structure. In the open-cycle mode, after entering the discharge structure the water returns to the river through an aerating structure. The cooling towers are not used in the open-cycle mode of operation. In both the closed-cycle and hybrid cycle, after entering the discharge structure, the circulating water is pumped up to the cooling towers. After being cooled, the water returns to a weir collection chamber in the discharge structure. A gate inside this chamber allows all or a portion of the water to return to the intake structure. In the closed-cycle mode all of the tower cooled water is returned to the intake structure for re-use in the condenser. In the hybrid cycle

mode of operation a portion of the water returns to the intake structure while the remainder is returned to the river through the aerating structure. The exact amount of water returned to both the intake structure and the river in hybrid mode depends on seasonal variation in environmental parameters, particularly the temperature in the Connecticut River. Blowdown from the circulating water system is discharged to the river through piping near the discharge structure. Make-up water lost from blowdown and evaporation from the cooling towers is withdrawn from the river. VYNPS has two mechanical draft cooling towers, one of which has a deep basin holding 1.4 million gal of water for emergency cooling (VDEC 2003, VDEC 2006a, Entergy 2004).

The concrete intake structure has three pump bays for three circulating pumps and two service water bays for four service water pumps and two fire water pumps. All bays are provided with trash racks and traveling water screens to remove debris in the intake water. Water treatment equipment at the intake structure delivers biocides to both the circulating water and service water pump bays to minimize biofouling of the system. Corrosive control agents and chemicals to adjust pH are also added (Entergy 2004).

Cooling water for the main condensers is drawn from the Connecticut River using three vertical circulating water pumps, which provide a total maximum flow capacity of 360,000 gpm (802 cfs) (during once-through operation) and a minimum of 10,000 gpm (22 cfs) (during closed-cycle operation). Approach velocities at the intake trash racks are about 1.2 ft/s at a low water level of 215 ft mean sea level (MSL) and 1.0 ft/s for the normal water level of 220 ft MSL, while intake velocities at the traveling screens are 1.96 ft/s for an extreme low water level of 212 ft MSL, 1.73 ft/s for a low water level of 215 ft MSL, and 1.57 ft/s for a normal water level of 220 ft MSL.

Water is also drawn from the river for the plant's service water system, which provides water for turbine and reactor auxiliary equipment cooling, reactor shutdown cooling, and miscellaneous services. Four vertical, two-stage, turbine-like pumps, located at the north end of the intake structure, supply water to the service water system, providing a total flow capacity of 13,400 gpm. Additionally, two pumps with a total flow capacity of 5000 gpm, which are operated infrequently, are located at the north end of the intake structure to withdraw water from the river for fire protection (Entergy 2006b).

Cooling water discharge to the Connecticut River flows through an aerating discharge structure located near the riverbank. The structure is about 199 ft long by 108 ft wide by 46 ft deep. An aerating spillway, consisting of three rows of dissipating concrete blocks with approximately nine blocks per row, is adjacent to and downstream of the discharge structure. It provides air entrainment, energy dissipation, and warm water dispersion of the discharged cooling water. Sheet piling is used to prevent scouring of the aerating apron (Entergy 2004). NPDES-permit established limitations for circulating water discharges are 543 million gpd for open- and hybrid-cycle modes and 12.1 million gpd for the closed-cycle mode (NRC 2006c).

5.0 POTENTIAL IMPACTS OF PLANT OPERATION ON BIOTA AND HABITAT

The cooling water system associated with VYNPS utilizes water from the Connecticut River and may potentially affect EFH in the following ways:

- Impingement of juvenile and adults life stages and/or their larger prey items;
- Entrainment of eggs and larvae and/or planktonic prey items;
- Withdrawal of water from the water column; and
- Discharge of heated cooling water.

These impacts are discussed in this section.

5.1 IMPINGEMENT

As part of its NPDES permit requirements, Entergy is required to monitor fish impingement at VYNPS. Routine impingement sampling is conducted from April 1 through June 15 and from August 1 through October 31. Limits are established for the number of Atlantic salmon (*Salmo salar*) and American shad (*Alosa sapidissima*) that can be impinged. The impingement limit for Atlantic salmon is set at 0.1 percent of the estimated smolt-equivalents (estimated number of smolts from a population that successfully emigrate from a specified area) migrating past VYNPS. If the limit is exceeded, the plant must run in a closed-cycle mode until June 15. American shad impingement limit is set at one impinged shad for each adult shad that passes the Vernon Dam fishway and/or is transported by State or Federal fisheries personnel upstream of Vernon Dam (Aquatec 1990). Impingement numbers below those established for the two anadromous fish species are considered by the Environmental Advisory Committee[(a)] (comprised of representatives from the Vermont Department of Environmental Conservation, Vermont Department of Fish and Wildlife, New Hampshire Department of Environmental Services, New Hampshire Department of Fish and Game, Massachusetts Department of Environmental Protection, Massachusetts Division of Fish and Wildlife, and the U.S. Fish and Wildlife Service (FWS) Coordinator of the Connecticut River Anadromous Fish Program) to be impingement losses that are not adverse to the populations of these species (Entergy 2006a). To date, the NPDES permit limits established for these species have not been exceeded.

(a) The Environmental Advisory Committee has an advisory function that reviews and evaluates the aquatic environmental monitoring and studies program at VYNPS. It also defines specific objective investigations for Entergy to complete.

During the initial FWPCA Section 316 Demonstration (Aquatec 1978), an average of 23 fish per day was impinged during 685 days of once-through operation. The Turners Falls and Vernon Dam fishways were not in place until the early 1980s therefore, no Atlantic salmon or American shad were impinged prior to this period (Aquatec 1990). During the impingement sampling periods of the 1980s, an average of 26 fish were impinged per day (Aquatec 1990). Over 80 percent were small sunfish, rock bass (*Ambloplites rupestris*), minnows, and yellow perch (*Perca flavescens*). During the 1980s, 59 juvenile Atlantic salmon and one American shad were impinged (Aquatec 1990).

Table 1 presents some results of impingement collections that have been made at VYNPS since 1988. Impingement collections at VYNPS are generally made from April 1 through June 15 and August 1 through October 31 each year, as dictated by NPDES permit stipulations. In general, the common warmwater residents within Vernon Pool were predominant in impingement collections. These included sunfish, rock bass, and yellow perch. The numbers of American shad and Atlantic salmon impinged at VYNPS were lower than the yearly NPDES permit limits set for these species. For example, the permit limits were set at 1666 American shad and 231 Atlantic salmon, but only 25 American shad and 9 Atlantic salmon were impinged in 2001 (VYNPS and Normandeau 2002). In 2003, 13 American shad and 28 Atlantic salmon were impinged, while the permit limits for that year were set at 1140 and 364, respectively (Entergy and Normandeau 2004). In 2004, 73 American shad and no Atlantic salmon were impinged; the NPDES permit impingement limits for 2004 were set at 1005 American shad and 252 Atlantic salmon (Normandeau 2005).

Based on riverine and impingement collections of resident and anadromous fish that have been ongoing since VYNPS began withdrawing water from Vernon Pool, no observable adverse impacts to any fish species or to the overall fish community due to the operation of VYNPS has been demonstrated (Aquatec 1978, 1990; Normandeau 2004a, 2005; Entergy 2006b).

5.2 ENTRAINMENT

Entrained fish eggs and larvae experience thermal stress and mechanical and hydraulic forces during transport through a plant's cooling system. In a study of the Haddam Neck Plant, a nuclear plant with once-through cooling that formerly operated on the lower Connecticut River, Marcy (2004c (1976c) and references cited therein) found mechanical damage to be the main cause of entrainment mortality, while thermal shock was responsible for only about 20 percent

Table 1. Percentages (and Numbers) of Fish Species Impinged at VYNPS[(a)]

	Collection Period			
Species	**1988 and 1990-1997**	**2001**	**2003**	**2004**

Sea lamprey (*Petromyzon marinus*)	0.9 (130)[(b)]	34.4 (241)	0.2 (2)	0.0 (0)
American shad (*Alosa sapidissima*)	2.6 (387)	3.6 (25)	1.1 (13)	30.8 (73)
Atlantic salmon (*Salmo salar*)	1.4 (202)	1.3 (9)	2.5 (28)	0.0 (0)
Chain pickerel (*Esox niger*)	0.2 (31)	0.4 (3)	1.0 (11)	0.8 (2)
Golden shiner (*Notemigonus crysoleucas*)	1.1 (161)	2.1 (15)	0.6 (7)	0.4 (1)
Spottail shiner (*Notropis hudsonius*)	7.7 (1139)	0.3 (2)	0.8 (9)	2.1 (5)
Yellow bullhead (*Ameiurus natalis*)	1.5 (227)	0.0 (0)	3.4 (39)	0.4 (1)
Rock bass (*Ambloplites rupestris*)	10.8 (1599)	4.7 (33)	9.5 (108)	9.7 (23)
Pumpkinseed (*Lepomis gibbosus*)	5.8 (853)	1.7 (12)	14.2 (162)	2.5 (6)
Bluegill (*Lepomis macrochirus*)	19.9 (2937)	28.7 (201)	32.6 (372)	28.3 (67)
Unidentified sunfish (*Lepomis* spp.)	20.1 (2967)	0.0 (0)	0.0 (0)	0.0 (0)
Smallmouth bass (*Micropterus dolomieu*)	1.9 (279)	1.0 (7)	2.4 (27)	3.8 (9)
Largemouth bass (*Micropterus salmoides*)	0.9 (134)	0.6 (4)	5.1 (58)	1.3 (3)
Black crappie (*Pomoxis nigromaculatus*)	0.01 (1)	1.7 (12)	11.0 (126)	4.2 (10)
Yellow perch (*Perca flavescens*)	15.2 (2247)	18.3 (128)	15.0 (171)	8.4 (20)
Other species (including unidentifiable fishes)	28.3 (4184)	1.1 (8)	0.8 (9)	7.2 (17)
Totals	100 (14,778)	100 (700)	100 (1142)	100 (237)

(a) Data presented represent a portion of the impingement data collected at this facility.
(b) The percent of the total number of fish followed by the total number of fish impinged in parantheses for each species during the collection period.
Sources: Normandeau 1999; VYNPS and Normandeau 2002; Entergy and Normandeau 2004; Normandeau 2005.

of the mortality. While some entrainment survival occurs, 100 percent mortality is normally assumed as a conservative estimate of entrainment losses for all operational modes. When ichthyoplankton are at their peak in the Connecticut River (e.g., late spring through early summer), VYNPS is generally operating in an open-cycle or hybrid mode. The NPDES permit requires larval fish sampling to be done weekly during this period (Normandeau 2005).

The portion of Vernon Pool near VYNPS was found not to be a good fish spawning area due to daily water level fluctuations, a steep shoreline, and a silty sand substrate. Therefore, the amount of ichthyoplankton entrained in the area would be expected to be limited. Overall, densities of ichthyoplankton near the VYNPS intake were <1 fish/m^3, which were much lower than densities in littoral areas estimated by Aquatec (1990). For example, minnow densities near the VYNPS intake were <0.6 larvae/m^3, whereas densities in shallow, slow-moving nearshore areas were as high as 3000/m^3 (Aquatec 1990). Monitoring results indicate that larval fish densities are low in the VYNPS area and the impact of entrainment has been minimal (Entergy 2006a).

Table 2 presents some of the results of entrainment collections that have been made in the Connecticut River in the vicinity of the VYNPS intake since 1988. Entrainment collections at VYNPS are generally made from early May through early to mid July each year, as dictated by the NPDES permit. In general, the common warmwater species that are resident within Vernon Pool were predominant in entrainment collections. These included the spottail shiner (*Notropis hudsonius*), white perch (*Morone americana*), and centrarchids. No Atlantic salmon has been collected in entrainment samples, and one American shad has been collected in entrainment samples.

5.3 THERMAL RELEASES

The discharge of heated water from VYNPS creates elevated temperatures in the Connecticut River and produces a thermal plume that varies in extent and magnitude based on operational characteristics of the plant, ambient air and water temperatures, and hydrodynamic characteristics of the river. The maximum discharge flow temperature for VYNPS is 100°F, although this seldom occurs (Normadeau 2004a). Thermal discharges have the potential to affect food web dynamics, alter fish behavior, or produce acute or chronic impacts on temperature-sensitive species.

5.3.1 Temperature Requirements under the Current NPDES Permit

The current NPDES permit (VDEC 2003) defines two seasonal periods (winter, from October 15 through May 15; and summer, from May 16 through October 14) and sets limits for the increase in temperatures at River Monitoring Station 3, less than a mile downstream of Vernon Dam (Figure 3). These are presented in detail in Table 3.

Table 2. Percentages (and Numbers) of Fish Eggs and Larvae by Species Entrained at VYNPS

Species	Collection Period			
	1988 and 1990-1997	2001	2003	2004
Common carp (*Cyprinus carpio*)	0.3[a] (18)	0.2 (3)	2.2 (27)	0.5 (5)
Spottail shiner (*Notropis hudsonius*)	0.03 (2)	57.9 (978)	71.6 (875)	25.4 (269)
Notropis spp.	49.6[b] (2850)	0.0 (0)	0.0 (0)	0.0 (0)
Cyprinidae	13.7[b] (788)	0.0 (0)	0.0 (0)	0.0 (0)
White sucker (*Catostomus commersoni*)	0.02 (1)	37.9 (640)	0.2 (2)	1.0 (11)
White perch (*Morone americana*)	20.7 (1191)	1.8 (31)	14.6 (178)	3.4 (36)
Sunfish (*Lepomis* spp.)	10.9 (628)	1.8[c] (31)	8.2[c] (100)	68.7 (726)
Largemouth bass (*Micropterus salmoides*)	0.07 (4)	0.0[d] (0)	0.0[d] (0)	0.0 (0)
Yellow perch (*Perca flavescens*)	4.2 (244)	0.1 (2)	3.2 (39)	0.5 (5)
Walleye (*Sander vitreus*)	0.14 (8)	0.1 (2)	0.1 (1)	0.2 (2)
Other species (including unidentifiable fishes)		0.1[e] (2)	0.0 (0)	0.3[e] (3)
Total	100 (5747)	100 (1690)	100 (1222)	100 (1057)

(a) The percent of the total number collected followed by the total number of entrained in parentheses for each species during the collection period.
(b) Based on entrainment sample identifications done in the subsequent years and fish species known from lower Vernon Pool, most individuals identified as only *Notropis* spp. or Cyprinidae were probably spottail shiners.
(c) Listed as Centrarchidae and therefore may also include some largemouth bass.
(d) See footnote (c) - likely that some largemouth bass eggs and larvae were entrained.
(e) The Other species category is almost entirely the tessellated darter (*Etheostoma olmstedi*).

Sources: Normandeau 1999; VYNPS and Normandeau 2002; Entergy and Normandeau 2004; Normandeau 2005

Table 3. Discharge Temperature Requirements under the Current and Amended NPDES Permits for VYNPS

Currently Enforced NPDES Permit (June 9, 2003)

Winter (October 15 through May 15) at downstream Station 3[(a)]:

- Temperature shall not exceed 65°F;
- The rate of change of temperature (i.e., the mean difference between consecutive hourly average temperatures) shall not exceed 5°F per hour;
- The plant-induced increase in temperature above ambient water temperature as measured at Station 7 shall not exceed 13.4°F.

Summer (May 16 through October 14):

- The increase in river water temperature at Station 3 above ambient water temperature as measured at Station 7 shall not exceed the following:

Upstream Station 7 temperatures	Temperature increase above Station 7 measured at Station 3 shall not exceed
Above 63°F	2°F
>59°F, ≤63°F	3°F
≥55°F, ≤59°F	4°F
Below 55°F	5°F

March 30, 2006 Amendment Request to NPDES Permit

Winter (October 15 through May 15) at downstream Station 3[(a)]:

- Temperature shall not exceed 65°F;
- The rate of change of temperature (i.e., the mean difference between consecutive hourly average temperatures) shall not exceed 5°F per hour;
- The plant-induced increase in temperature above ambient shall not exceed 13.4°F.

Early Summer (May 16 through June 15):

- The increase in river water temperature at Station 3 above ambient water temperature as measured at Station 7 shall not exceed the following:

Upstream Station 7 temperatures	Temperature increase above Station 7 measured at Station 3 shall not exceed
Above 63°F	2°F
>59°F, ≤63°F	3°F
≥55°F, ≤59°F	4°F
Below 55°F	5°F

Summer (June 16 through October 14):

- The increase in river water temperature at Station 3 above ambient water temperature as measured at Station 7 shall not exceed the following:

Station 7 temperatures	Temperature increase above Station 7 measured at Station 3
Above 78°F	2°F
>63°F, ≤78°F	3°F
>59°F, ≤63°F	4°F
≤59°F	5°F

- When the average hourly temperature at Station 3 equals or exceeds 85°F, the thermal output of the discharge must be reduced to the extent that the average hourly temperature at Station 3 does not exceed 85°F.

(a) Station 3 is located 1.4 mi downstream of VYNPS.

(b) Station 7 is located 3.7 mi upstream of VYNPS.

NPDES permits are issued for five years at a time. On July 11, 2001, VDEC issued a renewed permit for VYNPS with an expiration date of March 31, 2006, and the permit was amended on June 9, 2003 (VDEC 2003). On February 20, 2003, Entergy applied to the VDEC to amend the permit for VYNPS to increase the temperature of the Connecticut River by 1°F as determined at River Monitoring Station 3 (downstream monitoring station) during the NPDES summer period (May 16 through October 14). On March 30, 2006, VDEC issued an amendment to the permit for VYNPS; however, the amended permit only authorized the requested temperature increase for the period from June 16 through October 14 (VDEC 2006a). VDEC concluded that additional information was needed to evaluate the impacts of the temperature increase on migrating salmon smolt during the May 16 through June 15 portion of the NPDES summer period, since it marks the end of the smolt outmigration period. The permit would have expired on March 31, 2006; however, Entergy submitted an application for a renewed permit on September 29, 2005 (Entergy 2005e). By letter dated September 30, 2005, VDEC informed Entergy that the renewal application was timely and that the permit would remain valid under an administrative extension until VDEC completes the review of the permit renewal application (VDEC 2005a).

In May 2006, the New England Coalition (NEC) appealed the NPDES permit amendment that was issued on March 30, 2006. The amendment was stayed by the State of Vermont Environmental Court on August 28, 2006. At the time this SEIS was published, VYNPS was operating under the NPDES permit as issued on June 9, 2003 (VDEC 2003). The future status of the permit depends on the outcome of the NEC appeal. If the appeal is upheld, an increase in thermal discharge will not be granted and the discharge requirements in the current permit (issued June 9, 2003) will continue until a new permit is issued. If the appeal is denied, the NPDES permit as amended March 30, 2006, will be reinstated and remain in effect until a new permit is issued by VDEC (NRC 2006d). The temperature requirements of the current and amended NPDES permits are presented in Table 3.

The NRC staff's evaluation of the environmental impact in the SEIS and this assessment of essential fish habitat considered the 1°F increase for the time period May 16 through October 14. This evaluation would be bounding if the VDEC grants Entergy the 1°F increase in the May 16 through June 14 time period or the NEC appeal is denied or the NEC appeal is upheld.

5.3.2 Methods of Demonstrating Compliance

The NPDES permit requirements, as of the date of this SEIS, are described below. The permit requires that during the winter period (October 15 through May 15), the plant-induced temperature at downstream River Monitoring Station 3 shall not exceed 65°F (Table 3). The plant-induced temperature increase is calculated using the equation published in the executive summary of the 1978 demonstration report (Aquatec 1978). The equation is based on the principle of energy conservation and takes into account the heat content of the plant's

circulating water system and cooling towers, the heat content of the plant's cooling water discharge to the river, and the average discharge (flow) of the Connecticut River as measured at Vernon Dam.[(a)] Measurement and cooling system data are linked to a process computer that allows plant personnel to adjust operations on the basis of continual real-time data to meet the thermal requirements of the permit (Normandeau 2005).

The Vernon Dam regulates the river discharge to maintain a minimum sustained flow of 1250 cfs. At 1250 cfs, the permitted theoretical maximum increase in temperature at River Monitoring Station 3 due to the plant's thermal discharge is 12.9°F. In effect, the plant can operate in an open-cycle cooling mode (without cooling tower operation) when ambient river temperatures as measured at the upstream River Monitoring Station 7 are less than 52.1°F (i.e., 65°F minus 12.9°F) during the winter period. At ambient temperatures equal to or greater than 52.1°F, the plant's heat discharge can be reduced by using the cooling towers to dissipate heat to the atmosphere (especially during periods of low river flow) (Normandeau 2005). The NPDES permit requires that the plant-induced increase in temperature never exceeds 13.4°F and that the rate of increase never exceeds 5°F per hour.

Table 4 summarizes the maximum simulated river temperature increases at River Monitoring Station 3 and the flows at which they occurred during the winter period (October 15 through May 15) for the years 2000 through August 2006.

Table 5 summarizes the maximum simulated river temperature increases at the station and the flows at which they occurred during the summer period for the years 2000 through 2006.

Exceedences occurred in each of the years between 2000 and 2004, but in each case were less than 1 hr in duration:

- On July 16 and 21, 2000, two 59-minute exceedences occurred (2.74°F and 0.03°F, respectively) when Vernon Dam went to minimum flow as a result of a loss of offsite power caused by a lightning strike (Normandeau 2001).

- On July 5, 2001, a 59-minute exceedence of 0.12°F occurred because plant operators did not shift to closed-cycle mode quickly enough to respond to changing river conditions.

(a) The heat content of the circulating water system and cooling towers is calculated on the basis of the change in condenser inlet temperatures over a specified time interval. The heat content of the cooling water discharge is calculated on the basis of the number and pumping capacity of circulating water intake pumps, the difference between condenser inlet and outlet temperatures, the number of circulating intake and cooling tower booster pumps, and the cooling tower outlet temperatures all over a specified time interval (Normandeau 2005).

Table 4. Maximum Simulated River Temperature Increase at River Monitoring Station 3 during the NPDES Winter Period (October 15 through May 15)

Year	Day	Maximum Temperature Increase	Permit Limit	River Flow (cfs)	Exceeded 5°F/hour?
2006[(a)]	March 12	6.03°F	13.4°F	2958	No
2005	February 10	12.91°F	13.4°F	1285	No
2004	February 2	12.90°F	13.4°F	1331	No
2003	January 25	13.16°F	13.4°F	1308	No
2002	January 23	12.70°F	13.4°F	1367	No
2001	December 21	12.67°F	13.4°F	1250	No
2000	November 26	12.60°F	13.4°F	1275	No

(a) Data through August 2006.
Source: Normandeau 2001, 2002, 2003, 2004b, 2005; DeWald 2005a, 2006b

Table 5. Maximum Simulated River Temperature Increase at River Monitoring Station 3 during the NPDES Summer Period (May 16 through October 14)

Year	Day	Maximum Temperature Increase (Permit Limit)	Permit limit	River Flow (cfs)	Exceeded 5°F/hour?
2006[(a)]	August 15	2.94°F	3.0°F	3168	No
2005	July 1	1.97°F	2.0°F	6760	No
2004	July 6	2.06°F	2.0°F	3483	No
2003	September 19	2.16°F	2.0°F	2802	No
2002	October 5	2.05°F	2.0°F	1697	No
2001	July 5	2.12°F	2.0°F	3923	No
2000	July 16	2.74°F	2.0°F	6571	No

(a) Data through August 2006.
(b) There was an exceedence on July 21, 2000, but it was not the maximum for the year 2000.
Source: Normandeau 2001, 2002, 2003, 2004b, 2005; DeWald 2005b, 2006c

- On October 5, 2002, a 60-minute exceedence of 0.05°F occurred because of unreliable automated input associated with new equipment (Normandeau 2003).

- On September 19, 2003, an 11-minute exceedence of 0.16°F occurred because plant operators shifted operating parameters in anticipation of an increase in river flow (reported by the Wilder Hydroelectric Dam). The increase in river flow occurred, but not to the degree anticipated (Normandeau 2004b).

- On July 6, 2004, a 45-minute exceedence of 0.06°F occurred when the plant was brought back on-line after an outage caused by a transformer fire (Normandeau 2005).

There were no exceedences in 2005 or 2006 through August.

5.3.3 Temperatures in the Connecticut River

The monthly variation in river temperatures as measured at River Monitoring Stations 3 (downstream) and 7 (upstream) over a 5-year period (2000 to 2004) are shown in Figures 4 and 5, respectively. Over this period, monthly averages ranged from 34.5°F in January to 75.5°F in July at River Monitoring Station 3 and from 33.4°F in February to 73.3°F in August at River Monitoring Station 7.

Figure 6 is a plot of the difference in average monthly temperatures between River Monitoring Stations 3 and 7 (i.e., Station 3 temperature minus Station 7 temperature) in 2000 through 2004. There is an increasing trend throughout the spring, peaking in May, with Station 3 having an average temperature that was 5.9°F higher than that at Station 7, with a decreasing trend throughout the summer. In most months during this summer period, the average monthly temperatures at the downstream station were greater than those at the upstream station. However, in September and December, the average monthly temperatures at River Monitoring Station 7 were higher than River Monitoring Station 3 (1.4°F and 0.4°F, respectively). The average temperature difference between the stations was less than 1°F in January and March (Normandeau 2001, 2002, 2003, 2004b, 2005).

In June, July, and August of 2002, temperature measurements were taken from thermistor stations along three bank-to-bank transects across Vernon Pool perpendicular to the river flow, as part of a study to characterize the circulation and distribution of heated water in the area between the VYNPS discharge structure and Vernon Dam (Figure 7; ASA 2004). Temperatures were measured at three depths at each of the three stations along each transect (Figure 7; Table 6). The June-July sampling period was chosen to represent expected conditions; August was chosen to represent low-flow, high-temperature conditions, usually considered the worst-case for potential impacts to aquatic biota.

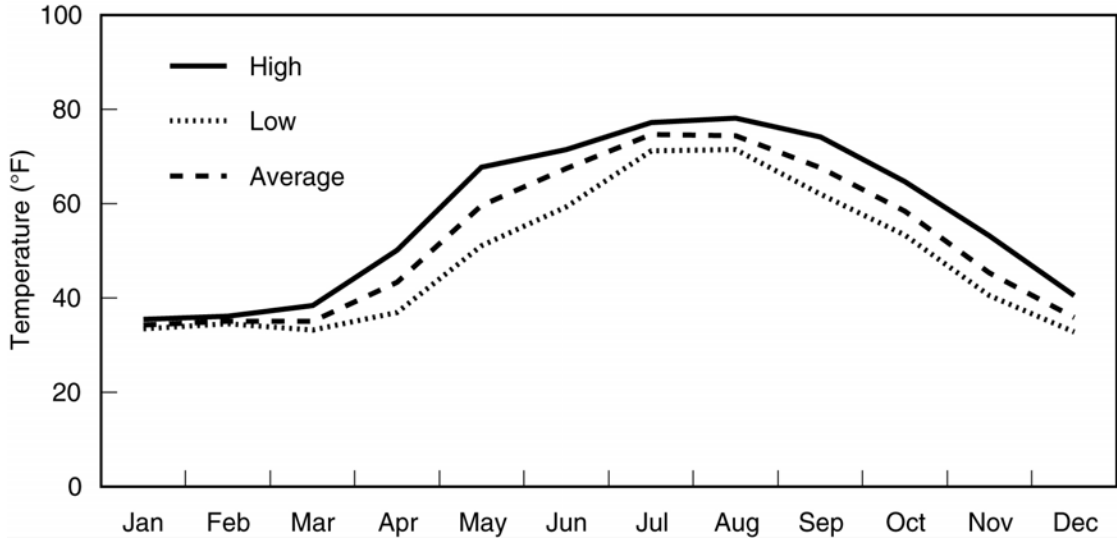

Figure 4. Seasonal Variation in Temperature at River Monitoring Station 3, Located about 0.65 miles Downstream of Vernon Dam (2000-2004) (Source: Normandeau 2001, 2002, 2003, 2004b, 2005)

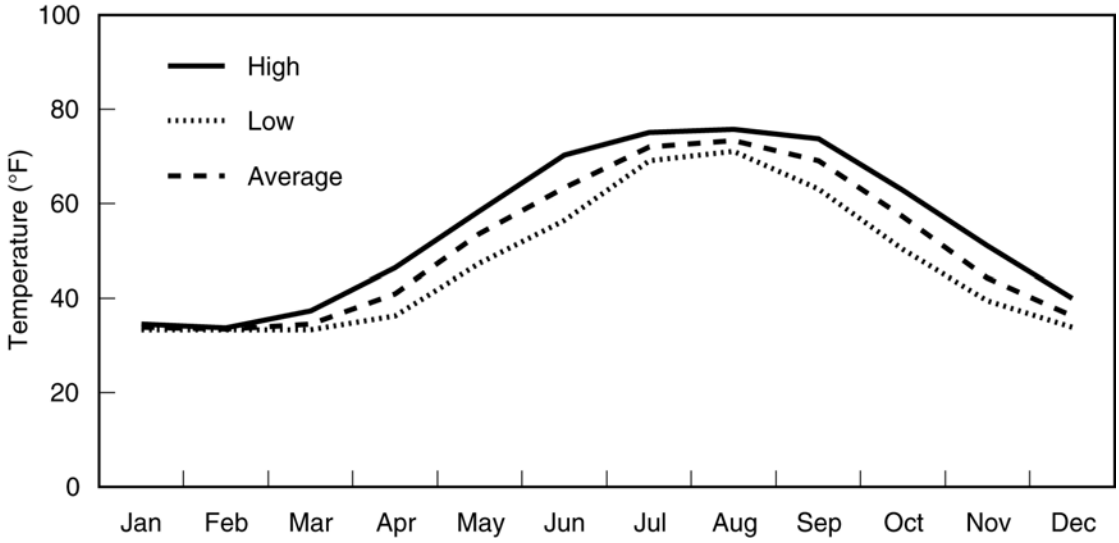

Figure 5. Seasonal Variation in Temperature at River Monitoring Station 7, Located 4 Miles Upstream of VYNPS (2000-2004) (Source: Normandeau 2001, 2002, 2003, 2004b, 2005)

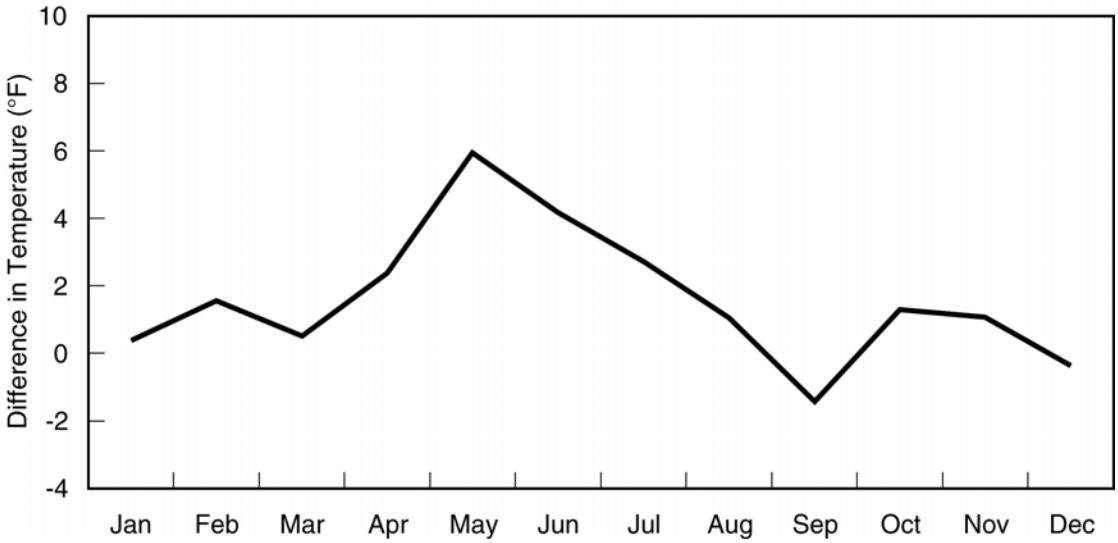

Figure 6. Difference in Average Monthly Temperatures between River Monitoring Stations 3 (downstream) and 7 (upstream) (Source: Normandeau 2001, 2002, 2003, 2004b, 2005)

Table 6. Total Water Depth and Temperature Sampling Depths in Vernon Pool

Station Total	Water Depth (ft)	Surface Depth (ft)	Middle Depth (ft)	Bottom Depth (ft)
C1/C2	17	1	8.5	16
C3/C4	17	1	8.5	16
C5/C6	14	1	7	13
D1/D2	20	1	10	19
D3/D4	14.1	1	7	13
D5/D6	23	1	11.5	22
E1/E2	39	1	19.5	38
E3/E4	13	1	6.5	12
E5/E6	5	1	2.5	4
F1/F2	13	1	6.5	12
F3/F4	21	1	10.5	20

Source: ASA 2004

Figure 7. Locations of Thermistor Stations at Vernon Pool (Source: ASA 2004)

The June-July measurements showed that temperature ranges were fairly similar along each transect between the VYNPS discharge structure and Vernon Dam: 67.1°F to 81.5°F at C stations, 67.3°F to 82.9°F at D stations, and 66.7°F to 81.9°F at E stations (Figure 7). Temperatures were generally lower at the F stations (67.1°F to 77.0°F), located upgradient of the VYNPS intake structure, during the same sampling period (Figure 7).

In the June-July sampling period, thermal stratification of the water column was greatest (up to a 6.3°F difference across the thermocline) near the VYNPS intake structure and had a decreasing trend toward the dam. Measurements at the E stations near Vernon Dam showed little stratification of the water column; however, the diurnal variation in surface temperature, due to fluctuations in river flow and the effects of solar heating, was as high as 1.8°F.

Significant spatial gradients in the surface water temperature of Vernon Pool were also detected in the June-July sampling period. Temperatures across the transects varied as much as 5.4°F to 7.2°F, with the higher temperatures recorded near the west bank. Temperature variations were least pronounced during periods of high river flow. The average temperature difference between the upstream River Monitoring Station 7 and the downstream River Monitoring Station 3 during the June-July sampling period was 4.3°F.

The August temperature measurements also showed similarities along each transect between the VYNPS discharge structure and Vernon Dam: 75.2°F to 85.1°F at C stations, 75.2°F to 84.7°F at D stations, and 75.9°F to 86.6°F at E stations. Temperatures were generally lower at the F station (74.8°F to 83.8°F), located upgradient of the VYNPS intake structure, during the same sampling period.

The August diurnal variation in temperature due to fluctuations in river flow and the effects of solar heating was most pronounced at the surface (upper 1 ft) in Vernon Pool, with the highest variation (3.6°F) occurring near the VYNPS discharge structure (Station C1/C2); diurnal variation was less pronounced at the upstream location (Transect F), with a variation of about 1.5°F at the surface.

There was little spatial variation in temperature across the bank-to-bank transects in Vernon Pool during the August sampling period. Although temperatures were slightly higher near the VYNPS discharge structure, thermistor temperatures were within about 1.8°F of each other across a single transect at any given time. The average temperature difference between the upstream River Monitoring Station 7 and the downstream River Monitoring Station 3 during the August sampling period was 2.9°F (ASA 2004).

No fish mortalities or delays in fish migration have been observed due to the VYNPS thermal discharge. VYNPS operations have not been observed to have caused fish mortality or been a barrier to fish migration due to thermal releases or delays in the movement of migratory fish species due to the thermal plume (Aquatec 1990; Normandeau 2004b).

6.0 POTENTIAL EFFECTS OF THE PROPOSED ACTION ON DESIGNATED ESSENTIAL FISH HABITAT

6.1 EVALUATION OF SPECIES REQUIRING EFH CONSULTATION

During the development of this EFH assessment, NMFS websites (NMFS 2006a,b) were consulted to develop an initial list of candidate fish species that would be considered for EFH consultation. On May 5, 2006, the NRC contacted the NMFS and requested information on EFH under the MSFCMA (NRC 2006d). In NMFS's response on September 15, 2006, NMFS stated that the Connecticut River and tributaries are designated EFH for Atlantic salmon and that the potential impacts from VYNPS operation on Atlantic salmon and their habitat should be fully evaluated in the SEIS (NMFS 2006c). This EFH Assessment is in support of the NRC's initiation of an EFH consultation with NMFS regarding the potential license renewal of VYNPS.

6.2 ATLANTIC SALMON

6.2.1 Life History of Atlantic Salmon

Atlantic salmon are anadromous and have a complex life history that includes spawning in freshwater rivers and feeding migrations in the Atlantic Ocean. Most Atlantic salmon of United States origin spend two years (ranging from one to three or more years) in the ocean before returning to their natal rivers to spawn. Spawning of Atlantic salmon in New England typically occurs in late October and November. Eggs are deposited by the females in nests constructed out of river rocks; the nests are referred to as redds. A typical female lays about 7000 eggs, which are then fertilized by the males. Although some adults survive to spawn in subsequent years, most die following spawning. Those that do return to sea, do so either immediately after spawning or during the following spring (FWS 2002). Few Atlantic salmon live to be more than eight or nine years old (Bigelow and Schroeder 2002). The eggs overwinter in the gravel and hatch the following spring, usually in March and April. Newly hatched sac fry (alevins, the beginning of larval stage) remain in the gravel and use the energy reserves in their yolk sacs to continue development. Once the yolk sacs become depleted the fry emerge from the gravel and begin feeding on plankton and small invertebrates. Fry emergence generally occurs from March through June (FWS 2002). They inhabit shallow riffles with moderate currents (McCormick et al. 1998)

About early December, the fry disperse into riffles with faster currents and coarse substrates (McCormick et al. 1998). The fry develop markings along their sides; at this point, the young Atlantic salmon are called parr (beginning of juvenile stage). Parr inhabit cool, swift-flowing streams with riffles and gravel-cobble substrates. As they mature, they will also inhabit slower-moving waters with pools and vegetation (Kart et al. 2004; NHFGD 2005). They may also move into small tributaries during their first summer as parr and remain there until they leave as smolts (McCormick et al. 1998). Parr are opportunistic feeders, feeding mostly on aquatic

insects; they in turn fall prey to fish and bird species (FWS 2002). The parr stage lasts for one to three years. During this period, they reach a length of about 4 in. (10 cm). After reaching this size, most parr undergo a developmental change during the spring (smoltification) to become smolts; however, some parr will become sexually mature before smoltification and are capable of fertilizing the eggs of returning females (Henry and Cragg-Hine 2003). Some of these mature parr can undergo smoltification in the following spring (McCormick et al. 1998). As smolts, the juvenile Atlantic salmon begin migrating toward the ocean. During their migration, they begin schooling and develop a tolerance to salt water necessary before they enter the ocean.

Once in the ocean, they eventually migrate toward their major feeding grounds in the North Atlantic near Greenland and Iceland. While in the ocean, Atlantic salmon prey upon various fish species and large zooplankton and are preyed upon by seals, sharks, tuna, striped bass (*Morone saxatilis*), bluefish (*Pomatomus saltatrix*), and other predators (FWS 2002). After spending one to three or more years at sea, adult salmon migrate back to their natal streams to spawn. In New England, the migration generally occurs from May through October with May through July being the primary time period. Spawning normally occurs from late October through November in New England (FWS 2002). Once they enter freshwater, adult Atlantic salmon cease feeding and will not feed again until they re-enter the ocean some six months to a year later (FWS 2002). Adults that do not die after spawning will overwinter in the river before migrating back to sea.

6.2.2 EFH for Atlantic Salmon

EFH for Atlantic salmon is described as all waters currently or historically accessible to Atlantic salmon within Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut (NMFS 1998). The Connecticut River and its tributaries are considered EFH for all life stages of the Atlantic salmon (eggs, larvae, juveniles, adults [those that are in-migrating to spawning sites, overwintering, or out-migrating to the sea], and spawning adults). The following EFH requirements are applicable for the specific life stages of the Atlantic salmon (NMFS 1998):

- *Eggs.* Substrates within a gravel or cobble riffle above or below a pool in rivers and streams. Generally, the water temperature in the excavations that Atlantic salmon construct for egg-laying (i.e., redds) is below 50°F and consists of clean, well-oxygenated freshwater. Atlantic salmon eggs are most frequently present in redds between October and April.

- *Larvae.* Substrates within a gravel or cobble riffle above or below a pool in rivers and streams. Generally, Atlantic salmon larvae (i.e., alevins and fry) occur in locations with clean, well-oxygenated freshwater and water temperatures below 50°F. Atlantic salmon alevins and fry occur most frequently observed between March and June.

- *Juveniles.* Shallow gravel or cobble riffles interspersed with deeper riffles and pools of rivers and estuaries. Generally, Atlantic salmon juveniles (e.g., parr) are found in areas with clean, well-oxygenated freshwater; water temperatures below 77°F, water depths of 4 to 24 in.; and water flows of 12 to 36 in./s. As they grow, parr transform into smolts. Atlantic salmon smolts require downstream access to make their way to the ocean. Upon entering the sea, "post-smolts" become pelagic and range from Long Island Sound north to the Labrador Sea.

- *Adults.* For adult Atlantic salmon returning to spawn, EFH includes habitats with resting and holding pools in rivers and estuaries. Returning Atlantic salmon require access to their natal streams and access to the spawning grounds. Generally, conditions where returning Atlantic salmon adults are found migrating to the spawning grounds include water temperatures below 73°F and dissolved oxygen levels above 5 parts per million (ppm). Oceanic adult Atlantic salmon are primarily pelagic and range from the waters of the continental shelf off southern New England north throughout the Gulf of Maine.

- *Spawning adults.* EFH for spawning adults includes gravel or cobble substrates of riffles above or below a pool of specific rivers and streams that currently support or historically supported Atlantic salmon spawning. Generally, conditions where spawning Atlantic salmon are found include water temperatures below 50°F; water depths of 12 to 24 in.; water flows around 24 in./s; and clean, well-oxygenated freshwater. Spawning Atlantic salmon adults are most frequently observed during October and November.

EFH regulations also direct the fishery management councils to consider a second, more limited habitat designation for each species in addition to EFH. Habitat areas of particular concern (HAPCs) are described in the regulations as subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPCs are not afforded any additional regulatory protection under the MSFCMA. However, Federal projects with potential adverse impacts on HAPCs are more carefully scrutinized. In addition to identifying general EFH for Atlantic salmon, the New England Fishery Management Council also identified HAPC for adult Atlantic salmon in 11 coastal watersheds in Maine that support unique and important populations of Atlantic salmon. Thus, those HAPCs would not be affected by VYNPS operations.

6.2.3 Atlantic Salmon in the Connecticut River

Prior to damming of the Connecticut River watershed, Atlantic salmon spawning runs occurred as far upstream as Beecher Falls (near the Vermont-Canadian border, about RM 370) (NHFGD 2005). Spawning runs mostly occurred in the spring, but a small number of Atlantic salmon also migrate upriver in the early fall. Those that return in the spring spend the summer in deep, cold pools of their natural streams before spawning in fall (Connecticut River Atlantic Salmon Commission 1998). The optimal temperature range for migratory adults is 57.2 to 68°F

(Krisweb.com undated). Since the installation of fishways on the Connecticut River, Atlantic salmon have reached as far upstream as the Ammonoosuc River, downstream of the Ryegate Dam (RM 273) (FWS undated). Historically, little of the mainstem of the Connecticut River downstream of the present-day site of the Ryegate Dam supported Atlantic salmon rearing habitat (Gephard and McMenemy 2004). Spawning habitat primarily occurs in the Connecticut River tributaries (Gephard and McMenemy 2004). Artificial barriers (e.g., dams and faulty culverts) and natural barriers (e.g., waterfalls > 10 ft high) pose problems for adults migrating to their spawning areas (Kart et al. 2004). Most returning Atlantic salmon are captured for broodstock, although about 10 percent are released upstream of Holyoke Dam to spawn naturally (Connecticut River Atlantic Salmon Commission 1998). In 2004, nearly 7.8 million fry, parr, and smolts were stocked in the Connecticut River watershed (U.S. Atlantic Salmon Assessment Committee 2005).

In 2004, it was estimated that 183,000 smolts were produced above Holyoke Dam (RM 87) (U.S. Atlantic Salmon Assessment Committee 2005). Smolt passage efficiency at Bellows Falls, Vernon, Turners Falls, and Holyoke Dams has been estimated at 80 percent at each dam (Boubee and Haro 2003).

Optimal spawning temperature is 41 to 46.4°F (Krisweb.com undated). Spawning habitat consists of coarse, clean gravel stretches that are at least 3 to 10 ft long and 3 ft wide with water depths 1 to 2 ft. Self-sustaining populations of Atlantic salmon do not currently occur within the Connecticut River watershed are therefore, dependent on a multi-state stocking effort (Kart et al. 2004). Juvenile Atlantic salmon have been stocked in streams as far north as the Nulhegan River, Vermont, about 350 mi upstream on the Connecticut River (FWS undated).

Annual spawning runs in the Connecticut River have numbered in the hundreds but more recently have declined to less than one hundred. For example, in 2004 there were only 69 documented Atlantic salmon returns to the river, and only 1635 to all rivers in the United States (U.S. Atlantic Salmon Assessment Committee 2005). Spawning run declines have been occurring throughout the range during the last 30 years (Gephard and McMenemy 2004). There is a no-take policy for Atlantic salmon in the Connecticut River (NHFGD 2005). The Connecticut River Atlantic Salmon Commission establishes annual schedules for the passage of migratory fish species for a number of dams on the Connecticut River (FWS 2006). The 2006 schedule for upstream passage operations at Vernon Dam was May 15 through July 15 and September 15 through November 15 for Atlantic salmon; the 2006 schedule for downstream Atlantic salmon passage was April 1 through June 15 for smolts and October 15 through December 31 for adults (FWS 2006). The number of Atlantic salmon that have annually passed upstream of Vernon Dam from 1981 to 2006 has ranged from 0 to 13. Four passed the dam in 2006 (FWS 2006).

A variety of factors, including stream hydrology, water temperatures, pH, dissolved oxygen, streambed characteristics, availability of food, competition, predation, pollution, and recreational and commercial fishing, interact to affect the survival of the various life stages of Atlantic salmon

in rivers and streams (Maine Atlantic Salmon Task Force 1997). In addition to turbine mortality and other passage issues at dams, dams and their impoundments can delay migration of Atlantic salmon smolts and increase water temperature, which can lead to a loss of smolt characteristics. This can have a negative impact on the capacity of smolts to survive in seawater and return as adults (McCormick et al. 1999). Extended residency in impoundments can also increase predatory pressure to smolts. Low pH due to acid deposition appears to be detrimental to outmigrating smolts. Water temperature fluctuations in the Atlantic Ocean over the past ten years may be contributing to reduced adult salmon returns throughout much of their range (Kart et al. 2004). Atlantic salmon recovery is also hindered by degraded water quality parameters, siltation in tributary streams, and predation of early life history stages by a variety of species including the striped bass.

The results of studies conducted at VYNPS suggest that no eggs and larvae or any life stage of Atlantic salmon are entrained. There are no records of adults being impinged. Each year low numbers of smolts are impinged at VYNPS. These losses are inconsequential when compared to the total number of smolts in the river. The number of smolts impinged has been a small portion of the applicant's NPDES permit limit for Atlantic salmon (Aquatec 1978, 1990; Entergy 2006a; Entergy and Normandeau 2004; Normandeau 1999, 2004a, 2005; VYNPS and Normandeau 2002).

The only life stages of the Atlantic salmon exposed to the VYNPS thermal plume are smolts (during spring) and migrating adults (during spring and fall). The schedule for upstream fish passage operations at Vernon Dam is from mid May to mid July and from mid September to mid November for adult salmon. The downstream fish passage operations are from about April 1 through mid June for smolts and mid October to the end of December for adults (FWS 2006).

Few adults pass by VYNPS as adult spawning runs in the Connecticut River are small and 90 percent of the adults that reach Holyoke Dam are captured for broodstock. Adult Atlantic salmon passage at Vernon Dam occurs during mid June (VFWD 2006).

The optimum temperature range for adult Atlantic salmon migration is 57.2 to 68°F with the highest temperature for normal upstream migration being about 80.6°F, depending upon acclimation and duration of exposure (Fay et al. 2006). The optimum temperature range for smolt migration is 44.6 to 57.7°F with the highest temperature being about 66.2°F (Fay et al. 2006).

In 2004, river temperatures of VYNPS averaged about 42.9°F in April, 57.3°F in May, and 65.7°F in June, while at the downstream monitoring Station 3 they averaged about 43.3°F in April, 59.5°F in May, and 67.5°F in June. Average daily temperatures at the Vernon Dam fishway from mid May through the end of June ranged from 55.5°F(May 27) to 70.6°F (June 15) (Normandeau 2005). Thus, river temperatures near the VYNPS are within the tolerance limits of migrating adult Atlantic salmon and, most often, for migrating smolts. June appears to be the only month during which water temperatures exceed tolerance limits for outmigrating smolts;

therefore smolt migration could potentially be affected during June. No blockages of adult Atlantic salmon past Vernon Dam due to VYNPS operations were observed during Project SAVE (Save Available Vermont Energy) (Aquatec 1990). Seventy-five percent of the adult Atlantic salmon that passed Turners Falls Dam passed the Vernon Dam fishway, while radiotelemetry studies of smolts revealed that downstream movement into and through the VYNPS thermal plume occurred without any observed delays (Aquatec 1990). Most Atlantic salmon smolt migrate past VYNPS before the upper limit for survival of 82°F is exceeded (Normandeau 2004a). Atlantic salmon smolts migrating past VYNPS would not be subjected to elevated temperatures for more than 12 hr, and could avoid the warmest waters by swimming around or under the plume (Normandeau 2004a). Therefore, there may be a slight habitat squeeze in the migration corridor in the vicinity of VYNPS, but studies indicate that most smolts successfully complete their downstream migration.

Although prey items for Atlantic salmon are entrained or impinged in the VYNPS cooling system, there is no indication that prey populations have been measurably affected and that prey populations near VYNPS are not limited by station operation. The NRC staff concludes VYNPS operations would likely have a minimal adverse effect on Atlantic salmon EFH (See Table 7 for a summary of potential adverse effects).

7.0 MITIGATION MEASURES

Four categories of impacts related to VYNPS operations that could influence EFH for the Atlantic salmon are: (1) entrainment of Atlantic salmon early life stages; (2) impingement of juvenile or adult Atlantic salmon; (3) discharge of heated cooling water; and (4) mortality of Atlantic salmon prey species due to impingement, entrainment, or thermal effects. The applicant's NPDES permit contains operational and temperature limits to protect water quality and minimize impacts to aquatic biota. The State of Vermont has established limits on the increase in water temperature above ambient in the Connecticut River due to station operations. These limits were established, in part, to minimize impacts to Atlantic salmon during the spawning migration and outmigration of smolts. Additionally, the VYNPS intake is located in an area devoid of unique spawning habitat for Atlantic salmon so entrainment of eggs and larvae are not a concern. Should impingement of smolts prove to be a problem in the future, particularly if the Connecticut River salmon population increases substantially, the licensee could install a fish return system or operate the station in the closed-cycle cooling mode during the period of time the smolts are outmigrating.

Table 7. Impacts of VYNPS Operations on EFH of the Atlantic Salmon

Life Stage	EFH Description	Expected Effect of VYNPS Operations on EFH
Eggs	Bottom habitats with gravel or cobble riffles above or below a pool in rivers; clean, well-oxygenated water with water temperatures <50°F and water depths of 30 to 61 cm (1 to 2 ft); occur most frequently between October and April.	**No Adverse Effect.** No spawning habitat near plant. Additionally, eggs incubate in gravel and are, therefore, not subject to entrainment. Spawning areas not affected by thermal discharges.
Larvae	Bottom habitats with gravel or cobble riffles above or below a pool in rivers; clean, well-oxygenated water with water temperatures <50°F; occur most frequently between March and June for alevins/fry.	**No Adverse Effect.** No spawning habitat near the plant so no thermal effects. Additionally, alevins remain buried in gravel and once fry emerge from the redd they tend to remain in their natal stream. Therefore, larvae are not subject to entrainment.
Juveniles	Shallow gravel/cobble habitats interspersed with deeper riffles and pools in rivers and estuaries; clean, well-oxygenated water with water temperatures 77°F; prefers water depths of 10 to 61 cm (0.3 to 2 ft) and water velocities of 30 to 92 cm/s (1 to 3 ft/s).	**Minimal Adverse Effect.** Parr habitat no present in immediate area of VYNPS therefore no thermal effects. Smolts not commonly impinged; impingement numbers well below yearly NPDES permit limits. Prey items are entrained or impinged at VYNPS, but prey population size not affected. Smolts move into and through the VYNPS thermal plume without observed delays.
Adults	Areas with resting and holding pools in rivers and estuaries for adults returning to spawn; water temperatures <73°F and with dissolved oxygen levels >5 ppm; oceanic adults are mainly pelagic and range from the continental shelf off southern New England north throughout the Gulf of Maine.	**Minimal Adverse Effect.** Very few returning Atlantic salmon allowed to continue upstream spawning migrations past Holyoke Dam. Generally, those that pass Turners Falls Dam also pass Vernon Dam, and most of those subsequently pass Bellows Falls Dam. Few post-spawning adults expected to pass the VYNPS area. Generally, impingement of adults would be unlikely. Adults do not feed while in freshwater; thus, other fish species impinged at VYNPS do not comprise a loss of prey items for adult Atlantic salmon. Thermal effects on adults not observed and unlikely.
Spawning Adults	Bottom habitats with gravel or cobble riffles above or below a pool in rivers; clean, well-oxygenated water with temperatures <50°F, depths of 30 to 61 cm (1 to 2 ft), and velocities about 61 cm/s (2 ft/s); spawning most frequently occurs in October and November.	**No Adverse Effect.** No spawning habitat near the plant so no adverse effect due to thermal discharges or impingement.

Sources: Maine Atlantic Salmon Task Force 1997; NMFS 1998, 2006a; Scott and Crossman 1973

8.0 CONCLUSION

For each life stage, VYNPS operations were evaluated to determine whether they resulted in (1) no adverse impact, (2) minimal adverse impacts, or (3) substantial adverse impact on Atlantic salmon EFH. These impact categories follow the standards used by the Northeast Regional Office of the NMFS. The expected impacts of VYNPS operations on EFH for the Atlantic salmon are summarized in Table 7. Because VYNPS operates for a portion of the year in a once-through mode, it has the potential to have an adverse impact on EFH for the Atlantic salmon due to withdrawal from the Connecticut River. However, the low level of interactions between the Atlantic salmon and the facility, as well as current mitigation measures in place at VYNPS, reduce the potential adverse effect on the various life stages of the Atlantic salmon and their respective EFHs. The 316(a) and (b) Demonstration that has been conducted at VYNPS, coupled with results of annual impingement, entrainment, and riverine sampling of fish required by NPDES permit stipulations, have demonstrated that VYNPS operations do not have an adverse effect on the aquatic biota in the Connecticut River, including the movement of migrating Atlantic salmon smolts and adults (Aquatec 1978, 1990; Entergy 2006a; Entergy and Normandeau 2004; Normandeau 1999, 2004a, 2005; VYNPS and Normandeau 2002). The affected area from VYNPS operations would not affect any habitats in or near bays, estuaries, or offshore areas. Accordingly, there would be no adverse effects on EFH or Federally managed species in such areas. The NRC staff concludes that license renewal of VYNPS for an additional 20 years of operation would result in a minimal adverse effect on EFH of the Atlantic salmon.

9.0 REFERENCES

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Appendix F

Generic Environmental Impact Statement Environmental Issues Not Applicable to Vermont Yankee Nuclear Power Station

Appendix F

Generic Environmental Impact Statement Environmental Issues Not Applicable to Vermont Yankee Nuclear Power Station

Table F-1 lists those environmental issues listed in the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS) (NRC 1996, 1999)[(a)] and Title 10, Part 51, of the *Code of Federal Regulations* (10 CFR Part 51), Subpart A, Appendix B, Table B-1, that are not applicable to Vermont Yankee Nuclear Power Station (VYNPS) because of plant or site characteristics.

Table F-1. GEIS Environmental Issues Not Applicable to VYNPS

ISSUE–10 CFR Part 51, Subpart A, Appendix B, Table B-1	Category	GEIS Sections	Comment
SURFACE-WATER QUALITY, HYDROLOGY, AND USE (FOR ALL PLANTS)			
Altered salinity gradients	1	4.2.1.2.2	VYNPS does not discharge to an estuary.
Altered thermal stratification of lakes	1	4.2.1.2.2; 4.4.2.2	VYNPS does not use surface water from lakes.
GROUNDWATER USE AND QUALITY			
Groundwater-use conflicts (potable and service water, and dewatering; plants that use >100 gpm)	2	4.8.1.1; 4.8.2.1	VYNPS does not use >100 gpm of groundwater.
Groundwater-use conflicts (Ranney wells)	2	4.8.1.4	VYNPS does not use Ranney wells.
Groundwater-quality degradation (Ranney wells)	1	4.8.2.2	VYNPS does not use Ranney wells.
Groundwater-quality degradation (saltwater intrusion)	1	4.8.2.1	VYNPS uses <100 gpm of groundwater and is not located near a saltwater body.
Groundwater-quality degradation (cooling ponds in salt marshes)	1	4.8.3	VYNPS does not use a cooling pond.

(a) The GEIS was originally issued in 1996. Addendum 1 to the GEIS was issued in 1999. Hereafter, all references to the "GEIS" include the GEIS and its Addendum 1.

Table F-1. (contd)

ISSUE–10 CFR Part 51, Subpart A, Appendix B, Table B-1	Category	GEIS Sections	Comment
Groundwater-quality degradation (cooling ponds at inland sites)	2	4.8.3	VYNPS does not use a cooling pond.
TERRESTRIAL RESOURCES			
Bird collisions with cooling towers	1	4.3.5.2	VYNPS does not use natural draft towers.
Cooling pond impacts on terrestrial resources	1	4.4.4	VYNPS does not use a cooling pond.

F.1 References

10 CFR Part 51. *Code of Federal Regulations*, Title 10, *Energy*, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

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Appendix G

NRC Staff Evaluation of Severe Accident Mitigation Alternatives (SAMAs) for Vermont Yankee Nuclear Power Station

Appendix G

NRC Staff Evaluation of Severe Accident Mitigation Alternatives (SAMAs) for Vermont Yankee Nuclear Power Station

G.1 Introduction

Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Entergy) submitted an assessment of severe accident mitigation alternatives (SAMAs) for Vermont Yankee Nuclear Power Station (VYNPS) as part of the environmental report (ER) (Entergy 2006a). This assessment was based on the most recent VYNPS probabilistic safety assessment (PSA) available at that time (Model VY04R1), a plant-specific offsite consequence analysis performed using the MELCOR Accident Consequence Code System 2 (MACCS2) computer code, and insights from the VYNPS individual plant examination (IPE) (VYNPC 1993) and individual plant examination of external events (IPEEE) (VYNPC 1998). In identifying and evaluating potential SAMAs, Entergy considered SAMAs that addressed the major contributors to core damage frequency (CDF) and population dose at VYNPS, as well as SAMA candidates for other operating plants which have submitted license renewal applications. Entergy identified 302 potential SAMA candidates. This list was reduced to 66 unique SAMA candidates by eliminating SAMAs that: are not applicable to VYNPS due to design differences, have already been implemented at VYNPS, or are similar in nature and could be combined with another SAMA candidate. Entergy assessed the costs and benefits associated with each of the potential SAMAs and concluded in the ER that several of the candidate SAMAs evaluated are potentially cost-beneficial.

Based on a review of the SAMA assessment, the U.S. Nuclear Regulatory Commission (NRC) issued a request for additional information (RAI) to Entergy by letter dated June 1, 2006 (NRC 2006a). Key questions concerned: findings of the Boiling Water Reactor Owners Group (BWROG) and the independent assessment team reviews of the VYNPS PSA; the approach used to assign source terms for each release category as a part of the Level 2 analysis; justification for the multiplier used for external events; further information on several specific candidate SAMAs and low cost alternatives; and details for several of the cost estimates provided. Entergy submitted additional information by letters dated August 1, 2006, September 19, 2006, October 20, 2006 and November 6, 2006 (Entergy 2006b, Entergy 2006c, Entergy 2006d, Entergy 2006e). In response to the RAIs, Entergy provided: information regarding the findings of the BWROG peer review; a discussion of the process for assigning severe accident source terms for the Level 2 analysis; additional information regarding several specific SAMAs; and additional information pertaining to the cost estimates. Additionally, Entergy provided two attachments to the RAI responses, containing information on a later version of the PSA (version VY05R0) and a revised assessment of the SAMA benefits based on this later version of the PSA. This revised assessment utilizes a modified multiplier to

account for external events exclusive of uncertainties, and a modified core inventory to account for plant-specific burn-up and enrichment. Entergy's responses addressed the NRC staff's concerns.

An assessment of SAMAs for VYNPS is presented below.

G.2 Estimate of Risk for Vermont Yankee Nuclear Power Station

Entergy's estimates of offsite risk at the VYNPS are summarized in Section G.2.1. The summary is followed by the NRC staff's review of Entergy's risk estimates in Section G.2.2.

G.2.1 Entergy's Risk Estimates

Two distinct analyses are combined to form the basis for the risk estimates used in the SAMA analysis: (1) the VYNPS Level 1 and 2 PSA model, which is an updated version of the IPE (VYNPC 1993) that accounts for the Extended Power Uprate (EPU) conditions, and (2) a supplemental analysis of offsite consequences and economic impacts (essentially a Level 3 PSA model) developed specifically for the SAMA analysis. The ER (Entergy 2006a) included a SAMA analysis based on PSA version VY04R1. Subsequently, the SAMA analysis was revised based on PSA version VY05R0, and submitted as part of Entergy's RAI response (Entergy 2006c). The scope of the VYNPS PSA does not include external events.

The baseline CDF for the purpose of the SAMA evaluation is approximately 8.0×10^{-6} per year. The CDF is based on version VY05R0 of the PSA for internally-initiated events. Entergy did not include the contribution from external events within the VYNPS risk estimates; however, it did account for the potential risk reduction benefits associated with external events by effectively multiplying the estimated benefits for internal events by a factor of 3.33[(a)]. This is discussed further in Sections G.2.2 and G.6.2.

The breakdown of CDF by initiating event is provided in Table G-1. The results from the earlier PSA model (VY04R1) are also provided for information. As shown in this table, events initiated by loss of offsite power, internal flooding, transients without the power conversion system, and loss of an AC bus are the dominant contributors to CDF. Although not separately reported, station blackout (SBO) sequences contribute 2.3×10^{-6} per year (about 29 percent of the total

(a) In the ER, Entergy bounded the combined impact of external events and uncertainties by applying a multiplier of 10 to the estimated SAMA benefits for internal events. In response to an RAI, Entergy revised the analysis to include a multiplier of 3.33 to account for potential SAMA benefits in both internal and external events, and provided a separate accounting of uncertainties.

Table G-1. VYNPS Core Damage Frequency

PSA Model	VY04R1		VY05R0	
Initiating Event	**CDF* (Per Year)**	**% Contribution to CDF**	**CDF[(a)] (Per Year)**	**% Contribution to CDF**
Loss of offsite power	7.2×10^{-7}	14	2.8×10^{-6}	35
Internal Flooding	1.5×10^{-6}	29	1.4×10^{-6}	17
Transients without power conversion system	8.2×10^{-7}	16	8.4×10^{-7}	11
Loss of AC Bus 3	4.0×10^{-7}	8	7.9×10^{-7}	10
Loss of AC Bus 4	3.5×10^{-7}	7	7.3×10^{-7}	9
Loss of DC Bus 2	2.5×10^{-7}	5	2.8×10^{-7}	4
Loss of DC Bus 1	2.6×10^{-7}	5	2.8×10^{-7}	3
Inadvertently opened relief valve	2.7×10^{-7}	5	2.7×10^{-7}	3
Reactor trip	1.4×10^{-7}	3	1.7×10^{-7}	2
Anticipated Transient Without Scram	1.4×10^{-7}	3	1.5×10^{-7}	2
Loss of Coolant Accidents	3.7×10^{-8}	1	7.3×10^{-8}	1
Stuck-open relief valve	6.9×10^{-8}	1	6.5×10^{-8}	1
Total loss of service water	5.0×10^{-8}	1	5.2×10^{-8}	1
Interfacing System LOCA	1.6×10^{-8}	<1	3.9×10^{-8}	<1
LOCA outside containment	3.7×10^{-8}	1	3.4×10^{-8}	<1
Total CDF	**5.0×10^{-6}**	**100**	**8.0×10^{-6}**	**100**

(a) Point Estimate.

internal events CDF) (Entergy 2006c), while anticipated transient without scram (ATWS) sequences contribute 1.5×10^{-7} per year to CDF (about 2 percent of the total internal events CDF). With the Loss of Offsite Power (LOOP) initiating event contributing 2.8×10^{-6} per year to the CDF, the percentage of LOOP events resulting in SBO is high. This is because the dominant LOOP initiator involves a regional blackout due to severe weather conditions (Entergy 2006d).

The Level 2 VYNPS PSA model that forms the basis for the SAMA evaluation represents an updated version of the original IPE Level 2 model. The current Level 2 model utilizes a single containment event tree (CET), containing both phenomenological and systemic events, that is directly linked with the Level 1 models. CET nodes are evaluated using supporting fault trees

and logic rules. Plant Damage States (also called core damage sequence functional classes) were defined for the purposes of summarizing and reporting the results of the Level 1 and Level 2 analyses.

The result of the Level 2 PSA is a set of 14 release categories with their respective frequency and release characteristics. The results of this analysis for VYNPS are provided in Table RAI.2.b of the RAI responses (Entergy 2006c). The frequency of each release category was obtained from the quantification of the linked Level 1 - Level 2 models and is the sum of the frequency of the individual accident progression CET endpoints binned into the release category. The release characteristics for each release category were obtained by frequency-weighting the release characteristics for each CET endpoint contributing to the release category (Entergy 2006c).

The offsite consequences and economic impact analyses use the MACCS2 code to determine the offsite risk impacts on the surrounding environment and public. Inputs for these analyses include plant-specific and site-specific input values for core radionuclide inventory, source term and release characteristics, site meteorological data, projected population distribution (within an 80-kilometer (50-mile) radius) for the year 2032, emergency response evacuation modeling, and economic data. The core radionuclide inventory is derived from an ORIGEN calculation assuming a 4.65 percent enrichment and average burn-up (Entergy 2006b). The magnitude of the onsite impacts (in terms of clean-up and decontamination costs and occupational dose) is based on information provided in NUREG/BR-0184 (NRC 1997b).

In the revised SAMA analysis (Entergy 2006c), Entergy estimated the dose to the population within 80 kilometers (50 miles) of the VYNPS site to be approximately 0.151 person-sievert (Sv) (15.1 person-rem) per year. The breakdown of the total population dose by containment release mode is summarized in Table G-2. Containment failures within the early time frame (less than 6 hours following accident initiation) dominate the contributions to the population dose risk at VYNPS.

G.2.2 Review of Entergy's Risk Estimates

Entergy's determination of offsite risk at VYNPS is based on the following three major elements of analysis:

- The Level 1 and Level 2 risk models of the 1993 IPE submittal (VYNPC 1993), and the external events analyses of the 1998 IPEEE submittal (VYNPC 1998),

- The major modifications to the IPE model that have been incorporated in the VYNPS PSA, and

Table G-2. Breakdown of Population Dose by Containment Release Mode

Containment Release Mode	Population Dose (Person-Rem[(a)] Per Year)	% Contribution
Early Containment Failure	12.8	85
Late Containment Failure	2.1	14
Containment Bypass	0.2	1
Intermediate Containment Failure	< 0.1	< 1
Intact Containment	negligible	negligible
Total	**15.1**	**100**

(a) One person-Rem = 0.01 person-Sv.

- The MACCS2 analyses performed to translate fission product source terms and release frequencies from the Level 2 PSA model into offsite consequence measures.

Each of these analyses was reviewed to determine the acceptability of Entergy's risk estimates for the SAMA analysis, as summarized below.

The NRC staff's review of the VYNPS IPE is described in an NRC report dated February 9, 1996 (NRC 1996). Based on a review of the IPE submittal, the NRC staff concluded that the IPE submittal met the intent of Generic Letter (GL) 88-20; that is, the licensee's IPE process is capable of identifying the most likely severe accidents and severe accident vulnerabilities. It was noted that internal flooding and weather related LOOP initiators were included in the IPEEE, but not in the IPE. The current internal-event PSA, however, includes both internal flooding and weather-related LOOP initiators. No severe accident vulnerabilities associated with either core damage or poor containment performance were identified in the IPE.

While no vulnerabilities were identified in the IPE and no hardware modifications were proposed as a result of the IPE, several plant improvements were identified and implemented prior to and in conjunction with the IPE. These improvements included: replacement of uninterrupted power supply for the low pressure coolant injection system injection valves, improvement of the safety relief valve and main steam isolation valve (MSIV) pneumatic components, replacement of instrument air compressors and upgrade of the residual heat removal service water (RHRSW) system (NRC 1996).

The VYNPS IPEEE analysis of internal flooding yielded a CDF of 9.0×10^{-6} per year. The NRC staff IPEEE SER (NRC 2001) concluded, with respect to the internal flooding, that while the analysis process is capable of identifying the most likely severe accidents, insufficient information was provided and that this weakness may inhibit its use in other regulatory

applications. The internal flooding analysis has been subsequently updated, and the current CDF is 1.4 x 10^{-6} per year. The model has also been incorporated within the scope of the internal-events PSA. The internal flooding model is discussed further in Section G.3.2.

The VYNPS IPEEE listed 14 opportunities for improvements with respect to internal flooding. In response to an RAI, Entergy provided the status of these 14 improvements (Entergy 2006b). Ten have been implemented and credited in the current flooding risk analysis or were shown by analysis not to be required. The remaining four were judged to mitigate non-credible events or not have a significant impact on risk. In response to a staff RAI, Entergy described a review of the revised flooding risk analysis performed in 2002 to identify modifications that would further reduce the flooding risk (Entergy 2006e). A modification to provide spray shielding in two areas was identified and included in the current analysis as a candidate SAMA. No other modifications, short of major structural or relocation changes were identified. The NRC staff concludes that the opportunity for internal flood-related SAMAs has been adequately explored and that it is unlikely that there are any additional potentially cost-beneficial, internal flood-related SAMA candidates.

There have been numerous revisions to the IPE model since the 1993 IPE submittal. A comparison of internal events CDF between the 1993 IPE and the current PSA model (version VY05R0) indicates an increase of approximately 3.7 x 10^{-6} per year (from 4.3 x 10^{-6} per year to 8.0 x 10^{-6} per year). However, as indicated above, the 1993 IPE did not include internal flooding, which originally had an estimated CDF of 9.0 x 10^{-6} per year. If this is added to the 1993 IPE value for internal events, the resulting CDF is 1.3 x 10^{-5} per year. This indicates a reduction in the CDF between the 1993 IPE and the current PSA model of 5 x 10^{-6} per year (from 1.3 x 10^{-5} per year to 8.0 x 10^{-6} per year).

A comparison of the contributors to the total CDF indicates that some have increased while others have decreased from the IPE. The most notable changes are in the LOOP, which has increased from approximately 8.6 x 10^{-7} per year to 2.8 x 10^{-6} per year, internal flooding, which decreased from approximately 9.0 x 10^{-6} per year (from the IPEEE) to 1.4 x 10^{-6} per year and ATWS, which decreased from approximately 8 x 10^{-7} per year to 1.5 x 10^{-7} per year. A summary listing of those changes that resulted in the greatest impact on the internal events CDF made in the various revisions of the PSA was provided in response to a staff request for additional information and is summarized in Table G-3 (Entergy 2006c).

The CDF value from the 1993 IPE (1.3 x 10^{-5} per year, including the contribution from internal flooding events) is near the average of the CDF values reported in the IPEs for boiling-water reactor (BWR) 3/4 plants. Figure 11.2 of NUREG-1560 shows that the IPE-based total internal events CDF for BWR 3/4 plants ranges from 9 x 10^{-8} to 8 x 10^{-5} per year, with an average CDF for the group of 2 x 10^{-5} per year (NRC 1997a). It is recognized that other plants have updated the values for CDF subsequent to the IPE submittals to reflect modeling and hardware changes.

Table G-3. VYNPS PSA Historical Summary

PSA Version	Summary of Changes from Prior Model[a]	CDF per Year
1993	IPE Submittal - no internal flooding (With 1998 IPEEE internal flooding of 9.0×10^{-6} added)	4.3×10^{-6} (1.3×10^{-5})
1998 Model Update (VY118)	Reviewed by BWROG in 2000 (With 1998 IPEEE internal flooding of 9.0×10^{-6} added) - corrected modeling limitations found in IPE - incorporated impact of three design changes (ATWS rule instrumentation, normal position of LPCI/RHR minimum flow valve, and standby position of torus vent valve)	4.9×10^{-6} (1.4×10^{-5})
VY00R0	- Integrated individual models (transients, LOCAs, internal flooding, ISLOCA, LOCA outside containment and Level 2) into single model - updated component failure database	1.8×10^{-5}
VY02R0	- Incorporated major design changes (addition of fourth battery charger, replacement of 24VDC batteries with 125VDC to 24VDC converter, and containment nitrogen system model revised to reflect new piping and nitrogen supply) - Updated failure rate and unavailability data - Updated initiating event frequencies - Updated internal flooding model to include: two separate initiators for SW line break in torus room, revised human error probabilities, and additional credit for CRD system	4.3×10^{-6}
VY02R6	- Revised non-recovery factors for loss of service water and loss of offsite power - Revised model to have separate initiators for SORV and IORV - Removed credit for use of CRD for injection early in event sequences	7.8×10^{-6}
VY04R1	- Revised model to account for effects associated with Extended Power Uprate[b] - Revised treatment of SW recovery to be based on system failure modes - Revised flooding analysis of SW line break at elevation 280' - Updated loss of vital DC bus initiating event frequency - Updated reactor protection system fault tree model	5.0×10^{-6}
VY05R0	- Increased mission time for emergency diesel generators from 8 to 24 hours - Updated frequency of loss of offsite power (LOOP) initiating event - Added LOOP due to severe weather - Revised model to include credit for use of John Deere diesel generator as an alternate power supply for the station battery chargers - Reevaluated human error associated with use of diesel driven fire pump - Added operator action to model the potential that the operator fails to adequately control the torus vent, leading to a net positive suction head (NPSH) loss and ECCS pump failure	8.0×10^{-6}

(a) Summary of changes includes the key changes made to previous model revisions not specifically listed in this table.
(b) A sensitivity study associated with the EPU application indicated that the EPU increased the CDF by 3.3×10^{-7} per year (Entergy 2003).

The current internal events CDF results for VYNPS (8.0×10^{-6} per year) are comparable to or somewhat lower than that for other plants of similar vintage and characteristics.

The NRC staff considered the peer reviews performed for the VYNPS PSA, and the potential impact of the review findings on the SAMA evaluation. In the ER and in a response to a staff RAI (Entergy 2006a, 2006b), Entergy described the peer review by the BWROG of the 1998 model (Model VY118) conducted in September of 2000. Entergy also provided a list of strengths and weaknesses identified by the peer review, and a list of ten areas for improvement along with their resolution. The BWROG review concluded that the VYNPS PSA can be effectively used to support applications involving risk significance determinations supported by deterministic analysis, once the significant Facts and Observations (F&Os) are addressed. In response to the NRC staff's request for additional information concerning the application for extended power uprate (Entergy 2004), Entergy indicated that a total of 104 F&Os were identified during the BWROG peer review, and provided a listing of the single "Category A" and the 51 "Category B" F&Os, along with their resolutions. The NRC staff reviewed this material and concluded that the VYNPS PSA has sufficient scope, level of detail and technical adequacy to support the risk evaluation of the proposed EPU (NRC 2005). In the context of the SAMA application, Entergy stated that all significant F&Os (i.e., A and B priority) have been resolved and that appropriate modeling changes have been implemented in the PSA version used to support SAMA analysis.

The internal flooding analysis performed for the IPEEE was included within the BWROG peer review. Entergy indicated that internal flooding was cited in the review as a strength and that there were no recommended areas for improvement associated with internal flooding. In response to an RAI (Entergy 2006b), Entergy described the significant changes subsequently made in the internal flooding analysis to support the significant reduction in CDF due to internal flooding.

Given that the VYNPS internal events PSA model has been peer-reviewed and the peer review findings were either addressed or judged to have no adverse impact on the SAMA evaluation, and that Entergy has satisfactorily addressed NRC staff questions regarding the PSA, the NRC staff concludes that the internal events Level 1 PSA model is of sufficient quality to support the SAMA evaluation.

As indicated above, the current VYNPS PSA does not include external events. In the absence of such an analysis, Entergy used the VYNPS IPEEE to identify the highest risk accident sequences and the potential means of reducing the risk posed by those sequences, as discussed below.

The VYNPS IPEEE was submitted in June 1998 (VYNPC 1998), in response to Supplement 4 of GL 88-20. This submittal included internal flooding, as well as the usual external events (seismic, fire and other external events). While no fundamental weaknesses or vulnerabilities to

severe accident risk in regard to the external events were identified, a listing of improvement opportunities was developed. Improvements related to internal flooding were discussed above. Additional improvements for seismic, fire, high winds and other external events are discussed below. In a letter dated March 22, 2001, the NRC staff concluded that the submittals met the intent of Supplement 4 to GL 88-20, and that the licensee's IPEEE process is capable of identifying the most likely severe accidents and severe accident vulnerabilities (NRC 2001).

The VYNPS IPEEE uses a focused scope Electric Power Research Institute (EPRI) seismic margins analysis. This method is qualitative and does not provide numerical estimates of the CDF contributions from seismic initiators (EPRI 1991). The seismic IPEEE identified a number of outliers of items within the scope of the Unresolved Safety Issue (USI) A-46 program. Resolution of these outliers was accomplished in the context of USI A-46. Given the satisfactory resolution of these outliers, VYNPS found that, based on the EPRI assessment methodology, all high confidence low probability of failure (HCLPF) values were greater than the 0.3 g review level earthquake used in the IPEEE except for the condensate storage tank (CST) with a HCLPF value of 0.25 g and the Diesel Fuel Oil Storage Tank with a HCLPF of 0.29 g. The NRC review and closure of USI A-46 for VYNPS is documented in a letter dated March 20, 2000 (NRC 2000).

The IPEEE identifies seven opportunities for improvement related to seismic events, including improvements related to the CST and Diesel Fuel Oil Storage Tank. In response to an RAI, Entergy confirmed that, with the exception of improvements related to the CST, all the improvements identified in the IPEEE and in Tables 2.7 and 2.12 of NUREG-1742 (NRC 2002) have been implemented or otherwise shown not to be required (Entergy 2006b). In response to an RAI, Entergy evaluated a modification to raise the CST HCLPF value. This is discussed further in Section G.3.2. Based on the information provided by the applicant, the NRC staff finds the treatment of seismic events to be reasonable for the purposes of the SAMA analysis.

The VYNPS IPEEE fire analysis employed EPRI's fire-induced vulnerability evaluation methodology to perform a qualitative and quantitative screening review and then a probabilistic risk analysis to estimate the CDF contribution for the areas that did not screen out. After qualitative screening, fire event initiation frequencies were determined for the unscreened areas for use in quantitative screening along with the assumption that all equipment in a compartment was damaged by the fire. Using results from the IPE, a conservative CDF for the compartment was determined and areas with a CDF of less than 1×10^{-6} per year were screened out. Fire propagation and suppression analysis was then conducted on the unscreened compartments. Fire induced CDFs were determined by propagating the fire initiating events and associated equipment failures determined by the fire propagation and suppression analysis through event trees similar to those in the IPE. The potential impact on containment performance and isolation was evaluated following the core damage evaluation. The VYNPS fire CDF results, after updating in response to IPEEE RAIs, are presented in Table E.1-11 of the ER. The total fire CDF, found by summing the values for all compartments is 5.6×10^{-5} per year.

In the IPEEE, four opportunities for improvements with respect to fire events were identified. These improvements were all credited in the IPEEE fire CDF. Three of the four improvements involved improvements in the fire prevention inspection and barrier inspection and maintenance programs. The fourth improvement involved relocating or protecting certain control cables for offsite power breakers. In the ER, Entergy indicates that these improvements have been implemented.

The NRC staff inquired about additional steps taken to reduce fire risk and the possibility of additional SAMAs that might be feasible to reduce the fire risk. Entergy provided a listing of fire related Phase I SAMAs that have been implemented. Most of these SAMAs are improvements in the fire protection program, that while they would decrease the fire risk, are not explicitly credited in the fire risk analysis. Entergy further argued that a number of the SAMAs, identified based on internal events analysis, would also mitigate the fire risk and identified these SAMAs and the affected fire zones (Entergy 2006c). In addition, all of the dominant fire zones are equipped with fire detection systems and all but two of the zones have fire suppression systems (Entergy 2006e). Each of the dominant contributors to the total fire CDF and the associated fire detection and suppression system for those fire zones are shown in Table G-4.

The feasibility of adding fire suppression to the two remaining fire zones was examined and it was concluded that this was inappropriate to do so because of inherent complexity and competing risks associated with possible fire suppression designs. Based on the above, Entergy concluded that no additional cost effective fire related SAMAs would be expected (Entergy 2006e). The NRC staff concludes that the opportunity for fire-related SAMAs has been adequately explored and that it is unlikely that there are any potentially cost-beneficial, fire-related SAMA candidates.

In the ER, Entergy states that the above CDF values are screening values and that a more realistic fire CDF may be about a factor of three lower (or 1.86×10^{-5} per year) based on the NRC staff estimate for another license renewal application. In response to an NRC staff RAI to justify the factor of three reduction for VYNPS, Entergy identified seven general conservative assumptions applied to the fire analysis and eight conservatisms specific to fires scenarios in the control room or cable vault that are significant contributors to fire risk (Entergy 2006b). Of the fire scenario-specific conservatisms, most can be characterized by: (1) use of conservative fire frequency and severity factors, (2) no credit taken for certain plant operating procedures during fire events, and (3) use of a simple fire suppression analysis. Based on the existence of numerous conservatisms, the NRC staff finds the use of a fire CDF of 1.86×10^{-5} per year to be reasonable for the purposes of the SAMA analysis.

The IPEEE analysis of high winds, external floods and other external events followed the screening and evaluation approaches specified in Supplement 4 to GL 88-20 (NRC 1991) and

Table G-4. Dominant Contributors to Total Fire CDF at VYNPS

Fire Compartment	Description	CDF (per year)	Fire Detection	Fire Suppression Type
CV	Cable Vault, El. 262'	1.5×10^{-5}	Yes	CO_2
SGW	West Switchgear Room, El. 248'	9.0×10^{-6}	Yes	CO_2
SGE	East Switchgear Room, El. 248'	7.0×10^{-6}	Yes	CO_2
CR	Control Room, El. 272'	5.7×10^{-6}	Yes	None
RB3	Reactor Building, El. 252', Zone RB3 (north)	5.1×10^{-6}	Yes	Pre-action water
RB4	Reactor Building, El. 252', Zone RB4 (south)	3.3×10^{-6}	Yes	None
CVBT	Cable Vault Battery Room, El. 262'	3.2×10^{-6}	Yes	CO_2
TURB	Turbine Building, All General Areas	1.1×10^{-6}	Yes	Pre-action water

did not identify any significant sequences or vulnerabilities (VYNPC 1998). Based on this result, Entergy concluded that these other external hazards would not be expected to impact the conclusions of the SAMA analysis and did not consider them further.

Based on the aforementioned results, the external events CDF is approximately 2.33 times the internal events CDF (based on a negligible seismic CDF, a fire CDF of 1.86×10^{-5} per year, and an internal events CDF of 8.0×10^{-6} per year). Accordingly, the total CDF from internal and external events would be approximately 3.33 times the internal events CDF. In the revised SAMA analyses submitted in response to an RAI, Entergy multiplied the benefit that was derived from the internal events model by a factor of 3.33 to account for the combined contribution from internal and external events. The NRC staff agrees with the applicant's overall conclusion concerning the multiplier used to represent the impact of external events and concludes that the applicant's use of a multiplier of 3.33 to account for external events is reasonable for the purposes of the SAMA evaluation.

The NRC staff reviewed the general process used by Entergy to translate the results of the Level 1 PSA into containment releases, as well as the results of the Level 2 analysis, as described in the ER and in response to NRC staff requests for additional information (Entergy 2006a, 2006b, and 2006c). The current Level 2 model utilizes a single CET, containing both phenomenological and systemic events, which is linked directly to the Level 1 event trees.

Entergy characterized the releases for the spectrum of possible radionuclide release scenarios using a set of 14 release categories, defined based on the timing and magnitude of the release

and whether the containment remains intact or is bypassed. The frequency of each release category was obtained from the quantification of a linked Level 1 - Level 2 model which effectively evaluates a CET for each Level 1 accident sequence. Each CET accident progression end state was assigned to one of the 14 release categories. The release characteristics for each release category were obtained by frequency weighting the release characteristics for each CET end state contributing to the release category. The source term release fractions for the CET endstates were estimated based on the results of plant-specific analyses of the dominant CET scenarios using the Modular Accident Analysis Program (MAAP, Version 4.04) computer program. The release categories, their frequencies and release characteristics are presented in Table RAI.2.b of Entergy's RAI responses (Entergy 2006c).

The NRC staff's review of the Level 2 IPE concluded that it addressed the most important severe accident phenomena normally associated with the Mark I containment type, and identified no significant problems or errors (NRC 1996). Based on the NRC staff's review of the Level 2 methodology, and the fact that the Level 2 model was reviewed in more detail as part of the BWROG peer review, the NRC staff concludes that the Level 2 PSA provides an acceptable basis for evaluating the benefits associated with various SAMAs.

Even though Entergy used the MACCS2 code and scaled the reference BWR core inventory for VYNPS plant-specific power level (1912 MWt), the NRC staff requested that Entergy evaluate the impact on population dose if the core inventory were based on the plant-specific burn-up and enrichment (NRC 2006a). In response to the NRC staff's request, Entergy derived a best estimate inventory of long-lived isotopes (such as Sr-90, Cs-134 and Cs-137) from an ORIGEN calculation assuming 4.65 percent enrichment and average burn-up based on expected fuel management practices. This resulted in an increase of approximately 25 percent in the inventories of the aforementioned radionuclides relative to those considered in the ER (Entergy 2006b). The increase in the inventories, combined with the increase in CDF in version VY05R0 of the PSA, resulted in an increase in total population dose from 9.2 to 15.1 person-rem per year, and an increase in the annual offsite economic risk monetary equivalent (discussed later) from $21,000 to $36,600 (Entergy 2006c). As part of their response, Entergy provided revised benefit estimates for each SAMA based on the revised core inventory values and the revised PSA model. The revised benefit estimates are presented and discussed in Section G.6.

The NRC staff reviewed the process used by Entergy to extend the containment performance (Level 2) portion of the PSA to an assessment of offsite consequences (essentially a Level 3 PSA). This included consideration of the source terms used to characterize fission product releases for the applicable containment release categories and the major input assumptions used in the offsite consequence analyses. The MACCS2 code was utilized to estimate offsite consequences. Plant-specific input to the code includes the source terms for each release category and the reactor core radionuclide inventory (both discussed above), site-specific meteorological data, projected population distribution within an 80-kilometer (50-mile) radius for

the year 2032, emergency evacuation modeling, and economic data. This information is provided in Attachment E of the ER (Entergy 2006a) and Attachment B of the RAI responses (Entergy 2006c).

Entergy used site-specific meteorological data for the 2002 calendar year as input to the MACCS2 code. The hourly data were collected from the onsite meteorological tower. In response to an RAI, Entergy stated that it considered the year 2002 data to be the most current and complete set of data at the time of the SAMA analysis (Entergy 2006b). Missing data was obtained from a backup meteorological system located on the VYNPS site. The NRC staff notes that previous SAMA analyses results have shown little sensitivity to year-to-year differences in meteorological data and concludes that the use of the 2002 meteorological data in the SAMA analysis is reasonable.

The population distribution the applicant used as input to the MACCS2 analysis was estimated for the year 2032, based on the U.S. Census population data for 2000 (Entergy 2006a). The 2000 population was adjusted to account for transient population. These data were used to project county-level resident populations to the year 2032 using a least squares fit method. The NRC staff considers the methods and assumptions for estimating population reasonable and acceptable for purposes of the SAMA evaluation.

The emergency evacuation model was modeled as a single evacuation zone extending out 16 kilometers (10 miles) from the plant. Entergy assumed that 100 percent of the population would move at an average speed of approximately 1.8 meters per second (4 miles per hour) with a delayed start time of 1 hour and 20 minutes (Entergy 2006a). This assumption is similar to the NUREG-1150 study (NRC 1990), which assumed evacuation of 99.5 percent of the population within the emergency planning zone. Sensitivity analyses were performed in which the evacuation delay time was set to 2 hours, and the evacuation speed was decreased to 1 meter per second (2.2 miles per hour). The results of both sensitivity analyses showed that delayed evacuation and lower evacuation speed have a small impact on the population dose. The NRC staff concludes that the evacuation assumptions and analysis are reasonable and acceptable for the purposes of the SAMA evaluation.

Site-specific economic data requiring spatial distributions as input to MACCS2 were prepared by specifying the data for each of the 17 counties within 80 kilometers (50 miles) of the plant. The values used in each of the 240 sectors surrounding the plant corresponded to the county that made up a majority of the land in that sector. Generic economic data that are applied to the region as a whole were revised from the MACCS2 sample problem input when better information was unavailable. These included fraction of farm and non-farm wealth from improvements (e.g., buildings, equipment). The agricultural economic data were extrapolated to 2002 using average values for the 50-mile radius area from the 1987, 1992, and 1997 Census of Agriculture (USDA 1998). The recommended MACCS2 growing seasons duration was assumed.

The NRC staff concludes that the methodology used by Entergy to estimate the offsite consequences for VYNPS provides an acceptable basis from which to proceed with an assessment of risk reduction potential for candidate SAMAs. Accordingly, the NRC staff based its assessment of offsite risk on the CDF and offsite doses reported by Entergy.

G.3 Potential Plant Improvements

The process for identifying potential plant improvements, an evaluation of that process, and the improvements evaluated in detail by Entergy are discussed in this section.

G.3.1 Process for Identifying Potential Plant Improvements

Entergy's process for identifying potential plant improvements (SAMAs) consisted of the following elements:

- Review of the most significant basic events from the plant-specific PSA,
- Review of potential plant improvements identified in the VYNPS IPE and IPEEE,
- Review of Phase II SAMAs from license renewal applications for six other U.S. nuclear sites, and
- Review of other NRC and industry documentation discussing potential plant improvements.

Based on this process, an initial set of 302 candidate SAMAs, referred to as Phase I SAMAs, was identified. In Phase I of the evaluation, Entergy performed a qualitative screening of the initial list of SAMAs and eliminated SAMAs from further consideration using the following criteria:

- The SAMA is not applicable at VYNPS due to design differences,
- The SAMA has already been implemented at VYNPS, or
- The SAMA is similar in nature and could be combined with another SAMA candidate.

Based on this screening, 236 SAMAs were eliminated, leaving 66 for further evaluation. Of the SAMAs eliminated, 57 were eliminated because the SAMA is not applicable at VYNPS because of design differences, 175 were eliminated because the SAMA has already been implemented at VYNPS, and 4 were eliminated because the SAMA is similar in nature and could be combined with another SAMA candidate. The remaining SAMAs, referred to as Phase II SAMAs, are listed in Table E.2-1 of the ER (Entergy 2006a) and Revised Table E.2-1 of the RAI

responses (Entergy 2006c). In Phase II, a detailed evaluation was performed for each of the 66 remaining SAMA candidates, as discussed in Sections G.4 and G.6 below. To account for the potential impact of external events, the estimated benefits based on internal events were multiplied by a factor of 3.33, as previously discussed.

G.3.2 Review of Entergy's Process

Entergy's efforts to identify potential SAMAs focused primarily on areas associated with internal initiating events. The initial list of SAMAs generally addressed the accident sequences considered to be important to CDF from functional, initiating event, and risk reduction worth perspectives at VYNPS, and included selected SAMAs from prior SAMA analyses for other plants.

In Table E.1-3 of the ER, Entergy provided a tabular listing of the risk significant terms or functions in the PSA sorted according to their risk reduction worth (RRW) in PSA version VY04R1 (Entergy 2006a). A revision to this table based on PSA version VY05R0 was provided in response to an RAI (Entergy 2006d). SAMAs impacting the risk significant terms would have the greatest potential for reducing risk. Entergy used a RRW cutoff of 1.005, which corresponds to about a one-half percent change in CDF given 100-percent reliability of the SAMA. This equates to a benefit (using PSA version VY05R0) of approximately $15,000 (after the benefits have been multiplied to account for external events). Entergy correlated the terms with highest risk importance in the Level 1 PSA with the SAMAs evaluated in Phase I or Phase II, and showed that, with a few exceptions, all of the significant terms are addressed by one or more SAMAs (Entergy 2006a).

The exceptions (for which Entergy did not identify any SAMAs to address risk significant terms) are all operator action terms, in which procedure enhancements have already been implemented and further procedural changes would be of little benefit. Consequently, the only potential for reducing the risk would be to automate the operator action, if it has not already been automated. For most of these operator actions, automating the operator actions raises the potential for adverse risk impacts. For example, the operator action with the highest RRW involves aligning the John Deere diesel generator and the firewater system to provide alternate injection into the reactor for station blackout sequences. In response to NRC staff inquiries, Entergy stated that if these actions were automated and spurious operation occurred, potential serious adverse electrical and/or fluid system interaction would be possible. While it is possible to design around these interactions, this would complicate the modification and increase its cost (Entergy 2006e). Entergy concluded for this operator action that no Phase II SAMAs need be considered. With one exception, the same conclusion is reached for the other significant operator actions. The exception is automating the starting of turbine building closed cooling water (TBCCW) pumps after a loss of offsite power. For this case, the cost-benefit of automating this function was evaluated at the NRC staff's request and it was found not to be cost-beneficial (Entergy 2006c).

For a number of the Phase II SAMAs listed in the ER, the information provided did not sufficiently describe the proposed modification. Therefore, the NRC staff asked the applicant to provide more detailed descriptions of the modifications for several of the Phase II SAMAs candidates (NRC 2006a). In response to the RAI, Entergy provided the requested information (Entergy 2006b).

The NRC staff questioned the ability of some of the candidate SAMAs to accomplish their intended objectives (NRC 2006a). In response to the RAIs, Entergy addressed the NRC staff's concerns by either re-evaluating the existing SAMA using revised modeling assumptions, or by evaluating an alternative (additional) SAMA (Entergy 2006c). This is discussed further in Section G.6.2.

The NRC staff also questioned Entergy about lower cost alternatives to some of the SAMAs evaluated, including revising operator procedures to provide additional space cooling to the emergency diesel generator (EDG) room via the use of portable equipment, the use of a portable generator to power the battery chargers, and providing an auto-start feature to start a TBCCW pump automatically during a LOOP event (NRC 2006a). In response to the RAIs, Entergy addressed the suggested lower cost alternatives, some of which are covered by an existing procedure, or are addressed by a new SAMA (Entergy 2006b, 2006c, 2006d). This is discussed further in Section G.6.2.

Internal flooding initiators contribute more than 17 percent of the internal events CDF (Entergy 2006c). In the ER, Entergy only evaluated one SAMA candidate, SAMA 47, which would uniquely reduce the internal flooding contribution. In response to an RAI, Entergy indicated that a number of the SAMAs identified to mitigate non-flooding sequences would also mitigate flooding events. Fourteen opportunities were identified in the IPEEE for improvements for internal flooding. In response to the RAI, Entergy described each of the 14 improvements and confirmed that they were either implemented and credited in the PSA (10 of the 14) or were not warranted for various reasons (4 of the 14) (Entergy 2006b). In response to further NRC staff inquiry, Entergy stated that an internal flooding assessment was conducted by Entergy in 2002, subsequent to the IPEEE assessment. The assessment indicated SAMA 47 as a potential improvement and concluded that all other identified improvements to further reduce the internal flooding impact were either not feasible or excessively costly (Entergy 2006e). SAMA 47 is discussed further is Section G.6.2. Additionally, Entergy provided a revised Table E.1-3 of risk significant terms, which had changed based on the use of PSA version VY05R0. It indicated that the number of internal flooding risk significant terms had dropped as a result of the PSA revision, from 17 to nine (Entergy 2006d).

Based on this information, the NRC staff concludes that the set of SAMAs evaluated in the ER, together with those identified in response to NRC staff RAIs, addresses the major internal event contributors to CDF (including internal flooding).

Entergy did not identify VYNPS-specific candidate SAMAs for seismic events. In the VYNPS IPEEE seismic analysis, all high confidence low probability of failure (HCLPF) values were greater than the 0.3g review level earthquake except for the CST, which had a HCLPF value of 0.25g. NRC requested that Entergy evaluate modifications that would raise the CST HCLPF to 0.3g (NRC 2006a). Entergy indicated that the combination of strengthening the lower portion of the shell and additional anchorage would accomplish this goal. To assess the benefit, operator failure to switch over from CST suction for high-pressure coolant injection (HPCI)/reactor core isolation coolant (RCIC) to torus suction was eliminated. This resulted in a benefit (including the impact of uncertainties) of $17,000. Entergy estimated the cost of implementing this SAMA to be $1M (Entergy 2006c). This new SAMA would not be cost-beneficial at VYNPS. Therefore, no cost-effective hardware changes were identified to address the CST. Furthermore, Entergy states in the ER that several seismic-related enhancements beyond those identified in the IPEEE were evaluated, and that these enhancements were included in the comprehensive list of Phase I SAMA candidates. Entergy identified and described these SAMAs in response to an RAI (Phase I SAMAs 205 through 210 and SAMA 212) and confirmed that all of these SAMAs have been implemented (Entergy 2006b). Based on the licensee's IPEEE, the A-46 efforts to identify and address seismic outliers, the modifications that have already been implemented, and the expected cost associated with further seismic risk analysis and potential plant modifications, the NRC staff concludes that the opportunity for seismic-related SAMAs has been adequately explored and that it is unlikely that there are any cost-beneficial, seismic-related SAMA candidates.

Entergy also did not identify VYNPS-specific candidate SAMAs for fire events. The fire risk at VYNPS is dominated by eight fire areas, the largest contributor being the cable vault. The NRC staff asked the applicant to explain what measures were taken to further reduce risk and why the fire risk cannot be further reduced in a cost effective manner (NRC 2006a). In response to this request, Entergy stated that most of the fire scenarios are mitigated by SAMAs responding to internal risk contributors. Entergy also provided a list of fire-related Phase I SAMAs (214 through 224 and 282 through 284) that were previously implemented. In response to an RAI concerning the possibility of SAMAs to address fire events, Entergy pointed out that many of the Phase II SAMAs identified based on internal events risk also mitigate the fire risk. Entergy also stated that all eight dominant risk significant fire areas are equipped with a fire detection system that alarms in the control room, and that six of the eight areas are equipped with a fire suppression system. Of the two areas not equipped with fire suppression systems, Entergy indicated that installation of these systems is either not feasible or would entail excessive costs (Entergy 2006e). Therefore, no hardware changes or other modifications to further reduce the fire CDF were found to be cost-effective (Entergy 2006b).

In the IPEEE, five opportunities for improvements related to external flooding were identified. These improvements were all related to procedural enhancements to address site flooding or the sealing of conduits or walls to prevent external flood penetration (NRC 2001). In the ER, Entergy stated that all have been implemented and qualitatively discussed the residual risks

from high winds, external flooding, ice, hazardous chemical transportation and nearby facility incidents. These external hazards are below the threshold screening frequency and are not expected to impact the conclusions of the SAMA analysis. Accordingly, Entergy considered the potential for SAMAs to further reduce these risks, but concluded that further modifications would not be cost-beneficial (Entergy 2006a). The NRC staff concludes that the applicant's rationale for eliminating these enhancements from further consideration is reasonable.

The NRC staff notes that the set of SAMAs submitted is not all inclusive, since additional, possibly even less expensive, design alternatives can always be postulated. However, the NRC staff concludes that the benefits of any additional modifications are unlikely to exceed the benefits of the modifications evaluated and that the alternative improvements would not likely cost less than the least expensive alternatives evaluated, when the subsidiary costs associated with maintenance, procedures, and training are considered.

The NRC staff concludes that Entergy used a systematic and comprehensive process for identifying potential plant improvements for VYNPS, and that the set of potential plant improvements identified by Entergy is reasonably comprehensive and therefore acceptable. This search included reviewing insights from the plant-specific risk studies, reviewing plant improvements considered in previous SAMA analyses. While explicit treatment of external events in the SAMA identification process was limited, it is recognized that the prior implementation of plant modifications for seismic and fire events and the absence of external event vulnerabilities reasonably justifies examining primarily the internal events risk results for this purpose.

G.4 Risk Reduction Potential of Plant Improvements

Entergy evaluated the risk-reduction potential of the 66 remaining SAMAs that were applicable to VYNPS. The majority of the SAMA evaluations were performed in a bounding fashion in that the SAMA was assumed to completely eliminate the risk associated with the proposed enhancement. Such bounding calculations over-estimate the benefit and are conservative.

Entergy used model re-quantification to determine the potential benefits. The CDF and population dose reductions were estimated using the VYNPS PSA model. The changes made to the model to quantify the impact of the SAMAs are detailed in Section E.2.3 of Attachment E to the ER (Entergy 2006a) and in Attachment B of the September 19, 2006 RAI responses (Entergy 2006c). Table G-5 lists the assumptions that were considered to estimate the risk reduction for each of the evaluated SAMAs, the estimated risk reduction in terms of percent

Table G-5. SAMA Cost-Benefit Screening Analysis for VYNPS[a]

SAMA	Assumptions	% Risk Reduction[b]		Total Benefit Using 7% Discount Rate ($)[c]	Total Benefit Using 3% Discount Rate ($)[c]	Cost ($)
		CDF	Population Dose			
Additional Service Water Pump 1 - Add a service water pump.	Eliminate CDF contribution due to loss of service water.	<1	<1	24,000	34,000	5,900,000
Redundant Train to EDG Building HVAC 2 - Provide a redundant train/means of EDG Room ventilation.	Eliminate CDF contribution from EDG failures.	24	26	750,000	1,000,000	2,200,000[d]
Improvements Related to Diagnosis of EDG Building HVAC 3 - Add a diesel building high temperature alarm, or redundant louver and thermostat.	Reduce probability of EDG run failures by a factor of three.	18	19	560,000	760,000	1,300,000[d]
Decay Heat Removal Capability	Completely eliminate loss of torus cooling mode of the RHR and RHRSW system events.	6	8	230,000	310,000	
4 - Install and independent method of suppression pool cooling.						5,800,000
12 - Install a passive containment spray system						5,800,000
17 - Add dedicated suppression pool cooling.						5,800,000
Filtered Vent	Bin successful torus venting sequences into the Low-Low release category	0	~0	400	500	
5 - Install a filtered containment vent to provide fission product scrubbing. Option 1: Gravel Bed Filter. Option 2: Multiple Venturi Scrubber.						3,000,000
22 - Install a filtered vent.						3,000,000

Table G-5. (contd)

SAMA	Assumptions	% Risk Reduction[b] CDF	% Risk Reduction[b] Population Dose	Total Benefit Using 7% Discount Rate ($)[c]	Total Benefit Using 3% Discount Rate ($)[c]	Cost ($)
Containment Vent for ATWS Decay Heat Removal	Eliminate CDF contribution from loss of torus cooling mode of RHR and RHRSW in ATWS event sequences.	~0	0	0	0	
6 - Install a containment vent large enough to remove ATWS decay heat.						>2,000,000
56 - Install an ATWS sized vent.						>2,000,000
Molten Core Debris Removal	Completely eliminate containment failures due to core-concrete interaction (not including liner failure).	0	11	280,000	390,000	
7 - Create a large concrete crucible with heat removal potential under the base mate to contain molten core debris.						>100,000,000
8 - Create a water-cooled rubble bed on the pedestal.						19,000,000
11 - Create a core melt source reduction system						>1,000,000
14 - Increase the depth of the concrete base mat or use an alternative concrete material to ensure melt-through does not occur.						>5,000,000
15 - Provide a reactor vessel exterior cooling system.						2,500,000
25 - Provide a means of flooding the rubble bed.						2,500,000

Table G-5. (contd)

SAMA	Assumptions	% Risk Reduction[b] CDF	% Risk Reduction[b] Population Dose	Total Benefit Using 7% Discount Rate ($)[c]	Total Benefit Using 3% Discount Rate ($)[c]	Cost ($)
26 - Install a reactor cavity flooding system.						8,750,000
Drywell Head Flooding	Completely eliminate drywell head failures due to high temperature.	0	0	0	0	
9 - Provide modification for flooding the drywell head.						>1,000,000
23 - Provide a method of drywell head flooding.						>1,000,000
Reactor Building Effectiveness	Bin sequences with releases into reactor building into the Low-Low release category.	0	39	940,000	1,300,000	
10 - Enhance fire protection system and standby gas treatment system hardware and procedures.						>2,500,000
16 - Construct a building connected to primary containment that is maintained at a vacuum.						>2,100,000 [d]
24 - Use alternate method of reactor building spray.						>>2,500,000 [f]
Strengthen Containment	Eliminate CDF contribution due to ATWS and loss of containment heat removal.	6	9	240,000	330,000	
13 - Strengthen primary and secondary containment.						12,000,000
18 - Create a larger volume in containment.						8,000,000

Table G-5. (contd)

SAMA	Assumptions	% Risk Reduction[b] CDF	% Risk Reduction[b] Population Dose	Total Benefit Using 7% Discount Rate ($)[c]	Total Benefit Using 3% Discount Rate ($ [c]	Cost ($)
19 - Increase containment pressure capability (sufficient pressure to withstand severe accidents).						12,000,000
27 - Add ribbing to the containment shell.						12,000,000
Vacuum Breakers 20 - Install improved vacuum breakers (redundant valves in each line)	Eliminate vacuum breaker failures and suppression pool scrubbing failures.	~0	0	4000	5000	>1,000,000
Temperature Margin for Seals 21 - Increase the temperature margin for seals.	Eliminate containment failure due to high temperature drywell seal failure.	0	0	0	0	12,000,000
DC Power	Increase time available to recover offsite power before HPCI and RCIC are lost from 4 to 24 hours during SBO scenarios	11	11	340,000	450,000	
28 - Provide additional DC battery capacity.						1,730,000[d]
29 - Use fuel cells instead of lead-acid batteries.						>1,000,000[e]
33 - Provide 16 hour station blackout injection.						1,730,000[d]
40 - Install fuel cells.						>1,000,000[e]
41 - Extended station blackout provisions.						1,730,000[d]

Table G-5. (contd)

SAMA	Assumptions	% Risk Reduction[b]		Total Benefit Using 7% Discount Rate ($)[c]	Total Benefit Using 3% Discount Rate ($)[c]	Cost ($)
		CDF	Population Dose			
Improved DC System	Completely eliminate failures of DC bus 1.	3	3	100,000	140,000	>500,000
30 - Provide auto-transfer of AC bus control power to a standby DC power source upon loss of the normal DC source						
Dedicated DC Power and Additional Batteries and Divisions	Completely eliminate loss of DC bus 1 and one division of DC power events (battery and bus).	6	6	180,000	240,000	
38 - Add a dedicated DC power supply.						3,000,000
39 - Install additional batteries or divisions.						3,000,000
Turbine Generator	Eliminate CDF contribution due to failure of the Vernon Tie.	29	32	920,000	1,240,000	
31 - Install a gas turbine generator.						>>2,000,000[f]
34 - Install a steam driven turbine generator.						>>2,000,000[f]
35 - Provide an alternate pump power source.						>5,000,000[e]
36 - Install a gas turbine.						>2,000,000
37 - Install a dedicated RHR (bunkered) power supply.						>2,000,000
Bypass Diesel Generator Trips	Reduce probability of EDG failing to run by a factor of three.	18	19	560,000	760,000	>1,200,000[d]
32 - Change procedure to bypass diesel generator trips, or change trip set-points.						

Table G-5. (contd)

SAMA	Assumptions	% Risk Reduction[b] CDF	% Risk Reduction[b] Population Dose	Total Benefit Using 7% Discount Rate ($)[c]	Total Benefit Using 3% Discount Rate ($)[c]	Cost ($)
Locate RHR Inside Containment 42 - Locate residual heat removal (RHR) inside containment.	Bin ISLOCA accident sequences into the same end states as medium LOCA accident sequences.	<1	<1	20,000	28,000	>500,000
ISLOCA 43 - Increase frequency of valve leak testing.	Eliminate CDF contribution due to ISLOCA.	<1	<1	20,000	28,000	100,000
ISLOCA Release 44 - Ensure all ISLOCA releases are scrubbed.	Bin ISLOCA sequences into the Low-Low release category.	0	1	32,000	45,000	>2,500,000
Containment Isolation Valve Position Indication 45 - Add redundant and diverse limit switches to each containment isolation valve.	Eliminate CDF contribution due to ISLOCA and make containment isolation successful in the level 2 model.	<1	<1	20,000	28,000	>1,000,000
MSIV Design 46 - Improve MSIV design.	Eliminate CDF contribution due to main steam line LOCA outside containment.	~0	0	0	0	>1,000,000[e]
Shield Electrical System fro Water Spray 47 - Shield injection system electrical equipment from potential water spray.	Eliminate CDF contribution due to internal flooding initiators that could impact injection system electrical equipment.	3	2	68,000	90,000	250,000
Diesel to CST Makeup Pumps 48 - Install an independent diesel for the condensate storage tank makeup pumps.	Eliminate operator failure to switch over from CST to torus.	2	0	8000	9000	135,000

Table G-5. (contd)

SAMA	Assumptions	% Risk Reduction[b] CDF	% Risk Reduction[b] Population Dose	Total Benefit Using 7% Discount Rate ($)[c]	Total Benefit Using 3% Discount Rate ($)[c]	Cost ($)
High Pressure Injection System	Eliminate CDF contribution due to failure of the HPCI system.	28	25	740,000	1,000,000	
49 - Provide an additional high pressure injection pump with independent diesel.						5,000,000[e]
50 - Install independent AC high pressure injection system.						5,000,000[e]
51 - Install a passive high pressure system.						28,000,000[e]
53 - Install an additional active high pressure system.						4,400,000[e]
54 - Add a diverse injection system.						4,000,000[e]
Improve the Reliability of High Pressure Injection System	Reduce the HPCI system failure probability by a factor of three.	19	17	500,000	670,000	4,000,000[e]
52 - Improved high pressure systems.						
SRV Reseat	Eliminate CDF contribution due to stuck open relief valves.	<1	37	910,000	1,280,000	4,600,000[e]
55 - Increase safety relief valve (SRV) reseat reliability.						
ATWS	Eliminate CDF contribution from ATWS sequences.	2	<1	28,000	36,000	>500,000
57 - Improve ATWS coping capability.						
Diversity of Explosive Valves	Eliminate common cause failure of SLC explosive valves.	0	0	0	0	>200,000
58 - Diversify explosive valve operation.						

Table G-5. (contd)

SAMA	Assumptions	% Risk Reduction[b]		Total Benefit Using 7% Discount Rate ($)[c]	Total Benefit Using 3% Discount Rate ($)[c]	Cost ($)
		CDF	Population Dose			
Reliability of SRVs [g] 59 - Increase the reliability of safety relief valves by adding signals to open them automatically.	Eliminate the occurrence of all RCS overpressure events.	~ 0	0	600	700	>1,500,000
Improve SRV Design 60 - Improve SRV design.	Eliminate probability of SRV failure to open for vessel depressurization.	13	8	260,000	350,000	2,800,000[e]
Self-Cooled ECCS Pump Seals 61 - Provide self-cooled ECCS pump seals.	Eliminate CDF contribution from sequences involving RHR pump failures.	<1	0	9000	12,000	>200,000
Large Break LOCA 62 - Provide digital large break LOCA protection.	Eliminate CDF contribution due to large break LOCA.	<1	0	9000	12,000	>100,000
Controlled Containment Venting[g] **63 - Control containment venting within a narrow band of pressure.**	**Reduce probability of operator failing to vent by a factor of 3 and remove guaranteed failure of core spray and LPCI.**	**3**	**4**	**120,000**	**150,000**	**250,000**
Cross-Tie of RHRSW System to RHR Loop B 64 - Provide a crosstie from the RHRSW system to RHR loop B.	Eliminate CDF contribution from failure of firewater crosstie to RHRSW loop A.	<1	0	10,000	13,000	>500,000

Table G-5. (contd)

SAMA	Assumptions	% Risk Reduction[b]		Total Benefit Using 7% Discount Rate ($)[c]	Total Benefit Using 3% Discount Rate ($)[c]	Cost ($)
		CDF	Population Dose			
ECCS Low Pressure Interlock - Procedure Change **65 - Improve operator action: Defeat low reactor pressure interlocks to open LPCI or core spray injection valves during transients with stuck open SRVs or LOCAs in which random failures prevent all low pressure injection valves from opening.**	**Eliminate probability of ECCS low pressure permissives failing.**	**16**	**17**	**500,000**	**670,000**	**50,000**
ECCS Low Pressure Interlock - Hardware Modification **66 - Install a bypass switch to bypass the low reactor pressure interlocks of LPCI or core spray injection valves.**	**Eliminate probability of ECCS low pressure permissives failing.**	**16**	**17**	**500,000**	**670,000**	**1,000,000**

(a) SAMAs in bold are potentially cost-beneficial
(b) CDF and population dose reductions taken from a revised assessment provided in Attachment B of the RAI responses (Entergy 2006c) based on a revised internal events PSA, model VY05R0
(c) Estimated benefits taken from a revised assessment provided in Attachment B of the RAI responses (Entergy 2006c). This assessment is based on: (1) internal events PSA version VY05R0, (2) a multiplier of 3.33 to account for potential risk reduction in both internal and external events, and (3) revised core inventories to reflect expected fuel management practices at VYNPS.
(d) Estimated costs reflect revised values provided in Attachment B of the RAI responses (Entergy 2006c)
(e) Estimated costs reflect revised values provided in response to RAI 6.b (Entergy 2006c)
(f) Estimated costs reflect revised values provided in response to RAI IV.d (Entergy 2006d)
(g) The assumptions, estimated benefits, CDF and population dose reductions reflect a revised analysis provided in the RAI clarifications (Entergy 2006d)

reduction in CDF and population dose, and the estimated total benefit (present value) of the averted risk. The estimated benefits reported in Table G-5 reflect the combined benefit from both internal and external events, as well as a number of changes to the analysis methodology and revised VYNPS PSA subsequent to the ER. The determination of the benefits for the various SAMAs is further discussed in Section G.6.

The NRC staff questioned the assumptions used in evaluating the benefits or risk reduction estimates of certain SAMAs provided in the ER (NRC 2006a, 2006b). For SAMA 59, increase the reliability of safety relief valves by adding signals to open them automatically, the NRC staff questioned Entergy's modeling assumption that only medium LOCAs would be impacted by this modification (NRC 2006a, 2006b). In response, Entergy re-evaluated the SAMA by eliminating the occurrence of all RCS overpressure events. This revision resulted in a negligible CDF reduction (Entergy 2006d). The NRC staff considers the revised assumptions for this SAMA to be reasonable and acceptable for purposes of the SAMA evaluation.

For Phase II SAMA 63, control containment venting within a narrow pressure band, Entergy estimated the benefit by reducing the probability of operator failure to vent by a factor of three (Entergy 2006a). The NRC staff noted that the benefit of controlled venting occurs for sequences involving successful venting, and that these sequences are not affected by reducing the operator failure to vent (NRC 2006a). In response to an RAI and a subsequent request for clarification, Entergy revised the PSA model binning rule to remove guaranteed failure of core spray and LPCI based upon successful venting of containment. This revision resulted in a CDF reduction of approximately 3.2 percent, which is slightly more than the 2.8 percent CDF reduction previously estimated, and an increase in the estimated benefit (Entergy 2006d). The NRC staff considers the revised assumptions for this SAMA to be reasonable and acceptable for purposes of the SAMA evaluation.

The NRC staff has reviewed Entergy's bases for calculating the risk reduction for the various plant improvements and concludes that the rationale and assumptions for estimating risk reduction are reasonable and generally conservative (i.e., the estimated risk reduction is higher than what would actually be realized). Accordingly, the NRC staff based its estimates of averted risk for the various SAMAs on Entergy's risk reduction estimates.

G.5 Cost Impacts of Candidate Plant Improvements

Entergy estimated the costs of implementing the 66 candidate SAMAs through the application of engineering judgement and use of other licensees' estimates for similar improvements. The cost estimates conservatively did not include the cost of replacement power during extended outages required to implement the modifications, nor did they include contingency costs associated with unforeseen implementation obstacles. The cost estimates provided in the ER also did not account for inflation, which is considered another conservatism. For those SAMAs whose implementation costs were originally developed for severe accident mitigation design

alternative analyses (i.e., during the design phase of the plant), additional costs associated with performing design modifications to the existing plant were not included (Entergy 2006a).

The NRC staff reviewed the bases for the applicant's cost estimates (presented in Section E.2.3 of Attachment E to the ER). For certain improvements, the NRC staff also compared the cost estimates to estimates developed elsewhere for similar improvements, including estimates developed as part of other licensees' analyses of SAMAs for operating reactors and advanced light-water reactors. The NRC staff noted that several of the cost estimates provided by the applicant were drawn from previous SAMA analyses for a dual-unit site. As such, the cost estimates reflect implementation for two units. Also, some of the cost estimates provided (as taken from other SAMA analyses) are specific to a plant's design, such as the number of valves or batteries that would need to be replaced. Therefore, the NRC staff asked the applicant to provide appropriate cost estimates that are specific to VYNPS (NRC 2006a). In response to the NRC staff's request, Entergy provided revised cost estimates for several SAMAs (Entergy 2006c). For those cost estimates that were taken from a dual-unit SAMA analysis, Entergy reduced the estimated costs by half. For those SAMAs that required a more plant-specific cost estimate, Entergy provided new cost estimates along with a brief explanation of what the cost estimates include. Additionally, Entergy provided more refined cost estimates for other SAMAs, as a part of the revised benefit assessment. Refined cost estimates were used for SAMAs in which the revised benefits (using PSA version VY05R0) significantly changed from that provided in the ER. Revision of these cost estimates had no impact on the original conclusions that these SAMAs were not cost-beneficial (Entergy 2006c). The NRC staff reviewed the costs and subsequent cost revisions and found them to be reasonable, and generally consistent with estimates provided in support of other plants' analyses.

The NRC staff concludes that the cost estimates provided by Entergy are sufficient and appropriate for use in the SAMA evaluation.

G.6 Cost-Benefit Comparison

Entergy's cost-benefit analysis and the NRC staff's review are described in the following sections.

G.6.1 Entergy's Evaluation

The methodology used by Entergy was based primarily on NRC's guidance for performing cost-benefit analysis, i.e., NUREG/BR-0184, *Regulatory Analysis Technical Evaluation Handbook* (NRC 1997b). The guidance involves determining the net value for each SAMA according to the following formula:

Net Value = (APE + AOC + AOE + AOSC) - COE where,
APE = present value of averted public exposure ($)
AOC = present value of averted offsite property damage costs ($)
AOE = present value of averted occupational exposure costs ($)
AOSC = present value of averted onsite costs ($)
COE = cost of enhancement ($).

If the net value of a SAMA is negative, the cost of implementing the SAMA is larger than the benefit associated with the SAMA and it is not considered cost-beneficial. Entergy's derivation of each of the associated costs is summarized below.

NUREG/BR-0058 has recently been revised to reflect the agency's policy on discount rates. Revision 4 of NUREG/BR-0058 states that two sets of estimates should be developed: one at three percent and one at seven percent (NRC 2004). Entergy provided both sets of estimates (Entergy 2006a).

Averted Public Exposure (APE) Costs

The APE costs were calculated using the following formula:

APE = Annual reduction in public exposure (Δperson-rem/year)
x monetary equivalent of unit dose ($2000 per person-rem)
x present value conversion factor (10.76 based on a 20-year period with a 7-percent discount rate).

As stated in NUREG/BR-0184 (NRC 1997b), it is important to note that the monetary value of the public health risk after discounting does not represent the expected reduction in public health risk due to a single accident. Rather, it is the present value of a stream of potential losses extending over the remaining lifetime (in this case, the renewal period) of the facility. Thus, it reflects the expected annual loss due to a single accident, the possibility that such an accident could occur at any time over the renewal period, and the effect of discounting these potential future losses to present value. For the purposes of initial screening, which assumes elimination of all severe accidents due to internal events, Entergy calculated an APE of approximately $325,000 for the 20-year license renewal period.

Averted Offsite Property Damage Costs (AOC)

The AOCs were calculated using the following formula:

AOC = Annual CDF reduction
x offsite economic costs associated with a severe accident (on a per-event basis)
x present value conversion factor.

For the purposes of initial screening which assumes all severe accidents due to internal events are eliminated, Entergy calculated an annual offsite economic risk of about $36,600 based on the Level 3 risk analysis. This results in a discounted value of approximately $393,000 for the 20-year license renewal period.

Averted Occupational Exposure (AOE) Costs

The AOE costs were calculated using the following formula:

AOE = Annual CDF reduction
x occupational exposure per core damage event
x monetary equivalent of unit dose
x present value conversion factor.

Entergy derived the values for averted occupational exposure from information provided in Section 5.7.3 of the regulatory analysis handbook (NRC 1997b). Best estimate values provided for immediate occupational dose (3300 person-rem) and long-term occupational dose (20,000 person-rem over a 10-year cleanup period) were used. The present value of these doses was calculated using the equations provided in the handbook in conjunction with a monetary equivalent of unit dose of $2,000 per person-rem, a real discount rate of seven percent, and a time period of 20 years to represent the license renewal period. For the purposes of initial screening, which assumes all severe accidents due to internal events are eliminated, Entergy calculated an AOE of approximately $3,000 for the 20-year license renewal period.

Averted Onsite Costs

Averted onsite costs (AOSC) include averted cleanup and decontamination costs and averted power replacement costs. Repair and refurbishment costs are considered for recoverable accidents only and not for severe accidents. Entergy derived the values for AOSC based on information provided in Section 5.7.6 of NUREG/BR-0184, the regulatory analysis handbook (NRC 1997b).

Entergy divided this cost element into two parts – the onsite cleanup and decontamination cost, also commonly referred to as averted cleanup and decontamination costs, and the replacement power cost.

Averted cleanup and decontamination costs (ACC) were calculated using the following formula:

ACC = Annual CDF reduction
x present value of cleanup costs per core damage event
x present value conversion factor.

The total cost of cleanup and decontamination subsequent to a severe accident is estimated in NUREG/BR-0184 to be $1.1 x 10^9 (discounted over a 10-year cleanup period). This value is integrated over the term of the proposed license extension. For the purposes of initial screening, which assumes all severe accidents due to internal events are eliminated, Entergy calculated an ACC of approximately $92,600 for the 20-year license renewal period.

Long-term replacement power costs (RPC) were calculated using the following formula:

RPC = Annual CDF reduction
x present value of replacement power for a single event
x factor to account for remaining service years for which replacement power is required
x reactor power scaling factor

For the purposes of initial screening, which assumes all severe accidents due to internal events are eliminated, Entergy calculated an RPC of approximately $63,000 for the 20-yr license renewal period.

Entergy based its calculations on the value of 910 megawatts electric, which is greater than the current electrical output for VYNPS (after the extended power uprate). Therefore, Entergy conservatively did not apply power scaling factors to determine the replacement power costs. For the purposes of initial screening, which assumes all severe accidents are eliminated, Entergy calculated the AOSC to be approximately $156,000 for the 20-year license renewal period.

Using the above equations, Entergy estimated the total present dollar value equivalent associated with completely eliminating severe accidents due to internal events at VYNPS to be about $878,000. Use of a multiplier of 3.33 to account for external events increases the value to $2.9M and represents the dollar value associated with completely eliminating all internal and external event severe accident risk at VYNPS.

Entergy's Results

If the implementation costs for a candidate SAMA exceeded the calculated benefit, the SAMA was considered not to be cost-beneficial. In the baseline analysis contained in the ER (using the PSA version VY04R1, a 7-percent discount rate, and considering the combined impact of both external events and uncertainties), Entergy identified three potentially cost-beneficial SAMAs:

- SAMA 47 – shield injection system electrical equipment from potential water spray. This SAMA involves installing shields in two locations to address the impacts of breaks in either of the two locations. At the 303-ft elevation, the shields would protect the

emergency core cooling system (ECCS) 24V DC distribution panel. At the 290-ft elevation, the shields would protect the ECCS instrument panel 6B (S2), channels A and C.

- SAMA 65 – modify procedures to allow operators to defeat the low reactor pressure interlock circuitry that inhibits opening the low-pressure coolant injection (LPCI) or core spray injection valves following sensor or logic failures that prevent all low pressure injection valves from opening.

- SAMA 66 – install a bypass switch to allow operators to bypass the low reactor pressure interlock circuitry that inhibits opening the LPCI or core spray injection valves following sensor or logic failures that prevent all low pressure injection valves from opening.

Entergy performed an additional analysis to evaluate the impact of alternative discount rates on the results of the SAMA assessment. No additional SAMA candidates were determined to be potentially cost-beneficial (Entergy 2006a).

In response to an RAI, Entergy provided a revised assessment based on a separate accounting of the impacts of external events and uncertainties and the use of PSA version VY05R0 (Entergy 2006c). The revised baseline assessment resulted in identification of only one potentially cost-beneficial SAMA (SAMA 65). However, when accounting for uncertainties, SAMA 66 was also potentially cost-beneficial. (SAMA 47, which was marginally cost-beneficial in Entergy's original SAMA assessment, is not cost-beneficial in the revised assessment. This shift is due to a reduction in the multipliers used in the revised assessment for external events and uncertainties, which had multiple conservatisms in the ER.) However, in response to NRC staff inquiries regarding estimated benefits for certain SAMAs and lower cost alternatives, four additional potentially cost-beneficial SAMAs were identified. The potentially cost-beneficial SAMAs, and Entergy's plans for further evaluation of these SAMAs are discussed in more detail in Section G.6.2.

G.6.2 Review of Entergy's Cost-Benefit Evaluation

The cost-benefit analysis performed by Entergy was based primarily on NUREG/BR-0184 (NRC 1997b) and was executed consistent with this guidance.

In the ER, Entergy evaluated the reduction in risk for each SAMA in the context of an upper bound analysis which combined the impact of external events with the impact of uncertainties. Entergy bounded the combined impact of external events and uncertainties in the ER by applying a multiplier of 10 to the estimated SAMA benefits in internal events.

The NRC staff requested that the baseline evaluation be revised to include only the impact of internal and external events (without uncertainties), and that the impact of analysis uncertainties on the SAMA evaluation results be considered separately (NRC 2006a). Given that a revised

CDF was provided in the RAI response (using PSA version VY05R0), Entergy applied the NRC staff request to a revised set of CDF values. The impact of external events was considered by applying a multiplier of 3.33 to the estimated SAMA benefits in internal events (1+ [negligible seismic CDF + fire CDF of 1.86×10^{-5} per year] / [internal events CDF of 7.98×10^{-6} per year]). Additionally, Entergy revised the consequence analyses on which the benefit estimates are based to account for fuel enrichment and burn-up expected during the period of extended operation.

As a result of the revised baseline analysis (using PSA version VY05R0, a multiplier of 3.33 and a 7 percent real discount rate), Entergy found that only one SAMA candidate remained potentially cost-beneficial. SAMA 65 remained cost-beneficial, while SAMAs 47 and 66 were no longer cost-beneficial. When benefits were evaluated using a 3 percent discount rate, as recommended in NUREG/BR-0058, Revision 4 (NRC 2004), no additional SAMAs were determined to be potentially cost-beneficial.

Entergy considered the impact that possible increases in benefits from analysis uncertainties would have on the results of the SAMA assessment. In the revised ER, Entergy presents the results of an uncertainty analysis of the internal events CDF which indicates that the 95 percentile value is a factor of 2.15 times the mean CDF. Information regarding the uncertainty distribution of the internal events CDF of the revised analysis (using PSA version VY05R0) is summarized in Table G-6 (Entergy 2006c). Entergy re-examined the Phase II SAMAs in the revised assessment to determine if any would be potentially cost-beneficial if the revised baseline benefits were increased by an additional factor of 2.15. One additional potentially cost-beneficial SAMA was identified (SAMA 66). SAMA 47, which was marginally cost-beneficial in Entergy's original SAMA assessment, is not cost-beneficial in the revised assessment. This shift is due to a reduction in the multipliers used in the revised assessment for external events and uncertainties, which had multiple conservatisms in the ER.

Table G-6. Uncertainty in the Calculated CDF for VYNPS

Percentile	CDF (per year)
5th	3.81×10^{-6}
50th	6.78×10^{-6}
mean	8.42×10^{-6}
95th	1.81×10^{-5}

Entergy has submitted the potentially cost-beneficial SAMAs 65 and 66 for engineering project cost-benefit analysis. Given that SAMA 47 was no longer found to be potentially cost-beneficial using PSA version VY05R0, Entergy does not plan to evaluate this SAMA for implementation (Entergy 2006d).

The NRC staff questioned the ability of some of the candidate SAMAs identified in the ER to accomplish their intended objectives (NRC 2006a). This included Phase II SAMA 46, improved MSIV design, Phase II SAMA 47, shield injection system electrical equipment from potential water spray, and Phase II SAMA 63, control containment venting within a narrow pressure band. In response, Entergy provided further clarification or revised evaluations (Entergy 2006b, 2006c, 2006d). Of particular note is the revised evaluation of Phase II SAMA 63.

Phase II SAMA 63, control containment venting within a narrow pressure band, was identified as a potential SAMA to prevent rapid containment depressurization when venting, thus avoiding adverse impacts on the ability of low pressure injection systems to take suction from the torus. As described in Section G.4, Entergy revised the PSA model binning rule to remove guaranteed failure of core spray and LPCI based upon successful venting of containment to address the NRC staff's concerns with the benefit assessment. This revision resulted in a CDF reduction of approximately 3.2 percent and Entergy estimated the benefit (not including the impact of uncertainty) to be approximately $116,000 (Entergy 2006d). The estimated cost of implementing this SAMA is approximately $250,000 (Entergy 2006c). The NRC staff notes that when the impact of uncertainties is included, the benefit of SAMA 63 becomes approximately $250,000. Therefore, SAMA 63 is potentially cost-beneficial.

The NRC staff also requested that the applicant provide an evaluation of the costs and benefits of converting the vent system to a passive design or adding redundant components. In response, Entergy evaluated three new SAMAs. The benefit associated with conversion of the existing torus to a passive torus vent was estimated to result in a CDF reduction of 4.5 percent, and a benefit (including the impact of uncertainties) of $370,000. However, Entergy estimated the cost of implementing this SAMA to be approximately $980,000 (Entergy 2006c). Additionally, Entergy evaluated two new SAMAs associated with adding redundant components. The first SAMA proposed providing an alternate power source to torus vent valve V-16-19-86. The second SAMA proposed providing a redundant vent path. The cost of these modifications were estimated at $720,000 and $1.5M, respectively. In an RAI clarification, Entergy stated that the benefit associated with converting the existing torus vent to a passive design can be used as a bounding (conservative) estimate for the two new SAMAs. While the two new SAMAs mitigate the failure of specific components, operator failure to implement torus venting remains the dominant contributor to CDF. As such, implementation of either of these alternative SAMAs would provide a benefit less than $370,000 (Entergy 2006d), and would not be cost-beneficial at VYNPS.

The NRC staff noted that for certain SAMAs considered in the ER, there may be alternatives that could achieve much of the risk reduction at a lower cost. The NRC staff asked the applicant to evaluate several lower cost alternatives to the SAMAs considered in the ER, including SAMAs that had been found to be potentially cost-beneficial at other BWR plants. These alternatives included: (1) revising operator procedures to provide additional space cooling to the EDG room via the use of portable equipment, (2) using a portable generator to power the battery chargers, (3) providing an auto-start feature to start a TBCCW pump

automatically during a LOOP event, (4) providing alternate direct current (DC) feeds to panels supplied only by DC bus, and several additional alternatives (NRC 2006a). Entergy provided a further evaluation of these alternatives, as summarized below.

- Operator procedure revisions to provide additional space cooling to the EDG room via the use of portable equipment (in lieu of a redundant train of EDG room ventilation considered in Phase II SAMA 2) – Based on a bounding analysis in which EDG failures were set to zero, Entergy estimated that this SAMA would result in a CDF reduction of about 24 percent, a population dose reduction of 26 percent and a benefit (including the impact of uncertainties) of $1,610,000. Entergy estimated the cost of implementing this SAMA to be approximately $50,000 (Entergy 2006c). Therefore, Entergy concluded that this low-cost alternative is potentially cost-beneficial for VYNPS.

- Use a portable generator to power the battery chargers -- in response to the NRC staff's inquiry regarding use of a portable generator, Entergy stated that upon a complete SBO, a portable generator could be used to extend the life of both 125 VDC batteries. To assess the benefit, the time available for recovery of offsite power was increased from 4 hours to 24 hours for SBO scenarios. This resulted in a benefit (with uncertainties) of approximately $723,000 (Entergy 2006c). Entergy estimated the cost of implementing this SAMA to be $712,000. Therefore, Entergy concluded that this low-cost alternative is potentially cost-beneficial for VYNPS.

- Provide an auto-start feature to start a TBCCW pump automatically during a LOOP event – to assess the benefit, Entergy created a model with the operator action to start a TBCCW pump set to guaranteed success. This resulted in a CDF reduction of 1.4 percent and a benefit (including the impact of uncertainties) of $49,000. (Entergy 2006c). Entergy estimated the cost of implementing this SAMA to be greater than $100,000. Therefore, this new SAMA would not be cost-beneficial at VYNPS.

- Use a portable generator to provide power to individual 125VDC motor control centers (MCCs) upon loss of a DC bus - To conservatively assess the benefit, Entergy set the failure of the HPCI system to zero. This is equivalent to the benefit assessment for SAMA 49, or approximately $1.6M (including the impact of uncertainties). Entergy estimated the cost of implementing and using the portable generator to be $712,000 (Entergy 2006d). Therefore, Entergy concluded that this low-cost alternative is potentially cost-beneficial for VYNPS.

- Entergy indicated that the remaining low cost alternatives identified by the NRC staff are either already addressed by existing plant procedures, or by a Phase II SAMA.

The NRC staff notes that Entergy has submitted SAMAs 65 and 66 for engineering project cost-benefit analysis. However, four additional potentially cost-beneficial SAMA were identified as a result of the NRC staff review, i.e., (1) control containment venting within a narrow pressure

band (SAMA 63), (2) operator procedure revisions to provide additional space cooling to the EDG room via the use of portable equipment, (3) use a portable diesel generator to extend the life of the 125 VDC batteries, and (4) use a portable generator to provide power to individual 125VDC MCCs upon loss of a DC bus. These SAMAs should also be included in the set of SAMAs to be further evaluated by Entergy.

The NRC staff concludes that, with the exception of the potentially cost-beneficial SAMAs discussed above, the costs of the SAMAs evaluated would be higher than the associated benefits.

G.7 Conclusions

Entergy compiled a list of 302 SAMAs based on a review of the most significant basic events from the plant-specific PSA, insights from the plant-specific IPE and IPEEE, Phase II SAMAs from license renewal applications for other plants, and review of other NRC and industry documentation concerning potential plant improvements. A qualitative screening removed SAMA candidates that (1) were not applicable at VYNPS due to design differences, (2) had already been implemented at VYNPS, or (3) were similar and could be combined with another SAMA. Based on this screening, 236 SAMAs were eliminated leaving 66 candidate SAMAs for evaluation.

For the remaining SAMA candidates, a more detailed design and cost estimate were developed as shown in Table G-5. The cost-benefit analyses in the original ER showed that three SAMA candidates were potentially cost-beneficial in the baseline analysis (Phase II SAMAs 47, 65 and 66). In a revised analysis, Entergy evaluated the same SAMA candidates using a later version of the PSA, new multipliers to account for external events and uncertainties, and core inventory values that better reflect plant-specific fuel management practices. This showed that one SAMA was potentially cost-beneficial in the baseline analysis (Phase II SAMA 65), and one additional SAMA was potentially-cost beneficial when analysis uncertainties are considered (SAMA 66). (SAMA 47, which was marginally cost-beneficial in Entergy's original assessment, is not cost-beneficial in the revised analysis.) Entergy has indicated that Phase II SAMAs 65 and 66 have been submitted for engineering project cost-benefit analysis. The NRC staff concurs that these two SAMAs are potentially cost-beneficial. In addition, as a result of the NRC staff review, four additional SAMAs were also found to be potentially cost-beneficial, i.e., (1) control containment venting within a narrow pressure band (SAMA 63), (2) operator procedure revisions to provide additional space cooling to the EDG room via the use of portable equipment, (3) use a portable diesel generator to extend the life of the 125 VDC batteries, and (4) use a portable generator to provide power to individual 125VDC MCCs upon loss of a DC bus. These SAMAs should also be included in the set of SAMAs to be further evaluated by Entergy.

The NRC staff reviewed the Entergy analysis and concludes that the methods used and the implementation of those methods was sound. The treatment of SAMA benefits and costs

support the general conclusion that the SAMA evaluations performed by Entergy are reasonable and sufficient for the license renewal submittal. Although the treatment of SAMAs for external events was somewhat limited, the likelihood of there being cost-beneficial enhancements in this area was minimized by improvements that have been realized as a result of the IPEEE process, and inclusion of a multiplier to account for external events.

The NRC staff concurs with Entergy's identification of areas in which risk can be further reduced in a cost-beneficial manner through the implementation of all or a subset of the identified, potentially cost-beneficial SAMAs. Given the potential for cost-beneficial risk reduction, the NRC staff agrees that further evaluation of these SAMAs by Entergy is warranted. However, these SAMAs do not relate to adequately managing the effects of aging during the period of extended operation. Therefore, they need not be implemented as part of license renewal pursuant to Title 10 of the *Code of Federal Regulations*, Part 54.

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Docket No. 50-271

11. ABSTRACT *(200 words or less)*

This final supplemental environmental impact statement (SEIS) has been prepared in response to an application submitted to the NRC by Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Entergy) to renew the operating license for Vermont Yankee Nuclear Power Station (VYNPS) for an additional 20 years under 10 CFR Part 54. This SEIS includes the NRC staff's analysis that considers and weighs the environmental impacts of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures available for reducing or avoiding adverse impacts. It also includes the staff's recommendation regarding the proposed action.

The NRC staff's recommendation is that the Commission determine that the adverse environmental impacts of license renewal for VYNPS are not so great that preserving the option of license renewal for energy-planning decisionmakers would be unreasonable. This recommendation is based on (1) the analysis and findings in the GEIS; (2) the Environmental Report submitted by Entergy; (3) consultations with Federal, State, and local agencies ; (4) the staff's own independent review; and (5) the staff's consideration of public comments.

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