

NUCLEAR REGULATORY COMMISSION

[Docket No. 50-213]

Environmental Assessment and Finding of No Significant Impact

**Related to Exemption of Material in Accordance with 10 CFR 20.2002 for Proposed
Disposal Procedures for the Connecticut Yankee Atomic Power Company
License DPR-061, East Hampton, Connecticut**

AGENCY: Nuclear Regulatory Commission

ACTION: Environmental Assessment and Finding of No Significant Impact

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SUPPLEMENTARY INFORMATION:

I. Introduction

The U.S. Nuclear Regulatory Commission (NRC) staff is considering a September 16, 2004, request by the Connecticut Yankee Atomic Power Company (CYAPCO or Licensee), License DPR-61, to dispose of demolition debris from decommissioning the Haddam Neck Plant (HNP) in East Hampton, Connecticut. The request was submitted pursuant to Section 20.2002 of Title 10 of the Code of Federal Regulations (10 CFR 20.2002), "Method of Obtaining Approval of Proposed Disposal Procedures." The licensee proposes to demonstrate that the material is acceptable for burial at a Subtitle C, Resource Conservation and Recovery Act (RCRA) hazardous waste disposal facility in accordance with 10 CFR 20.2002. The RCRA facility is regulated by the State of Idaho Department of Environmental Quality, and any disposal must comply with State requirements. This action, if approved, would also exempt the

slightly contaminated material from further Atomic Energy Act (AEA) and NRC licensing requirements. The NRC has prepared an Environmental Assessment (EA) in support of this proposed action in accordance with the requirements of 10 CFR Part 51. Based on the EA, the NRC has determined that a Finding of No Significant Impact (FONSI) is appropriate.

II. Environmental Assessment

Background:

The waste material (the demolition debris) intended for disposal includes flooring materials, concrete, rebar, roofing materials, structural steel, soils associated with digging up foundations, and concrete and/or pavement or other similar solid materials. Soils remediated for the purpose of meeting the final status survey requirements of the HNP License Termination Plan (LTP) (i.e., exceed the Derived Concentration Guideline Levels [DCGL] in the LTP) are not included in this action. CYAPCO intends to scabble off surface concrete where contamination or activation levels are high, and to dispose of this material at radioactive waste disposal facilities. The demolition debris will originate from the destruction and removal of structures and paved surfaces at the HNP site, after the structure/surface has been decontaminated to remove areas that are highly contaminated. The underlying soil will be surveyed in accordance with CYAPCO's LTP.

The physical form of this demolition debris will be that of bulk material of various sizes ranging from the size of sand grains up to occasional monoliths with a volume of several cubic feet. The material will be dry solid waste containing no absorbents or chelating agents. The mass of demolition debris originating from the decommissioning of the HNP is estimated to be approximately 45,000 metric tons (50,000 tons). After compaction, the estimated volume of material to be disposed of is approximately 30,500 cubic meters (40,000 cubic yards).

The licensee has demonstrated by calculation that the potential dose consequence is less than 30 microsieverts per year ($\mu\text{Sv/y}$) (3.0 millirem per year [mrem/y]), as a result of the proposed burial of demolition debris in a RCRA facility.

Proposed Action:

The proposed action would approve the removal of approximately 45,000 metric tons (50,000 tons) of demolition debris from the HNP, transportation of the debris, and disposition of the debris at the US Ecology facility in Grand View, Idaho. The proposed action also would exempt the low-contamination material from further Atomic Energy Act and NRC licensing requirements. The licensee has conservatively assumed a radionuclide inventory for the demolition debris and calculated the potential dose as less than 30 microsieverts per year ($\mu\text{Sv/y}$) (3.0 millirem per year [mrem/y]), if all the material were disposed of in such a facility. The proposed action is in accordance with the licensee's application dated September 16, 2004, and supplements dated December 17, 2004, March 1, 2005, and March 29, 2005, requesting approval.

Need for Proposed Action:

The licensee needs to dispose of 45,000 metric tons (50,000 tons) of demolition debris since the HNP site is currently undergoing licensed decontamination and decommissioning in accordance with the LTP. Characterization and conservative modeling of the material to be included as demolition debris have been used to develop overall averages for radionuclide concentrations. These averages are listed below in Table 1. The licensee proposes to dispose of 45,000 metric tons (50,000 tons) of demolition debris at US Ecology, Idaho, which is a Subtitle C, RCRA hazardous waste disposal facility. This proposed action, would also require NRC to exempt the slightly contaminated material authorized for disposal from further AEA and NRC licensing requirements.

Table 1. Overall Radionuclide Concentrations

Radionuclide	Average Concentration in Becquerel per gram (Bq/g)	Average Concentration in picoCuries per gram (pCi/g)
H-3	9.7e+00	2.6e+02
C-14	3.6e-01	9.7e+00
Mn-54	6.3e-05	1.7e-03
Fe-55	5.2e-03	1.4e-01
Co-60	1.0e-02	2.8e-01
Ni-63	6.3e-02	1.7e+00
Sr-90	1.1e-03	3.0e-02
Nb-94	4.8e-05	1.3e-03
Tc-99	2.4e-04	6.5e-03
Ag-108m	7.4e-05	2.0e-03
Cs-134	1.8e-04	4.9e-03
Cs-137	3.6e-02	9.7e-01
Eu-152	1.9e-04	5.0e-03
Eu-154	1.4e-04	3.8e-03
Eu-155	1.4e-04	3.9e-03
Pu-238	1.4e-04	3.7e-03
Pu-239	4.4e-05	1.2e-03
Pu-241	1.9e-03	5.1e-02
Am-241	2.4e-04	6.6e-03
Cm-243	4.1e-05	1.1e-03

Alternatives to the Proposed Action:

Alternatives to the proposed action include: (1) taking no action, (2) decontaminating the buildings and structures before demolition, or decontaminating the debris, (3) decontaminating and conducting final status surveys of the buildings, and (4) handling demolition debris as low-level radioactive waste and shipping it to a low-level waste facility. CYAPCO has determined that disposal of these demolition wastes in a Subtitle C, RCRA hazardous waste disposal facility is less costly than alternatives 2, 3 and 4. Disposal of the demolition debris in the manner proposed is protective of public health and safety, and is the most cost-effective alternative.

Environmental Impacts of the Proposed Action:

The 45,000 metric tons (50,000 tons) of demolition debris will come from the HNP containment building, residual heat exchanger facility, the waste disposal building, the auxiliary building, the spent fuel pool and building, the service building, and facility soils, asphalt and other small structures. The HNP is located in the Town of Haddam, Middlesex County, Connecticut, on the east bank of the Connecticut River at a point 21 miles south-southeast of Hartford, Connecticut and 25 miles northeast of New Haven, Connecticut. The reactor was permanently shutdown on December 5, 1996, and the site is currently undergoing active decommissioning. The current site is approximately 430 acres. The distance between the HNP and US Ecology, Idaho, is approximately 2,500 miles. The driving time would be approximately 50 hours (assuming average speed of 50 miles per hour).

The NRC has completed its evaluation of the proposed action and concludes there are no significant radiological environmental impacts associated with the disposal of 45,000 metric tons (50,000 tons) of demolition debris to US Ecology, Idaho, which is a Subtitle C, RCRA hazardous waste disposal facility. The licensee's analysis used conservative estimates of the average radionuclide concentrations based on ongoing site characterization. The licensee analyzed the dose to a transport driver, loader, disposal facility worker, and long-term impacts to a resident. Each of the analyses conservatively estimated the exposure to less than 30 μSv (3.0 mrem) total dose per year. The proposed action will not significantly increase the probability or consequences of accidents and there is no significant increase in occupational or public radiation exposures.

With regard to potential non-radiological impacts, the HNP is considered to be a potentially historically significant site. Potential impacts from site decommissioning and dismantlement were previously considered as part of the HNP LTP review. Site decommissioning is being conducted in accordance with mitigation measures established by

the State Historical Preservation Office, which included documentation of HNP facility in accordance with the professional standards of the National Park Service's Historic American Engineering Record. There is no additional impact to historic archaeological resources resulting from alternate disposal location for demolition debris.

The disposal of demolition debris does not affect non-radiological plant effluents. There may be a slight decrease in air quality and slight increase in noise impacts during the loading and transportation the demolition debris. However, there are no expected adverse impacts to air quality as a result of the loading and transportation of the demolition debris.

CYAPCO estimates that transportation of the demolition debris will require between 2,500 - 3,000 truck shipments. CYACPO is engaging the local community and government officials for awareness and coordination of the shipping activities in the area immediately surrounding the HNP. There is no anticipated overall impact from the alternate disposal as the shipping effort represents a small fraction of the national commercial freight activity. The total tonnage to be shipped represents 0.0005 % of the total U.S. annual commercial freight trucking activity (based on 2002 data). Similarly, the total ton-miles for the alternate disposal represents 0.0087% of the total U.S. annual commercial freight trucking activity in the same time period. Additionally, these activities will be short in duration and minimal as compared to other activities at the HNP. Therefore, there are no significant non-radiological environmental impacts associated with the proposed action.

The proposed action and attendant exemption of the material from further AEA and NRC licensing requirements will not significantly increase the probability or consequences of accidents. In addition, no changes are being made in the types of any effluents that may be released off site, and there is no significant increase in occupational or public radiation exposure.

Environmental Impacts of the Alternatives to the Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the “no-action” alternative). The result of the no-action alternative is that the demolition debris would remain on site until disposition sometime in the future. Therefore, the impacts therefore be limited to the site, and there would be no transportation impacts and no disposal considerations or impacts until sometime in the future.

Two of the alternatives to the proposed action would be to decontaminate the buildings and structures prior to demolition or final status survey. The environmental impacts as a result of these alternatives would decrease air quality, and increase the noise and water usage, as necessary, during the decontamination process. Additionally, there would be an increase in occupational exposure as a result of the decontamination process.

Disposing of the demolition debris in a low-level waste disposal facility is another alternative to the proposed action. This alternative has similar environmental impacts as the proposed action, but is more costly.

Agencies and Persons Consulted:

This EA was prepared by Theodore B. Smith, M.S., Environmental Engineer, Decommissioning Directorate, Division of Waste Management and Environmental Protection (DWMEP). NRC staff determined that the proposed action is not a major decommissioning activity and will not affect listed or proposed endangered species, nor critical habitat. Therefore, no further consultation is required under Section 7 of the Endangered Species Act. Likewise, NRC staff determined that the proposed action is not the type of activity that has the potential to cause previously unconsidered effects on historic properties, as consultation for site decommissioning has been conducted previously. There are no additional impacts to historic properties associated with the disposal method and location for demolition debris. Therefore,

no consultation is required under Section 106 of the National Historic Preservation Act. The NRC provided a draft of its Environmental Assessment (EA) to the following individuals:

Mike Firsick, Supervisor
Connecticut Department of Environmental Protection
Radiological Health Section
79 Elm Street
Hartford, CT 06106-5127

Doug Walker
Senior Health Physicist
State INEEL Oversight Program
900 North Skyline, Suite B
Idaho Falls, ID 83402-1718

The State of Connecticut questioned the basis for the conclusion that impacts to air quality and noise were minimal, and expressed concern about operation of diesel fuel trucks in the state, since the state is in non-attainment (i.e. out of compliance with the Environmental Protection Agency standards) for ozone pollution.

NRC staff considered the states comment, and provides the following clarifying information:

Transportation impacts for decommissioning nuclear facilities were considered in NUREG-0586, Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, Supplement 1, dated November 2002, and determined to be not significant.

The 2,500-3,000 shipments scheduled to occur is a very small fraction of the total number of operating diesel vehicles in the state of Connecticut. Ninety-nine percent of Connecticut school buses run on diesel. Discounting the approximately 360 buses which have had some form of emission reducing equipment retrofit, this still represents 5,680 buses a day operating for nine months a year. This figure does not include city mass transit systems or other commercial shipping. The operation of unmodified diesel engine school buses in the

State of Connecticut represents over one million vehicle days of operation annually. The proposed CYAPCO action represents 0.27 % of the unmodified diesel school bus traffic in a year in the State of Connecticut, and therefore, is not considered significant.

Further, for the “moderate” non-attainment classification of the Haddam Neck and surrounding area, EPA has established an attainment date of June 2010. Due to the relatively quick breakdown of the ozone affecting chemicals compounds in diesel exhaust, the proposed shipping campaign will have no impact on ozone attainment in Connecticut in 2010.

On February 14, 2005, several comments were received from the State of Idaho Department of Environmental Quality. In response to Idaho’s comments and requests, statements have been added to the Introduction to clarify that waste disposal at the US Ecology RCRA C facility must comply with their state issued RCRA C permit, and to identify the proposed exemptions in the Need for Proposed Action section.

Idaho also requested NRC to identify the exemption criteria, and to identify when and where the exemption takes effect. This information will be included in the Safety Evaluation Report and response to CYAPCO.

Idaho requested NRC to clarify how the proposed action relates to regulation of transuranic elements in waste from NRC-licensed facilities. There are five transuranic radionuclides identified in CYAPCO’s proposal; three isotopes of plutonium, americium-241, and curium-243. The plutonium isotopes are considered special nuclear material, subject to 10 CFR 70, while the americium and curium isotopes are byproduct materials subject to 10 CFR 30. As such, all the transuranic materials in the proposed action would be subject to specific exemption under either 10 CFR 30.11 or 10 CFR 70.17.

Idaho requested NRC staff to identify to what extent NRC’s evaluation relied upon US Ecology’s current performance assessment, waste acceptance criteria and verification, health and safety plan, post-closure requirements, radiation monitoring, and waste handling

procedures. NRC staff's dose assessment relied only upon general RCRA facility operating practices and did not require detailed information about US Ecology's facility as part of our analysis.

Finally, the US Ecology site currently accepts other non-NRC licensed radiological material, in accordance with their acceptance criteria. Idaho identified that if NRC determines that the CYAPCO decommissioning waste is exempt from its regulation, Idaho would have to assess the cumulative effects of this additional waste stream, and evaluate regulatory and permitting changes that may apply to US Ecology's RCRA license.

State licensing requirements notwithstanding, NRC staff have concluded that, since the conservatively modeled dose contribution from demolition debris is small (less than 30 $\mu\text{Sv/y}$ (3.0 mrem/y)), it would not constitute a significant increase in the cumulative dose at a RCRA C or other facility.

III. Finding of No Significant Impact

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

Sources Used:

-Connecticut Yankee Atomic Power Company letter CY-04-168, dated September 16, 2004, Request for Approval of Proposed Procedures in Accordance with 10 CFR 20.2002 for alternate disposal at the US Ecology Hazardous Waste Treatment and Disposal Facility in Idaho. (ML042800489).

-Connecticut Yankee Atomic Power Company letter CY-04-252, dated December 17, 2004, Supplemental Information. (ML043570446).

- Connecticut Yankee Atomic Power Company letter CY-05-057, dated March 1, 2005, Supplemental Information. (ML050680216).
- Connecticut Yankee Atomic Power Company letter CY-05-090, dated March 29, 2005, Supplemental Information (ML050960492).
- NRC 10 CFR 20.2002, "Method of Obtaining Approval of Proposed Disposal Procedures"
- NUREG-1640, "Radiological Assessment for Clearance of Materials from Nuclear Facilities."
- NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs."
- US DOT, Bureau of Transportation Statistics, "Transportation Statistics Annual Report", September 2004.
- US DOT, Bureau of Transportation Statistics, "Freight Shipments in America", April 2004.
- US EPA Health Assessment Document for Diesel Engine Exhaust.
- US EPA Designation for 8-Hour Nonattainment Areas in New England Questions and Answers.
- Connecticut Department of Environmental Protection Diesel Risk Reduction Strategies.
- Evaluation of Test Data Collected in 2001 and 2002 from Connecticut's Inspection/Maintenance Program, July 2004.
- NUREG -0586, Supplement 1, Generic Environmental Impact Statement of Decommissioning of Nuclear Facilities, November 2002.
- State of Idaho Department of Environmental Quality letter dated February 7, 2005

IV. Further Information

Documents related to this action, including the application for amendment and supporting documentation, are available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this site, you can access the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents. The ADAMS accession numbers for the documents related to this notice are: (1) ML042800489 for the licensee's exemption request letter of September 16, 2004, (2) ML043570446 for the licensee's supplement of December 17, 2004, (3) ML050680216 for the licensee's supplement of March 1, 2005 and (4) ML050960492 for the licensee's supplement of March 29, 2005. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC's Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737, or by email to pdrc@nrc.gov.

These documents may also be viewed electronically on the public computers located at the NRC's PDR, O 1 F21, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852. The PDR reproduction contractor will copy documents for a fee.

Dated at Rockville, Maryland, this 8th day of April, 2005.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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Division of Waste Management and
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Office of Nuclear Material Safety
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