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JUN 15 1978

Docket Nos. ~~50-245~~ and 50-336

Northeast Nuclear Energy Company
ATTN: Mr. W. G. Counsil, Vice President
Nuclear Engineering and Operations
P. O. Box 270
Hartford, Connecticut 06101

Gentlemen:

The Commission has issued the enclosed Amendment No. 50 to Provisional Operating License No. DPR-21 and Amendment No. 42 to Facility Operating License No. DPR-65 for the Millstone Nuclear Power Station Unit Nos. 1 and 2. The amendments consist of changes to the Appendix B Technical Specifications in response to your application dated February 13, 1978.

The amendments authorize changes to the common Appendix B Technical Specifications that will limit the off-gas release rate of radioactive gases in process to assure that the off-site doses resulting from postulated accidents associated with operation of the Steam Dilution Augmented Off-gas System will not exceed established criteria.

Copies of our Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

Original Signed by:
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Construct 1

Enclosures:
1. Amendment No. 50 to DPR-21
2. Amendment No. 42 to DPR-65
3. Safety Evaluation
3. Notice

SEE PREVIOUS YELLOW FOR ALL CONCURRENCES.

DOR:ORB#2
HSmith:sah
/ /78

OFFICE	DOR:ORB#4	DOR:ORB#2	DOR:ORB#4	DOR:ORB#4	OELD	DOR:ORB#2
SURNAME	RIngram	JShea	MConner	RReid		DLZiemann
DATE	/ /78	/ /78	/ /78	/ /78	/ /78	/ /78

NRC FORM 318 (9-76) NRCM 0240 ☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—626-624

JUN 19 1978

Docket Nos. 50-245
and 50-336

Northeast Nuclear Energy Company
ATTN: Mr. W. G. Counsil, Vice President
Nuclear Engineering and Operations
P. O. Box 270
Hartford, Connecticut 06101

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Operating Reactors Branch #2
Division of Operating Reactors

Enclosures:
1. Amendment No. 50 to DPR-21
2. Amendment No. 42 to DPR-65
3. Safety Evaluation
3. Notice

**See previous yellow for concurrence

DOR:ORB#2
HSmith:sah
5/26/78

OFFICE➤	DOR:ORB#4	DOR:ORB#2	DOR:ORB#4	DOR:ORB#4	OELD	DOR:ORB-2
SURNAME➤	RIngram**	JShea**	MConner**	RReid	J.R.Gray	DLZiemann
DATE➤	5/ /78	5/ /78	5/ /78	5/14/78	5/19/78	5/ /78

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BJones (8)	
BScharf (15)	
JMMcGough	
AESteen	
WPasciak	
BHarless	

Docket No. 50-245

Northeast Nuclear Energy Company
ATTN: Mr. Donald C. Switzer
President
P. O. Box 270
Hartford, Connecticut 06101

Gentlemen:

The Commission has issued the enclosed Amendment No. 50 to Provisional Operating License No. DPR-21 and Amendment No. 42 to Facility Operating License No. DPR-65 for the Millstone Nuclear Power Station Unit Nos. 1 and 2. The amendment consists of changes to the Appendix B Technical Specifications in response to your application dated February 13, 1978.

The amendment authorizes changes to the common Appendix B Technical Specifications that will limit the offgas release rate of radioactive gases in process to assure that five off-site doses resulting from postulated accidents associated with operation of the Steam Dilution Augmented Offgas System will not exceed established criteria.

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Sincerely,

Original Signed by:
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Enclosures:
1. Amendment No. 50 to DPR-21
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**ORB#2:DOR
HSmith:sah
5/14/78

OFFICE	**DOR:ORB#4	*DOR:ORB#2	DOR:ORB#4	DOR:ORB#4	OELD	DOR:ORB#2
SURNAME	RIngram	JShea	MConner	RReid		DLZiemann
DATE	5/12/78	5/24/78	5/25/78	5/ /78	5/ /78	5/ /78

NRC FORM 318 (9-76) NRCM 0240

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cc
William H. Cuddy, Esquire
Day, Berry & Howard
Counselors at Law
One Constitution Plaza
Hartford, Connecticut 06103

Anthony Z. Roisman
Natural Resources Defense Council
917 15th Street, N. W.
Washington, D. C. 20005

Northeast Nuclear Energy Company
ATTN: Superintendent
Millstone Plant
P. O. Box 128
Waterford, Connecticut 06385

Waterford Public Library
Rope Ferry Road, Route 156
Waterford, Connecticut 06385

First Selectman of the Town
of Waterford
Hall of Records
200 Boston Post Road
Waterford, Connecticut 06385

Connecticut Energy Agency (w/copy of 2/13/78 application)
ATTN: Assistant Director, Research
and Policy Development
Department of Planning and
Energy Policy
20 Grand Street
Hartford, Connecticut 06106

Chief, Energy Systems Analyses
Branch (AW-459)
Office of Radiation Programs
U. S. Environmental Protection Agency
Room 645, East Tower
401 M Street, S. W.
Washington, D. C. 20460

U. S. Environmental Protection Agency
Region I Office
ATTN: EIS COORDINATOR
John F. Kennedy Federal Building
Boston, Massachusetts 02203

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

DOCKET NO. 50-245

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 1

AMENDMENT TO PROVISIONAL OPERATING LICENSE

Amendment No. 50
License No. DPR-21

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Connecticut Light and Power Company, The Hartford Electric Light Company, Western Massachusetts Electric Company, and Northeast Nuclear Energy Company (the licensees) dated February 13, 1978, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B of Provisional License No. DPR-21 is hereby amended to read as follows:

"B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 50 , are hereby incorporated in the license. The licensees shall operate the facility in accordance with the Technical Specifications."

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 19, 1978

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

DOCKET NO. 50-336

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 42
License No. DPR-65

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Connecticut Light and Power Company, The Hartford Electric Light Company, Western Massachusetts Electric Company, and Northeast Nuclear Energy Company (the licensees) dated February 13, 1978, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-65 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 42 , are hereby incorporated in the license. The licensees shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 19, 1978

ATTACHMENT TO LICENSE AMENDMENT NO. 50 TO

PROVISIONAL OPERATING LICENSE NO. DPR-21, AND

AMENDMENT NO. 42 TO FACILITY OPERATING LICENSE NO. DPR-65

DOCKET NOS. 50-245 AND 50-336

Replace the following pages of the Appendix "B" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

Remove	Insert
2.4-8	2.4-8
2.4-12	2.4-12

2. For all radioiodine and radioactive materials in particulate form with half-lives greater than eight days, released to the environs as part of the gaseous wastes:

$$7.9 \times 10^4 Q_s + 3.04 \times 10^6 Q_v \leq 1$$

E. deleted

F. During the release of gaseous wastes from the waste gas holdup system of Unit 2, and the offgas system of Unit 1, at least one monitor in each process stream shall be operating and set to alarm and to initiate the automatic closure of a discharge valve prior to exceeding the limits specified in 2.4.2.2.D above. The operability of the automatic isolation valve shall be demonstrated quarterly for each unit.

G. During operation of the augmented offgas system of Unit 1, if the hydrogen concentration reaches an alarm set point of 4% by volume, the concentration shall be reduced to less than 4% or the offgas flow through the augmented offgas retention equipment shall be terminated before the sampled mixture reaches the noble gas retention equipment.

H. If no stack monitor is operating, a shutdown of Unit 1 shall be initiated and the reactor shall be in a hot shutdown condition within 10 hours.

I. The drywell of Unit 1 shall be purged through the standby gas treatment system at all times the primary containment integrity is required.

J. The maximum activity to be contained in one waste gas storage tank of Unit 2 shall not exceed 16,000 curies (considered as Xe-133).

K. In the Unit No. 1 offgas system, the noble gas in-process activity rate shall not exceed 1.47×10^6 u Ci/sec averaged over 15 minutes as measured at the offgas monitor.

L. If limiting conditions in 2.4.2.2.A through 2.4.2.2.K above are exceeded, plant operations shall be modified as required to restore compliance with these specifications. Prompt reporting requirements for exceeding these limiting conditions for operation are detailed in Section 5.6.2.a.(1).

DPR-21: Amendment No. 23, 42, 50
DPR-65: Amendment No. 10, 34, 42

the ENE sector at a distance of 4022 meters where the X/Q_3 is 5.0×10^{-7} sec/m^3 for ground releases, and 1.3×10^{-8} sec/m^3 for elevated releases. The grass-goat-milk-child thyroid chain is controlling.

The assumptions used for these calculations are: (1) onsite meteorological data for the most critical 22.5 degree sector; (2) credit for building wake; and (3) a reconcentration factor of 1220 and a grazing factor of 0.5 was applied for possible ecological chain effects from radioactive iodine and particulate releases where applicable.

Specifications 2.4.2.2.B and 2.4.2.2.C establish upper limits for the releases of noble gases, iodines and particulates with half-lives greater than eight days, and iodine-131 at twice the design objective annual quantity during any calendar quarter, or four times the design objective annual quantity during any period of 12 consecutive months. The intent of this specification is to permit the licensee the flexibility of operation to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in higher releases than the objectives.

In addition to the limiting conditions for operation of Specifications 2.4.2.2.B, 2.4.2.2.C and 2.4.2.2.D, the reporting requirements of 2.4.2.2.A delineate that the cause be identified whenever the release of gaseous effluents exceeds one-half the design objective annual quantity during any calendar quarter, and describe the proposed program of action to reduce such release rates to the design objectives.

General Specification 2.4.2.2.F and 2.4.2.2.H are in accordance with Design Criterion 64 of 10 CFR Part 50.

Specification 2.4.2.2.I requires that the primary containment atmosphere of Unit 1 receive treatment for the removal of gaseous iodine and particulates prior to its release.

Specification 2.4.2.2.G and monitoring requirement 2.4.2.3.G require that hydrogen concentration in the offgas system of Unit 1 shall be monitored at all times the recombiners are in service.

Specification 2.4.2.2.J limits the maximum offsite dose above background to below the limits of 10 CFR Part 20, postulating that the rupture of a waste gas storage tank holding the maximum activity releases all of the contents to the atmosphere.

Specification 2.4.2.2.K limits the offsite dose, due to failure of the Unit No. 1 augmented offgas system, to 5 rem whole body. Analysis shows that this offgas limit is 5.2×10^5 uCi/sec at 30 minutes delay, using the offgas mixture defined in GE BWR Radiation Sources Document 22A2703T. The limit stated in Specification 2.4.2.2.K is this activity rate adjusted for five minutes delay to the location of the offgas monitor.

DPR-21: Amendment No. 28, 50
DPR-65: Amendment No. 10, 42

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION SUPPORTING AMENDMENT NO. 50 TO LICENSE NO. DPR-21, AND AMENDMENT NO. 42 TO LICENSE NO. DPR-65

NORTHEAST NUCLEAR ENERGY COMPANY MILLSTONE NUCLEAR POWER STATION UNIT NOS. 1 AND 2 DOCKET NOS. 50-245 AND 50-336

Introduction

On February 13, 1978, Northeast Nuclear Energy Company (NNECO) submitted a report entitled, "Steam Dilution Off-Gas Recombiner/Augmented Off-Gas System" which provides a system description together with a safety analysis to establish basis for operation criteria. By the same submittal, NNECO proposed to amend its operating licenses DPR-21 and DPR-65 by changes in the Environmental Technical Specifications for Millstone Nuclear Power Station, Units 1 and 2. These changes will limit the off-gas in-process activity rate to assure that the off-site doses resulting from potential accidents associated with operation of the Steam Dilution Augmented Off-gas System (SDAOGS) would not exceed established criteria. This safety evaluation considers the installed SDAOGS which NNECO has proposed to operate. Although the Environmental Technical Specifications for Millstone Units 1 and 2 originally proposed by NNECO had a higher off-gas activity limit, the revised limit we have specified was discussed with and accepted with reservations by representatives of NNECO. NNECO's reservations are based on their inability to justify or confirm the validity of our accident model for the release of the radionuclide inventory from the charcoal beds to the atmosphere.

Discussion

The augmented radioactive off-gas treatment system (AOGS) which NNECO installed to meet the radioactive effluent limits of the Nuclear Regulatory Commission is described in previous NNECO reports dated July 1973 and August 1975. The gaseous waste was to be treated sequentially by (1) a hydrogen recombiner system and (2) a xenon-krypton treatment system. During testing in the last quarter of 1975, an inherent deficiency, referred to as the catalyst migration problem, was discovered which raised questions concerning the future operability of the recombiner portion of the off-gas system. This problem related to the air recycle concept employed in the Millstone Unit No. 1 off-gas recombiner system.

This air recycle feature made the entire system susceptible to contamination with small particles of catalyst, a substance used to initiate the recombination of the hydrogen and oxygen gases in the recombiner. During preoperational testing, it was found that fine particles of this catalyst material had contaminated parts of the recombiner system which would normally contain explosive mixtures of hydrogen and oxygen during reactor operation, thus creating the potential for hydrogen explosions. NNECO therefore modified their AOGS to a steam dilution recombiner system to eliminate the problem related to air recycle and catalyst migration.

Design of the SDAOGS

The proposed SDAOGS is a modification of the AOGS to utilize steam dilution instead of recycle air dilution of the off-gas stream. The second stage ejector of the steam jet air ejector (SJAE) is modified to bypass the aftercondensers and discharge the motive steam and gas to the process pipe. The process stream, containing a gas/steam mixture, with hydrogen concentration diluted to below 4.0 volume percent, is transported to the recombiner system.

The recombiner system consists of two full capacity redundant trains each containing a preheater, a catalytic recombiner, an off-gas condenser, a jet compressor, an after-cooler condenser and an associated instrumentation and control system. The preheater utilizes plant auxiliary steam to preheat the gas/steam off-gas mixture from 250°F to 320°F. The superheated steam-diluted mixture enters the recombiner where free hydrogen and oxygen react in the presence of precious metal-coated metal base grid catalyst bed to form water. The gas exits the recombiner at approximately 730°F and enters the off-gas condenser where it is cooled to 130°F. The condensed water is drained to a subcooler, cooled to 110°F and returned to the main condenser. A jet compressor provides the motive force for the offgas leaving the off-gas condenser. The gas exits the jet compressor at 340°F and enters the after-cooler condenser before being transported to the xenon-krypton treatment system (XKS). The jet compressor is capable of discharging 50 SCFM at 22.7 psia. A minimum flow of 25 SCFM is required by the XKS. Makeup air from the plant station air system is injected automatically into the gas stream at the preheater to maintain system flow at 25 SCFM if condenser air inleakage falls below 25 SCFM.

The XKS is a low temperature (-20°F) charcoal adsorption system. The system consists of two sections: pretreatment and charcoal adsorption. The pretreatment utilizes glycol cooler units which are designed to cool the off-gas to -20°F and dryers to dehumidify the steam to a dew-point of -90°F. Two charcoal beds operate in series, each containing

11,000 pounds of activated charcoal. There are three thermocouples in the first bed and one in the second bed. Each of the thermocouples has temperature indication and high temperature alarm in the control room. The high temperature alarm is set at 20°F above the operating temperature of -20°F. After decay in the charcoal beds, the offgas flows to HEPA filters prior to being released to the environs from the 375 foot stack.

The Xe-Kr Building which houses the XKS is a seismic Category I structure. In addition, the charcoal beds and associated process stream piping and valving in the Xe-Kr Building and the plant stack are designed to seismic Category I criteria.

Evaluation

At present, the unrecombined off-gas is transported to the stack via a buried delay pipe, which provides approximately 50 minutes of delay. Routing the off-gas through the SDAOGS will provide additional delay of the noble gases and removal of the iodine isotopes by adsorption on the charcoal contained in the charcoal beds. Our evaluation of the expected performance under normal and abnormal conditions follows.

Evaluation of Normal Operation

When the system is in operation, the charcoal beds are expected to provide delay times of 1.3 days for krypton and 50 days for xenon, while removing essentially all radioiodine isotopes. The ventilation system of the Xe-Kr Building ventilates the air in the building and any small system outleakage to the elevated stack release point. The SDAOGS will be helium leak tested prior to operation to detect and (thus) minimize system leakage.

In the event of recombiner system malfunction, as indicated by instrumentation alarms such as low preheater outlet temperature or high transport-pipe hydrogen concentration, the SDAOGS will be bypassed and the off-gas routed to the original delay pipe providing a minimum delay of 30 minutes prior to being exhausted through HEPA filters and the plant stack. The recombiner system utilizes main plant condensate, auxiliary steam, service air, instrument air and station A-C electric power. Partial or total loss of these support services will be directly alarmed in the control room, or indirectly alarmed as a result of creating an upset condition in the gas stream, and may result in the bypass of the SDAOGS by the operator.

Evaluation of Hydrogen Reaction

System components, piping and valves are designed to withstand the peak pressure of a hydrogen explosion within the SDAOGS. The steam dilution in the system minimizes the probability of hydrogen ignitions prior to being recombined at the catalytic recombiner. The off-gas/steam mixture from the second stage ejector of the SJAE bypasses the after-condenser and discharges to the preheater of the recombiner system. The presence of steam dilution keeps the hydrogen concentration below the 4% volume detonable level. The minimum flow of 25 SCFM required by the XKS is provided by makeup air from the plant station air system and injected automatically into the gas stream at the preheater when the main condenser air inleakage is low.

Rupture discs in the system have been blanked off. It has been determined that the actuation of the rupture discs is too slow for pressure relief in the event of a hydrogen detonation but could result in a subsequent off-gas leakage path. The treatment of liquid drains takes on added importance as the drain seals (e.g. loop seals) could be blown by a hydrogen detonation pressure transient. The liquid drains of the condensate from the SDAOGS are piped to the main condenser to minimize the probability of off-gas outleakage.

We have concluded that the SDAOGS will maintain system integrity under hydrogen reactions. The probability of a hydrogen detonation is minimized by steam dilution and the problem of catalyst migration is eliminated by the absence of air recycle. We have also concluded that the probability of outleakage of offgas resulting from pressure transients is minimized by the elimination of rupture discs and the piping of condensate liquid drains to the main condenser.

Evaluation of Charcoal Fires

There is a possibility that hydrogen reactions in the SDAOGS may initiate a fire in the charcoal delay beds. If the reaction is of the detonation type, the detonation front would move through the charcoal bed so rapidly (approximately 8500 fps) that it would be unlikely to initiate a fire. If the reaction is a deflagration (fire) type, with a slow burning front of approximately 10 to 20 fps, the charcoal may be ignited, since the temperature of the hydrogen-oxygen reaction is about 4700°F. The charcoal used in the SDAOGS will have been previously exposed to temperatures of 1800°F to burn off entrained organic material which would be ignited at lower temperatures than the charcoal itself. Each charcoal tank is expected to be filled with 5.5 tons of activated charcoal, leaving a void fraction of approximately 0.41. In a hydrogen reaction, the

radiolytic oxygen would preferentially combine with the hydrogen. The only oxygen that would be available to sustain a charcoal fire would be that associated with the air inleakage and oxygen which is adsorbed on the charcoal. We have estimated that if the oxygen in the tank partially oxidizes the charcoal (conversion to carbon monoxide), there would only be sufficient oxygen present in the void spaces and adsorbed on charcoal of a charcoal tank to consume a small fraction of the charcoal. However, with a flowing system, the burning will continue until the offgas flow to the tank is shut off. We estimate that under the expected conditions, if the deflagration has already passed through the tank, there will be sufficient air to oxidize 0.2 pounds of charcoal per minute. The first charcoal tank in each train will have three temperature indicators in the bed with alarms to alert operators in the control room when bed temperatures reach $\geq$20°F above the normal condition. Operator action would isolate the SDAOGS in a timely fashion. The second charcoal tank in each train will also be equipped with a temperature element in each bed. The peak pressure associated with a charcoal fire is less than that associated with a hydrogen detonation. As discussed previously, system integrity could be maintained during repeated hydrogen reactions.

A charcoal fire, which is assumed to occur locally near the inlet of the first charcoal tank in each stream, would result in local liberation of noble gases. These noble gases would be reabsorbed on the downstream portion of the first bed or on the second bed. Under the worst case, it is expected that only a small portion of the charcoal radionuclide inventory would be released in any postulated charcoal fire. However, for conservatism, we analyzed the complete release of radionuclide inventory in the charcoal beds as a result of explosion or fire. This evaluation follows.

Evaluation of Potential Accidents

The Xe-Kr Building which houses the off-gas processing system charcoal beds is a Seismic Category I structure. In addition, the charcoal beds, the charcoal bed piping and isolation valves, the pretreatment equipment and the plant stack are designed to the Seismic Category I criteria. The SJAE and the recombiner system are located within the non-Seismic Category I turbine building.

While our evaluation indicates that the SDAOGS integrity will be maintained, under hydrogen explosion or charcoal fire, we have considered the failure of the SDAOGS at the Xe-Kr Building and the simultaneous failure of the off-gas piping in the turbine building. We considered the release from non-Category I piping to occur at the turbine building. The failure of the XKS in the Xe-Kr Building coupled with the failure of building ventilation system could result in the charcoal bed inventory ground level release during the first hour after the incident. Table 1 presents the basic assumptions used in our analysis. The source term

released is the average inventory in process and transport piping, recombiner system, an equilibrium loading on the charcoal beds and an hour's release with a delay of 5 minutes from the SJAE to the point of failure (this assumes that there is no isolation of the SJAE for an hour following system failure).

Table 2 presents the estimated dose consequences at the exclusion area boundary from the three contributing sources, i.e., the one-hour release from the SJAE, the release from inventory in process, transport piping, and recombiner system and the release of Xe and Kr from the Xe-Kr Building. The dose consequences are well within the guidelines of 10 CFR Part 100 and meet the whole body dose criteria in Standard Review Plan (SRP) 15.7.1 and are, therefore, acceptable.

Evaluation of Technical Specifications

Technical Specification 2.4.2.2.K has been revised to include a lower off-gas release rate of the SJAE to limit dose consequence of the failure of the entire SDAOGS to 5 rem or less at the exclusion area boundary. Based on the accident analysis discussed above, we have determined that SDAOGS operation at an off-gas release rate at the air ejector of no more than 1.47 Ci/sec (<0.52 Ci/sec at 30 minutes) will limit the potential consequences of the total failure of the off-gas system, including continued operation of the air ejector for one hour, to less than 1 rem thyroid dose and 5 rem total body dose over a period of two hours at the site exclusion boundary. These dose values are also within the guidelines of 10 CFR Part 100 and SRP 15.7.1. The noble gas inprocess activity limit at 1.47 Ci/sec also provides a degree of assurance that offgas system operation will not continue with excessive fuel failures.

ETS 2.4.2.2G has been revised to eliminate reference to an interim offgas system. The need for such a system will be eliminated when the SDAOGS is placed in operation.

Environmental Considerations

We have determined that the amendments do not authorize a change in effluent types or a significant increase in the total amounts of effluents nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and an environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Attached:
Tables 1 and 2

Date: June 19, 1978

TABLE 1

ASSUMPTIONS USED TO ESTIMATE CONSEQUENCES OF A
FAILURE IN THE MILLSTONE 1 STEAM DILUTION AUGMENTED OFF-GAS SYSTEM

Noble gas release rate @ 30 Minutes	350,000 μCi/sec
Distribution of Nuclides	1971 GE Mix
Residence Time on Charcoal Beds:	
Xenon	1186 hours
Krypton	31 hours
Isolation Time for Steam Jet Air Ejector	1 hour
χ/Q at Exclusion Area Boundary	
Xe-Kr Building (ground level)	2.6×10^{-3} sec/m^3
Turbine Building (ground level)	6.4×10^{-4} sec/m^3

TABLE 2

Estimated Consequences of a Failure of the

Millstone 1 Steam Dilution Augmented Offgas System

Source of Release	Total Body Gamma Dose @ Exclusion Area Boundary (550m), (Rem)
1 hour release from SJAE	0.56
Inventory from piping and recombiner system	0.08
Inventory from XKS	2.95
Total	3.5

Note: Off-gas release rate of 1.47 Ci/sec at air ejector monitor would correspond to total body gamma dose of 5 Rem.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-245 AND 50-336

NORTHEAST NUCLEAR ENERGY COMPANY
THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY, AND
WESTERN MASSACHUSETTS ELECTRIC COMPANY

NOTICE OF ISSUANCE OF AMENDMENTS TO OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 50 to Provisional Operating License No. DPR-21 and Amendment No. 42 to Facility Operating License No. DPR-65 to Northeast Nuclear Energy Company, The Connecticut Light and Power Company, The Hartford Electric Light Company, and Western Massachusetts Electric Company, which revised Technical Specifications for operation of the Millstone Nuclear Power Station, Units Nos. 1 and 2, located in the Town of Waterford, Connecticut. The amendments are effective as of their date of issuance.

These amendments modify the Common Appendix B (Environmental) Technical Specifications by adding offgas release rate limits of radioactive gases to assure that the off-site doses resulting from postulated accidents associated with operation of the modified Augmented Offgas System will not exceed established criteria.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required

since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated February 13, 1978, (2) Amendments Nos. 50 and 42 to Licenses Nos. DPR-21 and DPR-65, respectively, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D. C. and at the Waterford Public Library, Rope Ferry Road, Route 156, Waterford, Connecticut. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 19th day of June, 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors