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The Northeast Utilities System

March 13, 2000
B17978

U. S. Nuclear Regulatory Commission
Director of Nuclear Reactor Regulation
Washington, D. C. 20555

Subject: Millstone Nuclear Power Station, Unit No. 1, Docket No. 50-245
Request for Exemption -- Physical Security Requirements

The purpose of this letter is to submit a request pursuant to 10CFR73.5 for an exemption from specific requirements of 10 CFR Part 73, "Physical Protection of Plants and Materials."

On July 21, 1998, Northeast Nuclear Energy Company (NNECO) informed the U. S. Nuclear Regulatory Commission that Millstone Unit No. 1 had permanently ceased operations and that the fuel had been permanently removed from the reactor vessel. Pursuant to 10CFR50.82(a)(2), the certification in the letter modified the Millstone Unit No. 1 license by permanently withdrawing the authority to operate the unit. Docketing this letter prohibits NNECO from placing or retaining fuel in the Millstone Unit No. 1 reactor vessel.

In the shutdown and defueled configuration, certain requirements of 10CFR73 are no longer appropriate. Therefore, NNECO is requesting an exemption to certain requirements of 10CFR73 for Millstone Unit No. 1.

NNECO has determined that certain physical security activities required for compliance with 10CFR73 would not serve the underlying purpose of the rule and would present an undue burden. Therefore, a request for exemption from certain requirements of 10CFR73 is enclosed as Attachment 1 to this letter.

NNECO requests approval of the proposed exemption by October 1, 2000, so that appropriate actions can be taken to revise and implement the Millstone Nuclear Power Station Physical Security Program. The proposed exemptions are requested to be effective upon issuance.

PDR
per
E. McNeil

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If you should have any questions on the above, please contact Mr. Bryan Ford at (860) 437-5895.

Very truly yours,

F. C. Rothen
Vice President - Nuclear Work Services

cc: H. J. Miller, Region I Administrator
L. L. Wheeler, NRC Project Manager, Millstone Unit No. 1
P. C. Cataldo, Resident Inspector, Millstone Unit No. 1

Attachment 1 to B17978
Millstone Nuclear Power Station -- Unit No. 1
Request for Exemption to 10CFR73 -- Physical Security Requirements

A. BACKGROUND

On July 17, 1998, the Northeast Utilities Board of Trustees decided to permanently cease further operation of the Millstone Unit No. 1. Certification to the NRC of the permanent cessation of operation and permanent removal of fuel from the reactor vessel, in accordance with 10CFR50.82(a)(1)(i) and (ii), was filed on July 21, 1998, at which time the 10CFR50 license no longer authorized operation of the reactor or placement of fuel in the reactor vessel.

Subsequent to the cessation of power operations, NNECO reevaluated (1) the design basis accident analyses as described in the Safety Analysis Report (SAR) to determine the applicability and potential consequences of design basis events; (2) the causes and potential consequences of a loss of spent fuel pool cooling capability; and (3) the applicability and potential consequences of radiological sabotage events.

In addition, NNECO contracted with Sandia National Laboratories to conduct a detailed threat analysis of Millstone Unit No. 1 using NRC methodology. The Sandia analysis[1] concluded that no credible act of sabotage could cause a radiological release which would exceed the exposure limits of 10CFR100. In fact, a NNECO evaluation determined that the resultant offsite dose from a design basis radiological release is well within the EPA Protective Action Guidelines. The NRC in their letter of November 9, 1999,[2] found NNECO's determination of design basis accidents applicable to Millstone Unit No. 1 in a permanently shutdown and defueled state appropriate. Further, the NRC also found that the radiological dose analyses performed by NNECO in support of the defueled Technical Specifications acceptable.

NNECO is required to comply with 10CFR73 through Millstone Unit No. 1 Facility Operating License DPR-21, condition of license 2.C.4. "Physical Protection." However, certain of the requirements contained within 10CFR73.55 are not appropriate or are not applicable for a nuclear facility undergoing decommissioning as determined from the work performed for the SAR or by Sandia National Laboratories.

Therefore, NNECO is requesting an exemption to 10CFR73 for five specific issues for Millstone Unit No. 1. These issues are very similar to exemptions NRC previously granted to other nuclear utilities that are also in the process of decommissioning nuclear power facilities. The following are the five specific issues for which we are requesting an exemption for Millstone Unit No. 1:

1) Requirement that a licensed senior operator suspends safeguard measures when appropriate (10CFR73.55(a));
2) Requirement that the reactor control room be bullet resisting (10CFR73.55(c)(6));
3) Requirement that a secondary alarm station be provided (10CFR73.55(e)(1));
4) Requirement regarding the periodicity of required security program reviews from once every 12 months to once every 24 months (10CFR73.55(g)(4)); and
5) Requirement regarding security shift staffing (10CFR73.55(h)(3)).

B. CURRENT SECURITY SYSTEM

The Millstone Nuclear Power Station is a three unit complex. Two of these units, Millstone Unit Nos. 2 and 3, continue to safely operate. Only Millstone Unit No. 1 is in the process of decommissioning. The Millstone Nuclear Power Station has a site-wide physical security plan entitled, "Millstone Nuclear Power Station Physical Security Plan." Other plant security plans and procedures support the general performance objectives of the Physical Security Plan, as well as applicable Part 73 requirements. These plans and procedures are in the process of being revised under 10CFR50.54(p). When completed, NNECO envisions separation of Millstone Unit No. 1 security plans and procedures from those for Unit Nos. 2 and 3.

The current security system has a protected area that encompasses all three units. Within the protected area are vital areas that are provided to protect vital equipment. Millstone Unit No. 1 has no vital equipment and no vital areas with the exception of the Millstone Unit No. 1 control room. The Millstone Unit No. 1 control room shares vital area space with the Millstone Unit No. 2 control room and is therefore, a vital area for Millstone Unit No. 2.

As decommissioning efforts proceed, additional decommissioning engineers and craft workers are employed onsite to work on Millstone Unit No. 1 activities. These workers are badged for access to the protected area which encompasses all three units. The equipment and material needed by these workers must be controlled in accordance with the requirements contained within the Millstone Physical Security Plan. These controls provide little benefit for Millstone Unit No. 1 and place unnecessary burden on the operating units.

C. NEW ANALYSIS

In support of the permanently defueled configuration that Millstone Unit No. 1 is in, new analyses have been performed. NNECO reevaluated: (1) the design basis accident analyses as described in the SAR to determine the applicability and potential consequences of design basis events; (2) the causes and potential consequences of a loss of spent fuel pool cooling capability; and (3) the applicability and potential consequences of radiological sabotage events. These analyses were also used as the basis for revisions to the Technical Specifications. The NRC concluded that NNECO's determination of design basis accidents applicable to Millstone Unit No. 1 in a permanently shutdown and defueled state is appropriate. Further, the NRC also found that the radiological dose analyses performed by NNECO in support of the defueled Technical Specifications acceptable.[2]

Sandia National Laboratories has recently performed an independent radiological sabotage threat analysis for Millstone Unit No. 1. This threat analysis along with the other analysis, discussed above, forms the basis for the proposed changes to the Millstone Nuclear Power Station Physical Security Plan. This report is available at the Millstone site for examination by NRC staff. The Sandia analysis uses the US DOE analytic system and software for evaluating safeguards and security methodology and has been used to define and evaluate the proposed controlled access area at Millstone Unit No. 1 in the defueled condition. The defined threat is the NRC design basis threat.

The design basis threat applied to NRC licensed facilities includes the use of a vehicle bomb. The proposed combination of physical security, including the robust exterior wall strength of the Millstone Unit No. 1 reactor building around the controlled access area, will mitigate this threat. Sandia National Laboratories concurs that the configurations proposed would adequately protect Millstone Unit No. 1 and Millstone Unit Nos. 2 and 3.

The following background supports this significantly lower radiological risk associated with postulated acts of radiological sabotage:

- All Unit No. 1 spent fuel is stored in the spent fuel pool which will be located within a controlled access area. Irradiated spent fuel is inherently self-protecting, requiring underwater storage within robust reinforced concrete structures. Unauthorized retrieval would be extremely difficult.

- Millstone Unit No. 1 has been shutdown for greater than four years and as a result radioactive decay has greatly reduced the decay heat produced by the

spent fuel. Therefore, in the event of a loss of cooling, calculations indicate that the spent fuel pool time to boil is currently on the order of 10 days. Diverse means are available to either re-establish cooling or to provide make-up to the spent fuel pool.

D. FUTURE SECURITY SYSTEM

Millstone Unit No. 1 has no vital equipment and no vital areas with the exception of the Millstone Unit No. 1 control room. The Millstone Unit No. 1 control room shares vital area space with the Millstone Unit No. 2 control room and is therefore, a vital area for Millstone Unit No. 2. After the new Millstone Unit No. 1 central monitoring station is implemented, the Millstone Unit No. 1 control room will no longer be needed, and will become part of the Millstone Unit No. 2 vital area. Since Millstone Unit No. 1 will not have any vital areas, NNECO is not required by regulations to establish protected areas or any concomitant isolation zones around Millstone Unit No. 1. This is consistent with prior NRC findings regarding Maine Yankee in that "...the staff agrees that MYAPC has interpreted the regulations correctly and that the lack of vital areas at MYAPS has eliminated the requirement to establish protected areas and concomitant isolation zones."[3]

To replace the current system NNECO will establish an industrial security area that will generally reflect the current protected area boundary applicable to Millstone Unit No. 1. This industrial area will transition through existing buildings at the Millstone Station and will separate Millstone Unit No. 1 from Millstone Unit Nos. 2 and 3. The transition of the boundary through the existing buildings and the fence line that separates Millstone Unit No. 1 from Millstone Unit Nos. 2 and 3 will also serve as the protected area boundary for Millstone Unit Nos. 2 and 3. The proposed industrial security area will be provided for the economic protection of NNECO property and will not be a protected area as defined in 10CFR73.2. Located within the Unit No. 1 industrial area, will be the controlled access area which surrounds the spent fuel pool. This controlled access area will be protected by a barrier, as well as intrusion detection and surveillance systems. Access to the controlled access area will be controlled similar to entry to the existing protected area. Millstone Unit No. 1 will also have its own bullet resisting central alarm station located next to the new central monitoring station. The new central alarm station will be able to monitor the controlled access areas and maintain communication capabilities with the local law enforcement agencies. Details of these systems will be contained in the modified security plans as appropriate.

E. PROPOSED EXEMPTIONS

As a result of the permanently shutdown and defueled status of Millstone Unit No. 1, NNECO has concluded that certain aspects of the current physical security plans and procedures can be discontinued or modified as they apply to Unit No. 1. With more that 1500 days of radiological decay since the plant was shutdown in 1995, the potential source term of gaseous and volatile radionuclides associated with the remaining design basis accident and radiological threat has decreased substantially.

The following items constitute NNECO's request for exemption to 10CFR73:

Issue 1: Exemption from the requirement of 10CFR73.55(a) which states in part that: "In accordance with §§50.54(x) and 50.54(y) of part 50, the licensee may suspend any safeguards measures pursuant to §73.55 in an emergency when this action is immediately needed to protect the public health and safety and no action consistent with license conditions and technical specification that can provide adequate or equivalent protection is immediately apparent. This suspension must be approved as a minimum by a ***licensed senior operator*** *prior to taking the action..".*

Under this exemption a certified fuel handler will be given the authority to depart from a Technical Specification or License Condition involving an emergency situation to protect the public health and safety and provide equivalent protection at the Unit. Although the certified fuel handler is not an individual licensed by the NRC as is the licensed senior reactor operator, this individual's responsibilities are part of NNECO's certification process and training program which the NRC has reviewed and approved through amendment of the Technical Specifications. The certified fuel handler is the individual on shift with requisite knowledge about relevant fuel protection from situations that may occur at the site. This change is consistent with the similar requirements in 10CFR50.54(x) and 10CFR50.54(y) which allows either a licensed senior operator or a certified fuel handler to authorize deviations from Part 50 requirements in an emergency situation.

This exemption has been granted by the NRC for Big Rock Point[4] and Maine Yankee.[5]

Issue 2: Exemption from the requirement of 10CFR73.55(c)(6) which states: "**The walls, doors, ceiling, floor, and any windows in the walls and in the doors of the reactor control room shall be bullet-resisting**."

The central monitoring station (replacing the control room) will be basically an administrative area and contains no equipment that would enable a rapid change of spent fuel pool inventory. Further the central monitoring station will be located next to the new central alarm station; the latter being a bullet resisting structure. The central alarm station will have offsite communication capabilities with armed responders, local law enforcement agencies, and with the security organization located at Millstone Unit Nos. 2 and 3.

NNECO requests that an exemption from the requirement to maintain a bullet resisting reactor control room (central monitoring station) be provided. One of the functions of a reactor control room is to ensure safe reactor shutdown. With Millstone Unit No. 1 permanently shutdown and defueled, there are no reactor controls in the central monitoring station that could adversely impact public health and safety. Furthermore, the deliberate, inappropriate manipulation of controls associated with spent fuel cooling will not result in any immediate threat to public health and safety. Although it can be argued that Millstone Unit No. 1 no longer has a "reactor control room" due to the permanently defueled state of the plant, exemption from this requirement is requested for completeness.

Similar exemptions have been granted by the NRC for Big Rock Point,[4] Maine Yankee,[5] and the Haddam Neck Plant.[6.]

Issue 3: Exemption from the requirement of 10CFR73.55(e)(1) which requires, in part, that "All alarms required pursuant to this part must annunciate in a continuously manned central alarm station located within the protected area ***and in at least one other continuously manned station*** *not necessarily onsite, so that a single act cannot remove the capability of calling for assistance or otherwise responding to an alarm."*

The regulations require that there be a secondary alarm station (SAS), not necessarily on site, to ensure that the site is capable of requesting offsite local law enforcement agency assistance if the central alarm station is compromised. At operating reactor sites, SAS has normally been located within the protected areas. This has provided the necessary assurance and availability for communications with the local law enforcement agencies. With the inherent reduced risk and the establishment of the controlled access area with limited protection needs, the secondary alarm station will no longer be required. The new central alarm station will be located outside the controlled access area and will be a bullet resisting structure. The additional redundancy of a secondary alarm station to summon emergency offsite assistance from local law enforcement agencies is unnecessary. Although it can be argued that Millstone Unit No. 1 will no longer have a protected area or vital areas, and does not have

alarms which are required to be continuously monitored, exemption from this requirement is requested for completeness.

This exemption has been granted by the NRC for Big Rock Point[4] and Maine Yankee.[5]

Issue 4: *Exemption from the requirements of 10CFR73.55(g)(4) which states, in part, that "The licensee shall review implementation of the security program by individuals who have no direct responsibility for the security program either:*
(i) ***At intervals not to exceed 12 months****, or*
(ii) As necessary, based on an assessment by the licensee against performance indicators and as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect security but no longer than 12 months after the change. In any case, each element of the security program must be reviewed at least every 24 months..".

NNECO requests an exemption for this issue since the security program activities, including types and significance of protective measures, is considerably diminished as compared with those activities for an operating power reactor. NNECO will perform these reviews every 24 months. The proposed reduction in review frequency is consistent with the reduction in security activities commensurate with the elimination of vital equipment, vital and protected areas, and other aspects of the physical security program. The 24 month frequency is also consistent with NRC accepted audit frequencies for safety related audits[7].

This exemption has been granted by the NRC for Big Rock Point.[4]

Issue 5: *Exemption from the requirement of 10CFR73.55(h)(3) which states that: "* ***The total number of guards, and armed, trained personnel immediately available at the facility to fulfill these response requirements shall nominally be ten (10)****, unless specifically required otherwise on a case by case basis by the Commission; however, this number may not be reduced to less than five (5) guards."*

With the transition from an operating reactor to a defueled reactor, the size of the area (threat target) that needs to be protected is substantially reduced. The design basis threat is also significantly less consequential. For Millstone Unit No. 1, NNECO proposes a security program that provides security related equipment and a security force, some of whom are armed, to protect the spent fuel pool from acts of radiological sabotage. The armed security force members

on site will be trained and qualified and can react to different scenarios based on the established contingency plans. In addition, arrangements have been established with the local law enforcement agencies to respond to threats against the site.

The actual proposed number of guards and armed trained personnel for Unit No. 1 is considered safeguards information and is being withheld from this document. The actual number will be contained in the security plan.

This exemption has been granted by the NRC for Big Rock Point,[4] Maine Yankee,[5] and the Haddam Neck Plant.[6]

F. EVALUATION OF EXEMPTIONS AGAINST 10CFR73.5

The specific requirements for granting exemptions from Part 73 regulations are set forth in 10CFR73.5. Section 73.5 states "The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security, and are otherwise in the public interest." As discussed below, NNECO's request satisfies the standards for the regulatory exemption.

1. *The proposed exemption is authorized by law.*

The request is authorized by law. The Atomic Energy Act does not specify the exact methods by which a licensee is to provide physical protection of special nuclear material at a commercial nuclear power plant, and thus would preclude the NRC from granting an exemption to the specific requirements of 10CFR73. While the Act does charge the NRC with protecting the public health and safety from radiological hazards (such as hazards associated with radiological sabotage), the Act does not preclude the NRC from exercising the authority to determine the appropriateness of a requirement contained in 10CFR73. In fact, NRC authority to grant an exemption to Part 73 requirements is similar to the authority of the Commission to grant exemptions from the licensing requirements of 10CFR50. Such exemptions have been granted to licensees whenever the licensees' requests satisfy the exemption criteria.

2. *The proposed exemption will not endanger life or property or the common defense and security, and is otherwise in the public interest.*

The underlying purpose of 10CFR73 (as stated in 10CFR73.1(a)) is to provide reasonable assurance that adequate security measures can be taken in the event of an act of radiological sabotage. In the permanently defueled plant

condition, the risk associated with Millstone Unit No. 1 has been significantly reduced. Radiological releases from radiological sabotage would not credibly result in Part 100 limits being exceeded at the site boundary. NNECO has completed a site specific analysis of the susceptibility of the spent fuel pool to an accidental radiological release in the event that the spent fuel pool is drained. The results indicate that no fuel damage will occur, and the resultant offsite doses are well within the EPA Protective Action Guidelines.

The exemption request will not endanger the common defense and security. The phrase "common defense and security" as used in 10CFR73.5, and as applied herein refers principally to the safeguarding of special nuclear material. The proposed exemption does not result in a decrease in the ability to effectively safeguard the spent fuel in the spent fuel pool. The proposed exemption would allow Millstone Unit No. 1 to implement a plan that focuses human and monetary resources solely on the safeguarding of spent fuel in one location, in the spent fuel pool. Therefore, the granting of the requested exemption will not endanger the common defense and security.

The proposed exemption is otherwise in the public interest because the alternative to granting the exemption is continuation of physical security measures that go far beyond that needed for a permanently shutdown and defueled facility. The exemption allows implementation of a plan that better focuses the safeguarding of special nuclear material while terminating or modifying activities that do not contribute to the physical security of a non-operating, defueled nuclear power station.

Since the offsite radiological risk associated with the plant has been significantly reduced as a result of the significant amount of time that Millstone Unit No. 1 has been shutdown, requiring full compliance with the applicable regulations would result in costs that do not provide any additional benefit. NNECO is responsible for ensuring that adequate funds are available to complete the decommissioning of the facility. Full compliance with certain requirements of 10CFR73 that are clearly meant for operating reactor facilities would result in undue financial and administrative hardship for Millstone Unit No. 1, its Owners and the ratepayers.

Over a dozen power reactors have been permanently shut down and entered the decommissioning process. When the NRC promulgated the security requirements of 10CFR73, it was not envisioned that nuclear power plants would be shut down and entering decommissioning, before the end of their operating license.

NRC has acknowledged that the provisions of the current regulations do not provide clear guidance relative to the reduction of security requirements for

permanently shut down plants. NUREG-1497, "Interim Licensing Criteria for Physical Protection of Certain Storage of Spent Fuel," issued in November 1994, and Proposed Rule Making 10 CFR Parts 60, 72, 73 and 75 (60FR42079, published 8/15/95), both contain discussion relative to the lack of clear regulatory guidance provided for the security requirements for permanently shut down power reactors.

As explained herein, Millstone Unit No. 1, in its permanently shutdown and defueled condition, poses a significantly reduced risk to the public health and safety. Certain requirements of 10CFR73 are no longer appropriate for which this exemption request is submitted. Reducing security requirements for Millstone Unit No. 1 would result in significant cost savings to NNECO. Since the cost for security planning requirements are ultimately borne by the public rate payers, it would be in the public interest for the NRC to grant the requested exemption.

G. REFERENCES

1. Sandia National Laboratories, "Preliminary Assessment of the Reduced Protected Area and Industrial Security Area Proposal for Millstone Nuclear Power Plant During Unit One Decommissioning and Long-Term Defueled Condition," dated November 9, 1999.

2. NRC letter to Northeast Nuclear Energy Company, "Millstone Nuclear Power Station, Unit 1 - Issuance of amendment RE: Permanently Defueled Technical Specifications (TAC No. MA5326)," dated November 9, 1999.

3. NRC letter to Maine Yankee Atomic Power Company, "Appeal of NRC Determination Concerning Maine Yankee Atomic Power Company Claim of Backfit Regarding Permanently Shutdown Reactor Security Plan," dated May 18, 1999.

4. NRC letter to Consumers Energy Company, "Exemption from Certain Physical Protection Requirements (10 CFR Part 73) - Big Rock Point Nuclear Plant (TAC NO. MA4240)," dated March 29, 1999.

5. NRC letter to Maine Yankee Atomic Power Company, "Exemption from Certain Requirements of 10 CFR Part 73 at Maine Yankee Atomic Power Station (TAC No. MA0281)," dated June 29, 1998.

6. NRC letter to Connecticut Yankee Atomic Power Company, "Exemption from Certain Requirements of 10 CFR Part 73 at Haddam Neck Plant (TAC No. M98350)," dated July 15, 1998.

7. Millstone Unit 1 Northeast Utilities Quality Assurance Program, Appendix F.1.3.7.