

NYR 2007-046



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

August 10, 2007

Mr. Wayne Norton, President  
Yankee Atomic Power Company  
49 Yankee Road  
Rowe, MA 01367

SUBJECT: YANKEE NUCLEAR POWER STATION - RELEASE OF LAND FROM PART 50  
LICENSE

Dear Mr. Norton:

I am responding to your letter of March 8, 2007, in which you requested the U.S. Nuclear Regulatory Commission's (NRC) approval of the acceptability of the release of a portion of the Yankee Nuclear Power Station (YNPS) site from the 10 CFR Part 50 license (DPR-3). The area to be released consists of twenty-four (24) open land survey areas, eight (8) survey areas associated with partially or fully removed structures, and one (1) subsurface soil survey area. These areas proposed for release encompass the majority of the site, leaving only the areas associated with the Independent Spent Fuel Storage Installation, Survey Areas/Units OOL-10-02, NOL-07 and NSY-10, within the Part 50 License. Your letter indicated that you have reviewed and assessed the subject survey areas in accordance with Section 1.5 of the YNPS License Termination Plan (LTP) and the NRC Safety Evaluation of the LTP dated July 28, 2005, to ensure that this proposed action will have no adverse impact on the ability of the site in aggregate to meet 10 CFR 20, Subpart E, criteria for unrestricted release.

The NRC staff has reviewed your proposed partial site release from the license, as specified in your March 8, 2007, letter, and finds the proposed release to be acceptable subject to the following comments:

Following removal from the license, in the unlikely event the released areas were to become radiologically contaminated as a result of later decommissioning activities at the Yankee Nuclear Power Station Independent Spent Fuel Storage Installation, the contamination would be considered an off-site release, and subject to 10 CFR Part 20.

Yankee is required to maintain \$100 million in nuclear liability insurance coverage, as described in Indemnity Agreement B-17, "until all the radioactive material has been removed from the location and transportation of the radioactive material from the location has ended as defined in subparagraph 5(b), Article 1, or until the Commission authorizes the termination or modification of such financial protection." Approval of this partial site release request has no impact on the terms of the indemnity agreement. In particular, it should be noted that the site location described in Item 4 of Amendment No. 3 to the indemnity agreement means the "original" 10 CFR Part 50 license site boundaries. The liability insurance coverage level shall not be reduced below the minimum \$100 million amount without prior NRC approval.

A copy of the staff's safety evaluation is enclosed.

The staff has reviewed the residual radioactivity values in the Final Status Survey reports and compared them to the trigger values in the 2002 Memorandum of Understanding (MOU) between the NRC and U.S. Environmental Protection Agency (EPA) entitled, "Consultation and Finality on Decommissioning and Decontamination of Contaminated Sites." Based on this review, the residual radioactivity in soil and groundwater at the site do not exceed the trigger values in the MOU and, as such, consultation with EPA in accordance with the MOU is not required.

In accordance with 10 CFR Part 2.390 of NRC's "Rules of Practice," a copy of letter will be available electronically for public inspection in NRC Public Document Room, or from the Publicly Available Records component of NRC's Agencywide Document Access Management System (ADAMS). ADAMS is accessible from NRC Web site: <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions concerning this evaluation, please contact John Hickman at (301) 415-3017, or by e-mail at [jbh@nrc.gov](mailto:jbh@nrc.gov).

Sincerely,

A handwritten signature in black ink that reads "Keith I. McConnell". The signature is written in a cursive style with a large initial "K".

Keith I. McConnell, Deputy Director  
Decommissioning and Uranium Recovery  
Licensing Directorate  
Division of Waste Management  
and Environmental Protection  
Office of Federal and State Materials and  
Environmental Management Programs

Docket No.: 50-029  
License No.: DPR-3

Enclosure: Safety Evaluation

cc: Yankee Service List

Yankee (Rowe) Nuclear Power Station Service List

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SAFETY EVALUATION BY OFFICE OF FEDERAL AND STATE MATERIALS  
AND ENVIRONMENTAL MANAGEMENT PROGRAMS

RELATED TO THE RELEASE OF LAND FROM FACILITY OPERATING LICENSE NO. DPR-3

YANKEE ATOMIC ELECTRIC COMPANY

YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-029

1.0 INTRODUCTION

Yankee Nuclear Power Station (YNPS) was permanently shutdown on October 1, 1991. The DECON decommissioning plan was approved in February 1995 and the plant has completed dismantlement under 10 CFR 50.59. The licensee completed construction of an on-site Independent Spent Fuel Storage Installation (ISFSI) under a general license. The ISFSI became fully operational with the transfer of the last canister containing Greater Than Class C (GTCC) material in June 2003. The ISFSI contains fifteen canisters of spent fuel and one canister of GTCC material.

By letter dated March 8, 2007<sup>1</sup>, Yankee Atomic Electric Company (YAEC, the licensee) requested U.S. Nuclear Regulatory Commission (NRC) approval of the acceptability of the release of a portion of the YNPS site from the 10 CFR Part 50 license (DPR-3). The area consists of twenty-four (24) open land survey areas, eight (8) survey areas associated with partially or fully removed structures, and one (1) subsurface soil survey area. These areas encompass the majority of the site, leaving only the areas associated with the ISFSI, Survey Areas/Units OOL-10-02, NOL-07 and NSY-10, within the Part 50 License. YAEC indicated that they have reviewed and assessed the subject survey areas in accordance with Section 1.5 of the YNPS License Termination Plan (LTP)<sup>2</sup> and the NRC Safety Evaluation (SE)<sup>3</sup> of the LTP dated July 28, 2005, to ensure that this proposed action will have no adverse impact on the ability of the site in aggregate to meet 10 CFR 20, Subpart E, criteria for unrestricted release.

2.0 EVALUATION

2.1 Applicable Requirements

Chapter 1 of the LTP describes the process for phased site releases prior to license termination. Section 1.5 of the LTP requires YAEC to complete the following:

1. Following completion of decommissioning activities, YAEC will compile a report with the following information for NRC review:

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<sup>1</sup> ADAMS Accession No. ML070740494

<sup>2</sup> ADAMS Accession No. ML043240450

<sup>3</sup> SER related to Amendment 158 to License DPR-3, dated July 28, 2005, ADAMS Accession No. ML051310453

- a description and location of the survey unit or area being surveyed;
- certification that dismantlement/decommissioning activities, as described in the LTP, have been completed for the subject building or area;
- an evaluation of the potential for possible recontamination of the area and a description of controls in place to prevent such recontamination;
- Final Status Survey (FSS) results for the survey unit or area, as demonstration of compliance with the LTP release criteria (not applicable to areas designated as "nonimpacted");
- Expected date of removal of the area from the 10 CFR 50 license.

2. YAEC will review and assess the impacts on the following programs and documents in preparation for removal of a survey unit or area from the license:

- Final Safety Analysis Report and Technical Specifications;
- Radiological Environmental Monitoring Program;
- Offsite Dose Calculation Manual;
- Defueled Emergency Plan;
- Security Plan;
- License Termination Plan;
- Ground Water Monitoring Program;
- 10CFR100 Siting Criteria; and
- Decommissioning Environmental Report.

The reviews will include an assessment to ensure that the land area(s), and any associated building(s), to be released will have no adverse impact on the site's ability to meet the Part 20, Subpart E, criteria for unrestricted release. The reviews will also include the impacts on the discharge of effluents and the limits of 10CFR 20, as they pertain to the public.

3. A letter of intent to remove a portion of the property from the Part 50 license will be sent to the NRC, no later than sixty (60) days before the anticipated date for release of the subject survey area(s). This letter will contain a summary of the assessments performed, as described above, and, for areas designated as "impacted" will include the FSS report for the subject survey units(s) or area(s).
4. Once the land area(s), and any associated building(s), have been verified ready for release, no additional surveys or decontamination of the subject building or area will be required (beyond those outlined in Section 5.4.5 intended for isolation and controls) unless administrative controls to prevent recontamination are known or suspected to have been compromised. Following completion of the Final Status Survey and submittal of the associated report, the NRC will review the report and conduct, as appropriate, the applicable NRC confirmatory inspections.
5. Upon completion of the YNPS Decommissioning Project, a final report will be prepared, to summarize the release of areas of the YNPS site from the 10 CFR 50 license.

Accordingly, because the approved LTP includes the phased site release process set forth above, the 10 CFR § 50.83 partial site release requirements are not applicable here.

## 2.2 Area to be Released and FSS Results

The area the licensee intends to release consists of twenty-four (24) open land survey areas, eight (8) survey areas associated with partially or fully removed structures, and one (1) subsurface soil survey area. This area encompasses the majority of the site, leaving only the areas associated with the ISFSI, Survey Areas/Units OOL- 10-02, NOL-07 and NSY-10, within the Part 50 License. The specific survey areas to be released are described below:

AUX-01: AUX-01 consisted of the remaining Primary Auxiliary Building (PAB) walls that lie within the spent fuel pool excavation footprint. The PAB was located in the former Radiological Controlled Area (RCA) and designed to contain the radiological constituents resulting from operation of the primary (radioactive) systems of the YNPS. The FSS Report for this area was submitted on May 11, 2006<sup>4</sup>.

AUX-02: AUX-02 consists of that portion of the PAB that was not designed to contain portions of the primary (radioactive) operating systems of the plant. AUX-02 is located within the former RCA. The FSS Report for this area was submitted on September 7, 2006<sup>5</sup>.

BRT-01: Survey Area BRT-01 consists of the reinforced concrete structures that comprise the foundations and support pedestals of the sixteen Vapor Container (VC) supports and the eight Reactor Support Structures (RSS) that remained after demolition of the VC and RSS. The FSS Report for this area was submitted on August 28, 2006<sup>6</sup>.

NOL-01: NOL-01 consists of open land areas and includes the site of the former Spent Fuel Pool, Ion Exchange Pit, Vapor Container Elevator Foundation, the North and South Decontamination Pads and Fuel Transfer Enclosure. Decommissioning of the area resulted in the complete excavation of the land area and the encompassed structures. NOL-01 is located within the former RCA. The FSS Report for this area was submitted on March 30, 2006<sup>7</sup>.

NOL-02: The NOL-02 Survey Area is an open land area comprised of the previous site of the New Fuel Vault, surrounding areas east of the former Spent Fuel Pool and the Northeast Upper RCA Yard. Sub-surface systems that traversed or connected within the Survey Area include electrical, storm drain, fuel oil and auxiliary service water, fire protection, and radioactive liquid drain and transfer lines. The FSS Report for this area was submitted on November 20, 2006<sup>8</sup>.

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<sup>4</sup> ADAMS Accession Number ML070470130

<sup>5</sup> ADAMS Accession Number ML070160490

<sup>6</sup> ADAMS Accession Number ML070160537

<sup>7</sup> ADAMS Accession Number ML070470110

<sup>8</sup> ADAMS Accession Number ML063340250

NOL-03: Survey Area NOL-03 was originally a survey unit consisting of a portion of the Old PCA Storage Building. During the FSS of sub-area NOL-03-01, however, it was discovered that the unit would not pass FSS and a management decision directed the complete removal of the structure. As a result the final NOL-03 consisted of an open land area within the southeast section of the RCA yard. The FSS Report for this area was submitted on November 3, 2006<sup>9</sup>.

NOL-04: NOL-04 is a open land area in the southeast portion of the former RCA. The FSS Report for this area was submitted on August 31, 2006<sup>10</sup>.

NOL-05: Survey Area NOL-05 consists of the exposed land area remaining from the demolition of the concrete pad associated with the RCA Warehouse, Waste Disposal Building, and Radioactive Waste Compactor Building and the remaining remnants from demolition of the PCA-1 bathtub foundation. The footprint includes miscellaneous excavations which expose underlying soil and/or concrete remnants, and the exposed soil grade. The FSS Report for this area was submitted on October 5, 2006<sup>11</sup>.

NOL-06: Survey Area NOL-06 is a open land area within the former RCA on the west and southwest sides of where the reactor and VC were present. Portions of the reactor support structure ring and mat foundations were present in, but not part of, this survey unit. The FSS Report for this area was submitted on October 31, 2006<sup>12</sup>.

NSY-12: Survey Area NSY-12 consists of a single Survey Unit, NSY-12-01, which comprises the base for Tank-1 and a subsurface pipe chase that connected the Tank-1 base to the Auxiliary Boiler Room in the Turbine Building. NSY-12 is part of the original plant structure. The FSS Report for this area was submitted on May 11, 2006<sup>13</sup>.

OMB-06: Survey Area OMB-06 consists of the remains of the concrete structure located at the discharge end of the circulating water system known as the Seal Pit. The Seal Pit was extensively characterized with a combination of sediment samples, concrete core samples, gamma scans, beta scans and beta fixed measurements. The FSS Report for this area was submitted on August 9, 2006<sup>14</sup>.

OOL-01: OOL-01 is described as Sherman Pond Sediment. OOL-01 Survey Area encompasses the Sherman Reservoir, the Seal Pit Cove, the East Storm Drain System Discharge, and Circulating Water System Discharge and up to and including part of the

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<sup>9</sup> ADAMS Accession Number ML063120097

<sup>10</sup> ADAMS Accession Number ML070160541

<sup>11</sup> ADAMS Accession Number ML062970047

<sup>12</sup> ADAMS Accession Number ML063070487

<sup>13</sup> ADAMS Accession Number ML070470124

<sup>14</sup> ADAMS Accession Number ML070160273

shoreline of the reservoir. The entire Survey Area OOL-01 is situated underwater. The FSS Report for this area was submitted on January 4, 2007<sup>15</sup>, and revised on March 7, 2007<sup>16</sup>.

OOL-02: The OOL-02 Survey Area is in the original non-RCA portion of the YNPS site inside the security fence, which is owned by YAEC. OOL-02 includes the area of the site known as the Non-Rad Yard Area, the Turbine Building footprint and the Service Building footprint and the area surrounding the security access building. The FSS Report for this area was submitted on December 4, 2006<sup>17</sup>.

OOL-03: Survey Area OOL-03 is comprised of the area of the site known as the Sherman Reservoir Dam & South Shoreline including the surface area of the Sherman Dam and the south shoreline of Sherman Reservoir, which is property owned by TransCanada. OOL-03 consists of soil, asphalt and vegetation. The FSS Report for this area was submitted on January 5, 2007<sup>18</sup>.

OOL-04: Survey Area OOL-04 consists of open land surface area surrounding Sherman Station (a hydroelectric plant). The land is owned by TransCanada. It is primarily open land area with some brush, some grass and a small amount of asphalt. It surrounds the hydroelectric power station on three sides, and includes a substation and breakers for the power coming from the hydro station. It also includes open land area stretching east to west along the north end of the site. The FSS Report for this area was submitted on November 21, 2006<sup>19</sup>.

OOL-05: The OOL-05 Survey Area is the area of the site known as the USGen, (now Trans Canada) Deerfield River Frontage. OOL-05 consists of the TransCanada owned land area located between the YAEC property and the Deerfield River. The FSS Report for this area was submitted on December 14, 2006<sup>20</sup>.

OOL-06: OOL-06 consists of the land area west of the site and is comprised of soil and asphalt. The land is level to steeply sloping and ranges from heavily wooded to open land. The FSS Report for this area was submitted on December 4, 2006<sup>21</sup>.

OOL-07: Survey Area OOL-07 included a pile of soil that was released from the YNPS industrial area during the construction of the ISFSI pad and placed in the mid-level parking lot. OOL-07 also included the personnel parking area which was used to stockpile soil, from excavations in

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<sup>15</sup> ADAMS Accession Number ML070160457

<sup>16</sup> ADAMS Accession Number ML070820489

<sup>17</sup> ADAMS Accession Number ML063480355

<sup>18</sup> ADAMS Accession Number ML070160100

<sup>19</sup> ADAMS Accession Number ML063350106

<sup>20</sup> ADAMS Accession Number ML070030540

<sup>21</sup> ADAMS Accession Number ML063480355

the industrial area, awaiting thermal desorption. The FSS Report for this area was submitted on October 6, 2006<sup>22</sup>.

OOL-08: The OOL-08 Survey Area is open land areas along the western, south-western, and southern perimeter of the former industrial area. The FSS Report for this area was submitted on December 19, 2006<sup>23</sup>.

OOL-09: The OOL-09 Survey Area is in the area of the site known as the Southeast Construction Fill Area (SCFA). The SCFA was not part of the plant RCA and there were no sub-surface systems that traversed or connected within the survey unit. Survey Unit OOL-09 includes partially wooded and open land area. The FSS Report for this area was submitted on October 23, 2006<sup>24</sup>.

OOL-10: The OOL-10 Survey Area includes the perimeter of the ISFSI up to the "security" fence. This survey area is composed of sod, grasses, and asphalt, in an open land area located within the western portion of the RCA buffer zone, and an open land area that was on the west and south side (outside) of the former RCA. A portion of OOL-10, Survey Unit OOL-10-02 is *not* included in this release request and *will remain* within the Part 50 license to act as buffer for and to facilitate eventual ISFSI decommissioning activities. The FSS Report for this area was submitted on November 13, 2006<sup>25</sup>.

OOL-11: The OOL-11 Survey Area in unused open land area on the east side of the former RCA. This survey area includes a narrow strip of land located between the Northeastern Upper RCA Yard and the southwest face of the adjacent hill side and a narrow strip of open land located between Southeastern Upper RCA Yard and the southwest face of the adjacent hill side. The FSS Report for this area was submitted on November 3, 2006<sup>26</sup>.

OOL-12: OOL-12 is an open land area, in the northeast portion of the Yankee Rowe site. The area included a rail spur which was used for transport of radioactive waste, including spent fuel and irradiated reactor internals hardware. The area was also a main path for personnel and material traffic into and out of the RCA. Systems that traversed or connected within the survey unit include the Auxiliary Service Water System, the Fire Protection System and electrical conduits. During decommissioning, OOL-12 was the site of the Truck Monitor system. The FSS Report for this area was submitted on October 19, 2006<sup>27</sup>.

OOL-13: OOL-13-01 is a section of the Sherman Reservoir bank near the rail spur terminus. It is located adjacent to and down slope of the former location of the RCA and is currently owned

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<sup>22</sup> ADAMS Accession Number ML062970013

<sup>23</sup> ADAMS Accession Number ML070030522

<sup>24</sup> ADAMS Accession Number ML062930080

<sup>25</sup> ADAMS Accession Number ML063210484

<sup>26</sup> ADAMS Accession Number ML063120133

<sup>27</sup> ADAMS Accession Number ML062990103

by TransCanada (formerly owned by US Gen). The FSS Report for this area was submitted on September 26, 2006<sup>28</sup>.

OOL-14: Survey Area OOL-14 (Wheeler Brook Frontage) consists of an open land area which is owned by TransCanada, at the northeast perimeter of the industrial area. There are no sub-surface systems that traverse or connect within OOL-14, and the area was considered to be minimally impacted by site activities given that it was at a distance from the RCA, and was not accessible by vehicular traffic. The majority of OOL-14 is heavily wooded. The FSS Report for this area was submitted on October 23, 2006<sup>29</sup>.

OOL-15: Survey Area OOL-15 consists of open land northeast of the plant site. The property is owned by TransCanada and extends north from the TransCanada/YAEC property line to the Sherman Reservoir shore. There are no sub-surface systems or plant structures within area OOL-15. The area was not accessible by vehicle traffic, nor was it used for storing radioactive material or for processing/packaging radioactive waste. The FSS Report for this area was submitted on August 9, 2006<sup>30</sup>.

OOL-16: Survey Unit OOL-16, known as the Furlon House Lot, is the site of the former visitors center. OOL-16-01 is entirely bounded by non-impacted YAEC-owned property. OOL-16-01 was never part of the RCA, did not contain any radioactive systems and no decommissioning activities were performed in this area. The FSS Report for this area was submitted on September 18, 2006<sup>31</sup>.

OOL-17: OOL-17 is an open land area comprised of stone fill and soil. The land area is located in the non-RCA portion of the site and is entirely bounded by non-impacted YAEC owned property. Survey area OOL-17 contains soil that was excavated during construction activities at the YNPS site and was used as a personnel parking area. The FSS Report for this area was submitted on December 1, 2006<sup>32</sup>.

OOL-18: Survey Area OOL-18 consists of an open land area, comprised of packed soil. There are no sub-surface systems that traverse or connect within OOL-18. This land area is located in the non-RCA portion of the site and has been used for temporary storage of roll-off containers. The FSS Report for this area was submitted on November 13, 2006<sup>33</sup>.

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<sup>28</sup> ADAMS Accession Numbers ML070160540 and ML062780397

<sup>29</sup> ADAMS Accession Number ML063060048

<sup>30</sup> ADAMS Accession Number ML070160270

<sup>31</sup> ADAMS Accession Number ML070160522

<sup>32</sup> ADAMS Accession Number ML063480590

<sup>33</sup> ADAMS Accession Number ML063340143

SSS-01: The SSS-01 Survey Area is comprised of statistical samples in subsurface soil in the industrial area footprint surveyed to a depth of 3 meters (or until refusal). The FSS Report for this area was submitted on December 1, 2006<sup>34</sup>.

SVC-01: SVC-01 is comprised of the Service Building foundation that was exposed during excavation campaigns to remove radiologically contaminated soil and PCB contaminated soil from the "alley way". The FSS Report for this area was submitted on September 21, 2006<sup>35</sup>.

TBN-01: TBN-01 consists of the remaining concrete floors and exposed foundations of the former Turbine Building and the Circulating Water discharge piping. All above grade structures have been demolished and removed, as well as portions of the floors and foundations of the Turbine Building. TBN-01 is located outside of the former RCA. The FSS Report for this area was submitted on February 20, 2006<sup>36</sup>.

WST-01: Survey Area WST-01 is comprised of the reinforced concrete foundation of the 'Old Potentially Contaminated Area Storage Building' as well as the remaining concrete partial walls exposed during the excavation of Survey Unit NOL-05. WST-01 was used, during plant operation, as a decontamination facility and as a storage area for heavily contaminated items. WST-01 is located within the former RCA. The FSS Report for this area was submitted on April 17, 2006<sup>37</sup>.

The NRC has previously reviewed the FSS reports, and the licensee's responses to NRC comments on the FSS reports, for the areas to be released and determined that the FSS reports are acceptable. The NRC review of the FSS reports is documented in letters dated January 25, 2007<sup>38</sup>, February 20, 2007<sup>39</sup>, March 2, 2007<sup>40</sup>, March 16, 2007<sup>41</sup>, and April 5, 2007<sup>42</sup>.

Multiple other survey areas were identified in the LTP for which no FSS reports were submitted. These include survey areas NYS-01 thru NYS-09, NYS-11, NYS-13, OMB-01, OMB-03 thru OMB-05, SFP-01, SFP-02, SVC-02, and SVC-03. These survey areas were for structural foundations which the licensee chose to remove from the site rather than leave in place. Survey areas WST-002 thru WST-04, were included in WST-01. Survey areas NOL-07, NSY-

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<sup>34</sup> ADAMS Accession Number ML063480590

<sup>35</sup> ADAMS Accession Number ML070160544

<sup>36</sup> ADAMS Accession Number ML070400322

<sup>37</sup> ADAMS Accession Number ML070470121

<sup>38</sup> ADAMS Accession Number ML070220076

<sup>39</sup> ADAMS Accession Number ML070380132

<sup>40</sup> ADAMS Accession Number ML070590301

<sup>41</sup> ADAMS Accession Number ML070650191

<sup>42</sup> ADAMS Accession Number ML070940670

10, and OOL-10-02 will be addressed when the ISFSI is decommissioned and will remain as part of the license area until then.

### 2.3 Remaining Dismantlement / Decommissioning Activities

With the exception of decommissioning activities at the ISFSI to be undertaken when all fuel has been removed, all decommissioning and dismantlement activities have been completed at this site. Thus, no dismantlement activities are required in the survey areas to be released. The ISFSI and immediately surrounding areas are to be retained under the Part 50 license.

### 2.4 Controls to Prevent Recontamination

The only remaining source of potential recontamination of the area to be released is the ISFSI. The YNPS spent fuel at the ISFSI is stored in the NAC-MPC System. The NAC-MPC System is a sealed and leak-tight spent fuel storage system. YAEC completed in-process inspections and tests during fabrication and sealing of the canisters. Consequently, there is no release of radioactive material during normal conditions of storage. The structural analysis of the canister for off-normal and accident conditions of storage, which is presented in Chapter 10 of the NAC-MPC Final Safety Analysis Report (FSAR), shows that the canister is not breached in any of the evaluated events. Consequently, there is no release of radioactive material during off-normal and accident conditions of storage that could impact the areas proposed for release.

### 2.5 Impact of Proposed Partial Site Release on Programs and Documents

#### 2.5.1 FSAR

The proposed release will require minor changes to Section 300, "Environmental Site Characteristics" and to Figure 300-1, "Site Boundary and Plant Exclusion Area" of the Decommissioning FSAR. The changes need to (1) describe the reduced site area resulting from the removal of the subject survey area from the Part 50 License; and (2) identify the new site boundary on Figure 300-1. The licensee has stated that this revision will be performed.

#### 2.5.2 Technical Specifications

The YNPS Defueled Technical Specifications are not impacted by the release of the subject survey areas, as a size and description of the site are not included in the Technical Specifications. The survey and release processes are consistent with the LTP and associated License Condition. The ISFSI Technical Specifications, associated with allowable surface contamination on the cask after loading, were based upon limiting the dose at 100 m due to a total mechanistic release of the surface contamination. The partial site release will not affect the basis for this Technical Specification, as the assumed 100 m dose point is within the 300 m owner controlled boundary that will continue to be maintained for the ISFSI after partial site release has been implemented.

#### 2.5.3 Radiological Environmental Monitoring Program

Gaseous, liquid, and solid radwaste systems associated with the operation of YNPS have been removed and disposed. Site decommissioning activities have been concluded for the site

(except those required in the future for the ISFSI), and discharges of radioactive material (gaseous or liquid) are no longer made. Accordingly, the Environmental Monitoring Program has been revised to address monitoring associated only with the ISFSI which is to be retained under the Part 50 license. Therefore, the Environmental Monitoring Program will not be affected by the release of the proposed areas.

#### 2.5.4 Offsite Dose Calculation Manual (ODCM)

Gaseous, liquid, and solid radwaste systems associated with the operation of YNPS have been removed and disposed. Site decommissioning activities have been concluded for the site (except those required in the future for the ISFSI), and discharges of radioactive material (gaseous or liquid) are no longer made. Recently, the National Pollutant Discharge Elimination System (NPDES) permit for the site was terminated. Accordingly, the ODCM was revised to address the ISFSI only. Monitoring in accordance with the ODCM continues and will not be impacted by the proposed partial site release. Therefore, the ODCM will not be affected by release of the proposed areas.

#### 2.5.5 Defueled Emergency Plan

As the former nuclear plant has been dismantled and decommissioned, the Emergency Plan for the site has been reduced to address the ISFSI only. The ISFSI Emergency Plan describes the location of the ISFSI, the Radiologically Controlled and Protected Areas, and the 300 m Owner Controlled Area. None of these locations/areas will be affected by the proposed partial site release. Although portions of the owner controlled area are included in the area proposed for partial site release, YAEC will continue to maintain control of this area. Therefore, the emergency Plan will not be affected by release of the proposed areas.

#### 2.5.6 Security Plan

The security plan addresses the materials stored at the ISFSI and will not be affected by the release of the proposed areas.

#### 2.5.7 License Termination Plan

The licensee has committed to make a revision to the LTP to revise the area of the site still under the Part 50 license. Otherwise the proposed release does not impact the LTP.

#### 2.5.8 Groundwater

The Groundwater Monitoring Program is intended to integrate all aspects of groundwater characterization, monitoring and remediation required to support unrestricted release of the YNPS site. The LTP includes a commitment that prior to license termination, YAEC must demonstrate that the maximum tritium concentration in a resident farmer's well (consistent with dose modeling assumptions) is less than the U.S. Environmental Protection Agency's (EPA's) maximum contaminant limit (MCL) (20,000 pCi/L for tritium). As documented in Final Groundwater Condition Report dated February 15, 2007<sup>43</sup>, YAEC has calculated the maximum

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<sup>43</sup> ADAMS Accession Number ML071510133

concentration in the resident farmer's well as of April 2007 to be 8150 pCi/L, well below the 20,000 pCi/L limit.

In the course of the staff's review, questions were raised regarding the quantity of water drawn from the worst case well. By e-mail dated March 27, 2007<sup>44</sup>, the licensee provided a comparison analysis for the tritium concentration without water drawn for irrigation. The analysis indicated negligible difference in concentration. The staff has reviewed the analysis and has no further concerns.

The staff reviewed YAEC's confirmation of groundwater compliance dated April 24, 2007<sup>45</sup>, for the YNPS. In that document, YAEC demonstrated license termination compliance for the groundwater at the YNPS site as specified in its Groundwater Compliance Plan dated August 31, 2006<sup>46</sup>.

This demonstration included the following items:

- A summary of the five quarters of radiological sampling data for 53 monitoring wells and Sherman Spring,

- Confirmation that no radionuclides other than tritium have been detected in the groundwater exceeding License Amendment No. 158 action levels, and

- Confirmation that tritium concentrations in a resident farmer's well near monitoring well MW-107C is less than the EPA's MCL (20,000 pCi/L).

In addition, YAEC committed in its Groundwater Compliance Plan to provide a statistical trend analysis of tritium at each monitoring site for the five quarters. All the monitoring sites except monitoring well MW-110C had a stable or downward trend for tritium during this time period. The tritium in well MW-110C has increased slightly over this time period from 1,160 to 2,040 pCi/L, which is approximately 10 percent of the tritium MCL. The staff did not consider this upward trend significant.

The NRC has reviewed the licensee's groundwater sampling documents and analysis and agrees that the acceptance level, as documented in the LTP, has been met and therefore, groundwater compliance with the release criteria has been achieved.

#### 2.5.9 10 CFR 100 Siting Criteria

10 CFR Part 100 addresses design and environmental aspects to be considered in siting a power reactor. Decommissioning of the YNPS power reactor portion of the site has been completed. Only the ISFSI and a 300 m boundary will remain after this proposed partial site release. Therefore, the criteria of 10 CFR Part 100 no longer apply to this site and need not be addressed.

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<sup>44</sup> ADAMS Accession Number ML071640142

<sup>45</sup> ADAMS Accession Number ML071280543

<sup>46</sup> ADAMS Accession Number ML070080200

### 2.5.10 Decommissioning Environmental Report

The licensee evaluated the environmental impacts as documented in the Yankee Decommissioning Environmental Report and Supplement 1 to NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities" during preparation of the LTP. The information contained within the LTP was determined to be consistent or bounded by the information in the Yankee Decommissioning Environmental Report and Supplement 1 to NUREG-0586. The partial site release process was included in the LTP, and this partial site release is being proposed consistent with the process in the LTP. Therefore, the Yankee Decommissioning Environmental Report and conclusions in Section 8 of the LTP concerning Supplement 1 to NUREG-0586 are not impacted by the proposed partial site release.

### 2.6 NRC Inspections and Confirmatory Surveys

NRC survey contractors from the Oak Ridge Institute for Science and Education (ORISE) performed multiple in-process and confirmatory surveys of the radiological conditions at YNPS during decommissioning. ORISE also performed confirmatory analysis of samples from YNPS. Samples were tested by gamma spectroscopy for Co-60, Cs-137, and other (Hard-to-Detect) gamma-emitting radionuclides associated with the YNPS. Reports of ORISE surveys and sample analyses were provided on December 24, 2003<sup>47</sup>, February 16, 2005<sup>48</sup>, February 23, 2005<sup>49</sup>, March 30, 2005<sup>50</sup>, April 30, 2005<sup>51</sup>, October 12, 2005<sup>52</sup>, October 12, 2005<sup>53</sup>, December

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<sup>47</sup> ADAMS Accession Number ML040360630

<sup>48</sup> ADAMS Accession Number ML051360081

<sup>49</sup> ADAMS Accession Number ML051330130

<sup>50</sup> ADAMS Accession Number ML051330139

<sup>51</sup> ADAMS Accession Number ML051390312

<sup>52</sup> ADAMS Accession Number ML061530379

<sup>53</sup> ADAMS Accession Number ML061530383

2, 2005<sup>54</sup>, December 9, 2005<sup>55</sup>, January 25, 2006<sup>56</sup>, March 13, 2006<sup>57</sup>, August 17, 2006<sup>58</sup>, and January 10, 2007<sup>59</sup>.

NRC inspections of Yankee decommissioning activities are documented in inspection reports dated February 12, 2004<sup>60</sup>, September 20, 2004<sup>61</sup>, May 20, 2005<sup>62</sup>, October 18, 2005<sup>63</sup>, June 13, 2006<sup>64</sup>, and July 2, 2007<sup>65</sup>.

The inspectors reviewed the licensee's survey results, the licensee's survey methodology, and the licensee's plans for demonstrating that the survey results would demonstrate that structures and areas met acceptable radiological levels for release. The inspectors and NRC staff also reviewed confirmatory and in-process radiation and contamination surveys conducted by ORISE. Confirmatory surveys provide confidence that the licensee's survey results are representative of the conditions for that survey unit. In-process surveys provide confidence that the licensee's survey results are accurate. Based on the data review, discussions and observations, the inspector observed that the licensee had in place methods for demonstrating compliance with the release criteria. The inspector found that the licensee had in place a methodology in which the survey results were used to assess the radiological condition of the structures in order to determine whether further remediation was required, or the structures were suitable for demolition.

An issue that was identified during ORISE surveys was related to identified areas of elevated activity at some locations which were due to discrete small particles of radioactive material. The licensee began a review of their survey procedures relative to the identification of the "hot particles" and the dose significance of the particles. This issue involved the use of in situ gamma spectroscopy by the licensee that was reviewed and evaluated by the NRC Office of Nuclear Material Safety and Safeguards and determined to be acceptable by letter dated

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<sup>54</sup> ADAMS Accession Number ML061530393

<sup>55</sup> ADAMS Accession Number ML061530402

<sup>56</sup> ADAMS Accession Number ML061530412

<sup>57</sup> ADAMS Accession Number ML061530421

<sup>58</sup> ADAMS Accession Number ML071230672

<sup>59</sup> ADAMS Accession Number ML071230643

<sup>60</sup> ADAMS Accession Number ML040430204

<sup>61</sup> ADAMS Accession Number ML042640103

<sup>62</sup> ADAMS Accession Number ML051400350

<sup>63</sup> ADAMS Accession Number ML052910375

<sup>64</sup> ADAMS Accession Number ML061660446

<sup>65</sup> ADAMS Accession Number ML071860234

25, 2007<sup>66</sup>. In addition to the independent in-process surveys, the inspectors also split several samples with the licensee to assess the licensee's capability to characterize various areas and structures of the site prior to remediation and FSSs. The samples were analyzed by the NRC's contract laboratory, ORISE. The results indicated that the licensee correctly characterized systems and structures prior to remediation and FSSs.

In summary, NRC Inspections and ORISE Confirmatory Surveys, corroborated that the radiological conditions of the open land areas survey units that are proposed to be released, met the approved site-specific DCGLs, and that YNPS's laboratory data were consistent and in agreement with the ORISE's analytical results.

### 2.6.1. Groundwater Monitoring

The NRC staff collected split groundwater samples from monitoring wells on December 11 - 13, 2006, at the YNPS near Rowe, Massachusetts. ORISE, the NRC's independent laboratory, performed the following analytical analyses on these samples: gross alpha, gross beta, tritium, strontium-90, carbon-14, and gamma spectrometry (Co-58, Co-60, Cs-134, and Cs-137) (ORISE, 2007. Report For Analyses of Ten Water Samples From Yankee Rowe in Rowe, Massachusetts dated February 14, 2007<sup>67</sup>). A comparison of the analytical results for the split groundwater samples (i.e., the NRC and YAEC groundwater samples for the above wells) indicates a close correspondence. The NRC staff has concluded that the licensee's laboratory analyses and field sampling procedures are adequate. Therefore, the NRC staff has concluded that YAEC's radiological analytical program was adequately measuring the occurrence of site-generated radionuclides in the groundwater.

### 3.0 Conclusions

NRC's review of the licensee LTP determined that the proposed DCGLs would ensure that the 10 CFR 20, Subpart E, release criteria would be met. NRC review of the FSS reports determined that the reports were consistent with and demonstrated compliance with the LTP and the FSS results demonstrate that the survey areas to be released meet the radiological criteria for unrestricted release. Review of the licensee's submittal requesting the release adequately addressed the criteria as provided in the LTP. NRC inspections and confirmatory measurements substantiated that the licensee's decommissioning and FSS programs adequately assessed the radiological conditions at the site. Therefore, the NRC approves releasing the subject survey areas from the license, as specified in YAEC's March 8, 2007, request.

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Date: August 10, 2007

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<sup>66</sup> ADAMS Accession Number ML070220076

<sup>67</sup> ADAMS Accession Number ML071450240