

March 10, 2005

Raymond Shadis
Staff Technical Advisor
New England Coalition
Post Office Box 98
Edgecomb, Maine 04556

Dear Mr. Shadis:

This letter responds to the petition you filed on April 23, 2004, with Dr. William D. Travers, Executive Director for Operations of the U.S. Nuclear Regulatory Commission (NRC) pursuant to Section 2.206 of Title 10 of the *Code of Federal Regulations* (10 CFR 2.206) as supplemented on September 10, 2004.

In your petition you requested that the NRC take the following actions as result of two lost pieces of fuel pins in the spent fuel pool (SFP) at the Vermont Yankee Nuclear Power Station (Vermont Yankee):

1. require Entergy Nuclear Operations, Inc. (Entergy or the licensee) to do an accurate and NRC-verified inventory of the location, disposition, and condition of all irradiated fuel, including fuel currently loaded in the reactor, and
2. order the licensee to halt all fuel movement at Vermont Yankee until this inventory is complete.

You and your representative, Paul Blanch, participated in a teleconference with the Petition Review Board (PRB) on May 5, 2004, to discuss the petition. This teleconference gave your representative and the licensee an opportunity to provide additional information and to clarify issues raised in the petition. The results of this discussion were considered in the PRB's determination regarding the request for immediate action and in establishing the schedule for reviewing the petition.

In a letter dated May 28, 2004, the PRB notified you that it had determined that your request would be treated pursuant to 10 CFR 2.206 of the Commission's regulations. The May 28, 2004, letter further stated: "As result of your petition, the NRC issued a letter dated May 21, 2004, to Entergy requesting that they respond to the petition and provide documentation of the following: (1) verification of the inventory of all the special nuclear material in the spent fuel pool, (2) document [ation of] all other actions you are performing to locate the missing fuel, (3) verification of the location of the remaining portions of the two spent fuel rod segments, and (4) the results of your actions to locate the missing fuel when the current efforts are completed."

By letter dated September 10, 2004, you supplemented your petition and again requested that the NRC order a halt to all fuel movement at the Vermont Yankee until such time as the licensee has rendered an accurate and NRC verified account of the location, disposition, and condition of all irradiated fuel, including fuel currently loaded in the reactor core. In a teleconference on September 22, 2004, you discussed your supplemental letter with our PRB.

You said that you felt that the inspections to date to verify assembly location and number were not of the accuracy to ensure that the all fuel rods or pieces have been correctly identified and accounted for. In addition, you stated that the identification of the fuel rod pieces was questionable.

In a letter dated October 25, 2004, the PRB notified you that the results of the September 22, 2004, discussion would be considered in the PRB's determination regarding your request. The October 25, 2004, letter further stated: To assist in its review of your concerns, the NRC has issued a letter dated October 5, 2004, to Entergy requesting that the following information be provided by October 30, 2004:

2. Describe actions to confirm that Entergy has located the misplaced pieces. In particular, other than the comparison of the lengths of the pieces, what other evidence does Entergy have that the misplaced pieces were located? For instance, can Entergy verify that the diameters of all the broken pieces are consistent with the fuel rod pieces that were missing. General Electric makes a distinction between pieces and segments (i.e., segments are precut sections of fuel rods). Have any pieces or segments of irradiated fuel rods ever been sent to General Electric at Vallecitos or other facilities and has Entergy ever received any irradiated fuel pieces or segments from Vallecitos or other facilities? Can Entergy confirm the sections of fuel rods in the canister were pieces and not segments?
2. Describe Entergy's process for the movement and control of fuel rods during your reconstitution efforts. How has Entergy verified that individual fuel rod movements were properly documented and controlled? How have all individual rods removed from an assembly or from one assembly to another been accounted for? Describe any other conditions where fuel has been handled as less than complete assemblies (e.g., pieces, segments, pellets, rods, etc.), not addressed in the above questions, and how this fuel was accounted for. How many assemblies have been involved in the reconstitution efforts?
3. Provide the root-cause analysis for this event. If this analyses is to be provided with the updated licensee event report (LER), please provide the updated LER.

The NRC sent a copy of the proposed director's decision to you and the licensee for comment on December 27, 2004. You responded with comments on January 25, 2005. The licensee had no comments. Your comments and the NRC staff's responses are included in the director's decision.

By letter dated May 28, 2004, the NRC informed you that your request for the NRC to issue an order to immediately stop all movement at Vermont Yankee was moot, since all fuel movement for this refueling outage had been completed. The request to perform an accurate and NRC verified account of the location, disposition, and condition of all irradiated fuel, including fuel currently loaded in the reactor had been referred to the Office of Nuclear Reactor Regulation for appropriate action. I have determined that the NRC's actions have in effect granted your request for an accurate and NRC verified inventory of the special nuclear material in the Vermont Yankee SFP. In addition, the NRC has issued the report on the results of its special

inspection on the misplaced fuel pieces at Vermont Yankee. No further action is necessary to address your petition. Consequently, the NRC denies the supplemented request for a more detailed inventory of the SNM in the SFP.

A copy of the director's decision (DD-05-01) will be filed with the Secretary of the Commission for the Commission to review in accordance with 10 CFR 2.206(c). As provided by this regulation, the decision will constitute the final action of the Commission 25 days after the date of the decision unless the Commission, on its own motion, institutes a review of the decision within that time. The documents cited in the enclosed decision are available in ADAMS for inspection at the Commission's Public Document Room, at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland, and from the ADAMS Public Library component of the NRC Web site, <http://www.nrc.gov> (the Public Electronic Reading Room).

I have also enclosed a copy of the notice of Issuance of Director's Decision Under 10 CFR 2.206 that has been filed with the Office of the Federal Register for publication.

Please contact Alan B. Wang, Petition Manager, at 301-415-1445 to discuss any questions related to this petition.

Sincerely,

/RA/

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures: 1. Director's Decision 05-01
2. Staff's Response to Petitioner's Comments

cc w/encls: See next page

inspection on the misplaced fuel pieces at Vermont Yankee. No further action is necessary to address your petition. Consequently, the NRC denies the supplemented request for a more detailed inventory of the SNM in the SFP.

A copy of the director's decision (DD-05-01) will be filed with the Secretary of the Commission for the Commission to review in accordance with 10 CFR 2.206(c). As provided by this regulation, the decision will constitute the final action of the Commission 25 days after the date of the decision unless the Commission, on its own motion, institutes a review of the decision within that time. The documents cited in the enclosed decision are available in ADAMS for inspection at the Commission's Public Document Room, at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland, and from the ADAMS Public Library component of the NRC Web site, <http://www.nrc.gov> (the Public Electronic Reading Room).

I have also enclosed a copy of the notice of Issuance of Director's Decision Under 10 CFR 2.206 that has been filed with the Office of the Federal Register for publication.

Please contact Alan B. Wang, Petition Manager, at 301-415-1445 to discuss any questions related to this petition.

Sincerely,

/RA/

J.E.Dyer, Director
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures: 1. Director's Decision 05-01
2. Staff's Response to Petitioner's Comments

cc w/encls: See next page

DISTRIBUTION: See next page

Incoming: ML041180245

Supplement: ML042680084

M. Kansler-Request for Comments: ML043510424

R. Shadis-Request for Comments: ML043520028

Comment Memo: ML050470240

PKG. ML050540667

ADAMS Accession No.: LTR: ML050540428/Fed. Reg. Not.: ML050660476 NRR-106

OFFICE	PDI-1/PM	PDIV-2/PM	PDIV-2/LA	PDI-1/SC	PDI/D	TECH ED
NAME	DSkay	AWang	LFeizollahi:lx1	AHowe	CHolden	PKleene
DATE	3/3/05	3/2/05	3/2/05	12/06/04	12/09/04	2/28/05

OFFICE	Region I	DLPM/DD	DLPM/D	NRR/ADPT
NAME	CAnderson	JLyons	JDyer	BWSheron
DATE	12/13/04	3/7/05	3/10/05	3/10/05

E:\Filenet\ML050540428.wpd

OFFICIAL RECORD COPY

DISTRIBUTION FOR LETTER TO RAYMOND SHADIS RE: DIRECTOR'S DECISION ON
VERMONT YANKEE:

Date:**3/10/05**

PUBLIC
PDI-1 Reading
EDO R/F(**G20040284**)
L. Reyes (Hard Copy)
W. Kane
J. Silber
M. Virgilio
E. Merschoff
K. Cyr/S. Burns
B. Sheron
J. Dyer/W. Borchardt

R. Zimmerman, NSIR
M. Weber, NSIR
H. Miller, R-I
L. Marsh/J. Lyons
C. Holden
R. Laufer
P. Milano
S. Little
A. Madison, NSIR
A. Wang
L. Feizollahi
J. Shea

E. Weiss
R. Palla
G. Matakas, R-I
D. Skay
J. Goldberg, OGC
S. Lewis, OGC
OPA
OCA
NRR WpcMailCtr(**G20040284**)
L.Cox(Hard Copy)
B. Holian
A. Howe

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

J. E. Dyer, Director

In the Matter of)	Docket No. 50-271
)	
ENTERGY NUCLEAR OPERATIONS, INC.)	License No. DPR-28
)	
(Vermont Yankee Nuclear Power Station))	
)	

DIRECTOR'S DECISION UNDER 10 CFR 2.206

I. Introduction

By letter dated April 23, 2004, as supplemented on September 10, 2004, Mr. Raymond Shadis of the New England Coalition (the Petitioner) filed a petition pursuant to Title 10 of the *Code of Federal Regulations*, Section 2.206. The Petitioner requested that the U.S. Nuclear Regulatory Commission (NRC) take the following actions as a result of the absence of two pieces of fuel rods from their documented location in the spent fuel pool (SFP) at the Vermont Yankee Nuclear Power Station (Vermont Yankee):

- (1) require Entergy Nuclear Operations, Inc. (Entergy or the licensee), to perform an accurate and NRC-verified inventory of the location, disposition, and condition of all irradiated fuel, including fuel currently loaded in the reactor, and
- (2) order the licensee to halt all fuel movement at Vermont Yankee until this inventory is completed.

The Petitioner stated that the basis for the requested actions in the petition is that Entergy lost control of the spent fuel inventory at Vermont Yankee and until all spent fuel was accounted for, that the Petitioner would have no confidence that Entergy did not put leaking fuel

or suspected leaking fuel assemblies back into the reactor core during the April 2004 refueling outage.

In a letter dated April 30, 2004, the NRC informed the Petitioner that the requests for a fuel inventory verified by the NRC at Vermont Yankee and for an order to stop all fuel movement were being referred to the Office of Nuclear Reactor Regulation for appropriate action. This letter stated that a teleconference had been arranged to discuss the petition with the Office of Nuclear Reactor Regulation's Petition Review Board (PRB) on May 5, 2004. By teleconference on May 5, 2004, the Petitioner discussed the petition with the PRB and provided additional supporting details. This teleconference was transcribed and the transcript is publicly available as a supplement to the petition. The transcript is available in ADAMS (ML050550412) for inspection at the Commission's Public Document Room (PDR), at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible from the ADAMS Public Electronic Reading Room on the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who have problems in accessing the documents in ADAMS should contact the NRC PDR reference staff by telephone at 1-800-397-4209 or 301-415-4737 or by e-mail to pdrr@nrc.gov.

By letter dated May 24, 2004, the NRC requested Entergy to:

- (1) document the verification of the inventory of all the special nuclear material (SNM) in the SFP
- (2) document all other actions Entergy is performing to locate the missing fuel
- (3) document that the location of the remaining portions of the two spent fuel rod pieces have been verified

- (4) provide the results of its actions to locate the missing fuel when the current efforts are completed

By letter dated June 8, 2004, Entergy responded to the above requests and provided a schedule for these requests related to the petition. The staff considered the requested information in evaluating the petition. In addition, Entergy issued a licensee event report (LER) on June 17, 2004. An updated LER issued on September 29, 2004, summarized the root cause analysis.

By letter dated May 28, 2004, the NRC informed the Petitioner that the request that the NRC issue an order to immediately stop all fuel movement at Vermont Yankee was moot since all fuel movement for the April 2004 refueling outage had been completed when the NRC received the request. During the May 5, 2004, conference call, the Petitioner stated he understood that all fuel movement had been completed for the April 2004 refueling outage but reaffirmed the petition's request to stop all fuel movement. He stated he understood that at the present time that would limit the request to the SFP. However, the Petitioner stated that he did not object to moving fuel in the SFP if the fuel movement was related to the inventory inspection. The Petitioner also stated he wanted an order for a 100-percent verification of the inventory of all the SNM in the SFP. The May 28, 2004, letter stated that the NRC would take action on the remaining request that Entergy perform an accurate and NRC-verified inventory of the location, disposition, and condition of all irradiated fuel, including fuel currently loaded in the reactor.

On July 13, 2004, Entergy informed the NRC that it had located the unaccounted-for fuel pieces in a cylindrical container (fuel storage liner) in the SFP. On July 17, 2004, Entergy confirmed that the two missing pieces had been found.

On September 10, 2004, the Petitioner supplemented his petition to request that the NRC require the licensee to restore its documentation of the location and condition of all SNM at Vermont Yankee and that the NRC verify the accuracy and completeness of the documentation. In a September 22, 2004, conference call, the PRB discussed the supplemental letter with the Petitioner and his consultants. This teleconference was transcribed and the transcript is publicly available as a supplement to the petition. In this call, the Petitioner stated that the inspections to date to verify assembly location and number were "not of the veracity" to ensure that the all fuel rods or pieces have been correctly identified and accounted for. In addition, the Petitioner stated that the identification of the fuel rod pieces was questionable. On October 5, 2004, the NRC sent Entergy a letter requesting additional information. Entergy responded to this letter on November 19, 2004.

II. Discussion

On April 21, 2004, Entergy made a 10 CFR 50.72 notification that two short spent fuel rod pieces were not in their documented location in the SFP.

On April 22, 2004, the NRC initiated a special inspection to review the licensee's actions to locate the fuel and evaluate why the spent fuel pieces at Vermont Yankee were potentially missing. At the same time, Entergy began doing a comprehensive search of the SFP, verifying the core re-load and the location of the remaining damaged spent fuel rod sections stored in the bundles, and reviewing records in an effort to find the missing pieces.

By letter dated May 21, 2004, the NRC asked the licensee to document the various actions to account for all SNM in the SFP. This letter also asked the licensee to document actions to locate the missing fuel pieces, verify the location of the remaining parts of the two spent fuel rods, and provide the results of these efforts to the NRC. In its June 8, 2004, response, Entergy stated it had verified: (1) that every spent fuel assembly was in its

documented location in the SFP rack and (2) that the remaining parts of the fuel rods that were the source of the unaccounted-for fuel rod pieces were in their documented locations.

Entergy's LER dated June 17, 2004, provides additional details on Entergy's physical inspection of the SFP.

Entergy stated that it had fully verified the documented position of 100-percent of fuel assemblies in the SFP by comparing the serial numbers on the fuel assemblies to the serial numbers recorded on the SFP map for each rack position. No discrepancies were noted. During the special inspection, the inspectors independently selected 219 of the rack positions shown on the SFP map and compared the serial numbers of fuel assemblies shown in those positions on the inspection videotapes with the expected serial numbers. The inspectors identified no discrepancies in the samples reviewed. The inspectors verified the location of selected nonfuel SNM (i.e., fission detectors) by comparing the actual serial number of the item to the inventory sheet. The inspectors also verified the balance of nonfuel SNM inventory by matching the tamper-evident seal number to the number of the corresponding item on the inventory sheet. The licensee's 100-percent inspection of fuel assemblies in the SFP and the NRC's special inspection gives the NRC a high level of confidence that all spent fuel assemblies at Vermont Yankee are accounted for and in their documented locations.

The Petitioner also requested that a core load verification be done. Core load verification (i.e., verifying the location and orientation of each individual fuel assembly in the reactor core) is performed at Vermont Yankee in accordance with Vermont Yankee Operating Procedure (OP) 1411, "Core Verification," after any reconfiguration of fuel assemblies within the core, including midcycle and refueling outages. In accordance with OP 1411, these verifications are performed visually with the aid of an underwater video camera. Thus Entergy

personnel videotaped these verifications in addition to documenting the completion of verifications in OP 1411.

As part of the normal NRC refueling activity inspection at Vermont Yankee, the NRC inspectors discussed the core loading verification process with Entergy reactor engineering personnel. Every refueling outage, the licensee performs a 100-percent inspection with 100-percent independent verification of the fuel assemblies in the reloaded core not only for location but for orientation. During refueling outage (RFO) 24, an initial verification of the core loading was done by a reactor engineer and a training instructor. The reactor engineer used an underwater video camera and a video monitor to read the serial number of each fuel assembly installed in the core, while the training instructor verified that the number read by the reactor engineer matched the corresponding fuel assembly number on the core loading map. Two additional individuals, a reactor engineer and a reactor engineering supervisor, performed independent verifications of the core loading using a similar method and a separate video monitor. All fuel assemblies were verified during this effort to be properly loaded and oriented.

As part of the normal NRC refueling activity inspection at Vermont Yankee, the inspectors did an independent review of 128 fuel assembly locations (34 percent of core load), comparing Entergy's "as left" core map to the core verification videotape made during the performance of OP 1411. Among the 128 fuel assemblies reviewed, the NRC inspection included 20 previously burned fuel assemblies which had not been in core during the last operating cycle and 4 fuel assemblies adjacent to the calculated "most reactive" control rod. The NRC inspection verified that the 128 bundles in the sample were in their documented locations. In addition, the NRC inspectors compared the pre-RFO 24 SFP map to the as-left core map to verify that no leaking fuel assemblies had been reinserted into the core. The NRC inspectors did not identify any discrepancies in core fuel loading and did not find leaking fuel

reinserted into the core. Based on the licensee's 100-percent inspection and verification results and the results of the NRC's sample inspection, the NRC has a high level of confidence that the locations of the fuel assemblies in the reloaded core were accurately documented.

The Petitioner's supplement questioned whether the fuel rod pieces the licensee found were correctly identified. To answer this question, the staff requested information from the licensee regarding the identification of the fuel rod pieces. Entergy did a document search and confirmed that the only fuel pieces or segments of fuel rods ever sent off site went to General Electric (GE) at Vallecitos in 1979. Documentation also showed that the segments and pieces sent to GE at Vallecitos were not related to the pieces of two failed fuel rods in the liner. There are no records of shipments of fuel rod pieces or segments to any other facility. Entergy has no records of ever receiving any fuel pieces or segments from GE at Vallecitos or from any other facility. GE has confirmed that due to the destructive nature of the post-irradiation examination, any spent nuclear fuel from Vermont Yankee sent to GE for post-irradiation examination will be stored at Vallecitos until disposal. Therefore, there is reasonable evidence that the fuel rod pieces in the fuel storage liner are from Vermont Yankee.

After the discovery of the two spent fuel rod pieces, the NRC special inspection focused on why Entergy concluded that the two spent fuel rod pieces were in fact the same two spent fuel rod pieces which had been misplaced. Entergy verified that the two spent fuel rod pieces were the unaccounted spent fuel rod pieces by measuring radiation levels and estimating the length and diameter of the pieces. Entergy reasoned as follows:

- The lengths of the two found spent fuel rod pieces were consistent with the lengths of the two misplaced spent fuel rod pieces, based on visual comparison with items of known length.

- Radiation measurements inside and outside the fuel storage liner were consistent with the expected radiation levels based on Entergy's detailed radiological characterization of the two misplaced spent fuel rod pieces.
- The diameters of the two spent fuel rod pieces were consistent with the diameters of the original fuel rods based on boroscope observation.
- Only two spent fuel rod pieces were misplaced. Two spent fuel rod pieces were recovered. No other record discrepancies indicated any other unaccounted for SNM.
- The fuel storage liner discovered on July 13, 2004, was consistent with the 1980 log entries and other documents referring to a fuel storage liner.
- Entergy interviewed a former employee who had been involved in the transfer of the two spent fuel rod pieces from the fuel storage bucket to the fuel storage liner on January 21, 1980. While the individual did not specifically recall the transfer activity, his description of the fuel storage liner used to store broken spent fuel rod pieces matched the fuel storage liner discovered on July 13, 2004.
- A GE invoice dated August 9, 1979, indicated that a fuel storage liner was shipped to Vermont Yankee to contain broken fuel pins. This invoice indicated the intent to use the fuel storage liner to contain broken spent fuel rod pieces. The first spent fuel rod was broken on April 23, 1979. This invoice and documents provided by GE were consistent with the fuel storage liner found in the SFP by Entergy and the 1980 SNM transfer form.

Using the videotape records, the NRC inspectors compared the lengths of the two spent fuel rod pieces to the known distance between reference markings on a probe and independently confirmed that one of the two spent fuel rod pieces in the fuel storage liner was 9 inches long

and the other 17 inches. The NRC inspectors found that Entergy's radiological characterization of the two spent fuel rod pieces acceptable. The NRC inspectors determined that Entergy had sufficient supporting information to conclude that the two spent fuel rod pieces found were the two misplaced spent fuel rod pieces. On this basis, the NRC staff is confident in Entergy's conclusion that the fuel storage liner opened in the SFP on July 13, 2004, contained the two spent fuel rod pieces described in the records.

The Petitioner's supplement also asserted that the inventory of assemblies was not sufficiently rigorous. Fuel rods were routinely moved during fuel reconstitution efforts and fuel assembly inspections. However, the licensee confirmed that after fuel assembly inspections, each fuel rod was typically returned to the location from which it was removed. Procedure OP-1403, "Fuel Bundle Non-Destructive Testing and Reconstitution," Rev. 16, describes the methods used for examining fuel assemblies and individual rods and requires that records be created for accountability of fuel rods moved. The NRC inspectors interviewed Entergy personnel who also described in detail how they tracked changes in fuel assembly configurations as a result of the movement of individual fuel rods, for example during fuel assembly reconstitutions. When a rod was removed from an assembly, the action was recorded on the notebook page for that assembly along with where the rod was moved. An exchange of one rod for another was also recorded on the notebook page. This created a record that enabled tracking of the movements of individual fuel rods among assemblies. When all such changes to an assembly had been completed during a manipulation, the current SNM inventory of that reconstituted fuel assembly was adjusted to reflect the additions and removals of the fuel rods. Thus, every fuel rod moved from one assembly to another was tracked on a fuel rod transfer form and inventory documentation so that every fuel rod could be traced back to where it came from.

Entergy reviewed the records of all individual rod movements within the SFP at the request of the NRC's SNM investigation team and identified no discrepancies. Entergy selected seven fuel assemblies and did a physical inspection and verification of vacant fuel rod positions, broken fuel rods, and full-length fuel rods that had been moved about 20 years ago. Entergy compared the results with its fuel records and identified no discrepancies. The seven assemblies were selected on the basis that they contained fuel rods which had been manipulated and were therefore more likely to have been misplaced. The seven assemblies consisted of four assemblies that were associated with the two failed fuel rods in question, one assembly associated with shipment of fuel pieces to GE Vallecitos, and two fuel cages (i.e., containers) for storing rods and pieces of rods. The fuel rods and pieces came from the reconstitution efforts during the early 1970s. The fuel inventory has accounted for all rods and pieces in the assemblies and the inventory has been properly documented. The inspectors reviewed a sample of these records and found that each rod movement in the sample reviewed was properly recorded in the affected fuel assembly.

Therefore, on the basis of the inventory performed by Entergy and verified by a NRC's special inspection and routine inspections the NRC has concluded that Entergy is in full compliance with regulatory requirements to account for all SNM in its possession.

Entergy's investigation required the movement of seven fuel bundles. Entergy has not moved any spent fuel in the SFP not related to this investigation since April 21, 2004. Entergy also moved a fuel storage liner in the SFP. The liner was found to contain the two missing fuel pieces.

III. Conclusion

The NRC staff has reviewed the basis for the Petitioner's requested actions. The Petitioner's request to stop all fuel movement is moot since all fuel movement for the April 2004

refueling outage had been completed before NRC received the petition. As noted above, seven fuel assemblies and the fuel storage liner with the two rod pieces were moved as part of the licensee's investigation. Based on the licensee's documented inventory of fuel assemblies and their locations, the location of the individual rods, the successful discovery of the two fuel rod pieces in the SFP, and the core verifications, the NRC has concluded that as of July 13, 2004, Entergy has been in full compliance with regulatory requirements to account for all SNM in its possession. Since the licensee has restored its inventory of SNM at the Vermont Yankee site, there is no need for the NRC to prohibit future fuel movement. Therefore, the Petitioner's requested actions have, in effect, been granted. The licensee's actions were performed voluntarily, obviating the need for an order. The staff has concluded no further action is necessary to address your petition. Consequently, the NRC denies the supplemented request for a more detailed inventory of the SNM in the SFP.

The Petitioner also claimed to have no confidence that Entergy did not put leaking fuel rods or suspected leaking fuel assemblies back into the reactor core during the last refueling outage. The NRC inspectors verified that no leaking fuel assemblies had been reloaded in the reactor core. Although the NRC has concluded that Entergy is now in compliance with regulatory requirements to account for all SNM, the special inspection report issued on December 2, 2004, the inspectors identified an apparent violation of 10 CFR 74.19, "Material Control and Accounting of Special Nuclear Material - Recordkeeping," related to the two spent fuel rod pieces. The NRC is considering escalated enforcement action for this finding.

As provided in 10 CFR 2.206(c), a copy of this Director's Decision will be filed with the Secretary of the Commission for the Commission to review. As provided for by this regulation,

the decision will constitute the final action of the Commission 25 days after the date of the decision unless the Commission, on its own motion, institutes a review of the decision within that time.

Dated at Rockville, Maryland, this 10th day of March 2005.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-271

LICENSE NO. DPR-28

ENTERGY NUCLEAR OPERATIONS, INC.

VERMONT YANKEE NUCLEAR POWER STATION

NOTICE OF ISSUANCE OF DIRECTOR'S DECISION UNDER 10 CFR 2.206

Notice is hereby given that the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission (NRC) has issued a Director's Decision on an April 23, 2004, petition by the New England Coalition, hereinafter referred to as the "Petitioner." The petition was supplemented on September 10, 2004. The petition concerns the operation of the Vermont Yankee Nuclear Power Station (Vermont Yankee).

The basis for the April 23, 2004, petition, was the absence of two pieces of fuel rods in the spent fuel pool (SFP) at Vermont Yankee from their documented location. The Petitioner stated that Entergy Nuclear Operations, Inc. (Entergy or the licensee) had lost control of the spent fuel inventory at Vermont Yankee. The Petitioner would have no confidence that Entergy did not put leaking fuel rods or suspected leaking fuel assemblies back into the reactor core during the April 2004 refueling outage until Entergy accounted for all special nuclear material (SNM). The New England Coalition contends that operation with leaking fuel in the reactor core would be potentially unsafe and in violation of Federal regulations.

On May 5 and September 22, 2004, the Petitioner and the licensee met with the staff's Petition Review Board (PRB). These meetings gave the Petitioner and the licensee an opportunity to provide additional information and to clarify issues raised in the petition.

The NRC sent a copy of the proposed Director's Decision to the Petitioner and to the licensee for comment on December 27, 2004. The Petitioner responded with comments on January 25, 2005. The comments and the NRC staff's responses are included in the Director's Decision. The staff did not receive any comments from the licensee.

The Director of the Office of Nuclear Reactor Regulation denies the Petitioner's request that the NRC make Entergy do an accurate and NRC-verified inventory of the location, disposition, and condition of all irradiated fuel, including fuel currently loaded in the reactor, and order Entergy to halt all fuel movement at Vermont Yankee until the inventory is completed. The reasons for this decision are explained in the Director's Decision pursuant to Title 10 of *Code of Federal Regulations* (10 CFR), Section 2.206 (DD-05-01), the complete text of which is available in ADAMS for inspection at the Commission's Public Document Room at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland, and from the ADAMS Public Library component of the NRC's Web site, <http://www.nrc.gov/reading-rm.html> (the Public Electronic Reading Room).

The Petitioner's request that all fuel movement be stopped is moot. All fuel movement for the April 2004 refueling outage had been completed before the NRC received the petition. The licensee has completed a documented inventory to confirm the total number of fuel assemblies and their locations and the locations of the individual rods. The licensee successfully located the two fuel rod pieces in the SFP and did core verifications. The NRC therefore concludes that as of July 13, 2004, Entergy has been in full compliance with regulatory requirements to account for all SNM in its possession. Therefore the Petitioner's request has in effect been granted. The licensee took the requested actions voluntarily obviating the need for an order. Furthermore, the licensee has updated its inventory of SNM, so there is no need for the NRC to prohibit fuel movement.

The Petitioner claimed to have no confidence that Entergy did not put leaking fuel or suspected leaking fuel assemblies back into the reactor core during the last refueling outage. The NRC inspectors verified that no leaking fuel assemblies were reloaded in the reactor core. The NRC has concluded that Entergy is now in compliance with regulatory requirements to account for all SNM. However in the special inspection report issued on December 2, 2004, the inspectors identified an apparent violation of 10 CFR 74.19, "Material Control and Accounting of Special Nuclear Material-Recordkeeping," related to the two spent fuel rod pieces. The NRC is considering escalated enforcement action for this finding.

A copy of the Director's Decision will be filed with the Secretary of the Commission for the Commission's review in accordance with 10 CFR 2.206 of the Commission's regulations. As provided for by this regulation, the Director's Decision will constitute the final action of the Commission 25 days after the date of the decision, unless the Commission, on its own motion, institutes a review of the Director's Decision in that time.

Dated at Rockville, Maryland, this 10th day of March 2005.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Vermont Yankee Nuclear Power Station

cc:

Regional Administrator, Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

Mr. David R. Lewis
Shaw, Pittman, Potts & Trowbridge
2300 N Street, N.W.
Washington, DC 20037-1128

Ms. Christine S. Salembier, Commissioner
Vermont Department of Public Service
112 State Street
Montpelier, VT 05620-2601

Mr. Michael H. Dworkin, Chairman
Public Service Board
State of Vermont
112 State Street
Montpelier, VT 05620-2701

Chairman, Board of Selectmen
Town of Vernon
P.O. Box 116
Vernon, VT 05354-0116

Operating Experience Coordinator
Vermont Yankee Nuclear Power Station
320 Governor Hunt Road
Vernon, VT 05354

G. Dana Bisbee, Esq.
Deputy Attorney General
33 Capitol Street
Concord, NH 03301-6937

Chief, Safety Unit
Office of the Attorney General
One Ashburton Place, 19th Floor
Boston, MA 02108

Ms. Deborah B. Katz
Box 83
Shelburne Falls, MA 01370

Ms. Carla A. White, RRPT, CHP
Radiological Health
Vermont Department of Health
P.O. Box 70, Drawer #43
108 Cherry Street
Burlington, VT 05402-0070

Mr. James M. DeVincentis
Manager, Licensing
Vermont Yankee Nuclear Power Station
P.O. Box 0500
185 Old Ferry Road
Brattleboro, VT 05302-0500

Resident Inspector
Vermont Yankee Nuclear Power Station
U. S. Nuclear Regulatory Commission
P.O. Box 176
Vernon, VT 05354

Director, Massachusetts Emergency
Management Agency
ATTN: James Muckerheide
400 Worcester Rd.
Framingham, MA 01702-5399

Jonathan M. Block, Esq.
Main Street
P.O. Box 566
Putney, VT 05346-0566

Mr. John F. McCann
Director, Nuclear Safety Assurance
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

Mr. Gary J. Taylor
Chief Executive Officer
Entergy Operations
1340 Echelon Parkway
Jackson, MS 39213

Vermont Yankee Nuclear Power Station

cc:

Mr. John T. Herron
Sr. VP and Chief Operating Officer
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

Mr. Danny L. Pace
Vice President, Engineering
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

Mr. Brian O'Grady
Vice President, Operations Support
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

Mr. Michael J. Colomb
Director of Oversight
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

Mr. John M. Fulton
Assistant General Counsel
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601

Mr. Jay K. Thayer
Site Vice President
Entergy Nuclear Operations, Inc.
Vermont Yankee Nuclear Power Station
P.O. Box 0500
185 Old Ferry Road
Brattleboro, VT 05302-0500

Mr. Kenneth L. Graesser
38832 N. Ashley Drive
Lake Villa, IL 60046

Mr. James Snizek
5486 Nithsdale Drive
Salisbury, MD 21801

Mr. Ronald Toole
1282 Valley of Lakes
Box R-10
Hazelton, PA 18202

Ms. Stacey M. Lousteau
Treasury Department
Entergy Services, Inc.
639 Loyola Avenue
New Orleans, LA 70113

Mr. Raymond Shadis
New England Coalition
Post Office Box 98
Edgecomb, ME 04556

Mr. James P. Matteau
Executive Director
Windham Regional Commission
139 Main Street, Suite 505
Brattleboro, VT 05301

Mr. William K. Sherman
Vermont Department of Public Service
112 State Street
Drawer 20
Montpelier, VT 05620-2601
Mr. Michael

Kansler
President
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601