



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

October 31, 2001

Docket No. 05000245

License No. DPR-21

Raymond P. Necci  
Vice President - Operations  
Dominion Nuclear Connecticut, Inc.  
Millstone Nuclear Power Station, Unit 1  
c/o Mr. David A. Smith, Process Owner - Regulatory Affairs  
Rope Ferry Road  
Waterford, CT 06385

**SUBJECT: INVESTIGATION OF MILLSTONE NUCLEAR POWER STATION, UNIT 1:  
FAILURE TO REPORT MISSING OR LOST RADIOACTIVE FUEL RODS IN A  
TIMELY MANNER**

Dear Mr. Necci:

On September 28, 2001, the NRC Office of Investigations completed an investigation which was initiated to determine when Northeast Nuclear Energy Company, the former operator of the Millstone Station, as well as licensee staff/contractors became aware that two fuel rods/pins were missing from the Millstone Nuclear Power Station Unit 1 spent fuel pool (SFP), and whether there was any deliberate effort to delay reporting that information to the NRC. On October 5, 2001, the Atomic Safety and Licensing Board Panel (the Board) requested that a copy of the OI Report, in its entirety, be provided to the Board as part of the proceeding in LBP-01-29. Pursuant to that request, a copy of the OI Report is being provided to the Board on this date. Since the OI report will be accessible to the public as part of that proceeding, we are simultaneously providing you a copy with this letter.

As the enclosed report implies, based on the evidence developed during its investigation, OI did not substantiate that either Northeast Nuclear Energy Company, or its personnel/contractors, deliberately delayed properly reporting to the NRC that the two fuel rods were missing from the MNPS Unit 1 SFP.

As you are aware, a special NRC inspection is currently ongoing into the circumstances surrounding the missing fuel pins. Enforcement, if warranted, for any violations relative to this matter will be handled after that inspection.

In accordance with 10 CFR 2.790, a copy of this letter and OI report will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html>. No reply to this letter is required.

R. Necci  
Dominion Nuclear Connecticut, Inc.

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Your cooperation with us is appreciated.

Sincerely,

***/RA Francis M. Costello Acting for/***

George Pangburn, Director  
Division of Nuclear Materials Safety

Enclosure:  
Investigation Report No. 1-2001-007

cc w/o encl:

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DATE	10/31/01		10/31/01		by tele/email		10/31/01		10/31/01

OFFICIAL RECORD COPY

Title: MILLSTONE NUCLEAR POWER STATION, UNIT 1:

FAILURE TO REPORT MISSING OR LOST RADIOACTIVE FUEL RODS IN A  
TIMELY MANNER

Licensee:

Northeast Nuclear Energy Company  
107 Selden Street  
Berlin, CT 06037

Docket No.: 50-245

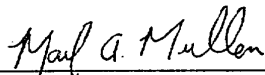
Case No.: 1-2001-007

Report Date: September 28, 2001

Control Office: OI:RI

Status: CLOSED

Reported by:



Mark A. Mullen, Special Agent  
Office of Investigations  
Field Office, Region I


Reviewed and Approved by:



Barry R. Letts, Director  
Office of Investigations  
Field Office, Region I

Participating personnel:

Todd Jackson, Health Physicist, DNMS, Region I  
Kristen Monroe, Special Agent  
Jeffrey Teator, Special Agent  
Robert P. Rzepka, Special Agent



## SYNOPSIS

This investigation was initiated on February 13, 2001, by the Nuclear Regulatory Commission (NRC), Office of Investigations (OI), Region I, to determine when the licensee and licensee personnel/contractors became aware that two fuel rods/pins were unaccounted for/missing/lost from the Millstone Nuclear Power Station (MNPS) Unit 1 spent fuel pool (SFP); and, specifically, whether there was any deliberate effort to delay reporting that information to the NRC.

Based on the evidence developed during this investigation, OI did not substantiate that either the licensee or licensee personnel/contractors deliberately delayed properly reporting to the NRC that two fuel rods/pins were unaccounted for/missing/lost from the MNPS Unit 1 SFP.

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KUDLA, Christopher S., Engineer/Project Manager, Independent Contractor, MNPS .....	26
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[REDACTED]

## DETAILS OF INVESTIGATION

### Applicable Regulations

10 CFR 50.5: Deliberate misconduct  
10 CFR 50.9: Completeness and accuracy of information  
10 CFR 20.2201(a)(1)(ii): Reports of theft or loss of licensed material

### Purpose of Investigation

This investigation was initiated on February 13, 2001, by the Nuclear Regulatory Commission (NRC), Office of Investigations (OI), Region I (RI), to determine if the licensee (formerly Northeast Nuclear Energy Company (NNECO)) or licensee personnel/contractors failed to report missing or lost radioactive fuel rods from the Millstone Nuclear Power Station (MNPS) Unit 1 spent fuel pool (SFP) in a timely manner. Specifically, this investigation focused on when the licensee became aware that the two fuel rods were missing/lost and whether there was any deliberate intention to delay reporting that information to the NRC (Exhibit 1).

AGENT'S NOTE: Dominion Nuclear Connecticut, Inc. (DNCT), became the operator of MNPS on April 1, 2001, transferring the license from NNECO.

### Background

On February 13 and 15, 2001, Allegation Review Boards (ARB) were convened in Region I to discuss potential wrongdoing discovered by an inspector during an inspection at Millstone Unit 1 from January 29, to February 1, 2001. During the inspection, a licensee special nuclear material (SNM) clerk/scientist indicated that in August 2000 "the guys" mentioned to her a concern that radioactive fuel rods could not be accounted for (Exhibits 2 and 3).

The concern centered on the fact that the NRC inspector had not been notified of the two potentially missing/lost fuel rods until November 16, 2000. Further, the licensee had previously submitted a Semi-Annual Special Nuclear Material Balance Report (SASNMBR/DOE/NRC 742 Forms) for MP1, MP2, and MP3, dated October 25, 2000, in which there was no mention of the two missing/lost fuel rods. The licensee is required by 10 CFR Part 20.2201(a)(1)(ii) to report any lost, stolen, or missing licensed material of a specific quantity within 30 days after it becomes known to the licensee.

Additionally, the Atomic Safety and Licensing Board (ASLB) was holding hearings on whether to grant Northeast Nuclear Energy Company (NNECO), via a licensee amendment application to the NRC, dated March 19, 1999, the ability to increase the storage capacity of Millstone Unit 3

spent fuel pool (SFP) from 756 assemblies to 1860 assemblies. The Connecticut Coalition Against Millstone (CCAM) and the Long Island Coalition Against Millstone (CAM) became parties to the proceeding, arguing against increasing the storage capacity of the Unit 3 SFP. Licensing Board activities (i.e., filings, arguments etc.) were ongoing throughout the summer of 2000. On October 26, 2000, the ASLB issued a Memorandum and Order with regard to Contention 4, and ruled that "NNECO has demonstrated that it can adhere to administrative controls . . . without posing an undue or unnecessary risk to plant workers or the public." CAMM/CAM filed a motion to reopen the record on Contention 4, based on new developing information (i.e., the licensee's acknowledgment of two missing rods from the MNPS Unit 1 SFP). The ASLB initially denied the motion to Reopen the Record but subsequently argued to reopen the record. The aforementioned issues remain unresolved.

#### Coordination with Regional Staff

OI communicated regularly with NRC Region I Health Physicist Todd JACKSON and Regional Counsel throughout this investigation. OI also provided a status briefings to Division of Nuclear Materials Safety (DNMS) management as requested.

Allegation: Failure To Report Missing Or Lost Radioactive Fuel Rods In A Timely Manner

#### Evidence

#### Review of Documentation

JACKSON, Health Physicist, NRC, RI, provided the following:

(1) Northeast Utilities (NU) Unit 1 Decommissioning Condition Report (CR) M1-00-0548, dated November 16, 2000 (Exhibit 4).

The CR documents paperwork discrepancies regarding the physical location of a tie rod and spacer capture rod and other attempts to document or determine what happened to those rods;

(2) Northeast Nuclear Energy Semi-Annual Special Nuclear Material Balance Report (SASNMBR) (DOE/NRC 742 Forms) for MP1, MP2, and MP3, dated October 25, 2000 (Exhibit 5).

The SASNMBR is a required submission from the licensee to the NRC every six months. The SASNMBR does not make any reference to the tie rod and spacer capture rod in question;

(3) Northeast Nuclear Energy MNPS, Unit No. 1, Docket No. 50-245 Licensee Event Report (LER) 2000-02-00, dated January 11, 2001 (Exhibit 6).

The LER is a required submission to the NRC and notified the NRC of the missing/unaccounted for rods;

(4) NU memorandum from T. G. PIASCIK to file, subj: "Fuel Rods," dated May 15, 1979 (Exhibit 7).

The memorandum documents that two fuel rods, fuel rod serial No. BP0406, further identified as a bent tie rod, and fuel rod serial No. BK0136, further identified as a spacer capture rod, were "stored in the fuel rod storage rack in the North-West corner of the spent fuel pool until they can be incorporated in a scavaged [sic] fuel assembly." Also, a fuel index card, dated with a May 12, 1979, entry, indicates the tie rod and spacer capture rod in question are in the NW corner of the Unit 1 SFP.

(5) NU memorandum from T. G. PIASCIK to Reactor Engineering SNM file, subj: "Spent Fuel Pool Inventory," with attachments (SFP maps), dated October 8, 1980 (Exhibit 8).

Included in the attachments are SFP maps, to include maps dated April 30, 1980 and September 18, 1980. The April 30, 1980 map shows "2 fuel rods MS557" in the NW corner of the Unit 1 SFP, whereas the September 18, 1980 map does not indicate a location for the 2 fuel rods, and a March 13, 1979, map, showing the SE corner of the Unit 1 SFP; and

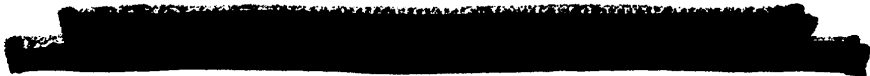
(6) "Reportability Determination Regarding 10 CFR Criteria," dated December 14, 2000 (Exhibit 9).

This report documents the "30-Day Reportability Determination For M1-00-0548," reflecting the licensee's view. The licensee's evaluation: "The location of the fuel rods remains undetermined. Although the complete allowed 30-day investigation period has not expired, it has been conservatively decided to make this report."

In response to an OI subpoena Charles C. THEBAUD, Jr., Corporate Counsel, Morgan, Lewis, and Bockius, LLP, Washington, D.C., provided OI with:

(1) Shift Narrative Logs (SNLs) from June 1, 2000 to November 16, 2000 (Exhibit 10).

The majority of the SNLs will be kept in the OI case file, except for the following: August 30, 2000, FR 0472, "Mike HILL [sic] commence spent fuel serial number gathering on the 108"; October 24, 2000, FR 0295, "Camera removed from the fuel pool, work in pool complete for the day"; November 15, 2000, FR 0210, "Rock RADASCH and Mike HILL [sic] completed inspections for today all equipment is out of the pool"; and November 16, 2000, FR 0204, "Submitted CR M1-00-0548. Possible loss of accountability of 2 spent fuel rods. A Reportability Determination has been requested";



(2) Various notes taken from Carol MANDIGO's Journal, to include entries from August 2000 through November 28, 2000, "written first week of Jan. 2001," FR 0089-FR 0090 (Exhibit 11).

In August 2000 MANDIGO's notes document that Mike HILLS sought out MANDIGO's records regarding fuel pins from MS557. MANDIGO's response was, "what pins." Follow on discussions on MS557 with HILLS and Rockwell RADASCH. "Pool maps showing pins found in SNM records. Map dated 5/9/80 shows pins in SFP"; and a November 13, 2000, meeting with HILLS, RADASCH and Lee HILL, issue of missing fuel rods discussed. MANDIGO and HILL recommend CR be written as soon as possible on missing fuel rods;

(3) Calendar/Day Planner of RADASCH, for October and November 2000, FR 0060-FR 0061, respectively (Exhibit 12).

There are entries for October 23 and 24, 2000, indicating raised fuel assembly inspection activity in the Unit 1 SFP and fuel record searches for various other dates in October 2000. Concerning November 2000, there are various entries for fuel record searches prior to November 16, 2000, as well as possible searches of the Unit 1 SFP on November 14 and 15, 2000, for the two fuel pins;

(4) Notes of HILLS regarding MS557 and two fuel pins/rods, "Is MS557 complete? Where are missing F/R," FR 0063-FR 0070, various dates from summer 2000 through November 14, 2000 (Exhibit 13).

The notes include: a MS557 Timeline describing maps of the Unit 1 SFP, circa 1979-1981. "The two MS 557 F/R's appear on 5/12/79 and disappear between 4/30/8 [sic] and 9/18/80"; August 17, 2000, "Searched all 1980 and 1981 MTF's. Did not find any mention of MS 557 or the two stray rods"; that a "Visual inspection of MS 557 conducted on 9/12/00 revealed that the F/A [fuel assembly] is as stated in the late 1970's. It is missing a spacer capture rod and a tie rod"; an entry dated October 18, 2000, "Spent fuel pool activities for 10/16-10/26," survey edge of pool between racks for the 2 missing fuel rods, "other places to survey?"; and other various information related to the fuel rods;

(5) "Interviews Conducted Prior to Project Plan or Guideline," undated (Exhibit 14).

This report documents individuals who were interviewed, to include HILLS and MANDIGO, prior to the project plan;

(6) Northeast Nuclear Energy Company Memorandum to File, prepared by HILLS, subj: "Inspections of MS 557 and SRP-2D-AWO M1-00-01881," FR 0783, dated December 11, 2000, and Northeast Nuclear Energy Company Memorandum to File, prepared by HILLS, subj: "Inspections of MS 508-AWO M1-00-01883, FR 0784, dated December 11, 2000 (Exhibit 15).

[REDACTED]

Observations of HILLS are captured in this memorandum: "Prior to November 16, 2000 fuel assembly MS 557 was visually inspected without disturbing the fuel assembly, utilizing a color camera system. The results of this inspection showed that the fuel assembly upper tie plate had been modified and that the spacer capture rod protruded above the tie plate. The spacer capture rod appeared to be clean and was thought to be a dummy rod. The inspection revealed the lattice location of the second missing rod, a tie rod, was empty. These inputs were part of the decision into filing of the CR. Discussions held with GE demonstrated that the observations to date could not positively eliminate the possibility that the rods were indeed in MS 557, thus further inspections were scheduled," and "Canister SRP-2D was also visually inspected from the top prior to November 16, 2000 and the inspection results indicated that the fuel assembly contained the proper number of rods," and observations about MS 508;

(7) Unit 1 Corrective Action Program U1 RP 4, Rev. 1, FR 0091, dated January 19, 2000, and Unit 1 Corrective Action Program U1 RP 4, Rev. 001-01, FR 0147, dated September 21, 2000 (Exhibit 16).

These Unit 1 Decommissioning documents are administrative procedures that apply specifically to the MNPS Unit 1 Decommissioning Project; and

(8) "Special Nuclear Material (SNM) Master List," FR 1012 and FR 1013, respectively, reviewed and validated October 2, 2000 (Exhibit 40).

HILLS submitted this report to SNM, for his submission as part of the SASNMBR, dated October 25, 2000. Note: HILLS claimed that he did not make a representation that the tie rod and spacer capture rod were in the Unit 1 SFP.

THEBAUD also provided OI with:

(1) MNPS Procedure Special Nuclear Material Inventory and Control MC-5, Rev. 2, Effective Date November 1, 1999 (Exhibit 17).

On page 27 of 59 it states: "IF any of the following occur, INITIATE a CR:," specifically citing a "Discrepancy found with physical location of any SNM."

(2) SASNMBR, dated April 25, 2001 (Exhibit 18).

The report documents that: "An investigation is ongoing at Millstone Unit1 to determine the location of two full-length irradiated fuel rods, as reported in NRC License Event Report (LER) 2000-002-00 and 2000-002-01, dated January 11, 2001 and March 30, 2001, respectively"; and

[REDACTED]



(3) "Millstone Unit 1 Spent Fuel Inspection Summary AWO M1-00-00847," prepared by Rockwell L. RADASCH, dated September 13, 2000 (Exhibit 19).

The above inspection took place between August 29, 2000 and September 12, 2000. The report also documents about MS557: "No serial number. The word "SCRAP" is engraved on this assembly. One fuel tie rod has been removed."

#### Testimony

AGENT'S NOTE: Unless indicated otherwise, all interviewees were represented by THEBAUD.

#### Interviews of Michael P. HILLS (Exhibit 20 and 21)

HILLS, Consultant, Nucon, former NU employee at MNPS, was interviewed on March 8, 2001, at his residence by OI:RI and on June 20, 2001, at MNPS. He provided as follows:

AGENT'S NOTE: HILLS was not represented by THEBAUD during his first interview.

HILLS has worked for Nucon at MNPS since his retirement from NU in 1996. HILLS worked as an engineer in the decommissioning organization during the last 30 months of his NU employment. HILLS has worked as decommissioning engineer on staff for Unit 1, gathering data and putting together fuel records for the decommissioning of the dry storage. HILLS stated his supervisor was Christopher KUDLA, but it changed a few months ago to Robert FAIRBANKS (Exhibit 20, pp. 4-6).

When asked who discovered that two fuel rods were missing, HILLS stated: "probably myself." HILLS explained: "As part of the fuel rods reconciliation, we saw the letter - - I first saw the letter probably early last summer while another individual and myself were sorting through the records trying to put together a file for the storage facility." According to HILLS, he and Rockwell RADASCH were trying to put together a historical record or a historical document for each fuel assembly in the fuel pool. "In the process of doing that, Mr. RADASCH and I, who works with me, basically came upon a letter that was written in 1979 by the reactor engineer at that time, Tommy PIASCIK, or T. G. PIASCIK. The letter described the fact that he had identified two fuel rods and had placed them in a cannister in the front of the pool (NW corner of the pool). And when we looked at that letter, it was, at that time, a curiosity or an issue that had to be resolved, and then we carried forward from there." HILLS advised that it was "early summer. I would say June, mid-June," when they found the letter. HILLS said: "At the time, I basically took the letter - - took a copy of the letter and put it up on my board as an issue that has to be resolved prior to the finish of the project." HILLS said he was not sure whether he notified

KUDLA about the letter at that time, June 2000 (Exhibit 20, pp. 8-10 and 20; Exhibit 21, p. 43; and Exhibit 7).

HILLS stated that the letter turned up in the Kardex file, a 4 by six card, and "there's about 3,000 of them. And they track the history of movement for each fuel assembly." HILLS said: "My thought in June, when I discovered it, is that it was a very unique letter to find. I was not knowledgeable of any fuel pins in the pool. And in fact, I thought that there were no fuel pins in the pool. It was probably one of a number of issues that we uncover that we look for closure from a follow-on letter or another piece of data. And so as we continued to search during the summer, we just basically kept looking for something that would bring closure to it" (Exhibit 20, p. 11 and Exhibit 7).

HILLS explained: "During June, July, and I would say part of August, it was really treated as a - I treated it as an oddity in the documentation with a presumption that I would find some other piece of document that would say, Yes, we put it back into its parent assembly, or Yes, that it went it [sic] someplace or was shipped someplace official or it was stored in another container that was partially filled in the fuel pool. Tommy's letter stated that he was going to place this into a, what he referred to as a scavenged fuel assembly" (Exhibit 20, pp. 12 and 19; and Exhibit 7).

HILLS stated that material transfer forms (MTFs) are "a record of movement of a fuel assembly, and it would have included the record of movement of an individual fuel rod if there were one." As early as August [17,] 2000, HILLS looked at MTFs from 1979-1981, in an attempt to find out more information about the fuel rods. HILLS said: "The search of the MTFs, the material transfer forms, would have indicated if there was specific activity with bundles. We were looking for specific activity for Bundle [MS] 557 and MSB125, the cannister, SRP-2D, logical places for these fuel rods to have been transferred to" (Exhibit 21, pp. 25, 26, 89, 92, and 98-100, and Exhibit 13).

HILLS said that Carol MANDIGO, Scientist and Special Nuclear Material Accounting Clerk, NU/DNCT, was informed of the potential problem with the fuel rods in the late summer of 2000. HILLS stated, "Part of mindset [sic], I think was the fact that is hasn't happened [lost fuel rods before]. I didn't feel it could. But that's opinion. At the end of August, early September, the one thing to note is I went away to Spain for three or four weeks." HILLS added, "So the investigation sort of takes a one-month hiatus while I'm gone" (Exhibit 20, pp. 15-17, and Exhibit 21, p. 27 and 28).

AGENT'S NOTE: RADASCH apparently continued on with various related work, to include the serial number verification effort, in HILLS' absence [early September 2000].

HILLS said the serial number verification inspection was part of an ongoing process, however, during the serial number verification process, the NW corner of the Unit 1 SFP was looked at in an attempt to physically sight the two fuel rods. "We did note at the time that MS 557 looked like it had a center rod in it, but we didn't know what the center rod was, and it had the appearance at the time of having a missing rod in it." HILLS also said: "There was a rod in the location of the capture rod that was elevated, but it did not make sense why it was elevated. But there was an elevated rod in that location. You could not tell what it was." HILLS added: "With the equipment that we had available to us, there was no way of determining whether a tie rod was there. You could not see below the top nozzle" (Exhibit 21, pp. 18-24, 74-75, and 102, and Exhibit 13).

Regarding the raised fuel assembly inspection in October [believed to be on the 23<sup>rd</sup> and 24<sup>th</sup>] 2000, HILLS said: "The purpose of the raised fuel assembly search was that there is a series of approximately 72 fuel assemblies in the pool that are not fully seeded for a number of reasons. There was an NRC commitment made in the 1995 time frame, or in the '96 time frame probably, that they would not conduct any routine fuel movements unless they reseeded all the fuel assemblies that were raised and explained why they were raised. And that was a regulatory commitment made in the 1995/1996 time frame." Additionally, HILLS indicates that: "The purpose of the inspection was to go in and look at each assembly, photograph it, and from the photographs we could then put together a procedure saying how we would treat each fuel assembly; what we would do to seed it, and what we would do [to] inspect it." HILLS admitted that during the raised fuel assembly inspection the NW corner of the Unit 1 SFP was looked at, in an attempt to physically sight the two fuel rods (Exhibit 21, pp. 29, 30, 35 and 36; Exhibit 10; and Exhibit 12).

AGENT'S NOTE: HILLS acknowledged that he had lost confidence after completion of the serial number verification and raised fuel assembly inspections (between late August and October 23 and 24, 2000) that the two fuel rods were in the NW corner of the Unit 1 SFP. HILLS was asked why not write a CR at this point, HILLS said, "A couple of things play into that; is that there are many other locations in the pool where it could be. It is a significant event that would cause that container to change locations would be the rerack of 1989." HILLS also said, "But I treated that as - - these fuel rods in my mind were still be treated as a discrepancy in the data, and not a discrepancy in the physical location" (Exhibit 21, pp. 52-55).

HILLS stated that he talked with Lee HILL, MANDIGO's supervisor, in October 2000 about the fuel rod situation, however, he was unaware if MANDIGO had informed HILL previously about the fuel rods (Exhibit 20, p. 19).


Regarding the Semi-Annual Special Nuclear Material Balance Report (SASNMBR), dated October 25, 2000, HILLS acknowledged that he provided input to the report. HILLS explained:

[REDACTED]

"My role in this document is to provide the Millstone Unit 1 inventory for that six-month period. The inventory is required by our procedures (MC-5, possibly titled special nuclear material control), and it's essentially a piece count of all the special nuclear material that's on-site." HILLS stated the inventory report is provided to HILL, he (HILL) then combines Unit 1, 2, and 3 and publishes that memo. HILLS said that there was no discussion about reporting the fuel rods as missing at that time, to include in the SASNMBR. HILLS explained: "At that point, I didn't feel that - - at that point, I still felt they were in the pool and that I had not done sufficient work to raise the question of whether or not they were actually missing from the pool or just unaccounted for." HILLS stated: "my confidence was still up that the pins were in the fuel pool and I would find them." HILLS commented that the work he did in August with the cameras did not give him enough information in his mind to report the fuel rods as missing in the SASNMBR. HILLS acknowledged that he could have reported the discrepancy in the documentation as part of his submission to the SASNMBR (Exhibit 20, pp. 21-26; Exhibit 21, pp. 132-136; Exhibit 5; and Exhibit 40).

HILLS said that he was familiar with MNPS Procedure Special Nuclear Material Inventory and Control MC-5, Rev. 2, effective date November 1, 1999 ("I am one of the authors of probably the parent of this procedure"). On page 27 of 59 it states: "IF any of the following occur, INITIATE a CR:," specifically citing a "Discrepancy found with physical location of any SNM." HILLS said this is the procedure that is related to the SASNMBR. When asked why he did not write a CR in October 2000, HILLS replied, "The problem that I was dealing with at the time is that I had - - or that I had determined in my own mind to be a - - well, call it a discrepancy, but an inconsistency in the data from 1979-1980, and I had not completed at this time - - I had not gone far enough to determine where these things should be had they been put back into a parent assembly, and I just had not found the record." HILLS pointed to page 36 of 59 of the document, which states that an item control area (ICA) is: "an area within the protected area of the nuclear power plant designated as a location authorized for storage or use of special nuclear material." HILLS believes the SFP is an ICA, and he still felt that fuel rods would be found in the SFP. In regards to the NW corner of the Unit 1 SFP, HILLS claims that: "The northwest corner is not a location in and of itself" (Exhibit 21, pp. 136-146, 154, and 160-162; and Exhibit 17, pp. 27 and 36).

HILLS stated that he prepared Condition Report (CR) M-1000548, dated November 16, 2000. HILLS explained: "Essentially, in my mind, I wrote the CR when I became convinced that the fuel was not in any place reasonable. I thought about it. I had done more inspections during the month of October/November. On November 15<sup>th</sup> or 16<sup>th</sup>, but right there is when I lost confidence in the fact that I knew where these things were or that they would turn up in a reasonable fashion." HILLS also said that he started to consider that the fuel rods were possibly not in the pool, but may have been shipped. HILLS added, "In the November [possibly the 14<sup>th</sup> and 15<sup>th</sup>] time frame, we reentered the fuel pool with the purpose of looking for the canister, the 8-pin canister with the camera that we had, which is a color camera, non-radiation tolerant camera.



The purpose of the search in November was to look in any spaces in the fuel pool that we could see into." HILLS said that he had attended a meeting with HILL, MANDIGO, and RADASCH a few days before the CR was written. HILLS acknowledged that during the meeting it was agreed that a CR would be written if the above referenced November search was negative for the two fuel rods (Exhibit 20, pp. 28-30; Exhibit 21, pp. 66 and 67; Exhibit 4; Exhibit 10; and Exhibit 12).

HILLS stated that he was not familiar with 10 CFR 20.2201(a)(1)(ii), which requires that each licensee to report by telephone to the NRC, within 30 days after the occurrence of any lost, stolen, or missing licensed material becomes known to the licensee. In his second interview on June 20, 2001, HILLS said: "Yes. I had good familiarity with that in the November [2000] time frame." When asked if he thought about pulling out the aforementioned regulation in the June 2000-October 2000 time period, HILLS said, "No." HILLS acknowledged that he may have received some training during his career in this area, but that it was several years ago (Exhibit 20, p. 43 and Exhibit 21, pp. 62-67).

HILLS said that he was aware that there were ongoing Atomic Safety and Licensing Board (ASLB) panel proceedings in the summer 2000 time period that concerned the expansion of the Millstone Unit 3 SFP/ongoing licensing efforts. HILLS denied that the ASLB proceeding impacted his decision not to write a CR before November 16, 2000 (Exhibit 20, pp. 57 and 58).

HILLS said that he was familiar with 10 CFR 20.1003 (Definitions), specifically, "Lost or missing licensed material means licensed material whose location is unknown." HILLS claims that since he felt the fuel rods were in the Unit 1 SFP, he knew their location (Exhibit 21, pp. 58 and 59).

Interviews of Carol D. MANDIGO (Exhibits 22 and 23)

MANDIGO, Scientist, NU/DNCT, MNPS, was interviewed on February 14, 2001, and March 27, 2001, by OI:RI at MNPS and provided as follows:

AGENT'S NOTE: MANDIGO was not represented by THEBAUD during her first interview. The objective of MANDIGO's first interview was to determine when the licensee first became aware of the fuel rod situation and was not designed to get all the details surrounding the issue.

MANDIGO said that she has worked for NU/DNCT since 1973. MANDIGO stated her duties include "the accounting side, which is budgeting, forecasting, and tracking bills," and nuclear fuel accountability for all three Millstone units (Exhibit 23, pp. 8 and 9)


[REDACTED]

MANDIGO said that she first heard about the situation involving the fuel rods in August 2000 from HILLS and RADASCH. MANDIGO said: "Mike [HILLS] asked me if I knew anything about assembly MS 557, and I said, yes. It is a bundle, you know, one of the first core bundles. He says, well, what do you know about the two rods that were taken out of it? And at that point I said, what two rods? Because that was the first time that I ever heard that the rods were out of the bundle." MANDIGO also stated: "I can't remember exactly what was said, but there was something along the lines that he [HILLS] had discovered a memo that showed two rods to be out of the bundle, and did I have any records on it? And at that point we went looking to see if I had any records. My records showed that bundle to be intact. I pulled out the record that shows and said, you know, the bundle is intact. And he said, well, this memo that I saw said that there was two rods out of the bundle. And we went looking in the spent fuel pool maps and at that point we discovered a couple of maps that were in my file, that showed rods to be out of the bundle. And the dates on the maps were from the 1979-1980 range" (Exhibit 23, pp. 10-12 and Exhibit 11).

MANDIGO informed her supervisor, Lee HILL, of the above information in August 2000. MANDIGO was asked whether or not there was any consideration given to writing a CR at this point, MANDIGO said, "No." MANDIGO said: "I personally, I believed that since the records we had were at least 20 years old, that in the meantime somewhere in the last 20 years the rods had either been placed into the bundle, back into the bundle, or they could have been placed, we still had an STR rod, a bundle cannister out there. They might have been placed in that cannister, or they might still be in the pool, in a different, in any of many locations in the pool. So I just believed it was a recordkeeping [sic] item, that we had to get a record straight, at that point" (Exhibit 23, pp. 17 and 18).

MANDIGO did not have any involvement in the searches of the SFP. MANDIGO stated: "I knew they were ongoing, I didn't know when, or where, or what, you know, what they looking at, at a particular time" (Exhibit 23, p. 22).

MANDIGO acquiesced that she knew that there had been searches of the northwest corner of the Unit 1 SFP, which were negative for fuel rods in question and prior to the submission of SASNMBR, dated October 25, 2000. On whether to report the fuel rod situation via the SASNMBR, MANDIGO said: "There were discussions. I can't tell you exactly who they were with. But there were a number of discussions as to where the rods should be indicated on that, in the report for October of 2000." MANDIGO also said: "We had, Lee [HILL] and I had talked about the representation of the two fuel pins, and the decision had been made that since the search had not been completed at that time, that we would - - since we report to NMSS as one number, in the pool, the rods were going to be contained, you know, soon to be contained in that number, because we didn't have any evidence otherwise [sic]. And that is why we reported it as still being in the pool" (Exhibit 23, pp. 24-32; Exhibit 22; and Exhibit 5).



MANDIGO participated in a November 13, 2000, meeting to discuss the Independent Spent Fuel Storage Installation (ISFSI) data with HILLS, HILL, and RADASCH. Also discussed at the meeting was the need to document the missing fuel rods in a CR. According to MANDIGO, there was some discussion with HILLS and HILL prior to the meeting, and in both conversations she stated that there was a limit as to how long you could go without writing a CR. MANDIGO and HILL had discussed before the meeting that there was a need to write the CR. MANDIGO and HILL then recommended at the meeting that a CR be written. As a result, during the aforementioned meeting it was agreed to document the unaccountable/missing fuel rods via a CR (Exhibit 23 and Exhibit 11).

MANDIGO said that she was aware early on of the ongoing ASLB proceedings involving "licensing activities" and the expansion of the Unit 3 SFP. MANDIGO stated that she did not offer any information or testify in ASLB proceeding number 00-771-01-LA concerning the expansion of the Unit 3 SFP (Exhibit 23, pp. 57-59).

Interviews of Rockwell L. RADASCH (Exhibits 24 and 25)

RADASCH, Maintenance/Support Engineer, Tekton, was interviewed on March 27, 2001, and on June 18, 2001, by OI:RI at MNPS and provided as follows:

RADASCH worked at the Maine Yankee Atomic Power Station from 1970 to 1997. From December 1997 to the present, RADASCH has worked at MNPS; he started to work on Unit 1 Decommissioning in July 1999. RADASCH said that he reported to Jim VEGILA, an Entergy employee in the July 1999 time period (Exhibit 24, pp. 8-10).

RADASCH said that he worked on a lot of corrective action issues for MNPS Unit 1 and the ISFSI. RADASCH said that he worked with HILLS and KUDLA, and he (KUDLA) "was kind of overall manager of that effort" (Exhibit 24, pp. 11-14).

RADASCH stated: "I first understood that two pins were displaced from this fuel assembly in the last summer time frame [summer of 2000]. And what I understood, at that time, is that the pins were removed from the bundle, but they were still in the pool. So we didn't characterize those as, or I didn't characterize each fuel bundle as damaged or undamaged. And in going through the records [card files] for the MS series fuel it was obvious, from the records, that two pins had been removed from 557 stored in the northwest corner of the pool. And so that is when I became aware of the fact two pins were removed from MS 557" (Exhibit 24, pp. 15 and 16).


RADASCH said that he and [HILLS] discussed the fuel rod issue with MANDIGO to see if she had any records of where the fuel pins were. RADASCH stated: "We were looking for any fuel pool maps that might demonstrate where these things were. We talked to other people about that. I think we talked to Lee HILL, we had a meeting with him" (Exhibit 24, p. 22).

RADASCH was asked when he considered the fuel rods to be missing and stated: "In the fall of 2000, after we had, you know, done several physical searches in the pool." RADASCH also said: "But I mean, there was every belief that those two pins were in the pool. And it was just a matter of going up there and finding them. And we had physical inspection activities that were scheduled, and planned up there [Unit 1 SFP]. And, you know, it was the belief that they would show up. There was never any belief that these things were not in the pool." RADASCH clarified the fall of 2000 to mean November 2000 (Exhibit 24, pp. 23 and 24).

RADASCH was asked about the serial number verification process that occurred [between August 29 and September 12, 2000]. RADASCH acknowledged that, as part of that process, the team looked at the NW corner of the Unit 1 SFP for the fuel rods, but it was unfruitful. RADASCH said that he wrote a report or a memorandum upon completion of the serial number verification inspection. Regarding MS 557, RADASCH wrote: "No serial number. The word "SCRAP" is engraved on this assembly. One fuel tie rod has been removed" (Exhibit 24, p. 50, Exhibit 10, and Exhibit 11).

When asked if he (RADASCH) considered the fuel rods to be missing at that time [September 12, 2000], he stated: "we didn't treat them at that time as missing, it is just that they didn't, they weren't where the records said they were." When asked why he did not write a CR at this point, RADASCH said: "Because Mike [HILLS] was, you know, was responsible for this, we had discussed it, and he was going to, you know, he had - - he led me to - - he gave me the impression, in discussing it with him, that a CR would be written at such time, when we determined that these fuel pins were missing, okay? But there were other places to look, we hadn't determined that these fuel rods were missing at the time. The only thing we determined is that those fuel rods weren't in the northwest corner of the fuel pool, but there were many other places that those could have appeared in the pool. Mike was going to address that, but not until he determined that these fuel rods were missing, okay? So I reported to the unit 1 reactor engineer, I felt that I had done, and brought it to the appropriate level of attention . . . . But we weren't there yet, we weren't there" (Exhibit 24, pp. 26-29 and 47).

RADASCH was asked to clarify the above in regards to writing a CR as early as the summer of 2000; he said there was no discussion about writing a CR to his recollection. RADASCH also said: "Well, that was finally decided in the fall of last year, after subsequent inspections of the spent fuel pool that determined that they weren't not only in the northwest corner, but they weren't in other places where they could have been, either. And at that point the line was drawn that said, they are no longer, they are no longer mislocated [sic], now they are missing. And that was in the fall of last year." RADASCH was asked if there was any resistance to writing a CR; he said: "Absolutely not, there was no resistance to writing a CR." RADASCH also said: "he [HILLS] was going to write the CR when he made the call that these fuel rods were missing. But he had several search plans identified before he was going to claim that these were actually missing" (Exhibit 24, pp. 30-36).





Concerning the raised assembly inspection on October 23 and 24, 2000, RADASCH said: "The purpose of that was to identify any fuel bundles that were raised, i.e., not fully seated in their racks." RADASCH does not recall how this inspection was documented. RADASCH stated that upon completion of the raised fuel assembly work he felt the fuel rods were not in the NW corner of the Unit 1 SFP (Exhibit 24, pp. 51 and 84; and Exhibit 25, pp. 22-24).

RADASCH claims that he had no input into the SASNMBR, dated October 25, 2000. RADASCH said that he was not familiar with 10 CFR 20.1003 (Definitions), specifically, "Lost or missing licensed material means licensed material whose location is unknown." RADASCH claims that he had no knowledge of the 10 CFR 20.2201(a)(1)(ii) [reporting requirements] (Exhibit 24, pp. 65 and 66; Exhibit 25, pp. 5-9; and Exhibit 5).

RADASCH recalls a meeting [in November 2000, believed to be the 13<sup>th</sup>] where the topic of writing a CR surfaced. RADASCH said: "What I remember was that a condition report was discussed, and it was discussed to the extent that one would be written when it was determined that the fuel pins were, in fact, missing. When and if they were determined to be missing." RADASCH stated that [on November 14 and 15, 2000], "we spent time in the spent fuel pool doing a search for missing pins." RADASCH added: "So that appears to be a final search to look in some other locations, prior to writing the CR. And it would give the appearance that there was a determination made at that time that the pins were not going to found in the spent fuel pool based on the searches we had done to date, so the CR was then written" (Exhibit 24, pp. 66-72 and Exhibits 10-12).

Interview of Christopher S. KUDLA (Exhibit 26)

KUDLA, Engineer/Project Manager, Independent Contractor, was interviewed on March 28, 2001, by OI:RI at MNPS and provided essentially as follows:

KUDLA said that he reported to "Jim VEGILA" in the June 2000 time period and that HILLS and RADASCH worked for him (KUDLA). KUDLA believes that he first heard about the tie rod and spacer capture rod in July/August 2000. KUDLA said that he was on vacation in June 2000; stating "I wasn't there" (Exhibit 26, pp. 11-25).

KUDLA said that he tried to focus on contract issues and that HILLS and RADASCH were trying to put together a data base. KUDLA said he was not aware during the serial number verification [between August 29 and September 12, 2000] and raised fuel assembly inspections [October 23 and 24, 2000] that HILLS and/or RADASCH had looked at the NW corner of the Unit 1 SFP, attempting to specifically locate the tie rod and spacer capture rod (Exhibit 26, pp. 33-35 and 37-39).

KUDLA said he looked at a picture taken of MS 557. He stated, "First off nobody has ever lost fuel, so I don't think any of us believed that it was missing. And then, you know, did GE put it back in there? And it was strange, because this thing, this waffle if you want to call it, is clogged out, it looks like they shoved the thing back in there. I mean, it looked like the issue got closed by the picture. So I wouldn't write anything. I mean, I'm seeing something that looks, it is a center capture rod, it is in there, I just don't have a piece of paper that tells me how it got in there." When asked about the tie rod, KUDLA said: "there is a letter, I guess, that we found, it says that the threads are bent, and GE typically, in other plants, they clip that out, you see this waffle grid up there, and you can't tell there is rod there. And we couldn't lift fuel, we didn't have the capability to lift the fuel. So, I mean, lifting the fuel answers the question. We didn't have the capability to do it." KUDLA do not inform an Entergy, NU, or any DNCT employees of the above information (Exhibit 26, pp. 46-56, Exhibit 15, and Exhibit 19).

When asked if thought there was a difference between missing and lost, KUDLA said: "I'm not an expert on, you know, the 10CFR [sic]. I can tell you about part 71 and part 72, for dry fuel storage, you would get bored stiff with it." KUDLA stated that he had no input into the SASNMBR, dated October 25, 2000 (Exhibit 26, pp. 55 and 68; and Exhibit 5).

When asked if he was briefing Entergy personnel about the fuel rod situation, KUDLA said: "as part of our project every Tuesday we used to have a project manager's meeting, it covered all the major projects, the project managers would be there, and we would each go through the schedule, where we stood, what was going on, that kind of thing. But, I mean this was not a topical issue that was brought up because, you know, at the time we didn't think it was an issue" (Exhibit 26, pp. 113-115).

Interview of Lee O. HILL, Jr. (Exhibit 27)

HILL, Team Leader, Nuclear Supply Group/Special Nuclear Material (SNM) Accountant, Dominion Nuclear Of Connecticut (DNCT), MNPS, was interviewed on March 28, 2001, by OI:RI at MNPS and provided essentially as follows:

HILL said that he is MANDIGO's supervisor and that MANDIGO is responsible for preparing the 742 reports, which she submits to NMSS. "And she is responsible for maintaining all of the, we call it the master list, a record of all the S&M on site." HILL stated that his office relies on the information that is submitted to it (Exhibit 27, pp. 10 and 11).

When asked when he first heard about the fuel rod situation, HILL said: "It was in mid to late August, as I recall. Mike HILLS, Chris KUDLA, and Rock RADASCH were working on trying to establish a data base for all of the spent fuel that was at Millstone I" (Exhibit 27, p. 14).

When asked if he briefed his supervisor, John GUERCI, about the fuel rod situation, HILL said: "You know I don't recall whether I did. I might have mentioned it to John. If I did, it was certainly not something I would consider to be a major issue at that point. It is very likely I did not mention it to John, I can't recall." When asked what he thought he had in August 2000, HILL said: "I figured we just had a records problem." HILL also said: "There was no reason to believe that those pins are physically out of the pool. I mean your radiated material leaving the pool is not trivial matter. So there is - - there is no expectation on my that those pins were any place but in that pool. Millstone I had a reputation for not being really good about recordkeeping [sic] over many years. The fact that those pins were moved, or were not there, and could have been moved elsewhere in the pool, wouldn't have surprised me at all. So I just thought we had a recordkeeping [sic] problem" (Exhibit 27, pp. 17 and 27).

HILL was asked about the possibility that the rods were outside of the Unit 1 SFP and he said: "It is inconceivable that you have special nuclear material that would be - - that could have gotten out of the pool, in an uncontrolled way" (Exhibit 27, p. 19).

HILL was aware that MANDIGO was looking through SNM records searching for "any indication of disposition of those pins. My understanding, also, is that there were plans being made to physically search the pool. There were a couple of problems with that, I understand. One was that there was some NRC commitments that have to be fulfilled before you can move any fuel in the pool." HILL believes that physical searches were being made through October and November 2000, but, apparently, he was not aware of the serial number verification inspection in late August/early September 2000 that actually looked at the NW corner of the Unit 1 SFP for the tie rod and spacer capture rod (Exhibit 27, pp. 21 and 22).

HILL was asked about the SASNMBR, dated October 25, 2000, and whether or not he considered making a report about the tie rod and spacer capture rod. HILL said, "My belief is that they were in the spent fuel pool. I had no evidence to indicate that they were anyplace else." HILL also said: "I may have spoken, I don't recall specifically, I may have spoken with Carol MANDIGO about this. There was no thought on my part that we had a discrepancy. We had, as I said, we had no information to the contrary to modify our inventory reports. And until we had that, there was no reason to reflect other than what we had in those 742s" (Exhibit 27, pp. 27-29 and Exhibit 5).

HILL recalled a meeting with HILLS and RADASCH or KUDLA in November 2000 [possibly the 13th]. HILL claims that prior to the meeting he mentioned to MANDIGO that since the paperwork search was not productive, and if HILLS had not had any luck in the searches of the Unit 1 SFP, it was time to "raise a flag up the flagpole by, you know writing a CR." HILL stated that during the meeting HILLS expressed an interest in looking at other places in the Unit 1 SFP before he was ready to write a CR. HILL thinks that HILLS wrote the CR a few days after the meeting (Exhibit 27, pp. 22 and 23; and Exhibit 4).

HILL was asked about ASLB panel proceeding No. 00-771-01-LA and expansion of the Unit 3 SFP, HILL said: "My knowledge of the spent fuel pool stuff at Millstone III is very tangential. I knew there were some licensing activities going on, but specifically that I was not aware that specific meeting." HILL denied that the above proceeding impacted his decision on reporting information about the fuel rods (Exhibit 27, pp. 48 and 76).

HILL claims that he has read the regulations under "10 CFR," and that if he thought that there was a problem, he would have gone back and checked. HILL said: "I didn't have a belief that they [fuel rods] were missing in October" (Exhibit 27, pp. 62 and 63).


Interview of Vincenzo VEGILA (Exhibit 28)

VEGILA, Entergy, Pilgrim Nuclear Power Station (PNPS) and former Engineering Manager, MNPS, Unit 1, was interviewed on July 12, 2001, by OI:RI at PNPS and provided as follows:

VEGILA stated that he served as the Engineering Manager at MNPS Unit 1 from July 1999 until October 2000. VEGILA was HILLS', RADASCH's, and KUDLA's supervisor. When VEGILA took over decommissioning projects in June 2000, KUDLA started to report to him. VEGILA said that Daniel MEEKHOFF took over for him in October 2000 because of the pending (license) transfer to DNCT in April 2001. VEGILA stated that he generally dealt with the project managers and not the engineers (Exhibit 28, pp. 8-13 and 30).

In June 2000 VEGILA had oversight of the Independent Spent Fuel Storage Installation (ISFSI) project. VEGILA's priorities were the decommissioning projects and the "cold and dark" issues (Exhibit 28, pp. 14-16).

In July 2000 VEGILA was aware that HILLS, RADASCH, and KUDLA were attempting to reconcile the records regarding the Unit 1 SFP, but was not aware that a tie rod and spacer capture rod were unaccounted for. VEGILA learned in late September/early October 2000, through HILLS, that there was a discrepancy in the documentation regarding the aforementioned fuel rods and that HILLS and the others were going to continue reviewing records and look in the Unit 1 SFP. VEGILA said that when HILLS presented him with the information (maps and records) about the fuel rods, he (HILLS) "didn't seem to be overly concerned about it," and that factored into his level of concern. When asked why not write a CR based on the records' inconsistencies, VEGILA stated: "No. We had not written a condition report on the state of the records. Perhaps we should have. You know, I guess I could look at it as 20/20 hindsight, but we just didn't do it. If I had to do it over again, I probably would have, just a general CR saying, hey, the records are in bad shape. Everybody knew that the records were in bad shape. We were working towards a resolution" (Exhibit 28, pp. 17, 18, and 25-29).



VEGILA does not recall HILLS informing him about looking in the NW corner of the Unit 1 SFP for the fuel rods during the serial number verification inspection conducted in August-September 2000. VEGILA said that he was aware that a raised fuel assembly inspection of the Unit 1 SFP was conducted in October 2000, but, again, he was unaware that a search of the NW corner of the Unit 1 SFP was conducted for the fuel rods. VEGILA had no input into the SASNMBR, dated October 25, 2000 (Exhibit 28, pp. 28-31 and 35-37).

VEGILA does not recall briefing MEEKHOFF on the information concerning the fuel rods that he had learned from HILLS. VEGILA said that his turnover with MEEKHOFF "wasn't all that extensive." VEGILA claims that he informed MEEKHOFF about the records reconstitution being performed by KUDLA and HILLS, but not specifically about the fuel rod situation, because he felt that the "fuel pin issue was just part of a records reconstitution. I really - - my mind-set at the time wasn't that these things were missing; it was a problem with getting records together and the details of what was going on." When asked what he meant, VEGILA stated: "Well, in the back of my mind, I had every reason to believe that they were in the spent fuel pool. It never entered my mind, frankly. Maybe it was just a prior nuclear mind-set that they would have gone anywhere else" (Exhibit 28, pp. 32 and 33).

VEGILA said that he was familiar with MNPS Procedure Special Nuclear Material Inventory and Control MC-5, Rev. 2. On page 27 of 59 it states: "If any of the following occur, INITIATE a CR:," citing a "Discrepancy found with physical location of any SNM." VEGILA claims that he interpreted the above information to be related to item control areas (ICAs). VEGILA stated: "If an SNM, a piece of SNM is not located in the ICA where you think it is, then it's an issue. The location of SNM within an ICA, you know, whether it's here, there, or anywhere, as long as it's in the ICA, in my mind, the way I've interpreted it in the past was that didn't - - that wasn't a discrepancy because the location was still in the ICA. Now, that being said, I didn't consciously think that in October 2000. I didn't connect MC5 specifically with the location of the - - or lack of location with the fuel pins in the northwest corner of the pool" (Exhibit 28, pp. 38-40 and Exhibit 17).

Interview of Daniel J. MEEKHOFF (Exhibit 29)

MEEKHOFF, Project Manager for System Evaluation and Recategorization and Technical Advisor to the Director of Unit Operations, DNCT, MNPS, was interviewed on March 8, 2001, by RI:OI and provided essentially as follows:

AGENT'S NOTE: MEEKHOFF was interviewed at home and did not have legal counsel present.

MEEKHOFF said he learned about the fuel rod situation: "right around November 16<sup>th</sup>, I believe, the day before we wrote - - I think that CR was written November 17, 2000 - - to document the

[REDACTED]

fact that these two rods weren't in the last location where documentation showed them to be." MEEKHOFF stated that, at the time the CR was written, HILLS was working for him and HILLS notified him about the CR (Exhibit 29, pp. 3 and 4; and Exhibit 4).

According to MEEKHOFF, HILLS told him that he (HILLS) was working on records reconstruction or a records reconstitution to prepare for going to dry storage when he came across a fuel index card that indicated that two fuel rods were in the NW corner of the Unit 1 SFP in a canister. MEEKHOFF said that HILLS did not tell him when he first learned of this information (Exhibit 29, pp. 5 and 6).

Interview of Frostie A. WHITE (Exhibit 30)

WHITE, Contractor/Root Cause Engineer for Fuel Rod Accountability and former Supervisor for Regulatory Affairs, Excel Services, Inc., MNPS, Unit 1, was interviewed on June 21, 2001, by OI:RI at MNPS and provided as follows:

WHITE began working at MNPS Unit 1 on November 6 or 7, 2000. WHITE stated that she first became aware of the fuel rod situation through HILLS [possibly November 15, 2000], when he brought a draft of a CR and identified the issue. WHITE explained that HILLS asked for her input and she "word engineered it a little bit, just to make sure that we captured all the activities that he was in the process of doing or had completed." When asked what she changed, WHITE said: "Again, it was basically grammar," and "there was nothing changed as to the content" (Exhibit 30, pp. 10 and 13-15; and Exhibit 4).

On how she became the Root Cause Engineer for Fuel Rod Accountability, WHITE said: "root causes is a requirement for a level one condition report, a report with NRC LER, and that was part of the efforts, and so they thought that I would be a good part of the team." WHITE also stated: "we are trying to determine loss of accountability and why it happened, and secondly, based on the likely scenario that what ultimately - - the ultimate disposition and what happened to the rods, and why that happened as well" (Exhibit 30, pp. 6 and 7).

Interview Report of Harold L. ROTHSTEIN (Exhibit 31)

ROTHSTEIN, Manager of Spent Fuel Storage Systems Engineering Department and Manager of the Nuclear Department, Washington Power/Washington Group International, was interviewed on July 25, 2001, in Princeton, NJ, by OI:RI, and provided essentially as follows:

ROTHSTEIN was not represented by legal counsel during this interview.

ROTHSTEIN stated that he worked for Raytheon Engineers and Constructors (RE&C) which later became Washington Power. ROTHSTEIN indicated that the majority of his career "has

[REDACTED]

been involved with spent fuel storage work, primarily re-racking or increasing spent fuel pool capacity by putting in higher density racks, and later dry storage of the spent fuel in any of the various dry storage systems that are available" (Exhibit 31, pp. 5 and 6).

ROTHSTEIN stated that has performed work (as Project Leader) for MNPS, which included generating a report entitled Northeast Nuclear Energy Company "Independent Assessment of Millstone Unit 1 Spent Fuel Pool System Issues," prepared by RE&C, dated April 30, 1997. ROTHSTEIN said: "Millstone had various nuclear regulatory finishing inspections of the spent fuel storage systems at Millstone Unit 1 in the 1995/1996 time frame. And NRC concluded that the Northeast Nuclear Energy Company process for identification and resolution of deficiencies regarding spent fuel storage was not comprehensive. NRC requested, as a result, an evaluation of the process for its comprehensiveness regarding identification and resolution of deficiencies." ROTHSTEIN stated the licensee complied with the NRC's request. ROTHSTEIN said that his report credited the licensee for due diligence and the foresight to "establish their spent fuel storage projects department." ROTHSTEIN said his report concluded that: "The problems uncovered were primarily due to inadequate documentation of closure by Northeast Utility to inattention by Northeast Utilities to conflicting documentation statements, rather than real technical issues beyond these problems. Of importance is the fact that no new problems of apparent safety significance were uncovered by the independent assessment team" (Exhibit 31, pp. 6-8 and 11).

AGENT'S NOTE: NRC has a copy of the aforementioned report from (RE&C).

ROTHSTEIN said that in a recent telephone conversation (July 2001) with Irv MERMELSTEIN, a Washington Power licensing engineer assigned to Millstone, the subject of unaccounted for/missing fuel rods in the [Unit 1 SFP] came up. ROTHSTEIN said to MERMELSTEIN something to effect of, oh, is that still an issue? "And I [ROTHSTEIN] said, well, it sounds like something I heard about years ago when we finished our 1997 report (Exhibit 31, pp. 12 and 13; and Exhibit 33, pp. 9-16).

ROTHSTEIN recalls a conversation with Michael McNAMARA (approximately April 1997) when closing out the above referenced report, wherein McNAMARA may have said something about "not being sure of the location of or maybe missing fuel rods, or parts of a fuel bundle, or something to that effect, the implication being, as I remember it, that there were some rods that weren't where they were expected to be and may be underneath the racks or some other location in the pool yet to be found." Upon being informed of the PIASCIK memorandums and maps, ROTHSTEIN said that he was unaware of them and did not come across them in his work for MNPS (Exhibit 31, pp. 13-17, Exhibit 7, Exhibit 8, and Exhibit 33, pp. 9-16).

[REDACTED]

Interview of Michael P. McNAMARA (Exhibit 32)

McNAMARA, Vice President of Nuclear Projects, Holtec International, and former NU employee at MNPS, was interviewed on August 14, 2001, at RI by OI and provided essentially as follows:

McNAMARA was not represented by legal counsel during this interview.

McNAMARA went to work at NU in 1987 and in 1994 he was asked to become Project Manager for what was later known as the Spent Fuel Project. McNAMARA said that the Spent Fuel Project "was a project created to ensure long term spent fuel storage of the three units at Millstone." McNAMARA stated that his group "participated in strategic planning and development to enable all three units at Millstone to achieve end-of-life wet storage in the pools" (Exhibit 32, pp. 5 and 6).

McNAMARA advised that his group's work included: "a combination of spent fuel pool re-racking and transfer, inter-unit transfer from Unit 1 at Millstone and Unit 2 at Millstone to Unit 3 pool at Millstone, which is one of the largest pools in the country and has ample capacity to do that." McNAMARA also said: "I created a department, brought in outside consultants to augment the staff and employed several Northeast Utilities folks to staff this project" (Exhibit 32, pp. 6 and 7).

McNAMARA said that ROTHSTEIN was contracted in the 1996/1997 time period to perform an assessment of the Unit 1 SFP and Spent Fuel Storage issues. McNAMARA also said: "Yes, in fact, that Spent Fuel Pool Assessment was a commitment made to the U.S. NRC as a result of the inspection that prompted many, many issues and questions as well as the many issues and ACR's [Adverse Condition Reports] that came up in that same time frame" (Exhibit 32, pp. 11 and 12).

McNAMARA stated that most of ROTHSTEIN's work was conducted off-site. McNAMARA said that the Northeast Nuclear Energy Company "Independent Assessment of Millstone Unit 1 Spent Fuel Pool System Issues," prepared by Raytheon Engineers and Constructors (RE&C), dated April 30, 1997, does not discuss any unaccounted for, missing, or lost fuel rods. McNAMARA attested: "Let me state this. There has never been any discussion by anyone, that I know, to me or that I'm aware of, regarding these missing pins, rods, pellets, whatever terminology is being used to describe them, ever. I know of no such issue ever discussed, until I was made aware of Harold's [ROTHSTEIN's] statement. And I, I'm still at a loss to explain it." (Exhibit 32, pp. 14 and 15).

Regarding the above issue, McNAMARA also said: "We were in position at that point in time of being provided information regarding discrepant conditions that were spent fuel related. We supported them without reservation. If you review the record you will see that I, I personally

[REDACTED]



wrote LER's to the NRC. I personally made phone calls to the NRC to report conditions that we discovered. We wrote numerous ACR's and brought them into management's attention in the interest of disclosing these issues before someone else had to discover them. We wanted to, we wanted to flush them all out, to get them all out so that we could get going on reconciliation. So, had I known this one, it would have been immediately disclosed. There would have been no reservation on anyone's part in my department or they knew that I would disclose it" (Exhibit 32, pp. 17 and 18).

AGENT'S NOTE: The licensee disclosed the above information to the NRC. On July 27, 2001, THEBAUD provided interview summaries conducted by the licensee to include ROTHSTEIN, McNAMARA, and others (Exhibit 33). No licensee interviewee could corroborate ROTHSTEIN's information.

The following individuals do not appear to have been aware of the tie rod and spacer capture rod situation until November 15-17, 2001 (Exhibits 34-39):

Frank C. ROTHEN, Vice-President for Nuclear Services, NU, was interviewed on August 8, 2001, at MNPS. ROTHEN stated that he became aware of the fuel rod situation after the CR was written, or the morning of November 17, 2000. ROTHEN talked with Lee OLIVIER, who expressed concern over the issue. ROTHEN said that OLIVIER looked at this situation from an Operations background, wanting "to know where everything is right now, right then" (Exhibit 34, pp. 10-17 and 29).

When asked about the camera work conducted by HILLS and RADASCH in the Unit 1 SFP, ROTHEN stated: "I know that they did some work with cameras in the pool [he learned after November 17, 2000], and I know it [was] useless, because we had to go back and do it again. They didn't videotape them, it wasn't done in a manner that we could verify, with coordinates where they had gone, etcetera. It wasn't a very disciplined approach. So I'm aware that they did that. The time frame I'm not sure. It kind of aggravated me a little bit that they had spent the time, effort, and money, and that it was useless from an investigation perspective, and we had to go back and do it again. And the quality of it didn't meet the project standards. So we had to redo all that" (Exhibit 34, pp. 42 and 43).

ROTHEN said: "I have found no indication, anywhere in this, that anybody acted improperly, did anything wrong . . . ." (Exhibit 34, p. 75).

Larry G. TEMPLE, former General Manager Decommissioning, Entergy, MNPS Unit 1, currently working at Entergy's Northeast Headquarters, White Plains, NY, on the transition to acquire Indian Point 2 (IP2) and becoming future General Manager of IP2, stated that he learned about the tie rod and spacer capture rod situation on November 15, 2000 (Exhibit 35, pp. 16 and 17).

[REDACTED]

Byran S. FORD, former Decommissioning Director, Entergy, MNPS Unit 1, and currently Entergy Nuclear Generation Company (ENG), Pilgrim Nuclear Power Station (PNPS), said that he believes he first heard about the issues involving two fuel rods from the Unit 1 SFP the day before the CR was written (Exhibit 36, pp. 12 and 13).

John GUERCI, Manager/ Process Owner of Nuclear Fuel and Safety Analysis, DNCT, was interviewed at MNPS. GUERCI stated that he found out about the fuel rod situation a day or two before the CR was written (Exhibit 37, pp. 11 and 12).

William SPAHN, Shift Manager, DNCT, was interviewed at MNPS. SPAHN stated that he was the shift manager when CR M1-00-0548 was initiated and he signed same. SPAHN said that he knew that morning [November 16, 2000] that the CR was coming and had conversations with management that day. SPAHN was unaware of any information about the missing/unaccounted for tie rod and spacer capture rod prior to the CR being written (Exhibit 38, pp. 10-15 and Exhibit 4).


Sworn Statement of Vasant BHARDWAJ (Exhibit 39)

BHARDWAJ, Manager of Engineering Programs and Component Engineering, James A. Fitzpatrick Nuclear Power Plant, Entergy Nuclear Northeast, and former Decommissioning Manager, MNPS Unit 1, provided the following:

BHARDWAJ provided a sworn statement that was notarized in the state of New York stating: "I did not have any conversation with anyone, including Messrs. KUDLA, HILLS or RADASCH, about the possibility of missing fuel rods before November 15, 2000. Additionally, I was not aware of any steps taken by anyone to locate or account for the two spent fuel rods before November 15, 2000. In my role managing Unit 1 separation projects, I routinely attended daily meetings of Unit 1 management. I have no recollection of the issue of two missing fuel rods being discussed before November 15, 2000" (Exhibit 39).

Agent's Analysis

Although HILLS discovered an inconsistency/discrepancy in documentation, i.e., PIASCIK's memorandums, the Kardex file card, and maps, circa 1979 and 1980, and had reviewed some MTFs for the period 1979-1981, apparently as early as August 17, 2000, he, RADASCH and KUDLA have made it clear that they continued to believe that the tie rod and spacer capture rod were in the Unit 1 SFP. Additionally, a serial number verification evolution (conducted between August 29 and September 12, 2000), and a raised fuel assembly inspection conducted (October 23/24, 2000) involving the Unit 1 SFP, presented opportunities to look for the tie rod and capture rod, specifically in the NW corner of the Unit 1 SFP. Despite not physically sighting either fuel rod, HILLS, KUDLA, and RADASCH, continued to still believe, based on their



extensive experience and common sense, that the tie rod and spacer capture rod were still in the Unit 1 SFP. There is no known testimonial or documentary evidence to suggest that HILLS, RADASCH, and/or KUDLA considered writing a CR on the issue until November 13-15, 2000, after completion of SFP camera searches conducted on November 14 and 15, 2000, which were negative for the tie rod and capture rod. Independently, testimony from MANDIGO and HILL supports HILLS' position that he (HILLS) continued to believe that the rods were in the Unit 1 SFP, and that nobody else involved in this matter seriously considered writing a CR any sooner.

Even though HILLS had submitted data as part of the SASNMBR in October 2000, had a working knowledge of 10 CFR 20.100.3 Definitions, i.e., "Lost or missing licensed material means licensed material whose location is unknown," and a solid grasp of MNPS Procedure MC-5, Rev. 2, 1.6.4, dated November 1, 1999, he emphatically stated that he did not write a CR sooner because he truly believed that the rods/pins were in the Unit 1 SFP, and that they were really only dealing with a paperwork discrepancy.

Although, HILLS and others acknowledged that they were aware of the ASLB proceedings involving MNPS Unit 3, they vehemently denied any correlation or impact on the decision not to write a CR sooner. OI is not aware of any evidence to suggest otherwise.


OI believes and witness testimony suggests that the lack of aggressive licensee (NU)/Entergy management oversight of, and accountability for contractors work (i.e., HILLS, RADASCH, and KUDLA), possibly contributed to the CR being written on November 16, 2000, vice sometime sooner. That, compounded by the unwillingness of those involved to seriously consider the possibility that the rods were lost (because nobody had ever lost rods before), resulted in what appears to be a somewhat lengthy delay in formally reporting this situation to the NRC.

#### Conclusion

Based on the evidence developed during this investigation, OI did not substantiate that either the licensee or licensee personnel/contractors deliberately delayed properly reporting to the NRC that two fuel rods/pins were unaccounted for/missing/lost from the MNPS Unit 1 SFP.

## LIST OF EXHIBITS

<u>Exhibit No.</u>	<u>Description</u>
1	Investigation Status Record, dated February 13, 2001.
2	Allegation Disposition Record, dated February 13, 2001.
3	Allegation Disposition Record, dated February 15, 2001.
4	Northeast Utilities (NU) Unit 1 Decommissioning Condition Report (CR) M1-00-0548, dated November 16, 2000.
5	Northeast Nuclear Energy Semi-Annual Special Nuclear Material Balance Report (SASNMBR) (DOE/NRC 742 Forms) for MP1, MP2, and MP3, dated October 25, 2000.
6	Northeast Nuclear Energy MNPS, Unit No. 1, Docket No. 50-245, Licensee Event Report (LER) 2000-02-00, dated January 11, 2001.
7	NU Memorandum from T. G. PIASCIK to file, subj: "Fuel Rods," dated May 15, 1979.
8	NU Memorandum from T. G. PIASCIK to Reactor Engineering SNM file, subj: "Spent Fuel Pool Inventory," with attachments (SFP maps), dated October 8, 1980.
9	"Reportability Determination Regarding 10 CFR Criteria," dated December 14, 2000.
10	Shift Narrative Logs (SNLs) from June 1, 2000, to November 16, 2000.
11	Various notes taken from Carol MANDIGO's Journal, to include entries from August 2000 through November 28, 2000.
12	Calendar/Day Planner of RADASCH, for October and November 2000.
13	Notes of HILLS regarding MS557 and two fuel pins/rods, various dates from summer 2000 through November 14, 2000.

- 14 Licensee Interviews Conducted Prior to Project Plan or Guideline," undated.
- 15 Northeast Nuclear Energy Company Memorandum to File, prepared by HILLS, subj: "Inspections of MS 557 and SRP-2D-AWO M1-00-01881," dated December 11, 2000, and Northeast Nuclear Energy Company Memorandum to File, prepared by HILLS, subj: "Inspections of MS 508-AWO M1-00-01883, dated December 11, 2000.
- 16 Unit 1 Corrective Action Program U1 RP 4, Rev. 1, dated January 19, 2000, and Unit 1 Corrective Action Program U1 RP 4, Rev. 001-01, dated September 21, 2000.
- 17 MNPS Procedure for Special Nuclear Material Inventory and Control MC-5, Rev. 2, Effective Date November 1, 1999.
- 18 SASNMBR, dated April 25, 2001.
- 19 "Millstone Unit 1 Spent Fuel Inspection Summary AWO M1-00-00847," prepared by Rockwell L. RADASCH, dated September 13, 2000.
- 20 Transcribed Interview of HILLS, dated March 8, 2001.
- 21 Transcribed Interview of HILLS, dated June 20, 2001.
- 22 Interview Report of MANDIGO, dated February 14, 2001.
- 23 Transcribed Interview of MANDIGO, dated March 27, 2001
- 24 Transcribed Interview of RADASCH, dated March 27, 2001.
- 25 Transcribed Interview of RADASCH, dated June 18, 2001.
- 26 Transcribed Interview of KUDLA, dated March 28, 2001.
- 27 Transcribed Interview of HILL, dated March 28, 2001.
- 28 Transcribed Interview of VEGILA, dated July 12, 2001.
- 29 Transcribed Interview of MEEKHOFF, dated March 8, 2001.
- 30 Transcribed Interview of WHITE, dated June 21, 2001.
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- 31 Transcribed Interview of ROTHSTEIN, dated July 25, 2001.
- 32 Transcribed Interview of McNAMARA, dated August 14, 2001.
- 33 Summaries of Interviews conducted by the licensee, various dates.
- 34 Transcribed Interview of ROTHEN, dated August 8, 2001.
- 35 Transcribed Interview of TEMPLE, dated July 27, 2001.
- 36 Transcribed Interview of FORD, dated July 12, 2001.
- 37 Transcribed Interview of GUERCI, dated June 19, 2001.
- 38 Transcribed Interview of SPAHN, dated June 21, 2001.
- 39 Sworn Statement of BHARDWAJ, dated August 17, 2001.
- 40 "Special Nuclear Material (SNM) Master List," reviewed and validated  
October 2, 2000.

