

**Nuclear**

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4410-86-L-0012  
Document ID 0379A

March 7, 1986

TMI-2 Cleanup Project Directorate  
Attn: Dr. W. D. Travers  
Director  
US Nuclear Regulatory Commission  
c/o Three Mile Island Nuclear Station  
Middletown, PA 17057

Dear Dr. Travers:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)  
Operating License No. DPR-73  
Docket No. 50-320  
Defueling Canisters

In accordance with GPU Nuclear letter 4410-85-L-0245 dated December 11, 1985, the results of GPU Nuclear's inquiry into the matter of the erroneous information provided to the NRC relative to the percent of verification of poison tube loading at Nuclear Energy Services (NES) are included in Attachment 1.

Attachment 1 also provides the result of an independent review of NES documentation concerning poison tube loading, the bases for the erroneous information, and the corrective actions taken.

GPU Nuclear has performed a thorough review of the docketed correspondence listed in Attachment 2 relating to the defueling canisters and has determined that no further inconsistencies exist.

Sincerely,



F. R. Standerfer  
Vice President/Director, TMI-2

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Attachments

GPU Nuclear Corporation is a subsidiary of the General Public Utilities Corporation

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## I INTRODUCTION

On October 17, 1985, the NRC transmitted a letter to GPU Nuclear which provided comments on Quality Assurance Issues relating to defueling canisters. Comment 5 of the letter requested, in part, information concerning what independent verification of poison ( $B_4C$ ) tube loading was performed at Nuclear Energy Services (NES). In response to this NRC comment, GPU Nuclear letter 4410-85-L-0210 dated October 28, 1985, stated:

"The loading operations and inspections were verified 100% by NES Quality Assurance and travelers were signed off. The SQR witnessed a minimum of 20% of the operations and signed off the travelers as appropriate."

On November 8, 1985, the NRC transmitted a letter to GPU Nuclear authorizing the use of defueling canisters subject to four (4) provisions. One of these provisions required GPU Nuclear to submit to the NRC independent verification of all poison tube loading and installation for all filter and knockout canisters. In response to this provision, GPU Nuclear letter 4410-85-L-0229 dated November 12, 1985, stated:

"To date, the Bechtel SQR at NES has independently verified, by witnessing, the loading of approximately one-third (i.e., 33.4%) of the 467 poison tubes loaded at NES and no deficiencies were noted."

However, it later became apparent to GPU Nuclear that the information in the above statements was incorrect. Thus, GPU Nuclear instituted a radiographic examination program, as described in GPU Nuclear letter 4410-85-L-0245, dated December 11, 1985, in order to provide further verification of the presence of pellets in poison tubes loaded at NES.

Additionally, GPU Nuclear conducted an independent review of the documentation at NES in order to determine the correct number of poison tubes loaded and the number verified by the Supplier Quality Representative (SQR) at NES. The following sections document the results of this independent review, the events leading to the incorrect statements, and the corrective actions taken.

## II RESULTS OF INDEPENDENT REVIEW

On December 4-7, 1985, GPU Nuclear conducted an independent document review at NES to determine the number of poison tubes loaded by NES, the number of tube loadings verified by NES Quality Control (QC), and the number of tubes witnessed/verified by the Bechtel SQR at NES. The data obtained from the review is provided below:

Poison Tubes loaded by NES - 179

Poison Tubes witnessed/verified by NES QC - 114 (64%)

Poison Tubes witnessed/verified by Bechtel SQR - 138\* (77%)

The documentation to support the above data is available for review.

- \* Inspection of poison tube loading by the Bechtel SQR refers to either witnessing the actual loading of the tubes or verifying the presence of poison in the top region of the tube and verifying that the gap between the top pellet and the top of the tube did not exceed specifications.

### III BASES FOR INCORRECT STATEMENTS

- A. "The loading operation and inspections were verified 100% by NES Quality Assurance and travelers were signed off."

The basis for the above statement was a miscommunication between Bechtel PSQD and the Bechtel SQR at NES.

During the development of GPU Nuclear's response to the NRC letter of October 17, 1985, several discussions took place between PSQD and the SQR concerning the verification of catalyst and poison loadings at NES. Both PSQD and the SQR, to the best of their knowledge, were of the opinion that simultaneous discussion of the catalyst and poison in the same context led to the misinterpretation that 100% of the poison tube loading had been verified by NES QA when, in fact, 100% verification of the catalyst loading had been reported as accomplished. There is no NES documented basis for this statement.

Subsequently, the erroneous information was transmitted in a memorandum on October 22, 1985 from PSQD to TMI-2 Recovery Programs.

The above information was determined to be incorrect on November 13, 1985, as a result of further SQR review of NES documentation to determine, more accurately, the percentage of the poison tube loadings which had been verified by the SQR. The SQR review determined that NES had witnessed/verified loading of 114 of 467 poison tubes. It became obvious to PSQD that the 100% NES verification previously reported was in question. Thus, PSQD determined that development of more precise information on poison tube loadings was necessary. This led to the independent review discussed in Section II which confirmed that NES QA had witnessed/verified 114 of 179 tubes (i.e., 64%) rather than the 100% previously reported and established.

- B. "The SQR witnessed a minimum of 20% of the operations and signed off the travelers as appropriate."

The above statement is factual. During the period that the canister poison tubes were loaded at NES (i.e., May 23, 1985 - September 10, 1985), the Quality Surveillance Plan required the SQR to witness 20% of the poison tube loading operations.

As a result of the concerns relative to independent verification of poison tube loading, the Quality Surveillance Plan at NES was revised on November 19, 1985. This revision upgraded the witness point to a hold point requiring the SQR to witness or verify all loading of the B4C poison material into the poison tubes.

As shown in Section II of the attachment, the percentage of poison tube loadings witnessed/verified by the SQR at NES is significantly greater than 20%.

- C. "To date, the Bechtel SQR at NES has independently verified, by witnessing, the loading of approximately one-third (i.e., 33.4%) of the 467 poison tubes loaded at NES and no deficiencies were noted."



The basis for the above statement was a verbal communication between the SQR and the TMI-2 Recovery Programs on November 12, 1985. The cause of this incorrect statement is described below.

On November 8, 1985, the NRC issued a letter to GPU Nuclear which required, in part, submittal of independent verification of poison tube loading for all filter and knockout canisters. In response to this requirement, the SQR at NES was directed on November 11, 1985, to provide a more accurate percentage of the SQR witness/verification of poison tube loading; i.e., a more specific statement of performance than the 20% minimum required by the Quality Surveillance Plan.

On November 12, 1985, the SQR contacted Recovery Programs and provided the data which is the basis for the above statement. The independent review discussed in Section II indicates that the SQR has witnessed/verified the loading of 138 of the 179 tubes (i.e., 77%).

That portion of the SQR statement concerning the "467 poison tubes loaded at NES" was derived by the SQR's review of NES travelers. A traveler is the manufacturing document used by a shop to define the operational steps of fabrication. In the case of NES, it was common practice to place multiple numbers of components on a traveler. This practice resulted in many of the NES travelers being divided into subtravelers which represent a lesser number of components for fabrication. The incorrect number of 467 poison tubes was attributed to adding the sum of all numbers at the top of each master traveler, instead of reviewing each of the subtravelers which would have provided the actual number of tubes that contained poison.

#### IV CORRECTIVE ACTIONS

Due to the uncertainty in the percentage of independent verifications performed on poison ( $B_4C$ ) tubes loaded at NES, the following corrective actions have been taken:

- o As described in GPU Nuclear letter 4410-85-L-0245, dated December 11, 1985, GPU Nuclear is performing radiographic examinations on all poison tubes loaded at NES. This program is intended to provide reasonable assurance of the presence of poison pellets in these canisters.
- o An independent review to determine the correct number of poison tubes loaded and verified at NES has been performed. The results of that review are documented in Section II.
- o The Quality Surveillance Plan at NES was revised on November 19, 1985, to require a 100% hold point for the SQR to witness/verify all poison tube loadings at NES.
- o This event and its ramifications have been discussed with the SQRs at the canister vendors (i.e., NES, B&W and Joseph Oat Corporation). As a result, Bechtel Procurement has developed a proceduralized method for responding to NRC requested information.

ATTACHMENT 1  
(4410-86-L-0012)

- o GPU Nuclear has performed a thorough review of all docketed correspondence relating to the defueling canisters and has determined that no further inconsistencies exist.

Docketed Correspondence Related To The Defueling Canisters

4410-85-L-0202	October 10, 1985
4410-85-L-0206	October 23, 1985
4410-85-L-0210	October 23, 1985
4410-85-L-0229	November 12, 1985