



GPU Nuclear Corporation  
Post Office Box 480  
Route 441 South  
Middletown, Pennsylvania 17057-0191  
717 944-7621  
TELEX 84-2386  
Writer's Direct Dial Number:  
(717) 948-8005

January 22, 1992  
C311-92-2013

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

Gentlemen:

Subject: Three Mile Island Nuclear Station, Unit I (TMI-1)  
Operating License No. DPR-50  
Docket No. 5U-289  
Response to Notices of Violation in Inspection Report 91-23

In accordance with 10 CFR 2.201 this letter transmits the GPU Nuclear response to the Notices of Violation included in Appendix A to Inspection Report 91-23.

The Inspection Report required that GPUN also provide a perspective on the apparent negative trend in procedural controls when performing critical evolutions, particularly those performed on an infrequent basis, three examples of which are identified in violation B of the Notice of Violation. GPUN compared the events (both cited and non-cited) resulting from infrequently performed evolutions during the 9R refueling outage to those occurring during the 8R outage (1/5/90 thru 3/4/90) and 7R outage (6/1/88 thru 8/16/88) and identified no negative trend. The types of problems experienced in 9R (e.g., inadvertent actuation of safety systems, reactor trip and violation of Technical Specifications (LCOs)) have also occurred in past outages at a similar frequency. However, none of the specific events occurring in past outages have recurred and there have been no loss of decay heat removal events since the 7R outage. This indicates that the corrective actions taken in response to the specific events were effective. However, the GPUN expectation that fewer problems related to complex or infrequently performed evolutions would be experienced during the 9R outage was not realized. Based on the review of events from these outages, GPUN considers

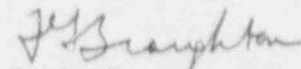
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that broader based programs to address human performance and procedure quality are warranted. As a result, GPUN has undertaken actions to strengthen the procedures for infrequently performed evolutions and to reduce human errors through a "self-check" program and training which emphasizes supervisory responsibility to ensure complex and infrequent evolutions are understood before they are begun. This is addressed further in the response to violation B.

Sincerely,



T. G. Broughton  
Vice President & Director, TMI-1

WGH:

Attachment

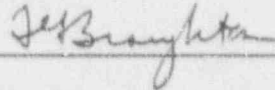
cc: Administrator, Region I  
TMI-1 Senior Project Manager  
TMI-1 Senior Resident Inspector

METROPOLITAN EDISON COMPANY  
JERSEY CENTRAL POWER AND LIGHT COMPANY  
PENNSYLVANIA ELECTRIC COMPANY  
GENERAL PUBLIC UTILITIES NUCLEAR CORPORATION

Three Mile Island Nuclear Station, Unit 1 (TMI-1)  
Operating License No. DPR-50  
Docket No. 50-289

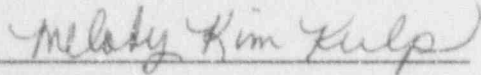
Response to the Notice of Violation  
in Inspection Report 91-23

This letter is submitted in response to the Notice of Violation in Inspection Report 91-23, Routine Monthly Inspection for the period September 22 through November 16, 1991 for TMI-1 dated December 23, 1991. All statements contained in this response have been reviewed, and all such statements made and matter set forth therein are true and correct to the best of my knowledge.

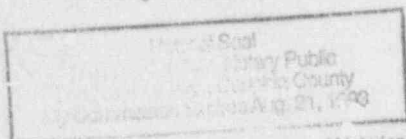


T. G. Broughton  
Vice President and Director, TMI-1

Signed and sworn before me this  
22nd day of January, 1992.



Notary Public



Member, Pennsylvania Association of Notaries

### Notice of Violation A

Technical Specification 6.8.1.a requires that written procedures shall be established and implemented for applicable procedures recommended in Appendix "A" of Regulatory Guide 1.22, revision 2, February 1978. Regulatory Guide 1.33, Appendix A, Section 9.a requires that maintenance that can affect the performance of safety-related equipment be performed in accordance with written procedures.

Contrary to the above, the licensee failed to establish adequate maintenance procedures to lubricate motor-operated valves with threaded yoke bushings prior to 1989. In addition, upon establishing the program with revision 17 to Preventive Maintenance Procedure E-13 in May 1989, the licensee failed to adequately implement the procedure. This led to the eventual failure of high pressure injection discharge isolation valve MU-V16A, and the degradation of MU-V-16B, C and D.

This is a Severity Level IV violation (Supplement I).

### GPUN Response

GPUN agrees in principle with this violation. However the text of the Inspection Report appears to reflect a misunderstanding on the part of the NRC with respect to the history of valve maintenance programs at TMI-1 and specifically the MOV program.

### Background

The vendor recommended yoke bushing lubrication was not performed due to a lack of understanding that a sub-set of MOVs requiring special action with respect to lubrication existed. The valves at issue have rotating, rising stems and are unique in that the load bearing member for valve closure is the yoke bushing external to the valve motor operator and not the stem nut internal to the valve motor operator. Although the specific sub-set of 19 Rockwell design MOVs was not identified until October 1991, GPUN had been performing stem lubrication as a part of its valve maintenance activities.

Since TMI-1 began operations, the plant has had corrective and preventive valve maintenance programs and procedures in place for manual and motor operated valves (MOV's). Maintenance of MOV's is primarily preventive in nature, weighted heavily toward the motor operator and performed in accordance with PM procedure E-13. The procedure was established in December 1975 and predates by approximately 10 years the industry guidance promulgated on the subject of MOV's (IE Bulletin 85-03 and Generic Letter 89-10). Significant MOV training provided to maintenance supervisors and technicians since implementation of the procedure, well established PM tasks, and the early implementation of MOVATS testing are examples of the typical proactive approach to quality maintenance employed at TMI.

MOVATS testing was initiated in 1985. Test results on some MOVs indicated higher than desired running loads. The possible contributors to the high MOV running loads were reviewed, the need for a well lubricated yoke bushing was identified and valves exhibiting higher running loads during testing were lubricated. In 1989, details addressing stem and yoke bushing lubrication were added to PM procedure E-13 to assure proper performance of the maintenance task. This proactive change was prompted by the MOVATS test results.

Since there had been no failures related to lubrication problems and no significant concerns relative to the higher running loads, a situation requiring immediate lubrication of all valves effected by the new lubrication guidance was not considered to exist. A schedule for performing E-13 lubrication requirements on all Limitorque MOVs in the plant was established taking into consideration each valve's function, location/environment, frequency of operation and maintenance history. The schedule was seen as well conceived and appropriate for accomplishing the numerous preventive maintenance actions in PM procedure E-13, including lubrication, in an appropriate sequence.

The MOVATS data revealed no gradual degradation of MU-V16A. Prior to the MU-V16A yoke bushing failure, GPUN expected that MOVATS testing would provide an indication of degradation and potential failure such as that which led to the failure of MU-V16A. Since that was not the case, the first indication of severe degradation caused by lack of adequate lubrication was the failure of MU-V16A.

A grease residue was found on the valve stem of MU-V16A at the time of the yoke bushing failure. The residue resulted from previous lubrication of the motor operator internals and stem to motor operator interface; some lubricant inevitably travels down the stem of a vertically mounted valve from the motor operator internals. Those motor operator internals are lubricated routinely in accordance with PM E-13.

#### Corrective Actions Taken and Results Achieved

The schedule initiating the performance of preventive maintenance on all MOVs in 1975 and recently revised as described above is considered an element of the corrective action. For the reasons previously stated, there was no effort made to complete the PM schedule in advance of the established cycle. Preventive Maintenance procedure E-13 was revised in 1989 to include specific steps to lubricate the yoke bushing. The scheduling of E-13 PM with the added lubrication requirements for all plant MOVs assures lubrication of all valve stems. Preventive maintenance was completed in accordance with the revised procedure on 13 of the 19 valves in the sub-set similar to MU-V16A prior to the September 1991 failure of the MU-V16A yoke bushing. Preventive maintenance on the remaining six MOVs was completed during the 9R refueling outage as scheduled by the plant computerized PM scheduling system. During the 9R outage, a proactive and thorough review of the MU-V16A failure

implications was performed. The review included a multi-disciplined root cause analysis. During investigation of the failure mode, the stem on MU-V16A was found to be slightly bent. An engineering evaluation concluded that MU-V16A with a new lubricated bushing will remain operable with the bent stem until the 10R outage, at which time the stem will be replaced.

#### Corrective Actions to Avoid Further Violations

The corrective steps required to avoid further violations of this type were identified and accomplished as a result of the root cause analysis of the MU-V16A failure performed in October 1991. Actions consisted of identifying all safety-related manual and motor-operated valves with the potential to exhibit wear or degradation similar to that experienced on MU-V16A and verification that each is included in the preventive maintenance program such that appropriate, periodic lubrication is assured. GPUN engineering and maintenance personnel are also considering other MOV testing methods which exhibit a potential to provide earlier and more reliable valve condition information.

Although in hindsight, the process used proved untimely in that damage to the MU-V16A bushing occurred prior to its lubrication, GPUN considers the process of evaluation used to determine the method and schedule for implementation of this change to be appropriate. This process will continue to be used in other backfit situations.

#### Date of Full Compliance

GPUN considers that full compliance has been achieved as of this date for those actions considered necessary to address the cited deficiency.

The concern was isolated to a particular sub-set of valves that were inspected and repaired as necessary. Future MOV lubrication activities will be accomplished in accordance with the established procedures and schedule.

#### Notice of Violation B

Technical Specification 6.8.1.b requires that written procedures shall be established and implemented for surveillance and test activities of equipment that affects nuclear safety.

Contrary to the above, the licensee failed to adequately implement surveillance procedures as evidenced by the following examples:

- a. On September 28, 1991, the licensee failed to implement Surveillance Procedure 1303-11.10 rev. 25, "Engineered Safeguards System Emergency Sequence and Power Transfer Test," properly, performing procedure steps out of the order specified. This procedural nonconformance led to the disabling of Makeup Pump 1C (MU-P-1C).
- b. On November 12, 1991, the licensee failed to adequately implement Surveillance Procedure 1303-4.1, rev 72, "Reactor Protection System," step 8.7.4.1. The step requires the technician to obtain permission from the Shift Supervisor prior to testing the reactor coolant system pressure channel. Due to poor communications, step 8.7.4.1 was not adequately implemented which resulted in the inadvertent lifting of the pressurizer power operated relief valve.
- c. On November 13, 1991, the licensee failed to adequately establish Surveillance Procedure 1303-11.39A rev 7, "HSPS-EFW Auto Initiation," by not specifying initial plant conditions required for the test. This led to an improper restoration from the test resulting in an inadvertent auto-start of the motor driven emergency feed pumps.

This is a Severity Level IV violation (Supplement I).

#### GPUN Response

GPUN agrees with the violation as written. The causes of the violation were: (1) a failure of trained personnel to properly implement the approved procedures and (2) a failure to provide adequate procedures.

#### Corrective Actions Taken and Results Achieved

As a result of the three incidents GPUN performed the following corrective actions:

- a) Relevant plant incident reports were reviewed by all of the Operations department personnel as required by Administrative Procedure 1029 "Conduct of Operations."
- b) A procedure change request (PCR) was submitted to Procedure 1303-11.10 to clarify the appropriate procedural steps, thereby eliminating potential operator confusion caused by the original wording in performance of the surveillance procedure.
- c) The Plant Operations Director discussed each of the incidents in detail with the personnel affected. The discussions included the need for personnel accountability, the responsibility to understand the details of tasks to be performed, and the expected outcome and potentially adverse affects of actions taken or to be taken when physical manipulations are performed during infrequently accomplished or complex tasks.

As a result of these corrective actions there is a renewed awareness on the part of all operators that additional attention to detail, planning, and communications must be observed when performing surveillances that are performed infrequently or are complicated in nature.

#### Corrective Actions to Avoid Further Violations

GPUN has taken the following actions to prevent further violations of a similar nature:

- a) Surveillance procedures which are infrequently performed and which could result in potentially significant adverse consequences will be identified and reviewed as a special task. Each selected procedure will be reviewed by a team including: an individual knowledgeable in the technical area, an individual from the group which performs the test, and an individual knowledgeable in the area of human factors/procedure writing techniques. The selected procedures will be revised as necessary based on the committee review. Procedure revisions identified by these reviews will be completed prior to the next refueling outage scheduled for September, 1993.
- b) INPO SOER 91-01 which deals with infrequently performed tests or evolutions will be reviewed and discussed with each licensed operator during training cycle 92-01 (the training cycle currently in progress).
- c) Management has committed to emphasize personnel accountability. Personnel must be more aware of all on-going plant activities and, in particular, the effect their actions have on overall plant conditions and those activities. All personnel need to be alert to indications of a potential problem or misunderstanding, and the importance of being able to respond to them as they are identified, i.e., to ask the right questions and receive meaningful and appropriate responses. Supervisors will be reminded of their responsibility to (1) ensure proper preparation of personnel and understanding of the planned evolution prior to its commencement, and (2) provide increased oversight during the performance of complex or infrequently performed tasks. The management of the TMI-1 Operations and Plant Materiel departments will counsel all their personnel on the importance of checking their actions just prior to the performance of a physical manipulation. With repeated use of this "self-checking" concept, this characteristic is expected to become a standard practice at TMI-1.

#### Date of Full Compliance

Full compliance will be achieved with the issuance of revisions for procedures 1303-11.10 and 1303-11.39A identified by the Notice of Violation. Procedure revisions will be completed prior to the next refueling outage scheduled for September, 1993 via the team process described above. The September, 1993 implementation date is suitable, since the procedures are appropriate as is, for operating plant conditions.