

DCD-016

FEB 07 1983

Docket No. 50-289

MEMORANDUM FOR: Chairman Palladino  
Commissioner Gilinsky  
Commissioner Ahearne  
Commissioner Roberts  
Commissioner Asselsine

FROM: Darrell G. Eisenhut, Director, Division of Licensing, ONRR

SUBJECT: BOARD NOTIFICATION (BN-83-09) - TMI-1 RESTART HEARING

In accordance with the NRC procedures for Board Notification, the enclosed letter (R. Haynes (NRC) to R. Arnold (GPUN) dated January 20, 1983) is provided directly to the Commission. The letter provides the results of the annual systematic assessment of licensee performance for TMI-1. The ASLAB is being informed by copy of this notification.

The letter relates to the management capability of the licensee which was an issue in the TMI-1 hearing; and does not affect the findings of the Board on this issue.

Original signed by  
Darrell G. Eisenhut

Darrell G. Eisenhut, Director  
Division of Licensing, ONRR

Enclosure:  
1/20/83 Ltr. fm. NRC to GPUN

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\*See previous NRC 318 for concurrences.

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1/20/83 Ltr. fm. NRC to GPUN

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

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1/20/83 Ltr. fm. NRC to GPUN

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

ORB#4 DISTRIBUTION FOR BOARD NOTIFICATION NO. 83-09

RE: TMI-1 Restart Hearing

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ORB#4 Memo File	EBlackwood
ORB#4 Board Notification File	TMI Site Pouch
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JStolz	BSnyder
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JAN 20 1983

Docket No. 50-289

GPU Nuclear Corporation  
ATTN: Mr. R. Arnold,  
President  
P. O. Box 480  
Middletown, Pennsylvania 17057

Gentlemen:

Subject: SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE (SALP)

This letter forwards the results of our annual SALP for the Three Mile Island Nuclear Station, Unit 1 and includes: a list of attendees who participated in discussions held at Three Mile Island on December 10, 1982 regarding the assessment (Enclosure 1); the SALP report (Enclosure 2) which contains our assessment of GPUN performance for the period October 1, 1982 through September 30, 1982; and, the December 14, 1982 GPUN letter (Enclosure 3) which was provided in response to our request of December 3, 1982 (Enclosure 4).

In the December 10, 1982 meeting, the discussions focused on the SALP Board Report, and your efforts to improve performance. We have considered the GPUN feedback to our assessment and we acknowledge your commitments for performance improvement, your clarification/amplification of certain points contained in our report which characterized GPUN intentions, and your perspective on certain other matters.

Overall, we find your performance of licensed activities indicates a high degree of management attention and involvement and that it is aggressive and oriented toward nuclear safety, with adequate application of resources. In the areas of Radiological Controls, Maintenance and Design, and Engineering and Modification we note that better coordination and communications among management, interfacing technical functions groups and plant supervisory and worker personnel would enhance performance. In response to comment 2 of your December 16, 1982 letter, we agree that continued open discussions are necessary to develop a mutual understanding of conditions and underlying NRC concerns. We also acknowledge the occasional need to escalate issues to appropriate individuals so that resolution can be achieved. In this regard, you should escalate issues that come into dispute to the Senior Resident Inspector for TMI Unit 1 who is the appropriate focal point for inspection activities at Unit 1. If the Senior Resident Inspector requires assistance in either obtaining additional inspector expertise or resolving issues in dispute, the matter should be escalated to the appropriate supervisors or managers in the Regional Office.

We consider that our meeting was beneficial and improved our mutual understanding of your activities and our regulatory program. Based on your comments during the meeting and your December 16, 1982 letter, we found that no

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changes to our assessment are necessary and, therefore, the SALP Board Report has not been supplemented. Minor editorial and typographical corrections that did not affect our assessment or conclusions have been made.

In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosures will be placed in the NRC Public Document Room. No reply to this letter is required.

Your cooperation with us is appreciated.

Sincerely,

Original Signed By:

*JAMES M. ALLAN*  
Ronald C. Haynes  
Regional Administrator

Enclosures:

1. List of Attendees
2. SALP Report
3. GPUN Letter December 16, 1982
4. NRC Letter December 3, 1982

cc w/encl:

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R. J. Toole, Operations and Maintenance Director, TMI-1  
C. W. Smyth, Supervisor, TMI-1 Licensing  
E. G. Wallace, Manager, PWR Licensing  
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Ms. Mary V. Southard, Co-Chairman, Citizens for a Safe Environment  
(Without Report)  
R. Jacobs, LPM, TMI-1, NRR

bcc w/encl:

Region I Docket Room (with concurrences)  
L. Barrett, Deputy Program Director, TMI Program Office  
J. Goldberg, OELD: HQ  
Senior Operations Officer (w/o encls)  
Ms. Mary V. Southard, Co-Chairman, Citizens for a Safe Environment  
DPRP Section Chief



ENCLOSURE 1

TMI-1 SALP Meeting Attendees  
December 10, 1982

Licensee Attendees

R. Arnold, President, GPU Nuclear  
R. Howard, Vice President, Radiological & Environmental Controls  
H. Hukill, Vice President & Director, TMI Unit 1  
R. Long, Vice President, Nuclear Assurance  
H. Masini, Security Manager, Administration Division  
C. Mascari, Manager Engineering Services, Technical Functions  
R. Toole, Operations and Maintenance Director TMI-1  
C. Smyth, Licensing Manager TMI-1, Technical Functions  
E. Wallace, Manager PWR Licensing, Technical Functions

NRC Attendees

R. Conte, Senior Resident Inspector, TMI-1  
R. Jacobs, Licensing Project Manager, TMI-1, NRR  
R. Keimig, Chief, Projects Branch No. 2, DPRP  
R. Starostecki, Director, Division of Projects and Resident Programs, Region I  
F. Young, Resident Inspector, TMI-1

L. Barrett, Deputy Director, TMI Program Office (part-time)  
R. Bellamy, Chief, Technical Support Section, TMI Program Office  
A. Fasano, Chief, TMI-2 Project Section  
T. Poindexter, Licensing Project Manager TMI-2, NRR

Enclosure 2

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE  
GPU NUCLEAR CORPORATION  
THREE MILE ISLAND NUCLEAR STATION  
UNIT 1  
November 22, 1982

THREE MILE ISLAND NUCLEAR STATION  
UNIT 2  
November 22, 1982

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## I. INTRODUCTION

### A. Purpose and Overview

The Systematic Assessment of Licensee Performance (SALP) is an integrated NRC staff effort to collect the available observations on an annual basis and evaluate licensee performance based on those observations. The objectives of the SALP is to improve the NRC regulatory program and licensee performance.

The assessment period is October 1, 1981, through September 30, 1982. This assessment, however, contains pertinent observations and NRC and licensee activities through October 1982. The prior SALP assessment period was April 1, 1980 - March 31, 1981.

Evaluation criteria used during the assessment are discussed in Section III below. Each criterion was applied using the "Attributes for Assessment of Licensee Performance" contained in NRC Manual Chapter 0516.

- B. SALP Board Members:
- R. Starostecki, Director, Division of Project and Resident Programs (DPRP)
  - T. Martin, Director, Division of Engineering and Technical Programs (DETP)
  - R. Bores, Acting Chief, Radiological Protection Branch, DETP
  - R. Keimig, Chief, Reactor Projects Branch No. 2, and Acting Chief, Projects Section 2C, DPRP
  - R. Jacobs, Operating Reactors Project Manager (TMI-1)
  - R. Conte, Senior Resident Inspector (TMI-1)

Other NRC Attendees:

- A. Fasano, Chief, Three Mile Island Resident Section, PB No. 2, DPRP
- F. Young, Resident Inspector (TMI-1)
- M. Shanbaky, Chief, Radiation Protection Section

### C. Background

#### (1) Licensee Activities

Throughout the assessment period, the plant remained in cold shutdown per NRC Commission Orders of July 2, 1979, and August 9, 1979. The reactor coolant system (RCS) remained mostly in a partial drain down condition to support work in the Once Through Steam Generators (OTSGs). Completion of various restart modification (TMI-2 Lessons Learned) along with testing and turnover of these modifications to plant staff was a major activity during the assessment. On January 1, 1982, the operating license for TMI-1 was transferred to General Public Utilities Nuclear Corporation (GPU Nuclear).

In late November 1981, while increasing RCS pressure to 45 psig for equipment testing, primary to secondary system leakage was detected. The RCS was then depressurized and partially drained to conduct OTSG leakage tests. In early December 1981, approximately 130 OTSG tubes were determined to be leaking and non-destructive examination of the OTSG tubes was commenced using eddy current testing (ECT) techniques. The initial ECT examination indicated that there were thousands of potentially defective tubes. As a result, GPU Nuclear established internal task groups to investigate the mechanism and cause of the tube failures, the extent of the problem and acceptable methods of repair.

Subsequently, as a result of metallographic examination of portions of removed tubes, it was confirmed that the cause of the tube failures was intergranular attack initiated from the primary side of the tubes resulting in the formation of stress assisted intergranular cracks. The active chemical impurity causing the corrosion was sulfur in reduced forms. Initial ECT results indicated approximately 8-10,000 tubes contained defects with the vast majority (approximately 95%) of the defects occurring within the top 2-3 inches of the 24 inch upper tubesheet. Subsequent ECT using special probes and techniques verified that many more defects existed at the very top of the tubes (top  $\frac{1}{2}$  inch).

To repair the tubes which have defects within the upper tubesheet, the licensee decided to perform an explosive expansion repair technique which will expand and tightly seal the tubes within the tubesheet, thereby establishing a new leak limiting/load carrying seal. The explosive expansion repair technique will be applied to all tubes in both OTSGs, except those tubes already plugged.

The findings of the licensee's various task groups for OTSG repair are summarized below.

- The cause of the defects was sulfur induced corrosion through leakage of small amounts of sulfur from the sodium thiosulfate tank.
- The kinetic expansion process is acceptable. (The licensee has submitted to the NRC staff a portion of their Safety Evaluation Report (SER) addressing this and have held several technical meetings with the NRC staff to present a concise understanding of the process.)

- No adverse conditions had taken place in other portions of the primary systems due to the sulfur intrusion.
- A swipe survey of all systems that interface with the RCS should be conducted to determine the extent of sulfur contamination.

Production work for the kinetic expansion process started in early November 1982 and is expected to be complete by January 1983.

(2) Inspector Activities

Two resident inspectors were assigned to the site during the assessment period. In addition, radiation specialists were also assigned to the site during the assessment period.

Total NRC inspector hours were 3030 (resident and regional based). Distribution of inspection hours is shown in Table 3.

Table 4 is a list of inspection activities conducted during the assessment period. Table 5 is a presentation of resulting enforcement actions.

(3) Atomic Safety and Licensing Board (ASLB) Activities

Subsequent to the restart hearings, the ASLB, in a PID dated August 27, 1981, decided issues in part that related to the licensee's management capability. The decision was favorable to restart subject to certain conditions including a Commission decision on immediate effectiveness of the subject decision. The ASLB also retained jurisdiction over issues pertaining to quality of the licensee's management and its operating personnel because there had been cheating on an NRC operator's licensing examination in April 1981. The licensee and NRC had initiated investigations into the cheating matter between April and August 1981 and ASLB board notifications were made on the status of these investigations. In a September 8, 1981, response to a Board Order relative to the cheating investigation, the licensee also brought to the Board's attention its own concern about "several cases of strong parallelism" in answers on some licensee-administered examinations and suggested that the Board reopen the evidentiary record. On October 2, 1981, the Board reopened the evidentiary record to inquire into the matter and appointed a Special Master to preside over the hearing. Subsequent to the Special Master's report of April 28, 1982, the

ASLB decided issues that related to cheating. The ASLB PID, dated July 27, 1982, was also favorable to restart based on substantial licensee corrective action, subject to certain conditions and Commission decision regarding immediate effectiveness. One of the significant conditions was that the licensee's qualification and requalification testing and training program was to be on a two year probationary period. During this period the training program would be subject to an indepth, independent audit by auditors approved by the Director of NRR. The licensee initiated actions to satisfy this and other conditions of the PID, independent of Commission ruling on immediate effectiveness.

Other PIDs, dated December 14, 1981, were issued on Plant Design and Procedures, and Separation of Units Issues and Emergency Planning Issues. The licensee initiated actions to resolve or satisfy the PIDs conditions independent of Commission ruling on immediate effectiveness.

II. SUMMARY OF RESULTSFUNCTIONAL AREAS

THREE MILE ISLAND UNIT 1		
CATEGORY 1	CATEGORY 2	CATEGORY 3

A. Plant Operations (Shutdown Mode)	x		
B. Radiological Controls °Radiation Protection °Radioactive Waste Management °Transportation °Effluent Control and Monitoring			x
C. Maintenance			x
D. Surveillance (Including Inservice and Preoperational Testing)	x		
E. Fire Protection	x		
F. Emergency Preparedness	x		
G. Security and Safeguards	x		
H. Refueling			Not Evaluated
I. Licensing Activities	x		
J. Quality Assurance/Control	x		
K. Design, Engineering and Modification			x



## II. CRITERIA

The following evaluation criteria were applied to each functional area:

1. Management involvement in assuring quality.
2. Approach to resolution of technical issues from a safety standpoint.
3. Responsiveness to NRC initiatives.
4. Enforcement history.
5. Reporting and analysis of reportable events.
6. Staffing (including management).
7. Training effectiveness and qualification.

To provide consistent evaluation of licensee performance, attributes associated with each criterion and describing the characteristics applicable to Categories 1, 2, and 3 performance were applied as discussed in NRC Manual Chapter 0516, Part II and Table 1.

The SALP Board conclusions were categorized as follows:

Category 1: Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used such that a high level of performance with respect to operational safety or construction is being achieved.

Category 2: NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and are reasonably effective such that satisfactory performance with respect to operational safety or construction is being achieved.

Category 3: Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appeared strained or not effectively used such that minimally satisfactory performance with respect to operational safety and construction is being achieved.

#### IV. Performance Analysis

##### A. Plant Operations (Shutdown Mode)

###### Analysis

Resident inspector review in this area included in-plant observations, review of records, verification of procedure implementation, review of licensee event reports (LERs), responses to NRC bulletins, and monitoring of selected licensee planning meetings. Region based inspector review in this area included a review of information management systems and licensed operator and non-licensed training.

Completion of the licensee's overall management improvement program, since the TMI-2 accident, occurred on January 1, 1982, with the transfer of the operating license for TMI-1 from Metropolitan Edison Company to GPU Nuclear. Further, the licensee's new review and approval program was implemented on August 28, 1982, per License Amendment No. 77 (revised Technical Specifications Section 6). Operations and Plant Engineering staffing levels were ample as indicated by control of backlog work activities.

Excellent management control was exhibited on cold shutdown activities. Shutdown activities were the maintenance of equipment to support readiness for restart, control of modifications to implement TMI-2 lessons learned and reactor coolant system special evolutions to support steam generator repair activities.

There was consistent evidence of prior planning and assignment of priorities for these activities. In general, procedures were well stated and were explicit. Operational policies were well stated, disseminated and understandable and are contained in Administrative Procedures. In particular, these procedures incorporate many of the corrective actions stated by the licensee in response to the TMI-2 accident violations.

Decision making was consistently at a level that assured adequate management review. Corporate management was frequently involved in site activities as evidenced by frequent visits to the site and by the maintenance of satellite staffs permanently assigned to site in the Nuclear Assurance and Technical Functions Divisions. The project status meetings (bi-weekly) for restart hardware installation and test status pulls together the various site and corporate first line supervisors to develop a decisive action item list that seldom required revision.

Operations procedures were rarely violated as evident by relatively few minor procedure implementation violations identified during this assessment period. Personnel protection and equipment control procedures and policies were strictly adhered to as noted by extensive NRC review in this area without the identification of any discrepancies.

A procedural document control problem was identified in that certain uncontrolled procedures, or portions of procedures, were posted or at various work places in the plant, such as the control room, radwaste control panel in the Auxiliary Building and at the River Water Intake Structure. These included information charts and placards that were not excerpts from procedures and a mechanism did not exist to assure that they were properly updated. Licensee corrective actions included: removal of the uncontrolled documents in the plant; issuance of a interim memorandum (later formally incorporated into Administrative Procedures) forbidding the use and posting of uncontrolled procedures; all charts/placards were placed on controlled drawings and; therefore, would be in the system for updating. NRC considered these actions to be acceptable.

The licensee's resolution of technical issues from a safety standpoint was technically sound and thorough in almost all cases as noted by extensive data collection and review and testing initiated by the licensee to justify proceeding with the Steam Generator Tube Repair process.

Resolution of NRC bulletins was technically sound and thorough and acceptable resolutions initially proposed in almost all cases. Actions as a result of NRC Bulletins were consistently complete.

The licensee made considerable progress in the completion of actions to resolve or close previous inspection findings. Corrective action was prompt and usually effective. Few instances were noted where items remained open. The licensee also took the initiative to resolve or close the findings of the ASLB PIDs despite the uncertainty on immediate effectiveness which is pending Commission decision.

An analysis of Licensee Event Reports submitted during the period identified three sets of causally linked events (Section V.1): missed surveillances; incorrect valve lineups on radiation monitoring equipment; and errors in original system/component design. With respect to the tracking and recording of surveillances, the licensee reviewed their computer tracking system used to perform these tasks.

Corrections were made to the program and it appears the problem was corrected. With respect to the valve lineup problems on radiation monitoring and similar systems, the licensee reviewed the valve lineups and procedures. Procedures that deal with these valve lineups and sampling procedures for radiation process monitors were modified to indicate proper "as left" positions for the valves. These actions are considered acceptable to prevent recurrence.

LERs dealing with errors in the original designs were reported by the licensee during their review of design modifications against regulatory requirements. The errors noted were randomly spread and not indicative of a programmatic breakdown.

In May 1982, licensee representatives reported to the NRC site staff the discovery of radiation worker examinations with answer keys being left uncontrolled in the training building. Licensee analysis of

this event concluded that security of radiation worker examinations did not represent conditions in any other training section. It appeared to be an isolated incident attributable to a single individual's personal practices. Licensee corrective actions included: development and use of new examinations/answer keys that would be locked in files when not in use; implementation of a more random questions bank examination system; and reprimand of the cognizant supervisor. NRC considered this action to be acceptable.

A recent NRC inspection was conducted (outside this assessment period) of the licensee's licensed operator and non-licensed operator training programs and associated implementation. No violations were identified and the licensee continues to make reasonable progress on remaining open management issues that must be completed prior to restart; that is, modification training for plant staff and formalization of non-licensed staff training programs. An example of significant improvement in the area of technical training for non-licensed personnel was the continued implementation of a licensee policy of one week of training every six weeks.

In the area of housekeeping, the licensee conducted a plant wide cleanup and decontamination program during the assessment period. The purpose of this program was to permit first level supervisors and upper management easy access into more areas of the plant such as equipment cubicle areas. Overall cleanliness in the plant improved and management personnel were noted to be frequently conducting plant tours. This effort has decreased the number of areas which were classified as high radiation areas. The aggressive cleanup policy has been a positive contribution to the licensee's housekeeping program.

Reorganizations, realignments, and reassignments of responsibilities resulted in altering the manner in which the licensee was implementing the NRC approved Quality Assurance Plan with respect to record requirements. The records management function demonstrated evidence of prior planning and developed a set of defined procedures for the control of activities. Records were complete, well-maintained, and available as a result of improvements made during the assessment period. The records management function was expanded to include a significantly larger staff of professional and clerical personnel dedicated to the collection and retention of records. This function was led by a department level manager supported by appropriate supervisory personnel. Key positions were identified, and responsibilities were well defined. There was an increased emphasis on the importance of records, record retention and control. Among the improvements in record retention includes computer-aided filing, improved storage and control and advanced reproduction methods. Record retention and control was also complemented by general training that emphasized the necessity to properly complete each aspect of work including the documentation.

In summary, licensee management attention and involvement in this area were aggressive and oriented toward nuclear safety. Licensee resources were ample and effectively used such that a high level of performance with respect to safety was achieved.

### Conclusion

#### Category 1

### Recommendations

NRC to maintain two resident inspectors supplemented by region based inspectors to monitor licensee management performance during changing plant conditions through preoperational and startup testing to power operations, if restart is permitted. The basic inspection program should include training program modules.

## B. Radiological Controls

### Analysis

This analysis is based on two programmatic radiological controls inspections; one special inspection of outstanding items from a health physics appraisal; two special inspections of the licensee control of high radiation areas, and fuel examination operations; a programmatic transportation inspection; a programmatic waste management inspection; and a followup inspection in the environmental protection area.

The areas of radiation protection, effluent control and monitoring, and transportation were under routine review by the site NRC radiation specialists.

#### 1. Radiation Protection

An ample staff (more than fifty) was engaged in radiological protection for TMI-1. During the assessment period, significant changes in the Radiological Controls Department occurred. Replacement personnel were appointed to the following positions: Radiation Protection Manager; Supervisor, Radiological Controls Technicians; and, Supervisor, Radiological Engineering. The position of Deputy Radiation Protection Manager was recently eliminated following appointment of a qualified Radiation Protection Manager.

The radiological controls department continued to be corporate based independent of the site operations and maintenance department. Close coordination and interfacing between departments was noted in the licensee's daily/weekly planning meetings including the daily meetings specifically for the OTSG repair process. Accordingly, decision making was consistently at a level that assured adequate management review.

A programmatic breakdown was identified by the NRC in the control of high radiation areas with respect to the adequacy of high radiation area barriers, adequacy of procedures, adequacy of first line management responsiveness, failure to follow administrative control procedures for key control and failure to observe a high radiation area posting/barrier. Besides specific corrective actions to address and resolve these problems, the licensee's upper management simultaneously initiated a thorough investigation of the circumstances and of the established program for the control of high radiation areas. Specific corrective actions included:

- strong procedural requirements for key control specifically under the control of the radiological controls foreman, locked key locker when uncontrolled, documentation of each key transaction along with specific radcon department approval to enter a high radiation area;
- several locks/locked barriers were improved beyond that identified by the NRC;
- management (including the Division Vice President), presence in the plant was increased along with increased radiological engineer tours;
- briefings were established to review procedural requirements before high radiation area entry;
- postings of high radiation areas were reviewed and updated; and,
- increased personnel instruction and reprimands to those individuals involved with the events.

NRC review of the licensee's investigation indicated it to be thorough and complete. Specific corrective actions continue to be reviewed by NRC.

Except as noted above, procedures and policies, in general, were adequately stated, understood, and defined. Procedures and policies were rarely violated. Resolutions of technical issues were viable and generally sound and thorough. Reviews were generally timely, thorough and technically sound.

The licensee's approach to the control of person-rem exposure was technically sound and thorough for the work needed to be completed in the primary side of the OTSG. A full size mock-up was used in the Turbine Building for personnel training on manway entries. Although OTSG tube leakage tests, plugging and eddy current testing were performed, less than 450 person-rem was expended during the assessment period.

Substantial licensee progress was noted in the adequate resolution of previous inspection findings in almost all cases especially with respect to the health physics appraisal conducted before the assessment period. In fact, management was aggressive in the timely resolution of these and other previous inspection findings.

## 2. Radioactive Waste Management

A positive effort was made to minimize the amount of radioactive waste generated and volume of radioactive waste material shipped from TMI-1 despite an extensive plant-wide decontamination effort. The licensee completed the construction of a special waste storage facility (TMI-1 Onsite Low Level Radioactive Waste Storage Facility) located at TMI-2. Further, an interim solidification process (Hittman System) was used during the assessment period.

Two violations were identified regarding the Hittman solidification design evaluation and operation. The violations addressed failure to properly monitor or evaluate the potential for airborne effluent, and an inadequate procedure for container (liner) venting. In certain instances, actual operations were conducted outside the scope of the safety evaluation for the system. The licensee response to these violations was to substantiate less than detectable effluent quantities of radioactive material (and therefore the need for monitoring would be precluded), but this response evaluation contained questionable assumptions. The licensee subsequently committed to a reevaluation of this area.

Specific licensee corrective actions to support continued solidification system operation included upgraded piping modifications along with revised/upgraded procedures for vent line hook-up.

Two violations were identified regarding failure to follow the procedures for control of vacuum cleaners. Licensee and NRC evaluations of these events indicated only a minor problem.

## 3. Effluent Monitoring and Control

Effluent quantities were continually reviewed by the site NRC staff during the current assessment period. Station liquid effluents are well controlled and well below regulatory limits.

Procedures and policies were strictly adhered to and well stated as noted in the review of surveillance procedure implementation.

## 4. Transportation

This activity is controlled by TMI-2. During the current assessment period, 198 shipments of radioactive material were made (TMI-1 and TMI-2). The site NRC radiation specialists inspected 100% of these shipments.



One violation identified a minor problem with the lack of more definitive criteria for shipping cask gaskets. Applicable procedures were revised in this area.

With respect to findings in this particular functional area, the licensee was unusually reluctant to accept inspector disposition of findings as violations. It appeared that the licensee was overly sensitive to having a relatively large number of violations in this area despite their agreement of the control problems that these violations represented. Corrective actions and measures to prevent recurrence were usually good.

In summary, licensee management attention and involvement in the area was evident and they were concerned with nuclear safety. Licensee resources were ample and reasonably effective such that satisfactory performance with respect to safety was being achieved.

#### Conclusion

Category 2

#### Recommendarion

Normal NRC attention should be maintained. NRC to discuss with the licensee attitude toward violations in this area. NRC should shift emphasis from 100% transportation inspection.

#### C. Maintenance

During the assessment period, one regional based inspection was performed on the maintenance area in conjunction with limited monthly inspections of maintenance activities by the resident inspectors.

Management involvement and control in assuring quality was evidenced in various licensee planning meetings by prior planning and assignment of priorities along with stated and defined procedures for control of maintenance activities. Maintenance related reviews were generally timely, thorough and technically sound.

Inspectors identified a problem in the manner in which a substantial number of maintenance activities and post maintenance testing results were documented by various licensee personnel. Licensee analysis of this problem confirmed that the quality of maintenance work

documentation varied with the individual performing the documentation and this necessitated individual attention to detail in this matter. Closer supervisory attention to the documentation effort was provided. The licensee reported and NRC verified improvement with these measures in place. Other maintenance information/records, overall were generally well maintained, complete and available.

The licensee had provided timely response with acceptable resolutions and had proposed viable, sound and thorough resolutions to the few regulatory concerns identified in this area.

A review of staffing indicated that key positions were identified and authorities and responsibilities were well defined. Key positions are usually filled in a reasonable time and staffing was ample considering the workload that exists.

Two instances were noted where contractor personnel failed to follow maintenance procedures. Licensee analysis of one of these events indicated that there was weak communication between OTSG contractor personnel and operations personnel. Licensee actions included personnel counseling of all OTSG personnel and specific preshift briefing of OTSG work activities. Licensee analysis of the other event indicated the personnel failed to pursue acquiring all protective material for a welding process which resulted in a minor fire. Personnel counseling also occurred. Considering the number of maintenance instructions or procedures that were implemented during the assessment period, this was not considered to be representative of an overall attitude of lack of respect for procedural requirements in the maintenance area.

The NRC conducted a special review of maintenance practices with respect to maintenance department interfacing with engineering personnel for timely and adequate resolution of problems encountered during any phase of a work effort. The established maintenance program provides for interfacing with engineering personnel especially in the preparatory aspects. The key to this program was that the licensee shifted to proceduralizing all work activities at the plant and this usually necessitates engineering review.

The Operations and Maintenance Director must specifically approve any work activity that will be completed with only a job ticket (not a formal/specific procedure written). The licensee is reviewing this area for additional improvements in strengthening the engineering/maintenance interface functions along with improving guidance to maintenance procedure writers as to what is considered adequate references (i.e., drawings, vendor manuals, standards, etc.).

Early in the assessment period, inspectors identified a problem in that licensee instructions to maintenance planners were not adequate for the identification of systems, structures and components to which the quality assurance (QA) program applied (Q-List). A revised list was not definitive enough on a component basis with respect to the procedural and procurement requirements. The actual Q-List used by maintenance personnel and prescribed by maintenance procedures was no longer an "officially" controlled procedure. Interim measures included specific engineering review for all procured parts with respect to the revised QA program guidance on safety related and important-to-safety classifications and most work activities were proceduralized. Although licensee final corrective actions are not yet complete, the interim measures were acceptable.

In summary, licensee management attention and involvement in this area were evident. Resources were ample and reasonably effective such that satisfactory performance with respect to safety was achieved.

#### Conclusion

##### Category 2

#### Recommendation

Normal NRC attention during shutdown activities and increased NRC attention commensurate with the level of maintenance activities.

#### D. Preoperational Testing and Surveillance

Inspections of the Technical Specification (TS) Calibration and Surveillance Programs, and the Preoperational and Startup Test Programs occurred.

Licensee activities in this area were appropriately prioritized due to the shutdown status of the plant. An administrative procedure was maintained to control the TS Surveillance Program which included computerized scheduling. Scheduled surveillances were routinely listed on licensee planning meeting agendas along with frequency window monitoring to assure the surveillance was not conducted too early or was not late. There was notable engineering attention in the resolution of exceptions and deficiencies on surveillance test completion and there was engineering awareness of scheduled surveillance from the routine planning meetings.

Because of the extended plant shutdown, TS surveillances, that were not specifically required to be performed, were completed to assure readiness for restart and to avoid problems due to nonuse of equipment. This program was complemented by an extensive list of

preventative maintenance and operations (department self-initiated) surveillances. Based on a selective review, operator implementation of surveillance program was by strict adherence to procedures.

The licensee implemented a surveillance procedure methodology to assure that operability of safety related equipment after surveillance testing (and maintenance testing) was verified through the independent performance and documentation of a post-test lineup check by an operator. However, instructions for this verification were not clear in that various operators used different methods to complete the lineup documentation. This did not adversely affect the satisfactory completion of the test or the verification process. The licensee is clarifying the instructions in this area.

During this period the licensee completed actions in establishing a complete program for the calibration of test equipment used to comply with the TSs. Inspection findings, that involved the correction of minor calibration procedural errors, were also resolved. Licensee actions were acceptable.

The licensee continued the implementation of a special preoperational test program to support TMI-1 restart and the testing of facility modification for restart. Many preoperational test procedures were implemented due to the relatively high turnover rate of modifications. Overall test control was excellent along with strict adherence to test procedures. Licensee planning meetings effectively incorporated the weekly tests to avoid conflicts with OTSG repair or unique plant conditions.

The test organization used a Test Working Group (TWG) that was comprised of representatives from NSSS Vendor, Design Contractor or Corporate Staff, Plant Analysis Corporate Staff, Test Engineers and

Plant Operation/Engineering staffs. The TWG recommends approval/disapproval of test procedures prior to management approval. The preoperational test management was aggressive and thorough in the resolution of test deficiencies/exceptions that was complemented by the referral of many items to the corporate engineering staff. The test organization staffing was sometimes strained due to periodic large influx of modification work activities but it was adequate to stay abreast with the turnover process.

In summary, licensee management attention and involvement were aggressive and oriented toward nuclear safety. Licensee resources were adequate and effectively used such that a high level of performance with respect to safety was achieved.

Conclusion

Category 1

Recommendation

Continue normal NRC attention to preoperational testing with limited attention to surveillance testing during shutdown activities and increased NRC (resident inspection) attention to surveillance testing during power operations.

E. Fire ProtectionAnalysis

Resident inspector routine review of housekeeping and implementation of fire protection measures as noted by plant tour occurred. A recent region based inspection occurred outside the assessment period.

The licensee was adequately implementing interim fire protection measures/modifications as described in Licensee Amendment Nos. 44 and 50. The licensee made substantial progress in implementing the relatively new 10 CFR 50 Appendix R fire protection requirements. The licensee provided dedicated fire protection engineers in the Plant Engineering Group.

Housekeeping substantially improved as noted during the plant-wide cleanup described in the plant operations section (Section IV.A).

Exemptions from 10 CFR 50, Appendix R, requirements were submitted by the licensee during this assessment period and these exemptions are presently under review by NRC staff.

In summary, licensee management's attention and involvement in this area were aggressive and oriented toward nuclear safety. Licensee resources were ample and effectively used such that a high level of performance with respect to safety was achieved.

Conclusion

Category 1

Recommendation

NRC attention, per specialized program review, to 10 CFR 50, Appendix R implementation is required.

F. Emergency Preparedness

Site staff and region based observations in this area included: (1) participation and witnessing of the August 11, 1982, Annual Exercise; (2) review of department preparatory training for major drills especially in the radiological controls area; (3) review of emergency plan implementation during actual events; and (4) recent followup review of emergency appraisal items (outside the assessment period).

The Prompt Notification (Siren) System for TMI was installed, tested and control was transferred to local responsible county authorities as of 12:00 PM, December 22, 1981. Ownership and maintenance of the siren system remained with the licensee. On May 21, 1982, the licensee reported that the siren system met all design objectives for the system and provides full area coverage of the TMI plume exposure emergency planning zone (EPZ) and that the audible test was fulfilled per the ASLB PID of December 27, 1981.

The siren system was plagued with numerous inadvertent actuations. Based on discussions with the licensee, the following corrective actions were planned: dual tone activation modifications; establishment of a comprehensive preventive maintenance program to be established; establishment of a contingency plan for (on-call) prompt response to correct the problem; and continual routine testing as established by staggered times in the various local counties.

The Emergency Planning Department continued to function as a corporate entity that was independent of site operations and maintenance staffs, and it reports to the Vice President of Nuclear Assurance. Corporate staff presence on site was frequently noted and continued involvement with drill preparation and critiques was also noted. Ample staffing was available to perform the necessary functions in this area.

During the current assessment period, no Emergency Preparedness Implementation Appraisal (EPIA) was conducted. However, an EPIA was conducted during the period July 13-24, 1981, which identified seven findings and eight improvement items. The findings of the EPIA indicated that administration of the emergency preparedness program and emergency organization were adequate. The emergency preparedness training program appeared to be generally adequate; however, one complete iteration of training in emergency preparedness had not been performed at the time of the appraisal. Emergency facilities and equipment were generally adequate; however, modifications to the Reactor Building evacuation alarm and post-accident sampling systems were needed. Observation and questioning of selected individuals

during walk-throughs of their assigned tasks and functions indicated that the individuals were aware of their assignments and their part in the emergency organization and were able to perform effectively. Most of these findings described in the EPIA were resolved as noted in a recent followup inspection.

An annual exercise was also evaluated on August 11, 1982. This evaluation determined that the licensee had demonstrated the capability to implement their emergency preparedness program in a manner to adequately protect the health and safety of the public. The exercise was well planned, effectively implemented, and satisfactorily critiqued. Licensee observers identified most of the weaknesses which were noted by the NRC. Action items were recorded for followup corrective actions.

During an actual unusual event declared by the licensee in May 1982, implementation of the applicable portions of the emergency plan was adequate.

In summary, licensee management attention and involvement in this area were aggressive and oriented toward nuclear safety. Licensee resources were ample and effectively used such that a high level of performance with respect to safety was achieved.

#### Conclusion

Category 1

#### Recommendation

Normal NRC attention is to continue in this area by review of the annual exercise for the TMI site.

#### G. Security and Safeguards

During the assessment period, there were two unannounced physical protection inspections performed by a region-based inspectors. No material control and accounting inspections were performed. No violations were identified during this period.

The licensee was effective in maintaining the security program during the assessment period. Management resources, both on site and at the corporate level, were adequate to administer the program. Corporate management involvement in site activities was evident, as exhibited by the annual corporate security audit. These audits have consistently been a comprehensive and thorough review of security plan commitments. Corrective actions resulting from audit items were timely and effective.

Key licensee positions were identified and their duties and responsibilities were well defined. Security records were complete, well maintained and available for inspection.

The licensee continues to ensure timely resolution of security issues and consistently conducted technically sound and thorough analyses of these issues.

During this assessment period, the licensee submitted nine Security Event Reports pursuant to the requirements of 10 CFR 73.71. Descriptions of the events were clear and concise.

Security personnel appeared to be knowledgeable in their assigned duties. The Guard Training and Qualification Program for Units 1 and 2 was progressing on schedule with minimal difficulty. The program was well defined and implemented with dedicated personnel. Classroom instruction was highly professional.

#### Conclusion

Category 1

#### Recommendation

None

#### H. Refueling

Activities in this area were not observed. Reactor core fuel assembly inspection occurred as a result of the sulfur contamination of the Reactor Coolant System with respect to OTSG tube repair evaluation. Analysis was conducted in Section IV.K.

#### I. Licensing Activities

##### Analysis

The basis for this review was correspondence associated with significant licensing issues involving substantial NRC resources and licensee responses to inspection reports, NRC bulletins and licensee event reports. Specific evaluation reviews were for: steam generator recovery program; response to NUREG 0737 items; startup test program; Technical Specifications on plant design hearing issues; complete revision of administrative section in Technical Specifications; operator licensing; containment flood level analysis; containment temperature detectors; and, environment qualification of safety related electrical equipment.



In general, the level of management involvement was appropriate for the significance of the issues. For issues of high company priority, safety significance and public visibility, management involvement was at the highest levels. An example of such an issue was the steam generator recovery program where active participation of top company officials was apparent. All correspondence sent to the NRC was also reviewed by affected senior company officials to assure responses correctly reflected the company's position.

Utility personnel particularly in the licensing department showed thorough understanding of complex issues. The licensee's approach to its most difficult and complex technical problem, intergranular corrosion cracking of steam generator tubes, was extremely thorough, well planned, conservative and technically sound in all aspects of the recovery program. The licensee exhibited sound judgement by employing numerous expert consultants and subjecting company decisions to an independent third party review group which they established on their own. Licensee's approach to resolution of other issues was likewise technically sound with due regard for safety.

Although responses to issues (primarily those impacting restart) were generally timely, numerous responses to generic issues including NUREG 0737 issues, required extensions of time. It was felt that this relatively frequent tardiness on issues not affecting restart was in part justifiable since the licensee was involved in much heavier regulatory action than other operating reactors due to hearing activities and public visibility. Most proposed resolutions were acceptable with few repeated submittals needed to reach a resolution.

Events were generally reported in a timely manner. Frequency and importance to safety of reported events were diminished since the licensee did not operate at power during this reporting period.

Licensee event reports (LERs) dealt with significant issues such as design or safety analysis errors for which more time was needed to submit a complete report. The licensee controlled this situation by so stating remaining items to be addressed for each LER and by providing supplemental information in a later revision to produce a quality evaluation of the event.

The licensee has developed a very large staff dedicated to TMI-1. During this assessment period, the NRC staff has reviewed and imposed Technical Specification requirements governing the qualifications of key onsite and offsite utility positions. The imposed staffing requirements which the utility was able to meet, were similar to those applied to new licensees.

The adequacy of the operator training and testing program was a major issue in the TMI-1 restart proceeding and the Board's decision in that area was favorable. During this period, operator licensing exams were administered by the NRC, three times in October 1981, February 1982 and June 1982. The cumulative passing rate for these exams was 20 out of 24 Reactor Operator candidates and 16 out of 25 Senior Reactor Operator candidates passed. The passing rate significantly increased in the February and June 1982 exams over the October 1981 exams.

GPU Nuclear has demonstrated a strong in-house technical capability supported by a capable licensing department which has an indepth understanding of issues being reviewed by NRR. One issue, the steam generator recovery program was particularly noteworthy. The steam generator corrosion problem was an extremely complex and difficult technical issue. The licensee response to this issue was superior and GPU should be commended for their efforts to date in resolving this problem.

In general, licensee responses to violations were timely, thorough and reflect an indepth review except in the area of radiological controls protection as previously stated. The licensee usually tended to review violations for programmatic deficiencies with appropriate corrective action and measures to prevent recurrence. Of 13 violations, 1 was formally refuted in the radiological control protection (RCP) area without adequate evaluation and sufficient evidence to support an acceptable finding. Specific problems in the RCP area were addressed in that functional area section (Section IV.B).

In summary, licensee management attention and involvement in this area was aggressive and oriented toward nuclear safety. Licensee resources were ample and were effectively used to provide the highest level of performance.

#### Conclusion

Category 1

#### Recommendation

None

J. Quality Assurance/Control

Regional based and resident inspector review of this area included followup to previous inspection findings and an annual review of implementation of the NRC approved Quality Assurance Program at TMI-1.

The Nuclear Assurance Division Organization manual describes organizational responsibilities and major functions, and provides organization graphs and charts. The licensee also recently developed a GPU Nuclear Job Description and Specifications Manual that detailed individual job responsibilities, position requirements, capabilities, etc. Additionally, the GPU Organization Plan, signed by the President, continued to be the senior management policy description. Management awareness and involvement in the QA Program were demonstrated by the Nuclear Assurance Division goals and task completion dates. The QA Department developed a viable computer system to track open items and a Computer User Procedure Manual was issued. Certain portions of the tracking system were on line.

The QA organization provides for a unique three levels of inspection concept. Level I activities were essentially inspection or quality control and involve a direct inspection of activities. The implementing QA section on site was fully staffed with representatives of a variety of specialists (electrical, mechanical, welding, etc). This section was also supplemented by contractor personnel.

Level II activities involved monitoring or surveillance of numerous functional areas to verify procedure implementation. The QA section responsible for implementing these activities was formed subsequent to the TMI-2 accident and was adequately staffed. The functions of this section permitted the QA Audit Section more time to concentrate on program establishment in accordance with applicable regulatory requirements.

Level III activities were primarily audit activities. A QA Audit Section was assigned to the TMI site and functionally reported to a manager at corporate headquarters independent of other site QA sections. The entire QA department was also corporate based. The audit section members were qualified and the section was adequately staffed.

The licensee produced several reports evaluating QA effectiveness. A monthly report titled "Assessment of the Implementation and Effectiveness of the Site Quality Assurance Program," was widely distributed to upper management including the vice presidents of

major organizational functions. The reports includes a statistical analysis of Level I and II inspections, but more importantly it contained a narrative section which discussed the QA/QC perspective of station activities.

In July 1982, the QA Department issued a report to the GPU Nuclear Board of Directors on the status of the QA Program Implementation. This unique report was an assessment of implementation for the new program developed in 1979 and 1980, governing plant activities. The assessment provided statistical analyses of findings, noted trends, and listed accomplishments and areas needing improvement to provide a balanced review of the assessment period. Findings were similar to those noted by the NRC and they were noted that many QA findings were precursors to the regulatory findings. Self analysis of QA Department methodologies occurred. QA effectiveness was further reviewed by licensee participation in audits by a Joint Utility Group.

In summary, QA management attention and involvement were aggressive and oriented toward nuclear safety. Quality Assurance staffing was ample and effectively used to produce a high level of performance with respect to safety.

#### Conclusion

Category 1\*

#### Board Recommendation

NRC attention in this area may be reduced.

#### K. Design, Engineering and Modifications

Numerous inspection resources were used in this area per NUREG 0680 to support NRC staff certification of completed licensee actions to satisfy short term items of the Commission shutdown order and items required for restart from the ASLB PIDs. Further extensive review of the unique OTSG tube leakage problem and repair process occurred.

Significant changes occurred in the area of management control regarding the design change and modifications program and these included: (1) revision of existing procedures, (2) implementation of new procedures and instruction, (3) drawing control status reviews, and (4) an ongoing program identifying and documenting the as-built condition for approximately 2,500 drawings which provided improved configuration status for the as-built condition of baseline drawings. These changes provided evidence of more adequately stated and understandable policies. Modification decision making was at a level that ensured adequate management review. Reviews were thorough and technically sound.

An increased emphasis on the records management function has resulted in a more complete, available and well-maintained record system. Audits were complete, timely and thorough. This is supported by the licensee's audit on information management that identified similar findings to the NRC review.

Early in the assessment period, inspectors identified a breakdown in the licensee providing plant staff adequate drawings for control of activities. Areas of concern for drawings used for control of plant operations included: legibility of interim as-installed drawings; identification of uncontrolled drawings; cancellation/removal of design change/modification annotations that no longer apply to a drawing; tracability of interim as-installed drawings to the applicable as-built drawing or incorporation into the as-built numbering system; and annotation of drawings that were affected by interim as-installed documents and the availability of such. Further it appeared that staffing for the drawing control was weak or minimal as evidenced by excessive backlog. Progress was made by the licensee during this assessment period in the upgrading/updating of drawings and in the identification of drawings needing revision. However, licensee actions are not yet complete.

The licensee response to NRC concerns were technically sound, thorough and timely. The licensee completed extensive changes in the overall layout (display of control room equipment) incorporating the latest NRC guidance in human factors engineering. NRC personnel were impressed with the licensee's accomplishments in that area.

Further, it should be noted that the licensee satisfactorily resolved several 1979 and 1980 NRC bulletins which involved extensive design, engineering and modification work such as in the anchor bolt and pipe

support seismic analysis area. However, during the NRC's initial review of the pipe support seismic analysis, a special technical meeting was needed to convince licensee management of the proper safety factor to be used in the analysis.

One violation was identified concerning failure to install instrumentation sensing lines in accordance with detailed drawings. The licensee corrected the installation and reviewed other modifications completed around the same time period (late 1979 to 1980) for other instances of inadequate installation of instrument sensing lines. No other discrepancies were reported by the licensee. Licensee actions were adequate.

Management involvement in planning and implementing modifications is generally extensive as evidenced by documentation associated with the modifications. Policies and procedures were adequately defined and records were generally complete and readily available. Key management positions were well defined and normally filled by qualified personnel.

The licensee approach to the resolution of technical issues is normally sound and thorough, although during review of a modification to connect the ENS telephone to a vital power source, the licensee was unable to demonstrate that the modification had accomplished the intended goal. At the conclusion of the assessment period, the licensee had the modification under review for several weeks with still no resolution.

Further, the licensee needed to revise certain procedures with respect to post-accident long term recirculation capabilities. A special inspection of short term plant shielding modifications was completed to assure adequate personnel shielding protection during post-accident long term recirculation modes. Emergency procedures were found to be deficient. There apparently was a breakdown in the communication between plant staff and corporate engineering in the revision of such procedures as a result of the shielding analysis.

The licensee devoted a large portion of its engineering staff and budget to develop, coordinate and direct the steam generator recovery program. This recovery program is on the critical path to returning the unit safely to service. In light of the importance of the task, the licensee moved forward in an expeditious but cautious manner, performing a proper evaluation of each major step. The licensee, to ensure that the various task groups did not leave a major area unaddressed, formed a third party independent review group. This group was a composite of technical experts from the industry who were completely independent of GPU organization. The third party group review concluded that the licensee's evaluation of the proposed repair was adequate.

The licensee had good interface, monitoring and auditing by their own Quality Assurance (QA) Department, in particular, along with other departments. The QA/Quality Control Department made a positive

contribution on OTSG work by identifying many procurement and material nonconformance early in the process, thus allowing for early resolution.

Special (temporary) procedures (15-20) for the OTSG repair activities were reviewed for technical adequacy by NRC and observations of several prebriefings and implementation of these new procedures were also made. The licensee showed adequate control and coordination of the work associated with OTSGs. In general, the licensee's OTSG recovery program was adequately planned and accomplished.

In summary, licensee management attention and involvement in the design change and modification area were evident and they were concerned with nuclear safety. Licensee staffing was ample and were reasonably effective such that satisfactory performance with respect to safety was being achieved.

Conclusion

Category 2

Recommendation

Normal NRC attention should be maintained.

V. SUPPORTING DATA AND SUMMARIESA. Licensee Event Reports (LERs)Tabular ListingType of Events

a.	Personnel error	8
b.	Design/Manufacturing/Construction/ Installation Error	2
c.	External Cause	0
d.	Defective Procedures	0
e.	Component Failure	3
f.	Other	4
	Total	<u>17</u>

Licensee Event Reports reviewed:

Report No. 81-004/03L-0 through 82-013/03L-0

Causal Analysis

Three sets of common mode event chains were identified:

- LERs 81-006, 81-003 and 81-010 reported surveillances which were missed due to management oversight.
- LERs 82-006 and 82-008 reported instrumentation rendered inoperable due to incorrect valve lineups.
- LERs 81-007, 81-009, 81-011, 81-014, 82-01 and 82-04 reported errors in original design system and/or component.

B. Investigation Activities

As a result of ASLB PID of July 27, 1982, an investigation was initiated by the NRC Office of Investigation. The investigation centered around an apparent material false statement by the licensee in 1979 regarding the certification of a licensed operator at TMI-2 in the completion of the licensed operator requalification program. The NRC investigation was not completed at the end of the assessment period.

C. Escalated Enforcement Actions

1. Civil Penalties

There were no civil penalties assessed during the assessment period.

2. Orders

There were no orders associated with escalated enforcement actions during the assessment period.

3. Confirmatory Action Letters (CALs)

There were no CALs issued during the assessment period.

D. Enforcement Conferences Held During the Assessment Period

No enforcement conferences were held during the assessment period.



TABLE 1  
TABULAR LISTING OF LERs BY FUNCTIONAL AREA  
THREE MILE ISLAND - UNIT 1

<u>Area</u>	<u>Number/Cause Code</u>				<u>Total</u>
1. <u>Plant Operations</u> <u>(Shutdown)</u>	1/A	1/B	1/E	3/X	6
2. <u>Radiological Controls</u>	2/A		2/E	1/X	5
3. <u>Maintenance</u>					0
4. <u>Preoperational Testing</u> <u>and Surveillance</u>	2/A				2
5. <u>Fire Protection</u> <u>and Housekeeping</u>					0
6. <u>Emergency Preparedness</u>					0
7. <u>Security and Safeguards</u>					0
8. <u>Refueling</u>					0
9. <u>Licensing Activities</u>					0
10. <u>Quality Assurance</u>					0
11. <u>Design, Engineering</u> <u>and Modification</u>	3/A	1/B			4
			Total		17*

## Cause Codes:

- A - Personnel Error
- B - Design, Manufacturing, Construction, or Installation Error
- C - External Cause
- D - Defective Procedures
- E - Component Failure
- X - Other

\*A special report listed in Table 2 is not included.

TABLE 1  
TABULAR LISTING OF LERs BY FUNCTIONAL AREA  
THREE MILE ISLAND - UNIT 1

<u>Area</u>	<u>Number/Cause Code</u>				<u>Total</u>
1. <u>Plant Operations</u> <u>(Shutdown)</u>	1/A	1/B	1/E	3/X	6
2. <u>Radiological Controls</u>	2/A		2/E	1/X	5
3. <u>Maintenance</u>					0
4. <u>Preoperational Testing</u> <u>and Surveillance</u>	2/A				2
5. <u>Fire Protection</u> <u>and Housekeeping</u>					0
6. <u>Emergency Preparedness</u>					0
7. <u>Security and Safeguards</u>					0
8. <u>Refueling</u>					0
9. <u>Licensing Activities</u>					0
10. <u>Quality Assurance</u>					0
11. <u>Design, Engineering</u> <u>and Modificati...</u>	3/A	1/B			4
			Total		17*

Cause Codes:

- A - Personnel Error
- B - Design, Manufacturing, Construction, or Installation Error
- C - External Cause
- D - Defective Procedures
- E - Component Failure
- X - Other

\*A special report listed in Table 2 is not included.

TABLE 2  
THREE MILE ISLAND - UNIT 1

LER SYNOPSIS

October 1, 1981 - September 30, 1982

<u>LER Number</u>	<u>Summary Description</u>
81-09/01T-0	Design review of the diesel generator breaker logic revealed that the original design did not consider certain sequences of event which could lead to possible damage to motor or generator windings. Present logic does not allow sufficient time to elapse for residual voltage decay and for load shedding to occur
81-010/03L-0	Quality control audit determined that a Reactor Building prestressing tendon had an unacceptable lift-off force. Technical Specifications require that two adjacent tendons be inspected, which was not performed
81-011/01L-0	Review of a catwalk structure for application of additional loads revealed that seismic design calculations were not performed by the original architect engineer
81-12/04L-0	River Water Chlorinator malfunctioned causing Environmental Technical Specification limiting condition for total chlorine concentration to be exceeded
81-13/01T-0	Primary to secondary tube leakage occurred in both Once Through Steam Generators
81-014/01T-0	Review of Pipe Support interfacing structurals during IE Bulletin 79-14 inspections revealed nine structurals identified "as built" were in non-conformance to original design
82-01/01T-0	While performing control room habitability review per NUREG 0737, Item III D.3.4, it was identified that Control Building ventilation system modification had not made any provisions for automatic isolation on high airborne radioactivity in the Fuel Handling Building to exclude potential contaminants from entering the system
82-02/03L-0	Inspection of leakage deposits from valve WDG-V4, a containment isolation valve for the Radioactive Waste Gas Disposal System led to the discovery of two cracks in associated piping

- 82-03/01T-0 While regenerating demineralizer beds, an auxiliary operator inadvertently overflowed the secondary neutralizing tanks (SNT) to the plant's effluent discharge to the river (approximately 2,5000 gallons of 3 to 5 Ph water)
- 82-04/01T-0 While performing pressurizer code safety valve review per NUREG 0737, Item II.D.1, it was identified from EPRI valve testing program that a potential problem exists requiring additional evaluation of TMI-1 safety valves under water discharge condition
- 82-05/03L-0 Station liquid effluent radiation monitor required by T.S. 3.21-1 was discovered to be inoperable due to failure of the sample pump. Sample pumped failed due to inadequate flow through the pump
- 82-06/03L-0 An incorrect valve lineup on Reactor Building purge effluent monitor system resulted in a failure to meet Technical Specification requirements for specific instrumentation to be operable
- 82-07/03L-0 Iodine channel of purge effluent monitor RM-A9 failed low causing the required number of channels specified by Technical Specifications not to be available
- 82-08/01T-0 While returning "C" Reactor Coolant Bleed tank to service following being opened for maintenance, the oxygen concentration exceeded Technical Specifications limit of two percent
- 82-09/03L-0 An incorrect valve lineup on Reactor Building purge effluent monitor system resulted in a failure to meet Technical Specifications requirements for specific instrumentation to be operable
- 82-10/99X-0 ESAS low pressure system bypass channel failed to drop out of bypass during post maintenance testing because of induced voltage in the newly installed triac from adjacent circuitry. Replacement triac was solid state relay as compared to previous electromechanical relay type
- 82-11/ Not used
- 82-12/01T-0 Personnel error in calculating the alarm setpoint for station liquid effluent monitor (RM-L-7) resulted in a wrong setpoint
- 82-13/03L-0 Due to an open breaker on sample pump SR-P-4, no flow existed past the plant effluent radiation monitor thus making the monitor inoperable per Technical Specifications

TABLE 3  
INSPECTION HOURS SUMMARY (10/1/81 - 9/30/82)  
THREE MILE ISLAND UNIT 1

	<u>HOURS</u>	<u>% OF TIME</u>
1. Plant Operations (Shutdown Mode)	978	32
2. Radiological Controls	208	7
3. Maintenance	158	5
4. Preoperational Testing and Surveillance	295	10
5. Fire Protection and Housekeeping	212	7
6. Emergency Preparedness	200	7
7. Security and Safeguards	58	2
8. Refueling	27	1
9. Licensing Activities	No Data Available	
10. Design, Engineering and Modification	801	26
11. Quality Assurance	<u>93</u>	<u>3</u>
*Total	3030	100%

\*Allocations of inspection hours vs. Functional Areas are approximations based upon inspection report data.

TABLE 4

INSPECTION REPORT ACTIVITIESTHREE MILE ISLAND UNIT 1

<u>REPORT NUMBER</u> (Inspectors)	<u>AREAS INSPECTED</u>
81-26	Bulletin followup in the area of welding and (Specialist) nondestructive testing
81-27	Maintenance control program and associated Quality (Specialist) Assurance
81-28	Routine plant operation and reporting, fire (Resident/Specialist) protection surveillance, modification control program and implementation preoperational testing program and implementation
81-29	Previous inspection finding followup in the area (Specialist) of radiological controls protection, radcon personnel training and qualification, radiation exposure control, radcon audits
81-30	Radioactive Material Transportation Program (Specialist)
81-31	Security Program and Implementation (Specialist)
81-32	Routine plant operations and reporting, (Resident/Specialist) surveillance program implementation, maintenance program implementation
81-33	Restart/certification items in the training area (Specialist)
82-34	Radwaste, effluent control and associated (Specialist) Radiological Controls Protection Program and implementation
82-01	Routine plant operations and reporting, high (Resident/Specialist) radiation area control, restart modification certification preoperational test program implementation
82-02	Routine plant operations and reporting, (Resident/Specialist) maintenance program implementation, restart modification certification

- 82-03 Routine plant operations, emergency drill (Resident/Specialist) observations, restart modification certification
- 82-04 Security program and implementation (Specialist)
- 82-05 Followup inspection in the areas of radiological (Specialist) controls protection, radwaste management, environmental control
- 82-06 Routine plant operations, reactor coolant system (Resident/Specialist) inspection, restart modification certification, preoperational test implementation
- 82-07 Routine plant operations and reporting, training (Resident/Specialist) department exam control, restart modification certification, preoperational test implementation
- 82-08 Radiological controls protection, radwaste management, (Specialist) effluent monitoring and control
- 82-09 Routine plant operations and followup on previous (Resident/Specialist) findings in management programs area
- 82-10 Routine plant operations, maintenance control (Resident/Specialist) program, event followup in area of radiological control protection, restart modification certification
- 82-11 Quality assurance program/implementation annual (Specialist) review
- 82-12 Emergency Preparedness annual drill (Specialist)
- 82-13 Restart modification certification (Specialist)
- 82-14 Routine plant operations and restart modification (Resident) certification, followup on finding in radiological control protection area
- 82-15 Restart modification certification (Specialist)
- 82-16 Restart software certification (Specialist)
- 82-17 Followup on Control Room Design Review (Specialist/NRR Staff)
- 82-18 Restart software certification (Specialist)

82-19 Not in this assessment period

82-20 Routine plant operations and reporting (Resident)



TABLE 5  
ENFORCEMENT DATA  
(10/1/81 - 9/30/82)  
THREE MILE ISLAND UNIT 1

A. Number and Severity Level of Violations and Deviations

1. Interim NRC Policy Severity Level (October 1, 1981 - March 9, 1982)

Violations S.L. I	0
Violations S.L. II	0
Violations S.L. III	0
Violations S.L. IV	6
Violations S.L. V	4
Violations S.L. VI	1
Deviation	<u>0</u>
Total	11

2. NRC Policy Severity Levels (March 10, 1982 - September 30, 1982)

Violations S.L. I	0
Violations S.L. II	0
Violations S.L. III	0
Violations S.L. IV	0
Violations S.L. V	2
Deviation	<u>0</u>
Total	2

B. Violations vs. Functional Area

(1) September 1, 1981 - March 9, 1982

<u>FUNCTIONAL AREAS</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>
1. <u>Plant Operations</u> <u>(Shutdown Mode)</u>	0	0	0	0	0	0
2. <u>Radiological Controls</u>	0	0	0	5	3	0
3. <u>Maintenance</u>	0	0	0	1	1	1
4. <u>Preoperational Test</u> <u>and Surveillance</u>	0	0	0	0	0	0
5. <u>Fire Protection</u>	0	0	0	0	0	0
6. <u>Emergency Preparedness</u>	0	0	0	0	0	0
7. <u>Security and Safeguards</u>	0	0	0	0	0	0
8. <u>Refueling</u>	0	0	0	0	0	0
9. <u>Licensing Activities</u>	0	0	0	0	0	0
10. <u>Quality Assurance/Control</u>	0	0	0	0	0	0
11. <u>Design, Engineering</u> <u>and Modification</u>	0	0	0	0	0	0

(2) March 9, 1982 - September 30, 1982

FUNCTIONAL AREAS	I	II	III	IV	V
1. Plant Operations (Shutdown Mode)	0	0	0	0	0
2. Radiological Controls	0	0	0	0	1
3. Maintenance	0	0	0	0	0
4. Preoperational Test and Surveillance	0	0	0	0	0
5. Fire Protection	0	0	0	0	0
6. Emergency Preparedness	0	0	0	0	0



GPU Nuclear Corporation  
Post Office Box 480  
Route 441 South  
Middletown, Pennsylvania 17057  
717 944-7621  
TELEX 84-2386  
Writer's Direct Dial Number.

December 16, 1982  
5211-82-297

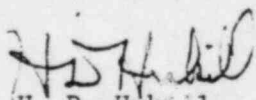
Mr. Richard W. Starostecki, Director  
Division of Project and Resident Programs  
U. S. Nuclear Regulatory Commission  
Region I  
631 Park Avenue  
King of Prussia, PA 19406

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)  
Operating License No. DPR-50  
Docket No. 50-289  
GPUN Comments on the NRC Systematic Assessment of  
Licensee Performance (SALP) for TMI-1

The attached comments represent our formal response to your letter dated December 3, 1982 and supplements discussions at our meeting on December 10, 1982. We believe that the SALP Program is very helpful to us. It is particularly valuable to have a group of NRC Staff personnel, with their unique visibility as to the strengths and weaknesses of several licenses, provide us with their conclusions as to how well we are doing our jobs. We appreciate the objectivity and professional quality of the assessment and are dedicated to addressing areas that need improvement in the same manner. As discussed during the meeting, we do take very seriously the identification of any items of noncompliance.

Sincerely,

  
H. D. Hukill  
Director, TMI-1

HDH:CWS:vjf  
Enclosure  
cc: R. Conte  
R. Keimig  
J. Van Vliet

8301260461 830120  
PDR ADOCK 05000289  
Q PDR

82-558

GPUN COMMENTS ON THE NRC SYSTEMATIC ASSESSMENT OF  
LICENSEE PERFORMANCE (SALP) FOR TMI-1

1. Section A, page nine of the SALP report indicates that the licensee has implemented a policy of one week of training every six weeks for non-licensed personnel. To clarify this statement, it should be noted that it is clearly our intent to make available about seven weeks per year for training of non-licensed shift personnel, similar to that provided for licensed personnel; however, it must be understood that the use of this time for training will be based on the actual needs of the individuals involved and the availability of appropriate instructors.
2. The NRC discussion in the section entitled "Radiological Controls" noted that GPUN was, "unusually reluctant to accept inspector disposition of findings as violations". We believe, as discussed in our meeting, much of the discussion of the various findings in this functional area came as a result of our lack of full understanding of the NRC position in one or two specific inspections. We felt that information bearing on the issues had not been fully considered by the NRC inspectors, and that the information available in certain instances was a basis for a reconsideration of the seriousness of the finding. We continue to believe that open discussions are necessary to develop a mutual understanding of conditions and any underlying NRC concerns so that productive corrective actions can be taken in a timely fashion, consistent with the importance of an item. We will increase our efforts to objectively and constructively understand the concerns of the NRC inspectors. We expect this will lead to better understanding of the issues and improvement of our responses. Additionally, as requested by you during our meeting, we will not hesitate to contact the Regional Office when disagreements arise, which can not be readily resolved at the local level.
3. The NRC discussion in Section F entitled "Emergency Preparedness" mentions the GPUN actions planned to correct the numerous spurious siren actuations which have occurred. As we discussed in our meeting, we believe that the spurious actuations have been reduced to an insignificant level as a result of our actions. Final confirmation will only come with time and recurrence of the severe weather that we believe was in part responsible for the inadvertant actuations. We will keep the site NRC staff informed if this previous adverse experience recurs.
4. Section K "Design Engineering and Modifications" of the report identified a problem encountered in providing vital power to the ENS telephone system. Prior to the ENS upgrading, the ENS telephone had been supplied vital power in accordance with GPUN modification PM-18. The upgrading which was accomplished in the spring of 1982, pursuant to the NRC July 19, 1981 letter, effectively defeated the purpose of the modification accomplished under PM-18. We believe this occurred due to the early retirement of the person who was the engineering contact for the ENS specified by GPUN in our letter (LL2-81-0185) dated July 28, 1982. The NRC contractor (Bell Telephone) who provided and installed the enhancement equipment contacted the GPUN administrator for the telephone equipment but, due to his retirement,

the engineering contact was not notified. As a result, the appropriate technical questions concerning power requirements for the new equipment were not addressed at the time the enhancement equipment was installed. GPUN realized that a problem potentially existed shortly after the upgrading equipment was installed. Before the NRC inspection, a Field Questionnaire (FQ) was generated to evaluate the problem. The resolution of the FQ identified that the upgrading performed in the spring of 1982 had defeated PM-18 and a further modification was generated to correct this condition. This further modification is scheduled for completion in December, 1982.

DEC 03 1982

Docket No. 50-259

GPU Nuclear Corporation  
ATTN: Mr. Henry D. Mukill  
Vice President and  
Director, TMI-1  
P.O. Box 480  
Middletown, Pennsylvania 17057

Gentlemen:

Subject: Systematic Assessment of Licensee Performance (SALP)

The NRC Region I SALP Board conducted a review on November 22, 1982, and evaluated the performance of activities associated with the Three Mile Island Unit 1 Nuclear Generating Station. The results of this assessment are documented in the enclosed SALP Board Report. A meeting has been scheduled for December 10, 1982, at the site to discuss this assessment. This meeting is intended to provide a forum for candid discussions relating to this performance.

At the meeting, you should be prepared to discuss our assessment and your plans to improve performance. Any comments you may have regarding our report may be discussed at the meeting. Additionally, you may provide written comments within 20 days after the meeting.

Following our meeting and receipt of your response, the enclosed report, your response, and a summary of our findings and planned actions will be placed in the NRC Public Document Room.

Your cooperation is appreciated.

Sincerely,

Original Signed By:

Richard W. Starostecki, SALP Board  
Chairman  
Director, Division of Project and  
Resident Programs

Enclosure: As Stated

GPU Nuclear Corporation

-2-

10

cc w/encl:  
R. Arnold, President, GPU Nuclear  
R. Jacobs, NRR, LPM

bcc w/encl:  
A. N. Fasano, Chief, Three Mile Island Resident Section  
R. J. Conte, SRI  
F. I. Young, RI

OFFICE	DPRP	DPRP #2	DPRP			
SURNAME	RConte/lmp	RKEmig	RStarostecki			
DATE	11/29/82	12/2/82	12/3/82			