



LIC 2/17/81

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
METROPOLITAN EDISON COMPANY)	Docket No. 50-289 SP
)	(Restart)
(Three Mile Island Nuclear)	
Station, Unit No. 1))	

LICENSEE'S RESPONSE TO
THE BOARD QUESTION CONCERNING
MAINTENANCE PRACTICES IN THE SAMPLE YEAR, 1978

8102230479

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Introduction

During presentation by TMIA of its affirmative case on its Contention 5, the Licensing Board requested that evidence be presented on Licensee's system for identifying maintenance items which were important from a nuclear safety standpoint and on Licensee's system for documenting that these items were performed. Specifically, the Board stated:

...[W]e believe that Mr. Shovlin's testimony and the summary, [TMIA proposed] Exhibit No. 1, are sufficient to motivate the Board to inquire further into whether prior to November 1979 the Licensee had in place a reliable method of identifying nuclear safety work requests which required maintenance, and whether the Licensee had in place a reliable system of records which would identify and assure that the work was either done or made unnecessary for some other reason. Tr. 3352.

And we wish to have evidence produced in this record which would address the issue of whether or not there was in place a reliable method for identifying safety related work requirements, and was there in place a reliable method of maintaining records which demonstrated that the work was identified and performed? That is what we want. Tr. 3355-56.

[W]e are not talking about individual work requests. It may very well be that individual work requests we will test. We are talking basically about QA/QC, operational QA/QC, was there a method in place to identify nuclear safety related work which needed to be done, and was there a method of recordkeeping in place which assured that that work would be duly reported and completed? Tr. 3358.

It was agreed by the parties and the Board that the system in place during 1978 would be an appropriate sample period.

Tr. 3835-36.

Background

Understanding the maintenance management systems and practices in 1978 requires some background on the Company efforts in these areas over a several year period.

The objectives of maintenance of TMI-1 are numerous and

extensively interrelated. They include, along with nuclear safety, employee safety, reliability of operation and protection of the company's investment. All of these are very compelling considerations and the management of the company prior to and in the 1978 time frame reflected the importance of these considerations in the interest and attention directed by management toward the material condition of the plant.

Illustrious of this attitude are the following:

- (1) Unit 1 management focused specifically on being sure the plant staff was ready to perform routine maintenance on systems and equipment prior to the time the sytems or equipment were turned over to the plant staff upon completion of construction and initial testing.
- (2) Shortly after TMI-1 was placed in commercial service, a board consisting of senior technical management personnel from the GPU system was convened by the President of GPU to review the readiness of the plant staff and the status of the plant to ensure steps were being taken to complete any outstanding items necessary to achieve a high degree of confidence in the safety and reliability of the facility during its operational phase. There was

extensive discussion during that review of the maintenance staffing, organization, status of procedures and backlog of maintenance work.

- (3) In 1975 the plant staff developed a computer sorting program for tabulating the backlog of work requests. This program enabled the work requests to be listed in a variety of ways including numerically, by priority, by cognizant department and by plant conditions (outage or operating) needed to conduct the work. This printout was useful to senior plant management and corporate management for maintaining an awareness of the backlog of maintenance work and the number and nature of high priority jobs. This was an entirely manual system. The maintenance clerks keypunched data cards using information from the Maintenance Log. The cards were fed into the printer/sorter when management desired a printout. The printout was not used by Maintenance, since more detailed information was available from the Maintenance Log. The system was discontinued in 1977 when it was decided by the management personnel who were using the printouts that

the statistics of backlog information were sufficient without the necessity for the details of each work request and because of the manpower necessary to duplicate the Maintenance Log onto a printout.

- (4) In 1975, the Company initiated a systemwide effort to develop common formalized preventive maintenance, corrective maintenance and maintenance scheduling systems based upon work with a management consulting firm during 1973 and 1974. The Generation Maintenance System (GMS) which resulted from that effort was fully implemented at TMI as an automated system in December 1978. This system is more fully described in Licensee's Testimony on Maintenance at TMI-1.
- (5) In 1975, GPU initiated a Nuclear Management Review Committee composed of the presidents of GPUSC, Met Ed and JCP&L and the generation vice presidents of all four GPU subsidiaries. This Committee met once per year at each operating unit and reviewed plant status and staff concerns using a standard agenda. The status of maintenance was one of the agenda items.

The systems in place in 1978 for control of maintenance and identification of the status of maintenance work need to be understood not only in the context of the efforts to improve those systems as previously described, but also in the context of the plant's Technical Specifications. The Technical Specifications set forth the minimum operability requirements for systems and equipment for operation of the unit. As such, they provide a reference for the equipment status which represents the minimum acceptable level of the state of maintenance of plant equipment from a safety viewpoint. To ensure the status of the plant was known relative to those minimum requirements, the Operations Department maintained documented status of plant equipment that was necessary for safe operations which was out of service or otherwise not operable as defined by the Technical Specifications. This provided an important and rigorous review of plant status which contributed greatly to the assurance that important maintenance work was being identified and completed in a timely manner.

In addition, the plant staff regularly pre-planned work to be considered for accomplishment during an unscheduled shutdown. This work plan was referred to as the "No Name Outage" schedule which would subsequently become known by the particular problem which caused an unscheduled shutdown. Upon recovery of the plant from a particular outage, planning would immediately begin for the next "No Name Outage." A major advantage of this management tool was that it provided for routine review by plant management of work that was being

postponed until the plant was shut down and the appropriateness of such deferral was thus also subject to routine review.

Other circumstances that also relate to the Board's questions in this area are the extent to which other automated systems that are important to an effective maintenance program were under development. In 1974 the Nuclear Plant Reliability Data System (NPRD) was established under the sponsorship of the American National Standards Institute (ANSI), to provide long range reliability data on safety related equipment. This was established as requested by the NRC. GPU became a participant in the NPRD system in 1975. The Generation Divisions of the GPU companies developed in 1973 and 1974 an automated spare parts inventory control system for the power plants. In other testimony, the GPU-wide effort to design and implement an automated Construction, Operations and Maintenance Expenditure Control (COMEC) System was described. All of these systems contained numerous interfaces with the GMS and consequently their designs had to be compatible. All of the activities also reflect the extensive efforts being undertaken to provide the generation personnel with modern information processing and management control systems for use in the control of all generation activities, including maintenance, and especially as the systems are applicable to activities at TMI.

Maintenance System 1978

In the year 1978, the TMI Maintenance Department was governed by procedures not altogether different than the ones currently in effect. The key procedures were:

AP 1021, Rev. 1 - Plant Modifications
GP 1003, Rev. 4 - Control of Design Change/Modifications
AP 1027, Rev. 4 - Preventative Maintenance
AP 1026, Rev. 5 - Corrective Maintenance & Machinery
History
CQA Plan, Rev. 7 - Operational Quality Assurance Plan
GP 1008, Rev. 1 - Quality Assurance Systems List

At the end of 1978, the work request portion of AP 1026 was replaced by MP 1407-1. This was necessitated by the changeover to the Generation Maintenance System (GMS) and the computer form job tickets.

The Maintenance Department organization in place during 1978 was as shown by Attachment 1. There was a Supervisor of Maintenance for each unit but a common work force to support both units. Dedicated planners were not assigned at that time. Planning was principally accomplished by the Maintenance Supervisor. In addition, there was a Maintenance Engineer, the forerunner of the current Supervisor of Management Controls. His duties were primarily outage planning and processing of work requests.

The Quality Control organization in 1978 was as shown by Attachment 2. The Supervisor of Quality Control reported to the Manager of Operations Quality Assurance who was located at Met Ed Generation Offices in Reading.

Work Request System

A representative work request form then in effect (per AP 1026) was TMI-93 2-78 (Attachment 3). Work requests could be

written by any plant personnel. The person requesting the work filled out Items 1 through 4 and his judgment of the priority. He then forwarded the work request to his supervisor for concurrence and approval. After the supervisor signed the work request it was sent to the Supervisor of Maintenance. The Supervisor of Maintenance or the Maintenance Engineer then answered/filled in items 6 through 13 on the work request. These items were:

6. Does the work represent a change or modification to an existing system or component? If yes, an approved change modification is required per AP 1021. (Yes)
(No)
 - If Yes a Change/Modification Request was filled out and submitted by the Supervisor of Maintenance to Generation Engineering Reading through the plant engineering staff.
- 7a. Does the work require an RWP? (Yes) (No)
 - This was determined based on the location of the component. All work in the Auxiliary, Fuel Handling and Containment Buildings were in RWP areas.
(Additional areas were as defined by Rad Con).
- 7b. Is an approved procedure required to minimize personnel exposure? (Yes) (No)
 - This was determined based on the work to be performed on the system/component, e.g., does the system need to be opened, etc.

8a. Is the work on a QC component as defined in CP 1008?

(Yes) (No)

- This was determined by checking GP 1008 to see if the component listed on the job ticket was listed as a QC component.

8b. If 8a is yes does the work have an effect on Nuclear Safety? If 8b is yes, PORC reviewed Superintendent approved procedure must be used. (Yes) (No)

- This question was answered only if 8a was Yes.

Does the WORK have an effect on Nuclear Safety? is the question. This was a judgment decision based on the malfunction described and the work to be performed. It was made by the Supervisor of Maintenance or the Maintenance Engineer. If there were any conflicts or questions, the Superintendent of Maintenance resolved them. If the answer was Yes, then a PORC approved Superintendent procedure was required to be used. If the answer was NO then step 9 was followed.

9. Agreement that a PORC reviewed, Superintendent approved procedure is not required for this work because it has no effect on nuclear safety. (Applies only if 8a was Yes and 8b was No).

- If 8a was Yes (QC Component) and 8b was No (does not affect nuclear safety), the Unit Superintendent was required to agree by affixing his signature.

10a. Is the system on the Environmental Impact list in AP 1026. (Yes) (No)

- This was determined by looking at AP 1026 which listed those systems which could have environmental impact.

10b. If 10a is Yes, is an approved procedure required to limit environmental impact. (Yes) (No)

- This question was answered in conjunction with question 10c by the Supervisor of Operations.

10c. Agreement that 10b is No. (Required only if 10a is Yes).

- The Supervisor of Operations answered both 10b and 10c based on his knowledge of the plant and the details of any attached procedure. If he answered 10b - Yes, an approved procedure was required. If he answered 10b - No, then his signature was required.

11. Plant status or prerequisite conditions required for work.

- The status was based upon the priority code letter assigned where "A" any plant condition, "B" meant reduced power, "C" meant shutdown, and "D" meant cold shutdown, and the determination by the Maintenance Engineer or the Supervisor of Maintenance as to requisite plant conditions, e.g., could the system be isolated while the plant was operating.

Under the work request priority system shown below, the definitions and hence the application of the priorities were much more general than under the current system.

- Priority 1 - Urgent; it may be necessary to call in personnel or work overtime.
- Priority 2 - Routine; accomplish during normal working day.
- Priority 3 - Low Priority; accomplish as time and personnel are available.

As can be seen from the definitions, no working time interval was established. Also, the priority was not reflective of whether a job might be of any safety concern (nuclear or industrial). Per AP 1026 "the person initiating the work request shall assign his estimate of the priority, which may be changed at the discretion of the Supervisor of Maintenance." So the janitor could write a priority 1 work request to fix a leaky faucet because to him it was urgent. The procedure did not require the priority to be physically changed on the work request (some were, some were not) if the Supervisor of Maintenance decided the priority was different than recommended.

After the Maintenance Engineer and/or the Supervisor of Maintenance completed the review of the work request, it was handed to the clerical staff. The clerical staff numbered the work request and logged it in the Maintenance Log. The Maintenance Log contained the following information: date job ticket processed, number assigned, description, account number, department assigned to, priority, change modification (Yes) (No), RWP Procedure (Yes) (No), QC (Yes) (No), approved procedure required (Yes) (No), status, closed date, NPRD (Yes) (No), C/M number. In September 1978 an additional column for

the Environmental Impact question was added. This log was a document that was maintained solely as an aid for the Supervisor of Maintenance by the Maintenance Clerk. After logging, the work request was then forwarded to the responsible discipline within the Maintenance Department for action.

The responsible discipline group would do all the staff work on the work request, i.e., obtain the required procedure, get the parts, obtain QC approval. The lead foreman would approve the work request for work. The discipline per se did not keep a summary of the status of maintenance work. Important maintenance was discussed at the Plan of the Day (P.O.D.) meetings. All daily and forthcoming plant evolutions and major and important maintenance items were discussed. Since the Operations Department submitted probably ninety percent of all work requests and also was responsible for being aware of the operability of systems and equipment, the procedure of utilizing the P.O.D. to distinguish priority work was effective in identifying items important to plant operations.

In addition to the maintenance items that were identified at the P.O.D., each lead foreman would go through his file of active (not completed) work requests and select additional work requests to be completed by his discipline. His selection was tempered by plant condition, knowledge of any system, systems or parts of systems that were shut down or could be shut down and those items that were a continuing source of problems.

On the average, somewhere between 30 and 80 work requests were generated in a week. Because no automated system was available prior to 1978, a centralized work status summary on all work requests was not maintained. This means that a work status report that covered all work requests was not available and, from a practical standpoint, could not readily be developed. However, in general, the status (e.g., whether the physical work was completed but the paper work not yet closed out, whether engineering was still required, whether work was awaiting parts) of any particular work request could be determined from the individual maintenance discipline records.

P.O.D. Meetings

Work requests were scheduled and completed in a timely manner consistent with safety, plant conditions and other considerations by the Supervisor of Operations and the Superintendent of Maintenance as discussed at the P.O.D. meetings. The P.O.D. meetings were held on Monday, Wednesday, and Friday of each week at 9:00 a.m. The attendees generally consisted of the Unit Superintendent, Supervisor of Operations, Shift Supervisor, Superintendent of Technical Support, Supervisor of Maintenance or Superintendent of Maintenance, and a representative from QC.

The agenda for the P.O.D. meetings was the P.O.D. form. The P.O.D. form was a computerized form which was updated prior to each meeting. It contained: plant conditions; operations/tests planned (which includes items of major concern for

Operations, Maintenance, Engineering, QC, Stores); and primary and secondary chemistry results and technical specifications items (surveillances for past, current, and future weeks). The P.O.D. meeting generally lasted approximately 45 minutes, during which the P.O.D. form was run through item for item. The cognizant department reported on progress, difficulties, etc., and entertained questions from other groups. At the conclusion of the meeting, the Supervisor of Operations listed additional maintenance items that were of immediate concern to him. These were job tickets that may have been priorities 1, 2 or 3.

Outage items, both planned (i.e., scheduled) and unplanned (i.e., forced), were handled within each discipline. The work requests were identified with a "D" after the priority to indicate it was an outage item. These work requests were segregated from the other work requests. They were again separated into planned and unplanned outage categories. Within each discipline an outage coordinator was assigned. He did the ordering of parts and planning of the outage jobs. The Maintenance Engineer was the overall outage scheduler for Unit 1.

Preventive Maintenance was performed in accordance with AP 1027. There was not a separate PM group as there is now so PM's were handled within each discipline.

Examples of work requests written during 1978 that were handled in a timely and proper manner per maintenance procedures are:

(1) Work Request 23610 (EG-Y-1B), Attachment 4, is an example of a priority 1, nuclear safety related work request. This work request was written by an electrical foreman on April 27, 1978, who also signed in lieu of his Supervisor. The job was classed as "Urgent." The second emergency diesel was fully operable so a redundant component was available. The reactor was shut down for refueling; and one of the Limits and Precautions was that the reactor should not be brought critical until both diesels were operable. The work request was received, approved, commenced, and completed on April 28, 1978. QC subsequently reviewed the work request with final closeout by the Supervisor of Maintenance on May 3, 1978.

(2) Work Request 23647 (WDL-F-3A), Attachment 5, is an example of a priority 1, non-nuclear safety related, possible environmental impact work request. This work request was written by a shift foreman on March 30, 1978 who also signed in lieu of his Supervisor. The work requested was reviewed and approved by Maintenance on April 30, 1978. Work was commenced on May 1, 1978 and completed and tested on May 2, 1978. QC reviewed the completed work request on May 5, 1978 with final closeout by the Supervisor of Maintenance on May 8, 1978.

(3) Work Request 25771, Attachment 6, (Distillate Lines) is an example of a priority 2, nuclear safety related, possible environmental impact work request. The work request was written by a shift supervisor and approved by him on October 25, 1978. The work request was reviewed and approved for work

on October 27, 1978. Approval to commence work was granted on October 28, 1978. The work was completed and tested on November 2, 1978. This was a routine (non-urgent) work request that was of interest to the Supervisor of Operations.

(4) Work Request 24958, Attachment 7, (FS-PI-153) is an example of a priority 3, non-nuclear safety related work request. The work request was written and approved by a shift supervisor on August 17, 1978. The work request was reviewed and approved for work on August 21, 1978. The instrument shop began working the job on August 27, 1978. The work was completed and tested on September 4, 1978, reviewed by QC on September 20, 1978 and closed out on September 22, 1978.

(5) Work Request 24576, Attachment 8, (RR-V-12A) is an example of a priority 2, nuclear safety related work request. This was a routine work request written and approved by mechanical engineering on July 14, 1978. The work request was sent to the mechanical discipline for work and was approved by the shift foreman to commence work on September 5, 1978. Work was completed and aligned for testing on September 5, 1978. QC had noted prior to testing that the proper QC review prior to work and the Supervisor of Maintenance approval to commence work was not filled in. This was a violation of procedure. QC wrote NCR #78-173 on September 8, 1978. The NCR prevented further testing until resolved. Maintenance acknowledged the NCR on September 12, 1978, and generated a satisfactory reply to NCR #78-173. The NCR was closed out on September 21, 1978.

Subsequently the component was satisfactorily tested and returned to use on September 25, 1978. It was reviewed by QC on September 27, 1978, and closed out on October 10, 1978.

The above 1978 work requests are a representative sample of properly handled work requests. They also reveal how QC checks and balances worked to insure that maintenance work was properly performed and documented.

Statistics that support the fact that the maintenance system in place in fact worked are as follows: In 1978, 3,939 work requests were written, of which 3,805 have been completed to date. Of the 3,939 written, 515 were nuclear safety related. Of the 515, 417 were completed in 1978, 51 were completed in 1979, 29 were completed in 1980, and 1 has been completed so far this year. Seventeen nuclear safety related work requests have not been completed. The reason for non-completion of the nuclear safety related work requests are:

- 8 - Engineering Change Modification Hold
- 4 - Planning*
- 3 - On Hold for Parts
- 2 - Scheduled to be Performed

* The jobs in planning are one priority 2 work request, and three priority 3 work requests.

The Maintenance Department monitored the status of important nuclear safety related work requests prior to their completion (and continues to do so for those that remain outstanding) in order to assure itself that they were completed in a timely

fashion. Finally, the total number of work requests outstanding as of December 31, 1978 was 1,313.

QA's Role

To insure that Maintenance properly performed its work, followed approved procedures and documented results, the Quality Assurance group, headquartered in Reading but with a full-time staff on site, performed inspections, audits, surveillances and reviews of Maintenance department procedures, work requests and field work. The on-site portion of that group was Quality Control. The governing document was the Operational Quality Assurance (O/QA) plan, revision 7. The two groups most relevant to the issues being discussed functioned as follows:

Quality Assurance Auditing Group - this corporate level group performed a program review of corrective and preventive maintenance at least once per year to insure that maintenance was conforming to the guidelines in the O/QA plan and Maintenance Department procedures. Audit reports were submitted to the Unit Superintendent, the Station Manager and the Manager Generation Operations. Copies were also distributed to corporate managers including the Vice President Generation. Items indicated as deficient were to be corrected within a specified time frame. The audit group also audited the Quality Control group to insure that they were performing their intended functions.

Quality Control Group - This group was responsible for the continuing and ongoing review of all documents governing QC

component corrective and preventive maintenance. This group reviewed each work request that involved a QC component both prior to and at the completion of work. In addition, this group was required to surveil (or monitor) in the field the performance of each generic maintenance procedure within a two year time frame. The work requests and procedures to be surveilled were identified by a stamp stating, "QC Witness Points Indicated, Notify QC at least four hours prior to commencing work". If for some reason QC was unable to witness the job, the witness points could be waived by QC. Additionally, QC might stamp a job ticket and a procedure with "QC Hold Points Indicated." This stamp was used to identify jobs that QC felt they must monitor to insure conformance. These witness/hold points could be waived; however, the reason for the waiver of the hold/witness points was required to be documented and approved by the QC Supervisor.

After the corrective maintenance had been completed in the field, the maintenance foreman signed and dated the work request. The Operations Department then aligned the component for testing and signed the work request. The testing was then performed and the component was realigned and released for normal use and approved by the shift foreman on the work request form. (In instances when testing could not be performed due to plant conditions, after the maintenance foreman completed his work, the job ticket was held by the Operations Department for test scheduling.) After the shift foreman returned the component to normal, the job ticket was

returned to the maintenance office, reviewed by the Supervisor of Maintenance or Maintenance engineer and sent to QC for review. There were no procedures or guidelines governing the time frame in which the QC review should take place after this work was performed. The guidelines stated that an adequate review shall be performed. QC reviewed the paperwork to insure, for example, that documents were properly filled out, acceptance criteria were met, QC tags attached (if required), and test data attached (if required). Some job tickets were not reviewed by QC for months after a job was completed in the field simply because the testing had not been completed on the job, or the job had been held open for observation.

During 1978, an audit was conducted of Maintenance by the QA Auditing Group. The results of that audit were documented in GQM letter 3546 of August 14, 1978. (Attachment 9). The auditors concluded that with the exception of the ten discrepancies noted, station maintenance and modifications were being performed in accordance with the requirements of the applicable procedures. These discrepancies subsequently were satisfactorily closed out by Maintenance and QA.

The Quality Control group conducted 101 surveillances of work requests/procedures in 1978. These surveillances were direct observations of the actual work at the job site. Only 7 Non-Conformance Reports (NCR's) resulted from these surveillances. Additionally, by their administrative review of work requests and procedures and the receipt inspection of QC material, 66 other NCRs were written against Maintenance. All

of the NCR's applicable to TMI Unit 1 Maintenance have been resolved.

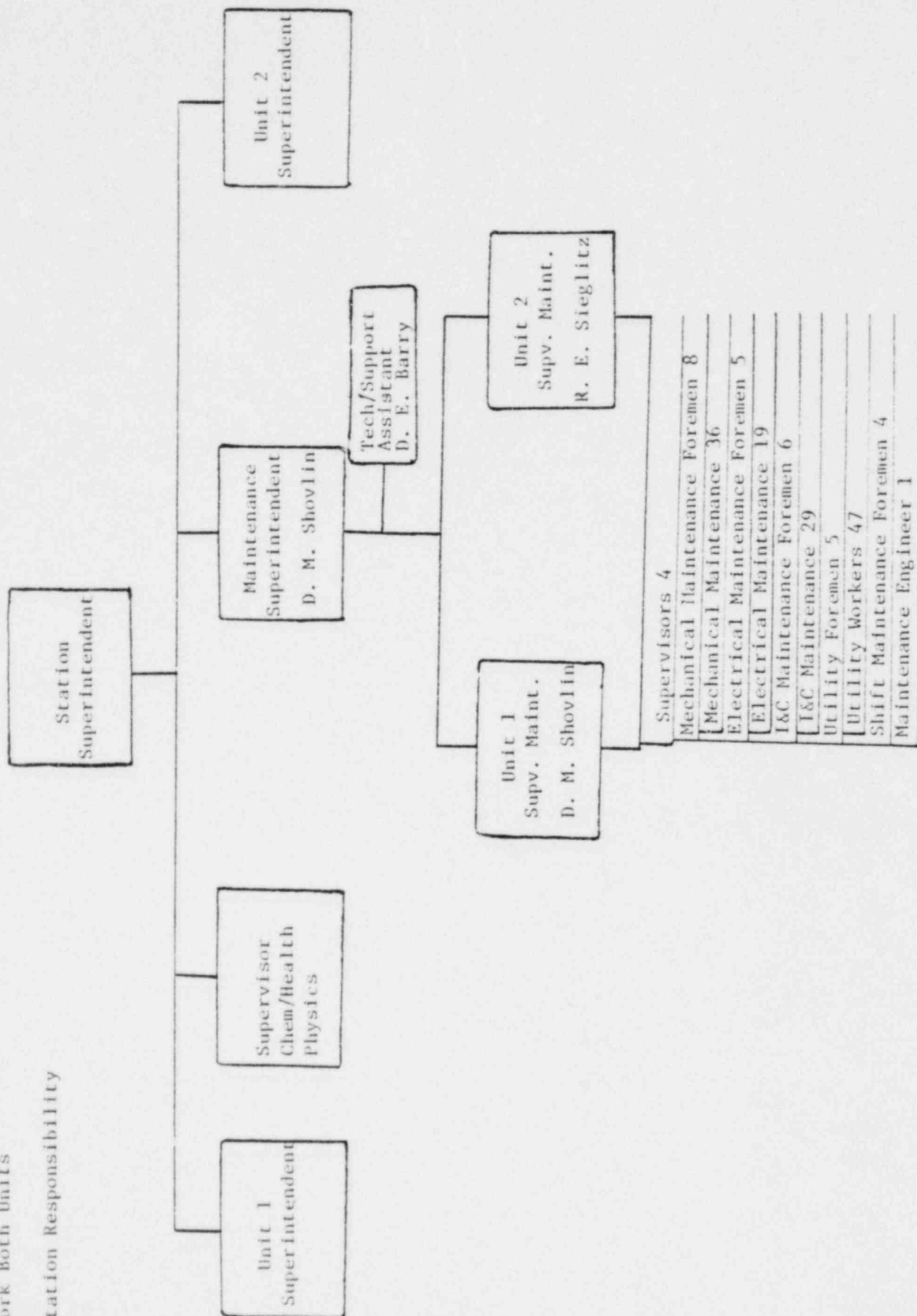
Conclusions

In conclusion, in 1978, Licensee had in place a reliable method of identifying and maintaining equipment important to plant operations. Audit, surveillance and NCR results indicated few problems with the conduct of maintenance. The end of the year brought the transition to the new GMS system, a better method of tracking work requests and their status.

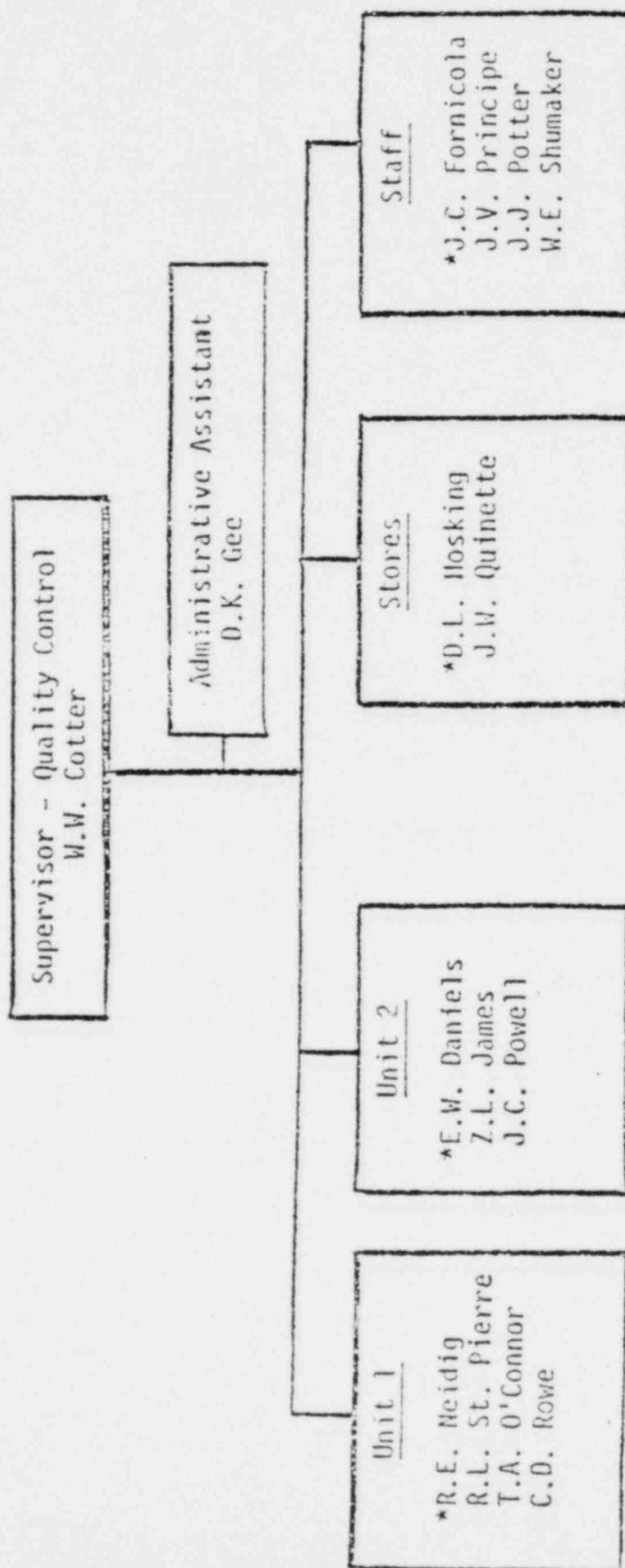
TMI MAINTENANCE ORGANIZATION - 4/30/78

1 40 Per Unit With Ability to
Work Both Units

* Station Responsibility



TMI QUALITY CONTROL SECTION
ORGANIZATION CHART



* Designated Group Leader

WORK REQUEST APPROVAL

TMI Nuclear Station

Unit No. _____ Work Request No. _____
 W.O./Account _____ NPRD Form Req'd _____ Priority _____

Items 1 through 5 completed by originator

1. System: _____
2. Component (name & number) _____
3. Describe malfunction and cause of malfunction (if known) or modification desired. _____

4. Originator: _____ Date/Time: _____

5. Originator's Supervisor's Signature _____

6. Does work represent a change or modification to an existing system or component?
 If yes, an approved change modification is required per AP 1021.

C/M No. _____ Yes _____ No _____

7a. Does work require an RWP Yes _____ No _____

7b. Is an approved procedure required to minimize personnel exposure. Yes _____ No _____

8a. Is work on a QC component as defined in GP 1003. Yes _____ No _____

8b. If 8a is yes does work have an effect on Nuclear Safety? If 8b is yes,
 PORC reviewed Superintendent approved procedure must be used. Yes _____ No _____

9. Agreement that a PORC reviewed, Superintendent approved procedure
 is not required for this work because it has no effect on nuclear safety.
 (Applies only if 8a is Yes and 8b is No).

 Unit Superintendent

 Date

10a. Is the system on the Environmental Impact list in AP 1026 Yes _____ No _____

10b. If 10a is Yes, is an approved procedure required to limit environmental
 impact. Yes _____ No _____

10c. Agreement that 10b is No. (Required only if 10a is Yes).

 Unit Superintendent/Supervisor of Operations

 Date

11. Plant status or prerequisite conditions required for work.

12. Limits and Precautions.

- a) Personnel
- b) Equipment
- c) Environment
- d) Nuclear

13. Post Maintenance Testing required and Acceptance Criteria.

14. Estimated manhours to perform job: E _____ IC _____ M _____ U _____

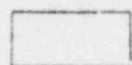
15. Maintenance Foreman Assigned: _____

16. QC Dept. review, if required in Item No. 8

QC Supervisor _____ Date _____

17. Supervisor of Maintenance approval to commence work: _____ Date _____

18. Shift Foreman's approval to commence work _____ Date _____



Initial if Shift Foreman signature is not required

Tagging Application No. _____

Radiation Work Permit No. _____

19. Comments on work performed:

Retest met acceptance criteria

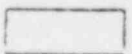
Yes ☐ No ☐

Work Performed by date/time

Work Reviewed - Maintenance Foreman's Signature

Date

20. Work completed and component aligned for testing.

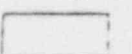


Initial if S.F. signature is not required.

Shift Foreman's Signature

Date

21. Testing completed and component released for normal use.



Initial if S.F. signature is not required.

Shift Foreman's Signature

Date

22. Quality Control Department review of work and testing completed (QC work only).

Consultance Report No. _____

QC Department

Date

23. Supervisor of Maintenance Work request and procedure are complete and signed off as required. Change/modification form has been signed off as required. Machinery history entry has been made, if required.

Actual Manhours to perform job

Supervisor of Maintenance Signature

Date

WORK REQUEST APPROVAL
TMI Nuclear StationUnit No. 1
W.O./Account No. 18035/SB1.5 NPRD Form Req'd NOWork Request No. 23610
Priority A

Items 1 through 5 completed by originator

1. System: Emergency Electrical2. Component (name & number) EG-Y-1B

3. Describe malfunction and cause of malfunction (if known) or modification desired.

Gov. on B Diesel will NOT operate. Also Blocked
Alarm does NOT come in when StandBy / ~~Exercise~~^{no} Exercise switch
is put in the StandBy position.

4. Originator: JR BaumanDate/Time: 4/27/78 08005. Originator's Supervisor's Signature JR Bauman For H. Mitchell6. Does work represent a change or modification to an existing system or component?
If yes, an approved change modification is required per AP 1021.C/M No. _____ Yes _____ No ☒

7a. Does work require an RWP

Yes _____ No ☒

7b. Is an approved procedure required to minimize personnel exposure.

Yes _____ No ☒

8a. Is work on a QC component as defined in GP 1008.

Yes ☒ No _____8b. If 8a is yes does work have an effect on Nuclear Safety? If 8b is yes,
PORC reviewed Superintendent approved must be used.Yes ☒ No _____9. Agreement that a PORC reviewed, Superintendent approved procedure is not required for this work because it
has no effect on nuclear safety. (Applies only if 8a is Yes and 8b is No)._____
Unit Superintendent_____
Date

10a. Is the system on the Environmental Impact list in AP 1026

Yes _____ No ☒

10b. If 10a is Yes, is an approved procedure required to limit environmental impact

Yes _____ No _____

10c. Agreement that 10b is No. (Required only if 10a is Yes).

Unit Superintendent/Supervisor of Operations_____
Date

11. Plant status or prerequisite conditions required for work.

Op in Mode 31.0

- d) Nuclear

clear Reactor should not be made critical until both diesel generators are operable.

- Radiation Work Permit No.

- Ops. Dept. while Running 10 Diesel Goo down
RAN GOO. PASS THE 400 RPM limit. ~~and~~ When this
happens the limit Sw for the 900 RPM Relay is picked up
making it look like they ARE setting at 900 RPM, But at the
SAME time the light for 900 RPM was
Retest met acceptance criteria Yes ☒ No ☐ Blent out. The Blocked Alarm
works OK.

Retest met acceptance criteria

Yes ☒

No

Ruout out. The Blocked state
works OK.

Work Performed by date/time

Work Reviewed - Maintenance Foreman's Signature

Mike Sinkovich

4/27/78
Date

J. Bowman

20. Work completed and component aligned for testing.

Initial if S.F. signature is not required.

Shift Foreman's signature _____

4/27/78
Date

21. Testing completed and component released for normal use.

Initial if S.F. signature is not required.

Shift Foreman's Signature _____

Date _____

22. Quality Control Department review of work and testing completed (QC work only)

Surveillance Report No.

QC Department

Date _____

23. Supervisor of Maintenance Work request and procedure are complete and signed off as required. Change/modification form has been signed off as required. Machinery history entry has been made, if required.

Actual Manhours to perform job

Supervisor of Maintenance Signature _____

Date _____

WORK REQUEST PROCEDURE
TMI Nuclear Station
Maintenance Procedure Format and Approval

RECEIVED

Unit No. 1

This form outlines the format and acts as a cover sheet for a maintenance procedure. Due to the limited size of the form, additional pages may be attached as required. Work Request procedure AP 1016 Section 6 should be used as a guide in preparing the maintenance procedure.

1. Procedure Title & No.

TRouble SHOOT 1B Diesel Gov. Circuit.

2. Purpose:

TO give proper Instruction in TRouble SHOOTING 1B Diesel Gov. Circuit

3. Description of system or component to be worked on.

EG Y-1B

4. References:

4.1 AP1002

4.2 COU Drawing & Manual

5. Special Tools, Materials and Qualifications required.

S.1 Simpson.

6. Detailed Procedure (attach additional pages as required)

SEE Attached

4-27-78

Supervisor of Maintenance Recommends Approval

Date

4-27-78

*Unit 1 PORC Recommends Approval

Chairman

Date

*Unit 2 PORC Recommends Approval

Chairman

Date

*Unit 1 Supt. Approval

Date

*Unit 2 Supt. Approval

Date

Supervisor Quality Control

Date

*NOTE: These approvals require only on Nuclear Safety Related/Radiation Work Permit Jobs.

6.0 Procedure

6.1 Tag B Diesel out of service in accordance with AP1002 & Met Ed Safety Manual if nec.

6.2 Technician shoot GOU circuit using cont Drawings. Problem may be with StandBy/Exercise switch in control room.

6.3 Repair or replace StandBy/Exercise switch in control room, if nec.

Mark all buses on switch before removing.

6.4 After switch is repaired or replaced, run GOU up & down by placing StandBy/Exercise switch in StandBy & then Exercise.

When switch is in ~~Stand~~ Exercise position, 1B Diesel GOU Blocked Alarm should be in.

GOU OPERATES

UP GRB
Down GRB

Blocked Alarm is Received when in Exercise

GRB

Performed By Mike Sinkovich DATE 4/27/76
Approved By GRB DATE 4/27/76

WORK REQUEST APPROVAL TMI Nuclear Station

Unit No. 1
W.O./Account No. 7803/530.4

NPRD Form Req'd No

Work Request No. 23647
Priority 1/A

M

Items 1 through 5 completed by originator

1. System: Liquid waste Disposal

2. Component (name & number) WDL-F-3A

3. Describe malfunction and cause of malfunction (if known) or modification desired.

Resin Trap has hi ΔP needs changed

4. Originator: [Signature]

Date/Time: 3-30-78 1252

5. Originator's Supervisor's Signature [Signature] JMSR

6. Does work represent a change or modification to an existing system or component?
If yes, an approved change modification is required per AP 1021.

C/M No. _____

Yes _____ No ✓

7a. Does work require an RWP

Yes ✓ No _____

7b. Is an approved procedure required to minimize personnel exposure.

Yes ✓ No _____

8a. Is work on a QC component as defined in GP 1008.

Yes ✓ No _____

8b. If 8a is yes does work have an effect on Nuclear Safety? If 8b is yes,
PORC reviewed Superintendent approved must be used.

Yes _____ No ✓

9. Agreement that a PORC reviewed, Superintendent approved procedure is not required for this work because it has no effect on nuclear safety. (Applies only if 8a is Yes and 8b is No).

Unit Superintendent

Date

10a. Is the system on the Environmental Impact list in AP 1026

Yes ✓ No _____

10b. If 10a is Yes, is an approved procedure required to limit environmental impact

Yes ✓ No _____

10c. Agreement that 10b is No. (Required only if 10a is Yes).

Unit Superintendent/Supervisor of Operations

Date

11. Plant status or prerequisite conditions required for work

existing

12. Limits and Precautions:

- a) Personnel
- b) Equipment
- c) Environment
- d) Nuclear

COMPLY WITH THE PROVISIONS
SET FORTH IN AP1002, 1003
AND MET ED SAFETY MANUAL

13. Post Maintenance Testing required and Acceptance Criteria. filter changed / Does not Leak

14. Estimated manhours to perform job: E IC M 12 U

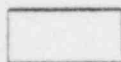
15. Maintenance Foreman Assigned: S. Allen

16. QC Dept. review, if required in item No. 8

QC Supervisor T. Conner by phone visit Date 4-30-78

17. Supervisor of Maintenance approval to commence work Y. Stambaugh by phone visit Date 4-30-78

18. Shift Foreman's approval to commence work W. B. Date 5/1/78



Initial if Shift
Foreman
signature is not required

Tagging Application No. 137

Radiation Work Permit No. 17794

19. Comments on work performed: MANUFACTURED EQUIPMENT FROM NEW JOB -
REMOVED OLD FILTER & REPLACED WITH NEW UNIT

Retest met acceptance criteria

Yes ☒ No ☐

Work Performed by date/time

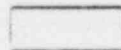
O. McCurdy 5-2-78
C. Hoffman 1000
R. Soanelli

Work Reviewed - Maintenance Foreman's Signature

5-2-78
Date

S. Allen 5-2-78

20. Work completed and component aligned for testing.

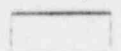


Initial if S.F. signature is not required.

S. Allen
Shift Foreman's Signature

5-2-78
Date

21. Testing completed and component released for normal use.



Initial if S.F. signature is not required.

S. Allen
Shift Foreman's Signature

5-2-78
Date

22. Quality Control Department review of work and testing completed (QC work only).

Surveillance Report No. NA

QC Department 5/5/78

Date

23. Supervisor of Maintenance Work request and procedure are complete and signed off as required. Change/modification form has been signed off as required. Machinery history entry has been made, if required.

Actual Manhours to perform job 26

Supervisor of Maintenance Signature R. Soanelli

Date 5-8-78

1410-F1
Revision 0
12/12/77

WORK REQUEST PROCEDURE
TMI Nuclear Station
Maintenance Procedure Format and Approval

mach. maint.

CONTROLLED COPY

format and acts as a cover sheet for a maintenance procedure. Due to the limited size
pages may be attached as required. Work Request procedure AP 1016 Section 6 should
repairing the maintenance procedure.

0.1

TS REPLACEMENT 1410-F1

f this procedure is to change filter elements on nuclear safety
nents and Q.C. components.

nt or component to be worked on.

ving replaceable filters.

ndor manual

rials and Qualifications required.

ilter element
required

1/4" Socket needed for cap nuts

(attach additional pages as required)

Supervisor of Maintenance recommends approval *B. M. Shovlin* Date *12-5-77*

JRC Recommends approval - Chairman *J. P. Shovlin* Date *12-7-77*

nit/Station Superintendent Approval *J. P. Shovlin* Date *12-7-77*

approvals required only on Nuclear Safety Related/Radiation work permit jobs.

STANDING PROCEDURE *W. W. Cotto* Date *12/9/77*
SUPERVISOR - Q.C.

6.0 LIMITS AND PRECAUTIONS

1. Insure filter is properly drained and vented before casing is opened.
2. Insure filter drainage is collected if working on a radioactive system.
3. Comply with the requirements of AP 1002 Rules for the Protection of Employees Working on Electrical and Mechanical Apparatus.
4. Comply with AP 1003 Radiation Protection Manual if applicable.
5. This procedure is not to be used for Unit I Seal Injection Filters (use 1410-F4) or Unit I Makeup filters (use 1410-F3, 1402-1.1).

6.1 Isolate filter to be changed.

6.2 Vent and drain filter.

6.3 Remove housing cover. If threaded cap, inspect threads for galling and repair as needed. Replace filter cover gasket as required.

6.4 Remove used element(s).

6.5 Clean housing as required.

6.6 Insert new filter elements per vendor's recommendations.

6.7 Replace housing cover.

7.0 ACCEPTANCE CRITERIA

7.1 Filter differential pressure is satisfactory.

7.2 Filter casing does not leak.

WORK REQUEST APPROVAL

TMI Nuclear Station

Unit No. 1 Work Request No. 227
 W.O./Account T 100/1001 NPRD Form Req'd 57, 4 Priority 11 A

Items 1 through 5 completed by originator

1. System: LIQUID WASTE DISPOSAL
 2. Component (name & number) DISTALLATE LINES.
 3. Describe malfunction and cause of malfunction (if known) or modification desired.

FLUSH DISTALLATE LINES FROM THE INLET
TO THE DRAINING BACK TO THE DISTALLATE PUMP.

4. Originator: L. N. M. Date/Time: 10-25-78/1000
 5. Originator's Supervisor's Signature L. N. M. / M. R. R.

6. Does work represent a change or modification to an existing system or component?
 If yes, an approved change modification is required per AP 1021.

C/M No. _____ Yes _____ No ☒

- 7a. Does work require an RWP Yes _____ No _____
 7b. Is an approved procedure required to minimize personnel exposure. Yes _____ No _____
 8a. Is work on a QC component as defined in GP 1008. Yes _____ No _____
 8b. If 8a is yes does work have an effect on Nuclear Safety? If 8b is yes, PORC reviewed Superintendent approved procedure must be used. Yes _____ No _____
 9. Agreement that a PORC reviewed, Superintendent approved procedure is not required for this work because it has no effect on nuclear safety. (Applies only if 8a is Yes and 8b is No).

Unit Superintendent

Date

- 10a. Is the system on the Environmental Impact list in AP 1026 Yes _____ No _____
 10b. If 10a is Yes, is an approved procedure required to limit environmental impact. Yes _____ No _____
 10c. Agreement that 10b is No. (Required only if 10a is Yes).

Unit Superintendent/Supervisor of Operations

Date

11. Plant status or prerequisite conditions required for work.

operating as usual.

- Date _____

WORK REQUEST PROCEDURE
TMI Nuclear Station
STATION Maintenance Procedure Format and Approval

Mech Maint
Unit 1

Unit No. 1 & 2

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This form outlines the format and acts as a cover sheet for a maintenance procedure. Due to the limited size of the form, additional pages may be attached as required. Work Request procedure AP 1016 Section 6 should be used as a guide in preparing the maintenance procedure.

1. Procedure Title & No.:

CLEANING OF CLOGGED LINES
1410-Y-17

2. Purpose:

2.1 To clean lines which have become plugged.

3. Description of system or component to be worked on.

3.1 See specific Work Request.

4. References:

4.1 AP 1002
4.2 AP 1003

5. Special Tools, Materials and Qualifications required.

5.1 Nitrogen bottle and regulator, if necessary
5.2 Plumbers power, if necessary
5.3 Snake, if necessary

6. Detailed Procedure (attach additional pages as required)

6.1 See Attached

Supervisor of Maintenance Recommends Approval *[Signature]* Date *10-4-77*

*Unit 1 PORC Recommends Approval *[Signature]* *10-4-77* *Unit 2 PORC Recommends Approval *[Signature]*

[Signature] Chairman Date *10-4-77* *Unit 2 Supt. Approval *[Signature]* Chairman Date *10-4-77*

*Unit 1 Supt. Approval *[Signature]* Date *10-4-77*

Supervisor Quality Control *[Signature]* Date *10-4-77*

*NOTE: These approvals require only on Nuclear Safety Related/Radiation Work Permit Jobs.

6.0 LIMITS AND PRECAUTIONS

- a. Insure goggles and protective clothing are worn if dealing with caustic chemicals.
- b. Do not exceed system design pressure.
- c. Initiate RWP prior to starting work on systems containing radioactive material or in a controlled area.
- d. Shift Foreman shall review the proposed flushing path.

6.1 Tag Out System

6.2 Open plug or fitting to establish flow path. Valves and/or openings may be temporarily blanked or valve internals may be removed.

6.3 Attach a fitting to the nitrogen bottle. Set regulator to insure that system design pressure will not be exceeded. Install a gauge in line between regulator and the system to be unplugged.

6.4 Apply the nitrogen pressure and blow the line out.

CAUTION: Do not exceed system design pressure.

6.5 If nitrogen is not available, water may be used to attempt flushing.

6.6 At times it may be necessary to use either a plumbers power or hand snake to dislodge any obstruction. A water or nitrogen flush may be needed following this step.

6.7 At times it may be desirable to use steam to unclog a line. i.e.: Boric Acid lines, etc.

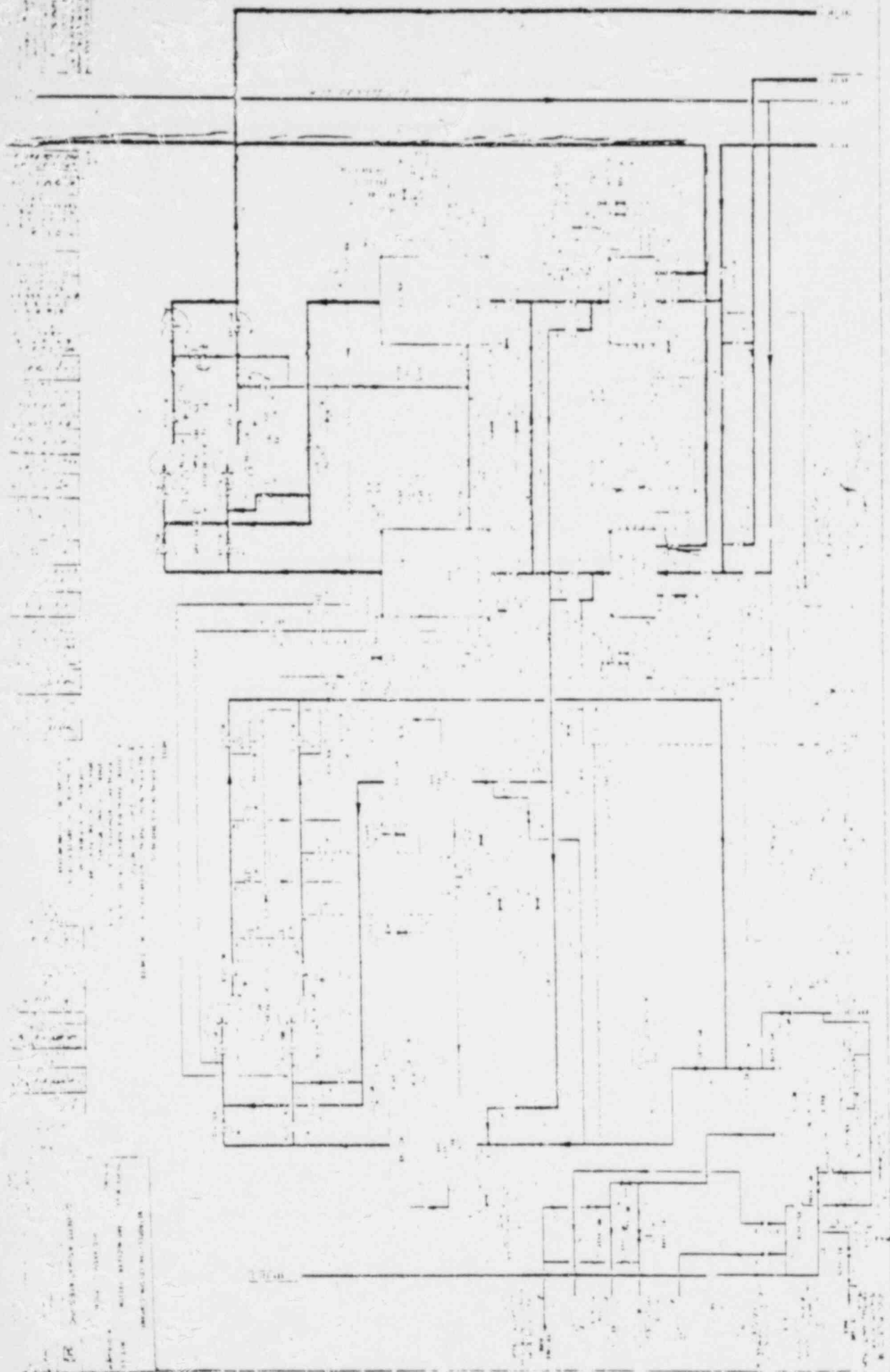
6.8 Replace any plugs, fittings, etc., removed in step 6.1. Remove all blanks installed. Reassemble any valves which were disassembled.

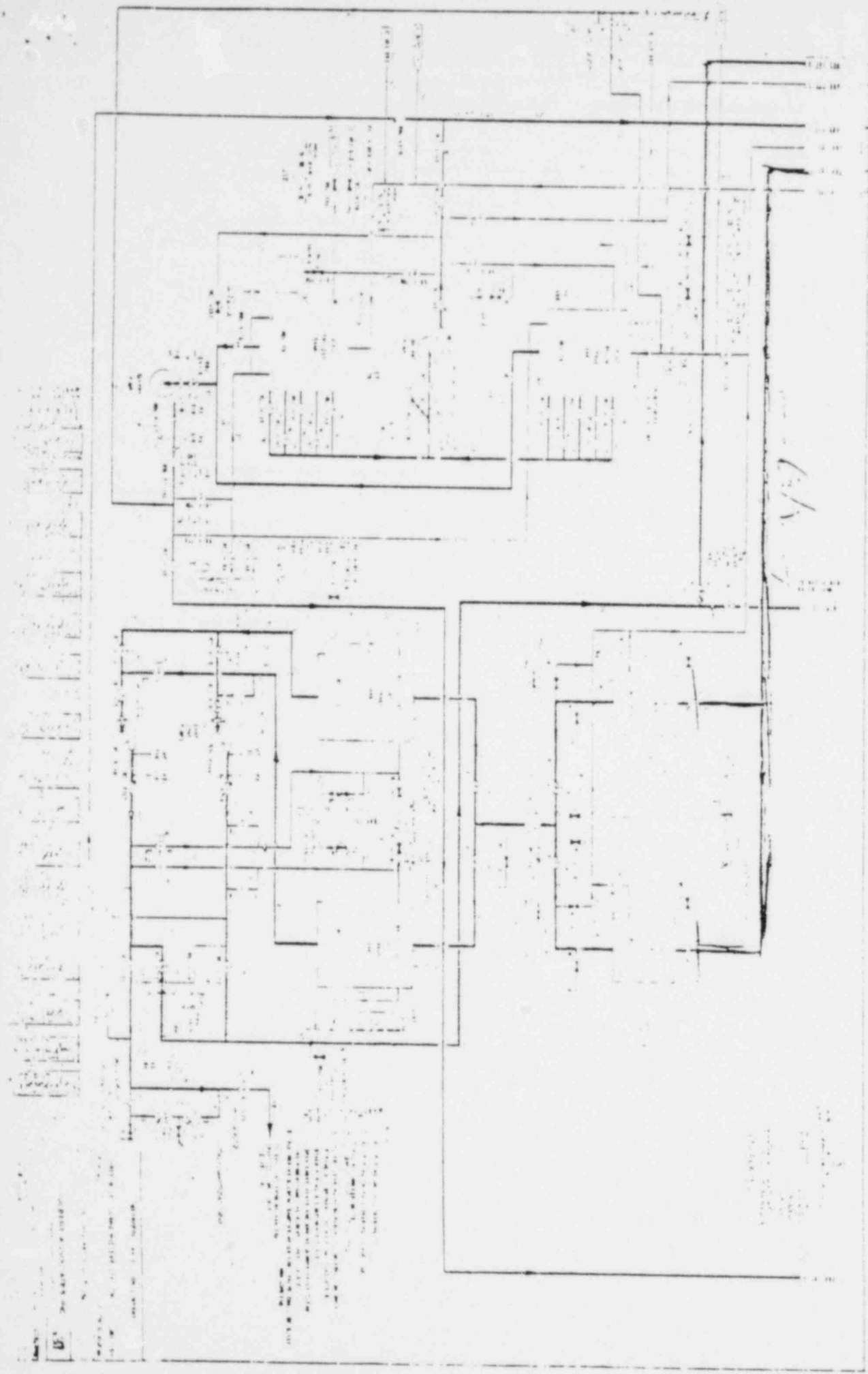
6.9 Remove all tools and materials upon the completion of work.

7.0 ACCEPTANCE CRITERIA

7.1 Line is unplugged, no leaks at any joints and component is operating satisfactorily.







BEST COPY AVAILABLE

WORK REQUEST APPROVAL
TMI Nuclear StationUnit No. 1 Work Request No. 24958
W.O./Account 78005/1001/832.2 NPRD Form Req'd NO Priority 111A

Items 1 through 5 completed by originator

1. System: Fire System
2. Component (name & number) P I-153
3. Describe malfunction and cause of malfunction (if known) or modification desired.

Gage is stuck at 3pi2 - change gage

4. Originator: Paul Date/Time: 5-17-78/2250

5. Originator's Supervisor's Signature [Signature]

6. Does work represent a change or modification to an existing system or component?
If yes, an approved change modification is required per AP 1021.

C/M No. Yes No ✓7a. Does work require an RWP Yes No ✓7b. Is an approved procedure required to minimize personnel exposure. Yes No ✓8a. Is work on a QC component as defined in GP 1008. Yes ✓ No 8b. If 8a is yes does work have an effect on Nuclear Safety? If 8b is yes, PORC reviewed Superintendent approved procedure must be used. Yes No ✓

9. Agreement that a PORC reviewed, Superintendent approved procedure is not required for this work because it has no effect on nuclear safety. (Applies only if 8a is Yes and 8b is No).

Unit Superintendent

Date

10a. Is the system on the Environmental Impact list in AP 1026 Yes No ✓10b. If 10a is Yes, is an approved procedure required to limit environmental impact. Yes No

10c. Agreement that 10b is No. (Required only if 10a is Yes).

Unit Superintendent/Supervisor of Operations

Date

11. Plant status or prerequisite conditions required for work.

Operating or Shutdown

* 12. Limits and Precautions.

- a) Personnel
- b) Equipment
- c) Environment
- d) Nuclear

Company Safety Provisions
 21 CFR 1910.102 and
 21 CFR 1910.103

BEST COPY AVAILABLE

13. Post Maintenance Testing required and Acceptance Criteria.

14. Estimated manhours

14. Estimated manhours to perform job: E _____ IC _____ M _____ U _____ Calibration within on cal. date.

15. Maintenance Foreman Assigned: _____

16. QC Dept. review, if required in item No. 2 _____

16. QC Dept. review, if required in item No. 8

QC Supervisor

17. Supervisor of Maintenance approval to commence work _____ Date 8/2/84

18. Shift Foreman _____

18. Shift Foreman's approval to commence work _____ Date 8/31/79

Chief of Shift
Foreman

Foreman

signature is not required

Tagging Application No.

Radiation Work Permit No.

19. Comments on work performed.

Comments on work performed:
Grade 100% for the work performed. The work was done.

Retest met acceptance criteria

Yes ☐ No ☐

Work Performed by date time

Work Reviewed Maintenance Foreman's Signature

20. Work completed and component aligned for testing.

Initial if S.F. signature is not required.

21. Testing completed and component released for normal use.

Initial if S.F. signature is not required

22 Quality Control Department review of work and testing completed (QC work only).

23 Supervisor of Maintenance Work request and procedure are complete and signed off as required. Change/modification form has been signed off as required. Machinery history entry has been made, if required.

Actual Manhours to perform job.

Supervisor or Maintenance Signature

9/20-78

NOTE 18-17
MTCWORK REQUEST APPROVAL
TMI Nuclear StationUnit No. 1
W.O./Account No. TR23/1001 / 530.7
NPRD Form Req'd NoWork Request No. 24576
Priority 2 FL

Items 1 through 5 completed by originator

M

1. System: RR
2. Component (name & number) RR-V12A - Vacuum Breaker - on RR-PIA - Clean
3. Describe malfunction and cause of malfunction (if known) or modification desired SUSPECT VALVE FROZEN
SN

Disassemble & check valve (RO154) and clean, repair
re-assemble.

141C-V-18
NO. 0
8/10/77

4. Originator: Kent - Sumner Date/Time: 7/14/785. Originator's Supervisor's Signature W. E. B. [Signature]

6. Does work represent a change or modification to an existing system or component?
If yes, an approved change modification is required per AP 1021.

C/M No. _____

Yes _____ No ✓

- 7a. Does work require an RWP

Yes _____ No ✓

- 7b. Is an approved procedure required to minimize personnel exposure.

Yes _____ No ✓

- 8a. Is work on a QC component as defined in GP 1008.

Yes ✓ No _____

- 8b. If 8a is yes does work have an effect on Nuclear Safety? If 8b is yes,
PORC reviewed Superintendent approved must be used.

Yes ✓ No _____

9. Agreement that a PORC reviewed, Superintendent approved procedure is not required for this work because it
has no effect on nuclear safety. (Applies only if 8a is Yes and 8b is No).

Unit Superintendent

Date

- 10a. Is the system on the Environmental Impact list in AP 1026

Yes _____ No ✓

- 10b. If 10a is Yes, is an approved procedure required to limit environmental impact

Yes _____ No _____

- 10c. Agreement that 10b is No. (Required only if 10a is Yes).

Unit Superintendent/Supervisor of Operations

Date

11. Plant status or prerequisite conditions required for work

exister

12. Limits and Precautions:

- a) Personnel
- b) Equipment
- c) Environment
- d) Nuclear

Comply with the Provisions
set forth in AP 1002 and
Met Ed Safety Manual

7-10-68

13. Post Maintenance Testing required and Acceptance Criteria: *per attached procedure*
14. Estimated manhours to perform job: E _____ IC _____ M _____ U _____
15. Maintenance Foreman Assigned: _____

16. QC Dept. review, if required in item No. 8

See NCR 78-173

Date _____

17. Supervisor of Maintenance approval to commence work: *Dm Shorlin* Date *9-28-78*

18. Shift Foreman's approval to commence work Robert L. Smith Date 9-5-78

114

Initial Shift
Foreman

Tagging Application No.

Radiation Work Permit No. _____

signature is not required

19. Comments on work performed:

Was valve frozen shut YES P. VALVE JUST
NEEDED CLEANING CLEANED + REASSURED

Retest met acceptance criteria

Yes ☒ No ☐

Work Performed by date/time

Work Reviewed - Maintenance Foreman's Signature

0 D4.200000 GR-1313

Date _____

20. Work completed and component aligned for testing.

100

Initial if S.F. signature is not required.

T. R. Mellett

Shift Foreman's Signature _____

62-5-78
Date

21. Testing completed and component released for normal use

114

Initial if S.F. signature is not required.

Shift Foreman's Signature _____

Date _____

22. Quality Control Department review of work and testing completed (QC work only)

NCR 78-173

QC Department

9/27/78
Date

23. Supervisor of Maintenance Work request and procedure are complete and signed off as required. Change/modification form has been signed off as required. Machinery history entry has been made, if required.

Actual Manhours to perform job

Supervisor of Maintenance Signature _____

10-10-78
Date

(X) OPEN DISTRIBUTION MADE 9/22
(X) CLOSED DISTRIBUTION MADE 9/22

NCR NO. 78-173 Ps. 1
UNIT NO. I

QC NONCONFORMANCE REPORT

(X) NCR
() M-GE
() M-GO
() M-GA
(X) M-GM
() PORC
() UNIT

() VENDOR FILE
() COG. DEPT. HEAD
() P.O. FOLDER
() PURCHASING
(X) CRC
() S - LICENSING
(X) SUPV. OF MAINT.

(X) FILE
(ORIGINAL)
(X) FILE GENERATION
DOCUMENT CONTROL
CENTER

ORIGINATED BY:

() RECEIPT INSPECTION
() SURVEILLANCE
REPORT NO. _____
(X) OTHER Work Request
Review

ITEM Work Request 24576 P.O.# N/A LINE ITEMS N/A
LOCATION TMI-NS VENDOR N/A
SYSTEM Corrective Maintenance Program DEPT. Maintenance
PROCEDURE NO. AP 1026, Rev. 6, dated 5-1-78

DESCRIPTION: Section 4.2.5 of AP 1026 states: "The Maintenance foreman is responsible for implementing the details of this procedure (AP 1026). He will insure all appropriate approvals be obtained prior to commencing work..."

Contrary to this requirement, work was performed using work request 24576 without completing the required reviews prior to commencing work. (CONTINUED ON ATTACHED SHEET)

() POTENTIALLY REPORTABLE PREPARED BY: THO'Connor DATE: 9-8-78

RESOLUTION: 1. The Supervisor of Maintenance shall make personnel in his department aware of the contents of this NCR and the requirements for Work Request reviews and approvals.

DUE DATE: 9-29-78

COG. DEPT/SECT. HEAD: EC Thompson
SUPERVISOR - QC: Thompson

DATE: 9-12-78
DATE: 9-15-78

STATUS

CLOSED: 9-15-78: The Supervisor of Maintenance has completed the resolution as stated; see attached memo to members of his department. TAC

SUPERVISOR - QC: Thompson

DATE: 9-21-78

QC NONCONFORMANCE REPORT
NCR NO. 78-173
UNIT NO. 1
Page 2 of 2

DESCRIPTION: (CONT'D)

Further, Section 4.3.1.1.21 of AP 1026 states that the block 21:
"Signature indicates that the system or component is acceptable for
operations. QC work requests are then routed to the QC Department
for review". Contrary to this, the completed work request was routed
to QC for review prior to releasing the component/system for operational
use. This equipment (RR-PIA train) is Tech. Spec. related (sect. 3.3).

METROPOLITAN EDISON COMPANY Subsidiary of General Public Utilities Corporation

Subject NONCONFORMANCE REPORT # 78-173

Location TMI Nuclear Station
 Middletown, Pa.


Date September 11, 1978

To Maintenance Supervisors
 Maintenance Foreman
 Maintenance Shift Foreman

NCR #78-173 concerns work performed on a component (RR-V-12A) listed in G.P. 1008 without appropriate signatures (line 16, QC Supervisor and line 17, Supervisor of Maintenance approval to commence work). AP 1026 specifically states that these signatures are required prior to working on a Quality Control component.

Please ensure in the future that the appropriate signatures are obtained before start, go to work on a component. Standing procedures only require a notification (telephone call) to Quality Control and documenting such in line 16. For line 17, there are a number of personnel designated who can sign for the Supervisor of Maintenance's approval per Maintenance Department Order No. 14, Rev. 7.

Per this memorandum, this nonconformance report is closed.


D. M. Shovlin
Superintendent of Maintenance

DMS/pas
cc: T. Mackey
 D. Gee

METROPOLITAN EDISON COMPANY

Subsidiary of General Public Utilities Corporation

Subject AUDIT 78-11, STATION MAINTENANCE-INCLUDING
MODIFICATIONS (NUCLEAR)

Location Reading

Date August 14, 1978
GQM 3546

To L. L. LAWYER
G. P. MILLER
J. P. O'HANLON

I. Persons Conducting Audit

a. T. F. Barbagallo*	Team Member
b. P. A. Levine*	Team Leader

II. Personnel Contacted

a. M. B. Bezilla	Unit 2 - PORC Secretary
b. E. R. Crawfoot	Electrical Maintenance Foreman
c. A. J. DiVittore	Maintenance Dept. Clerk Typist Jr.
d. E. C. Fuhrer	Engineer II HP/Chemistry
e. J. R. Gilbert	I & C Maintenance Foreman
f. D. L. Good*	Tech. Analyst Sr.
g. N. S. Herneisey*	Mechanical Maintenance Foreman
h. R. M. Klingaman	Manager Generation Engineering
i. J. J. McGarry	Supervisor of Mechanical Maintenance
j. H. M. Mitchell*	Electrical Maintenance Supervisor
k. H. R. Morris	Generation-Supervisor of Electrical Maintenance
l. R. E. Neidig	QC Specialist
m. C. A. Nixdorf	Office Supervisor
n. J. P. O'Hanlon	Unit 1 Superintendent
o. B. J. Rittle	Electrical Maintenance Foreman
p. R. L. St. Pierre	QA Assistant
q. W. J. Sawyer	Unit 1 Supervisor of Maintenance
r. J. L. Shirk	Technical Analyst II
s. D. M. Shovlin*	Supervisor of Maintenance
t. R. E. Sieglitz	Engineer Sr. I Nuclear
u. P. A. Sinegar	Maintenance Dept. Clerk Typist Jr.
v. R. H. Trautman	Engineer III Maintenance
w. A. M. Troutman	Clerk - Jr.
x. H. L. Wilson*	Unit 1 I & C Maintenance Foreman-Nuclear

*Personnel present at post audit review held on July 6, 1978.

III. Applicable Reference Documents

- a. CQA Plan Rev. 7
- b. TMI Unit 1 and 2 Technical Specifications
- c. Audit 76-10
- d. AP 1016, Rev. 12 Operations Surveillance Program
- e. AP 1021, Rev. 1 Plant Modifications
- f. AP 1026, Rev. 5 Corrective Maintenance and Machinery History

L. L. LAWYER
G. P. MILLER
J. P. O'HANLON

-2-

August 14, 1978
CGM 3546
Audit 78-11

- g. AP 1027, Rev. 4 Preventative Maintenance
- h. GP 1003, Rev. 4 Change Memo #3 Control of Design Change/Modifications

IV. Summary

An audit was conducted on April 24, 26, May 17, 22, and July 6, 1978 for the purpose of assessing the adequacy of and compliance with the Station Maintenance Program/Procedures for TMI 1 and 2. In performing the audit, the audit team reviewed a number of work requests, change modifications, and machinery history cards as well as the computer program that has been established to control preventive maintenance. The audit identified the following discrepancies which are documented on the attached findings and can be summarized as follows:

1. Discrepancies between the procedural requirements of AP 1027 and current practice.
2. Inadequate or unclear procedural requirements for reporting conditions per 10 CFR 21.
3. Inadequate utilization of machinery history cards and taggar records.
4. Unit 1 mechanical and electrical shops did not have the latest revision to AP 1026.
5. A number of inconsistencies in the procedural requirements for processing change modifications between AP 1021 and GP 1003.

V. Detailed Summary

The following areas were audited utilizing the prepared checklists that were based on the procedural requirements of AP 1021, 1026, and 1027.

1. Plant Modifications
2. Corrective Maintenance and Machinery History
3. Preventive Maintenance

Those items covered by AP 1016, Operations Surveillance Program were not audited during the course of this audit, because the auditors decided that this activity would more appropriately come under the heading of Normal Station Operations rather than Station Maintenance.

A. Unsatisfactory Areas

The audit identified the following discrepancies:

1. Preventive Maintenance

AP 1027 identifies how the preventive maintenance system

functions and provides directions for plant personnel in performing plant preventive maintenance. The preventive maintenance tasks for various components has been put on master lists which have been computerized and from these master lists maintenance schedules have been developed. The various computerized lists have been made part of AP 1027 and require certain information to be listed. It was noted during the audit that the computerized master lists, being presently used at TMI, do not in all cases, contain the same information as listed on the attachments to AP 1027. (See Finding Nos. 1 and 2)

- b. AP 1027 requires personnel who are performing preventive maintenance to identify conditions that are reportable per 10 CFR 21. The procedure, however, does not clearly define the mechanism to be used for reporting such adverse conditions. (See Finding Nos. 3 and 4)

2. Corrective Maintenance

AP 1026 provides directions to personnel in the performance of plant corrective maintenance and the methods to be used to document maintenance activities such as Machinery History Cards and Megger Cards.

- a. A review of the Machinery History Cards on file in the Unit 1 Electrical and Mechanical Maintenance shops determined that the person who made the entry is not indicated, nor does the card provide a space for identifying the data recorder. (See Finding No. 5)
- b. The review also noted that History Cards are not maintained for all plant components and that certain maintenance activities such as routine bearing replacement or pump repairs are not recorded unless problems are encountered. (See Finding No. 6)
- c. Megger checks on motors rated 480V and below are not being documented on the megger cards. (See Finding No. 7)

3. Document Control

The auditors noted that the Mechanical and Electrical Shop area files did not contain the latest revision of AP 1026, even though the copy they had was marked "controlled copy". (See Finding No. 9)

4. Procedural Inconsistencies

- a. AP 1021 referenced the wrong section of the TMI OQA plan as being applicable to Plant Modifications. (See Finding No. 10)
- b. There are a number of inconsistencies in the change modification forms that are used for processing change modifications between AP 1021 and GP 1003. (See Finding No. 10)

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August 14, 1978
GQM 3546
Audit 78-11

B. Satisfactory Areas

The following documents were reviewed and it appeared that they were being processed in accordance with the applicable procedural requirements.

1. Unit 1 Change Modifications 852, 903, 920, 1075, 1082, 979, 1026, 1029, 1060, 973, 1064, 1010, 996, 949, 976, 1077, 1085, 1079, 1068, 1067, and Unit 2 Change Modification 0001, 0013, 0014, 0020, 0022, 0023, 2-0080, and 2-0081.
2. Unit 1 Work Requests 23559, 23548, 23523, 23499, 23471, 23445, 23428, 23381, 23366, 23290, 23764, 23791, and Unit 2 Work Requests 4066, 3917, 4018, 4026, and 4027.
3. Megger Cards for MD - P - 1A and HH - P - 1C.
4. Unit 2 Loop Calibration Sheets for BS - PS - 3570, BS - PS - 3571, BS - PS - 3572, BS - PS-3573, SP 1A - LT1, SP 1B - LT1, SP 1A - LT4, SP 1A - LT5, SP 1B - LT4, SP 1B - LT5, and SP 3A - TT1.

VI. Conclusion

The auditors concluded that with the exception of the items identified in the attached findings, station maintenance and modifications are being performed in accordance with the requirements of the applicable procedures.

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