

Reference 19



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

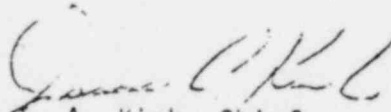
SEP 28 1978

Those on Attached List

COMPUTER LISTINGS OF LICENSEE EVENT REPORTS SORTED BY FACILITY

The enclosed computer listing provides information concerning licensee event reports entered into the file during the month of September.

If you desire additional information or special searches, please do not hesitate to contact us.


I. A. Kirk, Chief
Automated Systems Branch
Division of Technical Support
Office of Management and
Program Analysis

Enclosure:
As stated

8003110

222

SEP 26, 1978

LER MONTHLY OUTPUT SORTED BY FACILITY
 PROCESSED DURING SEPTEMBER FOR POWER REACTORS

PAGE 45

FACILITY/SYSTEM/COMPONENT/ COMPONENT SUBCODE/CAUSE CODE/ CAUSE SUBCODE/MANUFACTURER	DOCKET NO./ LER NO./ CONTROL NO.	EVENT DATE/ REPORT DATE/ REPORT TYPE	EVENT DESCRIPTION/ CAUSE DESCRIPTION
THREE MILE ISLAND-1 AIR COND, HEAT, COOL, VENT SYSTEM RELAYS OTHER COMPONENT FAILURE ELECTRICAL OTHER	05000289 78-019/03L-0 021954	060578 062278 30-DAY	PERFORMING SP 1303-5.1 REACTOR BLDG. COOLANT AND ISO SYS LOGIC CHANNEL COMPONENT TEST CONTROL FUSE OPENED AND RB-V-7 DID NOT OPERATE. REACTOR BLDG. COOLING SYS IS A CLOSED SYS INSIDE REACTOR BLDG. THUS NO THREAT TO HEALTH AND SAFETY OF PUBLIC EXISTED WHILE VALVE WAS OUT OF SERVICE. REPORTABLE PER T.S. 6.9.2.B.(2) AND REPRESENTS DEGRADED MODE UNDER T.S. 3.4.6. LER 77-14 REPORTED A SIMILAR EVENT.
THREE MILE ISLAND-1 REACTIVITY CONTROL SYSTEMS CONTROL ROD DRIVE MECHANISMS SUBCOMPONENT NOT APPLICABLE COMPONENT FAILURE ELECTRICAL DIAMOND POWER SPECIALTY CORP.	05000289 78-020/01T-0 021953	061478 062878 2-WEEK	VALVE FAILED DUE TO BLOWN FUSE IN CONTROL CIRCUIT. VOLTAGE SPIKE SUPPRESSION (THYRECTOR) ACROSS THE COIL OF AN AUXILIARY RELAY FAILED CAUSING SHORT CIRCUIT. THYRECTOR REPLACED AND VALVE FUNCTIONED AS DESIGNED. VALVE RETURNED TO FULL OPERABILITY WITHIN 24 HOURS.
THREE MILE ISLAND-1 EMERG GENERATOR SYS + CONTROLS VALVES OTHER PERSONNEL ERROR LICENSED & SENIOR OPERATORS ITEM NOT APPLICABLE	05000289 78-022/03L-0 022054	072378 081178 30-DAY	SEVEN OF NINE CONTROL RODS IN GROUP 3 INADVERTANTLY DROPPED INTO CORE RESULTING IN OPERATION WITH MORE THAN ONE INOPERABLE ROD PER T.S. 4.7.1.2. VIOLATION OF T.S. 3.5.2.2.A. AND ROD INDEX LIMITS OF T.S. 3.5.2.5.E. DURING FOLLOWING TRANSIENT QUADRANT POWER TILT LIMIT OF T.S. 3.5.2.4.A WAS EXCEEDED BUT RETURNED TO ACCEPTABLE VALUE IN FOUR HOURS. POWER REDUCED TO 40% IMMEDIATELY AND CONTROL ROD ASYMMETRY CLEARED IN ONE HOUR WITH SHUTDOWN MARGIN ABOVE 1% DELTA K/K. DROPPED RODS CAUSED BY SHORTED DIODE IN DC HOLD SECONDARY POWER SUPPLY. SHORTED DIODE AND BLOWN FUSES CAUSED LOW VOLTAGE FROM SECONDARY SUPPLY. WHEN TRIP BREAKERS FOR MAIN SUPPLY TESTED DURING RPS SURVEILLANCE, RODS DROPPED BECAUSE OF LOW VOLTAGE. FUSES AND DIODE REPLACED AND OUTPUT WAVE FORMS CHECKED.
THREE MILE ISLAND-1 REACTOR VES. + APPURTENANCES VESSELS, PRESSURE REACTOR VESSEL DESIGN/FABRICATION ERROR MANUFACTURING MADCOCK & WILCOX COMPANY	05000289 78-024/01T-0 022053	080778 082178 2-WEEK	DISCOVERED AT 1452 A EMERGENCY DIESEL GENERATOR AIR VALVE HAD BEEN TAGGED SHUT AT 1115 DURING I&C SYS MAINTENANCE RENDERING A DIESEL INOPERABLE. CONTRARY TO TS 3.7.2.C, REDUNDANT DIESEL WAS NOT IMMEDIATELY TESTED. REPORTABLE PER TS 6.9.2.B.(3). B DIESEL WAS SUCCESSFULLY TESTED. A DIESEL WAS RETURNED TO SERVICE UPON COMPLETION OF ITS REQUIRED SURVEILLANCE. NO THREAT TO HEALTH AND SAFETY OF THE PUBLIC.
			CAUSE FOR TAGGING OUT A DIESEL WITHOUT TESTING B DIESEL WAS PERSONNEL ERROR. ALL PERSONNEL HAVE BEEN INFORMED OF THEIR IMPROPER ACTIONS. ALL OPERATIONS DEPARTMENT PERSONNEL HAVE BEEN REDRIEFED ON IMPORTANCE OF PROPER TESTING OF REDUNDANT ES SYSTEMS.
			NET-ED RECEIVED NOTIFICATION FROM B&W THAT WELD FILLER WIRE ATYPICAL OF WIRE SPECIFIED BY B&W MAY HAVE BEEN USED IN CONSTRUCTION OF THE TMI-1 REACTOR VESSEL. REPORTABLE PER T.S. 6.9.2.A.(9). THE STRUCTURAL INTEGRITY OF THE VESSEL IS NOT COMPROMISED AND NO THREAT TO PUBLIC HEALTH AND SAFETY IS INVOLVED.
			ATYPICAL WELD WIRE WAS UNKNOWINGLY MIXED BY THE SUPPLIER IN A SHIPMENT OF WIRE TO B&W. B&W DISCOVERED THIS CONDITION DURING CHEMICAL ANALYSIS OF ARCHIVE WELDMENTS. WHILE A REVISED TECH SPEC IS BEING PREPARED, PRELIMINARY INFORMATION SUPPLIED BY B&W WILL BE USED TO GOVERN P-T HEATUP & COOLDOWN.

SEP 26, 1978

LER MONTHLY OUTPUT SORTED BY FACILITY
 PROCESSED DURING SEPTEMBER FOR POWER REACTORS

PAGE 46

FACILITY/SYSTEM/COMPONENT/
 COMPONENT SUBCODE/CAUSE CODE/
 CAUSE SUBCODE/MAUFACTURER

DOCKET NO./ EVENT DATE/
 LER NO./ REPORT DATE/
 CONTROL NO. REPORT TYPE

EVENT DESCRIPTION/
 CAUSE DESCRIPTION

THREE MILE ISLAND-2
 AC ONSITE POWER SYS + CONTROLS
 INSTRUMENTATION + CONTROLS
 CONTROLLER
 COMPONENT FAILURE
 ELECTRONIC
 SOLID STATE CONTROLS, INC.

05000320 032978
 78-021/03L-0 050178
 021952 30-DAY

IN MODE 2 VITAL BUS 2-IV BECAME DE-ENERGIZED REQUIRING OPERATION IN ACTION STATEMENT TO T.S. 3.8.2.1, 3.3.2.1 (TABLE 3.3-3 ITEMS 3A AND 3B), 3.3.3.5, AND 3.3.3.6. NO ADVERSE SAFETY CONCERNS, REACTOR TRIPPED, ECCS FUNCTIONED PER DESIGN, AND VITAL BUS WAS RE-ENERGIZED WITHIN TIME FRAME OF APPLICABLE ACTION STATEMENTS RETURNING AFFECTED EQUIPMENT TO OPERABLE STATUS.

VITAL BUS INVERTER FAILED TO FUNCTION PROPERLY IN FREE RUNNING MODE. WHEN ALTERNATE (AC) SOURCE TRIPPED DURING SFAS TESTING RESULTING IN BLOWN FUSE ON DC INPUT. ALTERNATE SOURCE AC BREAKER WAS CLOSED, ENERGIZING VITAL BUS AND FAULTY INVERTER CONTROL MODULE AND FUSE WERE REPLACED.

THREE MILE ISLAND-2
 FIRE PROTECTION SYS + CONT
 COMPONENT CODE NOT APPLICABLE
 SUBCOMPONENT NOT APPLICABLE
 DESIGN/FABRICATION ERROR
 CONSTRUCTION/INSTALLATION
 ITEM NOT APPLICABLE

05000320 060978
 78-043/03L-0 071078
 021980 30-DAY

FLOOR FIRE BARRIER PENETRATION SEAL BETWEEN RELAY ROOM AND CONTROL ROOM DEFICIENT VIOLATING T.S. 3.7.11. NO CONDITION EXISTED WHICH REQUIRED THE OPERABILITY OF THE FIRE SEAL. NO THREAT TO HEALTH AND SAFETY OF PUBLIC.

IMPROPERLY CURED FOAM MATERIAL WAS USED TO MAKE THE SEAL. CONTINUOUS FIRE WATCH WAS POSTED. DEFICIENT BARRIER REPAIRED AND RETURNED TO FUNCTIONAL STATUS.

THREE MILE ISLAND-2
 EMERG GENERATOR SYS + CONTROLS
 CIRCUIT CLOSERS/INTERRUPTERS
 CIRCUIT BREAKER
 DEFECTIVE PROCEDURES
 NOT APPLICABLE
 ITEM NOT APPLICABLE

05000320 063078
 78-044/03L-0 072478
 021936 30-DAY

IN MODE 6, 6/29/78, AT 1430, A DIESEL GENERATOR PLACED IN EMERGENCY STANDBY 6/30/78 AT 1600, DISCOVERED BREAKER G2-1E2 NOT CLOSED WHEN A D.O. PLACED IN EMERGENCY STANDBY CONSTITUTING VIOLATION OF T.S. 3.8.1.2. UNIT IN MODE 6, AND NO CORE ALTERATIONS OR CHANGES IN REACTIVITY WERE MADE. THIS EVENT DID NOT EFFECT HEALTH AND SAFETY OF PUBLIC.

PROCEDURE INADEQUACY. PROCEDURE REVISED TO ENSURE G2-1E2 CLOSED WHEN A DIESEL GENERATOR IS PLACED IN EMERGENCY STANDBY. APPROPRIATE PERSONNEL WILL BE INSTRUCTED ON PROCEDURE CHANGE.

THREE MILE ISLAND-2
 FIRE PROTECTION SYS + CONT
 COMPONENT CODE NOT APPLICABLE
 SUBCOMPONENT NOT APPLICABLE
 DESIGN/FABRICATION ERROR
 CONSTRUCTION/INSTALLATION
 ITEM NOT APPLICABLE

05000320 072478
 78-048/03L-0 082278
 022052 30-DAY

DURING A FIRE BARRIER PENETRATION SEAL VERIFICATION INSPECTION, A WALL PENETRATION WAS FOUND LACKING A FIRE BARRIER SEAL. THIS 12" X 6" PENETRATION IS LOCATED IN THE SOUTH WALL OF THE SWITCHGEAR ROOM IN THE EMERGENCY DIESEL GENERATOR BUILDING. SINCE THIS FIRE BARRIER WAS NON-FUNCTIONAL, IT CONSTITUTES A VIOLATION OF TECH SPEC 3.7.11.

LACK OF A FIRE BARRIER SEAL IN THIS PENETRATION WAS DUE TO AN OVERSIGHT ON THE PART OF THE CONTRACTOR. A CONTINUOUS FIRE WATCH WAS ESTABLISHED IN ACCORDANCE WITH TECH SPEC 3.7.11 PRIOR TO INSTALLING THE SEAL AND SUBSEQUENTLY A FIRE BARRIER SEAL WAS INSTALLED USING AN APPROVED MATERIAL.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION
631 PARK AV
KING OF PRUSSIA, PENNSYLVANIA 19380

Reference 20

COPY

APR 24 1978

Docket No. 50-320

Metropolitan Edison Company
ATTN: Mr. J. G. Herbein
Vice President
P. O. Box 542
Reading, Pennsylvania 19603

Gentlemen:

Subject: Inspection 50-320/78-15

This refers to the inspection conducted by Mr. D. Haverkamp of this office on March 30-31 and April 5-6, 1978, at the Three Mile Island Nuclear Station, Unit 2, Middletown, Pennsylvania, of activities authorized by NRC License No. DPR-73 and to the discussions of our findings held by Mr. S. Folsom of this office with Mr. S. Levin of your staff on March 31, 1978, by Mr. W. Coleman of this office with Mr. J. Seelinger of your staff on March 31, 1978, and by Mr. Haverkamp with Mr. Seelinger at the conclusion of the inspection.

Areas examined during this inspection are described in the Office of Inspection and Enforcement Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

Within the scope of this inspection, no items of noncompliance were observed.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold such information from public disclosure. Any such application must be accompanied by an affidavit executed by the owner of the information, which identifies the document or part sought to be withheld, and which contains a statement of reasons which addresses with specificity the items which will be considered by the Commission as listed in subparagraph (b)(4) of Section

Page of

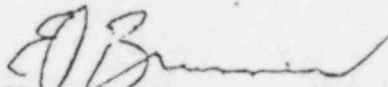
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2.790. The information sought to be withheld shall be incorporated as far as possible into a separate part of the affidavit. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

No reply to this letter is required; however, if you should have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,


Elton J. Brunner, Chief
Reactor Operations and Nuclear
Support Branch

Enclosure: Office of Inspection and Enforcement Inspection Report
Number 50-320/78-15

cc w/encl:

R. L. Wayne, QA Manager, Design & Construction
T. Broughton, Safety & Licensing Manager
R. W. Heward, Jr., Project Manager
R. C. Arnold, Vice President, Generation
L. L. Lawyer, Manager, Generation Operations - Nuclear
G. P. Miller, Superintendent
J. L. Seelinger, Unit 2 Superintendent
Gerald Charnoff, Esquire
I. R. Finfrock, Jr.
Miss Mary V. Southard, Chairman, Citizens for a Safe Environment
(Without Report)

bcc w/encl:

IE Mail & Files (For Appropriate Distribution)
Central Files
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
Technical Information Center (TIC)
REG:I Reading Room
Region Directors (III, IV)(Report Only)
Commonwealth of Pennsylvania
Miss Mary V. Southard, Chairman, Citizens for a
Safe Environment

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

NOTICE
25 APR 1978
AS OF
REGION I HAS NOT OBTAINED PROPRIETARY
CLEARANCE IN ACCORDANCE WITH 10 CFR 2790

Report No. 50-320/78-15

Docket No. 50-320

License No. DPR-73

Priority --

Category B-2

Licensee: Metropolitan Edison Company

P. O. Box 542

Reading, Pennsylvania 19603

Facility Name: Three Mile Island Nuclear Station, Unit 2

Inspection at: Middletown, Pennsylvania

Inspection conducted: March 30-31 and April 5-6, 1978

Inspectors:

D. R. Hayerkamp
D. R. Hayerkamp, Reactor Inspector (April 5-6)

4/20/78
date signed

W. E. Coleman FOR
W. E. Coleman, Reactor Inspector (March 31)

4/20/78
date signed

S. A. Folsom
S. A. Folsom, Reactor Inspector (March 30-31)

4/20/78
date signed

Approved by:

D. M. Sternberg
D. M. Sternberg, Acting Chief, Reactor
Projects, Section No. 1, RO&NS Branch

4/20/78
date signed

Inspection Summary:

Inspection on March 30-31 and April 5-6, 1978 (Report No. 50-320/78-15)

Areas Inspected: Routine, unannounced inspection of licensee's action on previous inspection findings; license conditions for Mode I Operation; and licensee actions concerning an ECCS actuation and injection into the RCS on March 29, 1978. The inspection involved 38 inspector-hours onsite by three NRC inspectors.

Results: No items of noncompliance were identified.

DUPLICATE DOCUMENT

Entire document previously
entered into system under:

ANO 7904250508

No. of pages: 7pp.

Page of

7904250508

7pp.

DETAILS

1. Persons Contacted

Metropolitan Edison Company

- Mr. P. Lydon, Shift Foreman
- *Mr. J. Floyd, Supervisor of Operations
- */**Mr. J. Seelinger, Unit Superintendent - Technical Support

General Public Utilities Service Corporation

- *Mr. T. Block, Lead Site QA Auditor
- Mr. G. Derk, Field Supervisor - QC
- Mr. J. Godleski, QA Engineer
- *Mr. S. Levin, Site Project Engineer
- Mr. I. Porter, Lead Instrument Engineer
- **Mr. R. Toole, Test Superintendent
- Mr. J. Ulrich, Shift Test Engineer

Catalytic, Inc.

- Mr. J. Webb, Piping Supervisor

Pittsburgh Testing Laboratory

- Mr. N. Ritze, QC Inspector

The inspectors also talked with several other employees of the licensee and the constructor.

* denotes those present at the exit interviews on March 31, 1978.

** denotes those present at the final exit interview on April 6, 1978.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item 320/77-32-03: Diesel Generator Starting. The diesel generator air starting system modification has been completed, and the diesels have been started 10 times without recharging from the air compressors. (Additional information concerning this item is contained in Paragraph 3.b.)

(Closed) Inspector Followup Item 320/77-42-03: Approval of TP 600/29. The inspector determined that the 1/8 inch and 7/8 inch shims for RC-P-IA Restraint No. 10 had been interchanged in accordance with Catalytic Work Authorization Notice No. 546. QC Inspection Report No. CM-557 indicated satisfactory disposition of this item. TP 600/29 was subsequently final approved for Mode I operation with no outstanding test deficiencies/exceptions.

(Closed) Inspector Followup Item 320/78-11-01: Voltage Level Optimization. A bus voltage measurement test program has been completed and existing transformer tap settings have been verified to be correct. (Additional information concerning this item is contained in Paragraph 3.a)

(Closed) Inspector Followup Item 320/78-11-02: ICCW Heat Exchangers Modification. Coolers IC-C-IA and IC-C-IB have been modified so that their design conforms with seismic Category I requirements. (Additional information concerning this item is contained in Paragraph 3.c.)

(Closed) Unresolved Item 320/78-12-02: Structural Support Anchorage for Core Flood Tank CF-T-IB. The inspector reviewed Engineering Deviation Report (EDR) No. 4704 for modification of the subject anchor plate and observed the work in progress. The inspector also reviewed Burns & Roe, Inc. letter to GPU, serial 4178-GP, which stated that Burns & Roe has verified that:

- (1) The plate stress after modification per EDR No. 4704 is within the allowable; and
- (2) Cut-off of wall reinforcement will not affect the structural integrity of the shield wall.

The inspector subsequently reviewed QC Inspection Reports CS-131 and CS-132 associated with the completed EDR No. 4704, and had no further questions concerning this item.

(Closed) Inspector Followup Item 320/78-13-02: Housekeeping Conditions. The inspector toured accessible plant areas on April 6, 1978, and noted that general cleanup activities were continuing, and that housekeeping conditions in the Control Building and Auxiliary Building had improved since the last inspection. The inspector determined that cleanliness and fire protection controls were adequate for entering Mode I.

3. Review of Facility Operating License DPR-73 Conditions for Mode I Operation

The items discussed below were reviewed for resolution of outstanding conditions of the operating license.

a. Voltage Level Optimization of Safety-Related Buses

- References:
- (1) Burns & Roe, Inc. letter to GPU, serial 4173-GP, dated March 29, 1978;
 - (2) MEC letter to NRR, serial GQL 0569, dated March 30, 1978.

A bus voltage measurement test program was conducted on March 28, 1973, as described in reference (1). Voltage and current measurements were taken on various safety-related buses while observing operating loads on these buses. These measurements were converted to arrive at the actual KVA load for each bus. A computer program was prepared which recreated the plant conditions during the test, and a computer printout was obtained which listed the expected bus voltage values for the same test program conditions. Field data was then compared with the analytical results, and the values were within 2.1% agreement, thus establishing a level of confidence in the ability of the analytical program to predict bus voltage behavior during different plant conditions. Analytical values of full load and no load bus voltages were obtained, and it was determined that in order to optimize voltages at various buses, transformer taps of all Unit Substation buses must be set at -2.5%, as currently exists. Reference (2) forwarded a report which provided the documentation and confirmation of correct voltage tap settings. The inspector reviewed the test methodology and results and referenced reports and had no further questions concerning this license condition.

b. Diesel Generator Air Starting System Modification

During previous testing of the diesel generators, the compressed air starting system had failed to maintain the required minimum air pressure. Burns & Roe Engineering Change Memo (ECM) No. S-5866, Rev. 1, provided for modification of the system to correct this test deficiency. The inspector reviewed the ECM documentation, observed work in progress on the required modifications, and subsequently reviewed the records of satisfactory seismic qualification testing of the added air starting system regulating valves. Additionally, the inspector determined

that each diesel generator was demonstrated capable of providing 10 starts without recharging from the air compressors, as documented by the final approved TP 401/1. Findings were acceptable regarding this license condition.

c. ICCH Heat Exchangers Modification

Modification of the supports for the Intermediate Closed Cooling Water Heat Exchangers, IC-C-1A and IC-C-1B, was necessary so that their design conforms with seismic Category I requirements. The inspector reviewed the applicable work authorization notice, nuclear safety review, and QC inspection report associated with the following Engineering Change Memos:

- (1) ECM No. S-5837 for the modifications required to the supports for IC-C-1A.
- (2) ECM's No. S-5832 and 5879 for the inspection and modification of supports for IC-C-1B.
- (3) ECM No. 5850 for removal of grout above the level of the sliding base plate for IC-C-1B.

Additionally, the inspector reviewed Burns & Roe, Inc. letter to GPU, serial 4171-GP, which stated that a seismic analysis was completed to qualify coolers IC-C-1A and IC-C-1B to seismic I loading conditions, and that upon completion of the above ECM's, the coolers and attachments were considered to be Seismic I qualified.

The inspector determined that modifications to the cooler supports had been properly completed in accordance with ECM's S-5832, S-5837, 5850 and 5879, and had no further questions concerning this license condition.

4. Emergency Safeguards Actuation

The inspector reviewed the emergency safeguards (ES) actuation which occurred on March 29, 1978. The event occurred during the performance of a monthly ES surveillance test. During the surveillance test, the circuit breaker for the alternate power supply to the 2-IV Bus was tripped (in accordance with the procedure) and a fuse blew in the inverter which is the primary power supply to the 2-IV Bus. The loss of power caused the reactor to trip and also opened the pressurizer electrozatic relief valve. The relief valve caused

reactor coolant system pressure to decrease to the ES actuation pressure and water was injected into the reactor coolant system. The event terminated when the fuse was replaced in the inverter. As a result of the ES actuation, high concentrations of Sodium (Na^+) and of Chloride (Cl^-) were injected into the reactor coolant system. The licensee commenced a plant cooldown when the measured RCS chloride concentration was discovered to be 2.55 ppm on March 30, 1978.

Subsequent to the ES actuation, the RCS was determined to have had maximum assumed concentrations of 4.0 ppm chloride, 10 ppb oxygen, and 430 ppm sodium. B&W letter to GPU/MEC, serial SOM-II-127, dated April 4, 1978, stated that the contamination of the RCS will have no deleterious effect upon the structural integrity of the RCS or associated auxiliary systems and equipment. Therefore, the RCS remains acceptable for continued operation.

The RCS chemistry was returned to within specification on April 4, 1978, and a plant heatup was commenced to resume low power physics testing.

During discussions with licensee representatives, the inspector determined that two modifications are currently being considered to prevent recurrence of this event. A circuitry change is planned to keep the alternate power supply connected to each vital bus in the event of ES channel actuation, and lighted control board position indications will be provided for the electromatic relief valve.

The inspector reviewed the event to verify that the ES system performed as designed, that the licensee was conforming to Technical Specification requirements, that the licensee reviewed the incident for generic implications, that the licensee reviewed the event for reportability in accordance with Technical Specifications and Reg. Guide 1.16, and that the licensee's plans for restoration of reactor coolant chemistry were consistent with Technical Specifications and vendor requirements. A special report of the ES actuation will be submitted by the licensee pursuant to T.S. 3.5.2. The inspector had no further questions concerning this item at this time. Findings were acceptable.

5, Exit Interview

The inspector met with licensee and contractor representatives (denoted in Paragraph 1) on March 31, and April 6, 1978, to discuss the findings of the inspection.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION Reference 21
621 PARK AV
KING OF PRUSSIA, PENN.

KVS -9

March 31, 1978

Docket No. 50-320

MEMORANDUM FOR: K. V. Seyfrit, A/D Technical Programs, ROI, IE:HQ
THRU: ^(N) 3131 E. C. McCabe, Jr., Acting Chief, RO&NS Branch, RI
FROM: D. M. Sternberg, Acting Chief, RP Section No. 1,
RO&NS Branch, RI
SUBJECT: THREE MILE ISLAND 2 - PRESSURIZER RELIEF VALVE CONTROL
SYSTEM (AITS # F14674H2)

1. PN-KRC:I-40 dated March 30, 1978, reported a reactor trip and blow-down at Three Mile Island 2. The cause of the trip was the loss of a vital bus caused by an inverter failure. The cause of the inverter failure is under investigation by the licensee. The blowdown, however, was caused by the pressurizer Electromatic relief valve opening upon a loss of electrical power to its control bistable.
2. This relief valve does not appear to be a safety-related component and it opens on a 1 of 1 logic-power arrangement producing a loss of coolant condition.
3. It is requested that the adequacy of the design approach (i.e., valve failing open on loss of control power) be reviewed on an expedited basis for B&W facilities in general and Three Mile Island in particular.

Daniel M. Sternberg
Daniel M. Sternberg, Acting Chief
Reactor Projects Section No. 1

CONTACT: D. M. Sternberg, RI
(488-1256)

Dupe of

8042118805

LP



UNITED STATES
NUCLEAR REGULATORY C Reference 22
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

1-1 COPY

Docket No. 50-320

MAY 31 1978

Metropolitan Edison Company
ATTN: Mr. J. G. Herbein
Vice President
P. O. Box 542
Reading, Pennsylvania 19603

Gentlemen:

Subject: Inspection 50-320/78-17

This refers to the inspection conducted by Mr. D. Haverkamp of this office on May 3-5 and 8-10, 1978, at the Three Mile Island Nuclear Station, Unit 2, Middletown, Pennsylvania, of activities authorized by NRC License No. DPR-73 and to the discussions of our findings held by Mr. Haverkamp with Mr. J. Seelinger of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the Office of Inspection and Enforcement Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, measurements made by the inspector, and observations by the inspector.

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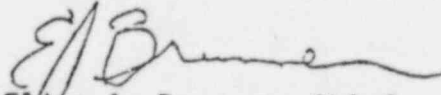
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*Report
790430410
2PP*

MAY 31 1978

No reply to this letter is required; however, if you should have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,



Eldon J. Brunner, Chief
Reactor Operations and Nuclear
Support Branch

Enclosure: Office of Inspection and Enforcement Inspection Report
Number 50-320/78-17

cc w/encl:

R. L. Wayne, QA Manager, Design & Construction
T. Broughton, Safety & Licensing Manager
R. W. Heward, Jr., Project Manager
R. C. Arnold, Vice President, Generation
L. L. Lawyer, Manager, Generation Operations - Nuclear
G. P. Miller, Superintendent
J. L. Seelinger, Unit 2 Superintendent
Gerald Charnoff, Esquire
I. R. Finfrock, Jr.
Miss Mary V. Southard, Chairman, Citizens for a Safe Environment
(Without Report)

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Region Directors (III, IV)(Report Only)
Commonwealth of Pennsylvania
Miss Mary V. Southard, Chairman, Citizens for a
Safe Environment

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

NOTICE
31 MAY 1978
REGION I HAS NOT OBTAINED NECESSARY
CLEARANCE IN ACCORDANCE WITH 10 CFR 87.10

Report No. 50-320/78-17

Docket No. 50-320

License No. DPR-73

Priority --

Category B-2

Licensee: Metropolitan Edison Company

P. O. Box 542

Reading, Pennsylvania 19603

Facility Name: Three Mile Island Nuclear Station, Unit 2

Inspection at: Middletown, Pennsylvania

Inspection conducted: May 3-5 and 8-10, 1978

Inspectors: [Signature]
D. R. Haverkamp, Reactor Inspector

5/26/78
date signed

date signed

date signed

Approved by: [Signature]
D. M. Sternberg, Acting Chief, Reactor
Projects Section No. 1, RO&NS Branch

5/26/78
date signed

Inspection Summary:

Inspection on May 3-5 and 8-10, 1978 (Report No. 50-320/78-17)

Areas Inspected: Routine, unannounced inspection of plant operations including shift logs and records and facility tour; licensee followup actions concerning selected licensee events, IE Circulars, and previous inspection findings; reactor coolant system decontamination; emergency safeguards actuation on April 23, 1978; unit auxiliary transformer design deficiency; and postulated small break LOCA. The inspection commenced during a backshift and involved 42.5 inspector-hours onsite by one NRC inspector.

Results: No items of noncompliance were identified.

DUPLICATE DOCUMENT

Entire document previously entered into system under:

ANO 7904300432

No. of pages: 16 pp.

Dupe of

7904300432

16 pp.

DETAILS

1. Persons Contacted

Metropolitan Edison Company

Mr. C. Adams, Shift Foreman
Mr. M. Beers, Shift Supervisor
Mr. R. Benzel, Unit 2 Lead Electrical Engineer
*Mr. M. Bezilla, PORC Secretary
Mr. J. Brummer, Unit 2 Lead Instrumentation and Controls Engineer
Mr. W. Conaway, Shift Foreman
Mr. R. Dubiel, Supervisor of Radiation Protection and Chemistry
*Mr. J. Floyd, Supervisor of Operations
Mr. C. Guthrie, Shift Foreman
Mr. J. Hilbish, Station Lead Nuclear Engineer
Mr. K. Hoyt, Shift Foreman
Mr. R. Hutchinson, Shift Foreman
Mr. P. Lydon, Shift Foreman
Mr. B. Marshall, Operations Engineer
Mr. G. Miller, Station Superintendent
Mr. T. Mulleavy, Radiation Protection Supervisor
*Mr. J. Seelinger, Unit 2 Superintendent - Technical Support

General Public Utilities

Mr. C. Gatto, Lead Mechanical Engineer
Mr. R. Toole, Test Superintendent

The inspector also talked with and interviewed several other licensee employees during the inspection. They included reactor operators and engineering and office personnel.

* denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance 320/78-09-02: Audible Count Rate. The licensee's corrective measures have been completed as described in MEC letter to NRC Region I serial GQL 0458, dated March 21, 1978. Procedure 251-4.01, "Core Assembly", was revised by PCR 2-78-491, which added a prerequisite to ensure a specific operator inside containment is responsible for continuously monitoring audible count rate.

(Closed) Noncompliance 320/78-10-01: Drawing and Drawing Change Control. The licensee's corrective measures have been completed or initiated as described in MEC letter to NRC Region I serial GQL 0707, dated April 18, 1978. The comprehensive review and audit of Unit 2 drawings is being tracked by PORC Action Item (PAI) 2-78-15.

(Closed) Unresolved Item 320/78-10-02: Revision of Surveillance Procedure 2311-F4. Revision I to SP 2311-F4 was issued March 21, 1978, which incorporated values of moderator temperature coefficient consistent with Technical Specification LCO values.

(Closed) Noncompliance 320/78-10-06: Torque Wrench and Torque Wrench Tester Calibration. The licensee's corrective measures have been completed as described in MEC letter to NRC Region I serial GQL 0707, dated April 18, 1976. Revision I to PM Procedure M-48 was issued April 6, 1978, which incorporates criteria for determining that calibration of torque wrenches and torque wrench testers will be satisfactorily accomplished. Additionally, a QA evaluation was completed, as described in NRC Region I letter to MEC, dated May 1, 1978. The evaluation of torque wrench tested data and torque wrench data indicated that the out of tolerance condition of the equipment related only to its use for left hand threaded fasteners. Since there are no such fasteners used at the facility, no further action was necessary.

3. Review of Plant Operations

a. Shift Logs and Operating Records

The inspector reviewed the following logs and records:

- Shift Foreman Log, Control Room Log Book, Control Room Operator's Log Sheets, Primary Auxiliary Operator's Log-Tour Readings, Primary Auxiliary Operator's Log-Liquid Waste Disposal Panels, Secondary Auxiliary Operator's Log Sheets, and Auxiliary Operator Log Sheets-Out-Building Tour; dated February 8 - April 30, 1978.
- Shift and Daily Checks; dated February 8 - April 30, 1978.
- Jumper, Lifted Lead, and Mechanical Modifications Log (active and cleared); entries made during February 8 - May, 5, 1978.

- Equipment Lockout Tag Log (active and cleared); entries made during February 8 - May 5, 1978.
- Do Not Operate Tag Log; entries made during February 8 - May 5, 1978.
- Transient Cycle Log Book; entries made during February 8 - May 5, 1978.
- Unit 2 Superintendent's Operating Memos Nos. 1 through 4.
- Unit 2 Standing Order No. 1, dated March 23, 1976.
- Unit 2 Operations Department Memos 2-78-1 through 2-78-8.

The logs and records were reviewed to verify the following items.

- Log keeping practices and log book reviews are conducted in accordance with established administrative controls.
- Log entries involving abnormal conditions are sufficiently detailed.
- Operating orders do not conflict with Technical Specifications (TSs).
- Jumper log and tagging log entries do not conflict with TSs.
- Jumper/lifted lead/mechanical modification and tagging operations are conducted in conformance with established administrative controls.
- Problem identification reports confirm compliance with TS reporting and LCO requirements.

Acceptance criteria for the above review included inspector judgement and requirements of applicable Technical Specifications and the following procedures.

- Station Administrative Procedure (SAP) 1002, "Rules for the Protection of Employees Working on Electrical and Mechanical Apparatus," Revision 12.

- SAP 1010, "Technical Specification Surveillance Program," Revision 12, TCN 2-78-328.
- SAP 1011, "Controlled Key Locker Control," Revision 15.
- SAP 1012, "Shift Relief and Log Entries," Revision 8.
- SAP 1013, "Bypass of Safety Functions and Jumper Control," Revision 7.
- SAP 1016, "Operations Surveillance Program," Revision 12.
- SAP 1033, "Operating Memos and Standing Orders," Original.
- SAP 1037, "Control of Caution Tags," Original.

The inspector's findings regarding shift logs and operating records were acceptable, except as noted below.

- Shift Foreman Log and Control Room Log Book entries were explicit and complete.
- Some minor discrepancies were noted regarding the administration of controls for lifted leads and jumpers, including manner of log sheet completion and accountability of active, inactive and missing tags. These items were discussed with licensee representatives and corrected or scheduled for correction prior to completion of the inspection. The inspector determined that active lifted leads and jumpers were properly installed and had no further questions concerning this item.
- The Transient Cycle Log Book did not include entries for all recent heatups, cooldowns, reactor trips and safety injections. Licensee representatives stated that the log book would be reviewed and entries would be included for appropriate transients. The inspector had no further questions concerning this item.
- SAP 1037, issued March 13, 1978, implements use of yellow cardboard type CAUTION tags as an information tag only. The tag is to be attached to a component, control switch or other device to indicate an off normal condition or to caution personnel to a specific condition which must

be satisfied prior to using the component or device. Additionally, SAP 1037 provides for use of a red bakelite DO-NOT-OPERATE tag in place of a CAUTION tag, particularly when used in environments where the CAUTION tags may easily deteriorate under extended use. The administrative controls provided by SAP 1037 have not yet been fully implemented, including operator training regarding use of CAUTION tags and replacement of existing white information stickers and DO-NOT-OPERATE tags with CAUTION tags where applicable. Licensee representatives stated that the full implementation of SAP 1037 would be expedited. This item is unresolved (320/78-17-01) pending licensee implementation of SAP 1037.

b. Plant Tour

Upon arrival at the site at 8:30 p.m. on May 3, 1978, the inspector proceeded directly to the Control Room to observe plant operations during off normal hours. Control Room manning and Control Board monitoring instrumentation and equipment controls were observed for conformance with applicable Technical Specification requirements. The inspector then conducted a tour of the Unit 2 Reactor Building to observe activities in progress, radiation controls established at the personnel access control point, general cleanliness conditions and potential fire hazards. The tour was completed at 10:15 p.m.

At various times during May 4-5 and 8-10, 1978, the inspector conducted tours of the following accessible plant areas.

- Auxiliary Building
- Turbine Building
- Fuel Handling Building
- Control Room
- Switchgear Rooms
- Inverter and Battery Rooms
- Diesel Rooms
- Make-up Pump Rooms
- Building Spray Pump and Decay Heat Pump Vaults

The following observations/discussions/determinations were made.

- Control Room and local monitoring instrumentation for various components and parameters was observed, including reactor coolant flow, pressure and temperature, pressurizer pressure and temperature, and control rod positions.
- Radiation controls established by the licensee, including the posting of radiation areas, the condition of step-off pads and the disposal of protective clothing, were observed. Radiation work permits used for entry to radiation and controlled areas were reviewed. Actual radiation level measurements were taken and compared with posted values throughout the plant.
- Plant housekeeping, including general cleanliness conditions and storage of materials and components to prevent safety and fire hazards, were observed.
- Systems and equipment in all areas toured were observed for the existence of fluid leaks and abnormal piping vibrations.
- Selected DHR, BS, MS, and FW system piping snubbers/restraints were observed for proper fluid level and condition/proper hanger settings.
- The indicated positions of electrical power supply breakers and selected RBS, RBECR, NSRP, DHR, DH, and DHCC control board equipment start switches and remote-operated valves and the actual positions of DH, BS, DF, CO, and MU manual-operated valves were observed.
- Selected equipment lockout tags were observed for proper posting and tagged equipment was observed for proper positioning. The items observed included tags and equipment associated with clearances 2095, 2226 and 2360.
- Selected jumper and lifted lead markers were observed for proper identification and the effected wiring changes were observed for proper completion. The items observed included controls associated with the lifted leads 8 and 9 and jumpers 4 and 5.

- The Control Board was observed for annunciators that normally should not be lighted during the existing plant conditions. The reasons for the annunciators were discussed with control room operators.
- The licensee's policy and practice regarding plant tours was reviewed.
- Control Room manning was observed on several occasions during the inspection.

Acceptance criteria for the above items included inspector judgement and requirements of 10 CFR 50.54(k), Regulatory Guide 1.114, applicable Technical Specifications and the following procedures.

- SAP 1002, "Rules for the Protection of Employees Working on Electrical and Mechanical Apparatus," Revision 12.
- SAP 1003, "Radiation Protection Manual," Revision 12.
- SAP 1008, "Good Housekeeping," Revision 3.
- SAP 1009, "Station Organization and Chain of Command," Revision 3.
- SAP 1013, "Bypass of Safety Functions and Jumper Control," Revision 7.
- SAP 1028, "Operator at the Controls," Original.
- SAP 1037, "Control of Caution Tags," Original.

The inspector's findings regarding the plant tours were acceptable.

4. In-Office Review of Licensee Event Reports (LERs)

The LERs listed below were reviewed in Region I office promptly following receipt to verify that details of the event were clearly reported including the accuracy of the description of cause and the adequacy of corrective action. The LERs were also reviewed to determine whether further information was required from the licensee, whether generic implications were involved, whether the event should be classified as an Abnormal Occurrence, and whether the event warranted onsite followup.

The following LERs were reviewed.

- *-- LER 78-01/3L, dated February 28, 1978; Reactor Building purge supply fans and associated dampers were inoperable due to incomplete construction.
- LER 78-02/3L, dated February 28, 1978; Manufacturer's defect noted in plate #6 of seismic instrumentation triaxial spectrum recorder #714.
- *-- LER 78-03/IT, dated February 27, 1978; Fire watch not stationed during cable room Halon system inoperability.
- *-- LER 78-04/IT, dated February 27, 1978, Source range neutron instrumentation audible counts not in service during fuel load.
- *-- LER 78-05/99T, dated February 21, 1978; Rock rip-rap moved down slope of dike due to improper slope.
- *-- LER 78-06/IT, dated March 2, 1978; Direct communications not established between Reactor Building and Control Room during incore detector installation.
- LER 78-07/3L, dated March 16, 1978; during surveillance testing the reverse power relay actuated causing Diesel Generator DF-X-18 to trip.
- *-- LER 78-08/3L, dated March 25, 1978; three fire penetration seals were not functional.
- *-- LER 78-09/3L, dated March 25, 1978; during pre-op test of CRD mechanisms the CRD trip breakers were closed and control rods withdrawn prior to performing function test of T.S. 4.3.1.1.1.
- *-- LER 78-10/3L, dated April 4, 1978; river water pump outlet and prelube valves and redundant RCP seal injection valves were not functionally tested prior to placing their respective systems in service.

* denotes those LERs selected for onsite followup.

- *-- LER 78-11/3L, dated April 7, 1978; Reactor Building door seals surveillance was not performed within previous 72 hours prior to entering Mode 4.
- *-- LER 78-13/It, dated March 27, 1978; "A" Diesel Generator was not demonstrated operable by performing required surveillance, when "B" Diesel Generator was tagged out of service.
- LER 78-14/3L, dated April 12, 1978; inner door seals on both airlocks failed the surveillance test due to insufficient seating on the inner doors.
- *-- LER 78-15/IT, dated March 27, 1978; remedial action required on the "B" Steam Generator special vibration instrumentation inspection opening assembly to prevent the development of an unsafe condition.
- *-- LER 78-16/IT, dated April 5, 1978; Nuclear Service Water Pumps 1A and 1B inoperable due to failure of load shed relays to reset.
- LER 78-17/3L, dated April 21, 1978; weld leak at 1/2 inch inlet nipple socket weld joint to DH-V121B at Decay Heat Pump 1B suction piping.
- *-- LER 78-19/IT, dated April 5, 1978; power shaping rod position out of specification in Mode 2.
- LER 78-20/3L, dated April 21, 1978; containment isolation valves NM-V52 and NS-V81 inoperable due to engagement of manual handwheel pins.
- *-- LER 78-21/3L, dated May 1, 1978; Vital Bus 2-IV became de-energized during ES test due to fuse blown on bus power supply transfer.
- *-- LER 78-23/3L, dated April 24, 1978; only one boron injection flow path verified operable prior to entry into Mode 4.

The above LERs were closed, based on satisfactory review in the Region I office, except those LERs selected for onsite followup.

5. Onsite Licensee Event Followup

For those LERs selected for onsite followup (denoted in Paragraph 4), the inspector verified that the reporting requirements of Technical Specifications and GP 4703 (Original) had been met, that appropriate corrective action had been taken, that the event was reviewed by the licensee as required by Technical Specifications, and that continued operation of the facility was conducted in conformance with Technical Specification limits.

The inspector's findings regarding these licensee events were acceptable, unless otherwise noted below.

- Corrective measures associated with LERs 78-10/3L and 78-23/3L are being tracked for completion by PORC Action Items 2-78-007 and 2-78-017, respectively. The inspector determined that the licensee's planned corrective actions were appropriate and had no further questions on these LERs.
- Corrective measures associated with LERs 78-09/3L, 78-12/3L, 78-13/IT, 78-16/IT and 78-19/IT are being tracked for completion by PORC Action Items 2-78-005, 2-78-016, 2-78-014, 2-78-009 and 2-78-010, respectively. The inspector determined that the licensee's planned corrective actions were appropriate and substantially completed. However, the originally scheduled dates for completing the PORC Action Items were overdue. Licensee representatives stated that appropriate reviews of outstanding PORC Action Items would be performed to ensure that corrective measures are properly completed as scheduled or that extended completion due dates are approved when necessary on an ad hoc basis. Licensee measures to ensure timely completion of PORC Action Items in general and resolution of the specific items listed above will be reviewed during a subsequent inspection. (320/78-17-02)

6. IE Circular Followup

The inspector reviewed the licensee's followup actions regarding the IE Circulars listed below.

- IEC 77-14, "Separation of Contaminated Water Systems from Noncontaminated Plant Systems."
- IEC 77-16, "Emergency Diesel Generator Electrical Trip Lock-out Features."

-- IEC 78-02, "Proper Lubricating Oil for Terry Turbines."

The review included discussions with licensee personnel and review of selected facility records.

The licensee's followup actions were reviewed to verify that the circulars were received by appropriate licensee management, a review for applicability was performed, and that action taken or planned is appropriate. Acceptance criteria for the above review included inspector judgement and requirements of applicable Technical Specifications and facility procedures.

The licensee has initiated, but not completed, PORC Action Items 2-78-022, 2-78-023 and 2-78-020 to require reviews of IE Circulars 77-14, 77-16 and 78-02, respectively, to determine facility applicability and appropriate followup actions. Licensee resolution of the above PORC Action Items will be reviewed during a subsequent inspection. (320/78-17-03)

7. Reactor Coolant System Decontamination

Several facilities have recently carried out or are planning to carry out decontamination of reactor coolant pressure boundary components without prior NRC approval. This is allowed under the provisions of 10 CFR 50.59. Operations of this nature generally do not represent unreviewed safety questions provided that the following conditions are satisfied.

- The components involved have been physically removed from the system.
- The licensee's administrative controls and post-decontamination surveillance are adequate to assure that residual decontamination solution is not introduced into other components within the reactor coolant pressure boundary.
- The component is not degraded.

The inspector informed licensee representatives that NRR is actively developing generic criteria to govern decontamination of reactor coolant pressure boundary components. Until these generic criteria are developed, decontamination solutions with unproven corrosion characteristics should not be introduced into components within the reactor coolant pressure boundaries of operating reactors without prior NRC approval.

The inspector determined that chemical decontamination has neither been carried out on components within the reactor coolant pressure boundary nor is planned in the near future by the licensee. The inspector had no further questions concerning this matter.

8. Emergency Safeguards Actuation

The inspector reviewed the licensee's corrective measures concerning the emergency safeguards (ES) actuation which occurred on April 23, 1978. Details of the occurrence, including the event description, the cause, and the related consequences, were reported in MEC letter to Region I serial GQL 0871, dated May 8, 1978, which enclosed LERs 78-33/IT and 78-31/IT. Subsequent to the occurrence, an in-depth investigation was initiated by the licensee to evaluate the actual event and appropriate corrective action. The inspector reviewed the finalized site report of the incident, forwarded by JLS memorandum to GPM, dated May 4, 1978. The report included sections which described the synopsis of the event, the sequence of events, conclusions and recommendation/action items, as well as various pertinent appendices. The inspector noted that the licensee's investigation was thorough and addressed all significant aspects of the incident.

The inspector also reviewed B&W letters to MEC serial SOM-II-140, dated May 2, 1978, and serial SOM-II-143, dated May 5, 1978. These letters provided evaluations of specific areas of concern following the transient, based on a preliminary B&W review of the effects of the supplied data, which supported continued facility startup and operation. The specific evaluations, included findings, transient results and recommendations, concerning the reactor coolant pumps, the control rod drive mechanisms, fuel components, RCS water chemistry, the once through steam generators, the reactor vessel, the reactor coolant piping and pressurizer usage factors, and voiding of the pressurizer. The licensee will submit a special report of the ES actuation and injection pursuant to T.S. 3.5.2.b.

The inspector had no further questions concerning this incident. The licensee's final disposition of recommended corrective and the ES actuation/injection report actions will be reviewed during a subsequent routine inspection.

9. Unit Auxiliary Transformer Design Deficiency

On May 3, 1978, Region I was notified by a licensee representative that the unit auxiliary transformers did not meet the requirements of General Design Criteria 17 of 10 CFR 50. Each of the two unit auxiliary transformers was determined to be incapable of carrying the unit full load auxiliaries and the engineered safety feature auxiliaries, for the normal operating range of the 230 KV grid, during periods of peak unit auxiliary demand. Additional details of this occurrence were reported by MEC to Region I in a telegram, dated May 4, 1978, and in a written followup report, dated May 9, 1978.

The followup report described the following corrective actions, which would be taken to assure adequate voltage levels to support operation of the ESF and balance of plant auxiliaries:

- The unit will not be operated above a (bus loading) power level compatible to safe single transformer operation;
- Selective balance of plant load shedding will be installed; or
- The automatic bus transfers to the other auxiliary transformers for designated buses will be disabled.

On May 10, 1978, licensee representatives informed the inspector that, for the normal 232-238 KV grid voltage operating range, each unit auxiliary transformer would meet the requirements of GDC 17 provided that the total 4170/6900 V bus load was restricted to 48 MW and that each 4160 V bus load was restricted to 20 MW. Appropriate administrative controls will be implemented to ensure that the unit is operated within these maximum bus loading values. Additionally, pending further review by the licensee, the fast transfer of balance of plant loads may be defeated, if necessary. For long term corrective actions, the licensee is considering to selectively block the fast transfer of individual balance of plant components including two circulation water pumps, one condensate booster pump and one heater drain pump. The inspector subsequently informed the NRR project manager for the facility of these planned corrective actions. The inspector had no further questions concerning this matter. The licensee's final resolution of planned corrective measures will be reviewed during a subsequent routine inspection.

10. Postulated Small Break LOCA

MEC letter to NRC:NRR serial GQL 0854, dated May 5, 1978, enclosed the results of B&W's most recent calculations concerning a small break LOCA at TMI, as well as the analysis presented to the NRC staff by B&W at a meeting on April 25, 1978. Additionally, the letter described certain actions that have been taken or that were planned to ensure proper operator response to a small break LOCA. The inspector verified that the following actions have been satisfactorily completed by the licensee.

- Emergency Procedure 2202-1.3 was revised to detail the operator response as described in MEC letter serial GQL 0854.
- Operating Procedure 2104-1.2 was revised to permit operations with one of the make-up pump discharge cross-connect valves open and the other one closed.
- Each shift was briefed on the constraints of the license and the small break LOCA procedure requirements, and each operator has physically located all equipment required to be operated in accordance with the procedure changes.
- Unit 2 Operations Department Memo 2-78-10 was written to require each operator to signify understanding of the procedure changes and specific LOCA response manning requirements designated therein.
- Ops Memo 2-78-10 required a sheet to be attached to the Control Room Log sheet showing the two individuals assigned the responsibilities for carrying out the actions indicated in the procedure changes.
- Ops Memo 2-78-10 required each shift to be rebriefed at least once per month of the actions required in the procedures.
- Each shift has performed drills to verify that the assumed operator response time is achievable and within the analysis assumptions.

The inspector discussed the LOCA response actions with selected operators and verified their understanding and knowledge of the procedure changes. Additionally, the inspector observed that the HPI discharge valves and cross-connect valves were properly aligned and instructions posted for normal and LOCA operation, that the valves were accessible for prompt operation in the event of a LOCA, and that dedicated communications headsets were provided at the HPI discharge valve areas:

The inspector reviewed the licensee's plans to submit B&W results of additional calculations for power levels up to 2772 MW(t) and to submit a Technical Specification Change Request covering the above procedures. Licensee representatives stated that the LOCA procedures T.S. Change Request would be submitted to NRR by June 15, 1978, in conjunction with the B&W reanalysis submittal.

The inspector had no further questions concerning this matter. Findings were acceptable.

11. Unresolved Items

Unresolved items are matters for which more information or additional time is required in order to ascertain whether they are acceptable, items of noncompliance or deviations. An unresolved item identified during this inspection is discussed in Paragraph 3.a.

12. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) on May 10, 1978, to discuss the findings of the inspection.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA

Reference 24

Docket No. 50-320

03 OCT 1978

Metropolitan Edison Company
ATTN: Mr. J. G. Herbein
Vice President - Generation
P. O. Box 542
Reading, Pennsylvania 19603

Gentlemen:

Subject: Inspection 50-320/78-24

This refers to your letter dated September 18, 1978, in response to our letter dated August 24, 1978.

Thank you for informing us of the corrective and preventive actions. These actions will be examined during a subsequent inspection of your licensed program.

Based on a telephone discussion between Mr. D. Haverkamp of this office and Mr. W. Potts of your staff, on September 27, 1978, it is our understanding that the potential or actual use of weld rod at out-of-specification temperature conditions prior to July 20, 1978, will be reviewed and evaluated.

Your cooperation with us is appreciated.

Sincerely,

Boyce H. Grier
Director

cc:

T. Broughton, Safety and Licensing Manager
J. J. Barton, Project Manager
R. C. Arnold, Vice President - Generation
L. L. Lawyer, Manager - Generation Operations - Nuclear
G. P. Miller, Superintendent
J. L. Seelinger, Unit 2 Superintendent - Technical Support
I. R. Finfrock, Jr.
Mr. R. Conrad
G. F. Trowbridge, Esquire
Miss Mary V. Southard, Chairman, Citizens for a Safe Environment

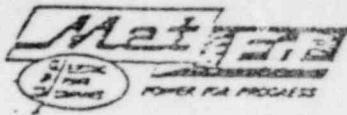
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Commonwealth of Pennsylvania



METROPOLITAN EDISON COMPANY SUBSIDIARY OF GENERAL PUBLIC UTILITIES CORPORATION

ST OFFICE BOX 542 READING, PENNSYLVANIA 19603

TELEPHONE 215 - 929-3601

September 18, 1978

GCL 1532

Mr. B. E. Grier, Director
Office of Inspection & Enforcement
Region 1
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Sir:

Three Mile Island Nuclear Station Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Inspection Report No. 78-24

This letter is in response to the subject inspection report resulting from Mr. Haverkamp's inspection of July 18-21 and July 31-August 3, 1978, and the findings thereof. Below is the response to the infraction referenced in the subject inspection.

Infraction

10 CFR 50, Appendix B, Criteria 7, states in part: "Activities affecting quality shall be prescribed by ... procedures and shall be accomplished in accordance with these ... procedures ...". The accepted Operational Quality Assurance Program (FSAR Section 17.1.5.1) states, in part: "The Met-Ed Quality Assurance Plan ... contains the requirements that activities affecting quality be documented by instruction, procedures ...".

Mechanical Construction Procedure, MCP-2-2, Revision 12, specifies the requirement that weld rods, if not issued, shall be placed in holding/storage ovens and maintained at $250^{\circ}\text{F} \pm 25^{\circ}\text{F}$.

Contrary to the above, on July 20, 1978, the holding/storage furnace containing the low hydrogen weld rods was found to be at an indicated temperature of 190°F .

Corrective Actions Taken

Since the holding/storage oven was determined to be deficient, it was promptly withdrawn from service and repaired. The weld rod involved was removed from the holding/storage oven and returned to the bake oven for removal of any additional hydrogen.

Page 01

78-0496-001
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Mr. B. E. Grier, Director

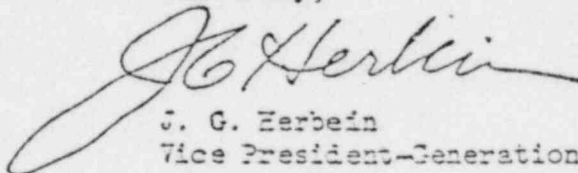
- 2 -

September 18, 1978
GQL 1532

Corrective Steps Taken to Prevent any Future Recurrence

The requirements of MCP 2-2 were reemphasized to the responsible construction personnel. A thorough Quality Assurance review of welding control was conducted over the period from July 20, 1978 through July 31, 1978 with no unresolved problems identified. Periodic QC inspections of rod ovens have been conducted to date with no recurrence of out-of-specification temperature conditions.

Sincerely,


J. G. Herbein
Vice President-Generation

JGH:JRS:cjg



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

24 AUG 1978

IE FILE COPY

Docket No. 50-320

Metropolitan Edison Company
ATTN: Mr. G. Herbein
Vice President - Generation
P.O. Box 542
Reading, Pennsylvania 19603

Gentlemen:

Subject: Inspection 50-320/78-24

This refers to the inspection conducted by Mr. D. Haverkamp of this office on July 18-21 and July 31 - August 3, 1978, at your corporate office and at the Three Mile Island Nuclear Station, Unit 2, Middletown, Pennsylvania, of activities authorized by NRC License No. DPR-73 and to the discussions of our findings held by Mr. Haverkamp with Mr. J. Seelinger and other members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the Office of Inspection and Enforcement Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

Based on the results of this inspection, it appears that one of your activities was not conducted in full compliance with NRC requirements, as set forth in the Notice of Violation, enclosed herewith as Appendix A. This item of noncompliance has been categorized into the levels as described in our correspondence to you dated December 31, 1974. This notice is sent to you pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office, within twenty (20) days of your receipt of this notice, a written statement or explanation in reply including: (1) corrective steps which have been taken by you and the results achieved; (2) corrective steps which will be taken to avoid further items of noncompliance; and (3) the date when full compliance will be achieved.

Page of

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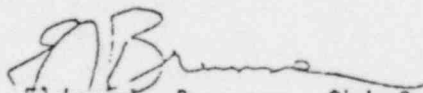
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24 AUG 1978

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosures will be placed in the NRC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold such information from public disclosure. Any such application must be accompanied by an affidavit executed by the owner of the information, which identifies the document or part sought to be withheld, and which contains a statement of reasons which addresses with specificity the items which will be considered by the Commission as listed in subparagraph (b) (4) of Section 2.790. The information sought to be withheld shall be incorporated as far as possible into a separate part of the affidavit. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,



Eldon J. Brunner, Chief
Reactor Operations and Nuclear
Support Branch

Enclosures:

1. Appendix A, Notice of Violation
2. Office of Inspection and Enforcement Inspection Report Number 50-320/78-24

cc w/encls:

T. Broughton, Safety and Licensing Manager
J. J. Barton, Project Manager
R. C. Arnold, Vice President - Generation
L. L. Lawyer, Manager - Generation Operations - Nuclear
G. P. Miller, Superintendent
J. L. Selinger, Unit 2 Superintendent - Technical Support
I. R. Finfrock, Jr.
Mr. R. Conrad
G. F. Trowbridge, Esquire
Miss Mary V. Southard, Chairman, Citizens for a Safe Environment
(Without Report)

24 AUG 1978

bcc w/encs:

IE Mail & Files (For Appropriate Distribution)

Central Files

Public Document Room (PCR)

Local Public Document Room (LPDR)

Nuclear Safety Information Center (NSIC)

Technical Information Center (TIC)

RES:I Reading Room

Region Directors (III, IV) (Report Only)

Commonwealth of Pennsylvania

Miss Mary V. Southard, Chairman, Citizens for a
Safe Environment

24 AUG 1978

APPENDIX A

NOTICE OF VIOLATION

Metropolitan Edison Company

Docket No. 50-320

Based on the results of the NRC inspection conducted on July 18-21 and July 31 - August 3, 1978, it appears that one of your activities was not conducted in full compliance with conditions of your Facility License No. DPR-73 as indicated below. This item is an Infraction.

10 CFR 50, Appendix B, Criterion V, states, in part: "Activities affecting quality shall be prescribed by...procedures...and shall be accomplished in accordance with these...procedures...." The accepted Operational Quality Assurance Program (FSAR Section 17.1.5.1) states, in part: "The Met-Ed Quality Assurance Plan...contains the requirements that activities affecting quality be documented by instruction, procedures...."

Mechanical Construction Procedure, MCP-2-2, Revision 12, specifies the requirement that weld rods, if not issued, shall be placed in holding/storage ovens and maintained at $250^{\circ}\text{F} \pm 25^{\circ}\text{F}$.

Contrary to the above, on July 20, 1978, the holding/storage furnace containing the low hydrogen weld rods was found to be at an indicated temperature of 190°F .

Dupe of
78 + 0 + 90006

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF, INSPECTION AND ENFORCEMENT

Region I

NOTICE
24 AUG 1978

Report No. 50-320/78-24

Docket No. 50-320

License No. DPR-73 Priority _____ Category B2

Licensee: Metropolitan Edison Company

P. O. Box 542

Reading, Pennsylvania 19603

Facility Name: Three Mile Island Nuclear Station, Unit 2

Inspection at: Middletown, Pennsylvania and Reading, Pennsylvania

Inspection conducted: July 18-21 and July 31, August 3, 1978

Inspectors: D. K. Haverkamp
D. K. Haverkamp, Reactor Inspector
A. N. Casano
A. N. Casano, Reactor Inspector
J. P. Jury
J. P. Jury, Reactor Inspector
A. A. Rebellowski
A. A. Rebellowski, Reactor Inspector

8/23/78
date signed
Aug 19, 1978
date signed
Aug 19, 1978
date signed
8/23/78
date signed

date signed

date signed

Approved by: A. R. Keimig
A. R. Keimig, Chief, Reactor Projects Section
No. 1, ACSXS Branch

8-23-78
date signed

Inspection Summary:

Inspection on July 18-21 and July 31-August 3, 1978 (Report No. 50-320/78-24)
Areas Inspected: Routine, unannounced inspection by regional based inspectors of main steam relief valve/piping modifications; plant operations including shift logs and records and facility tour; licensee controls for nonroutine events; licensee followup actions concerning selected previous inspection findings, licensee events, and IE Bulletins and Circulars; measures established to implement Part 21 requirements; and selected licensee periodic and special reports. The inspection involved 93 inspection hours at the corporate office by four NRC inspectors.
Results: Of the eight areas inspected, one area (infraction - failure to maintain required temperature - paragraph 3.c).

DUPLICATE DOCUMENT

Entire document previously entered into system under:

ANO 1814194457

No. of pages:

DETAILS

1. Persons Contacted

Metropolitan Edison Company

- Mr. R. Benschel, Unit 2 Lead Electrical Engineer
- */**Mr. M. Bezilla, Unit 2 PORC Secretary
- Mr. W. Conaway, II, Unit 2 Shift Foreman
- Mr. J. Chwastyk, Shift Supervisor
- **Mr. J. Floyd, Unit 2 Supervisor of Operations
- *Mr. J. Hilbish, Station Lead Nuclear Engineer
- *Mr. T. Mackey, Jr., Supervisor of Quality Control
- Mr. B. Mehler, Shift Supervisor
- Mr. I. Porter, Unit 2 Lead Instrumentation and Controls Engineer
- **Mr. J. Seelinger, Unit 2 Superintendent-Technical Support
- Mr. J. Stair, Licensing Engineer
- *Mr. R. Warren, Unit 2 Lead Mechanical Engineer

General Public Utilities Service Corporation

- Mr. J. Godleski, QA Engineer
- Mr. W. Gunn, Site Project Manager
- Mr. T. Hawkins, Assistant Test Superintendent
- **Mr. R. Toole, Test Superintendent
- *Mr. J. Wright, QA Manager
- *Mr. L. Zubey, Mechanical Engineer

Crouse Nuclear Energy Services Corporation

Mr. H. Bailey, Project Manager

The inspectors also interviewed several other licensee and contractor employees during the inspection. They included control room operators, technical and engineering staff personnel and general office personnel.

* denotes those present at the exit interview on July 21, 1978.

** denotes those present at an exit interview on August 3, 1978.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (320/76-17-11): Diesel generator "first out" failures. Discussion with operations department personnel and observation

in the control room and diesel generator rooms indicate that the licensee has the ability to analyze the incoming diesel alarms to obtain "first-out" (sequence) information.

(Closed) Inspector Followup Item (320/77-17-01): IE Bulletin 77-01 followup. The licensee has identified the time delay relays in the diesel generators with regard to information received in IE Bulletin 77-01. The relays were tested on a twice weekly basis during January and February. The timing heads for 5 and 5L relays were replaced and retested. The inspector had no further questions regarding this item.

(Closed) Inspector Followup Item (320/77-28-06): Possible RCP seal design deficiency. A station blackout test was performed on April 22, 1978, and TP800/32, "Loss of Offsite Power Test," was reviewed and approved on May 19, 1978. The procedure calls for the monitoring of the reactor coolant pump seals for pressure, inlet, and outlet temperature. The inspector reviewed the recorder charts and found no discrepancies. The redesign of makeup lines to the seals and makeup pump sequence appears adequate. The inspector had no further questions on this item.

(Closed) Inspector Followup Item (320/77-29-04): Domestic water system isolation. The licensee has completed the ECM's 5512, 8088, and 8633 that tie the domestic water system to the Nuclear River pumps prelube, Service River pumps prelube, and Service Water pumps prelube. Areas that are fed by domestic water have been capped and check valves installed to prevent backflow from the prelube systems. The inspector had no further questions regarding this matter.

(Closed) Inspector Followup Item (320/77-40-02): RCP leakage at pump volute. Procedure SP710/2, MTX 147.36, test results were approved on April 6, 1978. SP710/2, "Controlling Procedure for Post Fuel Load Precritical Testing," includes requirements for observation of the mating flange of the volute and Reactor Coolant pump flange. No leakage was observed. The inspector had no further questions concerning this item.

(Closed) Inspector Followup Item (320/77-41-02): Brush recorder sensitivity. The sensitivity band of the brush recorders has been narrowed in TP800/36, "Shutdown From Outside the Control Room." Thus, a larger divisional increment will be obtained in the range of expected test data for Pressurizer Level, Reactor Coolant Pressure, and Reactor Coolant Loop Temperatures. The inspector had no further questions regarding this item.

(Closed) Unresolved Item (320/77-41-05): Modification of hanger support. The licensee has revised the hanger support design for MSH-281-S (Engineering Change Memo, Serial No. 5612) to eliminate interference with electrical conduits. The inspector observed the modified hanger and found it in accordance with the plan. Clearance appears adequate for hot operations.

(Closed) Unresolved Item (320/77-42-10): Temporary change notice (TCN) control. Controls have been established to ensure removal of cancelled TCN's from control room procedures. The inspector reviewed the TCN log and determined that selected cancelled TCN's had been removed from the applicable procedures.

(Closed) Unresolved Item (320/77-42-11): Equipment tagout index. Licensee representatives stated that an index of active equipment tagouts was not currently planned. The status of active tagouts can be determined by review of the active and cleared tagout requests and associated switching orders. The inspector determined that the licensee's controls for tagged equipment were acceptable, as discussed in paragraph 4.b of this report, and had no further questions concerning this matter.

(Closed) Unresolved Item (320/78-03-01): TP 600/4 evaluation. The licensee has accepted 1 cycle out of the 40 for the high pressure injection transient, which resulted during performance of TP 600/4. The transient at 85°F injection water temperature was less severe than the analyzed transient with 60°F injection water.

(Closed) Unresolved Item (320/78-17-01): Control of caution tags. SAP 1037, "Control of Caution Tags," has been fully implemented. The inspector verified that the use of CAUTION tags and DO-NOT-OPERATE tags was in conformance with the requirements of SAP 1037.

(Closed) Inspector Followup Item (320/78-17-02): Timely completion of PORC action items. Measures had been established to ensure that PORC action items are completed as scheduled and to approve extended completion due dates, when necessary. Additionally, PORC action items 2-78-005, 2-78-012, 2-78-014, 2-78-009, and 2-78-010 have been satisfactorily completed. The inspector had no further questions regarding this item.

(Open) Inspector Followup Item (320/78-17-03): Resolution of PORC Action Items regarding IE Circulars. PORC Action Items (PAI) 2-78-023 and 2-78-020, concerning PORC review of IE Circulars 77-16 and 78-02, have been satisfactorily completed. PAI 2-78-022 concerning IE Circular 77-14 remains outstanding for PORC review. Licensee determination that contaminated water systems are adequately separated from noncontaminated plant systems will be reviewed during a subsequent inspection.

3. Main Steam Relief Valve/Piping Modifications

a. General

The main steam line safety relief valves were determined to have excessive blowdown characteristics, as described in Licensee Event Reports 78-33 and 78-34. Subsequent modifications to the safety relief valves, A through MSR6A and MSR1B through MSR6B, did not correct the inability to obtain reproducible lift pressure, reset pressure or blow-down setpoints. The original valves were a prototype dual exhaust design, manufactured by the J. E. Lonergan Company. The twelve valves have been removed and are being replaced with twenty, single exhaust, 6R10 Dresser Relief Valves (Reference: Burns and Roe Drawing SK-A161).

The documentation used as the basis for acceptance criteria for the main steam valve/piping modification included: FSAR Section 10, Steam Generator Relief Valves; TMI-2 Technical Specifications; 10 CFR 50.59(a); Burns and Roe (B&R) Field Change Request (FCR) 2520.1, Revision 2, and FCR 2520.2, Revision 2; ASME Section III, Class II, Section V and IX; ASTM; and ANSI B31.7.

The inspector reviewed QC procedures and records with respect to material receipt, storage, and handling; welding; post weld heat treatment; nondestructive examination; planned testing; and mechanical pipe arrestors.

b. Material Receipt, Storage, and Handling

The QC program contains appropriate procedures for materials checks and record retention. These procedures include QC-2-2, "Receiving Inspection," Revision 7, Field Change #OC-205; QC-3-2, "Storage Control," Revision 3; and QC-6-2, "Records and

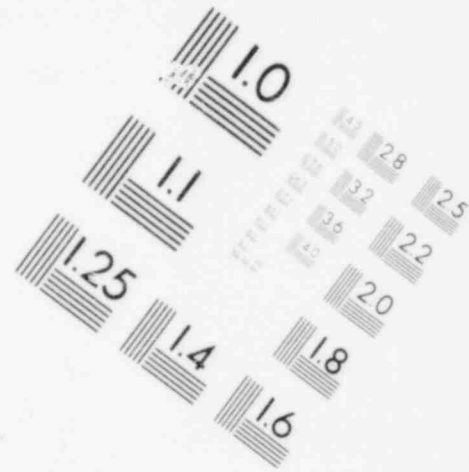
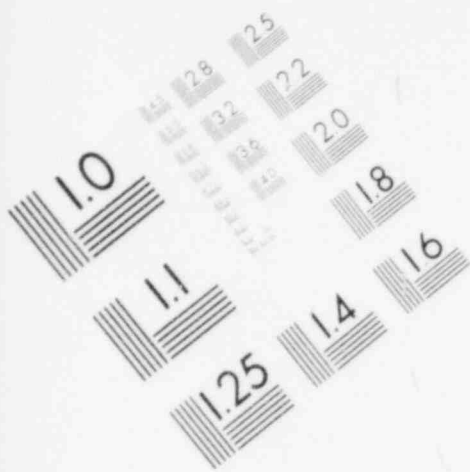
Filing System," Revision 7, Field Change #QC-266. The inspector reviewed the records for the long neck flanges which included Mill Test Report - Coffey Corporation #12118. A material chemical and physical check were made by the inspector. The records for the split plate assemblies, Purchase Order (PO) No. 7064-65-11, and records for the flexible gaskets, PO No. 7064-65-4, were reviewed. Conformation Certificates for Material Shipped, Order 59703, Flexitallic Gasket Company, confirm leachable chloride to be less than 200 ppm as specified.

The inspector reviewed the QA data package and documentation indicating QA participation in the witnessing of vendor testing of the new main steam relief valves. The documents reviewed included TMI-2 Interoffice Memorandums, dated July 13 and July 19, 1978. The licensee witnessing inspection, Trip Report dated July 11, 1978, addresses the Confirmation of B&R Design Specification 2555-147, Main Steam Safety Valves. The inspector reviewed Burns and Roe TWX to Dresser Valves, Inc., dated July 11, 1978, which also addresses the certification by B&R that the Sargent and Lundy Design Specification, F-2761 and L-2761 meet or exceed the requirements of B&R Specification 2555-147. The inspector determined that documentation available attests to an active program to assure receipt of acceptable valves.

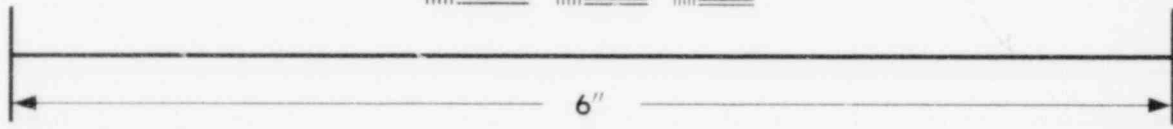
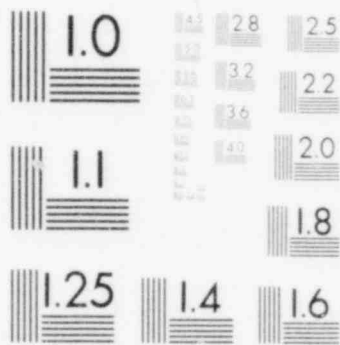
No items of noncompliance were identified.

c. Welding

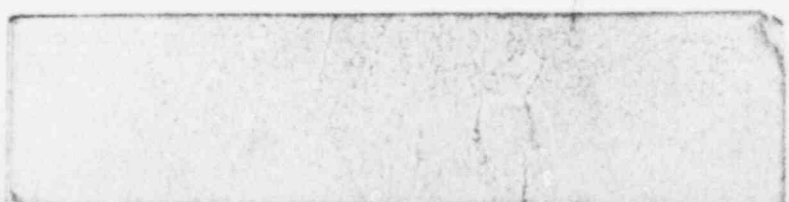
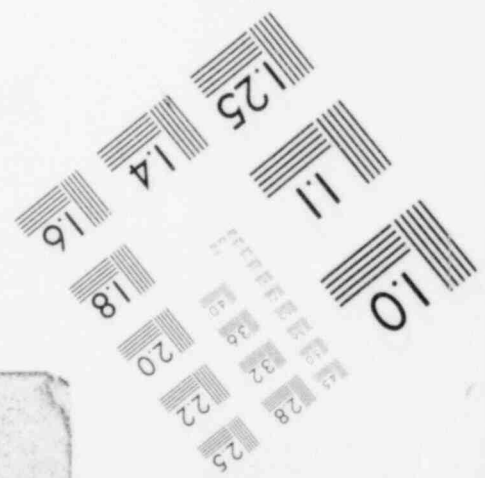
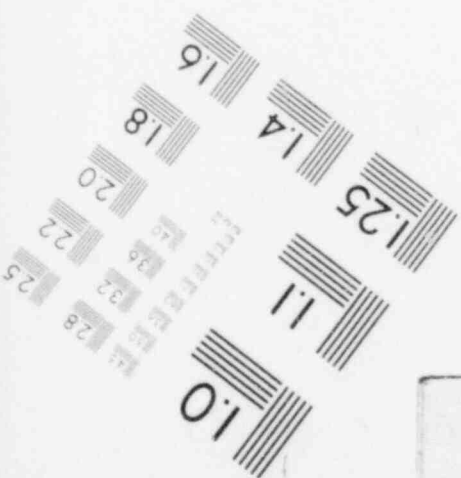
The main steam safety relief valve piping modification was in progress. The preparations to receive the long neck flanges had been finalized. The fit-up and welding of the long neck flanges and the split plate supports was in progress. The inspector witnessed a part of the welding being performed on location 263, 228, and 25B in accordance with Crouse Company Incorporated Welding Sequence, dated July 1, 1978. The inspector visually examined the partially completed welds, per Weld Procedure Specification GTA-SMA-1.1-P-102, including checks for slag, dirt, and crater indications. The weld at 278, which has been completed, was inspected and appeared to be smooth and clear of visual defects. The inside diameter was inspected for contour and smoothness.



**IMAGE EVALUATION
TEST TARGET (MT-3)**



MICROCOPY RESOLUTION TEST CHART



The new weld rod ordered for the modification was checked for receipt and storage. The rods in use were inspected for disbursing and handling controls.

At the receiving station the E-7018 filler rods were in hermetically sealed containers and tagged with QC release for construction, Tag. No. C-879. The records for this order (PO 36590-8798) were inspected for Certified Materials Test Reports (Chemtron No. 4029 and 4034) and receiving checklist.

The inspector checked the weld rod disbursing station for control of weld rod issuance, weld rod return, and oven weld rod storage. The weld rod was being issued as documented on the Request for Welding Electrodes (GPU form). The rebake oven was checked and did not contain any electrodes. The Mechanical Construction Procedure for "Control of Weld Rod and Consumable Insert," MCP 2-2, Revision 12, requires that weld rods, if not issued, should be placed in holding/storage ovens and maintained at $250^{\circ}\text{F} \pm 25^{\circ}\text{F}$. The inspector found the low hydrogen electrode storage oven temperature indication at 190°F , which was below the required holding temperature, at approximately 8:00 a.m., on July 20, 1978. This constitutes an infraction level item of noncompliance (320/78-24-01).

The inspector checked the welders performance and procedures qualification records for the three in-process welds noted above. The records of welders identified as F-5, F-9, and F-21 were reviewed and found acceptable.

d. Post Weld Heat Treatment

The inspector reviewed the draft post weld heat treatment procedure for FCR 2520.1, "Heat Tracing," Revision 0, dated July 18, 1978, to verify that it complies with the USAS B31.7 Code requirements. Paragraph W.1.5.1.b does not fully comply, in that the heating and cooling rates above 600°F are greater than those allowed by the USAS B31.7 Code, paragraph 1-731.3.3. This item is considered unresolved pending a change in the procedure and subsequent review by NRC:RI (320/78-24-02).

e. Nondestructive Examinations

The licensee is performing radiography on the long neck flange welds in accordance with Conam Nondestructive Testing Procedure XR-1-NP. The radiography is being performed using an Iridium-192 gamma source, 87 Ci strength. The procedure was reviewed and found to be acceptable and in accordance with ANSI B31.7 1969 and the 1970 addenda.

No items of noncompliance were identified.

f. Planned Testing

The licensee plans to conduct a hydrostatic test of the completed modification and a test of the main steam relief valves using a hydraulic ram followed by an actual lift. The two procedures, TP 271.4 and TP 209, are currently being finalized.

No items of noncompliance were identified.

g. Mechanical Pipe Arrestors

For the relief valve/piping modification, mechanical pipe arrestors MSH-284-S (two with this number), MSH-280-S, and MSH-292-S appear to be stored, or partially engaged in a manner which makes them subject to damage. The licensee plans to modify pipe restraints MSH-230-S and MSH-284-S (Reference: FCR No. 2520.1, Revision 1). This FCR also requires units 230 and 284 to be removed to a new location. Corrective action was in progress to protect these units during the remaining work on the main steam relief valve/piping modification. The licensee stated that the suspect units will be checked for proper functioning prior to or during the test program following the completion of the modification. The inspector had no further questions at this time.

No items of noncompliance were identified.

4. Review of Plant Operations

a. Shift Logs and Operating Records

The inspector reviewed the following logs and records:

- Shift Foreman Log, Control Room Log Book, Control Room Operator's Log Sheets, Primary Auxiliary Operator's Log-Tour Readings, Primary Auxiliary Operator's Log-Liquid Waste Disposal Panels, Secondary Auxiliary Operator's Log Sheets, and Auxiliary Operator Log Sheets-Out-Building Tour; dated May 1 - July 31, 1978.
- Shift and Daily Checks; dated May 1 - July 25, 1978.
- Jumper, Lifted Lead, and Mechanical Modifications Log (active and cleared); entries made during May 6 - July 31, 1978.
- Fire System Removal from Service Notification log; entries made during February 8 - July 31, 1978.
- Applications for Apparatus to be Taken Out of Service; those active on August 1, 1978, and those cleared dated July 17-31, 1978.
- Do Not Operate Tag Log; entries made during May 6 - July 31, 1978
- Transient Cycle Log Book; entries made during May 6 - July 31, 1978, and updated entries for the period February 8 - May 5, 1978.
- Unit 2 Operations Department Memos 2-78-9 through 2-78-15.

The logs and records were reviewed to verify the following items.

- Logkeeping practices and log book reviews are conducted in accordance with established administrative controls.
- Log entries involving abnormal conditions are sufficiently detailed.

- Operating orders do not conflict with Technical Specifications (TSs).
- Jumper log and tagging log entries do not conflict with TSs.
- Jumper/lifted lead/mechanical modification and tagging operations are conducted in conformance with established administrative controls.
- Problem identification reports confirm compliance with TS reporting and LCO requirements.

Acceptance criteria for the above review included inspector judgement and requirements of applicable Technical Specifications and the following procedures.

- Station Administrative Procedure (SAP) 1002, "Rules for the Protection of Employees Working on Electrical and Mechanical Apparatus," Revision 12.
- SAP 1010, "Technical Specification Surveillance Program," Revision 12, TCN 2-78-507.
- SAP 1011, "Controlled Key Locker Control," Revision 16.
- SAP 1012, "Shift Relief and Log Entries," Revision 8.
- SAP 1013, "Bypass of Safety Functions and Jumper Control," Revision 7.
- SAP 1016, "Operations Surveillance Program," Revision 12.
- SAP 1033, "Operating Memos and Standing Orders," Original.
- SAP 1037, "Control of Caution Tags," Original.

The inspector noted that the Transient Cycle Log Book had been updated and the administration of controls for lifted leads and jumpers had improved since the last inspection in this area. The inspector's findings regarding shift logs and operating records were acceptable.

b. Plant Tour

On August 2-3, 1978, the inspector conducted a tour of the following accessible plant areas.

- Auxiliary Building
- Turbine Building
- Fuel Handling Building
- Control Room
- Switchgear Rooms
- Inverter and Battery Rooms
- Diesel Rooms
- Chemical Addition Room
- Makeup Pump Rooms
- Building Spray Pump and Decay Heat Pump Vaults
- Evaporator Room

The following observations/discussions/determinations were made.

- Control Room and local monitoring instrumentation for various components and parameters was observed, including diesel fuel oil levels, control rod positions, and RCS pressure and temperature.
- Radiation controls established by the licensee, including the posting of radiation and high radiation areas, the condition of step-off pads, and the disposal of protective clothing, were observed. Radiation work permits used for entry to radiation and controlled areas were reviewed.

- Plant housekeeping, including general cleanliness conditions and storage of materials and components to prevent safety and fire hazards, was observed.
- Systems and equipment in all areas toured were observed for the existence of fluid leaks and abnormal piping vibrations.
- Selected piping snubbers/restraints were observed for proper fluid level and condition/proper hanger settings.
- The indicated positions of electrical power supply breakers and selected control board equipment start switches and remote-operated valves and the actual positions of selected manual-operated valves were observed.
- Selected equipment lockout tags, caution tags, and Do-Not-Operate tags were observed for proper posting and the tagged equipment was observed for proper positioning, where applicable.
- Selected jumper and lifted lead markers were observed for proper identification and the effected wiring changes were observed for proper completion.
- The Control Board was observed for annunciators that normally should not be lighted during the existing plant conditions. The reasons for the annunciators were discussed with control room operators.
- The licensee's policy and practice regarding plant tours was reviewed.
- Control Room manning was observed on several occasions during the inspection.

Acceptance criteria for the above items included inspector judgement and requirements of 10 CFR 50.54(k), Regulatory Guide 1.114, applicable Technical Specifications, and the following procedures.

- SAP 1002, "Rules for the Protection of Employees Working on Electrical and Mechanical Apparatus," Revision 12.

- SAP 1003, "Radiation Protection Manual," Revision 12.
- SAP 1008, "Good Housekeeping," Revision 3.
- SAP 1009, "Station Organization and Chain of Command," Revision 3.
- SAP 1028, "Operator at the Controls," Original.
- SAP 1037, "Control of Caution Tags," Original.

The inspector's finding regarding the plant tours were acceptable, except as noted below:

- The inspector noted that general cleanliness conditions in the auxiliary building upper levels had improved since the last inspection in this area. However, cleanliness and material storage conditions in the auxiliary building basement, including the BS and DH vaults, and in the reactor building require correction. Licensee representatives were aware of the degraded conditions in these areas and have scheduled appropriate cleanup and removal of excess material prior to heatup or resuming power operation. The inspector had no further questions concerning this matter at this time.
- During observation of control room and local annunciators, the inspector noted an inconsistency in diesel generator alarms. The Low Lube Oil Day Tank Level Alarm was lighted on both local annunciator panels, but on only one control room panel. Licensee representatives stated that the apparently out-of-service alarm would be investigated. The licensee's investigation of this alarm is considered an unresolved item (320/78-24-03).

5. Nonroutine Event Review

The inspector reviewed the licensee's system for identification, review, reporting, and followup of nonroutine events. The review was performed to determine that responsibilities have been assigned for the items listed below:

- Prompt review and evaluation of off-normal operating events to assure identification of safety related events.
- Prompt review of planned and unplanned maintenance and testing activities to assure identification of violations of Technical Specification LCO requirements.
- Reporting safety related operating events internally and to the NRC.
- Assuring completion of corrective actions relating to safety related operating events.

Administrative controls for reporting nonroutine events are described in GP 4703. There is no administrative procedure which specifies responsibilities for nonroutine event identification, review, and followup. Licensee representatives stated that these functions are inherently performed by facility management, PORC members, and licensed operators, based on their knowledge of Technical Specifications reporting requirements. Nonroutine events are identified during shift foreman review of Control Room logs and completed surveillance procedures, PORC review of completed maintenance activities, and departmental supervisory review of routine operations. Reportable matters are promptly referred to facility management and PORC for review and evaluation. Applicable corrective actions are tracked for completion by designation as PORC Action Items. The inspector noted that the licensee's functions associated with non-routine events have been acceptable since license issuance and had no further questions concerning this matter.

6. In-Office Review of Licensee Event Reports (LER's)

The LER's listed below were reviewed in the Region I office promptly following receipt to verify that details of the event were clearly reported including the accuracy of the description of cause and the adequacy of corrective action. The LER's were also reviewed to determine whether further information was required from the licensee, whether generic implications were involved, whether the event should be classified as an Abnormal Occurrence, and whether the event warranted onsite followup.

The following LER's were reviewed:

- LER 78-24/3L, dated May 4, 1978; NS-V83B failed to open during surveillance testing due to malfunction of solenoid-operated pilot valve.
- *-- LER 78-26/3L, dated May 2, 1978; RCS wide range pressure transmitter RC-3A-PT4 failed due to moisture induced short circuit in the transmitter terminal box.
- *-- LER 78-27/1T, dated May 2, 1978; Error in small break LOCA safety analysis.
- *-- LER 78-28/3L, dated May 3, 1978; DC-V103 failed to close during SFAS surveillance testing due to a failed motor on the valve operator.
- LER 78-29/3L, dated May 10, 1978; Ventilation damper D-4098 failed to close during surveillance testing due to improperly adjusted linkage.
- LER 78-30/3L, dated May 17, 1978; RPS Channel C tripped on Hi Flux due to damage of NI-7 during initial installation.
- LER 78-31/3L, dated May 18, 1978; CA-V3 failed to completely close during SFAS surveillance testing due to incorrect torque switch setting.
- *-- LER 78-33/1T, dated May 8, 1978; Reactor trip followed by RCS depressurization and sodium hydroxide injection, due to steam generator safety valves not properly reseating.
- *-- LER 78-34/1T, dated May 8, 1978; Degradation of main steam safety valve discharge piping.
- *-- LER 78-35/1T, dated May 9, 1978; Unit auxiliary transformers incapable of carrying full load and ESF auxiliaries during periods of peak demand.
- *-- LER 78-36/1T, dated May 18, 1978; Error in uncertainties applied to incore detector measurements of imbalance and quadrant power tilt.

* denotes those LER's selected for onsite followup.

- *-- LER 78-37/3L, dated May 25, 1978; Emergency Diesel Generator "B" failed surveillance test and tripped on high crankcase pressure due to undetermined cause.
- LER 78-38/3L, dated June 12, 1978; While performing monthly surveillance, the setting of BS-PS-3260 was found to be 0.02 psig higher than TS limit due to instrument drift.
- *-- LER 78-39/3L, dated June 15, 1978; Emergency Diesel Generator "B" failed to start during surveillance testing due to failure of the vertical shaft between the upper and lower crank shafts, caused by improper material.
- *-- LER 78-40/3L, dated June 15, 1978; Chiller AH-C-8B failed to operate during surveillance testing due to a microswitch that had a rough edge on its stem.
- *-- LER 78-41/3L, dated June 15, 1978; Emergency Diesel Generator "B" tripped on high crankcase pressure during surveillance test due to partially plugged orifice plate to the crankcase vacuum ejector.
- LER 78-42/3L, dated July 14, 1978; During surveillance testing the Damper 4092c accumulator pressure could not be maintained within 10 psi of the initial pressure due to improper location of the associated 3-way valve.
- LER 78-43/3L, dated July 10, 1978; Deficient floor fire barrier penetration seal due to improperly cured foam material used to make the seal.
- *-- LER 78-44/3L, dated July 24, 1978; Manual output breaker G2-1E2 for the "A" Diesel Generator was not closed when the unit was placed in emergency standby, due to a procedure inadequacy.

The above LER's were closed, based on satisfactory review in the Region I office, except those LER's selected for onsite followup.

* denotes those LER's selected for onsite followup.

7. Onsite Licensee Event Followup

For those LER's selected for onsite followup (denoted in Paragraph 5), the inspector verified that the reporting requirements of Technical Specifications and GP 4703 (Original) had been met, that appropriate corrective action had been taken, that the event was reviewed by the licensee as required by Technical Specifications, and that continued operation of the facility was conducted in conformance with Technical Specification limits.

The inspector's findings regarding these licensee events were acceptable, unless otherwise noted below.

- Corrective measures associated with LER's 78-33/1T and 78-34/1T are being tracked for completion by PORC Action Item 2-78-025. The ECCS actuation of April 23, 1978, and the licensee's evaluation of the transient and designation of corrective actions were reviewed during a previous inspection, as described in OIE Inspection Report 50-320/78-17, paragraph 8. Modifications of the main steam safety relief valves and piping, to prevent recurrence of excessive valve blowdown, are described in paragraph 3 of this report. The above LER's stated that prior to criticality the relief valves will be tested for proper lift pressure and also to insure that blowdown is not excessive. Completion of satisfactory relief valve testing prior to criticality is an unresolved item (320/78-24-04).
- The inspector noted that some of the LER's reviewed onsite contained coding errors or narrative omissions. Specific examples of these reporting inadequacies and the requirements of NUREG-0161, "Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File," were discussed with licensee representatives. The inspector stated that updated reports were not required to correct the identified errors. Licensee representatives stated that appropriate action would be taken to ensure that future LER forms are complete and accurate. The inspector had no further questions concerning this item.

- LER 78-44/3L contained inadequate narrative descriptions of the event and the cause. A licensee representative stated that an update LER would be submitted to correct these reporting discrepancies. Licensee submission of an update LER and completion of personnel instruction to ensure that proper diesel generator electrical lineup is established and maintained is an unresolved item (320/78-24-05).

8. IE Bulletin and Circular Followup

The inspector reviewed the licensee's followup actions regarding the IE Bulletins and Circulars listed below.

- IEB 77-07, "Containment Electrical Penetration Assemblies at Nuclear Power Plants Under Construction," dated December 19, 1977.
- IEB 78-01, "Flammable Contact-Arm Retainers in General Electric (GE) CR120A Relays," dated January 16, 1978.
- IEB 78-02, "Terminal Block Qualification," dated January 30, 1978.
- IEB 78-04, "Environmental Qualification of Certain Stem Mounted Limit Switches Inside Reactor Containment," dated February 21, 1978.
- IEB 78-05, "Malfunctioning of Circuit Breaker Auxiliary Contact Mechanism - General Electric Model CR105X, dated April 14, 1978.
- IEB 78-06, "Defective Cutler-Hammer Type M Relays with DC Coils," dated May 31, 1978.
- IEC 78-04, "Installation Error That Could Prevent Closing of Fire Doors," dated May 18, 1978.
- IEC 78-05, "Inadvertent Safety Injection During Cooldown," dated May 25, 1978.
- IEC 78-07, "Damaged Components on a Bergen-Patterson Series 25000 Hydraulic Test Stand," dated May 31, 1978.

This review included discussions with licensee personnel, review of selected facility records, and observation of selected facility equipment and components.

With respect to the above Bulletins, the inspector verified that licensee management forwarded copies of the bulletin response to appropriate onsite management representatives, that information and corrective action discussed in the reply was accurate and effected as described, and that the reply was submitted within the time period described in the bulletins.

With respect to the above Circulars, the inspector verified that the circular was received by appropriate licensee management, a review for applicability was performed, and that action taken or planned is appropriate.

Acceptance criteria for the above review included inspector judgement and requirements of applicable Technical Specifications and facility procedures.

Licensee followup to the above Bulletins and Circulars was acceptable, unless otherwise noted below.

- IEB 78-01 concerned fire damage of several GE CR120A relays which occurred at another facility. The fire was attributed to an overheated relay coil that ignited the relay's plastic contact-arm retainer. The corrective action recommended by GE was to replace the flammable Celcon retainers of designated relays with improved self-extinguishing flame resistant Valoz retainers.

The licensee has determined that many of the GE CR120A and CR122 relays installed in safety related and balance of plant equipment have the Celcon contact-arm retainers. A list of all such relays has been compiled, and necessary replacement Valoz-type retainers have been ordered. Burns and Roe ECM S-5989 has been approved to perform retainer replacement. Licensee completion of ECM S-5989 upon receipt of replacement materials is considered an unresolved item (320/78-24-06).

- IEB 78-05 concerned a problem encountered with the operation of a GE Model CR105X auxiliary contact mechanism at another facility. An auxiliary contact had failed in the closed position due to binding of the plunger arm caused by burrs and nicks on its surface. The corrective action recommended by GE was to replace the plunger arm of affected relays.

The licensee has determined that 32 GE NEMA size 1 contactors are installed in safety related systems and 94 such contactors are used in balance of plant equipment. Each of these contactors has one to three model CR 105X100P auxiliary contact mechanisms. No binding problems have been encountered with these as of this date. However, the licensee plans to replace the potentially binding mechanisms in the appropriate equipment as well as in the spares inventory. MEC letter to NRC Region I serial GQL 1021, dated May 30, 1978, stated that changeout will be completed as soon as possible but not later than the end of the first regularly scheduled refueling outage. The inspector determined that necessary replacement parts have not yet been ordered, accomplishment of the changeout has not yet been scheduled or directed by an ECM. Since implementation of the changeout may not be fully completed for an extended period, the inspector noted that any long-term deferrals in changeout should be technically supported and justified. The basis for deferral should include a review of the function and safety significance of each affected auxiliary contact mechanism and a review of routine checks or component surveillance that is performed to demonstrate continued equipment operability until changeout is completed. Licensee completion of actions concerning IEB 72-05 is considered an unresolved item (320/78-24-07).

9. In-Office Review of Measures Established to Implement 10 CFR Part 21 Requirements

The generation procedures listed below were reviewed in the Region I office.

- GP 0075, Revision 0, Change 1 (November 18, 1977), "Reporting of Defects and Noncompliance as Required by 10 CFR 21."
- GP 0029, Revision 3 (January 2, 1978), "Generation Division Nonconformances."
- GP 0063, Revision 0, Change 3 (March 13, 1978), "Record Control."
- GP 1009, Revision 1, Change 3 (April 10, 1978), "Procurement Document Control."
- GP 1011, Revision 1, Change 2 (October 18, 1977), "Preparation, Changing, and Issuance of Specifications and Bills of Material."

- GP 1024, Revision 3, Change 2 (February 28, 1978), "Identification and Evaluation of Nonconforming Materials, Parts, and Components."
- GP 4005, Revision 2, Change 3 (February 15, 1978), "Review of Procurement Documents."
- GP 4012, Revision 4, Change 2 (May 8, 1978), "Nonconformance Reports, and Stop Work Orders."
- GP 4414, Revision 0 (February 14, 1978), "Receipt Deficiency Reporting."
- GP 4705, Revision 0 (December 3, 1977), "Licensing Reviews for Reportability."

The procedures were reviewed to verify that the procedures or controls listed below have been established and are adequate to assure implementation of 10 CFR Part 21 requirements.

- Controls or procedures for posting (21.6).
- Procedures for evaluating deviations or informing the licensee or purchaser of deviations (21.21(a)).
- Procedures for informing a director or responsible officer of:
1) deviations evaluated to be a defect, or 2) failures to comply relating to a substantiated safety hazard (21.21(a)).
- Controls or procedures which will assure that a director or responsible officer will inform the Commission as required when receiving information of a defect or reportable failure to comply (21.21(b)).
- Controls or procedures to assure that each procurement document for a facility or basic component, when applicable, specifies that provisions of 10 CFR Part 21 apply (21.31).
- Controls or procedures to assure licensee maintenance of records (21.51(a)).
- Controls or procedures to assure the preparation and appropriate disposition of records (21.51(b)).

No items of noncompliance were identified.

10. In-Office Review of Periodic and Special Reports

The periodic and special reports listed below were reviewed in the Region I office to verify that the report included information required to be reported and that test results and/or supporting information discussed in the report were consistent with design predictions and performance specifications, as applicable. The reports were also reviewed to ascertain whether planned corrective action was adequate for resolution of identified problems, where applicable, and to determine whether any information contained in the report should be classified as an Abnormal Occurrence.

The following TMI 2 periodic reports were reviewed.

- February Operating Report, dated March 13, 1978.
- March Operating Report, dated April 13, 1978.
- April Operating Report, dated May 15, 1978.
- May Operating Report, dated June 15, 1978.
- June Operating Report, dated July 13, 1978.

The following TMI 2 special reports were reviewed.

- Report of ECCS Actuation of March 29, 1978, dated June 27, 1978.
- Report of ECCS Actuation of April 23, 1978, dated July 24, 1978.

The above reports were closed based on satisfactory review at the Region I office.

11. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 3.d, 4.b, 7, and 8.

12. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on August 3, 1978. The inspector summarized the purpose and scope of the inspection and the findings.