

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 85-19

Docket No. 50-410

License No. CPPR-112

Priority --

Category A/B

Licensee: Niagara Mohawk Power Corporation  
300 Erie Boulevard  
Syracuse, New York 12302

Facility Name: Nine Mile Point, Unit 2

Inspection At: Scriba, New York

Inspection Conducted: June 10, 1985 to July 19, 1985

Inspectors: R.A. Gramm, Senior Resident Inspector  
R.M. Wheeler, Resident Inspector

Approved by: James C. Linville  
J.C. Linville, Chief, Reactor  
Projects Section 2C DRP

8/6/85  
Date

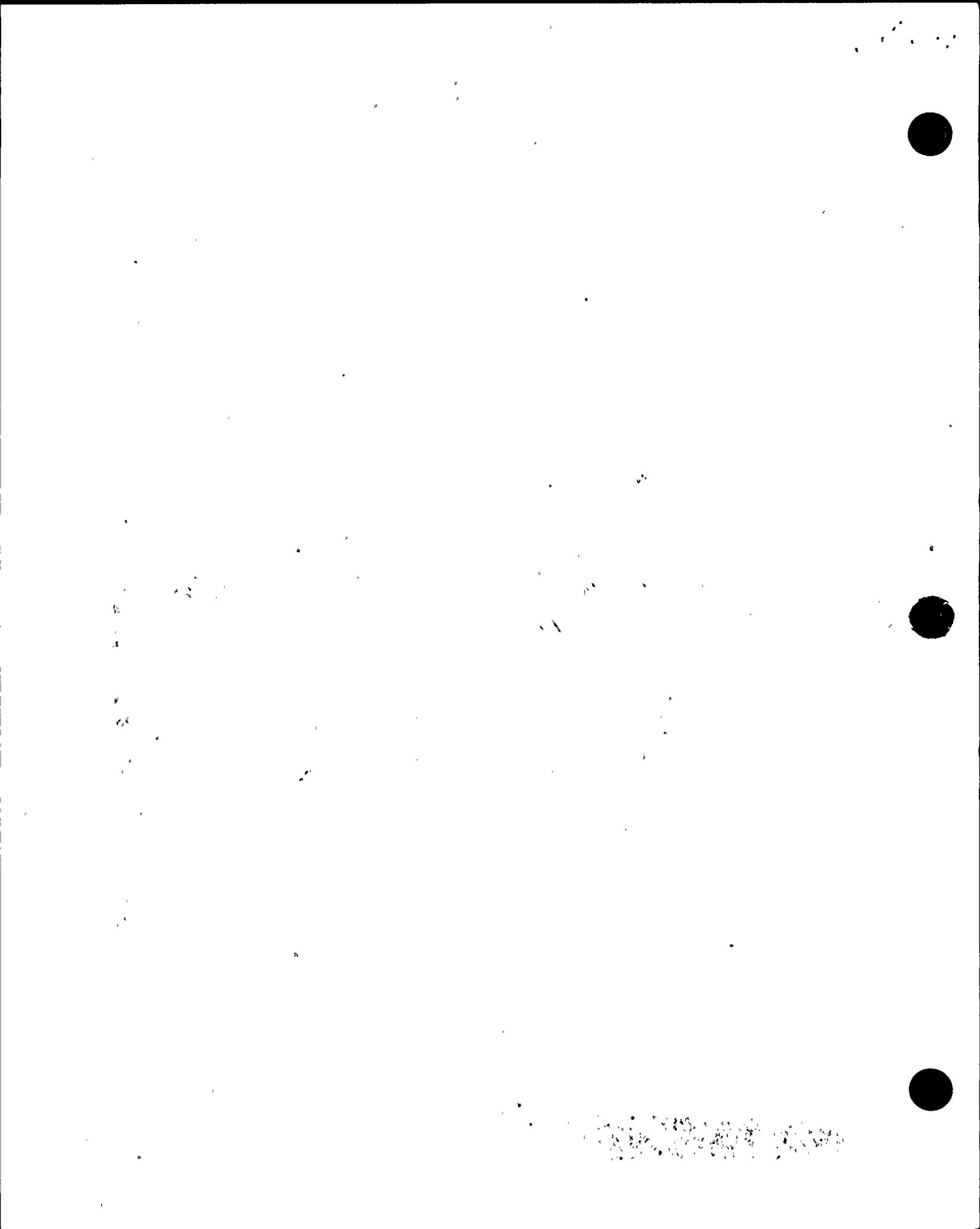
Inspection Summary:

Inspection on June 10, 1985 to July 19, 1985 (Report No. 50-410/85-19)

Areas Inspected: Routine inspection by the resident inspector of work activities, procedures and records relative to the Quality Performance Management Program, Niagara Mohawk Quality Assurance activities, reactor pressure vessel internals installation, preliminary testing, and the flood control berm. The inspector also reviewed licensee action on previously identified items and performed plant inspection tours. The inspection involved 157 hours by the inspectors.

Results: No violations were identified. Further discrepancies were identified between the Final Safety Analysis Report and site practices (paragraphs 3.q, 3.ee, 4.g, 4.i, 8.d, and 9).

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## DETAILS

1. Project Organizations

Niagara Mohawk Power Corporation (NMPC)

Stone and Webster Engineering Corporation (SWEC)

General Electric Company (GE)

ITT-Grinnell Industrial Piping, Inc. (ITT)

Johnson Controls, Inc. (JCI)

Reactor Controls, Inc. (RCI)

2. Plant Inspection Tours

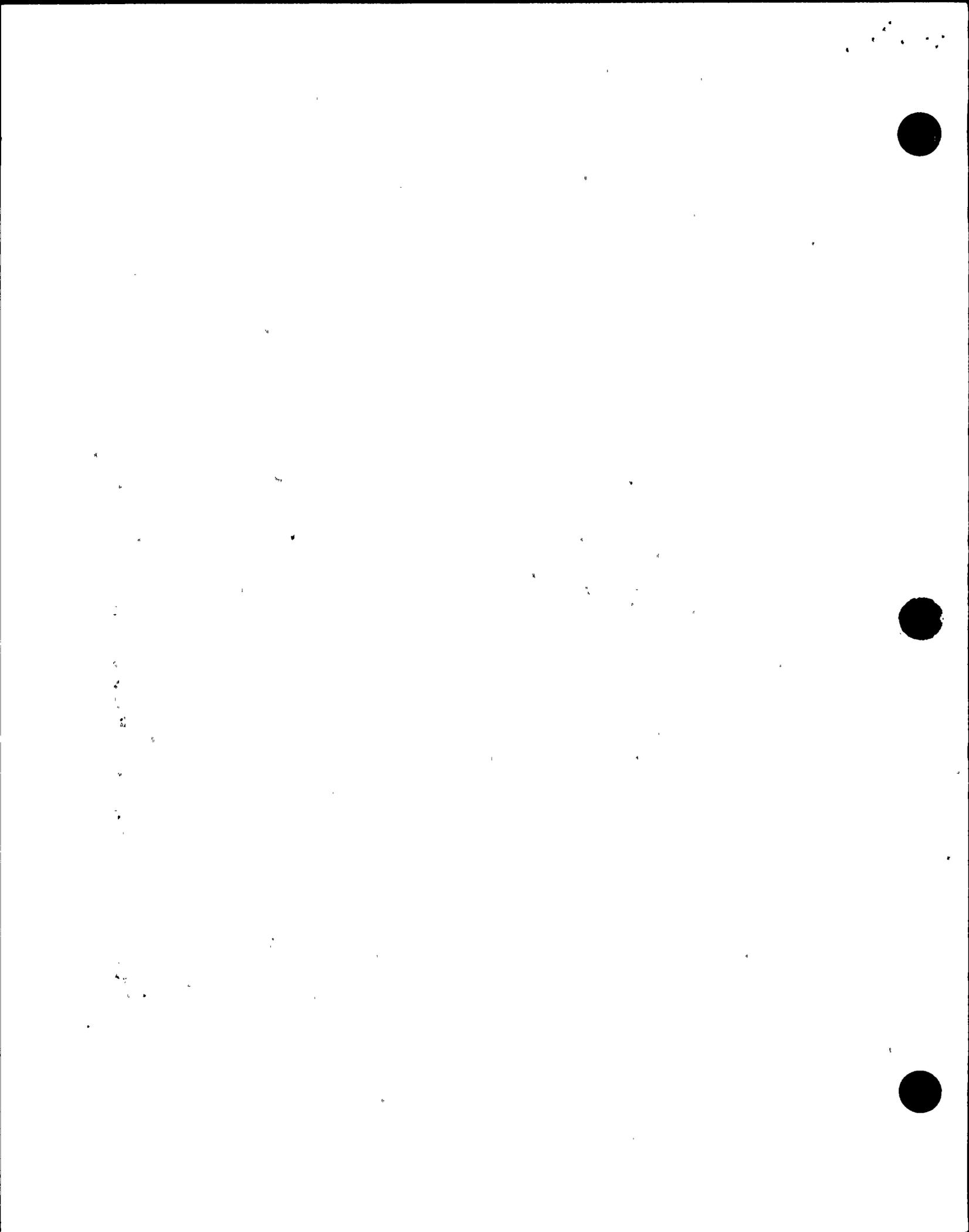
The inspector observed work activities in-progress, completed work and plant status in several areas during general inspection tours. Work was examined for any obvious defects or noncompliance with regulatory requirements or license conditions. Particular note was taken of the presence of quality control inspectors and quality control evidence such as inspection records, material identification, nonconforming material identification, housekeeping and equipment preservation. The inspector interviewed craft supervision personnel, and quality inspection personnel in the work areas. Observations are noted below:

The inspector observed a conduit support that served to support two conduits (2CC992GE and 2CC992YE) of redundant electrical divisions. He reviewed Specification E061A, Raceway list C-6, drawing EE-460EP-4 and Engineering and Design Coordination Report (E&DCR) C91350. The inspector noted that the design was in accordance with the specification requirements.

The inspector reviewed E&DCRs F02322 and F02347 which invoke reduced electrical separation requirements in relationship to IEEE 384 and Regulatory Guide 1.75. The E&DCRs direct Quality Control (QC) to track those instances in which the reduced separation is utilized pending completion of successful testing to demonstrate the adequacy of the new configurations. The inspector additionally reviewed a brief test proposal from Wyle laboratories related to the separation testing. Pending revision of the Final Safety Analysis Report (FSAR) and review of the separation test results, this item is unresolved. (85-19-01)

The inspector reviewed in-process welding adjacent to the scram discharge volume tank and examined drawing W1D-020-10. The inspector had no further questions.

The inspector reviewed Inspection Report X4002939 which described the receipt inspection of the replacement turbocharger for the HPCS diesel.



The turbocharger is a Utex model 9526867. Startup test personnel stated that the model correlates with a 20 cylinder diesel high capacity 17.9:1 gear ratio turbocharger. The inspector had no further questions.

The inspector reviewed revised calculation 517.45.05-NZ(C)-121 related to the generic acceptance of pipe support welds. The calculation was corrected such that it was consistent with E&DCR F02174A for allowable weld length reduction. The sampled pipe support designs were re-analyzed by SWEC and found to provide a minimum of 4% design margin. The inspector had no further questions regarding the weld analysis.

No violations were identified.

3. Licensee Action on Previously Identified Items

- a. (Closed) CONSTRUCTION DEFICIENCY (82-00-03): Failure of Electroswitch Company series 20K switches. The design of the series 20K switches manufactured from 1976 to 1981 was found deficient as during manual operation of the switch handle, the slip contacts could fail to achieve the proper configuration. Electroswitch modified the design to preclude the potential misoperation of the slip contacts. The licensee had ascertained that the switches were used in several safety related plant systems. General Electric subsequently issued Engineering Change Authorization (ECA) 820305-1 which directed that all affected switches within the NSSS scope be replaced. GE review of the Engineering Information System, Electrical Device List and visual examination of the PGCC panels ascertained that none of the deficient series 20K switches had been supplied to the site as the panels had been reworked prior to site delivery. The inspector reviewed internal SWEC correspondence in which lead design engineers (power, electrical, controls, environmental, hydraulics) reviewed the scope of their design for assurance that none of the deficient switches were utilized. Cooper Energy Services had supplied series 20K switches to the site, though not of the deficient design. The SWEC excluded equipment list appropriately identifies the subject switches. The licensee reviewed the SWEC spare parts inventory and found that none of the affected parts had been specified. Based upon the licensee review of NSSS and BOP hardware for assurance that none of deficient switches have been specified for use on NMP2, this item is closed.
- b. (Closed) CONSTRUCTION DEFICIENCY (82-00-15): Failure to obtain the required SWEC review of ITT weld planner packages. In response to NRC violation 82-08, NMPC had committed that all ITT weld planner packages would receive SWEC concurrence. ITT had subsequently issued weld planners to the field which had not received the requisite SWEC review.

The inspector reviewed the following documents:

- ITT direction that QC inspectors were to verify SWEC review of



planner packages during in-process inspections.

- ITT direction that as of July 1, 1982 all safety related planners require SWEC approval.
- SWEC stop work order for ITT field activities dated 10/29/82 pending verification that all planner packages be properly reviewed.
- ITT memo 2322 which documented an audit of planner packages on October 29, 1982.
- ITT memo 2404 which documented four piping planner packages and sixteen support packages that had not received the required SWEC review prior to field issuance.
- SWEC engineering and QA planner review sheets for the twenty packages identified by ITT memo 2404.
- Deficiency documents regarding the welding and inspection of field weld 400 ISO 1-16 without prior SWEC approval (Deviation Reports 3306, 2136 and 3349, E&DCRs V10395 and V10237)
- NMPC letter NMQA339 which relieved the SWEC review of planner packages, when confidence was gained for the ITT review process.
- Surveillance inspection reports of ITT in-process activities.

Based upon the ITT audit of planner packages to identify those lacking the required SWEC review; the SWEC review of the deficient packages; and the enhancements to ensure SWEC review was performed when required, this item is closed.

- c. (Closed) FOLLOWUP ITEM (82-01-06): Lack of material traceability for ASME components. The inspector reviewed Nonconformance and Disposition Reports 2796 and 2858 that documented the lack of material traceability for pipe support hardware. Hardware for which the grade and type of material could not be verified were prohibited from use in ASME installations. SWEC developed procedure CSI 20.12 to control the use of traceable material. ITT procedure FQC-4.2-14-11 requires that inspections be performed to verify pipe support material traceability. RCI procedure QAI 10.01 requires that receipt inspection be performed to verify material traceability. The inspector reviewed current inspection documentation to verify that heat marks were recorded by RCI. NMPC has developed pipe support QA surveillance checklists to assure the acceptable performance of the contractor installation activities. This item is closed based upon the development of site procedures and verifications to ensure the traceability of pipe support material.
- d. (Open) CONSTRUCTION DEFICIENCY (83-00-09): Nonconforming material

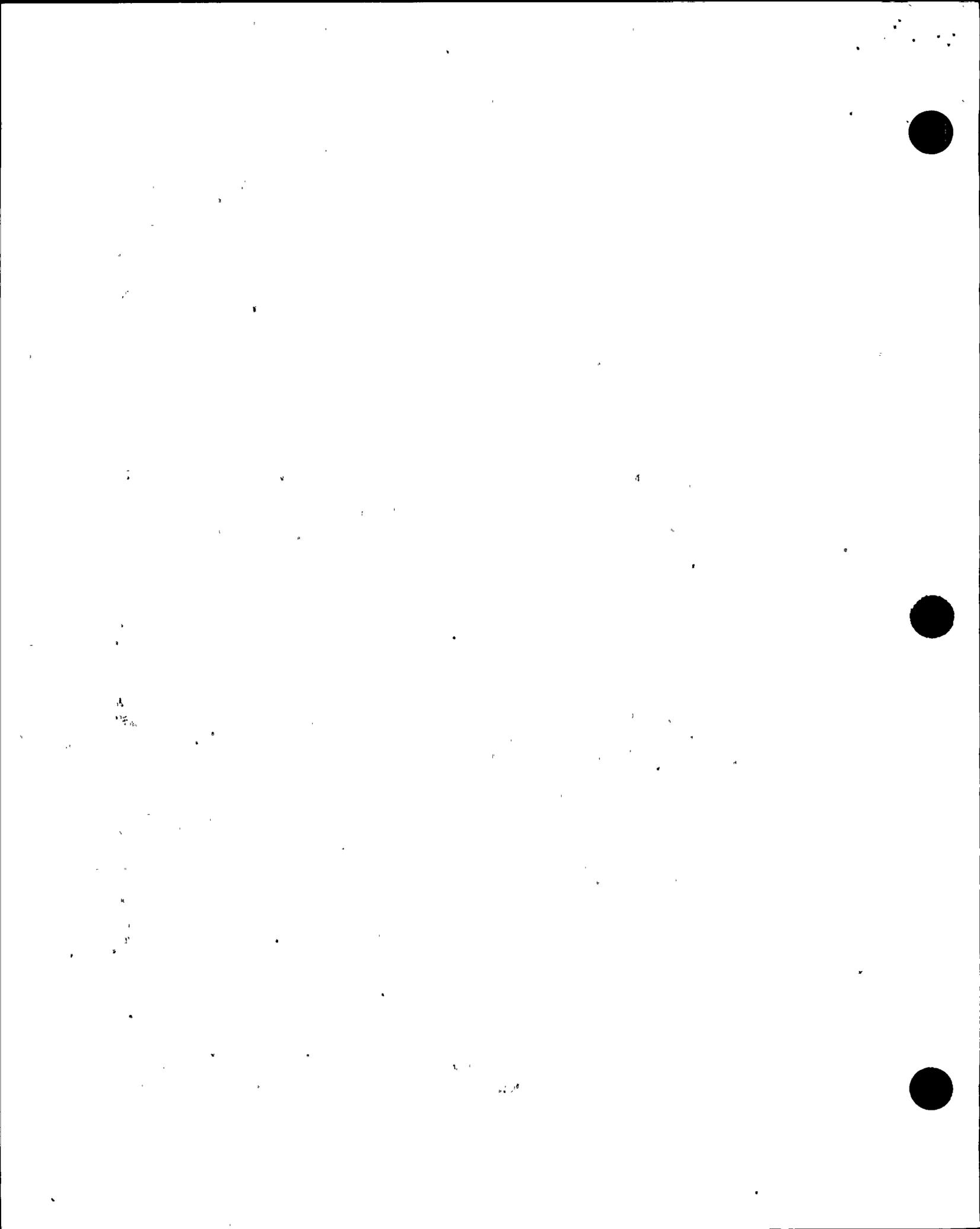


supplied by Tube Line. The inspector reviewed the corrective actions taken in response to Information Notice 83-07, Bulletin 83-06 and this construction deficiency. The concerns relative to Tube Line material remain open pending licensee investigation of the following items:

- The final disposition of materials identified by Tube Line letter dated April 8, 1983 to SWEC was not readily apparent.
- Chicago Bridge and Iron (CB&I) letter, dated November 18, 1983 implied that qualified vendors had procured Tube Line materials. SWEC apparently did not investigate the supply of Tube Line material to the site through the CB&I vendors.
- Zurn letter of May 24, 1983 proposed a material test program to establish the acceptability of the material involved. The licensee was asked to provide the test results.
- Guyon letter of May 4, 1983 stated that no carbon steel Tube Line material had been supplied to the site. The inspector requested similar confirmation for stainless steel material.

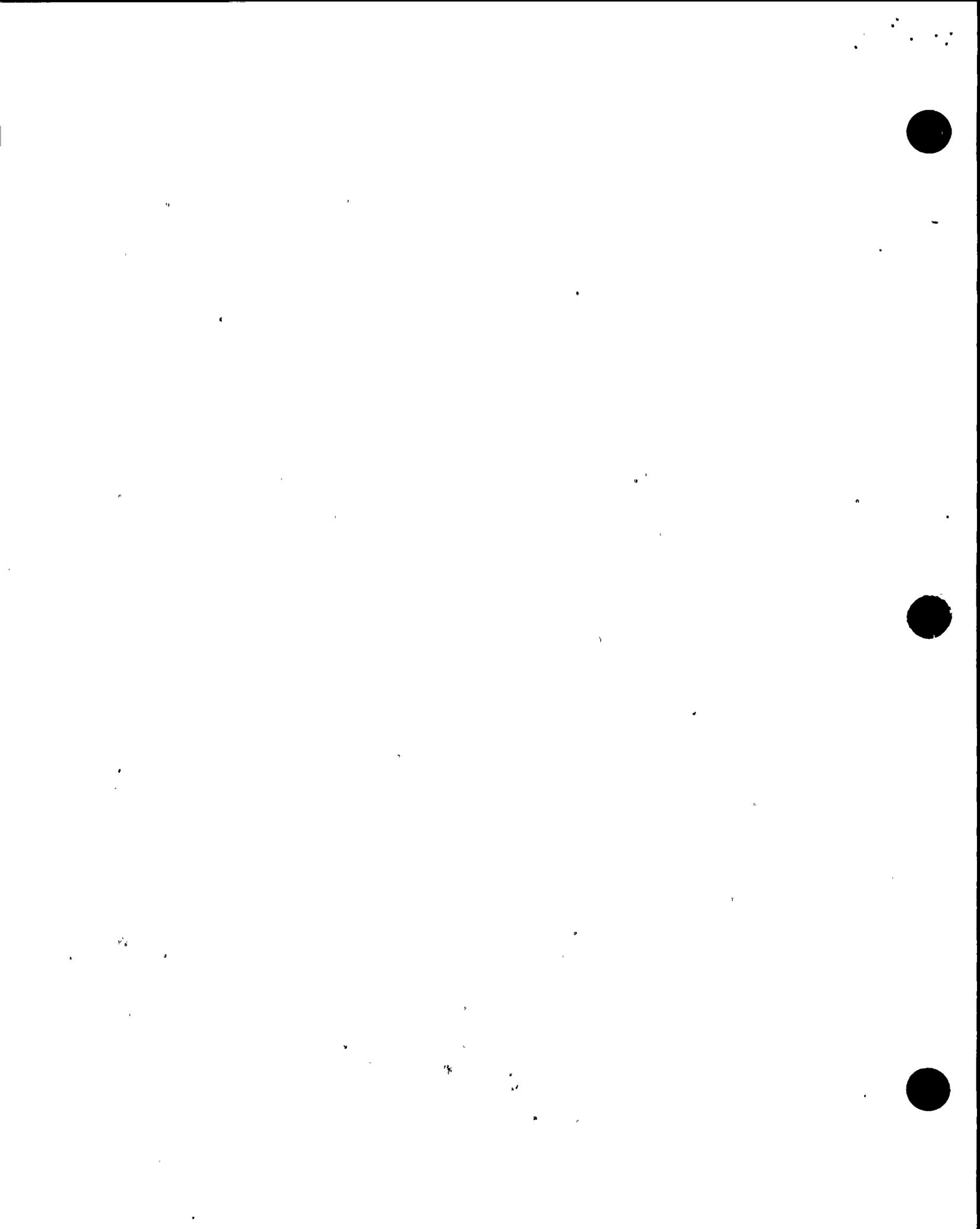
This item remains open.

- e. (Closed) FOLLOWUP ITEM (83-12-08): Maintenance of Level A warehouse conditions. Nonconformance and Disposition (N&D) report 5385 was generated to document an excessive humidity condition. Inspection Report (IR) x3021717 documented the satisfactory condition of a sample of permanent plant equipment located in the Level A area. The inspector noted that N&D 8615 and IR X4002992 documented a subsequent condition of excessive humidity. The inspector was informed that SWEC QC inspects 100% of the items removed from the Level A area for assurance that no detrimental conditions exist. The licensee has further upgraded the Level A air handling unit and de-humidifier to improve the capability to control the room temperature and humidity. The inspector reviewed recent humidity recordings and ascertained the Level A area was currently within specification requirements. This item is closed.
- f. (Closed) FOLLOWUP ITEM (83-12-09): Pump shaft rotated while the unit was drained of oil. The pump gear box and hydraulic reservoir were filled with the appropriate lubricant. The pump vendor evaluated the incident and determined that sufficient oil would be retained on the bearing surface to protect the non-safety related pump during the shaft rotation. This item is closed.
- g. (Open) UNRESOLVED ITEM (83-12-11): Hanger design for sway strut supports. The licensee was asked to provide the hot functional walkdown procedure that will be utilized to verify the sway strut 4 degree movement allowance. The inspector further requested that the generic field tolerance of 3 inches for the rear bracket location be



re-evaluated with respect to the summation of field tolerances that can occur during the installation process. This item remains open.

- h. (Closed) UNRESOLVED ITEM (83-16-08): Control rod drive support tack weld defect. The inspector reviewed RCI weld specifications GWS-0-01-S1 and GWS-1-01 which define the acceptance criteria for tack welds and specify that craftsmen notify QC when deficient conditions are identified. RCI and NMPC engineering evaluated the weld defect and determined that an inadequate tack weld had been deposited to withstand the thermal movement of the support. RCI interviewed the welder and confirmed that the tack weld was not incorporated into the final weld. This item is closed based upon the revision to the welding procedures, engineering evaluation of the defect initiation and assurance that the defect was not incorporated into the final weld.
- i. (Closed) UNRESOLVED ITEM (83-17-01): Reactor Pressure Vessel (RPV) storage conditions. E&DCR F01299 was generated to initiate routine Preventive Maintenance (PM) inspections of the exposed RPV head flange connections. Specification SMO1 was found consistent with GE specification 22A7409 which governs of the RPV storage condition during installation phases. ITT assigned construction personnel the responsibility to verify that all RPV end caps were in place at the end of the work shift. NMPC Nonconformance Report 421 was generated on February 7, 1984 when SWEC corrective actions regarding the RPV storage were found unacceptable. SWEC instituted a cleanup of the RPV area and a subsequent NMPC Quality Assurance (QA) verification found the measures effective. The RPV piping nozzles have been welded up as the installation activities have been completed. RCI controlled the RPV cleanliness during the time that internals work was proceeding. Based upon the actions taken to maintain the RPV storage conditions and the revision of the PM program, this item is closed.
- j. (Closed) FOLLOWUP ITEM (83-17-02): RCI document control and availability of field drawings. RCI created a field office from which controlled installation drawings were available. RCI then issued procedure QAI-6-4 which requires that field work be performed in accordance with work packages which contain all information necessary to carry out quality related work activities. RCI has performed the necessary personnel training on the new procedure. The inspector reviewed sample work packages and found them complete with respect to necessary drawings and installation instructions. This item is closed.
- k. (Closed) FOLLOWUP ITEM (83-18-22): Indeterminate quality bolts utilized to install 125 volt D.C. battery racks. The battery rack vendor has revised the seismic qualification report to identify the acceptability of the commercial grade bolting material. The generic aspect of bolting material control between field installations and the associated seismic qualification reports will be reviewed for



items 83-18-71 and 83-18-79. The as-installed battery rack configuration was found acceptable. This item is closed.

1. (Closed) FOLLOWUP ITEM (83-18-32): ITT procedure FQCR 4.2-34-1 requires that engineering perform inspection activity. ITT determined that procedure FQCR 4.2-34-1, "Inprocess Inspections of Pipe Whip Restraints" had not been implemented prior to the identification of the deficiency. The procedure was revised such that only Quality Control (QC) inspectors would perform the required inspections. The Management Analysis Corporation (MAC) third party review made a recommendation that SWEC QA develop a procedure to guide the review of sub-contractor documents. SWEC has issued QCI 5.03 to define the QA review of subcontractor procedures, and manuals. This item is closed.
- m. (Closed) FOLLOWUP ITEM (83-18-52): ITT weld defects identified in NRC Inspection Report 83-18 Table IV-2. The inspector reviewed the following ITT Deficiency Reports (DRs) that documented the weld deficiencies, weld repair and QC closure:

<u>DR</u>	<u>Support</u>
4986	BZ-111BC-1
5001	BZ-108QJ-1
5004	BZ-108TQ556-2
4852	BZ-19EA-1
5003	BZ-19GK-2
5110	BZ-71NP-1
5087	BZ-71EG-2
5176	BZ583G285-3
5173	BZ583G284-2

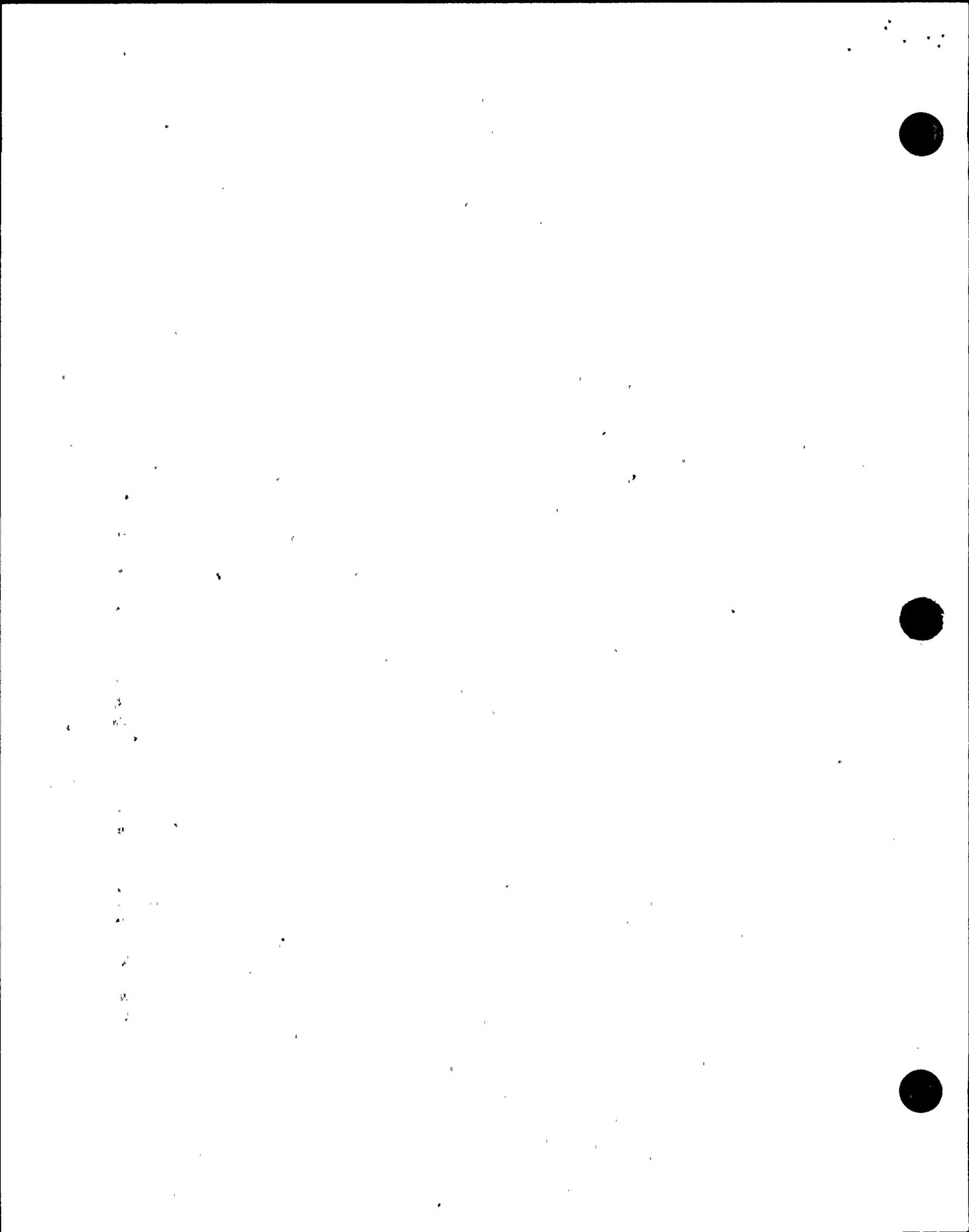
The inspector further reviewed Nonconformance and Disposition report IG-2172 that accepted the welds on support BZ-71NP-1. This item is closed based upon the correction of the noted weld concerns.

- n. (Open) FOLLOWUP ITEM (83-18-58): Post placement inspection of concrete surfaces. The inspector was informed that NMPC QA has performed a satisfactory surveillance of current baseplate installations. The inspector has requested that the licensee incorporate the post-placement surface inspection identified by ANSI N45.2.5 into the QC inspection program. Pending development of the revised QC inspection procedures, this item remains open.
- o. (Closed) CONSTRUCTION DEFICIENCY (84-00-11): RHR heat exchanger bracing design. SWEC drawings ES-53BC-3, ES-53CQ-1 and ES-53CR-1 were revised to incorporate the missing brace members. SWEC instituted a design change log that will be monitored on a periodic basis to track outstanding drawing changes and to ensure that the changes are ultimately incorporated. NMPC engineering evaluated the implementation of the change log at Cherry Hill and found it



satisfactory. A flow chart was prepared by SWEC to assure proper interface control of design information between structural engineering and design personnel. SWEC further assured that lateral bracing requirements and stiffness criteria have been satisfied for other equipment installations. The inspector discussed the adequacy of the corrective actions with the cognizant Cherry Hill structural designers. The inspector reviewed NRC Vendor Program Branch Inspection Report 99900509 84-02 which found that this problem was an isolated deficiency. This item is closed based upon the incorporation of the bracing details in the drawing, and enhancements to control the flow of design information and licensee verification that other equipment is suitably supported.

- p. (Closed) CONSTRUCTION DEFICIENCY (84-00-20): Silicone filled rectifiers used in Brown-Boveri trip devices. Brown-Boveri filed a 10 CFR 21 report stating that certain trip devices have leakage values that could cause spurious tripping. A 400 volt stress test was devised to measure the leakage current to determine the condition of the silicone filled rectifiers. Nonconformance and Disposition report 9748 documented that a device in cabinet 2EJS\*US3 failed the leakage test. A spare breaker was tested for leakage and installed in lieu of the deficient item. Test procedure ES.GENE.001, "SCR Leakage Stress Test for K-Line Breakers Static Trip Device" was reviewed and found to contain the Brown Boveri recommended stress test parameters. The inspector was informed that all Category I K-line breakers were tested satisfactorily with the exception of the deficiency noted on N&D 9748. The inspector reviewed the test records for the failed breaker and the replacement breaker which were satisfactory. This item is closed.
- q. (Open) VIOLATION (84-06-04): Structural steel inspection. The inspector requested that the licensee assure that the FSAR commitment to Regulatory Guide 1.94 regarding high strength bolt thread projection had been adhered to by RCI. Pending licensee investigation of the scope of RCI involvement with high strength bolt installations, this item remains open.
- r. (Closed) UNRESOLVED ITEM (84-15-07): Primary containment penetration hardware missing. The inspector was informed that the bolting hardware and handwheels had been intentionally removed. The items had been dismantled prior to the initiation of the Punch List Item Report for rework control. The swing bolt hardware and pressure gauge were lost and were reordered by the licensee. SWEC procedure CSI 20.5 provides a Material Credit Slip to track the location of material returned from the field to the warehouse. Since the date when the penetration assemblies were disassembled, numerous programs have been instituted to control rework of this nature. Replacement hardware which meets the requisite quality requirement has been ordered to complete the penetration installations. This item is closed.



- s. (Closed) UNRESOLVED ITEM (84-17-01): Maintenance of Level A storage conditions. SWEC procured additional vacuum cleaners and replaced the Level A area air handling unit filters on an accelerated schedule to control the dust accumulation. Two additional laborers were assigned to the warehouse to clean the Level A and B areas. SWEC management now performs weekly inspections of the storage areas to ensure compliance with ANSI N45.2.2 requirements. The inspector toured the Level A area and verified that the additional measures discussed above have resulted in improved cleanliness conditions. This item is closed.
- t. (Closed) VIOLATION (84-19-02): Undersized instrumentation tubing support weld. The undersized weld on support BZ-412JD was documented by JCI on Inspection Report 8849. The inspector reviewed NMPC Corrective Action Report (CAR) 84.117 which documented additional concerns regarding the performance of the JCI inspector that accepted the deficient support weld. In February 1984 the JCI inspector was retrained on the weld inspection attributes, and he was subsequently terminated in July 1984. JCI reviewed the support documentation packages which included welds that had been inspected by the deficient inspector. The welds in question were re-examined and seven supports were found nonconforming and documented accordingly on unsatisfactory inspection records. JCI procedure QAS-1802-NMP2, "Review and Turnover of Category I Quality Assurance Records" has been amended to include an attribute to assure that all welds previously accepted by the deficient inspector have been subsequently inspected by another certified individual. The checklist has been made an integral part of the procedure. This item is closed as the JCI review of inspection documents will identify all welds inspected prior to February 1984 by the deficient inspector and will assure that they are reinspected on a 100 percent basis to verify the weld quality.
- u. (Closed) VIOLATION (84-19-03): Damaged instrumentation tubing. SWEC issued Training Bulletins #7 and #10 to all site personnel which covered precautions required to avoid damage to permanent plant equipment. A SWEC memorandum (NM2M-2492) was additionally issued to all site personnel which stated that instrumentation tubing runs were susceptible to damage and that any personnel found causing damage to the tubing would be subject to disciplinary action. SWEC training documented that over 4,200 personnel received on-the-job training regarding the proper care of installed plant equipment. SWEC procedure CSI 20.16, "Protection for Permanent Plant Equipment" was developed to promulgate guidelines applicable to permanent plant protection. The inspector reviewed the following documents that cover the specific instances of tubing damage noted by the NRC:
- JCI ISRs 6896, 9087, 9088, 9089, 9143
  - NMPC SR E-85-00531
  - SWEC N&D JC-777
  - GE FDDR KG1-0420



The damaged tubing was removed and replaced with new tubing to meet the design criteria. The inspector toured the Reactor Building and observed wooden framework to protect tubing runs. No further damage was identified. Based on the repair of the damaged tubing and establishment of site wide programs to prevent permanent plant damage, this item is closed.

- v. (Closed) UNRESOLVED ITEM (84-21-02): Lock washers and nuts supplied by Lone Star Screw Company. SWEC generated N&D 8771 to document potentially deficient material received from Lone Star. Lone Star provided physical and chemical test results for the A194 grade 8 material on February 27, 1984. The inspector noted that the Rockwell C hardness test results were not consistent with allowed hardness values of A194 grade 8. SWEC required that Lone Star perform a Rockwell B hardness test of 500 nuts. An-Tech Laboratories certified that the sample of 500 nuts was satisfactorily tested to the A194 grade 8 requirements. SWEC engineering analyzed the potential variations of the supplied material and found that the nuts and lockwashers would meet the design requirements. This item is closed based upon engineering analysis and test results that indicate the supplied material will perform the design function.
- w. (Closed) VIOLATION (84-21-05): SWEC review of design change documents. NMPC revised the FSAR (letters NMP2L-0345 and NMP2L-0383) to correct the information pertaining to the Refueling Equipment Platform Quality Assurance classification. By letter dated May 20, 1985, NRR accepted the NMPC justification to downgrade the Quality Assurance Category of that component. SWEC E&DCRs C91328, C91328A, C91328B and C91541 provided installation requirements for the platform. While the platform was classified as QA Category II, SWEC QC has been directed to perform a 100% visual field weld inspection. SWEC Project Procedure PP-16 has been revised to require that the QA Category designated on E&DCRs be verified against the information contained within FSAR section 3.2. SWEC engineering has further required that all future E&DCRs that reduce the assigned component QA Category from Category 1, must receive additional engineering concurrence from either the Project Engineer or the Superintendent of Engineering. SWEC Engineering Assurance examined 300 previously issued E&DCRs to identify whether the appropriate QA Category was assigned. Two E&DCRs, F41832 and V10659, were identified which had been erroneously assigned a reduced QA Category. The sample passed the MIL-Standard 105D acceptance criteria for a log of 35,000 E&DCRs and the two deficient documents were corrected. As E&DCR F41832 involved the misclassification of another GE designed item, SWEC engineering further investigated the QA classification design interface controls. SWEC sampled 50 E&DCRs that pertain to GE items and found that all were properly classified. The SWEC Project Engineer issued a May 3, 1985 memorandum which clarifies the GE classification system in relationship to the SWEC system. The inspector further reviewed three components identified in FSAR Table 3.2-1 as QA Category I items and found that all three were properly



treated under the SWEC system. This item is closed based on the procedural change for E&DCR generation, the sampling of past design change documents to verify appropriate QA categorization, the review of the GE and SWEC design interface, and the correction of the FSAR commitment regarding the refueling platform QA classification.

- x. (Closed) VIOLATION (84-21-06): HVAC support tension bracing design. SWEC issued E&DCRs C45112, C03243, C45115 and C91831 to provide additional information for the installation and inspection of HVAC supports. The QC inspection plan (N20P413LFA001) was amended to require that the entire HVAC support be verified in accordance with the engineering requirements. Nonconformance report N&D11,501 and IR M5A31023 were issued to document the as-built conditions identified during the reinspection of previously accepted HVAC supports affected by the above listed E&DCRs. Engineering analyzed the as-built conditions of the bracing and found that in all cases the hardware was acceptable. The appropriate engineering drawings were revised to reflect the as-built configuration details. This item is closed based on the backfit inspection of previously accepted supports involving tension braces and the revision of the applicable engineering design documents.
  
- y. (Closed) CONSTRUCTION DEFICIENCY (85-00-05): Improper ECCS pump switch operation. As documented in NRC Inspection Report 85-13, the RHR, LPCS and HPCS pump switches were replaced with the correct two position switches. The inspector reviewed DR E02048, N&D 11,082, and FDDR KG1-3638. These documents identified the failure to contact GE prior to switch replacement. The inspector reviewed the NMPC IRs that documented the satisfactory installation of the subject switches. The inspector was provided procedure EE.GENE.006, "Control Circuit Verification." He was informed that all switches within the control room will be verified during preliminary testing to assure proper function of the switches. This item is closed.
  
- z. (Open) CONSTRUCTION DEFICIENCY (85-00-17): Diesel Generator operated in excess of the rated capacity. The inspector reviewed the following documentation:
  - DR M02536 which documented the 40 minute overload
  - NEI Peebles-Electric Products letter EF-3251, which stated the generator was not adversely affected by the overload.
  - CES letters of June 4, 1985 and July 8, 1985 that evaluated the consequences of the overload upon the Diesel and found that no adverse affects occurred to the diesel components.
  - Test procedure MD.0100.A01 which specified limits to be observed during the diesel testing.

SWEC has evaluated the overload event and determined that no damage occurred to the diesel and subsequently withdrew the 10 CFR 50.55(e) notification to Region I. Region I will independently review the overload data and monitor future diesel generator preliminary and

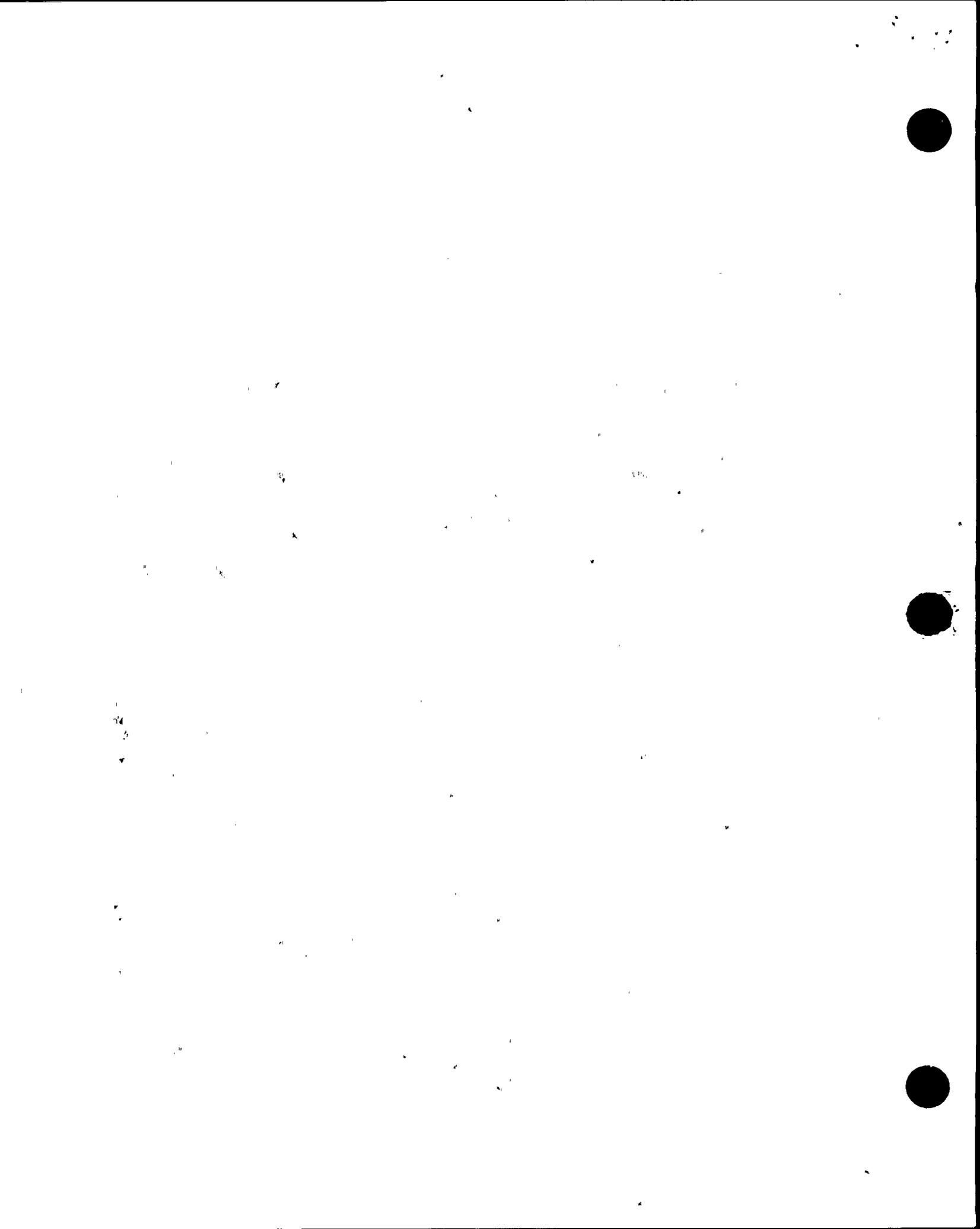


pre-operational testing to ensure that no adverse conditions were created during the overload.

- aa. (Open) CONSTRUCTION DEFICIENCY (85-00-18): Electrical support tube steel weld defects. The inspector was informed that the affected material was 4" x 4" x 3/8", 4" x 4" x 1/2", and 6" x 6" x 1/2" tube steel supplied by Unarco-Leavitt. The inspector obtained a list of suspect heat codes and reviewed several N&Ds (12313, 12367, 12015 and 12169) that have been written to document nonconforming supports utilizing the suspect material. SWEC QC has performed a reinspection to identify the location of all the deficient members. This item remains open pending the completion of the SWEC investigation of the problem.
- bb. (Open) CONSTRUCTION DEFICIENCY (85-00-20): RCIC pump suction line valve isolation. The inspector reviewed GE Application Information Document (AID-57) which proposed the design modification for the RCIC system. SWEC Engineering Change Notice (ECN) ICS-023 implemented the change and mistakenly omitted a critical check valve. This item will be reviewed when the licensee corrective actions are available.
- cc. (Open) UNRESOLVED ITEM (85-04-02): Licensee FSAR verification efforts. The inspector met with cognizant licensee personnel to discuss the on-going FSAR verification program. He presented typical inconsistencies that had been detected during the course of NRC inspections. Further FSAR discrepancies are documented in section 3.q, 3.ee, 4.g, 4.i, 8.d and 9, of this report. A meeting will be held between Region I and NMPC on July 23, to further discuss the licensee verification efforts. This item remains open.
- dd. (Open) VIOLATION (Inspection Report 85-10): Inspection Report 85-10 identified one violation. The licensee responded by letter dated July 11, 1985 which detailed planned corrective and preventive actions. The licensee response has been accepted and the implemented actions will be examined during a future inspection.
- ee. (Open) UNRESOLVED ITEM (85-13-03): Emergency DC power system pre-operational test. The inspector had previously identified that the FSAR battery load profile defined in Table 8.3-10 was inconsistent with respect to the load profile to be used during the pre-op test 74-3. The inspector requested that the licensee provide evidence that the FSAR had been amended. Such evidence was not immediately available. This item remains open.

#### 4. Licensee Action on IE Bulletins and Circulars

- a. (Closed) IE BULLETIN (77-06): Potential problems with containment electrical penetration assemblies. Bulletin 77-07 addresses the concerns relative to the General Electric (GE) series 100 electrical penetrations for construction sites. The Nine Mile Point 2 (NMP2) site utilizes Conax penetrations of a different design than the GE



style. The licensee actions will be further reviewed during evaluation of Bulletin 77-07. This item remains closed.

- b. (Closed) IE BULLETIN (78-01): Examination of Mark-1 containment torus welds. The NMP2 site utilizes a over/under primary containment with a suppression pool such that this problem is not applicable. This item is closed.
- c. (Closed) IE CIRCULAR (79-07): Unexpected speed increase of reactor recirculation MG set resulted in reactor power increase. The NMP2 design utilizes variable flow control valves on the recirculation system such that this problem is not applicable. This item is closed.
- d. (Closed) IE BULLETIN (79-10): Requalification training program statistics. NMP2 did not have an operating license when the data was collected regarding requalification programs. Therefore this bulletin is not applicable and it is closed.
- e. (Closed) IE CIRCULAR (79-14): Unauthorized procurement and distribution of Xenon-133. NMP2 does not procure, distribute or process radio pharmaceuticals. Therefore this item is not applicable.
- f. (Closed) IE BULLETIN (79-22): Possible leakage of tubes of tritium gas used in timepieces for luminosity. This bulletin is not applicable to NMP2.
- g. (Open) IE BULLETIN (79-24): Frozen lines. The bulletin requested that safety related process, instrument and sampling lines be protected from freezing weather conditions. The inspector reviewed FSAR sections 5.4.6.1.5, 4.6.1.1.2 and 9.3.5.2 which state that the RCIC, CRD and SLC systems are protected from sub-freezing conditions. The inspector reviewed the NMPC response to FSAR question 440.17 which stated that FSAR section 5.4.7.14 dealt with this concern. The inspector found that this section did not exist within the FSAR. Additionally, the licensee review apparently did not address the aspect of instrument and sampling lines. This item remains open.
- h. (Open) IE BULLETIN (79-28): Possible malfunction of NAMCO model EA180 limit switches at elevated temperatures. The inspector noted an NMPC letter dated July 22, 1981 that directed SWEC to certify that none of the affected NAMCO switches are utilized in NMP2 equipment or that the defective gaskets had been replaced. The licensee could not produce the SWEC certification. This item remains open.
- i. (Open) IE BULLETIN (80-04): PWR main steam line break. The inspector reviewed the SWEC analysis of this type of accident which stated that continued feedwater addition will lead to lower containment pressures. The inspector reviewed FSAR section 6.2 and table 6.2-18 which state that for a double ended rupture of the main



steam line, within containment, continued feedwater addition will result in a higher drywell pressure. Pending licensee review of the FSAR and SWEC engineering analysis for consistency. This item remains open.

- j. (Closed) IE BULLETIN (80-05): Vacuum condition resulting in damage to chemical volume control system holdup tanks. This bulletin is not applicable to NMP2 as it pertains only to pressurized water reactors.
- k. (Closed) IE CIRCULAR (80-06): Control and accountability systems for implant therapy sources. This item is not applicable to NMP2.
- l. (Closed) IE BULLETIN (80-11): Masonry wall design. The inspector toured safety related plant buildings including the Reactor, Control, Diesel Generator, Auxiliary Service, and the Service Water pump buildings. He found that no free standing masonry block walls were utilized in those buildings. The inspector further reviewed FSAR section 3.8.4 and specification S206W which stated that removable block walls are used for providing equipment replacement access while satisfying shielding requirements. These block walls are completely enclosed by structural steel members and the adjacent concrete structure. The structural design of those elements accounts for the requisite seismic loadings. The licensee stated that in no instances do the removable wall designs support any safety related equipment. This item is closed.
- m. (Open) IE BULLETIN (80-12): Decay heat removal system operability. The inspector requested licensee verification that the bulletin contents had been reviewed in conjunction with the development of the NMP2 operating procedures. This item remains open.
- n. (Open) IE BULLETIN (82-04): Bunker Ramo electrical penetrations. The NMP2 design utilizes Conax electrical penetrations. The inspector requested further licensee documentation regarding the maintenance of an NMPC excluded equipment list for deficient equipment such as the Bunker Ramo items. This bulletin remains open.
- o. (Closed) IE BULLETIN (83-01): Failure of reactor trip breakers (Westinghouse DB-50) to open an automatic trip signal. SWEC and GE reviewed the NMP2 design and found that GE type CRI05 contactors were used for the scram initiation and that none of the affected circuit breakers are used in the trip system. This item is closed.
- p. (Closed) IE BULLETIN (83-07, Supplement 1 and 2): Apparently fraudulent products sold by Ray Miller, Inc. SWEC reviewed the vendors identified by Bulletin 83-07 that had received Ray Miller materials. The review found that only Buffalo Tank had supplied components fabricated from Ray Miller material to the site. The tanks are non-safety related. Engineering analysis concluded that the tanks are expected to perform the design function as they are subject to atmospheric pressure only. NMPC has a procurement quality



assurance program which performs inspections and audits of vendor facilities. A qualified vendor list is maintained which is based upon evaluation of vendor performance. Based upon the ongoing procurement quality assurance programs and the fact that SWEC determined that no safety-related systems are impacted by deficient Ray Miller material, this item is closed.

- q. (Closed) IE BULLETIN (83-08): Electrical circuit breakers with an undervoltage trip feature in use in safety-related applications other than the reactor trip system. SWEC and GE review found that no Westinghouse Type DB, DS or General Electric Type AK-2 circuit breakers are used in safety related applications other than the reactor trip system at Nine Mile Point 2.
- r. (Open) IE BULLETIN (84-03): Refueling cavity water seal. The inspector reviewed the following documents that describe the seal design:
- FSAR section 9.1.4.2.9
  - Specifications M070A and P283V
  - E&DCRs P13232 and P13380
  - Drawings EV-2A-4, EV-2D-3, EV-2M-3, EV-1A-7, EV-1B-9, EV-24A-6 and EV-25A-7.

The inspector noted that the seal design for NMP2 is considerably different from the Haddam Neck design. The NMP2 annular spacing has a maximum tolerance to limit width variations. The seal seating is full depth and is angled such that hydrostatic pressure will force the seal to seat tighter against the seat structure. While the NMP2 design would appear to preclude the concern identified within the bulletin, this item remains open pending completion of pre-operational test POT-39 which includes a static head pressure test of the refueling cavity.

#### 5. Quality Performance Management Program

The inspector reviewed the nineteenth Quality Performance Management Program (QPMP) report issued by NMPC. He attended the associated licensee executive board meeting. The inspector noted that adverse trends were identified by the licensee staff. He questioned the licensee as to why data regarding startup test activities was not included within the report. He was additionally informed that the report format was under evaluation to be revised. The effectiveness of future reports will be monitored. No violations were identified.

#### 6. NMPC Quality Assurance Program

- a. The inspector reviewed the following documents that define the guiding requirements for the NMPC audit program:
- PSAR Appendix D.2.18



- ANSI N45.2.-77, "Quality Assurance Program Requirements for Nuclear Facilities"
- ANSI N45.2.12.-77, "Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants"
- QAP 18.10, "Quality Assurance Department Audits"

The inspector then reviewed the following recent NMPC audit reports and plans for compliance to the above requirements:

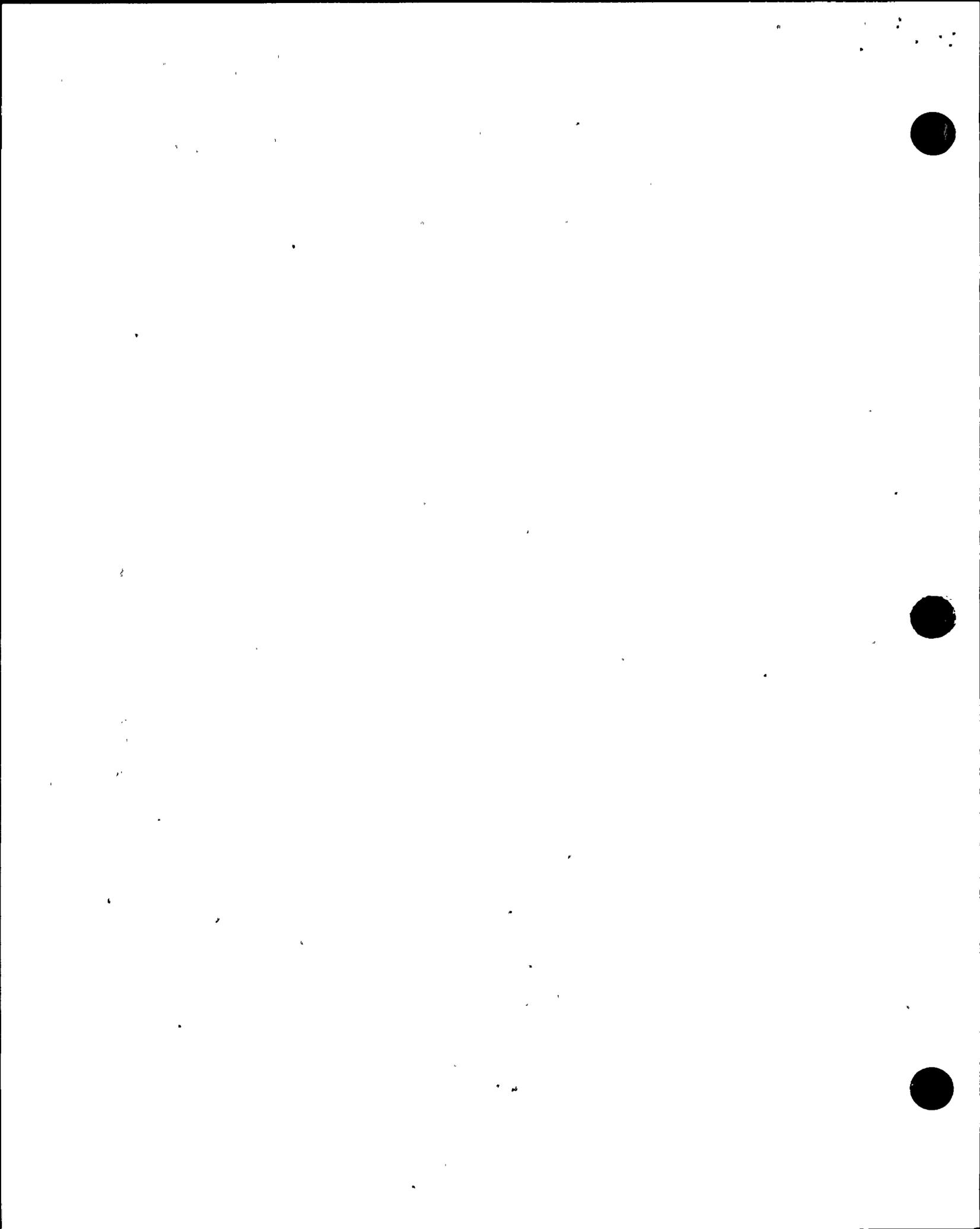
<u>Audit</u>	<u>Audit Date</u>	<u>Audited Organization</u>
NC-RG-CO-85023	6/24/85	RCI
NC-RG-CO-85022	6/10/85	SWEC PQA
NC-RG-IN-85019	6/10/85	Records Management
NC-RG-IN-85018	6/3/85	Fire Protection Program
NC-RG-CO-85017	5/20/85	Document Control

The inspector verified that the audits were appropriately documented. No violations were identified.

- b. The inspector reviewed the following NMPC QA Instructions (QAIs) that contain detailed implementation guidance for the Startup QA efforts:

- 2.10-01, "Training of Startup QA Personnel"
- 6.20-01, "Review of Documents Effecting Quality by the Startup QA Staff"
- 6.20-02, "Startup QA Review of Type A or B System/Equipment Release Packages and System Turnover Package Review"
- 10.02-01, "Preparation of Startup QA Checklists"
- 10.20-01, "Startup QA Surveillance Reports"
- 10.30-01, "Use and Preparation of QCIR"
- 10.30-03, "Mechanical/Electrical and I/C Inspections"
- 10.30-04, "Inspection and Surveillance of Housekeeping and Foreign Material Exclusion"
- 10.30-05, "Sampling Plan"
- 12.10-01, "Calibration and Control of Measuring and Test Equipment Utilized by QA/QC"
- 13.10-01, "System Cleanliness Verification/Reverification"
- 14.10-02, "Review of Station Work Requests and Work Control Requests"
- 14.10-03, "Use and Control of QA/QC Status Tags"
- 16.03-01, "Guidance for the Processing of Corrective Action Requests"
- 16.20-01, "Startup Quality Assurance Trending and Tracking System (QATTS)"
- 17.10-04, "Quality Assurance Records Collection, Review, Storage and Transmittal to Records Acceptance Criteria"

The inspector reviewed the implementation of selected portions of the above listed instructions as follows:



- | <u>QAI</u> | <u>Items Reviewed</u>  |
|------------|--|
| 2.10-01    | QA personnel files for certified and uncertified individuals were reviewed. Sample lesson plans from the Master Training File were reviewed and the designated training coordinator was interviewed.   |
| 6.20-01    | QA comment sheets for preliminary test procedures written after QA was removed from the Joint Test Group were examined. The inspection call-in log book for Deficiency Reports (DRs) were examined, and it was observed that Inspection Reports (IRs) are correlated with DR holdpoints. The process of QA Category verification for DRs was reviewed. |
| 6.20-02    | Notification was requested from QA prior to the next system turnover walkdown.   |
| 10.02-01   | 25 checklists written to date for QA surveillances were examined.  |
| 10.20-01   | The method of surveillance scheduling with cognizant personnel was discussed .   |
| 10.30-01   | That the inspection form does not reference Measuring & Test Equipment (M&TE) per ANSI N45.2.8 was noted, and the inspector was informed that QAP 10.30 had been revised to add that requirement.  |
| 10.30-04   | The zone surveillance schedule and past surveillance results were reviewed.  |
| 10:30-03   | 20 current QC inspection plans were reviewed.  |
| 12.10-01   | When the inspector asked to review the M&TE use log, he was informed that all calibrated equipment is controlled by Unit 1.  |
| 14.10-02   | The Work Request (WR) log that correlates the WR with the associated inspection was examined.  |
| 14.10-03   | The inspector was informed that the status tag system has not been used to date.   |
| 16.20-01   | The monthly trend reports for April to June 1985 and several suspected Trend Investigation Reports were reviewed.  |

The inspector reviewed a proposed licensee plan to perform an operational readiness inspection audit. The following are open concerns regarding the startup QA program:



- QAP 10.30 does not discuss the use of checklists to guide the associated inspection activity. (85-19-02)
- The startup QA/QC program has not explicitly been reviewed in relationship to the programmatic concerns identified during the Construction Appraisal Team (CAT) inspection. (85-19-03)

No violations were identified.

#### 7. Reactor Pressure Vessel Internals Installation

- a. The inspector observed the installation of blade guides into the Reactor Pressure Vessel and noted that the work was performed by NMPC employees. He reviewed a blade guide location map that specified the coordinates for insertion of the blade guides. He received a statement from startup personnel that the items were cleaned to grade B prior to installation. He reviewed NMPC Surveillance Report SR-85-10101 which covered the activity. GE Service Information Letter (SIL) 406 was reviewed as it contained precautions regarding the proper insertion of blade guides to protect in-core instrumentation from flow induced vibration during startup tests. He verified that the blade guide placement was in accordance with the SIL recommendations. He noted Startup QA letter 9MSTQA85-362 which directed test personnel to develop procedures as necessary to support work and test activities.
- b. The inspector reviewed the following documents which pertain to the installation of incore detectors:
  - Procedure IS.0094.001, "Inspection, Preassembly and Installation of Incore Detectors and Dry Tubes"
  - GE FDDRs KG1-4164, KG1-4163
  - Deficiency Reports I02557 and I02561

He had no questions and no violations were identified.

#### 8. Preliminary Test Activities

- a. The inspector reviewed GE specification 22A7409 and FDDR KG1-0331 which require a liquid penetrant examination of certain Reactor Pressure Vessel (RPV) welds after the conduct of the RPV hydrostatic test. The inspector noted that other nuclear facilities have reported potential 10 CFR 50.55(e) reports based upon adverse findings of these inspections. The inspector requested that the licensee provide the applicable weld examination results in conjunction with the RPV hydrostatic test results when they become available. (85-19-04)
- b. The inspector reviewed RCI procedure HY-100 and work package 80 for the Control Rod Drive Hydraulic system hydrostatic test of the scram system group III piping. He noted that the design pressure was 1250



psi and the test pressure was specified to be 1.25 times the design pressure. The test procedure was reviewed and found to include the appropriate ASME Section III requirements. During the performance of the hydrotest, the inspector verified the presence of personnel representing RCI QC, the appropriate ANI, SWEC QC, and NMPC QA. The inspector independently examined a number of the scram header weld joints when the system was at the inspection pressure. The inspector assured that calibrated test gauges were utilized and that the system was provided with a high point vent and relief valve. The inspector had no further questions.

- c. The inspector observed preliminary test activity on electrical circuits associated with valve 2RHS\*FY38. The inspector verified the testing was performed in accordance with the associated test procedures and design documents. The following were reviewed:

- Test procedure EE.GENE.001, "Insulation Resistance Measurement of Electrical Equipment," ED.GENE.014, "Motor Operated Valves," EE.GENE.006, "Control Circuit Checkouts"
- Drawings EE-9NL-2, EE-9SR-4, EE-3CN-5 and EE-3CP-5
- Diagram ESK-6RHS21

The inspector had no further questions.

- d. The following documents which describe the nonconformance program that will be used during the startup test phases were reviewed:

- FSAR 17.1.15.1
- Startup Administrative Procedure (SAP) 121A, "Deficiency Report System"
- SAP 121B, "Deficiency Tracking System"

The inspector noted that a Problem Report (PR) is used to identify design deficiencies for resolution while a Deficiency Report (DR) is used to identify and disposition non-design related problems.

The inspector reviewed the following Problem Reports for compliance with SAP 121A:

M00224	E00213	E00225	E00278
M00201	I00213	I00230	
E00206	I00218	E00252	

The inspector then reviewed the following Deficiency Reports relative to SAP 121A:

E00406	E00452	M00476	E00498
E00414	M00464	M00477	M00500
M00429	M00466	I00478	M00503



E00431	E00471	I00479	M00576
E00447	E00474	E00496	
E00448	I00474	E00497	

Procedure SAP 121A did not explicitly identify the definition of the term quality class that signifies the level of attention the component should receive under the QA program. The licensee agreed to revise the procedure to clearly state that quality class is synonymous with QA Category. The inspector further noted that procedure SAP 121A was ambiguous with respect to what personnel were responsible for reviewing either DRs or PRs for reportability under 10 CFR 50.55(e). The inspector was shown a draft procedure revision which clearly stated that the lead engineer or the test group manager is responsible for making that determination. Again, the licensee committed to revise the procedure accordingly. The inspector verified that the DRs and PRs are trended by the NMPC startup QA organization. The inspector verified that SAP-110 has mandatory training for startup personnel on 10 CFR 50.55(e) and 10 CFR 21 reporting.

Problem Report M00201 had been written to resolve a problem with the relative location of vacuum breakers on lines that are connected to the spent fuel pool. The engineering analysis showed the situation was acceptable as a pipe break would only drain the water level down 12 feet such that the spent fuel assemblies remain covered and appropriately cooled. The inspector examined FSAR section 9.1.2.3 which states the spent fuel pool will be covered at all times with a minimum depth of water to provide sufficient shielding. The inspector requested that the licensee assure that the vacuum breaker location satisfies the FSAR description. Pending completion of the review, this item is unresolved. (85-19-05)

#### 9. Flood Control Berm

The inspector reviewed the following documents that pertain to the design and installation of the flood control berm:

- FSAR section 2.5.6 and table 2.5-50
- Specification G002R, "Flood Control Berms"
- Drawing EV-11A-4, "Flood Control Berms/Plans and Topography"
- Drawing EV-11G-3, "Flood Control Berms/East Berm-Sections"
- QA Inspection Plan N20G002RFA001, "Flood Control Berms"
- ASTM D-1557-78, "Moisture-Density relations of soils and soil - aggregate mixtures using 10-lb. rammer and 18 in. drop"
- ASTM D-1556-82, "Density of soil in place by the sand - cone method"



The inspector observed backfill operations associated with the East Flood Control Berm (FCB). SWEC Quality Control (QC) personnel were present and conducted the required inspections. The QC inspector was interviewed and found knowledgeable of the specification requirements. The associated contractor, Tuscarora Construction Company, was in compliance with the design requirements. The inspector further noted the presence of a SWEC geotechnical engineer during the backfill operation.

The following SWEC inspection reports were reviewed:

S5A61616, S5A61347, S5A61594, S5A61645, S5A61612, S5A61587, S5A61649, S5A61624, S5A61585

The inspection records covered in place density tests, field construction inspection, moisture - density laboratory tests, and sieve laboratory analysis.

The inspector identified the following concerns to the licensee:

- FSAR table 2.5-50 designates that soil tests must be performed in accordance with ASTM D1557-70, while specification G002R invokes D1557-78 which consists of a modified test procedure.
- FSAR section 2.5.6.4.2 states that maximum soil density will be determined by ASTM D-1557 Method D, but due to the material gradation used on the berm Method C is used.
- QA Inspection Plan N20G002RFA001 does not define inspection attributes regarding control of lift thickness and number of passes for the compaction equipment.
- Specification G002R required that #6 and #8 sieves be used to meet the gradation acceptance criteria, but those sieves were not used for the laboratory tests.
- Specification G002R and the moisture-density test reports indicated that ASTM D-1557 Method D was used, when in fact verbal discussions with SWEC QC ascertained that Method C was correctly used.
- The reviewed inspection reports inconsistently defined the source of the fill material.

The licensee took the following actions to address the concerns identified above:

- Licensing Document Change Notice 1650 was initiated to correct the FSAR commitment to ASTM D1557-78.
- Although method D was specified, whenever less than 10% of the material was retained on a 3/4 inch sieve, Method C was actually used in accordance with ASTM D-1557.



- QA Inspection Plan N20G002RFA001 was revised to incorporate quantitative criteria for lift thickness and number of passes.
- E&DCR F30169 showed the gradation curve developed by using #4 and #10 sieves would satisfy the design intent.
- The licensee corrected the previously issued inspection reports to properly document the test method that was used.
- The licensee corrected the previously issued test and inspection reports to consistently define the fill material source.

Based upon the licensee actions, the inspector had no further questions.

10. Unresolved Items

Unresolved items are matters for which more information is required in order to ascertain whether they are acceptable items, or violations or deviations. Unresolved items were identified within this inspection in paragraphs 2 and 8d.

11. Management Meetings

At periodic intervals during the course of this inspection, meetings were held with senior plant management to discuss the scope and findings of this inspection. Based on the NRC Region I review of this report and discussions held with licensee representatives on July 19, 1985, it was determined that this report does not contain information subject to 10 CFR 2.790 restrictions.

