

SUMMARY REPORT
FOR
REGIONAL EVALUATION
OF
PALO VERDE UNIT ONE

DOCKET NO. 50-373

PREPARED BY
U.S. NUCLEAR REGULATORY COMMISSION
REGION 5

NOVEMBER 14, 1984

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a. Project History

Palo Verde Nuclear Generating Station Unit No. 1

PLANT CHARACTERISTICS:

Docket No.: 05000528
CP No. & Date Issued: CPPR-141/05-25-76
CP Expiration Date: 12/31/84
Applicant: Arizona Public Service Company
Plant Location: 36 miles west of Phoenix, AZ
IE Region: V
AE: Bechtel
NSSS: Combustion Engineering
Constructor: Bechtel
Reactor Type: PWR
DER (MWE): 1304

KEY PERSONNEL:

Corporate Contact: E. E. Van Brunt, Jr., Vice President
Nuclear Production
Corporate Address: P. O. Box 21666
Phoenix, AZ 85036
Corporate Phone No.: (602) 271-7900
NRC LPM: E. Licitra
IE Resident Inspector: R. Zimmerman/G. Hernandez

FUEL LOAD DATE CHANGES
AS REPORTED BY UTILITY:

<u>Report Date</u>	<u>New Schedule</u>	<u>Reason for Change Reported by Utility</u>
09-13-79	11-00-82	Impact of scheduling problems with key equipment. Augmentation of the plant's emergency response system as results of TMI lessons learned. Complexity of the transition from construction to start-up phase.
07-28-82	08-01-83	
03-00-84	First Quarter of '85	

LOCAL PUBLIC DOCUMENT ROOM:

Phoenix Public Library
12 East McDowell Road
Phoenix, AZ 85004

CONSTRUCTION STATUS REPORT
NUCLEAR POWER PLANTS

PALO VERDE 1

CONSTRUCTION STATUS:

Applicant's Current Estimated Fuel Loading Date: By 12/84

Applicant's Previous Estimated Fuel Loading Date: 11-01-83

Applicant's Estimated Fuel Loading Date at CP Issuance: 11-00-81

Applicant's Current Estimated Commercial Operation Date: 11-30-85

Applicant's Construction Completion Estimate
as Defined in CP: (Earliest) 06-01-81
(Latest) 12-31-84

CURRENT ESTIMATED PERCENT CONSTRUCTION COMPLETE: 99%

COMMENTS REGARDING CURRENT CONSTRUCTION STATUS:

	<u>ESTIMATED START</u>	<u>ACTUAL START</u>	<u>ESTIMATED COMPLETION</u>	<u>ACTUAL COMPLETION</u>	<u>ESTIMATED % COMPLETE</u>
Mobilize and Prepare site:		05-76		10-76	100%
Place structural concrete:		08-76		01-81	100%
Install Reactor Pressure Vessel:		11-78		12-78	100%
Install Large Bore Process Pipe:		03-77		03-83	100%
Install Large Bore Pipe Hangers, Restraints, and Snubbers:		09-78		06-83	100%
Install Small Bore Pipe:		06-78	12/84		99%
Install Cable Tray:		10-77		11-81	100%
Install Exposed Metal Conduit:		03-78	12/84		99%
Install Power, Control, Instrumentation, and Security Cable:		02-79	12-84		98%
Install Electrical Terminations:		08-79	12-84		98%
Conduct Reactor Cold Hydrostatic Test:		07-82		07-82	100%
Conduct Hot Functional Test:		05-83		07-83	100%
Conduct Preop and Acceptance Tests Necessary for Fuel Load:		10-81	12/84		82%

b. Quality Assurance Organization and Program (Construction)

The Quality Assurance Program at PVNGS has remained stable since the inception of the Project. The changes made have been those resulting from continuous evaluations as different phases of project activities and necessary modifications were needed to update commitments to Regulatory Standards. Similarly, the QA Organization has also remained stable with increased emphasis on APS assuming the first line of responsibility as the Project nears operation.

The original APS QA organization reported to the Nuclear Project Management Vice President/ANPP Project Director and consisted of a home office, which defined the overall QA program criteria for design and procurement, and a site organization which verified implementation of the QA program implemented by the Constructor and AE.

The major responsibility for implementation of the QA program as well as for the design, procurement and construction was delegated to Bechtel Power Corporation and Combustion Engineering. Their programs were accepted in 1976 and have remained stable throughout the life of the project. Refinements to these programs have been made to increase efficiency and effectiveness as well as to incorporate new regulatory requirements since the publication of the PSAR however, the basic quality program controls have remained constant.

The APS QA Organization has evolved from a nucleus of Quality Engineers, dedicated to the initial construction phase of the Project, to a large organization dedicated to improving the efficiency and effectiveness of all phases of the QA program as the Project has become increasingly complex as each unit nears operational readiness.

A major organizational change was effected in 1982 with the establishment of a single project-wide QA Organization reporting to the Executive Vice President, ANPP. This change was made in recognition of the need to strengthen the QA organization in preparation for startup and operation as well as to improve the effectiveness of the organization.

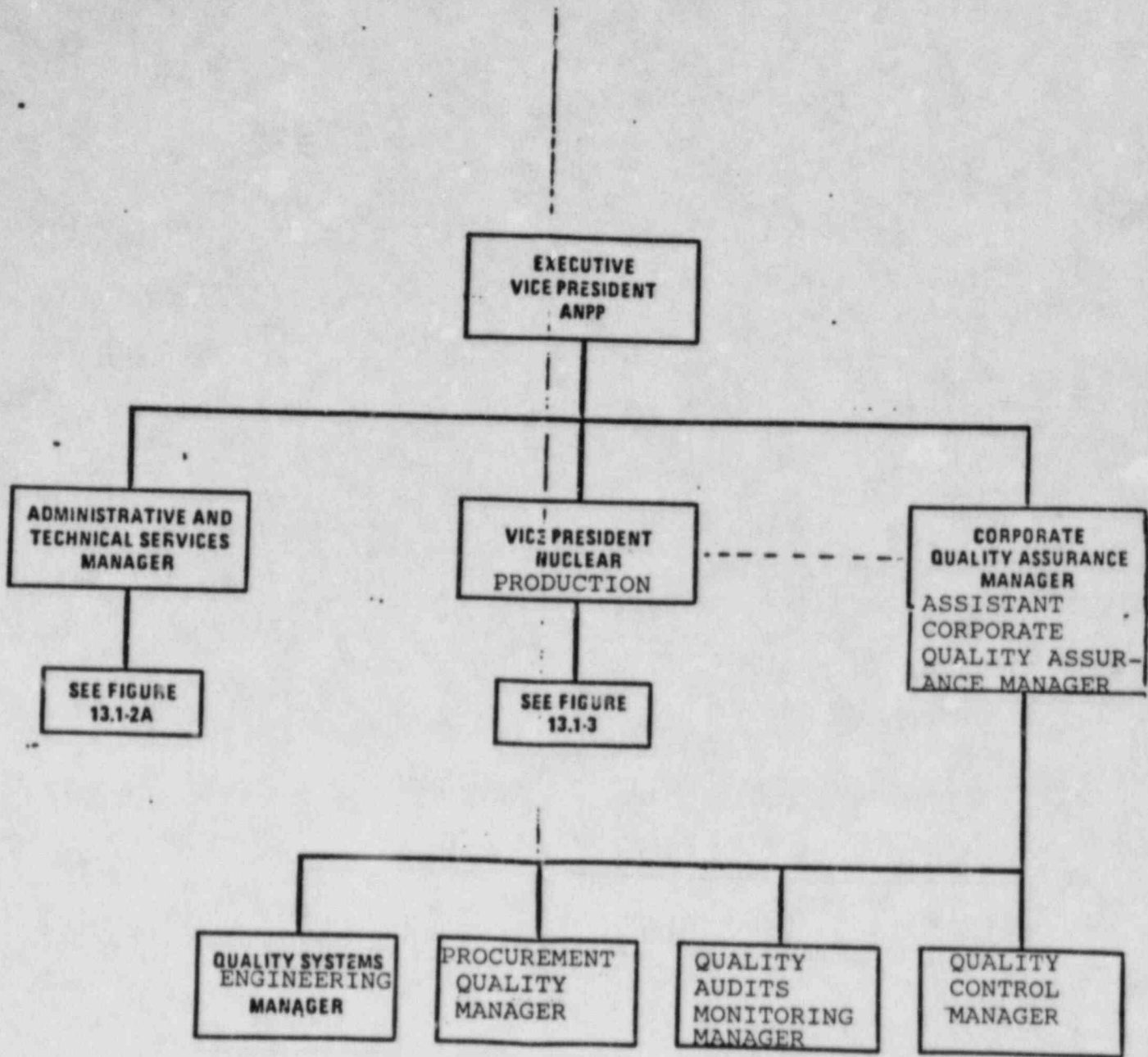
The organization was structured along jurisdictional lines in response to changes in project management organizations which reflected the increasing scope of activities in the plant operating staff and the plant startup organization as well as the construction organization.

In 1984, the APS QA organization was reorganized along functional lines rather than jurisdictional lines in preparation to execute responsibilities in an operational environment and, more importantly to increase its efficiency.


Quality Assurance Organization and Program (Construction)

Quality Assurance continues to report directly to the Executive Vice -President, ANPP, as does the Vice-President, Nuclear Production. The QA organization has received the complete support of top level management and is, therefore, involved in all aspects of nuclear project activities.

The APS Quality Assurance program has become more clearly defined as the project and the organization have matured. The number of personnel assigned to the QA organization has increased as responsibilities have expanded in preparation for the operational phase of PVNGS.



_____ Denotes lines of authority/administration
 - - - - - Denotes lines of communications

 Palu Verde Nuclear Generating Station FSAR
APS ANPP ORGANIZATION Figure 13.1-2

c. NRC Inspection Activities

MC 2512 Program Status

Priority 1 Complete

MC 2513 Program Status

<u>Module</u>	<u>Subject</u>	<u>Status</u>
35743	QA Program - Maintenance	50%
35745	QA Program - Surveillance Testing	50%
35748	QA Program - Records	60%*
35749	QA Program - Tests & Experiments	0%
42400	Plant Procedures Inspection	90%
70322	Engineered Safety Features Test	0%*
70326	Loss of Offsite Power Test	0%*
70329	Preoperational Test Verification	0%*
83320	Radiation Protection	95%
84330	Liquid Waste Systems	85%*
84331	Gas Waste System	85%
84332	QC and Radio Chemistry	95%
91300	Title 10 Requirements	0%
92718	Safety Evaluation Report Review	0%

All other applicable inspection areas have been completed. The areas listed above will be completed prior to licensing. Those areas which are indicated by an asterisk require further action by the licensee, generally completion of a preoperational test or collation of test results, before the inspection may be completed.

MC 2514 Program Status

Limited inspection has been performed for the startup testing phase. The Initial Fuel Loading Procedure Review (72500) will be completed prior to issuance of the operating license. The licensee has issued all startup testing procedures required by the FSAR.

Special Inspection Activities

See Table 1

Table 1

<u>Inspection Number</u>	<u>Inspection Date</u>	<u>Inspection Hours</u>	<u>Brief Description</u>	<u>Findings</u>
81-02	1/26/81 - 2/5/81	356	Construction Assessment Team (CAT) Inspection	Receiving inspectors; equipment maintenance, special handling requirements, maintenance and storage appeared weak. Management and QA/QC visibility was high; construction management appeared strong.
83-10	6/1/82 - 3/11/83		Investigation of allegations concerning records safety-related electrical terminations.	Allegations substantiated (Civil Penalty issued)
83-14	4/11/83 - 5/12/83	608	Emergency Preparedness Preoperational Inspection	No significant deficiencies were identified.
83-34	9/6/83 - 11/1/83	1720	CAT Inspection	Construction generally satisfactory. Large numbers of deficiencies were not identified during final QC inspection. Management control by Operations and Startup groups needed improvement.
84-38	8/27/84 - 9/15/84	819	CAT Followup Inspection	Startup Work Controls generally satisfactory APS followup to 1983 CAT inspection effective. Significant amount of "punch list" items exist.
84-41	8/20-24/84 10/1-10/84	396	Security Preoperational Inspection	Security program was not satisfactory. Licensee has reported that all deficiencies will be corrected by 12/15/84.

d. Generic Correspondence

The licensee has satisfactorily responded to all applicable Bulletins and Circulars, with the following exceptions:

- (1) IE Bulletins 79-21, 80-06, 80-09, 80-16, 81-02, 82-02, 83-03, 83-07, and 84-03.
- (2) IE Circulars 79-21, 80-05, 80-10, and 81-03

The review of these Bulletins and Circulars is pending licensee completion of action on them.

Also, a sampling review of licensee action on all Information Notices will be conducted prior to licensing.

e. Enforcement History

<u>Escalated Enforcement Action (date)</u>	<u>Reason for Action</u>	<u>Corrective Action</u>
Civil penalty of \$40,000 dated December 12, 1983 (Imposition suspended pending release of report of investigation by Department of Justice. Report released by DOJ 20 Sept 84)	Unit 1 Electrical Termination installation cards did not reflect crimp tool number and signature of the installer.	Licensee has not formally responded but licensee expected to demonstrate that other controls on termination cards ensured all terminations were technically adequate.
Civil penalty of \$40,000 (mitigated to \$20,000) dated December 12, 1983	Licensee's Quality Assurance program did not maintain adequate control over activities affecting quality.	Licensee stopped testing, conducted a comprehensive audit of startup work controls, and revised administrative controls for startup testing.

Uncorrected Violations of Unresolved Items

Licensee responses to three deviations, fourteen Severity Level IV violations and twelve unresolved items have not been reviewed as of 10/28/84. Review of these items is pending licensee completion of corrective action.

f. Licensee and Contractor Initiated Stop Work Actions

Licensee Initiated Stop Work Actions

<u>Year</u>	<u>Organization</u>	<u>Reason/Period</u>	<u>Corrective Actions</u>
1978	Bechtel	Radial bends did not meet drawing requirements. Repairs started without NCR or repair instructions documented. (12/13/78-12/15/78)	Rework tag prepared in compliance with WPP/QCI 54.0 As-built survey record attached to NCR. NCR issued C-Y-1078 (12/14/78)
1979	Bechtel	ASME code acceptance criteria not met for ultrasonic testing. (7/31/79-8/21/79)	Test data and results obtained for acceptance of double welded stainless steel pipe.
1981	Bechtel and CE	Insulation being deformed to fit between Reactor Vessel and RV support columns and technical justification not provided for assurance of quality and integrity of system not violated. (5/5/81-5/21/81)	Deforming of insulation analyzed and accepted. Gaps minimized.
1981	Bechtel	Procedures/instructions or controls not developed to control the connection and charging of batteries to assure safety of personnel and equipment. (8/31/81-9/1/81)	Procedure initiated and PCN written to WPP/QCI 28.0
1981	Bechtel	Five Star Grout 150 used and does not meet required strength. (12/14/81-4/28/82)	Authorization for use deleted from 13-CM-365.
1982	APS Operations	Control of temporary electrical jumpers, temporary lifting of terminal leads, temporary change of set-points and use of temporary modification not being performed in accordance with 73AC-92205 but in accordance with 90AC-02211. (4/1/82-4/2/82)	90AC-02211 identified as procedure for Startup to use: 73AC-92205 was revised to be in effect only at fuel load.

<u>Year</u>	<u>Organization</u>	<u>Reason/Period</u>	<u>Corrective Actions</u>
1982	Bechtel	Tendons stored without weather protection. (5/18/82-5/21/82)	All tendons discussed inspected, rust removed and recoated. No signs of pitting or other deficiency. Considered acceptable and covered with plastic for weather protection. Western Concrete personnel reinstructed in requirements for storage of tendons.
1982	Bechtel	Stopped installation of sample supply lines to air radiation monitors as supply sample lines are not designed to requirements of ANSI N13.1 Seat B5. (5/27/82-6/29/82)	Issue of DCP 1SN-SQ-001, Rev. 5. Existing system installed in accordance with current revision of design drawing. Problem resolved on QAF82-45.
1982	Bechtel	Material accountability not being maintained in Zone III area established for this work. (6/2/82-6/2/82)	Complete inventory taken, controlled access material and tool log updated. Removed section pipe spool and inspected. Area inspected, personnel instructed.
1982	Bechtel	Procedure cancelled which governs BPC preparation for area transfer/release. Requirement for inspection/acceptance of cable tray covers and barriers deleted. Requirement for inspection/acceptance of unscheduled commodities has been deleted as was commitment to verify installation/inspection documentation within scope of area transfer. (7/20/82-7/22/82)	BPC will review WPP-QCI 31.0 and write PCN; review Fire Barriers, Cable Tray Covers and Conduit Sealant and incorporate into existing procedures or add to WPP/QCI 31.0
1982	APS Startup	Test Director not certified as qualified for test MG300, FPN P02. (7/21/82-7/22/82)	Test Director will be familiarized with the procedure and familiarization will be documented. QC to be present during test.

<u>Year</u>	<u>Organization</u>	<u>Reason/Period</u>	<u>Corrective Actions</u>
1982	APS Startup	Circuit breaker removed without permission and no clearance was requested nor issued. (8/4/82-8/4/82)	90GA-02228 revised and Maintenance will assure that personnel are aware of station clearance requirements and test conduct requirements.
1982	BPC Startup and APS Maintenance	Failure to: respond in a timely manner to OTNs; to implement requirements of AD-112 with regard to M&TE usage logs and forms; to respond to calibration overdue notices; to comply with ANSI N45.2.16, Section 3; provide an adequate response to CAR 82-036. (9/17/82-9/18/82)	Corrective actions agreed on by Bechtel and APS QA.
1982	Maintenance	Work Order 482 & 483 issued to set safety valves did not provide adequate instructions to perform the work as required by code, ASME Section XI. (10/14/82-11/21/82)	Procedure initiated in accordance with code and specifications. Special instructions issued with work orders.
1982	APS and Bechtel Startup	Valves SGN-HV-05 and SGN-HV-06 were stroked over a two hour period and allowed approximately 100,000 gals. of highly contaminated H ₂ O into the secondary side of SG1 and at the time SG2 was unknown. Isolation valves for nitrogen purge thought to be closed were open. (10/19/82-10/19/82)	Performed required actions of steam generator recovery plan.
1983	APS Startup and Operations	Cleanliness of Low Pressure Safety Injection System was indeterminate and continued operation without corrective action could lead to significant damage to LPSI pumps. (1/18/83-1/19/83)	Inspection to determine amount of damage and verification of cleanliness. Potential causes for entry of foreign material into system investigated. Ongoing inspections and evaluation of system cleanliness.

<u>Year</u>	<u>Organization</u>	<u>Reason/Period</u>	<u>Corrective Actions</u>
1983	APS Startup Operations	Startup and Maintenance Personnel were not performing work activities in accordance with approved project procedures. (2/8/83-3/4/83)	90AC-0ZZ02 and 90GA-0ZZ28 were revised and require a review of TER's prior to rework or installation of materials on "Q" class components to determine if an NCR should be written of if it is reportable. All TER's written 1/17/83-2/11/83 to be reviewed.
1983	Bechtel	Typical drawings in FCR 77.577E differ significantly from actual field conditions and bolts could be installed incorrectly. Original field conditions will become indeterminate if bolts are installed without adequate directions. (11/21/83-4/14/84)	DCP issued providing necessary drawing clarification.
1983	Bechtel	Reportability evaluation in question. If skewed T joints do not affect safety why are welds being repaired? (11/23/83-12/20/83)	DCPs were transmitted to Resident Engineering for reportability review. Condition not reportable.
1983	Combustion Engineering	Personnel records do not provide documentation of certification of inspectors. (11/28/83-12/2/83)	Inspectors performed demonstration of proficiency.
1983	Innryco, Inc.	Contract PV83-8215 Specification 83-95.71-06-001 did not adequately implement the applicable technical and quality requirements which must be imposed on Innryco as a result of the scope of work Innryco is to perform. (12/16/83-12/30/83)	Program was reviewed and approved.

Bechtel Initiated Stop Work Actions

<u>Year</u>	<u>Organization</u>	<u>Reason/Period</u>	<u>Corrective Action</u>
1977	Shurtleff & Andrews	E-7018 weld rod not stored in drying ovens. (6/17/77 -6/17/77)	Drying ovens obtained from Bechtel. SDDR issued.
1978	Peabody Test.	Penetrant materials not analyzed. (1/12/78-1/27/78)	Materials tested satisfactorily, procedures revised.
1978	Construction	Unauthorized M-6 solvent used for cleaning. (2/10/78-3/16/78)	SAR Change Notice 814 issued to define qualification parameters. WPP/QCI 14.0 revised.
1979	Construction	Youngstown pipe material is suspect - DER 79-4 (5/18/79-6/22/79)	Radiograph accomplished - no defects found.
1979	Clark Painting	Unacceptable curing operations (11/5/79-11/8/79)	Construction NCRs issued. Supplier QA program improvements initiated.
1980	Construction	Rockbestos Class IE cable may have unqualified splices. DER 80-4 (3/5/80-10/24/80)	Supplier and Bechtel controls implemented. Cable qualified, any cable with repairs is approved for outside containment only.
1980	Construction	HPSI suction pump piping may not be acceptable to pump supplier. DER 79-13 (3/28/80-11/14/80)	Piping arrangements were determined acceptable.
1980	Construction	ITT Grinnell pipe supports were received with under-size fillet welds. DER 80-6 (4/25/80-7/8/80)	Acceptable - based on Code Inquiry, ASME File No. NI-77-406.
1980	Construction	Certain cable pulling stopped due to potential deficiency in Containment rebar detailing. DER 80-19 (6/30/80-10/18/80)	Condition acceptable based on engineering analysis.

9. Construction Deficiency Evaluation Reports (DER's) 10 CFR 50.55(e)

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
78-1	Fabrication of Anchor Bolts for Major NSSS components	Documentation reviewed and corrected	Closed 04/11/78 Not reportable
78-2	Void in concrete placement	Void repaired	Closed 05/19/78 Not reportable
78-3	Stainless Steel pipe spools	All pipe and pipe spools from Youngstown Welding and Engineering Company have been rejected, quarantined, and the company removed from the AVL by Pullman Power Products	Final report 11/17/78 Reportable
78-4	Defective fillet welds due to drafting error on DWG's	Drawing corrected	Closed 05/19/78 Not reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
79-1	Voided		
79-2	Weld sequence of Unit #1 and Unit #2 polar crane support girders	Weld sequence verified correct	Final report 06/04/79 Not reportable
79-3	Math error in calculations	Calculation corrected	Closed 06/01/79 Not reportable
79-4	Longitudinal weld defects in S/S pipe	NDE showed no defects	Closed Not reportable
79-5	Polar crane girder welds	Procedures prepared and Implemented	Closed 06/01/79 Not reportable
79-6	2" defective socket weld valves	Coating removed prior to welding	Closed 05/19/79 Not reportable
79-7	Polar crane bracket welds	NDE showed satisfactory results	Closed 11/30/79 Not reportable
79-8	Cracked Auxiliary switches	Switches replaced; 100% reinspection conducted	Closed 08/28/79 Not reportable
79-9	Pipe spool heat treatment	All material tested satisfactorily	Closed 05/19/79 Not reportable
79-10	Safety-related pipe support assemblies in Unit #1	A complete re-inspection program has been initiated with deficiencies being documented, training sessions updated, fillet weld gauges supplied, and increased surveillance	Final report 03/06/80 Reportable
79-12	Inadequate concrete strength achieved with pneumatically placed motor repairs	Specifications and procedures revised, all accessible areas chipped and reworked, and all inaccessible areas evaluated and dispositioned accept-as-is in NCR C-R2040 based on Design Criteria.	Final report 12/30/80 Reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
79-13	Pump suction pipe configuration on the high pressure safety injection pumps (HPSI)	A review of the various piping arrangements has shown them to be acceptable under all existing guidelines and no further action is required	Final report 12/03/80 Not reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
80-1	Inadequate design of Seismic I instrument supports	Calculations performed; verified satisfactory	Closed 06/27/80 Not reportable
80-2	An error in calculations for tubing support	Calculations re-performed	Closed 06/27/80 Not reportable
80-3	Relating to undersized structural steel fillet welds	Accepted without repair.	Final report 12/24/80 Not reportable
80-4	Class 1E, 600V, Power cable	Procedures revised; applicable cable repaired	Final report 11/05/80 Not reportable
80-5	Class 3, piping system welds	All welds NDE'd satisfactory	Final report 07/09/80 Not Reportable
80-6	Safety-related sway struts	Stop work order notice 80-SW-3 closed and NCR P-A-125 revised to use-as-is.	Final report 07/10/81 Not reportable
80-7	Steam Generator piping welds	Forms revised to show in-terpass temperature	Final report 07/03/80 Not reportable
80-8	Hilti drop-in anchors	FCR written to delete this type of anchor.	Final report 07/03/80 Not reportable
80-9	Operability failure of vertical fire dampers	All installed and not in-stalled fire dampers found that did not meet the required tolerances were replaced. A re-design has been incorporated to elevate future problems.	Final report 09/15/80 Reportable
80-10	Namco Controls Series EA180 limit switches	Anchor/Darling to provide replacement gaskets for the subject valve limit switches.	Final report 07/03/80 Reportable
80-11	Defective pressure switch in the chlorine detectors	MDA Scientific to provide alternate pressure switches after approval/qualification.	Final report 07/03/80 Reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
80-12	Pipe spools with the same I.D. number	Paper work corrected	Final report 07/03/80 Not reportable
80-13	Dowel omission during concrete placement	Add dowels prior to concrete placement which tie into the slab.	Final report 07/08/80 Reportable
80-14	Pipe strap, pipe ear full length welding	All installations verified correct	Final report 07/10/80 Not reportable
80-15	Closure of COMSIP, Incorporated containment gas analysis system pump valve	COMSIP to furnish modification kit details and instructions. Units to be modified with proper field change procedures	Final report 07/09/80
80-16	Inadequate embedment of anchor bolts for Units #1 and #2 seal tables	A design change will be implemented so that the seal table is adequately anchored in the reinforced concrete and meets all seismic Category I requirements.	Final report 07/21/80 Reportable
80-17	Inadequate design of reinforcing steel in the walls of the Main Steam Support Structure for Unit #1	The design for all three (3) units has been changed to add the required amount of steel to meet established Design Criteria.	Final report 07/21/80 Reportable
80-18	Blocked tendon sheaths in Unit #1 and #2 containment	Blockages removed and re-inspected	Final report 07/21/80 Not reportable
80-19	Reinforcing steel shown in the drawings may not be accurately reflected in the actual design in certain areas	Analysis performed; all stresses are within allowable limits	Final report 11/06/80 Not reportable
80-20	Three (3) shipping studs jammed in reactor vessel	Studs not needed; use-as-is	Final report 07/30/80 Not reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
80-21	Borg-Warner valves with stem extensions could loosen after a few cycles	Valves have been I.D.'ed and NCR'ed. Borg-Warner will supply parts and instructions for rework	Final report 07/29/80 Reportable
80-22	Dowel omission from concrete wall pour of Unit #2 Control Building	Item was NCR'ed. Disposition was to drill and grout the required dowels into wall	Final report 09/24/80 Reportable
80-23	Loose bushings on corner and LADA sway struts	Bechtel verified which struts were in question through Corner & LADA. Bechtel will rework all identified struts using a C&L inspection and repair procedure	Final report 03/02/81 Not reportable
80-24	Excessive shear stresses in Unit #1 & #2 concrete slabs supporting the safety injection tanks 1B, 2A, and 2B	The Bechtel calculations are being updated to be consistent with the actual data as submitted by combustion engineering	Final report 03/30/81 Not reportable
80-25	Improperly grouted Reactor Vessel Supports	Voids repaired	Final report 10/17/80 Not reportable
80-26	Weld deficiencies on the main control panel	None required	Final report 07/14/81 Not reportable
80-27	Fractured bearing capsules on Unit #1 containment polar crane wheels	Shims added; lugs adjusted	Closed 10/20/80
80-28	Potential failure of temperature detection controllers used on CTI-Nuclear Air Handling and Filtration equipment	All controllers were returned to McGraw-Edison for repair or replacement	Final report 10/23/80 Reportable
80-29	Potential motor shaft breakage in Six Hydrogen Monitors	Subject equipment is being reworked per suppliers recommendations	Final report 10/31/80 Reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
80-30	Borg-Warner 3", 1500#, motor operated gate valve failure to close under operating conditions	Use-as-is	Final report submitted 11/05/82 Not reportable
80-31	Breakers in battery chargers supplied by power conversion (EM-051)	Reworked in accordance with suppliers recommendations	Final report 11/05/80 Reportable
80-32	Pipe cold spring for fit-up	Training session conducted	Closed 01/26/81 Not reportable
80-33	Validity of Marathon CMTR's for CF&I steel	SDDR supplied and	Closed 01/26/81 Not reportable
80-34	Foxboro, Model 270, displays and housings require repair	SCN issued to track equipment better	Closed 11/24/80 Not reportable
80-35	Potential defect of Rosemount Pressure transmitter on MSIV and MFIV	Not used in safety-related systems	Closed 11/12/80 Not reportable
80-36	Loose bushings on ITT Grinnel sway struts	Bushing repaired	Final report 06/19/81 Not reportable
80-37	Concrete void in Unit #2 Control Building Sump	A procedure was developed and implemented to correct this deficiency	Final report 07/09/81 Reportable
80-38	Pipe spools pulled to facilitate installation of pipe supports may overstress welds	Bechtel removed and re-installed new pipe to design specs and retrain associated personnel in erection of piping	Final report 01/12/81 Reportable
80-39	Cable tray supports not meeting dwg. requirements	Dwgs have been revised, cable trays inspected and reworked as needed	Final report 03/16/81 Reportable
80-40	Control Building raceways and FSAR separation criteria	Drawing revised and wiring relocated as necessary	Closed 12/11/80 Not reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
80-41	Class 1E conductors coming within six inches of non-class 1E conductors on six ITE Gould 480 volt load center isolation relay cabinets	Install additional supports or move termination blocks or provide a barrier satisfying Code requirements for division between Class 1E and Non-Class 1E wiring	Final report 01/12/81 Reportable
80-42	Texas bolt material not meeting ASME Section III	Code Case N-310-1 accepted	Final report 01/27/82 Not reportable
80-43	Field weld repair made on Borg-Warner valves	Weld verified satisfactory	Closed 02/06/81 Not reportable
80-44	Missing screws from bottom of control cabinet instruments	None required	Closed 01/08/81 Not reportable
80-45	Additional rebar reinforcement required by drawing, not included in containment placement	Reworked in accordance with engineering disposition (Isolated Case)	Final report 02/04/81 Reportable
80-46	ASME Section XI ultrasonic pre-service examination revealing indications in Pullman power elbows	Indication considered acceptable. Procedures revised accordingly.	Final report 04/30/81 Not reportable
80-47	Deficiency in the containment fuel transfer housing tube design	Stiffner plates added to reduce stresses below allowable limits. Dwg's have been revised to incorporate this change.	Final report 03/18/81 Reportable

DER NC.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
81-1	Concrete void in Unit 2 Auxiliary Building	Repaired the void	Closed 02/09/81 Not reportable
81-2	Indications in radiographs of piping spools	8" piping spool was repaired	Final report 04/20/81 Not reportable
81-3	GE fuse blocks may be loose/misaligned	None required	Closed 03/12/81 Not reportable
81-4	Corner and lada sway struts	NCR invalidated	DER cancelled 02/18/81
81-5	Swivel bearings on RCP cannot be rotated	None required	Final report 06/12/81 Not reportable
81-6	Cracked turnbuckle assemblies for Control Room lighting	Assemblies returned to manufacturer and replaced	Final report 04/15/81 Reportable
81-7	Auxiliary feedwater pump nozzle mismatch	Mismatch corrected during fit-up	Closed 05/08/84 Not reportable
81-8	Weld defects on cask loading Gate/Spent Fuel Transfer Gate	Welds repaired per NCR	Closed 04/29/81 Not reportable
81-9	Unacceptable radiograph accepted	Grinding mark repaired and weld re-radiographed	Closed 06/12/81 Not reportable
81-10	Hardened washers not used as required by ASME Code	Code case shall be documented	Final report 06/04/82 Not reportable
81-11	Broken fiber on the armature of 4.16 KV switchgear	Replace broken wire	Final report 10/22/81 Not reportable
81-12	Mating force of 125VDC fuse blocks	NCR dispositioned to perform field modification (retaining clip)	Final report 11/02/82 Not reportable
81-13	4.16KV switchgear wiring violates separation criteria	Wiring errors corrected	Final report 09/18/81 Reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
81-14	A-354 anchor bolt failures	All accessible bolts hardness tested. All failures will be replaced	Final report 01/28/83 Reportable
81-15	Auxiliary feedwater pump may not deliver feedwater flow within 10 seconds	SARCN to change 10 second requirement to 20 seconds	Final report 02/16/83 Not reportable
81-16	Operated GE breakers may deform	Bearing assemblies were replaced	Final report 07/10/81 Reportable
81-17	Pipe supports fabricated without weld joint preparation	Applicable drawing revised to show fillet weld only or increased fillet weld	Final report 06/08/82 Not reportable
81-18	MCC's contain tie material which may unravel or loosen	Re-tighten wire bundles	Final report 12/30/81 Not reportable
81-19	Possible short circuit in Foxboro recorders	Repair necessary circuits	Final report 08/03/81 Not reportable
81-20	Weld details on pipe support drawing contrary to ASME requirements	Hangers reworked; drawings corrected	Final report 07/30/81 Reportable
81-21	Re-energization problem in ESFAS relay cabinets	Power supplies and circuit boards returned to manufacturer	Closed 07/13/81 Not reportable
81-22	Premature time out of AGASTAT relays	Replaced as required during testing; applicable panel inspected	Final report 10/21/81, Not reportable
81-23	MCC's have bent or broken terminal blocks	Revised installation instructions issued	Closed 08/21/81 Not reportable
81-24	Void in Unit #1 Control Building concrete	Void repaired	Closed 08/19/81 Not reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
81-25	AFW pumps could not be rotated by hand	Storage procedures revised	Final report 02/18/82 Not reportable
81-26	Blocked tubes in Unit #1 Steam Generators	Felt plugs removed	Final report 11/18/81 Not reportable
81-27	Embed plate failed to comply with weld criteria	None required	Closed 08/28/81 Not reportable
81-28	Flexible conduit has split jackets	Conduit replaced	Closed 09/28/81 Not reportable
81-29	Failure of ASTM A490 bolts	Defective bolts replaced inspection program to verify tension in high strength bolts	Final report 11/25/81, 05/11/83 Reportable
81-30	Indication in ASME Code pipe	Indication removed; use-as-is	Final report 01/08/82 Not reportable
81-31	Valve operator material substitution	Affected valves modified	Final report 10/15/81 Reportable
81-32	HPSI bearings and sleeves discolored	None	Final report 11/25/84 Not reportable
81-33	Sleeve bearing shifted in upward direction	Use-as-is	Closed 10/06/81 Not reportable
81-34	Fillet welds on pipe supports not thick enough	Use-as-is	Closed 10/09/81 Not reportable
81-35	Backfill erosion under Unit #1 and #2 Auxiliary and Control buildings	Temporary gas, water lines removed; abandoned lines grouted	Final report 05/20/82, 04/06/83 Reportable
81-36	Incorrect size fillet weld on pipe support	Support standards revised	Closed 10/05/81 Not reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
81-37	Foxboro displays failed environmental testing	Displays modified to qualify environmentally	Final report 01/29/82 Not reportable
81-38	Minimum wall thickness violations	Calculations performed to verify adequacy of pipe	Closed 10/20/81 Not reportable
81-39	Gas Stripper has undocumented section of pipe and welds	Pipe replaced; notifications to affected disciplines	Final report 02/28/83 Not reportable
81-40	Missing vertical dowels in concrete pour in Radwaste Building	Dowels installed	Closed 11/20/81 Not reportable
81-41	Possible stress in Unit #2 containment piping	Use-as-is	Final report 12/29/82 Not reportable
81-42	Unit #2 RCP bearing housing has sand holes	Grinding performed and holes sealed	Final report 01/29/82 Not reportable
81-43	Loose nuts and couplings on Units #1 Steam Generators	NCRs dispositioned to correct deficiencies. Inspection performed on Unit #3 Steam Generator	Final report 09/21/82, 03/29/83
81-44	Pressure regulating valves do not meet design requirements	Regulating valves replaced	Final report 07/06/82 Not reportable
81-45	Unit 1 pressurizer missing lockwires	Screws re-torqued and lockwire installed	Final report 04/19/82 Not reportable
81-46	Borg-Warner valve installed on horizontal plane	Valves modified as required	Final report 12/30/81 Reportable
81-47	Voids in Unit #1 MSSS support floor slab	Grout patch repaired	Final report 10/16/82 Not reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
81-48	Defective cylinder head on Unit #2 DG	Head replaced prior to start-up	Final report 01/05/82 Reportable
81-49	MSSS water level transmitters may give erroneous readings	Flexihose re-installed to prevent erroneous output	Final report 01/05/82, Reportable
81-50	Non-conservatism in design basis water consumption analysis	SARCN to reflect correct design basis	Closed 12/23/81 Not reportable
81-51	DG Control cabinets wiring not separated	Isolation and separation of wiring accomplished per vendor documents	Final report 08/23/84 Reportable
81-52	LPSI and CS pumps have loose anti-rotation pins	Loose pins tack welded	Final report 05/26/82 Not reportable
81-53	Wiring separation violations in Main Control	Barriers erected to meet separation requirements	Final report 05/24/84 Reportable
81-54	Indication in Unit #1 S/G #2 outlet nozzle	Indication removed by grinding. NCR dispositioned. Use-as-is.	Final report 03/03/82 Not reportable
81-55	Water line leak under Auxiliary Building	All temporary water, air and gas lines removed.	Final report 09/29/84
81-56	Unit #1 letdown Heat Exchangers had improperly welded stiffener rings	The weld was repaired	Final report 04/05/82 Not reportable
81-57	Type HMA Auxiliary Relays have excess uninsulated leads	NCR dispositioned rework for affected leads	Final report 07/06/82

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
82-1	Ex-core neutron monitor cables haveing greater length and attenuation than design	New cable purchased/replaced which meets attenuation requirements	Final report 08/26/82 Not reportable
82-2	During an internal inspection (of heat exchangers), 4 welds were found visually unacceptable	Dispositioned "Rework" and since accepted by radiographic examination	Final report 03/22/84 Not reportable
82-3	Diesel generators lube oil strainer baskets require replacements per 10CFR21 by Cooper Energy Services	Replacement of defective baskets	Final report 03/23/82 Reportable
82-4	Design specification drawings for instrument tubing clamps do not show locknuts as required by ASME Code	All installed clamps corrected to comply with the Code	Final report 07/23/84 Reportable
82-5	Unit #2 reactor coolant pump delivered with sand in cooler chamber housing	NCR dispositioned to remove the blasting sand	Final report 06/16/82 Not reportable
82-6	Unit #3 valves (11 total) shipped and removed from receiving area without qualification documentation	Qualification documentation processed. NCR issued against the Unit #3 equipment as required	Final report 02/18/82 Not reportable
82-7	Five Star Special "150" grout used in containment construction observed stratification	WPP/QC1 revised to review manufacturer's final certification. Remove Five Star Special "150" grout from approved list	Final report 04/07/82 Not reportable
82-8	G.E. switchgear has parts not certified by suppliers for nuclear use	NCRs dispositioned to replace the identified components correcting all equipment deliveries to the jobsite	Final report 10/25/82 Not reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
82-9	Thermowells in diesel generator lube oil systems by Cooper Energy were not procured to Code	NCRs dispositioned to replace thermowells	Final report 11/04/82 Not reportable
82-10	Code material I.D. nos. obliterated on 8 pipe supports in Unit #2 containment and MSSS due to galvanizing	Addenda incorporated as applicable	Final report 04/27/82 Not reportable
82-11	Six nozzles in the reactor bottom head had porosity in the weld zone, deep surface defects, and nicked welding surfaces	NCR dispositioned to allow tube installation work to proceed	Final report 03/15/82 Not reportable
82-12	Instrument clamps installed without calculations for thermal expansion	NCR dispositioned to review/rework all discrepancies of installation	Final report 06/08/82 Reportable
82-13	Reinforcing bars omitted from Unit #3 fuel transfer tube inspection station	Horizontal rebar installed	Final report 06/04/82 Not reportable
82-14	Units #1 and #2 instrument installation bolting procured to ASME III Code was used without issue control	Fasteners replaced with certified fasteners	Final report 07/07/82 Reportable
82-15	ASME III Code pipe supports not traceable to QIB material	NCRs dispositioned to check and verify each material drawn from storage for installation	Final report 07/14/82 Reportable
82-16	Condensate pots were found to be nonforming	NCR dispositioned use-as-is	Closed 04/16/82 Not reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
82-17	Bechtel supplier document register errors may allow outdated CE procedures to be used for Unit #1 instrument calibration	The computerized SDR has been corrected, precluding redundant logging	Final report 12/09/82 Not reportable
82-18	Pump motors have metal particles in lube oil and deterioration of internal epoxy coating	NCR dispositioned to flush and replace the motor oil	Final report 09/16/82 Not reportable
82-19	Class IE MCC's burned out due to damage during testing	NCRs dispositioned to replace damaged components	Final report 09/14/82 Not reportable
82-20	20' section of 8" schedule 80 pipe has numerous areas below minimum wall thickness	NCR dispositioned use-as-is for the installed section. The non-installed section returned to manufacturer	Closed 05/05/82 Not reportable
82-21	Cable support structure had shop welds not in accordance with drawing	NCR dispositioned to use-as-is since no rework required	Closed 05/06/82 Not reportable
82-22	Knee-braced steel framing of the MSSS incorrectly	NCR dispositioned use-as-is since no rework required	Closed 06/03/82 Not reportable
82-23	Inspection revealed numerous unauthorized grinding on SI system	Piping spool repaired. Wall thickness verified	Closed 05/14/82 Not reportable
82-24	Weld procedure not pre-qualified by Ametek-Straza for reactor hot leg pipe stops	Dispositioned use-as-is	Final report 09/15/82 Not reportable
82-25	Q-Class pipe in auxiliary building has visible 2"-4" indications near weld	"Cracks" were actually shallow surface, proving adequate wall thickness	Closed 06/11/82 Not reportable
82-26	Mounting failures of valve position indicating switches	Broken brackets rewelded. Other similar switches inspected	Final report 09/09/82 Not reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
82-27	Fuel building gate supports improperly welded	Returned to supplier for rework	Closed 06/01/82 Not reportable
82-28	Joy fan blade locknuts under-torqued	NCR dispositioned use-as-is	Final report 07/23/82 Not reportable
82-29	Multiple linear indication on Main Feedwater lines	NCRs dispositioned use-as-is	Final report 11/24/82 Not reportable
82-30	Cleanliness control not maintained on Unit #1 VGS	VGS inspected and cleaned	Final report 07/20/82 Not reportable
82-31	Wiring error in the Plant Monitoring System	Correct wiring error	Closed 06/24/82 Not reportable
82-32	Purge dam material in CH system	Material removed and check valve reassembled	Closed 07/02/82 Not reportable
82-33	Leakage past 3" Anchor-Darling check valve	Set screw staked in place	Final report 08/20/82 Not reportable
82-34	Concrete void in Unit #1 MSSS	Repair the void	Final report 07/23/82 Not reportable
82-35	Unit #2 LPSI and CS pump hold down bolts under-torqued	Field personnel instructed on verification of torque valves	Final report 09/29/82 Not reportable
82-36	DG Control Panel wiring not crimped	New lugs installed	Final report 08/06/82 Reportable
82-37	Class 1E wiring improperly crimped	Procedures rewritten for maintenance program hydraulic crimp units. All future crimps to be done at a minimum of 7900 psi	Final report 11/15/82, 07/18/82 Reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
82-38	Containment isolation valves had actuator bolts loose	Bolts retightened	Final report 01/12/83 Not reportable
82-39	Valve limit switches below flood level in containment	All switches inspected and found satisfactory	Final report 05/16/83 Not reportable
82-40	Unit #1 circuit breakers incorrectly set after testing	Test procedures re-written; testing program revised	Final report 12/28/82 Reportable
82-41	Improperly crimped lugs in Unit #3 switchgear	New connections installed as applicable	Final report 11/23/82 Reportable
82-42	Unit #1 RCP nozzle weld leak	Stainless steel portion of nozzle replaced by a double piece of incenel	Final report 03/28/83 Reportable
82-43	Improperly crimped lugs in Unit #2	All lugs inspected and repaired as necessary	Final report 02/07/83 Reportable
82-44	Borg-Warner valve operators not qualified for use in containment	Motor operators replaced with qualified operators	Final report 11/15/82 Reportable
82-46	ITT-Barton transmitters do not meet requirements	Transmitters replaced with Rosemount; SARCEN to change diversity requirements	Final report 03/15/84 Reportable
82-47	Minimum wall thickness violations on 24" pipe	Inspect and repair the areas of corrosion	Final report 11/19/82 Reportable
82-48	Check valves siezed open by welding heat	Check valves redesigned; all check valves flow tested	Final report 12/07/82 Reportable
82-49	Unit #1 and #2 S/G has pipe support incorrectly welded	Replace beam attachments with applicable brackets	Final report 10/08/82 Reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
82-50	Flexible conduit couplings may be damaged during seismic event	Conduits modified for proper support	Final report 03/09/84 Reportable
82-51	Pipe line failure in Unit #1 essential cooling system	Plasite repairs effected for applicable piping	Final report 01/09/84 Reportable
82-52	Pipe supports incorrectly installed	Inspections of Unit #1 pipe supports	Final report 11/08/82 Not reportable
82-53	Joy fan blade failure in Unit #1	Containment lines plate repaired; fan blade replaced; all fans reinspected	Final report 08/29/83 Not reportable
82-54	MSIV's have internal corrosion	Valves reinspected and refurbished	Final report 01/26/83 Reportable
82-55	DC motor feeder cables may not provide sufficient operating voltage	Undersized cable replaced; cable sizing procedure revised	Final report 02/23/83 Reportable
82-56	Condensate storage tank scaled down without new seismic calculations	Calculations performed on tank; satisfactory as built	Final report 07/21/83 Not reportable
82-57	Auxiliary feedwater valves are carbon steel instead of stainless steel	Valves replaced with stainless steel bodies	Final report 12/28/82 Reportable
82-58	DG cubicles may not be qualified seismically	DCP issued to anchor cubicles acceptably	Final report 11/22/82 Reportable
82-59	DG crankcase sump coating flaking off	Loose paint removed from sump	Final report 11/22/82 Not reportable
82-60	DG has non-conforming material certification	Defective piston replaced	Final report 11/22/82 Reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
82-61	RCP diffuser ring cap screws may fail	Cap screw material changed; wedging device added	Final report 01/25/84 Not reportable
82-62	ESFAS DC power supply ground detectors failed testing	Review conducted to assure consistency between test procedures and specifications	Final report 08/03/83 Not reportable
82-63	Calculation error in seismic calculation of RWT	Design analysis showed acceptable as-built condition	Final report 06/27/83 Not reportable
82-64	Dissimilar metal socket welds	Welds replaced with correct material	Final report 11/29/82 Not reportable
82-65	Battery racks may not be seismically qualified	Additional calculations performed. Racks to be replaced as necessary	Closed 11/04/82 Not reportable
82-66	Demineralized water leaked into the reactor vessel	Water removed	Closed 11/10/82 Not reportable
82-67	ESFAS power supplies do not meet specifications	Power supplies replaced	Final report 12/16/82 Not reportable
82-68	Cables to startup transformers may not carry full current	Use-as-is	Final report 09/16/83 Not reportable
82-69	Incorrectly marked fuses in CEDM's	Replaced fuses	Final report 03/08/83 Not reportable
82-70	Improper grinding next to weld	Use-as-is	Closed 11/18/82 Not reportable
82-71	Loose bolt holding yoke to valve body	Re-torqued the bolt	Final report 01/26/83 Not reportable
82-72	Concrete void in Unit #2 containment wall	Grouting program initiated to fill voids	Final report 06/30/83 Reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
82-73	Pipe support clamps in Unit #2 MSSS may have excess gap	Defective clamps replaced; inspection conducted to identify other deficiencies	Final report 01/31/84 Reportable
82-74	Adjustable resistors have wrong size bolts	Modification effected to replace nuts and washers	Final report 12/23/82 Not reportable
82-75	Refueling water tank suction strainers improperly secured	Improper studs, clips replaced	Final report 12/23/82 Reportable
82-76	Target rock valves do not meet specification/test requirements	Solenoid operators modified; replace target rock solenoids with valcor	Final report 07/11/84 Reportable
82-77	Foxboro displays failed Class 1E testing	Qualified models supplied for use	Final report 12/23/82 Not reportable
82-78	Improperly crimped lugs in water chiller control panels	All lugs inspected; defective lugs replaced	Final report 01/17/83 Reportable
82-79	Control air tubing violates separation criteria	Tubing separated to meet requirements	Final report 01/17/83 Not reportable
82-80	Low insulation valves for terminals blocks	Terminal blocks replaced with splices	Final report 08/31/84 Not reportable
82-81	R-Class instruments used in lieu of Q-Class in DG control cabinets	Honeywell instruments inspected for conformance	Final report 04/12/83 Reportable
82-82	Mechanical snubbers do not permit 5 movement without binding	NCRs dispositioned to rework the affected snubbers	Final report 01/19/83 Reportable
82-83	DG butterfly valves did not comply with requirements	Valves interchanged and replaced	Closed 01/06/83 Not reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
82-84	Class 1E load centers in Unit #1 had internal damage by space heaters	Space heaters inspected for correct voltage	Final report 04/19/83 Not reportable
82-85	Harlo relay panels in Unit #1 failed testing	Incorrect relays replaced with qualified relays	Final report 03/07/83 Reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
83-1	DG voltage regulating system may not perform as specified	Transformers repaired per DCP	Final report 02/16/83 Reportable
83-2	Valve operators interchanged	Affected operators were replaced	Final report 05/03/84 Reportable
83-3	Foreign material in bearing housing of Unit 1 HPSI pump	Housing flushed and cleaned	Final report 02/28/84 Not reportable
83-4	Test procedures for air handling units do not meet ANSI 510	Procedures revised; retests performed	Final report 04/27/84 Not reportable
83-5	Weld undercut on pipe in SI system	Use as is	Final report 02/28/83 Not reportable
83-6	Undersize shock suppressor in Unit 1 Containment	Shock suppressor replaced	Final report 02/28/83 Reportable
83-7	Maxi-bolt anchors improperly installed	Replaced affected bolts	Final report 03/04/83 Not reportable
83-8	Hydrogen recombiner failed Qualification test	Existing timers replaced	Final report 02/28/83 Reportable
83-9	Unit 1 LPSI pumps strainers	Both LPSI trains flushed and cleaned	Final report 09/06/83 Not reportable
83-10	Main steam relief valves exceed 5% blowdown unit	Valves returned to manufacturer for refurbishment	Final report 02/28/84 Not reportable
83-11	Exide batteries may leak or corrode at terminals	Stress on batteries relieved; permanent repairs effected	Final report 06/14/83 Not reportable
83-12	480V MCC interlocks may malfunction	Interlocks changed out under GE supervision	Final report 05/03/83 Reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
83-13	Violation of Tagout requirements	Training conducted on tagging procedures	Final report 07/14/83 Not reportable
83-14	Leaking capacitors in DG relays	Defective relays replaced	Final report 09/27/83 Reportable
83-15	A 354 Anchor bolt bone under installation torque	Torque valve determination methodology changed; drawings revised	Final report 09/23/83 Reportable
83-16	DG governor and voltage regulator do not reset after trip	DCP issued to correct deficiency	Final report 05/03/83 Reportable
83-17	Fire protection switches failed to meet TMI criteria	All damaged switches replaced	Final report 07/19/83 Reportable
83-18	Pipe supports do not meet Seismic IX requirements	Additional hex nuts installed; drawing revised	Final report 04/28/83 Not reportable
83-19	Shock arrestors do not function properly	Applicable shock arrestors replaced	Final report 01/03/84 Not reportable
83-20	Startup test personnel qualification	All personnel properly trained and qualified	Final report 04/29/83 Not reportable
83-21	LPSI pump operated in violation of procedures	Training provided to operators	Final report 05/06/83 Not reportable
83-22	Hydrogen recombiner circuit breaker failed to operate improperly	Circuit breakers replaced	Final report 10/24/83 Reportable
83-23	MSIV bypass isolation valves failed to close within 5 seconds	Solenoid valves replaced	Closed 05/10/83 Not reportable
83-24	DG lube oil and jacket water heaters do not maintain temperatures	New heaters installed	Final report 05/18/83 Reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
83-25	Instrument tubing does not have boundary class break	Use-as-is; revised specifications issued	Final report 09/21/83 Not reportable
83-26	BOP ESFAS modules failed testing due to over-heating	Cabinets modified to increase ventilation; drawings revised	Final report 10/28/83 Not reportable
83-27	Need position indication switches functioning improperly	Adjust switches as necessary; O-ring and terminal boards replaced	Closed 04/28/83 Notreportable
83-28	Snubbers installed in violation of reserve range requirements	Use as is; Specification change to clarify procedure	Final report 06/08/83 Not reportable
83-29	Hangers in SI system installed incorrectly	Supports repaired; drawings revised	Final report 06/06/83 Reportable
83-30	A354 bolt broke while torquing on Unit 2 AFW pump	Torque procedures revised; drawings revised	Final report 01/30/84 Not reportable
83-31	Temperature rise in DG control cabinet could exceed design	Ventilation modifications made to provide forced ventilation	Final report 08/23/83 Reportable
83-32	Socket welds in Unit 1 S/G	Transition pieces installed; drawings revised	Final report 02/29/84 Not reportable
83-33	GE breakers with EC-1 trips may have defect	Defects corrected per NCR dispositioned	Final report 06/24/83 Reportable
83-34	Instrument racks in Unit 2 have surface cracks	Defective welds repaired	Final report 09/19/83 Not reportable
83-35	Inverters produced voltage spikes on DC supply bus	High frequency snubber capacitor reworked	Final report 01/09/84 Reportable
83-36	Excessive cycling of hydramotor actuators	Actuators refurbished and retested; Training program conducted	Final report 12/21/83 Not reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
83-37	Missed factory operations on Unit 3 S/G	Defects repaired as appropriate	Final report 12/05/84 Reportable
83-38	Clip angles used for HVAC supports do not meet requirements	Use-as-is	Final report 10/06/83 Not reportable
83-39	Rejectable indications on Unit 1 RCP	Reworked pump case; inspected all other welds	Final report 01/03/84 Not reportable
83-40	Unit 1 LPSI and CS pump motors leaking oil	New lower end brackets installed; new design housing	Final report 02/02/84 Reportable
83-41	Flooding in Control Building	Circulating water intake canal sealed; electrical ducts sealed; all joints sealed	Final report 09/21/83 Reportable
83-42	Failed thermowells in the RCS	Original thermowells replaced with new, redesigned thermowells	Final report 09/14/84 Reportable
83-43	Improper crimp terminations	All relay cabinets by Harlo reinspected; discrepancies will be corrected	Final report 09/27/84 Reportable
83-44	Wiring errors in PPS cabinets	Wiring corrected and retested	Final report 08/15/83 Reportable
83-45	Cable separations in Unit 1 Control Room panels	Wiring redone in accordance with applicable requirements; procedures revised	Final report 09/26/83 Reportable
83-46	Value overtorqued during hydrostatic testing	Adjusted electrical leads and reed switch	Final report 01/09/84 Reportable
83-47	Power supplies may damage instrument conductor penetrations	Additional fuses installed	Final report 10/17/83 Reportable

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
83-48	Solenoid valves subjected to excessive heat	Refurbished with high temperature connectors, lead wires and O-rings	Final report 10/28/83 Not reportable
83-49	Broken impeller blades/diffuser bolts	Diffuser redesigned; capscrew numbers increased; impellers backfiled; bearing sleeves replaced	Final report 09/14/84 Not reportable
83-50	Combined with DER 83-49		
83-51	AFW pump failed testing	Surveillance test path eliminated; SARCEN to change required flow rates	Final report 09/25/84 Reportable
83-52	Power supplies feed noise into 125 VDC bus	Filter elements installed; annunciators returned for re-work	Final report 12/22/83 Reportable
83-53	Unit 3 embed plates do not meet specification	Under evaluation	Open
83-54	Washers found in Unit 1 S/G's	Loose parts removed; remainder of system inspected	Final report 01/17/84 Not reportable
83-55	Thermal liner on cold leg of RCP 1A missing	Liners removed from system	Final report 12/30/84 Not reportable
83-56	Discrepancies with MSIV's	Larger hydraulic reservoir; pump material replaced; relief valve installed	Final report 04/13/84 Reportable
83-57	Cracks in CEA shroud	4 and 12 finger guides removed; snubbers added for lateral support	Final report 09/14/84 Reportable
83-63	HPSI isolation valves failed to open	Under evaluation	Open
83-64	Pressure relief valves failed testing	Test rig replaced	Final report 05/24/84 Not reportable

DEF NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
83-65	Safety relief valves found dirty and rusted	Valves reconditioned and tested; cleanliness requirements addressed	Final report 01/23/84 Reportable
83-66	AFW pump impeller wear ring fractured	Wear ring material changed; sent to manufacturer for rework	Final report 06/21/84 Reportable
83-67	Ex-core detectors below flood level	Detectors relocated above flood level	Final report 01/23/84 Reportable
83-68	Battery racks constructed with materials not meeting specifications	Non-conforming hardware replaced	Final report 02/09/84 Reportable
83-69	Seismic supports on Posi-Seal valves incorrectly installed	Added additional shaft supports to raise frequency, validating seismic analysis	Final report 07/11/84 Reportable
83-70	Wiring in ERF Cabinets not in conformance with specification	Wiring rerouted; metal barriers installed; color coding of wiring	Final report 02/28/84 Reportable
83-71	Shock arrestors may have generic defect	Snubbers replaced as required	Final report 04/24/84 Reportable
83-72	Undersize welds in Unit 1 Auxiliary Building	Specification revised; Training for QC inspectors	Final report 03/14/84 Not reportable
83-73	Unqualified power supplies installed in instrument cabinets	Under evaluation	Open
83-74	Undersize welds in Unit 1 Auxiliary Building	Inspections conducted on all units pipe supports for weld size	Final report 09/21/84 Not reportable
83-75	Improperly torqued bolts on panel filler assemblies	Bolts retorqued	Final report 07/24/84 Not reportable
83-76	Improper AFW pump logic	Logic diagram revised; modifications on existing logic	Final report 05/07/84 Reportable
83-77	Unit 2 concrete pour contains honeycombs	Honeycombed areas repaired	Final report 07/13/84 Not reportable

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
83-78	No user tests or documentation for Rock Bolt Expansion Anchor	Samples tested for hardness, and elongation; analysis performed to accept as is	Final report 08/02/84 Not reportable
83-79	AC interference spikes on DC bus	Specifications revised; Micarta boards installed	Final report 03/09/84 Not reportable
83-80	MFIV close in 20 seconds; Specification requires 5 seconds	Closing speed control valve fully open; package to 3500# at 70°F	Final report 08/23/84 Not reportable
83-81	Schedule 160 SS pipe from Gulfalloy contains a manufacturing defect	Replace the piping	Final report 08/29/84 Not reportable
83-82	Improper bend radius in DG control cabinets	Cables rejected and replaced to meet bend radius requirements	Final report 08/10/84 Reportable
83-83	Incorrect sway strut supporting Class QA piping was installed	Strut replaced	Final report 08/23/84 Reportable
83-84	Missing bolts for MCC (6) in Unit #1	Installations made to conform to revised drawings	Final report 05/15/84 Not reportable
83-85	Perimeter microwave detection system has a manufacturing defect	Safeguards information	Final report 01/20/84 Not reportable
83-86	Seismic analysis of the shutdown HX did not address baseplate thickness adequately	Add stiffener plates to base plate	Final report 01/26/84
83-87	Remote operated manual HFSI valves	Deficient SI valves corrected	Final report 03/13/84 Not reportable
83-88	QA lack of procedures & programs for testing and startup	Appropriate procedures reviewed and revised	Final report 04/13/84

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
84-1	Methodology used to track required retesting activities	Procedures revised to provide a documented program to track requirements for outstanding preoperational retest after work is performed on a previously tested structure system or component	Final report submitted 04/09/84 Not reportable
84-2	Rust, scale, and pitting in the clevis and arm of several SI and CH valves	NCRs were dispositioned use-as-is	Final report 07/13/84 Not reportable
84-3	Feedwater isolation valves; lower 4-way valve found stuck during testing	Inspect and rework FWIVs and MSIVs to remove unacceptable pipe sealant and replace with Loctite No. 277 prior to fuel load	Final report 05/25/84 Reportable
84-4	External security wiring not in conformance with specification	Contains proprietary security information per 10CFR 2.790	Closed 01/27/84 Not reportable
84-5	Debris found in reactor internal during movement of the CEA Shroud Assembly from the UGS	NCR dispositioned to clean area and return tools to proper storage	Closed 02/10/84 Not reportable
84-6	Possible deficiencies in absolute and deviation alarm modules	Under evaluation	Open
84-7	Failure to provide corrective action as stated in DER 80-21	NCRs initiated to reinstate rework on valves requiring modifications	Final report 07/13/84 Reportable
84-8	ITT/Barton Model 763 Transmitters do not meet specifications	Transmitters will be replaced or refurbished	Final report 07/24/84 Reportable
84-9	Relating to CAD welding for cathodic protection ground connection	Under evaluation	Open

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
84-10	Abnormal number of single element RTDs open-circuited	100% inspection revealed no problem with the RTDs	Final report 08/01/84 Not reportable
84-12	Zone III violations of RCP 1A and S/G #1	The entire Unit 1 RCS returned to Class B cleanliness, and the demonstration test completed	Final report 09/10/84 Not reportable
84-13	Relating to HVAC acceptance criteria	Under evaluation	Open
84-14	Some studs and nuts installed on SI & RC systems which do not meet ASME requirements for boric acid service	DCN issued to allow the use of SA-194, GR 8M material in the boric acid related systems, as applicable	Closed 03/13/84 Not reportable
84-15	Relating to welds attaching pipe restraint supports less than design-calculated dimensions in Unit 2	Under evaluation	Open
84-16	ESFAS relay cabinets baseplates	Added stiffener plates to cabinets and updated installation DWG's	Final report 08/02/84 Reportable
84-17	The core shroud envelope	Measurements of core shroud panels accomplished as required	Closed 04/23/84 Not reportable
84-18	Wiring error on LPSI pump "B" CS-3 switch	Wiring errors on control switch corrected	Final report 09/10/84 Not reportable
84-19	Improperly installed blind flanges	Nonconforming flanges removed and replaced to meet Piping Material Classifications	Final report 07/30/84 Not reportable
84-20	Displacement of a connecting line in the SI system	Under evaluation	Open
84-21	Rosemount transmitters not torqued to specified valve	Under evaluation	Open

DER NO.	DESCRIPTION	CORRECTIVE MEASURES	STATUS
84-22	Unit #1 CEA shroud support contaminated with oil	Contaminated area cleaned and checked for corrosion. Oil retention bars are being added to the Polar Cranes to contain oil in gear case	Final report 08/01/84 Reportable
84-23	Auxiliary feedwater pump "B" discharge valve to condensate storage tank	No future reflow circ. testing will be done. Recirc. valves V018 and V027 will be replaced by spectacle flanges!	Final report 07/12/84 Reportable
84-24	Limitorque valve operators loose on valve bodies	Under evaluation	Open
84-25	Containment supply registers would not cycle	Under evaluation	Open
84-26	Improperly tested or adjusted interlock	Interlocks will be manually tested unless properly tested personnel are performing the function	Final report 09/21/84 Reportable
84-27	Improperly handled instrumentation from Waldinger Corp.	Under evaluation	Open
84-28	Diesel generator fuel lines	Under evaluation	Open
84-29	Build up of material on Unit #2 diesel generator HX	Clean, recoat with plastic lining	Final report 09/25/84 Reportable
34-30	Improper documentation of diesel generator components	Review of all code-related documentation concluded correct and on file; use-as-is	Final report 09/18/84 Not reportable
84-32		Superseded by DER 84-34	

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
84-33	Incorrectly installed hanger support assembly	Weld added	Final report 09/21/84 Not reportable
84-34	Critical friction type high strength connectors	Under evaluation	Open
84-35	Setpoint potentiometers in the PPS drift outside of tolerance	Potentiometers replaced	Final report 09/18/84 Not reportable
84-36	SI valve stalls just off closing seat when opening or closing	Under evaluation	Open
84-37	Unauthorized/unqualified duct sealant	Under evaluation	Open
84-38	Improperly welded flange in Unit #2	Rework/repair by adding filler material	Final report 09/18/84 Reportable
84-39	LPSI and containment spray pumps have experienced abnormal rumbling noises	Use-as-is, but do not run pump in the 2500 to 3500 flow range during shutdown cooling mode of operation	Final report 09/26/84 Not reportable
84-40	Unit #2 auxiliary feedwater pump has corrosion	Under evaluation	Open
84-41	Adequacy of Cardinal Industrial Products program for supplier qualification	Under evaluation	Open
84-42	Unqualified torque switches installed on safety related valves	Under evaluation	Open
84-43	HPSI 3" gate valve failure to open	Valve stem cleaned and lubricated	Closed 07/18/84 Not reportable
84-44	Fatigue failures of the charging pumps	Under evaluation	Open

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
84-45	Relating to spot welding on skid mounting indication and control	Under evaluation	Open
84-46	Refueling water tank penetration sleeves; connection would be overstressed during a seismic event	DCPs prepared to perform required grouting work	Final report 09/24/84 Reportable
84-47	Hacksaw blade in the Unit #3 SI system	Weld on line SI 130 was completed	Closed 07/24/84 Not reportable
84-48	Improper material for pipe plugs on MSIV	Under evaluation	Open
84-49	Auxiliary feedwater system experiences hydraulic resonance	Mini-flow individually adjusted for each pump to reduce the vibration to acceptable limits	Final report 09/26/84 Reportable
84-50	Main steam isolation valve, do not close as required	Under evaluation	Open
84-51	Failure of turbine-driven auxiliary feedwater pump to quick start from ambient conditions	Changes initiated to reflect the feedwater delivery time change from 20 to 30 seconds	Final report 09/26/84 Reportable
84-52	Relating to the atmospheric dump valve; a review of the seismic analysis report determined that the base flange of the resistor is overstressed during an SSE and will break	DCPs initiated to increase the thickness of the resistor base flange to two inches	Final report 09/26/84 Not reportable
84-53	Nuts on bolts found loose on PC and CH valves	Under evaluation	Open
84-54	Containment sump isolation valve	Under evaluation	Open

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
84-55	Non-"Q" material in- installed in QLE instru- mentation cabinets	Under evaluation	Open
84-56	Fire dampers were found to close inconsistently	Under evaluation	Open
84-57	Evaluation relating to radioactive waste drain system	SARCN to change time from 10 seconds to 40 seconds	Closed 09/19/84 Not reportable
84-58	Auxiliary feedwater sys- tem solenoid valve failed to open in response to AFAS signal	Under evaluation	Open
84-59	MCC cables damaged by fire stops	Under evaluation	Open
84-60	Improper lubricant used in Limitorque valve operators	Under evaluation	Open
84-61	Auxiliary pressurizer spray system-loop valve potential to stop open	Under evaluation	Open
84-62	Load sequencer did not function properly during safeguards testing	Under evaluation	Open
84-63	SIT vent valve would not close during testing	Under evaluation	Open
84-64	Snubbers will not cycle	Under evaluation	Open
84-65	Inst. leads removed from UGS have shown splitting of outer sheath	Under evaluation	Open
84-66	Downcomer feedwater iso- lation valves	Under evaluation	Open
84-67	Steam generator system valve solenoid operations at low voltage	Under evaluation	Open

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
84-68	ESC "A" would not re- sequence due to temp. switch trip after LOP	Under evaluation	Open
84-69	Reactor protection system shunt trip contacts	Under evaluation	Open
84-70	Diesel engine "A" in Unit #1 tripped off because of engine overspeed	Lubricate control mechanism	Closed 09/28/84 Not reportable
84-71	A spurious load shed of the 4160 V SWGR S04 Feeder Breaker	None required	Closed 09/17/84 Not reportable
84-72	During pre-op test SI valve torqued out near the closed seat	Under evaluation	Open
84-73	Test cards for excore system have an incorrect value for "R26"	Under evaluation	Open
84-74	Inverters failed pre-op testing	Under evaluation	Open
84-75	DG essential exhaust fan fails to start within 5 seconds in Mode 1 or 4 operation	Under evaluation	Open
84-76	STAT or temps could be exceeded	Under evaluation	Open
84-77	Rosemount transmitters manufactured after January 10, 1984 may not have hermetic seal	Under evaluation	Open
84-78	Valcor valves experience coil failures	Under evaluation	Open
84-79	Broken terminal lug on DG could cause abnormal temp. rise	Under evaluation	Open

<u>DER NO.</u>	<u>DESCRIPTION</u>	<u>CORRECTIVE MEASURES</u>	<u>STATUS</u>
84-80	DG "A" tripped off on overspeed when load was removed	Under evaluation	Open
84-81	65%-90% hesitation of the open position when 3 of 4 valves are in closed position	Under evaluation	Open
84-82	Improper mate between seat and disc of SI check valve	Under evaluation	Open
84-83	HPSI "A" injection lines experiencing cavitation	Under evaluation	Open
84-84	Discrepancy between CESSAR Section 5.1.4 and CESSAR Chapter 15, dealing with valve closure time	Under evaluation	Open
84-85	Containment purge valve closing time on Containment Isolation Activation Signal assumed in CESSAR 15-4-8 Amend 6 or later was not assumed in Palo Verde FSAR	Under evaluation	Open

h. Part 21 Notifications

All vendor Part 21 notifications have been reported and corrective action initiated by APS through the Construction Deficiency Report (10 CFR 50.55e).

i. Construction Status

The following safety-related and important to safety structures, systems, and components are not complete as of September 28, 1984.

The remaining construction is relatively minor in nature consisting mainly of efforts to complete corrective actions identified as a result of testing, Deficiency Evaluation Reports, walk-down punchlist items, etc. All safety-related and important to safety systems will be construction complete prior to issuance of an OL.

<u>Description</u>	<u>Subsystem Designator</u>
Motor Driven Aux. Feedwater Pump "B"	AF01
Motor Driven Aux. Feedwater Pump "N"	AF02
Auxiliary Feedwater Turbine and Pump "A"	AF03
Condenser	CD01
Purification and Deborating Ion Exch.	CH01
Refueling Water Tank	CH02
Volume Control Tank	CH03
Charging Pumps	CH04
Reactor Makeup Water Tank & Pumps	CH07
Equipment Drain Tank & Drains	CH08
Holdup Tanks and Pumps	CH11
Reactor Drain Tank & Pumps	CH12
Purification Filters	CH13
Seal Injection Filters	CH14
Regenerative Heat Exchanger	CH15
Gas Stripper	CH16
Penetrations and ILRT Panels	CL01
Pressurization Penetration & Portable Fans	CL04
Containment Electrical & Spare Mechanical Penetrations	CL06
Containment Purge	CP01
Condensate Storage & Transfer	CT01
Diesel Fuel Oil & Transfer Train "A"	DF01
Diesel Generator Train "A"	DG01
Diesel Generator Train "B"	DG02
Train "A"	EC01
Train "B"	EC02
Train "A"	EW01
Train "B"	EW02
New Fuel Storage	FH02

The construction punchlist contained approximately 1300 detailed items as of 11/01/84. Many of these items are closely related sets of items which are expected to be resolved as a set. The licensee expects to resolve all of these items prior to 12/7/84. Region V review of this list will be initiated once this list is reduced to a few hundred items.

<u>Description</u>	<u>Subsystem Designator</u>
Spent Fuel Handling Machine	FH05
Fuel Carriage and Upender	FH07
Fuel Handling Tools	FH08
Refueling Machining	FH10
CEA Change Platform	FH11
CEA Elevator	FH12
Water Reserves, Pumps & Unit 1 Power Block Yardloop	FP01
D/G Building Deluge Sprinklers	FP25
Radwaste & D/G Bldg. Hose Stations	FP27
Deluge Sprinklers for Safety Injection Pump Rooms Train "A"	FP28
Deluge Sprinklers for Safety Injection Pump Rooms Train "B"	FP29
Sprinklers for Elect. Penetration Room Channels B&D	FP30
Sprinklers for Elect. Penetration Room Channels A&C	FP32
Sprinklers for Turbine Driven Aux. FW Pumps	FP33
Containment Building Hose Stations	FP34
Fire Protection for Containment and Switchgear Buildings	FP35
Halon Flood Protection, Control Bldg. Corridor Fire Protection	FP36
Gaseous Radwaste	GR01
HVAC Supply	HA01
HVAC Exhaust	HA02
Air Cooling Units	HA03
CEDM ACU Supply	HA07
Containment HVAC South	HC01
Containment HVAC North	HC02
Pre-Access Air Filtration Unit	HC03
Reactor Cavity Cooling South	HC04
CEDM ACU Fans	HC05
Reactor Cavity Cooling North	HC07
Main Steam Penetration Cooling	HC08
Diesel Generator Building HVAC	HL01
HVAC Supply	HF01
HVAC Exhaust	HF02
Fuel and Aux. Bldgs. Exhaust	HF03
Control Bldg. Normal AHU	HJ01
ESF Switchgear Room Essential AHU A	HJ02
ESF Switchgear Room Essential AHU B	HJ03
Containment Room Essential AHU B	HJ04
Containment Room Essential AHU A	HJ05
Battery Ventilation	HJ06
Containment Hydrogen Control	HP01
Containment Hydrogen Control System	HP70
Holdup Tanks and Pumps	LR01
Evaporator Package	LR04

DescriptionSubsystem Designator

Concentrate Monitor Tanks	LR05
Nuclear Cooling Water	NC01
Fuel Pool Cleanup Pumps	PC01
Fuel Pool and Heat Exchangers	PC02
Fuel Pool Ion Exchangers	PC04
Class 1E 480V Power Switchgear	PG01
Class 1E 480V Power MCC	PH01
Auxiliary Bldg. Elev. 51k	QB07
Reactor Vessel, Steam Generators	RC01
Reactor Coolant Pumps	RC02
Pressurizer	RC03
Reactor Coolant Gas Vent System	RC70
TMI Task #11E	
R/C Wide Range Instrumentation	RC72
Containment Radwaste Sump and Pump East	RD02
Reactor Cavity Sump & Pumps	RD03
Sump Pumps Discharge Header	RD04
Radwaste Building Sump and Pumps	RD08
Holdup Tank Sump and Pumps	RD09
Essential Instrument Power Supply	RM03
Reactor Protection System	SB72
Chemical Addition	SC02
TMI Task #14A ERFDAD	SD70
Steam Generator 1	SG01
Steam Generator 2	SG02
Main Steam HP Turbine	SG03
Main Steam Bypass	SG04
Main Steam Isolation	SG05
Containment Recirculation Sumps & Screens	SI01
Safety Injection Tanks	SI02
Auxiliary Spray Header Nozzles	SI04
Spray Chemical Storage Tank & Pumps	SI05
Shutdown Cooling Heat Exchangers	SI06
Low Pressure SI System	SI07
Containment Spray System	SI08
High Pressure Safety Injection System	SI70
Essential Spray Pond Pump & Heat Exchanger "A"	SP01
Essential Spray Pond Pump & Heat Exchanger "B"	SP02
TMI Task #9G ECW Flow and Temp.	SQ70
Spent Resin Tanks and Dewatering Pump	SR01
Solidification Package	SR02
Nuclear Sampling	SS01
Auxiliary, Radwaste and Control Bldgs.	WC01
Containment Bldg. All Levels	ZC08
Fuel Bldg. All Levels	ZF01

j. Preoperational Test Results

1. Preoperational Testing - Preoperational testing will be completed on all safety related or important to safety systems prior to fuel load. The current status is as follows:

<u>Total Tests</u>	<u>Tests Complete</u>	<u>Test Results Approved</u>
206	161	50

The remaining 45 tests that are not complete are listed below.

Tests on Hold

<u>Procedure #</u>	<u>Description</u>		<u>Percentage Complete</u>
91HF-1HA01	ESF Pump Room HVAC Performance Test	(C)	80
91PE-1FH10	CEA Elevator and Change Platform	(C)	85
91PE-1FP02	Halon 1301 Fire Suppression System		75
91PE-1GR01	Gaseous Radwaste System		85
91PE-1HP01	Hydrogen Purge System		65
91PE-1SK01	Resin Transfer/Dewatering System		89
91PE-1SR02	Solid Radwaste System		80

Test in Progress

<u>Procedure #</u>	<u>Description</u>		<u>Percentage Complete</u>
91HF-1ZZ06	BOP Piping Steady State Vibration Test	(A)	80
91HF-1ZZ08	BOP Piping Thermal Expansion Test	(A)	80
91PE-1CP01	Containment Purge System		85
92PE-1QK01	Fire Detection and Alarm System		89
92PE-1RI03	Movable Incore Drive System	(C)	80
92PE-1RJ03	Restoration of Field Input-Plant Monitoring System		85
92PE-1RK02	Restoration and Field Input Verification-Plant Annunciator		55
92PE-1SB17	Safety System Response Time Test		75
92PE-1SD01	Field Input Verification of the Emergency Response Facilities Data Acquisition and Display System		75
92PE-1SF03	Reactor Regulating System Test	(A)	75
92PE-1SF05	Reactor Power Cutback System Test		75
92PE-1SQ02	Post Accident Radiation Monitoring Preoperational Test Procedure		85

Test in Progress (continued)

<u>Procedure #</u>	<u>Description</u>		<u>Percentage Complete</u>
92PE-1SQ04	Safety Related Radiation Monitoring Preoperational Test Procedure	(C)	85
92PE-1SQ05	Portable EOF, and TSC Radiation Monitors Preoperational Test Procedures	(C)	85
93PE-1QM01	Boric Acid System Heat Tracing		25
93PE-1SA01	Integrated Test of Engineered Safety Features		80

Tests Not Started

<u>Procedure #</u>	<u>Description</u>		<u>Percentage Complete</u>
91PE-1CH09	Boric Acid Concentrator Test		
91PE-1CH10	Holdup Tank and Pumps Including Gas Stripper		
91PE-1RC02		(N)	
91PE-1SS02		(N)	
92PE-1FH01	Refueling Machine Underwater Television System		
92PE-1QF06	Preoperational In-Plant Communications Test (Evaluation System)	(N)	
92PE-1SB15		(N)	
92PE-1SB19		(N)	
92PE-1SB20		(N)	
92PE-1SE03	Ex-Core Nuclear Instrumentation Safety Channel A		
92PE-1SE04	Ex-Core Nuclear Instrumentation Safety Channel B		
92PE-1SE05	Ex-Core Nuclear Instrumentation Safety Channel C	(C)	
92PE-1SE06	Ex-Core Nuclear Instrumentation Safety Channel D		
92PE-1SF01	Feedwater Control System Channel 1	(C)	
92PE-1SF02	Feedwater Control System Channel 2	(C)	
92PE-1SF04	Steam Bypass Control System Test	(C)	
92PE-1SM01		(N)	
92PE-1SQ01	Radiation Monitoring Preoperational		
93PE-1MA01	Main Generator	(NC)	
93PE-1QD01	Control Room Emergency Lighting		
93PE-1RC03		(N)	
93PE-1RM01	Disconnect Handswitch Alarm Verification Test		

- (A) Retest
- (C) Field required performance
- (N) Test not approved

2. System Acceptance - All safety related or Important to Safety systems and areas will be accepted by operations to ensure drawings up-to-date and system completion prior to fuel load. The latest status is as follows:

<u>Total Subsystems</u>	<u>Accepted</u>	<u>Subsystems Walked Down</u>
230	60	227

The remaining systems yet to be walked down are QM03, FP36 and SM01.

<u>Total Areas</u>	<u>Accepted</u>	<u>Walked Down</u>
55	21	55

3. Surveillance Test Procedures - The status of surveillance test procedure development that is required for fuel load is as follows:

<u>Total Procedures</u>	<u>PRB Approved</u>	<u>Currently Approval Process</u>	<u>Remaining Draft Complete</u>
100	80	11	9

4. Operations Procedures - Approximately 30 of 331 procedures required by Regulatory Guide 1.33 are still in preparation.

5. Significant System Performance Deficiencies

During preoperational testing, the following deficiencies were notable:

- | | |
|--|---|
| - Reactor Coolant Pump impellers were damaged by insufficient operating clearances. | Reactor coolant pumps were modified and reworked. |
| - Reactor Coolant System hot and leg thermowelds were broken. | Thermowelds were cold redesigned and modified. |
| - Reactor Vessel Upper Guide was cracked. | Structure was strengthened and modified. |
| - Reactor Coolant System Thermal Sleeves were dislodged. | Thermal sleeves were reevaluated to be unnecessary. |
| - Low Pressure Safety Injection Pumps repeatedly tripped due to flexing of pump shaft. | Pumps were replaced with stiffer shifted pumps. |

- Auxiliary Feedwater Turbine Driven Pump steam supply repeatedly tripped system was redesigned and governor adjustments were made.
- High Pressure Safety Injection valves galled Redesign system to reduce differential pressure experienced by valve, changed valve orientation.
- Auxiliary Feedwater pumps experienced flow resonance when operated on mini-recirculation. Modified recirculation orifices to increase recirculation flow, and eliminate resonance in most expected flow regimes.

k. Summary Status

1. Applicant's current estimated licensing date: 12/7/84
2. Inspection Program: Will be completed prior to 12/7/84 provided licensee has reviewed required preoperational test results through the Test Working Group level.
3. Review of Actions on Generic Correspondence: The licensee has not completed action on nine IE Bulletins and four Circulars. The licensee's action on each of these must be reviewed prior to OL issuance.
4. Reportable 10 CFR 50.55e Events: The licensee has reported approximately eighty potentially reportable 10 CFR 50.55e events which have not been corrected by the licensee. Approximately forty of these appear reportable, based on the limited information supplied to date. All reportable events and the licensee's program of corrective action will be reviewed prior to OL issuance.
5. Preoperational Testing: As of 10/1/84, the licensee had completed 161 of 206 required preoperational tests. The licensee has committed to complete all preoperational tests prior to OL issuance.
6. Significant System Performance Deficiencies: All deficiencies have been satisfactorily resolved with the exception of the galled HPSI valves which have been repaired, but not completely retested. The licensee has committed this testing prior to OL issuance.

7. System Turnovers: 170 of 230 safety related or important to safety systems have not been turned over to the operations department. Approximately 1300 construction deficiencies remain as of 11/14/84. The licensee's resolution of these will be reviewed by Region V prior to OL issuance.
8. Procedures: Approximately 30 of 331 operations procedures are still in preparation, and approximately 280 of 365 surveillance procedures are still in preparation. A significant sample of these must be reviewed by Region V prior to OL issuance.

1. Readiness for Operation

If current trends prevail, the licensee may not be ready for licensing by December 7, 1984, as they have requested. A large number of items requiring licensee action remain. Many of these require regional review. A management meeting was held at APS Corporate Headquarters on October 24, 1984. Mr. Turley of APS reiterated that these items would be completed by December 7, 1984. Region V continues to observe that items are not being completed to the extent that they may be reviewed by the NRC prior to December 7, 1984. In spite of repeated protestations to the contrary, evidence since that meeting suggests that a large number of completed packages will be submitted very close to the licensing date.

In addition to this general concern, and the incomplete review areas noted elsewhere in the report, the following specific issues require resolution. It is anticipated that some portions of these will be resolved as post-OL license conditions or prior to issuance of the full power license. This distinction will be made once the actual low power OL date becomes clear, and the licensee substantially completes the other open items discussed in this report.

1. Backup capability for Post Accident Sampling System Reactor Coolant System gas samples is not currently available.
2. The licensee does not have the capability to produce printouts or other records of any Radiation Monitoring System (RMS) effluent activity. This capability currently is dependent on Chemical and Radiological Analysis Computer System (CRACS). CRACS is not expected to be operational prior to fuel load.
3. The containment high range monitor cable failed environmental qualification. Requalification will probably require six or more months.
4. The licensee has not validated transfer calibration data for RMS or verified minimum detectable levels for effluent monitors.
5. The licensee has not completed procedures for handling post-accident high activity samples.

6. The licensee has not resolved questions related to the availability of PASS backup laboratory capability.
7. The licensee's security program was significantly deficient in the areas of lighting, vital area barriers, and security officer strength. The licensee expects to correct these shortcomings by December 15, 1984.
8. The meteorological data acquisition system is not functional. Parts required to repair one of two required data links are on order.
9. Seismic instrumentation requires calibration.
10. The Emergency Operations Facility (EOF) habitability system's HEPA filters and the Radiological Monitoring System in the Technical Support Center and the EOF needs to be completed.
11. Approximately sixty potentially reportable (10 CFR 50.55e) construction deficiencies are being corrected by the licensee. Final completion of corrective action for these is resolving only three or four per week. Many of these conditions, and the licensee's proposed corrective action (as a minimum) must be resolved prior to OL.
12. The current licensed operator shift staffing does not satisfy industry guidelines (NVMARC) for previous similar commercial PWR experience.
13. The HPSI injection valves require retesting following their recent modification.
14. The diesel generator emergency load sequencers require retesting following replacement of some of their components.
15. Potentially significant fouling and corrosion of the fire protection piping requires resolution.
16. The turbine building closed cooling water system buried pipe leak requires evaluation to determine its significance.
17. The turbine driven auxiliary feedwater pump steam inlet bypass valve requires retesting following replacement.
18. Approximately ten allegations are being reviewed by Region V staff. All of these are expected to be resolved prior to OL issuance.