

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/82-10(DETP)

Docket No. 50-341

License No. CPPR-87

Licensee: Detroit Edison Company
2000 Second Avenue
Detroit, MI 48226

Facility Name: Enrico Fermi Nuclear Power Station, Unit 2

Inspection At: Fermi Site, Monroe, MI

Inspection Conducted: June 21 to July 2, 1982

Inspectors: *W. J. Key*
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Inspection Summary

Inspection on June 21 to July 2, 1982 (Report No. 50-341/82-10(DETP))
Areas Inspected: Special announced team assessment of the licensee's Construction Quality Assurance Program, including QA program overview and interfaces, corrective action systems, design change control, material traceability of installed structures and components, electrical cable installation, inprocess inspection, and effectiveness of quality control inspectors. This inspection involved a total of 481 inspector-hours onsite, which included 92 inspector-hours onsite by the Senior Resident Inspector, and 80 inspector-hours onsite by the Team Leader.

Results: Of the seven major areas assessed, no items of noncompliance or deviations were identified in two areas; nine items of noncompliance were identified in the other areas, including a total of fourteen examples (Section II, Paragraphs B.3, D.1, D.2, D.4, E.3, F.1, F.2, and G; Section III, Paragraphs A.1 and A.3; Section V, Paragraphs A.6 and B.4; and Section VI, Paragraphs A.2 and A.3).

DETAILS

Persons Contacted

Detroit Edison Company (DECo)

- *D. Wells, Manager, Quality Assurance
- *T. Alessi, Director, Quality Assurance
- *W. Fahrner, Manager, Fermi 2 Project
- *G. Trahey, Assistant Director, Project QA
- *H. Walker, Supervisor, Construction QA
- *L. Eix, Director, Engineering Assurance
- *W. Everett, Project Supervisor, Construction
- *J. Nunley, Director, Project Design
- *F. Agosti, Assistant Manager, Startup
- *W. Colbert, Assistant Director, Nuclear Engineering
- *C. Bacon, Assistant Director, Field Engineering
- *D. Ferencz, Sr. Engineer, Project QA
- *T. Bryan, Engineering Work Leader
- *H. Ebner, Supervisor, Information Systems
- C. Craamer, Document Control Supervisor

Daniel International Corporation (DIC)

- *J. Ard Jr., Project Manager
- *E. Thompson, Lead Mechanical Quality Engineer, PQA
- E. Muszkiewicz, Lead Quality Engineer, PQA
- G. Kemmer, Lead Auditor
- D. Gallagher, Lead Auditor
- R. McGee, Record Turnover Supervisor
- D. Cawood, Civil QA Engineer
- W. Wingfield, Mechanical QA Engineer
- D. Stringer, Receiving Supervisor

Wisner and Becker (W&B)

- L. Osborne, Project Quality Manager
- B. Abbott, Project Engineer

L. K. Comstock (LKC)

- L. Hack, QC Manager
- R. Seltmann, Assistant QC Manager
- B. Friemark, QC Supervisor
- D. Ord, QC Supervisor

Townsend and Bottum (T&B)

- R. Watt, QC Supervisor
- W. Ash, QC Engineer

Reactor Controls, Inc. (RCI)

J. Moskwa, Site QC Supervisor
H. Champ, Assistant QC Supervisor

Walbridge and Aldinger Company (WACo)

J. Rotando, QA Lead Engineer
M. Mears, Welding Engineer
T. Delyser, Project Manager
P. Retaskie, Project Engineer

Insulation Consultants and Management Services

D. Zilke, Site QA Manager

*Denotes those persons who attended the final exit meeting at the Fermi site on July 2, 1982. During the two week assessment at the site, preliminary exit meetings were held with licensee management on June 23, 25 and 30, 1982, to discuss findings as they were identified.

Other members of the licensee's and contractors' staffs were interviewed during the course of the assessment.

SECTION I

Prepared By: J. E. Konklin

GENERAL

A. Construction Team Assessment - Purpose, Methodology and Conclusions

Significant problems have been identified, during the past two years, at several nuclear power plants under construction; problems which have resulted in prolonged shutdowns of work activities in major areas of construction, and which have required substantial changes in the organizations and QA programs of the involved utilities and site contractors. In response to those identified problems, NRC Region III established teams to perform assessments of construction activities and QA programs at other nuclear plants under construction, including Fermi 2, to determine whether similar problems exist at those other sites.

The team assessment concept is based on concurrent assessments of selected ongoing functional or program areas by a multi-disciplinary assessment group. The areas selected for these assessments parallel those which were identified as major problem areas at the construction sites discussed above. The specific areas assessed at the Fermi 2 Plant included quality assurance program interfaces and overview, corrective action systems, design change control, material traceability of installed structures and components, electrical cable installation, in-process inspections, and effectiveness of quality control inspectors.

For the above specific areas, the assigned inspectors reviewed procedures and records, interviewed personnel, and observed work activities to verify that site work is being performed in accordance with NRC requirements and the licensee's commitments, and that the licensee's QA program and the site contractors' QA/QC programs are functioning in a manner to assure that significant discrepancies are promptly identified and properly corrected.

Nine items of noncompliance, and a number of open items, were identified during the construction team assessment at Fermi 2. Those findings indicate that there are areas within the overall QA program at the Fermi 2 plant which require significant corrective actions by Detroit Edison Company; however, the assessment data indicates that the identified QA Program deficiencies have not, to date, resulted in significant hardware deficiencies, and that the plant is being constructed substantially in accordance with NRC requirements and the licensee's commitments.

SECTION II

Prepared By: J.J. Harrison

QA PROGRAM INTERFACES AND OVERVIEW

A. Assessment Purpose and Approach

The purpose of the assessment in this area was to verify that the licensee's overall QA Program is in accordance with NRC requirements and licensee commitments and has been approved by NRC; that the QA programs of site contractors have been evaluated for consistency with the approved program and are routinely audited to ensure continued consistency; that the Licensee has control of changes to the approved program; that the Licensee's QA Program provides for effective control and oversight of contractor activities; that the QA organizations of the licensee and major site contractors are adequately staffed; that effective audit and trend analysis programs are included in the Licensee's QA Program; and that periodic assessments of the QA Program are conducted by the Licensee's upper management.

In performing the assessment, the inspector reviewed the applicable Fermi FSAR sections, QA Program manuals and procedures; discussed implementation of the program with licensee and contractor personnel; reviewed organization charts and staffing plans, trend analyses, audit reports, nonconformance documentation, quality surveillances, stop work authority, related corrective actions, and housekeeping, and inspected selected work activities to verify specific aspects of program implementation.

B. Review of Overall QA Program

1. The inspector reviewed the following major Fermi QA Program documents, and discussed the approval change status of the documents with the appropriate Detroit Edison personnel.
 - a. Fermi FSAR, Chapters 17.1 and 17.2.
 - b. Detroit Edison Fermi QA Manual, dated April 29, 1977, and revised December 5, 1978.

NOTE: A later QA Manual revision, dated June 28, 1982, was in the process of being issued during this assessment. That revision was not reviewed for content.

The inspector verified that the licensee's QA Program is approved by NRC, and that the licensee effectively controls changes to the Quality Assurance Program by procedure. The inspector also verified that selected portions of the licensee's QA Manual are consistent with the FSAR, that the applicant has prime responsibility for executing the QA Program, and that upper levels of

management are aware of this and have issued an appropriate policy statement in support of the QA Program. In addition, the inspector determined that the licensee's and the constructor's QA staffs are sufficiently independent of cost and schedule, and that QA has the requisite authority to stop work. However, the review of the QA Program revealed a problem in that major differences exist between FSAR commitments and the implemented QA Program, as follows:

2. The QA Program, as stated in the FSAR Chapter 17.2, was approved by the NRC on November 17, 1976. At the time of approval, Chapter 17.1 was included in the submittal, but was not reviewed or approved by the NRC. The QA Program and Fermi organization underwent a major revision in March 1980, so that the current organization being implemented is different than that in the approved Chapter 17. Currently the law considers the SAR as a "dead document" after docket/approval, and revision is not required. The law is in the process of being revised to make the SAR a "living document." The proposed change, as stated in 46 FR 34595, modifies 10 CFR 50.34, 50.54 and 50.55 to require each licensee to implement or report changes thereto of the QA Program within 90 days of publication of the law and any following changes within 30 days. This change to the law was approved by the NRC Executive Director for Operations on July 2, 1982, and is awaiting publication in the Federal Register. The revision to Chapter 17.1 and 17.2 is considered to be an open item (341/82-10-01(DETP)). A written response is requested from Detroit Edison on this item.
3. The inspector also reviewed the Quality Assurance manual requirements against the current QA organization. This review revealed that in March 1980, the Fermi QA Program was reorganized, integrating the Detroit Edison and Daniel International site personnel into one organization. The QA manual dated April 27, 1977, and revised December 5, 1978, was not revised prior to the reorganization. The manual revision was subsequently completed and approved on June 28, 1982, 27 months after the reorganization (and during this assessment). The implementing procedures had been revised to reflect the changes, however, that is a reversal of basic QA philosophy with regard to document priorities. This is considered to be an item of noncompliance with Criterion II of 10 CFR 50, Appendix B (341/82-10-02(DETP)).
4. The Fermi Quality Assurance Manual, Section 2, states, "The Project Quality Assurance Director (PQAD) who reports on project-related matters to the Project Manager, is administratively responsible to the Director of the Quality Assurance Department and obtains direction from him on QA policy matters." This appears to have been misstated and is not the actual practice at Fermi. This statement needs clarification to assure organizational freedom to fully meet Criterion I of 10 CFR 50, Appendix B. This is considered to be an open item (341/82-10-03(DETP)). A written response is requested from Detroit Edison on this item.

C. Review of QA Staffing

The inspector reviewed the licensee's and site contractors' present organization and staffing plan relative to the QA/QC function. The review indicated that the licensee's present QA staff is adequate with regard to maintaining an effective overview of site activities. Staffing was as follows:

Total site employees	4114
Craft (including maintenance staff)	1890
Craft (construction only)	1291
QA/QC (total includes Supervision and clerks)	299
QA/QC (Inspectors, Auditors, Surveillances)	211
Ratio QA/QC to total craft	15.8:1
Ratio QA/QC to Construction Craft	16.3:1

D. Audit Program

The inspector assessed the effectiveness of the licensee's overall audit program, including review of controlling procedures, scheduling and performance of audits, auditor training and certification, audit reports, adequacy and timeliness of responses, and final close out actions. The assessment included three separate audit program areas, (1) management audits, (2) internal audits of Detroit Edison, and (3) contractor audits.

1. Management Audits

The inspector found that the requirement of Criterion II of 10 CFR 50, Appendix B, which states that "the applicant shall regularly review the status and adequacy of the quality assurance program" was not being met. This requirement is also stated in the Audit Section (19.0.3) of the Detroit Edison QA Manual. A procedure to control this activity was not in place, nor had such a review been scheduled or performed since the beginning of the Fermi Project. It should also be noted that a Management Analysis Company report, dated November 8, 1979, also identified this problem. The lack of this review of the overall Fermi QA Program is contrary to Criterion II of 10 CFR 50, Appendix B, and is considered to be another example of the item of noncompliance cited in Paragraph II.B.3 above (341/82-10-04(DETP)).

2. Internal Audits

The inspector reviewed the audit finding summary reports, audit finding reports, audit checklists and audit responses for the areas of Start-Up, Operational Assurance and Project Quality Verification. These three audits included fourteen findings. The reports were concise, responses were acceptable, and most close-outs were timely (also see II.E, Trend Analysis). The audit schedules were reviewed for 1980, 1981, and 1982 to verify audit timeliness and to assure that the entire program was being periodically audited. This review revealed that the QA site group responsible for audits, and the QA group responsible for

audits of Design in Troy have not been included in the audit schedule or included in the audit program. These functions appear to have been missing in audit scope since the Fermi project began. This is contrary to Criterion XVIII of 10 CFR 50, Appendix B, and is considered to be an item of noncompliance (341/82-10-05(DETP)).

3. Contractor Audits

The inspector reviewed a total of nine selected audits of various contractors. This review included audit scheduling, audit timeliness, findings, reports, responses and close-out actions. The audits reviewed included:

- a. L. K. Comstock - Electrical. Six audits conducted during March 1982, June 1981 (First), June 1981 (Second), August 1980, November 1980 (First), and November 1980 (Second), resulting in seventeen findings.
- b. Wismer and Becker - Mechanical. Two audits conducted during May 1982 and September 1981, resulting in six findings.
- c. Townsend and Bottum - Mechanical. One audit conducted during December 1980, resulting in five findings.

The assessment in these areas showed that the program was on schedule and was being implemented with positive results, with the exception of prompt corrective action, follow-up, and close-out (see II.E., Trend Analysis).

4. Training and Certification of Auditor Personnel

The inspector reviewed the training, qualifications and certification of auditors and lead auditors to the requirements of licensee Procedure PQAP 9.112, Revision 0, Qualification of Audit Personnel. The training and certification records were reviewed for twenty-one auditors and lead auditors. Two problems were detected during this review:

1. Procedure PQAP 9.112, Revision 0, does not include the requirement that Lead Auditors be administered an examination that they must pass to be properly certified. This requirement is from ANSI N45.2.23 and Regulatory Guide 1.146.
2. Lead Auditors were not properly certified, in that a certificate was issued with no backup documentation (letter, examination, etc.) on file at the site. This certification was apparently by telephone. This problem was compounded by the previous procedural problem noted above.

The above deficiencies are contrary to Criterion V of 10 CFR 50, Appendix B, and are considered to be an item of noncompliance (341/82-10-06(DETP)).

E. Trend Analysis Program and Corrective Actions

The inspector reviewed the trend analysis program to the requirements of Procedure PQAP 9.347, Trend Analysis System, Revision 0. The procedure was found to be weak with regard to the assignment of time constraints on analyzing data or issuing reports to trigger corrective action. Also, Nonconformance Reports (NCR's) are not covered by this procedure, and procedure Section 3.0 refers to trending only "Onsite Contractors." The trending should also include Detroit Edison activities (the actual practice). This is considered to be an open item (341/82-10-07). A written response is requested from Detroit Edison on this item.

The inspector also reviewed trending data for audit finding reports, deviation disposition requests, surveillance reports, and nonconformance reports. This review revealed that many corrective action responses were overdue and that corrective action completions and close-outs were not timely. Although the trending program identified numerous adverse trends, positive actions to correct these trends were not taken in most cases. The inspector reviewed corrective actions taken in regard to two selected adverse trends, torque wrench calibration problems and by-passed hold points. Corrective actions taken by Detroit Edison and contractors in these two areas appeared to be adequate.

Examples of the adverse trends described above are denoted by report types, general status, and with specific examples as follows:

1. Deviation Disposition Request (DDR's)

a. DDR Status

Total Issued - 8700

Total Open - 909

<u>Number Open</u>	<u>Time Open (in excess of)</u>
1	60 (months)
1	54
8	48
10	42
21	36
26	30
35	24
42	18
55	12
36	6
574	0-6

- b. DDR's were also often not responded to, or the responses were unacceptable. Sixty DDR's were noted to be awaiting response for 6 to 20 months; examples are shown below:

<u>DDR No.</u>	<u>Dated</u>	<u>Description</u>
7006	09/28/81	Improper penetrometer on Dravo radiograph.
2692	03/23/79	Arc strike on fuel canal liner plate.
5377	11/05/80	Incomplete ID of weld on radiographic film.

- c. After DDR's are dispositioned, corrective actions and close-outs have not always been timely; the following examples are of items which have been open for excessive lengths of time.

<u>DDR No.</u>	<u>Dated</u>	<u>Description</u>
3087	07/02/79	Arc strike on containment shell.
3262	08/17/79	Hole cut through a portion of reactor building roof deck and siding.
2488	01/31/79	Spent fuel, new fuel and control rod storage racks improperly stored.
1732	05/31/78	In-vessel racks damaged, housekeeping, and storage.
1372	01/23/78	CRD insert and withdraw lines (stainless) painted and poor housekeeping.
2566	02/20/79	Carbo-Zinc coating thickness and weld splatter on drywell door.
1334	12/23/77	Use of carbon steel pipe contrary to specifications and drawings.

2. Audit Finding Reports (AFR's)

a. AFR Status

AFR's - Total Open - 45

AFR's - No response/ unacceptable response, - 12 (awaiting response 2 to 4 months)

AFR's - Corrective action incomplete - 14 (open 6 to 33 months)

b. Examples of Audit Finding Reports awaiting corrective action or close-out

<u>CQA Audits</u>	<u>Date</u>	<u>Description</u>
AFR 79-09-29D	09/17/79	QA Manual, record section needs revision.
AFR 80-01-16C	01/18/80	No procedure for inspection (Comstock) and documentation of Nelson transit penetrations.
AFR 80-08-10D	08/13/80	QC Inspection not performed (Comstock) due to lack of man power.

3. Surveillance Reports (SR's)

a. SR Status

SR's - Total Open - 46

SR's - Awaiting disposition/acceptable disposition - 12 (2 to 6 months)

SR's - Open over 6 months - 4
 SR's - Awaiting inspection over 3 years - 1 (examples of long overdue inspection)

b. Examples of Surveillance Reports awaiting corrective action or response

<u>SR No.</u>	<u>Date</u>	<u>Description</u>
PC 060779	06/07/79	"C" Clamp in control room (Detroit Edison) ceiling-questioned; status "awaiting inspection."
S 102480	10/24/80	DDR's inaccurately closed (Wismer and Becker) concerning consumable inserts; status "awaiting completion of action on DDR's."
E111881	11/18/81	Debris found in cable trays, (Comstock) housekeeping violation; status "awaiting completion of corrective action."
S 010882	01/08/82	DDR's improperly closed; (Reactor Controls) status "response not received."
S 012982	01/29/82	Procedure issued in a (Detroit Edison) letter format; status "response not received."
021582	01/15/81	DDR not signed by QC (Wismer and Becker) Manager prior to issuance of DDR number; status "response unacceptable."

The procedures for Auditing, PQAP 9-311, Revision 0, PQAP 9-312, Revision 0, and Deviation Disposition Request, AP-VII-02, Revision 14, do not include a requirement specifying a reasonable time to respond or provide corrective action, or establishing a time deadline to have actions completed and closed out. Although the inspector's review indicates that nonconformances and other problems are being promptly identified, corrective action is not being promptly taken. This is an item of noncompliance with Criterion XVI of 10 CFR 50, Appendix B (341/82-10-08(DETP)).

F. Surveillance Program

The inspector reviewed the surveillance program of the licensee to the requirements of Procedure PQAP 9-312, Revision 0, and for Wismer and Becker to the requirements of Procedure WB-Q-113, Revision 5. This review found the licensee's program to be comprehensive and effective with the exception of Corrective Action (see Section II.E). The surveillance program being implemented by Wismer and Becker was found to have several problems, as follows:

1. Procedure WB-Q-113, Revision 5, assigns responsibilities and provides administrative direction, but does not provide appropriate quantitative or qualitative acceptance criteria with

regard to how surveillances are to be conducted or what the scope of the surveillance program is to be. This procedural inadequacy is contrary to the requirements of Criterion V of 10 CFR 50, Appendix B, and is considered another example of the item of noncompliance cited in Paragraph II.D.4 (341/82-10-09(DETP)).

2. Wismer and Becker Company has been utilizing an improper practice of reporting and dispositioning nonconformances on surveillance reports. This improper practice was partially due to the inadequate procedure (II.F.1 above). The inspector reviewed the surveillance computer log and randomly selected ten surveillance reports. Five of these contained surveillance items which directly affected plant hardware and clearly fell within the scope of Wismer and Becker Procedure WB-E-138, Deviation Disposition Request, Revision 14. A number of other surveillance reports were used by Wismer and Becker personnel to generate questions and answers; this is also a misuse of the surveillance system. Misuse of the system may not be restricted to this area since the potential also exists in the reporting of Category B DDR's. Examples of the incorrect use of surveillance reports to report nonconformances are:

<u>SR No.</u>	<u>Date</u>	<u>Finding</u>
1291	12/19/80	Use of two pieces of 3/32" TIG wire to weld 1" s/s socket weld for drywell subassemblies--1/8" wire was not available. Disposition - "Tests were conducted - no records were kept, Use-As-Is."
2552	05/26/82	Spent fuel pool cooling - attachment plate to subassembly bent 5/8". Disposition - "Not detrimental to support."
2549	05/24/82	Capillary tubing of pressure transmitter, cracked, Level III, Class D system, Disposition - "Return to Vendor."
2534	05/14/82	Stud and nuts installed without traceability or marking. Disposition - "Replace with traceable material."
2323	03/05/82	Two valves, Reactor Closed Cooling Water system, multiple dents in valve bodies; Disposition - "UT for minimum wall violation."

The above improper use of surveillance reports and lack of proper reporting and dispositioning of nonconformances is contrary to Criterion XV of 10 CFR 50, Appendix B, and is considered to be an item of noncompliance (341/82-10-10(DETP)).

G. Housekeeping

The Reactor Building, Drywell, Auxiliary Building and Residual Heat Removal Building were all inspected for general housekeeping to the

requirements of the Detroit Edison QA Manual, Section 1.4.7, "Performance of activities affecting quality under suitably controlled conditions," and further stated in Section 1.5.4 relative to "Cleaning." The plant was observed to be extremely dirty in that garbage, scrap lumber, rags, and other debris were not being collected and disposed of; this problem also created a fire hazard. The only exception was the RHR Building, which was found to be clean.

Two unattended containers of a flammable liquid were also observed in the Drywell and Reactor Building. Pipe caps were noted to be missing on some instrument racks. The general site areas outside buildings around construction offices and trailers, were also observed to be littered with trash and debris. The conditions observed are contrary to Criterion II of 10 CFR 50, Appendix B, and are considered to be another example of the item of noncompliance cited in Paragraph II.B.3 (341/82-10-11(DETP)).

SECTION III

Prepared By: J. H. Neisler

A. Design Change Control

The purpose of the assessment in this area was to determine whether site design interfaces are clearly defined and implemented, whether design changes are being adequately controlled, whether site personnel involved in design change control understand and use the applicable procedures, and whether procedures are being properly implemented to assure the timely revision and distribution of drawings.

Design changes involving the Fermi 2 facility are controlled by the Detroit Edison Quality Assurance Manual, Procedures QAP-3, "Design Control" and QAP-4, "Configuration Control." In addition, the Project Procedures Manual Procedure No. 3.20, "Design Change Notices;" Procedure No. 3.21, "Design Change Requests;" Procedure No. 3.22, "Field Modification Requests;" and Daniel International Corporation Procedure AP-IV-04, "Design Change Requests (DCR)/Field Modification Requests (FMR)," provide implementing instructions for the initiation, processing, and close-out of changes originated by both onsite and offsite organizations.

Interfaces between elements performing design change activities are delineated in the Project Procedures Manual. The procedures in this manual also establish responsibilities for design change activities for the engineering and construction organizations.

1. Review of Procedures

The inspector examined procedures established to control design change activities within the licensee's and contractors' organizations. The procedures reviewed included:

- a. Daniel Procedure AP-IV-04, Revision 11, dated March 25, 1982, "Design Change Requests (DCR)/Field Modification Requests (FMR)." This procedure or a variation of this procedure is used by the constructor and the subcontractors for the initiation and control of design changes originating on the Fermi 2 site.
- b. Detroit Edison Project Procedures Manual, Procedure 3.20. The purpose of this procedure is to control the processing and distribution of design change notices. The inspector observed that the procedure was incorrectly titled "Design Change Requests" and that incorrect references are listed and called out in the procedure.

- c. Detroit Edison Project Procedures Manual, Procedure 3.21, "Design Change Requests." This procedure establishes the approved method for initiating, processing and dispositioning design change requests, and details the responsibilities and interfaces for individuals and organizations involved in the design change control system. The inspector observed that references called out in the procedure were incorrect, in that the references did not contain the information stated in the procedure.
- d. Detroit Edison Project Procedures Manual Procedure 3.22, "Field Modification Requests." This procedure establishes the approved methods for the initiation, processing, and close-out of field modification requests originating within the site organizations. The inspector observed incorrect references similar to those in (b) and (c) above. In Subsections 5.7 of the procedure, the instructions for changing FMRs are replaced by Subsection 5.6 of Procedure 3.21 for design change requests.

The errors identified during examination of the procedures in (b) and (c) and (d) above indicate that these licensee procedures for controlling design changes are inadequate. This is another example of an item of noncompliance with Criterion V of 10 CFR 50, Appendix B, as cited in Section II.D.4 of this report (50-341/82-10-12(DETP)).

2. Design Change Requests

The inspector examined more than thirty design change requests (DCR) processed over the last five years. The inspection included verification that the appropriate drawings had been revised to reflect the design changes, and that the physical changes to the structures, systems, or components were as stated in the DCR. The inspector did not identify any instances in which the appropriate changes had not been performed. All DCRs examined had been reviewed by the appropriate organizations or individuals according to procedures.

3. Field Modification Requests

The inspector examined field modification requests (FMR) issued over a period of two years. In general, the FMRs had been reviewed by the appropriate organizations or individuals, the disposition of the FMRs and the close out action had been completed, and the affected drawings or documentation had been updated according to procedure.

The inspector observed that FCR No. S3940, for the installation of a site - fabricated cable support rack on top of cabinet H11-P613, did not indicate that the licensee had considered possible changes in the seismic qualifications of the cabinet with the rack installed. The FMR also failed to include quality assurance requirements for the rack fabrication and installation.

Several FRM's had been issued to replace pump motor connection boxes with larger connection boxes. There was no evidence on site that the installation of larger boxes on the motors had received a review to consider the affect on seismic qualifications of the safety related motors.

Failure to provide design control measures for design changes that are commensurate with the original design is contrary to the requirements of Criterion III of 10 CFR 50, Appendix B, and is an item of noncompliance (50-341/82-10-13(DETP)).

B. Corrective Action Systems

The inspector reviewed specific aspects of the corrective action systems relating to construction deficiencies. Other aspects of corrective actions are discussed in Section II of this report. Specifically, the inspector reviewed procedures, reports, and activities to determine whether deficiencies identified during construction are promptly and properly dispositioned.

The Deviation Disposition Request (DDR) is used at Fermi 2 for the reporting of nonconforming conditions identified during construction, as a basis for requiring corrective action to assure that completed installations conform to design requirements.

The inspector examined more than fifty of the DDRs issued during the past three years. These DDRs included civil, electrical, piping, welding, mechanical, and documentation deficiencies identified by the licensee or contractors during plant construction. In general, the DDRs had been reviewed by the appropriate supervisory and engineering personnel. Recommended corrective actions appeared to have been evaluated and approved or modified by engineering personnel to provide a quality installation. Final inspection of corrective actions was performed by quality control inspectors to assure satisfactory resolutions to the identified deficiencies.

C. Concrete Anchor Installation/Core Drilling

The inspector reviewed procedures and examined records and documents related to the drilling of holes in concrete structural components for the installation of concrete anchors, and for providing a hole for passage of pipe or cable through walls or floors.

Concrete anchor installation is controlled by Daniel Procedure WP-1-01, "Installation and Testing of Concrete Anchors." The procedure requires use of a magnetic finder to locate reinforcement prior to the drilling. This requirement has been in the procedure since February 1978. To cut a rebar, the contractor must obtain a "Cut Rebar Request" prior to cutting the bar. The contractor's project manager's approval in writing is required for the tool cribs to issue the diamond tipped bits necessary for cutting rebar.

Core drilling is controlled by Daniel Procedure WP-1-04 "Concrete Coring." The procedure requires in Subsection 3.3 that, prior to a coring operation, a core drilling release must be initiated and routed through all engineering disciplines represented in the Detroit Edison field engineering department group. No evidence of unreported cut or damaged concrete reinforcement was observed.

SECTION IV

Prepared By: B. H. Little

QC INSPECTOR EFFECTIVENESS

A. Assessment Purpose and Approach

The purpose of the assessment in this area was to provide the answers to five basic questions:

1. Are QC inspection procedures well defined?
2. Are QC inspection procedures consistent with QA Program requirements?
3. Are QC inspectors adequately qualified and certified to perform their assigned tasks?
4. Are QC inspectors free from harassment, intimidation and other undue pressures which would affect their performance?
5. Are QC inspectors routinely waiving hold points or other inspection requirements?

The assessment approach in this area was threefold. The first part of the effort involved review of selected procedures associated with the quality control function; the second part consisted of a review of qualification records for site quality personnel; the third part involved interviews with quality control personnel and representatives from other site organizations which routinely interface with quality control.

B. Procedures Review

Selected administrative and quality control procedures were reviewed to assess their adequacy with regard to scope, clarity, and consistency with QA program requirements. The following procedures were included in this review:

1. PQAP-9.113 Indoctrination, Training and Certification of Quality Verification Personnel
2. PQAP-9.227 Identification, Control, and Tagging of Materials
3. PQAP-9.300 Selection, Indoctrination and Training of CQA Personnel
4. PQAP-9.403 Indoctrination, Training and Certification of FC/M QA Personnel
5. PQAP-9.415 Finish Construction/Maintenance QA surveillance Procedure

6. PQAP-9.471 Quality Control Instruction Preparation, Approval, and Control
7. LKC-4.1.4 Indoctrination and Training of Quality Control Personnel
8. W/B-QA-TM-1 Training Manual for Construction Inspection Personnel
9. W/B-QA-TM-2 NDE Personnel Qualification Manual

In addition, four in-field "travelers" were reviewed for content of QC witness and inspection points. The travelers contained QC inspection requirements, and the inspections were being performed.

The inspector found that the procedures which were reviewed provided appropriate guidance within their intended scope, contained functional checklists, and were consistent with general QA Program requirements.

C. Qualification Records Review

To assess the level of qualification for QC inspectors at the Enrico Fermi 2 site, the indoctrination, training and certification records for twenty Detroit Edison/Project Quality Assurance (DE/PQA) inspectors, twenty Wismer and Becker (W/B) inspectors, two Townsend and Bottum (T/B) inspectors, fifteen L. K. Comstock Company (LKC) inspectors, and three Reactor Controls Incorporated (RCI) inspectors were reviewed. The records were reviewed against ANSI N45.2.6 standards as referenced in DECo to NRR letter EF2-55,344 dated November 18, 1981.

The following table summarizes the number of QC inspectors' qualification records available and reviewed for the licensee and contractors.

<u>Contractor</u>	<u>Records Available</u>	<u>Records Reviewed</u>	<u>Requirements</u>
DE/PQA	84	20	ANSI N45.2.6-1973
W/B	46	20	ANSI N45.2.6-1973
T/B	2	2	ANSI N45.2.6-1973
LKC	51	15	ANSI N45.2.6-1973
RCI	6	3	ANSI N45.2.6-1973

Except as noted below, the personnel qualification packages contained appropriate records of indoctrination, training, and certification and met the intent of ANSI N45.2.6 as endorsed by Regulatory Guide 1.58.

<u>Contractor</u>	<u>Discrepancy</u>	<u>Number of Occurrences</u>
LKC	Visual exam missing	1
LKC	No basis for certification	1
LKC	Activities for which certified not indicated	3
LKC	Certification not dated	2
LKC	Certification not documented	1

During the assessment, the licensee was advised of the above qualification records which contained discrepancies, and directed LKC to review and update their entire QC personnel files. The licensee has scheduled an audit of LKC QC personnel training and qualifications. This is an open item which requires a response by the licensee (50-341/82-10-14(DETP)).

D. Personnel Interviews

Interviews were conducted with selected quality control, quality assurance, engineering, and management personnel. Although the majority of interviews were held with quality control inspectors, it was felt that limited interviews with personnel who routinely interface with quality control would be valuable to the assessment. The following table summarizes the interviews which were conducted.

<u>Organization</u>	<u>Total Personnel</u>	<u>Personnel Interviewed</u>
PQA QA/QC	152	8
W/B - QC	46	10
T/B - QC	2	1
LKC - QC	51	8
RCI - QC	6	3

The format was similar for each interview. The approach included soliciting each employee's opinion regarding management support, training, stop work authority, inspector harassment or intimidation, adequacy of inspection procedures and checklists, and organizational interfaces. During the interviews the following concerns and observations were elicited:

Management Support

QC inspectors in PQA, LKC, RCI, and T/B reported having good management support of QC activities. They felt that QC supervision supported and encouraged the identification and reporting of QC concerns and nonconformances, and believed QC was adequately independent to carry out effective QC program.

W/B QC inspectors perceived a lack of management support for QC activities. Specific concerns expressed by the W/B inspectors included:

1. W/B QC manager was not independent of influence by the W/B Construction Superintendent.
2. W/B QC supervision was not supportive; feedback to inspectors regarding concerns was not adequate.

The assessment team members questioned W/B QC inspectors to assess if the above concerns resulted in missed QC inspection points or the failure to document nonconformances. The QC inspectors' response to

questions in this area indicated they believed planned inspection requirements were being performed and that nonconformances were being properly documented and processed.

Items 1 and 2 are considered to be open (341/82-10-15(DETP)). This matter will be reviewed further during subsequent NRC inspections. A written response by the licensee is requested for Items 1 and 2.

Training and Indoctrination

The QC inspectors considered the training and indoctrination provided to them had been adequate. A few inspectors felt that a more formalized training program would be of benefit but believed the "on-job training" was good.

Stop Work Authority

All QC inspection personnel interviewed believed they have adequate stop work/process authority. This is obtained through Hold Tag Procedures, which require problem resolution and tag removal prior to the continuation of the work.

Inspector Harassment or Intimidation

All of the QC inspectors interviewed stated that the working relationships with craft personnel and craft supervision are good, and are free from harassment or intimidation. One isolated case of verbal harassment was reported. In that case the inspector notified his supervisor and the craft supervisor; the craft worker involved was terminated the same day the incident took place.

Inspection Procedures and Checklists

QC inspectors, in general, believed that procedures and checklists were adequate--containing appropriate guidelines and specifications. An exception to this was in the area of electrical conduit and supports. The LKC inspectors stated that, in that area, some procedures contain conflicting specifications. Resolving the conflicts are time consuming and frustrating to the inspectors.

Organizational Interfaces

In general, QC inspectors considered existing organizational interfaces adequate to good. QC inspectors, with the exception of W/B QC inspectors, felt free to interface with PQA and DE Field Engineering, and were encouraged by their supervision to do so. They believed that feedback on QC issues from the DECo organization was adequate and timely.

Opinions expressed by W/B QC inspectors relative to the adequacy of interfaces were notably different from those expressed by QC inspectors in other contractor organizations. W/B QC inspectors stated that they do not feel free to contact DECo organizations with QC

concerns. In addition, they stated that engineering and technical support within W/B was frequently not adequate and not provided in a timely manner.

The concerns noted above with regard to (1) inspection procedures and checklists for electrical conduit and supports, (2) the reluctance of W/B inspectors to contact Detroit Edison with QA concerns, and (3) the expressed inadequacy of W/B engineering and technical support, are considered to be an open item for which a licensee response is requested (50-341/82-10-16(DETP)).

E. Conclusion

The results of the procedure review, qualification records review and the personnel interviews indicate that the QC program at Fermi 2 is providing an appropriate level and acceptable quality of inspection. More specifically, the assessment in this area showed that the QC inspection procedures, with the exception of the LKC procedures noted above, provide adequate guidance and check lists and are consistent with QA program requirements. With the exception of the qualification record deficiencies identified in Section V.C., the QC inspectors are adequately qualified and certified to perform their assigned tasks. The inspectors are free from harassment, intimidation or other undue pressures except for infrequent, isolated, cases which have been promptly and rigorously corrected. The required QC inspection requirements are being routinely met.

Enrico Fermi 2 Noncompliance History

A review by the inspector of inspection records and Systematic Appraisal of Licensee Performance (SALP) reports indicate that the number of noncompliances issued at Fermi is average for facilities under construction in Region III. This comparison was made based on the number of inspection hours per item of noncompliance. Although average in total number of items of noncompliance, the records indicate that greater than forty percent of the items relate to procedural and corrective action issued, which is indicative of a need for greater licensee attention in those areas.

SECTION V

Prepared By: K. R. Naidu

A. Electrical Cable Installation

The purpose of the assessment in this area was to verify that cables have been installed, separated, and routed in accordance with adequate procedures which reflect the relevant specifications, and that the cable installation craft and QC personnel have been adequately trained in those activities. In performing the assessment, the inspector reviewed the applicable procedures, observed installed cables, and interviewed selected craft personnel.

1. The inspector reviewed Work Procedures 4.3.1, 4.3.3, 4.3.4, 4.3.6, 4.3.7 and 4.10.1 and determined that the procedures reflect the requirements of the relevant engineering specifications.
2. The inspector observed the following cables which were installed in Cable Trays or Conduits; 211 632 A/B-2C, 201 670 A/B-1P, 232 770-1K, 223 010 A/B-1C, 212 770 A/B/-2P, 245 763-1K, 245 770-1C, 220 074-1C, 230 901-1C, 220 071-1C, 245 753-1K, 245 764-1C, 220 079-1C, 245 857-2K, 245 64-2C, 220 084-2C, 230 906-2C, 220 081-2C, 245 759-2K, 245 758-2C and 220 096-2C. The inspector determined that the above cables are adequately separated; the routing is as specified in the computer printed routing schedule; the raceways are inspected to appropriate procedures to verify that each raceway is free of hazards such as sharp edges, burrs, and debris; the cables are identified at each end; and the cable color matches the raceway color identification.
3. The inspector observed that cables routed in non-safety related Cable Tray OK-093 crossed over to Divisions I Cable Tray 1K-004 and Division II Cable Tray 2K-030 at approximate elevation 632 in the vicinity of the control room. This installation is in accordance with Drawing No. 6E 721-1801-9. The licensee stated that one-hour fire rated fire-retardant material will be installed in the cable trays and crossover transits. The licensee stated that there are four more locations where cables routed in non-safety related cable trays crossover and are routed in safety related Division I or II cable trays. These are shown in Drawings No. 6E 721-2801-7, No. 6E 721-2802-8A and No. GE 721-2801-8B. This matter has been identified as an open item in Region III Report No. 50-341/81-12, and will be reviewed during a subsequent inspection.
4. The inspector observed the following adverse findings which the licensee concurred with and agreed to correct. A reinspection was started prior to the end of the assessment period. These are not considered to be items of noncompliance because it is not clear whether the discrepancies occurred before or after inspection.

- a. Softeners to protect the cable from the cable tray metal edge were not in place on Cable Trays 1C-137, 1C-038, 1C-047 and 1C-035. Paragraph 5.20.11.4 of Detroit Edison Company (DECo) Specification 3071-33 requires the installation of metal edge protector "calrepc" or equal approved by DECo, where cables leaving or entering cable trays are in contact with or may contact the edge of the tray channel flange. The cable jacket may be used as a softener at tray rungs and around bends in the tray and should be properly secured by ty-wrap or tape as necessary. The contractor developed Procedure 4.3.0, titled "Inspection of Installed Cable and Associated Raceway" to reinspect the installed cables. The reinspection was in progress at the time of this assessment. Paragraph 3.4.0 of Procedure 4.3.0 requires verification that cable softeners or other protection is in place. QC Checklist 40 is used to document adverse findings. At the suggestion of the inspector, the LKC QC Supervisor agreed to review the adequacy of the checklist and revise it as appropriate to incorporate additional criteria. Pending review of the revised checklist this item is considered to be an open item (341/82-10-17(DETP)). A response by the licensee is requested.
 - b. The inspector observed a cable identified as 231 053-1C with deep impressions on the jacket. The inspector determined that DDR-646, dated November 12, 1979, was initiated to identify that this cable, and Cables 246 819-1C, 214 500-1C, 231 818-1C, and 209 640-1C, have deep impressions in the cable jackets. A megger test was performed on these cables and no degradation was identified. The inspector reviewed the test report, dated January 9, 1980, which indicates that megger and insulation tests were performed on Cable 231 053-1C to LKC Procedure WI 000-03-011, and that the results were acceptable.
 - c. The inspector found that there are no requirements to torque the cable tray splice plate bolts to a specific value, and that therefore, there are no QA requirements to verify the torque. The installation procedure adequately describes the method to install the bolts in the splice plate joint and to tighten the nut. The inspector observed that in all of the cable trays involved with the cables identified in Paragraph V.A.2 above, the projection of the bolt from the splice plate indicates that the bolts were adequately tightened.
5. The inspector interviewed QC inspectors and their supervisors and established from the discussions that they are knowledgeable with regard to the inspection checklists. However, the inspector noted, and the L. K. Comstock (LKC) QC Supervisor agreed, that the QC inspectors and their supervisors were not knowledgeable with regard to the acceptance criteria in the QC procedures

governing the QC inspection checklists. The LKC QC Supervisor stated that an indoctrination refresher course will be given to the QC staff. This is considered to be an open item (341/81-10-18(DETP)). A response by the licensee is requested.

6. The inspector observed combustible material such as paper, construction material such as empty cable reels, and other debris in Cable Trays OC-031 and OC-731 in the first floor of the reactor building above the control rod drive rack and in Cable Trays 2C-066 in the second floor of the reactor building. The inspector informed the licensee that measures to protect the integrity of installed cables in cable trays were inadequate and that this is a further example of the item of noncompliance cited in Section II.B.3 of this report as contrary to the requirements of Criterion II of 10 CFR 50, Appendix B (50-341/82-10-19(DETP)).

Based on the above procedure reviews, observations, and interviews, the inspector concluded that, except as noted above, the electrical cable installation is adequate. One example of an item of noncompliance was identified in the above area.

B. Inprocess Inspection

The purpose of the assessment in this area was to verify that adequate inprocess inspections were performed during the cable installation process. The inspector conducted the assessment by reviewing installation records, surveillance reports, and nonconformance reports associated with the cable installation activities.

Review of the following typical installation records indicated that inspections were performed:

1. Cable 220 074-1C. A five conductor/12 AWG cable connects core spray Division I Cabinet P626 and instrument rack H21 P004. Cable trays and conduits are listed. Records (Form No. 39) indicate that the cable was originally pulled on November 21, 1979, and pulled back on January 23, 1981. The cable was repulled on January 26, 1981, and inspected on February 25, 1981. Cable pulling checklist Form No. 37 was signed off on February 25, 1981. The QC inspection checklist of electrical terminations, Form No. 36, was signed off on May 5, 1981.
2. Cable 220 096-2C. A five conductor/12 AWG cable connects core spray Division II Cabinet H 11-P627 and instrument rack H21-P005. Form No. 39 indicates that the cable was repulled on February 25, 1981. Form No. 36, dated May 5, 1981, indicates that the electrical terminations were inspected and accepted.
3. Cable 220 070-1P. A three conductor/410 AWG heavy duty power cable connects the Division I core spray pump to 4160 volt circuit breaker B10. Form No. 37 indicates the cable was pulled on May 11, 1982. Forms No. 36 signed on May 24, 1982, and November 5, 1981, indicate that the terminations at the motor and switchgear sides were inspected and found to be acceptable.

4. Form No. 17 is a cable tray inspection checklist used in conjunction with work instruction 000-03-021. The inspector reviewed a typical checklist for tray segment 1P-003. Item 1.3 on the checklist requires verification that the tray is anchored down. The inspector did not receive an adequate explanation as to how this was verified when trays were welded to supports. Paragraph 3.1.3 of LKC Procedure 4.3.1 requires verification that the Level 1 tray/wireway has been fastened down by welding to the hanger/support as specified on Drawing No. DECo-STD-EB-117-57. This drawing specifies a 1/8" size, 3/4" long, weld. The inspector stated and the licensee agreed that this requirement is impossible to meet. The cable tray is curved at the ends and does not have 3/4" contact with the hanger support. Furthermore the specified weld length does not have a tolerance for inspections, and inspections should have reflected this observation. The inspector determined that there were no documents to indicate that these welds have been inspected since September 1978. Prior to that date, the welds were inspected and unacceptable welds were documented, evaluated, and repaired. The inspector informed the licensee that failure to inspect or document the inspection of these welds is an item of noncompliance with the requirements of 10 CFR 50, Appendix B, Criterion X (341/82-10-20(DETP)).

The DECo Project Manager issued a stop work order dated July 2, 1982, which terminated the further installation of cable trays and supports until all cable tray hangers installed after August 1978, have been inspected.

Electrical cable tray hangers/supports were designed by Sargent and Lundy, DECo's Architect Engineer, for locations other than the drywell. L. K. Comstock Company fabricated and installed the hangers. The hangers were assigned a style number and were inspected after they were fabricated in the shop. A unique identification number was not assigned to each of the hangers of the same style. Therefore, after hangers were installed, the documents could be traced to the installation inspections only, and could not be correlated to the fabrication records for that particular installed hanger. For example, Drawing 6E-721-2802-6, Revision E, shows seven electrical hangers between Columns F and G. The hangers are of the same style, 12H8, and have unique numbers, 12H8-13, 14, 15, 16, 17, 18 and 19. The installation record (Form No. 17A) indicates that hanger style 12H8 was fabricated to Design Standard EB-116.12, Revision 3, dated March 1977, was installed and the following attributes were verified:

1. Support/hanger type physical location
2. Length conforms to the tabulation sheet
3. Support installed correctly
4. Field welds touched with galvanox paint
5. Welder's/QC inspector's stamps adjacent to the weld
6. Bolted connections are correct

The fabrication (weld) inspection checklist (Form No. 19) for the above hanger cannot be easily retrieved because several hangers of the same style were fabricated, and no unique number was assigned. The weld inspection checklist, Form No. 17, documents verification of following attributes:

1. Weld rod used
2. Fitup
3. Requirements of Section 8.1.15 of the AWS D1.1 code
4. Welder and welding inspector identification in the vicinity of the weld

The DECo Project Manager, in a letter dated July 2, 1982, directed the construction Project Manager to develop a procedure to supplement existing procedures to provide evidence of inspection coverage on fabrication and installation. Pending review of the revised procedure, this is considered to be an open item. (341/82-10-21(DETP)). A response from the licensee is requested.

The drawings for hangers installed in the drywell were designed by Giffels, and each hanger was assigned a unique hanger number. The inspector selected Hangers 1H11, 1K01, 1G04, 1E02, and 1F02, identified on Drawing No. 6E-721-2836-20. The fabrication details of hanger 1K01 are shown in detail 24 of Drawing No. 6E-721-2836-23. The weld inspection checklist (Form No. 19), the tray segment inspection checklist (Form No. 17) and the hanger and support checklist (Form No. 17A) were retrievable.

L. K. Comstock designed, fabricated, and installed the supports/hangers for electrical conduits. The inspections on the installed supports/hangers are behind schedule because cables were installed in conduits before the supports/hangers were inspected and accepted. Site records indicate that DECO management decided not to inspect conduit supports/hangers at the time of installation. During the current inspection, the licensee stated that there is a backlog of several hundred installed conduit hanger/supports which have not been inspected, but in which cables have been pulled. The licensee plans to accelerate the inspections in this area to reduce the backlog.

SECTION VI

Prepared By: W. J. Key

A. Material Traceability of Installed Structures and Components

The purpose of the assessment in this area was to verify that the material traceability of installed structures and components is in compliance with licensee commitments and NRC requirements. In conducting the assessment, the inspector reviewed applicable procedures and documentation, and conducted examinations of weld material control at warehouse storage and contractor issuing stations. In addition, the inspector traced selected materials and components through purchasing, receipt inspection (RIR), and installation, to verify that material traceability has been maintained.

1. Specifications and Procedures Review

The inspector reviewed the following specifications and procedures against the requirements of 10 CFR 50, Appendix B, and the licensee's commitments to applicable Codes and Standards. Procedures from the following contractors were reviewed, and selected items from each were identified for traceability; Wismer and Becker (W/B), Reactor Controls, Inc. (RCI), Townsend and Bottum (T/B), Walbridge and Aldinger Company (WACo).

- a. Specification No. 3071-31, Revision D, Pipe Erection, which includes piping, valves, hangers, supports, guides and appurtenances, and incorporates requirements of the following:
 - (1) Regulatory Guide 1.31, Control of Stainless Steel Welding
 - (2) Regulatory Guide 1.38, QA Requirements for Packaging, Shipping, Handling, Receiving, and Storage
 - (3) Regulatory Guide 1.39, Housekeeping
 - (4) Regulatory Guide 1.44, Control and Use of Sensitized Stainless Steel
 - (5) Regulatory Guide 1.50, Control of Preheat Temperature for Welding of Low Alloy Steel
 - (6) Regulatory Guide 1.71, Welder Qualification for Areas of Limited Accessibility
 - (7) AWS B31.1.0
 - (8) ANSI N45.2.3

- (9) MSS-SP-58, Materials and Design of Pipe Hanger Supports
- (10) ASTM-Materials, A193, A307, A320, A325
- b. Specification No. 3071-31 is applicable to Class A piping Systems including the feed water, recirculation, main steam, R. H. R., and Steam to HPCI/RCIC systems, and Class B piping systems including the low pressure coolant injection, containment cooling, and core spray systems.
- c. Specification No. 3071-525, Revision C, Design Specification for Nuclear Class II and III small bore piping, I&C piping and tubing.
- d. W/B Procedures
 - (1) Procedure No. WB-C-102, Revision 10, Field Pipe Erection
 - (2) Procedure No. WB-C-103, Revision 12, General Pipe Fabrication
 - (3) Procedure No. WB-C-107, Revision 3, Stainless Steel Tool Control
 - (4) Procedure No. WB-C-114, Revision 20, QA Level I Pipe Supports (except GE-NED)
 - (5) Procedure No. WB-E-133, Revision 2, Field Routing of Small Bore Lines
 - (6) Procedure No. WB-E-118, Revision 12, Welder and Brazer Qualifications
 - (7) Procedure No. WB-Q-101, Revision 14, Control of Welding Materials.
- e. Reactor Controls, Inc. Procedures
 - (1) Procedure No. CP-129, Revision 5, QA Level Pipe Supports
 - (2) Procedure No. CP-129A, Revision 4, QA Level Pipe Supports
 - (3) Procedure No. WP-121, Revision 1, Electrode Control Procedure (Stainless Steel Materials)
 - (4) Procedure No. WP-121A, Revision 2, Electrode Control Procedure
 - (5) Procedure No. WP-123, Revision 0, Control of Bare Wire and Consumable Insert Welding Materials.
- f. Townsend and Bottum Procedures
 - (1) Procedure No. FW-P-02, Revision 1, Instrumentation and Tubing Installation

- (2) Procedure No. FW-P-04, Revision 4, Piping Fabrication and Erection
- (3) Procedure No. FW-P-09, Revision 3, Fabrication and Erection of Hangers and Supports
- (4) Procedure No. WP-04, Revision 4, Weld Filler Material Procurement and Control
- (5) Procedure No. QC-P-9, Revision 1, Indoctrination of Quality Control Personnel

g. Walbridge and Aldinger Procedures

- (1) Procedure No. FWP-QC-1, Revision 0, Inspection of B31.1 Welds
- (2) Procedure No. FWP-V-103, Revision 4, Procedure for Base Metal and Weld Metal Repair
- (3) Procedure No. FWP-AP-8, Revision 2, Procedure for Control of Site Material and Equipment
- (4) Procedure No. FWP-AP-8A, Revision 1, Procedure for Permanent and Temporary Marking of Fabricated Hanger Assemblies
- (5) Procedure No. FWP-AP-83, Revision 1, Procedure for the Control of Site Material used to Fabricate Hangers at the Hanger Fabrication Shop
- (6) Procedure No. WM-IV, Revision 7, Welding Filler Material Control

No items of noncompliance were identified in this area.

2. Control of Welding Materials

Welding materials in the storage warehouse and contractor issue stations were examined by the inspector.

Wisner and Becker issues welding materials to site contractors from the warehouse, on request from designated welding engineers. As containers are opened and identified with contractor heat codes or the material heat numbers recorded, the materials are placed in controlled ovens at the issue stations and issued from there in portable heating ovens to authorized/qualified welders.

- a. During examination of the RCI issue station on June 28, 1982, the inspector noted that fifty 1/8-inch E7018 carbon steel electrodes were mixed in the No. 2 oven in the same compartment with E308L stainless steel electrodes. The inspector informed the licensee that this was an item of noncompliance with the requirements of Criterion IX of 10 CFR 50, Appendix B, and with RCI Procedure No. WP-121A,

Revision 2, which prohibits the storage of stainless steel electrode in ovens or containers with other classifications of electrodes (50-341/82-10-22(DETP)).

The licensee stated that no stainless welding using electrodes from the oven in question had been done since November 1981, and that audits of RCI weld rod control performed by Detroit Edison showed that, while stainless steel welding was underway, weld rod control by RCI was satisfactory. The documentation of these contentions should be discussed in the licensee's reply to the above item of noncompliance.

- b. During examination of WACO's fabrication shop issue station and the ironworkers' issue station in building No. 49, the inspector noted that the thermometers used at these two stations to check the holding ovens were not identified by tags or stickers and that neither had a calibration record. The inspector was informed that neither thermometer had been calibrated and that neither was in the calibration program.

This is an item of noncompliance with Criterion XII of 10 CFR 50, Appendix B (50-341/82-10-23(DETP)).

- c. The inspector selected the following welding materials from travelers, storage, and issue stations and traced them back to the applicable purchase orders.

- (1) Material - ENICRFE-3
Lot No. 8K3C
Purchase Order No. 63128
Receipt Inspection Report No. 2717
- (2) Material - E7018 Carbon Steel Electrode
Heat No. 422P3881
Purchase Order No. 83513
Receipt Inspection Report No. 1560
- (3) Material - E7018 Carbon Steel Electrode
Heat No. 422P2471
Purchase Order No. 83595
Receipt Inspection Report No. 6627
- (4) Material - "K" Inserts
Heat No. 3548R-308
Purchase Order No. 63591
Receipt Inspection Report No. 1931

Other than as noted in Paragraphs 2.a and 2.b, above, no noncompliances were identified with welding material control.

3. Material Traceability - Piping

In order to confirm traceability of installed and inprocess piping, the inspector randomly selected items from drawings and

purchase orders and compared the installed materials with receipt inspection reports and material test reports. Listed below are examples of items selected for traceability.

- a. pipe, heat No. HD7123 on Purchase Order No. 62636, RIR No. 1664; welded to 90° elbow, heat code No. M492 on Purchase Order No. V07464, in the RHR vent and relief line from the south heat exchanger, shown on Drawing No. WM-E11-5166-1, Revision D.
- b. Pipe, heat No. HD7123, Purchase Order No. 62636, RIR No. 1664; welded to 90° elbow, heat code No. M674 on Purchase Order No. 1444, same drawing as above.
- c. Valve, No. V8-2409, purchase order No. 1E86734, RIR No. 8-14-75-2B; welded to 8" elbow No. MK-P44-3351-4, S/N4438. Purchase Order No. 1C-701005, RIR No. 919.171, in the Emergency Equipment Cooling Water (EECW) pump (north) suction by-pass and discharge, on Drawing No. 6M721-3351-1, Revision P.
- d. Valve, No. V8-2409, on Purchase Order No. 1E-86734, RIR No. 8-14-75-2B; welded to pipe MK-P44-3351-5, S/N 4439, on Purchase Order No. 1C-70105.
- e. Valve, No. V8-2244, purchase order No. 1E-87807, RIR No. 9-27-77-28; welded to pipe heat No. HD7123, Purchase Order No. 62636, on Drawing No. 6WM-E51-5163-1, Revision B, in the RCIC small piping around the turbine pump and barometric condenser.
- f. Valve, No. V8-2276, Purchase Order No. 1E-87807; welded to pipe spool heat No. JC-2646, purchase order No. 63020, shown on Drawing No. 6WM-E51-2185-1, Revision C, in the RCIC mini flow line from the RCIC pump discharge to the core spray test line.
- g. Pipe, heat No. K0476 on Purchase Order No. 63011, RIR No. 2077; welded to 90° elbow heat code JV-339, Purchase Order No. 68277, RIR No. 4033, on Drawing No. 6DI-B21-7219-1, Revision C, in the drywell instrumentation piping from B21-L003D to penetration X-46B.
- h. Pipe, MK-E21-3145-9, S/N 3724 on Purchase Order No. 1C-70105, RIR No. 12-30-74-3B, to penetration assembly No. X-227A, heat No. 41274 on Purchase Order No. C72274-5562 shown on Drawing No. 6M721-3145-1, Revision K, in the north core spray mini-flow by-pass and test line.
- i. Spool No. 1023-15, heat No. 480200, on Purchase Order No. 390N3056-B11, RIR No. F11-14, shown on Drawing No. SK442-73B, in the Control Rod Drive System.

- j. Spool No. 0223-16, heat No. 454868, RIR No. 11-115, ordered on Purchase Order No. 390N0302-219, and shown on Drawing No. 61721-2113-1-9, in the Control Rod Drive System.
- k. Structural steel material, heat No. 422P4531, ordered on Purchase Order No. 834, and RIR No. 120-8, in the Instrument Volume Tank (hanger).
- l. Spool No. MK-R30-N-2186-1, heat No. N76258, ordered on Purchase Order No. UP-00048, RIR No. 214, and shown on Drawing No. 6M721-N-2186-1, Revision D, in the Diesel Fuel Oil Day Tank Overflow EDG-13.

No items of noncompliance were identified.

During a review of documentation for the RPV head insulation support framing - stiffener beams, the inspectors noted that Deviation Disposition Request (DDR) No. N6116-1, generated by the Warren Service Center Shops had been forwarded to Detroit Edison requesting approval and disposition by April 2, 1982. Edison had failed to make any disposition, but had released the component for shipment to the site following final inspection by the Edison Purchasing Department inspector in Inspection Report No. 2 dated April 22, 1982.

Receipt Inspection Report (RIR) 4-26-82-3 dated May 14, 1982, by Project C Verification, states "Documentation reviewed/accepted by Purchasing Inspection. See Inspection Report No. 2." Since the equipment was sent to the site with an open DDR and the documentation was accepted and placed in the document control vault without disposition of the DDR, this is considered to be another item of noncompliance with Criterion XV of 10 CFR 50, Appendix B, as cited in Section II.F.2 of this report (50-341/82-10-23(DEF)).

Other than as noted above, no items of noncompliance were identified in this area.

4. Welding Procedure and Welder Qualification Review

The inspector reviewed contractor welding procedures and determined that the requirements of ASME Code, Section IX and AWS D1.1 are being met. The inspector also reviewed welder qualifications for 20 welders and for the welder training facilities, and determined that training and qualifications meet the requirements of the ASME Code Section IX and AWS D1.1. Welder training facilities and qualifications have in the past been conducted by the contractor welding engineers, however, Detroit Edison is in the process of taking over the responsibility for training and qualifications of all onsite welders.

No items of noncompliance or deviations were identified in this area.

5. Conclusions

Based on the reviews of specifications and procedures, and the documentation of items selected for traceability, the inspector concluded that the specifications include the required codes and standards, the procedures are adequate to meet the specification requirements and are being followed, traceability and retrieveability of documentation is adequate, and welder training and qualification meet the required codes and standards. Areas to which more attention should be given by the licensee include the control of welding materials by the contractors' and licensee's quality assurance departments, and the final review of vendor documentation by the Purchasing Department quality inspectors and by Document Control prior to acceptance and release of items for shipment to the site for installation.

Exit Interview

The Construction Assessment Team met with licensee management during and at the conclusion of the assessment. Preliminary exit meetings were held on June 23, 25 and 30, 1982, to discuss the ongoing status of the assessment. The final exit meeting was held on July 2, 1982. The team members summarized the scope and findings of the assessment. The licensee acknowledged the findings.

The specific findings or open items, other than noncompliances, for which written replies are requested from Detroit Edison, are noted in the body of the report.