U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-254/86001(DRS); 50-265/86001(DRS)

Docket Nos. 50-254; 50-265 Licenses No. DPR-29; DPR-30

Licensee: Commonwealth Edison Company
P.O. Box 767
Chicago, IL 60690

Facility Name: Quad Cities Nuclear Power Station, Units 1 and 2

Inspection At: Cordova, IL

Inspection Conducted: January 15-23, 1986

Inspector: W. E. Milbrot 2/6/86
Date

Approved By: W. G. Guldemond, Chief 2/7/86
Operational Programs Section Date

Inspection Summary

Inspection on January 15-23, 1986 (Report No. 50-254/86001(DRS); 50-265/86001(DRS))

Areas Inspected: Routine unannounced inspection of licensee actions on previous inspection findings; refueling activities; spent fuel pool activities; and main steam isolation valve maintenance and testing. The inspection involved a total of 50 inspector-hours onsite by one NRC inspector including three inspector-hours onsite during off-hours. This inspection was conducted under the guidance of Inspection Procedures 60705, 60710, 62700, 85700, and 92701.

Results: No violations or deviations were identified.

DETAILS

1. Persons Contacted

Licensee Employees

*R. Bax, Production Superintendent
*T. Tamlyn, Services Superintendent
*D. VanPelt, Assistant Superintendent, Maintenance
*R. Robey, Assistant Superintendent, Operations
*J. Fish, Master Mechanic
*M. Kooi, Compliance Coordinator
*G. Price, Maintenance Staff
*D. Gibson, Quality Assurance Supervisor
*C. Smith, Quality Control Supervisor

USNRC

A. Madison, Senior Resident Inspector

The inspector also contacted and interviewed other licensee personnel during the inspection.

*Denotes personnel attending the January 23, 1986 exit interview.

2. Action on Previous Inspection Findings

a. (Closed) Unresolved Item (254/85-09-02(DRS); 265/85-10-02(DRS)): Failure of the licensee to verify that actual valve position is correctly reflected by remote position indication for all valves in the IST Program. The licensee revised Procedure QOS 005-4, Revision 1 "IST Valve Position Indication Surveillance," to include all valves with remote position indication. The procedure also requires that valve position be determined by personnel observing the valve operation.

b. (Closed) Open Item (265/85018-03(DRS)): During performance of CILRT supplemental testing, moisture was detected in certain atmospheric monitoring lines. The licensee committed to verify that all atmospheric monitoring lines were free of moisture prior to startup of the unit. The licensee satisfied this commitment and documented the completed action on the "Prior to Startup Items" checklist. A copy of the completed checklist was provided to the inspector.

3. Refueling Activities

Fuel handling operations were in progress at the start of the inspection period which consisted of a complete unload of the core. The inspector witnessed portions of two shifts of fuel handling. Fuel handlers showed

good knowledge in operating the refueling bridge and handled core components safely and in accordance with approved procedures. Manning of the refueling floor was adequate and shift turnovers were conducted in an orderly fashion. Shift checks of the refueling bridge were conducted each shift as required by QFP 100-6, Revision 2, "Refueling Shift Checks" to preclude the possibility of refueling bridge malfunction. A Fuel Handling Foreman log was also maintained giving a chronological order of refueling events. Continuous communication was maintained between the Control Room (CR) and the refueling bridge assuring that each core alteration was completed as identified on the Nuclear Component Transfer List, (NCTL).

The refueling bridge was recently replaced at Quad Cities and was being used for the first time for core alterations. The equipment was checked out satisfactory including proper operation of the refueling interlocks. Personnel were briefed on the operation of the new equipment and gained experience in its operation during check out of refueling interlocks. The bridge performed satisfactorily except for a continual problem with the power assist to the air hose take-up reel. The power assist was intended to assure that the air hose which operated the grapple was free of slack as the grapple moved up. The power assist was driven by a flex drive that makes a 270 degree bend. Fuel Handling Foreman log entries noted that the flex hose problem suspended fuel alterations seven different times, two of which occurred during the inspection. The licensee is working with the bridge manufacturer to correct the problem prior to core loading.

Good cleanliness and radiological controls were in effect during refueling and loose items used over the reactor vessel were secured with a lanyard except for the wireless remote telephone used on the refueling bridge to maintain communication with the CR. The licensee stated that an attempt to secure a lanyard to the telephone was unsuccessful without impairing the performance of the instrument. The licensee is planning to replace the wireless telephone with a system that is capable of being secured.

Shiftly surveillances were completed as covered in Procedure QOS 005-S1, Revision 32, "Operations Department Weekly Summary of Daily Surveillances." Checks included SRMs operating and indicating required CPS, mode switch in correct position, ARMs on the refueling floor operating, and spent fuel pool (SFP) water level within limits.

Written procedures were available on the refueling floor including emergency instructions in the event of a fuel drop accident or uncontrollable loss of water from the reactor cavity/SFP. Personnel were briefed on these emergency procedures prior to the start of core alterations.

During a review of the NCTL following completion of core unloading the inspector noted that several verification signatures had not been made. One was for the completion of Step 54A on Page 4A and the second signature was to verify that the Fuel Handling Foreman had completed his

review for all the activities of Page 4A. The licensee made a review of the subject activities, verified the work to be complete and made the required verification signatures.

No violations or deviations were identified.

4. Spent Fuel Pool

The inspector made a review of SFP activities. Refueling bridge operations, cleanliness and radiological controls, core component accountability, ARM requirements, and SFP water level verifications were reviewed during refueling activities and are covered in Paragraph 3, above.

The SFP ventilation system was verified operating each shift including the vent system airborne monitors. Also, continuous portable airborne monitors were operating on the refueling floor when fuel movement was in progress. The SFP cooling system was operating continuously with CR annunciators to detect problems. Secondary containment isolation was in effect and area negative pressure was maintained.

No violations or deviations were identified.

5. MSIV Maintenance

Maintenance of the MSIV's was reviewed by the inspector including valve repair procedure, personnel training, disassembly of the valves and inspection of the valve internals, valve seat repair, procurement of replacement parts, and local leak rate testing (LLRT) results. The valve repair package covered disassembly of the valve, inspect the valve seating surface for damage, lapping the valve and valve plug seat, reassemble the valve and conduct a LLRT. Maintenance of a valve seat that could not be accomplished by the lapping process would require a change to the maintenance procedure. Replacement of defective parts would be determined on a case basis pending results of the valve inspection.

a. Maintenance Procedure

The repair program for inspection and maintenance of MSIVs is covered in generic Procedures QAP 500-8, Revision 6, "Repair Program Requirements for Equipment in the ASME Section XI Boundary" and QMP 800-18, Revision 5, "Inspection of Safety-Related Valves During Disassembly, Repair and Reassembly of Valves," respectively with additional maintenance instructions provided by a work request (WR) specifically prepared for the particular valve to be repaired. For any MSIV that did not pass the required LLRT the normal repair technique was to lap the valve seating surfaces unless the visual inspection of the valve internals detected extensive damage such as

a cracked or badly worn valve seat. If this were the case the WR would be revised to include weld repair, machining and/or part replacement as determined by evaluation of the problem.

The WR specified the valve repair instructions to be followed with the required witness points recorded on Inspection Checklist QMP 800-S15, Revision 2, "Safety-Related Valve Inspection Checklist." The work activities documented in the WR were very abbreviated, providing maintenance personnel with little guidance on how to perform the repair work. The portion of the WR that provided repair work instructions stated in part:

(1) Disassemble Valve

(2) Clean, inspect, repair and/or replace parts as needed, including lapping of seats.

(3) Prepare valve for reassembly

(4) Reassemble Valve

There were no acceptance criteria for any of the valve seat repair work. The WR did make reference to the valve service manual which had a section on valve disassembly and reassembly but provided no instructions for valve maintenance. The inspector expressed his concern on the limited nature of the repair procedure used to repair safety-related MSIV. The licensee stated that mechanic training and knowledge are part of the process used to assure that the valve will be repaired satisfactorily. The licensee also stated that each repaired MSIV must pass a LLRT prior to being placed into service. The inspector noted that not only must the repaired valve pass a LLRT but the valve must also continue to perform satisfactorily during the duration of the unit's operating cycle under a very severe environment to meet its required safety function.

The MSIV service manual provided information on torque values and lubrication which is added to checklist QMP 800-S15 when applicable. The service manual also states that packing must be installed in accordance with manual requirements which are not followed by the licensee. The licensee stated that the style of packing referenced in the service manual is no longer used at Quad-Cities as a newer style has been developed with the valve vendor which has proven to be superior. The service manual has not been changed to reflect the new style packing. The licensee reported that action would be taken to request a manual change which was initiated during the inspection. Revision of the MSIV service manual will be tracked as an Open Item (254/86001-01(DRS); 265/86001-01(DRS)).

b. Personnel Training

The method used to repair the MSIVs was to lap the valve seat using a Dexter Valve Grinder, model 850GL. This machine is a new design

used for the first time at Quad-Cities to repair MSIVs. The Dexter machine is also capable of grinding the valve seat should extensive metal removal be required. Maintenance personnel assigned to operate the Dexter machine were given an eight hour hands-on instruction by Dexter representatives which included both machine set up and operation to the extent possible without the aid of a valve mock-up. During set up of the lapping machine on the first MSIV to be repaired, Dexter representatives were at the job site providing additional instructions. Also, licensee personnel had experience operating the previously used valve lapping machine which was of similar design.

c. Valve Disassembly

The valves were disassembled with the aid of special rigging equipment and removal tools. After the valve internals were removed, Quality Control personnel conducted an inspection of the valve seating surfaces and recorded the results on Checklist QMP 800-S15. Only minor rust and dirt was reported on the two valves inspected. Maintenance also conducted an inspection of each valve to identify any valve leakage sources and note the general condition of valve internals. No identifiable leakage sources were noted.

Should the valve internal inspection detect any conditions that could not be repaired by lapping the valve seat, a revision would be issued to the WR to identify the new job requirements.

d. Valve Seat Dressing

The Dexter machine fits into the valve bore and is aligned to existing machined surfaces. The machine has three mounting feet on the upper end that are self centering and four feet on the lower end that operate independently to allow alignment of the lapping heads to the valve seating surface. A dial indicator was used to check machine run out. Acceptable run out was based on operator experience. The angle of the lapping heads is fixed and does not require adjustment.

The valve plugs were machined in a standard machine shop lathe.

The lapping operation was considered complete when the valve seat appeared dressed across the seating face for the entire seating area. No measurements were required by the procedue to verify an acceptable lapped valve seat.

e. Replacement Part Procurement

Valve spare parts were available should valve inspection identify the need to replace any valve hardware. The inspector reviewed several purchase orders (PO) and receipt inspection packages. The POs specified procurement from Crane Company to assure items were original replacement parts, chemical and physical certifications

and NDE results as specified on the vendor drawing. A receipt inspection notice was completed for acceptable items. No discrepancies were noted.

f. MSIV LLRT Results

MSIV tests are conducted in accordance with Procedure QTS 100-3, Revision 8, "Main Steam Isolation Valve Local Leak Rate Tests." A review of MSIV LLRT results for Unit 1 outboard valves noted that two of the four valves have a history of not meeting the Technical Specification Surveillance requirements of 11.5 SCFH. The inspector has a concern regarding action the licensee is taking to improve MSIV performance.

A conference call was conducted on February 3, 1986 between the licensee and the inspector covering MSIV maintenance and the inspector's concern of MSIV poor leak rate performance. During this call the licensee identified the following actions designed to improve MSIV leak rate performance.

(1) Continued use of the Dexter valve grinding machine as covered in Paragraph b, above.

(2) Install new valve seat rings as required when lapping of existing seats is unsuccessful.

(3) A preventative maintenance program on valve hydraulics to assure that valve seating forces are satisfactory.

Pending review of the above action to improve MSIV LLRT results will be tracked as an Open Item (254/86001-02(DRS); (265/86001-02(DRS)).

No violations or deviations were identified.

6. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Paragraphs 5 a. and f.

7. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) on January 23, 1986, to discuss the scope and findings of the inspection. The licensee acknowledged the statements made by the inspector with respect to items discussed in the report. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary. Subsequent to the inspection, the inspector contacted the licensee on February 3, 1986, to further discuss concerns related to MSIV maintenance.