

LICENSEE EVENT REPORT (LER)

Form Rev. 2.0

Facility Name (1) Quad Cities Unit Two	Docket Number (2) 0 5 0 0 0 2 6 5	Page (3) 1 of 0 1
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Title (4)

Voluntary LER On The Unit Two Rod Mispositioning Event

Event Date (5)			LER Number (6)			Report Date (7)			Other Facilities Involved (8)			
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Names	Docket Number(s)		
0 1	2 7	9 4	9 4	-- 0 0 2	-- 0 0	0 2	2 8	9 4		0 5 0 0 0		

OPERATING MODE (9) 4

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input checked="" type="checkbox"/> Other (Specify in Abstract below and in Text)
<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Jeff Neal, Regulatory Assurance, Ext. 2901	AREA CODE: 3 0 9 6 5 4 - 2 2 4 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
E									

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

Expected Submission Date (15)

Month	Day	Year

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

ABSTRACT:

Unit 2 was between 20-25% thermal power and holding load. Unit 1 was holding load at less than 97% thermal power. On 1/27/94 on Unit 2, during the performance of QTS 130-4, "Control Rod Scram Timing In The Hot Condition", control rod [rod] M-8 was withdrawn from position 00 to position 48 per the approved testing sequence. The rod was scrambled and the rod "full in" position indicated (--), rather than the expected (00). The Nuclear Station Operator (NSO) incorrectly assumed rod M-8 needed to be re-tested and withdrew rod M-8 and left it at position 48 (without a control rod special maneuver written). Rod M-8 was not retested. The next in sequence rod, M-6, was withdrawn from 00 to 48. At this time it was noted that power had increased to a higher than expected level. It was then realized that rod M-8 had been mispositioned.

The Causal Factors related to this event were: inappropriate WORK PRACTICES, MANAGEMENT/SUPERVISORY METHODS, and VERBAL COMMUNICATIONS; ineffective CHANGE MANAGEMENT, WORK ORGANIZATION/PLANNING and TRAINING/QUALIFICATION also contributed.

Rod M-8 was returned to position 00 in accordance with QCOA 300-4, "Mispositioned Control Rod". Rod M-6 was also returned to position 00 and rod testing/movements were suspended. This is a voluntary Licensee Event Report.

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TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 Mwt rated core thermal power.

EVENT IDENTIFICATION: Voluntary LER on the Unit Two rod mispositioning event.

A. CONDITIONS PRIOR TO EVENT:

Unit: Two Event Date: January 27, 1994 Event Time: 1347
 Reactor Mode: 4 Mode Name: RUN Power Level: 20

This report was initiated by Licensee Event 265\94-002.

RUN (4) - In this position the reactor system pressure is at or above 825 psig, and the reactor protection system is energized, with APRM protection and RBM interlocks in service (excluding the 15% high flux scram).

B. DESCRIPTION OF EVENT:

On 1/27/94 on Unit 2, during the performance of QTS 130-4, "Control Rod Scram Timing In The Hot Condition", control rod [rod] M-8 was withdrawn from position 00 to position 48 per the approved testing sequence. The rod was scrambled and the rod "full in" position on the full core display indicated (--), rather than the expected 00. The Nuclear Station Operator (NSO) incorrectly assumed rod M-8 needed to be retested and withdrew rod M-8 from position 00 to position 48 (without a control rod special maneuver written). Rod M-8 was left at 48, instead of being retested. The next in sequence rod, M-6, was withdrawn from 00 to 48. At this time it was noted that power had increased to a higher than expected level. It was then realized that rod M-8 had been mispositioned. The Shift Engineer was notified and rod M-8 was returned to position 00 in accordance with QCOA 300-4, "Mispositioned Control Rod". Rod M-6 was also returned to position 00 and rod testing/movements were suspended until short term Corrective Actions were implemented.

C. APPARENT CAUSE OF EVENT:

This is a voluntary Licensee Event Report.

I. WORK PRACTICES

The primary Causal Factor (C/F) of this event was an unacceptable WORK PRACTICE. This allowed the mispositioning of rod M-8. The event was caused by a failure to explicitly follow the procedural requirements of QCGP 4-1, "Control Rod Movements And Control Rod Sequence", i.e. the rod was repositioned by the NSO without a rod maneuver sheet pre-authorizing the move. Two distinct inappropriate actions have been identified. The first is the unauthorized move of rod M-8 from 00 to 48 and the second inappropriate action was the failure to identify and return rod M-8 to position 00 before in sequence rod M-6 was withdrawn.

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Other inappropriate actions caused by deficient WORK PRACTICES include: the requirements for independent rod verification, as detailed in QCGP 4-1, were not followed. Also, following the withdrawal of rod M-8, a computer printout of the rod patterns (which would have identified M-8 out of position) was not run, as required by the procedure.

2. MANAGERIAL/SUPERVISORY METHODS/CHANGE MANAGEMENT

The investigation indicates that MANAGERIAL and SUPERVISORY METHODS are contributing C/Fs due to the fact this test had not conservatively been classified as an infrequent/sensitive evolution, requiring Heightened Level of Awareness (HLA) controls. Since this test involved Reactivity Management issues, the coordination and control should have been elevated. Roles and responsibilities of the test participants were not clearly defined, which contributed to a number of incorrect assumptions that were made. No one clearly knew who was responsible for performing the independent rod verifications.

The informality of the Unit Supervisor (US) qualification process, the unavailability of a functional Reactor Engineer and the use of newly qualified Test Coordinators are all CHANGE MANAGEMENT issues that contributed to this event.

3. WRITTEN COMMUNICATIONS

QCAP 200-11, QCGP 4-1 and other procedures, lack detail and allow for considerable deviation regarding HLA classifications and independent rod verification requirements and applicability.

4. VERBAL COMMUNICATIONS and WORK ORGANIZATION/PLANNING

Incomplete VERBAL COMMUNICATIONS, e.g. questions asked were not answered, the pass/fail status of rods being tested was not communicated to all crew members, etc. was a C/F that contributed to the ineffectiveness of the independent control rod verification process used in the Control Room before and during this event. No one was performing proper independent rod movement verifications, as required by QCGP 4-1. The Qualified Nuclear Engineer (QNE) assigned to the reactor panel (who should have been the person assigned verification responsibilities) was also completing a Local Power Range Monitor (LPRM) test during this time, which caused some distraction from his primary duties. Due to the limited number of personnel available to complete all of the desired testing, the LPRM test would have been better scheduled for a different time (WORK ORGANIZATION/PLANNING issue).

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5. TRAINING/QUALIFICATION

Personnel, performing as Unit Supervisors, were not formally trained/qualified to perform all assigned tasks independently. Consequently, Operating Management's expectations for pre-job briefings, communications expectations, standards for monitoring personnel performance, e.g. evaluating independent rod verification techniques, etc. may have been inconsistent. This potentially contributed to the event.

D. SAFETY ANALYSIS OF EVENT:

The control rod mispositioning event was modeled by the CECO Nuclear Fuel Services (NFS) Department using the NRC approved steady state 3-dimensional simulator PANACEA. The PANACEA code demonstrated that the withdrawal of rods M-8 and M-6 resulted in a localized power increase, but the Technical Specification operating limits were met in all cases.

The core-wide anticipated operational occurrences (AOO) which must be evaluated on a cycle-specific basis were not affected by this event. The core-wide plant transients, e.g. cold water injection events, are evaluated at rated thermal power and all-rods-out conditions, which bound the low thermal power and rodded (rods are inserted into the core) conditions. This means that a transient initiated from a rodded condition (as was the case in this event) is less severe than one initiated from an unrodded condition.

The Station is analyzed for a control rod withdrawal error (RWE), which is the AOO this event resembles. The RWE analysis assumes both rated thermal power and that the event starts with the core at thermal limits prior to the withdrawal error. Therefore, the assumptions of the RWE analysis clearly bound the control rod mispositioning event due to the lower thermal power level and the large degree of thermal margin-greater than sixty (60) percent when the error was initiated.

E. CORRECTIVE ACTIONS:

A Level 2 investigation of this event was started on 1/27/94 and was completed on 2/21/94.

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Corrective Actions Completed:

1. Crew members involved in the event were removed from shift duties. Each affected member was given classroom and simulator remediation training. The training included the following topics:

- o Reactivity management case studies
- o Controls for infrequently performed tests/evolutions
- o Design basis accident analysis
- o AOO safety analyses
- o Plant response simulations to reactivity addition events
- o Simulator practice on infrequent tests/evolutions

All crew members involved in the event returned to shift duties following completion of the training.

2. Prior to assuming shift responsibilities, all oncoming Operating crews were briefed on the specifics of this event.
3. Scram time testing was immediately halted. Test Coordinator control, communications and independent rod verification techniques were revised and implemented prior to the resumption of testing.

Corrective Actions to be Completed:

1. QGCP 4-1 will be revised to clarify specific requirements for independent rod verifications; this will include verbal communication requirements. Management will perform periodic Control Room overviews to monitor (and re-enforce if necessary) adherence to the new method being used for independent rod verification. Other applicable procedures, related to control rod maneuvering, will be evaluated for possible revision. (NTS#2651809400201)
2. Procedure QCAP 200-11, "Heightened Level of Awareness Program", will be revised to add specific details on the proper interpretation and classification of infrequent/sensitive events. Potential reactivity management concerns will be evaluated. (NTS#2651809400202)
3. The level of knowledge and proficiency demonstrated by each Unit Supervisor on the administrative and supervisory tasks associated with the new position, will be evaluated and upgraded as necessary. (NTS#2651809400203)

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F. PREVIOUS EVENTS:

No Licensee Event Reports (LERs), required because of rod mispositioning events, have been submitted since 1988.

G. COMPONENT FAILURE DATA:

There were no equipment failures directly involved in this event. This report is not NPRDS reportable.