POTENTIAL CONDITION ADVERSE TO QUALITY REPORT (PCAQR) | PCAQR NO. 1998-0649 | PAGE 1

PART 1 INITIATION

A. ISSUE, OBSERVATION, OR CONCERN

Inspection of the Reactor Vessel head identified the existence of boric acid residue.
There were indications that CRDM B-10 had past leakage.
This PCAQR will provide an evaluation of the findings.

☐ Q-HOLD TAG APPLIED ☐ CONTINUED

EQUIPMENT IDENTIFICATION NO. (IF KNOWN)
N/A

INITIATOR (PRINT)	SIGNATURE	ORGANIZATION	PHONE NO.	MAIL STOP	DATE
G. H. McIntyre	[signature]	SYME	8165	1056	4/18/98

PCAQR SUBJECT
Reactor vessel head boron deposits

SUPERVISOR (PRINT)	SIGNATURE	ORGANIZATION	PHONE NO.	MAIL STOP	DATE
G. H. McIntyre	[signature]	SYME	8165	1056	4/18/98

PART 2 ☐ N/A STATUS AND REPORTABILITY

A. MODE POWER	B. REPORTABILITY	C. OPERABLE
[illegible]	☐ 1 HR ☐ 4 HR ☐ 24 HR ☒ N/A	☒ YES ☐ NO ☐ NON-TS

IMMEDIATE ACTION TAKEN

☐ CONTINUED

SUPERVISOR	SIGNATURE	DATE	TIME
[illegible]	[illegible]		

INITIATOR

SUPERVISOR

SHIFT SUPERVISOR

POTENTIAL CONDITION ADVERSE TO QUALITY REPORT (PCAQR)	PCAQR NO. 98-0649	PAGE 2

PART 4A (CATEGORY 3) INITIAL ASSESSMENT

A. ORGANIZATION	DUE DATE
SYME	7/13/98

B. APPARENT CAUSE

It should be noted that the actual GRDM leaking was D-10, vice B-10, as indicated on the PCAQR Part 1. Apparent cause is gasket relaxation coupled with previous minor gasket sealing erosion resulting in minor boric acid leakage.

☒ CONTINUED

C. SYSTEM CAPABLE OF PERFORMING SPECIFIED FUNCTION

☒ N/A - Non Tech Spec and not a potentially reportable system
☐ Yes
☐ No - Initiate new PCAQR if Part 2 is Operable - Yes or Non-S.

D. 10 CFR PART 21 REPORTABLE ☒ NO ☐ YES - NOTIFY REGULATORY AFFAIRS

E. SPECIFIC ACTION NECESSARY TO CORRECT CONDITION (Restoration)

1. Video the GRDMs for leakage in 12 RFO and replace the gasket on D-10 if leakage is identified. (IPPC for outage inclusion)
2. Machine the gasket sealing surface to restore the surface finishes on GRDM D-10 (and other drives if indicated as required) if the gasket is replaced (IPPC for outage inclusion)
3. Identify other drives that may need machining to restore the surface finish and evaluate the necessity of machining by the Island Nuclear Projects for outage inclusion (SYME)

☒ CONTINUED

F. WORK COMPLETION DOCUMENTS

CATS items 1, 2, and 3 have been generated to perform actions described above.

RECEIVED
APR 30 1998
PCAQR

☐ CONTINUED

G. ASME CODE

☐ NO ☒ YES ANI REVIEW Thomas G Lupo ANI 4/30/98 ENGINEERING N/A

H. EVALUATOR (Print)	SIGNATURE	PHONE NO.	DATE
E. V. Chimahusky	[signature]	8556	[illegible]
SUPERVISOR (Print)	SIGNATURE	PHONE NO.	DATE
G. R. McIntyre	[signature]	8165	[illegible]

I. CONCURRENCE - PCAQR REVIEW BOARD CHAIRMAN (Print) | DATE [illegible]

EVALUATOR

...TIAL CONDITION
...VERSE TO QUALITY REPORT CONTINUATION SHEET

PART	ITEM	CONTINUATION
A	E	If I performed a video inspection of the CRDM flanges on 4/17/98. As part of this inspection, CRDM D-10 was identified as having a minor leak. Initial and follow-up review of the leaking flange by Davis Besse Plant Engineering indicated that no immediate repair was required and that this drive should be inspected during 12 RFO and repairs made as required. As part of the disposition to the NCR, FTI provided a copy of NCR RVS-0050 from 8 RFO that described degradation to the flange sealing surface noted during CRDM D-10 leakage repair during that outage. Corrective action taken was flange surface polishing and gasket replacement. The 1993 NCR also recommended that the flange surface be machined if further leakage occurs. It should be noted that during past inspections imperfections have been noted, however further degradation was not identified during follow-on outages when leakage was noted and repairs made. The history of flanges identified as leaking but without repairs conducted was reviewed: 8 RFO: Of the 7 flanges identified as leaking in 7 RFO (but not repaired), 5 leaked in cycle 8 and were repaired in 8 RFO. The magnitude of each of these leaks increased. 9 RFO: Of the 15 – 21 flanges identified as leaking in 8 RFO (but not repaired), only 5 leaked in cycle 9 and were repaired in 9 RFO. The 6th flange identified as leaking in 9 RFO and repaired was previously identified as leaking in 7 RFO (but not repaired). There was little change in the magnitude of these previously identified leaks. 10 RFO: The only flanges rebuilt in 10 RFO were those without the new gasket material. Only one flange exhibited signs of leakage during this outage and it was already scheduled for repair. The leak from CRDM D-10 is considered minor. Using previously developed criteria, the leakage would be categorized as between a CAT 1 and a CAT 2, with CAT 5 being the worst. There were no stalagmites hanging from the flange, and there was no boric acid bridging to adjacent flanges. There was no rust present on either the flange or the split nut rings and no degradation to the split nut rings was visible. Leaks of this magnitude have not always increased over time. There have been several occasions where leakage identified during one outage and not repaired, stopped leaking over the next cycle. A major concern of RCS leakage is boric acid corrosion of carbon steel components. Accumulation of boric acid on the reactor vessel caused by leaking CRDMs has not resulted in any boric acid corrosion. This was identified through inspections following reactor vessel head cleaning in past outages. Additionally, B&W documentation discussing CRDM nozzle cracking further stated that boron deposits on the head caused by leaking CRDM flanges would not result in head corrosion. The split nut rings are made of SA 320 Grade L43, a material considered to be low alloy steel. Although this material has some susceptibility to boric acid corrosion, inspection of the split nut rings removed on previously leaking flanges identified no corrosion, regardless of the magnitude of the leak. Unidentified leakage data was reviewed for the past several cycles. With the numerous flange leaks present in both 7 RFO and 8 RFO, the highest unidentified leakage was approximately 0.3 gpm in cycle 7 and 0.4 gpm in cycle 8. The cycle 11 unidentified leakage averaged 0.05 gpm. No Technical Specifications were exceeded even when significant flange leakage was present. If greater leakage than expected occurs during cycle 12, the Technical Specifications covering RCS leakage will ensure appropriate action is taken. Based on the above information, it is considered acceptable to defer any repairs to CRDM D-10 until 12 RFO following re-inspection.

APR 30 1998

THIS CONTINUED

NUCLEAR SAFETY AND INSPECTION

POTENTIAL CONDITION ADVERSE TO QUALITY REPORT (PCAQR)	PCAQR NO. 98-0049	PAGE [illegible]

PART 7 VERIFICATION

	YES	NO	N/A
A. APPROVED REMEDIAL ACTION HAS BEEN INITIATED AS DESCRIBED	X		
B. APPROVED CORRECTIVE ACTION TO PREVENT RECURRENCE HAS BEEN INITIATED AS DESCRIBED			X
C. Q-HOLD TAGS HAVE BEEN REMOVED			X
D. CONDITIONAL RELEASE HAS BEEN RESOLVED			X
E. STOP WORK ACTION HAS BEEN WITHDRAWN			X

F. DOCUMENTS REVIEWED

PCAQR 98-0049

CATS

☐ CONTINUED

G. COMMENTS

☐ CONTINUED

H. QA REVIEW OF AUDIT/SURVEILLANCE PCAQR N/A			DATE
I. REGULATORY AFFAIRS REVIEW OF REPORTABLE PCAQR N/A			DATE
J. EVALUATOR (Print) R.W. Robinson	SIGNATURE Robert W. Robinson	PHONE NO. 7940	DATE 5-10-98
K. NSI MANAGER CONCURRENCE OF UNACCEPTABLE PCAQR N/A			DATE

DAVIS-BESSE ACTIVITY TRACKING SYSTEM 05/13/98

DOCUMENT RELATED ITEMS

TYPE/ID: PCAQ 98-0649 SUMM: REACTOR VESSEL HEAD BORON

CODE	ITEM TYPE	ITEM NUMBER	CHS	STATUS

PF2-UPDATE PF3-RESTART LIST PF4-RETRIEVE: PCAQ 98-0649
PF5-VIEW ITEM PF8-FORWARD PF9-S/T S PF10-DETAIL PF11-MENU