Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

August 2, 1985

Mr. James G. Keppler
Regional Administrator
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Quad Cities Station Unit 2
Response to Items of
Noncompliance in I.E. Inspection
Report No. 50-265/85018

Reference: R. L. Spessard letter to Cordell Reed dated
July 5, 1985.

Dear Mr. Keppler:

The reference provided results of a routine safety inspection conducted by Messrs. D. S. Butler and S. M. Hare of your office during the period of May 25 through June 24, 1985 of activities at Quad Cities Nuclear Power Station Unit 2.

During the course of that inspection, certain activities appeared to be in noncompliance with NRC requirements. Attachment 1 to this letter contains our response to the Item of Noncompliance.

In addition, your letter requested a response to Unresolved Item No. 265/85018-04 regarding leaking containment isolation valves. Attachment 2 provides a copy of Revision 1 to Licensee Event Report 85-007 which contains the information requested in your letter.

Very truly yours,

for L. O. DelGeorge
Assistant Vice President

lm

cc: NRC Resident Inspector - Quad Cities

Attachments

AUG 5 1985

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ATTACHMENT 1

RESPONSE TO NOTICE OF VIOLATION

COMMONWEALTH EDISON COMPANY

RESPONSE TO NOTICE OF VIOLATION

As a result of an inspection conducted during May and June of 1985, the following violation was identified:

> 10 CFR 50, Appendix B, Criterion XVIII requires in part that sufficient records shall be maintained to furnish evidence of activities affecting quality and that they be identified and retrievable. 10 CFR 50, Appendix B, Criteria III requires in part that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and approved by the responsible organization.

Contrary to the above, six safety-related pressure transmitters were modified between April and May, 1979, without adequate documentation and approval. In addition, external calibration jacks and a calibration test resistor were installed without implementing required design controls.

DISCUSSION

Test jacks with one ohm precision resistors were installed at Quad-Cities in instruments in the late 1970's to facilitate normal calibration checks and recalibrations. Most instrument models at that time came from the manufacturer with resistors already installed for calibration purposes. This allowed calibration without removing the instrument cover and breaking the internal current loop to install a test resistor in the internal wiring. Pressure transmitters, supplied by Rosemount Inc., were delivered with a diode installed in series with the current loop that could be used to measure the current in the loop with an ampere meter. Testing equipment used by the Instrument Maintenance Department during the late 1970's did not include an ampere meter function. Since it was not possible to use the diode in the loop to measure the current, and since the installation of a resistor in a current loop in no way affects the design intent of a current loop, a precision resistor was installed in series in the current loop. This allowed the ability to measure the voltage drop across the resistor and the calculation of the current in the loop. The actual voltage drop around the entire loop in no way affects the function or design of the pressure transmitter. All failure modes of the resistor will have no affect on the safe operation of the pressure transmitter. A short across the resistor will not change the value of the current in the current loop. An open circuit failure of the resistor will cause a zero value for current and cause a trip of the pressure transmitter trip unit. The addition of the test jacks and resistor poses no problems with respect to overall reliability or safety. Twenty-two of these units have been in service for many years and none have ever failed or caused any problems associated with calibration. Table I lists all the applications where these resistors have been installed. Only four of the installations are used in safety-related applications.

The interpretation of the threshold of routine maintenance which constitutes a design change is always subject to change. During the late 1970's when these installations were performed, it was determined that this work did not constitute a design change. As the interpretation of the design change threshold has evolved over the years, the Station finds itself accountable for decisions made without post TMI hindsight.

CORRECTIVE ACTION TAKEN AND RESULTS ACHIEVED

Since the date of the occurrence, the Commonwealth Edison Nuclear Work Request System has evolved to match the pace of changing interpretations. Currently each work request is scrutinized to preclude the classification of design changes as routine maintenance. We therefore feel that changes in practice to resolve this concern have already been implemented. In order to assure continuing compliance, the following step will be taken:

1) The four safety-related classified pressure transmitters in which test facilities were added, will be returned to their original configuration by the removal of the test jacks and precision resistors. This will be accomplished by October 31, 1985.

CORRECTIVE ACTION TAKEN TO AVOID FURTHER NONCOMPLIANCE

As described above, enhancements in the Work Request System implemented since 1979 are sufficient to prevent further noncompliances.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

As stated previously, full compliance will be achieved by October 31, 1985 when the four safety-related classified pressure transmitters will be returned to their original configuration.

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TABLE I

Instrument Test Jack List

EPN	SYSTEM	USE	CLASSIFICATION
2-261-5 A/B	Recirc	Pump DP	Non-safety Related
1-1602-8 B	Press Sup	Torus Level	Non-safety Related
1-1602-9 B	Press Sup	Torus Press	Non-safety Related
2-1602-8 B	Press Sup	Torus Level	Non-safety Related
1-5441-31 AA	Off Gas	Condenser Level	Non-safety Related
1-8941-418	HRSS	Waste Tank Level	Non-safety Related
1-8941-419	HRSS	Waste Tank Level	Non-safety Related
2-8941-418	HRSS	Waste Tank Level	Non-safety Related
2-8941-419	HRSS	Waste Tank Level	Non-safety Related
1-645 D	Feed Water	Steam Flow	Non-safety Related
1-646 B	Feed Water	Rx Level	Non-safety Related
2-645 A/D	Feed Water	Steam Flow	Non-safety Related
2-2541-11 A/B	ACAD	D.W. Press	Safety Related
2-2541-12 A/B	ACAD	D.W. Press	Safety Related
2-2541-8 A/B	ACAD	Dilution Air Press	Non-safety Related

ATTACHMENT 2

RESPONSE TO UNRESOLVED ITEM 265/85018-04(DRS)

Commonwealth Edison
Quad Cities Nuclear Power Station
22710 206 Avenue North
Cordova, Illinois 61242
Telephone 309/654-2241

NJK-85-193

July 15, 1985

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Reference: Quad Cities Nuclear Power Station
Docket Number 50-265, DPR-30, Unit Two

Enclosed please find Licensee Event Report (LER) 85-007, Revision 01, for Quad Cities Nuclear Power Station.

This report is submitted to you in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73 (a)(2)(ii), which requires reporting of any event or condition that resulted in the condition of the nuclear power plant, including its principle safety barrier, being seriously degraded.

The original Licensee Event Report (LER) 85-007 stated that the Local Leak Rate Testing (LLRT) program had found leakage in excess of Technical Specification limits, but did not provide a complete summary pending completion of the testing program and corrective actions. This report addresses all valves and penetrations that had repairs performed to reduce the leakage total to within the Technical Specification limit.

Respectfully,

COMMONWEALTH EDISON COMPANY
Quad Cities Nuclear Power Station

N. J. Kalivianakis
Station Manager

NJK/eem/e

Encl.

cc: J. Wojnarowski
A. Madison
INPO Records Center
NRC Region III

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EVENT DESCRIPTION

During the Unit Two end of cycle seven refueling outage, the following valves required repairs or adjustments (RA's). Note that some of the RA's were not due to excessive leakage, but were the result of preventative maintenance or modifications. The valve leakage before and after the RA's and an explanation of the work performed is provided in Table 1. For valves where the RA's were initiated due to local leak rate test (LLRT) results, notes are shown in the comment section with details provided in the corrective action section of this report.

TABLE 1

DESCRIPTION	VALVE NO.	COMPONENT DESCRIPTION	LEAKAGE (SCFH) AS FOUND	LEAKAGE (SCFH) AS LEFT	COMMENTS
Main Steam Line Drain	MO 2-220-1	Crane 3" Gate Valve (783U)	75.50	6.42(c)	Note 1, Table 2 as Left Leakage Is Total for 220-1,2
Main Steam Line Drain	MO 2-220-2	Limitorque Type SMB	40.20		Note 2, Table 2
"A" Reactor Feedwater	CV 220-58A	Crane Tilting Disc CV	1921.66	16.00	Note 3, Table 2
"B" Reactor Feedwater	CV 220-62B	Same as Above	789.50	5.42	Note 4, Table 2
"A" Drywell Spray	MO 2-1001-23A and 26A		0.63(c)	0.84(c)	New EQ Limitorque Operators Installed
"A" RHR Return	MO 2-1001-29A		4.50	9.00	New EQ Limitorque Operators Installed
"B" Drywell Spray	MO 2-1001-23B and 26B		15.12(c)	15.67(c)	New EQ Limitorque Operators Installed
"B" RHR Return	MO 2-1001-29B		4.14	4.14	New EQ Limitorque Operators Installed
RCIC Steam Supply	MO 2-1301-16,17		4.10(c)	2.00(c)	New EQ Limitorque Operators Installed
Drywell/Torus Purge Exhaust	AO 1601-23	Pratt 18" Butterfly (D 1200G)	342.00(c)	0.00(c)	Note 5, AO-1601-23, 24,60,61,62,63 valves Test as one Volume
Drywell/Torus Purge Exhaust	AO 1601-24	Same as Above			Note 5, Table 2
Drywell/Purge Exhaust	AO 1601-60	Same as Above (D 1200G)			Note 5, Table 2
Drywell/Purge Exhaust	AO 1601-63	Pratt 6" Butterfly (D 1200G)			Note 5

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TABLE 1 (Continued)

DESCRIPTION	VALVE NO.	COMPONENT DESCRIPTION	LEAKAGE (SCFH) AS FOUND	LEAKAGE (SCFH) AS LEFT	COMMENTS
"B" Torus Vent	AO 1601-20B CV 1601-31B	Pratt 20" Butterfly	13.99(c)	13.99(c)	Note 6, Table 2
HPCI Steam Exhaust	CV 2301-45	24" Mission Duo Check	33.80	0.00	Note 7, Table 2
HPCI Drain Pot Exh.	CV 2301-34	2" Kerotest Lift Check	14.20	12.50	Note 8, Table 2
Oxygen Analyzer	AO 8801C	Blaw Knox 3/4" Globe Valve	36.50	13.00	Note 9, Table 2
Oxygen Analyzer	AO 8802C	Same As Above	9.70	6.50	Note 10, Table 2
Oxygen Analyzer	AO 8804	Same as Above	6.50	3.50	Note 11, Table 2
TIP Ball Valve	737-1	General Pneumatics Corp 608 KWJ06-3	0.25	0.80	Retested after Preventative Maintenance
TIP Ball Valve	737-2	Same as Above	0.40	0.80	Retested After Preventative Maintenance
TIP Ball Valve	737-3	Same as Above	0.10	1.30	Retested After Preventative Maintenance
TIP Ball Valve	737-4	Same as Above	0.00	0.30	Retested After Preventative Maintenance
TIP Ball Valve	737-5	Same as Above	1.70	0.50	Note 12, Table 2
ACAD System	AO 2599-2A	1" AO Gate Valve WKM Valve Div., ACF Ind.	7.80	2.30	Note 13, Table 2
ACAD System	AO 2599-4B	Same as Above	6.50	0.90	Note 14, Table 2
CAM System	SO 2499-1A	Target Rock 1/2-SMS-S	0.00	0.00	EQ Valve Modification
CAM System	SO 2499-2A	Same as Above	0.00	0.00	EQ Valve Modification
CAM System	SO 2499-1B	Same as Above	0.00	0.00	EQ Valve Modification
CAM System	SO 2499-2B	Same as Above	0.00	0.00	EQ Valve Modification
Core Spray Penetration	X-16B	Metal Bellows	0.00	0.00	Outer Test Bellows Added (Inner Bellows Replaced Last Outage)

CAUSE

The first step to a good corrective action or maintenance program is to determine why the valve in question leaked. The answer to that question is not always obvious when dealing with valves that are sometimes quite large or when the air leakages are small but require repair due to regulatory limitations. At Quad Cities, we believe that we have a good program for diagnosing valve problems and facilitating repairs through the use of Station Procedure QMP 800-18 and the checklist QMP 800-S15. When any safety related and/or primary containment isolation valve is disassembled, a Quality Control inspector performs a thorough inspection of the valve in order to determine the root cause of the valve leakage (or any other problems mandating the repair). An additional inspection is performed during re-assembly of the valve. A copy of the procedure and checklist is included in Appendix A. We believe that this method of diagnostics and control on these types of repairs meet or exceed any prevailing standard within the industry.

In addition, Quad Cities maintains on file the LLRT results for every primary containment isolation valve and penetration dating back to plant startup and trends those results. The station's willingness to repair valves or penetrations that exhibit low, but equipment specific high or increasing leakages over past LLRT results, demonstrates a sincere effort to meet the requirements of 10 CFR 50, Appendix J.

Because of the stringent testing requirements of the above regulation and problems encountered industry-wide in meeting those requirements, the corrective action portion of this report has been prepared to identify "chronic" problems experienced at Quad-Cities. Actions taken in the past and future plans are discussed.

The specific action taken this refuel outage on all valves with RA's due to LLRT leakage is given below in Table 2. The note numbers can be referenced back to Table 1 to identify the valves.

TABLE 2

Note No.	DISCUSSION

1 Work Request No. Q41003. Repairs to this valve included cleaning the internals of rust-like dirt and lapping the seat.

Leakage History:

07/26/71	0.00 SCFH(c)
01/18/75	0.00 (c)
10/17/75	1.70 (c)
09/11/76	5.42 (c)
01/15/78	6.55 (c)
11/26/79	1.72
01/23/80	8.45 (c)
09/07/81	66.30
12/23/81	8.63 (c)
09/05/83	39.27 (c)
01/12/84	07.46 (c)
03/17/85	75.50
05/21/85	6.42 (c)

Note: (c) = combined leakage of both 220-1 valve and the 220-2 valve.

Conclusion: While this valve performed well for the first 10 years of plant operation, chronic problems with valve leakage have been experienced recently. Reference the corrective action section of this report.

2 Work Requests No. Q39984 and Q41911. During operation, this valve had a small steam leak from the bonnet seal ring that only leaked when the MO 2-220-1 was open. After the as found LLRT, this valve was disassembled, inspected, and cleaned with no observed defects that would explain the through leakage. Subsequent LLRT showed little improvement in leakage. Subsequent investigation determined that Limitorque operator was not closing the valve completely and that torque switch setting could be increased. This corrective action eliminated most of the valve leakage.

Conclusion: Valve inspection and corrective action required do not indicate that this valve has a chronic problem requiring further corrective action at this time.

TABLE 2 (Cr inued)

Note No.	DISCUSSION
3	Work Request No. Q41492. No problems were found with seat or seals. Valve was disassembled and put back together with new o-rings on disc/seat assembly and seal ring. One of the hold down clamp set screws had a cracked tack weld but no probable affect on valve leakage.

Leakage History:

07/13/71	4.60 SCFH
12/30/74	97.00
02/08/75	8.80
10/12/76	1.70
10/19/76	0.00
02/03/78	1.56
12/26/79	Could Not Pressurize
01/16/80	7.80
09/21/81	1.03
10/05/83	267.30
01/09/84	0.52
04/10/85	1921.66
05/04/85	16.00

Conclusion: The feedwater check valves are large, 18" check valves on the feedwater lines and have an erratic test history. The main reason for this is that the valve does not seat when tested with 48 PSIG of air. All feedwater check valves are considered a chronic problem. Reference the corrective action section of this report.

Note No.	DISCUSSION
4	Work Request No. Q41492. This valve was found to have a hinge pin missing even though the set screw, lock nut, and tack weld to hold the hinge pin were still in place. Future valve repairs will include modifications to better secure the hinge pins. This is the first failure of this kind at Quad Cities. Subsequent repairs to the valve to make it leak tight included machining a slight valley out of the valve body where the seat ring is clamped down.

Leakage History:

08/21/71	7.50 SCFH
12/30/74	2647.00
02/18/75	1.36
09/14/76	811.00
10/11/76	6.78
01/17/78	Unable to Pressurize
03/02/78	16.50
11/27/79	406.80
01/28/80	14.90
09/17/81	1018.00
11/13/81	13.60
09/14/83	362.00
12/30/83	28.50
03/22/85	789.50
05/31/85	5.42

Conclusions: Same as for CV 220-58A

Note No.	DISCUSSION
5	Work Request No. Q41926 Replaced AO 1601-23 Work Request No. Q42341 Replaced AO 1601-24 Work Request No. Q41927 Replaced AO 1601-60 Work Request No. Q42345 Replaced AO 1601-63

Leakage History: Volume Boundary - AO 1601-23, 24, 60, 61, 62, 63

08/24/71	3.20 SCFH
08/22/72	0.70
04/16/73	11.25
10/18/73	4.55
10/03/76	0.00
02/25/78	12.52
12/05/79	27.00
02/12/80	18.00
10/18/81	17.99
09/30/83	9.00
04/29/85	342.00
05/24/85	0.00

Conclusions: The above valves all have vulcanized rubber seats and are Pratt butterfly valves. Inspections on disassembly revealed that all of the valves were dirty and the seats were hard and non-resilient. These valves were original equipment from when the plant was built (1971).

The 23-valve was disassembled and cleaned in February, 1980. The 24-valve was disassembled and cleaned in April, 1981. This is the only maintenance performed on the internal seating surfaces of these valves since plant startup. While the valves gave little warning of impending failure (excessive leakage), the inspections showed that the seating surfaces were at the end of their useful life. The valves were replaced with new valves and the old ones will be decontaminated and sent out for seat replacement (re-vulcanizing).

The leak rate history shows that these valves do not constitute a chronic problem. The fact that so many valves (4) failed simultaneously is, however, reason for concern. Reference the corrective action section of this report.

TABLE 2 (Continued)

Note No.	DISCUSSION
6	Work Request No. 41665. CV 1601-31B was disassembled and cleaned. Was found to be dirty. AO 1601-20B had packing on shaft replaced.

Leakage History:

08/19/71	0.08 SCFH
04/16/73	1.91
10/17/73	0.00
01/28/75	0.00
09/12/76	2.29
01/18/78	110.74
02/15/78	0.73
12/03/79	0.76
09/23/81	19.90
09/30/81	10.70
09/12/83	07.10
03/23/85	13.99
05/30/85	13 99

Conclusions: Repairs performed did not reduce leakage from the volume. Probable source of leakage is through AO 1601-20B. This is a rubber seated Pratt butterfly valve. While no chronic problem has been experienced with this valve, reference the corrective action section of this report.

TABLE 2 (Continued)

Note No.	DISCUSSION
7	Work Request No. Q42118 and Modification M-4-2-85-27.

This valve is a TRW Mission Duo Chek on the HPCI turbine exhaust. The inspection on this valve showed damage to the rubber seat and a bent stop pin. The valve was new in October, 1981. The valve was replaced this outage with a nearly identical valve.

Leakage History:

07/21/71	2.20 SCFH
01/30/75	0.40
09/13/76	57.23
10/13/76	0.00
01/16/78	1.56
11/26/79	16.90
09/08/81	165.00
10/06/81	12.04
09/05/83	0.00
03/18/85	33.80
05/23/85	0.00

Conclusions: The life expectancy of this valve appears to be approximately 3 cycles. Because of the severe damage found during valve inspections and problems encountered in the industry with these valves used for this application, this is considered a chronic problem. Reference the corrective action section of this report.

TABLE 2 (Continued)

Note No.	DISCUSSIC.
8	Work Request No. Q41548. Modification M-4-2-85-19.

While this valve has not had a bad LLRT performance, maintenance records showed that the valve did not have much stellite left on its seat from previous seat lapping repairs. Since the valve leakage did increase over previous values, the decision was made to replace the valve.

Leakage History:

12/31/70	0.19 SCFH
04/15/74	0.41
01/04/76	0.26
03/22/77	0.00
01/19/79	1.90
08/31/80	4.50
09/09/82	0.00
03/08/84	0.00
03/18/85	14.20
06/02/85	12.50

Conclusions: The leakage history of this valve does not indicate a chronic problem with leakage. The new valve, a Kerotest lift check valve, exhibited some leakage when installed. The performance of this new valve will be carefully trended.

TABLE 2 (C inued)

Note No.	DISCUSSION
9	Work Requests No. Q41308 and Q42167.

The valve was originally found to have very dirty (rusty) internals with a piece of paper or gasket material across the seat. Cleaning the valve and seat surfaces reduced the leakage from 36.5 to 17.0 SCFH. The valve was disassembled again and the seat surface lapped reducing the leakage to its final value.

Leakage History:

01/02/75	1.49 SCFH (c)
09/16/76	1.20
01/18/78	10.50
12/06/79	11.00
09/29/81	4.40
10/03/83	6.00
03/29/85	36.50
05/21/85	11.00

Conclusions: These oxygen analyzer valves do not represent a serious source of containment leakage because the lines go to a sample rack and are manually isolated at this point. In fact, recent changes to the containment monitoring systems (CAM and HRSS) have made the lines with AO 8801-1, 2A and AO 8801-1, 2B and AO 8801-1,2C, obsolete and no longer used. A modification will be started to remove these valves and cap the lines.

TABLE 2 (Continued)

Note No.	DISCUSSION

10 Work Request No. Q41309

This valve was found to have dirty internals with a rust-like build up. It was cleaned and re-assembled.

Leakage History:

01/02/75	1.49 SCFH (c)
09/16/76	13.00
01/18/78	>30 (limit of flowmeter)
02/09/78	0.05
12/06/79	0.60
09/29/81	0.40
10/03/83	16.00
11/29/83	1.40
03/29/85	9.70
05/03/85	6.50

Conclusions: Same as for Note 9 above.

11 Work Requests No. Q41307 and Q42167.

On the first Work Request, the valve was cleaned of dirty, rust-like material. Subsequent to reassembly, the leakage rate increased slightly. On re-inspection, small scratches on the valve seat were observed. The seat was lapped and the leakage was reduced to its final value.

Leakage History:

01/28/75	3.87 SCFH
09/27/76	4.00
01/30/78	3.90
12/06/79	2.90
10/01/81	9.50
10/14/83	10.00
03/29/85	6.50
05/22/85	3.50

Conclusions: This valve does not have a chronic problem. No further action is required.

TABLE 2 (Continued)

Note No.	DISCUSSION
12	After preventative maintenance, consisting of cleaning valve internals and replacing/lubricating valve seals and O-rings, the leakage of this valve increased from 1.70 to 4.00 SCFH. Since this is an unusually large leakage for these valves, it was replaced with a new valve.

Leakage History:

01/26/78	0.80 SCFH
12/05/79	0.10
09/25/81	0.00
02/02/83	0.00
11/07/83	4.50
03/21/85	1.70
06/02/85	0.50

Conclusions: No chronic problems, no further action required.

13 Work Request No. Q41662

On disassembly, the bonnet to body gasket was discovered to be improperly installed allowing some slight leakage. Valves had not been worked on since their original installation in 1980.

Leakage History:

02/29/80	0.00 SCFH (c)
09/28/81	0.20 (c)
10/07/83	5.00
04/01/85	7.80
05/03/85	2.30

Conclusions: This is not a chronic problem and no further action is required.

14 Work Request No. Q41663

Rust and dirt was cleaned from the internals of this valve. In addition, the body-to-bonnet gasket was found to be improperly installed (same as 13 above)

Note No.	DISCUSSION

Leakage History:

02/29/80	0.00 SCFH (c)
09/28/81	Unable to Pressurize
12/18/81	9.50
09/23/83	6.50
04/02/85	6.50
05/03/85	0.90

Conclusions: The leakage from this valve had been nearly constant since 1981. Valve would appear to be tight now. No further action would seem required at this time.

CORRECTIVE ACTION

The immediate action taken for many of the RA's is sufficient corrective action because the leakages involved were small and no pattern of chronic failure exists. The items of special concern, however, are valves that have a history of excessive leakage and/or large leakage rates. These problems are identified as follows:

1) Main steam line drain valve 220-1;

2) All feedwater check valves 220-58A, B; 220-62A,B;

3) Drywell purge butterfly valves 1601-23, 24, 60, 61, 62, 63;

4) HPCI Steam exhaust 2301-45.

The above problems will be discussed in detail here concerning future corrective actions required to prevent further re-occurrences.

MAIN STEAM LINE DRAIN VALVE (220-1)

As noted from the leakage history of this valve, the valve performed reasonably well for the first 10 years of plant operation. Since 1981, however, this valve has caused problems requiring repair each refuel outage. During the 1983 refuel outage, fairly extensive repairs were performed by replacing the valve disc and disc guide, as well as lapping the seat. The following additional actions are warranted at this time:

1) Replace the valve during the next refuel outage;

2) Investigate a better valve for this application (e.g. a globe type valve instead of a gate valve);

3) Investigate the possibility of relocating this valve in the drywell (under the steam lines) to a location that would make future repairs easier to perform and possible result in less dirt or rust being deposited on valve internals.

ALL FEEDWATER CHECK VALVES (220-58A, B; 220-62A, B)

The failure of these valves to give good LLRT results is well documented at Quad Cities and at other stations throughout the industry. While modifications have been performed to reduce the potential of valve leakage (e.g. modifications to the disc/seat assembly seals and hold down clamps), the primary problem continues to be that these valves are intended to isolate a high pressure water line and we are testing them with low pressure air. The test method does not include a way to firmly seat the disc prior to testing. The testing does not simulate either normal operating or accident conditions that would act to seat these valves, and normally the feedwater lines would not act as a leakage path because they are water filled.

While other stations, with NRC approval, have attempted to use water and/or water/air mixtures to seat the valves prior to testing with air, Quad Cities has not found this technique to be effective. The quantity of water that can be introduced into an 18-inch line through a 1-inch test tap does not seem to affect closure of the valve, and at times can be counter-productive by washing rust and dirt into the seat. The water velocity that can be developed seems inadequate to either move the disc or keep the surface free of crud.

While the station continues in its efforts to develop a better maintenance program and test procedure for this valve, we believe that the problem is to a great extent generic with these particular valves. Unfortunately, recent industry experience with a newly designed dual seat valve offered by Anchor Darling Corp. has not been totally successful as documented in NRC IE Bulletins.

The station has initiated an Action Item Request (AIR NO. 85-12) to Station Nuclear Engineering Department (SNED) to investigate this problem and determine a solution.

DRYWELL PURGE BUTTERFLY VALVES

As stated in the previous section, the valves that developed excessive leakage have a history of good performance. The concern of the station, however, is that these valves, because of their soft rubber seats, might be reaching the end of their useful life in terms of the vulcanized seat material. There are a number of other containment valves with this same valve manufacturer and design. The additional valves are listed below and they will be disassembled during the next refuel outage for seat inspection, maintenance, and/or replacement:

AO 1601-20A
AO 1601-20B
AO 1601-21
AO 1601-22
AO 1601-56

A similar inspection maintenance/replacement program will be established on Unit One.

HPCI STEAM EXHAUST VALVE

There is an existing AIR to SNED to investigate a replacement for this valve. The station does not feel that the Mission Duo Check valve, while it does give adequate service for more than one cycle, is the best choice for this application. Further engineering will be performed to determine if a more suitable valve is available, or if modifications to the existing valves will make them more reliable.

APPENDIX A

QMP 800-18
Revision 3
July 1984

INSPECTION OF SAFETY-RELATED VALVES DURING DISASSEMBLY, REPAIR, AND RE-ASSEMBLY OF VALVES

ID/10

A. PURPOSE

The purpose of this procedure is to outline the requirements for the inspection of safety-related valves, including primary containment isolation valves, during disassembly, repair, and re-assembly for maintenance. This procedure also is intended to verify that foreign materials are not introduced into the valve which may affect future valve performance or testing.

B. REFERENCES

1. ANSI 18.7 (1972 Edition).

FOR REFERENCE ONLY

C. PREREQUISITES

1. When valve or valve components such as pilots or bonnet, stem, and disc assemblies are to be removed from the system area for repair, obtain a hold tag(s) if needed from Quality Control and place the hold tag(s) on the valve and/or parts.

2. Refer to manufacturer's repair manual or instructions, etc., if available in system file for recommendation for replacements parts, bolt torque procedure orders and for cleaning solvents and lubricants (CECo approved products). This is to achieve optimum valve operation and performance so that Technical Specification operability and timing requirements are met.

3. Primary containment isolation valve disassembly during a refueling outage must not be undertaken until an "as-found" Local Leak Rate Test (LLRT) is performed first by the Technical Staff.

D. PRECAUTIONS

1. Use extra precautions when hanging rigging. Some climbing may be required to rig in some areas.

E. LIMITATIONS AND ACTIONS

1. This procedure is intended to be used in conjunction with a developed work package for the proposed maintenance on safety-related valves.

2. The maintenance foreman responsible for the repair shall discuss with the mechanics the proper techniques for the disassembly, inspection, repair, and reassembly of safety-related valves. This discussion shall include the specific cleaning solvents and lubricants to be utilized during the repair and the application and amounts to be used.

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3. Quality Control shall inspect every safety-related valve upon disassembly and prior to reassembly to verify that foreign materials are not present on valve seating surfaces.

4. The checklist QMP 800-S15 shall be reviewed by QC and QA prior to use to include hold points as deemed necessary to verify maintenance performance.

F. PROCEDURE

1. Before disassembly of the valve, survey the entire exterior of the valve for corrosion, cracks, wear and pits etc. (Remove valve insulation only if there is evidence of valve leakage.) Record specific data such as loose bolting, fittings, packing, condition of the stem and the above inspection information on QMP 800-S15.

2. Contact Quality Control for inspection of valve intervals (seating surfaces, etc.) immediately upon disassembly.

3. When disassembly is complete, briefly describe the condition of the valve internal parts (including surfaces, stem, disc, seat, etc.). Also note the valve leakage source on QMP 800-S15.

4. Repair and replace parts as identified in the accompanying work package. If changes are required to the approved work package, the package revision must be approved prior to work proceeding. Note all repair and replacement parts on the checklist. Also, list the specific manufacturer's product name for lubricants and cleaning solvents used on valve component surfaces (i.e., o-rings, gaskets, sealing surfaces, stems, etc.). The product used shall be in accordance with the valve manufacturer's recommendations and/or good maintenance practices; for purposes of assuring smooth and resistance-free valve operation. Describe the type application used for cleaning solvents, lubricants and the proper amounts.

5. Contact Quality Control immediately prior to valve closure to inspect the internal seating surfaces for cleanliness and to verify that foreign material is not on the seating areas.

6. Complete the reassembly of the valve in accordance with manufacturers recommendations and good maintenance practices. Add the bolt torquing requirements and rotational and sequential orders on the checklist.

G. CHECKLISTS

1. QMP 800-S15, Safety-Related Valve Inspection Checklist (Includes Primary Containment Isolation Valves).

H. TECHNICAL SPECIFICATION REFERENCES

1. None.

HOLD POINTS INCLUDED
QC_____
QA_____
INITIAL/DATE

QMP 800-S15
Revision 1
July 1983

SAFETY-RELATED VALVE INSPECTION CHECKLIST (INCLUDES PRIMARY CONTAINMENT ISOLATION VALVES)

ID/1P

UNIT_____ EPN_____ WORK REQUEST NO._____

VALVE DESCRIPTION (I.E., MAKE, MODEL, SIZE, ETC.)_____

A. VALVE EXTERNAL INSPECTION:
(NOTE CONDITIONS FOUND)

QC/QA HOLD POINTS (X IF REQUIRED)

	QC		
	QA		
		SIGN	DATE

	YES	NO
CORROSION		
CRACKS		
WEAR		
PITS		
OTHER		

FOR REFERENCE ONLY

IF YES, DESCRIBE CONDITIONS FOUND:

B. VALVE DISASSEMBLY
QUALITY CONTROL INSPECT VALVE ON DISASSEMBLY. NOTE ANY FOREIGN MATERIAL ON SEATING SURFACES.

QA HOLD POINT (X IF REQUIRED)

	QA		
		SIGN	DATE

_____ / _____
QUALITY CONTROL INSPECTOR DATE

DESCRIBE ANY DISCREPANCIES BELOW:

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C. IDENTIFY VALVE LEAKAGE SOURCE

QC/QA HOLD POINTS (X IF REQUIRED)

	QC		
	QA		
		SIGN	DATE

	YES	NO
MAIN SEAT/POPPET		
PILOT SEAT/POPPET		
STEM PACKING		
SEAL RING/BODY-BONNET GASKET		
OTHER		

FOR REFERENCE ONLY

IF YES, DESCRIBE CONDITIONS FOUND:

IF UNKNOWN AFTER INSPECTION INCLUDE OBSERVATIONS AND POSSIBILITIES OF LEAKAGE SOURCE:

D. VALVE INTERNAL INSPECTION
NOTE GENERAL CONDITION OF:

QC/QA HOLD POINTS (X IF REQUIRED)

	QC		
	QA		

INTERNAL VALVE BODY SURFACES _____

VALVE SEAT _____

GUIDE _____

DISC _____

GASKET AND SURFACES _____

PACKING/FOLLOWER _____

STEM _____

BOLTING _____

LUBRICATION (I.E., DRY, NORMAL ETC.) _____

OTHER CONDITIONS NOTED _____

E. REPAIRS, IF NECESSARY, SHALL BE IDENTIFIED ON A WORK PACKAGE (I.E., MAINTENANCE/MODIFICATION PROCEDURE AND STATION TRAVELER).
NOTE: NO DATA REQUIRED ON THIS FORM.

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F. REPLACEMENT DATA:

QC/QA HOLD POINTS (X IF REQUIRED)

		SIGN	DATE
	QC		
	QA		

PART NO. (IF APPLICABLE)

VALVE ASSEMBLY _____

STEM _____

MAIN DISC _____

MAIN SEAT _____

PILOT DISC _____

PILOT SEAT _____

GUIDE _____

OPERATOR _____

OTHER _____

_____

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FOR REFERENCE ONLY

G. LUBRICANT AND SOLVENTS

QC/QA HOLD POINTS (X IF REQUIRED)

		SIGN	DATE
	QC		
	QA		

MFG NAME LUBRICANT _____ TYPE APPLICATION _____ AMOUNT* _____

MFG NAME SOLVENT _____ TYPE APPLICATION _____ AMOUNT* _____

*AMOUNT: DESCRIBE COATING OF LUBRICANT OR SOLVENT (I.E., LIGHT FILM, HEAVY USE ETC).

DESCRIBE ANY ADDITIONAL USES OR POTENTIAL PROBLEMS WITH LUBRICANT OR SOLVENTS:

_____

H. VALVE REASSEMBLY
QUALITY CONTROL INSPECT VALVE PRIOR TO CLOSURE (VALVE REASSEMBLY). NOTE ANY EXCESSIVE OR UNAUTHORIZED FOREIGN MATERIAL ON SEATING SURFACES. RECLEANING IS REQUIRED PRIOR TO PROCEEDING WITH THE CLOSURE, IF FOREIGN MATERIALS ARE NOTED.

QA HOLD POINT (X IF REQUIRED)

		SIGN	DATE
	QA		

CONDITION _____

_____ / _____
QUALITY CONTROL INSPECTOR DATE

I. VALVE CLOSURE

QC/QA HOLD POINTS (X IF REQUIRED)

		SIGN	DATE
	QC		
	QA		

BOLTING: SEQUENTIAL ORDER _____

ROTATIONAL ORDER _____

TORQUE VALUE _____

TORQUE WRENCH NUMBER _____

CALIBRATION DATE _____

SKETCH:

FOR REFERENCE ONLY

FINAL SIGNATURES:

MECHANIC _____ / _____
SIGNATURE DATE

FOREMAN REVIEW _____ / _____
SIGNATURE DATE

MASTER MECHANIC REVIEW _____ / _____
SIGNATURE DATE

QUALITY CONTROL REVIEW _____ / _____
SIGNATURE DATE

NOTE: THE ABOVE SIGNATURES MUST BE COMPLETE PRIOR TO RETURNING THE VALVE TO SERVICE (RELEASE FOR TEST).

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