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November 22, 1989

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Licensee Event Report #89-029-0, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(v)(D).

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EDE/jmt

Enclosure

cc: A. Bert Davis, Regional Administrator, NRC Region III
File/NRC
File/Numerical

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
Dresden Nuclear Power Station, Unit 2/3	0 5 0 0 0 2 3 7	1 of 1 6

Title (4)

Elevated HPCI Discharge Piping Temperature Due to Reactor Feedwater System Back Leakage

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)
									Dresden Unit 3	0 5 0 0 0 2 4 9
1 1	0 7	8 9	8 9	0 2 9	0 0	1 1	2 2	8 9	N/A	0 5 0 0 0

OPERATING MODE (9): N

POWER LEVEL (10): 1 0 0

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

__ 20.402(b)	__ 20.405(c)	__ 50.73(a)(2)(iv)	__ 73.71(b)
__ 20.405(a)(1)(i)	__ 50.36(c)(1)	X 50.73(a)(2)(v)	__ 73.71(c)
__ 20.405(a)(1)(ii)	__ 50.36(c)(2)	__ 50.73(a)(2)(vii)	__ Other (Specify in Abstract below and in Text)
__ 20.405(a)(1)(iii)	__ 50.73(a)(2)(i)	__ 50.73(a)(2)(viii)(A)	
__ 20.405(a)(1)(iv)	__ 50.73(a)(2)(ii)	__ 50.73(a)(2)(viii)(B)	
__ 20.405(a)(1)(v)	__ 50.73(a)(2)(iii)	__ 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER	
	AREA CODE	
Jerry F. Lizalek, Technical Staff System Engineer Ext. 2421	8 1 5	9 4 2 - 2 9 2 0

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS
X	B J	V L V	C 6 6 5	N					
X	B J	V L V	C 6 6 5	N					

SUPPLEMENTAL REPORT EXPECTED (14)

		Expected Submission Date (15)	Month	Day	Year
X Yes (If yes, complete EXPECTED SUBMISSION DATE)	__ NO		0 1	3 1	9 0

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

On October 23, 1989, during normal Unit 2 operation at 100% power, a temperature survey of the High Pressure Coolant Injection (HPCI) system discharge piping revealed elevated discharge piping temperatures. The HPCI system was then declared inoperable due to the possibility of a steam void existing within the discharge piping. A seven day Limiting Condition for Operation (LCO) was entered in accordance with Technical Specification 3.5.C. Subsequently, on October 31, 1989 at 1630 hours, during normal Unit 3 operation at 100% power, the Unit 3 HPCI system was also declared inoperable due to a similar elevated discharge piping temperature concern. The root cause was determined to be Reactor Feedwater system back leakage into the HPCI discharge piping. Corrective actions included an engineering review, and a revised standby lineup for HPCI to prevent the Reactor Feedwater system back leakage pending repairs to valves interfacing with the Feedwater system. A comprehensive HPCI piping inspection was also performed, and various piping supports were repaired. A review of the piping support In-Service Inspection program was also performed. The safety significance of this event was considered minimal since the HPCI systems remained available to mitigate the consequence of a Loss of Coolant Accident (LOCA). Additionally, the Low Pressure Emergency Core Coolant Injection Systems and the Automatic Depressurization Systems remained operable during this event. This was the first occurrence of this type of Reactor Feedwater back leakage into the HPCI discharge piping.

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

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2527 MWt rated core thermal power.

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX).

EVENT IDENTIFICATION:

ELevated High Pressure Coolant Injection (HPCI) [BJ] System Discharge Piping Temperature Due to Reactor Feedwater System Back Leakage

A. CONDITIONS PRIOR TO EVENT:

Unit(s): 2(3) Event Date(s): October 23 (31) 1989 Event Time(s): 2100 (1630) hours

Reactor Mode(s): N (N) Mode Name(s): Run (Run) Power Level(s): 100% (100%)

Reactor Coolant System (RCS) Pressure(s): 1005 (1001) psig

B. DESCRIPTION OF EVENT:

On October 23, 1989, during normal Unit 2 operation at 100% rated core thermal power, a temperature survey of the HPCI discharge piping was performed. The survey revealed that the HPCI piping temperature had increased to approximately 275 degrees Fahrenheit (F) between Motor Operated Valves (MOV) 2-2301-8 and 9, and to approximately 246 degrees F at the HPCI pump. Refer to Figure 1 for a HPCI system diagram. A review of the saturated steam tables indicated that at the corresponding static pressure in the pump discharge piping (32 psig), saturated steam can form at 276 degrees F. The Unit 2 HPCI system was then immediately declared inoperable and MOV 2-2301-9 was closed in order to allow the HPCI discharge piping to cool.

On May 11, 1989, the Technical Staff System Engineer conducted a walkdown of the HPCI drain pot piping to determine the root cause of elevated HPCI cubicle temperatures. During performance of the walkdown, the HPCI pump discharge piping was found to be at slightly elevated temperatures. The temperature of the piping at the HPCI pump was measured at 140 degrees F, and the temperature of the piping between the MOVs 2-2301-8 and 9 was measured at 160 degrees F. The solenoid operated valves (SOVs) 2-2301-31 and 2-2301-28 on the drain pot piping were verified to be passing steam. Work requests were then written to repair the SOVs 2-2301-28 and 31. Although these valves were confirmed as leaking, the temperatures obtained on the HPCI pump discharge piping indicated that this was not the sole source of the heat input into the HPCI cubicle.

Further investigations and walkdowns led to a test on July 19, 1989. Temperature readings were taken upstream and downstream of the HPCI Pump Discharge valve, MOV 2-2301-9, with HPCI in the normal standby lineup (i.e., MOV 2-2301-8 valve closed and MOV 2-2301-9 open). The temperature recorded on the HPCI pump discharge piping between the HPCI Main Pump and MOV 2-2301-9 was 175 degrees F. The temperature between MOV 2-2301-8 and MOV 2-2301-9 was 220 degrees F. At the same time, temperature readings were taken on Unit 3 HPCI pump discharge piping. They were found to be approximately 100 degrees less than the readings obtained from Unit 2. To aid in determining the source of the heat input, MOV 2-2301-9 was closed to further isolate the Reactor Feedwater [SJ] system from the HPCI pump discharge piping. Approximately 12 hours later, the temperature recorded between MOVs 2-2301-8 and 9 had dropped to 106 degrees F. Subsequently, MOV 2-2301-9 was reopened, and the piping temperature began to steadily increase back to 220 degrees F. Based on this information, it was concluded that Reactor Feedwater back leakage was occurring.

In order to pinpoint possible sources of back leakage, HPCI Booster Pump Discharge Check Valve to the Gland Seal Condenser Valve 2-2301-50A was backseated by starting the Auxiliary Cooling Water Pump. The 2-2301-50A valve is responsible for isolating the HPCI discharge piping from the Gland Seal Condenser cooling water piping while the Auxiliary Cooling Water Pump is operating. The HPCI pump discharge piping was then closely monitored for any pressure increases. The initial pressure was recorded as 32 psig. Following three hours of Auxiliary Cooling Pump operation, the pressure was recorded at 43 psig. This indicated that Auxiliary Cooling Water Pump Discharge Check valve 2-2301-51 was leaking.

The HPCI discharge piping was then monitored on a regular basis through walkdowns by the Technical Staff. No significant further increases in Unit 2 HPCI discharge piping were observed until October 23, 1989, when the HPCI system was declared inoperable. A seven day Limiting Condition for Operation (LCO) was then entered in accordance with Technical Specification 3.5.C, pending completion of a comprehensive HPCI piping inspection, piping support improvements, and operability testing. On October 31, 1989 at 0800 hours, an Unusual Event was declared and an orderly Unit 2 shutdown was initiated. The shutdown was subsequently terminated upon completion of Dresden Operating Surveillances (DOS) 2300-1, HPCI Motor Operated Valve Operability Verification, and DOS 2300-3, HPCI System Operability Verification.

As a direct result of the HPCI pump discharge piping elevated temperature problems discovered on Unit 2, a Unit 3 HPCI pump discharge piping temperature investigation was initiated on October 29, 1989. Cursory investigation on the Unit 3 HPCI discharge piping located at the entrance to the Main Steam [SB] line tunnel, resulted in elevated temperatures. Further investigations yielded that the piping in the Unit 3 HPCI piping was insulated at this location, whereas, the corresponding Unit 2 HPCI piping was not.

On October 30, 1989, Architect Engineer involvement was requested to help resolve appropriate temperature measurement points in light of the insulation differences. Subsequently, the Architect Engineer provided points on the HPCI pump discharge piping to be monitored for temperature.

On October 31, 1989, Technical Staff personnel, utilizing a thermal heat gun, conducted a more detailed walkdown of the Unit 3 HPCI pump discharge piping, measuring the piping surface at several locations. The recorded temperatures were as follows:

1. 255 - 256°F: Circumferentially around the HPCI pump discharge pipe, 3-2304-14", at elevation 513.5 feet at a location prior to entering the main steam line tunnel, between MOVs 3-2301-8 and 9.

2. 133 and 163°F: On a horizontal run of the HPCI pump discharge piping one to two feet away from temperature location #1 on top of the pipe and on the bottom of the pipe, respectively.

3. 114°F: Downstream of the MOV 3-2301-9 valve.

4. 114°F: Upstream of the MOV 3-2301-9 valve.

5. 112°F: At the discharge of the HPCI pump.

Based on the above HPCI discharge piping temperature survey, on October 31, 1989, at 1630 hours, during normal Unit 3 operation at 100% rated core thermal power, the Unit 3 HPCI system was declared inoperable due to the possibility of a steam void existing in the HPCI pump discharge piping.

C. APPARENT CAUSE OF EVENT:

This report is submitted in accordance with 10 CFR 50.73(a)(2)(v)(D), which requires the reporting of any event or condition alone that could have prevented the safety function of structures or systems that are needed to mitigate the consequences of an accident.

The root cause of the Reactor Feedwater system back leakage into the HPCI discharge piping on both Units 2 and 3 was attributed to leakage past HPCI pump discharge valve MOV 2(3)-2301-8. Additionally, HPCI pump discharge check valve 2(3)-2301-7 also allowed feedwater back leakage into the HPCI system. The HPCI system is configured to inject into the reactor vessel via the "B" Feedwater line. The 2(3)-2301-7 check valve and MOV 2(3)-2301-8 valve are in series and are provided for isolating the feedwater system from the HPCI system. (It should be noted that neither of these valves are primary containment isolation valves.) A review of a MOV 2-2301-8 motor operators current trace characteristic obtained on October 26, 1989, indicates an abnormally high current, which may indicate a bent valve stem. It is presently believed that the Unit 3 MOV 3-2301-8 is experiencing seat leakage due to a worn seat.

The Unit 2 2-2301-7 injection check valve was last inspected during the previous Unit 2 refueling outage under the direction of Work Request 79577. The inspection was performed on January 7, 1989 in accordance with Dresden Administrative Procedure (DAP) 11-25, General Check Valve Inspection Program. The 2-2301-7 check valve was found to be in satisfactory condition. The valve was inspected, cleaned, the seating surfaces were blue checked, and no discrepancies were identified. The Unit 3 3-2301-7 injection check valve is scheduled for inspection during the upcoming refueling outage under the direction of Work Request 86037. This inspection will also be performed in accordance with DAP 11-25. The 2(3)-2301-7 check valve was designed to prevent gross back leakage into the HPCI system. The check valve is not relied upon to maintain zero leakage.

D. SAFETY ANALYSIS OF EVENT:

During this event, the HPCI remained available to provide reactor inventory makeup during a small High Energy Line Break (HELB). A review of past operability surveillances indicates that the HPCI system was available to supply the required inventory makeup of 5000 gallons per minute. Although some minor hanger and support damage was identified on the HPCI discharge piping, engineering judgement indicates that the HPCI system was operable under all postulated design accident scenarios. A formal engineering review is being prepared to document the operability assessment. A supplement will be issued upon its completion. Additionally, during this event, the Isolation Condenser [BL] was operable. The Automatic Depressurization System [SB] and Low Pressure Emergency Core Cooling Systems (ECCSs) [BM,BO] were also available to provide reactor pressure and inventory control during any postulated design basis accident. For these reasons, the safety significance of this event is considered to be minimal.

E. CORRECTIVE ACTIONS:

The accessible Unit 2 HPCI discharge piping supports were visually inspected for gross damage on October 24, 1989 to determine whether the steam void (inadequately filled discharge pipe) caused a destructive hydrodynamic effect. The inspections were performed in the HPCI room, West Unit 2 corner room and the Unit 2 Torus Area. Of the 27 supports inspected, three pipe clamps were found rotated and/or shifted on the pipe. Two of the supports, M-1151-146 and M-1151-147 located in the West corner room had work requests (88247 and 88248) outstanding from October 23, 1989. The rotation and shifting of these two clamps is believed to have been caused by vibrations induced by the HPCI pump. The third support (M-1151-154) is located on top of the Torus. The clamp on this support was also rotated; however this rotation was verified to have occurred prior to November, 1988 because a work request was initiated during a HPCI piping walkdown performed during the previous refueling outage. An additional, more thorough inspection of the Unit 2 HPCI pump discharge piping and its associated supports was then conducted by Visually Trained (VT) inspection personnel. The walkdown was performed on October 28-30, 1989 and several supports were found with deficiencies. Work requests have been initiated on the identified supports and repairs were completed on all deficient supports. See Table 1 for detailed descriptions of the identified deficiencies.

Additionally, the Unit 3 HPCI discharge piping supports were inspected on October 31, 1989, resulting in the identification of several supports with deficiencies. Work requests have been initiated on the identified supports and repairs were completed on all deficient supports with the exception of two supports (no action supports) which are slated for future removal entirely. See Table 2 for detailed descriptions of the Unit 3 HPCI piping support deficiencies.

As a temporary corrective action to prevent further feedwater back leakage into the HPCI system, the HPCI system standby lineup has been revised. This revision changes valve configurations MOV 2(3)-2301-9 (normally open) in a closed position, and MOV 2(3)-2301-8 (normally closed) in an open position. This revised, off-normal, valve lineup was reviewed in accordance with 10 CFR 50-59 Safety Evaluation Guidelines. The following items were addressed (237-200-89-15901).

1. Probability or consequence of evaluated accident increased.

Chapter 14 of the Final Safety Analysis Report (FSAR) identifies the design basis accidents (DBAs). The HPCI system is designed with sufficient redundancy to minimize the probability of a single failure causing the system to be inoperable. Even in this unlikely event, the DBA scenario addresses the consequences of HPCI being inoperable. The following areas were assessed to assure that the probability of HPCI becoming inoperable is unchanged from the original analysis, as a result of the revised valve configuration:

a. Release of effluents - No new high stress points, which could change the High Energy line break assessments, are created. Pressure, temperature, gravity, and seismic loadings are unchanged.

b. Cooling water capacity - The normal source of make-up water available to HPCI (condensate storage tank) is still available with the revised configuration. All automatic initiation signals remain unchanged. The ability also still exists to remotely change the supply of cooling water from the condensate storage tank to the suppression chamber.

c. Ability to isolate system against pressure. The designs of the MOV 2(3)-2301-8 and MOV 2(3)-2301-9 were compared to confirm that MOV 2(3)-2301-9 can perform under this condition. As identified in Attachment B, the designs are identical for WP. Therefore, MOV 2(3)-2301-9 can perform identically for these conditions. In addition, testing has been conducted as part of the Safety Related MOV program which confirms this conclusion.

d. Affect on high energy lines - see item 1.a. above.

e) Fail safe criteria - The automatic initiation signals will remain unchanged. For HPCI to perform its intended function, MOV 2(3)-2301-9 will now have to open. In the original configuration, this valve was already open. This produces a possibility that a failure to open of MOV 2(3)-2301-9 could render HPCI inoperable. The probability of this happening is essentially the same as a postulated similar failure of MOV 2(3)-2301-8. HPCI becoming inoperable due to a single failure has previously been addressed in FSAR Chapter 14.

f) Environmental Qualification - MOV 2(3)-2301-9 has not been incorporated into the Environmental Qualification (EQ) program. However, an engineering review confirmed that it satisfies EQ requirements.

g) Electrical loads - The battery loading was reviewed for the load required for operation of MOV 2(3)-2301-9. The battery load profile assumes MOV 2(3)-2301-8 requires DC power. Based on MOVATS testing, battery load for MOV 2(3)-2301-9 is essentially the same as MOV 2(3)-2301-8. Therefore, the battery electrical emergecny loading is unchanged. The control and power feed for this valve has been installed and maintained as "safety related." Therefore, the probability of failure is not increased.

h) Actuation time - Actuation times for MOV 2(3)-2301-8 and MOV 2(3)-2301-9 are similar. Thus, timeliness of delivery of coolant to the reactor is unaffected.

i) Environmental Heat Load - As a result of leakage past MOV 2(3)-2301-8, the potential exists for above normal temperature conditions in the section of pipe between MOV 2(3)-2301-8 and MOV 2(3)-2301-9. This could result in additional ambient heat loads in various plant areas. Elevated plant temperatures may affect equipment in the area local to the increased temperature. However, temperature increases are not expected because flow has been stopped. Once flow has ceased, the fluid energy will dissipate, and the pipe temperature will reach that of the surrounding area. To confirm this conclusion, pipe temperatures will be monitored daily for two weeks after placing HPCI back in service. After stabilization is confirmed, temperatures will be monitored weekly for four weeks. If this process again confirms stabilization of temperatures at approximately normal level, daily temperature monitoring will cease.

Conclusion:

Design and control of the MOV 2(3)-2301-9 in the closed position and MOV 2(3)-2301-8 in the open position does not increase the probability of the accidents as identified in Chapter 14 of the FSAR. Likewise, the consequences of the postulated accidents are not increased.

2. New accident created.

No new equipment or connections are being made to the HPCI system. Therefore, failure modes which are created, as a result of a valve lineup change, would be limited to MOV 2(3)-2301-9. The failure modes could take the form of:

a. Failure to open.

b. Open partially.

c. Electrical short.

d. Electrical ground.

Conclusion:

All of the above mentioned failures would ultimately lead to a failure of HPCI to perform its intended function. This has been evaluated in Chapter 14 of the FSAR. Therefore, the possibility of creating an accident which has not been analyzed does not exist.

3. Margin of safety within Technical Specifications reduced.

   Based on Item 1 of this review, none of the LCOs or surveillance requirements of the Technical Specifications will be changed or affected. During operation, HPCI will be operated in accordance with the existing LCOs. HPCI operability will also be demonstrated routinely in accordance with the surveillance intervals identified. As a result, the margin of safety remains unchanged with the new valve configuration.

4. The following procedures have been revised to control the revised valve lineup (237-200-89-15902).

   a. Temporarily revise DOS 2300-1 to maintain MOV 2(3)-2301-8 in the open position and MOV 2(3)-2301-9 in the closed position. This is opposite the normal valve lineup.

   b. Temporarily revise DOS 2300-3 to allow for the performance of operability testing with the revised valve configuration of MOV 2(3)-2301-8 open and MOV 2(3)-2301-9 closed.

   c. Temporarily revise Dresden Operating Procedure (DOP) 2300-3, HPCI System Manual Startup and Operation, to allow for the manual operation of HPCI with the revised valve configuration of MOV 2(3)-2301-8 open and MOV 2(3)-2301-9 closed.

   d. Temporarily revise DOP 2300-6, HPCI System Local Manual Operation, to allow for local manual operation of HPCI with the revised valve configuration of MOV 2(3)-2-2301-8 open and MOV 2(3)-2-2301-9 closed.

   e. Temporarily revise Appendix A, Operator's Daily Log, to indicate the revised positions for MOV 2(3)-2301-8 and MOV 2(3)-2301-9 which are open and closed, respectively.

   f. Temporarily revise Dresden Operating Annunciator Procedure (DOA) 902-3 A-9, HPCI Turbine Tripped, to ensure operator closes MOV 2-2301-9 in the event of a failure of MOV 2-2301-8 to close (Unit 2 only, bent valve stem issue).

5. Additionally, the following actions have also been performed to control the revised valve positions (237-200-89-15903).

   a. Change control room panel lens covers on the 902(3)-3 panel for MOV 2(3)-2301-8 and MOV 2(3)-2301-9 to display the new valve positions, and to maintain the green board concept.

   b. A brief synopsis of the events surrounding the repositioning of MOV 2(3)-2301-8 and MOV 2(3)-2301-9 valves will be conveyed to the operators via Operator Training. The training will contain all the necessary information for the proper operation of the HPCI system with the revised valve lineups.

   c. MOV Control Switch Caution Cards (237-200-89-15904).

      1) A caution card will be placed on MOV 2-2301-8 to contact the electricians to perform a valve signature prior to valve manipulation.

2) A caution card will be placed on the MOV 2(3)-2301-9 to instruct the operator to close the MOV 2(3)2301-8 prior to opening the MOV 2(3)-2301-9, and to close the MOV 2(3)-2301-9 on a turbine trip if the MOV 2(3)-2301-8 does not close.

3) Caution cards will be placed on the MOV 2(3)-2301-35 and 36 so they do not remain open during normal unit operation. This will ensure the HPCI pump discharge piping remains full.

4) A caution card will be placed on the MOV 2(3)-2301-10 valve to instruct the operator to close the MOV 2(3)-2301-8 valve prior to opening MOV 2(3)-2301-10 valve. This will ensure a flowpath from the reactor to the condensate storage tank is not created.

In order to prevent recurrence of this event, work requests have been initiated to inspect and repair the Unit 2 and 3 MOV 2301-8 valves and the Unit 2 and 3 2301-7 check valves as necessary. The work request numbers and scheduled dates of inspection/repair are as follows (237-200-89-15905).

Valve	Work Request Number	Scheduled Date to Begin Repairs
MOV 2-2301-8	86116	12/10/89
MOV 2-2301-7	86117	D2R12 Refuel (Fall, 1990)
MOV 3-2301-8	88809	D3R11 Refuel (December, 1989)
MOV 3-2301-7	88810	D3R11 Refuel (December, 1989)

Additionally, to prevent further recurrence, routine periodic temperature monitoring of the HPCI discharge piping will be established. The Operations Department will develop a procedure to perform routine monthly temperature surveys of the HPCI discharge piping (200-237-89-15906). Also, an Untrasonic Test (UT) to verify piping integrity of the HPCI discharge piping will be performed on Unit 3. This UT will concentrate on the piping section entering the steam tunnel area and within the steam tunnel.

A review of the piping support In-Service Inspection program determined that all Class 1, 2, and 3 component supports at Dresden Station are included in the In-Service Inspection (ISI) program. The program requires visual examinations to be performed on component supports once each inspection interval (10 years). The ISI program maintains the frequency of the support inspections.

The sampling technique currently used is to select supports prior to each refueling outage based on the minimum and maximum number to be inspected as required by ASME Section XI. These supports are selected by random sampling on various systems. Ultimately, all supports are inspected at least once every 10 years.

In the event of a failed support, additional examinations are required by ASME Section XI. The additional examination are to include inspection of additional supports similar in type, design, and function as the failed support. The number of additional supports to be inspected is required to be equal to the number of supports initially examined. The expanded inspection is also required to include the supports immediately adjacent to the failed support.

Both generic and unique support problems will be identified during the course of the ISI interval. In the case of the component supports that were damaged during this event, their deficiencies would have been discovered by the ISI program. Based on review of previous examination results, it is believed that the support damage occurred relatively recent to the time of discovery.

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

A supplemental report will be submitted upon completion of inspection of MOV 2(3)-2301-7 and MOV 2(3)-2301-8 (237-200-89-15907).

F. PREVIOUS EVENTS:

No previous occurrences have been identified.

G. COMPONENT FAILURE DATA:

A detailed summary of component failure data will be provided in a supplemental report upon completion of inspection and testing.

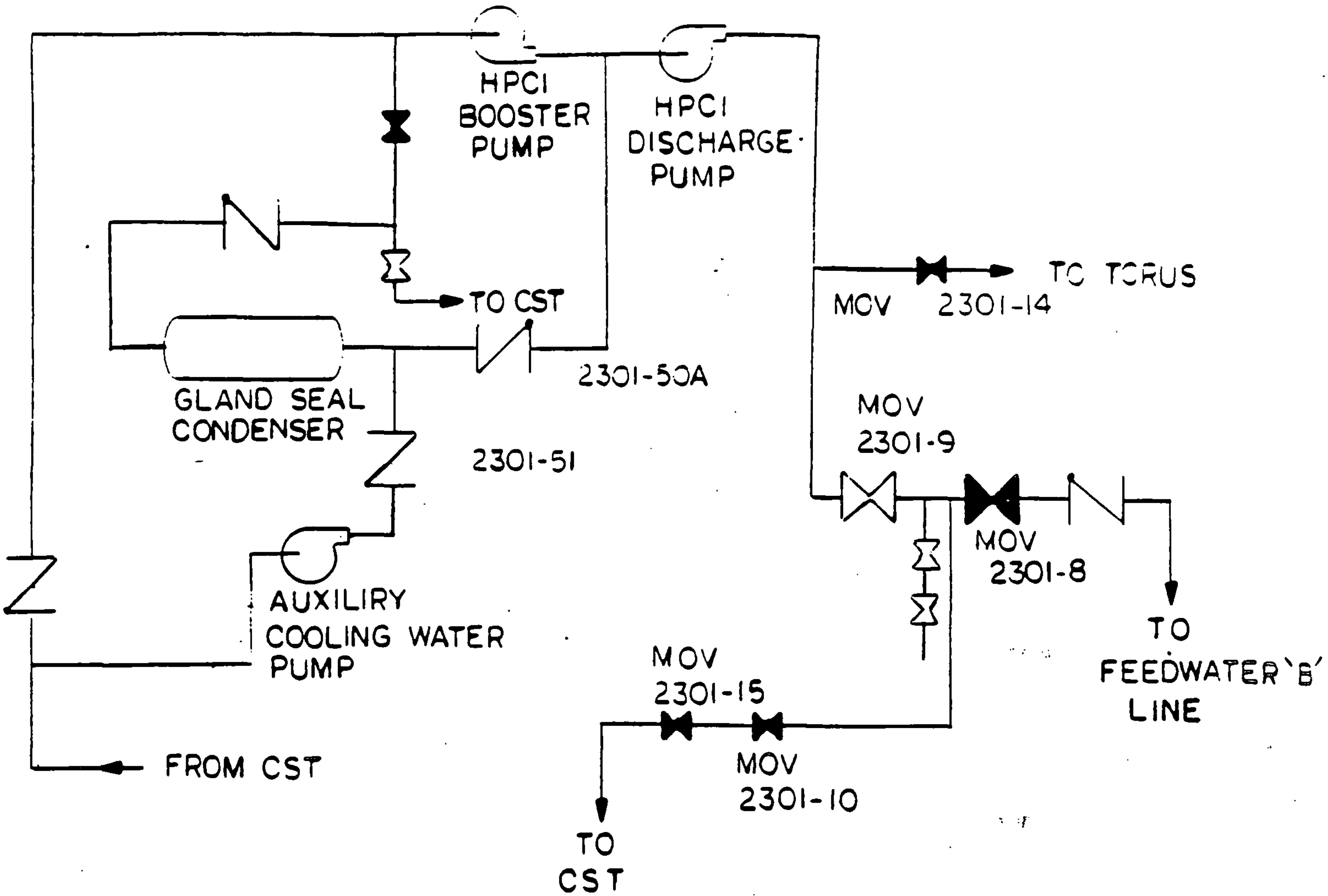

FIGURE 1
Basic HPCI system Drawing

Table 1
HPCI Support Inspection Results for Unit 2

On October 28, 1989, all of the HPCI discharge line supports were given a VT-3/4 inspection per the Special Process Procedures Manual (SPPM). Per the SPPM, these insections were documented on the Visual Inspection Data Form VT-3/4-1.1 The results are summarized in the table below.

In addition to the HPCI discharge line supports, the branch line supports off of the discharge lines were also inspected. The inspections did not reveal any problems but the inspections could not be documented per the SPPM because the support drawings were not available.

On supports M-1151D-4, 9, 10 and 155, Magnetic Particle Testing (MT) was performed on all of the accessible welds. In addition to this, the sheer lugs on the M-1151D-4 and 9 supports and the hanger to embedded plate welds on the M-1151D-10 and 155 supports were magnetic Particle Tested. These Non-Destructive Examination (NDE) tests did not reveal any service induced flaws.

Support No. (M-1151D-___)	Results	Work Request No.
Supports in the HPCI room		
-281	No indications	
-282	"	
-283	"	
-138	"	
-92	"	
-285	"	
-95	"	
-85	"	
-93	"	
-80	"	
-89	"	
-276	"	
-149	Strut not loaded, pipe clamp skewed causing binding on strut	88371
-151	Strut locknut loose	88372
-152	No indications	
Supports in the West corner room		
-147	Pipe clamp rotated, jam nut	88247 &
loose	88355	
-146	Pipe clamp rotated	88248
-168	No indications	
-167	Pipe clamp shifted 1/4 inch	88354
-273	Bottom lock nut loose, eye nut bolt bent, clamp spacer not contacting clamp, hanger rod locknut loose	88356

Table 1
HPCI Support Inspection Results for Unit 2 (Cont'd)

Support No. (M-1151D-___)	Results	Work Request No.
Supports in the Torus area		
-86	Pipe clamp skewed about 5 from vertical	88363
-153	Inadequate thread engagement on one CEA, 1/16 inch gap on base plate	88360
-154	Inadequate thread engagement on seven CEAs, pipe clamp skewed down, strut binding, strut locking nut loose	88361 & 88329
-155	Nine CEA's loose, two baseplates with 1/16 inch gap, one baseplate with 1/8 inch gap and spalled concrete, one baseplate with a 3/16 inch gap and spalled concrete, crack in concrete ceiling running from one baseplate to diagonally opposing backplate (about three feet in length)	88331
-96	Support not loaded, inadequate thread engagement on one CEA	88362
-84	Strut loose and unloaded	88333
-82	Strut loose and unloaded	88332
-10	One loose CEA, one CEA missing washer, 1/16 inch gap in baseplate, inadequate thread engagement on three CEAs	88364 & 88334
-81	No indications	
-5	No indications	
-83	No indications	
-9	No indications	
-4	3/8 inch gap in one baseplate with red head inserts pulled out 1/4 inch, 1/4 inch gap in one baseplate with red head inserts pulled out 1/8 inch and badly spalled concrete around the red head	88330
Supports in the X-area		
-269	Only partially inspected, letter written, no VT report or indications	
-270	Inadequate thread engagement on top clevis bolt evaluated by Impell and found acceptable, spring can missing scale so deflection was measured and found to be within tolerance	

Table 2
HPCI Support Inspection Results for Unit 3

Support No. (M-1151D-___) HPCI Room	Work Request No.	Results
-273		Satisfactory
-274		Satisfactory
-275		Satisfactory
-267		Satisfactory
-258		Spring Can set at 2800 lbs., satisfactory
-111	88419	Loose jamnut on strut, loose pipe clamp spacer
-68		Satisfactory
-69	88418	Spalling on embed plate, not supporting load, loose turnbuckle nut
-70		Satisfactory
2304-M-210	88417	(3-4218) loose upper locknut, loose eyenut locknut, eyenut not fully engaged
-67	88416	Loose pipe clamp spacer
-88	88415	Loose pipe clamp spacer
-104		Satisfactory
Corner Room		
-268		Spring can set at 9000 lbs., satisfactory

Table 2
HPCI Support Inspection Results for Unit 3 (Cont'd)

Support No. (M-1187D___)	Work Request No.	Results
Torus Catwalk		
-89		Satisfactory
-72		Satisfactory
-256	88437	Spring can, 3300 lbs., loose jamnut
-74		To be inspected 11/3/89
-98	88436	Not supporting load, loose jamnut and strut
-75	88438	Not supporting load, shifted pipe clamp, strut binding, "U"-bolt Locknut loose
-76	88439	Clamp shifted, strut binding, 3/16" gap in base plate
-77		Insufficient thread engagement on 2 CEA and Impell
-78		Satisfactory
-79	88440	Spalling on embed plate, loose jamnut
-257	88441	Loose jamnut
2304-M-223	88442	No action support, no nut on top pipe clamp bolt, no pipe clamp spacer, rod jamnut loose, clevis bolt missing locknut/Impell
-86	88443	Spalled concrete, insufficient thread engagement on one CEA, 1/8" gap on plate and CEA not torqued, two pipe clamp bolts without nuts
-80	88444	Loose jamnut
-81	88445	Loose jamnut
-82	88446	Insufficient weld at clevis to embed plate, no load supported, spalled concrete, small crack in clevis to embed weld at overlap area
-83	88447	Embed separating at seam, spalled concrete, pipe moved 1/2", upper stop plate contacting pipe, stop plate slightly bent (satisfactory)
X-Area		
-276		Spring can scale painted, need loads from dimensions (Impell)
-277		Spring can - Impell to provide tolerance calculations

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

Table 2
HPCI Support Inspection Results for Unit 3 (Cont'd)

Test Return Line to CST

HPCI Room	Work Request No.	Results
M-1187D-84	88420	Not supporting load
32342-2		spalled concrete, loose locknuts support should have been removed, Impell investigating
M-1187D-85		Satisfactory
M-1187D-110	88421	Plate and CEAs pulled out

HPCI Min Flow

HPCI Room		
M-1187D-63		Satisfactory
-253	88435	One CEA pulled out with 1/4" gap in baseplate, load flange binding on can, two tack welds holding can to structure are cracked, scale is painted, Impell to evaluate load from dimensions
-58	88425	Rotate pipe clamp
-59		Satisfactory

HPCI Branch Support

Corner Room	88422	U-Bolt Nut loose (support between -268 and -104)