FENOC
FirstEnergy Nuclear Operating Company

5501 North State Route 2
Oak Harbor, Ohio 43449

Mark B. Bezilla
Vice President - Nuclear

419-321-7676
Fax: 419-321-7582

NP-33-03-005-01

Docket No. 50-346

License No. NPF-3

January 23, 2004

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Ladies and Gentlemen:

LER 2003-005-01
Davis-Besse Nuclear Power Station, Unit No. 1
Date of Occurrence - May 2, 2003

Enclosed please find attached Supplement 1 to Licensee Event Report (LER) 2003-005, which is being submitted to provide additional information regarding inoperability of the Containment Gas Analyzers. Two independent analyzers are required to be operable in Modes 1 and 2 by the Davis-Besse Nuclear Power Station Technical Specification 3.6.4.1. This Supplement addresses additional design and configuration issues identified during the Extent of Condition review associated with LER 2003-005.

This LER Supplement is submitted in accordance with 10CFR50.73(a)(2)(i)(B), a condition prohibited by the plant's Technical Specifications.

Very truly yours,

By S. Allen
for Mark B. Bezilla

PSJ/s

Attachments

cc: Regional Administrator, USNRC Region III
DB-1 NRC Senior Resident Inspector
DB-1 Project Manager, USNRC
Utility Radiological Safety Board

IE22

COMMITMENT LIST

The following list identifies those actions committed to by the Davis-Besse Nuclear Power Station in this document. Any other actions discussed in the submittal represent intended or planned actions by Davis-Besse. They are described only as information and are not regulatory commitments. Please notify the Manager - Regulatory Affairs (419-321-8450) at Davis-Besse of any questions regarding this document or associated regulatory commitments.

COMMITMENTS	DUE DATE
Remove gate valves CC274, CC275, CC277, and CC278 from the CCW Containment Gas Analyzer System and replace with pipe spools.	Complete.
Replace Containment Gas Analyzer heat exchangers and relief valves.	Complete.
Modify the condensate removal configuration to eliminate reliance on instrument air to drain the moisture traps.	Complete.
Following system modifications, perform a flow check on the cooling side of the heat exchanger.	Complete.
Perform future surveillance flow test at a frequency determined by the responsible engineer.	Not later than 14RFO.
Develop a preventive maintenance program for CGAS components to be performed at a frequency as determined by the responsible engineer.	March 31, 2004
Change procedure NOP-CC-2001, "Design Verification," to provide methods of design verification that assure the design meets the specified design inputs. Also change procedure NOP-CC-2004, "Design Interface and Evaluations," to require engineering activities be evaluated by potentially affected organizations to assure the adequacy of design requirements, licensing basis, training requirements, and affected documents.	Complete.

NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Davis-Besse Unit Number 1	05000346	1 OF 9

4. TITLE

Containment Gas Analyzer Heat Exchanger Valves Found Closed Rendering the Containment Gas Analyzer Inoperable

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	02	03	2003	– 005 –	01	01	23	2004		05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	5
10. POWER LEVEL	000

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)
20.2203(a)(1)	50.36(c)(1)(i)(A)	50.73(a)(2)(iv)(A)	73.71(a)(4)
20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)
20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER Specify in Abstract below or in NRC Form 366A
20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)	
20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)	
20.2203(a)(2)(v)	X 50.73(a)(2)(i)(B)	50.73(a)(2)(vii)	
20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)	
20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Peter S. Jordan – Regulatory Affairs	(419) 321-8260

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

	YES (If yes, complete EXPECTED SUBMISSION DATE).	X	No

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

Two redundant trains of Containment Gas Analyzers (CGAs) are designed to monitor the post-accident containment atmosphere and alarm when excessive hydrogen is detected. The CGA Heat Exchangers (HXs) provide cooling of the containment atmosphere sample which travels through the CGAs following a loss of coolant accident. Technical Specification 3.6.4.1 requires two redundant CGAs to be operable in Modes 1 and 2. On May 2, 2003, with the plant in Mode 5, it was determined that no Component Cooling Water (CCW) flow existed through the CGA HXs. Further investigation revealed that the CCW valves were closed. Although the CCW valves allowed some handwheel movement, apparent seating surface corrosion inhibited opening of the valves. Subsequently, when one valve was forced opened, its CGA HX was found to be leaking. It was also determined that operation of the CGAs is dependent on non-safety grade instrument air which may be unavailable post-accident. The affected components were replaced without reliance on instrument air for operation. Based on the identified conditions and the absence of identified maintenance activities, it appears these conditions have existed since as early as plant startup in 1977. This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as any operation or condition prohibited by the Technical Specifications.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Davis-Besse Unit Number 1	05000346	2003	– 005 –	01	2 OF 9

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

DESCRIPTION OF OCCURRENCE:

Following a loss of coolant accident (LOCA), hydrogen may be generated in containment due to metal-water reaction, radiolytic decomposition, and corrosion of metals. In accordance with regulatory requirements, a Containment Hydrogen Control System [BB] is provided to control the concentration of hydrogen which may be released post-LOCA. The Davis-Besse Nuclear Power Station (DBNPS) Containment Hydrogen Control System consists of four subsystems: the Hydrogen Dilution System, the Hydrogen Purge System, the Hydrogen Recombination System [BB-RCB], and the Containment Gas Analyzer System (CGAS). If a sufficient amount of hydrogen is generated, it may react with oxygen present in the Containment Vessel [VSL] atmosphere at rates rapid enough to lead to high temperature and overpressurization of the Containment Vessel. The Containment Hydrogen Control System components are designed to be operated as necessary to maintain the maximum hydrogen concentration in the Containment Vessel at or below acceptable levels following a LOCA.

The hydrogen concentration inside containment following a design-basis accident is determined by two redundant Containment Gas Analyzer (CGA) trains external to the containment vessel. The CGAS, each consisting of a heat exchanger, recombiner, a sample pump, and standby sample pump, are required to be started 30 minutes after the Containment Spray System [BE] has been initiated during accident conditions to detect the buildup of hydrogen in the Containment Vessel. The system is mechanically connected to a containment penetration, which allows a sample of containment atmosphere to be conditioned, analyzed, and returned to the containment. The analyzer systems will initiate an alarm on excessive hydrogen concentrations.

On May 2, 2003, with the DBNPS in Mode 5, temporary ultrasonic flow instrumentation was being installed on several components of the CGAS to support performance of the Component Cooling Water (CCW) [CC] Loop 1 Safety Features Actuation System (SFAS) [JE] Level 3 and Level 4 flow verification test. This test was being performed to demonstrate the ability of CCW Loop 1 to meet its design flows during a simulated SFAS Level 3 and Level 4 actuation. Following installation of the instrumentation on the CCW supply line to the Channel 1 CGA, it was determined that there was no CCW flow through the line to the CGA. The same condition was found on the CCW supply line to the Channel 2 CGA. Subsequent inspection found CGAS Heat Exchanger (HX) isolation valves on both CGAS channels to be stuck in the closed position. These valves, CC274 and CC275 for channel 1 and CC277 and CC278 for channel 2, are one-half inch Powell Model #3462 gate valves. In an attempt to determine if there was any CCW flow or pressure from either the inlet or the outlet of the HX, the thermal relief valves in both channels were manually lifted. No water or pressure was identified from either line. The hand wheels for the isolation valves internal to the CGAS cabinets could only be operated about one-half of a turn. Subsequently, one valve was forced open. This resulted in an observed leak on the bottom of its respective HX. Efforts to open the remaining three valves were unsuccessful. Upon discovery that the cabinet-mounted isolation valves for the HXs for both CGAs were mechanically bound in the closed position, the condition was entered into the DBNPS

DESCRIPTION OF OCCURRENCE (continued):

corrective action program as Condition Report (CR) 03-03398, and the CGAS were declared inoperable.

During the investigation of the above condition on June 20, 2003, it was identified that proper operation of the CGAs relies on instrument air which is non-safety grade. Following a LOCA, a loss of offsite power is assumed which renders the instrument air system unavailable.

Prior to the containment air sample entering the thermal conductivity cell for hydrogen measurement, the high temperature, high humidity air passes through a moisture separator to separate the condensate from the air sample. The condensate is routed to a moisture trap. When the water level reaches a predetermined high level in the trap, instrument air is necessary to overcome the equivalent of 50 psig spring tension on the moisture trap drain check valve to drain the accumulated condensate. With instrument air unavailable, periodic draining of collected condensate would not occur, and the accumulated condensate would fill the CGA channel piping causing thermal conductivity detector to falsely indicate off-scale HIGH hydrogen concentration. This condition was entered into the DBNPS corrective action program as CR 03-04871.

In addition further investigation revealed on July 11, 2003, a pressure regulator for the instrument air servicing the CGAS was observed to be set at 25 psig. This pressure would be insufficient to overcome the equivalent of 50 psig spring tension in the moisture trap drain check valves to drain the moisture trap. This condition was entered into the DBNPS corrective action system as CR 03-05529.

During this investigation on June 20, 2003, the potentially radioactive condensate drain from the moisture traps was observed to be routed directly from the sides of the cabinets to the floor for collection by the floor drain system. This condition was entered into the DBNPS corrective action program as CR 03-04882.

APPARENT CAUSE OF OCCURRENCE:

Deficient Valves, Heat Exchangers, and Flow Testing

In 1987, a condition was discovered which identified insufficient controls over the configuration of the plant in that numerous components, included in vendor supplied cabinets and skids, were not included on plant drawings or in plant procedures. During the review process (1987) for this condition, it was identified that the field conditions for the CGA HXs did not match plant documentation. Associated documents were revised to include valves CC274, CC275, CC277, and CC278 to reflect the as-built conditions of the CGAS HXs. In February 1993 and August 1992, procedures DB-SP-03063 and DB-SP-03064, "Component Cooling Water Train 1 Valve Verification Monthly Test" (and Train 2, respectively), were revised to include verification that each isolation valve (CC274, CC275, CC277, and CC278) is in the open position. These

APPARENT CAUSE OF OCCURRENCE (continued):

procedures only verified valve position. Prior to May 2003, there had been no testing performed to verify flow through the HXs.

Operations procedure DB-OP-01002, "Component Operation and Verification", provides guidance to the operator and describes the correct way to verify that a valve is open. It states: "apply force to the handwheel in the close direction and when valve movement in the close direction is verified, re-open the valve." The as-found condition of the valves determined that the valve handwheels (and stem) rotated approximately one-half a turn in the close direction which indicated the valves were open. However, investigation determined that there was no flow through the valves.

Because the valve hand wheels could be moved in the closed direction, as described by procedure, this masked the fact that the valves were not in the open position. Although the valves were added to the drawings and procedures in 1990, no documentation could be found that confirmed flow through the CGA HXs after the documents were revised. Also, no records of maintenance activities could be identified that would have required the closing of these valves. Upon forcibly opening CC274, a leak was identified on the bottom of the CGA Loop 1 HX, apparently due to corrosion. This further indicated that the valves had not been opened for a significant period of time.

The investigation of the four CCW isolation valves found to be closed indicated this condition existed since original cabinet installation. The valves did not appear in plant drawings or procedures until 1990. No maintenance activities were identified that would have closed the valves. With the valves closed, the lines to the CGAs Analyzers did not completely fill with CCW, thereby creating a corrosive environment in the valve seating area. The condition of not having flow through the CGAs was not identified earlier than May 2003 because there was no direct or indirect means of verifying CCW flow through these lines. There was no attempt previous to May 2003 to measure flow through the lines. This issue of no prior flow testing was identified during the latent issues review performed on the CCW System. In order to assess the extent of this condition, the piping configuration for all CCW and Service Water cooled components was evaluated. No additional cases of piping configuration that failed to provide direct or indirect indication of cooling water flow were identified.

Based on the above, it is assumed that these valves have been in the closed position since plant startup in 1977, and this condition was the result of insufficient controls over vendor supplied equipment and configuration of the plant and less than adequate procedure preparation.

The four valves that were discovered to be stuck in the closed position are 1/2-inch gate valves, Powell Model #3462. As identified in CR 03-05204, an extent of condition was conducted to determine other safety-related applications of Powell Model #3462 valves. There did not appear to be any other of these valves installed in the plant.

APPARENT CAUSE OF OCCURRENCE (continued):

Reliance on Non-Safety Grade Instrument Air

During the investigation of the deficiencies discovered with the CGA CCW supply and return valves and the HXs, a deficiency was discovered in the design of the CGAS on June 20, 2003. The system relied on non-safety grade instrument air to remove condensate collected in the moisture trap which is essential for proper operation of the CGAs. Also, during a walkdown of the system to support the investigation of the deficient valve condition, an air regulator was discovered installed upstream of the CGA cabinets. Based on plant maintenance records, it was determined that this regulator has been installed since 1979. It was found set for 25 psig which was a pressure too low to overcome the equivalent of 50 psig spring tension of the moisture trap drain check valves. The regulator did not have an asset number assigned and did not appear on any plant or vendor drawing. This is further evidence of less than adequate control of plant configuration.

The support function that instrument air provided to the CGAS (drainage of the moisture traps) was apparently not recognized to be essential to the operation of the CGAS. Other safety-related systems have had their design reviewed periodically, but the CGAS has not. The air pressure regulator found installed upstream of the CGAS cabinet was not tracked by an asset number and was not documented in any station drawing or procedure. The CGAS installation instructions did not indicate any requirement for a regulator. The CGAS System Description, SD-023, did not substantively refer to the moisture separators or condensate removal. The Updated Safety Analysis Report did not address condensate removal. No station procedure referred to any portion of the CGAS condensate removal configuration. The moisture trap solenoid valves were not periodically exercised, and the moisture trap level switches were not periodically checked. Plant personnel appeared to have limited awareness of the interconnection of instrument air and the CGAS, and there was less than adequate identification and maintenance of information on the design and operation of the CGAS.

ANALYSIS OF OCCURRENCE:

Although these conditions were discovered with the plant in Mode 5 when the CGAs are not required to be operable, the conditions are reasonably assumed to have existed during past plant operating cycles. Technical Specification (TS) 3.6.4.1 requires two independent Containment Hydrogen (Gas) Analyzers to be operable during Modes 1 and 2. Therefore, this condition is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B), any operation or condition prohibited by the plant's TS.

The function of the CGAS is to monitor post-accident hydrogen concentration in the Containment Vessel atmosphere so that procedures can be implemented to keep hydrogen concentration within required limits. The inoperability of the CGAS does not render the physical equipment required to lower containment hydrogen concentration inoperable. However, with the CGAS inoperable, the ability to detect post-LOCA containment vessel hydrogen concentration may be impaired.

ANALYSIS OF OCCURRENCE (continued):

The moisture traps relied on non-safety grade instrument air to drain accumulated condensate. Failure to periodically drain the moisture trap would result in condensate backing up into the analyzer element. This would cause a false off-scale HIGH hydrogen indication. This may lead to premature operation of the Hydrogen Dilution System or the Hydrogen Purge System in conjunction with hydrogen dilution. These systems are manually initiated and administratively controlled in order to assure that the maximum containment repressurization pressure during hydrogen dilution operation (18 psig) does not exceed 50 percent of the Containment Vessel design pressure, consistent with 10 CFR §50.44(f). Premature operation of these Combustible Gas Control Systems would have no adverse effect on the accident mitigation process.

In order to ensure a conservative safety margin, the Combustible Gas Control Systems would be started no later than the time the hydrogen concentration reaches three volume percent. This limit is reached approximately 17 days after the accident. Assuming the loss of instrument air, the moisture traps would not be drained of condensate, and the thermal conductivity elements would be saturated with condensate causing a false HIGH hydrogen concentration indication within a matter of minutes following CGAS initiation. It is reasonable to assume that plant operators would recognize such an indication as an equipment malfunction and utilize an alternate means to measure hydrogen concentration within the Containment Vessel. This alternate capability is provided by the Post Accident Sample System (PASS) [IP]. In the event the CGAS hydrogen monitors are unavailable, hydrogen concentration can be determined from the off-gas and containment atmosphere samples of the PASS. Although the PASS is a non-safety grade system which does not receive essential power and would be unavailable following the assumed loss of offsite power, its availabilility immediately following a LOCA is not essential. Given the minimum 17-day time required to reach the three volume percent of hydrogen concentration, it is reasonable to assume that offsite power would be restored which would allow the sample to be taken and analyzed.

During the investigation of the deficient CGAS valves and HXs, a configuration issue was identified whereby the moisture traps condensate would be drained directly to the floor and would flow to a floor drain. This area is not served by the Emergency Ventilation System and therefore may result in a containment bypass pathway. No design information was identified that justified the open discharge configuration. However, since the air regulator identified in CR 03-05529 was set too low to successfully blowdown collected condensate, no drainage of the moisture traps would have been expected, thus negating any potential containment bypass issue.

To assess the potential safety significance of the identified CGAS conditions, research of regulatory documentation was performed. The NRC initiated a study in November 1999 to develop a framework for risk-informing Part 50. One of the first candidates selected for study was §50.44, "Combustible Gas Control," because the NRC believed that little to no risk significance or benefit may be associated with some of the technical requirements of this regulation. The framework for this study considered both design basis accidents as well as

ANALYSIS OF OCCURRENCE (continued):

severe accidents and used quantitative safety goals. Based on the knowledge of the time, the rule was implemented in November 1978 to control combustible gases, such as hydrogen, that could burn or detonate and thereby challenge the integrity of containment. Other regulatory provisions in implementing documents, such as Regulatory Guide 1.7 to which the DBNPS is committed, have imposed additional requirements beyond those stated in §50.44 (e.g., safety-grade continuous monitors for measuring hydrogen concentration). From the study performed by the NRC, for design basis accident conditions in large, dry containments like that of the DBNPS, hydrogen combustion is not a significant threat to the integrity of the Containment Vessel. Based on advances in the NRC's understanding of the risk to nuclear power plants from the production and combustion of hydrogen, the NRC concluded that the hydrogen release postulated from a design basis LOCA is not risk-significant because it would not lead to containment failure. However, the NRC determined that §50.44 should retain the requirement for measuring the concentration of hydrogen in containment because hydrogen monitoring following severe accidents is useful to assess the degree of core damage that can facilitate emergency response decision-making. Therefore, from a design basis accident perspective, inoperability of the CGAs is not risk significant as determined by the NRC study. From a severe accident perspective, the ability to measure hydrogen is useful for emergency assessment purposes. However, with the CGAs inoperable, an alternate capability to measure containment hydrogen concentration is provided by the PASS. On September 25, 2003, NRC regulation 10 CFR, §50.44 was revised to incorporate these positions. Based on this NRC determination and rule change, the inoperable condition of the CGAS is of minimal safety significance.

The apparent inoperability of the CGAS during past plant operation had minimal safety significance and would have reasonably been addressed by operator action to either initiate Hydrogen Control Systems or perform alternate sampling.

CORRECTIVE ACTIONS:

Engineering Change Request 03-0284 was issued to modify the CGAS. The CGA HXs and relief valves have been replaced. Gate valves CC274, CC275, CC277, and CC278 have been permanently removed from the CGAS and replaced with pipe spools. In the original configuration, the non-safety function of the valves provided redundant CCW isolation. Existing CCW valves installed upstream (CC238 and CC239) and downstream (CC243 and CC242) of the CGA HXs provide isolation when required. Upon completion of the corrective action to remove the redundant CGAS HX valves (CC274, CC275, CC277, and CC278) and replace the HXs and relief valves, a flow check was performed on the cooling side of the HXs to verify proper CCW flow through the HXs.

The CGAS Moisture Removal System has been modified by Engineering Change Package 03-0384 to eliminate operational reliance on non-safety grade instrument air. The moisture separator drain check valves and the moisture

CORRECTIVE ACTIONS (continued):

trap drain check valves have been replaced with solenoid valves. Power to these solenoid valves is essential and independent. Components employed to remove the condensate are safety related and seismic category I. As an enhancement action, condensate drainage is now directed via tubing from the CGAS cabinets to an existing Emergency Core Cooling System floor drain. The air regulator found outside and upstream of the CGAS cabinets has been removed and its instrument air line capped. These modifications were completed during 13RFO. As part of this corrective action, procedure DB-OP-06251, "Station and Instrument Air System Operating Procedure," Attachment 11, "Instrument Air System Manual Blow Down List," was revised on November 5, 2003, to reflect the modified component configuration.

As part of this modification, condensate drainage is now directed from the CGAS cabinets to an existing Emergency Core Cooling System floor drain. While the flowpath to the floor drain is not entirely within the area served by the Emergency Ventilation System, no adverse effects from the increase in containment bypass leakage have been created. For adverse containment bypass leakage to exist following a LOCA, radioactive iodine must be transported to the air. The organic form of iodine is less soluble and will not be separated from the air-steam mixture passing through the moisture separators within the CGAS. Therefore, this form of iodine will not be transported by the discharged condensate. The elemental form of iodine is more soluble and will be transported by the condensate; however, the solubility of elemental iodine decreases the probability of it separating from the condensate once it is discharged directly into the floor drain. Because the condensate is directed into a floor drain, there is no opportunity for evaporation, and the elemental iodine remains in solution and is directed via the floor drain to a closed sump that is served by the Emergency Ventilation System. Therefore, no adverse effects due to containment bypass leakage will occur.

Due to the lack of preventive maintenance performed on the CGAS, a preventive maintenance program for CGAS components will be developed by March 31, 2004, to preclude recurrence of the equipment conditions identified in CRs 03-03398 and 03-04871. The preventive maintenance program shall include CCW flow verification, with the first surveillance completed not later than 14RFO.

The investigation of the conditions identified in this Licensee Event Report determined that the issues affecting less than adequate control over vendor supplied equipment and plant configuration, less than adequate procedure preparation, and less than adequate control of design and operation of the CGAS occurred as early as original plant design and into the 1980's. These are latent issues for which recurrence should be prevented by recently instituted business practices and procedures. These include:

NOPL-CC-0001, "FENOC Engineering Principles and Expectations," which requires, in part, that all technical work be completed in writing; and all technical decisions be peer checked, reviewed, and appropriately approved. Also, the program owner is to ensure that program implementing documents are clear, up-to-date, and compliant with regulatory requirements.

CORRECTIVE ACTIONS (continued):

NOP-CC-2001, "Design Verification," provides methods of design verification to assure that the design meets the specified design inputs. This includes design engineers addressing equipment design considerations, functional and physical interfaces, and operational requirements under various plant conditions.

NOP-CC-2004, Revision 1, "Design Interface and Evaluations," requires engineering activities to be evaluated by potentially affected organizations to assure the adequacy of design requirements, licensing basis, training requirements, and affected documents.

FAILURE DATA:

There have been no previous LERs as a result of inoperability of the CGAS in the last three years. On July 7, 2000, LER 2000-005, "Main Steam Drain Valve Left Open Rendering Auxiliary Feedwater Pump Turbine Inoperable", was submitted to the NRC due to a valve being left open during a weekly condensate drain of the piping. The corrective actions taken in response to the 2000 event would not have prevented this current event because this reported event is a different issue in that this condition was the result of insufficient controls over vendor supplied equipment and configuration of the plant.

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

NP-33-03-005-01

CR 03-03398
CR 03-04882
CR 03-05529
CR 02-07169
CR 03-04871
CR 03-05204
CR 03-05605
CR 02-08008