ENERGY NORTHWEST
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P.O. Box 968 • Richland, WA • 99352-0968

May 10, 2005
GO2-05-089

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397**
LICENSEE EVENT REPORT NO. 2005-002-00

Dear Sir or Madam:

Transmitted herewith is Licensee Event Report No. 2005-002-00 for the Columbia Generating Station. This report is submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(D). The enclosed report discusses items of reportability and corrective actions taken.

If you have any questions or require additional information, please contact Mr. GV Cullen at (509) 377-6105.

Respectfully,

WS Oxenford
Vice President, Technical Services
Mail Drop PE04

Enclosure: Licensee Event Report 2005-002-00

cc: BS Mallett – NRC RIV
BJ Benney – NRC-NRR
INPO Records Center
NRC Sr. Resident Inspector – 988C (2)
RN Sherman – BPA/1399
WA Horin – Winston & Strawn
WB Jones – NRC RIV/fax

IE22

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington DC 20555-0001, or by Internet e-mail to Infocollects@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 an 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
Columbia Generating Station	05000397	1 OF 4

4. TITLE

High Pressure Core Spray System Inoperability Due to Cracks in the Pump Motor's Upper Air Deflector.

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
03	16	05	2005	-002	-00	05	10	05	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE

1

10. POWER LEVEL

100

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

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203 (a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☒ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER *(Include Area Code)*
Michael K. Brandon – Principal Engineer, Licensing	509-377-4758

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
Maint	BG	MO	GE	Yes					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On March 16, 2005, Energy Northwest took the High Pressure Core Spray (HPCS) pump out of service to investigate the source of a motor oil leak. During the course of this inspection, personnel discovered cracks in the HPCS pump motor upper air deflector. The root cause for the degraded air deflector is critical dimensions were not maintained during the motor reassembly process in 1992. The degraded air deflector was removed and replaced within the completion time allowed by the Technical Specifications. Long term corrective actions include the development and implementation of a procedure to ensure Energy Northwest has or obtains the available critical information and vendor representation necessary to successfully perform major overhaul or refurbishment work on significant plant equipment. Prior to completing refueling outage17, a visual examination of selected large motors will be performed.

This event did not adversely affect the health and safety of the public. Although this event is reported as a safety system functional failure, the ability and the duration of the system to perform its safety function in the as-found condition is the subject of a separate evaluation. By plant design, the emergency core cooling functions can be performed by several diverse systems that were not impacted by this condition. A similar event was reported by Energy Northwest as LER 92-025.

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

Plant Condition

The plant was operating in Mode 1 at 100 percent power at the time of this event.

Event Description

At 0943 PST on March 16, 2005, the High Pressure Core Spray (HPCS) pump [BG-P] was taken out of service for maintenance to investigate the source of an identified motor [MO] oil leak. During the course of this inspection, cracks in the HPCS pump motor upper air deflector were discovered. Energy Northwest personnel determined this constituted a condition that could have prevented the fulfillment of a safety function and was reported under 10 CFR 50.72(b)(3)(v)(D) (refer to event number 41499). Accordingly, this LER is provided in accordance with 10 CFR 50.73(a)(2)(v)(D) and as operations prohibited by the Technical Specifications in accordance with 10 CFR 50.73(a)(2)(i)(B).

Immediate Corrective Action

Corrective actions were taken to restore the HPCS system to an operable status within the 14-day completion time provided in the Columbia Technical Specifications. The degraded air deflector was removed and replaced.

To address the extent of condition for air deflector degradation, Energy Northwest reviewed the systems containing large vertical squirrel-cage induction style motors in safety related applications. Energy Northwest determined the design of the HPCS upper air deflector was unique with respect to other safety related motors for several reasons. Based on this determination, no immediate action for these other motors was deemed necessary.

Cause

The root cause for the degraded air deflector is that critical dimensions were not maintained during the motor reassembly process in 1992 which led to clearance deficiencies between the motor rotor/fan assembly and the air deflector. Lack of detailed design drawings that included critical dimensions led to:

- Incorrect planning for reassembly
- Incorrect upper thrust bearing endplay (work order steps for a different bearing assembly was used)
- Assembly methods that allowed excessive rotor overall travel that caused an up-thrust impact to the air-deflector and caused deformation, dimpling and displacement (air deflector not in rabbet groove)

A significant contributing cause for the degraded air deflector is less than adequate control of critical dimensions during the manufacturing process which led to parts that did not meet manufacturer dimensional specifications.

Further Corrective Action

1. Energy Northwest will develop and implement a site wide procedure and/or modify existing procedures to ensure Columbia has or obtains the available critical information and vendor representation necessary to successfully perform major overhaul or refurbishment work on significant plant equipment that is important to safety or plant reliability.

2. Prior to the completion of refueling outage 17 (commenced on May 7, 2005), Energy Northwest will perform visual examination of selected large motors for indications of damage to air deflectors.

Additional corrective actions are being pursued as identified in the Problem Evaluation Request 205-0175.

Assessment of Safety Consequences

HPCS is a part of the Emergency Core Cooling System (ECCS). Its purpose is to supply water to the reactor vessel over a wide range of accident conditions. For small-break Loss of Coolant Accidents (LOCAs) that do not result in rapid reactor depressurization, the system is designed to maintain reactor water level. For large breaks, the system provides core spray cooling. The ECCS has built-in redundancy, and is comprised of High Pressure Core Spray (HPCS), Low Pressure Core Spray (LPCS) [BM], Low Pressure Coolant Injection (LPCI) [BO] mode of the Residual Heat Removal (RHR) [BO] system and the Automatic Depressurization System (ADS). Failure of the HPCS is bounded within the ECCS single failure analysis.

The condition described in this report did not result in actual failure of HPCS during an event when it was required to operate. The HPCS motor and pump have been successfully tested and run numerous times since 1992 when the air deflector replacement was performed as discussed in the root cause analysis. The ability and duration of the system to perform its safety function in the as-found condition is the subject of a separate evaluation.

This event did not adversely affect the health and safety of either the public or plant personnel. If the failure of HPCS had occurred during an actual event, the ECCS is designed to accommodate this failure and the ECCS safety function could still be performed.

This event is reportable under 10 CFR 50.73(a)(2)(v)(D), "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident." There were no structures, systems or components that were inoperable at the start of the event that contributed to the event.

Similar Events

Energy Northwest performed a review of OE's, LER's, NPRDS/EPIX and Part 21 reports to identify other industry experience in the area of failed air deflectors and oil leaks. For these searches, there were no recent similar events identified. However, a similar event involving the air deflector was reported for Columbia in 1992 (refer to LER 92-025). The conditions associated with the 1992 event and the corrective actions taken were reviewed in detail as part of the root cause investigation of this current failure.

The root cause analysis and corrective actions from this previous event did not prevent recurrence. This root cause analysis did not identify specific procedural or work instruction flaws or weaknesses. It also did not consider that the repair and reassembly performed in 1992 could be subjected to the same causes that resulted in the cracked air deflector at that time. The corrective actions included a review of the applicable procedures. This procedure review did not identify specific deficiencies in procedures involved in repairing the HPCS pump motor that can result in excessive uplift movement and forces. Since this procedure review did not detect any flaws or weaknesses in the applicable procedures, no procedure changes were made.

EIIS information denoted as [XX]