#17

INL INITIAL NOTIFICATION REPORT

Entered By:	E. J. Schuebert
Date Entered:	20 July 2010
Site:	ATR Complex
Responsible Organization:	ATR Operations
Title:	Unplanned Reactor Shutdown due to Loss of Primary Coolant Pump Lubricating Oil
Discussion of Event/Condition:	**Summary:** At 0508 on 23 July 2010 the ATR reactor control room (RCR) received an alarm indicating low lubricating oil pressure for the M-6 primary coolant pump (PCP), one of the two operating PCPs for the current Operating Cycle. **Action Taken:** The annunciator response procedure was entered. The pre-lube (auxiliary) pump for M-6 PCP was started to maintain lubricating oil pressure. Operators responded to the equipment location and observed no oil in the sight glass that provides indication of oil level in the system and local lube oil pressure indications lower than normal. Differential pressure (indication of oil flow) was zero. With indications of a loss of lubricating oil to the PCP, control room operators shutdown the reactor and secured the M-6 PCP. The reactor was scrammed at 0513, scram procedures entered, and the PCP secured at 0533. LWP-13815, "INL Investigation Process" was entered and the event met Appendix A criteria 3 and Appendix C criteria 32. The event was categorized as ORPS reportable at 0639 and notifications to management and the DOE facility representative completed at 0642.
Safety Significance:	Low. Loss of all operating primary coolant pumps is an anticipated event with reactor flow maintained by emergency coolant pumps. In this event primary coolant system flow was maintained by the unaffected operating PCP. Prompt operator action was necessary to prevent or limit the potential for damaging the M-6 PCP, a significant plant component.
Reportability:	Group 4 – Facility Status, Subgroup A – Safety Structure/System/Component Degradation, Sequence Number 1- Performance degradation of any Safety Class or Safety Significant Structure, System, or Component (SSC) that prevents satisfactory performance of its design function when it is required to be operable. Significance category 3

#17

NE-ID--BEA-ATR-2010-0013 FINAL

Occurrence Report
After 2003 Redesign

Advanced Test Reactor

(Name of Facility)

Category "A" Reactors

(Facility Function)

Idaho National Laboratory — Battelle Energy Alliance, LLC

(Site) (Contractor)

Name: SCHUEBERT, EDMOND J
Title: ATR OPERATIONS FACILITY MANAGER **Telephone No.:** (208) 533-4284

(Facility Manager/Designee)

Name: OWENS, MARJORIE A
Title: ATR OPERATIONS FACILITY ADMINISTRATI **Telephone No.:** (208) 533-4563

(Originator/Transmitter)

Name: E. B. CRISWELL **Date:** 07/26/2010

(Authorized Classifier (AC))

1. Occurrence Report Number: NE-ID--BEA-ATR-2010-0013

Unplanned Reactor Shutdown at the Advanced Test Reactor Due To Loss of M-6 Primary Coolant Pump Lubricating Oil

2. Report Type and Date: FINAL

	Date	Time
Notification:	07/27/2010	17:05 (ETZ)
Initial Update:	09/07/2010	17:48 (ETZ)
Latest Update:	10/14/2010	13:04 (ETZ)
Final:	10/14/2010	13:04 (ETZ)

3. Significance Category: 3

4. Division or Project: ATR PROGRAMS

5. Secretarial Office: NE - Nuclear Energy, Science and Technology

6. System, Bldg., or Equipment: ADVANCED TEST REACTOR

7. UCNI?: No

8. Plant Area: PCP

9. Date and Time Discovered: 07/23/2010 05:08 (MTZ)

10. Date and Time Categorized: 07/23/2010 06:39 (MTZ)

11. DOE HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

12. Other Notifications:

Date	Time	Person Notified	Organization
07/23/2010	06:42 (MTZ)	D. Moorman	DOE-ID

13. Subject or Title of Occurrence:

Unplanned Reactor Shutdown at the Advanced Test Reactor Due To Loss of M-6 Primary Coolant Pump Lubricating Oil

---

14. Reporting Criteria:

4A(1) - Performance degradation of any Safety Class or Safety Significant Structure, System, or Component (SSC) that prevents satisfactory performance of its design function when it is required to be operable.

---

15. Description of Occurrence:

At 0508 on July 23, 2010, an alarm was received in the Advanced Test Reactor (ATR) control room indicating low lubricating oil pressure for the M-6 primary coolant pump (PCP). The M-6 PCP was one of two operating PCPs for the current operating cycle. The annunciator response procedure was entered and the pre-lube (auxiliary) pump for M-6 PCP was started to maintain lubricating oil pressure.

Reactor operators responded to the equipment location and observed no oil in the sight glass that provides indication of oil level in the system and local lube oil pressure indications lower than normal. Differential pressure (indication of oil flow) was zero. With indications of a loss of lubricating oil to the PCP, control room operators shut down the reactor and secured the M-6 PCP.

---

16. Is Subcontractor Involved? No

---

17. Operating Conditions of Facility at Time of Occurrence:

The Advanced Test Reactor was operating at nominal full power for Cycle 147A-1.

---

18. Activity Category:

03 - Normal Operations (other than Activities specifically listed in this Category)

---

19. Immediate Actions Taken and Results:

Appropriate levels of BEA management and DOE-ID were notified of this event.

The annunciator response procedure was entered, the reactor was shut down, and M-6 PCP was secured.

M-6 PCP bearing temperatures were monitored and recorded at 5 minute intervals until the pump was secured and a downward trend on temperature was observed. The highest bearing temperature observed was 139 F, well below the limit of 175 F.

---

20. ISM:

6) N/A (Not applicable to ISM Core Functions as determined by management review.)

---

21. Cause Code(s):

A2B6C01 - Equipment/ material problem; Defective, Failed or Contaminated; Defective or failed part

---

22. Description of Cause:

The cause analysis was performed in accordance with LWP-13845, Cause Analysis Program, and identified the following cause:

A2B6C01 - Defective or failed component. A coupling that drives a lubricating oil pump for the PCP bearings experienced an end of life failure. The ensuing loss of lubricating oil to the PCP bearings resulted in bearing damage that will require bearing replacement. (See corrective action #1)

---

23. Evaluation (by Facility Manager/Designee):

The investigation into the loss of the M-6 PCP lubricating oil is more extensive than anticipated. The final occurrence report will be delayed until the investigation is complete. The final report will be submitted by October 14, 2010. DOE-ID has been informed.

Plant operating personnel responded promptly to the low lubricating oil pressure in accordance with approved procedures. The rapid actions to shut down the reactor and secure the M-6 PCP prevented more extensive damage to the PCP components.

---

24. Is Further Evaluation Required?: No

---

25. Corrective Actions
Local Tracking System Name: ICAMS

1.

Repair/Replace the failed lubricating oil pump coupling and damaged PCP bearings.	
Target Completion Date: 11/30/2010	**Tracking ID:** IO-003606

---

26. Lessons Learned:

N/A

---

27. Similar Occurrence Report Numbers:

NE-ID--BEA-ATR-2008-0003

---

28. User-defined Field #1:

GB10

29. User-defined Field #2:

---

30. HQ Keyword(s):

01I--Inadequate Conduct of Operations - Safety System Actuation/Evacuation
05D--Mechanical/Structural - Mechanical Equipment Failure/Damage
05F--Mechanical/Structural - Corrosion/Material Degradation/EOL
12E--EH Categories - Equipment Degradation/Failure
14L--Quality Assurance - No QA Deficiency

---

31. HQ Summary:

On July 23, 2010, an alarm was received in the Advanced Test Reactor (ATR) control room indicating low lubricating oil pressure for the M-6 primary coolant pump. The M-6 pump was one of two operating primary coolant pumps for the current operating cycle. The annunciator response procedure was entered and the pre-lube (auxiliary) pump for the M-6 pump was started to maintain lubricating oil pressure. Reactor operators responded to the equipment location and observed no oil in the sight glass that provides indication of oil level in the system and local lube oil pressure indications lower than normal.

Differential pressure (indication of oil flow) was zero. With indications of a loss of lubricating oil to the primary coolant pump, control room operators shut down the reactor and secured the M-6 pump. The pump bearing temperatures were well below limits.

---

32. DOE Facility Representative Input:

---

33. DOE Program Manager Input:

---

34. Approvals:

Approved by: SCHUEBERT, EDMOND J, Facility Manager/Designee
Date: 10/14/2010
Telephone No.: (208) 533-4284