

# CAUSE ANALYSIS

CR Number

NOP-LP-2001-03

02-03668

Category / Eval Code: CA

**Condition Description and Cause Basis:** Hardware / Degraded Condition Resolution Required?  Yes  No

If Yes, select one

 Repair  Scrap  
 Rework  Use-As-Is**PROBLEM STATEMENT:**

1.) Failure to adequately address chronic/persistent leakage in a timely manner for Reactor Coolant Pumps (1-1, 1-2, 2-1 & 2-2) casing-to-cover gasket leakage.

2.) Reactor Coolant Pumps (1-1, 1-2, 2-1 & 2-2) casing-to-cover gasket leakage.

**APPARENT CAUSE:**

1.) Persistent leakage issue:

Low expectations and standards and a general willingness to accept RCS leakage.

2.) Joint Leakage:

Undocumented recessed machine surface on pump case. This would have affected the gasket compression and subsequent Joint preload.

**DISCUSSION:**

The Reactor Coolant Pumps, P36-1, P36-2, P36-3 and P36-4 have had a chronic leakage problem at the casing-to-cover joints for an extended amount of time. This has been a documented problem for over 15 years. Past attempts to resolve the problem have been unsuccessful. These attempts mostly involved retensioning of the cover studs. The retensioning effort only seemed to reduce the leakage, not to arrest it. Any leakage of these joints is now considered unacceptable per Plant Engineering and site expectations.

**LEAKAGE RESOLUTION:**

While disassembled for maintenance per WO 02-004137-005 for P36-1 and WO 02-004138-006 for P36-2, the problem causing the gasket leakage was found to be a previously undocumented recessed machine surface on the pump case. This machined surface was most likely cut during the original machining operations of the pump case and can potentially lead to an interference fit between the casing and cover which would result in insufficient gasket preload to maintain a leak tight joint. A review of the Byron Jackson fabrication records was unable to confirm this. This condition is documented per CR 02-09674 and has been resolved through ECR 02-805-00. See attached Scanned documents for clarification.

**ENGINEERING FAILURE RESOLUTION:**

Issues of this nature, (failure to adequately address problems) have been discussed and are considered to be resolved. This is per the proposed resolution to CR 02-07525. In the future, a more proactive approach will be taken for matters such as this and Engineering will formally address, and strive to identify and correct the problems in a more timely manner. This has been further reinforced by the adoption of FENOC Engineering Principles and Expectations.

**CORRECTIVE ACTIONS**

C-16

# CAUSE ANALYSIS

CR Number

02-03668

NOP-LP-2001-03

CA-1, Evaluate for an OE.

CA-2, Chamfer the Reactor Coolant Pump covers for P36-1 pump to ensure proper fit and replace the casing-to-cover gaskets. This work is to be accomplished per WO 02-004137-042, ECR 02-805-00 and CR 02-09674. No further actions required for this CR.

CA-3, Chamfer the Reactor Coolant Pump covers for P36-2 pump to ensure proper fit and replace the casing-to-cover gaskets. This work is to be accomplished per WO 02-004138-028, ECR 02-805-00 and CR 02-09674. No further actions required for this CR.

CA-4, Plant Engineering to quantify leakage at the casing-to-cover gaskets of P36-3. Troubleshooting to be completed during this upcoming startup. This task should be worked in conjunction with WO 02-002148-000. If any leakage is found, close this CA and create a new CR to Plant Engineering to evaluate results.

CA-5, Plant Engineering to quantify leakage at the casing-to-cover gaskets of P36-4. Troubleshooting to be completed during this upcoming startup. This task should be worked in conjunction with WO 02-002148-000. If any leakage is found, close this CA and create a new CR to Plant Engineering to evaluate results.

CA-6, Answer to Apparent Cause #1. This CA is being rolled over to CR 02-07525. Issues of this nature, (failure to adequately address problems) have been discussed and will be resolved per resolution of CR 02-07525. It has been agreed that in the future, an assessment of current Engineering capability would be formally documented, and that the actions taken in response to identified weaknesses would be assessed to ensure their adequacy for plant restart. This is further reinforced by the adoption of FENOC Engineering Principles and Expectations.

CA-7, Maintenance to replace the inner and outer casing-to-cover gaskets on the P36-3 pump and implement ECR 02-805-00 for the pump cover during the next Mid-Cycle outage.

CA-8, Maintenance to Replace the inner and outer casing-to-cover gaskets on the P36-4 pump and implement ECR 02-805-00 for the pump cover during RF014.

Process Code	Trend Codes					
HDW	(If cause is T or W)					
Activity Code	Cause Code		Component Code		Cause Org	
	Primary	Cause Code	Type	ID#	Cause Org	
0575	Primary	Q02	Previous CA not adequ		DES	Design Basis Engineering
0575	Secondary	Q02	Previous CA not adequ		PES	Plant Engineering
	Tertiary					

Completed By: SCOTT, L

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