

RTYPE H6.08

PILGRIM NUCLEAR POWER STATION

Procedure No. 8.5.4.3

HIGH PRESSURE COOLANT INJECTION OPERABILITY DEMONSTRATION AND
FLOW RATE TEST AT 150 PSIG



Stop
Think
Act
Review

CONTINUOUS USE

MSTP RELATED

REVISION LOG**REVISION 48****Date Originated 4/06**Pages AffectedDescription

(Revisions 41 through 47 omitted due to MERLIN revision numbering scheme.)

6

Add Tech Spec Amendment 218 to References.

6

Add EN-OP-115, "Conduct of Operations" to References and update title to PNPS 1.3.34, "Operations Administrative Policies and Processes".

6,9

Revise Tech Spec references due to numbering changes in Tech Spec Amendment 218.

REVISION 40**Date Originated 5/05**Pages AffectedDescription

6

Add/clarify titles to various References. Delete nonapplicable Operability Evaluation 98-088 from References.

8,15,19

Add Precaution/Caution to clarify HPCI 23-HO-320 test valve operation. (CR-PNP-2005-02565)

15

Clarify step wording for determining valve position to be recorded.

19

Clarify OPER-16 is part of PNPS 2.2.19.

22

Delete restriction that only CRS can initial for completion of step to log test performance in Station log.

22

Split multi-action step into single action substeps.

REVISION 39**Date Originated 2/04**Pages AffectedDescription

13,14

Revise and clarify HPCI turbine overspeed test. (CR-PNP-2003-04493)

22

Delete restriction that only OA can initial for completion of step to update MSTP.

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1.0 PURPOSE AND SCOPE

This Procedure satisfies the following Technical Specifications for the equipment listed:

TECHNICAL SPECIFICATIONS SURVEILLANCE REQUIREMENT	EQUIPMENT
4.5.C.1.d	P-205, HPCI Pump X-203, HPCI Turbine
4.5.C.1.c 3.13/4.13	MO-2301-3

This Procedure provides instructions to Station personnel for performing an operability test for the HPCI pump and turbine. This Procedure is performed to prove HPCI operability as required for postmaintenance testing or once per operating cycle, as required by the MSTP [Response Commitment RC86-21-04].

2.0 REFERENCES

2.1 DEVELOPMENTAL

[1] FSAR

- (a) Section 6, Core Standby Cooling System
- (b) Section 6.4.1, High Pressure Coolant Injection System

[2] NRCCC Item PAPR 020 (Pre-Evolution Briefing)

[3] Plant Design Changes (PDCs/FRNs/ERs)

- (a) 87-78C, Improvements to Labels, Nameplates on Main Control Room Panels
- (b) 95-34, FS-2354 Setpoint Change
- (c) 00-46, Addition of HPCI Test Loop Adjustable Orifice Valve 23-HO-320

[4] PNPS Elementary Diagrams for HPCI System; M1J16-10, M1J17-12, and M1J20-5

[5] PNPS Connection Diagram for Nuclear Control Panel C903, E226 Sh 19

[6] PNPS Internal Wiring Diagram for Control Panel C903, M1P508-12

[7] Response Commitment, RC86-21-04

[8] RFI 91-647, Turbine Speed Limitations

[9] Technical Specifications

(a) Amendment 149 (Section 3.13), Inservice Code Testing

(b) Amendment 156, Increase Allowed Out of Service Time

(c) Amendment 218, Containment Oxygen and Differential Pressure Limits

2.2 IMPLEMENTING

[1] PNPS Calculation M911, "HPCI System Hydraulic Calculation"

[2] Procedures

(a) EN-OP-115, "*Conduct of Operations*"

(b) PNPS 1.3.34, "*Operations Administrative Policies and Processes*"

(c) PNPS 2.1.19, "*Suppression Chamber Temperatures*" (OPER-16)

(d) PNPS 2.2.21, "*High Pressure Coolant Injection System (HPCI)*"

(e) PNPS 8.A.15, "*HPCI System Integrity Surveillance*"

[3] SE 3260, Revised Pump Test Acceptance Criteria Based on Design Basis Hydraulics Analysis and System Performance Requirements

[4] Technical Specifications Sections

(a) 3.5.c

(b) 4.5.c

(c) 3.7.A.1.d

(d) 3.7.A.1.e

(e) 3.7.A.1.f

(f) 3.7.A.8.b

(g) 3.7.A.8.c

3.0 DEFINITIONS

None

4.0 DISCUSSION

The HPCI System's purpose is to ensure the Reactor core is adequately cooled to limit fuel cladding temperature in the event of a small break in the nuclear system and loss-of-coolant which does not result in rapid depressurization of the vessel. This Procedure demonstrates the operability and verifies flow rate at approximately 150 psig steam pressure. The performance of this Procedure satisfies Technical Specifications Section 4.5.C.1.d.

PNPS Calculation M911 provides the acceptance criteria used in this Procedure to assure that the HPCI pump demonstrates the required capacity before exceeding the 150 psig Reactor pressure.

When the HPCI pump test corresponding to a Reactor pressure of 150 psig is performed, the HPCI pump shall deliver at least 4250 GPM.

5.0 SPECIAL TOOLS AND EQUIPMENT

- [1] PNPS 2.1.19, Form OPER-16
- [2] M&TE 0-500 or 0-600 psig pressure gauge
- [3] M&TE 0-5000 RPM tachometer with 0.1% accuracy of reading

6.0 PRECAUTIONS AND LIMITATIONS

6.1 PRECAUTIONS

- [1] If any abnormal condition(s) occurs during testing, then terminate the test at once and investigate the condition.
- [2] If the Core Spray/Emergency Core Cooling Systems (CS/ECCS) automatically initiate during the performance of this test, then terminate the test and restore the HPCI System to normal operating condition.
- [3] Do not stop the Auxiliary Oil Pump until the turbine has come to rest.
- [4] HPCI System should not normally be initiated with the Exhaust Line Vacuum Breaker Isolation Valves (MO-2301-33, MO-2301-34, 23-HO-230, and/or 23-HO-231) closed to avoid a water hammer caused by trapped water.
- [5] Do not start the HPCI turbine with the HPCI System Injection Mode push button for the 150 psig operability demonstration. Depressing the push button will cause HPCI to start and inject into the Reactor Vessel.
- [6] MO-2301-14 (PUMP MIN FLOW VLV) will not open automatically unless an initiation signal is present and flow is less than 550 GPM.

- [7] During normal operation, the HPCI turbine should not be run below 2000 RPM. Below 2000 RPM, intermittent exhaust flow will cause water hammer in the exhaust line. If HPCI turbine operation below 2000 RPM is required to achieve and/or maintain adequate core cooling, then the HPCI turbine should not be run below 1000 RPM. This will ensure adequate oil pressure to the control oil system and bearing lubrication. The time the HPCI turbine is run below 2000 RPM should be kept to a minimum.
- [8] HPCI and RCIC isolations will occur if Reactor pressure drops below approximately 80 psig.
- [9] Pump suction and return lines to the Condensate Storage Tanks **MUST** be in the **LOCKED OPEN POSITION** whenever HPCI is operable to prevent overpressurizing the low pressure piping at the Condensate Storage Tanks during a HPCI test.
- [10] The HPCI Test Line Adjustable Orifice Valve, 23-HO-320, has a reverse acting valve handwheel. Turn the handwheel **CLOCKWISE** to open the valve and **COUNTERCLOCKWISE** to close the valve. Valve position can be observed via the indication of the valve yoke.
- [11] Test parameters should be verified and/or recorded to within one-half of the smallest subdivision on the instrument face.
- [12] Installation and removal of pipe caps and test gauges require the use of plastic bags with absorbent material to contain potentially contaminated leakage.
- [13] For work in High Radiation Areas, maintain personnel exposure ALARA by using low dose areas as much as possible. Notify ALARA of any unusual exposure concerns.
- [14] To decrease the potential of radiation exposure to support personnel stationed in the Reactor Building during test performance, the hydrogen flow rate for Hydrogen Water Chemistry may be reduced.

6.2 LIMITING CONDITIONS FOR OPERATION - TECHNICAL SPECIFICATIONS (TS)

[1] TS Section 3.5.C.1

The HPCI System shall be operable whenever there is irradiated fuel in the Reactor Vessel, Reactor pressure is greater than 150 psig, and Reactor coolant temperature is greater than 365°F; except as specified in TS Section 3.5.C.2 (Step 6.2[2] below).

[2] TS Section 3.5.C.2

From and after the date that the HPCI System is made or found to be inoperable for any reason, continued Reactor operation is permissible only during the succeeding fourteen days unless such system is made operable sooner, provided that during such fourteen days all active components of the ADS System, the RCIC System, the LPCI System, and both Core Spray Systems are operable.

[3] TS Section 3.5.C.3

If the above requirements of Steps 6.2[1] and [2] cannot be met, an orderly shutdown of the Reactor shall be initiated and the Reactor shall be in Cold Shutdown condition within 24 hours.

[4] TS Section 3.2.B

The Limiting Conditions for Operation for the instrumentation that initiates or controls the core and containment cooling systems are given in TS Table 3.2.B. This instrumentation must be operable when the system(s) it initiates or controls is required to be operable as specified in TS Section 3.5.

[5] TS Section 4.7.A.1.b

Whenever there is testing which adds heat to the Suppression Pool, temperature shall be continually monitored and also observed and logged every 5 minutes until the heat addition is terminated.

[6] TS Section 3.7.A.1.d

Maximum suppression pool bulk temperature during RCIC, HPCI, or ADS operation shall be $\leq 90^{\circ}\text{F}$, except as specified in TS Section 3.7.A.1.e (Step 6.2[7]).

[7] TS Section 3.7.A.1.e

In order to continue Reactor power operation, the suppression chamber pool bulk temperature must be reduced to $\leq 80^{\circ}\text{F}$ within 24 hours.

[8] TS Section 3.7.A.1.f

If the suppression pool bulk temperature exceeds the limits of TS Section 3.7.A.1.d (Step 6.2[6]), then RCIC, HPCI, or ADS testing shall be terminated and suppression pool cooling shall be initiated.

[9] TS Section 3.7.A.8.b

The differential pressure (between the Drywell and suppression chamber) may be reduced to less than 1.17 psid for a maximum of 4 hours for maintenance activities on the differential pressure control system and during required operability testing of the HPCI System, the relief valves, the RCIC System, and the Drywell-suppression chamber vacuum breakers.

6.3 ADMINISTRATIVE LIMITS

- [1] HPCI shall be declared inoperable and actions taken in accordance with Technical Specifications requirements whenever MO-2301-4 (Inboard Steam Isolation Valve) is closed and HPCI is required to be operational in accordance with Technical Specifications Section 3.5.C.1. [RC99.1028]

7.0 PREREQUISITES

Initials

7.1 REASON FOR TEST
(Check applicable listing and initial)

- Normal Refueling Outage (Startup) Surveillance _____
- Postmaintenance MR# _____
- Other (specify) _____

7.2 SURVEILLANCE DATA CONTROL

[1] This surveillance requires operation and verification of equipment both from the Control Room and locally. The surveillance shall be directed from the Control Room and the official copy shall remain there. The Operator performing the local operations shall take a working copy of the Procedure to the field. The Control Room Operator shall sign off those steps verified/performed in the Control Room on the official copy. The local Operator shall sign off the steps verified/performed locally on the working copy. At the completion of the surveillance, the local Operator will transcribe signoffs to the official copy in the Control Room. The Control Room Supervisor shall verify that all required signoffs have been made on the official copy. The local working copy shall then be discarded.

[2] Personnel assigned to perform this Procedure have read the applicable sections/steps of this Procedure and understand their required involvement. All personnel involved must print their name and sign their initials below.

_____	_____	_____	_____
Name (print)	Initials	Name (print)	Initials
_____	_____	_____	_____
Name (print)	Initials	Name (print)	Initials
_____	_____	_____	_____
Name (print)	Initials	Name (print)	Initials

[3] Notify Radiation Protection (RP) of the performance of this test and request an RP representative attend the Pre-Evolution Brief.

CRS Init.

- [4] Obtain Shift Manager's (SM) permission to start test and complete a Pre-Evolution Brief Checklist (see Section 6.10 of PNPS 1.3.34). Attach Checklist to this surveillance to be filed when completed. [NRCCC Item P APR 020]

SM _____ Date _____ Time _____
 Signature

7.3 GENERAL

CAUTION

At least one 10" low pressure manual block valve to the Condensate Tanks (26-HO-58 and/or 26-HO-59) must be open to preclude rupturing the test return line.

- | | <u>Initials</u> |
|---|-----------------|
| [1] Verify valves are aligned in the normal standby lineup in accordance with PNPS 2.2.21 OR deviations have been evaluated and DO NOT prevent performing this surveillance. | _____ |
| [2] Verify Reactor is operating at approximately 150 psig (135 to 150 psig). | _____ |
| [3] Ensure the LPCI System and both Core Spray Systems are operable. [EXIT COMMITMENT EC87-51-02] | _____ |
| [4] PNPS 8.A.15 may be performed in conjunction with this Procedure. Refer to the MSTP to determine whether PNPS 8.A.15 is due within a month. | _____ |
| [5] Notify Maintenance to perform the steps necessary to install and set up for local hand-held tachometer on the HPCI turbine/pump. | _____ |
| [6] Have Maintenance install an M&TE pressure gauge (0 to 500, 0 to 600 psig range) at PI-2357 on Rack C2250 as follows: | |
| (a) Close or verify closed PI-2357 drain valve. | _____ |
| (b) Remove cap at PI-2357 drain valve and install M&TE gauge, using high pressure hose, at same elevation as PI-2357. | _____ |
| [7] Place the RHR System in the Torus Cooling mode in accordance with PNPS 2.2.19 to assure adequate mixing of Torus water and to maintain the temperature below Technical Specifications limits. | _____ |

8.0 PROCEDURE

8.1 HPCI 150 psig OPERABILITY AND FLOW RATE TEST

8.1.1 Prestart Checks

NOTE

If the turbine stop and control valves have been cycled and all oil pressures adjusted prior to this test, Steps 8.1.1[1] through [15] may be marked "N/P".

	<u>Initials</u>								
[1] START P-229, AUX OIL PUMP.	_____								
[2] VERIFY OPEN the following valves:									
• HO-2300-23, HPCI Turbine Steam Inlet Stop Valve	_____								
• HO-2301-24, HPCI Turbine Steam Inlet Control Valve	_____								
[3] VERIFY OR ADJUST (using Supply Cock HO-2301-119) AND RECORD turbine thrust bearing oil pressure.									
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"><u>Equipment</u></th> <th style="width: 30%;"><u>Acceptance Criteria</u></th> <th style="width: 30%;"><u>Indication</u></th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>Thrust Bearing</td> <td>15 to 17 psig</td> <td>_____ psig</td> <td style="text-align: center;">_____</td> </tr> </tbody> </table>	<u>Equipment</u>	<u>Acceptance Criteria</u>	<u>Indication</u>		Thrust Bearing	15 to 17 psig	_____ psig	_____	
<u>Equipment</u>	<u>Acceptance Criteria</u>	<u>Indication</u>							
Thrust Bearing	15 to 17 psig	_____ psig	_____						
[4] VERIFY OR ADJUST (using Supply Cock 23-HO-122) AND RECORD turbine outboard bearing oil pressure.									
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"><u>Equipment</u></th> <th style="width: 30%;"><u>Acceptance Criteria</u></th> <th style="width: 30%;"><u>Indication</u></th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>Outboard Bearing</td> <td>10 to 12 psig</td> <td>_____ psig</td> <td style="text-align: center;">_____</td> </tr> </tbody> </table>	<u>Equipment</u>	<u>Acceptance Criteria</u>	<u>Indication</u>		Outboard Bearing	10 to 12 psig	_____ psig	_____	
<u>Equipment</u>	<u>Acceptance Criteria</u>	<u>Indication</u>							
Outboard Bearing	10 to 12 psig	_____ psig	_____						

Initials

- [5] **VERIFY OR ADJUST** (using Supply Cock HO-2301-117) **AND RECORD** turbine inboard bearing oil pressure.

<u>Equipment</u>	<u>Acceptance Criteria</u>	<u>Indication</u>	
Inboard Bearing	10 to 12 psig	_____ psig	_____

- [6] **VERIFY OR ADJUST** (using Supply Cock HO-2301-116) **AND RECORD** pump bearings supply oil pressure.

<u>Equipment</u>	<u>Acceptance Criteria</u>	<u>Indication</u>	
Pump Bearing Supply	20 to 25 psig	_____ psig	_____

- [7] **VERIFY OR ADJUST** (using Supply Cock 23-HO-126) **AND RECORD** overspeed trip oil pressure.

<u>Equipment</u>	<u>Acceptance Criteria</u>	<u>Indication</u>	
Overspeed Trip	20 to 22 psig	_____ psig	_____

- [8] **DEPRESS** HPCI TURBINE TRIP push button on Control Room Panel C903.

- [9] **VERIFY** HO-2300-23, HPCI Turbine Steam Inlet Stop Valve, closes.

- [10] **RELEASE** HPCI TURBINE TRIP push button.

- [11] **VERIFY** HO-2300-23, HPCI Turbine Steam Inlet Stop Valve, opens.

- [12] **TEST** the Overspeed Trip as follows:

- (a) **RECORD** the PI-2031-13 reading: _____
- (b) **MOMENTARILY LIFT THEN RELEASE** the HPCI Overspeed Trip reset knob.
- (c) **VERIFY** closure of HO-2300-23, HPCI Turbine Steam Inlet Stop Valve. [SOER 89-1]
- (d) Following a brief delay, **VERIFY** HO-2300-23, HPCI Turbine Steam Inlet Stop Valve, returns to OPEN position. [SOER 89-1]

Initials

(e) Using PI-2301-13, **VERIFY** the HPCI turbine trip oil pressure repressurizes and indicates the automatic reset has occurred (desired reset pressure 18 to 20 psig).

(1) **RECORD** the PI-2301-13 reading: _____

(2) **IF** indicated pressure remains < 16 psig **OR** > 22 psig, **THEN SUBMIT** a Condition Report **AND CONTINUE** at Step [12](f).

(f) **PROVIDE** additional assurance the Overspeed Trip reset knob as returned to the reset position by manually depressing the Overspeed Trip reset knob.

[13] **STOP** P-229, AUX OIL PUMP.

[14] **VERIFY CLOSED** the following valves:

- HO-2300-23, HPCI Turbine Steam Inlet Stop Valve
- HO-2301-24, HPCI Turbine Steam Inlet Control Valve

8.1.2 HPCI Flow Rate Test At 150 psig

[1] **IF** HWC is in service, **THEN RECORD** the As-Found Hydrogen Water Chemistry (H₂) flow rate as indicated on either Control Room Panel CP600 or Extended Test System (ETS) Panel LB 613/614 located on Turbine Deck 51' elev. (**IF** HWC is not in service, **ENTER** "N/P".)

As-Found H₂ Flow _____ SCFM

[2] **IF** HWC is in service **AND IF** the As-Found H₂ flow rate is greater than 9 SCFM, **THEN ADJUST** the H₂ flow on whichever Hydrogen Controller (HC-601A or HC-601B) is in service to 9 SCFM or less. Hydrogen Controllers are located on ETS Panel LB 613/614 on Turbine Deck 51' elev. (**IF** HWC is not in service, **ENTER** "N/P".)

Initials

[3] **OPEN** the following two drain valves downstream of MO-2301-9 **AND DRAIN** to CRW.

- 23-HO-52, HPCI Pump Discharge Line Drain Valve Downstream MO-2301-9 _____
- 23-HO-53, HPCI Pump Discharge Line Drain Valve Downstream MO-2301-9 _____

[4] **AFTER** 2 minutes, **CLOSE** the following valves (Independent Verification required):

- 23-HO-52, HPCI Pump Discharge Line Drain Valve Downstream MO-2301-9
- 23-HO-53, HPCI Pump Discharge Line Drain Valve Downstream MO-2301-9

Initials	Ind.Ver.
Initials	Ind.Ver.

CAUTION

The HPCI Test Line Adjustable Orifice Valve, 23-HO-320, has a reverse acting handwheel. Operate the handwheel as follows:

- **CLOCKWISE** to **OPEN** the valve.
- **COUNTERCLOCKWISE** to **CLOSE** the valve.

Valve position can be observed via the indication on the valve yoke.

[5] **RECORD** position of 23-HO-320, HPCI Test Line Adjustable Orifice Valve, from the indicator on the valve yoke.

Position _____

[6] **UNLOCK** 23-HO-320, HPCI Test Line Adjustable Orifice Valve. _____

[7] **FULLY OPEN** 23-HO-320, HPCI Test Line Adjustable Orifice Valve. _____

(a) **COUNT AND RECORD** the number of turns required to fully open 23-HO-320.

Number of Turns _____

[8] **VERIFY** lubricant level for the booster pump is visible. _____

Initials

- [9] **INITIATE PNPS 2.1.19 AND MONITOR** the TORUS WATER TEMPERATURE on Form OPER-16 every 5 minutes as indicated on temperature indicators TI-5021-01A and TI-5022-01B until the heat addition has been terminated. _____
- [10] **START P-223, GLAND SEAL CONDENSER BLOWER.** _____
- [11] **VERIFY OR PLACE FIC-2340-1, INJECTION FLOW CONTROL**, on Control Room Panel C903 in **AUTO AND SET** at greater than or equal to 4250 GPM. _____
- [12] **OPEN MO-2301-15, HPCI/RCIC TEST RETURN VLV.** _____
- [13] **JOG OPEN MO-2301-10, HPCI FULL FLOW TEST VLV**, for approximately 6 seconds. _____

NOTE

Startup of the HPCI turbine requires performance of the following two steps, [14](a) and (b), in rapid succession. Ensure a second Operator is stationed at Panel C903 with a stopwatch to perform the valve timing.

CAUTION

When starting the HPCI turbine, the Auxiliary Oil Pump must not be started prior to opening MO-2301-3.

If the HPCI turbine trips, then maintain the turbine trip with the push button and secure the Auxiliary Oil Pump after the turbine comes to rest. **DO NOT** allow the turbine to restart while coasting down. [SIL 336]

- [14] **START** the HPCI turbine by performing the following steps in rapid sequence:

- (a) **OPEN MO-2301-3, TURBINE SUPPLY VLV, AND TIME** the opening:

<u>Equipment</u>	<u>Acceptance Criteria</u>	<u>Opening Time</u>
MO-2301-3	≤ 37.5 sec	_____ sec

- (b) **START P-229, AUX OIL PUMP.** _____

Initials

[15] At Rack C2250, **SLOWLY OPEN AND THROTTLE** PI-2357 drain valve to obtain a stable discharge pressure reading on M&TE pressure gauge while pump is in service.

[16] **ESTABLISH** the following:

(a) **VERIFY OR ADJUST** FIC-2340-1 to maintain flow \geq 4250 GPM on FI-2340-1-1 (Panel C903).

(b) **ADJUST** MO-2301-10 (HPCI FULL FLOW TEST VLV) to attain the following values:

(1) Flow \geq 4250 GPM on FI-2340-1-1 (Panel C903)

AND

(2) Pump discharge \geq 255 psig on M&TE pressure gauge at PI-2357 (Panel C2250)

AND

(3) Turbine speed \leq 2340 RPM on M&TE hand-held tachometer.

[17] **PRIOR** to recording operability data, **ALLOW** for the turbine pump system to stabilize.

[18] **RECORD** the following:

(a) Pump Flow Rate _____ GPM (FI-2340-1-1)

(b) Pump Disch Press _____ psig (M&TE pressure gauge at PI-2357 on Panel C2250)

(c) Turbine Speed _____ RPM (M&TE tachometer)

(d) Reactor Vessel Press _____ psig (PR/FR-640-27, Panel C905)

[19] **WHEN** the turbine/pump parameters are stable, **THEN SLOWLY DECREASE** the FIC-2340-1 setpoint tape to 3500 GPM **AND VERIFY** the pump flow rate responds accordingly.

NOTE

Alarm "HPCI TURBINE TRIP" (C903C-A2) should annunciate and then clear during the next step.

- | | <u>Initials</u> |
|---|-----------------|
| [20] STOP the HPCI turbine by performing the following steps: | |
| (a) DEPRESS AND HOLD the TURBINE TRIP push button on Panel C903. | _____ |
| (b) CLOSE MO-2301-3, TURBINE SUPPLY VLV. | _____ |
| (c) IF HPCI nitrogen purge is available, THEN PLACE Turb Exh N ₂ Purge flow in "PURGE" position using the locking finger. (IF not available, ENTER "N/P".) | _____ |
| (d) WHEN MO-2301-3 is FULLY CLOSED, THEN RELEASE the TURBINE TRIP push button. | _____ |
| [21] WHEN the turbine has come to a complete stop, THEN STOP P-229, AUX OIL PUMP, AND PLACE it in AUTO. | _____ |
| [22] RETURN the FIC-2340-1 setpoint tape to 4250 GPM AND VERIFY it is in AUTO. | _____ |
| [23] IF HPCI Turb Exh N ₂ Purge was placed in service [Step [20](c)], THEN, AFTER approximately 3 minutes, DISENGAGE the N ₂ purge locking finger. (IF not placed in service, ENTER "N/P".) | _____ |
| [24] CLOSE MO-2301-15, HPCI/RCIC TEST RETURN VLV. | _____ |
| [25] CLOSE MO-2301-10, HPCI FULL FLOW TEST VLV. | _____ |
| [26] WHEN annunciator "EXH DRAIN POT LEVEL HI" (C903C-F4) is verified CLEAR, THEN STOP Gland Seal Condenser Blower AND PLACE it in AUTO. | _____ |

CAUTION

The HPCI Test Line Adjustable Orifice Valve, 23-HO-320, has a reverse acting handwheel. Operate the handwheel as follows:

- CLOCKWISE to OPEN the valve.
- COUNTERCLOCKWISE to CLOSE the valve.

Valve position can be observed via the indication on the valve yoke.

Initials

[27] **RESTORE** 23-HO-320, HPCI Test Line Adjustable Orifice Valve, to the position recorded in Step 8.1.2[5], counting the number of turns recorded in Step 8.1.2[7]. (Two Operators required.)

Initials	2nd Oper

(a) **LOCK** 23-HO-320, HPCI Test Line Adjustable Orifice Valve, in the restored position.

[28] **WHEN** TORUS WATER TEMPERATURES stabilize, **STOP TAKING** OPER-16 data (PNPS 2.1.19).

[29] **RESET** HWC System H₂ flow to the pretest flow rate **OR** as otherwise directed by the SM/CRS.

[30] At the discretion of the Shift Manager, **SECURE** Torus Cooling in accordance with PNPS 2.2.19.

[31] **PERFORM** a visual inspection of the HPCI System snubbers, baseplates, and pipe clamps for integrity.

[32] **ATTACH** OPER-16 (PNPS 2.1.19) to this Procedure.

[33] **HAVE** Maintenance remove the M&TE pressure gauge from PI-2357 on Panel C2250.

(a) **CLOSE OR VERIFY CLOSED** PI-2357 drain valve.

(b) **REMOVE** the M&TE gauge.

(c) **INSTALL** pipe cap at PI-2357 drain valve.

8.1.3 Independent Verification

Initials

HAVE a second Operator INDEPENDENTLY VERIFY the following component positions:

	<u>COMPONENT</u>	<u>DESCRIPTION</u>	<u>POSITION</u>	
[1]	MO-2301-3	TURBINE SUPPLY VLV	CLOSED	<u>2nd Oper</u>
[2]	P-229	AUX OIL PUMP	AUTO	<u>2nd Oper</u>
[3]	P-223	GLAND SEAL CONDENSER BLOWER	AUTO	<u>2nd Oper</u>
[4]	FIC-2340-1	INJECTION FLOW CONTROL	AUTO at 4250 GPM	<u>2nd Oper</u>
[5]	MO-2301-15	HPCI/RCIC TEST RETURN VLV	CLOSED	<u>2nd Oper</u>
[6]	MO-2301-10	HPCI FULL FLOW TEST VLV	CLOSED	<u>2nd Oper</u>
[7]	AO-2301-64	GLAND SEAL CONDR DRN BLOCK VLV	CLOSED	<u>2nd Oper</u>
[8]	AO-2301-65	GLAND SEAL CONDR DRN BLOCK VLV	CLOSED	<u>2nd Oper</u>
[9]	PI-2357	PI-2357 DRAIN VALVE (RACK C2250)	CAPPED/ CLOSED	<u>2nd Oper</u>

9.0 ACCEPTANCE CRITERIA

9.1 SECTION 8.1 - HPCI 150 psig OPERABILITY AND FLOW RATE TEST

With Reactor steam pressure \leq 150 psig, the HPCI pump delivers greater than or equal to 4250 GPM with a discharge pressure \geq 255 psig at less than or equal to 2340 RPM.

10.0 CORRECTIVE ACTION

If the test Acceptance Criteria are not met, then immediately notify the SM. The SM shall declare the associated equipment inoperable and follow actions required in accordance with Technical Specifications.

11.0 ACCEPTANCE VERIFICATION AND SIGNOFF

[1] Acceptance Criteria listed in Section 9.0 are:

[] Met [] Not Met

_____ SM signature _____ Date/Time

If all Acceptance Criteria are not met, the following must be completed:

(a) Document any discrepancies observed during the performance of this surveillance:

(b) Surveillance Test Review (see PNPS 1.3.34)

(c) Corrective Action (enter "N/A" if not required)

MR# _____ CR# _____

MR# _____ CR# _____

Other: _____

Initials

- [2] Log the performance of this test in the Station log. _____
- [3] Attach completed copy of PNPS 2.1.19 (OPER-16) to this Procedure. _____
- [4] If Acceptance Criteria Section 9.1 were met, then sign off the Rep Tasks for BOTH:
 - (a) The once per operating cycle 150 psig flow rate test, Rep Task S000650. _____
 - (b) The 150 psig (non-IST) operability demonstration, Rep Task S000651. _____
- [5] A Pre-Evolution Brief has been filed with the completed surveillance. _____
OA
- [6] File the completed Procedure in the file maintained in the Control Room Annex. _____
OA

12.0 ATTACHMENTS

None