

Effective Date 1/20/09

CATEGORY II

MAIN TURBINE

ALARMS

- | | |
|--|----------------|
| • TURBINE GENERATOR TRIP | D3 – A5 |
| • EHC UNIT PANEL 10C363 | D3 - D5 |
| • TCV FAST CLOSURE | C5 – A2 |
| • MAIN STOP VALVE CLOSURE | C5 – B2 |
| • TURBINE GENERATOR VIB HI | D3 – C5 |
| • GEN STATOR CLG WATER SYS TROUBLE | E1 – C1 |
| • GEN COOLING PNL 10C120 POWER FLR | E1 – D1 |
| • GENERATOR H ₂ /SEAL OIL SYS TROUBLE | E1 – C3 |
| • GENERATOR TEMPERATURE HI | E1 – B1 |

INDICATIONS

- One or more Turbine trip signals generated.
- Generator output goes to zero.
- Rising vibration trend on any Main Turbine/Generator bearing (CRIDS).
- Generator Stator Water return temperature > 174.2°F (79°C)
- Stator Water inlet pressure ≤ 46.5 psig @ V9968 (≤ 64 psig at PI3607 on 10C120)
- Stator Water Inlet Flow ≤ 690 gpm.
- Decreasing hydrogen pressure/purity.
- Stator water (generator inlet) temperature > 118 °F

TERMINATED Date/Time: _____

RETAINMENT OVERRIDE	
CONDITION ACTION	
I. Loss of Stator Cooling for > 2 min. <u>AND</u> Reactor Power > 24% Date/Time: _____	<p>___ I.A REDUCE Recirc. Pump speed to MINIMUM.</p> <p>___ I.B LOCK the Mode Switch in SHUTDOWN.</p> <p>___ I.C TRIP the Main Turbine.</p>
II. Bearing 1–10 Vibration \geq 11 mils @ 1800 RPM * Bearing 11–12 Vibration \geq 7 mils @ 1800 RPM * Date/Time: _____	<p>___ II.A <u>IF</u> Reactor Power is \geq24% <u>THEN</u> PERFORM the following:</p> <p>___ a. REDUCE Recirc. Pump speed to MINIMUM.</p> <p>___ b. LOCK the Mode Switch in SHUTDOWN.</p> <p>___ II.B IMMEDIATELY TRIP the Main Turbine.</p>
III. Failure of Main Turbine to runback on a Loss of Stator Water Cooling. Date/Time: _____	<p>___ III.A REDUCE Recirc Pump speed to MINIMUM.</p> <p>___ III.B LOCK the Mode Switch in SHUTDOWN.</p>
* Vibration Limits may be exceeded during testing evolutions under an approved test plan with Engineering concurrence.	

ADDITIONAL INFORMATION:

Valves:

- 1–AB-HV-1026, M/S LEAD DRAIN S/U VLV.
- 1–AC-HV-1041/1042/1043, XAROUND STM LN DRN's.
- 1–AC-HV-1013A(B,C), MSV BEFORE SEAT DRN's.
- 1–AC-HV-1015, CV BEFORE SEAT DRAIN.
- 1–AC-HV-1017A(B), CV #1 & #2 STM LEAD DRN.
- 1–AC-HV-1018A(B), CV #3 & #4 STM LEAD DRN.
- 1–FW-HV-3719, RFP TURB MN STM DRN.

IMMEDIATE OPERATOR ACTIONS

CONDITION	ACTION
Bearing 1–10 Vibration \geq 12 mils @ 1800 RPM Bearing 11–12 Vibration \geq 8 mils @ 1800 RPM Date/Time: _____	_____ A. <u>IF</u> Reactor Power is \geq 24% <u>THEN LOCK</u> the Mode Switch in Shutdown. _____ B. IMMEDIATELY TRIP the Main Turbine.
Reactor Power \geq 24%. <u>AND</u> Turbine trip has occurred. Date/Time: _____	_____ LOCK the Mode Switch in Shutdown.

AUTOMATIC ACTIONS

IF	THEN
Main Turbine Trip	<ul style="list-style-type: none"> • Turbine Stop, Control and Combined Intermediate Valves close. • Turbine Bypass Valves Open to control pressure. • Generator output and field breakers open. • Generator lockout.
Turbine Trip Signal (as sensed by low air pressure downstream of the Air Relay Dump Valves (AC-PSL-1389)).	The following drain valves OPEN: <ul style="list-style-type: none"> • AB-HV-1026 • AC-HV-1041/1042/1043A(B, C) • AC-HV-1013A (B, C, D) • AC-HV-1015 • AC-HV-1018A(B) • AC-HV-1017A(B) • FW-HV-3719
Stator Water Cooling: <ul style="list-style-type: none"> • Supply header Pressure < 64 psig at PI3607 on 10C120 <u>OR</u> • Generator Stator Water Return Temperature 174.2°F (79°C) • Inlet Flow \leq690 gpm 	<ul style="list-style-type: none"> • Turbine-Generator runback if initiating conditions remain for 15 seconds. • Turbine Trip within: <ul style="list-style-type: none"> ➢ 2 minutes of loss of cooling <u>WITH</u> >25,000 Stator Amps (78.84% of rated) ➢ 3.5 minutes of loss of cooling <u>WITH</u> >7,055 Stator Amps (22.25% of rated) • Recirculation Pump Runback to 30% (12 seconds after turbine runback)
110 psig Hydrogen Seal Oil pressure	Emergency Seal Oil pump auto start
Stator Water Cooling Pump Trip	Standby Stator Water Cooling Pump auto start

RETAINMENT OVERRIDE	
CONDITION ACTION	
I. Loss of Stator Cooling for > 2 min. <u>AND</u> Reactor Power > 24% Date/Time: _____	<p>___ I.A REDUCE Recirc. Pump speed to MINIMUM.</p> <p>___ I.B LOCK the Mode Switch in SHUTDOWN.</p> <p>___ I.C TRIP the Main Turbine.</p>
II. Bearing 1–10 Vibration \geq 11 mils @ 1800 RPM * Bearing 11–12 Vibration \geq 7 mils @ 1800 RPM * Date/Time: _____	<p>___ II.A <u>IF</u> Reactor Power is \geq24% <u>THEN</u> PERFORM the following:</p> <p>___ a. REDUCE Recirc. Pump speed to MINIMUM.</p> <p>___ b. LOCK the Mode Switch in SHUTDOWN.</p> <p>___ II.B IMMEDIATELY TRIP the Main Turbine.</p>
III. Failure of Main Turbine to runback on a Loss of Stator Water Cooling. Date/Time: _____	<p>___ III.A REDUCE Recirc Pump speed to MINIMUM.</p> <p>___ III.B LOCK the Mode Switch in SHUTDOWN.</p>
* Vibration Limits may be exceeded during testing evolutions under an approved test plan with Engineering concurrence.	

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RETAINMENT OVERRIDE	
CONDITION ACTION	
I. Loss of Stator Cooling for > 2 min. <u>AND</u> Reactor Power > 24% Date/Time: _____	____ I.A REDUCE Recirc. Pump speed to MINIMUM. ____ I.B LOCK the Mode Switch in SHUTDOWN. ____ I.C TRIP the Main Turbine.
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ADDITIONAL INFORMATION:

Procedures:

- HC.OP-AB.BOP-0001(Q) FEEDWATER HEATING

Valves:

- 1-EG–TIC-2423, MAIN TURB L.O. TEMP. CONTROL VLV, Panel 10C105, 137' Turb Bldg.
- 1-CA-HV-1991, STM SEAL EVAP MN STM.

Equipment:

- 0-P-108, Motor Suction Pump.
- Main Turbine Lift pumps A(B,C,D,E,F,G,H,J)P110
- OP111 Turning Gear Oil Pump
- Unit Protection Lockout Relay 86UR is located in the Upper Relay Room.
- Unit Protection Lockout Relay 86UB (Back up) is located in the Upper Relay Room.
- SWC Pump Control Switches (10C120 Generator H2 & Stator Cooling Water Panel, TB El. 102')

Main Turbine Trips:

- 108% Primary Overspeed
- 110% Emergency Overspeed
- Condenser low vacuum (7.5" Hg A)
- Axial Position +/- 35 mils
- Low bearing oil pressure
- Exhaust Hood high temperature (225°F)
- Loss of Stator Coolant without a successful runback
- Loss of Emergency Trip System
- Low Shaft Driven Oil Pump discharge pressure
- Loss of both speed signals
- Moisture Separator high level
- Reactor water high level
- Generator protective devices actuation
- Load Reject, 40% mismatch
- Manual trip
- Loss of EHC oil pressure

SUBSEQUENT OPERATOR ACTIONS

CONDITION	ACTION
A. Main Turbine Trip	A.1 VERIFY the following CLOSED:
Date/Time: _____	<ul style="list-style-type: none"> • Turbine Control Valves • Turbine Stop Valves • Combined Intermediate Valves
(Continued on Page 9)	A.2 IF the Reactor is NOT Scrammed THEN ENTER Feedwater Heating Abnormal BOP-0001 concurrently.
	A.3 ENSURE the following are running:
	<ul style="list-style-type: none"> • Motor Suction Pump • Turning Gear Oil Pump
	A.4 ENSURE 1-CA-HV-1991 is OPEN to provide Main steam to the Steam Seal Evaporator.
	A.5 WHEN Main Turbine Speed <900 rpm, ENSURE all Main Turbine Lift Pumps running.
	A.6 If necessary: WHEN the cause of the Trip is KNOWN AND CORRECTED , PERFORM the following:
	a. PLACE both Stator Coolant Pump Control Switches to PULL-TO-LOCK.
	b. RESET the Unit Protection Lockout 86 Relays.
	c. PLACE Stator Cooling Water Pump A(B) Control Switch to CLOSE.
	A.7 SET Main Turbine Lube Oil Coolers Temperature Controller 1EG-TIC-2423 for 85°F. [CD-053B]
	(Continued on Page 9)

RETAINMENT OVERRIDE	
CONDITION ACTION	
I. Loss of Stator Cooling for > 2 min. <u>AND</u> Reactor Power > 24% Date/Time: _____	____ I.A REDUCE Recirc. Pump speed to MINIMUM. ____ I.B LOCK the Mode Switch in SHUTDOWN. ____ I.C TRIP the Main Turbine.
II. Bearing 1–10 Vibration \geq 11 mils @ 1800 RPM * Bearing 11–12 Vibration \geq 7 mils @ 1800 RPM * Date/Time: _____	____ II.A <u>IF</u> Reactor Power is \geq 24% <u>THEN PERFORM</u> the following: ____ a. REDUCE Recirc. Pump speed to MINIMUM. ____ b. LOCK the Mode Switch in SHUTDOWN. ____ II.B IMMEDIATELY TRIP the Main Turbine.
III. Failure of Main Turbine to runback on a Loss of Stator Water Cooling. Date/Time: _____	____ III.A REDUCE Recirc Pump speed to MINIMUM. ____ LOCK the Mode Switch in SHUTDOWN. ____ III.B
* Vibration Limits may be exceeded during testing evolutions under an approved test plan with Engineering concurrence.	

ADDITIONAL INFORMATION:

Equipment:

- 0-P-108, Motor Suction Pump.
- Main Turbine Lift pumps A(B,C,D,E,F,G,H,J)P110
- OP111 Turning Gear Oil Pump
- Unit Protection Lockout Relay 86UR is located in the Upper Relay Room.
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- SWC Pump Control Switches (10C120 Generator H2 & Stator Cooling Water Panel, TB El. 102')

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- 110% Emergency Overspeed
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- Low bearing oil pressure
- Exhaust Hood high temperature (225°F)
- Loss of Stator Coolant without a successful runback
- Loss of Emergency Trip System
- Low Shaft Driven Oil Pump discharge pressure
- Loss of both speed signals
- Moisture Separator high level
- Reactor water high level
- Generator protective devices actuation
- Load Reject, 40% mismatch
- Manual trip
- Loss of EHC oil pressure

SUBSEQUENT OPERATOR ACTIONS

CONDITION	ACTION
Continued from page 7 A. Main Turbine Trip	Continued from page 7 ____ A.8 <u>IF</u> Any action taken by Hope Creek resulted in: a. Island loss of ≥ 2000 Mwe generation <u>OR</u> b. Sustained 500 kV voltage excursions <450 kV or >550 kV, <u>OR</u> c. Major damage to 500 kV breakers or transmission network, <u>OR</u> d. Unplanned loss of any offsite transmission line, <u>OR</u> e. Damage to Main Generator, <u>OR</u> f. Damage to Main Generator, Main Transformers or transformer protective relays (A/B/CX500) <u>THEN INFORM</u> SM/CRS to refer to ECG, RAL Section 11.11.1 for NERC reporting requirements. (24 hour)

RETAINMENT OVERRIDE	
CONDITION ACTION	
I. Loss of Stator Cooling for > 2 min. <u>AND</u> Reactor Power > 24% Date/Time: _____	<div>___ I.A REDUCE Recirc. Pump speed to MINIMUM.</div> <div>___ I.B LOCK the Mode Switch in SHUTDOWN.</div> <div>___ I.C TRIP the Main Turbine.</div>
II. Bearing 1–10 Vibration \geq 11 mils @ 1800 RPM * Bearing 11–12 Vibration \geq 7 mils @ 1800 RPM * Date/Time: _____	<div>II.A <u>IF</u> Reactor Power is \geq24% <u>THEN</u> PERFORM the following:</div> <div>___ a. REDUCE Recirc. Pump speed to MINIMUM.</div> <div>___ b. LOCK the Mode Switch in SHUTDOWN.</div> <div>___ II.B IMMEDIATELY TRIP the Main Turbine.</div>
III. Failure of Main Turbine to runback on a Loss of Stator Water Cooling. Date/Time: _____	<div>___ III.A REDUCE Recirc Pump speed to MINIMUM.</div> <div>___ III.B LOCK the Mode Switch in SHUTDOWN.</div>
* Vibration Limits may be exceeded during testing evolutions under an approved test plan with Engineering concurrence.	

NOTES:

1. Raising temperature to high in the band has been known to counteract the effects of "Oil Whip" and reduce vibrations, if this is the cause for the high vibrations.
"Oil Whip" is the phenomenon of the bearing oil being drawn into a cushioning wedge with the shaft rotation. The whip occurs when the viscosity of the oil wedge is great enough for the wedge to be pulled out from under the turbine shaft, causing the shaft to move closer to the bearing surface, reforming the wedge and whipping away again. This whipping action will cause a bump or spike in the shaft's vibration at that point in the turbine and an increase in temperature in the adjacent bearings as they pick up the load. [OE11439]
2. The vibration levels / time limits in Steps B.2 and B.3 are assuming the Main Turbine is @1800 rpm. These limits may be exceeded / extended during testing evolutions under an approved test plan with engineering concurrence. At no time may the immediate operator action bearing vibration threshold values be exceeded.

ADDITIONAL INFORMATION:

Valves:

- 1-EG–TIC-2423, MAIN TURB L.O. TEMP. CONTROL VLV, Panel 10C105, 137' Turbine Bldg.

Procedures:

- HC.OP-SO.MA-0001(Q), MAIN GENERATOR & EXCITOR OPERATION & SWITCHING.
- HC.OP-IO.ZZ-0004(Q) SHUTDOWN FROM RATED POWER TO COLD SHUTDOWN.

SUBSEQUENT OPERATOR ACTIONS (continued)

CONDITION	ACTION
<p>B. Main Turbine high vibration.</p> <p>Date/Time: _____</p>	<p>B.1 PERFORM the following to stabilize rising vibrations:</p> <p>_____ **NOTE 1**</p> <p>_____ ● RAISE Main Turbine Lube Oil Coolers Temperature Controller 1EG-TIC-2423 (110 – 120°F).</p> <p>_____ ● VERIFY adequate bearing oil drain flow for bearing(s) exhibiting elevated vibration levels.</p> <p>_____ ● <u>WITH</u> System Operator concurrence, ADJUST MVAR loading. (MA)</p> <p>_____ ● CONTACT Engineering for additional guidance to lower turbine vibrations.</p> <p>_____ **NOTE 2**</p> <p>_____ B.2 <u>IF</u> Turbine Bearings 1-10 Vibration ≥ 8 mils but < 10 mils</p> <p>_____ <u>THEN</u> PERFORM the following:</p> <p>_____ a. <u>IF</u> $\geq 24\%$ Reactor Power</p> <p>_____ <u>THEN:</u></p> <p>_____ <u>WITH</u> Operations Manager concurrence COMMENCE a controlled shutdown. (IO.ZZ-0004)</p> <p>_____ b. <u>IF</u> Reactor Power $< 24\%$</p> <p>_____ <u>THEN:</u></p> <p>_____ SHUTDOWN the Main Turbine (AC-0001)</p> <p>_____ B.3 <u>WITH</u> Turbine Bearings 1-10 Vibration ≥ 10 mils for 15 minutes</p> <p>_____ <u>THEN</u> PERFORM the following:</p> <p>_____ a. <u>IF</u> $\geq 24\%$ Reactor Power</p> <p>_____ <u>THEN:</u></p> <p>_____ 1. REDUCE Recirc. Pump speed to MINIMUM.</p> <p>_____ 2. LOCK the Mode Switch in SHUTDOWN.</p> <p>_____ 3. TRIP the Main Turbine.</p> <p>_____ b. <u>IF</u> Reactor Power $< 24\%$</p> <p>_____ <u>THEN</u> TRIP the Main Turbine.</p> <p>(Continued on Page 13)</p>

RETAINMENT OVERRIDE	
CONDITION ACTION	
I. Loss of Stator Cooling for > 2 min. <u>AND</u> Reactor Power > 24% Date/Time: _____	____ I.A REDUCE Recirc. Pump speed to MINIMUM. ____ I.B LOCK the Mode Switch in SHUTDOWN. ____ I.C TRIP the Main Turbine.
II. Bearing 1–10 Vibration \geq 11 mils @ 1800 RPM * Bearing 11–12 Vibration \geq 7 mils @ 1800 RPM * Date/Time: _____	____ II.A <u>IF</u> Reactor Power is \geq 24% <u>THEN</u> PERFORM the following: a. REDUCE Recirc. Pump speed to MINIMUM. b. LOCK the Mode Switch in SHUTDOWN. ____ II.B IMMEDIATELY TRIP the Main Turbine.
III. Failure of Main Turbine to runback on a Loss of Stator Water Cooling. Date/Time: _____	____ III.A REDUCE Recirc Pump speed to MINIMUM. ____ III.B LOCK the Mode Switch in SHUTDOWN.
* Vibration Limits may be exceeded during testing evolutions under an approved test plan with Engineering concurrence.	

NOTES:

- Vibration value of \geq 40 mils is based on the potential for bearing damage should bearing clearances be exceeded. CRIDS is limited to 15 mils. Vibration readings > 15 mils can be monitored on Main Control Room System 1 computer or locally at TSI cabinet 10C366.
- Upon Main Turbine and Reactor Feed Pump Trip the applicable drain valves will reposition to OPEN. Should this occur, these valves should be returned to the CLOSED position.

ADDITIONAL INFORMATION:

Valves:

- AB-HV-F016, CTMT INBD STM LINE DRAIN HDR ISLN INBOARD MOV
- AB-HV-F019, CTMT INBD STM LINE DRAIN HDR ISLN OUTBOARD MOV
- 1–CG-HV-1968A1,A2,A3(B1,B2,B3), EJEC A(B) 1ST STG. JET SUCT.
- 1–AB-HV-2016A(B), SJAE A(B) INL VLV.
- 1–CG-HV-1972 A(B,C), CNDSR SEC A(B,C) VAC BKR.
- 1–CA-HV-1991, STM SEAL EVAP MN STM.
- 1–CA-HV-1990A(B), STM PKG EXH FAN A(B).

Equipment:

- AK103(BK103), STEAM PACKING EXHAUSTER FAN.

SUBSEQUENT OPERATOR ACTIONS (continued)

CONDITION	ACTION
(Continued from Page 11)	(Continued from Page 11)
B. Main Turbine high vibration.	<p>**NOTE 3**</p> <p>B.4 <u>IF</u> Bearing Vibration is elevated (>15 mils) following a turbine trip, MONITOR vibration on Main Control Room System 1 computer. <u>IF</u> System 1 is unavailable, <u>THEN</u> DISPATCH an Operator to the TSI cabinet 10C366 to continuously monitor turbine vibration.</p> <p>a. <u>IF</u> sustained Bearing Vibration ≥ 40 mils with turbine speed above the critical speed range of 1200-1250 RPM, <u>AND</u> Turbine damage is imminent <u>THEN</u> BREAK vacuum as follows:</p> <ol style="list-style-type: none"> REDUCE Recirc Pump Speed to MINIMUM. LOCK the Mode Switch in SHUTDOWN. CLOSE the MSIVs <u>AND</u> Main Steam line drains F016/F019. ENSURE the following are CLOSED: <ul style="list-style-type: none"> Main Turbine Stop Valves. Control Valves. Main Turbine Bypass Valves. CLOSE CG-HV-1968 A1, A2, A3 (B1, B2, B3). CLOSE AB-HV-2016A(B). OPEN CG-HV-1972A/B/C <p>**NOTE 4**</p> <ol style="list-style-type: none"> ENSURE the following valves remain CLOSED: <ul style="list-style-type: none"> Reactor Feed Pump Steam Line Drains. Main Steam Line Drains. <u>WHEN</u> Main Condenser Pressure is ≥ 29"HgA, <u>THEN</u>: <ol style="list-style-type: none"> CLOSE CA-HV-1991. STOP AK103 (BK103). OBSERVE HV-1990A(B) CLOSING.

RETAINMENT OVERRIDE	
CONDITION ACTION	
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II. Bearing 1–10 Vibration \geq 11 mils @ 1800 RPM * Bearing 11–12 Vibration \geq 7 mils @ 1800 RPM * Date/Time: _____	____ II.A <u>IF</u> Reactor Power is \geq 24% <u>THEN PERFORM</u> the following: ____ a. REDUCE Recirc. Pump speed to MINIMUM. ____ b. LOCK the Mode Switch in SHUTDOWN. ____ II.B IMMEDIATELY TRIP the Main Turbine.
III. Failure of Main Turbine to runback on a Loss of Stator Water Cooling. Date/Time: _____	____ III.A REDUCE Recirc Pump speed to MINIMUM. ____ LOCK the Mode Switch in SHUTDOWN. ____ III.B
* Vibration Limits may be exceeded during testing evolutions under an approved test plan with Engineering concurrence.	

CAUTIONS:

1. Vacuum should not be broken before speed is reduced to <1200 rpm.
Severe duty is placed on last stage blading above this range. If an emergency condition should arise that requires the turbine to be brought to rest as quickly as possible, it is acceptable to break vacuum immediately upon turbine trip.

NOTES:

5. Upon Main Turbine and Reactor Feed Pump Trip the applicable drain valves will reposition to OPEN. Should this occur, these valves should be returned to the CLOSED position.

ADDITIONAL INFORMATION:

Valves:

- AB-HV-F016, CTMT INBD STM LINE DRAIN HDR ISLN INBOARD MOV
- AB-HV-F019, CTMT INBD STM LINE DRAIN HDR ISLN OUTBOARD MOV
- 1-CG-HV-1968A1,A2,A3(B1,B2,B3), EJEC A(B) 1ST STG. JET SUCT.
- 1-AB-HV-2016A(B), SJAE A(B) INL VLV.
- 1-CG-HV-1972 A(B,C), CNDSR SEC A(B,C) VAC BKR.
- 1-CA-HV-1991, STM SEAL EVAP MN STM.
- 1-CA-HV-1990A(B), STM PKG EXH FAN A(B).

Equipment:

- AK103(BK103), STEAM PACKING EXHAUSTER FAN.

SUBSEQUENT OPERATOR ACTIONS (continued)

CONDITION	ACTION
C. Evidence of physical damage on <u>EITHER</u> : Main Turbine <u>OR</u> Turbine Auxiliaries	<p>___ C.1 REDUCE Recirc Pump Speed to MINIMUM.</p> <p>___ C.2 LOCK the Mode Switch in SHUTDOWN.</p> <p>___ C.3 TRIP the Turbine <u>AND LOCK OUT</u> the Generator.</p> <p>___ ★ CAUTION 1 ★</p> <p>___ C.4 BREAK Main Condenser Vacuum as follows:</p> <p>___ a. CLOSE the MSIVs <u>AND</u> Main Steam line drains F016/F019.</p> <p>___ b. ENSURE the following are CLOSED:</p> <p>___ ● Main Turbine Stop Valves.</p> <p>___ ● Control Valves.</p> <p>___ ● Main Turbine Bypass Valves.</p> <p>___ c. CLOSE CG-HV-1968 A1, A2, A3 (B1, B2, B3).</p> <p>___ d. CLOSE AB-HV-2016A(B).</p> <p>___ e. OPEN CG-HV-1972A/B/C</p> <p>___ **NOTE 5**</p> <p>___ f. ENSURE the following valves remain CLOSED:</p> <p>___ ● Reactor Feed Pump Steam Line Drains.</p> <p>___ ● Main Steam Line Drains.</p> <p>___ g. <u>WHEN</u> Main Condenser Pressure is ≥29"HgA, <u>THEN</u>:</p> <p>___ 1. CLOSE CA-HV-1991.</p> <p>___ 2. STOP AK103 (BK103).</p> <p>___ 3. OBSERVE HV-1990A(B) CLOSES.</p>

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II. Bearing 1–10 Vibration \geq 11 mils @ 1800 RPM * Bearing 11–12 Vibration \geq 7 mils @ 1800 RPM * Date/Time: _____	<p>___ II.A <u>IF</u> Reactor Power is \geq24% <u>THEN</u> PERFORM the following:</p> <p>___ a. REDUCE Recirc. Pump speed to MINIMUM.</p> <p>___ b. LOCK the Mode Switch in SHUTDOWN.</p> <p>___ II.B IMMEDIATELY TRIP the Main Turbine.</p>
III. Failure of Main Turbine to runback on a Loss of Stator Water Cooling. Date/Time: _____	<p>___ III.A REDUCE Recirc Pump speed to MINIMUM.</p> <p>___ III.B LOCK the Mode Switch in SHUTDOWN.</p>
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NOTES:

6. Generator VARS reduction may be secured once Stator Water Cooling is restored and stability guidelines described in A-5-500-EEE-1686 should be reviewed.
7. To determine conductivity prior to the Loss of Stator Water Cooling flow use chart recorder CR-3593B on Panel 10C650.
8. Ensure that conductivity indication/alarm is valid by checking that both the inlet and outlet indicators agree within 0.1 μ mho and are trending similarly. If $>9.9\mu$ mhos the indication is off scale. If indication is $<9.9\mu$ mhos at least 10 minutes should be allowed for indication to stabilize following stator flow restoration.

ADDITIONAL INFORMATION:

Procedures:

- A-5-500-EEE-1686 Artificial Island Operating Guide and Documentation (Engineering Evaluation)

SUBSEQUENT OPERATOR ACTIONS (continued)

CONDITION	ACTION
<p>D. Loss of Stator Cooling</p> <p>Date/Time: _____</p>	<p>D.1 PERFORM the following:</p> <ul style="list-style-type: none"> • START both Stator Water Cooling Pumps <u>AND</u> ENSURE tank level is normal. • ENSURE Reactor Recirculation Pump Runback. • VERIFY Main Turbine Runback. <p style="text-align: center;">**NOTE 6**</p> <ul style="list-style-type: none"> • REDUCE Generator VARS to zero. <p style="text-align: center;">**NOTE 7**</p> <p>D.2 <u>IF</u> Reactor Power $\leq 24\%$</p> <p>a. DETERMINE Stator Cooling conductivity <u>PRIOR</u> to Loss of Stator Water Cooling Flow <u>AND</u> PERFORM the following:</p> <ul style="list-style-type: none"> • <u>IF</u> conductivity is $< 0.5 \mu\text{mho}$, <u>THEN</u> <u>WITHIN</u> 60 minutes RESTORE Stator Water Cooling <u>OR</u> TRIP Turbine. • <u>IF</u> conductivity is > 0.5 but $< 9.9 \mu\text{mho}$, <u>THEN</u> <u>WITHIN</u> 3 minutes: RESTORE Stator Water Cooling <u>OR</u> TRIP the Main Turbine. • <u>IF</u> conductivity is $\geq 9.9 \mu\text{mhos}$ <u>THEN</u> TRIP the Main Turbine. <p style="text-align: center;">**NOTE 8**</p> <p>D.3 <u>UPON</u> restoration of Stator Cooling flow <u>IF</u> Conductivity is $\geq 9.9 \mu\text{mhos}$ <u>OR</u> $>.5 \mu\text{mho}$ <u>AND</u> continues to rise <u>THEN</u> PERFORM the following:</p> <p>a. <u>IF</u> $\geq 24\%$ Reactor Power <u>THEN</u>:</p> <ol style="list-style-type: none"> 1. REDUCE Recirc. Pump speed to MINIMUM. 2. LOCK the Mode Switch in SHUTDOWN. 3. TRIP the Main Turbine. <p>b. <u>IF</u> Reactor Power $< 24\%$ <u>THEN</u> TRIP the Main Turbine.</p>

RETAINMENT OVERRIDE	
CONDITION ACTION	
I. Loss of Stator Cooling for > 2 min. <u>AND</u> Reactor Power > 24% Date/Time: _____	____ I.A REDUCE Recirc. Pump speed to MINIMUM. ____ I.B LOCK the Mode Switch in SHUTDOWN. ____ I.C TRIP the Main Turbine.
II. Bearing 1–10 Vibration \geq 11 mils @ 1800 RPM * Bearing 11–12 Vibration \geq 7 mils @ 1800 RPM * Date/Time: _____	____ II.A <u>IF</u> Reactor Power is \geq 24% <u>THEN</u> PERFORM the following: ____ a. REDUCE Recirc. Pump speed to MINIMUM. ____ b. LOCK the Mode Switch in SHUTDOWN. ____ II.B IMMEDIATELY TRIP the Main Turbine.
III. Failure of Main Turbine to runback on a Loss of Stator Water Cooling. Date/Time: _____	____ III.A REDUCE Recirc Pump speed to MINIMUM. ____ LOCK the Mode Switch in SHUTDOWN. ____ III.B
* Vibration Limits may be exceeded during testing evolutions under an approved test plan with Engineering concurrence.	

CAUTIONS:

- When the Generator Gas Control System pressure falls below 63 psig, the potential exists for moisture intrusion into the generator windings from system leaks. [CD-197G]
- During performance of the following steps operator should be instructed to stay clear of the area unless required for step performance.

NOTES:

- When the Emergency Seal Oil Pump is in operation hydrogen purity should be monitored periodically and if prolonged operation is necessary, the Seal Oil Vacuum Pump should be secured.

ADDITIONAL INFORMATION:

Valves:

- 1-CC-SV-3523, PURITY METER VENT, 10C650, MAIN CONTROL ROOM.
- 1-CC-V031, GEN MAINT. ISLN VLV. (102' TURBINE BLDG.)
- 1-CC-V034, GEN CASING VNT TO ATM ISLN VLV. (102' TURBINE BLDG.)

Procedures:

- HC.OP-SO.CE-0001(Q), STATOR WATER COOLING SYSTEM OPERATION.

Equipment:

- SWC Pump Control Switches (10C120 Generator H2 & Stator Cooling Water Panel, TB El. 102')

SUBSEQUENT OPERATOR ACTIONS (continued)

CONDITION	ACTION
E. Hydrogen Seal Oil System Malfunction. Date/Time: _____	<p style="text-align: center;">**NOTE 9**</p> <p>___ E.1 <u>IF</u> the Emergency Seal Oil Pump fails to auto start, <u>THEN</u> START the Emergency Seal Oil Pump.</p>
F. Generator H ₂ pressure drops below 63 psig. Date/Time: _____	<p>___ F.1 <u>IF</u> Reactor Power $\geq 24\%$ <u>THEN</u> PERFORM the following:</p> <p>___ a. REDUCE Recirc. Pump speed to MINIMUM.</p> <p>___ b. LOCK the Mode Switch in Shutdown.</p> <p>___ F.2 TRIP the Turbine <u>AND</u> LOCK OUT the Generator.</p> <p style="text-align: center;">★ CAUTION 2 ★</p> <p>___ F.3 PLACE BOTH Stator Water Cooling Pump Control Switches to PULL TO LOCK. [CD-197G]</p> <p>___ F.4 OPEN Breaker 52-112113 Stator Coolant Water Heater 10E113 power supply.</p>
G. Both the Emergency Seal Oil Pump <u>AND</u> The Main Seal Oil Pump CANNOT be started, <u>OR</u> <u>BEFORE</u> Generator H ₂ pressure drops below 30 psig. Date/Time: _____ (Continued on Page 21)	<p>___ G.1 <u>IF</u> Reactor Power $\geq 24\%$ <u>THEN</u> PERFORM the following:</p> <p>___ a. REDUCE Recirc. Pump speed to MINIMUM.</p> <p>___ b. LOCK the Mode Switch in Shutdown.</p> <p>___ G.2 TRIP the Turbine <u>AND</u> LOCK OUT the Generator.</p> <p>___ G.3 PERFORM the following:</p> <p>___ ● EVACUATE unnecessary personnel from Turbine Generator Area</p> <p>___ ● ENSURE Turbine Building Ventilation in Purge</p> <p>___ ● START all available Turbine Building Exhaust / Supply Fans.</p> <p style="text-align: center;">★ CAUTION 3 ★</p> <p>___ ● OPEN the following:</p> <p>___ ♦ 1-CC-V031</p> <p>___ ♦ 1-CC-V034.</p> <p>___ ♦ SV-3523</p> <p>___ ● DIRECT Site Protection to evaluate H₂ concerns in the Turbine Building.</p> <p style="text-align: right;">(Continued on Page 21)</p>

RETAINMENT OVERRIDE	
CONDITION ACTION	
I. Loss of Stator Cooling for > 2 min. <u>AND</u> Reactor Power > 24% Date/Time: _____	<p>___ I.A REDUCE Recirc. Pump speed to MINIMUM.</p> <p>___ I.B LOCK the Mode Switch in SHUTDOWN.</p> <p>___ I.C TRIP the Main Turbine.</p>
II. Bearing 1–10 Vibration \geq 11 mils @ 1800 RPM * Bearing 11–12 Vibration \geq 7 mils @ 1800 RPM * Date/Time: _____	<p>___ II.A <u>IF</u> Reactor Power is \geq24% <u>THEN</u> PERFORM the following:</p> <p>___ a. REDUCE Recirc. Pump speed to MINIMUM.</p> <p>___ b. LOCK the Mode Switch in SHUTDOWN.</p> <p>___ II.B IMMEDIATELY TRIP the Main Turbine.</p>
III. Failure of Main Turbine to runback on a Loss of Stator Water Cooling. Date/Time: _____	<p>___ III.A REDUCE Recirc Pump speed to MINIMUM.</p> <p>___ III.B LOCK the Mode Switch in SHUTDOWN.</p>
* Vibration Limits may be exceeded during testing evolutions under an approved test plan with Engineering concurrence.	

ADDITIONAL INFORMATION:

Valves:

- 1-CD-V001, FLOAT TRAP BYP VLV.
- 1-CD-V003, FLOAT TRAP OTL ISOL VLV.
- 1-CD-V009, PCV 3096 INL ISOL VLV.
- 1-CD-V010, PCV 3096 OTL ISOL VLV.
- 1-CD-V011, PCV 3096 BYP VLV
- 1-CD-V015, FLOAT TRAP INL ISOL VLV.
- P-CD-V9996, LG 3073 FLOAT TRAP UPPER BYP VLV.
- P-CD-V9997, LG 3073 FLOAT TRAP LOWER BYP VLV.
- P-CD-V9998, LG 3073 FLOAT TRAP LOWER ISOL VLV.
- P-CD-V9999, LG 3073 FLOAT TRAP UPPER ISOL VLV. Valves:
- 1-CC-SV-3523, PURITY METER VENT, 10C650, MAIN CONTROL ROOM.
- 1-CC-V031, GEN MAINT. ISLN VLV. (102' TURBINE BLDG.)
- 1-CC-V034, GEN CASING VNT TO ATM ISLN VLV. (102' TURBINE BLDG.)

Indications:

- MACHINE GAS PRESSURE (H2 pressure) PI-3579 (10C120 Generator H2 & Stator Cooling Water Panel, TB El. 102')

SUBSEQUENT OPERATOR ACTIONS (continued)

CONDITION	ACTION
<p align="center">(Continued from Page 19)</p> <p>G. Both the Emergency Seal Oil Pump <u>AND</u> The Main Seal Oil Pump CANNOT be started, <u>OR</u> <u>BEFORE</u> Generator H2 pressure drops below 30 psig.</p>	<p align="center">(Continued from Page 19)</p> <p>G.4 <u>BEFORE</u> H2 Pressure drops to 3 psig <u>AND</u> Generator H2 Pressure can be maintained <8 psig CLOSE the following:</p> <ul style="list-style-type: none"> • SV-3523 • 1-CC-V031 • 1-CC-V034
<p>H. Pressure Control Valve (PCV-3096) Malfunction.</p> <p>Date/Time: _____</p>	<p>H.1 THROTTLE 1-CD-V011 to maintain Seal Oil Pressure 5 psig > H₂ Pressure.</p> <p>H.2 CLOSE the following valves:</p> <ul style="list-style-type: none"> • 1-CD-V009 • 1-CD-V010
<p>I. Float Trap Malfunction.</p> <p>Date/Time: _____</p>	<p>I.1 CLOSE the following valves:</p> <ul style="list-style-type: none"> • 1-CD-V015 • 1-CD-V003 <p>I.2 OPEN the following valves:</p> <ul style="list-style-type: none"> • P-CD-V9996 • P-CD-V9997 <p>I.3 CLOSE the following valves:</p> <ul style="list-style-type: none"> • P-CD-V9998 • P-CD-V9999 <p>I.4 THROTTLE 1-CD-V001 to maintain oil level in sight glass LG-3073.</p>

RETAINMENT OVERRIDE	
CONDITION ACTION	
I. Loss of Stator Cooling for > 2 min. <u>AND</u> Reactor Power > 24% Date/Time: _____	____ I.A REDUCE Recirc. Pump speed to MINIMUM. ____ I.B LOCK the Mode Switch in SHUTDOWN. ____ I.C TRIP the Main Turbine.
II. Bearing 1–10 Vibration \geq 11 mils @ 1800 RPM * Bearing 11–12 Vibration \geq 7 mils @ 1800 RPM * Date/Time: _____	____ II.A <u>IF</u> Reactor Power is \geq 24% <u>THEN</u> PERFORM the following: ____ a. REDUCE Recirc. Pump speed to MINIMUM. ____ b. LOCK the Mode Switch in SHUTDOWN. ____ II.B IMMEDIATELY TRIP the Main Turbine.
III. Failure of Main Turbine to runback on a Loss of Stator Water Cooling. Date/Time: _____	____ III.A REDUCE Recirc Pump speed to MINIMUM. ____ III.B LOCK the Mode Switch in SHUTDOWN.
* Vibration Limits may be exceeded during testing evolutions under an approved test plan with Engineering concurrence.	

CAUTIONS:

4. **DO NOT exceed 122°F (50°C) Deionizer inlet temperature due to resin deterioration and subsequent conductivity increase.**

NOTES:

10. Ensure that conductivity indication/alarm is valid by checking that both the inlet and outlet indicators agree within 0.1 μ mho.

ADDITIONAL INFORMATION:

Valves:

- P-CE-V9981, Deionizer Outlet Isolation Valve
- P-CE-V9994, Deionizer Inlet Isolation Valve

Indications:

- 1CETISH-3594, Stator Winding Outlet Temperature

SUBSEQUENT OPERATOR ACTIONS (continued)

CONDITION	ACTION
<p>J. High Stator Water Cooling Temperature.</p> <p>Date/Time: _____</p>	<p style="text-align: center;">★ CAUTION 4 ★</p> <p>_____ J.1 <u>IF</u> Stator Water Cooling inlet temperature has or is expected to exceed 122°F (50°C), <u>THEN ISOLATE</u> the demineralizer as follows:</p> <p>_____ a. CLOSE P-CE-9981</p> <p>_____ b. CLOSE P-CE-9994</p> <p>_____ J.2 ENSURE TACS Isolation Valves are OPEN to the Stator Cooling Heat Exchangers.</p> <p>_____ J.3 <u>IF</u> TCV-3604 is malfunctioning:</p> <p>_____ a. CLOSE P-CE-V9944 to isolate air to the TC-3604 to achieve full flow through the Stator Water Coolers.</p> <p>_____ b. MONITOR temperature at 1CETISH-3594.</p> <p>_____ c. THROTTLE EG-V311 and EG-V313 to achieve desired Stator Winding Outlet Temperatures.</p>
<p>K. Stator Cooling High Conductivity.</p> <p>Date/Time: _____</p>	<p style="text-align: center;">**NOTE 10**</p> <p>_____ K.1 VERIFY actual conductivity by comparing Inlet and Outlet indications.</p> <p>_____ K.2 <u>IF</u> Conductivity >.5 μmhos <u>THEN CONTACT</u> Engineering for guidance.</p> <p>_____ K.3 <u>IF</u> Conductivity ≥9.9 μmhos <u>THEN PERFORM</u> the following:</p> <p>_____ a. <u>IF</u> ≥24% Reactor Power <u>THEN</u>:</p> <p>_____ 1. REDUCE Recirc. Pump speed to MINIMUM.</p> <p>_____ 2. LOCK the Mode Switch in SHUTDOWN.</p> <p>_____ 3. TRIP the Main Turbine.</p> <p>_____ b. <u>IF</u> Reactor Power <24% <u>THEN TRIP</u> <u>AND LOCK OUT</u> the Main Turbine.</p>

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COMPLETION AND REVIEW

1.0 COMPLETION AND REVIEW

- 1.1 **EXPLAIN** the entry Condition into the abnormal in the Comments Section. _____
- 1.2 **ANNOTATE** in the comments section all systems affected by the implementation of this procedure AND restoration actions (i.e. restoration line ups) completed/required. _____
- 1.3 **ATTACH** photocopies of any Hard Cards utilized as part of this procedure implementation to Attachment 1. _____
- 1.4 **ENSURE** the Exit time for any applicable conditions and this abnormal are annotated in the comment section AND the Control Room Logs. _____
- 1.5 **FORWARD** completed Portions of this procedure AND Sections 1 and 2 of Attachment 1 to SM/CRS for approval and Record Retention. _____

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ATTACHMENT 1

(Page 1 of 2)

COMPLETION AND REVIEW

1.0 COMMENTS:

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

ATTACHMENT 1
(Page 2 of 2)
COMPLETION AND REVIEW

2.0 SIGNATURES:

<u>PRINT NAME</u>	<u>SIGNATURE</u>	<u>INITIALS</u>	<u>DATE/TIME</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Completion of this attachment is annotated in the Control Room Logs:

_____	_____	_____
Printed Name	Signature	Date/Time

3.0 SM/CRS FINAL REVIEW AND APPROVAL:

This procedure and Attachment 1 have been reviewed for completeness and accuracy. Entry/Exit conditions and all deficiencies, including corrective actions, are clearly recorded in the COMMENTS Section above.

_____	_____	_____
Printed Name	SM/CRS	Date/Time

4.0 RECORDS

4.1 **RETAIN** the following in accordance with RM-AA-101, Records Management Program:

- Procedure cover page
- Affected Conditions and Hard Cards performed
- Completion and Review section
- Attachment 1

-
- Biennial Review Performed: Yes ☐ No ☒ NA ☐
 - Packages and Affected Document Numbers incorporated into this revision:
CP No. _____ CP Rev. ☐ AD No. _____ Rev No. _____ None ☒
 - The following OTSCs were incorporated into this revision: None
-

REVISION SUMMARY

- Adds Step A.4 to provide extraction steam from Main Steam to the Steam Seal evaporator. (70092163-0040)
- Adds the word 'inlet' to Step J.1 to make the step more clear. This is an editorial change. (70091056-0020)

IMPLEMENTATION REQUIREMENTS:

None