WATERBOX TUBE FAILURE

1.0 ENTRY CONDITIONS

IF in Mode 1 through 4,

AND cation conductivity at CDP discharge (CE-2, CE-3) is verified to be > 10 µmho/cc,

THEN use this procedure.

2.0 IMMEDIATE ACTIONS

NOTE

There are no immediate actions for this procedure.

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3.0 FOLLOW-UP ACTIONS

ACTIONS	DETAILS
3.1 ___ Notify Chemistry.	• Notify Chemistry to perform the following: ___ Determine affected CWP. ___ Notify the control room if Condensate Demin outlet (CE-5) cation conductivity > 1 μmho/cc.
3.2 ___ Notify personnel of plant conditions.	• ___ STA • ___ Plant Operators • ___ SSOD (evaluate plant conditions for entry into the Emergency Plan)
3.3 ___ Isolate condensate rejection flow to CDT-1	• Notify SPO to fail closed CDV-88 "Condensate Reject to CDT-1" (95 ft 0 behind Atmospheric Drain Tank).

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ACTIONS		DETAILS
3.4	___ Verify Condensate Demins are not bypassed.	• Notify SPO to verify the following are closed at the "Condensate Demineralizer Control Panel": ___ CXV-5 "Demin Bypass Valve" ___ CXV-12 "Demin Bypass Valve"
	___ If Condensate Demins are bypassed, THEN notify SPO to attempt to close all Condensate Demin bypass valves.	1 ___ Adjust CX-15-DPI-B1 knob to "15" (95 TB CXCP-1 Panel). 2 ___ Adjust CX-16-DPI-B2 knob to "15" (95 TB CXCP-1 Panel). 3 ___ Depress "SYSTEM HI D/P ALARM CXV-12F BYPASS VALVE B2" "RESET" push button (95 TB CXCP-1 Panel). 4 ___ Depress "SYSTEM HI D/P ALARM CXV-5F BYPASS VALVE B1" "RESET" push button (95 TB CXCP-1 Panel). 5 ___ Adjust CX-15-DPI-B1 knob to "0" (95 TB CXCP-1 Panel). 6 ___ Adjust CX-16-DPI-B2 knob to "0" (95 TB CXCP-1 Panel).
3.5	___ Notify SPO to ensure proper Condensate Demins are in service.	1 ___ Obtain most efficient Condensate Demin alignment from chemistry. 2 ___ Ensure proper number of condensate demins are in service for power level.

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ACTIONS	DETAILS
3.6 ___ IF at any time, Condensate Demin outlet (CE-5) cation conductivity is > 1 μmho/cc, THEN stop the affected CWP and **GO TO** Step 3.12 in this procedure.	1 Stop the affected CWP: ___ CWP-1A ___ CWP-1B ___ CWP-1C ___ CWP-1D 2 ___ **GO TO** Step 3.12 in this procedure.
3.7 ___ IF a power reduction is required, THEN start a rapid power reduction at > 5%/min. See Table 1	• **CONCURRENTLY PERFORM** AP-510, Rapid Power Reduction, beginning with Step 3.1
3.8 ___ IF the tube leak is in a hotwell with only one inservice waterbox, AND turbine is operating, THEN reduce Rx power to less than the anticipatory setpoint and trip the turbine.	• ___ WHEN Rx power is < 45%, THEN trip the turbine and **CONCURRENTLY PERFORM** AP-660, Turbine Trip, beginning with Step 2.1

Applicable carry-over steps:
3.6 IF Condensate Demin outlet cation conductivity is > 1 μmho/cc...

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS	DETAILS
3.9 ___ IF at any time, the affected CWP can be stopped, THEN stop the affected CWP.	1 ___ Ensure Rx power and Turbine are operating within CWP operation guidelines. See Table 1

2 Stop the affected CWP:

___ CWP-1A
___ CWP-1B
___ CWP-1C
___ CWP-1D

3 Notify SPO to close waterbox vacuum isolation valve for the affected CWP:

___ ARV-47 "A Waterbox Vacuum Outlet Iso" (119 ft TB north of A Waterbox)

___ ARV-46 "B Waterbox Vacuum Outlet Iso" (119 ft TB north of B Waterbox)

___ ARV-45 "C Waterbox Vacuum Outlet Iso" (119 ft TB north of C Waterbox)

___ ARV-44 "D Waterbox Vacuum Outlet Iso" (119 ft TB north of D Waterbox)

4 ___ Notify Chemistry of CWP shutdown.

Applicable carry-over steps:
3.6 IF Condensate Demin outlet cation conductivity is > 1 μmho/cc...
3.9 IF the affected CWP can be stopped, THEN stop the affected CWP.

ACTIONS | DETAILS

NOTE

Opening waterbox vacuum breakers can potentially create a vacuum leak when the affected CWP is stopped.

3.10 ___ IF at any time, the affected CWP is stopped, THEN open affected Waterbox Vacuum Breaker Valves.

___ CWP-1A	___ ARV-57
	___ ARV-56
___ CWP-1B	___ ARV-55
	___ ARV-54
___ CWP-1C	___ ARV-53
	___ ARV-52
___ CWP-1D	___ ARV-51
	___ ARV-50

3.11 ___ WHEN all of the following conditions exist for the affected CWP:

___ CWP is stopped

___ Waterbox vacuum isolation valve is closed

___ Waterbox Vacuum Breaker valves are open

THEN GO TO OP-204, Power Operations, Section 4.3, 100% To 20% Power Decrease.

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ACTIONS | DETAILS

STATUS

Condensate Demin outlet (CE-5) cation conductivity is > 1 μmho/cc.

3.12 ___ IF the Rx is NOT tripped, THEN manually trip the Rx, and **CONCURRENTLY PERFORM** EOP-02, Vital System Status Verification, beginning with Step 2.1

3.13 ___ Initiate EFIC.

1 ___ Depress "EFW INITIATE" push buttons on EFIC channels A and B.

2 Ensure at least one EFP running:

___ EFP-1

___ EFP-2

3 ___ Ensure level in available OTSGs is at or trending toward required level.

[Rule 3, EFW Control]

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ACTIONS

3.14 ___ Initiate MFLI for both OTSGs.

DETAILS

1 Depress "MAIN FEED ISOLATION" pushbuttons on EFIC Channels A and B for both OTSGs.

2 Select MBV to "MAN" and select FW isolation valves to "CLOSE" for both OTSGs:

FW Valve	A OTSG	B OTSG
LLBV	___ FWV-31	___ FWV-32
MBV toggle	___ "MAN"	___ "MAN"
MBV	___ FWV-30	___ FWV-29
SUBV	___ FWV-36	___ FWV-33
Cross-Tie	___ FWV-28	___ FWV-28
Suction	___ FWV-14	___ FWV-15

3 Ensure both MFWPs tripped:

A OTSG	B OTSG
___ FWP-2A	___ FWP-2B

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3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS	DETAILS
3.15 ___ Stop both MFWBPs.	1 Start both MFWBP aux oil pumps: ___ FWP-6A ___ FWP-6B 2 Stop both MFWBPs: ___ FWP-1A ___ FWP-1B
3.16 ___ Isolate waterbox vacuum for the affected CWP.	1 Notify SPO to close waterbox vacuum isolation valve for the affected CWP: ___ ARV-47 "A Waterbox Vacuum Outlet Iso" (119 ft TB north of A Waterbox) ___ ARV-46 "B Waterbox Vacuum Outlet Iso" (119 ft TB north of B Waterbox) ___ ARV-45 "C Waterbox Vacuum Outlet Iso" (119 ft TB north of C Waterbox) ___ ARV-44 "D Waterbox Vacuum Outlet Iso" (119 ft TB north of D Waterbox) 2 ___ Notify Chemistry of CWP shutdown.

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ACTIONS	DETAILS	
3.17 ___ Open the affected Waterbox Vacuum Breaker Valves.	___ CWP-1A	___ ARV-57
		___ ARV-56
	___ CWP-1B	___ ARV-55
		___ ARV-54
	___ CWP-1C	___ ARV-53
		___ ARV-52
	___ CWP-1D	___ ARV-51
		___ ARV-50

3.18 ___ IF at any time, EFT-2 level is ≤ 8.5 ft, THEN notify SPO to cross-tie CDT-1 and EFT-2

- ___ Unlock and open CDV-103 "CDT-1 to EFP Suction" (119 ft Berm by CDT-1).
- ___ Ensure CDV-290 "CDT-1 to EFP Suction" is open (119 ft Berm in covered valve box by FST-1A).

Applicable carry-over steps:
3.18 IF EFT-2 level is ≤ 8.5 ft, THEN cross-tie CDT-1 and EFT-2...

ACTIONS	DETAILS
3.19 ___ IF at any time, makeup to CDT-1 is required, THEN notify SPO to makeup to CDT-1	1 ___ Ensure CDV-102 "CDT-1 Lower Iso" closed (119 ft Berm by CDT-1). 2 ___ Ensure CDV-236 "CDT-1 Upper Iso" open (119 ft Berm by CDT-1). 3 Isolate Condenser vacuum from DW loads downstream of DWV-346: ___ Close CDV-149 "DW Makeup to Hotwell Control Bypass" (95 ft TB by C inlet waterbox). ___ Close CDV-147 "DW Makeup to Hotwell Control Inlet Iso" (95 ft TB by C inlet waterbox). 4 ___ Select DWV-346 "TB DW Header Iso" control switch to "CLOSE" (95 ft TB Demin Water Panel). 5 ___ Open DWV-377 "DWV-346 Bypass" (95 ft TB southwest stairwell) until pressure equalizes around DWV-346 6 ___ Select DWV-346 "TB DW Header Iso" control switch to "OPEN" and verify DWV-346 opens (95 ft TB Demin Water Panel). 7 ___ Open CDV-147 "DW Makeup to Hotwell Control Inlet Iso" (95 ft TB by C inlet waterbox). 8 ___ Close DWV-377 "DWV-346 Bypass" (95 ft TB southwest stairwell). 9 ___ Select DWV-346 "TB DW Header Iso" control switch to "AUTO" (95 ft TB Demin Water Panel). 10 ___ Throttle open CDV-112 "DW Makeup to CDT-1" (95 ft TB by MFWBPs).

Applicable carry-over steps:
3.18 IF EFT-2 level is ≤ 8.5 ft, THEN cross-tie CDT-1 and EFT-2...
3.19 IF makeup to CDT-1 is required, THEN makeup to CDT-1...

ACTIONS	DETAILS
3.20 ___ Stop any hotwell fills.	• Notify SPO to perform the following: ___ Fail closed CDV-87 "CDT-1 Makeup to Hotwell" (95 ft TB by C inlet waterbox) ___ Fail closed CDV-113 "DW Makeup to Hotwell Control" (95 ft TB by C inlet waterbox) ___ Close CDV-149 "Makeup to Hotwell Control Bypass" (95 ft TB by C inlet waterbox)
3.21 ___ Notify Chemistry to make preparations for continuous condensate release.	
3.22 ___ **EXIT** this procedure.	

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Table 1:
CWP Operation
Guidelines

CWP Combination	Power Level
From 4 to 3 CWPs	<85%
From 3 to 2 CWPs (one in each hotwell)	<60%
From 3 to 2 CWPs (both in same hotwell)	<45%