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NO ACKNOWLEDGEMENT REQUIRED

A045



FLORIDA POWER
CRYSTAL RIVER UNIT 3
PLANT OPERATING MANUAL

EMERGENCY PLAN IMPLEMENTING PROCEDURE

EM-225F

LONG TERM EMERGENCY FEEDWATER MANAGEMENT

TABLE OF CONTENTS

SECTION	PAGE
1.0 PURPOSE	3
2.0 REFERENCES	3
2.1 DEVELOPMENTAL REFERENCES	3
3.0 PERSONNEL INDOCTRINATION	4
3.1 DEFINITIONS	4
3.2 RESPONSIBILITIES	4
3.3 LIMITS AND PRECAUTIONS	5
4.0 INSTRUCTIONS	6
4.1 GENERAL GUIDELINES	6
 <u>ENCLOSURES</u>	
1 EFT-2/CDT-1 Trends	7
2 EFW Management Plan	9
3 EFT-2/CDT-1 Inventory Control	13
4 Installation Of EFT-2 Temporary Transfer Line	15
5 EFT-2 Transfer To Alternate Tanks For Cooling	23
6 Aligning Unit 1 Or 2 Steam To EFP-2	30
7 EFP-2 Cross-Tie To A Train EFW	32
8 Transferring Hotwell To EFT-2 Using EFP-2	36
9 Start Up And Shutdown Of EFW/AFW Pumps	39
10 EFP-1 To DHR Transition	48
11 EFP-1 Alignment To A EDG Without Load Management	51
12 Aligning EFW/AFW Pumps To Hotwell	53
13 Refilling FST-1A/1B From Unit 1 Or 2 Fire System	57
14 Aligning EFW Pumps To EFT-2	59
15 EFP-2 Trip Recovery	61
16 EFP-1/EFP-3 Cross-Tie To B Train EFW	63
17 EFP-2 Temporary Transfer Line Configuration	66

1.0 PURPOSE

The purpose of this procedure is to provide guidance to the TSC Accident Assessment Team (AAT) to ensure Emergency Feedwater (EFW) or Auxiliary Feedwater (AFW) remains available when OTSG heat transfer is required to remove core decay heat.

These guidelines are applicable if EFW or AFW is operating for extended periods of time and normal surveillance testing is not in progress.

2.0 REFERENCES

2.1 DEVELOPMENTAL REFERENCES

- 2.1.1 PC 99-1710
- 2.1.2 M 99-0027 Rev. 6, CR-3 Emergency Feedwater System Hydraulic Design Verification Analysis
- 2.1.3 NRC Letter to FPC, 3N0899-05, dated 8/11/99, NRC Safety Evaluation Related to Amendment 182
- 2.1.4 Engineering Calculation E 91-0026 Revision 4
- 2.1.5 PC 99-3329
- 2.1.6 FPC Letter to NRC, 3F1198-01, dated 11/24/98

3.0 PERSONNEL INDOCTRINATION

3.1 DEFINITIONS

None

3.2 RESPONSIBILITIES

3.2.1 TSC ACCIDENT ASSESSMENT TEAM (AAT)

- Monitor EFT-2 temperature and provide recommendations to resolve high temperatures if approached.
- Provide recommendations for alternate feedwater sources and feedwater flow paths during long term EFW or AFW operation.
- Ensure EFW or AFW is maintained until OTSG heat transfer is no longer required.

3.2.2 EMERGENCY COORDINATOR (EC)

- Review and approve all recommendations provided by the Accident Assessment Team prior to implementation by the Control Room staff.

3.2.3 TSC ACCIDENT ASSESSMENT TEAM (AAT)

- Monitor EFT-2 temperature and provide recommendations to resolve high temperatures if approached.
- Provide recommendations for alternate feedwater sources and feedwater flow paths during long term EFW or AFW operation.
- Ensure EFW or AFW is maintained until OTSG heat transfer is no longer required.

3.2.4 EMERGENCY REPAIR TEAM (ERT)

- Install support equipment for transferring the contents of EFT-2 to either FST-1A or CDT-1 due to elevated temperatures in EFT-2.

3.2.5 OPERATIONS (OPS)

- Coordinate with the Control Room and provide alternate alignments for EFW or AFW systems and support systems.

3.3 LIMITS AND PRECAUTIONS

- 3.3.1 Ensure adequate load margin is available on EDGs prior to starting ES powered component. Refer to EOP-13, Rule 5, EDG Control.
- 3.3.2 EFT-2 tank temperature is only available on a local gauge (EF-28-TI) inside the tank building. Hazardous conditions may exist due to nitrogen gas leakage. If a loss of off-site power has occurred, ventilation and lighting will not be available in the enclosure.
- 3.3.3 EFT-2 temperature increases faster as level decreases.
- 3.3.4 EFW or AFW pump discharge TEMP of > 150°F can challenge NPSH limits, equipment qualifications, and RB penetration stresses. EFT-2 TEMP is limited to < 139°F to prevent exceeding these limits.
- 3.3.5 All actions recommended to the Control Room as a result of this procedure must be pre-approved by the Emergency Coordinator.
- 3.3.6 Inadequate NPSH could occur if EFP-3 is placed in STOP and allowed to run at reduced speed if EFT-2 is isolated. Stop EFP-3 by placing control switch in Pull To Lock.
- 3.3.7 FW-336-TI (95 IB on the RB wall across from EFP-2) can be used to monitor EFW discharge temperature only if flow to the OTSGs exists.
- 3.3.8 Use hand-held contact thermometers to monitor temperatures locally at EFW/AFW pumps if other instrumentation is not available and pump discharge temps are desired.
- 3.3.9 Following a steam generator overfill event ensure the main steam lines and the EFP-2 steam supply header are properly drained prior to starting EFP-2.
- 3.3.10 When operating EFP-1 or EFP-2 with the pump suction aligned solely to CDT-1 or FST-1A/1B maintain EFV-142 in the full open position to ensure adequate NPSH to the EFPs.

4.0 INSTRUCTIONS

4.1 GENERAL GUIDELINES

NOTE

Closing NGV-243 early will ensure EFT-2 and CDT-1/FST-1A levels will draw down together.

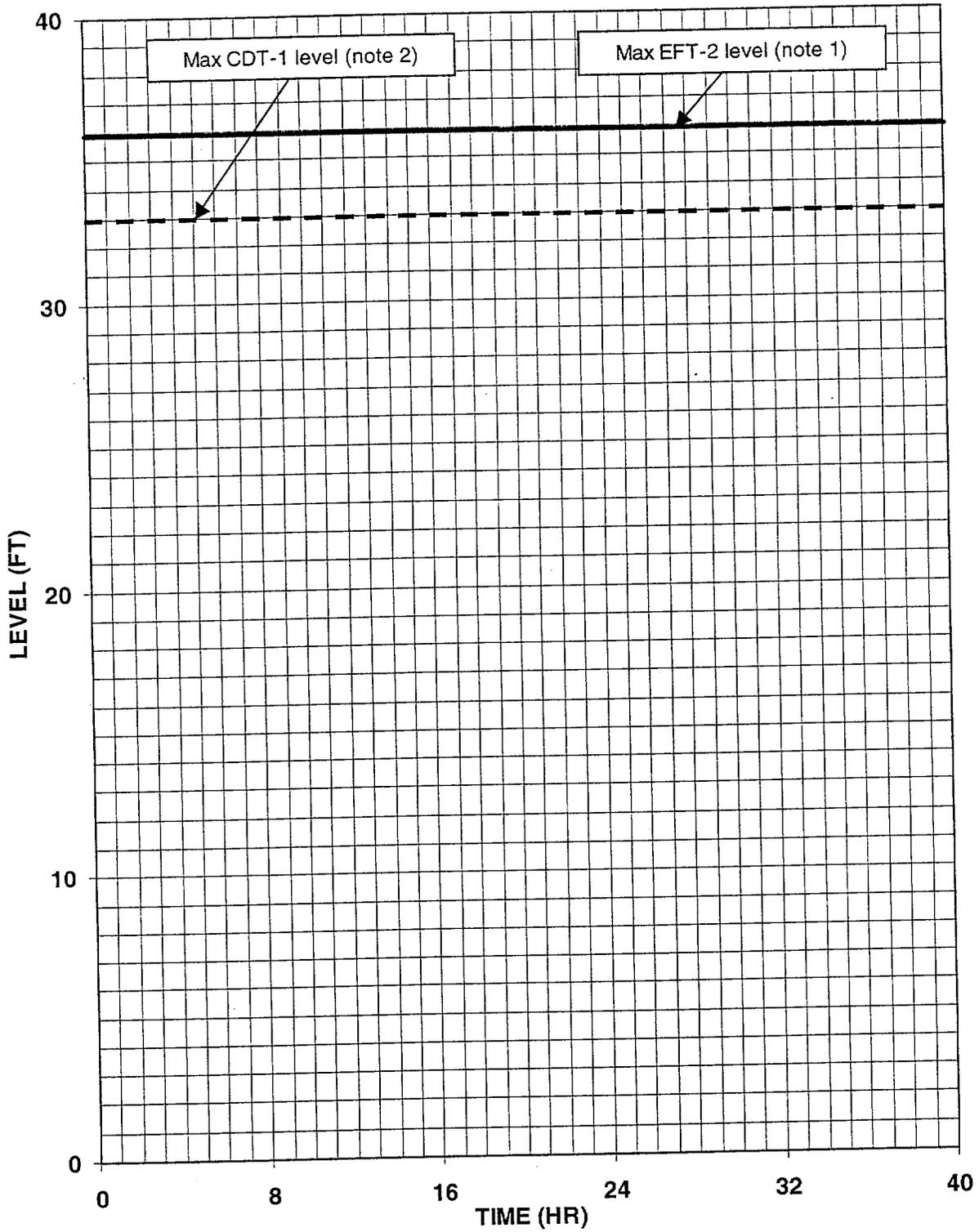
- 4.1.1 IF EFW is operating, THEN NOTIFY the TSC Repair Coordinator that an available operator and re-entry team are needed to isolate the nitrogen supply to EFT-2 by closing NGV-243 "N2 TO EFT-2" (119 ft TB by FWHE-2B).
- 4.1.2 IF EFW OR AFW is operating, THEN START plotting EFT-2 and CDT-1 level and temperatures on Enclosure 1 in this procedure.
- 4.1.3 REVIEW EFW Management Plan, Enclosure 2, in this procedure, and PERFORM appropriate actions if required.

NOTE

EFT-2 temperature limit of 139°F can be challenged within 8 hours under extreme conditions.

- 4.1.4 IF at any time, any EFW pump is running AND EFT-2 level is < 20 ft, THEN REFER to Enclosure 3 in this procedure for guidance.
- 4.1.5 IF at any time, FWP-7 is running AND CDT-1 level is < 20 ft, THEN REFER to Enclosure 3 in this procedure for guidance.
- 4.1.6 IF at any time, EFT-2 TEMP is $\geq 110^{\circ}\text{F}$, THEN NOTIFY the TSC Repair Coordinator to install EFT-2 temporary transfer hose per Enclosure 4 in this procedure.
- 4.1.7 IF at any time, EFT-2 TEMP reaches 130°F , THEN REFER to Enclosure 5 in this procedure for guidance.
- 4.1.8 IF EFT-2 will be cross-tied to CDT-1, THEN NOTIFY Chemistry to consider Amerzine addition to CDT-1.

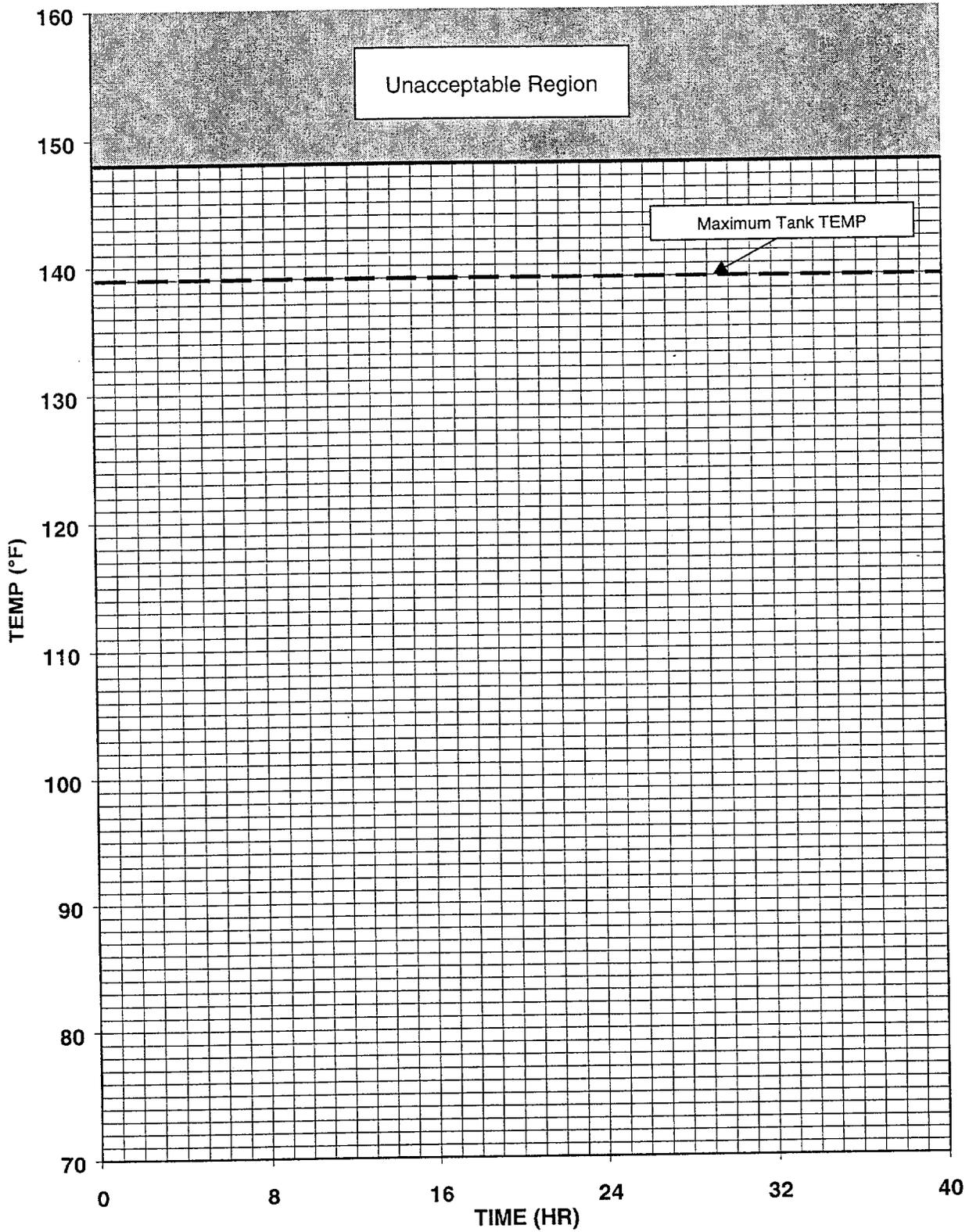
LEVEL TRENDS



Note 1: EFT-2 level instrumentation reference leg will flood if level is > 36 ft.
Note 2: CDT-1 will overflow to TB if level is > 33 ft.

ENCLOSURE 1 EFT-2/CDT-1 TRENDS (CONT'D)

TEMP TRENDS



Note 1: EFT-2 TEMP can be obtained from EF-28-TI.

ENCLOSURE 2 EFW MANAGEMENT PLAN

STATUS: EFP-3 IS RUNNING		
PROBLEM	SOLUTION	REFER TO
<p>Any of the following are failed:</p> <ul style="list-style-type: none"> • A EDG • A Train battery chargers • A Train battery failure 	<ul style="list-style-type: none"> • Start EFP-2 OR FWP-7 • Stop EFP-3 before A Train battery fails. <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • IF EFP-2 or FWP-7 NOT available, THEN cross-tie EFP-3 to B Train EFW. 	<p>Enclosure 9</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 16</p>
<p>Water sources on berm are depleted AND all the following are NOT available:</p> <ul style="list-style-type: none"> • EFP-1 • FWP-7 	<ul style="list-style-type: none"> • Start EFP-2 aligned to hotwell. • Align Units 1 or 2 Aux steam to EFP-2 before OTSG PRESS < 200 psig. <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • IF EFP-2 is NOT available, THEN fill FST-1A/B using Units 1/2 fire service. 	<p>Enclosure 12 Enclosure 6</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 13</p>
<p>Water sources on berm are depleted AND all the following are NOT available:</p> <ul style="list-style-type: none"> • FWP-7 • EFP-2 	<ul style="list-style-type: none"> • IF EFP-1 is available AND only A ES 4160V BUS energized, THEN start EFP-1 and align to the hotwell. <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • IF EFP-1 is available AND Both ES 4160V Buses are energized by EDGs, THEN start EFP-1 and align to the hotwell. 	<p>Enclosure 10 then Enclosure 12</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 11 then Enclosure 12</p>
<p>EFT-2 TEMP is ≥ 130°F</p>	<ul style="list-style-type: none"> • Align EFP-3 to CDT-1 and isolate EFT-2 <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • Start FWP-7 aligned to CDT-1 • Stop EFP-3 <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • Start EFP-2 aligned to the hotwell. • Align Units 1 or 2 Aux steam to EFP-2 before OTSG PRESS < 200 psig. • Stop EFP-3 	<p>Enclosure 5</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 9</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 12 Enclosure 6 Enclosure 9</p>
<p>Water sources on berm are depleted AND all the following are NOT available:</p> <ul style="list-style-type: none"> • FWP-7 • B-Battery 	<ul style="list-style-type: none"> • Start EFP-1 on A ES 4160V BUS • Align EFP-1 to hotwell. <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • Cross-Tie EFP-2 to A Train EFW. <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • Refill EFT-2 using EFP-2 	<p>Enclosure 10 then Enclosure 12</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 7</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 8</p>

ENCLOSURE 2 EFW MANAGEMENT PLAN (CONT'D)

STATUS: EFP-2 IS RUNNING		
PROBLEM	SOLUTION	REFER TO
EFT-2 TEMP is $\geq 130^{\circ}\text{F}$	<ul style="list-style-type: none"> Start FWP-7 aligned to CDT-1 Stop EFP-2 <p>-----OR-----</p> <ul style="list-style-type: none"> Align EFP-2 to hotwell. Align Units 1 or 2 Aux steam to EFP-2 before OTSG PRESS < 200 psig. <p>-----OR-----</p> <ul style="list-style-type: none"> Align EFP-2 to CDT-<u>AND</u> isolate EFT-2 	<p>Enclosure 9</p> <p>-----OR-----</p> <p>Enclosure 12 Enclosure 6</p> <p>-----OR-----</p> <p>Enclosure 5</p>
<p><u>All</u> the following exist:</p> <ul style="list-style-type: none"> Water sources on berm are depleted Hotwell is <u>NOT</u> available 	<ul style="list-style-type: none"> Fill Fire Storage Tanks using Units 1/2 Fire Service. 	Enclosure 13
<p><u>All</u> the following exist:</p> <ul style="list-style-type: none"> EFP-2 suction is aligned to hotwell Hotwell level is approaching 24 in 	<ul style="list-style-type: none"> IF adequate level exists in EFT-2, <u>AND</u> EFT-2 temperature is < 139°F, <u>THEN</u> align EFP-2 suction to EFT-2 <p>-----OR-----</p> <ul style="list-style-type: none"> Gravity drain water from CDT-1 and FST-1A/B to hotwell using CDV-88 	<p>Enclosure 14</p> <p>-----</p> <p>N/A</p>
<p><u>All</u> the following are <u>NOT</u> available:</p> <ul style="list-style-type: none"> EFP-3 FWP-7 	<ul style="list-style-type: none"> IF EFP-1 is <u>NOT</u> available, <u>THEN</u> align Unit 1 or 2 steam to EFP-2 <p>-----OR-----</p> <ul style="list-style-type: none"> IF EFP-1 is available <u>AND</u> only A ES 4160V BUS energized, <u>THEN</u> start EFP-1 Stop EFP-2 <p>-----OR-----</p> <ul style="list-style-type: none"> IF EFP-1 is available <u>AND</u> Both ES 4160V Buses are energized by EDGs, <u>THEN</u> start EFP-1 Stop EFP-2 	<p>Enclosure 6</p> <p>-----OR-----</p> <p>Enclosure 10</p> <p>Enclosure 9</p> <p>-----OR-----</p> <p>Enclosure 11</p> <p>Enclosure 9</p>

ENCLOSURE 2 EFW MANAGEMENT PLAN (CONT'D)

STATUS: EFP-1 IS RUNNING		
PROBLEM	SOLUTION	REFER TO
<p>EFT-2 TEMP is $\geq 130^{\circ}\text{F}$</p>	<ul style="list-style-type: none"> • Start FWP-7 aligned to CDT-1 • Stop EFP-1 <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • Align suction of EFP-1 to hotwell. <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • Align EFP-1 to CDT-1 <u>AND</u> isolate EFT-2 	<p>Enclosure 9</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 12</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 5</p>
<p><u>All</u> the following exist:</p> <ul style="list-style-type: none"> • Water sources on berm are depleted • Hotwell is <u>NOT</u> available 	<ul style="list-style-type: none"> • Fill Fire Storage Tanks using Units 1/2 Fire Service. 	<p>Enclosure 13</p>
<p><u>All</u> the following exist:</p> <ul style="list-style-type: none"> • EFP-1 suction is aligned to hotwell • Hotwell level is approaching 24 in 	<ul style="list-style-type: none"> • IF adequate level exists in EFT-2, <u>AND</u> EFT-2 temperature is $< 139^{\circ}\text{F}$, <u>THEN</u> align EFP-1 suction to EFT-2 <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • IF adequate level exists in EFT-2, <u>AND</u> EFT-2 temperature is $< 139^{\circ}\text{F}$, <u>THEN</u> start EFP-3 aligned to EFT-2 <p style="text-align: center;">-----OR-----</p> <ul style="list-style-type: none"> • Gravity drain water from CDT-1 and FST-1A/B to hotwell using CDV-88 	<p>Enclosure 14</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 9</p> <p style="text-align: center;">-----OR-----</p> <p>N/A</p>
<p><u>Any</u> of the following are failed:</p> <ul style="list-style-type: none"> • A Train battery chargers • A Train battery failure 	<ul style="list-style-type: none"> • Start EFP-2 <u>OR</u> FWP-7 • Stop EFP-1 <u>before</u> A Train battery fails. <p style="text-align: center;">-----OR-----</p> <p>IF EFP-2 or FWP-7 <u>NOT</u> available, <u>THEN</u> cross-tie EFP-1 to B Train EFW</p>	<p>Enclosure 9</p> <p style="text-align: center;">-----OR-----</p> <p>Enclosure 16</p>

ENCLOSURE 2 EFW MANAGEMENT PLAN (CONT'D)

STATUS: FWP-7 IS RUNNING		
PROBLEM	SOLUTION	REFER TO
<p>CDT-1 TEMP is $\geq 130^{\circ}\text{F}$</p>	<ul style="list-style-type: none"> • IF adequate level exists in EFT-2, <u>AND</u> EFT-2 temperature is $< 139^{\circ}\text{F}$, <u>THEN</u> start EFP-2 aligned to EFT-2 • Stop FWP-7 • Align Unit 1 or 2 steam to EFP-2 <p>-----OR-----</p> <ul style="list-style-type: none"> • Align suction of FWP-7 to hotwell. • Gravity drain CDT-1 to hotwell using CDV-88 <p>-----OR-----</p> <ul style="list-style-type: none"> • IF Off-site power is available, <u>THEN</u> refill CDT-1 with Demin Water. 	<p>Enclosure 9</p> <p>Enclosure 9 Enclosure 6</p> <p>-----OR-----</p> <p>Enclosure 12</p> <p>-----OR-----</p> <p>Enclosure 3</p>
<p><u>All</u> the following exist:</p> <ul style="list-style-type: none"> • FWP-7 suction is aligned to hotwell • Hotwell level approaching 24 in 	<ul style="list-style-type: none"> • Gravity drain water from CDT-1 and FST-1A/B to hotwell using CDV-88 	<p>N/A</p>
<p><u>All</u> the following exist:</p> <ul style="list-style-type: none"> • EFP-1 start up is desired • EDG load management <u>NOT</u> possible 	<ul style="list-style-type: none"> • IF EFP-1 is available <u>AND</u> only A ES 4160V BUS energized, <u>THEN</u> start EFP-1 • Stop FWP-7 <p>-----OR-----</p> <ul style="list-style-type: none"> • IF EFP-1 is available, <u>AND</u> Both ES 4160V Buses are energized by EDGs, <u>THEN</u> start EFP-1 • Stop FWP-7 	<p>Enclosure 10</p> <p>Enclosure 9</p> <p>-----OR-----</p> <p>Enclosure 11</p> <p>Enclosure 9</p>

ENCLOSURE 3 EFT-2/CDT-1 INVENTORY CONTROL

ACTIONS

DETAILS

3.1 ___ IF at least 1 CDP is running,
THEN maintain EFT-2 level.

1 ___ Ensure CD Hdr PRESS is between 90 and 150 psig.

2 Notify SPO to maintain EFT-2 level between 10 and 36 ft (95 ft TB behind Atmospheric Drain Tank):

___ Open CDV-260
"EFT-2 FILL FROM CONDENSATE".

___ Throttle CDV-259
"EFT-2 FILL FROM CONDENSATE"
as necessary to maintain EFT-2 level.

ENCLOSURE 3 EFT-2/CDT-1 INVENTORY CONTROL (CONT'D)

ACTIONS

DETAILS

3.2 ___ Maintain CDT-1 level.

- ___ IF at least 1 CDP is running,
THEN maintain CDT-1 level
between 10 and 31 ft using CD:

___ Ensure CD Hdr PRESS is
between 90 and 150 psig.

___ Notify SPO to throttle
CDV-88
"CONDENSATE REJECT
TO CDT-1"
as necessary to maintain
CDT-1 level
(95 ft TB behind Atmospheric
Drain Tank).

- ___ IF no CDPs are running,
THEN notify SPO to maintain
CDT-1 level between 10 and 31 ft
using DW:

___ Ensure CDV-88
"CONDENSATE REJECT TO
CDT-1" is closed
(95 ft TB behind Atmospheric
Drain Tank).

___ Throttle CDV-112
"DW MAKEUP TO CDT-1"
as necessary to maintain
CDT-1 level
(95 ft TB by MFWBPs).

ENCLOSURE 4 INSTALLATION OF EFT-2 TEMPORARY TRANSFER LINE

ACTIONS

DETAILS

CAUTION

Entry into EFT-2 Building may require additional precautions if power is not available to ventilation fan.

NOTE

- All fittings, hoses, and tools are located in the Fire Pump House.
- Five individuals are required to perform this enclosure

4.1 ___ Notify Control Room that EFT-2 temporary transfer line is being installed.

4.2 ___ IF B 4160V UNIT BUS is energized,
THEN ensure AHF-152 "EFT-2 ENC Vent Fan" runs for > 10 min prior to entry (Entrance to EFT-2).

4.3 ___ Ensure EFV-96 "EFT-2 DRAIN" is closed (Inside EFT-2 Building north wall). (OPS or ERT)

- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figures 1 and 2, in this procedure.
-

4.4 ___ Remove 4 in blank flange from EFV-96 "EFT-2 DRAIN" (Inside EFT-2 Building north wall). (ERT)

- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figures 1 and 2, in this procedure.

ENCLOSURE 4 INSTALLATION OF EFT-2 TEMPORARY TRANSFER LINE (CONT'D)

ACTIONS

DETAILS

NOTE

Match marks are installed on the flexible spool piece for match-up with EFV-96.

- 4.5 ___ Install flexible spool piece with gaskets between EFV-96 "EFT-2 DRAIN" and spare penetration (Inside EFT-2 Building north wall).
(ERT)
- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figures 1 and 2, in this procedure

-
- 4.6 ___ Ensure flange bolts and hose clamps are tight.
(ERT)
- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figures 1 and 2, in this procedure

-
- 4.7 ___ Remove 4 in blank flange on spare penetration (Maintenance Support Building under diamond plate, below stairs south wall).
(ERT)
- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figures 1 and 2, in this procedure

-
- 4.8 ___ Install double elbow assembly with gaskets on spare penetration.
(ERT)
- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figures 1 and 2, in this procedure

ENCLOSURE 4 INSTALLATION OF EFT-2 TEMPORARY TRANSFER LINE (CONT'D)

ACTIONS

DETAILS

4.9 ___ Install hose adapter with gaskets to double elbow assembly.

- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figures 1 and 2, in this procedure

4.10 ___ Ensure flange bolts are tight.
(ERT)

- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figures 1 and 2, in this procedure

4.11 ___ Ensure adequate temporary support is placed under hose adapter.

4.12 ___ Connect 6 in hose to hose adapter on double elbow assembly and tighten securely.
(ERT)

4.13 ___ IF EFT-2 connection to FST-1A is desired, THEN GO TO Step 4.22 in this enclosure.

ENCLOSURE 4 INSTALLATION OF EFT-2 TEMPORARY TRANSFER LINE (CONT'D)

ACTIONS

DETAILS

STATUS

EFT-2 connection to CDT-1 is desired.

CAUTION

FWP-7 cannot be operated if EFT-2 is connected to CDT-1 unless FWV-265 is closed.

-
- 4.14 ___ Install 4x6 in adapter with gaskets on FWV-265 "FWP-7 FW EMERGENCY TRANSFER TO FS OR SD SYSTEM ISO" (119 ft TB near southwest stairway). (ERT)
- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figure 3, in this procedure.
-
- 4.15 ___ Install hose adapter with gaskets to 4 x 6 in adapter.
- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figure 3, in this procedure.
-
- 4.16 ___ Ensure adequate temporary support is placed under hose adapter.

ENCLOSURE 4 INSTALLATION OF EFT-2 TEMPORARY TRANSFER LINE (CONT'D)

ACTIONS

DETAILS

NOTE

Route hose between FSTs, down east side of FST-1A and through Turbine Building door.

4.17 — Connect sections of 6 in hose together and attach to hose adapter on FWV-265 "FWP-7 FW EMERGENCY TRANSFER TO FS OR SD SYSTEM ISO" (119 ft TB near southwest stairway). (ERT)

- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figure 3, in this procedure.

ENCLOSURE 4 INSTALLATION OF EFT-2 TEMPORARY TRANSFER LINE (CONT'D)

ACTIONS

DETAILS

4.18 ___ Ensure all couplings and fittings are tight.
(ERT)

4.19 ___ Pressurize transfer hose.
(OPS)

- 1 ___ Slowly open EFV-96
"EFT-2 DRAIN"
(Inside EFT-2 Building north wall).
 - 2 ___ Check all hoses and connections for leaks.
 - 3 ___ IF leaks exist,
THEN perform the following in order:
 - ___ Close EFV-96
"EFT-2 DRAIN"
(Inside EFT-2 Building north wall).
 - ___ Repair leaks.
-

4.20 ___ Close EFV-96
"EFT-2 DRAIN"
(Inside EFT-2 Building north wall).

4.21 ___ **EXIT** this enclosure.

ENCLOSURE 4 INSTALLATION OF EFT-2 TEMPORARY TRANSFER LINE (CONT'D)

ACTIONS

DETAILS

STATUS

EFT-2 connection to FST-1A is desired.

4.22 ___ Install 2½ x 4 in adapter and 4 x 6 in adapter with gaskets to FSV-919 "FST-1A DRAIN AND SAMPLE VALVE" (Southeast side of FST-1A).

- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figure 4, in this procedure.

4.23 ___ Install hose adapter with gaskets to 4 x 6 in adapter.

- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figure 4, in this procedure.

4.24 ___ Ensure adequate temporary support is placed under hose adapter.

4.25 ___ Connect sections of 6 in hose together and attach to hose adapter on FSV-919 "FST-1A DRAIN AND SAMPLE VALVE" (Southeast side of FST-1A).

- Refer to Enclosure 17, "EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION," Figure 4, in this procedure.

4.26 ___ Ensure all couplings and fittings are tight.

ENCLOSURE 4 INSTALLATION OF EFT-2 TEMPORARY TRANSFER LINE (CONT'D)

ACTIONS

DETAILS

4.27 ___ Pressurize transfer hose.
(OPS)

1 ___ Slowly open EFV-96
"EFT-2 DRAIN"
(Inside EFT-2 Building north wall).

2 ___ Check all hoses and connections for
leaks.

3 ___ IF leaks exist,
THEN perform the following in
order:

___ Close EFV-96
"EFT-2 DRAIN"
(Inside EFT-2 Building
north wall).

___ Repair leaks.

4.28 ___ Close EFV-96
"EFT-2 DRAIN"
(Inside EFT-2 Building
north wall).

4.29 ___ **EXIT** this enclosure.

ENCLOSURE 5 EFT-2 TRANSFER TO ALTERNATE TANKS FOR COOLING

ACTIONS

DETAILS

- 5.1 _____ IF EFT-2 transfer
to FST-1A is desired,
THEN GO TO Step 5.12
in this enclosure.

ENCLOSURE 5 EFT-2 TRANSFER TO ALTERNATE TANKS FOR COOLING (CONT'D)

ACTIONS

DETAILS

STATUS

EFT-2 transfer to CDT-1 is desired.

5.2 — Verify 6 in hose is installed between EFT-2 and FWV-265
"FWP-7 FW EMERGENCY TRANSFER TO FS OR SD SYSTEM ISO"
(119 ft TB near southwest stairway).

— IF hose is NOT installed between EFT-2 and FWV-265,
THEN PERFORM
Enclosure 4 in this procedure.

ENCLOSURE 5 EFT-2 TRANSFER TO ALTERNATE TANKS FOR COOLING (CONT'D)

ACTIONS

DETAILS

CAUTION

Entry into EFT-2 Building may require additional precautions if power is not available to ventilation fan.

5.3 ___ IF B 4160V UNIT BUS is energized,
THEN ensure AHF-152 "EFT-2 ENC Vent Fan" runs for > 10 min prior to entry (Entrance to EFT-2).

5.4 ___ Open EFV-96 "EFT-2 DRAIN" (Inside EFT-2 Building north wall).

5.5 ___ Ensure transfer hose is not leaking.

NOTE

The next steps may result in a rapid decrease in EFT-2 level.

5.6 ___ Notify Control Room EFT-2 alignment to CDT-1 is in progress.

ENCLOSURE 5 EFT-2 TRANSFER TO ALTERNATE TANKS FOR COOLING (CONT'D)

ACTIONS

DETAILS

5.7 — Open FWV-265
"FWP-7 FW EMERGENCY
TRANSFER TO FS OR SD
SYSTEM ISO"
(119 ft TB near south
west stairway).

5.8 — Ensure CDV-103
"CDT-1 TO EFP SUCTION"
is open
(119 ft Berm by CDT-1).

5.9 — Unlock and close EFV-111
"EFT-2 TO EFP SUCTION
ISOLATION "
(Inside EFT-2 Building
northwest corner).

5.10 — Unlock and close EFV-109
"EFT-2 TO EFP SUCTION
ISOLATION"
(Inside EFT-2 Building
north wall).

5.11 — **EXIT** this enclosure.

ENCLOSURE 5 EFT-2 TRANSFER TO ALTERNATE TANKS FOR COOLING (CONT'D)

ACTIONS

DETAILS

STATUS

EFT-2 transfer to FST-1A is desired.

5.12 ___ Verify 6 in hose is installed
between EFT-2 and FSV-919
"FST-1A DRAIN AND
SAMPLE VALVE"
(Southeast side of FST-1A).

___ IF hose is NOT installed
between EFT-2 and
FSV-919,
THEN PERFORM
Enclosure 4 in this
procedure.

CAUTION

Entry into EFT-2 Building may require additional precautions if power is not available to ventilation fan.

5.13 ___ IF B 4160V UNIT BUS is
energized,
THEN ensure AHF-152
"EFT-2 ENC Vent Fan"
runs for > 10 min prior to
entry (Entrance to EFT-2).

ENCLOSURE 5 EFT-2 TRANSFER TO ALTERNATE TANKS FOR COOLING (CONT'D)

ACTIONS

DETAILS

5.14 ___ Open EFV-96
"EFT-2 DRAIN"
(Inside EFT-2 Building
north wall).

5.15 ___ Ensure transfer hose is not
leaking.

NOTE

The next step may result in a rapid decrease in EFT-2 level.

5.16 ___ Notify Control Room EFT-2
alignment to CDT-1
is in progress.

5.17 ___ Open FSV-919
"FST-1A DRAIN AND
SAMPLE VALVE"
(Southeast side of FST-1A).

5.18 ___ Close CDV-288
"FST TO CDT-1
CROSS-TIE DRAIN"
(119 ft Berm by FST-1A).

ENCLOSURE 5 EFT-2 TRANSFER TO ALTERNATE TANKS FOR COOLING (CONT'D)

ACTIONS

DETAILS

5.19 ___ Open CDV-289
"FST TO CDT-1
CROSS-TIE ISO"
(119 ft Berm by FST-1A).

5.20 ___ Open FSV-918
"FST TO CDT-1
CROSS-TIE ISO"
(119 ft Berm by FST-1A).

5.21 ___ Unlock and close EFV-111
"TO EFW PUMP SUCTION"
(Inside EFT-2 Building
northwest corner).

5.22 ___ Unlock and close EFV-109
"TO EFW PUMP SUCTION"
(Inside EFT-2 Building
north wall).

5.23 ___ EXIT this enclosure.

ENCLOSURE 6 ALIGNING UNIT 1 OR 2 STEAM TO EFP-2

ACTIONS

DETAILS

NOTE

If EFP-2 is the only available FW source, then not aligning Unit 1 or 2 steam may require EFP-2 to be cycled on and off based on available steam pressure.

6.1 ___ IF Unit 1 or 2 steam is available,
AND 95 ft IB is accessible,
THEN notify SPO to perform warmup and pressurization of AS line to EFP-2

1 ___ Throttle ASV-15
"AS ISO TO EFP-2"
1 turn open
(119 ft TB NW stairs).

2 ___ WHEN steam PRESS is equalized around ASV-15,
THEN open ASV-15

3 ___ Blowdown condensate from ASDT-2 by cycling ASV-110
"ASDT-2 BLOWDOWN"
(95 ft TB behind Atmospheric Drain Tank).

4 ___ WHEN AS lines are warmed and free of condensate,
THEN notify Control Room.

6.2 ___ WHEN AS lines are warmed and pressurized,
THEN notify PPO to blowdown MSDT-21

- Blowdown condensate from MSDT-21 by throttling open MSV-290
"MSDT-21 BLOWDOWN"
(95 ft IB by EFP-2).

ENCLOSURE 6 ALIGNING UNIT 1 OR 2 STEAM TO EFP-2 (CONT'D)

ACTIONS

DETAILS

6.3 ___ WHEN AS is ready to be aligned to EFP-2, THEN notify PPO to align Unit 1 or 2 steam to EFP-2

1 ___ Ensure MSDT-21 is free of condensate and close MSV-290 "MSDT-21 BLOWDOWN" (95 ft IB by EFP-2).

2 ___ Open ASV-23 "UNITS 1 OR 2 STEAM TO EFP-2" (95 ft IB by EFP-2).

6.4 ___ **EXIT** this enclosure.

ENCLOSURE 7 EFP-2 CROSS-TIE TO A TRAIN EFW

ACTIONS

DETAILS

STATUS

- A EDG is supplying the A ES 4160V BUS.
- B ES 4160V BUS is de-energized.
- EFP-2 cross-tie to A Train EFW is desired.

7.1 — Verify ASV-50
"EFP-2 TRIP &
THROTTLE VALVE"
is not tripped.

- "EF PUMP 2 TRIP" annunciator alarm
(H-07-04) not lit.

— IF ASV-50 is tripped,
THEN notify SPO to
perform Enclosure 15,
"EFP-2 TRIP RECOVERY" in
this procedure.

ENCLOSURE 7 EFP-2 CROSS-TIE TO A TRAIN EFW (CONT'D)

ACTIONS

DETAILS

7.2 ___ Ensure EFP-2 normal discharge path is isolated.

1 ___ Depress "MANUAL PERMISSIVE" push buttons on EFIC channels A and B.

2 Close EFP-2 discharge block valves:

___ EFV-11

___ EFV-32

3 Notify PPO to open EFP-2 discharge block valve switches (A ES 480V SWGR Room):

___ DPDP 8C-1
"EFV-11 MOTOR POWER"

___ DPDP 8C-3
"EFV-32 MOTOR POWER"

7.3 ___ Start EFP-2

• Open ASV-204

ENCLOSURE 7 EFP-2 CROSS-TIE TO A TRAIN EFW (CONT'D)

ACTIONS

DETAILS

7.4 ___ Notify PPO to cross connect EFW trains.

1 ___ Unlock and close EFV-12 switches (A ES 480V SWGR Room):

___ DPDP 8C-5
___ "EFV-12 MOTOR POWER"

___ DPDP 8C-6
___ "EFV-12 CONTROL POWER"

2 ___ Depress the open push button on EFV-12-MST (A ES 480V SWGR Room).

3 ___ WHEN EFV-12 is open,
THEN open and lock EFV-12 switches (A ES 480V SWGR Room):

___ DPDP 8C-5
___ "EFV-12 MOTOR POWER"

___ DPDP 8C-6
___ "EFV-12 CONTROL POWER"

4 ___ Notify Control Room that EFV-12 is open.

7.5 ___ WHEN EFP-2 is aligned to supply EFW to OTSGs,
THEN stop EFP-3

ENCLOSURE 7 EFP-2 CROSS-TIE TO A TRAIN EFW (CONT'D)

ACTIONS

DETAILS

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

7.7 ___ Ensure EFW flow is
controlled.

[Rule 3, EFW/AFW Control]

7.8 ___ **EXIT** this enclosure.

ENCLOSURE 8 TRANSFERING HOTWELL TO EFT-2 USING EFP-2

ACTIONS

DETAILS

STATUS

All the following exist:

- B-Battery failed
- Water sources on berm depleted
- Hotwell transfer to EFT-2 using EFP-2 is desired

8.1 ___ IF hotwell is NOT at atmospheric PRESS, THEN break condenser vacuum.

1 Close all MSIVs:

___ MSV-412

___ MSV-413

___ MSV-414

___ MSV-411

2 ___ Control OTSG PRESS using ADVs.

3 Select condenser ARPs to "PULL TO LOCK":

___ ARP-1A

___ ARP-1B

4 Open condenser vacuum Bkrs:

___ ARV-48

___ ARV-49

ENCLOSURE 8 TRANSFERRING HOTWELL TO EFT-2 USING EFP-2 (CONT'D)

ACTIONS

DETAILS

8.2 ___ Ensure EFP-2 EFW block valves are closed.

- ___ EFV-11
 - ___ EFV-32
-

8.3 ___ WHEN condenser is at atmospheric PRESS, THEN notify SPO to align EFP-2 to hotwell.

- 1 ___ Ensure EFV-36 "EFW & AFW SUCTION ISO FROM HOTWELL" is open (95 ft TB between C & D inlet waterboxes).
 - 2 ___ Unlock and open EFV-1 "EFP-2 SUCTION FROM CONDENSER" (95 ft IB by EFP-2).
 - 3 ___ Unlock and close EFV-4 "EFP-2 SUCTION FROM EFT-2" (95 ft IB by EFP-2).
-

8.4 ___ Start EFP-2

- Open ASV-204

ENCLOSURE 8 TRANSFERING HOTWELL TO EFT-2 USING EFP-2 (CONT'D)

ACTIONS

DETAILS

8.5 ___ WHEN hotwell \leq 24 in,
 ___ OR EFT-2 is at desired
 ___ level,
 ___ THEN stop EFP-2

- Close ASV-204

8.6 ___ **EXIT** this enclosure.

ENCLOSURE 9 START UP AND SHUTDOWN OF EFW/AFW PUMPS

ACTIONS

DETAILS

CAUTION

Ensure adequate margin is available on A EDG before starting EFP-1

9.1 ___ IF EFP-1 start is desired from hotwell, THEN ensure flow path is properly aligned and start EFP-1

- 1 ___ Ensure condenser is at atmospheric PRESS.
- 2 ___ Ensure EFV-36 "EFW & AFW SUCTION ISO FROM HOTWELL" is open (95 ft TB between C & D inlet waterboxes).
- 3 ___ Unlock and open EFV-2 "EFP-1 SUCTION FROM CONDENSER" (95 ft IB by EFP-1).
- 4 ___ Unlock and close EFV-3 "EFP-1 SUCTION FROM EFT-2" (95 ft IB by EFP-1).
- 5 ___ Ensure EFP-1 EFIC control valves are closed.
- 6 ___ Ensure EFP-3 is in "PULL TO LOCK".
- 7 ___ Start EFP-1 and ensure EFW flow is controlled.

[Rule 5, EDG Control]
- 8 ___ Ensure EFW flow is maintained < limit of EOP-14, Emergency Operating Procedures Enclosures, Figure 3

ENCLOSURE 9 START UP AND SHUTDOWN OF EFW/AFW PUMPS (CONT'D)

ACTIONS

DETAILS

CAUTION

Ensure adequate margin is available on A EDG before starting EFP-1

9.2 ___ IF EFP-1 start is desired from EFT-2, THEN ensure flow path is properly aligned and start EFP-1

- 1 ___ OPEN EFV-109
"EFT-2 TO EFW PUMP SUCTION"
(119 ft berm inside EFT-2 Building).
- 2 ___ Open EFV-111
"EFT-2 TO EFW PUMP SUCTION"
(119 ft Berm inside EFT-2 Building).
- 3 ___ Unlock and open EFV-3
"EFP-1 SUCTION FROM EFT-2"
(95 ft IB by EFP-1).
- 4 ___ Unlock and close EFV-2
"EFP-1 SUCTION FROM CONDENSER"
(95 ft IB by EFP-1).
- 5 ___ Ensure EFP-1 EFIC control valves are closed.
- 6 ___ Ensure EFP-3 is in "PULL TO LOCK".
- 7 ___ Start EFP-1 and ensure EFW flow is controlled.

[Rule 5, EDG Control]
- 8 ___ Ensure EFW flow is controlled.

[Rule 3, EFW/AFW Control]

ENCLOSURE 9 START UP AND SHUTDOWN OF EFW/AFW PUMPS (CONT'D)

ACTIONS

DETAILS

9.3 ___ IF EFP-2 start is desired from hotwell, THEN ensure flow path is properly aligned and start EFP-2

- 1 ___ Ensure condenser is at atmospheric PRESS.
- 2 ___ Ensure EFV-36 "EFW & AFW SUCTION ISO FROM HOTWELL" is open (95 ft TB between C & D inlet waterboxes).
- 3 ___ Unlock and open EFV-1 "EFP-2 SUCTION FROM CONDENSER" (95 ft IB by EFP-2).
- 4 ___ Unlock and close EFV-4 "EFP-2 SUCTION FROM EFT-2" (95 ft IB by EFP-2).
- 5 ___ Ensure EFP-2 EFIC control valves are closed.
- 6 Start EFP-2 by opening 1 of the following:
 - ___ ASV-5
 - ___ ASV-204
- 7 ___ Ensure EFW flow is controlled.

[Rule 3, EFW/AFW Control]

ENCLOSURE 9 START UP AND SHUTDOWN OF EFW/AFW PUMPS (CONT'D)

ACTIONS

DETAILS

9.4 ___ IF EFP-2 start is desired from EFT-2, THEN ensure flow path is properly aligned and start EFP-2

1 ___ OPEN EFV-109
"EFT-2 TO EFW PUMP SUCTION"
(119 ft berm inside
EFT-2 Building).

2 ___ Open EFV-111
"EFT-2 TO EFW PUMP SUCTION"
(119 ft Berm inside
EFT-2 Building).

3 ___ Unlock and open EFV-4
"EFP-2 SUCTION FROM EFT-2"
(95 ft IB by EFP-2).

4 ___ Unlock and close EFV-1
"EFP-2 SUCTION FROM
CONDENSER"
(95 ft IB by EFP-2).

5 ___ Ensure EFP-2 EFIC control valves
are closed.

6 Start EFP-2 by opening 1 of the
following:

___ ASV-5

___ ASV-204

7 ___ Ensure EFW flow is controlled.

[Rule 3, EFW/AFW Control]

ENCLOSURE 9 START UP AND SHUTDOWN OF EFW/AFW PUMPS (CONT'D)

ACTIONS

DETAILS

9.5 — IF EFP-3 start is desired,
THEN ensure flow path is
properly aligned and start
EFP-3

1 — IF starting EFP-3 from EFT-2,
THEN ensure the following valves
are open:

— EFV-109
"EFT-2 TO EFW PUMP
SUCTION"
(119 ft berm inside
EFT-2 Building)

— EFV-111
"EFT-2 TO EFW PUMP
SUCTION"
(119 ft Berm inside
EFT-2 Building)

2 — IF EFP-3 will NOT be aligned
to EFT-2,
THEN ensure proper suction flow
path exists.

3 — Ensure EFP-3 EFIC control valves
are closed.

4 — Ensure EFP-1 is in
"PULL TO LOCK".

5 — Depress "MANUAL PERMISSIVE"
push button on EFIC channel A.

6 — Select EFP-3 to
"NORMAL AFTER STOP".

7 — Reset the fuel rack on
EFP-3 diesel (119 ft Berm inside
EFP-3 Building).

8 — Start EFP-3

9 — Ensure EFW flow is controlled.

[Rule 3, EFW/AFW Control]

ENCLOSURE 9 START UP AND SHUTDOWN OF EFW/AFW PUMPS (CONT'D)

ACTIONS

DETAILS

9.6 ___ IF FWP-7 start is desired from CDT-1, THEN ensure flow path is properly aligned and start FWP-7

- 1 ___ Ensure CDT-1 level \geq 5 ft.
- 2 ___ Ensure CDV-102 "CDT-1 LOWER ISO" is open (119 ft Berm by CDT-1).
- 3 ___ OPEN FWV-214 "FWP-7 SUCTION FROM CDT-1" (95 ft TB by FWP-7).
- 4 ___ Close FWV-213 "FWP-7 SUCTION FROM HOTWELL" (95 ft TB by FWP-7).
- 5 ___ Ensure all AFW control valves are closed.
- 6 ___ Start FWP-7

ENCLOSURE 9 START UP AND SHUTDOWN OF EFW/AFW PUMPS (CONT'D)

ACTIONS

DETAILS

9.7 ___ IF FWP-7 start is desired from hotwell, THEN ensure flow path is properly aligned and start FWP-7

- 1 ___ Ensure condenser is at atmospheric PRESS.
- 2 ___ Ensure hotwell level \geq 48 in.
- 3 ___ Ensure EFV-36 "EFW & AFW SUCTION ISO FROM HOTWELL" is open (95 ft TB between C & D inlet waterboxes).
- 4 ___ Open FWV-213 "FWP-7 SUCTION FROM HOTWELL" (95 ft TB by FWP-7).
- 5 ___ Close FWV-214 "FWP-7 SUCTION FROM CDT-1" (95 ft TB by FWP-7).
- 6 ___ Ensure all AFW control valves are closed.
- 7 ___ Start FWP-7

ENCLOSURE 9 START UP AND SHUTDOWN OF EFW/AFW PUMPS (CONT'D)

ACTIONS

DETAILS

9.8 ___ IF FWP-7 start is desired from EFT-2, THEN ensure flow path is properly aligned and start FWP-7

- 1 ___ Ensure EFT-2 level \geq 9 ft.
- 2 ___ Ensure EFP-1 and EFP-2 are not running.
- 3 ___ OPEN EFV-109
"EFT-2 TO EFW PUMP SUCTION"
(119 ft berm inside EFT-2 Building).
- 4 ___ Ensure EFV-3 is open
"EFP-1 SUCTION FROM EFT-2"
(95 ft IB by EFP-1).
- 5 ___ Unlock and open EFV-2
"EFP-1 SUCTION FROM CONDENSER"
(95 ft IB by EFP-1).
6. ___ Open FWV-213
"FWP-7 SUCTION FROM HOTWELL"
(95 ft TB by FWP-7).
- 7 ___ Close FWV-214
"FWP-7 SUCTION FROM CDT-1"
(95 ft TB by FWP-7).
- 8 ___ Close EFV-36
"EFW & AFW SUCTION ISO FROM HOTWELL"
(95 ft TB between C & D inlet waterboxes).
- 9 ___ Ensure all AFW control valves are closed.
- 10 ___ Start FWP-7

ENCLOSURE 9 START UP AND SHUTDOWN OF EFW/AFW PUMPS (CONT'D)

ACTIONS

DETAILS

9.9 ___ IF stopping any EFW
OR AFW pump is desired,
THEN stop affected pump.

1 ___ IF EFP-1 shutdown is desired,
THEN select EFP-1 to
"PULL TO LOCK".

2 ___ IF EFP-2 shutdown is desired,
THEN perform the following in
order:

___ Depress "MANUAL
PERMISSIVE" push button
on EFIC channel B.

___ Close ASV-204

___ Close ASV-5

3 ___ IF EFP-3 shutdown is desired,
AND EFP-3 is aligned to EFT-2,
THEN perform the following in
order:

___ Depress "MANUAL
PERMISSIVE" push button
on EFIC channel A.

___ Stop EFP-3

4 ___ IF EFP-3 shutdown is desired,
AND EFT-2 is isolated,
THEN select EFP-3 to
"PULL TO LOCK".

5 ___ IF FWP-7 shutdown is desired,
THEN stop FWP-7

9.10 ___ **EXIT** this enclosure.

ENCLOSURE 10 EFP-1 TO DHR TRANSITION

ACTIONS

DETAILS

STATUS

All the following exist:

- EFP-1 starting desired
- B ES 4160V BUS not energized
- A EDG supplying power to A ES 4160V BUS
- DHR not in service
- LPI not required

10.1 ___ Ensure available margin on
A EDG.

- Ensure all the following are not
running:

___ DHP-1A

___ RWP-3A

___ DCP-1A

___ BSP-1A

___ AHF-15A

ENCLOSURE 10 EFP-1 TO DHR TRANSITION (CONT'D)

ACTIONS

DETAILS

10.2 ___ Start EFP-1

1 ___ Ensure proper suction flow path exists.

2 ___ IF EFP-3 is running,
THEN stop select EFP-3 to
"PULL TO LOCK".

3 Ensure EFP-1 EFIC control valves are closed:

___ EFV-58

___ EFV-57

4 ___ Start EFP-1

[Rule 5, EDG Control]

5 ___ Ensure EFW flow is controlled.

[Rule 3, EFW/AFW Control]

ENCLOSURE 10 EFP-1 TO DHR TRANSITION (CONT'D)

ACTIONS

DETAILS

10.3 ___ WHEN transition to DHR is required,
THEN stop EFP-1

1 ___ Raise level in available OTSGs to > 90%.

2 Close EFP-1 EFIC control valves

___ EFV-58

___ EFV-57

3 ___ Select EFP-1 to "PULL TO LOCK".

10.4 ___ Transition to DHR using applicable EOP or AP.

10.5 ___ **EXIT** this enclosure.

ENCLOSURE 11 EFP-1 ALIGNMENT TO A EDG WITHOUT LOAD MANAGEMENT

ACTIONS

DETAILS

STATUS

All the following exist:

- EFP-1 starting desired
- BOTH ES 4160V Buses energized by EDGs
- Stopping SWP-1A or RWP-2A not desired
- DHR not in service
- LPI not required

11.1 ___ Ensure CC ventilation and CC chiller is aligned to B ES 4160V BUS.

- Refer to EOP-14, Enclosure 17, Control Complex Emergency Ventilation and Cooling, for guidance.

11.2 ___ Ensure available margin on A EDG.

- Ensure all the following are not running:

- ___ DHP-1A
- ___ RWP-3A
- ___ DCP-1A
- ___ BSP-1A
- ___ AHF-15A

ENCLOSURE 11 EFP-1 ALIGNMENT TO A EDG WITHOUT LOAD MANAGEMENT
(CONT'D)

ACTIONS

DETAILS

11.3 ___ Start EFP-1

1 ___ Ensure a proper suction flow path exists.

2 ___ IF EFP-3 is running,
THEN select EFP-3 to
"PULL TO LOCK".

3 Ensure EFP-1 EFIC control valves are closed:

___ EFV-58

___ EFV-57

4 ___ Start EFP-1

[Rule 5, EDG Control]

5 ___ Ensure EFW flow is controlled.

[Rule 3, EFW/AFW Control]

11.4 ___ WHEN transition to DHR is required,
THEN ensure DHR is aligned to the
B ES 4160V BUS.

- Transition to DHR using applicable EOP or AP.

11.5 ___ **EXIT** this enclosure.

ENCLOSURE 12 ALIGNING EFW/AFW PUMPS TO HOTWELL

ACTIONS

DETAILS

12.1 ___ Ensure hotwell is at atmospheric PRESS.

1 Close all MSIVs:

___ MSV-412

___ MSV-413

___ MSV-414

___ MSV-411

2 ___ Control OTSG PRESS using ADVs.

3 Select condenser ARPs to "PULL TO LOCK":

___ ARP-1A

___ ARP-1B

4 Open condenser vacuum Bkrs:

___ ARV-48

___ ARV-49

12.2 ___ WHEN hotwell is at atmospheric PRESS, THEN notify SPO to determine hotwell TEMP.

• Record hotwell TEMP:

CD-53-TI
"CDHE-4A SOUTHSIDE
TEMPERATURE": _____ °F
(95 ft TB south of A hotwell)

CD-55-TI
"CDHE-4B SOUTHSIDE
TEMPERATURE": _____ °F
(95 ft TB south of B hotwell)

ENCLOSURE 12 ALIGNING EFW/AFW PUMPS TO HOTWELL (CONT'D)

ACTIONS

DETAILS

12.3 ___ Verify hotwell is available.

• Verify all the following exist:

___ Hotwell level > 48 in

___ Hotwell TEMP < 139°F

___ IF hotwell is NOT available,
THEN EXIT this enclosure.

12.4 ___ IF EFP-1 alignment to the hotwell is desired, THEN align EFP-1 to hotwell.

- 1 ___ Ensure EFV-36 "EFW & AFW SUCTION ISO FROM HOTWELL" is open (95 ft TB between C & D inlet waterboxes).
- 2 ___ Unlock and open EFV-2 "EFP-1 SUCTION FROM CONDENSER" (95 ft IB by EFP-1).
- 3 ___ Unlock and close EFV-3 "EFP-1 SUCTION FROM EFT-2" (95 ft IB by EFP-1).
- 4 ___ IF EFP-1 start up is desired, THEN CONCURRENTLY PERFORM Enclosure 9 in this procedure.
- 5 ___ Maintain total EFW flow \leq limits of EOP-14, Emergency Operating Procedures Enclosures, Figure 3

ENCLOSURE 12 ALIGNING EFW/AFW PUMPS TO HOTWELL (CONT'D)

ACTIONS

DETAILS

12.5 ___ IF EFP-2 alignment to the hotwell is desired, THEN align EFP-2 to hotwell.

- 1 ___ Ensure EFV-36 "EFW & AFW SUCTION ISO FROM HOTWELL" is open (95 ft TB between C & D inlet waterboxes).
- 2 ___ Unlock and open EFV-1 "EFP-2 SUCTION FROM CONDENSER" (95 ft IB by EFP-2).
- 3 ___ Unlock and close EFV-4 "EFP-2 SUCTION FROM EFT-2" (95 ft IB by EFP-2).
- 4 ___ IF EFP-2 start up is desired, THEN CONCURRENTLY PERFORM Enclosure 9 in this procedure.
- 5 ___ Maintain total EFW flow \leq limits of EOP-14, Emergency Operating Procedures Enclosures, Figure 3

ENCLOSURE 12 ALIGNING EFW/AFW PUMPS TO HOTWELL (CONT'D)

ACTIONS

DETAILS

12.6 ___ IF FWP-7 alignment to the hotwell is desired, THEN align FWP-7 suction from hotwell.

- 1 ___ Ensure EFV-36 "EFW & AFW SUCTION ISO FROM HOTWELL" is open (95 ft TB between C & D inlet waterboxes).
- 2 ___ Open FWV-213 "FWP-7 SUCTION FROM HOTWELL" (95 ft TB by FWP-7).
- 3 ___ Close FWV-214 "FWP-7 SUCTION FROM CDT-1" (95 ft TB by FWP-7).
- 4 ___ IF FWP-7 start up is desired, THEN CONCURRENTLY PERFORM Enclosure 9 in this procedure.

12.7 ___ IF at any time hotwell level is \leq 24 in, THEN ensure adequate suction source exists.

- Perform 1 of the following:
 - ___ Transfer pump suction to alternate supply.
 - ___ Refill hotwell.
 - ___ Stop any running EFW or AFW pump aligned to the hotwell.

12.8 ___ WHEN no running EFW OR AFW pump is aligned to the hotwell, THEN EXIT this enclosure.

ENCLOSURE 13 REFILLING FST-1A/1B FROM UNIT 1 OR 2 FIRE SYSTEM

ACTIONS

DETAILS

- 13.1 ___ Notify CR-1/2
Control Room that FST
filling evolution will be
performed.

NOTE

FST-1A or 1B is full when level is 36 ft (Approximately 9,860 gal = 1 ft.)

- 13.2 ___ Start FST-1A fill.

- 1 ___ Ensure FSV-27
"FST-1A INLET ISO"
is open
(119 ft Berm between FSTs).
- 2 ___ IF FST-1A and FST-1B are NOT
cross-tied,
THEN ensure FSV-28
"FST-1B INLET ISO" is closed
(119 ft Berm between FSTs).
- 3 Open 1 of the following valves:
- ___ FSV-25
"UNIT 1 & 2 FILL ISOLATION TO
UNIT 3 FIRE SERVICE"
(95 ft West of Berm outside
protected area)
 - ___ FSV-285
"FSV-25 BYPASS"
(95 ft West of Berm outside
protected area)

ENCLOSURE 13 REFILLING FST-1A/1B FROM UNIT 1 OR 2 FIRE SYSTEM
(CONT'D)

ACTIONS

DETAILS

13.3 ___ WHEN FSTs are at desired level,
THEN stop FST fill.

1 ___ Close FSV-25
"UNIT 1 & 2 FILL ISOLATION TO
UNIT 3 FIRE SERVICE"
(95 ft West of Berm outside
protected area).

2 ___ Close FSV-285
"FSV-25 BYPASS"
(95 ft West of Berm outside
protected area).

3 ___ IF FST-1A and FST-1B are NOT
cross-tied,
THEN perform the following:

___ Open FSV-28
"FST-1B INLET ISO
(119 ft Berm between FSTs).

___ Close FSV-27
"FST-1A INLET ISO"
(119 ft Berm between FSTs).

13.4 ___ **EXIT** this enclosure.

ENCLOSURE 14 ALIGNING EFW PUMPS TO EFT-2

ACTIONS

DETAILS

14.1 ___ Ensure EFT-2 level is ≥ 9 ft.

14.2 ___ Verify CDT-1 level is ≥ 5 ft.

___ IF CDT-1 level is < 5 ft,
THEN ensure CDV-103
"CDT-1 TO EFP SUCTION"
is closed
(119 ft Berm by CDT-1).

14.3 ___ IF EFP-1 alignment to EFT-2
is desired,
THEN align EFP-1 to EFT-2

1 ___ Ensure EFV-109
"EFT-2 TO EFW PUMP SUCTION"
is open
(119 ft berm inside
EFT-2 Building).

2 ___ Ensure EFV-111
"EFT-2 TO EFW PUMP SUCTION"
is open
(119 ft Berm inside
EFT-2 Building).

3 ___ Unlock and open EFV-3
"EFP-1 SUCTION FROM EFT-2"
(95 ft IB by EFP-1).

4 ___ Unlock and close EFV-2
"EFP-1 SUCTION FROM
CONDENSER"
(95 ft IB by EFP-1).

ENCLOSURE 14 ALIGNING EFW PUMPS TO EFT-2 (CONT'D)

ACTIONS

DETAILS

14.4 ___ IF EFP-2 alignment to EFT-2
is desired,
THEN align EFP-2 to EFT-2

- 1 ___ Ensure EFV-109
"EFT-2 TO EFW PUMP SUCTION"
is open
(119 ft berm inside
EFT-2 Building).
- 2 ___ EFV-111
"EFT-2 TO EFW PUMP SUCTION"
is open
(119 ft Berm inside
EFT-2 Building).
- 3 ___ Unlock and open EFV-4
"EFP-2 SUCTION FROM EFT-2"
(95 ft IB by EFP-2).
- 4 ___ Unlock and close EFV-1
"EFP-2 SUCTION FROM
CONDENSER"
(95 ft IB by EFP-2).

14.5 ___ EXIT this enclosure.

ACTIONS

DETAILS

CAUTION

If EFP-2 trip recovery follows an OTSG overflow event ensure MS lines and EFP-2 steam supply header are drained prior to performing EFP-2 trip recovery.

15.1 ___ Cause of the EFP-2 trip has been identified and corrected.

15.2 ___ Ensure EFP-2 steam supply isolation valves are closed.

- ___ ASV-5
 - ___ ASV-204
-

15.3 ___ Ensure EFP-2 normal discharge path is isolated.

1 ___ Depress "MANUAL PERMISSIVE" push buttons on EFIC channels A and B.

2 Close EFP-2 EFIC control valves:

___ EFV-55

___ EFV-56

ENCLOSURE 15 EFT-2 TRIP RECOVERY (CONT'D)

ACTIONS

DETAILS

15.4 ___ Notify SPO to
reset ASV-50
(95 ft IB by EFP-2).

- 1 ___ Turn handwheel clockwise to
raise latch collar.
- 2 ___ Ensure tappet and tappet nut are
fully depressed.
- 3 ___ Engage latch lever.
- 4 ___ Slowly open ASV-50 by turning
handwheel counterclockwise until
full open.
- 5 ___ Notify Control Room to verify
Annunciator alarm "EF PUMP 2
TRIP" (H-07-04) clears.

15.5 ___ Notify Control Room EFP-2
is reset.

15.6 ___ **EXIT** this enclosure.

ENCLOSURE 16 EFP-1/EFP-3 CROSS-TIE TO B TRAIN EFW

ACTIONS

DETAILS

STATUS

- EFP-1/EFP-3 cross-tie to B Train EFW is desired.

16.1 ___ Ensure EFP-1 / EFP-3 normal discharge path is isolated.

1 ___ Depress "MANUAL PERMISSIVE" push buttons on EFIC channels A and B.

2 Close EFP-1/ EFP-3 discharge block valves:

___ EFV-14

___ EFV-33

3 Notify PPO to open EFP-1 / EFP-3 discharge block valve switches (B ES 480V SWGR Room):

___ DPDP 8D-1
"EFV-14 MOTOR POWER"

___ DPDP 8D-3
"EFV-33 MOTOR POWER"

ENCLOSURE 16 EFP-1/EFP-3 CROSS-TIE TO B TRAIN EFV (CONT'D)

ACTIONS

DETAILS

16.2 ___ IF EFV-12 power available,
THEN notify PPO to open
EFV-12 electrically.

1 Unlock and close EFV-12 switches
(A ES 480V SWGR Room):

___ DPDP 8C-5
"EFV-12 MOTOR POWER"

___ DPDP 8C-6
"EFV-12 CONTROL POWER"

2 ___ Depress the open push button on
EFV-12-MST
(A ES 480V SWGR Room).

3 ___ WHEN EFV-12 is open,
THEN open and lock EFV-12
switches
(A ES 480V SWGR Room):

___ DPDP 8C-5
"EFV-12 MOTOR POWER"

___ DPDP 8C-6
"EFV-12 CONTROL POWER"

___ IF EFV-12 power is NOT
available,
THEN notify PPO to open
EFV-12 manually.
(95 ft IB by EFP-1)

16.3 ___ IF EFP-2 is not running,
THEN close EFP-2 EFIC
control valves.

• Close EFP-2 EFIC control valves:

___ EFV-55

___ EFV-56

ENCLOSURE 16 EFP-1/EFP-3 CROSS-TIE TO B TRAIN EFW (CONT'D)

ACTIONS

DETAILS

16.4 ___ Start EFP-1 or EFP-3.

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

16.6 ___ IF EFP-2 is running,
THEN stop EFP-2

16.7 ___ Ensure EFW flow is
controlled.

[Rule 3, EFW/AFW Control]

16.8 ___ **EXIT** this enclosure.

ENCLOSURE 17 EFP-2 TEMPORARY TRANSFER LINE CONFIGURATION

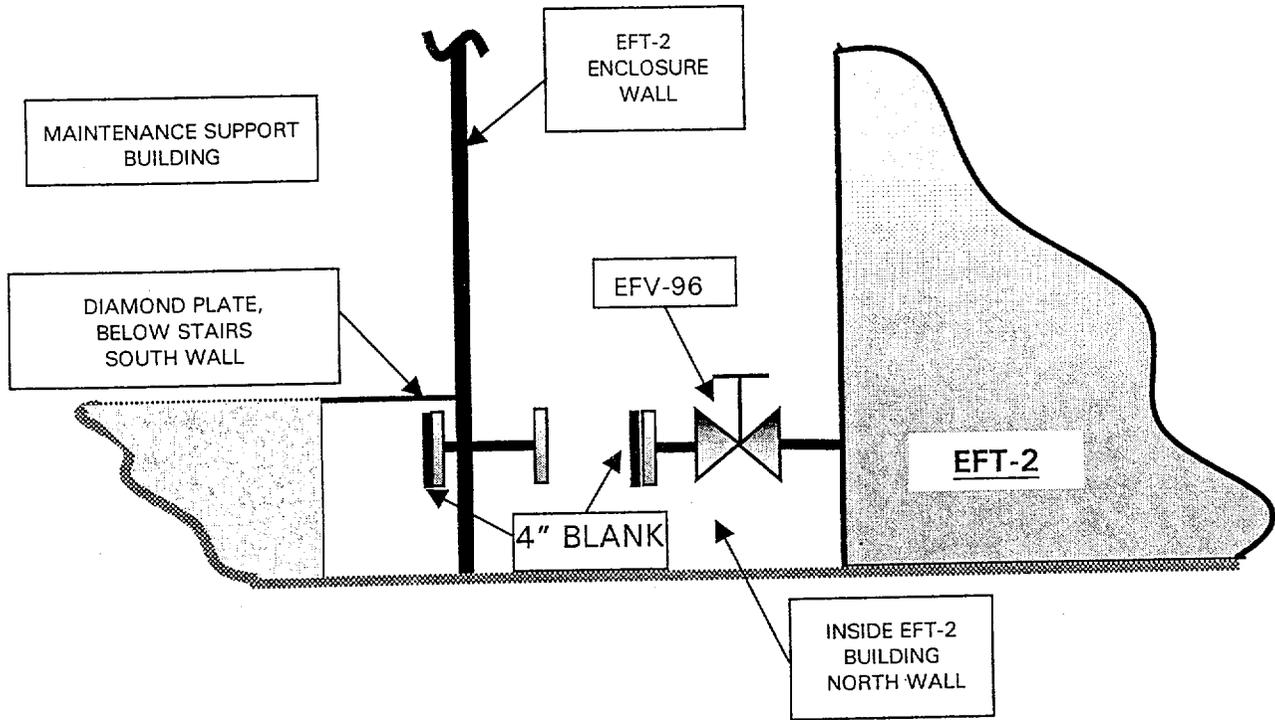


FIGURE 1 - CONFIGURATION OF EFT-2 PIPING AT BEGINING ENCLOSURE 4.0

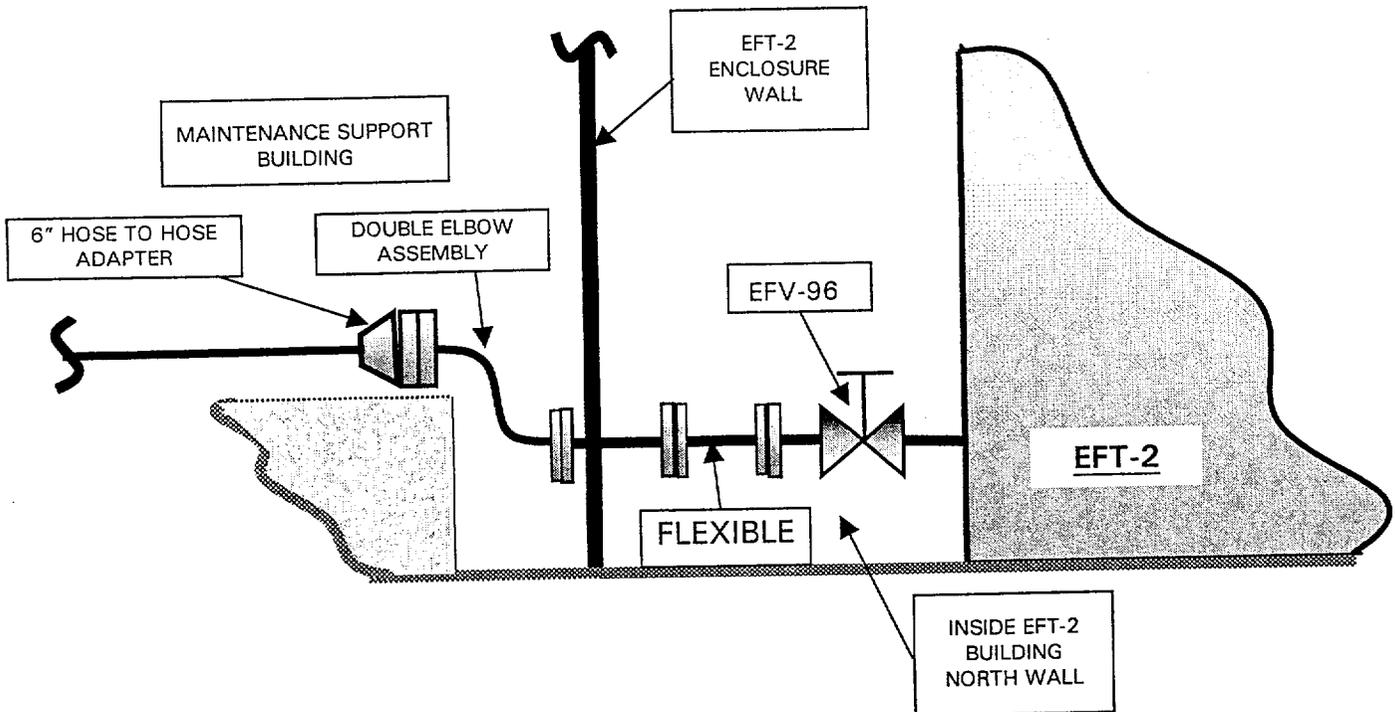


FIGURE 2 - CONFIGURATION OF EFT-2 TRANSFER LINE CONNECTION AT THE END OF ENCLOSURE 4, STEP 4.11

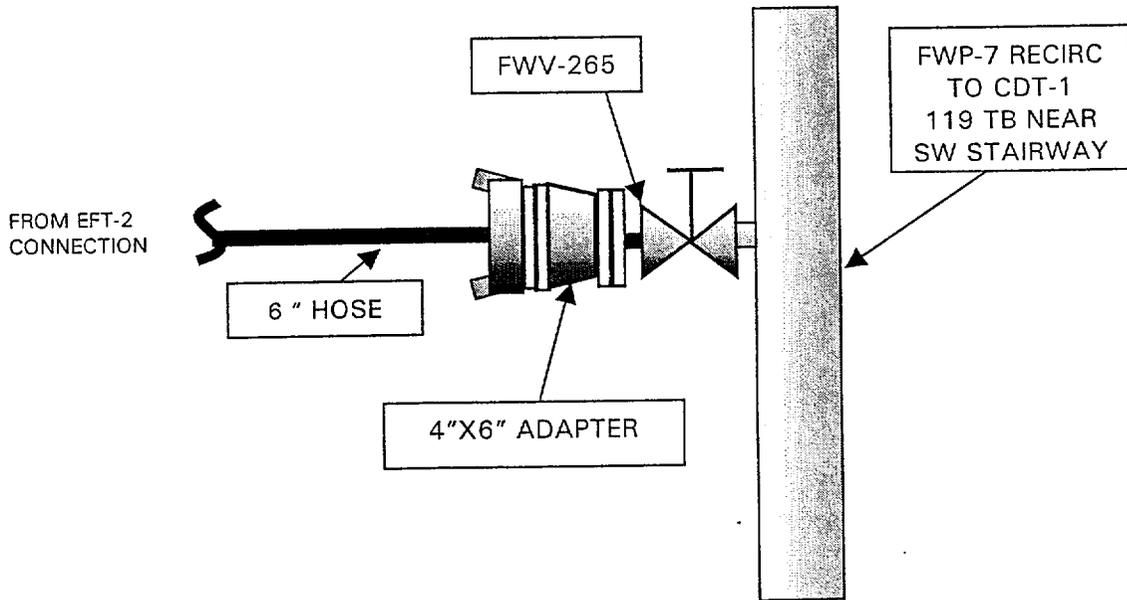


FIGURE 3 - CONFIGURATION OF EFT-2 CONNECTIONS TO CDT-1 AT THE END OF ENCLOSURE 4, STEP 4.16

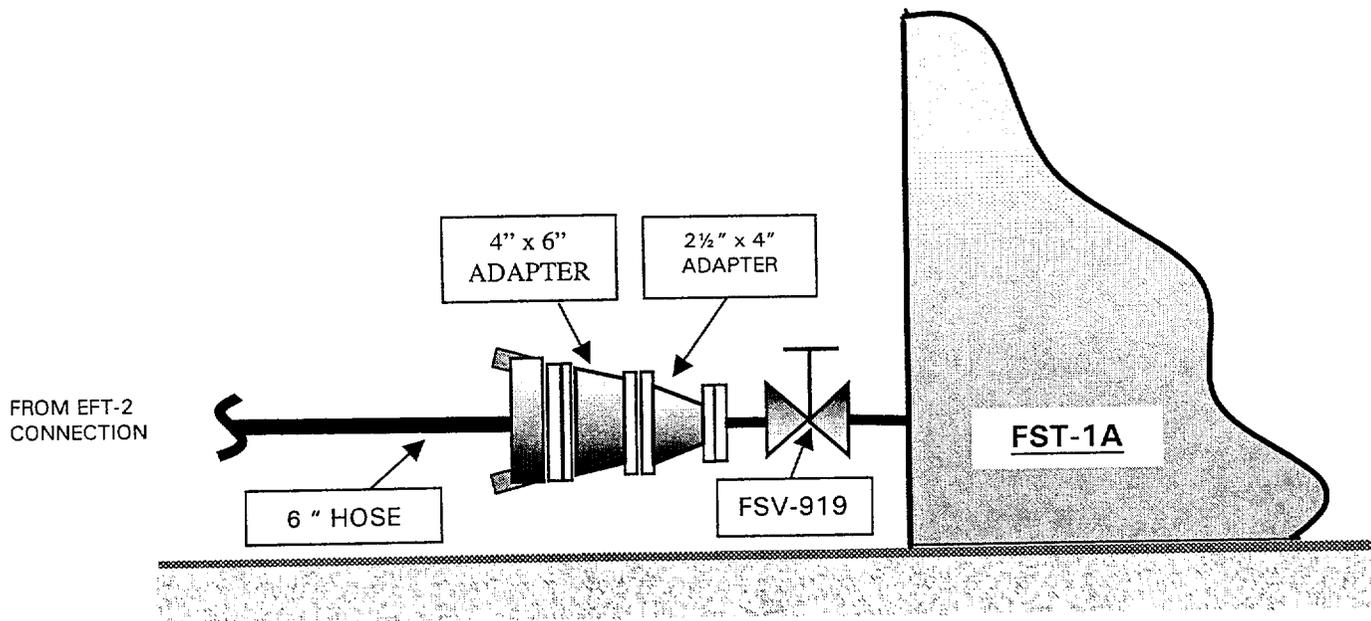


FIGURE 4 - CONFIGURATION OF FST-1A SOUTHEAST SIDE AT THE END OF ENCLOSURE 4, STEP 4.25

PROCEDURE DEVELOPMENT AND REVISION RECORD

Procedure: EM0225F

New Rev: 2

PRR#: 21359

Title: LONG TERM EMERGENCY FEEDWATER MANAGEMENT

MINOR CHANGES

If Minor Changes are included, check the applicable box(es) and provide a list of affected steps.
The following corrections are incorporated throughout:

- | | |
|---|---|
| <input type="checkbox"/> Sentence Structure | <input type="checkbox"/> Redundant words or phrases |
| <input type="checkbox"/> Punctuation | <input type="checkbox"/> Abbreviations |
| <input type="checkbox"/> Capitalization | <input type="checkbox"/> Obviously incorrect units of measure |
| <input type="checkbox"/> Spelling | <input type="checkbox"/> Inadvertently omitted symbols (#, %, etc.) |
| <input type="checkbox"/> Organizational Changes: position titles,
department names, or telephone numbers | <input type="checkbox"/> Obvious step numbering discrepancies |
| | <input checked="" type="checkbox"/> Format |

The following corrections are incorporated in the step(s) indicated: "Throughout" is used in lieu of Step# if a specific change affects a large number of steps.

Changing information that is obviously incorrect and referenced correctly elsewhere

Misplaced decimals that are neither setpoint values nor tolerances

Reference to a procedure when an approved procedure has taken the place of another procedure

Fixing branching points when it is clear the branching steps were originally intended but were overlooked or incorrectly stated due to step number changes

Note prior to step 4.1 revised to indicate number of people required to perform the enclosure.

Adding clarifying information such as NOTES and CAUTIONS

Steps 4.3 - 4.11, 4.14 - 4.17, and 4.22 - 4.25 - added detail referencing applicable diagrams provided in Enclosure 17.

Adding words to clarify steps, NOTES, or CAUTIONS which clearly do not change the methodology or intent of the steps

PROCEDURE DEVELOPMENT AND REVISION RECORD

Procedure: EM0225F

New Rev: 2

PRR#: 21359

Title: LONG TERM EMERGENCY FEEDWATER MANAGEMENT

NON-INTENT CHANGES

Changes are incorporated for the reasons provided. "Throughout" is used in lieu of Step # if a specific change affects a large number of steps. For new or cancelled procedures the reason is provided.

2.1.2	Changed revision number of M 99-0027 to reflect latest revision CALCULATION M-99-0027, Revision 6
2.1.7	Step 2.1.7 deleted. Contents of REA 99-1952 (formerly listed as step 2.1.7) incorporated into revision 6 of M 99-0027 (see step 2.1.2 above)
3.3.7	Changed location reference for FW-336-TI from 119 IB to 95 IB to correct error. NUPOST 85167
3.3.9	Added new L&P concerning need to drain steam lines prior to attempting to recover EFP-2 following a SG overflow event. NUPOST 70275
3.3.10	Added new L&P concerning need to maintain EFV-142 open when running EFP-1 or 2 solely from CDT-1 or FST-1A/1B. Calculation M-99-0027, Revision 6 AR 41703
Enclosure 4, step 4.1 (New)	Added new step 4.1 to notify CR when installing temporary transfer line to EFT-2 NUPOST 67889.
Enclosure 4, step 4.3 (Old 4.2)	Revised step to indicate ERT member may verify EFV-36 position NUPOST 66343
Enclosure 7, step 7.1	Step revised to indicate EFP-2 (ASV-50) should be reset using Enclosure 15 (New). Enclosure is a new enclosure added to provide guidance for recovering EFP-2 following a trip. NUPOST 70275
Enclosure 9, step 9.6 (new)	Step 9.6 provides stand alone guidance for starting FWP-7 with suction aligned to CDT-1.
Enclosure 9, step 9.7 (old 9.6)	Step 9.7 (old 9.6) provides guidance for starting FWP-7 with suction aligned to the hotwell. Detail 2 directing that if FWP-7 is not aligned to hotwell ensure suction path exists was deleted and replaced with specific steps (9.6 - 9.8) for aligning FWP-7 to each available suction source.
Enclosure 9, step 9.8 (new)	Step 9.8 provides stand alone guidance for starting FWP-7 with suction aligned to EFT-2. NCR 45113
Enclosure 15 (new)	Added new enclosure 15 to provide stand alone guidance for recovering EFP-2 following an EFP-2 turbine trip. NUPOST70275

PROCEDURE DEVELOPMENT AND REVISION RECORD

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New Rev: 2

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Title: LONG TERM EMERGENCY FEEDWATER MANAGEMENT

Enclosure 16 (new)	Added new Enclosure 16 which provides guidance for aligning EFP-1 or EFP-3 to the EFW train "B" control valves. NUPOST 93720
Enclosure 17 (new)	Added new Enclosure 17 which provides diagrams to aid in the installation of temporary transfer line. NUPOST66343
Enclosure 2 - EFP-3 Running	Added new "solution" option to crosstie EFP-3 to the "B" train EFIC control valves per Enclosure 16 (new) during a loss of "A" train DC power.
Enclosure 2 - EFP-1 Running	Added new "solution" option to crosstie EFP-1 to the "B" train EFIC control valves per Enclosure 16 (new) during a loss of "A" train DC power.
