COOLDOWN STEAM BOUND/OVERHEATED AFW PUMP

K/A REFERENCE: 061 A2.04 (3.4/3.8)
(NUREG-1122)

ALTERNATE PATH JPM _____ YES __X__ NO

PERFORMANCE CHECKLIST:

SATISFACTORY - Properly performed critical step(s) and/or in sequence (if applicable)

UNSATISFACTORY - Improperly performed critical step(s) and/or out of sequence (if applicable)

__X__ **Procedure adequately addresses task elements.**
Enter identifier here: **AOP-2C, Rev. 4**

_____ **Other document adequately describes necessary task elements.**
Enter identifier here: _____

__X__ **Task elements described as attached.**

DESIRED MODE OF EVALUATION: **APPLICABLE EVALUATION SETTING:**

SIMULATE/WALKTHROUGH __X__ **DISCUSSION** ____ **PERFORM** __X__ **IN-PLANT** __X__ **CONTROL ROOM** ____

VALIDATED TIME FOR COMPLETION: __15*__ **MINUTES**

NOTE: *Time does not include cooling the bearings to ambient temperature.

EXAMINEE _____ **EVALUATOR** _____

START TIME _____ **FINISH TIME** _____

PERFORMANCE ☐ **SAT** ☐ **UNSAT**

JOB TITLE: ☒ **AOT** ☐ **COT** ☐ **SRO** ☐ **STA**

TOOLS/EQUIPMENT/REFERENCES:

AOP-2C, Rev. 4, Auxiliary Feed Pump Steam Binding or Overheating.

TASK STANDARDS:

2P-29, Auxiliary Feed Water Pump bearing cooled to ambient in accordance with AOP-2C, "Auxiliary Feed Pump Steam Binding or Overheating, Unit 2".

READ AND PROVIDE TO THE EXAMINEE

****

THIS SECTION IS READ ONCE FOR THE ENTIRE PACKAGE OF JPMS. IT IS NOT REQUIRED TO REVIEW THIS SECTION FOR EVERY JPM BEING PERFORMED IN THE PACKAGE. THE INITIAL CONDITIONS AND INITIATING CUE(S)/TASKS TO BE PERFORMED SHOULD BE READ AND THEN PROVIDED TO THE EXAMINEE.

After I read you the initial conditions and initiating cue(s)/task to be performed for this JPM and provide you a copy of the same, you may review and begin. Once you have completed the task, indicate completion by handing back this form to the evaluator unless otherwise told.

You may use any approved reference materials normally available including logs. Make all written reports, oral reports, and log entries as if the evolution is actually being performed.

EOP Immediate Actions are required to be performed from memory. After completing immediate action steps without using the procedure, you may then use any approved reference materials.

For all two and three-way communications, make your report to me, the JPM evaluator. I will reply to your reports with the statement, "acknowledge." All actions in the plant are to be simulated and all actions in the simulator will be performed. Ensure you make it clear to me, the evaluator, of all actions you are taking so that credit may be given for completing each step of the task.

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

****

INITIAL CONDITIONS:

- You are the Unit 1 Turbine Building AO.
- Both units are at 100% power.
- While taking logs in the AFW pump room, you noticed that 2P-29, Turbine-Driven AFW pump casing is hot to the touch.
- Subsequent investigation found that the overheating was due to backleakage from "2A" Steam Generator.
- This investigation also found that overheating was limited to 2P-29 (P-38A and P-38B were unaffected).
- 2AF-4000 and 2AF-4001 have been closed and AFW Pump Bearing Temperatures have been confirmed to be 225 degrees F on 2TR-2000B

INITIATING CUE(S) / TASK TO BE PERFORMED (SIMULATED):

The DSS/DOS directs you to cooldown the pump casing <u>AND</u> bearings of 2P-29 in accordance with AOP-2C, "Auxiliary Feed Pump Steam Binding or Overheating, Unit 2", beginning with Step 3 RNO.

PERFORMANCE INFORMATION

NOTE: CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.

STEP	SEQUENCE	CRITICAL
1	1	Y

SAT _____
UNSAT _____

ELEMENT: Open the service water solenoid bypass valve for the affected pump if bearing cooling is required (SW-115A)

STANDARD: Obtain ladder (simulate) and turn the orange handwheel in the counter-clockwise position until stem is extended.

CUE: The valve stem is extended. If asked AFW pump bearing temperature is still reading >225°F on 2TR-2000B.

NOTE: **Ladder must be unlocked, however this in not critical to this step.**

COMMENTS:

STEP	SEQUENCE	CRITICAL
2	2	Y

SAT _____
UNSAT _____

ELEMENT: Slowly open the AFW pump vent to vent steam and reflood pump (2AF-62).

STANDARD: 2AF-62 turned slowly in counter-clockwise position.

CUE : The valve stem is extended and small amounts of steam and water are coming from the vent valve pipe.

COMMENTS:

STEP	SEQUENCE	CRITICAL
3	3	N

SAT _____
UNSAT _____

ELEMENT: Open AFW pump discharge vent for additional vent flow (2AF-58A AND 58B)

STANDARD: Obtain ladder and turn 2AF-58A and 58B in the counter-clockwise direction until flow is noted.

CUE: The valve stems are extended and small amounts of steam and water are coming from valve discharge piping. (If trainee decides not to open discharge vents, then administrator will cue that additional flow is requested)

COMMENTS:

PERFORMANCE INFORMATION

NOTE: CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.

STEP	SEQUENCE	CRITICAL	SAT / UNSAT
4	4	N	

ELEMENT: Check AFW pump casing AND discharge lines for 2P-29 at ambient temperature.

STANDARD: Pump casing and discharge line cool to touch.

CUE: When checked, 2P-29 pump casing and discharge line is at ambient temperature.

COMMENTS:

STEP	SEQUENCE	CRITICAL	SAT / UNSAT
5	5	Y	

ELEMENT: Shut the pump vent valves (2AF-62, 2AF-58A and 2AF-58B).

STANDARD: Vent valve(s) shut as noted above.

CUE : The vent valve stems are inserted. Control Room contacts you and informs you that 2TR-2000B alarms have cleared and bearing temperatures are <120°F for 2P-29.

COMMENTS:

STEP	SEQUENCE	CRITICAL	SAT / UNSAT
6	6	N	

ELEMENT: Shut the service water solenoid bypass valve (SW-115A)

STANDARD: Ladder obtained and SW-115A turned in clockwise position.

CUE : The valve stem is inserted.

NOTE: **This was a continuous action step from step 3 RNO column.**
The intent of this JPM is to cool 2P-29 bearing to ambient, not to troubleshoot which check-valve is the cause, so therefore the JPM should be terminated before allowing examinee to perform Step 8 of AOP-2C.

COMMENTS:

PERFORMANCE INFORMATION

NOTE: ***CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.***

STEP	SEQUENCE	CRITICAL
7	7	N

SAT _____
UNSAT _____

ELEMENT: Inform DSS/DOS on status of AFW pump 2P-29.

STANDARD: DSS/DOS informed.

CUE : The DSS/DOS acknowledges the report.

COMMENTS:

TERMINATION CUE: THIS COMPLETES THIS JPM.

COMPLETION TIME: _____

K/A REFERENCE: 061 A2.04 (3.4/3.8)
(NUREG-1122)

ALTERNATE PATH JPM _____ YES __X__ NO

PERFORMANCE CHECKLIST:

SATISFACTORY - Properly performed critical step(s) and/or in sequence (if applicable)

UNSATISFACTORY - Improperly performed critical step(s) and/or out of sequence (if applicable)

__X__ **Procedure adequately addresses task elements.**
Enter identifier here: **AOP-2C, Rev. 4**

_____ **Other document adequately describes necessary task elements.**
Enter identifier here: _____

__X__ **Task elements described as attached.**

DESIRED MODE OF EVALUATION: **APPLICABLE EVALUATION SETTING:**

SIMULATE/WALKTHROUGH __X__ **DISCUSSION** ____ **PERFORM** __X__ **IN-PLANT** __X__ **CONTROL ROOM** ____

VALIDATED TIME FOR COMPLETION: __15*__ **MINUTES**

NOTE: *Time does not include cooling the bearings to ambient temperature.

EXAMINEE _____ **EVALUATOR** _____

START TIME _____ **FINISH TIME** _____

PERFORMANCE ☐ **SAT** ☐ **UNSAT**

JOB TITLE: ☐ **AOT** ☐ **COT** ☐ **SRO** ☐ **STA**

TOOLS/EQUIPMENT/REFERENCES:

AOP-2C, Rev. 4, Auxiliary Feed Pump Steam Binding or Overheating.

TASK STANDARDS:

1P-29, Auxiliary Feed Water Pump bearing cooled to ambient in accordance with AOP-2C, "Auxiliary Feed Pump Steam Binding or Overheating, Unit 1".

READ AND PROVIDE TO THE EXAMINEE

****

THIS SECTION IS READ ONCE FOR THE ENTIRE PACKAGE OF JPMS. IT IS NOT REQUIRED TO REVIEW THIS SECTION FOR EVERY JPM BEING PERFORMED IN THE PACKAGE. THE INITIAL CONDITIONS AND INITIATING CUE(S)/TASKS TO BE PERFORMED SHOULD BE READ AND THEN PROVIDED TO THE EXAMINEE.

After I read you the initial conditions and initiating cue(s)/task to be performed for this JPM and provide you a copy of the same, you may review and begin. Once you have completed the task, indicate completion by handing back this form to the evaluator unless otherwise told.

You may use any approved reference materials normally available including logs. Make all written reports, oral reports, and log entries as if the evolution is actually being performed.

EOP Immediate Actions are required to be performed from memory. After completing immediate action steps without using the procedure, you may then use any approved reference materials.

For all two and three-way communications, make your report to me, the JPM evaluator. I will reply to your reports with the statement, "acknowledge." All actions in the plant are to be simulated and all actions in the simulator will be performed. Ensure you make it clear to me, the evaluator, of all actions you are taking so that credit may be given for completing each step of the task.

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

****

INITIAL CONDITIONS:

- You are the Unit 1 Turbine Building AO.
- Both units are at 100% power.
- While taking logs in the AFW pump room, you noticed that 1P-29, Turbine-Driven AFW pump casing is hot to the touch.
- Subsequent investigation found that the overheating was due to backleakage from "1A" Steam Generator.
- This investigation also found that overheating was limited to 1P-29 (P-38A and P-38B were unaffected).
- 1AF-4000 and 1AF-4001 have been closed and AFW Pump Bearing Temperatures have been confirmed to be 225 degrees F on 1TR-2000B

INITIATING CUE(S) / TASK TO BE PERFORMED (SIMULATED):

The DSS/DOS directs you to cooldown the pump casing <u>AND</u> bearings of 1P-29 in accordance with AOP-2C, "Auxiliary Feed Pump Steam Binding or Overheating, Unit 1", beginning with Step 3 RNO.

PERFORMANCE INFORMATION

NOTE: CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.

STEP	SEQUENCE	CRITICAL	SAT / UNSAT
1	1	Y	

ELEMENT: Open the service water solenoid bypass valve for the affected pump if bearing cooling is required (SW-137A)

STANDARD: Obtain ladder (simulate) and turn the orange handwheel in the counter-clockwise position until stem is extended.

CUE: The valve stem is extended. If asked AFW pump bearing temperature is still reading >225°F on 1TR-2000B.

NOTE: **Ladder must be unlocked, however this in not critical to this step.**

COMMENTS:

STEP	SEQUENCE	CRITICAL	SAT / UNSAT
2	2	Y	

ELEMENT: Slowly open the AFW pump vent to vent steam and reflood pump (1AF-24).

STANDARD: 1AF-24 turned slowly in counter-clockwise position.

CUE : The valve stem is extended and small amounts of steam and water are coming from the vent valve pipe.

COMMENTS:

STEP	SEQUENCE	CRITICAL	SAT / UNSAT
3	3	N	

ELEMENT: Open AFW pump discharge vent for additional vent flow (1AF-21A AND 21B)

STANDARD: Obtain ladder and turn 1AF-21A and 21B in the counter-clockwise direction until flow is noted.

CUE: The valve stems are extended and small amounts of steam and water are coming from valve discharge piping. (If trainee decides not to open discharge vents, then administrator will cue that additional flow is requested)

COMMENTS:

PERFORMANCE INFORMATION

NOTE: CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.

STEP	SEQUENCE	CRITICAL
4	4	N

SAT _____
UNSAT _____

ELEMENT: Check AFW pump casing AND discharge lines for 1P-29 at ambient temperature.

STANDARD: Pump casing and discharge line cool to touch.

CUE: When checked, 1P-29 pump casing and discharge line is at ambient temperature.

COMMENTS:

STEP	SEQUENCE	CRITICAL
5	5	Y

SAT _____
UNSAT _____

ELEMENT: Shut the pump vent valves (1AF-24, 1AF-21A and 2AF-21B).

STANDARD: Vent valve(s) shut as noted above.

CUE : The vent valve stems are inserted. Control Room contacts you and informs you that 1TR-2000B alarms have cleared and bearing temperatures are <120°F for 1P-29.

COMMENTS:

STEP	SEQUENCE	CRITICAL
6	6	N

SAT _____
UNSAT _____

ELEMENT: Shut the service water solenoid bypass valve (SW-137A)

STANDARD: Ladder obtained and SW-137A turned in clockwise position.

CUE : The valve stem is inserted.

NOTE: **This was a continuous action step from step 3 RNO column.**
The intent of this JPM is to cool 1P-29 bearing to ambient, not to troubleshoot which check-valve is the cause, so therefore the JPM should be terminated before allowing examinee to perform Step 8 of AOP-2C.

COMMENTS:

PERFORMANCE INFORMATION

NOTE: CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.

STEP	SEQUENCE	CRITICAL
7	7	N

SAT _____
UNSAT _____

ELEMENT: Inform DSS/DOS on status of AFW pump 1P-29.

STANDARD: DSS/DOS informed.

CUE : The DSS/DOS acknowledges the report.

COMMENTS:

TERMINATION CUE: THIS COMPLETES THIS JPM. **COMPLETION TIME:** _____