MATERIALS AND REFERENCES

98-1
AOC

TRANSPARENCIES

TP-1 Learning Objectives

POWERPOINT/SLIDES

NONE

HANDOUTS

1. Copy of TP-1
2. Copy of AOP 5B and AOP 9A
3. Training Handbook Drawings
   a. 11.11.3
   b. 11.8.1, 11.8.2, 11.8.3, 11.8.4, and 11.8.5A/B

TRAINING AIDES

NONE

REFERENCES

1. AOP 5B, Loss of Instrument Air
2. AOP 9A, Service Water System Malfunction

HISTORICAL DOCUMENTATION

Revision 0: Not given by instructor.

A/71

1.0 INTRODUCTION

1.1 Self-Introduction

Place instructor's name, course title and phone number in upper corner of board. If instructor is new to the students, he may want to comment on his background.

1.2 Motivating Statement

An AO's ability to properly execute AOP 5B (Loss of Instrument Air) and AOP 9A (Service Water System Malfunction) in a timely manner, may be the difference between keeping a unit on line verses having a Reactor Trip or possible worse conditions.

2.0 PURPOSE

2.1 Terminal Objectives

AO Tasks

P000.003AOT	Startup and operate the temporary diesel air compressor.
P000.004AOT	Respond to a loss of instrument air in the turbine hall.
P000.005AOT	Respond to loss of instrument air in the PAB.
P000.006AOT	Shift instrument air supply for critical components to alternate header.
P000.007AOT	Restart a tripped IA/SA compressor.
P000.008AOT	Start air compressor(s) to depressurized receivers.

Upon completion of this class the AO's should have an understanding of AOP 5B/9A to the level that he/she can find (locally) and operate all valves/equipment designated within these procedures and understand why they are performing these actions.

2.2 Learning Objectives

2.2.1 Given the latest revision of AOP 5B Loss of Instrument Air, **state** the required plant condition upon loss of all air compressors.

2.2.2 Upon restoration of Instrument Air per AOP 5B, **describe** operator actions required to reopen an air operated valve.

2.2.3 Given a copy of AOP 5B, **locate** (in plant) critical valves/flow indicators/power supplies that are locally operated/viewed per the procedure.

2.2.4 Given a copy of AOP 5B, be able to **satisfactorily perform** the procedure steps and System Response steps listed in attachments A through BB.

2.2.5 From memory, **state** the **three** major Service Water System malfunctions, that AOP 9A is designed against, as discussed in the AOP Background Documents.

2.2.6 Given the latest revision of AOP 9A Service Water System Malfunction, **state** the required plant condition when either service water header pressure is less than 50 psig with headers isolated.

2.2.7 Given a copy of AOP 9A, Service Water System Malfunctions, **locate** and be able to **operate,** all valves and equipment required per the procedure.

2.3 Evaluation and Criterion

This lesson plan is for continuing training and a written evaluation of some or all objectives will be given on the cycle quiz at the end of the week.

2.4 Handouts

- AOP 5B, Loss of Instrument Air
- AOP 9A, Service Water System Malfunctions
- Training Handbook Drawings:
  * Instrument Air System 11.11.3
  * Service Water System 11.8.1, 11.8.2, 11.8.3, 11.8.4, 11.8.5A/B

3.0 PRESENTATION

CLASSROOM SESSION

TP-1 Objectives

3.1 Cover Objectives with Class

3.2 Purpose

The purpose of this lesson plan is to ensure that AUXILIARY OPERATORS are competent in the use of the AOP 5B and AOP 9A procedures; have a complete understanding of these procedures and know where the components described therein are located.

3.3 Review usage of AOPs-(Optional depending on AO's preference)

- Two column format
  * Left-hand column----action/expected response **(AER)**
  * Right-hand column---response not obtained **(RNO)**
- Solid Bullets (•)
- Circle Bullets (•)

- Loss of AC Power Steps
- Continuos Action Steps
- Immediate Action Steps
- Substeps

3.4 AOP 5B Loss of Instrument Air

LO 2.2.1 Trip Rx upon loss of all air compressors

3.4.1 Required to trip reactor if:

- Loss of power to all instrument air and service air compressors. (RNO for Step 2)
- Loss of all air compressors (RNO for Step 5)
  * Instrument Air Compressors
  * Service Air Compressors
  * Temporary Air Compressor

LO 2.2.2 Reopening AOVs

3.4.2 Inform students that AOP 5B is misleading when **third note states** "manual action will be required to reopen affected valves." This is not true in all cases because some valves will open or close on their own as air pressure is returned.

Have students follow in their copy of AOP 5B

3.4.3 Using latest revision of AOP 5B, discuss overall approach and notes contained within procedure.

3.5 AOP 9A Service Water System Malfunction

LO 2.2.5 Three Major Service Water System Malfunctions

3.5.1 Three major Service Water Malfunctions per Background Document for AOPs

- Loss of electrical power to pumps
- Loss of water supply to pump suction
- Main service water header rupture

3.5.2 Using latest revision of AOP 9A, discuss overall approach and notes contained within procedure.

LO 2.2.6 Required Plant Condition

3.6 Required to trip reactor if:

- Operating with Split Service Water Headers (Step 16)

AND

- South hdr. press less than 50 psig and not on RHR then trip unit 1 reactor.
- North hdr. press less than 50 psig and not on RHR then trip unit 2 reactor.

IN PLANT SESSION-At this point the class will adjourn. The instructor will take AO's to the plant for walkdown of AOP 5A and AOP 9A

LO 2.2.3 Locate critical valves/flow indicators/power supplies per AOP 5B

3.7 Have Auxiliary Operators locate components/valves listed in the following steps of AOP 5B:

- Step 2 AER
- Notes 5 and 6
- Step 4 RNO
- Step 8 c and d RNO
- Step 11 a and b AER
- Step 14 b and c RNO
- Step 15 a and b RNO
- Step 16 AER
- Step 19 2 RNO
- Step 20 a RNO
- Step 23 a AER
- Step 25 b RNO

LO 2.2.4 Locate System Response Steps of Attachments A thru BB per AOP 5B

3.8 Have operators locate components listed in attachments A thru BB of AOP 5B.

Attachments--System Response

- C d
- D a
- F c
- H a
- I d
- R b
- T c
- W a
- AA all valves
- BB all valves

LO 2.2.7 Locate Valves per AOP 9A

3.9 Have Auxiliary/Operators locate components/valves listed in the following steps of AOP 9A.

- Step 5 RNO
- Step 12 RNO
- Step 16 b. RNO
- Step 27 a. AER

3.10 Have students locate valves of your choice from attachment A, Shifting Service Water Loads to Alternate Header.

4.0 SUMMARY

4.1 Review of selected learning objectives:

4.1.1 **Obj. 001** Upon loss of all air compressors AOP 5B forces the Control Room to trip the Reactor.

4.1.2 **Obj. 002** Upon restoration of Instrument Air some air valves will open/close by themselves while others require resetting with the control switch.

4.1.3 **Obj. 005** Three major Service Water Malfunctions per Background Document for AOPs

- Loss of electrical power to pumps
- Loss of water supply to pump suction
- Main service water header rupture

4.1.4 **Obj. 006** The Reactor (applicable unit) is required to be tripped when either Service Water header pressure is less than 50 psig along with the headers being isolated.

5.0 APPLICATION

Hopefully this training will never need to be applied but the training should add immensely in the performance of Operators carrying out this procedure.

6.0 ASSIGNMENT

NONE

7.0 COMMITMENTS INCLUDED IN THIS LESSON PLAN

Long-range training plan

LEARNING OBJECTIVES

1. GIVEN THE LATEST REVISION OF AOP 5B LOSS OF INSTRUMENT AIR, **STATE** THE REQUIRED PLANT CONDITION UPON LOSS OF ALL AIR COMPRESSORS.

2. UPON RESTORATION OF INSTRUMENT AIR PER AOP 5B, **DESCRIBE** OPERATOR ACTIONS REQUIRED TO REOPEN AN AIR OPERATED VALVE.

3. GIVEN A COPY OF AOP 5B, **LOCATE** (IN PLANT) CRITICAL VALVES/FLOW INDICATORS/POWER SUPPLIES THAT ARE LOCALLY OPERATED/VIEWED PER THE PROCEDURE.

4. GIVEN A COPY OF AOP 5B, BE ABLE TO **SATISFACTORILY PERFORM** THE SYSTEM RESPONSE STEPS AS LISTED IN ATTACHMENTS A THROUGH BB.

5. FROM MEMORY, **STATE** THE **THREE** MAJOR SERVICE WATER SYSTEM MALFUNCTIONS, THAT AOP 9A IS DESIGNED AGAINST, AS DISCUSSED IN THE AOP BACKGROUND DOCUMENTS.

6. GIVEN THE LATEST REVISION OF AOP 9A SERVICE WATER SYSTEM MALFUNCTION, **STATE** THE REQUIRED PLANT CONDITION WHEN EITHER SERVICE WATER HEADER PRESSURE IS LESS THAN 50 PSIG WITH HEADERS ISOLATED.

7. GIVEN A COPY OF AOP 9A, SERVICE WATER SYSTEM MALFUNCTIONS, **LOCATE** AND BE ABLE TO LOCALLY **OPERATE** ALL VALVES AND EQUIPMENT REQUIRED PER THE PROCEDURE.