



Program Title: OPERATOR LICENSED CANDIDATE

Course Title: PROCEDURES NORMAL, ABNORMAL, AND EMERGENCY

Lesson Title: ABNORMAL OPERATING PROCEDURES

Approximate Time: Hours

Revision No.: 0

Date: 85

Resource Materials for the Instructor:

Job Aids: Applicable Abnormal Procedure

Audio/Visual Equipment Needed: Overhead Projector

List of Transparencies:

Equipment/Tools: None

Safety Requirements: Davis-Besse Safety Practices

Instructional Setting: Classroom

Student Materials: Pen or Pencil, Paper, Handout

Special Considerations: N/A

Instructor References: AD 1828.10, AD 1805.00, AB 1203,  
Reg Guide 1, 33 10 CFR 50,  
Technical Specifications

Student Reference: AB 1203 Applicable

- | OBJECTIVE.<br>NUMBER | OBJECTIVE TEXT  |
|----------------------|---|
| 0                    | UPON SUCCESSFUL COMPLETION OF START-UP TRAINING, THE REACTOR OPERATORS AND SENIOR REACTOR OPERATORS WILL BE ABLE TO PROPERLY APPLY THE ABNORMAL PROCEDURES NECESSARY FOR PROPER TASK PERFORMANCE. |
| 00                   | THE FOLLOWING ENABLING OBJECTIVES ASSOCIATED WITH THIS LESSON PLAN ARE DESIGNED TO SUPPORT THE "KNOWLEDGE" REQUIREMENTS FOR THE ABOVE TERMINAL OBJECTIVE.   |
| 000                  | THE TRAINEE, WITHOUT REFERENCES (UNLESS OTHERWISE SPECIFIED), ACCORDIDNG TO APPROVED PROCEDURES, WILL BE ABLE TO:   |
| 01                   | GIVEN SPECIFIC SYMPTOMS, CORRECTLY RECOGNIZE THE APPLICABLE ABNORMAL PROCEDURE.   |
| 02                   | LIST/STATE THE FINAL PLANT CONDITION THAT THE ABNORMAL PROCEDURE DIRECTS THE PLANT TO BE PLACED IN.   |
| 03                   | RECALL/IDENTIFY THE PLANT EQUIPMENT/SYSTEMS AVAILABLE TO THE OPERATOR DURING THE PERFORMANCE OF THE ABNORMAL PROCEDURE.   |
| 04                   | LIST/STATE THE FINAL CONDITION OF SELECTED PLANT SYSTEM, WHEN THE ABNORMAL PROCEDURE IS COMPLETE.   |
| 05                   | WHEN PROVIDED WITH A SPECIFIC NOTE AND/OR CAUTION, CORRECTLY LIST/STATE THE REASON FOR THE NOTE AND/OR CAUTION.   |
| 06                   | LIST/STATE THE EMERGENCY ACTION LEVEL THE STATION/SITE IS IN WHEN THE ABNORMAL PROCEDURE IS: ENTERED, IN PROGRESS, COMPLETED (SRO ONLY).  |
| 07                   | BRIEFLY DESCRIBE THE ACTION(S) THAT EACH INDIVIDUAL IS DIRECTED TO PERFORM, IN ACCORDANCE WITH THE ABNORMAL PROCEDURE (SRO ONLY - ALL INDIVIDUALS ACTIONS).                                       |

## 1.0 INTRODUCTION

The intent of this lesson is to introduce/review the Loss of Instrument Air Abnormal Procedure. The material(s) that you are responsible for is/are stated in the objectives for this lesson.

TP-1

## 2.0 PRESENTATION

A. Symptoms that indicate entrance into this abnormal procedure.

Obj. #1

1. The following annunciator Alarms

- a. Station Air CMPSR Trouble
- b. Instrument Air Emg. CMPSR Trouble
- c. Air Header Pressure Low

(1) Station 97 psig (decreasing)

(2) Instrument 95 psig (decreasing)

2. Loss of Instrument Air is defined as < 75 psig on Inst. Air Header pressure indicator PI810 (located in the Control Room.

a. At this pressure (>75 psig), the operator will experience a loss of:

(1) Valve Control

Enclosure 2 of AB

(2) Indicators

Enclosure 1 of AB

(3) Alarms

Enclosure 1 of AB

B. Operator Actions

1. The operators first action(s) is to follow the appropriate alarm procedure(s).

OBJ #3 and 7

(i.e.) a. Start Additional Compressors

b. Correct the cause

2. The operators second action is to perform the Actions listed in the applicable procedure when the initiating condition(s) is/are met. Details of Actions are given in the AB
- a. PI 810  $\leq$  75 psig
- (1) Trip the Reactor
  - (2) Actuate SFRCS on Low Steam Generator Level
  - (3) Perform EP 1202.01, RPS, SFAS, SFRCS Trip or SG Tube Rupture.
  - (4) Continue to correct the cause.
  - (5) Insure Station Air Header is isolated SA 2008. TP-2
  - (6) Insure Filter/Dryer Emergency Bypass Line Regulator and Filter are in service.
  - (7) Isolate the normal inst. air filters and dryers.
3. When header pressure decreases to 70 psig insure that the following header(s) is/are isolated.
- a. Turbine Building
- b. Water Treatment Building
- c. Perform the following actions
- (1) Trip both heater drain pumps
  - (2) Shutdown the screen wash pumps
  - (3) Shutdown the cooling tower makeup pumps
  - (4) Open condenser vacuum breakers
  - (5) Lockout the mechanical hogger
  - (6) Shutdown the steam packing exhausters
  - (7) Try to maintain one condensate pump running

- (8) Maintain hotwell level using local valves
  - (9) Take manual control of service water to the component cooling and turbine plant cooling water heat exchangers
  - (10) Throttle TPCW pump discharge valve to control discharge pressure  $\geq 74$  psig. Leave one pump running.
  - (11) Provide a flow path for the flash tank pumps, blowdown mix condenser and a vent for the flash tank.
  - (12) Isolate and bypass the condensate polishers.
  - (13) Place turbine on turning gear (manually engage)
  - (14) Restore demineralized water header if needed
  - (15) Restore domestic water header if needed
  - (16) Inform C&HP - check water treatment system
4. When header pressure decreases to 65 psig, the Auxiliary Building non-essential header isolates. The following operational problems will/may occur.
- a. Pressurizer level - MU-32 fails open
  - b. Divert path for letdown - alternate flow path to CWRT 1
  - c. The following valves may close:
    - (1) MU-33 RCS MU CTMT Iso.
    - (2) MU-3 Letdown CTMT Iso.
    - (3) MU-66A thru D - SI CTMT Iso's
    - (4) MU-38 - Seal Return Header CTMT Iso

READ-CAUTION

Any SFAS actuated valve overridden to a non-SA position will have to be manually placed in the SA position if a SFAS occurs.

Read Aloud  
and Emphasize  
OBJ. #5

- d. Prevent damage to the running CCW pump by closing the CCW outlet valve from the DH cooler.
- e. Trip the primary water transfer pump
- f. Shutdown and lockout the following:
  - (1) Clean waste booster pumps
  - (2) CWRT transfer pumps
  - (3) CWMT transfer pumps
  - (4) Conc. transfer pumps
  - (5) Waste gas compressors
  - (6) MWMT transfer pumps
  - (7) Quench tank circ. pump
  - (8) R.C. drain tank pumps
  - (9) Boric acid addition tank immersion heaters
- g. Start the boric acid addition tank mixer
- h. To add boric acid: The boric acid pumps start switch must be held in that position for the pump to run Emphasize low level interlock will shutdown pump if switch is not held
- i. Place Control Room EVS system in service
- j. The following valves may also fail which could result in operational problems.
  - (1) MU-6 letdown flow control valve (Closed)
  - (2) Loss of atmospheric vent valves (Closed)
  - (3) MU-19 - seal injection flow control valve (Open)
  - (4) Loss of deaerator level control.

## C. Initial and Final Plant Condition(s)

1. The plant is assumed to be in Mode 1 or 2 at the start of the event.
2. The plant is taken to Mode 3 (Hot Standby) when the procedure is followed. OBJ. #2
3. RCS Heat Removal is via the Steam Gen., Auxiliary Feedwater is supplying the SG's. The AVV's or the Steam Safeties are maintaining pressure (Tsat; RCS Temp) OBJ. #4
4. The Emergency Action Level the plant is in at the: OBJ #6
  - a. Start is: Unusual Event  
condition - Miscellaneous
  - b. During: Dependent on plant conditions:  
U.E., Alert
  - c. Completed: Dependent on plant conditions:  
U.E., Alert, Site Emg. No Action Level

## D. Valves Identified in the procedure that may require manual operation.

1. MU-33 RCS Makeup Containment isolation
  - Fail Position - Closed (75 psig)
  - Location - #2 Mechanical Penetration Room
  - Location of Air Volume Tank - Outside #2 Mechanical Penetration Room Door
  - Manual Operation - Isolate the air to the Volume Tank (close valves), open the vent Proceed to valve, open regulator drain, remove fork device from handwheel spoke, turn handwheel. SL-1  
SL-2  
SL-3



2. MU-3 Letdown Containment Isolation  
Fail Position - closed (75 psig)  
Location - #1 Mechanical Penetration Room  
Location of Air volume tank - across from  
Motor Control Center E22B  
Manual Operation - same as MU-33
3. MU-66A thru 66D Seal Injection Containment Isolation Valve.  
Fail Position - Closed (75 psig)  
Location - #1 Mechanical Penetration Room  
Location of air volume tank - across from  
Motor Control Center E22B  
Manual Operation - same as MU-33
4. MU-38 Seal Return Header Containment Isolation  
Fail Position - Closed (30 psig)  
Location - #1 Mechanical Penetration Room  
Location of Air Volume Tank - Across from  
Motor Control Center E22B  
Manual Operation - Same as MU-33
5. PW-6881 Primary Water Transfer Pump Suction  
Fail Position - closed (~65 psig)  
Location - Clean Waste Monitor Tank Room SL-11  
Manual Operation - isolate air to the regulator  
(close valve). Open drain on Regulator, turn  
handwheel on top of valve diaphragm.

6. CC-1460 Makeup Pump header isolation
- Fail position - closed (~65 psig)
- Location - Component Cooling Pump/Hx Room N.E.  
Corner above door.
- Manual Operation - isolate air to regulator (close valve). Open vent valve; turn handhweel on top of diaphragm. SL-4
7. CT-916 Cooling Tower Makeup Valve
- Fail Position - Closed (~ 70 psig)
- Location - Service Water Structure - Lower elevation, south of bubbler pumps.
- Manual Operation - isolate air to the two regulators (close valves). Open Drains on regulators, open equalizing valve. Turn handwheel to allow key to align with keyway. Insert key into keyway; turn handwheel. SL-5  
SL-6  
SL-7
8. CT-840 Cooling Tower Blowdown Valve
- Fail Position - Open (~ 70psig)
- Location - Circulating Water Pump House S.W. corner
- Manual Operation - Same as CT-916 SL-8  
SL-9  
SL-10
9. DW-6880 Demineralized Water Transfer Pump Discharge Valve
- Fail Position - Closed (70 psig)
- Manual Operation - same as PW-6881 SL-11

## 10. Atmospheric Vent Valves

Fail Position - Closed

Location - In the radwaste ventilation area outside the Control Room (elevation 623') is located a manual handwheel and two valves for each atmospheric vent valve. Instructions are posted near each handwheel as follows:

Manual Operation - Close Valve A (see drawing) SL-12  
which isolates air from Valve V3.

Open Valve B (vent valve) which vents actuator  
air through V3

Check the handwheel counter at zero. Then open SL-13  
the handwheel (CCW) to the desired position.

0 turns = closed  
253 turns = open

NOTE: Valve does not start to open until approx.  
13 turns.

If partial closing is desired, simply rotate the  
manual handwheel in the clockwise direction since  
the valve is spring assisted in the close direction.

If positive shutoff is desired, close the manual  
handwheel until it reaches the full closed position  
(zero counts on counter).

Close B Valve

CAUTION: Do NOT open A valve unless remote manual  
operator counter is at zero counts as  
damage can occur to the lifting fork on  
the valve stem.

Open A valve to restore closing air to the actuator.

11. Discuss the process to return the hand jacked valves to auto.
  - a. Basically go in reverse order of placing valves in manual. Emphasize that: Keys must be removed from keyways and hand jacks returned to the "neutral" position (if applicable)

### 3.0 SUMMARY

- A. Review symptoms
- B. Review initiating event
- C. Review initial plant condition
- D. Review final plant condition
- E. Review Emergency Action Level the site may be in.

OPTION: At the instructors discretion - use TP's of Systems to indicate valves that will not control or fail.

TP's included

### 4.0 EVALUATION

- A. Ask the students to answer the objectives.

### 5.0 ASSIGNMENT

- A. None