

H. B. ROBINSON

LESSON PLANS

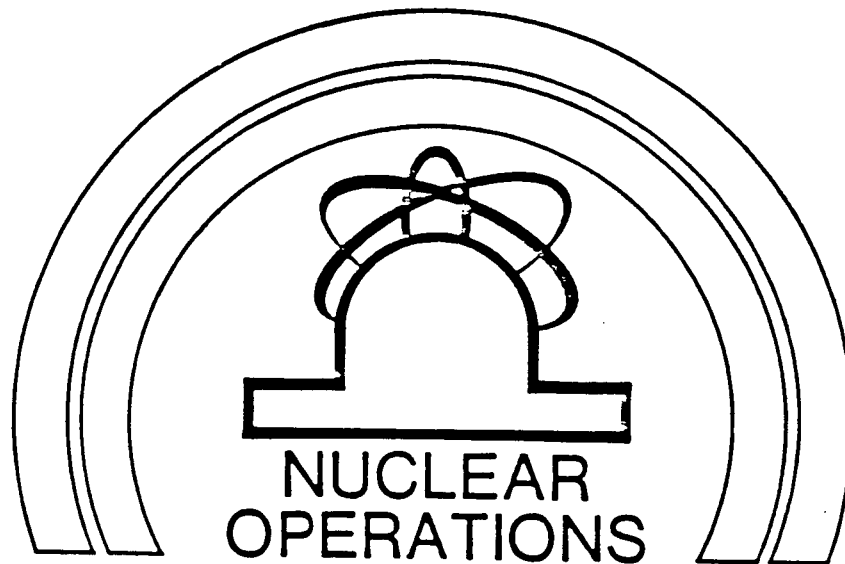
DEALING WITH

SEISMIC EVENTS

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HB ROBINSON STEAM ELECTRIC PLANT



SRO lesson plan

AOP-LP-9 ADVANCED OPERATING PRACTICES

Shift Foreman's Responsibilities
for Fire Protection and
Seismic Disturbances

H.B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2
INSTRUCTOR LESSON PLAN

SUBJECT: Advanced Operating Practices

SESSION NO.: AOP-LP-9

SESSION TOPIC: Shift Foreman Responsibilities for Fire Protection and Seismic Disturbances

TIME: 50 minutes

REVISION NO. 1

DATE: 8/1/84

APPROVAL: _____

C. Belter

INSTRUCTOR REFERENCES

1. H.B. Robinson Plant Operating Manual, Volume 6, Part 5
2. H.B. Robinson Plant Operating Manual, Volume 3, Part 5

CLASSROOM EQUIPMENT

1. Chalkboard, Chalk and Eraser
2. Overhead Projector
3. AP-21
4. FPM-19-1
5. FPP-002, Attachment 1

TRAINING MATERIALS REQUIRED

Transparencies:

- AOP-TP-9.1 (Rev. 0) Lesson Objectives and Reason for Study
- AOP-TP-9.2 (Rev. 0) Shift Foreman Responsibilities for Fire Protection
- AOP-TP-9.3 (Rev. 0) Fire Brigade Manning
- AOP-TP-9.4 (Rev. 0) Typical Accelerometer Film Trace

STUDENT REFERENCES

1. AOP-HO-1 (Rev. 0): Advanced Operating Practices
2. H.B. Robinson Plant Operating Manual, Volume 6, Part 5
3. H.B. Robinson Plant Operating Manual, Volume 3, Part 5

OUTLINE

KEY AIDS

I. INTRODUCTION

A. Lesson Objectives

AOP-TP-9.1 and
Student Handout

Upon successful completion of this session you will be able to:

1. From memory, state the five administrative responsibilities of the Shift Foreman in regards to fire protection and how to comply with each.
2. Without references, state the requirements for a fully manned fire brigade and any restrictions when determining which individuals will fill those positions.
3. Determine, by using AP-21, when a plant shut-down is required due to seismic disturbances.

B. Reason for Study

AOP-TP-9.1

In times of uncertainty, such as a fire, it is vital that plant personnel understand their role in suppressing the incident. The Shift Foreman, through the use of administrative and operating procedures, is responsible for assuring all requirements in regards to fire protection are met. His understanding of those procedures is vital for day to day operations.

II. PRESENTATION

A. Shift Foremans' Responsibilities for Fire Protection

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AOP-TP-9.2

1. Operation of the fire detection and fire suppression systems in accordance with the Technical Specifications and the established operating procedures
 - o Actions for a fire
 - a. Ensure that the Fire Equipment Building is unlocked
 - b. Ensure the plant is in safe condition
 - o In any safety related area, the corresponding fire protection preplan identifies the safety related equipment which may be affected by the fire
 - c. Perform as the Emergency Coordinator until relieved by a designated senior member of the plant management
 - 1) Act as the single onsite emergency point of control and contact
 - 2) Implement all applicable emergency plans
 - 3) Provide general direction and support to the Fire Brigade Team Leader

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- o Support to the Fire Brigade may include radiation monitoring, first aid, evacuation, and other. Appropriate radiation and other emergency plan procedures should be used as warranted by the circumstances
- 4) Call in and coordinate as necessary, other shift fire brigade teams
- 5) Ensure the necessary oral notification to NRC
- d. Contact the Hartsville Fire Department (332-1166) if additional fire fighting assistance is required
- e. Upon extinguishment of the fire, direct recovery to normal plant operation and determine
 - 1) Need for fire watches
 - 2) Restoring fire detection and fire suppression systems to normal operation
 - o Maintenance may be required prior to resetting fire equipment

AOP-LP-9

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3) Complete fire report

FPP-002

Attachment 1

a) Minimum distribution of the fire report is:

(1) Plant General Manager

(2) Shift Foreman of the affected unit

(3) Fire Protection Senior Specialist

(4) Manager Technical Support

(5) Manager Operations and Maintenance

b) Determine if NRC notification required

c) Fire Protection Technical Aide responsible for report

2. Ensuring the availability of at least five shift fire brigade members in accordance with Technical Specification

FPM Attachment 1

o Manning per shift

AOP-TP-9.3

a. Team leader

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- o Most senior RO not assigned to the RTGB
 - b. Two qualified Auxiliary Operators Unit 2
 - c. Unit 1 Shift Foreman
 - d. One Unit 1 Auxiliary Operator
 - 1) An equivalently trained person may substitute for any member
 - 2) Three operations personnel will be available at all times for plant operations only
 - o Unit 2 Shift Foreman will not appear on fire brigade
- 3. Providing general direction and support to the Fire Brigade Team Leader in the event of a fire
 - a. Provide additional qualified on-site help
 - b. Provide additional equipment or equipment location
 - c. Make necessary plant adjustments
- 4. Assessing potential and actual impact of fire emergencies on plant operation and altering the plant operations as necessary in accordance with the established procedures

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5. Ensuring the assignment of qualified fire watch personnel

a. When maintenance or modifications involve "hot work"

- o Open flames, welding, grinding, or high temperatures which approach material flash point

b. When required by Technical Specifications:

- o Shift foreman responsible

c. Instruct fire watch in

- 1) Area to watch or patrol
- 2) Start/stop times of watch

B. Shutdown Due to Seismic Disturbances

1. Upon receipt of seismic alarm

a. Immediate actions

- 1) Notify Operating Supervisor

- 2) Observe plant parameters

- 3) If plant conditions remain normal - continue to operate upon Plant Managers approval

Alarm is 0.01g
Horizontal

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b. Subsequent actions

1) Notify Instrument and Control to develop film to determine values

2) Perform control rod checks

PT-21.2

3) Tour plant, look for damage

o Checklist in AOP-1001

4) Determine horizontal and vertical values

AOP-019

AOP-TP-9.4

a) Vertical

(1) Obtain reading from chart

(2) Calculate

o Vertical acceleration
 $(g's) = 0.263 \times d_v$

d_v = maximum displacement for vertical (in Cm)

b) Horizontal

(1) Obtain reading from chart

AOP-LP-9

OUTLINE

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- o Transverse trace and longitudinal trace

Transverse is
East-West
Longitudinal is
North-South

(2) Calculate

- o Horizontal
acceleration (g's) =
$$0.263 \sqrt{d_t^2 + d_l^2}$$

d_t = displacement,
plus or minus, in CM
of transverse trace

d_l = displacement,
plus or minus, in CM
of longitudinal trace

5) Obtain Plant Manager approval to operate if

- a) < 0.1 g horizontal
- b) < 0.067 g vertical
- c) No equipment damage

6) Place plant in hot shutdown if

- a) > 0.1 g horizontal or
- b) > 0.067 g vertical or
- c) Any equipment damage which would affect safe operation

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- o Due to equipment damage
may want to go to cold
shutdown
- d) Recovery from required shut-
down when
 - (1) Evaluation is complete
 - (2) Safe reactor operation is
assured
 - (3) Plant manager (or
alternate) approves

III. SUMMARY

A. OBJECTIVE 1: From memory, state the five admini-
strative responsibilities of the Shift Foreman in regards
to fire protection and how to comply with each.

1. Operate fire systems in accordance with Techni-
cal Specifications and operating procedures
2. Ensure five shift fire brigade members
3. Provide direction and support to Fire Brigade
Team Leader
4. Determine plant operation condition based on
actual or potential fire damage
5. Ensure fire watch assigned when required

AOP-TP-9.2

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- B. OBJECTIVE 2: Without references, state the requirements for a fully manned fire brigade and any restrictions when determining which individuals will fill those positions.

1. Team leader

AOP-TP-9.3

- o Most senior RO not at RTGB

2. Two qualified Auxiliary Operators Unit 2

3. Unit 1 Shift Foreman

4. One Unit 1 Auxiliary Operator

- a) May substitute a qualified person
- b) Need three operations personnel dedicated for operations only

- C. OBJECTIVE 3: Determine by using AOP-019, when a plant shutdown is required due to seismic disturbances.

1. Vertical acceleration

a. Vertical acceleration (g's) = $0.263 \times d_v$

- b. d_v = maximum displacement, plus or minus, in CM of vertical trace

2. Horizontal acceleration (g's) = 0.263

$$\sqrt{d_t^2 + d_l^2}$$

- a. d_t = displacement, plus or minus, in CM of transverse trace
- b. d_l = displacement, plus or minus, in CM of longitudinal trace

IV. EVALUATION

A. OBJECTIVE 1 QUESTIONS

1. There is doubt as to placing a fire watch on a specific task. What requirements must be met to station a fire watch?

Answer: When maintenance or modifications involve "Hot Work". Hot work is classified as work involving open flames, welding, grinding or high temperatures (approaching the flash point).

2. What determines the power level you will operate the plant during a fire?

Answer: The decision should be based on fire location, actual or potential fire damage, and procedure requirements.

3. List the five administrative guidelines in regards to fire protection that the Shift Foreman must adhere to.

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Answer:

- a. Operate fire systems in accordance with Technical Specifications and operating procedures
- b. Ensure five shift fire brigade members
- c. Provide direction and support to Fire Brigade Team Leader
- d. Determine plant operation condition based on actual or potential fire damage
- e. Ensure fire watch assigned when required

B. OBJECTIVE 2 QUESTIONS

1. Because of a shortage of manpower, the control operator on the RTGB places himself on the fire brigade. Would you, as the Shift Foreman approve the fire brigade manning sheet? Why?

Answer: No, you should not. You should use the most Senior Control Operator not assigned to the RTGB.

2. The original team leader becomes sick and wants to go home. Who may replace that individual?

Answer: The qualified, most senior RO not at the RTGB. (Need three members available to shutdown plant.)

3. When, the fire brigade is fully manned, how many operations personnel must be available for operations, with no concurrent duties?

Answer: Three

C. OBJECTIVE 3 QUESTIONS

1. Given the following data, determine the action required per AOP-019:
- a. Horizontal acceleration is 0.01 g's
 - b. Vertical displacement is 0.247 CM

Answer: Vertical acceleration is equal to 0.065 g's

$$0.065 = 0.263 \times 0.247$$

Take a plant tour and inspect for damage. Notify the Plant Manager for permission to continue to operate (assuming no equipment damage).

2. Given the following data, determine the required action per AOP-019:
- a. Transverse displacement is 0.5 CM
 - b. Longitudinal displacement is 0.26 CM

Answer: Horizontal acceleration is equal to 0.148 g's

$$0.148 = 0.263 \sqrt{0.5^2 + 0.26^2}$$

OUTLINE

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The plant shall be placed in the hot shutdown condition and depending on plant damage, even go to cold shutdown.

V. ASSIGNMENT

Read H.B. Robinson Plant Operating Manual, Volume 6, Part-5

AOP-TP-9.1
LESSON OBJECTIVES

UPON SUCCESSFUL COMPLETION OF THIS SESSION YOU WILL BE ABLE TO:

1. FROM MEMORY, STATE THE FIVE ADMINISTRATIVE RESPONSIBILITIES OF THE SHIFT FOREMAN IN REGARDS TO FIRE PROTECTION AND HOW TO COMPLY WITH EACH.
2. WITHOUT REFERENCES, STATE THE REQUIREMENTS FOR A FULLY MANNED FIRE BRIGADE AND ANY RESTRICTIONS WHEN DETERMINING WHICH INDIVIDUALS WILL FILL THOSE POSITIONS.
3. DETERMINE BY USING AP-21, WHEN A PLANT SHUTDOWN IS REQUIRED DUE TO SEISMIC DISTURBANCES.

REASON FOR STUDY

IN TIMES OF UNCERTAINTY, SUCH AS A FIRE, IT IS VITAL THAT PLANT PERSONNEL UNDERSTAND THEIR ROLE IN SUPRESSING THE INCIDENT. THE SHIFT FOREMAN, THROUGH THE USE OF ADMINISTRATIVE AND OPERATING PROCEDURES, IS RESPONSIBLE FOR ASSURING ALL REQUIREMENTS IN REGARDS TO FIRE PROTECTION ARE MET. HIS UNDERSTANDING OF THOSE PROCEDURES IS VITAL FOR DAY TO DAY OPERATIONS.

SHIFT FOREMAN RESPONSIBILITIES FOR FIRE PROTECTION

1. OPERATE FIRE SYSTEMS IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS AND OPERATING PROCEDURES.
2. ENSURE FIVE SHIFT FIRE BRIGADE MEMBERS
3. PROVIDE DIRECTION AND SUPPORT TO FIRE BRIGADE TEAM LEADER
4. DETERMINE PLANT OPERATION CONDITION BASED ON ACTUAL OR POTENTIAL FIRE DAMAGE
5. ENSURE FIRE WATCH ASSIGNED WHEN REQUIRED

AOP-TP-9.3
FIRE BRIGADE MANNING

1. TEAM LEADER

O MOST SENIOR REACTOR OPERATOR NOT AT RTGB

2. TWO QUALIFIED AUXILIARY OPERATORS UNIT 2

3. UNIT 1 SHIFT FOREMAN

4. ONE UNIT 1 AUXILIARY OPERATOR

A. MAY SUBSTITUTE A QUALIFIED PERSON

B. NEED THREE OPERATIONS PERSONNEL DEDICATED FOR OPERATIONS ONLY

TYPICAL ACCELEROMETER

FILM TRACE

