

2-131F

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1 of 2

GEORGIA POWER  
POWER GENERATION DEPARTMENT  
VOGTLE ELECTRIC GENERATING PLANT  
SIMULATOR EXERCISE GUIDE

TITLE: RHR OPERATIONS WITH MALFUNCTIONS NUMBER: LO-SE-60019-07-C

PROGRAM: LICENSED OPERATOR TRAINING REVISION: 7

SME: S. DODDS DATE: 3/9/90

APPROVED: *Robert J. Brown* DATE: 3/12/90

INSTRUCTOR GUIDELINES:

### I. PREPARATION

- A. This Simulator Exercise Guide (SEG) is to be performed following completion of Lesson Plan LO-LP-60301.
- B. Concurrent with the performance of this SEG, ensure the students are prepared to perform the following Instructional Units (IUs):

(P = Perform; S = Simulate; O = Observe)

IU #	IU TITLE	WHC GETS CREDIT
LO-IU-60315-001	Respond to Loss of RHR	P - PD P - DXP P - SS if SRO
LO-IU-60322-001	Respond to Loss of Spent Fuel Pool Level or Cooling	P - RO P - BOP P - SS if SRO
LO-IU-60306-001	Respond to Spent Fuel Damage	P - RO P - BOP P - SS if SRO
LO-IU-60302-001	Respond to Nuclear Instrumentation System Failure (Source Range)	P - RO P - BOP P - SS if SRO
LO-IU-12101-005	Respond to RHR Alarms	P - RO P - SS if SRO

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PDR ADOCK 05000424  
S PDR

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Ensure the students have copies of these IJs and have been given adequate time for review prior to scheduled task performance.

- C. Attachment 1 - Simulator Evaluations is provided to the instructor as a tool to evaluate team skills and individual strengths and weaknesses. The feedback can then be used by the student. The use of these evaluations is optional, and may be used as time and manpower permit.
- D. Ensure all malfunctions run are entered into the simulator log.

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## I. INTRODUCTION

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### A. Terminal Objective

Respond to malfunctions while operating in Modes 4 and 5, using the AOPs, maintain the plant in a safe condition, and mitigate the consequences of associated transients.

### B. Enabling Objectives

1. Identify malfunctions by their symptoms.
2. Evaluate malfunctions to determine how the plant will be affected.
3. Carry out the actions as prescribed in the associated AOPs
4. Cool down the plant from Mode 4 to Mode 5.

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**II. CLASSROOM LESSON PLAN**

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- A. System Review (optional)
  - 1. LO-LP-12101 RHR System
  - 2. LO-LP-17101 Source Range NIS
  - 3. LO-LP-25102 Spent Fuel Pool Cooling/fuel Startup
- B. Classroom Presentation
  - LO-LP-60315 Respond to Loss of RHR
  - LO-LP-60322 Respond to Loss of Spent Fuel Pool Level or Cooling
  - LO-LP-60325 Respond to Toxic/Flammable Gas Release
  - LO-LP-60326 Seismic Event
- C. Procedures
  - \*1. AOP 18035-C Toxic/Flammable Gas Release
    - a. Purpose
    - b. Symptoms
    - c. Characteristics of chlorine
    - d. Personnel hazards
    - e. Actions
  - \*If not done the previous session
  - 2. AOP 18019-C Loss of RHR
    - a. Purpose
    - b. Symptoms
    - c. Actions
  - 3. AOP 18006-C Fuel Handling Event
    - a. Purpose
    - b. Symptoms
    - c. Actions
  - 4. AOP 18030-C Loss of Spent Fuel Pool Level or Cooling
    - a. Purpose

II. CLASSROOM LESSON PLAN

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b. Symptoms

c. Actions

D. Seismic Monitoring System

1. LO-LP-60326

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### III. SELF STUDY DIRECTIVES

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#### A. Procedures

1. AOP 18035-C Toxic/Flammable Gas Release
2. AOP 18010-C Loss of RHR
3. AOP 18006-C Fuel Handling Event
4. AOP 18030-C Loss of Spent Fuel Pool Level or Cooling

#### B. Instructional Units

1. LO-IU-60315-001 Respond to Loss of RHR
2. LO-IU-60322-001 Respond to Loss of Spent Fuel Pool Level or Cooling
3. LO-IU-60306-001 Respond to Spent Fuel
4. LO-IU-60302-001 Respond to Nuclear Instrumentation System Failure (Source Range)
5. LO-IU-12101-005 Respond to RHR Alarms

#### C. Seismic Monitoring System

1. Vogtle Training Text Chapter 33

## IV. OPERATIONS PLAN

NOTES

## A. Initial Conditions

1. Reset to IC-04

Instructor Note

Reduce pressure and temperature to place plant in Mode 4 and stabilize prior to admitting students to simulator. Snapshot initial conditions to an open IC for use in following scenario

2. Student information
  - a. Unit in cooldown, Mode 4
  - b. Procedure 12006-1 in effect
  - c. Beginning of life
  - d. No equipment out of service
  - e. Fuel handling training in spent fuel pool if in progress
3. Student instruction
  - a. Continue cooldown to Mode 5
  - b. Use Procedure 12006-1

## B. Simulator Operations

1. Commence cooldown to Mode 5 using UOP 12006-1
2. Insert Malfunction 36 at 100% severity (SB LOCA)
  - a. Stress importance of prompt operator action to prevent core uncover.
  - b. Procedure 18004-1, Section 4 leads through manual alignment of SI beginning with CCP. Students must restore power to SIPs and accumulator discharge valves if called for by procedure.
  - c. (Note: Remind students that auto SI signals from low pressure in pressurizer and steamline have been blocked. SI-1 containment

Commitment  
 PF 86.006  
 (SWR Confirmatory  
 Item 22)  
 SBLOCA in Mode 4

- pressure may not come in under these conditions.)
- d. When students have plant under control and stable reset to IC-3
3. Initial conditions
    - a. Unit in cooldown mode
    - b. Just entering Mode 4
    - c. Procedure 12006-1 in effect
    - d. Beginning of life
    - e. No equipment out of service
  4. Commence cooldown to Mode 5
    - a. Use UOP 12006-1
    - b. Allow normal operations until RHR in service
      - 1) Do no cool down secondary at this time
    - c. Cool down using steam dumps
      - 1) 50<sup>o</sup>F/hr
  5. Place Train "B" RHR in service as soon as possible
  6. Insert Malfunction 45B: RHR pump trip
    - a. RHR Train "B" pump trips
    - b. Expected operator actions
      - 1) Place standby RHR train in service
      - 2) Refer to SOP 13011-1
    - c. Initiate work order on tripped pump
  7. Insert Malfunction 138B: 1BY1B
    - a. Expected operator actions
      - 1) Verify S/G levels between 17% and 78%
    - b. Determine failed bus from annunciators

Start: SER 84.079  
 SCER 85.004  
 (Loss of RHR)



## IV. OPERATIONS PLAN

## NOTES

- 1) Status lights all lit for 1 train identifies bus
- 2) Have extra licensed operator find failed bus on annunciators
- c. Identify all failed equipment
  - 1) Nuclear instruments
  - 2) Various other equipment
8. Technical Specification application
  - a. RHR pump operability
9. Report "B" RHR pump has blown seals
  - a. Inoperable for at least 2 days
10. Insert Malfunction 38B: Loop pressure transmitter failure
  - a. RHR "A" Train isolation valve 8701B closed
    - 1) Note how long to find problem
  - b. "A" Train RHR no longer operating
    - 1) Should trip "A" pump before it trips itself
11. Remove Malfunction 38B
  - a. Restore "A" Train RHR to service
  - b. Restart 50<sup>o</sup>F/hr cooldown rate
12. Insert Malfunction 198 (Loss of Instrument Air) at 100% until alarm comes in. Slow IA header leak to 70% until HS 459 and HS 460 close. Then slowly lower severity level as needed until 50 psig is reached. Maintain IA pressure between 30-50 psig on PI-936 for remainder of malfunction
  - a. Expected operator actions of 18028-1
    - 1) Verify all air compressors running

Stop: SER 84.079  
SOER 85.004

ORS  
HIC606A/CNT UP  
PIC618A/CNT DOWN

- b. Verify service air loss than 100 psig
- c. If temperature falling rapidly then trip RHR pump
  - 1) RHR heat exchanger valves fail to cooldown
- d. Note: For instructor information only. Not a required student function. No procedure for implementation of safety grade charging/letdown (head vent)
  - 1) Can use ARVs
  - 2) Cycle RHR trains on and off if both operable (duty cycle on pumps)
  - 3) Throttle RHR discharge valves
- 13. Insert Malfunction 3A and 3B: Source range channel pre-amp failure
 

Note: No positive reactivity addition allowed

  - a. Immediate manual actions of AOP 18002-1
    - 1) Stop adding positive reactivity
  - b. Subsequent operator actions
    - 1) Have SS look up action in Tech. Specs.
  - c. Check power available
    - 1) Check for blown fuse
- 14. Override the spent fuel pit high temp alarm CO<sub>2</sub> on ALB 05 to alarm condition MF 457
  - a. Control room operators will investigate
  - b. Cause: SFP cooling water pump trip
  - c. Control room operators will initiate AOP 18030-1
- 15. Call control room, report as dropped dummy fuel assembly into spent fuel pool
  - a. Control personnel will initiate AOP 18006-1

## IV. OPERATIONS PLAN

NOTES

- b. If control asks for additional information tell them that "bubble" can be seen coming from the vicinity of a spent fuel assembly in the storage racks

## A. Team's Skills

1. Use of Attachment 1 - Simulator Evaluations, should be used as time and manpower permit. Any comments which can be useful in enhancing student performance should be made on Attachment 1 and made available to the students.

## B. Performance

1. Attachment 1 - Simulator Evaluations, should be used as much as possible to grade individual performance. This information then can be used by the student to help improve diagnostic abilities and communication skills.

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**VI. REFERENCES**

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**A. Procedures**

1. AOP-18006-C Fuel Handling Event
2. AOP-18019-C Loss of RHR
3. AOP-18035-C Toxic/Flammable Gas Release
4. AOP-18030-C Loss of Spent Fuel Pool Level in Cooling

**B. Commitments:**

1. SOER 85.994, "Loss or Degradation of Residual Heat Removal Capability in PWRs"
2. SER 84.079, "Loss of Shutdown Cooling Due to Inaccurate Level Indication"
3. FF 86.006 (SER Confirmatory Item 22) Small Break LOCA in Mode 4

**ATTACHMENT 1: SIMULATOR EVALUATIONS**

# OVERALL TEAM EVALUATION

## 1. Feedback - anticipating input needs, providing unsolicited feedback

1	2	3	4	5
Members wait to be asked for inputs. Inputs answer only the question.		Some members volunteering information. Answers complete even when questions are not.		Abundant unsolicited feedback. Few questions required. Inputs complete and useful.

## 2. Communication Monitoring - monitoring team communications to assure fidelity

1	2	3	4	5
Members ignore other conversations. Fidelity of team communications low.		Members listened to each others conversations. Major technical errors corrected.		Members assume responsibility for fidelity of team communications. Errors corrected quickly.

## 3. Influencing - individuals effectively influencing team decisions

1	2	3	4	5
Team decision-making dominated by one or two individuals. Other members passive.		Major decisions made by consensus. Few members acting passively.		All individuals provide input to decisions. Decisions supported by consensus.

## 4. Attribution - promoting winning attitudes within the team

1	2	3	4	5
Individuals criticized for errors. Successes minimized or ignored.		Individuals rewarded for major contributions. Errors generally ignored.		Individual contributions consistently praised. Mistakes are learned from.

## 5. Peer Reinforcement - effectively using positive reinforcements

1	2	3	4	5
Positive reinforcement rarely used. Punishment is mostly used for controlling members.		Major accomplishments are rewarded. Rewards usually praised. Members work for rewards.		Reinforcement is consistently specific, unambiguous for all levels of accomplishment. Members do not expect rewards.

## 6. Conflict Resolution - quickly and effectively resolving conflicts

1	2	3	4	5
Conflict is discouraged. Members who disagree are usually punished.		Conflicts are usually won by dominant members. Major conflicts distract from group performance.		Conflicts resolved through cooperative efforts. Team is usually strengthened by resolving the conflict.

# SHIFT SUPERVISOR SIMULATOR EVALUATION

## 1. CONTROL BOARD AWARENESS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• did not scan annunciators, panels, or other operator aids to look for information or interactions</li> <li>• did not recognize changes in plant parameters or changes which should have occurred</li> </ul>		<ul style="list-style-type: none"> <li>• intermittently scanned annunciators, panels, or other operator aids and looked for changes in plant information</li> <li>• recognized changes in plant parameters and when changes should have occurred</li> </ul>		<ul style="list-style-type: none"> <li>• regularly scanned annunciators, panels, or other operator aids and looked for information and interactions</li> <li>• quickly identified and reacted to changes in plant parameters</li> <li>• anticipated changes in plant conditions due to events in progress</li> </ul>

REMARKS:

## 2. EVENT DIAGNOSIS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• did not recognize when plant exceeded tech spec limits</li> <li>• did not step back and get the big picture</li> <li>• did not ask the right questions</li> <li>• could not screen out irrelevant/unimportant or inaccurate inputs</li> <li>• incorrectly diagnosed events</li> <li>• could not recognize emergency plan situations</li> <li>• did not recognize when critical safety function parameters EXCEEDED limits</li> </ul>		<ul style="list-style-type: none"> <li>• recognized when plant EXCEEDED tech spec limits</li> <li>• stepped back and analyzed the whole situation</li> <li>• asked the right questions</li> <li>• screened out irrelevant, unimportant, inaccurate information</li> <li>• correctly diagnosed events</li> <li>• recognized emergency plan situations</li> <li>• did not recognize critical areas</li> <li>• recognized when critical safety function parameters EXCEEDED limits</li> </ul>		<ul style="list-style-type: none"> <li>• recognized when plant APPROACHED tech spec limits</li> <li>• set up and ran a structured diagnostic process, including:               <ul style="list-style-type: none"> <li>-- prioritizing problems</li> <li>-- determining most probable cause</li> <li>-- establishing objectives and goals</li> <li>-- reviewing resources and constraints</li> <li>-- identifying success criteria</li> <li>-- generating possible solutions</li> <li>-- selecting the best solution</li> <li>-- specifying an action plan</li> <li>-- identifying potential trouble areas</li> </ul> </li> <li>• recognized when critical safety function parameters APPROACHED limits</li> </ul>

REMARKS:



### 3. IMMEDIATE ACTIONS/ENTRY-LEVEL ACTIONS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• did not verify that manual or automatic actions took place</li> <li>• did not tell CROs proper immediate actions when appropriate</li> <li>• did not integrate or direct multiple casualties and procedure use</li> <li>• did not verify initiations of safety functions when required</li> <li>• did not recognize EOP entry conditions</li> </ul>		<ul style="list-style-type: none"> <li>• verified that manual and automatic actions took place</li> <li>• told CROs immediate actions when appropriate</li> <li>• directed multiple actions and procedure use</li> <li>• verified initiation of safety functions when required</li> <li>• recognized EOP entry conditions</li> </ul>		<ul style="list-style-type: none"> <li>• ensured all immediate actions were taken</li> <li>• ensured correct integration and directed multiple casualties and procedures</li> </ul>

REMARKS:

### 4. SUBSEQUENT ACTIONS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• did not direct CROs response to events</li> <li>• did not recognize the plant exceeded tech spec limits</li> <li>• did not direct plant maneuvers toward more favorable conditions after limits were exceeded</li> <li>• made incorrect decisions for events not covered by procedures or when multiple alternatives were available</li> <li>• could not integrate direct multiple casualties and procedure use</li> <li>• did not recognize conditions</li> <li>• did not correct mistakes</li> </ul>		<ul style="list-style-type: none"> <li>• directed CROs to respond to events</li> <li>• recognized when plant exceeded tech spec limits</li> <li>• directed plant maneuvers toward more favorable conditions after limits were exceeded</li> <li>• made correct decisions for events not covered by procedures</li> <li>• correctly integrated the stage of several different procedures during multiple casualties</li> </ul>		<ul style="list-style-type: none"> <li>• recognized when plant approached tech spec limits</li> <li>• made contingency plans for unrec'd problems</li> <li>• effectively and correctly integrated the steps of different emergency, abnormal, and normal procedures in controlling a multiple casualty</li> <li>• corrected CROs and his own mistakes using appropriate means</li> </ul>

REMARKS:

### 5. CONTROL BOARD

1	2	3	4	5
<ul style="list-style-type: none"> <li>• could not use the computer, SPCS, ERIS, etc., correctly; performed C.O. role and manipulations when not necessary</li> </ul>		<ul style="list-style-type: none"> <li>• used the computer, SPCS, ERIS, etc., correctly</li> <li>• manipulated the panel when the CROs were not able to</li> <li>• offered direction to panel operators as appropriate</li> </ul>		

REMARKS:

### 5. USE OF PROCEDURES/TECHNICAL SPECIFICATIONS/REFERENCE DATA

1	2	3	4	5
<ul style="list-style-type: none"> <li>• could not locate appropriate procedures, tech specs or reference data</li> <li>• could not follow procedures or missed steps</li> <li>• caused trips or unplanned transients</li> <li>• relied too heavily on CROs' knowledge of procedures and limits</li> <li>• interpreted tech specs or reference data incorrectly</li> </ul>		<ul style="list-style-type: none"> <li>• located most required procedures, tech specs and reference data in reasonable time</li> <li>• followed procedures correctly</li> <li>• could explain bases of tech specs</li> <li>• interpreted tech specs correctly</li> <li>• verified compliance with tech spec limits and actions</li> <li>• LSS and safety limit tech specs were memorized, others were quickly looked up</li> </ul>		<ul style="list-style-type: none"> <li>• requested or readily located all appropriate procedures, tech specs and reference data</li> <li>• followed procedures accurately and quickly</li> <li>• could distinguish between step-by-step procedures and guidance-only procedures</li> <li>• identified procedural conflicts and inadequacies and could explain how to resolve them</li> <li>• ensured procedure changes were made as appropriate</li> </ul>

REMARKS:

### 7. COMMUNICATIONS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• gave unclear, garbled, confusing and incomplete directions</li> <li>• failed to ask for information when necessary</li> <li>• ignored input or did not indicate understanding</li> <li>• communicated with the wrong person or by the wrong method</li> <li>• failed to communicate with appropriate people (CRC, etc.) when required</li> </ul>		<ul style="list-style-type: none"> <li>• gave understandable directions</li> <li>• asked for information when necessary</li> <li>• occasionally asked for input from CRCs</li> <li>• initiated communications with appropriate people (NRC, etc.) when required and by correct means</li> </ul>		<ul style="list-style-type: none"> <li>• gave clear and concise directions</li> <li>• actively listened and verified that the message was understood</li> <li>• actively sought ideas and input from team members</li> <li>• provided periodic summaries of plant conditions and actions taken</li> </ul>

REMARKS:

## 8. SUPERVISOR/ABILITY

1	2	3	4	5
<ul style="list-style-type: none"> <li>• did not implement the emergency plan when required</li> <li>• did not set goals or priorities for people's actions</li> <li>• gave unnecessary direction or failed to give direction when necessary</li> <li>• did not coordinate actions of operators</li> <li>• did not assign people to others' tasks when desirable</li> <li>• let administrative duties distract from leadership role</li> <li>• did not anticipate potential problems or operator limitations</li> <li>• direction to crew consistently lagged behind crew actions</li> <li>• allowed operators to become overloaded</li> <li>• did not maintain a professional attitude in the control room</li> </ul>		<ul style="list-style-type: none"> <li>• implemented the emergency plan when required</li> <li>• prioritized some of the people's actions according to his own goals</li> <li>• provided direction when necessary</li> <li>• coordinated actions of operators</li> <li>• assigned people to others' tasks when desirable</li> <li>• occasionally disrupted CRO's actions</li> <li>• did not allow operators to become overloaded</li> <li>• maintained a professional attitude in the control room</li> </ul>		<ul style="list-style-type: none"> <li>• set clear goals</li> <li>• prioritized and integrated the actions of the whole team as appropriate</li> <li>• provided guidance appropriate for the situation and the team members</li> <li>• coordinated CRO's actions smoothly based on their abilities</li> <li>• changed people's assignments as time and skills were used efficiently</li> </ul>

### REMARKS:

# RO/BOP SIMULATOR EVALUATION

## 1. CONTROL BOARD AWARENESS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• inattentive to panels</li> <li>• ignored some part of panels</li> <li>• did not find appropriate indicators or controls in a timely manner</li> <li>• left control room when assigned as CRO without relief</li> <li>• unable to explain why annunciators were in alarm condition</li> </ul>		<ul style="list-style-type: none"> <li>• attended to and observed all parts of the panel</li> <li>• recognized unexpected changes in important plant parameters</li> <li>• found controls and indicators in a timely manner</li> <li>• used process computer and sequence of events recorder when requested</li> <li>• able to explain why annunciators were in alarm condition</li> </ul>		<ul style="list-style-type: none"> <li>• habitually attentive to all panels</li> <li>• recognized trends before alarm conditions developed</li> <li>• quickly found appropriate controls and indicators</li> <li>• anticipated changes in indications due to changing plant conditions</li> <li>• confirmed plant conditions with other sources</li> </ul>

REMARKS:

## 2. EVENT DIAGNOSIS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• missed important transitions</li> <li>• made inappropriate responses to alarm conditions</li> <li>• focused on wrong parameters</li> <li>• when asked, was unable to give valid input or possible reasons for event</li> <li>• gave incorrect instructions</li> <li>• responded to symptoms/signals rather than to condition or cause</li> </ul>		<ul style="list-style-type: none"> <li>• noticed important transitions in sufficient time</li> <li>• spotted most plant status changes</li> <li>• responded to alarms in a timely manner</li> <li>• when asked, gave input on possible reasons for treatment</li> </ul>		<ul style="list-style-type: none"> <li>• responded to alarm conditions and spotted all changes to plant status</li> <li>• focused on significant parameters during transients</li> <li>• when given incorrect instructions by S/CRO, made correct recommendations</li> </ul>

REMARKS:

### 3 IMMEDIATE ACTIONS/ENTRY LEVEL ACTIONS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• does not verify certain automatic actions</li> <li>• immediate actions were not performed or were performed incorrectly</li> <li>• did not initiate safety functions when required</li> <li>• did not recognize entry conditions to emergency operating procedures</li> </ul>		<ul style="list-style-type: none"> <li>• verified that certain automatic actions took place</li> <li>• took correct immediate actions, but required some prompting by SS/SCRO</li> <li>• performed minor manipulations correctly, but independent of other CROs</li> <li>• recognized entry conditions to emergency operating procedures</li> </ul>		<ul style="list-style-type: none"> <li>• verified that certain automatic actions took place and informed SCRO</li> <li>• took corrective immediate actions from memory, without prompting</li> <li>• performed manipulations with other CROs in an integrated manner</li> <li>• initiated immediate actions without prompting</li> </ul>

REMARKS:

### 4 SUBSEQUENT ACTIONS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• did not verify automatic or immediate actions</li> <li>• could not maximize plant when it was possible to</li> <li>• could not explain purpose of actions</li> </ul>		<ul style="list-style-type: none"> <li>• verified all automatic actions took place and all immediate actions were performed</li> <li>• performed appropriate subsequent actions on direction from SV/SCRO</li> <li>• performed manipulations correctly but independently</li> <li>• explained purpose of most actions correctly</li> </ul>		<ul style="list-style-type: none"> <li>• performed all automatic actions that did not take place</li> <li>• ensured all immediate actions were performed</li> <li>• performed subsequent actions without excessive supervision</li> <li>• performed manipulations correctly with other CROs in a coordinated manner</li> <li>• explained purposes of all actions correctly</li> </ul>

REMARKS:

5a. CONTROL BOARD MANIPULATIONS—NORMAL OPERATIONS

1	2	3	4	5
<ul style="list-style-type: none"> <li>located controls and indicators hesitantly</li> <li>did not control plant parameters</li> <li>could not control automatic systems manually</li> <li>could not recover from errors</li> <li>manipulations caused problems</li> <li>frequently needed guidance</li> </ul>		<ul style="list-style-type: none"> <li>located controls and indicators unhesitantly</li> <li>manipulated the plant safely</li> <li>manually operated automatic system controls with some guidance</li> <li>recovered from errors without causing problems</li> </ul>		<ul style="list-style-type: none"> <li>smoothly manipulated the plant within controlled parameters</li> <li>smoothly operated automatic systems controls manually</li> <li>did not make errors</li> <li>did not require guidance</li> <li>was able to control multiple panels</li> </ul>

REMARKS:

5b. CONTROL BOARD MANIPULATIONS—ABNORMAL/EMERGENCY OPERATIONS

1	2	3	4	5
<ul style="list-style-type: none"> <li>responded incorrectly or did not respond to an event</li> <li>could not locate controls or indicators</li> <li>could not control plant parameters</li> <li>could not recover from errors</li> <li>manipulations caused problems</li> <li>frequently needed guidance</li> <li>improperly or caused multiple problem conditions</li> </ul>		<ul style="list-style-type: none"> <li>responded correctly to events with some hesitation</li> <li>located some controls or indicators with hesitation</li> <li>manipulated the plant safely</li> <li>manually operated automatic system controls with guidance</li> <li>correctly compensated for malfunctions of automatic equipment</li> <li>recovered from errors without causing problems</li> </ul>		<ul style="list-style-type: none"> <li>responded quickly and correctly to events</li> <li>located controls and indicators unhesitantly</li> <li>manipulated the plant within controlled parameters</li> <li>smoothly operated automatic systems manually</li> <li>correctly compensated for malfunctions of automatic equipment</li> <li>did not make errors</li> <li>did not need guidance</li> <li>was able to control multiple panels</li> <li>worked well with other personnel in coordinating recovery</li> </ul>

REMARKS:

## 6. USE OF PROCEDURES/TECHNICAL SPECIFICATIONS/REFERENCE DATA

1	2	3	4	5
<ul style="list-style-type: none"> <li>• did not use or disregarded procedures</li> <li>• isolated procedures or administrative controls and/or limits</li> <li>• missed steps resulting in unplanned trips/problems</li> <li>• could not locate procedures, tech specs, reference data</li> <li>• did not use procedures to address alarms</li> <li>• did not review applicable turnover documents</li> </ul>		<ul style="list-style-type: none"> <li>• located and followed commonly used procedures</li> <li>• located appropriate tech specs</li> <li>• recognized plant conditions covered by tech specs</li> <li>• looked up reference data when directed</li> <li>• used procedures to address</li> <li>• p. 10/11/12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100</li> </ul>		<ul style="list-style-type: none"> <li>• readily located or requested all proper procedures</li> <li>• Lids and safety limit tech specs were memorized, others were quickly looked up</li> <li>• used appropriate reference data without direction</li> <li>• identified procedural conflicts and/or inadequacies</li> </ul>

REMARKS:

## 7. COMMUNICATIONS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• did not inform others of indications of abnormal conditions</li> <li>• did not inform of recommendations, intentions, or actions taken</li> <li>• gave irrelevant information</li> <li>• did not ask for information when needed</li> <li>• did not verify that information received was understood</li> <li>• was too assertive or argumentative</li> <li>• had problems with voice clarity, amplitude, speed, emphasis, direction, or identifying receiver</li> <li>• communicated with wrong person or by wrong means</li> <li>• did not inform others when performing evaluations</li> </ul>		<ul style="list-style-type: none"> <li>• informed others of indications or abnormal conditions/alarms</li> <li>• informed of recommendations, intentions and actions</li> <li>• did not verify that information given was received and understood</li> <li>• asked for information when needed</li> <li>• verified receipt of information casually or regularly</li> <li>• displayed positive verbal behaviors</li> <li>• informed others when performing evaluations</li> </ul>		<ul style="list-style-type: none"> <li>• informed others of relevant information immediately, clearly and concisely</li> <li>• made clear and timely recommendations</li> <li>• communicated intentions and actions clearly</li> <li>• sought feedback that information given was received and understood</li> <li>• always verified that information or instruction was received and understood</li> <li>• sustained team process verbally and nonverbally</li> </ul>

REMARKS:

# EXTRA PERSON ON SHIFT SIMULATOR EVALUATION

## 1. CONTROL BOARD AWARENESS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• inattentive to panels</li> <li>• ignored some part of panels</li> <li>• did not notice plant parameter changes</li> <li>• did not find appropriate indicators in a timely manner</li> <li>• did not use the process computer or SER to maintain awareness of plant conditions</li> </ul>		<ul style="list-style-type: none"> <li>• attended to and observed all parts of the panel</li> <li>• recognized unexpected changes in important plant parameters</li> <li>• found indicators in a timely manner</li> <li>• used process computer and SER when requested</li> </ul>		<ul style="list-style-type: none"> <li>• habitually attentive to all panels</li> <li>• recognized trends before alarm conditions developed</li> <li>• quickly found appropriate indicators</li> <li>• routinely used the process computer and SER to assist in maintaining awareness of plant condition</li> </ul>

REMARKS:

## 2. EVENT DIAGNOSIS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• did not recognize when plant exceeded tech spec limits</li> <li>• did not step back and get the big picture</li> <li>• did not ask the right questions</li> <li>• could not screen out irrelevant unimportant or inaccurate inputs</li> <li>• incorrectly diagnosed events</li> <li>• could not recognize emergency plant situations</li> <li>• could not reconstruct events from available charts, printouts, and schematics</li> <li>• did not recognize when critical safety function parameters exceeded limits</li> </ul>		<ul style="list-style-type: none"> <li>• recognized when plant EXCEEDED tech spec limits</li> <li>• stepped back and analyzed the whole situation</li> <li>• asked the right questions</li> <li>• screened out extraneous, irrelevant, unimportant, inaccurate information</li> <li>• correctly diagnosed events</li> <li>• recognized emergency plant situations</li> <li>• did not reconstruct events from available charts, printouts, and schematics</li> <li>• reconstructed events from available charts, printouts, and schematics</li> <li>• recognized when critical safety function parameters EXCEEDED limits</li> </ul>		<ul style="list-style-type: none"> <li>• recognized when plant APPROACHED tech spec limits</li> <li>• facilitated and supported a structured diagnostic process including:               <ul style="list-style-type: none"> <li>— prioritizing problems</li> <li>— determining root probable cause</li> <li>— establishing objectives and goals</li> <li>— reviewing resources and constraints</li> <li>— identify success criteria</li> <li>— generating possible solutions</li> <li>— selecting the best solution</li> <li>— specifying an action plan</li> <li>— identifying potential trouble areas</li> </ul> </li> <li>• anticipated potential problem areas independent of typical diagnostic process</li> <li>• determined the precise root cause of problem from the reconstructed event</li> <li>• recognized when critical safety function parameters APPROACHED limits</li> </ul>

REMARKS:



### 3. IMMEDIATE AND SUBSEQUENT ACTIONS

1	2	3	4	5
<ul style="list-style-type: none"> <li>• did not recognize entry conditions</li> <li>• unaware of plant conditions</li> <li>• when asked, did not provide appropriate advice</li> </ul>		<ul style="list-style-type: none"> <li>• recognized entry conditions</li> <li>• aware of relevant plant conditions</li> <li>• as necessary, advised appropriate team members:               <ul style="list-style-type: none"> <li>— that automatic actions occurred as designed</li> <li>— about normal plant responses</li> <li>— about immediate operator actions</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• recognized when plant approached entry condition</li> <li>• anticipated and advised in course of action to bring plant to preferred condition</li> </ul>

REMARKS:

### 4. USE OF PROCEDURES/TECHNICAL SPECIFICATIONS/REFERENCE DATA

1	2	3	4	5
<ul style="list-style-type: none"> <li>• could not locate appropriate procedures, tech specs, schematics or reference data</li> <li>• interpreted tech specs, schematics or reference data incorrectly</li> </ul>		<ul style="list-style-type: none"> <li>• located most required procedures, tech specs, reference data and schematics in reasonable time</li> <li>• could explain basis of tech specs</li> <li>• interpreted tech specs correctly</li> <li>• verified compliance with tech spec limits and actions</li> <li>• LSR and safety limit tech specs were memorized, others were quickly looked up</li> </ul>		<ul style="list-style-type: none"> <li>• requested or readily located all appropriate procedures, tech specs, reference data and schematics</li> <li>• located additional schematics to further clarify problems and interpretations</li> <li>• could distinguish between step-by-step procedure and guideline-style procedures</li> <li>• identified procedural conflicts and inadequacies and could explain how to resolve them</li> </ul>

REMARKS:

### 3. COMMUNICATIONS

- | 1   | 2 | 3   | 4 | 5  |
|---|---|---|---|--|
| <ul style="list-style-type: none"><li>• gave unclear, garbled, confusing and incomplete advice</li><li>• failed to ask for information when necessary</li><li>• ignored input or did not indicate understanding</li><li>• communicated with the wrong person or by the wrong method</li><li>• failed to communicate with appropriate people (NRC, etc.) when required</li></ul> |   | <ul style="list-style-type: none"><li>• gave understandable advice/input</li><li>• asked for information when necessary</li><li>• initiated communications with appropriate people (NRC, etc.) when required and by correct means</li></ul> |   | <ul style="list-style-type: none"><li>• gave clear and concise advice/input</li><li>• actively listened and verified that the message was understood</li><li>• actively sought ideas and input from team members</li></ul> |

REMARKS: