Georgia Power

POWER GENERATION DEPARTMENT

VOGTLE ELECTRIC GENERATING PLANT

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TRAINING LESSON PLAN

TITLE:	SPECIAL TEST EXCEPTIONS 3/4.10	NUMBER:	LO-LP-39214-00
PROGRAM:	LICENSED OPERATOR TRAINING	REVISION:	0
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INSTRUCTOR GUIDELINES:

WHITE BOARD WITH MARKERS

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I. PURPOSE STATEMENT:

TO TEACH THE STUDENT THE APPLICABILITY AND ACTIONS OF LIMITING CONDITION FOR OPERATION SECTION 3/4.10 SPECIAL TEST EXCEPTIONS.

II. LIST OF OBJECTIVES:

1. The student will be able to determine if in violation of an LCO if given a list of equipment and a given applicability condition.

2. The student will be able to give the required action statement from memory if the time limit for action is one hour or less.

3. The student will be able to look up the required action if given the applicable LCO if action required in more than one hour.

Additional for SRO

4. The student will be able to explain the bases for each of the LCO's.

REFERENCES:

TECHNICAL SPECIFICATIONS

SECTION 3/4.10 SPECIAL TEST EXCEPTIONS

III. LESSON OUTLINE:

NOTES

I. INTRODUCTION

A. This lesson presents the Limiting Conditions for Operation of section 3/4.10, Special Test Exceptions, of the Technical Specifications, along with their applicability, required actions, and bases.

B. Review the lesson objectives

1. Note bases are not required for SRO

II. PRESENTATION

A. Tech. Spec. 3/4.10.1 - Shutdown Margin

1. Limiting Condition for Operation

a. The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 may be suspended for measurement of control rod worth and SHUTDOWN MARGIN provided reactivity equivalent to at least the highest estimated control rod worth is available for trip insertion from OPERABLE control rod(s).

2. Applicable in Mode 2

3. Required actions

a. With any control rod not fully inserted and with less than the above reactivity equivalent available for trip insertion, immediately initiate and continue boration at greater than or equal to 30 gpm of a solution containing greater than or equal to 7000 ppm boron or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored. — 1 hour

b. With all control rods fully inserted and the reactor subcritical by less than the above reactivity equivalent, immediately initiate and continue boration at greater than or equal to 30 gpm of a solution containing greater than or equal to 7000 ppm boron or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored. — 1 hour

III. LESSON OUTLINE:

NOTES

4. Bases

   a. Provides a minimum reactivity worth available

      1) For testing control rod worth

   b. Permits periodic verifications of actual versus predicted core reactivity

      2) Due to fuel burnup

B. Tech. Spec. 3/4.10.2 - Group Height, Insertion, and Power Distribution Limits

1. Limiting Condition for Operation

   a. The group height, insertion, and power distribution limits of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.2.1, and 3.2.4 may be suspended during the performance of PHYSICS TESTS provided:

      1) The THERMAL POWER is maintained less than or equal to 85% of RATED THERMAL POWER, and

      2) The limits of Specifications 3.2.2 and 3.2.3 are maintained and determined at the frequencies specified in Specification 4.10.2.2 below.

         a) At least once every 12 hours determine $F_Q(2)$ and F^N_H within limits.

2. Applicable in Mode 1

3. Required actions

   a. With any of the limits of Specification 3.2.2 or 3.2.3 being exceeded while the requirements of Specifications 3.1.3.1, 3.1.3.5, 3.1.3.6, 3.2.1, and 3.2.4 are suspended, either:

      1) Reduce THERMAL POWER sufficient to satisfy the ACTION requirements of Specifications 3.2.2 and 3.2.3, or

      2) Be in HOT STANDBY within 6 hours.

III. LESSON OUTLINE:

NOTES

4. Bases

a. Permits rods violate group height and insertion limits

1) To measure control rod worth

2) Determine core stability index and dumping factor

a) During xenon oscillations

C. Tech. Spec. 3/4.10.3 - Physics Tests

1. Limiting Condition for Operation

a. The limitations of Specifications 3.1.1.3, 3.1.1.4, 3.1.3.1, 3.1.3.5, and 3.1.3.6 may be suspended during the performance of PHYSICS TESTS provided:

1) The THERMAL POWER does not exceed 5% of RATED THERMAL POWER.

2) The Reactor Trip Setpoints on the OPERABLE Intermediate and Power Range channels are set in accordance with Table 2.2-1, and

3) The Reactor Coolant System lowest operating loop temperature (T_{avg}) is greater than or equal to 541°F.

2. Applicable in Mode 2

3. Required actions

a. With the THERMAL POWER greater than 5% of RATED THERMAL POWER, immediately open the Reactor trip breakers. — 1 hour action

b. With a Reactor Coolant System operating loop temperature (T_{avg}) less than 541°F, restore T_{avg} to within its limit 15 minutes or be in at least HOT STANDBY within th next 15 minutes. — 1 hour action

III. LESSON OUTLINE:

NOTES

4. Bases

   a. Allows physics tests to be run outside some specs

      1) Below minimum temp for criticality

      2) Outside group heights

   b. Must be below 5% power

D Tech. Spec. 3/4.10.4 - Reactor Coolant Loops

1. Limiting Condition for Operation

   a. The limitations of the following requirements may be suspended:

      1) Specification 3.4.1.1 - During the performance of startup and PHYSICS TESTS in MODE 1 or 2 provided:

         a) The THERMAL POWER does not exceed the P-7 Interlock Setpoint, and

         b) The Reactor Trip Setpoints on the OPERABLE Intermediate and Power Range channels are set in accordance with Table 2.2-1.

      2) Specification 3.4.1.2 - During the performance of hot rod drop time measurements in MODE 3 provided at least two reactor coolant loops as listed in Specification 3.4.1.2 are OPERABLE.

2. Applicable during operation below the P-7 Interlock Setpoint or performance of hot rod drop time measurements.

3. Required actions

   a. With the THERMAL POWER greater than the P-7 Interlock Setpoint or performance of hot rod drop time measurements.

   b. With less than the above required reactor coolant loops OPERABLE during performance of hot rod drop time measurements, immediately open the reactor trip breakers and comply with the provisions of the ACTION statements of Specifications 3.4.1.2.

III. LESSON OUTLINE:

NOTES

4. Bases

a. Permits criticality under no flow conditions

b. Required to perform certain physics tests

1) At low power levels

E. Tech. Spec. 3/4.10.5 - Position Indication System - Shutdown

1. Limiting for Operation

a. The limitations of Specification 3.1.3.3 may be suspended during the performance of individual shutdown and control rod drop time measurements provided:

1) Only one shutdown or control bank is withdrawn from the fully inserted position at a time, and

2) The rod position indicator is OPERABLE during the withdrawal of the rods.*

a) *Not applicable during initial calibration if maintain k_{eff} — .95 and only one rod bank withdrawn at a time.

2. Applicable in modes 3, 4, and 5 during performance of rod drop time measurement.

3. Required actions

a. Immediately open the the Reactor trip breakers — 1 hour action

4. Bases

a. Permits DRPI to be inoperable for rod drop tests

1) Data derived from induced voltage in coil

a) Induced voltage small compared to normal voltage

b) Can not be observed if DRPI available

III. LESSON OUTLINE:

NOTES

III. Summary

A. Review Objectives

B. Tech. Specs. covered

1. Shutdown Margin

2. Group Height, Insertion Limits, and Power Dist. Limits

3. Physics Tests

4. Reactor Coolant Loops

5. Position Indication Systems - Shutdown

IV. PRACTICAL EXERCISES

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A. Exercise #1

1. During the performance of low power physics tests, the Reactor Test Engineer requests that the SG ARV lift setpoint be reduced to a pot setting of 6.8. Should you comply with his request?

   a. Provide students with a copy of the Steam Tables

2. A pot setting of 6.8 will result in a pressure lift setpoint of 885 psig (900 psia) The saturation temperature at 900 psia is approximately 532°F. Since this is below the minimum required temperature of 541°F per T.S. 3/4.10.3 you should not comply the request.

B. Exercise #2

1. A loss of offsite power occurs during the performance of hot rod drop time measurements while in Mode 3. What actions are required to be taken?

2. In accordance with T.S. 3/4.10.4, with no OPERABLE RCS loops, the reactor trip breakers must be opened immediately. Also must comply with ACTION statement of T.S. 3/4.4.1.2 for RCS loop operability and T.S. 3/4.8.1.1 for A.C Sources.