

FACILITY NAME: SEQUOYAH

Section 13

REPORT NUMBER: 05000327/2010301 and 05000328/2010301

POST EXAM COMMENTS

CONTENTS:

- ✓ Post Examination Comments and Supporting Documentation (if any)

Location of Electronic Files:

O:\Sequoyah Examinations\Initial Exam 2010-301

Submitted By:

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Verified By:

Mark C. Tate



Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37379-2000

Personally Identifiable Information - Withhold Under 10 CFR 2.390

March 9, 2010

10 CFR 55.40
10 CFR 55.49
10 CFR 55.5(b)(2)

Mr. Luis A. Reyes
Regional Administrator Region II
U.S. Nuclear Regulatory Commission
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-8931

Attention: Mr. M. T. Widmann

Sequoyah Nuclear Plant, Units 1 and 2
Facility Operating License Nos. DPR-77 and DPR-79
NRC Docket Nos. 50-327 and 50-328

Subject: **Reactor Operator and Senior Reactor Operator Initial Examinations -
05000327/2010301 and 05000328/2010301**

In accordance with Examination Standard (ES) 501, "Initial Post-Examination Activities," of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Sequoyah Nuclear Plant is providing the following information in enclosures to this letter:

- Written examinations for Reactor Operator (RO) and Senior Reactor Operator (SRO) examination answer keys, examination cover sheets, seating chart, student answer sheets, clean copy of each student's answer sheet and a summary of the student's clarifying questions.
- A substantive comment made by an applicant following the written examination, with explanation concerning why the comment was accepted, and the performance analysis that was conducted on the examination.
- Completed Form ES-403-1, "Written Examination Grading Quality Checklist."

There are no commitments contained in this submittal. In accordance with 10 CFR 55.49 "Integrity of Examinations and Tests," and NUREG-1021, appropriate measures have been taken to ensure examination integrity and security. The Examination Security Agreement Form ES-201-3 will be provided after obtaining the post-examination signatures.

*Rec'd
2/10/10*

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If you have any questions, please contact Beth A. Wetzel at (423) 843-7170 or James W. Proffitt at (423) 843-6651.

Sincerely,



Christopher R. Church
Site Vice-President
Sequoyah Nuclear Plant

Enclosures:

1. Written examinations for Reactor Operator (RO) and Senior Reactor Operator (SRO), examination answer keys, examination cover sheets, seating chart, student answer sheets, clean copy of each student's answer sheet and a summary of the student's clarifying questions.
2. A substantive comment made by an applicant following the written examination, with explanation concerning why the comment was accepted, and the performance analysis that was conducted on the examination.
3. Completed Form ES-403-1, "Written Examination Grading Quality Checklist."

[Handwritten initials]

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BAW:NRT:SKD

Enclosures

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S E N S I T I V E I N F O R M A T I O N

I: Operator License\2010\ Post Exam Information 030910

*Rec'd
3/10/10*

ENCLOSURE 2

**TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT (SQN)
UNITS 1 AND 2**

**A SUBSTANTIVE COMMENT MADE BY AN APPLICANT FOLLOWING THE WRITTEN
EXAMINATION, WITH EXPLANATION CONCERNING WHY THE COMMENT WAS
ACCEPTED, AND THE PERFORMANCE ANALYSIS THAT WAS PERFORMED ON THE
EXAMINATION**

Question #81 student comment. (docket #55-62645)

The stem of this question stated to determine the required procedure and the current status of offsite power. I concluded from the stem information that there was a clear delineation between the "required" statement, applying to the procedure and not applying to the "current" status of power operability. I did not, at the time of the exam, believe that the stem was unclear or confusing and did not ask the proctor for clarification.

I believe that this question has two correct answers for the following reasons:

1. GOI-6 Section AA is entered for the condition stated in the root, due to the Transmission Operator notifying the control room of an "unanalyzed" grid condition.

In accordance with the required procedure, GOI-6, Section AA; Section 3.0:

"NOTE 6- Entry into LCOs 3.8.1.1 and 3.8.1.2 is a conservative action at this time"

Based on Note 6, I applied the option stated in the note to declare the current offsite status as inoperable and entered the applicable LCOs. Based on the procedural guidance of GOI-6, it is acceptable to declare offsite power sources inoperable due to the unanalyzed condition stated in the stem, therefore making answer B or A correct. (See attached copies of procedure steps/notes)

2. Based on the stem description of "current" operability status of offsite power sources, I assumed that when contacted by the Transmission Operator that they implied a certain amount of inoperability in the grid just by being in an unanalyzed condition. I assumed then that the current status of offsite power was inoperable.

In conclusion, based on the unclear information in the stem of the question regarding current status of offsite power and by applying the conservative actions specifically delineated in Note 6 of the required procedure, GOI-6, Appendix AA, I think answers "B" and "A" should both be considered valid answers to this question.

Sequoyah Nuclear Station response;

After reviewing the information provided in question #81 and the guidance provided in GOI-6, "APPARATUS OPERATIONS", Section AA, "ACTIONS FOR CONDITION RED OR YELLOW OFFSITE POWER SOURCES", we agree with the candidate on his interpretation of offsite power operability. It is reasonable that the candidate could conclude that offsite power may in-fact be inoperable given the conditions provided in the stem of the question. The candidate would then be correct to make a conservative decision on the operability of offsite power and thus enter Tech Spec LCO 3.8.1.1 actions as stated in NOTE 6.

We recognize that the direction provided by Section AA, is not as clear as it could be on providing the expected actions should this condition be encountered. Thus the station has generated SR 138821 (GOI-6 weakness) to review the direction provided for determining offsite power operability and expected time frames in which this determination should be completed. Also this revised procedure clarification will be aligned with OPDP-8 guidance on operability determination (i.e. must have reasonable assurance of continued operability) to ensure consistency.

Based on the guidance in ES-403, Section D, since the two conditions of "A" and "B" are mutually exclusive (i.e. offsite power cannot be operable and inoperable at the same time) we recommend that question #81 be deleted from the exam.

QUESTIONS REPORT
for 2010 Feb SRO exam post-Atlanta

1. 077 AG2.2.44 081

Given the following:

- Both units are at 100%.
- The Transmission Operator informs the control room staff that the grid/offsite power conditions are in an unanalyzed condition due to the total system load exceeding the maximum analyzed system load for the current transmission system conditions.
- Capacitor Yard Bus Voltage is :
 - A 164.3
 - B 164.2
 - C 164.3
- 0-REC-241-2, Frequency Recorder Potential 120v AC indicates 60 Hz.

Which ONE of the following identifies the required procedure and the current operability status of offsite power sources?

<u>Procedure</u>	<u>Status of Offsite Power</u>
A✓ GOI-6, "Apparatus Operation" Section AA, "Actions for Condition Red or Yellow Offsite Power Sources."	Both sources still operable.
B. GOI-6, "Apparatus Operation" Section AA, "Actions for Condition Red or Yellow Offsite Power Sources."	Both sources immediately inoperable.
C. 0-GO-5, "Normal Power Operation" Appendix E, "Manual Operation of the Voltage Regulator."	Both sources still operable.
D. 0-GO-5, "Normal Power Operation" Appendix E, "Manual Operation of the Voltage Regulator."	Both sources immediately inoperable.

QUESTIONS REPORT
for 2010 Feb SRO exam post-Atlanta

DISTRACTOR ANALYSIS:

- A. *Correct, GOI-6 is the procedure the crew would implement in response to the conditions and the voltage and frequency is not out of limits as indicated in the question stem. Appendix AA has a 4 hour allowance for evaluation to determine if offsite power is operable.*

- B. *Incorrect, GOI-6 is the procedure the crew would implement in response to the conditions and with voltage and frequency not out of limits, the offsite sources are not immediately inoperable. The 4 hour allowance for evaluation of operability does apply. However if either the voltage or frequency had been outside of allowable values, both sources would have to be immediately declared inoperable.*

- C. *Incorrect, Plausible if candidate thought that because voltage and lower than normal the regulator was not working and that the excitation required manual control and both sources being operable is correct pending the four allowance for evaluation.*

- D. *Incorrect, Plausible if candidate thought that because voltage and lower than normal the regulator was not working and that the excitation required manual control and both sources would be inoperable if the voltage or frequency had been out of allowable values (out of limits) because the 4 hour allowance for the evaluation is not allowed.*

QUESTIONS REPORT
for 2010 Feb SRO exam post-Atlanta

Question Number: 81

Tier: 1 **Group** 1

K/A: 077 AG2.2.44, Generator Voltage and Electric Grid Disturbances: Ability to interpret control room indications to verify the status and operations of a system, and understand how operator actions and directives affect plant and system conditions.

Importance Rating: 4.2 / 4.4

10 CFR Part 55: 41.5 / 43.5 / 45.12

10CFR55.43.b: (5)

K/A Match: Applicant must determine the procedure to be implemented and the status of the offsite power supplies from information provided by the Transmission operator and indication in the control room.

Technical Reference: GOI-6, Apparatus Operations, R130

Proposed references to be provided: None

Learning Objective: OPT200.SWYD, B.5.c
OPL271GOI-6, B.2

Question Source:

New	<u> X </u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History:

Comments:

Justification

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT
GENERAL OPERATING INSTRUCTION

GOI-6

APPARATUS OPERATIONS

Revision 130

QUALITY RELATED

PREPARED/PROOFREAD BY: E. L. Parson

RESPONSIBLE ORGANIZATION: Operations

APPROVED BY: D. A. PORTER

EFFECTIVE DATE: 4/29/2009

LEVEL OF USE: **MULTIPLE USE (SEE INDIVIDUAL SECTIONS)**

REVISION

DESCRIPTION:

Revised Section F to include changes pertaining to the replacement of the 1A and 1C Main Transformers per DCN D22232A which were inadvertently omitted in the previous revision (08000858). Included a listing in Section F for the Unit 1 and Unit 2 Spare Main Bank Transformer.

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SECTION AA
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ACTIONS FOR CONDITON RED OR YELLOW OFFSITE POWER SOURCES
(REFERENCE USE)

1.0 PURPOSE

- A. To provide operators with guidance as to actions to be taken when notified by the Transmission Operator that one or both offsite power sources are determined to be in Condition Red or Condition Yellow. This section does not apply when offsite power has been lost (refer to AOP-P.01).

2.0 SECTION REFERENCES

- A. RIMS E14 030714 002, SQN Grid Operating Instructions.
- B. RIMS B25 880624 041, Draft of General Operating Instructions.
- C. FSAR 8.2.2
- D. Print 15E500-3
- E. Calculation SQN-GRID-STUDY-012
EDMS Accession No. E31010223251
- F. 1-AR-M1-A, 1-XA-55-1A and 2-AR-M1-A, 2-XA-55-1A
- G. 0-SI-OPS-082-007.W
- H. NRC Temporary Instruction 2515/163, "Operational Readiness of Offsite Power"

ELECTRICAL BOARD INDICATING LIGHTS
(INFORMATION USE)

1.0 PURPOSE

- A. To provide information on the proper indicating lamps for various electrical boards.

2.0 SECTION REFERENCES

- A. EWR No. 06-ICE-202-005
- B. PER 91030.
- C. DCCN-Q04482.

3.0 REQUIREMENTS

NOTE Use of the wrong indicating bulb may violate design requirements and could result in damage or short bulb life.

The following table provides information on required bulb type as determined by Systems Engineering. Bulb information for other boards will be added when it is verified by Engineering.

BOARD	REQUIRED BULB
All 6.9 KV boards	1835 ⁽¹⁾ (incandescent)
480 V Load Centers (Arrow Hart)	55, 57, or 1895 (incandescent)
Valve Position at local HS (i.e. non-rtn vlv indicator)	259 (wedge base, 6.3v)
Lighted pushbuttons on MOVs	12 (miniature bi-pin base 6.3v)
FSV position indicators, etc.	6S6 135v (120v, 6 amp-small <u>silver</u> -colored base)
MFP and EHC pump indications (on local panel)	10S6 250v ⁽²⁾ 240v 10 amp- small <u>brass</u> -colored base)

(1) Do not use 1819 bulbs for indicating lights in 6.9KV boards, PER 70135.

(2) Do not use 135v bulb in 240v socket (it will shine brightly for a few hours then burn out.)

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SECTION AA
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3.0 OPERATOR ACTIONS

NOTE 1 Actions in this section may be performed out of sequence.

NOTE 2 An unanalyzed condition can also be referred to as a
"red condition".

NOTE 3 A yellow grid risk power status means that at least one contingency
exists that will disqualify offsite power. Communications with a
Transmission Operator will be required to determine grid status.

[1] IF notified by Transmission Operator the grid/offsite power
conditions are in a red condition **OR** are unanalyzed, **THEN**
PERFORM the following:

[a] MAKE a log entry that we are in a degraded condition
(91-18) and will need to be analyzed.

[b] PERFORM an OPDP-9 phone call immediately with the TPS
Operator, Engineering, Operations Management and on-site
TPS to fully understand the grid conditions and actions to be
taken.

[c] REFER to SPP-7.1 On line Work Management for guidance on
scheduling and work activities during a Offsite Power Risk
Condition.

NOTE 4 The operability determination will be coordinated through SQN Site
Engineering and Transmission Operator.

NOTE 5 IF grid frequency and/or voltage is outside acceptable limits, the 4
hour allowance to determine operability does NOT apply.

[d] START a 4 hour clock for an operability determination to be done.

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SECTION AA
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3.0 OPERATOR ACTIONS

NOTE 6 Entry into LCOs 3.8.1.1 and 3.8.1.2 is a conservative action at this point.

[e] IF analysis is NOT complete within 4 hours, THEN COMPLETE the following:

1. **ENTER** LCO 3.8.1.1 or 3.8.1.2
2. **PERFORM** Diesel testing.

NOTE The following step starts a 24 hour clock that will cause both units to be shutdown.

[f] IF Transmission Operator reports that, based on their analysis, neither offsite power source is operable, LCO 3.8.1.1 or 3.8.1.2 will be entered at that time.

NOTE Both offsite power sources inoperable may be reportable under 10CFR50.72(b)(3)(v) due to loss of offsite power safety function. Refer to NUREG-1022.

[2] IF both offsite power circuits are inoperable, THEN

PERFORM the following:

[a] **ENTER** LCO 3.8.1.1 or 3.8.1.2 as applicable.

[b] **REFER** to SPP-3.5, Regulatory Reporting Requirements:

- **EVALUATE** reportability under 10CFR50.72.
- **PERFORM** site notifications specified in SPP-3.5 App. D.

[c] **INITIATE** OPDP-9, Emergent Issue Response.

[d] **NOTIFY** Work Week Manager to evaluate plant risk **USING** Sentinel or Oram as applicable.

[e] **EVALUATE** inoperable safety-related equipment and **INITIATE** action to restore any inoperable equipment as necessary.

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SECTION AA
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3.0 OPERATOR ACTIONS

- [f] **IF** any electrical boards are in an alternate (off-normal) alignment,
THEN
EVALUATE returning to normal alignment.
- [g] **INITIATE** actions to protect D/Gs, ERCW system and shutdown boards, such as restricting access and deferring non-essential work/testing.
- [h] **MONITOR** the following:
- Grid Voltage
 - 6.9kV and 480V Shutdown Board voltage
- [i] **IF** any Shutdown Board voltage is less than 93.5% (6456 V) for more than 5 minutes
OR voltage is less than 80% (5520 V),
THEN
PERFORM the following:
1. **ENSURE** D/G started.
 2. **ENSURE** Shutdown board Normal and Alternate supply breakers OPEN.
 3. **ENSURE** Shutdown Board energized from D/G.
- [j] **IF** D/Gs are NOT running,
THEN
PERFORM 0-SI-OPS-082-007.0 within 8 hours to verify D/G operability.
- [k] **COORDINATE** with load dispatcher to restore grid voltage and off-site power source operability as soon as possible.

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3.0 OPERATOR ACTIONS (Continued)

NOTE 1 Loss of a complete SQN 161kV Bus requires entry into LCO 3.8.1.1 Action a in Modes 1 - 4. If one or more bus sections are lost, entry into LCO 3.8.1.1 Action a will depend on switchyard alignment and available power sources. If an additional single failure could cause a loss of offsite power, then LCO 3.8.1.1 Action a should be entered.

NOTE 2 0-SI-OPS-082-007.W should be performed within one hour of entering LCO 3.8.1.1 action a, regardless of whether the action is exited prior to one hour. (PER 96156)

[3] IF one offsite power circuit is inoperable,
THEN
PERFORM the following:

[a] ENTER LCO 3.8.1.1 or 3.8.1.2 as applicable.

[b] PERFORM 0-SI-OPS-082-007.W within 1 hour and at least once per 8 hours thereafter to verify operability of remaining offsite power source.

[c] REFER to SPP-3.5, Regulatory Reporting Requirements:

- **EVALUATE** reportability under 10CFR50.72.
- **PERFORM** site notifications specified in SPP-3.5 App. D.

[d] EVALUATE initiation of OPDP-9, Emergent Issue Response.

[e] NOTIFY Work Week Manager to evaluate plant risk **USING** Sentinel or Oram as applicable.

[f] EVALUATE inoperable safety-related equipment and **INITIATE** action to restore any inoperable equipment as necessary.

SQN	APPARATUS OPERATIONS	GOI-6 Rev: 130 Page 189 of 237
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3.0 OPERATOR ACTIONS (Continued)

[3] (Continued)

- [g] IF any electrical boards are in an alternate (off-normal) alignment,
THEN
EVALUATE returning to normal alignment.

- [h] **EVALUATE** actions to protect Switchyard, D/Gs, ERCW system and shutdown boards, such as restricting access and deferring non-essential work/testing.

- [i] **NOTIFY** Load Dispatcher and Onsite TPS personnel to evaluate work activities to ensure remaining source NOT jeopardized.

- [j] **MONITOR** the following:
 - Grid Voltage
 - 6.9kV and 480V Shutdown Board voltage

- [k] IF any D/G is also inoperable,
THEN
PERFORM 0-SI-OPS-082-007.0 within 8 hours to verify operability of remaining D/Gs.

- [l] **COORDINATE** with load dispatcher to restore grid voltage and off-site power source operability as soon as possible

END OF SECTION

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SECTION AB
Page 1 of 5

COMMON STATION SERVICE TRANSFORMER AUTO TAP CHANGER OPERATION
(CONTINUOUS USE)

1.0 PURPOSE

To provide operational guidance for the Common Station Service Transformer under various conditions.

2.0 REFERENCES

- A. Plant Voltage Schedule Switchyard Letter 18 Rev. 24

3.0 INSTRUCTIONS

3.1 Common Station Service Transformer Auto-Tap Changer Operation

NOTE 1 Normal operation of CSST auto-tap changer will maintain start bus voltage automatically between 7.01 kV and 7.10 kV when the LTC remote control switches are in the PULLED-OUT-AUTO position. (LTC-X remote control switch for start bus 1A or 1B; LTC-Y remote control switch for start bus 2A or 2B).

NOTE 2 If voltage exceeds limits of 6876V (Low) or 7236V (high) for three minutes, then XA-55-ECB6A, window 14, CSS Transformer Auto-Tap Changer Abnormal, will annunciate and the tap changer locks in its present position.

NOTE 3 To manually adjust voltage, ensure LTC-X or LTC-Y control switch (as applicable) is in manual (pushed in). To raise voltage, raise tap by turning handle in the **clockwise** direction.
To lower voltage, ensure LTC-X or LTC-Y control switch (as applicable) in manual (pushed in) and lower tap by turning handle in the **counter clockwise** direction.

NOTE 4 Start bus 1A or 2A voltage is monitored using 1-EI-57-55 or 2-EI-57-55 respectively on M-1 main control boards. Start bus 1B or 2B voltage is monitored using 1-EI-57-56 or 2-EI-57-56 respectively on M-1.

NOTE 5 Off-site Power availability requirements with Tap Changers in Manual are contained in Section F and 15E500-3.

Buckner, Michael Allen

From: Porter, David A
Sent: Friday, March 05, 2010 8:50 AM
To: Smith, Steven Vaughn; Buckner, Michael Allen; Stephens, Michael Lee; Wilkes, James K; Simmons, Paul R; Leary, William T; Bergeron, Aaron Scott
Cc: Rieger, Timothy Edward; Roddy, Albert F
Subject: New SR 138821 (GOI-6 weakness)

The following issue was identified following the NRC written exam administered on 3/3/2010:

GOI-6 Section AA provides guidance for off-site power being in an unanalyzed condition. This section directs performing an operability determination within 4 hours. If in an unanalyzed condition due to grid load exceeding the previous analyzed limit, the intent is that off-site power may still be considered operable pending completion of the analysis of the new load condition as long as grid voltage and frequency are within limits. If the 4 hour clock expires prior to completing the analysis, then the procedure directs declaring both offsite power sources inoperable. One license candidate was confused by the existing guidance and decided to immediately declare both off-site power source inoperable (without waiting for the operability determination within 4 hours). Please clarify this procedure section to make this guidance clearer and to ensure that this section is consistent with OPDP-8 guidance on operability determinations (i.e. must have reasonable assurance of continued operability).