From:	Chawla, Mahesh
Sent:	Friday, August 26, 2022 3:02 PM
To:	Garcia, Richard M.
Subject:	Draft - Additional audit question - Columbia Generating Station - Regulatory audit question for LAR to revise TS to adopt TSTF-505, Revision 2 (EPID L-2022-LLA-0023)
Attachments:	EEEB Interpretation for Table E1-1--08_25-22.docx; Associated sub-audit questions to Original Audit Questions (002).docx

Mr. Garcia,

By letter dated February 3, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22034A992), Energy Northwest (the licensee) submitted a license amendment request for Columbia Generating Station (Columbia). The proposed amendment would modify Columbia's Technical Specification requirements to permit the use of risk-informed completion times in accordance with Technical Specifications Task Force (TSTF) Traveler TSTF-505, "Provide Risk-Informed Extended Completion Times – RITSTF [Risk-Informed TSTF] Initiative 4b," Revision 2.

On March 18, 2022 (ML22068A234), the U.S. Nuclear Regulatory Commission (NRC) staff issued an audit plan that conveyed intent to conduct a regulatory audit to support its review of the subject license amendment request. In the audit plan, the NRC staff requested an electronic portal setup and provided a list of documents to be added to the portal. In a letter dated July 6, 2022 (ML22165A296), NRC transmitted a list of audit questions.

During the audit discussions conducted from 8/1/22 through 8/4/22, the NRC staff from the electrical branch discussed 11 audit questions with the licensee. Following the audit meeting you uploaded responses to the audit questions on the portal. The licensee has provided excessive amount of text which complicates understanding the electrical distribution at Columbia. Further clarification is necessary to prevent possible undue additional effort by NRC staff. The purpose of the mark-up of the table and the attached write up is to provide NRC staff's understanding of the as-built electrical distribution at Columbia as shown on the drawings. The NRC staff would like the licensee to confirm this and provide an update to the supplemented information on the docket to simplify the presentation of the electrical distribution represented in the table. Thanks

Sincerely,

Mahesh Chawla, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
ph: 301-415-8371
Docket No. 50-397

	DORL/LPL4/PM	DORL/LPL4/BC
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8/25/22	8/25/22

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MESSAGE	2189	8/26/2022 3:01:40 PM
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CGS TS	CGS TS Description	SSCs Covered by TS LCO Condition	Functioned Covered by TS LCO Condition	Design Success Criteria
3.8.1.A	One offsite circuit inoperable	~~With one offsite circuit inoperable the remaining separate offsite circuit is in service to supply AC power to the onsite Class-1E AC power system.~~ There are two qualified (*) offsite power circuits (meeting GDC-17 provisions) that provide AC power from the BPA transmission network to the CGS onsite Class-1E electric power systems ~~supplying~~ (1) one is from TR-S (230kV as the Preferred AC power source) for Divisions 1, 2, and 3 ~~Division 1, Division 2 and Division 3 ESF loads when connected to TR-S (230 kV as the Preferred AC power source~~and (2) the other is from TR-B (115kV as the Backup AC power source) for Divisions 1 and 2 (*) A qualified offsite circuit consists of all breakers, transformers, switches, interrupting devices, cabling and controls required to transmit AC power from the offsite transmission network to the onsite Class-1E ESF buses. ~~The Class 1E AC distribution system supplies electrical power to three divisional load groups, Divisions 1, 2, and 3, with each division powered by an independent Class 1E 4.16 kV ESF switchgear bus),~~] . ~~Division 1 and Division 2 Class 1E 4.16 kV ESF switchgear buses SM-7 and SM-8 and associated low voltage distribution (see also LCO 3.8.7 Distribution Systems Operating) have two separate and independent offsite sources of power from TR-S (230kV network~~	Each qualified offsite circuit supplies power to onsite Class 1E AC distribution system when unit's main generator (MG) is unavailable. The Class 1E AC distribution system supplies electrical power to three divisional load groups, Divisions 1, 2, and 3, with each division powered by an independent Class 1E 4.16 kV ESF switchgear bus) – Division 1 (SM-7), Division 2 (SM-8), and Division 3 (SM-4 ~~Provide necessary AC power to support availability of required ESF systems.~~ ~~With one offsite power circuit inoperable, the other separate offsite circuit remains operable to supply AC power to CGS ESF systems from the BPA network where either operable offsite circuit maintains required frequency and voltage, while accepting required ESF loads during a DBA, while connected to their respective ESF 4.16kV switchgear buses.~~ ~~For example: With the TR-S network connection in service following a main generator trip and automatic source transfer of auxiliary station load to align the TR-S offsite power circuit to the onsite AC power distribution system: AC power from the 230kV network connection to ESF loads is supplied by respective Class 1E ESF 4.16kV switchgear buses SM-7 (for Division 1), SM-8 (for Division 2), and SM-4 (for Division 3).~~ ~~Note: Automatic transfer capability to transfer the source of power for the onsite electric power~~	One qualified offsite circuit supplying power to two Class 1E 4.16 kV ESF switchgear buses ~~For this LCO condition, one offsite circuit inoperable, the other independent offsite circuit remains operable and all three onsite emergency DGs assigned to their respective Class 1E 4.16kV ESF switchgear buses remain operable. This will equate to four sources to support availability of ESF design functions.~~ ~~However, with no offsite power available during a DBA there are just three sources of AC power available from respective independent on site DGs with each DG connected to its assigned division 1 (DG1), division 2 (DG2) and division 3 (DG3) ESF 4.16kV switchgear~~ bus. ~~With three sources of AC power to supply ESF systems in three separate ESF divisions operable, this will exceed provisions of the Safety Design (Bases) Success Criteria.~~ ~~That is, for this LCO condition and the plant responding to a DBA (no offsite power available) there is adequate number of power sources available to respective Class-1E ESF 4.16kV switchgear buses to meet or exceed the Design (Bases) Success Criteria that the ESF systems of any two of the three divisions (Division 1, Division 2 or Division 3 ESF load groups) provide for the minimum safety functions necessary to shutdown the unit and maintain it in a safe shutdown condition will be met.~~

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		~~connection) and TR-B (115kV network connection) (**).~~ ~~(**) Division 3 Class 1E 4.16 kV ESF bus SM-4 has one offsite source from TR-S (via the 230kV network). The Division 3 Class 1E 4.16kV switchgear bus SM-4 does not have a backup offsite power circuit connection from TR-B.~~ ~~Each Class-1E 4.16 kV ESF switchgear bus has a dedicated onsite DG (i.e., DG1 serves SM-7 supplying Division 1 loads, DG2 serves SM-8 supplying Division 2 loads and DG3 serves Division 3 HPCS loads when offsite power is not available).~~ ~~Note: Further identification of ESF system loads assigned to Division 1 load groups supplied by SM-7 Class-1E 4.16kV switchgear bus (e.g., LPCS/LPCI systems) and associated low voltage buses in Division 1, and redundant Division 2 load groups supplied by SM-8 Class-1E 4.16kV switchgear bus (e.g., two LPCI systems) and associated low voltage buses in Division 2, as well as the HPCS system loads assigned to Division 3 SM-4 Class-1E 4.16kV switchgear bus and associated low voltage buses supporting HPCS auxiliaries are shown on E502 series drawings (see also LCO 3.8.7 Distribution Systems Operating as well as FSAR chapter 8 for complete discussion of ESF system power sources and division load groups).~~	~~system from the normal auxiliary TR-N1 transformer (supplied by the main generator) to TR-S (supplied by the 230kV network) must also be operable.~~ ~~For example: For this condition, If the backup TR-B 115kV network interconnection to CGS remains in service (the offsite circuit from TR-S is inoperable), AC power from the operable offsite circuit is provided to Class 1E ESF 4.16kV switchgear buses SM-7 (Division 1) and/or SM-8 (Division 2) ESF load groups provided the automatic transfer capability from TR-S to TR-B is operable. SM-4 does not have a backup offsite power circuit connection. When offsite power is not available to SM-4 (division 3 loads) there is automatic transfer capability to connect the Class-1E ESF 4.16kV switchgear bus SM-4 to DG3, the onsite emergency power source for SM-4.~~	
3.8.1.B	One required diesel	~~There are th~~Three onsite emergency power DGs providing AC power to ESF ~~systems~~ divisions	Onsite emergency DG AC power sources supply ESF ~~systems~~ divisions when	~~For this LCO condition, and no offsite power sources available to each Class 1E ESF 4.16kV switchgear bus, there remains~~

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	generator inoperable	with each DG connected to a separate Class-1E 4.16kV ESF switchgear bus where: (i)SM-7 is supplied by DG1, division 1 (LPCS/LPCI DG), (ii)SM-8 is supplied by DG2, division 2 (LPCI DG) and, (iii)SM-4 is supplied by DG3, division 3 (HPCS DG), when offsite power to either of these 4.16kV ESF buses is not available. ~~See E502-2.~~ ~~For this LCO Condition (one required DG inoperable), ESF systems rely on the remaining two onsite emergency DG AC power sources supplied by either DG1 division 1 (LPCS/LPCI DG), or by DG2 division 2 (LPCI DG) or by DG3 division 3 (HPCS DG) when offsite power is not available depending on which DG is inoperable.~~	connected to their respective Class 1E 4.16kV ESF switchgear bus when offsite power to the 4.16kV ESF bus is not available ~~For this LCO condition, with one required DG inoperable there are two remaining onsite emergency DG AC power sources available to supply ESF loads: either division 1 (LPCS/LPCI) supplied from DG1, or division 2 (LPCI) supplied from DG2 or division 3 (HPCS) supplied from DG3 when offsite power is not available depending on which DG is inoperable.~~	~~two~~ At a minimum, two onsite emergency DG AC power sources operable to supply associated Class-1E 4.16kV ESF switchgear buses ~~(serving either Division 1 and Division 2 ESF loads or Division 1 and Division 3 ESF loads or Division 2 and Division 3 ESF loads depending on which DG is inoperable) to meet provisions within the Safety Design Success Criteria that ESF systems for any two of the three divisional load groups provide for the minimum safety functions necessary to shutdown the unit and maintain it in a safe shutdown condition when responding to a DBA (coincident with a loss of offsite power).~~
3.8.1.C	Two offsite circuits inoperable	~~LCO 3.8.1 Condition C, where both offsite power circuits are inoperable, that is,~~ AC power from the preferred 230kV power source at TR-S and the Backup 115kV power source at TR-B to the respective 4.16kV ESF switchgear buses is not operable; this constitutes, a loss of offsite power for this LCO. ~~For this condition, ESF systems are relying on the onsite emergency DG AC power sources provided to respond to a DBA when offsite power is not available.~~ DG1 ~~supplies~~ can supply AC power to division 1 ESF loads (LPCS/LPCI DG), DG2 can ~~supplies~~ supply AC power to division 2 ESF loads (LPCI DG) and, DG3 can ~~supplies~~ supply AC power to division 3 loads (HPCS DG)	~~Provide necessary AC power to support availability of ESF systems.~~ ~~Emergency onsite AC power sources support availability of ESF systems (arranged in division load groups) by providing AC power during a DBA when connected to their respective Class-1E 4.16kV ESF switchgear buses and associated low voltage distribution when offsite power (both the 230kV and 115kV offsite circuits) to 4.16kV ESF switchgear buses is not available.~~ With two offsite circuits inoperable there are three onsite emergency DG power sources available to supply AC power to ESF loads (arranged in division load groups) either: division 1 (LPCS/LPCI) from DG1, division 2 (two LPCI systems) from DG2, and	At a minimum, two onsite emergency DG AC power sources operable to supply associated Class-1E 4.16kV ESF switchgear buses ~~For this LCO condition, where there are no offsite power sources available during a DBA to each of the three Class 1E 4.16kV switchgear buses and associated low voltage distribution, there remains three independent onsite emergency DG AC power sources operable when each DG is connected to its assigned division 1 (DG1), division 2 (DG2) and division 3 (DG3) Class-1E 4.16kV ESF switchgear bus and associated low voltage distribution.~~ ~~With three sources of AC power to supply ESF systems in three separate ESF divisions operable, this will exceed provisions of the Design (Bases) Success Criteria. That is, there are sufficient AC sources from the onsite DGs serving each division ESF load group such that ESF systems for any two of the three division 1, division 2 or division 3 ESF load groups provide for the minimum safety functions necessary to shutdown the unit and maintain it~~

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		~~Note: There are three onsite emergency DGs providing AC power supporting ESF systems where one DG is connected to each Class 1E 4.16kV switchgear bus and connected low voltage distribution (E502-2), when offsite AC power from the network is not available:~~ ~~(i)SM-7 and associated low voltage distribution is supplied by DG1, division 1 (LPCS/LPCI DG),~~ ~~(ii)SM-8 and associated low voltage distribution is supplied by DG2, division 2 (LPCI DG) and,~~ ~~(iii)SM-4 and associated low voltage distribution is supplied by DG3, division 3 (HPCS DG)~~	division 3 (HPCS) from DG3.	~~in a safe shutdown condition when responding to a DBA coincident with a loss of all offsite power (FSAR chapter 6 and chapter 8).~~
3.8.1.D	One offsite circuit and one required diesel generator inoperable	There are two qualified (*) offsite power circuits (meeting GDC-17 provisions) that provide AC power from the BPA transmission network to the CGS onsite Class-1E electric power systems (1) one is from TR-S (230kV as the Preferred AC power source) for Divisions 1, 2, and 3and (2) the other is from TR-B (115kV as the Backup AC power source) for Divisions 1 and 2 (*) A qualified offsite circuit consists of all breakers, transformers, switches, interrupting devices, cabling and controls required to transmit AC power from the offsite transmission network to the onsite Class-1E ESF buses. ~~There are~~ Three onsite emergency power DGs providing AC power to ESF ~~systems~~ divisions with each DG connected to a separate Class-1E 4.16kV ESF switchgear bus where:	~~Provide necessary AC power from the Class-1E 4.16kV ESF switchgear buses and associated low voltage distribution system to support availability of required ESF systems.~~ Each qualified offsite circuit supplies power to onsite Class 1E AC distribution system when unit's main generator (MG) is unavailable. Onsite emergency DG AC power sources supply ESF systems when connected to their respective Class 1E 4.16kV ESF switchgear bus when offsite power to the 4.16kV ESF bus is not available ~~For this LCO condition, with one offsite circuit and one required DG inoperable there are two remaining onsite emergency DG AC power sources available to supply ESF loads: either division 1 (LPCS/LPCI) supplied from DG1, or division 2 (LPCI) supplied from DG2 or division 3 (HPCS) supplied from~~	One qualified offsite circuit OR two onsite emergency DG AC power sources operable to supply two Class-1E 4.16kV ESF switchgear buses

CGS TS	CGS TS Description	SSCs Covered by TS LCO Condition	Functioned Covered by TS LCO Condition	Design Success Criteria
		(i)SM-7 is supplied by DG1, division 1 (LPCS/LPCI DG), (ii)SM-8 is supplied by DG2, division 2 (LPCI DG) and, (iii)SM-4 is supplied by DG3, division 3 (HPCS DG), when offsite power to either of these 4.16kV ESF buses is not available. See E502-2. ~~For this LCO Condition (one offsite power circuit AND required DG inoperable), ESF systems responding during a DBA (where offsite power is not available) will rely on two onsite emergency Class-1E DG AC power sources supplied by either DG1 division 1 (LPCS/LPCI DG), or by the DG2 division 2 (LPCI DG) or by the DG3 division 3 (HPCS DG) depending on which DG is inoperable.~~	~~DG3 when offsite power is not available depending on which DG is inoperable.~~	
3.8.4.A	One required Division 1 or Division 2 125 VDC battery charger inoperable	~~. Two full capacity battery chargers in Division 1 and Division 2 where one battery charger is normally in service and the other one is installed as a spare charger, normally de-energized and isolated from the 125 VDC distribution system. The installed spare charger in each division can be placed into service via plant procedure should the operating battery charger in either division 1 or division 2 become unavailable.~~ ~~Note: The installed redundant spare battery charger is a design feature of the 125 VDC distribution system and is therefore modeled in the PRA as a recovery action option.~~ The 125 VDC electrical power system consists of three independent	Each 125 VDC battery charger supplies power to division 1 or division 2 125-VDC electric power distribution loads with the associated station battery floating on that DC subsystem. Each 125-VDC subsystem supplies DC control and motive power to auxiliary distribution loads including control and switching during all modes of operation to ensure the availability of the required DC power to support shut down of the reactor and to maintain it in a safe condition after an AOO or DBA. Note: The division 3 125 VDC subsystem has a separate LCO 3.8.4.B.~~.~~ ~~Function of the 125 VDC battery charger is to supply normal power to division 1 or division 2 125 VDC electric power distribution loads with the associated station~~	~~For this LCO condition with one required inoperable, the associated~~ A Division 1 or 2 125-VDC operable battery or battery charger to supply its subsystem's 125-VDC loads ~~redundant 125 VDC Division 1 or Division 2 battery charger and associated subsystem remains in service. An operable 125 VDC division 1 or division 2 battery charger and associated DC subsystem in conjunction with the 125 VDC division 3 subsystem provides necessary support to DC control and auxiliaries for associated DGs and ESF switchgear buses and 480V load centers to ensure the availability of the required power to shutdown the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a DBA. Loss of any DC electrical power subsystem does not prevent minimum safety function from being performed.~~

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		Class-1E DC electrical power subsystems, divisions 1, 2 or 3. ~~.~~ Each redundant subsystem including the ~~for~~ divisions 1 and 2 ~~125 VDC electrical power subsystems~~consists of a station battery ~~-~~ E-B1-1 or E-B1-2, associated two full capacity battery charger(s) –C1-1A & 1B or C1-2A & 2B (one in service at a time) and an installed spare) and all the associated control equipment and interconnecting cabling for the 125-VDC electrical distribution buses and their loads ~~The division 1 125 VDC system provides the control power for its associated Class 1E AC power load group, 4.16 kV switchgear and 480 V load centers. Also, the division 1 125 VDC subsystem provides DC power to the emergency lighting system, diesel generator (DG) auxiliaries and DC control power for DG-1. The division 2 125 VDC subsystem provides the control power for its associated Class 1E AC power load group, 4.16kV ESF switchgear and associated 480V load centers. Also this 125 VDC source supplies the emergency lighting system, DG auxiliaries and DC control power for DG-2. The Division 3 125 VDC subsystem provides DC power for HPCS DG field flashing control logic and control and switching function of 4.16 kV ESF Division 3 breakers. It also provides motive and control power for the HPCS system logic, HPCS DG control and protection, and all Division 3 related control features.~~	~~battery is floating on the DC system.~~ ~~The 125 VDC electric power distribution panel supplies DC control and motive power to auxiliary distribution loads (division 1 and division 2) including control and switching during all modes of operation.~~ ~~The LCO applies to the 125 VDC (division 1 or division 2 electrical power subsystems consisting of one battery, one battery charger in operation, and corresponding control equipment and interconnecting cabling to a 125 VDC distribution panel are required to be OPERABLE to ensure the availability of the required DC power to support shut down of the reactor and to maintain it in a safe condition after an AOO or DBA. Note: The division 3 125 VDC subsystem has a separate LCO.~~	

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3.8.4.B	One required Division 3 battery charger inoperable	The 125 VDC electrical power system consists of three independent Class-1E DC electrical power subsystems, divisions 1, 2 or 3. The subsystem for division 3 consists of a station battery (B1-DG3), associated battery charger (C1-1), and all the associated control equipment and interconnecting cabling for its 125-VDC electrical distribution buses and their loads. ~~Division 3 125 VDC battery charger HPCS-C1-1 is part of the 125 VDC Division 3 electrical power distribution subsystem consisting of a 125 VDC battery E-B3-1, associated battery charger HPCS-C1-1, and all the associated control equipment and interconnecting cabling for division 1 E-DP-S1/HPCS (200 amp) 125 VDC electrical distribution bus as shown on E505-1.~~	The 125 VDC battery supplies power to division 3 125-VDC electric power distribution loads when its battery charger is unavailable. This 125-VDC subsystem supplies DC control and motive power to HPSC auxiliary distribution loads including control and switching during all modes of operation to ensure the availability of the required DC power to support shut down of the reactor and to maintain it in a safe condition after an AOO or DBA. Note: The division 1 and 2 125-VDC subsystems have a separate LCO 3.8.4.A~~Note: The division 1 and 2 125-VDC subsystems have a separate LCO 3.8.4.A. Function of the 125 VDC battery charger is to supply normal power to division 3 125 VDC electric power distribution HPCS loads while maintaining station battery HPCS-B1-DG3 on float charge. The 125 VDC electric power distribution panel supplies DC control and motive power to HPCS auxiliary loads (division 3) including control and switching during all modes of operation.~~ ~~The 125 VDC (division 3) electrical power subsystem consisting of one battery HPCS-B1-DG3, one battery charger HPCS-C1-1, and corresponding control equipment and cabling to a 125 VDC distribution panel E-DP-S1/HPCS (division 3), per E505-1 are required to be OPERABLE to ensure the availability of the required DC power to support shut down of the reactor and to maintain it in a safe condition after an anticipated operational occurrence (AOO) or a~~	A Division 3 125-VDC operable battery to supply its subsystem's 125-VDC loads~~With one required Division 3 125 VDC battery charger inoperable, the associated 125 VDC division 3 distribution bus E-DP-S2/1 is supplying loads from the stationary ESF battery HPCS-B1-DG3 for the duration of the coping time (load profile) of the HPCS battery.~~ ~~For this LCO condition with one required Division 3 125 VDC battery charger inoperable, the other redundant 125 VDC Division 1 or Division 2 battery charger and associated subsystem are operable and in service. An operable 125 VDC Division 1 or Division 2 battery charger and associated DC subsystem in conjunction with the 125 VDC division 3 subsystem operating on the ESF 125 VDC division 3 battery during a DBA provides necessary DC control power to support to control and switching, emergency auxiliaries and DC power for DGs and ESF switchgear buses and 480V load centers to ensure the availability of the required power to shutdown the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a DBA. Loss of any DC electrical power subsystem does not prevent minimum safety function from being performed.~~

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			postulated DBA.	
3.8.4.C	One required Division 1 250 VDC battery charger inoperable	Division 1 250 VDC subsystem consists of a 250 VDC battery - E-B2-1, associated battery charger - E-C2-1, and all the associated control equipment and interconnecting cabling for 250 VDC electrical distribution bus and its loads. battery charger is part of the 250 VDC electrical power distribution subsystem consisting of of a 250 VDC battery E-B2-1, associated battery charger E-C2-1, and all the associated control equipment and interconnecting cabling for division 1 E-DP-S2/1 (1200 amp) 250 VDC electrical distribution bus as shown on E505-2.	The 250 VDC battery supplies the 250-VDC subsystem loads including those for reactor core isolation cooling (RCIC), residual heat removal (RHR), etc when the battery charger is unavailable to ensure the availability of the required power to support shut down of the reactor and to maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. The function of the 250 VDC battery charger is to supply normal power to 250 VDC electric power distribution subsystem loads while maintaining station battery E-B2-1 on float charge. The 250 VDC electric power distribution bus supplies DC control and motive power to various reactor core isolation cooling system, residual heat removal and reactor water cleanup system valves during all modes of operation. The 250 VDC division 1 system also supplies power on an uninterruptible power basis to plant controls, instrumentation, computer and communication equipment through a solid-state inverter E-IN-4 and the main and feedwater turbine auxiliary oil pumps; however, these loads are not TS related loads. The 250 VDC electrical power subsystem, each subsystem consisting of one battery, one battery charger, and the corresponding control equipment and interconnecting cabling supplying power to the associated division bus, are required to be OPERABLE to ensure the availability of the required power to support shut down of the	A Division 1 250-VDC operable battery to supply its subsystem's 250-VDC loads With one required Division 1 250 VDC battery charger inoperable, the associated 250 VDC distribution bus E-DP-S2/1 is supplying loads from the stationary battery E-B2-1 for the duration of the coping time of the E-B2-1 battery. This means the 250 VDC electrical power distribution subsystem maintains continuity of power to the connected loads during a loss of AC power (AOO) and DBA (see E505-2) and is capable of supporting the minimum safety functions performed by the 250 VDC loads (division 1). The 250 VDC electrical power distribution subsystem provides normal and emergency 250 VDC electrical power to plant auxiliaries such as RCIC, RWCU and RHR, including control and switching during all MODES of operation.

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			~~reactor and to maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA.~~	
3.8.4.D	One required Division 1 or Division 2 125 VDC battery inoperable	The 125 VDC electrical power system consists of three independent Class-1E DC electrical power subsystems, divisions 1, 2 or 3. Each redundant subsystem for divisions 1 and 2 ~~125-VDC electrical power subsystems~~consists of a station battery ~~-~~ E-B1-1 or E-B1-2, associated ~~station~~battery charger(s) – C1-1A & 1B or C1-2A & 2B (one in service at a time) and an installed spare) and all the associated control equipment and interconnecting cabling for the 125-VDC electrical distribution buses and their loads ~~and their loadsEach, as shown on E505-1.~~ .	Each 125 VDC battery supplies power to its subsystem (division 1 or 2) 125-VDC loads when the battery chargers for either subsystem are unavailable. Each 125-VDC subsystem supplies DC control and motive power to auxiliary distribution loads including control and switching during all modes of operation to ensure the availability of the required DC power to support shut down of the reactor and to maintain it in a safe condition after an AOO or DBA. Note: The division 3 125 VDC subsystem has a separate LCO 3.8.4.E~~.~~ ~~For LCO Condition D, E, or F represents one division with one battery inoperable. With one battery inoperable, the DC bus is being supplied by the OPERABLE battery charger(s). Any event that results in a loss of the AC bus supporting the battery charger(s) will also result in loss of DC to that division.~~	A Division 1 or 2 125-VDC operable battery or battery charger to supply its subsystem's 125-VDC loads ~~For this LCO condition D, where one division 1 or division 2 125VDC battery is inoperable is remedied by the associated operable battery charger along with the redundant division 1 or 2 subsystem together with HPCS 125 VDC subsystem ensures availability of required power to shutdown the reactor and maintain it in a safe condition after an AOO or a DBA such that loss of stored energy of the division 1 or division 2 battery or associated DC subsystem does not prevent the minimum safety function from being performed.~~
3.8.4.E	One required Division 3 battery inoperable	The 125 VDC electrical power system consists of three independent Class-1E DC electrical power subsystems, divisions 1, 2 or 3. The subsystem for division 3 consists of a station battery (B1-DG3), associated battery charger (HPCS C1-1), and all the associated control equipment and interconnecting cabling for its 125-VDC electrical distribution buses and their loads. ~~as shown on E505-1.~~	The 125 VDC battery charger supplies power to division 3 125-VDC electric power distribution loads with the associated station battery floating on that DC subsystem. This 125-VDC subsystem supplies DC control and motive power to HPSC auxiliary distribution loads including control and switching during all modes of operation to ensure the availability of the required DC power to support shut down of the reactor and to maintain it in a safe condition after an AOO or DBA.	Division 3 125-VDC subsystem's battery charger to supply its required 125-VDC loads ~~For this LCO condition E where one division 3 125 VDC battery is inoperable is remedied by the associated operable charger and availability of redundant division 1 and 2 125 VDC subsystems ensures availability of required power to shutdown the reactor and maintain it in a safe condition after an AOO or a DBA such that loss of stored energy of the division 3 battery or associated DC subsystem does not prevent the minimum safety function from being performed.~~

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CGS TS	CGS TS Description	SSCs Covered by TS LCO Condition	Functioned Covered by TS LCO Condition	Design Success Criteria
			Note: The division 1 and 2 125-VDC subsystems have a separate LCO 3.8.4.A. ~~For LCO Condition D, E, or F represents one division with one battery inoperable. With one battery inoperable, the DC bus is being supplied by the OPERABLE battery charger(s). Any event that results in a loss of the AC bus supporting the battery charger(s) will also result in loss of DC to that division.~~	
3.8.4.F	One required Division 1 250 VDC battery inoperable	Division 1 250 VDC subsystem consists of a 250 VDC battery - E-B2-1, associated battery charger - E-C2-1, and all the associated control equipment and interconnecting cabling for 250 VDC electrical distribution bus and its loads~~Division 1 250 VDC battery charger is part of the 250 VDC electrical power distribution subsystem consisting of of a for division 1 E-DP-S2/1 (1200 amp) as shown on E505-2.~~	The 250 VDC battery charger supplies the 250-VDC subsystem loads including those for reactor core isolation cooling (RCIC), residual heat removal (RHR), etc when the battery is unavailable to ensure the availability of the required power to support shut down of the reactor and to maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA ~~For LCO Condition D, E, or F represents one division with one battery inoperable. With one battery inoperable, the DC bus is being supplied by the OPERABLE battery charger(s). Any event that results in a loss of the AC bus supporting the battery charger(s) will also result in loss of DC to that division.~~	A Division 1 250-VDC operable battery charger to supply its subsystem's 250-VDC loads ~~For this LCO condition F with one division 1 250 VDC battery is inoperable is remedied by the associated operable charger and availability of redundant division 1 and division 2 125 VDC subsystems ensures availability of required power to shutdown the reactor and maintain it in a safe condition after an AOO or a DBA such that loss of stored energy of the division 1 250 VDC battery or associated DC subsystem does not prevent the minimum safety function from being performed.~~ ~~Note: ESF containment isolation valves also have AC powered isolation valves that are supported by division 1 and division 2 DGs and division 1 or division 2 125VDC subsystems providing control power for initiation logic and control power for associated DGs to ensure containment isolation functions are performed.~~
3.8.4.G	Division 1 or Division 2 125 VDC electrical power distribution subsystem inoperable for reasons other than Condition A or Condition D	The 125 VDC electrical power system consists of three independent Class-1E DC electrical power subsystems, divisions 1, 2 or 3 with each having a battery, battery chargers, and 125-VDC buses with this LCO focusing on buses ~~Division 1 or Division 2 DC electrical power distribution subsystems consist of two~~	The 125-VDC buses, motor control centers, and distribution panels deliver power from their battery or battery chargers to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an AOO or a postulated DBA.	One redundant 125-VDC subsystem (division 1 or 2) with the requisite 125-VDC bus and its associated motor control centers and distribution panels capable of delivering power to its required division 1 or 2 125-VDC loads

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CGS TS	CGS TS Description	SSCs Covered by TS LCO Condition	Functioned Covered by TS LCO Condition	Design Success Criteria
		~~independent 125 VDC electrical power distribution buses~~E-S1-1 (division 1) and E-S1-2 (division 2) and associated motor control centers and distribution panels~~as described in TSB Table B3.8.7-1.~~		
3.8.7.A	Division 1 or Division 2 AC electrical power distribution subsystem inoperable	Division 1 and Division 2 AC electrical distribution subsystems consist of 4.16kV ESF AC switchgear buses for Division 1 (SM-7) and Division 2 (SM-8) and associated 480VAC load centers, motor control centers, and distribution panels~~and 120 VAC panels in each division as described in TSB Table B3.8.7-1, and E502-2~~.	The required AC ~~and DC~~ electrical power distribution subsystems ~~listed in Table B 3.8.7-1~~ ensure the availability of AC ~~and DC~~ electrical power for the plant systems required to shut down the reactor and maintain it in a safe condition after an AOO or a postulated DBA. ~~The Division 1, Division 2, and Division 3 AC and DC electrical power distribution subsystems are required to be OPERABLE~~	Division 1 or Division 2 AC electrical distribution subsystem consisting of its 4.16kV ESF AC switchgear bus and associated 480VAC load centers, motor control centers, and distribution panels capable of delivering power to their required loads ~~With Division 1 or Division 2 required AC buses, load centers, motor control centers, or distribution panels, in one division inoperable, the remaining operable AC electrical power distribution subsystems described in TSB Table B3.8.7-1 (listing division 1, or division 2 and division 3 electrical power distribution subsystems) are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition.~~
3.8.7.B	Division 1 or Division 2 DC electrical power distribution subsystem inoperable	The 125 VDC electrical power system consists of three independent Class-1E DC electrical power subsystems, divisions 1, 2 or 3. This LCO focuses on an entire Division 1 or 2 125-VDC subsystem being inoperable for any reason including loss of its power sources battery and battery chargers, or/and their 125-VDC buses E-S1-1 (division 1) and E-S1-2 (division 2) and associated motor control centers and distribution panels ~~Division 1 or Division 2 DC electrical power distribution subsystems consist of two independent 125 VDC electrical power distribution buses E-DP-S1/1 (division 1) or E-DP-S1/2 (division 2) and E-DP-S1/HPCS (division 3) as described in TSB~~	The required DC electrical distribution subsystems ensure the availability of DC electrical power for the plant systems required to shut down the reactor and maintain it in a safe condition after an AOO or a postulated DBA ~~The required AC and DC power distribution subsystems listed in Table B 3.8.7-1 ensure the availability of AC and DC electrical power for the plant systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. The Division 1, Division 2, and Division 3 AC and DC electrical power distribution subsystems are required to be OPERABLE.~~	One redundant 125-VDC subsystem (division 1 or 2) with the requisite 125-VDC bus and its associated motor control centers and distribution panels capable of delivering power to its required division 1 or 2 125-VDC loads ~~With Division 1 or Division 2 required DC buses, (load centers, motor control centers, or distribution panels), in one division inoperable, the remaining DC electrical power distribution subsystems division 1 or division 2 and division 3 described in TSB Table B3.8.7-1 are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition.~~

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CGS TS	CGS TS Description	SSCs Covered by TS LCO Condition	Functioned Covered by TS LCO Condition	Design Success Criteria
		~~Table B3.8.7-1 and E505-1.~~		

Electrical Engineering Branch (EEEB) Sub-Audit Questions (indicated by letters with parenthesis) for LAR Table E1-1 Associated with Original Numbered Audit Question Listed in regard to Licensee Responses on Portal for those Original Audit Questions

Question 1 (EEEB) – TS LCO 3.8.1, Condition A

a) Should Column 3 address inoperable offsite circuit, DG information, and reference note or just remove that information?
b) Should both column 3 and 5 be repetitive of functions of SSCs or just column 5?
c) Should Column 6 address only minimum remaining required offsite circuit and number of Class 1E 4.16 kV buses supplied?

Question 2 (EEEB) – TS LCO 3.8.1, Condition B

a) Should Column 3 address stated reference note?
b) Should both column 3 and 5 address function of SSCs or just column 5 and should column 5 address stated inoperable equipment?
c) Should Column 6 address only minimum remaining required DGs and number of Class 1E 4.16 kV buses supplied?

Question 3 (EEEB) – TS LCO 3.8.1, Condition C

a) Should Column 3 address ESF systems or divisions, inoperable DG information, remaining DGs available, and reference note?
b) Should both column 3 and 5 address function of SSCs or just column 5 and should column 5 address stated inoperable equipment?
c) Should Column 6 address only minimum remaining required DGs and number of Class 1E 4.16 kV buses supplied?

Question 4 (EEEB) – TS LCO 3.8.1, Condition D

a) Should Column 3 address inoperable offsite circuit or DG information, remaining DGs available, and reference note?
b) Should both column 3 and 5 address function of SSCs or just column 5 and should column 5 address stated inoperable equipment?
c) Should Column 6 address only minimum remaining required offsite circuit or DGs and number of Class 1E 4.16 kV buses supplied?

Question 5 (EEEB) – TS LCO 3.8.4, Condition A

a) Should both column 3 and 5 address function of SSCs or just column 5 and should column 5 address stated inoperable equipment?
b) Should Column 6 address only minimum remaining required power sources either spare battery charger or its battery for LCO effected redundant subsystem or both battery chargers or its battery for unaffected redundant subsystem?

Question 6 (EEEB) – TS LCO 3.8.4, Condition B

a) Should any columns include a reference note as indicated for this RA?
b) Should both column 3 and 5 address function of SSCs or just column 5 and should column 5 address stated inoperable equipment?

c) Should Column 6 address only minimum remaining required power sources the subsystem's battery without reference to inoperable equipment?

Question 7 (EEEB) – TS LCO 3.8.4, Condition C

a) Should both column 3 and 5 address function of SSCs or just column 5 and should column 5 address stated inoperable equipment?
b) Should Column 6 address only minimum remaining required power sources the battery for subsystem?

Question 8 (EEEB) – TS LCO 3.8.4, Conditions D, E, and F

a) Should both column 3 and 5 address function of SSCs or just column 5 and should column 5 address stated inoperable equipment for RAs 3.8.4.D, E, and F?
b) Should Column 6 address only minimum remaining required power sources be listed for all of three RAs?

Question 9 (EEEB) – TS LCO 3.8.4, Condition G

a) Should both column 3 and 5 address function of SSCs or just column 5 and should column 5 address stated inoperable equipment?
b) Should Column 6 address only minimum remaining required power sources one redundant subsystem and its 125-VDC bus and associated motor control centers and distribution panels capable of delivering power to its required division 1 or 2 125-VDC loads?

Question 10 (EEEB) – TS LCO 3.8.7, Conditions A and B

a) Should both column 3 and 5 address function of SSCs or just column 5 and should column 5 address stated inoperable equipment?
b) Should Column 6 address only minimum remaining required power sources be listed:
    1. RA 3.8.7.A – Should following be indicated – "Division 1 or Division 2 AC electrical distribution subsystem consisting of its 4.16kV ESF AC switchgear bus and associated 480VAC load centers, motor control centers, and distribution panels capable of delivering power to their required loads?"
    2. RA 3.8.7.A – Should following be indicated – "One redundant 125-VDC subsystem (division 1 or 2) with the requisite 125-VDC bus and its associated motor control centers and distribution panels capable of delivering power to its required division 1 or 2 125-VDC loads?"