

PROPOSED OUTLINE COMMENTS

Facility: WCNOC

First Exam Date: Dec 9, 2019

Written Exam Outline		
Aug 6, 2019		
	Comment	Resolution
1	NRC Generated	None.
2	Original Chief Examiner agreed to K/A replacements listed on ES-401-4 for reasons such as balance of coverage, non-applicability, etc. Changes reviewed, and determined to be acceptable.	None.
3	SRO Question 77: Cannot sample this system on the SRO exam because it is already sampled twice on the RO exam. This is recent feedback from our HQ office that will be incorporated into a future revision of NUREG 1021. Replace this question with System 022 Containment Cooling, 2.1.20 Ability to interpret and execute procedure steps.	Changed as suggested. ES-401-2 and ES-401-4 updated to reflect this change.

Administrative JPM Outline		
	Comment	Resolution
1	When materials are developed, revise outlines to include the following: -JPM designator and name (e.g. A1-A4 RO, A5-A9 SRO) -Relevant generic K/A and importance -slightly more detail in description. Doesn't need to be a paragraph. -For JPMs repeated from previous 2 exams, state the exam and item number. See 2017 outlines.	Updated ES-301-1 as suggested. <ul style="list-style-type: none"> - JPM Designators Added - Relevant Generic K/A and importance rating Added - Improved descriptions - No Repeat JPMs used.
2	SRO RadCon Admin JPM is listed as both Modified and Previous – it is one or the other.	Updated ES-301-1 to “Modified”

Control Room / In-Plant System JPM Outline		
Comment		Resolution
1	I prefer to use a single Form ES-301-2 for systems JPMs, for ease of reference ... with the SRO-U JPM's bolded, and the RO-Only JPM italicized.	Updated ES-301-2 as suggested. <ul style="list-style-type: none"> - Bolded SRO-U JPMS (S1, S2, P1, P2, P3) - Italicized RO Only JPM (S8)
2	When you submit the draft exam, include a sheet summarizing each JPM in a few sentences, attached to ES-301-2. Helps for quick reference.	Added summary of each JPM at the end of updated ES-301-2 form as requested.
3	JPM S8 is either Previous 2 exams, or Modified. If it is modified it doesn't count as Previous. I.e., a "P" is by definition a "D".	Updated ES-302-2 to "Modified"
4	JPM P1 should count as Engineering Safety Feature, since its lining up EDG for auto start.	Updated ES-302-2 P1 Code with "EN"
5	Any JPM that is not performed in MODE 1 should be credited as "L" low power or S/D	Updated ES-302-2 S5 Code with "L"

Simulator Scenario Outline Comments		
Comment		Resolution
1	Scenario 1: Events 6 and 7 should be credited to the CRS also.	Updated ES-D1-1 for Scenario 1 Events 6 and 7 to include credit for CRS. Also updated ES-301-5 Forms.
2	Scenario 1: Event 8, if it causes a procedural transition that contains verifiable actions, it can be credited as a Component Malfunction to all operators who perform actions in that new procedure.	Updated ES-D1-1 for Scenario 1 Event 8 to include credit for all. Also updated ES-301-5 Forms.
3	Scenario 1 Event 2: Specify "Loss of Vital 120VAC Instrument Bus NN03" on D-1 for clarity.	Updated ES-D1-1 for Scenario 1, Event 2 description as suggested.
4	Scenario 1 Event 4: Credit this event as an "I" vice "R", since I/C malfunctions get greater flexibility for credit than reactivity manips.	Updated ES-D1-1 for Scenario 1, Event 4 as suggested. Credit changed to 'I' from 'R'. Also updated ES-301-5 Forms.
5	Scenario 1 Event 6: Specify on D-1 the 3 CIS-A valves that fail to close.	Updated ES-D1-1 for Scenario 1, Event 6 as suggested. Added BG HV-8160, -8152 and KA HIS-29 to event description.
6	Scenario 1 CT-1: Clarify CT1 success criteria is "Close containment isolation valves BG-HIS-8160 OR -8152, AND KA-HIS-29, such that ...". Additionally, the Cueing, PI, and Performance Feedback columns in the CT description page don't discuss KA-HIS-29 at all. Clarify what these valves are in the Scenario 1 narrative.	We would like to leave the critical task as is. BG HIS-8160 and BG HIS-8152 fail closed on a loss of air. KA HIS-29 has to fail open to supply air to prevent the other valves from closing without Operator Action. There is no adverse consequence associated with the failure to close KA HIS-29. Closure of either BG HIS-8160 OR BG HIS-8152 will isolate the release path from Containment to the environment and satisfy the critical task of restoring containment integrity.
7	Scenario 1 Event 3: Narrative describe briefly how the crew will address the malfunction, i.e. what action they will take to correct it.	During Operator Validations we identified the proposed Event 3 for Scenario 1 (BB LI-459 PZR Level Channel Failure) Technical Specification was NOT applicable in in MODE 2, or MODE 1 <P10 (10% Power). This event was moved to Scenario 4, Event 1. Updated ES D1-1 (Rev 1) for Scenario 4. Event 1 to specify the crew will select out the failed channel from service and restore automatic control.

8	Scenario 1 Event 7/CT-2: Clarify where the 30 minute time requirement for the CT is derived from. What is the most limiting component? Is there a quantitative component temperature value associated with this loss of CCW that is modeled in the Sim and we can reference?	Updated ES-D1-1 for Scenario 1 Critical Task 2 to specify action must be met within 30 minutes to satisfy station Time Sensitive Action requirements per procedure AI 21-016 to protect CCPs and SI Pumps during a sustained loss of CCW cooling (Updated from "ECCS Pumps.") The procedure requirement is time-based without specifying a temperature.
9	Scenario 1 Event 8: Specify that EMG C-11 is named "Loss of Emergency Coolant Recirculation" in Narrative.	Updated ES-D1-1 for Scenario 1 Event 8 Narrative to include the procedure noun name as suggested.
10	Scenario 1: Target Quantitative Attribute for Malfunctions After EOP Entry is 1-2. Scenario 1 has 3. ES-301 states, <i>"The quantitative attribute target ranges that are specified on the form are not absolute limitations; some scenarios may be an excellent evaluation tool but may not fit within the ranges. A scenario that does not fit into these ranges shall be evaluated to ensure that the level of difficulty is appropriate."</i> On evaluation, this scenario has an appropriately normal level of difficulty, the 1 st two post-EOP malfunctions are straightforward, and the 3 rd post-EOP malfunction is necessary to facilitate transition to an EOP contingency procedure, at least one of which is required per scenario set. In the opinion of the Chief Examiner, the deviation from target quantitative attributes is justified and the scenario is of an appropriate level of difficulty.	N/A

11	Scenario 2 Event 3: Credit this event as a “C” vice “R”, since I/C malfunctions get greater flexibility for credit than reactivity manips.	Updated ES-D1-1 for Scenario 2, Event 3 as suggested, Credit changed to ‘I’ from ‘R.’ Also updated ES-301-5 Forms.
12	Scenario 2 Event 7: This is two separate events: the stuck open S/G Safeties is a 2 nd Major Event, and the Failure of ‘B’ Train SI to actuate is an Instrument malfunction.	Updated ES-D1-1 for Scenario 2, as suggested. Event 7 was split into Events 8 (2 nd Major) and 9 (Instrument Malfunction). Also updated ES-301-5 Forms.
13	Scenario 2: Target Quantitative Attribute for Malfunctions After EOP Entry is 1-2. Scenario 2 has 3. As described in comment for Scenario 1, this can be allowed with justification; however, scenarios 1 through 4 all have more than 2 malfunctions after EOP entry. I don’t think an entire set should exceed this attribute. Recommend eliminating event 8 CRVIS failure to actuate → evaluate against ES-301-5 and add a Normal or I/C malfunction before the Major if any applicants are right at the minimum.	Updated ES-D1-1 for Scenario 2 as suggested. Eliminated Post-trip Event 8 (CRVIS Failure) and added Pre-trip Event 5 (Letdown orifice isolation valve closure). Also updated ES-301-5 Forms.
14	Scenario 2: CT-1 needs better bounding criteria and success criteria. I don’t think a successful response is for the operator to only manually insert all control rods to the bottom when other options are available to immediately put all rods on the bottom in the control room; FR-S1 requires the crew to manually insert rods AND de-energize rod drive MG sets. Additionally the CRS may dispatch an operator to locally trip the reactor in parallel with taking control room action; I wouldn’t support a CT failure if this was done conservatively in parallel. Recommend rephrasing CT-1 to something similar to “... insert maximum negative rod reactivity by de-energizing control rod drive MG sets from the control room, prior to ... (completing EMG E-0 or FR-S1 immediate actions)”	Updated ES-D1-1 for Scenario 2, CT-1. Specified “insert maximum negative reactivity” and changed the bounding criteria to “prior to completion of EMG FR-S1 Immediate actions” as suggested.
15	Scenario 2 CT-2: Specify exactly in the CT definition what components must be closed to isolate S/G-A satisfactorily. Specify the names of AL HK-7A/8A in PI column.	Updated ES-D1-1 for Scenario 2, CT 2 to specify the exact components that must be closed to meet the critical task. Also added the applicable noun names.

16	Scenario 2: CRS gets credit for I/C malfunctions after the Major.	Updated ES-D1-1 for Scenario 2, Events 7 and 9 to specify credit for the CRS. Also updated ES-301-5 Forms.
17	Scenario 3 Event 2: Credit as “C” not “R”.	Updated ES-D1-1 for Scenario 3, Event 2 as suggested. Changed Credit to ‘C’ from ‘R.’ Also updated ES-301-5 Forms.
18	Scenario 3: CRS gets credit for I/C malfunctions after the Major.	Updated ES-D1-1 for Scenario 3, Events 7 and 8 to specify credit for the CRS. Also updated ES-301-5 Forms.
19	Scenario 3 Event 5: The crew is taking a lot of action before the reactor is tripped, they should get some credit for it beyond a Major. Break this into two events ... SG tube leak that gives them time to respond to as described. And then the leak rate increases into a rupture on the examiner’s cue, which is the major.	Updated ES-D1-1 for Scenario 3 as suggested. Split Event 5 into a pre-trip RCS Leak (Event 5) and Event 6 Major. Event 6 commences on a key as specified by the Lead Examiner instead of a ramped rate of leak growth. Also updated ES-301-5 Forms.
20	Scenario 3 Event 5: Specify on D-1 that it is a ‘C’ S/G tube leak / rupture.	Updated ES-D1-1 for Scenario 3 as suggested. ‘C’ S/G is specified in both Events 5 and 6.
21	Scenario 3: Target Quantitative Attribute for Malfunctions After EOP Entry is 1-2. Scenario 3 has 3. As described in comment for Scenario 1, this can be allowed with justification; however, scenarios 1 through 4 all have more than 2 malfunctions after EOP entry. I don’t think an entire set should exceed this attribute. Recommend eliminating event 8 B SI PP Failure to autostart → evaluate against ES-301-5 and add a Normal or I/C malfunction before the Major if any applicants are right at the minimum.	Updated ES-D1-1 for Scenario 3 as suggested. Eliminated Post-trip Event 8 (B SI Pump auto start failure) and added Pre-trip Event 5 (RCS Leak) as described in #19 above. Also updated ES-301-5 Forms.
22	Scenario 3 CT2: Would this CT not apply regardless of whether ARV was opened or not? Specify the entry criteria into E-2 or C-31 that need to be avoided. Is the ARV one of the valves that needs to be closed? Specify the English name of each component in the Performance Indicators column.	Updated ES-D1-1 for Scenario 3, CT 2 to specify the exact components that must be closed to meet the critical task, including the ARV. Also added the applicable noun names as requested. Updated the bounding criteria in Rev 1 , to specify procedure transition to EMG E-2 from EMG E-0, Step 16 or to EMG C-31 from EMG E-3, due to foldout page criteria (Subcooling <30°F, PZR Level <6%), or if Ruptured S/G pressure drops to <380 psig.
23	Scenario 3 CT3: Under performance indicators specify what control will be used to depressurize RCS (e.g. manual PZR spray)	Updated ES-D1-1 for Scenario 3, CT 3 to specify the crew will use Normal Spray to depressurize as suggested.

24	Scenario 4: CRS gets credit for all events the board operators do.	Updated ES-D1-1 for Scenario 4 to specify credit for CRS. Also updated ES-301-5 Forms.
25	Scenario 4 event 8: This is a component malfunction, not a major.	Updated ES-D1-1 for Scenario 4, Event 9 (DDAFW Pump trips) to change code to 'C' from 'M'. Also updated ES-301-5 Forms.
26	Scenario 4, Post-Major Event malfunctions Target quantitative attribute is 1-2, this scenario exceeds that. However, event 7 TDAFP failure is non-credited as there are no verifiable actions that can be performed, it serves as an initial condition setup. The other 3 malfunctions appear necessary to drive the crew into functional recovery FR-H1. Given the desire to test applicants on use of EOP Contingency Procedures, In the opinion of the Chief Examiner, the deviation from target quantitative attributes is justified and the scenario is of an appropriate level of difficulty. See scenario 1 comments for additional background.	N/A
27	Scenario 4 event 3 credit as "C". Specify on D-1 what type of bus NB02 is.	Updated ES-D1-1 for Scenario 4, Event 3 in <u>Rev 1</u> to specify the component malfunction is XNB02 transformer fault resulting in a loss of "AC Emergency Bus NB02"
28	Scenario 4 CT1: Confirm EDG overtemperature trip is modelled in Simulator. What is the temperature / estimated time to trip?	The EDG Trip on loss of cooling water is modeled in the simulator and will trip when Jacket Water Temperature rises to 195°F. OFN NB-030, foldout page directs unloading and stopping the EDG if cooling water flow cannot be established within 3 minutes. With the light loading that results from failure of the ESW pump to auto start, the EDG will trip without operator action in ~10 minutes. ES-D1-1 for Scenario 4, CT 1 updated to specify bounding criteria of EDG trip on Jacket water high temperature at 195°F.
29	Scenario 4 CT 2/3: Is the requirement to initiate bleed and feed per FR-H1 1 S/G <12%WR or 2 S/G <12%? CT criteria should reflect that. Specify in safety significance that an otherwise-preventable bleed and feed causes unnecessary contamination of containment and equipment damage due to rupturing PRT.	During Operator Validations we identified the proposed Critical Task 2 was NOT applicable due to the given Loss of Offsite power which removed power from RCPs and PZR Heaters without Operator action. Critical Task 2 changed to commence Emergency Boration per OFN BG-009 as directed by EMG ES-02. Updated ES-D1-1 to include this change as well as clarifying in CT 3 that 3 of 4 S/G must drop <12% to commence RCS Bleed and Feed. Also added suggested wording in the safety significance.

30	Scenario Spare: Event 2 specify that PK-131 is "Letdown Outlet Pressure Controller".	Updated ES-D1-1 for Scenario 5(Spare), Event 2 to include the noun name as suggested.
31	Spare: Event 3 NB01 Bus lockout: Is this event substantively different in response from Scenario 4 Event 3 NB02 Bus degraded voltage?	CORRECT - Scenario 5 (Spare) Event 3 results in a Complete loss of a single safety train while scenario 4, Event 3 results in a momentary loss (~12 seconds) while the EDG starts and comes up to speed and volts. While OFN NB-030 is entered for both scenarios, different sections are performed.
32	Spare: Event 3 credit as "C"	Updated ES-D1-1 for Scenario 5(Spare) as suggested. Changed code to 'C' from 'R' and updated ES-301-5 Form as well.
33	Spare: Event 4 credit as "C"	Updated ES-D1-1 for Scenario 5(Spare) as suggested. Changed code to 'C' from 'R' and updated ES-301-5 Form as well.
34	All scenarios: The narrative pages read "SCENARIO #1 NARRATIVE".	Updated ES-D1-1 for Scenario 5 (Spare) to specify "SCENARIO 5 (SPARE) NARRATIVE."
35	Spare Event 6 (SBO, Major): This appears to be similar or identical to 2017 Scenario 2 Major event. NUREG 1021 Rev 11 APP D states: <i>"if any major event is repeated from either of the previous two NRC initial licensing operating tests, the examination author should change the major event, the ICs, or subsequent malfunctions (or a combination) to alter the course of action (within the emergency procedures) for the given scenario(s). The NRC expect that all major events would be broadly sampled over the course of several operating tests and that no major event will routinely be omitted without justification. If a facility licensee encounters difficulty meeting these requirements (e.g., because of large class sizes requiring the generation of more scenarios than normal), it should coordinate with the NRC chief examiner to meet the intent of this section to the extent possible."</i> Justify how this major event is different enough from 2017 SBO to satisfy above guidance, or replace. Realistically though I think we can just delete this event and use the SBLOCA inside CTMT as the sole major event for this spare scenario, but would require inclusion of an additional CT if SBO was	<p>We had considered the two events different because the 2017 version started off with 'B' EDG out of service whereas the 2019 version has a bus lockout as a pre-major event and an earthquake induced LOOP and EDG failure. The restoration of AC power via an off-site source was the same, however, so we agree with making the change.</p> <p>Scenario updated to remove the duplicate Loss of All AC power and replaced with loss of all high head injection which results in a degraded core cooling scenario to support creation of a third critical task to establish alternate high head injection lineup per EMG FR-C2, Attachment A.</p> <p><u>2017 Majors</u></p> <ol style="list-style-type: none"> 1. (Low Power) Feed line break in CTMT, 2. Loss of All AC (Restore off-site line), 3. (Spare) SGTR with MSIV stuck open 4. LOCA outside CTMT <p><u>2015 Majors</u></p> <ol style="list-style-type: none"> 1. Ejected Rod LOCA with a loss of heat sink, EMG FR-H1 to EMG E-1. 2. (Low Power) Steam line break in CTMT 3. Faulted/Ruptured S/G to EMG C-31. 4. Loss of All AC (Start SBO EDG) 5. Failure of Reactor to Trip resulting in LOCA, EMG FR-S1 to EMG E-1.

	removed. Also, a review of the rest of the major events for all scenarios in this exam against the 2015 and 2017 exams appears to satisfy the above guidance, but double check for me.	
36	Spare, CT2: Success criteria is "Energize Bus NB02 within 10 minutes per OFN NB-030 ATTB after an off-site power source is restored." However 2017 Scenario 2 CT for similar event CT success criteria was, "Energize at least one AC Emergency bus prior to conducting the depressurization and cooldown Step 32 of EMG C-0." What is the basis for the difference between the CT success criteria? What is basis for 10 minutes?	This critical task was replace as described in #35 above.

General Comments		
Comment		Resolution
1	Proposed schedule shows one SRO-U swapping crews to perform 2 scenarios. Chief Examiner developed and provided 3 different schedule options that will allow all applicants to stay with their same crew for all scenarios. Facility to evaluate options and make a preferred recommendation.	The facility endorsed schedule option #2, which will allow all applicants to stay with a single crew and allow for all of the Instant SROs to have a N+1 Scenario.
2	On ES-301-5, credit all events/beans for each applicant, including the N+1 scenarios in the total count.	Form ES-301-5 revised to credit all events.
3	Revise schedule for the likely potential of 5 examiners instead of 6.	Schedule revised, as previously agreed upon.
4	Provide sampling of exam items which are PRA/IPE/OE- significant for WC.	Document was provided, exam includes PRA-significant items and tasks specifically chosen for relevance to recent plant OE.