

## DRAFT OUTLINE COMMENTS

Facility: CGS

First Exam Date: 2/27/17

<b>Written Exam Outline</b>	
<b>Comment</b>	<b>Resolution</b>
<p>1</p> <p>RO Question 4 K/A replacement does not appear justified.</p> <p>“Knowledge of the operational implications of the following concepts as they apply to MAIN TURBINE GENERATOR TRIP: Pressure effects on reactor level. (RO-3.5)”</p> <p>“Reason for rejection: System does not operate like the K/A statement implies. From COLUMBIA GENERATING STATION SYSTEM DESCRIPTION, Volume 4, Chapter 2, NUCLEAR BOILER INSTRUMENTATION (NBI): <i>“Changes in reactor pressure influence the reference line and variable line hydrostatic pressures in the same direction and magnitude; this effectively eliminates changes in level indication due to changes in reactor pressure...”</i>”</p> <p>K/A is asking for effects on actual RPV level due to pressure increase, not just indicated level. I.E., level initially decreases due to void collapse from pressure increase, then increases due to SRV/BPV opening, EOC-RPT and Feedwater.</p> <p>Should be able to write a question that matches the original K/A.</p>	<p>Developed a question using the original K/A.</p>
<p>2</p> <p>RO Question 29, Incorrect method for replacing a K/A used. If unable to write a question to K/A A1.05, must randomly select from other K/A’s within A1 – there are 6 others above 2.5.</p>	<p>Resampled. New suggested K/A: 203000.A1.03.</p>
<p>3</p> <p>SRO Question 94, The 10CFR 55.41/.43/.45 references included with NUREG 1123 K/A statements are not absolutes. 2.1.9 does not list a 55.43 reference, but that doesn’t mean you can’t write an SRO question to one. Directing personnel activities is an inherent SRO function. Re-evaluate ability to write an SRO question to 2.1.9. Question has an SRO importance rating of 4.5.</p>	<p>Developed a question using the original K/A.</p>
<p>4</p> <p>SRO Question 100: Same explanation as Q-94 above, regarding generic K/A 2.4.31. SRO importance rating of 4.1.</p>	<p>Developed a question using the original K/A.</p>

<b>Administrative JPM Outline</b>		
(Date)		
	<b>Comment</b>	<b>Resolution</b>
1	Number the SRO Admin JPMs A-5 thru A-9 for distinction from RO JPMs.	Renamed SRO Admin JPMs from "A-1 through A-5" to "A-5 through A-9" on SRO Admin JPM Outline (Rev 1).
2	Ensure RO A-2 is not identical to the JPM run in 2015, 2009.	<p>Changed JPM description on RO Admin JPM Outline (Rev 1) from "Determine the Main Turbine Load Change Recommendation when raising Main Turbine load from 5% to 90%" to "Determine the Main Turbine Load Change Recommendation when raising Main Turbine load from 15% to 85%." Updated JPM to reflect changes.</p> <p>Note to NRC: Did not see this JPM on 2009 exam per ADAMs document ML091030041 (Columbia – CGS – 2009-03 Final Operating Test). JPM uses different values from that on 2015 exam.</p>

<b>Control Room / In-Plant System JPM Outline</b>		
<b>Comment</b>		<b>Resolution</b>
1	For quantitative criteria at bottom of form, include the actual number for the attribute in parentheses, e.g.: (A)lternate path 4-6 (5)	Attached actual numbers to quantitative criteria.
2	An in-plant Safety Function 6 EDG JPM has been on the last 3 exams, and 4 of last 5 exams. Replace with a non-DG JPM for reduced predictability, such as swapping inverter power supplies, etc.	Replaced P-1 (Alt Path) with Alt Path In-Plant JPM (Restart of RPS Motor Generator) (Both Safety Function 6)
3	S-1: (RRC) RRC-P-1A START IN MODE 1 .... How is this different from 2015's? Not listed as "P". Already at upper limit of Previous 2 exam JPMs without this (3).	<p>The only difference was the circumstance that required securing the pump. In 2015, the pump continued to increase in speed without operator demand which required securing the pump (pressing the Stop PB). On the current outline, the pump fails to come up to the required speed which, again, requires securing the pump (by pressing the Stop PB). The same action is required in both cases but directed from different procedures because of the way the pump flow control system failed in each case. In hindsight, maybe not enough of a difference.</p> <p>Replaced with another Safety Function 1 JPM (see below).</p>
4	Overall a high degree of repetition from previous exams. 9 of 11 direct from bank. 3 are from previous 2 exams (upper limit), possibly a 4 <sup>th</sup> , plus a 5 <sup>th</sup> from 3 exams ago. 4 exams in a row with DG-related in-plant jpm. High risk of predictability.	<ul style="list-style-type: none"> <li>• Replaced P-1 (Alt Path) with Alt Path In-Plant JPM (Restart of RPS Motor Generator) (Both Safety Function 6)</li> <li>• Replaced S-1 (Alt Path) JPM (Safety Function 1) with non Alt Path Sim Safety Function 6 JPM (TRANSFER BUS SM-3 FROM TR-S TO TR-N)</li> <li>• Changed S-3 to Alt Path version to make-up for S-1 change to non Alt Path</li> <li>• Reclassified S-3 from Bank to New JPM based on type</li> </ul>

		<p>of Alt Path which currently does not exist in our bank</p> <ul style="list-style-type: none"><li>• Removed Safety Function 6 JPM P-1 from SRO-U CR/IP Systems Outline and replaced it with Safety Function 1 JPM P-2 (this was done to ensure SRO-U JPMs met requirement for having all different Safety Functions).</li></ul>
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## Simulator Scenario Outline Comments

**Note when reading resolutions:** Scenario 1 is now Scenario 4 (Spare) and Scenario 4 is now Scenario 1 based on Scenario 4 NRC Comment 3.

### Scenario 1

	Comment	Resolution
1	<p>Scenario 1: The first creditable I/C malfunction doesn't come until Event 4. An efficient scenario construct typically contains either 1 Reactivity event OR 1 Normal event to start the scenario, and then moves on to a Component malfunction in event 2. It also would be preferable if one of the other existing I/C malfunctions could be made into a TS call, rather than having to use event 3 as a stand-alone TS call with no creditable operator actions. Scenarios should run 60 to 90 minutes, but if you're spending the first 30 minutes doing normal stuff it takes away from evaluating safety-related competencies. Let's discuss.</p>	<ul style="list-style-type: none"> <li>• Deleted Normal evolution.</li> <li>• Deleted non-creditable event requiring just a Tech Spec call and replaced with Component malfunction (RCIC coupling failure) requiring Tech Spec call. To balance out the scenario, the ATC must be directed to carry out the action of tripping the RCIC turbine while BOP monitors reactor parameters. RCIC controls are just to the left of the normal area of responsibility for the ATC.</li> <li>• First creditable I/C malfunction starts at Event 2.</li> </ul>
2	<p>Scenario 1 Event 5: Is there a way to set up initial conditions such that a TS or TRM entry IS required for IRM failed upscale? If so you can get rid of Event 3 Rod Accum Trouble Alarm which is TS only.</p>	<p>Unfortunately no. Two IRMs would have to be inoperable in the same trip system for an LCO Action statement to apply. Having an inoperable IRM as part of the initial conditions requires the IRM Bypass switch to already be positioned to bypass the inoperable IRM. Switch only allows one IRM in given trip system to be bypassed at a time. There would be no Verifiable actions for the ATC when second IRM fails during the scenario.</p> <p>Added new event (see Comment 1 resolution above) to address this.</p>

3	The ATC only has 1 I/C malfunction prior to the Major event, and only 1 after Major for a total of 2 – not a balanced scenario.	Added new event (see Comment 1 resolution above) to address this.
4	Scenario 1: Under target quantitative attributes, “EOPs entered/requiring substantive actions” is intended to mean those EOPs entered post-trip in response to the Major Event. So event 4 entry into PPM 5.3.1 would not count (but maybe you’re counting the entry per event 7?).	Yes.  Counted PPM 5.3.1 entry based on secondary containment flooding (Major)
5	Scenario 1: Target Quantitative Attributes: should say <i>EOP-based</i> Critical Tasks.	Updated wording.
6	Scenario 1: Target Quantitative Attributes: In order to count as a creditable I/C malfunction, it has to have a verifiable action in response to it. Failure of FDR-V-607 doesn’t appear to have any verifiable actions (and is not credited as a component malfunction on D-1), so it should not count as a “Malfunction after EOP entry” in Quantitative Attributes..	Deleted Failure of FDR-V-607 from Target Quantitative Attributes table.
7	Scenario 1 Event 7: Make the SW-V-29 failure to auto open a separate event.	Made SW-V-29 failure its own event.  With scenario outline changes, what would have been Event 8 is listed as Event 6.
8	Scenario 1 Event 7: From training dept. experience, what is the risk of crew tripping the reactor directly in response to OBE? Could cause loss of beans.	Some risk of scrambling solely based on the OBE, especially when Suppression Pool leak develops. ABN-EARTHQUAKE directs controlled plant shutdown but also gives option to scram reactor if the plant has been damaged or indications exist that may affect the safe operation of the plant.  Removed minimum seismic event and OBE (since in ABN for both) to minimize possibility for scrambling early based on ABN caveat allowing scram.  With only a single piping failure in the scenario, a seismic event is not required as stated in NUREG-1021 (Rev 10): “Mechanistic component failures are well-documented events that occur each year

		and often in multiple numbers. However, non-mechanistic failures (e.g., pipe breaks) generally occur singularly; therefore, unless there is a connective precursor, such as a seismic event, it would not be realistic or credible to have <b>several</b> piping systems fail during any one scenario.”
9	Scenario 1 Event 8: Merge the two parts into a single statement, and credit it as a Component malfunction.  “Reactor mode switch fails to scram reactor, requiring use of manual scram pushbuttons to scram reactor prior to wetwell level lowering to 19 feet 2 inches.”	Merged and annotated as described.  With scenario outline changes now listed as Event 7.
10	Scenario 1 CT #2: What is the bounding threshold for successfully opening 7 SRVs? When would they fail the CT?	Changed CT to read <b>“When wetwell level cannot be maintained above 19 feet 2 inches, initiate emergency depressurization by opening seven (7) Safety Relief Valves (ADS preferred) within 10 minutes of wetwell level lowering to 19 feet 2 inches.”</b>

<b>Scenario 2</b>		
	<b>Comment</b>	<b>Resolution</b>
1	Scenario 2 Event 7: Failure of RWCU-V-4 to close is a separate creditable event. Split it out from event 7.	Split out from Event 7 as Event 8. Previous Event 8 now Event 9.  ATC creditable event moved from Event 7 to Event 8.
2	Scenario 2 Target Quantitative Attributes: The SLC-P-1A shear and P-1B flow blockage count as a single malfunction, as they will be under a single event, for “Malfunctions after EOP entry” in Quantitative Attributes.	Combined both under “Reduced SLC injection capability” and counted as 1 of the 3 total in Quantitative Attributes table.
3	Scenario 2 CT-2: Explain better what exactly “maintain plant parameters” entails. What are they physically doing / parameters controlling?	Changed CT to read <b>“Maintain RPV level above -186 inches. Short excursions below -186 inches does not constitute failure of CT provided level restored and maintained above -186 inches within 10 minutes of going below -186 inches.”</b>

<b>Scenario 3</b>		
<b>Comment</b>	<b>Resolution</b>	
1	<p>Event 5 is not a separate creditable event, it is the required response to Event 4 which allows Event 4 to be called a Major. Merge as part of Event 4.</p>	<p>Merged previous Event 5 into Event 4.</p> <p>Note that Event 4 above became Event 5 when another creditable event was inserted into the scenario (as Event 3). See resolution for Comment 5 below.</p>
2	<p>Event 3 can be a Component malfunction or a Reactivity manipulation for a single operator, but not both per NUREG 1021 ES-301:</p> <p>“With the exception of the SRO TS evaluations, each event should only be counted once per applicant; for example, a power change can be counted as a normal evolution <b>or</b> as a reactivity manipulation and, similarly, a component failure that immediately results in a major transient counts as one or the other, but not both.”</p>	<p>Deleted Event 3 reactivity manipulation to allow credit for ATC Component malfunction.</p> <p>Reactivity manipulation will still occur but will not count for credit.</p> <p>With scenario outline changes, Event 3 is now listed as Event 4.</p>
3	<p>There are 2 creditable malfunctions after EOP entry, not 3.</p>	<p>Changed Target Quantitative Attributes to reflect 1 creditable malfunction after EOP entry.</p> <p>Note: The 3 listed “creditable malfunctions” (as previously listed) was the Steam leak in Main Steam Tunnel; MS-V-28A through D fail to auto close (relay fault); MS-V-22A will not close (mechanical). If we only count the MSIV failures as 1 creditable malfunction (see NRC comment 4 below) and no longer count the MSLB as a creditable malfunction (based on NUREG reference in NRC Comment 2 above)., this leaves only 1 remaining</p> <p>Am I missing something?</p>

4	The MSLB in event 6 is a separate Major event. The failure of MS-V-22A, MS-V-28A-D is a separate component malfunction.	Separated MSLB into separate Major event.  The failure of MS-V-22A and MS-V-28A-D put under separate event as Component malfunction.
5	Scenario 3 has only one creditable I/C malfunction for the BOP, and only 2 for the ATC. Not an efficient distribution of events.	Inserted new event into scenario as Event 3 to give BOP another creditable event opportunity.  Staggered ATC and BOP creditable events for better distribution of events.
6	CT#2 does not appear to have any bounding criteria. Before a 3 <sup>rd</sup> area exceeds MSOT perhaps? 2015 exam?	Changed CT #2 to read <b>“With a primary system discharging into secondary containment and area temperature exceeding maximum safe operating level in more than one area, initiate Emergency Depressurization (ED) by opening seven (7) Safety Relief Valves (ADS preferred) within 10 minutes of second MSOT being exceeded.”</b>
7	CT#1 – Safety Significance – “If secondary containment temp <i>exceeds</i> its MSOT ...”	Replaced word <i>approaches</i> with <i>exceeds</i> .

Scenario 4		
	Comment	Resolution
1	Event 8 counts as a single malfunction after EOP entry as it drives a single response.	Changed Target Quantitative Attributes table to reflect 2 malfunctions (vice 5).
2	CT#3: Is there a required time limit, bounding criteria by which RPV level must be restored about TAF?	Changed CT to read <b>“After ED, and within 10 minutes of RPV pressure lowering to 200 psig, restore and maintain RPV water level above TAF (-161 inches) using Low Pressure ECCS systems.”</b>
3	This appears to be a more robust scenario than Scenarios 1 or 3. May consider running this scenario.	Will run as Scenario 1 while making original Scenario 1 the Spare (Scenario 4).

## GENERAL

1. Submit common forms in a single file. E.G., all 301-1's in a single file, 301-2's, etc. **(Will submit forms as described on subsequent submittals.)**
2. Only 4 examiners are assigned to the team now. Consequently, while running scenarios there will only be 1 examiner free. So, all 3 in-plant JPMs will not be able to be administered on the same day, as originally scheduled. Most likely schedule solution is to run 1 in-plant JPM in parallel with scenarios Tuesday, and run the remaining 2 in-plant JPMs in parallel with simulator JPMs on Thursday. Alternate approaches are welcome. **(Will change schedule as described.)**
3. Confirm if class size is still 12. **(Class size remains 12.)**
4. Reformat schedule so that it can be printed on a standard 8.5 x 11 sheet. **(Will change schedule as described.)**

## OTHER FACILITY CHANGES MADE TO OUTLINE

1. Changed Examiner-directed Trigger numbers in each scenario outline such that they are numbered sequentially from first event to the last event.