

Comments on TMI Exam Draft Exam Submittal

SRO Admin Topics

Exam Team should review A.1.1, A1.2 (RO and SRO) and SRO A.2 validation week to see if the exam team is ok with these or decide if we can make any enhancements. These JPMs are not particularly challenging.

RO Admin Topics

A.3, GET too simplistic replaced this JPM. The licensee is writing a new A.4 replacement alt path JPM. Limerick requests that TMI perform the Limerick ERO call out notification due to control structure damage at Limerick.

Simulator/In-Plant JPMs

No Comments on sim/in-plant JPMs

Scenarios -

General – The CTs need work e.g., failure criteria in most cases is not identified. In some cases it appears that operators will be able to put their hands in their pocket without a resultant major plant damage/degradation. Please consult NUREG 1021, Appendix D, 4 factors for CTs and make sure your CTs meet the established criteria. During validation the exam team will ensure that the CTs are relevant. In addition, please highlight in the body of the script the operator actions that are required to be taken.

Scenario #3 – What is the basis for the 10 minute limitation for event #9?

Scenario #4 – Consider modifying the ATWS failure to require emergency boration to s/d the Rx.

Notes: Op Test comments provided to licensee the week of 2/20/12. Currently there are 10 applicants 6 SROs and 4 ROs for this exam.

CE Comments on TMI Exam Draft Outlines T-75 Submittal

SRO Admin Topics

A1.1, looks like a very simplistic JPM that may not hit the mark.

A1.2, I'd have to see the JPM may be ok. Reviewed draft JPM and it is a simple calculation exceed TS leakage see if you can add a second part to JPM to evaluate and locate source based on additional information on sump level etc.

A2, what is the ST being reviewed and what is the out of spec data that need to be identified?

A3, what are data points that must be identified as being incorrect? Typos and RP supervisor didn't sign for release simple admin errors would prefer to make this JPM more operationally oriented. Will provide them the JPM developed for Susq to provide ideas on a proper JPM in this area.

A4, are there multiple plant challenges that test competing sections of the classification guide?

RO Admin Topics

A1.1, looks like a very simplistic JPM that may not hit the mark. Is this task an RO or SRO responsibility? Step 11 see if by answering yes it might add a level of difficulty to the task

A1.2, I'd have to see the JPM may be ok. Reviewed draft JPM and it is a simple calculation exceed TS leakage see if you can add a second part to JPM to evaluate and locate source based on additional information on sump level etc.

A.2, Not a topic listed in ES-301 for Equipment Control. I'd rather see them develop a blocking and tagging for a ECCS or RCP pump using P&IDs. **Reviewed draft JPM this JPM should be Replaced.**

A.3, I'd have to see it.

Simulator/In-Plant JPMs

JPM A – discuss item may be overly simplistic.

JPM C – Safety system 3 – ECCS or Pzr pess control?

JPM-E – actions for trip of turbine driven EFW pump – discuss what are actions?

JPM G – discuss JPM?

JPM J - place 8th stage heating on line – discuss?

JPM K, Transfer to RB sump recirc in plant – discuss

We don't have any SROU? How many applicants?

Scenarios - Are these all new or significantly modified?

General

1. Scenarios #1, 2, 4 and 5 are all started at 100% power. All of them have required power reductions as their 'normal/reactivity' bean. Only Scenario #3 is different power, at 5% with startup in progress.
2. Scenarios appear lightweight for the RO (URO), generally amounting to a) ICS to hand, b) withdrawing a control rod, and/or c) manually tripping the reactor.

Scenario #1

1. ARO Event #2 different from Scenario #3 Event #2 (ICS auto power vs ICS hand power) but effect is same (loss of letdown) and bean credit is same (restore letdown).
2. CT-30 (restore makeup) of no significance since no loss of primary inventory and overcooling terminated under other CT.
3. Event 3, how much is power required to be lowered due to the loss of the EDG? 3.0.1 TS S/D move on after examiners seen enough.

Scenario #2

1. Loss of EF Pumps requires same diagnosis (but different actions) using OS-24 Attachment D as the EFW setpoint malfunction in Scenario #3. This is probably okay overlap.
2. CT-10/11/26 appear to all be 1 CT, which would be to cooldown to restore feedwater to dry OTSGs.

Scenario #3

1. This is the only RO scenario for SRO1 and SRO2 and it is a low power scenario. These SROs only get 2 scenarios. Probably okay, but need to evaluate.
2. Two of the three RO (URO) events are pulling rods – once for normal startup, once to recover dropped rod. The third event is to close a block valve.
3. Event 2 seems pretty benign – is Rx startup allowed to proceed with this failure?
4. Event 3 appears to be similar to Event 2 in scenario 1
5. CT-22 doesn't seem to apply to this scenario since no OTSG tube rupture.
6. CT for loss of power seems to apply to the scenario since power is lost, but not evident why it is critical to restore within 10 minutes. Nothing else happening to drive immediate need for power.

Scenario #4

1. This is the 3rd scenario taking credit for letdown restoration (other two are Scenarios #1 and #3).
2. This is the 2nd scenario taking credit for RO manual trip of reactor because auto has failed (other is in Scenario #2).
3. Event 4 - What if URO can't trip the Rx? What actions would be taken? Consider putting in an emergency boration situation rather than simplistic immediate actions to end ATWS.
4. Event #5, RCP sheared shaft, requires trip of motor by opening bus feeder because motor breaker will not operate. Looks like a hands-in-the-pocket event since shaft already sheared. No consequence to leaving the vibrating motor running.
5. CT-29 needs to be evaluated. It is defined as critical to not take actions to isolate OTSG, which you wouldn't normally take anyway. Sort of like, it is critical that operator doesn't defeat isolation signals and open all containment penetrations during a LOCA. True, that you wouldn't want the operator to take that action, but silly because he/she isn't going to take the action anyway.

Scenario #5 (spare)

1. Event 7, loss containment integrity, do all 3 valves need to be closed or just some of the valves (in series? or in parallel?)?

Written Outline

Tier 1, Grp 1

Q76 – does not appear to be SRO topic

Q77 - does not appear to be SRO topic

Q79 - not SRO topic, immediate actions and entry RO topic – **reviewed draft Q tests entry into abnormal not EOP doesn't match K/A**

Q44 – seems like the topic is too fundamental to write a good Q?

Tier 1, Grp 2

Q83 – does not appear to be SRO topic

Q84 - does not appear to be SRO topic

Tier 2, Grp 1

Q3&4 – don't ask power supply Qs directly too fundamental

Q 27 – reviewed draft Q doesn't meet K/A and LOD=1; licensee will reselect K/A and replace Q

Q 92 – Make sure TS are testing integrated plant situations where multiple TS apply

Tier 2, Grp 2

Q32 - don't ask power supply Qs directly too fundamental

Generic K/As

Q98 – topic too fundamental – **reviewed draft Q the Q can be answered with RO level system knowledge to know what procedure entry condition and not to send operators to an area with a large steam leak in-progress. Licensee agree will probably replace Q.**

Also reviewed draft Qs 32, 76, 77, 83 and 84 which had several typos.

Notes: 1/21/12 comments received and 2/2/12 feedback comments provided to licensee. Provided more feedback on some draft material reviewed admin JPMs and written Qs on 2/9/12. Currently there are 10 applicants 6 SROIs and 4 ROs for this exam.

Changes to Admin JPMs post NRC review week.

*Based on NRC/Operator Validation
Comments*

RO A1-1

- Revised initiating cue.
- Modified initial conditions, to reactor is stable ...
- Added new non-critical step 6, to note attaching forms.
- Raised tolerance band to ± 0.003
- Performance step 11 (old step 10) now critical.
- Performance step 14 (old step 13) clarified.

RO A1-2

- Added space to cue sheet separating table from initial conditions.

RO A2

- Added Examiner note before Performance step 3.
- Added EX1 to 1st bullet.
- Added EX2 to 2nd bullet.
- Changed Lock to Lock Key and added word danger to bullets 5 and 7.
- Changed NR-S-1B-EX4 to OFF.

RO A4

- Changed initial conditions 2nd bullet to Site Area Emergency

SRO A1-1

- Added (Whole procedure) to required references, to avoid worksheets only.
- Revised initiating cue.
- Modified initial conditions, to reactor is stable ...
- Removed ELP 5,7,8 from Step 8.
- Removed OE 6,7,8 from Step 9.
- Removed note at top of Page 8.
- Added WC-TM-430 to general references.
- Changed Step 12 tolerance band to ± 0.003 .

SRO A2

- Modified initiating Cue.

SRO A3

- Modified initiating Cue.
- Modified Examiner Cue prior to step 1 to have 2nd and 3rd procedures in room rather than hand out.

SRO A4

- Modified initial conditions to include No dose assessment data is available.

* Will RUN these 2 JPMs as a PAIR
STAGGER START with Admin JPMs RO A-4 & SRO A-4

Changes to JPMs after NRC Exam review week. *BASED ON NRC FEEDBACK.*
New 301-2 RO and SRO due to swapping RO only JPM F now H, H now F.

- A – Simulator initial conditions stabilized to prevent spurious alarms.
- B – Added steps for defeating 4# manual and automatic ESAS, with train "A" critical.
Confusion on steps 4 and 5 over having to press buttons twice, once for defeat 2nd time to re-enable. Changed Bullet to ✓ on defeating and included an evaluator note.
- C – Changed position from URO to ARO.
Added OP-TM-541-463 to "Required Materials"
Added ICO Cues to step 2.
- D – **no change**
- E – Changed the initial conditions, to be able to give in parallel with JPM H (now F). Modified step 1 TO TRIGGER Event 10, changed from recognizes loss of MFW to recognizes loss of EF-P-1. Corrected grammar on ICO cue step 11.
- * F – (Now H "RO Only")
Simulator setup changed, item #2 now NI16B Event # 1 and removed the Protected Equipment sign application item # 3, added to the evaluator cue on step 8 to state that "risk has been assessed if asked."
- G – Revised Task Standard statement.
Added an explanation statement as to the "Time Critical" portion to pg 2.
Corrected typo pg 4.
Removed repeating note on steps 9-13 and replaced with one note before time critical block.
Moved Time critical completion to the spot where it would occur, and added Time (1) and Time (2) indications to critical action blocks.
- * H – (Now F "SRO & RO")
Added trigger to set-up to allow to run parallel with JPM E.
Added evaluator note that candidate may verify diesel load prior to attempting to start RR-P-1A.
Modified Evaluator note before Step 7 to read clearance has been applied.
Added Evaluator note prior to step 10.
Added evaluator note prior to step 13.
Added explanation that AH-P-10A will not start in normal after start due to BOP powered relay.

- I. Step 9 Cue modified to include "if asked inverter output amps dropped", standard modified to better describe light verified.
Step 10 standard modified to better describe the light.
Step 13 added to standard either key rotated will rotate both.
P&I on page 80 of 1107-2B added to package, new 1102-2B included in this package.
- J. Added location of AS-V-213A to standard of Step 4.
Added location of CO-V-375 to standard of Step 7.
Added Cue to Step 11 for AS-V-1 loader.
- K. Added to Step 1 Cue the GREEN light is lit when the breaker is closed.
Added to Step 2 Cue the RED light is lit when the break(s) are closed.

LICENSEES LIST for COMMENT Resolution

Changes made to outline between outline submittal and package submittal:

Form ES-301-1 RO:

- Changed title of JPM RO-A2 from "Perform Shiftly Checks in the Control Room" to "Isolate a Component for Maintenance" with the appropriate K/A included.
- Changed explanation of JPM RO-A2 on page 2 of form.

Form ES-301-1 SRO: None

Form ES-301-2 RO:

- JPM C: Changed "EP 009" to "EPE 009" for accuracy.
- JPM E: Changed "SYS 061" to "APE 054" for correctness.

Form ES-301-2 SRO:

- JPM C: Changed "EP 009" to "EPE 009" for accuracy.
- JPM E: Changed "SYS 061" to "APE 054" for correctness.

Form ES-301-5:

- Changed event numbers for some scenarios for various individuals.
- Changed Totals based on above comment.

Scenario #1:

- Changed CT-11 to CT-16 (FW Flow Control) (pg.1)
- Changed CT-11 to CT-16 (FW Flow Control) (pg.7)
- Added/Changed failure criteria and/or source document to CT-16 (pg.7)
- Added/Changed failure criteria and/or source document to CT-17 (pg.8)
- Fixed typo (HPI) (pg.9)
- Added/Changed failure criteria and/or source document to CT-30 (pg.10)
- Fixed typo in first Booth Operator Cue (ICCW flow) (pg.19)
- Changed Second Booth Operator Cue to require Chief Examiner permission (pg.22)
- Added a Booth Operator Cue about time to repair (pg.23)
- Changed the first action to URO/ARO instead of URO only (pg.27)
- Added CT-16 (pg.29)
- Removed CT-11 (pg.30)
- Altered CT-17 Steps based on required actions taken (pg.33)

Scenario #2:

- Changed to correct T.S. (3.5.5.2) (pg.3)
- Added/Changed failure criteria and/or source document to CT-11 (pg.6)
- Added period to first paragraph (pg.6)
- Fixed Safety Significance (pg.6)
- Added/Changed failure criteria and/or source document to CT-18 (pg.8)
- Fixed Safety Significance (pg.8)
- Added/Changed failure criteria and/or source document to CT-26 (pg.10)
- Added an Override to strengthen initial setup (pg.14)
- Changed third action based on validation data (AH-E-19A – no action) (pg.18)
- Added Examiner's Note about time to start a ventilation fan (pg.18)
- Changed Booth Operator Cue, second bullet, for clarity to include if asked the status of the fans (pg.19)
- Removed repetitive word in Footnotes section (fan fan) (pg.19)
- Added first Examiner's Note about time to repair (pg.23)
- Edited Indications Available section (added quickly) (pg.24)
- Removed an unnecessary description in the Header based on removing the item during development (EF-V-30'S) (pg.29)
- Changed the Examiner's Note based on conversation during NRC Validation to indicate when to move on to the next event (pg.30)
- Fixed Event Description in Header to indicate actual event description (pgs 31-35)
- Added Booth Operator Cue for EFW pump description (pg.31)
- Added first ARO action to close FW-V-16A/B (pg.32)

Scenario #4:

- Added CT-24 (pg.1)
- Removed CT-7 (pg.1)
- Changed 100% power to 85% power (pg.1)
- Fixed minor typo (dose) (pg.2)
- Added verbage to Event # 3 about controlling feedwater (pg.5)
- Added verbage to Event #4 about ATWS actions (pg.6)
- Added/Changed failure criteria and/or source document to CT-1 (pg.9)
- Removed CT-7, replaced with CT-24 (pg.10)
- Added/Changed failure criteria and/or source document to CT-29 (pg.11)
- Added ATWS overrides (pg.14)
- Added CRD breaker remotes (pg.15)
- Added footnote about RCBT (pg.16)
- Added Examiners Note about OP-TM-401-472 and OP-TM-4010473
- Changed Step 2.1 to URO/ARO instead of URO only (pg.19)
- Fixed minor typo (Manual) (pg.22)
- Fixed minor typo ("B") (pg.23)
- Added Examiner's Cue about ICS Coordination, with a possible Go To Event #4 (pg.23)
- Removed shaded block to no longer indicate an action to take credit for (pressing buttons to trip reactor (pg.25)
- Added ATWS steps (pg.26)
- Removed CT-7 information (pg.28)
- Added an additional requirement to Booth Operator Instructions (pg.32)
- Edited Examiner's Note about when time critical action begins (pg.34)
- Added CT Start time (pg.34)
- Added footnote (pg.34)
- Added Stop time for CT (pg.35)
- Fixed minor typo (EF-V-30C) (pg.36)
- Changed EAL call based on ATWS (pg.39)

Scenario #5:

- Changed level to correct number (pg.2)
- Changed uppercase letter "A" to lowercase (pg.3)
- Added/Changed failure criteria and/or source document to CT-16 (pg.5)
- Added/Changed failure criteria and/or source document to CT-19 (pg.7)
- Removed unnecessary triggers (pg.10)
- Changed Booth Operator Cue (pg.11)
- Added Examiner's Note (pg.12)
- Fixed typo (pg.13)
- Added 1102-4 steps (pgs.14-15)
- Added OP-TM-226-151 steps (pgs. 14-15)
- Added Examiner's Note (pg.16)
- Added Examiner's Note about RCP combination (pg.24)
- Edited Examiners Note about COLR limits (pg.24)
- Added OP-TM-EOP-001 and RULE 4 steps to achieve CT-16 (pgs. 31-32)
- Added CT-19 start time, based on HPI initiation (pg.34)
- Added Examiner's Note about Rule 4 (pg.35)
- Reorganized steps for easier following (pgs.35-39)
- Added CT-19 Stop time (pg.39)

Comment # 1:

Scenarios #1, 3, and 4 all have "Restore Letdown".

Response:

Letdown is lost in a number of ways, and must be restored each time. During scenarios, it is common for Letdown to be isolated, and procedural guidance is given in each case to restore it. Knowing Letdown isolation would occur in multiple scenarios, we were careful to ensure that the reason for the loss, and therefore the restoration path taken, would be different for all three scenarios. In scenario #1, the crew will perform the appropriate portion of the procedure when restoring from isolation following a loss of ICS AUTO Power. In scenario #3, the crew will perform the appropriate portion of the procedure when restoring from isolation following a High Temperature isolation. In scenario #4, the crew will perform the appropriate portion of the procedure when restoring from isolation following an ESAS signal. Although the intent of the procedure is identical in all three cases, the procedural flowpath is different. The decision to choose the three different paths was made so that credit may be taken in each scenario. The alternative is to allow the time to restore letdown while not giving credit, which would be a waste of evaluation time.

NOTE: ① for SCN #1, Event #2, the loss of ICS Auto Power/Restore Letdown is not needed to meet minimum # of events - there are 3 other ARO events before the major ~~and~~ event.

② SCN #3, Event #3 (restore letdown following Hi-temp isol) also not needed to meet minimum # of ARO events - there are 2 other ARO events before the major event AND 2 events after the major event.

Comment #2:

Scenario #1 needs the executive summary beefed-up for why the Emergency Diesel Generator is a Tech Spec 3.0.1 entry, leading to a Shutdown.

Response:

Added the following to the executive summary: "The crew will diagnose a loss of EG-Y-1A Starting Air by annunciator A-2-1 and A-1-2 in alarm and communications with the Auxiliary Operators. The CRS will identify and declare Tech Spec 3.3.1.3.b, which states that since an Emergency Diesel is not operable on ES Train A, and a Nuclear River Pump is not operable on ES Train B, a 3.0.1 Timeclock is in effect (1 Hour to fix or commence a reactor shutdown). The crew will brief and commence a reactor shutdown IAW 1102-4, Power Operations."

③ SCN #4, Event #2 (restore letdown due to inadvertent ESAS) not needed to meet minimum # of ARO events - there are 2 other ARO events before the major event AND 1 ARO event after the major event.

Comment #3:

Scenario #1, CT-30 May not be critical.

Response:

Initially during the major event, HPI will inject into the core. The order will be given to throttle HPI IAW Rule 2. This will control RCS Inventory. The crew will determine, after the affected OTSG is isolated, that HPI flow is no longer needed, and the order will be given to terminate HPI. If HPI is not terminated, RCS inventory will shrink the Pressurizer bubble and cause RCS pressure to rise rapidly until such time as the PORV lifts. When RCS lowers, the PORV will reseal, and the actions will cycle again.

According to the B&W Critical Task list: Critical task (CT-30) is to control RCS inventory prior to emptying the pressurizer while not creating an excessive subcooling condition. Once an Excessive Heat Transfer condition no longer exists, pressurizer level is adjusted with MU (maintaining a minimum for pump damage concerns); HPI is not needed and can complicate achieving stability and cause unnecessary HPI nozzle thermal cycles. Either condition should be considered grounds for failing critical task.

Can change to CT-15: TERMINATE HPI COOLING if necessary.

Comment #4:

Scenario #2, Loss of Emergency Feedwater Pumps looks the same as scenario #3.

Response:

In scenario #2, a loss of Main Feedwater occurs initially and therefore Main Feedwater is not available. Subsequently, A staggered loss of Emergency Feedwater occurs. This complete Loss of Main AND Emergency Feedwater leads to a Loss of Primary to Secondary Heat Transfer. Procedure EOP-004 will direct the OTSG pressure to be reduced sufficiently to allow for Condensate Booster Pump feeding, thus establishing Primary to Secondary Heat Transfer. The routing, per Rule 4, is to maintain Condensate Booster Pump flow < 0.2 Mlb/HR / OTSG.

In scenario #3, there is no loss of Emergency Feedwater. However, in scenario #4, there is a loss of emergency Feedwater and is explained as different with the following description: A loss of Main Feedwater has NOT occurred, and therefore when a Loss of Emergency Feedwater occurs, EOP-004 is not entered. Instead, IAW Rule 4, Feed with a total MFW of >1.0 Mlbm/hr.

Comment #5:

Scenario #2, 3 CT's, but it looks like 1 action covers them all, therefore credit for only 1 CT.

Response:

CT-10 and CT-26 did overlap, so CT-10 was removed. CT-26 is performed by feeding the OTSG with the Condensate Booster Pumps.

CT-11 is performed by adjusting Atmospheric Dump Valves to stabilize Tcold LAW Guide 6.

CT-18, Turbine Trip has been added based on Event #6, where the Main Turbine fails to automatically trip upon a reactor trip, and the operator must manually trip it.

Comment #6:

Scenario #2, NRC would like enough stuck rods to remain at >5% power.

Response: Due to the multiple methods and backups it is not credible for us to have the CRDMs not de-energize, therefore it would require large numbers of rods to mechanically bind to cause the plant to not shut down or the plant would have to start operations from outside the allowable rod band. NUREG 1021 Appendix D B.2 does not allow to start in such a condition. Again Appendix D C.1 discusses Realism Credibility, it was felt by the author that the number of rods that would have to be stuck would exceed the credibility of realism and once stuck they would not be able to subsequently be inserted. Further discussion with the chief determined that what he would like to see is an exercise of the RNO column of EOP-001, Reactor Trip Procedure, for reactor not shut down. While this will still require a large number of rods to be stuck the author has agreed to submit the exam with out this condition and develop the condition prior to NRC examiner preview week for review by the team when they are here, scenario's 2 and/or 4 will be evaluated for this opportunity.

Comment #7:

Scenario #3, Would we be allowed to continue Startup with a Reactor Demand Station failure?

Response:

ICS is not a Safety-related system, nor in Tech Specs. Therefore, upon a failure of an ICS station, there is no procedure requirement to cease the plant and reactor startup. The crew, in accordance with good operating practices, will hold at the closest safe procedure step until further guidance is obtained. This is event #2, and the reactivity manipulation has occurred in event #1. This event will also not hinder the actions taken later for recovering the dropped safety rod.

Comment #8:

Scenario #3, Appears that 2 of 3 URO actions are to pull rods, with the third to close PORV Block Valve.

Response:

The URO will pull rods per the Start-up procedure for our reactivity management credit in Event #1.

The URO will switch Control Rod control back to the Diamond Panel, no rod motion required, unless the crew decides to continue the Startup.

The URO will close the PORV block valve to stop the rapid pressure reduction due to the PORV failing open. Failure to do this will have severe consequences.

The URO will recover the dropped safety rod with multiple switch manipulations along with single rod withdrawal. There is enough component manipulation performed prior to the rod withdrawal that the rod withdrawal is not required prior to going to the Loss of Offsite Power. Going this route will then make it only one rod manipulation in the scenario.

Comment #9:

Scenario #3, Look at CT-22. Is it "hands in the pocket"?

Response:

CT-22 is "Establish Natural Circulation". Although Emergency Feedwater actuates on the Loss of Offsite Power, the valves associated with feeding the OTSG's, EF-V-30A-D, have a setpoint of zero percent OTSG level. Therefore, the valves will never open in automatic and the OTSG's will go dry. Without water level in the OTSG's, natural circulation cannot occur, and this would be the case with hands in the pocket. The operator must take manual control of EF-V-30A-D and feed the OTSG's to promote natural circulation, therefore the Critical task is valid.

Comment #10:

Scenario #4, NRC does not like the ATWS event.

Response:

This ATWS is unique as follows: A loss of "B" DC occurs. One of the effects of this event is Main annunciator K-1-1, Turbine Trip, is inoperable. Therefore, when the Main Turbine trips, multiple alarms come in but not Turbine trip. The operators must look at more than the Main Annunciator Panel to determine that the Main Turbine has tripped. Then they must realize that power is greater than 45% and the reactor should have tripped, but didn't. Validation crews were initially stumped by the indications, thinking an ICS station has failed, and wanting to enter AOP-070. If action is not taken in a timely fashion, the reactor is at power with the main heat sink removed and RCS pressure will rise rapidly, bouncing off of the PORV (which most likely will lift once anyway). We can add the pushbuttons do not work on the console, but if we do more than that, the scenario will drift severely from the validated path.

Comment #11:

Scenario #4, CT-29 doesn't look like actions are taken, only prevented.

Response:

CT-29 is "Maintain SG Availability". The OTSG Tube Rupture is severe enough to cause a loss of subcooling margin but not large enough to cause OTSG isolation. By opening the Atmospheric Dump Valves to 90-100 percent open, the crew will be able to control OTSG level less than 85%. The leak grows in size over time, and so the ARO must constantly change the position of the ADV's to keep up with the level rise. Failure to adequately keep up with steaming off the OTSG would result in level reaching 85%, and would require isolating the OTSG. In a B&W plant, the crew wants to maintain the OTSG available if at all possible. In this case, it is difficult but possible, and isolating the OTSG would be cause for CT failure. Action is definitely required to achieve CT success.

Comment #12:

Scenario #5, are all 3 valves required for containment isolation in event #8?

Response:

Not all three valves are required for isolation. NS-V-15 is required for CT success along with one of the other two valves. NS-V-4 and NS-V-35 are valves in series and only one or the other is required to be closed. Wording will be changed in the scenario.