

## MFFFNPEm Resource

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**From:** Tiktinsky, David  
**Sent:** Friday, November 20, 2009 3:02 PM  
**To:** 'Gwyn, Dealis W.'  
**Cc:** MFFFHearingFile Resource  
**Subject:** FW: Slightly revised MOX Questions  
**Attachments:** Follow-up MOX NCS Issues 11-09.docx

Please take a look at these and we can discuss them. Thanks.

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**From:** Tripp, Christopher  
**Sent:** Wednesday, November 18, 2009 9:51 AM  
**To:** Tiktinsky, David; Morrissey, Kevin; Hrabal, Craig  
**Cc:** Silva, Patricia  
**Subject:** Slightly revised MOX Questions

Attached is a slightly revised set of what we provided you the other day for MOX. I've added a couple questions on changes recently made to the license application.

Please let me know when we can set up a phone call/in-office review meeting to resolve our remaining issues. Thanks.

*Christopher S. Tripp*

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## Follow-up of MOX Nuclear Criticality Safety Open Issues

### General ISA Questions

#### NCS-61

Operating Limits Manual (OLM) is in the process of being developed. Discuss in SER as a TBD item.<sup>1</sup>

Follow-up: Include in Verification Plan.

#### NCS-62

Operating Procedures and OLM not expected to be completed before cold startup. Discuss in SER as a TBD item.

Follow-up: Follow-up with staff reviewing software QA; calculation of acidity in KPA is based on measurement of solution density and temperature, so it is crucial the software performing this calculation is appropriately tested and controlled. Include in Verification Plan.

#### NCS-63

MOX Services stated that it would establish requirements in DOE ICDs prior to hot startup. Discuss in SER as a TBD item.

Follow-up: Include in Verification Plan.

#### NCS-64

Details of how sampling is to be performed will not be available till development of the sampling plans. Discuss in SER as a TBD item.

Follow-up: Staff has the question—

Your response states that for Category 3 lab analysis: “A single analyst cannot perform both analyses since there is a potential for CMF<sup>2</sup> between analyses performed *using the*

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<sup>1</sup> As discussed with the PMs, the wording to be used will be similar to the following: “The applicant has provided commitments to...The staff has determined that correct implementation of these commitments will provide reasonable assurance of safety during operations. **Completion of this item will be verified as part of the pre-operational verification review.**”

<sup>2</sup> Common mode failure.

*same instrument and procedure.* This single analyzer is operated by two different technicians *using the same analysis procedure.*” However, your previous RAI response stated: “When analyzing dual independent samples on the same laboratory equipment (e.g., “Category 3” lab analysis, the samples will be ensured independent *by independent procedures*”....” This information appears inconsistent on the question of how independence will be ensured, specifically whether the same procedure will be used. Clarify and provide sufficient details to provide assurance that there will be no common mode failure for Category 3 lab analysis.

Include review of IROFS sampling relied on for double contingency in Verification Plan.

#### NCS-65

The response did not explain how independence is ensured for redundant operator actions. Instead of addressing the question generally, the response only gave reasons why the specific example from unit NBX was highly unlikely.

Follow-up: Staff has the question—

Explain how there is no common mode failure, due to deficiencies in operator training, when two identical or similar administrative actions are relied on for double contingency. Answer the question for the general case, or provide examples (similar but not limited to the example from NBX cited here) that demonstrate *not only why the accident sequence is highly unlikely for other reasons*, but why the controls are sufficient unlikely to meet the double contingency principle.

#### NCS-66

Staff has not yet reviewed the “facility measurement and test equipment program,” as it has not yet been developed. This needs to be reviewed, because equipment that is needed to perform administrative IROFS has not been designated as IROFS. Discuss in SER as a TBD item.

Follow-up: Include in Verification Plan.

#### NCS-67

Details of the Moderator Control Program, including Moderator Exclusion Training, will not be prepared for several years. Discuss in SER as a TBD item.

Follow-up: Include in Verification Plan.

#### NCS-68

Staff needs to review the revised NCSE to verify that the proposed language is sufficient to ensure that only maintenance personnel will be able to introduce up to 1000 g of extraneous moderators in moderation controlled gloveboxes.

Follow-up: Review Primary Dosing Unit (NDP) NCSE to verify controls are adequate to ensure that double contingency will be maintained with regard to glovebox moderation limits.

#### NCS-69

The concern was ensuring appropriate closure of all TBD items prior to startup. This will be addressed as part of the Verification Plan/Operational Readiness Review (ORR). Closed.

#### NCS-70

The details of the Long Term Fissile Accumulation Monitoring Program (LTFAMP) will not be available for several years. Discuss in SER as a TBD item.

Follow-up: Include in Verification Plan.

#### NCS-71

This concerned environmental qualification of active engineered controls. Based on discussion with the digital I&C reviewer, applicant commitments to codes and standards (IEEE-323) should be adequate to ensure safety. I&C reviewer is also following up (as I&C-2).

Follow-up: Include in Verification Plan.

#### NCS-72

The applicant did not provide a sufficiently detailed summary of its calculations to allow the staff to perform an independent confirmation.

Follow-up: Staff has the question—

You did not provide a summary of calculations supporting your assertion that 1000 g of an optimized mixed oxide-water mixture bounds any unlimited number of heterogeneous 100 g items. Provide a summary evaluation, describing material composition, geometry, and any boundary conditions or other relevant characteristics in sufficient detail for staff to perform an independent confirmatory analysis to verify your results. Also, explain the existence of “permissible mass calculations” and “criticality analyses” referenced in your response, given the statement that “The formal calculation to calculate the reactivity of a sphere with 100 g items placed as above *has not yet been performed yet.*” [sic]

Once the new information is received, review it and perform any necessary analysis to confirm the applicant’s conclusions.

#### NCS-73

This concerned modeling of less-than-full reflection conditions around gloveboxes.

Follow-up: Review calculations cited in the response as part of an in-office review.

#### NCS-74

The applicant did not provide a sufficiently detailed summary of its calculations to allow the staff to perform an independent confirmation.

Follow-up: Staff has the question—

Provide a summary of the sensitivity studies supporting your assertion that the reactivity of the major systems in process cells is unaffected by the presence of nearby small ancillary equipment (i.e., demonstrating that they may be neglected if separated from major components by more than one foot. This information should be in sufficient detail for staff to perform an independent confirmatory analysis to verify your results. The fact that equipment is typically neutronically isolated when separated by a foot of full density water does not provide the needed demonstration, because full interstitial moderation is not always bounding in an interaction model (as it would be for a single unit).

Once the new information is received, review it and perform any necessary analysis to confirm the applicant's conclusions.

#### NCS-75

This concerned the determination of maintenance and surveillance frequencies and functional testing requirements to ensure that IROFS will be sufficiently available and reliable. This has not yet been determined. Discuss in SER as a TBD item.

Follow-up: Include in Verification Plan.

### **Process-Specific ISA Questions**

#### Purification Area (KPA) (Chris)

#### NCS-76

There is a disagreement concerning whether there's a discrepancy between the size of vents on drawings and P&IDs. This can most likely only be resolved by an in-office review of the relevant documents.

Follow-up: Reviewed the meeting summary for the August 14 – 16, 2007, in-office review (this was Issue #7). No specific details were provided in the write-up. However, the reviewer's notes indicated that the applicant stated an apparent discrepancy on the size of lines to tank TK8500 had been fixed. Documents in question are:

- DCS01-KPA-DS-CAL-F-10483-0, "Aqueous Polishing KPA Unit Tank and Vessel Vent Sizing."

- DCS01-KPA-DS-CAL-F-10475-A, “Overflow Line Size Verification in KPA Purification Unit”
- DCS01-UFJ-DS-CAL-H-38357-A, “MOX AP Vent Sizing Analysis Guideline”
- KPA NCSE DCS01-KPA-DS-ANS-H-35051-3
- P&ID DCS01-KPA-DS-SCH-D-16754-1 (Sheet 17)

Follow-up with an in-office review to confirm the consistency of vent sizing in these documents (goes to design control).

#### Solvent Recovery Unit (KPB) (Chris)

##### NCS-77

This concerned apparently inconsistent mass limits in DCS01-KKJ-DS-ANS-H-35053-3 (450 and 400 g Pu annual limits.) MOX Services stated in its response that the 450 g limit applies to material transferred to the Waste Solidification Building (Section 7.3), and the 400 g limit applies to AP Auxiliary units (Section 4, Table 7-1, and Table 8.1-2). The 450 g limit is consistent with ANSI/ANS-8.1, and the 400 g limit is simply established to be more conservative.

Follow-up: Perform in-office review to confirm that the two apparently inconsistent limits were used for different purposes, so there is no actual inconsistency.

#### Oxalic Precipitation Unit (KCA) (Chris)

##### NCS-78

This concerned the ability of the radiation detectors on the rotary filter to limit plutonium oxalate masses to 4.9 kg. The applicant stated in its response that DCS01-KCA-CG-NTE-H-08344-B demonstrates that 4.9 kg in the filter will be safely subcritical, and DCS01-KCA-CG-CAL-H-08293-B demonstrates that the detectors used at LaHague will be capable of detecting this quantity of Pu.

Follow-up: Perform in-office review of the two documents referenced above.

##### NCS-79

Discussion of the scenario involving over-pressurization due to a plugged furnace screw seems adequate. However, this may not be the only event leading to failure of the KCA process piping.

Follow-up: Perform in-office review of the KCA NCSE, and, if necessary, the associated PrHA, to confirm that this is the only initiating event leading to a failure of the KCA process piping.

#### Oxalic Mother Liquor Recovery Unit (KCD) (Craig)

##### NCS-80

This concerned use of a concrete albedo in calculations of the KCD evaporator, in DCS01-KCD-CG-CAL-H-06270-A, which had not been validated. The applicant has stated that it would redo the calculations without using albedos. Discuss in SER as a TBD item.

Follow-up: Include in Verification Plan.

#### Dechlorination and Dissolution Unit (KDD) (Chris)

##### NCS-81

This concerned a possible increased rate of corrosion in the electrolyzer due to higher oxidized forms of chlorine (such as perchlorates). Chemical safety reviewer stated that this issue was the subject of an RAI, and the applicant had established IROFS to maintain sufficiently low pH so that this could be discounted. Note that even if corrosion leading to a breach occurs, there is another favorable geometry barrier, the drip tray, so that it will remain subcritical. This issue is closed.

#### Decanning and Milling Units (KDA/KDM) (Chris)

##### NCS-82

This concerned powder density measurements for criticality safety. The applicant provided the titles of documents DCS01-KDJ-CG-CRE-Y-08287-A and DCS01-KDA-CG-NTE-F-07273-0 that describe the density measurement technique, and will be developing procedures that comply with the applicable portions of standards ASTM B527 and ISO 9161. Discuss the development of these procedures in the SER as a TBD item.

Follow-up: Perform an in-office review of the two documents mentioned. Include development of procedures to comply with the two standards in Verification Plan.

##### NCS-83

Closed

#### Sintering Furnace Units (PFE/PFF) (Chris)

##### NCS-84

This concerned design of control room human factors interfaces (e.g., hand switches, turn keys, etc.) associated with redundant administrative controls that must be independent. We have an inquiry in to the human factors reviewer with regard to adequacy of commitments in Chapter 12. However, the applicant indicated that its control room design has just started. Discuss in the SER as a TBD item.

Follow-up: Discuss the issue with the human factors reviewer. Include control room design in Verification Plan.

## Grinding Unit (PRE/PRF) (Chris)

### NCS-85

Final verification of the amounts of hydrogenous lubricants to be used in Moderation Control Areas will be done closer to startup. Discuss in the SER as a TBD item.

Follow-up: Include in Verification Plan.

### NCS-86

The response claims that there are specific mass and moderation IROFS for gloveboxes in the area, which contradicts the question. These include being located in a moderation controlled area, prohibiting extraneous moderators, and analyzing safe for up to 1000 g moderator; and establishing administrative controls to limit pellets to less than 144 kg of MOX. (Permissible mass limit with 1000 g moderation is 560 kg of MOX). The NCSE will have to be re-reviewed in light of the new information presented in the response.

Follow-up: Perform an in-office review of the grinding unit NCSE in light of new information.

### NCS-87

The question quoted the requirement as being that drip trays not be located above equipment containing fissile material (DCS01-ZMJ-DS-SPE-M-19102-1). The response quoted from documents that equipment containing lubricants should not be located above fissile material, and all such equipment should have a drip tray. The document will have to be re-reviewed to determine that wording of the actual requirement.

Follow-up: Perform an in-office review to confirm wording of requirement as stated in the response, and to check the Grinding Unit NCSE to make sure all scenarios involving lubricant leaks are appropriately handled.

### NCS-88

Response appears to be adequate, but an in-office review needs to be performed to confirm this.

Follow-up: Verify that accident sequences PRE-01, -10, and -11 are properly classified in Table 8-2 as "inherently highly unlikely," and that accident sequences PRE-02, -03, -04, -05, -06, -07, -08, and -09 require and have explicit double contingency demonstrations. Verify the likelihood of these latter sequences is adequately determined. In addition, verify that there is no large single source of hydrogenous lubrication in the Grinder Unit (which would require calculations justifying an exception to the generic requirement of less than 100 g/item). Perform an in-office review to confirm these facts.

## PUO<sub>2</sub> Receiving and 3013 Storage Units (DCP/DCM) (Chris)

#### NCS-89

Details on how the incoming AFS and PDCF feed material will be NDA'd yet to be determined. This is a key assumption that needs to be verified. Discuss in the SER at a TBD item.

Follow-up: Include in Verification Plan.

#### Scrap Processing Unit (NCR) (Chris)

#### NCS-90

MOX Services is currently in the process of redoing analysis to show that the process will be subcritical with up to full density (4.6 g/cc) scrap. Discuss in the SER as a TBD item.

Follow-up: Include in Verification Plan.

#### Waste Storage Unit (VDQ) (Chris)

#### NCS-91

This concerned classification (in terms of highly unlikely category B or C) of accident sequences involving waste drums. Justification provided appears adequate, but needs to be confirmed.

Follow-up: Re-review the VDQ NCSE in light of this new information, to confirm the basis for highly unlikely Category C events, in an in-office review.

#### Waste Nuclear Counting Unit (VDT) (Chris)

#### NCS-92

This concerned the reason for an apparent discrepancy in waste drum mass limits. Explanation seems plausible, but must re-review to confirm.

Follow-up: Perform an in-office review of the drum limits in the calculation document and NCSE to determine consistency, in light of new information.

#### NCS-93

This concerned the range of applicability of NDA methods for waste drum counting. The response is acceptable. No follow-up.

#### MOX Auxiliary Systems (RCA) (Chris)

#### NCS-94

This concerned the justification for why there will not be condensation in the MOX ventilation system. The applicant has committed to remove Appendix A of the LCT NCSE, based on control features listed in Table 8.2-6 of that NCSE. Because it is uncertain when the revision will be done, discuss in the SER as a TBD item.

Follow-up: Include in Verification Plan.

#### NCS-95

This concerned an apparent inconsistency in moisture limits for the pneumatic transfer system. The response is acceptable. No follow-up.

#### NCS-96

This concerned the methodology for correlating radiation readings on removed contaminated equipment with fissile mass. The correlation has yet to be determined. Discuss in the SER as a TBD item.

Follow-up: Include in Verification Plan.

### **License Application Follow-up Questions**

#### NCS-1

The response is acceptable. No follow-up.

#### NCS-7

The response is acceptable. No follow-up.

#### NCS-10

The response is acceptable. No follow-up.

#### NCS-29

The response is acceptable. No follow-up.

#### NCS-46

This concerned commitments for the use of “process variable” control for criticality safety. The staff notes that the sentence stating “MOX Services does not currently credit process control for demonstrating criticality safety” means that an amendment would be needed in order to use this

in the future. Commitments do not clearly identify what would fall under the umbrella of process variable controls, but the fact that the license application says this is not used means that it may be closed for present purposes. No follow-up.

#### NCS-49

The response is acceptable. No follow-up.

#### NCS-54

The response is acceptable. No follow-up.

#### NCS-55

The response is acceptable. No follow-up.

### **New Questions Resulting from LA and ISAS Change Pages**

#### License Application

- On page 6-5 of the license application, you state that the nuclear incident monitoring (NIM) system will be installed wherever there is 450 g or more of  $^{239}\text{Pu}$ . State whether you will have greater than a critical mass of enriched uranium present anywhere in the facility (such as after stripping in KPA) and, if so, commit that those areas will also be covered by the NIM.
- The commitment on page 6-7 of the license application that the alarm system will cover all areas that may experience an absorbed dose of 12 rad or greater has been removed. Explain why, and provide a commitment as to what areas must be covered by the alarm (i.e., what areas must be evacuated in the event the system detects criticality).
- Explain why you added the bullet on page 6-28 of the license application with regard to taking credit for fuel burnup. Describe whether you plan to take burnup credit, and if so, provide a technical justification for doing so.

#### ISA Summary

- Several instances of the following sentence have been added to Section 5.3.7 of the ISA Summary: "Curbs, sills, *and other room features* prevent water infiltration into the...unit from adjacent corridors and non-moderation controlled process rooms." The words "*and other room features*" have been added. What are these other room features?
- The following sentence on page 5.3.7-113 has been removed: "Redundant SPLCs also compare the weight of cans when they enter a glovebox and when the can enters the

destination glovebox ensuring that spilled material is identified and is remedied before operations are allowed to continue by the SPLCs.” Another sentence makes reference to comparing starting and ending weights “after each operation.” Does removal of the sentence in quotes represent a change to where or how mass measurements are made (e.g., between *operations* instead of between *gloveboxes*)? Discuss the basis for the change in the ISA Summary and any associated criticality controls.

**Summary Table of Open NCS Issues**

| Issue                     | Description/Current Scope   | RESPONSIBLE REVIEWER<br>(if open) | Issue Closed?<br>(response adequate?) | Include in Verification<br>Plan (TBD) | Document as a TBD<br>Item in the SER | Ask Follow-up<br>Clarifying Question | Perform Additional<br>In-Office Review | Perform Additional<br>Staff Review |
|---------------------------|---|-----------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|--|------------------------------------|
| <b>ISA Summary Review</b> |   |                                   |                                       |                                       |                                      |                                      |  |                                    |
| NCS-61                    | Development of Operating Limits Manual (OLM)                        |                                   | ✓                                     | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-62                    | Development of Operating Procedures                                 | CAH                               | ✓                                     | ✓                                     | ✓                                    |                                      |  | ✓                                  |
| NCS-63                    | Specification of doubly contingent controls on incoming feed        |                                   | ✓                                     | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-64                    | Doubly contingent sampling  | CST                               | ✓                                     | ✓                                     | ✓                                    | ✓                                    |  |                                    |
| NCS-65                    | Independence of redundant administrative IROFS                      | CAH                               | ✓                                     |                                       |                                      | ✓                                    |  |                                    |
| NCS-66                    | Equipment used to perform administrative IROFS                      |                                   | ✓                                     | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-67                    | Moderation Control Program & Moderator Exclusion Training           |                                   | ✓                                     | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-68                    | Moderation controlled gloveboxes during maintenance                 | CAH                               | ✓                                     |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-69                    | Tracking TBDs/document control                                      |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| NCS-70                    | Long Term Fissile Accumulation Monitoring Program (LTFAMP)          |                                   | ✓                                     | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-71                    | Environmental Qualification for digital equipment (see I&C-2)       |                                   | ✓                                     | ✓                                     |                                      |                                      |  |                                    |
| NCS-72                    | Ambiguous limits on moderation in MOX Process gloveboxes            | CAH                               | ✓                                     |                                       |                                      | ✓                                    |  | ✓                                  |
| NCS-73                    | Reflection conditions inside gloveboxes                             | CAH                               | ✓                                     |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-74                    | Demonstration that one foot isolates small ancillary equipment      | both                              | ✓                                     |                                       |                                      | ✓                                    |  | ✓                                  |
| NCS-75                    | Determination of specific management measures intervals             |                                   | ✓                                     | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-76                    | Discrepancy in size of overflow vents in KPA                        | CST                               | ✓                                     |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-77                    | Apparent inconsistency in Pu mass limits in KPB                     | CST                               | ✓                                     |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-78                    | Ability of radiation detectors on rotary filter to detect 4.9 kg Pu | CST                               | ✓                                     |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-79                    | Scenarios leading to failure of the KCA process piping              | CST                               | ✓                                     |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-80                    | Use of concrete albedos in evaporator calculations                  |                                   | ✓                                     | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-81                    | Electrolyzer corrosion in presence of AFS                           |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |

| Issue                             | Description/Current Scope  | RESPONSIBLE REVIEWER<br>(if open) | Issue Closed?<br>(response adequate?) | Include in Verification<br>Plan (TBD) | Document as a TBD<br>Item in the SER | Ask Follow-up<br>Clarifying Question | Perform Additional<br>In-Office Review | Perform Additional<br>Staff Review |
|-----------------------------------|--|-----------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|--|------------------------------------|
| NCS-82                            | Tap density measurement methods  | CST                               |                                       | ✓                                     | ✓                                    |                                      | ✓                                      |                                    |
| NCS-83                            | Maximum holdup in dust removal system  |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| NCS-84                            | Control room human factors design for independence of IROFS  | CST                               |                                       | ✓                                     | ✓                                    |                                      |  | ✓                                  |
| NCS-85                            | Verify quantities of lubricants in Moderation Control Areas  |                                   | ✓                                     | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-86                            | Existence of mass and moderation limits in Grinder Unit  | CST                               |                                       |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-87                            | Location of lubricant-bearing equipment or drip trays over fissile-bearing equipment                             | CST                               |                                       |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-88                            | Categorization of inherently highly unlikely events & amounts of moderator                                       | CST                               |                                       |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-89                            | Method of NDA'ing incoming feed material   | CST                               |                                       | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-90                            | Redo NCR analysis to show that the process is subcritical with full density (4.6 g/cc) scrap                     | CST                               |                                       | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-91                            | Justification for accident sequences involving waste drums being categorized as Highly Unlikely Category B or C. | CST                               |                                       |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-92                            | Apparent inconsistency in waste drum mass limits   | CST                               |                                       |                                       |                                      |                                      | ✓                                      |                                    |
| NCS-93                            | Range of applicability of waste drum counting methods  |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| NCS-94                            | Justification for lack of condensate in the ventilation system   | CST                               |                                       | ✓                                     | ✓                                    |                                      |  |                                    |
| NCS-95                            | Apparent inconsistency in pneumatic transfer system moisture limits  |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| NCS-96                            | Correlation between radiation readings and mass for removed contaminated equipment                               | CST                               |                                       | ✓                                     | ✓                                    |                                      |  |                                    |
| <b>License Application Review</b> |  |                                   |                                       |                                       |                                      |                                      |  |                                    |
| NCS-1                             | Authorization to make commitments to NRC   |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| NCS-7                             | Compensatory measures during criticality alarm outages   |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |

| Issue                           | Description/Current Scope                                       | RESPONSIBLE REVIEWER<br>(if open) | Issue Closed?<br>(response adequate?) | Include in Verification<br>Plan (TBD) | Document as a TBD<br>Item in the SER | Ask Follow-up<br>Clarifying Question | Perform Additional<br>In-Office Review | Perform Additional<br>Staff Review |
|---------------------------------|---|-----------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|--|------------------------------------|
| NCS-10                          | External reviews of NCSEs                                       |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| NCS-29                          | Characterization of incoming feed material & double contingency |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| NCS-46                          | Commitments related to process variable control                 |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| NCS-49                          | Validation commitments  |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| NCS-54                          | Exceptions to ANSI/ANS-8.1                                      |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| NCS-55                          | Exceptions to 10 CFR 70.24(a)                                   |                                   | ✓                                     |                                       |                                      |                                      |  |                                    |
| <b>New Questions – See Text</b> |   |                                   |                                       |                                       |                                      |                                      |  |                                    |