Comments on Accident Analysis

1) Verify whether INIS has plans to update their ventilation design and utilize actual ventilation rates instead of estimates in their consequence analyses.

2) Verify whether INIS has plans to revise the building dispersion volumes into their dispersion calculations. INIS used the entire building volume in the initial evaluations and will need to address or justify partitions such as walls/floors which may significantly reduce the volume for dispersion inside of the buildings and increase the worker exposure.

3) ISA consequence evaluations typically include some estimate of "equipment" space which affects dispersion volumes inside buildings. For example, a percentage of the room volume may be taken up by equipment and not be otherwise available for dispersion. The "mixing efficiency" of the material in the space available may also reduce the dispersion. These considerations could significantly impact dispersion estimates of the available room volume and release concentrations, particularly after considering the building partitions.

4) Review the following assumptions/justifications for any inconsistencies and resolve as appropriate.
   a) Several of the DUF-RD sequences consider a cylinder release rate based on Fick's Law. This appears to assume that a vapor is released. However, the assigned ARF and RF values appear to be inconsistent with a vapor release.
   b) Similarly a liquid UF6, release would vigorously react with moisture in the air to release UO2F2 and HF during an exothermic reaction. However, the evaluation assumed liquid spill ARF and RF values.

   (INIS should review the accident evaluations to ensure the initial release that is postulated is consistent with the ARF and RF values given the materials and interactions/reactions that will occur upon release.)

5) Clarify the release and exposure durations for the public and environment. The applicant states in some documentation that public exposures were limited to 30 minutes, which is the same duration used for the release in some of the methods employed. However, the "RD" evaluations state exposure durations of 24 hrs for the public/environment.

Talking Points for Quality Assurance RAI Responses

The QA reviewer has completed her assessment of your draft RAI responses. Would your team be available to discuss them in a conference call on Monday, January 24th at, say 10:00am (eastern)? If possible, I may be able to discuss the Organizational and Administrative RAIs also (provided I can finish my review).

The QA follow-up questions are as follows:

1. In Response to Question QA-3, the licensee revised the second paragraph of the LA to read as follows:

   Configuration management provides the means to establish and maintain a technical baseline for the facility based on clearly defined requirements. During the design phase of the project, CM is based on the design control provisions and associated procedural control of the design documents to establish and maintain the technical baseline. Design documents are identified that provide design input, design analysis, or design results specifically for IROFS. Each IROFS receives a classification of QA Level 1 or Level 2 that applies throughout the life of the facility. Those Quality Assurance (QA) levels are defined in subsection 11.8.2.2. These design documents undergo interdisciplinary review during the initial issue and during each subsequent revision. See Figure 11-1, "IIFP Project Design and Construction Organization

   Please clarify the intent of the following sentence: "Design documents are identified that provide design input, design analysis, or design results specifically for IROFS."

2. In Response to Question QA-1, the applicant stated that QAP was going to be changed to QA Program. In Response to Question, QA-3, QAP appears in two different instances, however, it was changed to QA Program in the first instance and QA Procedures in the second. Please clarify if the intent is to change QAP to QA Program throughout the document and this was a misunderstanding.

3. Also in Response to Question QA-3, the applicant added some paragraphs explaining the different QA levels and the requirements. The new second paragraph for the QA Level 2 requirements states: "The following QA elements are applied equally to QL-1 and QL-2 IROFS: design control; procurement control; document control; control of purchased items and services; identification and control of materials, parts, and components; control of measuring and test equipment; control of nonconforming items; corrective actions; and quality assurance records." Please clarify if procurement control means procurement document control. In addition, please clarify why audits and assessments will not be applied equally to QL1 and QL-2 IROFS.

4. In Question QA-4, please clarify if the text explaining the relationships and interfaces will be added to the license application.

In Response to Question QA-15, please clarify if the procedures chosen by the DB contractor for the construction phases will be reviewed and approved by IIFP.

Organization and Administration

Clarify who is ultimately responsible for IIFP actions

QA-6B:The RAI responses do a better job of clarifying that ultimate responsibility for safety, security, and protection of the environment rest with the INIS/IIFP upper management. However, there are several statements spread throughout LA Chapter 2 that indicate the COO, IIFP President, INIS President, and INIS Board of Directors are responsible for these items. These statements are correct.

However, the application needs to clearly indicate that one individual (probably the IIFP President) is ultimate responsible for actions at the IIFP. Consider adding a sentence which unequivocally states that one individual is ultimately responsible for safety, security, and protection of the environment, and ensure that individual has authority to oversee these responsibilities.

For example, the second full paragraph, first full sentence in Chapter 2 indicates that the COO has overall responsibility throughout the design, construction, startup, and operations of the facility. The third sentence indicates the COO reports to the President of IIFP who in turn reports to the INIS President, who reports to the INIS Board of Directors. This hierarchy of responsibility is important. But it becomes unclear which individual is ultimately responsible for safety, security and the environment at IIFP. A single sentence indicating who is responsible for IIFP actions should resolve this issue.

QA-5 & QA-6C: The revised text supporting this RAI response (LA Section 2.1.3, second paragraph) ends with the sentence, “Both the ESH and QA Managers have the authority to elevate and report any ESH or QA unresolved concern to the IIFP President and to the parent corporate ESH and QA Managers, respectively.” Similar language is also contained in Sections 2.2.7 regarding the QA Manager, and Section 2.2.8 regarding the ESH Manager.

These sections give the impression that the authority of the IIFP President can be superseded by the ESH, and QA Corporate Managers. Please clarify that one individual is ultimately responsible for ESH, QA, and other safety related issues at the IIFP facility, even though other managers may play a role.

Confirm structure of QA and ESH Management

QA-4 & QA-6C: Please confirm whether or not you intend to have an overlap of responsibility between corporate QA and ESH with IIFP QA and ESH.

Clarify lower level management structure

QA: The revised application makes a distinction between the Area Shift Supervisors (LA 2.2.9.2) and the Shift Superintendents (2.2.9.3). The description seems to indicate these individuals do the same task, but the Area Shift Supervisor works during the day and the other one works during the night and weekend shifts. Please clarify if this is correct, or if the Shift Superintendents oversee the Area Shift Supervisors.

Check Possible Typo

QA-6c: The last sentence of revised Section 2.2.2 states, “When the IIFP positions of IIFP ESH and QA Managers are filled, any of the IIFP Facility ESH and QA

responsibilities, duties and authorities that were temporarily being performed by INIS Corporate staff will transfer to the IIFP Corporate ESH and QA Managers."

This sentence ends with the phrase "IIFP Corporate ESH and QA Managers." Prior to this phrase, the word Corporate is consistently used for the INIS management. Please verify that the word Corporate is intended to be used with IIFP.

One Remaining NUREG Criteria

The staff has confirmed that the revised application addresses all the acceptance criteria in NUREG-1520, Chapter 2, except possibly for the fifth bullet on page 2-3 (under criteria for existing facilities). For completeness, please clarify how this 5th bullet has been addressed in the application (ESH implemented via written and approved procedures).

Comments on INIS General Information RAIs

Confirm No Transuranics

RAI GI-7C - Followup: Does INIS wish to add trace quantities of transuranics to their license to enable them to receive depleted uranium which may contain trace quantities of SNM?

Note: LA Section 1.4, second paragraph contains the following text, "IIFP will not store or process Special Nuclear Material (SNM) at the FEP/DUP facility. Therefore, no licenses and authorized uses for SNM are requested. SNM is defined in 10 CFR 70.4, "Definitions," (2008d)." This is the type of language which precluded INIS from receiving the shipments of DUF4 from DOE at the Idaho Falls Facility. Please confirm that you do not wish to add possession limits for small quantities of SNM, which may be present in some DU shipments.

Clarify Possible Inconsistency

GI-7C The second and third paragraphs in LA section 3.1.2.2 appear to be contradictory. One says Type G cylinders won't be used at INIS. The other implies they may be used. Consider revising the text to make it consistent.

Additional Justification for 40 Year License

GI-2: The RAI response clarifies that a 40 year license is being requested. A Part 40 facility has never been granted a 40 year license, although the request is consistent with the principle implemented for Part 70 facilities, see SRM to SECY-06-0186. Since the staff will need to provide a basis for granting a 40 years license in the SER, please consider providing a summary of the rational for requesting this length of license. (Provide an argument the staff can site to support a 40 year license.)

Consider Wording

GI-11: The second sentence in the revised LA text says, "Surface water is **likely** lost …". Consider revising likely to predominately or generally since likely gives the impression that INIS needs to further evaluate how the water is lost (seems to imply the process is currently unknown).

Provide Clarification

GI-9C: In new LA Section 1.7.2.3, please provide the name and capacity of the nearest Hospital. Is it the Lea Regional Medical Center with 240 beds? This information is needed to address the acceptance criteria in NUREG-1520, Section 1.3.3 (second bullet).

CS-5. I understand the response. However, why rely on an indirect measurement of a DUF_6 release (i.e., pressure and temperature increase; DUF-17) when you have the direct measurement (i.e., DUF_6 reaction products detector; DUF-35)? Could the autoclave door interlock be added to DUF-35 safety function (i.e., the autoclave door cannot be opened until there is an "all clear" signal from the DUF_6 detection system)? If not, why?

CS-7. The initiating event for accident sequence 103.25 is defined as "reactor outlet blockage" (see page 4-13 of December 2009 version of ISA Summary) and the response to CS-7 mentions that unreacted H_2 is carried out through the off-gas system. How can the unreacted H_2 be carried out through off gas system when the reactor outlet is blocked? Are there any other situations where the pressure is expected to increase in order to activate DUF-06 (e.g., runaway reaction)?

I agree with the start up purge of the system with N_2. Using N_2 to purge system piping is one of the inherent safer practices recommended by the U.S. Chemical Safety and Hazard Identification Board (http://www.csb.gov/videoroom/detail.aspx?VID=49).

CS-8. Given the consolidation of accident sequences 202.14 and 302.14 into 401.05, does this mean that there is only going to be one UO_2 hopper for the SiF_4 and BF_3 plants? Or each fluoride gas plant will have a UO_2 hopper?

How can the "Area Hazardous Gas Detection System and Alarms" (i.e. IROFS DUF-26, SF4-16, and APS-06) detect a release of solid particles? Is this a function better performed by "Airborne Radiation Detection System and Alarms"? If so, is the radiation emitted from the uranium in UF_4 and UO_2 easily detected? Does it depend on the location of the detectors? The use of the term "and/or" in "Area Hazardous Gas and/or Airborne Radiation Detection System and Alarms" makes the IROFS description confusing.

Can the weld seam be monitored or inspected with the reinforcement plate (APS-05) over it?

Is the safety function of APS-06 described in this response the same as APS-02 described in response to CS-9?