

July 30, 2010

MEMORANDUM TO: Thomas G. Hiltz, Chief  
Advanced Fuel Cycle, Enrichment  
and Uranium Conversion Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

FROM: Matthew Bartlett, Project Manager **/RA/ Y. Faraz for**  
Advanced Fuel Cycle, Enrichment  
and Uranium Conversion Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

SUBJECT: JULY 06 - 08, 2010, SUMMARY OF SITE VISIT TO CONDUCT  
INTEGRATED SAFETY ANALYSIS HORIZONTAL AND VERTICAL  
SLICE AND DISCUSSION DRAFT REQUESTS FOR  
ADDITIONAL INFORMATION WITH INTERNATIONAL  
ISOTOPES INC. (TAC NO. L32739)

On July 6-8, 2010, U.S. Nuclear Regulatory Commission staff met with International Isotopes Inc. staff to discuss the Integrated Safety Analysis documentation for the International Isotopes Fluorine Products Facility proposed to be located in Lea County, New Mexico. The Meeting Summary is enclosed and contains no proprietary or classified information.

Docket No.: 40-9086

Enclosure: As stated

cc:

John J. Miller, CHP  
4137 Commerce Circle  
Idaho Falls, ID 83401

CONTACT: Matthew Bartlett, FCSS/NMSS  
301-492-3110

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SUBJECT: JULY 6-8, 2010, SUMMARY OF SITE VISIT TO CONDUCT INTEGRATED  
 SAFETY ANALYSIS HORIZONTAL AND VERTICAL SLICE AND DISCUSSION  
 DRAFT REQUESTS FOR ADDITIONAL INFORMATION WITH  
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OFFICE	NMSS/AFCB	NMSS/AFCB	NMSS/AFCB
NAME	MBartlett YFaraz for	TRichmond	THiltz YFaraz for
DATE	7/27/10	7/30/10	7/27/10

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## MEETING SUMMARY

### SUMMARY OF CLOSED MEETING WITH INTERNATIONAL ISOTOPES INC. FLUORINE PRODUCTS INC. ON INTEGRATED SAFETY ANALYSIS

LICENSEE: International Isotopes Inc.  
4137 Commerce Circle  
Idaho Falls, Idaho 83401

DOCKET NO.: 40-9086

DATE AND TIME: July 6 to July 8, 2010

LOCATION: Nuclear Safety Associates  
100 Union Valley Rd. Suite #101  
Oak Ridge, Tennessee 37830

ATTENDEES: See attached participant list.

PURPOSE: The purpose of this meeting was to conduct an Integrated Safety Analysis (ISA) horizontal and vertical slice reviews and discuss draft requests for additional information with International Isotopes Inc. (INIS) Fluorine Products Facility (IIFP)

#### DISCUSSION:

The U.S. Nuclear Regulatory Commission (NRC) conducted a site visit in Oak Ridge, Tennessee with INIS and their contractor on July 6-8, 2010. The visit was to review the applicant's onsite ISA documents and to discuss draft requests for additional information (RAIs) regarding the safety review. The NRC provided draft RAIs to the applicant prior to the site visit in order to facilitate the discussions. The RAIs addressed the following areas of review: ISA, Fire, Chemical Safety, Health Physics, Quality Assurance (QA), and Seismic/Structural, see attached.

The applicant began the meeting by providing a slide presentation on the ISA methodology. Following this presentation, the meeting was broken into two separate parts. The first part addressed hazard analyses and the second dealt with structural and seismic issues. The review team conducted a horizontal and vertical slice review of the ISA. The team also conducted several break-out sessions with the applicant to discuss the draft RAIs.

#### Horizontal and Vertical Slice:

The ISA team conducted a horizontal and vertical slice review of the ISA and Process Hazard Analysis (PHA). The reviewers confirmed the methodology used by the applicant to determine the consequences of the accident sequences identified in the PHA is consistent with the information presented in the ISA Summary. The horizontal review revealed that the ISA continues to undergo updates, due in part to the lack of specific design information, which is still under development by the applicant. Updates to the ISA Summary are needed to complete the safety evaluation, which the staff indicated would be requested in the formal RAIs. The vertical

Enclosure

review examined several accident sequences in depth including the applicant's what-if analysis, accident sequences, items relied on for safety (IROFS), method for assigning likelihood and consequence, etc.

The chemical, fire, and ISA reviewers all selected several accident sequences which the applicant described in detail. The staff observed that the applicant used a number of generic IROFS to mitigate multiple distinct accident sequences. Further explanation of these IROFS and how they apply to specific accident sequences may be warranted. Several passive IROFS appeared to be doubly credited for reducing likelihood. The applicant provided additional explanation of its approach in this regard, and the staff indicated it would consider this in its detailed evaluation of the IROFS and provide an RAI if needed.

#### Request for Additional Information:

Break-out sessions were conducted for the NRC reviewers to discuss RAIs with their counterparts on the applicant's review team. Several major issues were discussed.

#### HEALTH PHYSICS:

The reviewer discussed the draft RAIs with particular attention to several important topics. The INIS application states ICRP-68 will be used for airborne activity limits rather than the values contained in Appendix B to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20. This typically requires an exemption to the regulations. INIS indicated it had not been aware of the exemption requirement and would evaluate the best path forward. Discussion concerning the planned ventilation system revealed that additional design characterization was needed before the related RAIs could be addressed. INIS proposed a volumetric free release criterion for the fluoride products based on 10 CFR 40.13, i.e. one twentieth of one percent. This quantity is not typically used as a free release criterion since it was based on the strategic control of national resource materials rather than exposure. A more common standard used by industry for clearance is 30 pCi/g or 1 mrem/yr, which is based on American National Standards Institute/Health Physics Society N13.12-1999. INIS indicated it would evaluate the best release criteria in response to the RAIs. The NRC reviewer also indicated he would need access to the ISA methodology and calculations which were used to conduct the radiation protection accident consequence analysis. INIS indicated the information was available upon request.

#### QUALITY ASSURANCE:

The QA reviewer met with the contractors QA representative to discuss the RAIs. The applicant indicated some information requested in the RAIs was not available during the site visit since the QA program was still under development. Information on how the applicant plans to address certain criteria of the Other QA Elements were needed, in addition to additional information on QA Process Description (QAPD). The NRC indicated the information could be provided in response to the RAIs. Two additional RAIs would be provided to address the QAPD.

#### SEISMIC/STRUCTURAL:

The seismic reviewers examined the areas of seismic, high-wind and tornado hazards, and structural analysis. The review included introduction to preliminary and conceptual documents, interviews with the applicant's staff, examination of cross cutting topics between Structural and the ISA and discussions of the draft RAIs, to ensure mutual understanding of the issues. The applicant presented their approach for the Aircraft Hazard and Natural Gas Pipeline Explosion

Hazard analysis. The applicant indicated the information to address portions of the RAIs would be available once the detailed design contractor begins work and the site surveys are completed. The applicant indicated the geophysical survey is underway in Lea County, New Mexico to verify the location of various underground and above ground utilities. An additional RAI would be provided to clarify the codes and standards that the facility would be built to meet.

#### FIRE:

Draft fire protection RAIs were discussed with the applicant's fire protection engineer. The applicant stated they have a clear understanding of the RAIs and are beginning to formulate their response. Draft fire protection RAI FS-7 will be deleted. The applicant specified that the dust present in the dust collection area is contained, non-combustible, and non-flammable. A new fire protection RAI will be added on the characterization of the hazard posed by nearby natural gas pipelines. The applicant is aware of the analysis that is needed and is formulating a response.

#### CHEMICAL:

The applicant demonstrated a clear understanding of the draft RAIs. Based on the discussions they were able to demonstrate that Chemical Safety RAIs 9, 10, 15, and 19 were completely addressed with information already on the docket. Therefore, these RAIs will be removed from the formal RAIs. The applicant indicated that calculations referenced in the ISA Summary for mitigation do not exist. These calculations would be developed once additional design information becomes available. Several inconsistencies observed in the ISA were reported as corrected in updated versions of the ISA, which have not been provided to the NRC. The applicant indicated the document updates would be provided as part of the response to the RAIs.

#### Document Review:

The NRC staff reviewed the following documents:

- FEP/DUP Accident Consequence Evaluation, Rev. A
- Accident Consequence Evaluation Worksheets, NSA-TR-10-10, Rev. A
- Process Hazard Assessment (PHA), NSA-TR-10-11, Rev. A
- Design Basis Analysis and Characterization of Hurricane Winds, Tornado and Straight Winds – Revision A, June 15, 2010 – Draft
- Characterization of Floods for the IIFP Facility – Draft
- Methodology to Characterize a Natural Gas Pipeline Explosion in the Area of the IIFP Facility – Draft
- Design Consideration for the Snow Load – Draft
- Aircraft Hazard Risk Determination – Rev. A, July 2010
- 640 Acre Plan – Preliminary Utility Easement
- 40 acre Plot Plan Natural Gas Line Exposure for Explosion Analysis
- DUF6 Autoclave Building and DUF4 Process Building – Major Equipment Plans (Conceptual) – Drawing No. 500-M-1201 Revision B
- DUF6 Autoclave Building and DUF4 Process Building – Structural Elevations (Conceptual) – Drawing No. 500-M-1202 Revision B
- Major Equipment and Building Plans for Fluorine Extraction Process (FEP) Production Facility – Conceptual – Drawing No. 400-M-1201 Revision B

- FEP Production Facility Structural Elevations - Conceptual – Drawing No. 400-M-1202  
Revision A

Closing Remarks:

The NRC requested the applicant to provide the PHA and ISA Slide Presentation. These documents have been included in this meeting summary as attachments.

Attachments:

1. Participants list
2. PHA
3. ISA Slide Presentation



**UNITED STATES NUCLEAR REGULATORY  
COMMISSION HEADQUARTERS**

**MEETING ATTENDEES**

U.S. Nuclear Regulatory Commission (NRC) Horizontal and  
Vertical Slice Review of Integrated Safety Analysis and Discuss  
Draft Requests for Additional Information

July 6-8, 2010  
Rockville, Maryland

<b>Name</b>	<b>Organization</b>
John Miller	INIS
James Thomas	Nuclear Safety Associates (NSA)
Thomas Thompson	NSA
Sheri Stephenson	NSA
Marshall Shepherd	NSA
Donnie Chumbler	NSA
Ron Green	NSA
Tammy Wheeler	NSA
Daniel Theisen	NSA
Carol Mason	NSA
Andrew O'Connell	NSA
Tena Graben	NSA
Thomas Hiltz	NRC
Yawar Faraz	NRC
James Downs	NRC
Matthew Bartlett	NRC
Jonathan DeJesus	NRC
Lydiana Alvarado	NRC
Gregory Chapman	NRC
Madhumita Sircar	NRC
Damaris Arroyo	NRC
Asad Chowdhury	Southwest Research Center