

January 14, 2011

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 A. Bartlett, Project Manager */RA/*
Advanced Fuel Cycle, Enrichment
and Uranium Conversion Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

SUBJECT: NOVEMBER 15-16, 2010, TELEPHONE CALL TO DISCUSS
THE USE OF PASSIVE ENGINEERED ITEMS RELIED ON FOR
SAFETY FOR EXTERNALLY INITIATED EVENTS AND
NATURAL PHENOMENON (TAC NO. L32739)

On November 15-16, 2010, the staff conducted two conference calls with International Isotopes, Inc. (INIS) and its contractor. The purpose of the calls was to discuss implementation of the guidance in NUREG-1520, Revision 1, for the use of passive engineered items relied on for safety (IROFS). The discussion centered on identifying the appropriate likelihood index for externally initiated events which may cause system failure. The U.S. Nuclear Regulatory Commission's staff and INIS agreed that under certain circumstances, the default value for passive engineered IROFS (i.e., 10^{-3}) listed in Table A-10 of the NUREG is not appropriate. As a result of the discussion, the staff will update the request for additional information which addresses passive engineered IROFS; and INIS will review and modify applicable portions of their Integrated Safety Analysis.

Enclosed is the telephone summary for your use. The summary contains no proprietary or classified information.

Enclosure:
As stated

Docket No. 40-9086

cc: Mr. John J. Miller, CHP
International Isotopes, Inc.
4137 Commerce Circle
Idaho Falls, ID 83401

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 A. Bartlett, Project Manager **/RA/**
Advanced Fuel Cycle, Enrichment
and Uranium Conversion Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

SUBJECT: NOVEMBER 15-16, 2010, TELEPHONE CALL TO DISCUSS
THE USE OF PASSIVE ENGINEERED ITEMS RELIED ON FOR
SAFETY FOR EXTERNALLY INITIATED EVENTS AND NATURAL
PHENOMENON (TAC NO. L32739)

On November 15-16, 2010, the staff conducted two conference calls with International Isotopes, Inc. (INIS) and its contractor. The purpose of the calls was to discuss implementation of the guidance in NUREG-1520, Revision 1, for the use of passive engineered items relied on for safety (IROFS). The discussion centered on identifying the appropriate likelihood index for externally initiated events which may cause system failure. The U.S. Nuclear Regulatory Commission's staff and INIS agreed that under certain circumstances, the default value for passive engineered IROFS (i.e., 10^{-3}) listed in Table A-10 of the NUREG is not appropriate. As a result of the discussion, the staff will update the request for additional information which addresses passive engineered IROFS; and INIS will review and modify applicable portions of their Integrated Safety Analysis.

Enclosed is the telephone summary for your use. The summary contains no proprietary or classified information.

Enclosure:
As stated

Docket No. 40-9086

cc: Mr. John J. Miller, CHP
International Isotopes, Inc.
4137 Commerce Circle
Idaho Falls, ID 83401

DISTRIBUTION:

FCSS r/f Y. Faraz, NMSS R. Wescott, NMSS D. Damon, NMSS

ML103230080

OFFICE	AFCB	AFCB	AFCB
NAME	MBartlett	LAllen	THiltz
DATE	12/1/10	12/1/10	1/14/11

OFFICIAL RECORD COPY

Telephone Conference Call Summary

International Isotopes, Inc. License Application Schedule

Dates and Times: 1:00 pm - 2:00 pm, November 15, 2010
1:00 pm - 2:00 pm, November 16, 2010

Call Participants:	<u>NRC</u>	<u>Applicant</u>
	Thomas Hiltz, NMSS	Steve Laflin, INIS
	Yawar Faraz, NMSS	John Miller, INIS
	Matthew Bartlett, NMSS	Jim Thomas, INIS
	Rex Wescott, NMSS	Ron Green, INIS
	Dennis Damon, NMSS	et. al.

Background

The Integrated Safety Analysis (ISA) presented by International Isotopes, Inc (INIS) uses passive engineered items relied on for safety (IROFS) to reduce the likelihood index for multiple events listed in the ISA Summary. In general this methodology is consistent with guidance in NUREG-1520, Revision 1, Chapter 3, Appendix A, Table A-4 (Table A-4). However, the NRC staff identified several instances where passive engineered IROFS did not appear to be applied correctly to certain accident sequences. These accident sequences involve initiating events that are external to the facility or the system. The examples discussed during the call involved seismic events and rupture of a process vessel during maintenance.

In both of the examples discussed, the applicant sought to apply a likelihood index of 10^{-3} , derived from Table A-4 to the sequence. This likelihood value cannot necessarily be applied to events that are initiated external to the facility or the system, since the default value assumes failure during designed operations.

For natural phenomena-initiated events, the NRC staff indicated that the applicant should apply the guidance in the NUREG-1520, Revision 1, Chapter 3, Annex to Appendix D (Annex). INIS noted that the guidance for seismic events only results in a 10^{-4} , and the ISA methodology requires a 10^{-5} for highly unlikely. INIS proposed using the building as passive engineered IROFS with a likelihood of 10^{-3} , drawn from Table A-4, to reach highly unlikely. However, building features such as design, internal containers, emergency response, and other features listed in the Annex are considered by the NRC to provide an additional likelihood index of 10^{-1} for natural phenomena-initiated events, providing a basis for determining that the consequences are highly unlikely.

A secondary example discussed, involved a passive engineered IROFS being assigned for an externally-initiated event, associated with a surge vessel. INIS indicated there were administrative procedures which would ensure the vessel was evacuated during maintenance and limit the type of equipment lifted over the vessel. The NRC staff noted that such administrative procedures were generally assigned as IROFS to comply with the performance requirements.

The NRC recommended that INIS review the accident sequences, which involve initiating events that are external to the facility or the system; yet take credit for passive engineered IROFS that can fail as a result of the initiating event.

PRINCIPAL CONTRIBUTOR

Matthew Bartlett