INL USQ PROCESS
POTENTIAL INADEQUACY IN THE SAFETY ANALYSIS (PISA) FORM
(DO NOT USE FOR PROPOSED CHANGES)

Facility or Activity: Advanced Test Reactor

USQ Process No.: RTC-USQ-2007-103

Subject: TRA-634 Hazard Categorization With and Without Temporary Experiment Storage

Describe the New Information/Discovery:

EDF TRA-1554 Revision 3 (May 2001) categorizes TRA-634 as a Radiological - Low facility (i.e., Less than Hazard Category 3 (LTHC3)), excluding experiment casks and temporary ATR experiment storage (TRA-1554 Rev. 3, TRA-99012). As part of the ATR Upgraded Final Safety Analysis Report (SAR-153) 2002 annual update temporary experiment storage in TRA-634 was incorporated into the ATR safety basis. The ATR safety basis, however, only addresses hazards and control of TRA-634 related to temporary experiment storage. SAR-153 Section 9.5.4 states that "TRA-634, other than during the time this facility is being used to store experiments, is not within the scope of the UFSAR." Hence, when an experiment is stored in TRA-634 the safety basis in Section 9.5.4 governs use and control of this building. When no experiment is present, use of TRA-634 is considered as a non-nuclear facility (LTHC3) based on its categorization in EDF-1554 Rev. 3, and has been managed and used by ATR Operations.

LWP-18005 identifies INL LTHC3 facilities, facility managers, and lists documents supporting the facility classification. Although TRA-634 is excluded from the ATR SAR when not storing experiments, it is not identified in LWP-18005 as a LTHC3 facility. Hence, identification of the facility manager and hazard classification documents are not maintained by LWP-18005. A review of the prior source term determination documented in TRA-99012 concluded that the prior total TRA-634 inventory of radioactive material was approximately 6% of the Hazard Category 3 threshold criteria.

References:

- TRA-1554 Revision 3, "Review of the Test Reactor Area (TRA) Facilities to Identify the Hazard Categorization in Accordance with Department of Energy (DOE) Orders and Notices," June 2001.
- TRA-99012, "TRA-634 Facility Hazards Characterization," March 2000.
- LWP-18005 Revision 1, "INL LTHC3 Radiological Facilities and Facility Managers," effective date 11/16/2006.

Identify the applicable safety basis document(s) (e. g., DSA, SAR, BIO, TSRs, etc.):

SAR-153 "Upgrade Final Safety Analysis Report for the Advanced Test Reactor"
TSR-186 "Technical Safety Requirements for the Advanced Test Reactor"

I. PISA ASSESSMENT

a. Is there a potential inadequacy in the analytical methodology and/or tools used in the safety basis?
☐ Yes ☒ No

b. Is there a potential discrepancy between the safety basis assumptions, provisions, or conditions, in the accident analysis and the facility operation or parameters?
☐ Yes ☒ No

c. Is the actual physical condition of the facility different than as described in the safety basis (discrepant as-found condition)?
☐ Yes ☒ No

d. Has an actual or postulated operational event or incident revealed a potential inadequacy in the safety basis?
☐ Yes ☒ No

e. Is this an activity or condition not analyzed in the existing safety basis?
☐ Yes ☒ No

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Provide an explanation of the assessment result:

The nuclear facility safety basis for temporary storage of ATR experiments in building TRA-634 is included in SAR-153. The analyses and evaluations for experiment storage are also very likely to remain conservative even considering conditions associated with non-experiment storage (the bounding analysis for radiological release from an experiment failure is very conservative). The safety basis in SAR-153 was reviewed and approved by the DOE, and the requirements of the safety basis have been implemented in facility procedures. DOP-4.8.74 controls experiment movement and storage in TRA-634. The frequency of cask storage in TRA-634 assumed in the safety basis analysis is conservative compared to actual storage.

The safety basis for TRA-634 does not directly address conditions when no experiment is being stored. Also, use of TRA-634 for non-experiment hazardous material storage, including radiological material, has not been rigorously controlled. However, the mission of the TRA-634 storage facility has not significantly changed since preparation of the radiological source term determination (TRA-99012) and the facility hazard categorization (EDF-1554). ATR Operations conducted a walkthrough of TRA-634 and compared existing items stored in the building with those previously included in the radiological source term determination. The walkthrough confirmed that currently stored items are similar to those that were present at the time the TRA-99012 determination was prepared and, therefore, the existing radiological inventory would be of the same order of magnitude. Since the radioactive material inventory in TRA-99012 represents approximately 6% of the Hazard Category 3 threshold criteria, it is highly unlikely that the criteria are currently challenged.

Because the nuclear facility safety basis is conservative and not significantly impacted by the lack of a clear tracking of the LTHC3 radiological inventory stored in TRA-634, there is no challenge to the nuclear facility safety basis in SAR-153. Furthermore, it is highly unlikely that the non-experiment radioactive material inventory currently stored in TRA-634 challenges the Hazard Category 3 threshold criteria. Therefore, this concern is not a PISA.

The safety basis for TRA-634, however, does not acknowledge it as a LTHC3 facility when no experiment is being stored. This represents a gap in management of this building for non-experiment storage that needs to be resolved. ATR Operations is in the process of updating the inventory of TRA-634. Management of this building will also likely be resolved by incorporating full time use of TRA-634 for storage into the ATR safety basis.

G. L. Sharp USQ Evaluator Print/Type Name	USQ Evaluator Signature	2/8/2007 Date
M. B. McDonough Nuclear Facility Manager Print/Type Name	Nuclear Facility Manager Signature	2/8/2007 Date

If the answer to ALL of the assessment questions above is No, file the completed form. Do not complete Section II, III, or IV.
If the answer to any one of the assessment questions is Yes, there is a potentially inadequate safety analysis (PISA):

- Nuclear Facility Manager document actions (Section II), including interim operating restrictions, taken to place or maintain the facility in a safe condition.
- Nuclear Facility Manager execute reporting process per MCP-190 or AWP-3.1, for PISA.
- USQ evaluator proceed to Section III.

II. DOCUMENT ACTIONS TAKEN TO PLACE OR MAINTAIN FACILITY IN A SAFE CONDITION AND PROVIDE THE BASIS FOR THE SELECTION OF ANY INTERIM CONTROLS