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

Facility or Activity: NMIS

USQ Process No.: USQ-RTC-2008-086

Subject: ETR/GETR Control Rod Enrichment

Describe the New Information/Discovery:

During review of an Engineering Design File (EDF) to support transfers of ETR/GETR fuel elements from NMIS, it was noted that the value reported in the EDF for U-235 enrichment of the ETR/GETR control rods differed from the value reported in the safety basis. The EDF reported an enrichment of 93%; however, Section 6.3.2.2 of SAR-154 states that the enrichment is 35%.

LMITCO Internal Report, INEEL/INT-98-01028, "Criticality Safety Evaluation for the Nuclear Materials Inspection and Storage Building – for Non-ATR Fissile Material Only" is the criticality safety evaluation (CSE) referenced in SAR-154 for ETR/GETR fuel. Review of the CSE identified that it also reports that the ETR/GETR controls rods have a U-235 enrichment of 35%; however the analysis was completed using the U-235 loading of 520 g and 93% enrichment of the standard elements.

Review of Safeguards and Security records indicate that the 230 g U-235 content of the ETR/GETR control rods reported in the safety basis is accurate, but that the 35% enrichment is not. The enrichment of the ETR/GETR control rods is indeed 93%.

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

SAR-154, "Safety Analysis Report for the Nuclear Material Inspection and Storage (NMIS) Facility TRA-621."
TSR-154, "Technical Safety Requirements for the Nuclear Material Inspection and Storage (NMIS) Facility TRA-621."

I. REASONABILITY DETERMINATION (Reasonability determinations made as part of the ATR Design Basis Reconstitution effort may be documented per SP-10.2.4.9)

Is it reasonable that the potential for an inadequate safety analysis exists based on the new information or discovery described above? ☐ Yes ☒ No

If "Yes," proceed to Sections II, III, and IV.
If "No," provide an explanation and basis for the reasonability determination.

Criticalities involving ETR/GETR fuel in the NMIS facility are analyzed scenarios in the safety basis. The probability of a criticality accident is maintained as extremely unlikely by administrative controls generated by the double contingency analysis. The safety basis envelopes the handling of ETR/GETR control rods with the handling of ETR/GETR elements because the control rods have a lower U-235 content (a correct assumption) and a supposed lower enrichment (an erroneous assumption). U-235 content and enrichment of ETR/GETR fuel elements and control rods which have been stored at the NMIS facility has been confirmed through review of the Safeguards and Security inventory. Despite the identification of the higher enrichment for the control rods, the handling of the ETR/GETR control rods is still enveloped by the handling of the ETR/GETR elements.

Because the ETR/GETR control rods are enveloped by the ETR/GETR elements, the erroneous reporting of the ETR/GETR control rod U-235 enrichment is not a potential for an inadequate safety analysis.

Anne K. McCartin / John C. Chapman USQ Evaluator Print/Type Name	AK McCartin / JC Chapman USQ Evaluator Signature	2-14-08 Date
Max M. Heberling Nuclear Facility Manager Print/Type Name	M Heberling Nuclear Facility Manager Signature	2/14/08 Date

If the answer to the question above is "No," file the completed form. Do not complete Section II, III, or IV.

If the answer to the question above is "Yes," complete Section II, III, and IV.