International Isotopes Fluorine Products

International Isotopes Fluorine Products, Inc. (IIFP)
A Wholly Owned Subsidiary of
International Isotopes, Inc. (INIS)

Fluorine Extraction Process & Depleted Uranium De-conversion (FEP/DUP) Plant

License Application

Chapter 5
Nuclear Criticality Safety

Revision B
October 13, 2011

5 NUCLEAR CRITICALITY SAFETY

The International Isotopes Fluorine Products, Inc., (IIFP) Facility does not possess or process enriched uranium or other fissile material outside of check-sources and various standards for radiological measurement calibration. As such, no criticality safety programs or procedures are maintained or implemented at the facility; however, the IIFP Integrated Safety Analysis (ISA), as documented in the ISA Summary, did evaluate the potential for a criticality accident at the IIFP Site. The only potential method of having a criticality accident at the facility involves the inadvertent receipt and processing of fissile materials, which is addressed in the ISA.

Controls are established to verify that no enriched uranium hexafluoride (UF_6) is received and processed at the facility. The cylinders processed at the IIFP Facility are the large, 14-ton or 10-ton UF_6 tails cylinders, not the 2 ½-ton enriched product cylinders. Processing equipment at the plant, namely the autoclaves, is not sized to handle these smaller cylinders, so there is no method to feed enriched material into the processing plants. Additionally, each cylinder will be scanned with a detector to verify that the incoming cylinders do not contain fissile materials. The scan does not determine the shipper's assay exactness for the cylinder contents, but does provide a reasonable indication if the cylinder is depleted or enriched. Both the receipt inspection and the scan for the assay at the Facility Site are maintained as Items Relied on for Safety (IROFS) controls. Also, feed suppliers (UF_6 enrichment plants) have redundant and diverse controls on enrichment that prevent mistakenly shipping fissile material instead of tails, which makes it unlikely that the IIFP Facility will ever receive fissile material. As a result, all scenarios associated with a criticality accident are show to be not credible.

REFERENCES

No Reference Entries