

Irradiated Fuels Examination Laboratory



Description

The Irradiated Fuels Examination Laboratory (IFEL), Building 3525, was designed and constructed in 1963 to permit the safe handling of increasing levels of radiation in the chemical, physical, and metallurgical examination of nuclear reactor fuel elements and reactor parts. A two-story building with a partial basement, the IFEL is classified a Category 2 nuclear facility.

Capabilities

- Receipt and handling of irradiated materials (fuel or nonfuel in shielded casks)
- Capsule disassembly
- Nondestructive and destructive testing of irradiated materials
- Full-length light water reactor fuel post-irradiation examination
- Repackaging of spent nuclear fuel
- Packaging and shipment of irradiated materials (on site and off site)
- Examination and testing activities such as metrology; metallographic sample preparation by sectioning, grinding, and polishing; optical and electron microscopy; gamma spectrometry; and other physical and mechanical properties evaluations as needed
- Safety testing of high temperature gas reactor (HTGR) fuel
- Automated sorting and analysis of HTGR fuel particles using gamma spectrometry
- Testing grid pinching and lateral constraint effects on spent nuclear fuel during transportation

Specifications



3 main hot cell banks with a total of 13 workstations and 15 pairs of manipulators

Metallography cell

Irradiated Microsphere Gamma Analyzer cell

Decontamination cell with an in-cell crane and 4 pairs of manipulators

Hot equipment storage area

4-6 glove boxes, 3 radiological laboratory hoods and 1 non-radiological hood for sample preparations



Viewing windows of lead glass filled with mineral oil



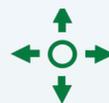
High-density concrete used for front, rear, and top walls, lined with stainless steel



Core Conduction Cool-down Test Facility can test/monitor radioactive samples under controlled thermal conditions



Two small-diameter horizontal transfer stations are used for small objects, while larger items are transferred through the shielded airlock door system



Master-slave manipulators

3-ton crane with a remote manipulator capable of traveling the length of the cell



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