Sodium Component Testing at SSFL

Where Was The Testing Done?

- **Sodium Component Test Installation (SCTI)**
  - Used to test large steam generators and other sodium system components
  - Supplied steam to an on-site cogeneration facility.
  - Was the largest steam generator test facility in the world.

- **Sodium Pump Test Facility**
  - Tested large scale sodium pumps.
  - Largest sodium pump test facility in the world.
  - Capable of circulating 55,000 gallons of sodium per minute at temperatures up to 1,100°F.

- **Liquid Metal Development Laboratory (LMDL 1 & 2)**
  - Used for the development of sodium systems instrumentation, friction and wear testing of bearings and seals.
  - Developed and tested safe heat removal systems.

- **Large Leak Test Facility**
  - Investigated safe operating margins for sodium to water steam generators.
  - Improved our knowledge of sodium system safety.

- **Small Component Test Loop**
  - Used to test small scale sodium pumps, valves and flow control devices.
  - Capable of 3,500 gallons per minute at 1,200°F.

- **Chemistry and Instrumentation Laboratory**
  - Used to support tests and equipment.
  - Investigated metal samples and maintain instruments.
  - Maintained and calibrated over 7,000 instruments.

What Was Tested?

Why Was Sodium Used?

- Excellent heat transfer properties.
- Has low operating pressure at typical temperatures.
- Relatively low melting point.
- Can be pumped using electromagnetic energy.

Why Area IV?

- Area IV was an isolated site close to utilities and skilled workers.
- The site was the center of excellence for liquid metal technology development for the U.S. Department of Energy.
- Interest in nuclear power declined and sodium component testing was completed in 2001.
- Nearly all sodium test facilities have been removed.

Why Was Testing Done?

- Testing defined the safety and reliability of the components.
- Sodium components were tested to support the National effort to develop nuclear power.
- Sodium components were tested in a non-nuclear environment to eliminate personnel exposure to radioactive materials.
- Practices and procedures to diagnose and repair equipment were developed to improve worker and system safety.