St. Lucie Unit 1

Pierce, FL

Owner: Florida Power & Light Company

Reactor type: Pressurized water reactor

Commercial operations began: December 21, 1976

Outage dates (duration): February 26, 1983 to May 16, 1984 (1.2 years)

Reactor age when outage began: 6.2 years

Fleet status: Youngest of three reactors owned by the company

Synopsis

Unit 1 was shut down for a refueling outage. Workers discovered degraded components inside the reactor vessel that extended the outage's duration. They removed the damaged thermal shield and repaired the damaged core barrel support.

Process Changes

None.

Commentary

The majority of the extended outages at U.S. nuclear power plants followed long periods during which reactors continued to operate with safety problems known to and tolerated by the plant owner and the NRC. This specific outage is different in that the safety problem was unknown to both the plant owner and the NRC when the outage began and, when the problem was discovered, it was corrected before the reactor was restarted.

NRC Systematic Assessment of Licensee Performance (SALP) History

Date	Operations	Radiological Controls	Maintenance	Surveillance Testing	Emergency Preparedness	Fire Protection	Security	Outage Management	Quality Assurance	Licensing	Training
01/1981	2	2	2	2	2	2	2	2	2	n/a	n/a
01/1983	1	1	2	1	2	2	2	1	n/a	2	n/a
12/1983	1	1	1	1	2	1	2	1	2	2	n/a
02/1985	1	1	1	1	1	2	1	1	2	1	n/a
08/1986	1	2	1	1	2	2	2	2	2	1	1
03/1988	1	2	1	1	1	n/a	2	1	1	1	1

	Operations	Radiological Controls	Maintenance/Surveillance Testing	Emergency Preparedness	Security	Engineering and Technology	Safety Assessment and Quality Verification
09/1989	1	2	1	1	2	1	1
01/1991	1	1	2	1	1	1	1
07/1992	1	1	1	1	1	1	1

	Operations	Maintenance	Engineering	Plant Support
02/1994	1	1	1	1
02/1996	2	2	1	1

NOTE: A rating of 1 designates a superior level of performance where NRC attention may be reduced. A 2 rating designates a good level of performance with NRC attention at normal levels. A rating of 3 designates an acceptable level of performance where increased NRC attention may be appropriate. A rating of n/a was given in those areas that were not assessed on that date.

Details

February 26, 1983: Operators manually shut down the reactor for a planned refueling outage.[1]

April 1983: Workers discovered that the thermal shield inside the reactor vessel was damaged. Florida Power & Light (FP&L) decided to remove rather than repair the thermal shield. The effort was projected to extend the refueling outage past the scheduled May 1 restart date to sometime in July 1983.[2]

1983: The damaged thermal shield was removed from the reactor vessel. In addition, four lugs had separated from the core support barrel with through-wall cracking in the region adjacent to the lugs. FP&L arrested the cracks by drilling crack-arrestor holes that were then sealed by expandable plugs.[3]

May 16, 1984: Unit 1 was connected to the electrical grid, ending its extended outage.[4]

Notes

[1] *Nuclear News*. 1984. Outage notes, July.

[2] *Nuclear News*. 1983. Outage notes, June.

[3] Bonaca, M.V. 2003. Report on the safety aspects of the license renewal application for the St. Lucie Nuclear Plant Units 1 and 2. Letter to Nils J. Diaz, chairman, Nuclear Regulatory Commission, September 17. Mario V. Bonaca was chairman of the Advisory Committee on Reactor Safeguards at the Nuclear Regulatory Commission.

[4] *Nuclear News*, 1984.