# Oyster Creek

*Forked River, NJ*

**Owner:** General Public Utilities

**Reactor type:** Boiling water reactor

**Commercial operations began:** December 1, 1969

**Outage dates (duration):** February 12, 1983 to November 1, 1984 (1.7 years)

**Reactor age when outage began:** 13.2 years

**Fleet status:** Oldest of three reactors owned by the company

## Synopsis

Oyster Creek shut down in February 1983 for what was planned as an 11-month outage to install modifications required by the NRC in the wake of the 1979 accident at Pennsylvania's Three Mile Island (TMI), primarily associated with the torus. In March and June 1983, the NRC issued orders that required Oyster Creek's owner, General Public Utilities (GPU)—which also owned TMI—to install seven additional TMI-related modifications prior to restarting the reactor. The length and cost of the outage nearly doubled as a result.

## Process Changes

None.

## Commentary

Oyster Creek represents as close to a "no-fault" extended outage as can probably be achieved. The need for and ultimate length of this outage were driven by lessons learned from TMI, not by performance problems.

Two considerations prevent the "no-fault" label. First, many of the items on the restart list were concerns that probably should have been identified and fixed prior to or during Oyster Creek's design and construction. For example, the metal torus intended to contain water for the 40-year life of the plant was not provided with a protective coating despite the fact that corrosion was a known degradation mechanism long before Oyster Creek was built. Second, all other nuclear power plant owners in the United States were able to resolve TMI-related issues without an extended outage. True, GPU may have been a little distracted by its problems at TMI, but few other companies needed an outage of nearly two years to address TMI-related modifications.

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/1980 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | n/a | n/a |
| 3/1981 | 2 | 2 | 2 | 2 | 2 | 1 | 3 | 2 | 2 | n/a | n/a |
| 6/1982 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | n/a | 2 | n/a |
| 6/1983 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | n/a | 2 | n/a |
| 10/1984 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | n/a | 2 | n/a |
| 9/1985 | 2 | 1 | 3 | 2 | 1 | n/a | 2 | 2 | n/a | 2 | n/a |
| 6/1987 | 2 | 2 | 2 | 1 | 1 | n/a | 1 | 2 | 2 | 2 | 1 |
| 5/1988 | 3 | 2 | 2 | 2 | 2 | n/a | 1 | n/a | 2 | 2 | 2 |

| | Operations | Radiological Controls | Maintenance/Surveillance Testing | Emergency Preparedness | Security | Engineering and Technology | Safety Assessment and Quality Verification |
|---|---|---|---|---|---|---|---|
| 9/1989 | 3 | 3 | 2 | 2 | 2 | 2 | 2 |
| 9/1990 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |

| | Operations | Maintenance | Engineering | Plant Support |
|---|---|---|---|---|
| 8/1991 | 2 | 2 | 2 | 2/1/2 |
| 11/1992 | 2 | 2 | 2 | 2/1/2 |
| 1/1994 | 2 | 2 | 1 | 2 |
| 8/1995 | 1 | 2 | 1 | 2 |

NOTE: A rating of 1 designated a superior level of performance where NRC attention may be reduced. A 2 rating designated a good level of performance with NRC attention at normal levels. A rating of 3 designated an acceptable level of performance where increased NRC attention may be appropriate.

## Details

*February 12, 1983*: GPU shut down Oyster Creek for a planned 11-month refueling and maintenance outage during which the company planned to perform 180 different tasks at an estimated cost of about $100 million.[1] Some of the major tasks included adding a second cable spreading room, replacing the control room alarm system, lining the torus with a protective coating, renovating the main control room, upgrading the torus support features, and refurbishment of the main generator.[2]

*March 14, 1983*: The NRC ordered GPU to complete TMI-related tasks by specified dates; six such tasks would need to be completed prior to restart.[3]

*June 6, 1983:* Chlorine gas leaking from a broken pipe forced the evacuation of 500 workers from the plant site and sent 22 workers to area hospitals.[4]

*June 17, 1983:* The NRC ordered GPU to install a post-accident sampling system prior to restart.[5]

*October 14, 1983:* GPU released INPO's assessment of performance at Oyster Creek, which rated average in four areas and below average in two areas. INPO rated Oyster Creek's overall performance at -3 on a scale of -15 to +15.[6]

*November 1, 1984:* Oyster Creek was connected to the electrical grid, ending the extended outage, which took nine months longer than expected and cost $80 million more than the original $100 million estimate; about $70 million of the cost went to torus modifications.[7] The $180 million total price tag corresponds to nearly $344 million in 2006 dollars.[8]

# *Notes*

[1] Klucsik, D. 1983. GPU Nuclear, February 9.

[2] *Nucleonics Week*. 1983. JCP&L's Oyster Creek Station has just begun an 11-month shutdown, February 17.

[3] Crutchfield, D.M. 1983. Order confirming licensee commitments on post-TMI related issues (generic letters 82-05 and 82-10). Letter to P.B. Fieldler, vice president and director, GPU Nuclear, March 14. Dennis M. Crutchfield was chief of operating reactors branch #5 at the Nuclear Regulatory Commission.

[4] Associated Press. 1983. Broken pipe blamed for gas leak at idled nuclear plant, June 7.

[5] Crutchfield, 1983.

[6] Laverty, J. 1983. GPU Nuclear, October 14.

[7] Galvin, C. 1984. Oyster Creek is back in service after a 20-month, $180-million outage. *Nucleonics Week*, November 8.

[8] Bureau of Labor Statistics. 2006. Inflation calculator. Washington, DC: U.S. Department of Labor. Online at *http://data.bls.gov/cgi-bin/cpicalc.pl*.