Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

July 25, 2007

Mr. Stuart A. Richards, Deputy Director
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Voluntary Groundwater Protection Submittal

DOCKET NO: 50-219

Dear Mr. Richards:

The nuclear industry, in conjunction with the Nuclear Energy Institute, developed a questionnaire to facilitate the collection of groundwater data at commercial nuclear reactor sites. The objective of the questionnaire is to compile baseline information about the current status of site programs for monitoring and protecting groundwater and to share that information with NRC.

By letter dated July 31, 2006, from Timothy S. Rausch (but signed by James J. Randich) to you, AmerGen Energy Company submitted its questionnaire for the Oyster Creek nuclear plant. By letter dated April 10, 2007, I informed Mr. Luis Reyes on the NRC staff about an error in that questionnaire; namely, AmerGen's statement about no past groundwater events requiring remediation being inaccurate because of at least one past groundwater event requiring remediation at Oyster Creek. By letter dated May 7, 2007, Mr. Reyes responded to me, pointing out that AmerGen's voluntary submittal had indeed been incomplete and inaccurate, but it failed to constitute a material false statement because NRC hadn't relied upon the information in making any regulatory decisions. Duly noted. This letter does not convey an allegation about more incomplete and inaccurate information although it does point out additional ways in which AmerGen's voluntary submittal was incomplete.

Instead, this letter constitutes our voluntary submittal on groundwater protection at Oyster Creek. I checked the rules on voluntary groundwater submittals and find nothing limiting voluntary submittals to NRC's licensees or NEI's members. In fact, there are no rules at all. And even if rules existed, since the NRC isn't using the information within (or without, apparently) the voluntary submittals to make regulatory decisions, what difference would it make.

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If the NRC elects someday to bestow a prize, like a toaster oven, to the provider of the voluntary submittal that is least inaccurate and least incomplete, we hope this submission makes us eligible for that drawing. We could really use a toaster oven for bagels and pop-tarts.

Our voluntary groundwater submittal provides NRC with information about several past spills, leaks, and releases at Oyster Creek – all curiously omitted from AmerGen's voluntary submittal.[1] One such event, discovered on February 10, 1981, involved an estimated 10,000 gallons of radioactively contaminated water leaking into the ground through the new radwaste building's concrete. There are also spills, leaks, and releases caused by:

- outside pipes containing radioactively contaminated water freezing and rupturing (two events, dates unspecified)
- a leak of radioactively contaminated water from the spent fuel pool cooling system into the reactor building closed cooling water system and then from the reactor building closed cooling water system into the discharge canal (date unspecified)
- an unplanned, uncontrolled, unmonitored discharge of radioactively contaminated water on February 6, 1975, when backwash valves on the condenser waterbox were mistakenly left open while inspecting for condenser tube leaks
- leaks of radioactively contaminated water from piping (four separate events)
- leaks of radioactively contaminated water from valves (two events)

I cannot personally vouch for the accuracy of this information, but I assume it is truthful. After all, it came from a Nuclear Regulatory Commission final report following several years of effort by the agency; the "Integrated Plant Safety Assessment Systematic Evaluation Program: Oyster Creek Nuclear Generating Station," (NUREG-0822), dated January 1983. Excerpts are attached.

As Mr. Randich, or Mr. Rausch, wrote last year, "This submittal contains no new regulatory commitments." It doesn't even recycle any old ones. But it doesn't matter since the NRC told me, in writing, that commitments aren't enforceable or binding.

Sincerely,

David Lochbaum
Director, Nuclear Safety Project

Attachment: attached

[1] Thus, UCS should be awarded a toaster oven by the NRC before AmerGen gets one.

NUREG-0822

Integrated Plant Safety Assessment
Systematic Evaluation Program

Oyster Creek Nuclear Generating Station

GPU Nuclear Corporation and
Jersey Central Power & Light Company

Docket No. 50-219

Final Report

U.S. Nuclear Regulatory Commission

Office of Nuclear Reactor Regulation

January 1983

ABSTRACT

The Nuclear Regulatory Commission (NRC) has published its Final Integrated Plant Safety Assessment Report (IPSAR) (NUREG-0822), under the scope of the Systematic Evaluation Program (SEP), for the Oyster Creek Nuclear Generating Station located in Ocean County, New Jersey, and operated by GPU Nuclear Corporation and Jersey Central Power & Light Company (colicensees). The SEP was initiated by the NRC to review the design of older operating nuclear reactor plants to reconfirm and document their safety. This report documents the review completed under the SEP for the Oyster Creek Nuclear Generating Station. The review has provided for (1) an assessment of the significance of differences between current technical positions on selected safety issues and those that existed when the Oyster Creek plant was licensed, (2) a basis for deciding on how these differences should be resolved in an integrated plant review, and (3) a documented evaluation of plant safety when all supplements to the Final IPSAR and the Safety Evaluation Report for converting the license from a provisional to a full-term license have been issued. The report also addresses the comments and recommendations made by the Advisory Committee on Reactor Safeguards in connection with its review of the Draft Report, issued in September 1982. The Final IPSAR and its supplements will form part of the bases for considering the conversion of the existing provisional operating license to a full-term operating license.

maintenance, and operator errors. The remaining seven events resulted from adverse weather conditions. Cold temperatures caused frozen sensing lines on five occasions, lightning caused the sixth event, and strong winds caused the seventh event.

4.5.1.4 Radioactivity release summary of reportable events. Table 4.8 gives a summary by year of the total known radioactivity released from Oyster Creek. An overall increase over the past ten years is apparent in the airborne release activity, while data for liquid activity released reveals a slight decrease. A total of twenty-three events at Oyster Creek were radiological in nature, with thirteen of these involving radioactivity releases, eight involving activity levels around rad waste tanks exceeding tech spec limits, and three involving personnel exposures

Of the thirteen events involving release of radioactivity, twelve were due to equipment failure including two occasions when outside lines containing radioactive water ruptured due to freezing. Four release events were pipe leaks, two were valve leaks, and another was a leak from fuel pool cooling to the RBCCW system then from the RBCCW heat exchanger to the discharge canal. One event was an increase in the gamma energy of the stack gas during a normal plant startup. The remaining radioactivity release occurred on February 6, 1975 due to maintenance error when backwash valves on the condenser water box were left open while inspecting the condenser for tube leaks. None of the events involved a release over tech spec limits.

eleven workers who received exposures ranging from 3.01 to 3.36 rems during the 1972 refueling outage. The second occurrence was on January 1, 1973 when three men received excessive exposure to iodine-133 while performing maintenance on the electromatic relief valves. In the third event, on May 8, 1973, a worker who was doing maintenance work on the con-

On February 10, 1981, an unmonitored release of radioactive water occurred due to seepage through the three-foot thick outside wall around the new radwaste building (NRW). Leakage from the condensate transfer system caused an overflow into the three chemical waste collection tank vaults. When the radioactive water exceeded the ninety-five percent level, water seeped through the NRW building concrete walls. The area around the building was roped off and soil samples were taken. Direct survey results showed detectable ground contamination only within six inches of the walls. To prevent further seepage, herculite was sealed against the wall. Once the continuous overflow to the chemical waste collection tank vaults was halted, effort was concentrated on processing the water from the tank vaults to the waste surge tank. The NRW operators have recieved instructions not to exceed the ninety-five percent level in any tank, and have been made aware of what actions to take in the event a tank reaches a level greater than ninety-five percent.[18]

An unmonitored release of radioactive water occurred on April 21, 1981 due to leakage from a valve inside the condensate transfer pump building. The water seeped through the ground in the building and under the walls. By performing a water balance, a total of 10,000 gallons could not be accounted for, and therefore, was considered as leakage.

control valve. However, the flow control valve was tagged out of service

at the time and the bypass valve was being used to control flow. Upon discovery of the leak, the condensate pump was shut down and the condensate storage tank was isolated. The area in front of the chlorination building was diked to trap any water collecting by the roadside. The trapped water was pumped into fifty-five gallon drums.

The leaking valve was replaced and repair work on the flow control valve was completed. Three days after the event, the radiological controls department removed the barriers and the area was cleaned. Modifications to minimize the probability of future leakage included sealing the floor in the condensate transfer building and the installation of a water detection alarm.[19]

On July 6, 1981, an unmonitored release occurred in the new radwaste ventilation exhaust system. A tear was discovered in a plastic seal used to temporarily block a newly installed section of ventilation duct. The new section had not been tied into the existing radwaste ventilation system. The total release, based upon flow calculations when the exhaust fan is operating, was less than 60 ;Ci.[20]

4.5.1.5 Environmental impact summary of reportable events. Twenty-four environmental events resulting from nonradiological causes occurred at Oyster Creek. Seven of these events were fish mortalities due to water temperature changes occurring because of plant discharge water stopping or starting during normal operation. Two events involved plugging of plant intake water screens and dilution pump seal water strainers by debris and crabs, while two events were caused by low intake water level due to low tide and high winds. High temperature of the condenser discharge water was the cause of one reported event. The diesel engine for the fire pump seized due to loss of cooling in another reported event.

The remaining eleven reported events involved the plant dilution pumps, designed to reduce thermal pollution by diluting the discharge water. Dilution pump failures have been a recurring problem at Oyster Creek. Numerous pump trips have occurred, primarily due to low cooling water pressure and low seal water pressure. On one occasion, dilution pump 1-3 seized when the pump impeller sheared a number of connecting bolts and jammed against its housing. Pump 1-1 was removed from service September 10, 1980 when a bearing overheated and was damaged. At the close of 1980, an engineering evaluation was in progress to improve the dilution pump system including a proposal to replace the present cooling/seal water pumps, located on the dilution structure, with two pumps of greater capacity. The new cooling/seal water pump location was tentatively decided to be the facility's fresh water fire pond.

Another environmental event occurred on April 15, 1981 when strong winds concentrated large amounts of sea lettuce in the intake canal and clogged the intake structure. This in turn reduced the flow across the screens causing the water level in one-half of the intake structure to drop below the emergency service water pump suctions. The emergency service water system provides cooling to the containment spray heat exchangers which removes heat from containment and is the ultimate heat sink for the energy release in a LOCA. Each of the two loops of containment spray contains two emergency service water pumps, two containment spray pumps and two heat exchangers. The flow from one pump in either loop is sufficient to provide the required heat removal capability. In addition, the intake structure is divided into two halves. Since one-half of the

intake structure was unaffected, one of the containment spray and emergency service water loops was available.

The second containment spray system loop was inoperable for twenty minutes. Availability returned when the circulating water pump was stopped, thereby allowing the water level in the intake structure to rise back above the emergency service water pump suctions. In addition, new high pressure screens were scheduled to be installed during a refueling outage in November 1981.

Finally, an interest has been shown in the Oyster Creek-Barnegat Bay area concerning the existence of shipworms. Shipworms are wood boring marine organisms that do great damage to wood, such as pilings for piers, beneath the water line. These organisms began to appear around 1971, and in 1975 a large population was in evidence. The utility contracted with William F. Clapp Laboratories of Battelle Columbus Labs in June of 1974 to study the woodborer problem. Also, the Westlands Institute of Lehigh University undertook a study, hired first by three local marina owners and later funded by the NRC. In their quarterly reports, both these organizations at times concluded that the growth of certain species of shipworms was indeed encouraged by the thermal effects of the plant effluent. At other times, they reported no relationship. However, it was also reported that by using only high quality treated wood in the area, continuing to use high dilution pumping, and keeping the water clean of load wood, the shipworm infestation problem could be held to a minimum.

4.5.2 Review of significant events

The analysis of the operating history of Oyster Creek examined reported events to find those occurrences which represented significant threats to continued safe operation or to systems designed to mitigate transient conditions. Reportable events were therefore significant if they met one of these criteria:

1. an event in which the failure or failures initiated a design basis event (DBE) as listed in Table 3.1, or
2. an event in which the failure or failures compromised a function of the engineered safety features.

Several events at Oyster Creek met the above significance criteria. Table 4.9 summarizes the significance categories assigned to these events and Table 4.10 summarizes the significant events which occurred at Oyster Creek. The total in the table, twenty-five, is greater than the actual number of significant events, seventeen, because six events, 72-29, AO 73-19, LER 79-014, LER 80-032, and LER 81-018, and LE 81-061, required multiple significance categories. The events designated as significant were:

1. decrease in reactor coolant inventory,
2. reactivity anomaly due to short period during startup,
3. loss of containment integrity,
4. loss of containment spray system,
5. loss of onsite power sources coincident with loss of offsite power sources,