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September 12, 1985

Mr. John A. Zwolinski, Chief
Operating Reactors Branch No. 5
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Zwolinski:

Subject: Oyster Creek Nuclear Generating Station (OCNGS)
Docket No. 50-219
SEP Topic No. XV-19, Loss-of-Coolant Accidents
Resulting From Spectrum of Postulated
Piping Breaks Within the Reactor Coolant
Pressure Boundary

During an assessment of the subject SEP topic, NRC staff performed an independent analysis of radiological consequences of a design-basis loss-of-coolant accident. The analysis resulted in excessive thyroid doses for the 30 day low population zone boundary (341 rems). 10CFR100, as implemented by SRP Section 15.6.5, requires that the radiological consequences of a design-basis loss-of-coolant accident be limited to the exposure guidelines in 10CFR100.11 (25 rems whole-body and 300 rems thyroid dose for both the 0- to 2-hour exclusion area boundary and the 30 day low population zone boundary).

In view of the small difference between the calculated offsite dose and the acceptance criteria and the conservatism in the staff's calculational techniques, the staff concluded that further analysis of this event is not warranted.

However, since a significant contribution to the calculated offsite dose was from the main steam line isolation valve (MSIV) leakage and because of the previous experience of the MSIV leakage at Oyster Creek, the staff requested GPUN to review their existing maintenance practices and those of other BWR facilities, identify any necessary corrective actions and upgrade the maintenance program, if necessary, before startup from the Cycle XI refueling outage.

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In September, 1982, the BWR Owners Group in which GPUN was an active participant, formed a subcommittee to address the MSIV leakage issue with investigation in the following areas:

1. Development of a technique for evaluation of BWR MSIV leakage contribution to radiological dose rate.
2. Collection of MSIV leakage data to establish clear cause for local leak rate test failure.
3. Development of potential operator-action guidelines for preventing MSIV leakage or mitigating its effects.

By letter dated May 18, 1984 GPUN informed the NRC staff that in order to address the subject SEP topic, the final reports issued by the subcommittee addressing the areas of concern listed above would be evaluated for plant specific applications.

The following discussion summarizes the results of our evaluation:

A review of the reports and the Oyster Creek MSIV installation indicates that most of the contributors of MSIV leakage at Oyster Creek Nuclear Generating Station are of the type that cannot be eliminated or minimized without extensive modifications to the plant or the valves.

All four MSIVs are rolled to the side by 22.5°. This rolling is due to the original plant design which required the valves to be rolled so that the actuators would not interfere with upstream piping or structures. The need for the rolling cannot be eliminated without extensive modifications to the entire main steam piping system both inside and outside the drywell. The rolling causes seat to guide misalignment because the valve poppet is no longer on the bottom guide but is now cradled between two guides. This misalignment condition cannot be easily corrected without extensive modifications to the valve body and internal parts.

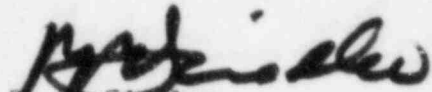
Therefore, the Oyster Creek MSIVs are expected to have some leakage because of the contributions that are part of either the plant or valve design which cannot be easily corrected. A review of the MSIV leakage history since 1977 indicates that the method of valve repair used at OCNGS to correct deterioration of valve condition is satisfactory.

This conclusion is also supported by NRC IE Information Notice No. 82-23: Main Steam Isolation Valve (MSIV) Leakage. The notice surveyed MSIV performance at BWRs and MSIVs which failed local leak rate test (LLRT) for the years 1979-1981. Ten of these plants have Atwood & Morrill Co. (A&M) MSIVs. The ten plants have a total of 19 failure event dates. Oyster Creek is listed for only one failure event date. The leakage rates range from a low of 13.3 scfh to a high of 3454 scfh. The Oyster Creek leakage rate was listed as 33 scfh. Oyster Creek did not have multiple failure dates as did 7 of the 10 plants and had less severe leakage than 79 of the 92 valves reported as exceeding LLRT limits.

Since 1981 Oyster Creek has had four LLRT failures. The first two failures were in 1982 with leak rates of 22.9 scfh and in excess of 120 scfh. These valves which failed LLRT are in series, therefore, the leakage out of the main steam lines would have been limited to 22.9 scfh. The other two failures were during the recent outage (1984) and the leak rates were 16.34 scfh and 17.21 scfh. However, in each case, the second valve in series had a leak rate of less than the Oyster Creek Technical specification limit of 12.08 scfh. Although these failures were observed, they are generally considered to be in the low range.

GPUN will continue discussions with the valve supplier (Atwood & Morrill Co.) to ensure that the GPUN repair methods are up-to-date consistent with A&M input and other utilities' repair experience.

Very truly yours,



R. B. Fiedler
Vice President and Director
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cc: Administrator
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