



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ENVIRONMENTAL IMPACT APPRAISAL BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 50 TO FACILITY OPERATING LICENSE NO. DPR-63
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION, UNIT NO. 1
DOCKET NO. 50-220

1.0 Introduction

On June 18, 1982 the Commission issued Amendment No. 49 to Facility Operating License No. DPR-63 for the Nine Mile Point Nuclear Station, Unit No. 1 (NMP-1). The amendment approved the recirculation system safe-end replacement program and provided license conditions related to this program. In the Safety Evaluation supporting Amendment No. 49, we concluded that the dose mitigation program and the actual safe-end replacement program were acceptable.

In an effort to evaluate the safe-end crack propagation, Niagara Mohawk Power Corp. (licensee) undertook additional ultrasonic (UT) examinations of recirculation system piping. Initial tests revealed cracking in heat-affected zones of recirculation system pump discharge welds. Subsequently, UT examinations were expanded to include other welds in the five loops of the recirculation system. The results of these tests disclosed cracking in a large number of the welds examined. Based upon these findings the licensee advised the staff by letter dated August 6, 1982 that a decision had been reached to replace all recirculation system piping while the facility was shutdown for safe-end replacement.

By letters dated August 16 and 26, 1982 the licensee provided additional information regarding removal of recirculation system piping. Based upon these submittals, as well as the information obtained during a site visit on August 13, 1982, we approved the removal of recirculation system piping by letter dated September 2, 1982. Not included in this approval was the actual replacement of recirculation piping.

On September 10, 1982 there was a meeting in Bethesda, Md. during which we responded to information received to date and clarified requirements regarding recirculation system replacement. Subsequently, by letters dated September 27, 1982 and October 6, 1982, the licensee provided requested additional information. The following Environmental Impact Appraisal addresses the NMP-1 expansion in work scope with respect to the licensee's dose mitigation program.

2.0 Evaluation

2.1 Occupational (On Site) Dose

Niagara Mohawk Power Corporation has revised the original collective occupational dose estimate to reflect both actual doses which result from safe-end replacement, as well as estimated doses associated with recirculation system piping replacement. In Amendment No. 49, dated June 18, 1982, supported by an Environmental Impact Appraisal, we approved the original dose estimate of 2906 person-rem associated with safe-end replacement. As required by the license conditions established by Amendment No. 49 the licensee forwarded, by letter dated June 30, 1982, a dose report for the period of April through June 30, 1982. Therein actual doses through June 30, 1982 were reported to be approximately 60% of the original safe-end estimate. Finally, by letter dated August 26, 1982 the licensee formally reduced the safe-end replacement dose estimate to 2,036 person-rem.

By letter dated September 27, 1982 the licensee provided a total occupational person-rem exposure estimate for both safe-end and recirculation system piping replacement. The following estimates were provided:

(1) Safe-end replacement,	1,565	person-rem
(2) Recirculation piping replacement	343	person-rem
	<u>1,908</u>	person-rem

The original estimate associated with safe-end replacement proved to be overly conservative due to: (1) Original dose rates and manpower estimates were too high, (2) Improved ALARA as work progressed and worker training resulted in a reduction in worker doses, (3) Greater dose reductions than originally estimated resulted from recirculation piping decontamination, (4) Effective use of temporary shielding; and (5) Expansion in work scope to include recirculation piping replacement caused a reduction in time consuming and/or precision work in high radiation areas in proximity to the reactor vessel. Therefore, we conclude that 1,565 person-rem is a reasonable estimate of occupational doses associated with safe-end replacement. With respect to the recirculation system replacement dose estimate of 343 person-rem we have reviewed this estimate against actual doses for similar efforts at another facility. Such analogous efforts have resulted in collective doses of approximately 300 person-rem. Based upon this we likewise conclude that the licensee's recirculation system replacement dose estimate is reasonable.

Since the total dose estimate is being revised from 2906 person-rem to 1908 person-rem, the basis upon which the 2906 person-rem estimate was approved remains valid. (See Environmental Impact Appraisal in support of Amendment No. 49) Therefore, Niagara Mohawk's expansion in work scope to include recirculation system piping replacement is acceptable and the worker dose mitigation program is likewise acceptable.

2.2 Public (Off-Site) Radiation Exposure

By letter dated May 7, 1982, the liquid radwaste handling and control aspects of the replacement program were reviewed and approved. In essence, liquid effluents will be shipped off-site for burial.

At this time, the licensee continues to estimate that no significant amount of airborne radioactivity will be released in gaseous effluents as a result of the recirculation system replacement project. Table 4.4 provided in the Environmental Impact Appraisal in support of Amendment No. 49 presents effluent releases for 1979, 1980, and 1981 from NMP-1 and the Final Environmental Statement (FES) annual average effluent release estimates, and compares the expected releases from the safe-end replacement project with FES estimates and actual annual radiological effluent releases at NMP-1. Based on this comparison, we conclude that the offsite environmental impact that may occur during the period of this repair project will be smaller than that which occurs during normal operation. In addition, since we do not expect an increase in radioactive effluents from NMP-1 after the recirculation system replacement project, we conclude that the impact on biota other than man will also be no larger after the recirculation system replacement project is completed.

In summary, the radioactive releases resulting from the combined safe-end/recirculation system replacement project will be less than those due to normal plant operation. These releases are also much less than the estimates presented in the FES. The doses due to these releases are small compared to: (1) the limits of 40 CFR Part 190, and (2) the annual doses from natural background radiation. Therefore, the radiological impact of the combined safe-end/recirculation system replacement project will not significantly affect the quality of the human environment.



Based on our review of the proposed replacement project, we conclude that:

- (1) The estimated occupational exposure of 1908 person-rem for the combined safe-end/recirculation system replacement project is within the expected range of doses incurred at light water power reactors in a year.
- (2) Workers are limited by regulation to 3 rems/calendar quarter with a maximum annual dose of 12 rems given that workers satisfy certain dose history criteria. Since the dose to an individual worker is controlled by 10 CFR 20 any increase in individual risk as a result of the repair is not considered significant. Although the collective dose to plant workforce increases as a result of this repair, the estimated impacts to the worker population are nonsignificant.
- (3) Niagara Mohawk Power Corporation has taken appropriate steps to ensure that occupational dose will be maintained as-low-as-reasonably-achievable (ALARA) and within the limits of 10 CFR Part 20.
- (4) Offsite doses resulting from the project will be:
 - (a) smaller than those incurred during normal operation of NMP-1, and
 - (b) negligible in comparison to the dose members of the public in the vicinity of NMP-1 receive from natural background radiation.

3.0 Conclusion

On the basis of the foregoing, we conclude that the proposed combined safe-end/ and recirculation system piping replacement project at the NMP-1 will not significantly affect the quality of the human environment.

We have reviewed this proposed combined replacement project relative to the requirements set forth in 10 CFR Part 51 and the Council of Environmental Quality's Regulations 40 CFR Part 1500. We have determined that the proposed action will not significantly affect the quality of the human environment.

On the basis of the foregoing analysis, it is concluded that there will be no significant environmental impact attributable to the proposed action. Having made this conclusion, the Commission has further concluded that no environmental impact statement for the proposed action need be prepared and that a negative declaration to this effect is appropriate.

Dated: October 15, 1982

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