



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 49 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.

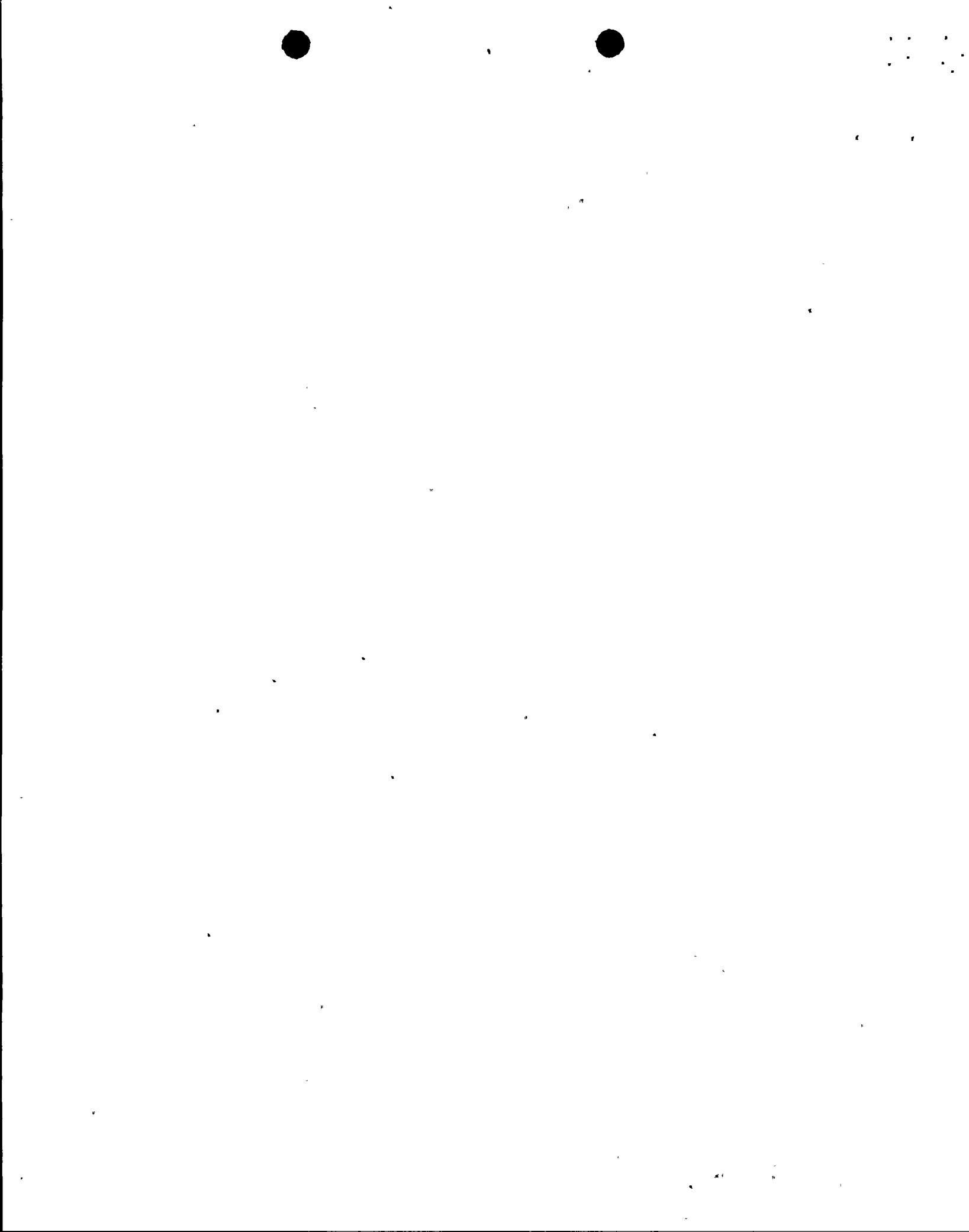
By letters dated August 16 and 26, 1982 the licensee provided additional information regarding removal of recirculation system piping. Based upon these submittals, as well as the information obtained during a site visit on August 13, 1982, we approved the removal of recirculation system piping by letter 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 the requested additional information. The following safety evaluation addresses the NMP-1 expansion in work scope with respect to the licensee's dose mitigation program and recirculation system replacement program.

2.0 Evaluation

2.1 Dose Mitigation Program Evaluation

Niagara Mohawk has taken into account "as-low-as-reasonably-achievable" (ALARA) considerations for the activities involved in the replacement of recirculation system piping. The licensee has also committed to implement an overall protection/ALARA program for the replacement project that includes: (1) job planning and



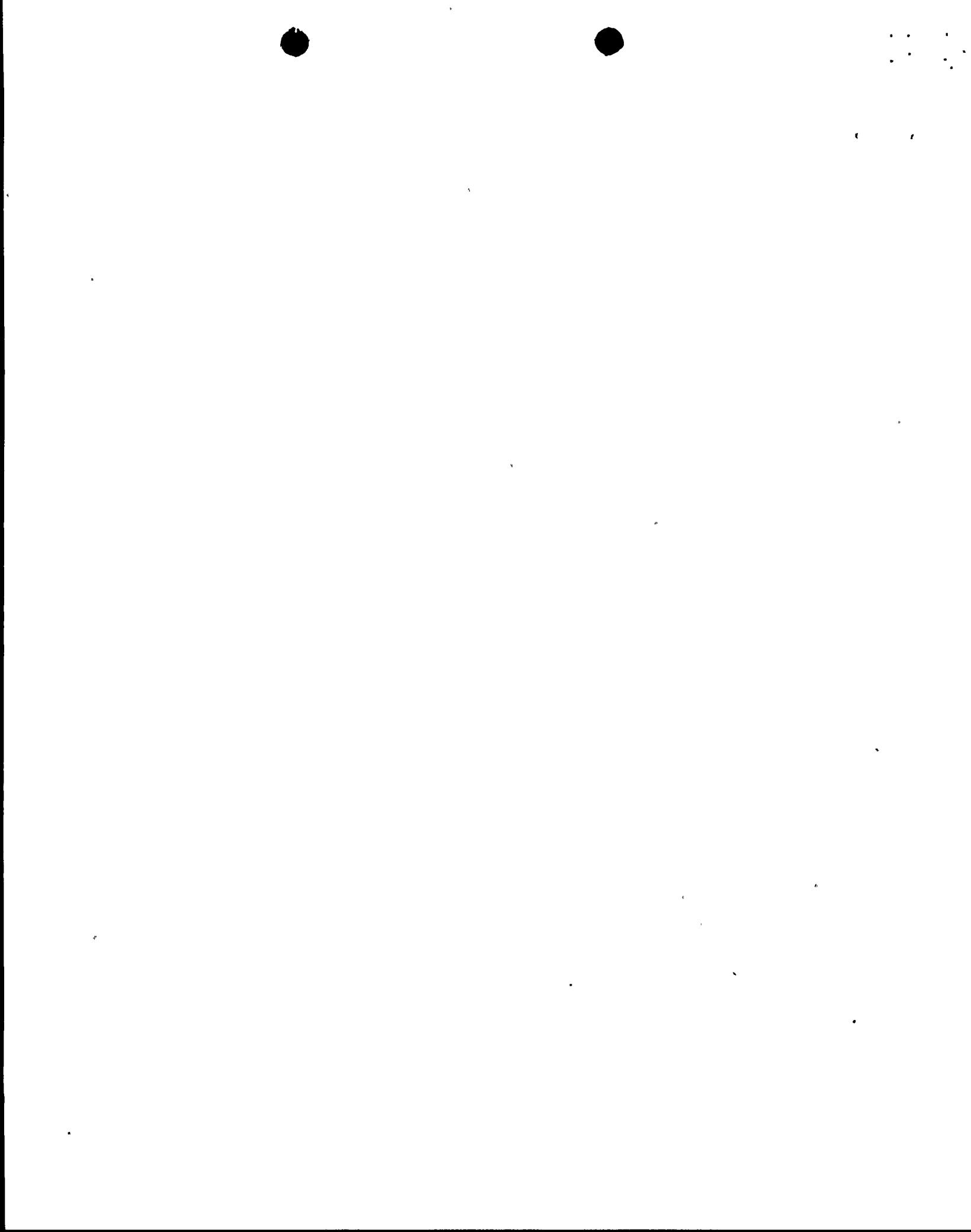
evaluation; (2) training of personnel; (3) review of work while in progress to detect problems and implement improvements; and (4) post-task evaluation to incorporate lessons learned into subsequent tasks.

Pre-job planning has considered alternative methods of replacing the recirculation system piping and an evaluation of alternative techniques for specific tasks. Activities specifically directed to reducing occupational doses include: (1) coolant pipe decontamination; (2) use of temporary shielding; (3) use of audio-visual communication equipment to minimize the number of personnel in high dose rate areas; (4) training of workers, (5) use of automated pipe cutting machines, welding equipment and weld crown reduction tools; (6) use of portable ventilation equipment to reduce airborne radioactivity; and, (7) use of water shielding in the primary coolant system where appropriate. These considerations are consistent with Regulatory Guide 8.8, and are acceptable.

The radiation protection training program is based on Regulatory Guides 8.13, and 8.27 and is acceptable. During the period the repair work is in progress, the licensee proposes to summarize daily personnel doses by individual and by task. The licensee has committed to a daily review of these dose reports by site supervisors. Doses will be based on pocket dosimeter readings. Furthermore, the licensee has committed to implement a pocket dosimeter test program in accordance with Regulatory Guide 8.4.

The licensee has committed to supplement the plant radiation protection staff with engineers and technicians necessary to complete the project. In addition, the licensee has committed that technicians in responsible positions: (1) will be qualified in accordance with ANSI 18.1, and (2) will be qualified on plant procedures that they are to perform.

The licensee provided a summary of the tasks to be performed. The licensee also has committed to review the person-hour estimates, as appropriate and to provide updates. The licensee will use updates to review the person-rem estimates, as appropriate. In addition, the licensee will refine the estimates as the work progresses to incorporate dose reductions based on experience gained. The experience will then be applied to subsequent work on remaining modifications, which may result in further dose reductions. The related Environmental Impact Appraisal supporting this amendment provides more detailed information.



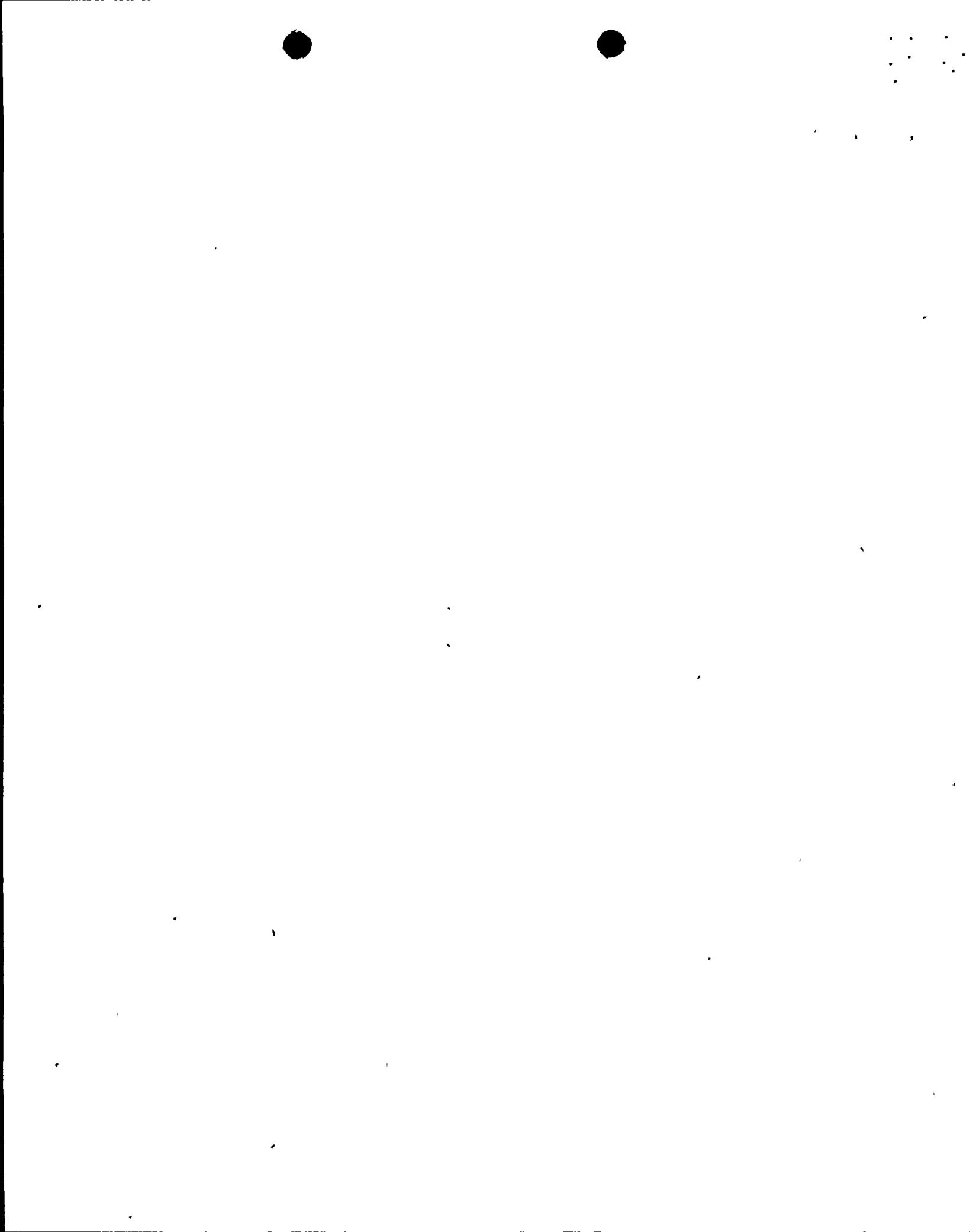
Based on our review of information provided by the licensee, we conclude that the estimated total person-rem dose for safe-end and recirculation system piping replacement appears to be reasonable and that the licensee intends to implement appropriate occupational ALARA actions. We conclude that the licensee has provided reasonable assurance that individual radiation doses will be maintained within the limits of 10 CFR Part 20 and the total person-rem doses are consistent with the ALARA guidelines of Regulatory Guide 8.8. We therefore find the proposed occupational dose control aspects of the safe-end and recirculation system piping replacement project to be acceptable.

2.2 Replacement Program Evaluation

By letter dated August 6, 1982, the licensee provided a description of the proposed replacement of recirculation system piping. In essence, the licensee plans to replace the original system piping, including branch lines up to the first isolation valve, and to replace this piping with piping of the same configuration and dimension. We have reviewed the following areas of this proposed effort: (1) Replacement Materials, (2) Cutting and Welding Procedures, (3) Code Compliance, (4) Stress and Seismic Analyses including verification of fit-up and as-built design, and (5) Pipe Break Analyses.

Regarding replacement materials the licensee intends to install Type 316 stainless NG (nuclear grade) piping, or the equivalent, with a carbon content of less than 0.02 percent. This material is of the grade which does not require augmented inservice inspection as specified in NUREG-0313, Revision 1, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping," dated July 1980. Therefore, Type 316 stainless NG, or equivalent piping, is a conforming material in consonance with NUREG-0313, Rev. 1, and its use is considered acceptable.

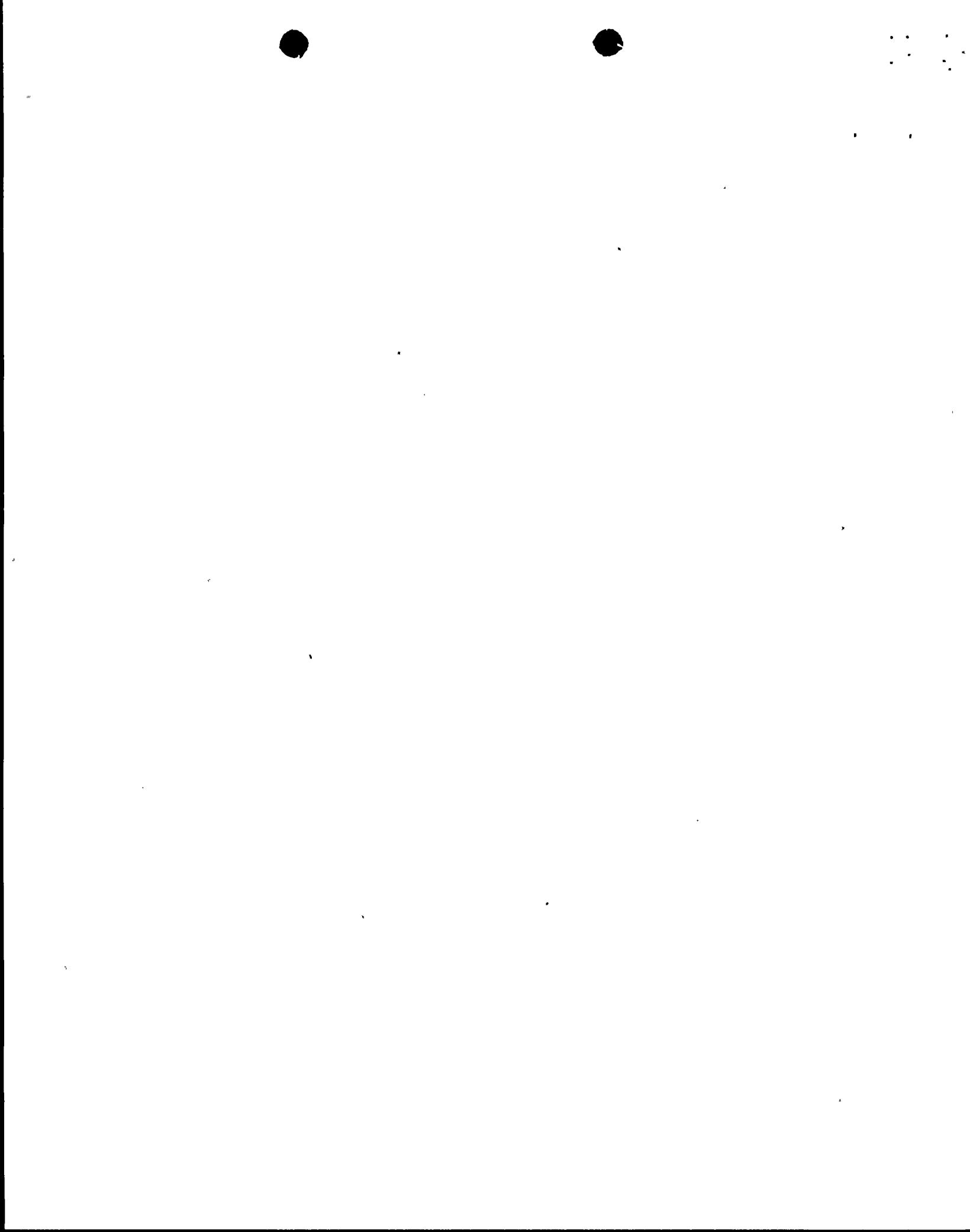
With respect to cutting and welding procedures Niagara Mohawk previously provided two written safe-end replacement procedures for our review: (1) Newport News Industrial Corporation Controlled Work Instruction CWI-1399k-2-11, "Removal and Relacement of Recirculation Nozzel Safe-End and Piping For Pump No. 11 Discharge For Niagara Mohawk Power Corporation, Nine Mile Point Unit One," Revision A, Dated May 19, 1982; and (2) Newport News Industrial Corporation Controlled Work Instruction, CWI-1399K-1-5, "Removal and Replacement of Recirculation Nozzle Safe-End and Piping For Pump No. 11 Suction For Niagara Mohawk Power Corporation Nine Mile Point Unit 1," Revision B, Dated June 1, 1982. These procedures were reviewed and approved by Amendment No. 49. The licensee has committed to also use these procedures for recirculation system piping replacement. We find this acceptable.



Regarding ASME Code Compliance, the licensee has stated that allowable stresses will be in consonance with the 1977 Edition (through Winter 1979 Addenda) of the ASME Boiler and Pressure Vessel Code, Section III, Subsection NC. These more current requirements will be used in lieu of the original design requirements, ASA B31.1, "Power Piping Code," 1955. We find the use of this code for allowable stresses to be acceptable.

Niagara Mohawk has stated that the actual piping replacement will be accomplished in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, 1977 Edition (through Summer 1978 Addenda). Furthermore, the licensee stated that all welding will be accomplished in accordance with the ASME Boiler and Pressure Vessel Code Section IX, 1978 Edition. Finally, the licensee has stated that fabrication, installation (fit-up) and quality assurance will be accomplished in accordance with ASME Boiler and Pressure Vessel Code, Section III (Winter 1980 Addenda). We likewise find the use of these codes for piping replacement to be as conservative as the original requirements and therefore, acceptable.

With respect to stress and seismic analyses the licensee originally stated by letter dated August 6, 1982 that new analyses were not necessary in that the new system will be of the same configuration as was the original design. With respect to the NMP-1 seismic design, replacement of recirculation piping does not invalidate, or necessitate an update of, the original NMP-1 seismic analyses. Therefore, it is not necessary to redo these analyses and the existing seismic design, as described in Section III of the NMP-1 Final Safety Analysis Report (FSAR), is acceptable. However, fit up of piping and the modification of the original design to reflect the new "as-built" configuration necessitates reevaluation of the stress analyses. By letter dated October 6, 1982 the licensee provided the equations and allowable stress values which will be used in the reanalyses. In addition, the licensee stated that the Teledyne Engineering Services ADLPPE and TMRSAP computer codes would be used. The use of these codes was previously approved by the staff by letter dated June 19, 1979. The licensee has agreed to a license condition which requires that the revised "as-built" stress analyses be completed, and selected portions of this analyses be submitted to the NRC, prior to restart of NMP-1. We find the aforementioned design criteria and commitments made by the licensee to be acceptable.



Regarding pipe break analyses, replacement of recirculation system piping will have no affect. In essence, the licensee's analyses submitted while petitioning for a Full-Term Operating License assumed that any high energy line could break anywhere inside containment. These analyses concluded that separation and redundancy would ensure that safety systems perform their intended safety function. The replacement effort does not alter these analyses. Therefore, the original analyses remain acceptable.

3.0 Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or the health and safety of the public.

Dated: October 15, 1982

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