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

ENCLOSURE

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
WITHDRAWAL SCHEDULE CHANGE FOR REACTOR MATERIAL SURVEILLANCE CAPSULE
BALTIMORE GAS AND ELECTRIC COMPANY
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1
DOCKET NO. 50-317

1.0 INTRODUCTION

Appendix H of 10 CFR Part 50 specifies the requirements for reactor vessel material surveillance programs. The purpose of these programs is to monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region of light water nuclear power reactors. The programs are used to determine the effects of neutron irradiation and thermal stresses on the vessel materials. Each of the Calvert Cliffs reactor vessels contain six surveillance capsule assemblies which contain reactor vessel material test specimens. The six surveillance capsules have approved withdrawal schedules which span the 40-year license period of each reactor.

Section II.B.3 of Appendix H to 10 CFR Part 50 requires that proposed withdrawal schedules for the material specimens must be provided to the Nuclear Regulatory Commission (NRC), with technical justification, for review and approval prior to implementation. By letter dated January 24, 1992, Baltimore Gas and Electric Company (BG&E) requested NRC review and approval of changes to the previously-approved withdrawal schedule for the material specimen capsules in the Unit 1 reactor. Specifically, the request is to switch the capsule at the 104 degree location currently scheduled to be withdrawn at the second withdrawal interval, which is during the upcoming refueling outage in March of 1992, with the capsule at the 97 degree location which is scheduled to be withdrawn at the fourth withdrawal interval. BG&E also indicated that the capsule at the 263 degree location would not be removed during the upcoming refueling outage.

The initial withdrawal schedule for the surveillance capsules was approved during the licensing of each of the Calvert Cliffs Units and the table listing the approved schedules was included in the Technical Specifications (TS) for each of the units. An initial change in the withdrawal schedule was approved in early 1982. Subsequently, the NRC issued Generic Letter (GL) 91-01, "Removal of the Schedule for Withdrawal of Reactor Vessel Material Specimens from Technical Specifications," dated January 4, 1991. By letter dated July 30, 1991, the NRC issued Amendment No. 158 to Facility Operating License No. DPR-53 and Amendment No. 138 to Facility Operating License No. DPR-69 for Units 1 and 2, respectively, which removed the withdrawal schedule from the TS and placed it in the Updated Final Safety Analysis Report (UFSAR), Table 4-13.

2.0 EVALUATION

The material specimen capsule at the 104 degree location contains standard reference material (SRM) Charpy impact specimens. The material speciman

capsule at the 97 degree location contains base metal (transverse) Charpy impact specimens. The material specimen capsule at the 263 degree location that was removed during first interval withdrawal contained SRM Charpy impact specimens which are the same as those contained in the 104 degree location capsule. Deferring the withdrawal of the capsule at the 104 degree location will result in an increase in its exposure to fluence. This in turn creates a greater difference in exposure of the SRM Charpy impact specimens withdrawn during the first interval. BG&E indicates, and the staff agrees, that the greater the difference in the fluence exposures of the two SRM specimens will result in more meaningful data when the second specimen is withdrawn and tested.

BG&E noted that after the capsule at the 263 degree location was withdrawn at the first withdrawal interval, a supplemental capsule was put in its place, but is no longer a reactor vessel material surveillance capsule in the current Appendix H surveillance program. This capsule was used for in-vessel neutron dosimetry to be used in conjunction with ex-vessel neutron dosimetry to benchmark calculated fluences. The benchmarking technique is used to minimize errors resulting from the effects of radial variations. One set of dosimetry was used for benchmarking after the completion of operating cycle 9. Prior to the start-up of operating cycle 10, an archival weld block containing McGuire, Unit 1, vessel material was found. This material is equivalent to the Calvert Cliffs, Unit 1, vessel weld material. BG&E fabricated test specimens from the material and they were placed in a capsule at the 263 degree location along with the in-vessel neutron dosimetry and may later be integrated into the Appendix H surveillance program.

BG&E proposes not to withdraw the capsule at the 263 degree location. Allowing BG&E to withdraw the capsule at the 97 degree location will provide the necessary in-vessel neutron dosimetry for benchmarking. The 97 degree location and the 263 degree location are isofluent and the ex-vessel neutron dosimetry results can be used in conjunction with the in-vessel neutron dosimetry in the capsule at the 97 degree location for benchmarking.

3.0 CONCLUSION

The NRC staff has concluded that BG&E has provided the necessary technical justification required by Section II.B.3 of Appendix H to 10 CFR Part 50 to support the proposed changes to the withdrawal schedules for the vessel material specimens for Calver Cliff, Unit 1, capsules. The capsule at the 97 degree location in the Unit 1 reactor will be the specimen withdrawn for the second withdrawal interval and the capsule at the 104 degree location will become scheduled for withdrawal at the end of the fourth interval. The capsule at the 263 degree location will not be removed during the second withdrawal interval in that adequate in-vessel neutron dosimetry is available in the capsule at the 97 degree location as detailed above. These changes will be reflected in the next UFSAR update as indicated in BG&E's January 24, 1992, submittal.

Principal Contributor:
Daniel G. McDonald

Date: March 11, 1992

in that the dosimetry in the 97 degree capsule location will provide the necessary in-vessel neutron dosimetry for benchmarking purposes. Details supporting this conclusion are included in the enclosed Safety Evaluation. These approved changes will be reflected in the next update of the Updated Final Safety Analysis Report.

Sincerely
Original Signed By
Daniel G. McDonald, Senior Project Manager
Project Dorectorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
Safety Evaluation

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