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Radiation Testing Under Simulated Loca Conditions

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The purpose of this evaluation is to gather data to determine whether or not radiation during a simulated Loss of Coolant Accident would have any effect upon the coatings being used. Because of the concern in industry regarding the safety of nuclear power generating stations and the strong actions of the various environmentalist clubs and agencies clubs and agencies, the utilities have been required to prove the safety of the power facilities to extraordinary degrees before licensing can be obtained to operate. One of the areas regarding the safety is the necessity of proving that the coatings will remain intact during a Loss of Coolant Accident, which could occur if the main steamline were to rupture. We have designed and built apparatus to test the performance of coatings under the conditions that might exist under such an accident criteria in order to assure ourselves and the AEC in the various utilities that the coatings currently being used or proposed will be adequate for this service.

Since under these conditions the coatings would also be exposed to some radiation, the question has arisen whether or not the radiation will have any effect upon the coating during this accident condition. Tests have been run showing that radiation before or after an accident condition has no effect on the performance, but because of the difficulty in testing, little work has been done with simultaneous loss of collant and radiation. The problem is further compounded by the variety of water chemistries that are involved with various reactor designs, and the fact that many of the time-temperature criteria are so vastly different. Preliminary test results will be reported.