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Subject: Indian Point Unit 2 SGTR - Licensee Preliminary Risk Estimate

ConEd exercised their PRA model to estimate the risk of a steam generator tube rupture (SGTR) at Indian Point Unit 2 given random equipment and operator failures. The resultant conditional core damage probability is $7.7\text{E-}05$. This is a preliminary estimate.

The ConEd PRA model is a large event tree model using the RISKMAN code. The baseline CDF, which includes test and maintenance unavailability, is $2.6\text{E-}05$ per reactor year. SGTR contributes $1.0\text{E-}06$ to the total CDF.

The dominant core damage sequences involved operator failures to identify and isolate the faulted steam generator and also the failure to depressurize the RCS. The largest sequence including these human reliability events contributes $5.1\text{E-}07$ to the total CCDF. The first sequence including equipment random failures (SI equipment) contributes $1.0\text{E-}07$ to the total CCDF. These sequences are in agreement with those identified by the NRC's Rev 2-QA SPAR model for Indian Point Unit 2. The Rev 2-QA SPAR model calculated the event CCDF as $3.3\text{E-}04$.

The ConEd analyst indicated that the CCDF of $7.7\text{E-}05$ is conservative given that the steam generator tube leakage rate is estimated in the range of 75 to 90 g.p.m. and within the capacity of a charging pump. This leakage rate effectively gives the operators more time to perform critical functions of identifying and isolating the faulted steam generator and to depressurize the RCS. The human reliability error rates are calculated for the PRA based on a design basis SGTR and challenge the operators to correctly in a much shorter time frame. In the case of the actual event, the charging system may have fulfilled the need for safety injection.

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