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INDIAN POINT III CONTAINMENT ANALYSIS

Enclosed for inclusion in your report to the ACRS are the conclusions of our review of the Containment Design Basis Analysis for the Indian Point III reactor.

/S/

Morris Rosen, Chief
Nuclear Technology Branch
Division of Reactor Licensing

RT-17A
DRL:NTB:HS

Enclosure:
Conclusions of CDB Analysis

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INDIAN POINT III CONTAINMENT ANALYSIS

The Indian Point III containment has a free volume of 2.61×10^6 cubic feet and a design pressure of 47 psig. In order to limit the containment pressure and temperature following a loss-of-coolant accident, two containment spray systems and five fan cooler units have been provided as active heat sinks. At design temperature and pressure, the heat removal capability of the spray systems is 360×10^6 BTU/hr while that of the fans is about 366×10^6 BTU/hr. In the event of a loss of off-site power there are 3 diesel generators of sufficient capacity to operate all of the sprays and fans. One diesel supplies the power to a single fan, while each of the other diesels supplies the power to one spray system and two fans. Should one of the diesels fail to operate it would still be possible to operate at least three fans and one spray system. The combined heat removal capability of the three fans and one spray system is 400×10^6 BTU/hr. The heat removal capability of the Indian Point III plant is about ten percent less than similar large PWR plants, such as Salem. Although this slightly reduces the ability of the containment to withstand additional long term energy sources, such as the energy released from a metal-water reaction or steam generator tube failures, Indian Point III is comparable to other recently reviewed plants.

The applicant has calculated pressure transients following the instantaneous severance of primary system pipes and finds that the three square foot break area results in the highest peak pressure.

Several analytical models were presented. One model predicted a peak of 39.5 psig based on the assumption that the emergency core cooling system rapidly subcooled the core, thereby terminating the evolution of steam from the core. A more conservative model predicted a peak of 41.7 psig based on the assumption that all of the core's residual energy and all of the energy stored in the reactor's hot metal was transferred to the containment as steam during the time period required to empty the accumulators.

We have independently calculated a peak pressure of 44 psig. The agreement between the applicant's calculations of initial peak pressure and ours is considered acceptable. Based upon the above, we have concluded that the design pressure and the capability of the containment heat removal system are acceptable.