

**HEAT TRANSFER ANALYSIS OF NUCLEAR WASTE CASKS STORED IN THE
YUCCA MOUNTAIN REPOSITORY**

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ABSTRACT A numerical model of the residual heat associated with stored nuclear waste casks proposed for long term storage in Yucca Mountain has been developed. The Yucca Mountain Repository, located about 100 miles from Las Vegas, NV, is the proposed long-term geologic repository for high-level nuclear waste. STAR-CD, one of several commercial CFD packages being used for the assessment studies, was used to establish the numerical model. The model was developed to simulate the fluid flow and heat transfer within the drift tunnels generated by the waste casks over a 10,000 year time cycle. The model shows that the heat generated from within the casks is partially removed by ventilating air moving through the drifts and conduction through the drift walls. Thermal radiation was found to have little effect on overall cooling compared to the roles of natural convection adjacent to the casks and forced convection from the drift ventilation.