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Ms. Jo Ann Resner
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TRANSMITTAL OF REPORT FOR PRINTING: NUREG/CR-5603, "PRESSURE-DEPENDENT FRAGILITIES FOR PIPING COMPONENTS - PILOT STUDY ON DAVIS-BESSE NUCLEAR POWER STATION" - DJC-163-90

Dear Ms. Resner:

Enclosed is the camera-ready copy for the subject report, as well as the NRC Form 335 and a copy of the Form 426A. The original Form 426A was sent to Dr. G. R. Burdick concurrently with shipment of the camera copy.

If you require anything else or have any questions, please call me on FTS 583-1199.

Very truly yours,

Dale J. Claflin

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cc: Ms. S. L. Zeigler, DOE-ID
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NRC FORM 426A (3-89) NRCM 1102, 3202

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4. AUTHORS *(If more than three, name first author followed by "and others")*: D. A. Wesley and others

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NRC FORM 426A (3-89)

NUREG/CR-5603
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Pressure-Dependent Fragilities for Piping Components - Pilot Study on Davis-Besse Nuclear Power Station

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ABSTRACT

The capacities of four, low-pressure fluid systems to withstand pressures and temperatures above the design levels were established for the Davis-Besse nuclear power station. The results will be used in evaluating the probability of plant damage from Interfacing System Loss of Coolant Accidents (ISLOCA) as part of the probabilistic risk assessment of the Davis-Besse nuclear power station undertaken by EG&G Idaho, Inc. Included in this evaluation are the tanks, heat exchangers, filters, pumps, valves, and flanged connections for each system. The probabilities of failure, as a function of internal pressure, are evaluated as well as the variabilities associated with them. Leak rates or leak areas are estimated for the controlling modes of failure. The pressure capacities for the pipes and vessels are evaluated using limit-state analyses for the various failure modes considered. The capacities are dependent on several factors, including the material properties, modeling assumptions, and the postulated failure criteria. The failure modes for gasketed-flange connections, valves, and pumps do not lend themselves to evaluation by conventional structural mechanics techniques and evaluation must rely primarily on the results from ongoing gasket research test programs and available vendor information and test data.

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