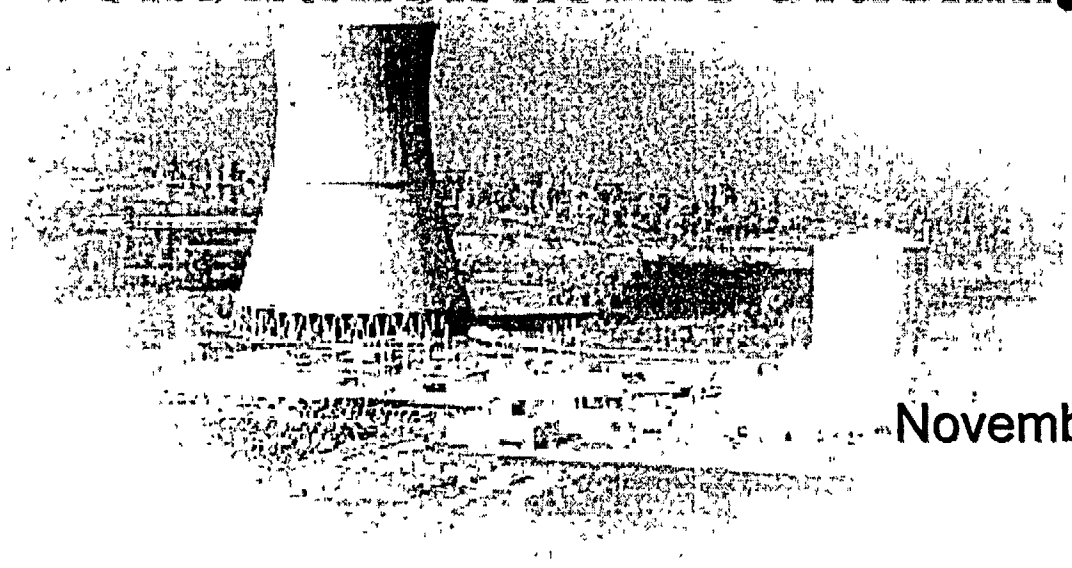
Davis-Besse Nuclear Power Station
Briefing Regarding
Reactor Pressure Vessel Head
Penetration Nozzle Cracking



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B-126

S. Moffitt

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Objective:

☆ Have ACRS consider additional industry information as it deliberates on the Control Rod Drive Nozzle cracking issue

☆ Include this additional information in formal correspondence to the Commission.

Reason for Request:

☆ Davis-Besse is considered a high-susceptibility plant as discussed in Bulletin 2001-01

☆ Davis-Besse is the only high-susceptibility plant that will not perform a visual inspection by December 31, 2001.

☆ Impact of continued safe operation of the plant until March 2002 refueling outage is negligible.

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Plant-Specific Deterministic Aspects:

☆ Qualified visual inspection performed in 1996, additional inspections in 1998 & 2000

☆ Finite element analysis show that 65 of 69 nozzles will allow leakage

☆ Larger allowable flaw size

☆ Conservative initial flaw size

☆ Over 3 adjusted effective full-power years less operation than Oconee Unit 3

Plant-Specific Risk Evaluation Results:

☆ CDF - Davis-Besse plant specific risk assessment conservatively estimates incremental core damage frequency as 6.7 E-6, which is categorized as "small" per RG 1.174. (bounding analysis)

☆ LERF - The plant specific risk assessment conservatively estimates incremental large early release frequency as 1.0 E-8, which is categorized as "very small" per RG 1.174.

☆ Public Health Risk - The plant specific risk assessment estimates person-Rem per year to be 6.5 E-1 which is negligible.

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Bounding or Conservative Inputs:

- ☆ Nozzle Leak Frequency
- ☆ Probability of OD Crack Initiation
- ☆ Time to OD Crack Initiation
- ☆ Initial Flaw Distribution
- ☆ Crack Growth Model Stresses
- ☆ Failure Definition
- ☆ Leakage Detection
- ☆ Probability of Core Damage

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Consideration of Sensitivities:

- ☆ Visual Inspection Reliability
- ☆ Initial Crack Size
- ☆ Temperature
- ☆ Crack Growth Rate Coefficient

Summary:

Based on deterministic and probabilistic assessments independent of the NRC's preliminary staff assessment, there is reasonable assurance that Davis-Besse is safe to operate until the next refueling outage (March 2002).