THE RELIABILITY OF
NUCLEAR REACTOR PRESSURE VESSELS BASED
ON PROBABILISTIC FRACTION MECHANICS

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SUMMARY

A short introductory discussion on the basic theory on probabilistic fracture mechanics is followed by the application to a reactor pressure vessel.

The application includes stress analysis, crack analysis, stress intensity factor analysis, materials analysis. The probability calculation is done on three load cases, hydrotest, normal operation and emergency core cooling. The results show the severe influence of the hydrotest as integrity test.