Development of Computer Code for Estimating Fracture Probability of a Reactor Pressure Vessel

- During the operation of reactor the fast neutron fluence causes the embrittlement of ferritic steel of RPV, which makes it susceptible to brittle fracture.
- The probabilistic fracture mechanics based methods explicitly quantify the uncertainties using statistical techniques and arrive at a decision variable termed as probability of failure (PoF) or reliability of the RPV.
- The PFM uses techniques like Monte Carlo Simulation (MCS) or First Order Reliability Method (FORM). These are computationally expensive and require use of dedicated computer code for making the estimation of PoF.
- This report gives details of a computer code developed for estimating Fracture Probability of a RPV. This code is named Probabilistic Structural Integrity Analysis of Reactor Pressure Vessel (BARC-PROSIAR).