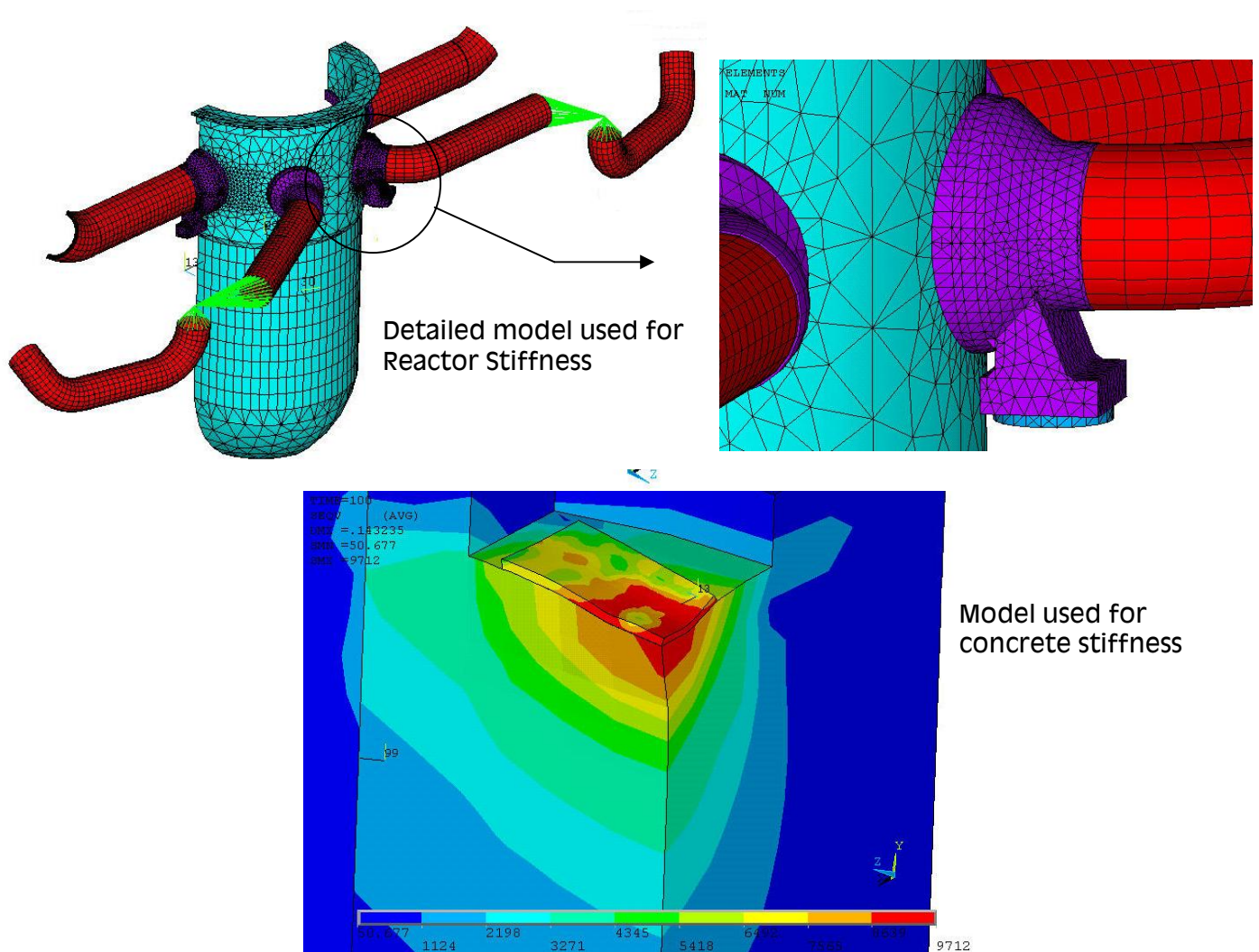


Project:

Reactor Head Drop Evaluation

**Challenge:**

Nuclear Regulatory Commission guidelines require power plant operators to evaluate the consequences of accidental drops of the reactor head onto the reactor vessel during refueling, maintenance, or head replacement activities.

Resolution:

Our engineering team performed several parallel analyses in development of an overall head drop risk assessment. The stiffness of the reactor vessel concrete support pedestal was determined with a detailed, a stand-alone analysis incorporating concrete crushing effects. Simultaneously, the stiffnesses of the Reactor Vessel support nozzles were determined with a detailed computer model incorporating material plasticity. The two stiffness components were combined into a total target stiffness, which was used for a simplified dynamic impact analysis. The resulting demand displacement of the target system was evaluated to ensure overall reactor stability and containment of reactor coolant in the event of the accidental drop.