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Structural Integrity Report of Neutron Flux Monitor at occluded EqP#07 (PBS 55.B4.D0)

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ITER is one of the most ambitious energy projects in the world today. The Neutron Flux Monitor (NFM) diagnostics module will be installed on ITER, it measures the total neutron emission, providing the evaluation of the fusion power, and will be positioned in the occluded Equatorial Port #07, more exactly mounted on the inner Bio-shield wall and within penetration from Tokamak Pit to the NB Cell.
This article describes the overall design of NFM, defines relevant failure modes, criteria of the structural integrity assessment, gives an overview of the structural design criteria used in the structural integrity assessment of the ITER NFM#07system. In the article, NFM is analyzed by the finite element tool ANSYS and the simulation result is evaluated based on analytical design, then summarizes the structural assessments related to each failure mode and the further research about the stress distribution at the large stress intensity area is performed.
The results and outcomes of this assessment will be taken into account for the design and the future fabrication of the NFM#07 system and its components.

Eligible for student paper award?

No

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