

**DESIGN VALIDATION OF ITER XRCS SURVEY SPECTROMETER WITH NUCLEAR  
CODE RCC-MR  
(IAEA CN-258/FIP/P1-36)**

**Summary:** The paper describes the results obtained from structural damage analysis of XRCS Survey system, and their compliance with relevant design rules given in the French Nuclear code RCC-MR validating the design.

1. Effect of different loads and load combination on XRCS Survey system has been analyzed using Finite element analysis method and validated using RCC-MR design codes criterion. Load case combining the following loads (DW+EM+VV ICE IV) found as worst case and maximum stress results are up-to 142Mpa were found. Maximum stress is found in safe range as per RCC-MR codes
2. Stresses and displacements caused by Thermal loads acting on the sight tube will the affect the temperature of Spectrometer assembly. Deformation of 23 mm has been assessed, it is also under the allowable limit. This input will be used for double wall bellow design used as a moment compensator for XRCS-Survey Sight tube.
3. Structural Integrity of ITER XRCS- Survey is being analyzed using RCC-MR recommendations, considering ITER load combinations. In this study P, type and S, type damage has been assessed and it is found the XRCS Survey design is under the allowable safety margins.