AMERICAN PETROLEUM INSTITUTE

API Technical Report 6AF2

Technical Report on Capabilities of API Integral Flanges Under Combination of Loading—Phase II

FIFTH EDITION | APRIL 2013 | 119 PAGES | $170.00 | PRODUCT NO. G6AF25

This technical report is the result of the evaluation of the load carrying capacity of API 6A integral flanges, including the end tension and bending moment in addition to the conventional rated pressure and makeup forces. The effect of a temperature difference corresponding to 250 °F on the inside and 30 °F on the outside is also evaluated. Three-dimensional finite element meshes are generated for the Type 6B, and Type 6BX flanges. The computer program SESAM is used to obtain the stresses at selected critical flange and hub sections and to determine the gasket reaction due to each of the four unit load cases and the temperature difference load case. The leakage criterion is defined as the load combination with reduces the initial makeup compressive forces in the gasket to zero. The stresses in each defined section are linearized in accordance with the ASME *Section VIII, Division 2*, procedure to determine the membrane and membrane-plus-bending stress intensities. The stress intensities are checked against the allowable conditions specified in Spec 6A.

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