**AXISYMMETRIC FINITE ELEMENTS ANALYSIS OF SKIRT-TO-VESSEL JUNCTURE**

**PROBLEM DESCRIPTION:**

It was required to calculate the stresses in the skirt at the juncture of skirt to the vessel for compliance with ASME B&PV Code Section VIII, Div.-2. The client requested to perform an axisymmetric FEA of the Skirt-to-vessel juncture.

**FEA MODEL & RESULTS:**

The axisymmetric FEA model of the skirt, cylindrical shell ring # 1 and hemispherical head was generated using FEA software ANSYS. The pressure loading of 1409 psig was applied inside the shell and head. To simulate the longitudinal stress in the vessel shell, a calculated pressure load was applied at the top of the model. The appropriate modulus of elasticity was applied to compensate for the design temperature in the model. Three load cases were analyzed, involving “Pressure loading”, “Weight + Wind loading” and “Pressure + Weight + Wind loading”. The wind loading was applied as unidirectional vertical load to comply with the requirements of the axisymmetric model.

For all the loading combinations analyzed, the stress analysis results for the skirt were checked against the ASME code, Section VIII, Div.-2, Appendix-4 criteria. Based on the results of finite Element Analysis, all the stresses in the skirt were within the Code allowable stress limits for the current design of the skirt. The displacement of the top of the skirt was also small and acceptable.

Based on the results of the axisymmetric finite element analysis, the current design of the skirt was certified to be in code compliance with ASME B&PV Code, Section VIII, Div.-2.

The attached FEA plots show the model and results for one of the load cases analyzed for the skirt.
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SMX = 57216

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Z-BUFFER

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MAT NUM

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