

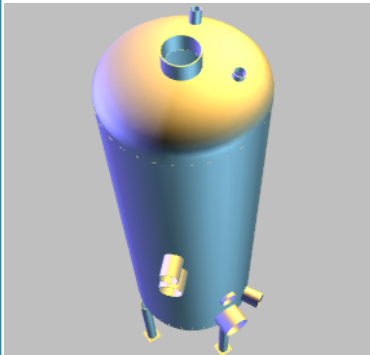
Rig Location: North Sea
Rig Type: Semisubmersible
Owner name: UKCS Operator
Classification Society: ABS
Code design: ASME BPVC Sec. VIII Div. I



Assessment Tools:

- **Compress**
www.codeware.com
- **Autodesk Robot Structural Analysis Professional**
usa.autodesk.com/robot-structural-analysis-professional

Click below to see model 3D!

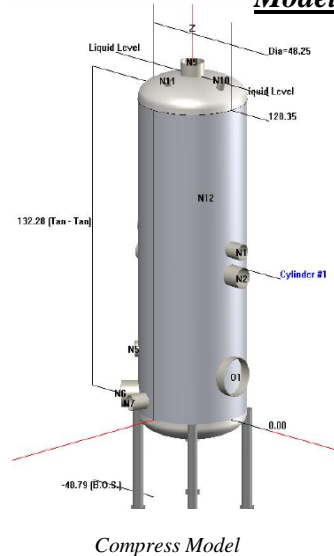


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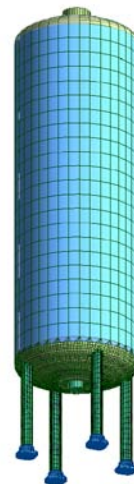


Project description: Rig Engineering (RE) has been tasked to reassess operating limit review of existing Mud Gas Separator (MGS) located on semi-submersible drilling rig. Design reference code was ASME Boiler and Pressure Vessel, Section VIII Division I. To assist with code requirements screening the vessel was rerated using Compress software. In addition, due to vessel legs location on bottom dome end, which is not covered by the code, an additional finite element analysis (FEA) was carried out in order to assess capacity of bottom dome end when submitted to contents (solids and liquids) inside the tank.

Model of Geometry



Compress Model



FEA Model

Photos



View on Top Part of Existing Mud Gas Separator

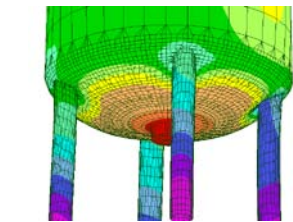


View on Supporting Legs of Existing Mud Gas Separator

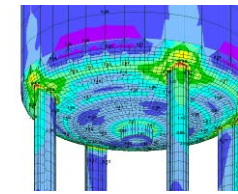


Interior View of of Mud Gas Separator with Pipe Inlet and Bottom Dome End

Results



Deformation Plot under Maximum Allowable Mud Density



Stress Plot in Bottom Head under Maximum Allowable Mud Density

R.E. scope of work
 Job assignment was to reassess capacity of existing Mud Gas Separator and redefine its safety working conditions i.e. Maximum Allowable Working Pressure (MAWP), maximum mud density for its maximum level inside the vessel and maximum mud level for mud density of 20 ppg. The analysis was also conducted for test conditions with test pressure of 1.5 times MAWP and wind of 50 knots as well as for survival storm condition for empty vessel and wind of 100 knots.

Engagement Condition
 Upload your problem to us and give us relevant input to allow us to resolve your problem. We will need:

1. Vessel Geometry
2. Design working conditions i.e. working pressure, maximum working temperature, mud density range and its level
3. As-gauged thickness of vessel components: main chamber, nozzles and legs
4. Wind pressure both for operating and storm conditions
5. DAF factor of the rig