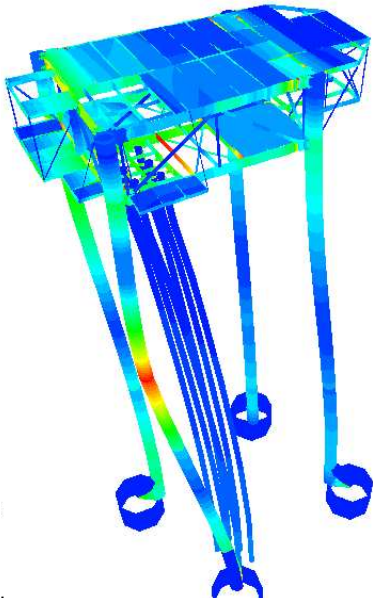


# Platform Design against Ship Impact

Client – Leading Industry Consultant

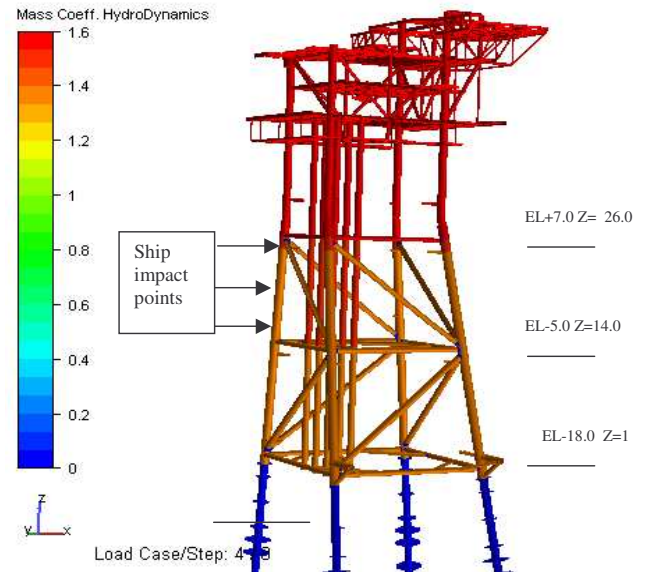
ABS Consulting was requested by Client to assist platform design against ship impact. The platform structure, with minimal facilities and normally unmanned, must withstand impact from a typical supply ship and withstand a storm after impact, with the risers and conductors adequately protected.



ABS Consulting conducted the analysis using principles of progressive collapse. The impact energy from collision of a ship into the fixed offshore jacket is dissipated by a combination of mechanisms: deformation of ship's hull,

denting of the impacted member, global bending of the jacket leg and overall deformation of the platform. Conventional single member analyses only utilise the energy dissipating capacity of the impacted member. The progressive collapse analysis takes into account all the energy dissipation mechanisms and therefore is able to provide a more realistic estimate of the resistance (or survivability) of the platform to ship collision. By using USFOS software, these analyses have been staged as follows:

- 1) Quasi static ship impact analysis for all inclusive scenarios for impact onto jacket legs within the ship impact zone
- 2) Redundancy analysis of brace failures under operational environmental loading
- 3) Post impact/damage push over analysis under operational environmental loading for selected cases



Some members were resized to accommodate ship impact strength requirements. Final analysis results demonstrate that the jacket platform has sufficient strength/capacity to absorb the required ship impact energy. Post damage analysis also demonstrated that the platform has sufficient strength to maintain integrity to operational loading level.

