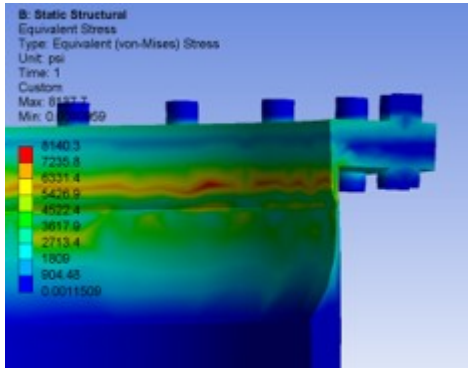


THERMO-WRAP™

24" OD CAISSON REPAIR & REINFORCEMENT, UK



Problem

Due to internal corrosion, a large thru-wall defect occurred near a 24" raised face flange. In addition to the internal corrosion, concerns were raised on whether the line could support the axial loads generated by the rise of pipe above the flange.

Conditions

This 24" OD schedule 80 line has a design pressure of 14 psi (1 bar) and is located under a 120' (36.6m) vertical rise weighing 300 lbs/ft (446 kg/m), resulting in a total axial load of 35.5 kips (16t). Reinforcement was applied over the 26" (66cm) section between the deck plate and the flange. The full weight of the 120' (36.6m) vertical rise of pipe was also taken into consideration as a worst case scenario, even though pipe supports were in place.

Solution

The thru-wall defect was repaired by applying 10 layers of Syntho-Glass®XT, a 54,000 psi (3,724 bar) tensile strength fiberglass wrap. The axial loads were addressed using 2 fabricated metal shutters which extended between the flange and deck creating a 4" (10.2cm) void which was filled with a high compression strength epoxy mortar to disperse the axial load over a larger surface. After the mortar had cured, the shutters were removed and the section of the pipe was wrapped with 10 layers of Thermo-Wrap™, a 100,000 psi (6,895 bar) tensile strength fiberglass wrap system, providing hoop strength and structural integrity to the thinned pipe, now and into the future.

Result

The repair was carried out by certified technicians in a matter of hours. The line is now fully capable of maintaining the design pressure and safely supporting the vertical rise of pipe.



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