8 CONCLUSION

- For both Amitech and fabricated flanges, the comparison between experimental and numerical results showed good agreement when flanges were tested up to 4.0 and 3.0 MPa respectively.
- It was found that the differences between analytical and experimental results were due to the occurrence of cracks around the gauge locations; as well as the change in time of the loading conditions of the stubs and fasteners.
- The 10 bar fabricated flanges were designed according to BS 6464. However, the burst pressure was found to be less than that required by the standard. This was probably due to material inconsistency within the flange laminates.
- The 10 bar fabricated flanges exhibited fibre dominated failure characterized by cracks extending through the stub. This indicated that the flange radius is the most critical location with regard to material failure of the stub flange laminate.
- The 10 bar Amitech flanges failed by fracture at about 8.6 MPa. This indicates that this flange was made adequately since the design specifications recommend a design factor not less that eight \(^{(3)}\).
- Amitech specimens exhibited two different types of failure. Matrix dominated failure characterized by pipe debonding at the flange heel and fibre dominated failure characterized by cracks around the flange radius extending through the stub thickness. This was probably due to their design and manufacturing methods.