TEST SUMMARY # 15

NIXUS International
6620 E. Co. Hwy E. CO.
Hwy 30A, Box U1
Watersound, FL 32461 U.S.A.
Tel: 850.267.1237
Fax: 850.267.1604
E-mail: info@NIXUSstrongback.com
www.NIXUSstrongback.com

STRONGBACK COMPOSITE REPAIR SYSTEM FOR DAMAGED PIPES

TESTING PARTY: EUPEC FRANCE.

TEST LOCATION: GRAVELINES, FRANCE.

CLIENT: TOTAL FINA ELF, TOTAL (E & P) INDONESIE

DATE: COMMENCED 9/27/2004. COMPLETE 1/2005.

OBJECTIVE:
To confirm StrongBack systems met client requirements for axial strength, corrosion prevention, abrasion resistance and pressure containment of corroded splash zone risers and for compatibility with several coating types.

TEST DESCRIPTION:
Multiple StrongBack systems applied to three coating types and bare steel 8" API 5L X42 Grade pipe and were subjected to adhesion, pull-off, cathodic disbondment, impact and burst tests. Two spools used for the burst tests each had a fully circumferential machined defect x 200mm length x 5.68mm deep (equivalent to a 80% wall thickness loss). For comparison, an unrepaired defective spool was hydrotested to (hoop) failure (48.6 bar).

REPAIR SYSTEM:
The defect repair systems used the StrongBack load transfer epoxy # GS-154 to fill the defect volume. Epoxy undercoat # GS-561 for corrosion prevention and tape adhesion applied over the defect to a length of 76mm and around pipe circumference. Four rolls of StrongBack tape # SB-0690 wrapped over the epoxy, to provide approx. 31 layers.

RESULTS:
Calculated burst pressures of 111.6 bar (Kastner, axial stress) and 41.3 bar (B31.G, hoop stress) were exceeded as StrongBack repair failed by leakage at 171.6 bar and 144.5 bar (after impact).

CONCLUSION:
StrongBack systems provided adequate corrosion / abrasion characteristics and was the only product to provide sufficient axial and hoop strengths for risers with significant external defects.

5/05NIC