



TEST SUMMARY # 16

**STRONGBACK COMPOSITE REPAIR
SYSTEM FOR DAMAGED PIPES**

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TESTING PARTY: SHELL GLOBAL SOLUTIONS

TEST LOCATION: AMSTERDAM, HOLLAND.

CLIENT: SHELL OPERATING UNITS

DATE: COMMENCED 8/18/2005. COMPLETE 11/2005.

OBJECTIVE:

To prove StrongBack repair systems are capable of restoring damaged pipe to the original specified ultimate pressure strength after aging and to evaluate repair life expectancy.

TEST DESCRIPTION:

Multiple simulated defects were machined into 6" Sch. 40, ASTM 106 Gr. B pipe (3 nos. defects per spool, 4 nos. spools). Each defect measured approx. 50mm x 52mm length x 4mm deep (equivalent to a 60% wall thickness loss). Following application of the StrongBack repair systems, spools were hydrotested to 180 bar. After 1,000 hrs aging the spool was to be burst tested (calculated burst pressure 365 bar).

REPAIR SYSTEM:

StrongBack load transfer epoxy # GS-154 used to fill defect volume. Epoxy undercoat # GS-561 for corrosion prevention and tape adhesion then applied completely over defect area and around pipe circumference. Two rolls of StrongBack tape # SB-0630 wrapped over the epoxy, to provide approx. 32 layers.

RESULTS:

At pipe design and field hydrotest pressures of 145 & 180 bar respectively, no yielding of the pipe wall at the defect location occurred. Calculated burst pressure was exceeded when at 390 bar testing was stopped for safety reasons but no sign of damage showing to the StrongBack repair.

CONCLUSION:

The StrongBack composite system is qualified for repair of pipes with external defect, long term, i.e. at least 20 years design life

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