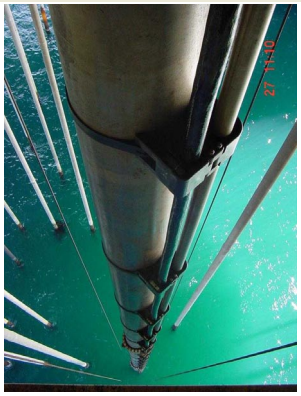
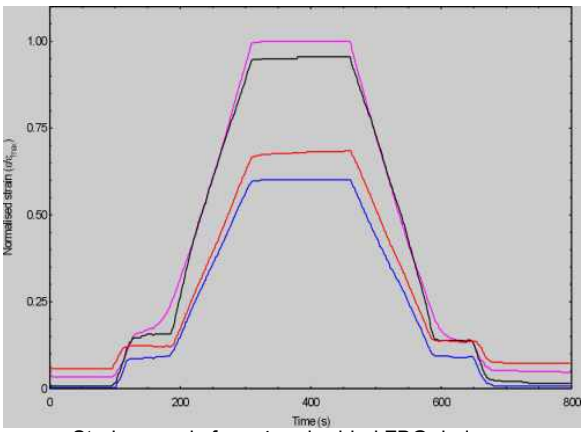
Composite Riser Pipe Monitoring

Project	Instrumentation and testing of CompRiser™, a new design of composite riser for deepwater applications
Client	Deepwater Composites (an Aker Kvaerner and ConocoPhillips Company)
Date	2001-2004
Location	Oslo, Norway and Houston, USA
Sensors	Bare FBG and SmartTape strain and temperature sensors
Attachment	Embedded within the carbon fibre composite laminates
Interrogator	OFSSSI
Images	 Composite drilling riser (black) together with metal risers (grey) on a platform before installation (c/o Deepwater Composites)  Composite drilling riser installed at Heidrun TLP in the North Sea (c/o Deepwater Composites)  Instrumented composite riser section within axial tension rig at DNV, Oslo.
Results	Smart Fibres were commissioned to provide optical fibre sensors to several design iterations of CompRiser™ for design validation and in-service monitoring. During load tests at Det-Norke Veritas on a composite riser specimen, strains were measured at many locations using both conventional strain gauges and Smart Fibres optical fibre strain sensors. Not only were the optical fibre sensors more reliable than the strain gauges but they also enabled the strain at different depths in the composite to be monitored. The Smart Fibres sensors were still operating correctly even after the riser pipe had been tested to failure. Further Smart Fibres sensors were embedded in later iterations of the product which were subjected to pressure testing to failure at ConocoPhillips' Houston laboratories.  Strain records from 4 embedded FBG during pressurisation test on the composite riser
Further information	Please contact us