

### ETPM Multipass Plough Buoyancy System

Client : Elf Exploration UK Plc.

Contractor : ETPM DeepSea Ltd.

Location : Block 22/30b, UKCS

Water depth : 85-105msw

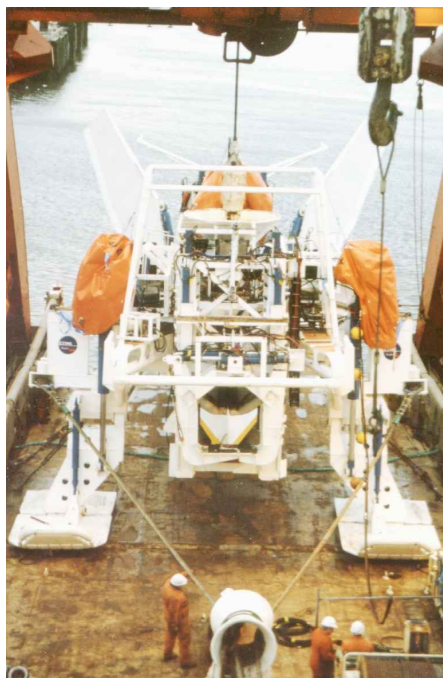
ETPM DeepSea (ETPM-D) were contracted by Elf Exploration UK Plc to undertake the trenching and burial works for the Elgin Franklin pipeline. ETPM-D commissioned a new Multi-Pass Plough (MPP) to do the works from their construction vessel TSV NORTHERN EXPLORER. However, The new plough was delivered over-weight and so as to keep to the operational parameters for over-boarding and recovery a solution was sought to reduce the weight of the plough. As a result of an engineering study it was decided that rather than 'chop the MPP down to size' a variable buoyancy system should be installed.

On appraisal it was considered that solid buoyancy was not suitable due to its constant state and the size and weight of steel buoyancy tanks would be enormous. ETPM-D approached Seaflex to design, develop and manufacture a variable buoyancy system.



### SEAFLEX INVOLVEMENT

Seaflex's solution was the installation of four (4) 5Te Fully Enclosed Single Attachment (FESA) air lift bags, connected to a central ROV operated valve chest. The bags could also be inflated or deflated from the ship via an air line running down the MPP umbilical. The FESA bags allowed single point attachment to the MPP in addition to variable lift up to 5Te in each unit.



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During overboarding the bags were fully inflated for the decent to the seabed thus reducing the loads on the wire and A-frame by 20Te. For recovery the bags were inflated only when approaching the heavy or splash zone. Each unit had a comprehensive air dumping system which could vent air at approximately 960cfm/28cmm.

### FESA Bags

In recognition of the Elgin Franklin project buoyancy success, ETPM-D have used the Seaflex Variable Buoyancy System on every MPP project since. The units hired from Seaflex on a project by project basis. Seaflex hold the units at their Cowes facility and despatch to the boat load-out location on instruction. The hire contract allows ETPM-D to be sure that the units are fully serviced and in test which in turn give minimum overheads and minimum down time.

Since the ETPM-D project Seaflex have proposed and used FESA technology on a number of successful Seaflex FESA bag range presently consists of 0.5Te, 1Te, 3Te and 5Te units - details available on request.

### PHOTOGRAPHS :

The Multi-Pass Plough on the aft deck of TSV 'Northern Explorer'. The FESA bags can clearly be seen installed ready for the MPP to be deployed