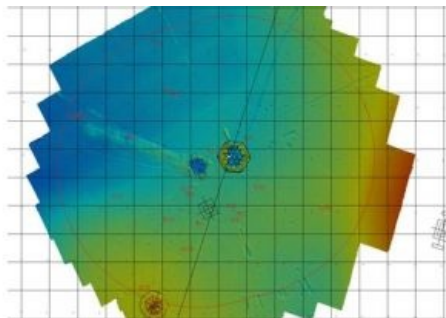


Subsea Visualisation at Frigg



SRD has successfully completed an acoustic subsea visualisation programme in support of decommissioning work on the Frigg field, located on the boundary between the British and Norwegian sectors of the North Sea. In August this year SRD were contracted by Saipem UK's Sonsub Division on behalf of Total Exploration & Production to provide acoustic subsea visualisation support.

The operation involved the removal and disposal of pipelines within a 500 metre radius of the platforms and was conducted from the vessel Normand Cutter. There was also a requirement to smooth the original protective rock berms to remove hazards for

subsequent trawling activities. SRD's Subsea Visualisation System (SVS) provided real time monitoring of the smoothing operation and was used for rapid assessment of the dispersal of material.

A pair of 240kHz SVS sonar heads was used along with integrated heading, motion and depth sensors. Seabed data was acquired in water depths of 100m using both conventional multibeam and electronic transmit beam-steering techniques.

Attention was focused on eight pipelines within a 500 metre radius. These routes featured either rock berms covering the pipe or trenches where the pipe had been removed. In both cases, smoothing was required to reduce the severity of the slopes. Using tools within the SVS software, terrain images were produced displaying seabed gradients with a colour palette. The images quickly highlighted areas where localised gradient values were outside the pre-determined limits specified.

There was also a requirement for a number of pipe ends to be buried to at least 1 metre. SVS was used for real-time comparison of historical pre-trenching data with the actual post-trenching survey data. Using pipe burial information from the ROV-mounted pipe tracker, SRD was able to accurately image and quantify the burial depth of the pipes.

After all smoothing operations had been completed, it was necessary to remove seabed debris within the 500m zone around the platforms. SRD conducted a bathymetry survey of the whole field to identify potential items of debris and successfully located 20 items of debris, most of which were recovered to the surface, including pipe lengths, grab bags and a ship's anchor.