Discovered in 1975, the billion barrel Norwegian North Sea giant Valhall oil field lies in seas 70m deep, close to the borders of UK and Denmark, with a production life estimated until 2050 and a daily production rate of around 40,000 bopd.

Valhall is a soft chalk reservoir and its fragility increases the complexity of managing it and maximising the total field output. Since 2003, 4D seismic technology (repeated 3D seismic surveys) has been utilised to upscale extraction. Permanent Reservoir Monitoring (PRM) consists of multi-component sensor arrays trenched in the seabed over which a repeatable source is fired. Providing High Density (HD), repeated, 4D snapshots allows analysis of reservoir changes on a regular basis enabling improved field management and development. BP, the industry leading proponent of 4D LoFS, has noted it provides considerably better repeatability than streamer surveys.

Since 2003 14 repeat LoFS surveys have been completed at Valhall. In 2010 WGP was contracted by BP to provide the precisely positioned source sub-arrays for the next 7 surveys over 3.5 years and so far three surveys have been successfully completed in 2010 and 2011 utilising the PMS equipment onboard the M/V Stril Myster.

Utilising available technology and the industry leading LoFS experience of WGP, BP is able to acquire survey data to the highest technical standards with the repeatability required to maintain and expand upon the quality of the Valhall LoFS 4D database – a core requirement for effective management of any producing reservoir. Valhall LoFS 15 commenced in Q2 2012.

WGP was contracted by BP in 2003 to design the source system to be used above this array for the 1-2 surveys per year. The short period required for each survey (1-2 months) called for a highly efficient and safe containerised source system design that facilitates rapid mobilisation and demobilisation to an existing Platform Supply Vessel (PSV). The minimal footprint utilised enables the PSV to maintain capacity for conventional oil-field operations if required.