



The SPARDIG project - Transforming analogue sparker records from the Norwegian continental shelf into SEG-Y format, first results

Marc Schaming (1), Leif Rise (2), Shyam Chand (2), Bøe Reidulv (2), Per Terje Osmundsen (2), and Tim Redfield (2)

(1) Université de Strasbourg, CNRS, Institut de Physique du Globe IPGS UMR7516, F-67000 Strasbourg, France (Marc.Schaming@unistra.fr), (2) Geological Survey of Norway (NGU), N-7491 Trondheim, Norway

A large number of sparker lines were acquired on the Norwegian continental shelf during the years 1970-1982, by IKU (Sintef Petroleum Research). The responsibility of the analogue seismic database was transferred to NGU in 1998; this included storage of the physical data (original paper rolls and half-scale film copies) and the digital navigation database. The data (from 60°N to ~71°30N) were in the early eighties subdivided in 6 data packages, and offered for sale to oil companies as half scale folded paper copies (25 cm width). Navigation applied was mainly Decca Main Chain.

The 2014-2016 SPARDIG project (Chand et al., 2016) was supported by NGU, AkerBP (Det Norske), Lundin Norway and the Seabed Project. In the project, IPGS has transformed 374 rolls of analogue sparker lines in 17 different surveys into SEG-Y format. The total length of converted survey lines is 31 261 kilometers. Rolls were scanned at 600 dpi and converted into SEG-Y using the SeisTrans (Caldera software) application (Miles et al., 2007). SeisTrans uses interactive, iterative and repeatable steps in a dedicated graphics window. A first step allows definition of axes and scales, then record time lines (horizontal TWT times and navigation time lines down the record) are picked and removed, and traces are defined. At this step, control tools are available to ensure the quality of the traces. After that, navigation information extracted and interpolated from excel files are added to trace headers. A continuous QC process allows production of SEG-Y files directly readable by interpretation software. The SEG-Y data will be delivered to the Norwegian Discos National Repository (<https://portal.diskos.cgg.com/whereoil-data/>) but access will be restricted to participants until 1st April 2019.

IKU sparker lines have higher resolution than conventional 2D lines, but the penetration is limited. The data sets are complementary to each other. In 2D seismic lines, it is often difficult to delineate units in the upper part of the records. Some lines show no details of the Quaternary stratigraphy, especially when the Quaternary overburden is thin, and in that case the sparker lines are of inestimable value. Off mid Norway, the SEG-Y transformed sparker lines were interpreted together with 2D seismic lines, and an updated geological map was made for the coastal area. We were able to classify the basement-sediment contact as fault related or stratigraphic. Several new faults were mapped based on detailed bathymetry and seismic data. Exposures of weathered basement at the seafloor and juxtaposition of basement and sediments across inherited faults were observed for several kilometers along strike. These relationships provide important links to the deeper structure and stratigraphy of the Mid-Norwegian margin. The SPARDIG project secured a national treasure for future investigations. This type of high-resolution regional grid will probably never be collected again in Norway.

References

- Chand et al. 2016 - Transforming analogue sparker records from the Norwegian continental shelf into SEG-Y format. Technical report, Spardig project, 2016.038, http://www.ngu.no/upload/Publikasjoner/Rapporter/2016/2016_038.pdf.
- Miles et al., 2007 - Resurrecting vintage paper seismic records. *Mar Geophys Res* 28, 319-329, DOI:10.1007/s11001-007-9034-5.