The Arbroath field is located in UKCS block 22/17 and produces 38° API oil from the Forties Sandstone turbidite reservoir at approximately 2500m TVDSS. Production began in 1990 and the field still produces significant oil volumes today.

In 2006, a re-appraisal of 1993 and 2000 vintage 4D seismic data over the field was initiated to de-risk infill drilling targets. This included a petrophysical and petroacoustic review and 4D seismic re-processing:

- Petrophysical log database QC and repair, facies modelling and shear log prediction using clustering to provide a quality log set for all key wells.
- Quantifying the seismic response to reservoir sand presence and fluid fill. Quantifying the dynamic seismic response associated with changes in OWC, oil saturation and fluid pressure due to continued production using seismic forward modelling techniques. Selecting optimum seismic elastic inversion products to highlight produced zones.
- Improved 4D seismic images by using state-of-the-art time lapse processing technology.
- Applying enhanced seismic processing to improve signal levels in seismic AVO volumes, leading to improved relative fluid impedance volumes for better delineation of by-passed oil.
- Predicting continuous rock strength profiles along infill well paths, performing sand stability and in-situ stress analysis to optimise preferred perforation placement and orientation.

This poster presents the integrated progression from seismic data review with petrophysical and petroacoustic analysis leading to identification of un-swept oil, and assisting infill well placement and design. We highlight the innovative technology used during each of the stages.