

The Schiehallion Field: The Impact of Depositional Architecture on Production Performance

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The Schiehallion field lies in water depths of up to 500m and is situated on the United Kingdom continental shelf some 200km west of the Shetland Islands. Schiehallion was discovered in late 1993 and was appraised by a further five wells in 1994-95. In 1995, a horizontal appraisal well, 204/20-5 (C01), was drilled and subsequently tested over an extended period. The Schiehallion field, together with the adjacent Loyal field, was sanctioned for development in 1996 with development drilling commencing that same year. At sanction, the Schiehallion field STOIP was estimated at 935 million barrels.

The Schiehallion Field comprises multiple reservoir sands that are sealed on the up-dip, southern edge by an east-west normal fault that completely offsets the reservoirs. The eastern trap is defined by the stratigraphic pinch-out of the T30 sands between top seal and bottom seal mudstones. The northern and western margins are defined by dip closure to an OWC at 2064mTVDss. The field is cross-cut by east-west faults which define four structural segments.

The multiple reservoir sands sit within the BP Amoco T30 Paleocene group of sequences, approximately equivalent to the Andrew Member of the North Sea lithostratigraphy. A detailed evaluation of well and seismic data in the Schiehallion area has allowed the T30 interval to be sub-divided into a number of sequences (T31, T32, etc.). Within these sequences there are three distinct episodes of sandstone deposition, T31, T34 and T35. It is these sandstone packages that form the reservoirs of the Schiehallion and neighbouring Loyal fields. The T30 reservoirs are siliciclastic turbidites with seismic interpretation and attribute mapping revealing them to be highly channelised. In the Schiehallion area, the T31 reservoir is a sheet-like unit comprised internally of a series of laterally amalgamated, meandering channel complexes.
