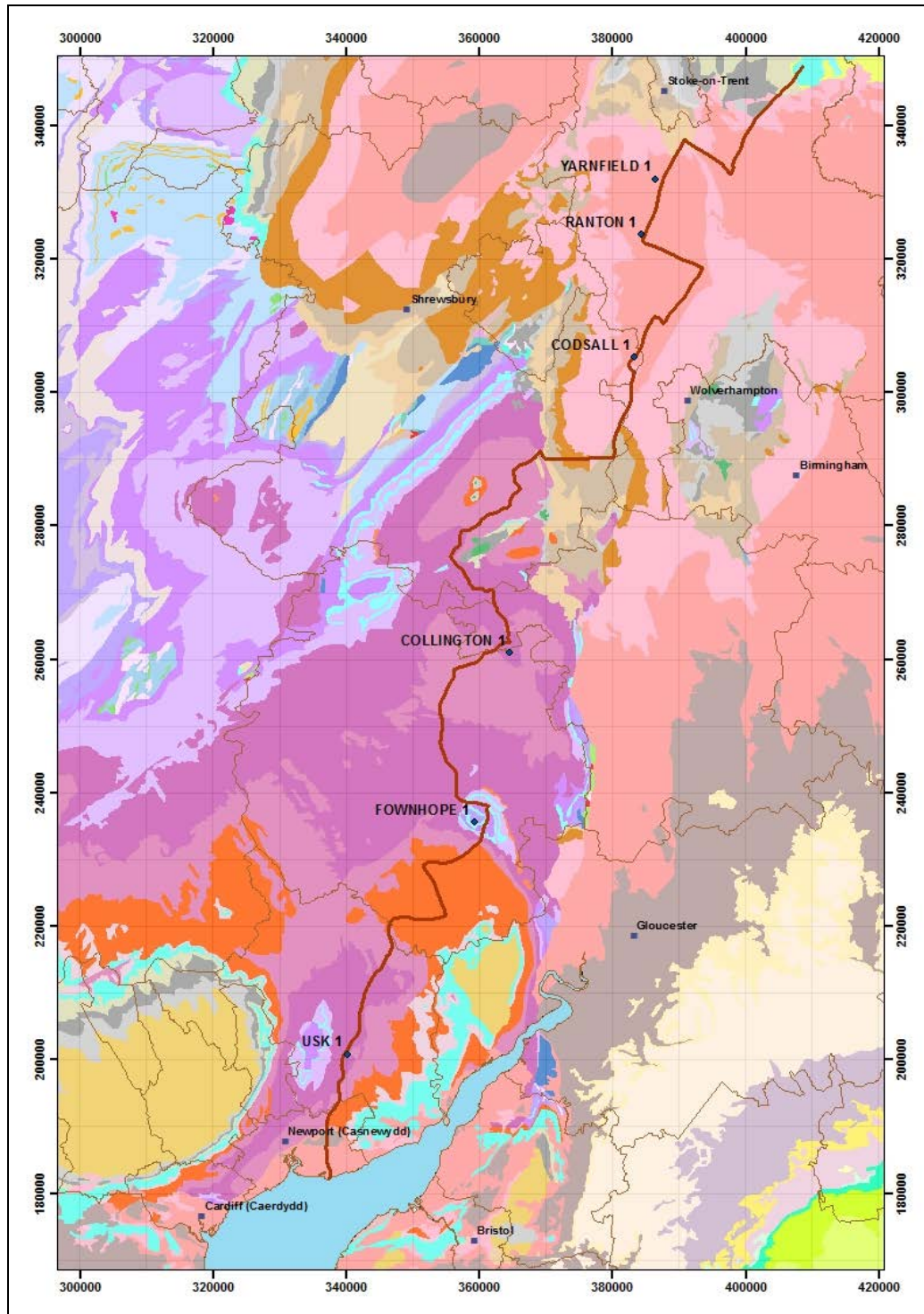


UKOGL-RG-007 : S-N profile from South Wales to Staffordshire



This profile was designed primarily to give a view of the Lower Palaeozoic sediments of the Welsh Borderlands and the South Stafford Basin. However, it also includes a thick sequence of Upper Palaeozoic rocks in its northern part.

The south end of the profile begins on the bank of the Severn Estuary, near Newport, and runs across a thin Lower Jurassic and Triassic section before reaching the Lower Old Red Sandstone outcrop of Lower Devonian and Pridoli age. These rocks form the outcrop for much of the southern section of the profile. Beneath this cover lies a sequence of well-bedded and gently folded sediments, proved to be primarily Silurian by Usk-1, which reached a total depth of 3,060 metres in the Aeronian (Llandovery). The well was drilled to the east of the Usk Anticline, where Ludlow and Wenlock outcrops can be traced into the profile from tie line SOV86-X80-05.

The line then runs across the northern extension of the Usk Anticline, into a thick Lower Palaeozoic basin that the results of Fownhope-1 suggests includes Ordovician sediments of Tremadoc and possibly Caradoc age beneath the Silurian. In the well, these rocks overlie Cambrian Merioneth sediments, resting unconformably on Pre-Cambrian sandstones and volcanics.

The profile continues northward to cross the Woolhope Dome close to the location of Fownhope-1, which was drilled on the crest of the Dome to a total depth of 1,998 metres in the Pre-Cambrian. The profile crosses outcrops of Wenlock and upper Llandovery rocks in the core of the Dome, which is bounded to the southwest by the Woolhope Fault, a prominent thrust related to Variscan, or possibly Acadian, deformation.

Immediately north of the Woolhope Dome, the profile crosses the zone of the Neath Disturbance into a shallower basin. The basin thickens northwards, into the area around Collington-1, but it is unclear from the seismic data whether the main southern part of this basin includes any Ordovician or Cambrian rocks between the Llandovery and the Pre-Cambrian. However, there are indications of dipping events below the Llandovery in the region immediately south of Collington-1, which was drilled to a total depth of 1,720 metres in possible Pre-Cambrian, overlain directly by the Woolhope Shale of basal Wenlock or Llandovery age. This well was drilled on a structure bounded to the southwest by another major thrust, the trace of which can be followed to the east on line BGS-84-01, where it plunges down towards the Malverns.

North of Collington, the profile is made up of a series of 1964-vintage single-fold seismic lines and data quality is poor. However, it can be seen clearly that there is a deep, Lower Palaeozoic or older, basin in this region. There also appears to be a major unconformity within the section around the lower Silurian. Work is currently underway to attempt to better define this from outcrop information to the west.

At about CDP 6320, the profile crosses a southwest extension of the Hodnet Fault, which joins up with the Church Stretton fault zone. There is a 10.2 km wide gap where there is no seismic data available, across the Upper Coal Measures and basal Permian outcrops of the South Shropshire Coalfield region, before the profile enters the South Stafford Basin.

Codsall-1 was drilled to a total depth of 1,189 metres in the Wenlock Coalbrookdale Formation and gives the first tie to the stratigraphy, which now includes Triassic, Permian and Upper Coal Measures sequences lying unconformably on Silurian of Ludlow age. Unfortunately, the seismic data south of Codsall is of poor quality, largely because the line runs almost along the line of the Hodnet Fault. North of Codsall-1, the Palaeozoic section expands and the Stretton Borehole encountered Lower and Middle Coal Measures before reaching a total depth of 1,220 metres in Devonian of Old Red Sandstone facies.

There appears to be a significant thickness of both Lower and Upper Palaeozoic rocks to the north of Stretton, although the structure is not easy to unravel, and both Dinantian and Namurian sediments are present in Ranton-1. This well was drilled to a total depth of 1,859 metres in Devonian of Old Red Sandstone facies and the profile indicates a thick sedimentary section beneath the well. The abrupt thickness change at the well location is related to a right angle change in the direction of the line, although Ranton-1 does lie on the northwestern edge of the South Stafford Basin.

The profile continues northwards, running close to Yarnfield-1, which was drilled to a total depth of 1,431 metres in the Namurian. This well began drilling in the Sherwood Sandstone, before drilling a thick sequence of Upper Coal Measures Warwickshire Group, rocks, below which Middle and Lower Coal Measures lie above the Namurian.

The profile then crosses the southern edge of the Potteries Coalfield before making another right-angle turn back into the Permo-Triassic outcrop of the Needwood Basin.

Another sharp turn takes place at CDP 11735, after which the profile runs northeast to the edge of the Derbyshire Dome through the Caldon Low Borehole. A strong unconformity can be seen clearly between CDP 11885 and CDP 12140, cutting down into underlying Coal Measures and older Carboniferous sediments. This is most likely the base of a thick Triassic section in an embayment of the Needwood Basin, although there is little deep borehole control in the area.

North of this, the profile runs across Namurian outcrop to Caldon Low, where the Dinantian limestones are at the surface. This borehole reached a total depth of 535 metres in Old Red Sandstone of probable Upper Devonian age.

Contact:

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