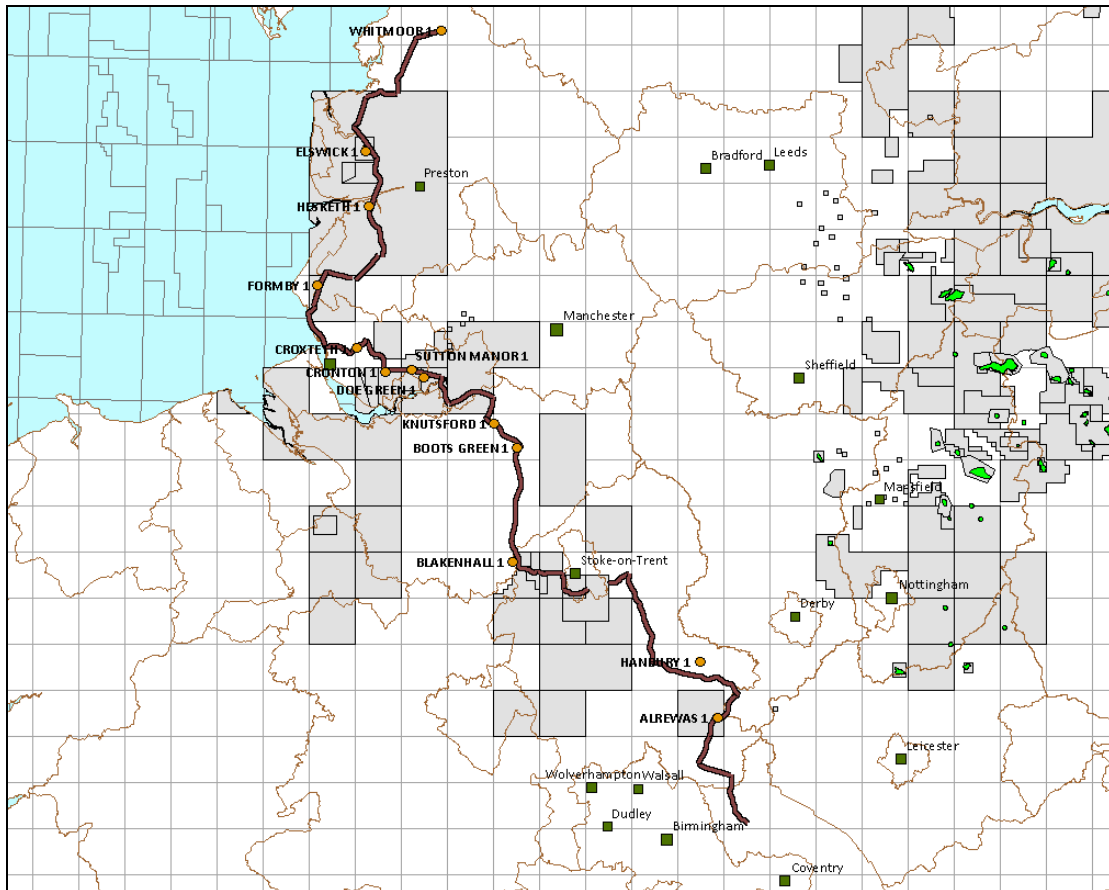


UKOGL-RG-006 : N-S profile from Lancaster to Birmingham

The southern end of this profile begins close to Daw Mill Colliery, west of Nuneaton, and covers part of the Warwickshire Coalfield. Data quality is poor at the beginning of the line because it runs very close to the Western Boundary Fault of the coalfield and crosses the small Dosthill inlier, where Cambrian rocks lie at the surface.

To the east of this fault productive Coal Measures (Westphalian A and B) lie at the surface, underlain by a thin Namurian Millstone Grit and Cambrian rocks and to the west a thick sequence of Basal Triassic sands and Barren Red Measures (Westphalian C and D) overlie the Coal Measures in the Knowle Basin, beneath which boreholes indicate the presence of Namurian, Dinantian and Devonian (Old Red Sandstone) rocks, overlying a Cambrian sequence.

The Triassic sequence is thin to absent beyond the Birmingham Fault, which marks the western boundary of the Knowle Basin, but it can be seen to thicken northwards into Alrewas-1, marking the southern boundary of the Needwood Basin. The Base Permian truncates the Upper Paleozoic sequence with clear angularity at Alrewas-1, where it lies on Lower Coal Measures. This well then passed through Namurian and Dinantian sequences before topping the Devonian at 0.62 seconds.

Continuing northwards, the profile crosses a little-known folded series of Carboniferous, Devonian and probably older rocks beneath the Permo-Triassic of the Needwood Basin.

There is little well control in this area but Hanbury-1 lies some 3 kms northwest of the line and encountered the top of the basal Widmerpool Formation of the Dinantian at 0.41 seconds.

The profile continues north to the western side of Cheadle, where there is a 5km gap in the data. The line picks up again southeast of Stoke-on-Trent, in an area with Upper Coal Measures at the surface, and passes by Northwood-1, which encountered the top of the Namurian at 0.70 seconds.

Continuing to the northwest, the profile crosses the Red Rock Fault complex. Here, the Permo-Triassic sequence thickens dramatically into the Sandbach-Knutsford Sub-Basin of the Cheshire Basin. Blakenhall-1 encountered the top of the Sherwood Sandstone at 0.42 seconds and Boots Green-1 encountered this top at 0.31 seconds: neither reached the Permian. However, Knutsford-1 drilled down through a full section of Triassic and Permian rocks, reaching the top of the Permian Manchester Marl at 1.05 seconds and then passing from the Collyhurst Sandstone into Coal Measures at 1.36 seconds. All three wells encountered Triassic halite near the surface.

From Knutsford-1 the Base Permian rises steadily until the Coal Measures are at or close to the surface in the southern part of the Lancashire Coalfield. The profile crosses close to the coal bed methane exploration wells of Doe Green, Sutton Manor and Cronton, north of Widnes.

It then continues to the northwest across a poor data area on the eastern side of Liverpool, where the Base Permian drops down again into the Formby Basin over a major fault complex that appears to have been penetrated by Croxteth-1. This well passed from the Bunter into the Namurian through a fault at an estimated 0.30 seconds before encountering the top of the Dinantian at an estimated 0.60 seconds.

The profile then crosses the area of the Formby oilfield, where oil was produced from the Keuper in small quantities (about 75,000 barrels in total) from around 50 shallow boreholes. Deeper drilling in the area has failed to find any commercial accumulation but does demonstrate that the Coal Measures has been eroded beneath the Base Permian in most of the Formby Basin, with Formby-1 passing from the Collyhurst Sandstone to the Namurian at about 0.93 seconds and reaching the top of the Dinantian at about 1.12 seconds.

From Formby the profile turns inland to pick up some of the detail of the Carboniferous sequence in the Ribblesdale Fold Belt, where Coal Measures are still overlain by a thick Permo-Triassic. Despite the thickness of the Permian, the distribution of the basal Collyhurst Sandstone in this region is sporadic and generally restricted to the thickest parts of the Permian basins.

A major fault disrupts the Permo-Trias just south of Hesketh-1, where the Base Permian lies at 0.42 seconds and overlies Namurian sediments. This well passes through Upper Bowland Shale to reach the top of the Dinantian, in Lower Bowland Shale facies, at 0.56 seconds.

From Hesketh the profile runs north past Elswick-1, which is downthrown from the eastern end of a Base Permian high on which Thistleton-1 was drilled (encountering the Base Permian at about 0.53 seconds). Namurian rocks of Bowland Shale facies subcrop the Permian Manchester Marl in this high and these are the subjects of a shale gas exploration programme in the Preese Hall-1 area. Elswick-1 reached probable Namurian beneath the Permian at a level projecting to about 0.95 seconds on the profile.

Beyond Elswick the Permo-Trias section thins onto the Bowland High towards the end of the profile. The Base Permian surface is irregular as it rises out of the basin, probably indicating remnant topography at the surface on top of the eroded Carboniferous.

At the far north end of the profile, the Permo-Trias is absent and Bowland Shales of Namurian age are at outcrop. Whitmoor-1 passed through a thick sequence of Bowland Shales before entering the top of the Dinantian Worston Shale Group at about 0.34 seconds. The profile ends on the Lancaster Fells, east of the city of Lancaster.

Contact:

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