

Excursion to Portencross

Saturday 25th June 2011

Excursion leader:- Dr Chris Burton

Report by:- Barbara Balfour

Participants: 24

After arriving at the car park at Portencross Castle, our first area of interest was at the northern end of Ardrine Bay. Looking inland we saw, at South Cottage, the faulted junction of bright red Upper Old Red Sandstone (UORS) dipping ca. 35° WSW of the Seamill Sandstone Formation and to the east the dip was ca. 80° E. The junction is formed by the most easterly of the faults of the Largs-Hunterson Fault Zone...



On the shore, we saw good examples of cross bedding in the sandstone

This cross bedding was created by crevasse splays when levées broke, and sand and mud flowed out. At this time the area was 20° south of the equator at a time just before the Carboniferous age.

At Farland Head, there was an E-W trending, 10m quartz dolerite dyke of late Carboniferous age which cuts the ORS sandstones. They contain extensive caliche (cornstone) horizons suggesting that palaeosols had been developed on the floodplain within which they were deposited.

Sandy's Creek, west of Farland Head, is a narrow triangular inlet at the eastern margin of which the UORS abuts, across a fault, the Sandy's Creek Mudstone Formation. At the western margin, formed by a fault formed gully where the Sandy's Creek mudstones meet the Portencross sandstone Formation the Creek contains a series of faulted highly deformed grey shales.



At the centre of the Creek is a deformed, boudinaged, carbonated basalt dyke which has been dated by sporomorphs (fossilised spores) as being of lowest Devonian age.

As we worked our way back to Portencross Castle, we encountered the Portencross Sandstone Formation, a chocolate brown sandstone with minor conglomerate units. The clasts in the conglomerate consist of porphyritic andesites of which there were examples of rhyolite.



The stone from which the 14th century castle is built is crude rubblestone from the local ORS but with quoins made from pale sandstone with occasional vein quartz pebbles within it.

After lunch, we went north of the Castle and beyond the harbour. There the Portencross Sandstone Formation is cut by an E-W trending quartz dolerite dyke, Jenny's Dyke. This dyke is ca. 20m thick and has been cut through to allow access to the path northwards. It is called the Throughlet.



Continuing northwards towards Hunterston, we examined cross-bedded sandstone interbedded with conglomerate units. These units, forming gravel bars, became more prominent as we approached the Hunterston fence



The gravel clasts show a wide range of lithologies including vein quartz, quartzite, sandstone, porphyritic lava and a small amount of greenschist.

Looking east, on our way back to the bus, we could see the old sea-coast, a sill, overlying the ORS of the cliff's lower section. The thick sill forms the height of Goldenberry Hill.



Chris had not only supplied comprehensive sheets on the geology at Portencross but also gave us his customary clear and thorough explanation of all the formations we had seen. Yet another great day in the field.