

## Field trip to Northern Ireland – Antrim Coast.

### Guide – Ray Pratt

The variety of the geology of Northern Ireland is unsurpassed in any other district of similar size in the British Isles and includes every geological system from the Moinian to the Quaternary with the exception of the Cambrian.

Structurally the area is to a great extent a south-westerly extension of Scotland, though the sharp topographical divisions made by the great faults which bound the Central Valley of Scotland are somewhat blurred in Ulster by the occurrence of Carboniferous, Mesozoic and Tertiary Formations which overlap the Caledonian boundaries.

### What we shall see

#### 1 Impact of igneous activity

- The area was subject to igneous activity in the Carboniferous and Tertiary periods and the field trip will explore the impact of these igneous intrusive and extrusive's on the host rocks and relate these to the effects on hydrocarbons and reservoir properties. The Tertiary Lava Plateau of Antrim and East Londonderry is gently folded on a North South axis to form the long valley of the river Bann forming steep scarps all around except to the SW.

#### 2 Coastal erosion – land slips as a consequence of geology

- The entire province has been subject to Quaternary glaciations.

#### 3 Murlough Bay & Ballycastle Bay

- We will look at the Pre Cambrian Schists basement and the juxtapositioned Carboniferous (Fault or UC ?). In this area we get to see faulting and unconformable boundaries, extrusive lava flows, intrusive sills and dykes and the sedimentologists get to look at the lacustrine systems of the Carboniferous and the Triassic, capped by the Ulster White Limestone (chalk)



#### 4 **Giants Causeway**

- Series of Tertiary basalt flows cooled into hexagonal columns (UNESCO World Heritage site). Tops of each flow marked by red lateritic soil.



#### 5 **White Rocks**

- Here we get to look at chalk deposits that have been protected by a layer of overlying volcanic. Compare the reservoir properties of this chalk to those you are familiar with in the north sea. We also get to see a vertical conduit/ feeder pipe for the overlying extrusives and discuss the enigmatic Tertiary volcanic boulders within the chalk.



## 6 Portrush

- At this site we visit the scene of the great debate on the origin of these rocks in the eighteenth century, between Vulcanologists and Neptunists. The sedimentary rocks are of Jurassic age



## 7 Core Store - Belfast

A visit to the core store will enable inspection of cores from wells penetrating the Sherwood sandstone (primary reservoir of the Rathlin basin) and Mecia mudstone (seal).

### Interactive Field Trip

The guide will lead the group to the localities and discuss the exposures and their documented interpretation. The team will be expected to use their collective expertise and experience to verify or challenge the ideas put forward.

Discussions will take place regarding the structural geology framework that Northern Ireland is part of and its paleo geography at the time for each location visited. We will discuss the petroleum potential of the Rathlin basin, utilising available well data to discuss reservoir rock quality and source rock maturity. We will also consider the impact of the igneous activity on our petroleum system with a bearing on all basins of the Atlantic margins west of Scotland and Ireland.

### Optional Culture Visits

Viewpoints – Magilligan Point

The Dark Hedges and other sets from the Game of Thrones TV Series.

Bushmills distillery

Fishermans rope bridge Carrickarade Island