



# The Second and Not So Secret Life of Core with the North Sea Core Initiative



# Who is North Sea Core?

**Kirstie Wright**

**Henk Kombrink**

**and volunteers!**

NORTH SEA CORE

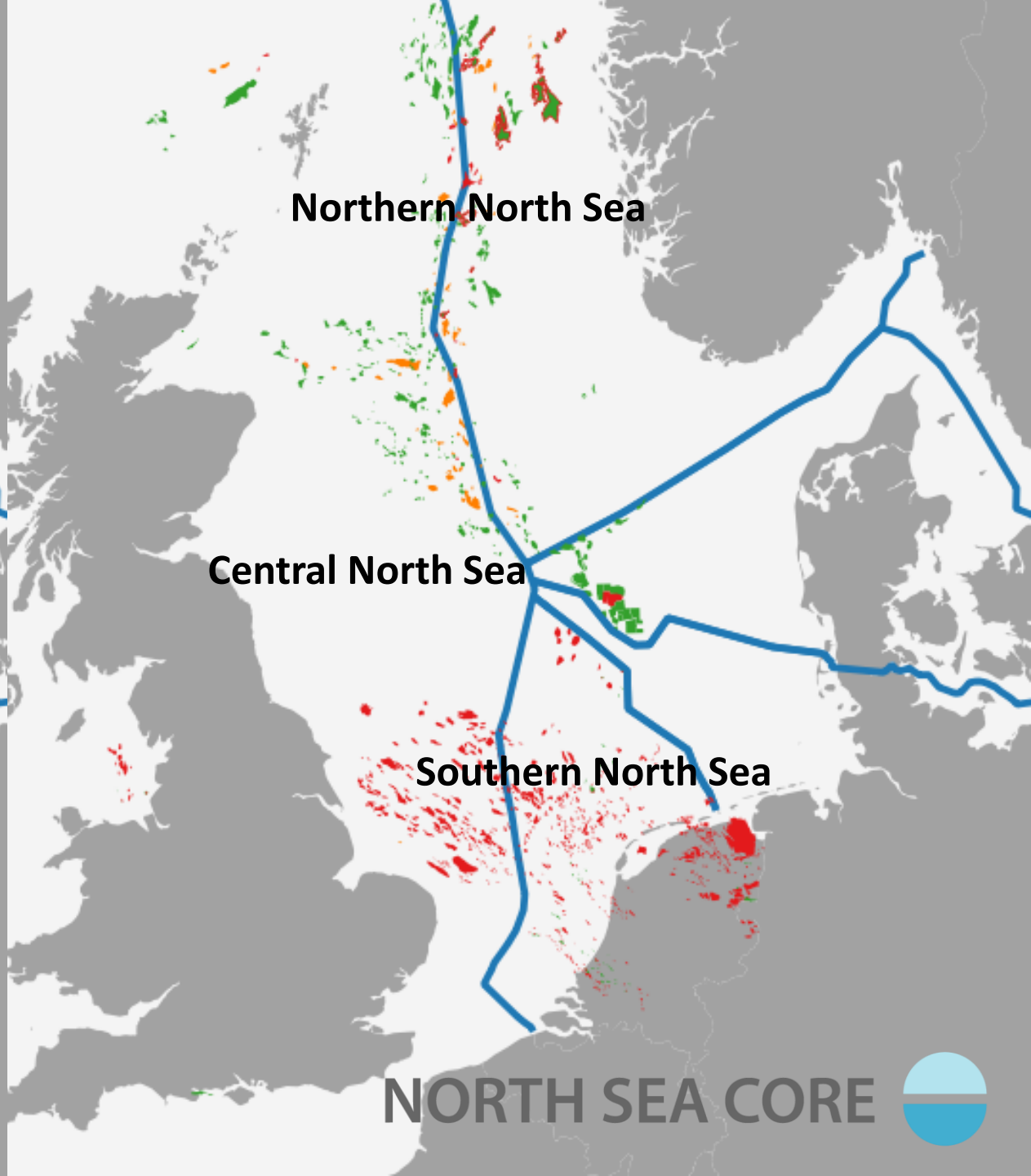




# What is North Sea Core?

- Established in 2017
- Official launch at Petex 2018
- Distribution of UKCS core material
- We only get the operator half
- Mostly voluntary initiative
- Formed CIC in May 2020
- Ambition to grow









NORTH SEA CORE









- Core for academia – teaching
- Core for academia – research
- Core for research institutes
- Core for schools
- Core as speaker gifts
- Core as a memento
- Core for industry
- Core for North Sea Core

NORTH SEA CORE





# Core for academia - teaching



NORTH SEA CORE





# Core for academia - research





# Core for research institutes

NORTH SEA CORE



48/116-5  
PALEOGENE  
2263 ft.

30/06a-8  
PALEOGENE  
SANDSTONE +  
SHALE,  
9948 ft.

48/256-3  
ROTTLIEGEND  
WHOLE CORE  
7602 ft.

49/06a-4  
TRIASSIC  
BLINTSANDST.  
6168 ft

16/29a-A4  
CHALK  
9229 ft.

21/22a-3  
MIDDLE JURASSIC  
MUDSTONE  
11097 ft.



# Core for schools (and academia)

**EXPLORATION BOX**

**Oil & Gas Authority**

**Brent - oil stained Reservoir rock**

**Brent - water wet Reservoir rock**

**Rotliegend Reservoir rock**

**Kimmeridge Clay Source rock**

**Mudstone Caprock**

**EXPLORATION BOX**

**Oil & Gas Authority**

**Core for schools (and academia)**

**Neogene**

**Paleogene**

**Cretaceous**

**Jurassic**

**Permian**

**Carboniferous**

**Devonian**

**Gas field**

**Oil & Gas Authority**

**Claystone - caprock**

This claystone is quite similar to the Kimmeridge Clay piece, with the exception being that it is not rich in organic matter. This is why it is light grey in colour. This type of claystone is much more common in the sedimentary record, because it is deposited across a wide variety of sedimentary environments as floodplains, lagoons or lakes, or in shallow to deep marine environments. No matter the depositional origin, claystones tend to be a good type of rock to inhibit hydrocarbons from moving further upward. This is why they are often called seal or caprocks and when oil or gas is found in a reservoir, it is often just as important as the reservoir to make a hydrocarbon system work, although it is always the reservoir that gets most attention and is sampled much more.

Literature - Figures 3 and 5 are based on material from the Millennium Atlas (2003) and Figure 4 is an edited version of a map from the Southern Permian Basin Atlas (2010).

**Authority**

**NORTH SEA CORE**

Carboniferous  
Devonian

systems chart of the Northern  
thern North Sea, with the strati-  
fferent source rocks involved.

A geological cross-section of the North Sea. The diagram shows several geological layers: Neogene (top, yellow), Paleogene (green), Cretaceous (light blue), Jurassic (dark blue), and Triassic (purple). A 'Gas field' is indicated by an arrow pointing to a red area within the Neogene layer. Several oil fields are shown as red areas within the Cretaceous and Jurassic layers. The text 'ion of the Brent well' is partially visible at the top left. The text 'NO' is visible on the right side. The text at the bottom reads: 'North Sea that shows where the Brent oil fields are found; they are sealed by Cretaceous mud-'. The text 'Brent oil fields' is also visible at the bottom left.

lay - source rock - 21/20b-3

lay - source rock - 2.

edge Clay is the most important in the Central and Northern North an interval rich in dead marine and this causes the rock to be dark and this causes the face of the core if you dampen the face of the core it even turns darker than it already is you may see subtle laminations. It is for a company to cut core from a rock, as this is not the rock where the generally produced from - although it originate from it. The sedimentary parti- that make up the core are clays - as the Kimmeridge Clays suggests. Clay parti- are very small grains and cannot be distinguished with the naked eye. The clays of the Kimmeridge Clay were deposited in deep water and sank to the sea floor gradually, together with the dead marine organisms (algae). As the clays were buried, they were under pressure, up to a point where the molecules "crack" into smaller molecules. The effect, with the reser-

Claystone - caprock

**Claystone - caprock**

This claystone is quite similar to the Kimmeridge Clay piece, with the exception being that it is not rich in organic matter. This is why it is light grey in colour. This type of claystone is much more common in the sedimentary record, because it is deposited across a wide variety of sedimentary environments. Claystones can be found in fluvial environments as floodplains, lagoons or lakes, or in shallow to deep marine environments. No matter the depositional origin, claystones tend to be a good type of rock to inhibit hydrocarbons from moving further upward. This is why they are often called seal or caprocks and when oil or gas is found in a reservoir, it is often with a mudstone like just above it. The seal is just as important as the reservoir to make a hydrocarbon system work, although it is always the reservoir that gets most attention and is sampled much more.

Literature - Figures 3 and 5 are based on material from the Millennium Atlas (2003) and Figure 4 is an edited version of a map from the Southern Permian Basin Atlas (2010).

Authority

Rotliegend  
Reservoir rock

Kimmeridge Clay  
Source rock

Mudstone  
Caprock

Brent - oil stained  
Reservoir rock

Brent - water wet  
Reservoir rock

EXPLORATION BOX

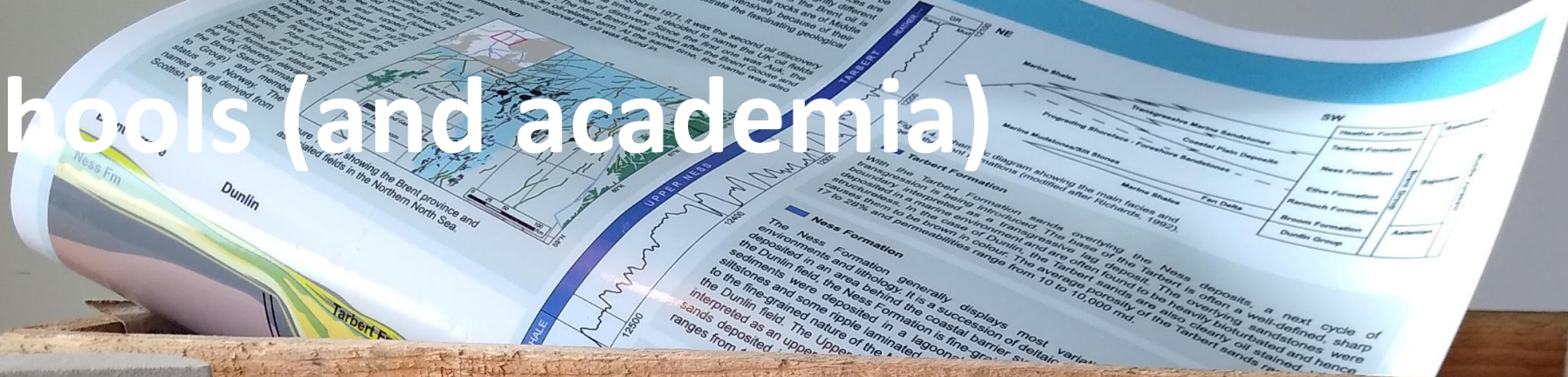


# NORTH SEA CORE






# Core for schools (and academia)



**EXPLORATION BOX**  
Brent - Northern North Sea

NORTH SEA CORE 

Broom

Rannoch

Ness

211/23-DA4  
12447

Etive

NORTH SEA CORE





# Core as speaker gifts



NORTH SEA CORE





# Core as a momento



NORTH SEA CORE





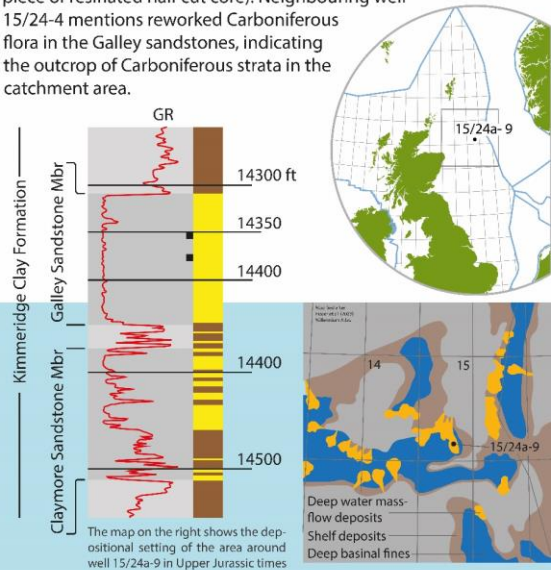


Core for industry



Upper Jurassic turbidites  
Outer Moray Firth - Central North Sea

This cored sandstone, which is part of the Galley Sandstone Member, was deposited as a series of mass flow or turbidite deposits derived from the platform area to the north. As the sandstones were deposited very quickly, there is a general lack of sedimentary structures, although an alternation of coarse and more finer grained intervals can be observed. Of particular interest are the dissolution bands that can be seen in the coarser grained intervals. Granules of green clays have also been observed (see piece of resinated half cut core). Neighbouring well 15/24-4 mentions reworked Carboniferous flora in the Galley sandstones, indicating the outcrop of Carboniferous strata in the catchment area.



|                    |                    |                   |                    |
|--------------------|--------------------|-------------------|--------------------|
| 14350              | 0.21 mD<br>Ø 9.8 % | 14374             | 0.28 mD<br>Ø 7.9 % |
| 21 mD<br>Ø 13.3 %  | 0.01 mD<br>Ø 2.9 % | 7.3 mD<br>Ø 9.3 % | 0.19 mD<br>Ø 7.5 % |
| 12 mD<br>Ø 12.6 %  | 0.19 mD<br>Ø 7.9 % | 11 mD<br>Ø 9.9 %  | 0.3 mD<br>Ø 7.4 %  |
| 2.9 mD<br>Ø 11.3 % | 0.08 mD<br>Ø 7.7 % | 17 mD<br>Ø 9.8 %  | 0.35 mD<br>Ø 8.7 % |
| 1.9 mD<br>Ø 10.8 % | 0.21 mD<br>Ø 5 %   | 6.8 mD<br>Ø 9.2 % |                    |
| 14356              |                    | 14380             |                    |

Well 15/24a-9 was drilled to appraise the Bowmore discovery made by well 15/24a-4 in 1990, 1600 m further to the east. Drilled as an HPHT well, the top of the reservoir was found at a depth of 14309 ft (4361m). Although the logs indicated the presence of hydrocarbons, fluid samples suggested a water-wet reservoir.

# Core for North Sea Core





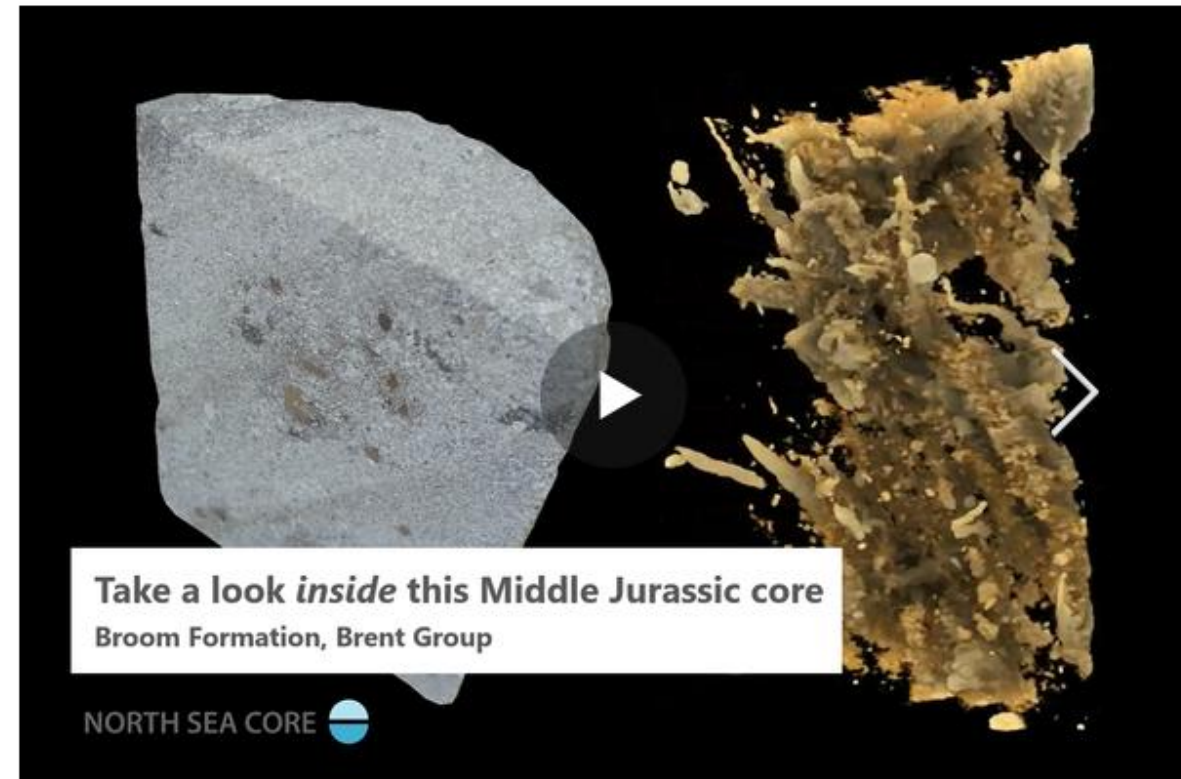
# Core for North Sea Core



## MIDDLE JURASSIC BROOM FORMATION

This sample of sandstone from the Middle Jurassic Broom Formation is from the Northern North Sea (Well 211/23- A18). The sandstone is coarse grained with many carbonate fragments. It is interpreted to have been deposited in a marine fan delta system.

The CT scan shows the gradual removal of the less dense sand material, leaving behind the denser carbonate material. These are most likely shell fragments that were transported with the sand into the basin.





# How to get in touch?

Message through the website

[www.northseacore.co.uk](http://www.northseacore.co.uk)

[henk.northseacore@gmail.com](mailto:henk.northseacore@gmail.com)

