

DISPLAY E2

Cores from the Atlantic Field, Kopervik Fairway, Outer Moray Firth, UK.

**Richard Blight & Barnaby Philips (BG Group) & Adam Law
(Amerada Hess)**

At first sight the 'tank of sand' provided by the Kopervik/Captain Sandstone Member reservoir of the Atlantic Field is a development geologist's and reservoir engineer's dream. However, the challenges posed are several:

(1) The top of the reservoir is not generally visible on seismic data, hence geologically-derived isopachs are important in creating top structure maps. The isopachs are best controlled by mapping individual sand units; however distinguishing between these units is difficult even in core, let alone on log data. Petrography, textural characteristics, palaeomagnetically-derived flow directions, heavy minerals, biostratigraphy, and geological models developed from other discoveries along the Kopervik fairway indicate that the sands may be deposited by a mixture of the "sausage" and "sock" mechanisms of Law et al (2000).

(2) The 'tank' may be subdivided by permeability barriers or baffles in the form of thin shale units or cemented zones. Atlantic Field will be developed with only two wells so these barriers may prove significant and it is important, although difficult, to predict their locations and lateral extents.

(3) The high-permeability (multi-darcy) reservoir, together with the thin hydrocarbon column and active aquifer, mean that development wells must be designed to prevent early catastrophic water breakthrough. Accurately drilling such wells will not be easy when the reservoir cannot easily be resolved on seismic data, mapped or depth converted.

Plate A

Well: UKCS 14/26a-8 Interval: 6426 ft - 6444 ft

Uppermost part of reservoir sand in 14/26a-8; compare with similarly located section in 14/26a-7A. Lithology is highly variable compared to the section beneath.

Plate B

Well: UKCS 14/26a-8 Interval: 6534 ft - 6552 ft

The bulk of the Atlantic reservoir consists of monotonous sand units which occasionally contain cemented zones with sharp or diffuse edges.

Plate C

Well: UKCS 14/26a-8 Interval: 6599 ft – 6629 ft

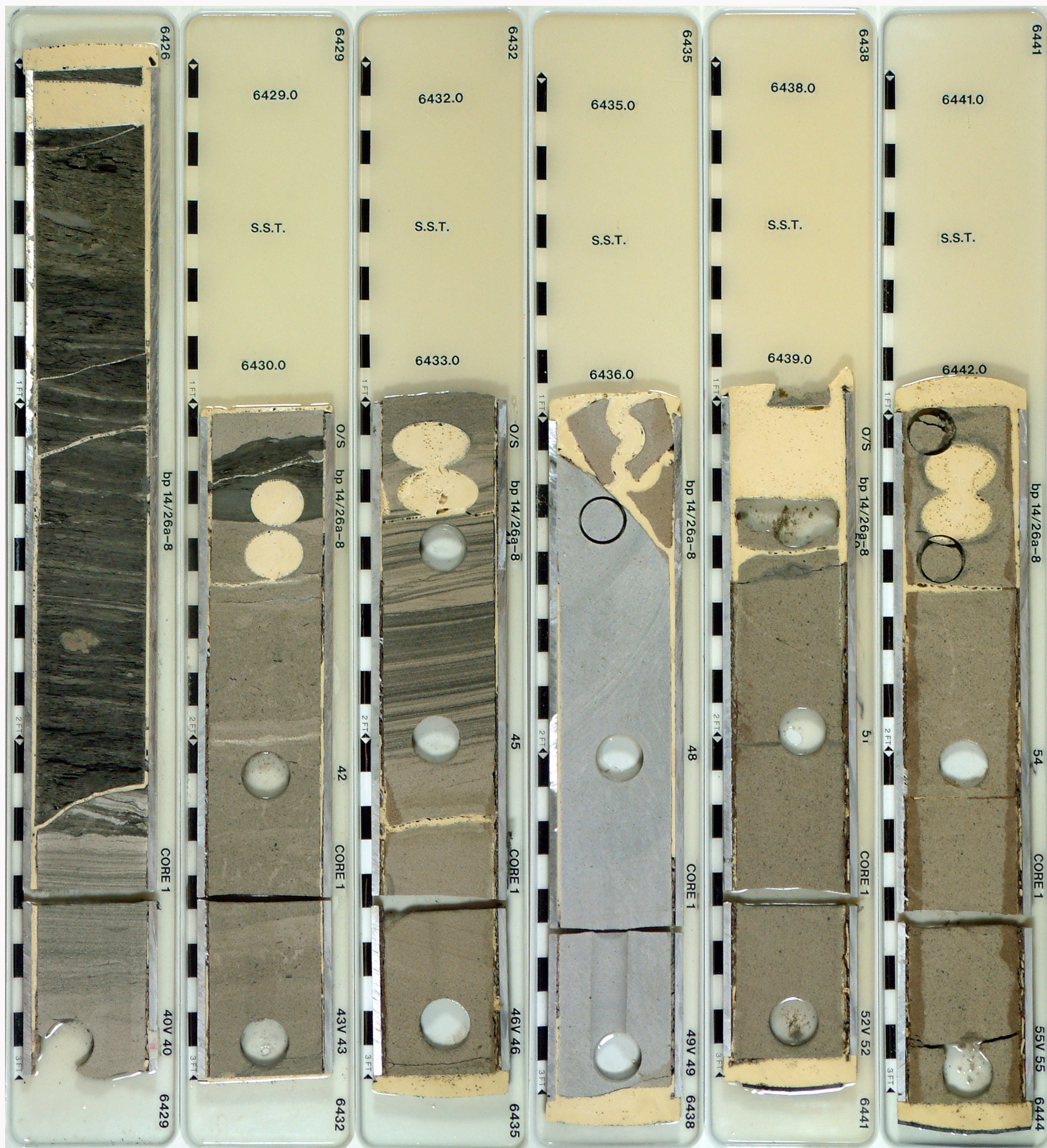
At last – some variability, shown by the presence of shale units and the variable textural characteristics of the sand interbeds..

Plate D

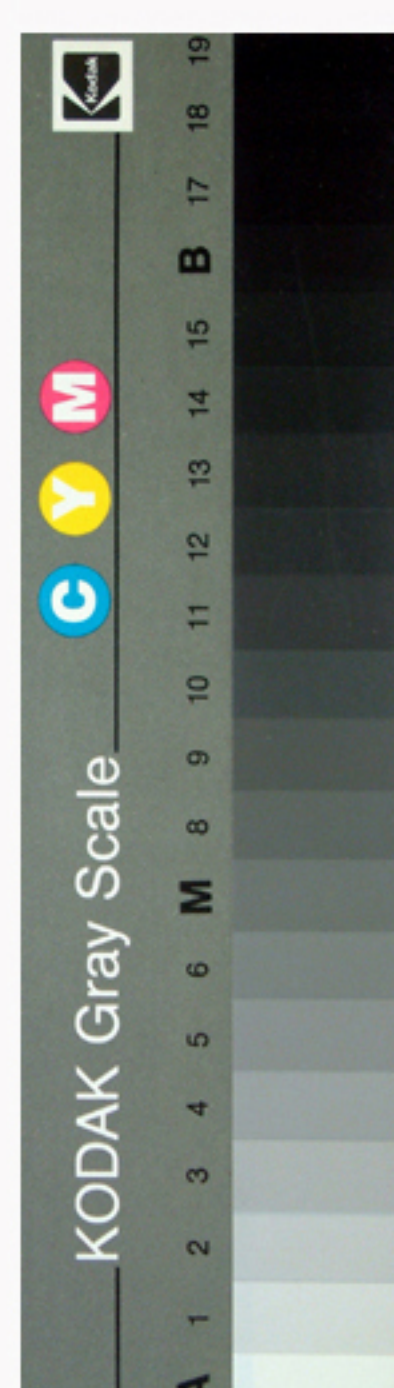
Well: UKCS 14/26a-7A Interval: 6534 ft – 6552 ft

Uppermost part of reservoir sand in 14/26a-7A; compare with similarly located section in 14/26a-8. This well encountered only a thin section with oil stain.

6441 ft



Three vertical bars are shown, each representing 1 unit. The first bar is labeled 'decimal feet' and is divided into 10 equal segments. The second bar is labeled 'inches' and is divided into 12 equal segments. The third bar is labeled 'cm' and is divided into 100 equal segments.



Core photography and digital processing by
Robert Leppard (**Leppard** Sedimentology Ltd) and
Colin Oakman (*Colin Oakman Associates*)

Display E2 Plate B

Well UKCS 14/26a-8

6534 ft

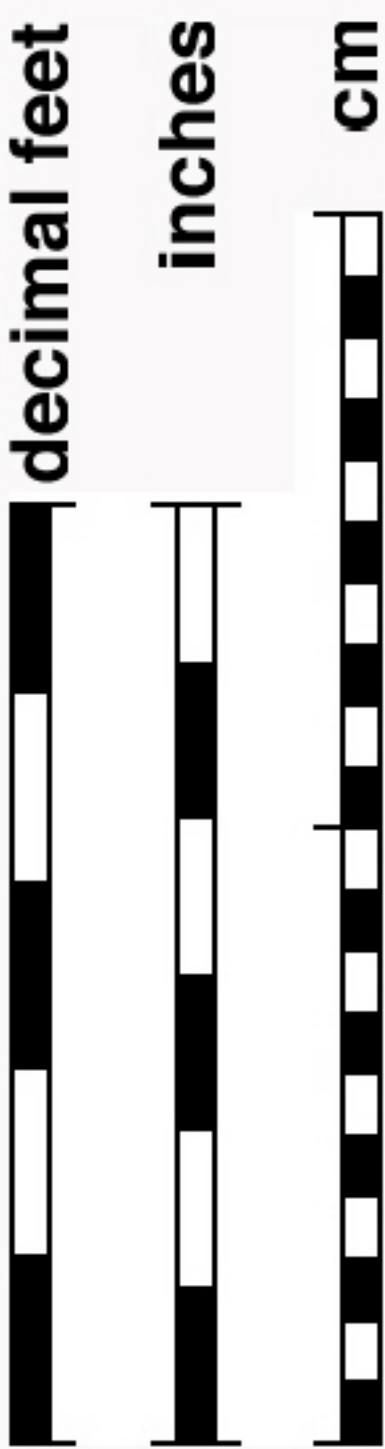
6537 ft

6540 ft

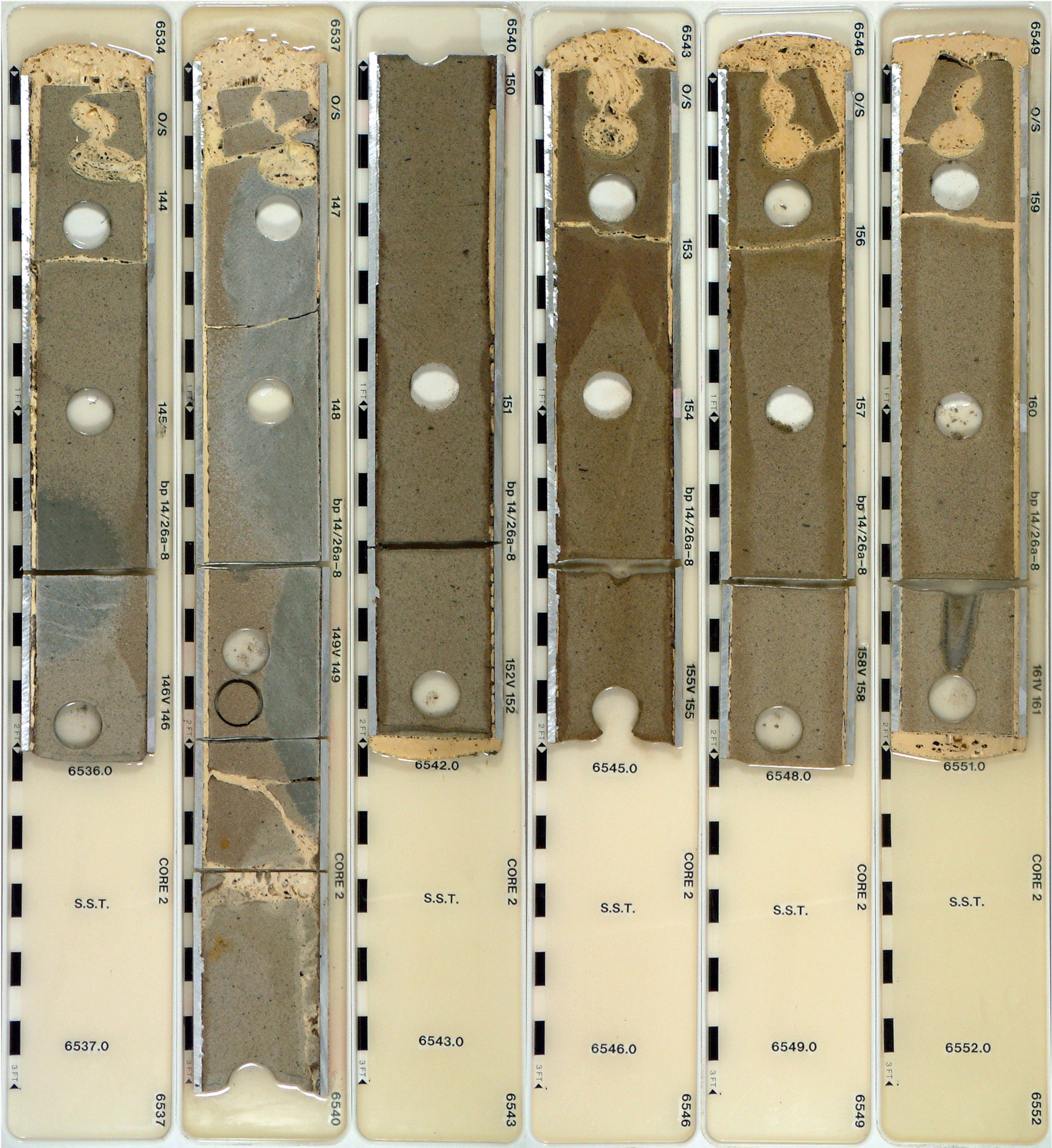
6543 ft

6546 ft

6549 ft

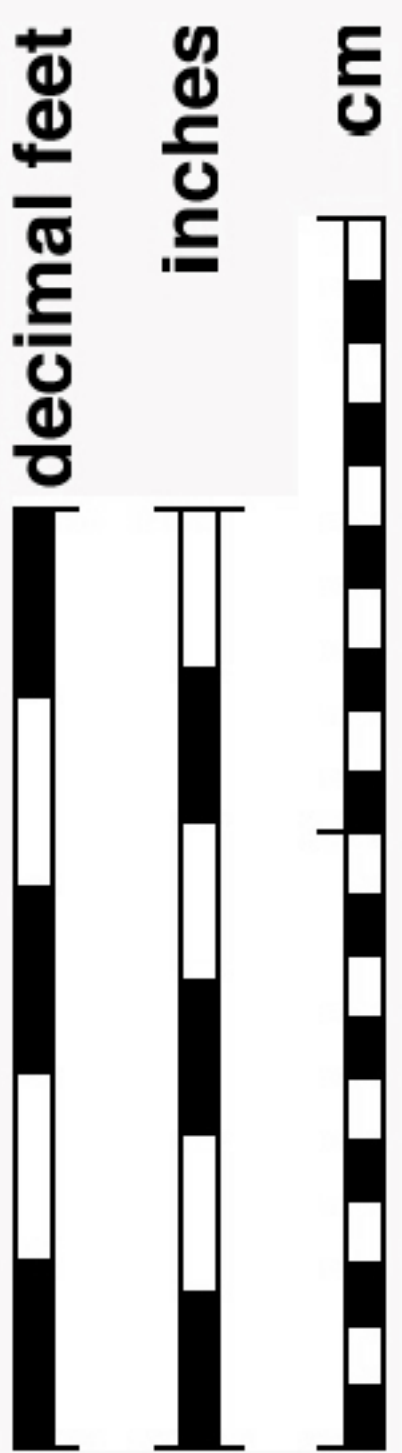


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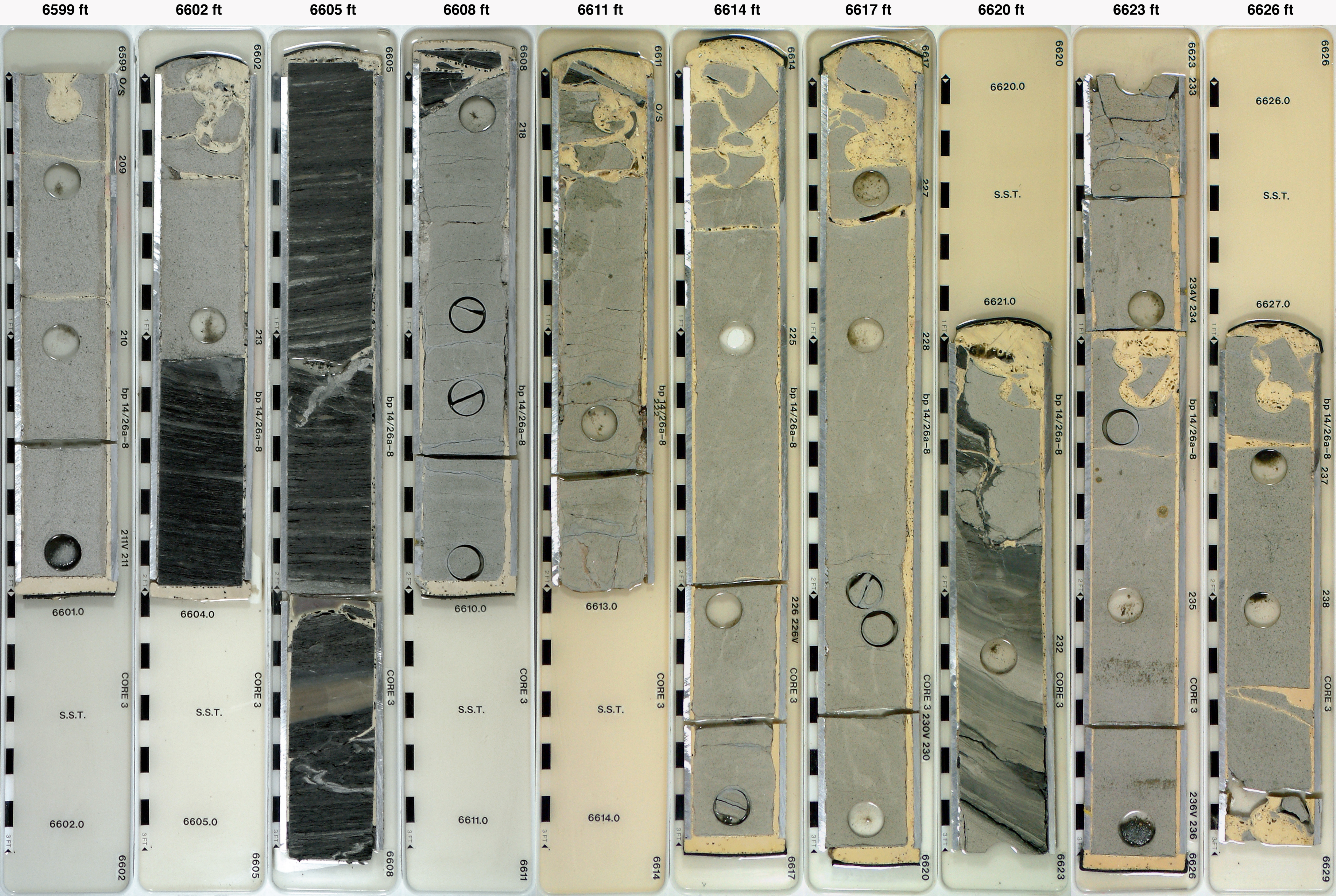


Display E2 Plate C

Well UKCS 14/26a-8



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Display E2 Plate D

Well UKCS 14/26a-7A

6534 ft

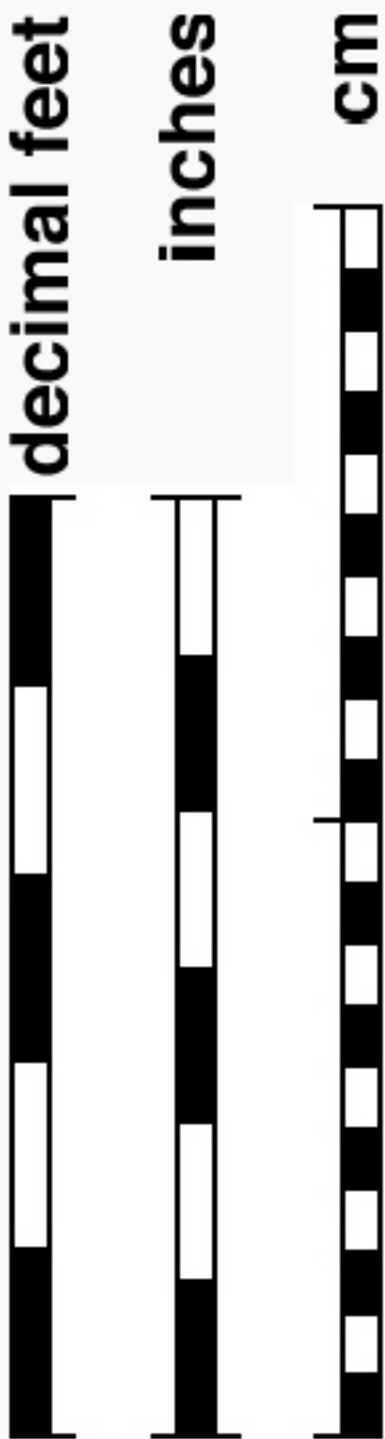
6537 ft

6540 ft

6543 ft

6546 ft

6549 ft



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