

Ehrenberg, 1990

Data Set 23

Reference: S.N. Ehrenberg, 1990, Relationship between diagenesis and reservoir quality in sandstones of the Garn Formation, Haltenbanken, Mid-Norwegian Continental Shelf: American Association of Petroleum Geologists Bulletin, v. 74, n. 10, p. 1538-1558.

Author's affiliation: Statoil

Age: Middle Jurassic

Formation: Garn Formation

Location: Haltenbanken area, North Sea

Well: 26 wells in Haltenbanken area

Depth range: 1300-4200 meters

Depositional Environment: fluvial and near-shore marine

Lithology: "Subarkosic arenites, which are thought to be first-cycle sediments shed from uplifted fault blocks of crystalline basement....As in most arkosic sandstones, plagioclase is much less abundant than K-feldspar. Mica content is generally 0-3%, and rock fragments and chert are very minor (mostly <1%). Median grain size ranges from 0.1 to 1.0 mm, but is mostly 0.3 to 0.5 mm. Most samples are well to very well sorted. Local concentrations of detrital clay are common along thin (<1 mm) laminations but, generally, the sandstones appear unbioturbated with little to no detrital clay."

Alteration: Alteration is quantified petrographically by the author, and summarized for averages of 16 wells in Figure 11 of the reference. Quartz cement and intergranular clay increase with burial depth, as does the fraction of dissolved grains. Carbonate cement is a small (0-2%) percentage of total rock volume. Intergranular clay ranges from 1.5 to 9% of total rock volume, the illite fraction ranges from near-zero to near-100% of the clay fraction. "Shallower cores are little illitized and have very high permeability, while the deeper cores are highly illitized and have very low permeability. However, several cores with intermediate permeability indicate clearly that degree of illitization is not the only factor controlling permeability variation."

Production: oil and gas condensate.

Core measurement conditions: "routine"

Data entry: manual entry from Table 1 and Figure 11 of the referenced paper.

Depths in table are relative to sea floor.

Averages: Porosity and permeability data are averages; number of samples is given in third column.