Aase and others, 1996   Data Set 1

Reference: Aase, N.E. P.A. Bjorkum, and P.H Nadeau, 1996, The effect of grain-coating
        microquartz on preservation of reservoir porosity: American Association of Petroleum
        Geologists Bulletin, v. 80, n. 10, p. 1654-1673.

Author's affiliation: Statoil

Age: Late Jurassic

Formation: Ula Sandstone and Gyda Sandstone

Location: Ula and Gyda Fields, Central Graben, Norwegian Sector, North Sea

Well: 15 wells

Depth range: 3300 - 4250 m

Depositional Environment: offshore marine shelf

Grain Size: See values in table. Samples were selected to obtain a limited range in grain size.

Background: This study was carried out to find why porosity values in these sandstones were
        greater than in other Jurassic formations at comparable depths of burial.

Grain mineralogy: Based upon xray diffraction analysis of 25 samples from 2 wells (table 2), and
        excluding 3 calcareous samples, quartz ranges from 62.3 to 79.5%, K-feldspar ranges from
        6.8 to 15.2%, and plagioclase ranges from 6.4 to 12.1%.

Alteration: The scanning electron microscope was used to estimate the amount of microquartz,
        macroquartz, clay, and carbonate cement (see table), with xray diffraction analysis on some
        samples as control. … "We designated sandstone samples as having a moderate (medium)
        amount of microquartz when there was a thin and continuous rim of microquartz around all
        the quartz grains and no or little pore-filling aggregates. The amounts of clay (including
        diagenetic illite) and carbonate has been estimated in the same way."

Conclusion: The authors concluded that the presence of microcrystalline quartz on grain surfaces
        impedes the deposition of quartz cement. They find that microquartz contents of 2 to 5%
        are optimal to preserve high porosity and permeability.

Comment: The horizontal needles on the permeability-porosity plot are proportional to the sum of
        the clay and carbonate content in a sample. Note that these values are classification ranks,
        not percentages.

Production: oil

Core measurement conditions: not given.

Data entry: manual entry from table 1 of reference