

TRIASSIC/JURASSIC WELL 33/12-2

TYPE WELL

STATFJORD FORMATION,
RAUDE AND EIRIKSSON MEMBERS
(STATFJORD FORMATION)

REFERENCE WELL:

NANSEN MEMBER
(STATFJORD FORMATION)

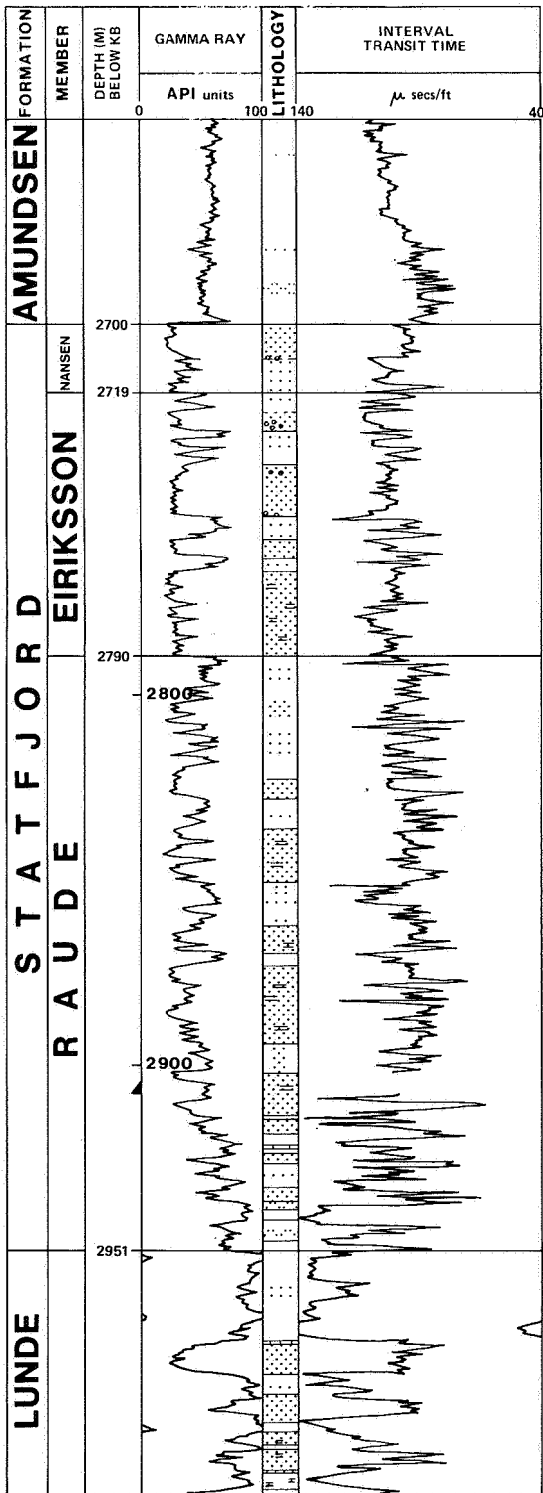


FIGURE 7

TRIASSIC/JURASSIC
UK WELL 211/24-1

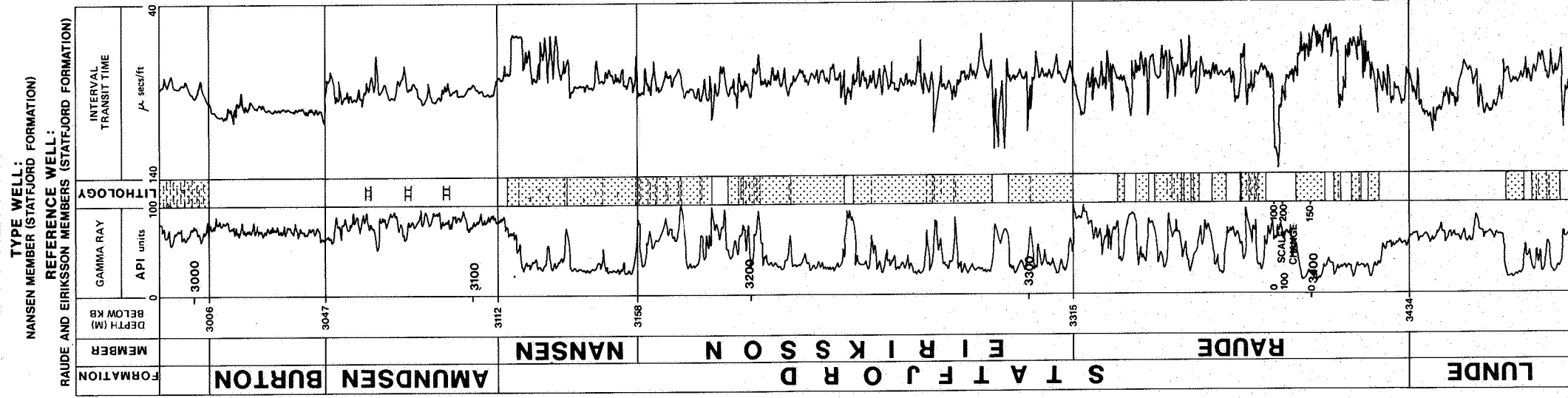
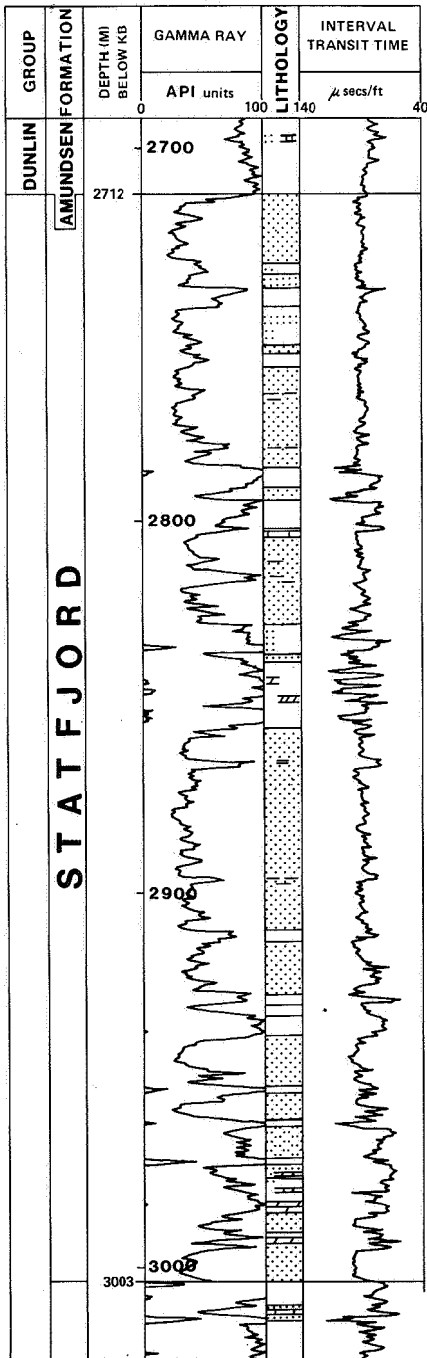


FIGURE 8
TRIASSIC/JURASSIC
WELL 30/6-1

REFERENCE WELL:
STATFJORD FORMATION

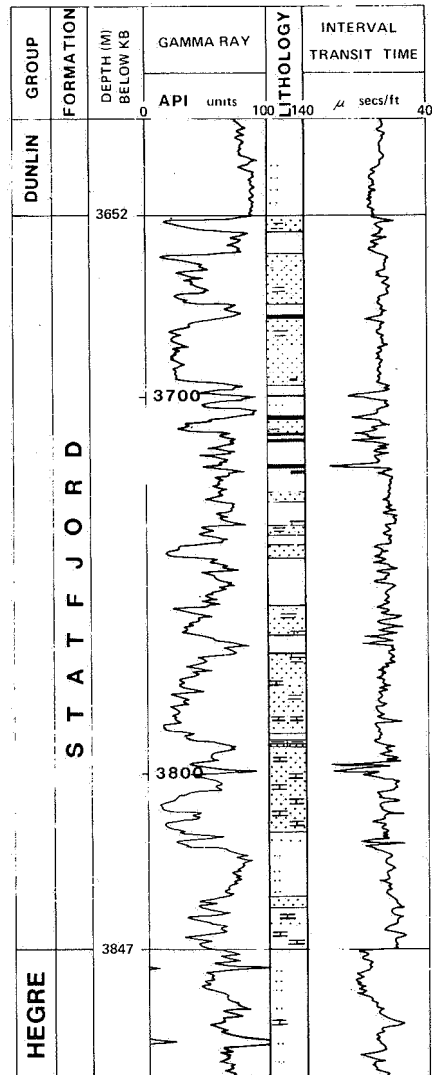


boundary is often associated with a sonic log break.

The top of the formation is at the contact between the uppermost medium to coarse-grained calcareous sandstones and the dark shales and siltstones of the overlying Dunlin Group. It should be noted that the top part of the calcareous sandstones in the UK sector (e.g. in the Brent Field and in UK part of the Statfjord Field), passes laterally into calcareous shales and siltstones in the Norwegian sector. The for-

FIGURE 9
TRIASSIC/JURASSIC
WELL 25/2-5

REFERENCE WELL:
STATFJORD FORMATION



mation boundary, being a lithological one, however, is placed at the top of the sandstones, regardless of age.

Distribution:

The Statfjord Formation can be recognized in the entire area between East Shetland Platform to the west and the bounding fault zone of the Fennoscandian Shield to the east. The formation is identified in the Viking Graben as far south as Norwegian blocks 25/8 and 11 (e.g. in wells 25/8-1 and 2 (Esso)).

Age:

The formation ranges in age from Rhaetian to Sinemurian.

Depositional environment:

The lower transitional unit in the type well area appears to represent an upward passage from

the dominantly continental deposits of the Lunde Formation of the Hegre Group to lower alluvial plain and braided stream deposits which make up most of the Statfjord Formation (Kirk, 1979, Chauvin and Valachi, 1980). Towards the top of the formation coarse sandstones with pebble beds, crossbedding and channel structures appear to have been deposited in a coastal environment. The uppermost sandstones are relatively structureless but the presence of marine fossils and glauconite suggests a shallow marine environment (Deegan and Scull, 1977).

Subdivision:

The Statfjord Formation is divided in the type well area (Statfjord Field) into three members, the Raude Member (base) the Eiriksson Member and the Nansen Member (top). (Deegan and Scull, 1977). It should be emphasized that this subdivision can only be applied west of the Viking Graben. Even within this area application of the subdivision is often difficult. No workable subdivision has been established in the few well penetrations of the Statfjord Formation east of the Viking Graben. The currently limited scope for subdivision of the Statfjord Formation indicates that it would serve no purpose to elevate the unit to group status (c.f. the underlying Hegre and overlying Dunlin Group). For definition and detailed description of the members of the Statfjord Formation, see Deegan and Scull (op. cit).

Dunlin Group (elevated)

Name:

Named by Deegan and Scull (1977). According to earlier Norwegian usage the unit had formation status, and the type well was UK well 211/29-3. In this report the unit is given group status in Norwegian as well as UK usage.

Type area:

The type area is the East Shetland Basin, in particular the region of Brent Field. The group is illustrated in the following wells: UK well 211/29-3 (Shell), Norwegian wells 33/9-1 (Mobil), 30/6-7 (Norsk Hydro), 31/2-1 (Shell) and 25/2-4 (Elf).

Thickness:

222 m in the UK well 211/29-3, 255 m, 365.5 m, 308 m and 204 m in Norwegian wells 33/9-1, 30/6-7, 31/2-1 and 25/2-4 respectively. The group is thickest in the northern Viking Graben area.

Lithology:

The group consists mainly of dark to black argillaceous marine sediments, but in the marginal areas of the basin marine sandstones are well developed at several stratigraphic levels and can extend a considerable distance into the basin. The sandstones are white to light grey, very fine to medium grained and generally well

sorted. The group tends to be more calcareous in the Norwegian sector, and in places limestone beds, some of which contain chamosite and siderite oolites, are found.

Boundaries:

The lower boundary with the Statfjord Formation and the upper boundary with the Brent Group are clearly marked by gamma ray log breaks. The Dunlin Group generally has a more regular log character than the underlying and overlying sediments. In the northernmost area where the Brent Group is not recognised, the Dunlin Group is often unconformably overlain by the Viking Group.

Distribution:

The group is more widespread than the underlying Statfjord Formation and is thickest in the Viking Graben area, east of the Statfjord and Brent Fields. It is recognizable over most of the East Shetland Basin and northern part of the Horda Platform. In places the Dunlin Group rests with an apparent unconformity on the Statfjord Formation. In the western part of the basin higher formations within the group are thought to be transgressive onto pre-Statfjord Formation sediments. Variation in thickness on tilted fault blocks probably reflects syndepositional movement.

Age:

The group ranges from Hettangian to Bajocian in age.

Subdivisions:

The Dunlin Group is divided into five formations. These are named the Amundsen (base), Johansen, Burton, Cook and Drake (top) Formations and can be clearly differentiated on sonic and gamma ray logs. The Amundsen, Cook and Drake Formations are found throughout the East Shetland Basin. The Burton Formation is found over most of the area but is not present on the Horda Platform. The Johansen Formation, on the other hand, has so far only been found on the Horda Platform. It should be stressed that the upper part of the calcareous sands in the Statfjord Formation passes laterally into the lower part of the calcareous silts and shales of the Amundsen Formation in the central parts of the basin.

Amundsen Formation (elevated)

Name:

Named by Deegan & Scull (1977) who gave it "sub-unit" status.

Well type section:

UK well 211/29-3 (Shell), from 2993 m to 3051 m, coord N 61°08'06'', E 01°43'36.5 (Fig. 10).

Well reference sections:

Norwegian wells 33/9-1 (Mobil) from 2838 m to 2923 m, coord N 61°15'07.5'', E 01°50'25.8'',