



## Generell informasjon

|                                          |                                        |
|------------------------------------------|----------------------------------------|
| Brønnbane navn                           | 6406/3-3                               |
| Type                                     | EXPLORATION                            |
| Formål                                   | APPRAISAL                              |
| Status                                   | P&A                                    |
| Faktakart i nytt vindu                   | <a href="#">lenke til kart</a>         |
| Hovedområde                              | NORWEGIAN SEA                          |
| Felt                                     | <a href="#">ÅSGARD</a>                 |
| Funn                                     | <a href="#">6506/12-3 Smørbukk Sør</a> |
| Brønn navn                               | 6406/3-3                               |
| Seismisk lokalisering                    | ST 8403 - 445 SP. 350                  |
| Utvinningstillatelse                     | <a href="#">091</a>                    |
| Boreoperatør                             | Den norske stats oljeselskap a.s       |
| Boretillatelse                           | 526-L                                  |
| Boreinnretning                           | <a href="#">DYVI DELTA</a>             |
| Boredager                                | 84                                     |
| Borestart                                | 04.08.1986                             |
| Boreslutt                                | 26.10.1986                             |
| Frigitt dato                             | 26.10.1988                             |
| Publiseringsdato                         | 28.06.2007                             |
| Opprinnelig formål                       | APPRAISAL                              |
| Gjenåpnet                                | NO                                     |
| Innhold                                  | SHOWS                                  |
| Funnbrønnbane                            | NO                                     |
| Avstand, boredekk - midlere havflate [m] | 29.0                                   |
| Vanndybde ved midlere havflate [m]       | 302.0                                  |
| Totalt målt dybde (MD) [m RKB]           | 4416.0                                 |
| Totalt vertikalt dybde (TVD) [m RKB]     | 4416.0                                 |
| Eldste penetrerte alder                  | EARLY JURASSIC                         |
| Eldste penetrerte formasjon              | ÅRE FM                                 |
| Geodetisk datum                          | ED50                                   |
| NS grader                                | 64° 59' 49.18" N                       |
| ØV grader                                | 6° 53' 27.64" E                        |
| NS UTM [m]                               | 7209958.99                             |
| ØV UTM [m]                               | 400545.31                              |
| UTM sone                                 | 32                                     |
| NPDID for brønnbanen                     | 949                                    |

**Brønnhistorie****General**

Well 6406/3-3 was drilled to appraise the southern part of the Beta structure, named Smørbukk South. This well was the fourth well on Smørbukk South, and it was a joint well between licenses PL 091 and PL 094. The primary target for the well was sandstones in the Middle-Early Jurassic age Halten Group (present nomenclature: Fangst and Båt Groups). The well location was chosen so that the Tomma I Formation (Garn Formation) was expected to be hydrocarbon bearing with hydrocarbon/water contacts in the Tomma III - Aldra Formations (Ile - Tilje Formations).

**Operations and results**

Appraisal well 6406/3-3 was spudded with the semi-submersible installation Dyvi Delta on 4 August 1986 and drilled to TD at 4416 m in the Early Jurassic Åre Formation. Operations went without significant incidents and were finished twenty days ahead of schedule. Only 5.2% rig time was registered as down time. The well was drilled with seawater/hi-vis pills/bentonite down to 1070 m, with gypsum/polymer mud from 1070 m to 2320 m, with gypsum/lignosulphonate/lignite mud from 2320 m to 3936 m, and with lignosulphonate/lignite/Anco resin mud from 3936 m to TD.

The top of the reservoir came in at 3933 m, 49 m deeper than prognosed. Cores showed poor - medium visible porosity and good to poor oil shows from the top and down to ca 3955 m (ca 3925 m TVD MSL). The oil/water contact was thus almost 65 m higher than the other holes in the Beta structure. RFT-data indicated that the rest of the Fangst and Båt Groups contained water. Weak shows were however recorded on sidewall cores in the interval 4210 m to 4262 m in the Tilje Formation, while weak shows were recorded on well site cuttings all through Middle - Early Jurassic down to TD.

A fixed offset VSP with the source 2.6 km north of the location was shot in order to explain the surprising and negative results of the well. The VSP sections indicated a probably sealing, east-west striking fault at reservoir level approximately 1 km north of the well. Results of well 6406/3-3 indicated that the Beta structure was divided into segments bounded by minor fault trends. As a result the reserve estimates on the Beta structure were reduced by ca 33%.

Two cores were cut in the intervals 3938 - 3952.5 and 3956 - 3972.2 m in the Garn Formation. No fluid samples were taken on wire line.

The well was permanently abandoned on 26 October 1986 as a well with shows.

**Testing**

Two DSTs were performed in the Garn Formation in this well. DST 1 at 4003 - 4012 m produced 35 m3 water/day on a 64/64" choke. The maximum temperature measured during the test was 136 deg C. DST 2 at 3940 - 3950 m gave no flow from a tight formation. Maximum temperature measured during DST 2 was 124 deg C.

**Borekaks i Sokkeldirektoratet**

| Borekaksprøve, topp dybde [m] | Borekaksprøve, bunn dybde [m] |
|-------------------------------|-------------------------------|
| 460.00                        | 4416.00                       |



|                                        |     |
|----------------------------------------|-----|
| Borekaks tilgjengelig for prøvetaking? | YES |
|----------------------------------------|-----|

### Borekjerne i Sokkeldirektoratet

| Kjerneprøve nummer | Kjerneprøve - topp dybde | Kjerneprøve - bunn dybde | Kjerneprøve dybde - enhet |
|--------------------|--------------------------|--------------------------|---------------------------|
| 1                  | 3938.0                   | 3952.5                   | [m ]                      |
| 2                  | 3956.0                   | 3972.2                   | [m ]                      |

|                                       |      |
|---------------------------------------|------|
| Total kjerneprøve lengde [m]          | 30.7 |
| Kjerner tilgjengelig for prøvetaking? | YES  |

### Kjernebilder



3938-3943m



3943-3948m



3948-3952m



3956-3961m



3961-3966m



3966-3971m



3971-3972m

### Palynologiske preparater i Sokkeldirektoratet

| Prøve dybde | Dybde enhet | Prøve type | Laboratorie |
|-------------|-------------|------------|-------------|
| 3591.0      | [m]         | DC         | PALEO       |
| 3603.0      | [m]         | DC         | PALEO       |
| 3618.0      | [m]         | DC         | PALEO       |
| 3633.0      | [m]         | DC         | PALEO       |
| 3648.0      | [m]         | DC         | PALEO       |
| 3660.0      | [m]         | DC         | PALEO       |
| 3675.0      | [m]         | DC         | PALEO       |
| 3690.0      | [m]         | DC         | PALEO       |



|            |     |       |
|------------|-----|-------|
| 3705.0 [m] | DC  | PALEO |
| 3720.0 [m] | DC  | PALEO |
| 3732.0 [m] | DC  | PALEO |
| 3744.0 [m] | DC  | PALEO |
| 3759.0 [m] | DC  | PALEO |
| 3774.0 [m] | DC  | PALEO |
| 3789.0 [m] | DC  | PALEO |
| 3804.0 [m] | DC  | PALEO |
| 3819.0 [m] | DC  | PALEO |
| 3831.0 [m] | DC  | PALEO |
| 3846.0 [m] | DC  | PALEO |
| 3861.0 [m] | DC  | PALEO |
| 3867.0 [m] | DC  | PALEO |
| 3876.0 [m] | DC  | PALEO |
| 3891.0 [m] | DC  | PALEO |
| 3906.0 [m] | DC  | PALEO |
| 3921.0 [m] | DC  | PALEO |
| 3936.0 [m] | DC  | PALEO |
| 3942.4 [m] | C   | PALEO |
| 3947.9 [m] | C   | PALEO |
| 3951.0 [m] | DC  | PALEO |
| 3966.0 [m] | DC  | PALEO |
| 3969.6 [m] | C   | PALEO |
| 3974.0 [m] | SWC | PALEO |
| 3981.0 [m] | DC  | PALEO |
| 3996.0 [m] | DC  | PALEO |
| 4011.0 [m] | DC  | PALEO |
| 4022.0 [m] | SWC | PALEO |
| 4026.0 [m] | DC  | PALEO |
| 4037.0 [m] | SWC | PALEO |
| 4041.0 [m] | DC  | PALEO |
| 4056.0 [m] | DC  | PALEO |
| 4068.0 [m] | DC  | PALEO |
| 4083.0 [m] | DC  | PALEO |
| 4095.6 [m] | SWC | PALEO |
| 4098.0 [m] | DC  | PALEO |
| 4113.0 [m] | DC  | PALEO |
| 4128.0 [m] | DC  | PALEO |
| 4133.8 [m] | SWC | PALEO |
| 4143.0 [m] | DC  | PALEO |



|            |     |       |
|------------|-----|-------|
| 4151.7 [m] | SWC | PALEO |
| 4161.0 [m] | DC  | PALEO |
| 4174.8 [m] | SWC | PALEO |
| 4176.0 [m] | DC  | PALEO |
| 4190.3 [m] | SWC | PALEO |
| 4191.0 [m] | DC  | PALEO |
| 4201.4 [m] | SWC | PALEO |
| 4206.0 [m] | DC  | PALEO |
| 4209.6 [m] | SWC | PALEO |
| 4215.0 [m] | DC  | PALEO |
| 4217.6 [m] | SWC | PALEO |
| 4236.0 [m] | DC  | PALEO |
| 4246.6 [m] | SWC | PALEO |
| 4251.0 [m] | DC  | PALEO |
| 4262.3 [m] | DC  | PALEO |
| 4266.0 [m] | DC  | PALEO |
| 4266.8 [m] | SWC | PALEO |
| 4281.0 [m] | DC  | PALEO |
| 4296.0 [m] | DC  | PALEO |
| 4300.8 [m] | SWC | PALEO |
| 4311.0 [m] | DC  | PALEO |
| 4316.5 [m] | SWC | PALEO |
| 4326.0 [m] | DC  | PALEO |
| 4328.8 [m] | SWC | PALEO |
| 4341.0 [m] | DC  | PALEO |
| 4347.1 [m] | SWC | PALEO |
| 4356.0 [m] | DC  | PALEO |
| 4371.0 [m] | DC  | PALEO |
| 4386.0 [m] | DC  | PALEO |
| 4387.8 [m] | SWC | PALEO |
| 4401.0 [m] | DC  | PALEO |
| 4403.3 [m] | SWC | PALEO |
| 4407.8 [m] | SWC | PALEO |
| 4413.8 [m] | SWC | PALEO |
| 4416.0 [m] | DC  | PALEO |



| Test type | Flaske nummer | Topp dyp MD [m] | Bunn dyp MD [m] | Væske type | Test tidspunkt     | Prøver tilgjengelig |
|-----------|---------------|-----------------|-----------------|------------|--------------------|---------------------|
| DST       | RFT2D         | 3994.50         | 0.00            |            | 29.09.1986 - 00:00 | YES                 |

### Litostratigrafi

| Topp Dyb [mMD RKB] | Litostrat. enhet                |
|--------------------|---------------------------------|
| 331                | <a href="#">NORDLAND GP</a>     |
| 1390               | <a href="#">KAI FM</a>          |
| 1987               | <a href="#">HORDALAND GP</a>    |
| 1987               | <a href="#">BRYGGE FM</a>       |
| 2256               | <a href="#">ROGALAND GP</a>     |
| 2256               | <a href="#">TARE FM</a>         |
| 2307               | <a href="#">TANG FM</a>         |
| 2368               | <a href="#">SHETLAND GP</a>     |
| 3188               | <a href="#">CROMER KNOLL GP</a> |
| 3188               | <a href="#">LYSING FM</a>       |
| 3222               | <a href="#">LANGE FM</a>        |
| 3800               | <a href="#">VIKING GP</a>       |
| 3800               | <a href="#">SPEKK FM</a>        |
| 3843               | <a href="#">MELKE FM</a>        |
| 3939               | <a href="#">FANGST GP</a>       |
| 3939               | <a href="#">GARN FM</a>         |
| 4038               | <a href="#">NOT FM</a>          |
| 4066               | <a href="#">ILE FM</a>          |
| 4131               | <a href="#">BÅT GP</a>          |
| 4131               | <a href="#">ROR FM</a>          |
| 4202               | <a href="#">TILJE FM</a>        |
| 4404               | <a href="#">ÅRE FM</a>          |

### Geokjemisk informasjon

| Dokument navn         | Dokument format | Dokument størrelse [KB] |
|-----------------------|-----------------|-------------------------|
| <a href="#">949_1</a> | pdf             | 0.37                    |
| <a href="#">949_2</a> | pdf             | 10.55                   |





## Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

| Dokument navn                                   | Dokument format | Dokument størrelse [KB] |
|-------------------------------------------------|-----------------|-------------------------|
| <a href="#">949_01_WDSS_General_Information</a> | pdf             | 0.25                    |
| <a href="#">949_02_WDSS_completion_log</a>      | pdf             | 0.34                    |

## Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

| Dokument navn                                             | Dokument format | Dokument størrelse [KB] |
|-----------------------------------------------------------|-----------------|-------------------------|
| <a href="#">949_01_6406_3_3_Completion_report</a>         | pdf             | 6.38                    |
| <a href="#">949_02_6406_3_3_Completion_report_Samples</a> | pdf             | 5.59                    |
| <a href="#">949_03_6406_3_3_Completion_log</a>            | pdf             | 2.96                    |

## Logger

| Type logg        | Topp dyp for logg [m] | Bunn dyp for logg [m] |
|------------------|-----------------------|-----------------------|
| CBL VDL CCL GR   | 2249                  | 3919                  |
| CNL GR           | 3952                  | 4398                  |
| CST GR           | 3974                  | 4413                  |
| DLL GR           | 3921                  | 4416                  |
| ISF LSS MSFL GR  | 2301                  | 4417                  |
| LDL CNL GR       | 2301                  | 4419                  |
| MWD - EWR GR     | 3925                  | 4347                  |
| MWD - GR RES DIR | 0                     | 4317                  |
| RFT GR           | 3193                  | 3218                  |
| RFT GR           | 3940                  | 3964                  |
| RFT GR           | 3952                  | 4398                  |
| RFT GR           | 3994                  | 4286                  |
| SHDT GR          | 3921                  | 4420                  |
| TEMP             | 0                     | 2300                  |
| VELOCITY         | 1000                  | 4000                  |

## Foringsrør og formasjonsstyrketester

| Type utforing | Utforing diam. [tommer] | Utforing dybde [m] | Brønnbane diam. [tommer] | Brønnbane dyp [m] | LOT/FIT slam eqv. [g/cm3] | Type formasjonstest |
|---------------|-------------------------|--------------------|--------------------------|-------------------|---------------------------|---------------------|
| CONDUCTOR     | 30                      | 442.0              | 36                       | 444.0             | 0.00                      | LOT                 |





|            |        |        |        |        |      |     |
|------------|--------|--------|--------|--------|------|-----|
| SURF.COND. | 20     | 1064.0 | 26     | 1083.0 | 1.67 | LOT |
| INTERM.    | 13 3/8 | 2301.0 | 17 1/2 | 2536.0 | 1.99 | LOT |
| INTERM.    | 9 5/8  | 3918.0 | 12 1/4 | 3936.0 | 1.89 | LOT |
| LINER      | 7      | 4415.0 | 8 1/2  | 4416.0 | 0.00 | LOT |

### Boreslam

| Dybde<br>MD [m] | Egenvekt,<br>slam<br>[g/cm3] | Viskositet,<br>slam<br>[mPa.s] | Flytegrense<br>[Pa] | Type slam   | Dato, måling |
|-----------------|------------------------------|--------------------------------|---------------------|-------------|--------------|
| 444             | 1.04                         | 35.0                           | 15.4                | WATERBASED  | 06.08.1986   |
| 446             | 1.12                         | 37.0                           | 19.6                | WATERBASED  | 07.08.1986   |
| 757             | 1.12                         | 42.0                           | 23.1                | WATERBASED  | 08.08.1986   |
| 886             | 1.16                         | 32.0                           | 4.9                 | WATER BASED | 24.10.1986   |
| 1067            | 1.12                         | 40.0                           | 28.0                | WATERBASED  | 11.08.1986   |
| 1067            | 0.00                         | 41.0                           | 30.8                | WATERBASED  | 11.08.1986   |
| 1067            | 0.00                         | 37.0                           | 26.6                | WATERBASED  | 11.08.1986   |
| 1083            | 1.30                         | 39.0                           | 14.0                | WATERBASED  | 12.08.1986   |
| 1083            | 0.00                         | 42.0                           | 13.3                | WATERBASED  | 13.08.1986   |
| 1083            | 0.00                         | 51.0                           | 9.8                 | WATERBASED  | 14.08.1986   |
| 1086            | 1.12                         | 43.0                           | 9.7                 | WATERBASED  | 18.08.1986   |
| 1155            | 1.55                         | 57.0                           | 7.7                 | WATER BASED | 23.10.1986   |
| 1180            | 1.12                         | 42.0                           | 10.0                | WATERBASED  | 18.08.1986   |
| 1330            | 1.12                         | 43.0                           | 10.0                | WATERBASED  | 18.08.1986   |
| 1645            | 1.20                         | 51.0                           | 13.0                | WATERBASED  | 18.08.1986   |
| 1970            | 1.25                         | 53.0                           | 14.0                | WATERBASED  | 18.08.1986   |
| 2320            | 1.52                         | 62.0                           | 14.0                | WATERBASED  | 19.08.1986   |
| 2320            | 0.00                         | 66.0                           | 14.0                | WATERBASED  | 20.08.1986   |
| 2320            | 0.00                         | 70.0                           | 13.3                | WATERBASED  | 21.08.1986   |
| 2536            | 1.55                         | 54.0                           | 8.4                 | WATERBASED  | 22.08.1986   |
| 2701            | 1.68                         | 65.0                           | 18.2                | WATERBASED  | 25.08.1986   |
| 2866            | 1.68                         | 58.0                           | 12.0                | WATERBASED  | 25.08.1986   |
| 2934            | 1.68                         | 65.0                           | 13.3                | WATERBASED  | 25.08.1986   |
| 2970            | 1.68                         | 62.0                           | 11.9                | WATERBASED  | 26.08.1986   |
| 3056            | 1.68                         | 53.0                           | 9.8                 | WATERBASED  | 27.08.1986   |
| 3093            | 1.68                         | 65.0                           | 11.2                | WATERBASED  | 28.08.1986   |
| 3138            | 1.68                         | 59.0                           | 10.5                | WATERBASED  | 29.08.1986   |
| 3189            | 1.68                         | 50.0                           | 9.1                 | WATERBASED  | 01.09.1986   |
| 3205            | 1.68                         | 51.0                           | 9.8                 | WATERBASED  | 01.09.1986   |
| 3259            | 1.68                         | 55.0                           | 10.5                | WATERBASED  | 01.09.1986   |



## Faktasider

### Brønnbane / Leting

Utskriftstidspunkt: 17.5.2024 - 09:15

|      |      |      |      |             |            |
|------|------|------|------|-------------|------------|
| 3281 | 1.68 | 58.0 | 9.8  | WATERBASED  | 02.09.1986 |
| 3349 | 1.71 | 55.0 | 9.1  | WATERBASED  | 04.09.1986 |
| 3418 | 1.71 | 58.0 | 10.5 | WATERBASED  | 04.09.1986 |
| 3488 | 1.71 | 53.0 | 19.5 | WATERBASED  | 05.09.1986 |
| 3522 | 1.71 | 53.0 | 10.0 | WATERBASED  | 08.09.1986 |
| 3566 | 1.71 | 56.0 | 10.0 | WATERBASED  | 08.09.1986 |
| 3639 | 1.75 | 70.0 | 3.5  | WATER BASED | 21.10.1986 |
| 3639 | 1.75 | 57.0 | 3.5  | WATER BASED | 23.10.1986 |
| 3649 | 1.71 | 53.0 | 9.0  | WATERBASED  | 08.09.1986 |
| 3701 | 1.25 | 45.0 | 2.8  | WATER BASED | 20.10.1986 |
| 3724 | 1.71 | 53.0 | 9.8  | WATERBASED  | 09.09.1986 |
| 3772 | 1.71 | 56.0 | 9.8  | WATERBASED  | 10.09.1986 |
| 3797 | 0.00 | 48.0 | 8.4  | WATERBASED  | 18.09.1986 |
| 3797 | 1.75 | 53.0 | 11.2 | WATER BASED | 15.09.1986 |
| 3797 | 0.00 | 52.0 | 11.2 | WATERBASED  | 15.09.1986 |
| 3797 | 0.00 | 32.0 | 11.2 | WATERBASED  | 16.09.1986 |
| 3797 | 0.00 | 58.0 | 10.5 | WATERBASED  | 17.09.1986 |
| 3812 | 1.75 | 60.0 | 11.2 | WATERBASED  | 11.09.1986 |
| 3835 | 1.75 | 58.0 | 11.2 | WATERBASED  | 12.09.1986 |
| 3884 | 1.75 | 55.0 | 9.8  | WATERBASED  | 15.09.1986 |
| 3936 | 1.75 | 53.0 | 11.2 | WATERBASED  | 19.09.1986 |
| 3936 | 0.00 | 60.0 | 12.6 | WATERBASED  | 22.09.1986 |
| 3937 | 1.25 | 50.0 | 7.7  | WATERBASED  | 22.09.1986 |
| 3974 | 1.25 | 60.0 | 7.0  | WATERBASED  | 22.09.1986 |
| 3995 | 1.26 | 51.0 | 3.5  | WATER BASED | 16.10.1986 |
| 3995 | 1.25 | 55.0 | 2.8  | WATER BASED | 17.10.1986 |
| 3995 | 1.25 | 50.0 | 2.8  | WATER BASED | 20.10.1986 |
| 3995 | 1.25 | 55.0 | 2.8  | WATER BASED | 20.10.1986 |
| 4000 | 1.25 | 50.0 | 3.5  | WATER BASED | 15.10.1986 |
| 4026 | 1.25 | 58.0 | 7.7  | WATERBASED  | 23.09.1986 |
| 4153 | 1.25 | 50.0 | 6.3  | WATERBASED  | 24.09.1986 |
| 4193 | 1.25 | 57.0 | 6.3  | WATERBASED  | 25.09.1986 |
| 4353 | 1.25 | 60.0 | 6.3  | WATERBASED  | 26.09.1986 |
| 4378 | 1.25 | 55.0 | 5.6  | WATERBASED  | 06.10.1986 |
| 4378 | 1.25 | 60.0 | 6.3  | WATER BASED | 06.10.1986 |
| 4378 | 1.25 | 50.0 | 5.6  | WATER BASED | 07.10.1986 |
| 4378 | 1.25 | 48.0 | 4.9  | WATER BASED | 10.10.1986 |
| 4378 | 1.25 | 54.0 | 7.0  | WATER BASED | 13.10.1986 |
| 4378 | 1.25 | 52.0 | 3.5  | WATER BASED | 14.10.1986 |
| 4378 | 1.25 | 49.0 | 4.9  | WATER BASED | 09.10.1986 |



|      |      |       |     |             |            |
|------|------|-------|-----|-------------|------------|
| 4378 | 1.25 | 55.0  | 3.5 | WATER BASED | 13.10.1986 |
| 4416 | 1.25 | 57.0  | 5.6 | WATERBASED  | 29.09.1986 |
| 4416 | 0.00 | 125.0 | 7.7 | WATERBASED  | 30.09.1986 |
| 4416 | 0.00 | 90.0  | 5.6 | WATERBASED  | 03.10.1986 |
| 4416 | 0.00 | 90.0  | 5.6 | WATERBASED  | 06.10.1986 |
| 4416 | 0.00 | 70.0  | 6.3 | WATERBASED  | 29.09.1986 |
| 4416 | 0.00 | 75.0  | 7.0 | WATERBASED  | 29.09.1986 |
| 4416 | 0.00 | 130.0 | 7.0 | WATERBASED  | 01.10.1986 |
| 4416 | 0.00 | 119.0 | 7.0 | WATERBASED  | 02.10.1986 |
| 4416 | 0.00 | 70.0  | 5.7 | WATERBASED  | 06.10.1986 |

## Trykkplott

Porertrykksdataene kommer fra logging i brønnen hvis ingen annen kilde er oppgitt. I noen brønner der trykk ikke er logget, er det brukt informasjon fra formasjonstester eller brønnspark. Trykkdataene er rapportert inn til Oljedirektoratet og videre prosessert og kvalitetssikret av IHS Markit.

| Dokument navn                                            | Dokument format | Dokument størrelse [KB] |
|----------------------------------------------------------|-----------------|-------------------------|
| <a href="#">949 Formation pressure (Formasjonstrykk)</a> | PDF             | 0.22                    |

