



## General information

|                          |                          |
|--------------------------|--------------------------|
| Lithostrat. unit         | LUNDE FM                 |
| NPDID lithostrat. unit   | 97                       |
| Level                    | FORMATION                |
| Lithostrat. unit, parent | <a href="#">HEGRE GP</a> |

## Level below

|                  |
|------------------|
| Lithostrat. unit |
|------------------|

## Description

### Lunde Formation

#### Name

From the bird (English: puffin) of the same name.

#### Well type section

Norwegian well [33/12-2](#) (Mobil) from 2951 m to 4048 m, coord N 61°13'31.38", E 01°51'25.97", ([Fig 3.4](#)).

#### Well reference section

UK well 211/29-5 (Shell) from 3003 m to 4055 m, coord N 61°04'43.0", E 01°45'46.5" ([Fig 3.5](#)).

#### Thickness

1079 m in the type well, 1052 m in the reference well.

#### Lithology

The formation is an interbedded sequence of very fine to very coarse-grained sandstones (2 to 10 m thick), claystones, marls and shales.

The sandstones are mainly white, pink or grey and cemented to a variable degree with kaolinite, anhydrite and carbonate. Fine-grained sandstones from the upper portion of the formation (core data from UK well 211/13-1) display small scale ripple cross stratification, bioturbation and incorporated mud clasts and mud balls. This part of the formation may also have small fining upward sequences.

The interbedded argillaceous units are dominantly red-brown claystones, siltstones and shales with thin limestones (possibly caliche). Tuff horizons are present in the lower half of the formation in the [Statfjord Field](#) area. The lowermost part of the Lunde Formation consists in the [Statfjord Field](#) area (and westward into UK waters), of a sequence which is very uniform both in lithology and thickness. It is around 300 thick and consists mainly of brick red to red brown calcareous claystones grading to marls which are normally soft, silty and micaceous. This lower sequence is easily recognisable and may eventually be separated out and assigned formation status.

#### Boundaries

The base of the formation is picked at the base of the first thick claystone unit. This boundary is marked by sonic and gamma ray log breaks. The alternating lithologies of the Lunde Formation result in an irregular gamma ray response. On structural highs the top of the formation is represented by a hiatus, with Jurassic or younger strata resting on the Triassic sequence. Where the [Statfjord Formation](#) is present, the upper boundary of



the Lunde Formation is placed at the change to the relatively massive clean sandstone of the overlying [Statfjord Formation](#). In the [Statfjord Field](#) area, this transition often occurs via a coarsening upward unit, clearly defined on gamma ray and sonic logs. The base of this unit is the top of the Lunde Formation. (See also the description of the [Statfjord Formation](#)).

### Distribution

The formation is assumed to be present throughout the northern North Sea Area, although major parts may be missing on structural highs owing to erosion or non-deposition.

### Age

Late Triassic, possibly Norian to early Rhaetian age.

### Depositional environment

The Lunde Formation is dominantly of continental origin, deposited in lacustrine and fluvial environments.

### Source

- Vollset, J. and Doré, A. G. (eds.) 1984: A revised Triassic and Jurassic lithostratigraphic nomenclature for the Norwegian North Sea. NPD-Bulletin No. 3, 53 pp.

### Wellbores penetrating

| Wellbore name             | Wellbore completion date | Top depth [m] | Bottom depth [m] |
|---------------------------|--------------------------|---------------|------------------|
| <a href="#">29/6-1</a>    | 09.05.1982               | 4786          | 4832             |
| <a href="#">30/3-2 R</a>  | 16.02.1981               | 3298          | 3308             |
| <a href="#">30/3-7 S</a>  | 12.12.1995               | 5322          | 5581             |
| <a href="#">30/5-3 S</a>  | 12.04.2009               | 3396          | 3809             |
| <a href="#">30/6-1</a>    | 22.09.1979               | 3003          | 3175             |
| <a href="#">30/6-9</a>    | 16.12.1982               | 3389          | 3476             |
| <a href="#">30/6-9 R</a>  | 12.05.1990               | 3387          | 3476             |
| <a href="#">30/6-24 S</a> | 06.12.1991               | 3940          | 3986             |
| <a href="#">30/6-28 S</a> | 29.03.2012               | 2754          | 3960             |
| <a href="#">30/9-3 A</a>  | 20.05.1984               | 4249          | 4300             |
| <a href="#">30/9-24</a>   | 17.10.2009               | 3718          | 3767             |
| <a href="#">31/4-8</a>    | 11.05.1986               | 2438          | 2611             |
| <a href="#">31/11-1 S</a> | 28.06.2021               | 3120          | 3284             |
| <a href="#">32/2-1</a>    | 01.07.2008               | 1247          | 1300             |
| <a href="#">32/4-3 S</a>  | 26.10.2019               | 1847          | 2017             |
| <a href="#">33/2-2 S</a>  | 10.06.2015               | 2946          | 3113             |
| <a href="#">33/5-1</a>    | 18.10.1979               | 2692          | 3220             |
| <a href="#">33/5-2</a>    | 18.11.1981               | 4455          | 4520             |
| <a href="#">33/6-1</a>    | 06.07.1979               | 3862          | 3900             |
| <a href="#">33/6-3 S</a>  | 24.07.2012               | 4377          | 4444             |



|                            |            |      |      |
|----------------------------|------------|------|------|
| <a href="#">33/12-1</a>    | 18.04.1974 | 2960 | 3060 |
| <a href="#">33/12-2</a>    | 23.08.1974 | 2951 | 3749 |
| <a href="#">33/12-5</a>    | 21.02.1976 | 2735 | 3747 |
| <a href="#">34/2-3</a>     | 13.08.1981 | 3344 | 3742 |
| <a href="#">34/2-5 S</a>   | 31.03.2018 | 3568 | 3680 |
| <a href="#">34/4-1</a>     | 16.12.1979 | 2508 | 2834 |
| <a href="#">34/4-2</a>     | 24.05.1980 | 2697 | 3599 |
| <a href="#">34/4-3</a>     | 30.03.1982 | 4410 | 4460 |
| <a href="#">34/4-4</a>     | 03.02.1983 | 2425 | 3143 |
| <a href="#">34/4-5</a>     | 06.04.1984 | 3599 | 3917 |
| <a href="#">34/4-6</a>     | 27.03.1986 | 2577 | 3153 |
| <a href="#">34/4-7</a>     | 12.05.1987 | 2502 | 2950 |
| <a href="#">34/4-8</a>     | 21.06.1994 | 2913 | 3110 |
| <a href="#">34/4-9 S</a>   | 15.02.1997 | 2513 | 3440 |
| <a href="#">34/4-11</a>    | 10.01.2010 | 4224 | 4327 |
| <a href="#">34/4-12 A</a>  | 18.02.2010 | 2563 | 2761 |
| <a href="#">34/4-12 S</a>  | 25.01.2010 | 2738 | 3066 |
| <a href="#">34/4-13 S</a>  | 02.01.2011 | 4905 | 5010 |
| <a href="#">34/4-14 S</a>  | 19.05.2015 | 4754 | 4822 |
| <a href="#">34/6-1 S</a>   | 28.08.2002 | 4313 | 4360 |
| <a href="#">34/6-2 S</a>   | 05.11.2012 | 4252 | 4335 |
| <a href="#">34/7-1</a>     | 24.07.1984 | 2392 | 2905 |
| <a href="#">34/7-2</a>     | 10.10.1984 | 2271 | 2475 |
| <a href="#">34/7-3</a>     | 02.01.1985 | 2513 | 3414 |
| <a href="#">34/7-4</a>     | 16.01.1985 | 2628 | 3115 |
| <a href="#">34/7-5</a>     | 16.03.1985 | 3010 | 3146 |
| <a href="#">34/7-6</a>     | 30.05.1985 | 2654 | 3539 |
| <a href="#">34/7-7</a>     | 16.12.1985 | 2678 | 3526 |
| <a href="#">34/7-8</a>     | 11.04.1986 | 2373 | 2766 |
| <a href="#">34/7-9</a>     | 12.06.1986 | 2443 | 3240 |
| <a href="#">34/7-10</a>    | 29.10.1986 | 2683 | 3000 |
| <a href="#">34/7-12</a>    | 17.12.1987 | 2763 | 2784 |
| <a href="#">34/7-13</a>    | 13.04.1988 | 2962 | 2994 |
| <a href="#">34/7-16 R</a>  | 15.10.1990 | 2945 | 2980 |
| <a href="#">34/7-16 R2</a> | 05.07.1994 | 2944 | 2979 |
| <a href="#">34/7-17</a>    | 07.04.1991 | 3085 | 3115 |
| <a href="#">34/7-20</a>    | 27.08.1992 | 3128 | 3177 |
| <a href="#">34/7-34</a>    | 10.03.2009 | 2584 | 2701 |
| <a href="#">34/7-34 A</a>  | 20.03.2009 | 2972 | 3022 |
| <a href="#">34/8-1</a>     | 08.03.1986 | 3417 | 3610 |
| <a href="#">34/8-2</a>     | 17.11.1986 | 3051 | 3240 |



|                             |            |      |      |
|-----------------------------|------------|------|------|
| <a href="#">34/8-4 A</a>    | 27.05.1992 | 3143 | 3567 |
| <a href="#">34/8-4 AR</a>   | 07.03.2003 | 3151 | 3574 |
| <a href="#">34/8-4 S</a>    | 09.06.1991 | 2950 | 3947 |
| <a href="#">34/8-5</a>      | 01.04.1991 | 3484 | 3540 |
| <a href="#">34/8-7</a>      | 16.07.1992 | 5208 | 5460 |
| <a href="#">34/8-7 R</a>    | 10.02.1993 | 5208 | 5460 |
| <a href="#">34/8-8</a>      | 24.08.1992 | 3474 | 3625 |
| <a href="#">34/8-8 R</a>    | 09.03.1993 | 3474 | 3624 |
| <a href="#">34/8-9 S</a>    | 28.12.1992 | 3245 | 3530 |
| <a href="#">34/8-10 S</a>   | 09.12.1993 | 3125 | 3470 |
| <a href="#">34/8-12 S</a>   | 09.12.2001 | 3253 | 3347 |
| <a href="#">34/8-13 S</a>   | 26.06.2009 | 4282 | 4442 |
| <a href="#">34/8-16 S</a>   | 15.11.2015 | 3116 | 3437 |
| <a href="#">34/8-17 S</a>   | 14.03.2014 | 4485 | 4587 |
| <a href="#">34/8-18 S</a>   | 22.02.2019 | 6001 | 6068 |
| <a href="#">34/10-1</a>     | 08.09.1978 | 2367 | 2460 |
| <a href="#">34/10-2</a>     | 08.12.1978 | 3540 | 3729 |
| <a href="#">34/10-3</a>     | 07.06.1979 | 2715 | 2802 |
| <a href="#">34/10-3 R</a>   | 10.10.1987 | 2712 | 2799 |
| <a href="#">34/10-4</a>     | 15.10.1979 | 2481 | 2600 |
| <a href="#">34/10-5</a>     | 02.01.1980 | 2764 | 2780 |
| <a href="#">34/10-7</a>     | 23.03.1980 | 2180 | 2250 |
| <a href="#">34/10-7 R</a>   | 14.07.1983 | 2177 | 2247 |
| <a href="#">34/10-11</a>    | 05.03.1981 | 2089 | 2155 |
| <a href="#">34/10-16</a>    | 11.04.1983 | 4010 | 4042 |
| <a href="#">34/10-16 R</a>  | 27.09.1983 | 4007 | 4039 |
| <a href="#">34/10-30</a>    | 12.05.1986 | 3375 | 3785 |
| <a href="#">34/10-32</a>    | 13.07.1987 | 3538 | 3753 |
| <a href="#">34/10-32 R</a>  | 10.08.1987 | 3538 | 3742 |
| <a href="#">34/10-38 S</a>  | 29.05.1995 | 3844 | 3940 |
| <a href="#">34/10-43 S</a>  | 11.04.2001 | 4370 | 4950 |
| <a href="#">34/10-44 S</a>  | 08.07.2001 | 4200 | 4865 |
| <a href="#">34/10-48 A</a>  | 15.02.2005 | 3657 | 4645 |
| <a href="#">34/10-48 S</a>  | 22.12.2004 | 3657 | 4645 |
| <a href="#">34/10-55 S</a>  | 26.03.2017 | 7390 | 7811 |
| <a href="#">35/1-1</a>      | 18.07.2002 | 4476 | 4540 |
| <a href="#">35/9-6 S</a>    | 07.12.2010 | 3710 | 3740 |
| <a href="#">6201/11-1</a>   | 06.11.1987 | 2678 | 3532 |
| <a href="#">6201/11-2</a>   | 11.03.1991 | 3697 | 3726 |
| <a href="#">6201/11-3 R</a> | 20.10.2012 | 2703 | 2783 |



### Wellbores with cores

| Wellbore name               | Wellbore completion date | Core length [m] |
|-----------------------------|--------------------------|-----------------|
| <a href="#">30/3-2 R</a>    | 16.02.1981               | 9               |
| <a href="#">30/5-3 S</a>    | 12.04.2009               | 55              |
| <a href="#">31/4-8</a>      | 11.05.1986               | 13              |
| <a href="#">33/2-2 S</a>    | 10.06.2015               | 30              |
| <a href="#">33/5-1</a>      | 18.10.1979               | 10              |
| <a href="#">34/2-3</a>      | 13.08.1981               | 39              |
| <a href="#">34/4-1</a>      | 16.12.1979               | 90              |
| <a href="#">34/4-4</a>      | 03.02.1983               | 182             |
| <a href="#">34/4-5</a>      | 06.04.1984               | 48              |
| <a href="#">34/4-6</a>      | 27.03.1986               | 54              |
| <a href="#">34/4-7</a>      | 12.05.1987               | 183             |
| <a href="#">34/4-9 S</a>    | 15.02.1997               | 208             |
| <a href="#">34/4-12 A</a>   | 18.02.2010               | 54              |
| <a href="#">34/4-12 S</a>   | 25.01.2010               | 52              |
| <a href="#">34/4-13 S</a>   | 02.01.2011               | 11              |
| <a href="#">34/7-1</a>      | 24.07.1984               | 223             |
| <a href="#">34/7-3</a>      | 02.01.1985               | 52              |
| <a href="#">34/7-6</a>      | 30.05.1985               | 39              |
| <a href="#">34/7-7</a>      | 16.12.1985               | 103             |
| <a href="#">34/7-8</a>      | 11.04.1986               | 5               |
| <a href="#">34/7-9</a>      | 12.06.1986               | 243             |
| <a href="#">34/8-1</a>      | 08.03.1986               | 9               |
| <a href="#">34/8-4 A</a>    | 27.05.1992               | 79              |
| <a href="#">34/8-4 S</a>    | 09.06.1991               | 327             |
| <a href="#">34/8-7</a>      | 16.07.1992               | 8               |
| <a href="#">34/8-8</a>      | 24.08.1992               | 22              |
| <a href="#">34/8-10 S</a>   | 09.12.1993               | 32              |
| <a href="#">34/8-16 S</a>   | 15.11.2015               | 53              |
| <a href="#">34/10-30</a>    | 12.05.1986               | 189             |
| <a href="#">34/10-32</a>    | 13.07.1987               | 16              |
| <a href="#">6201/11-1</a>   | 06.11.1987               | 151             |
| <a href="#">6201/11-2</a>   | 11.03.1991               | 14              |
| <a href="#">6201/11-3 R</a> | 20.10.2012               | 7               |