



OKEA Annual Statement
of Reserves and
Resources
2017

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1 Introduction

The Annual Statement of Reserves and Resources is a full overview of the hydrocarbon volumes entitled to OKEA AS, and is prepared for both internal and external stakeholders. The reserves calculation and reporting is in line with the *Listing and Disclosure Requirements for Oil and Natural Gas Companies* as stated by the Oslo Stock Exchange, which again is based the *SPE Guidelines for the reserves and resources reporting, SPE 2007*.

2 Classification of Reserves and Contingent Resources

OKEA's reserve and contingent resource volumes have been classified in accordance with the Society of Petroleum Engineer's (SPE's) "Petroleum Resources Management System". This classification system is consistent with Oslo Stock Exchange's requirements for the disclosure of hydrocarbon reserves and contingent resources. The framework of the classification system is illustrated in Figure 1.

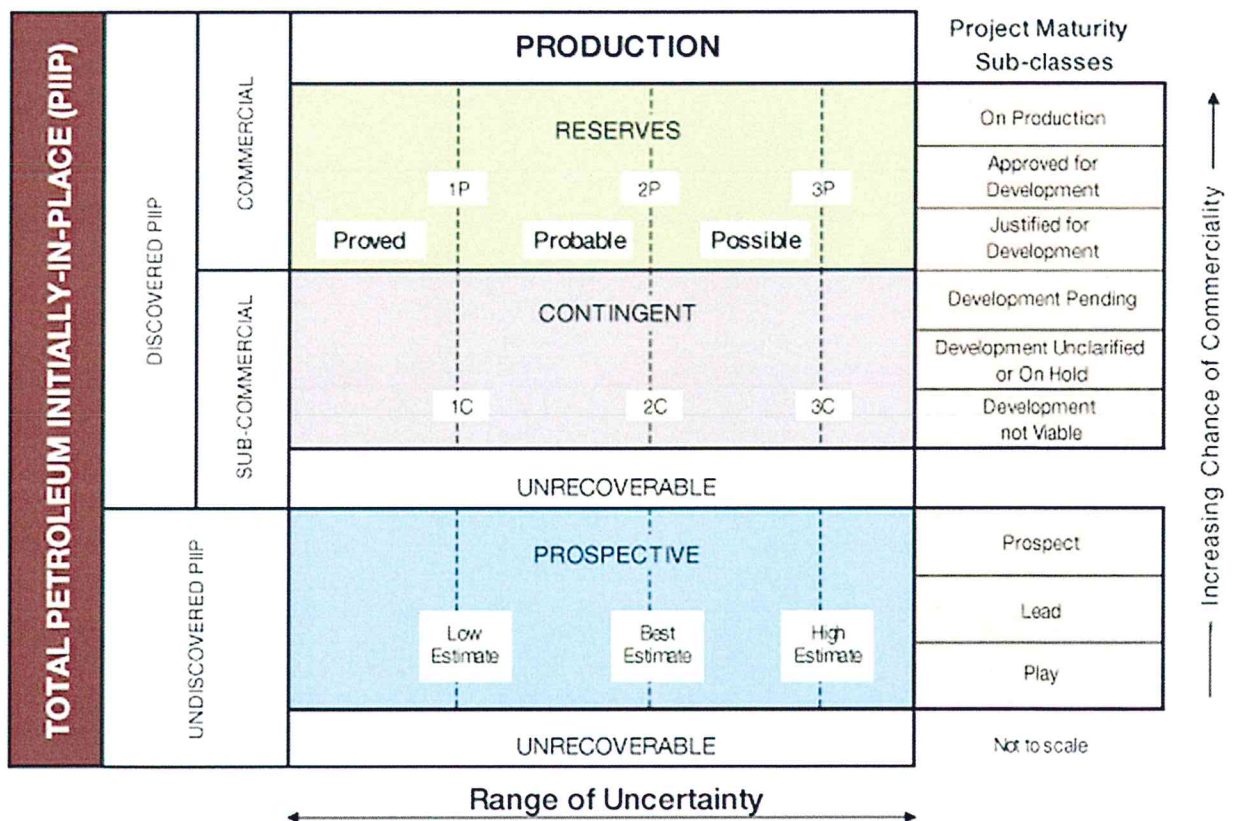


Figure 1: SPE reserves and resources classification system

3 Reserves

OKEA AS has a working interest in 3 fields, which listed in Table 1. The "Main Resource Class" describes the maturity and resource class that holds most of the field's volumes, although there may be a combination of resource classes within a field (i.e. volumes on production and potential IOR targets).

Table 1: Okea asset portfolio

Field/Project	Interest (%)	Operator	Main Resource Class	Comment
Ivar Aasen	0.554%	Aker BP	On production	
Yme field	15 %	Repsol	Justified for development	Main proportion of Okea reserves
Grevling field	70 %	Okea	Development unclarified / on hold	Only contingent resources

The production profiles and costs are based on the 2018 RNB (Revised National Budget) numbers, which is the annual data and production forecast reported to the Norwegian Government. The average future oil price assumption applied when calculating commercial reserves is forward prices 1. March (Appendix).

OKEA's net proven reserves (P90/1P) as of 31.12.2017 are estimated at 8,51 million barrels of oil equivalent. Total net proven plus probable reserves (P50/2P) are estimated at 10,52 million barrels of oil equivalents. The split between liquid and gas and between the different subcategories are given in Table 2.

Table 2: Okea AS 1P and 2P reserves as of 31.12.2017

As of 31.12.2016	Interest	1P/P90 (Low estimate)					2P/P50 (Base estimate)				
		Gross Oil	Gross NGL	Gross Gas	Gross oe	Net oe	Gross Oil	Gross NGL	Gross Gas	Gross oe	Net oe
	%	(mmboe)	(mmboe)	(mmboe)	(mmboe)	(mmboe)	(mmboe)	(mmboe)	(mmboe)	(mmboe)	(mmboe)
Reserves – on production											
Ivar Aasen	0.554%	92.2	6.1	21.9	120.2	0.7	122.3	7.6	22.9	151.99	0.84
Total Net oe						0,66					0.84
Reserves – Approved for development											
Total Net oe											
Reserves – justified for development											
Yme	15%	52.43	0	0	52.43	7.86	64.55	0	0	64.55	9.68
Total Net oe						7.86					9.68
Reserves – TOTAL											
OKEA Net oe						8.51					10.52

The total net possible reserves estimate (P10 / 3P) is 13.17 million barrels oil equivalents.

3.1. DEVELOPMENT OF RESERVES

OKEA's reserves and resources are continually matured, through field development work, improvement of technical sub surface models, acquisitions and production. Table 3 shows how the volumes have changed during the last year.

Table 3: Reserves Development

Reserves Development						
Net attribute mboe. Calendar years, reporting as of year end 2017	Developed Asset		Under development		Non-developed asset	
	1P / P90	2P / P90	1P / P90	2P / P90	1P / P90	2P / P90
Balance year end 2016	0,00	0,00	0,84	1,03		
Production	-0,11	-0,11				
Aqcuisition / disposals						
Extensions and discoveries						
New developments			7,86	9,68		
Revisions of previous estimates			-0,09	-0,08		
Projects matured	0,75	0,95	-0,75	-0,95		
Balance (current ASR) as of 31.12.2017	0,64	0,84	7,86	9,68		

4 Description of Reserves

The following chapter describes fields on production and fields approved / justified for development were OKEA holds a working interest.

4.1. IVAR AASEN UNIT (PL338BS)

Ivar Aasen Field is located in the North Sea 8 km north of the Edvard Grieg Field, and around 30 km south of Grane and Balder (Figure 4.1), at a water depth of 110 meters. The Ivar Aasen Field includes two accumulations; Ivar Aasen and West Cable. The accumulations cover several licenses and have been unitized into the Ivar Aasen Unit.

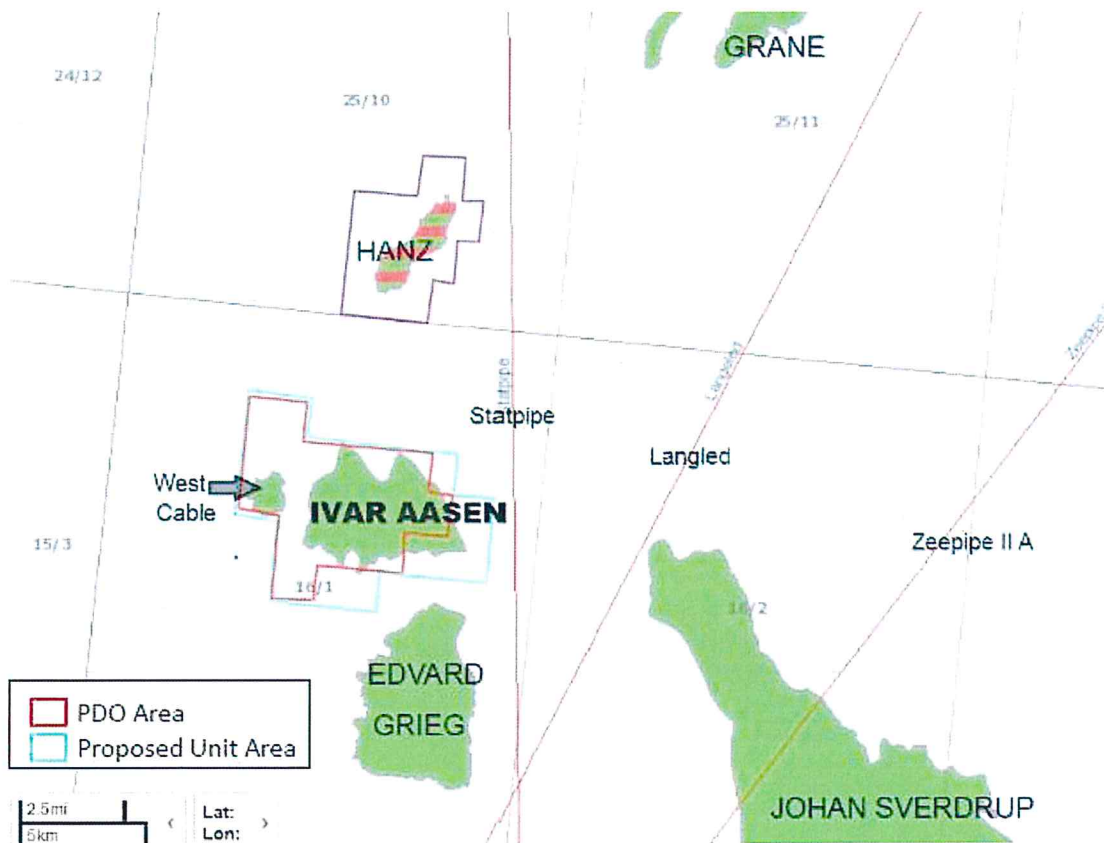


Figure 4.1: Ivar Aasen and West Cable location map

Discovery

Ivar Aasen was discovered with well 16/1-9 in 2008, proving oil and gas in Jurassic and Triassic sandstones.

Reservoir

The two accumulations are located at the Gudrun Terrace between the Southern Viking Graben and the Utsira High. The reservoir consists of shallow marine sandstones in the Hugin Formation and fluvial sandstones in the Sleipner and Skagerrak Formations, and is of Jurassic and Triassic age. The reservoir depth is approximately 2,400 meters. The Ivar Aasen reservoir has a small overlying gas cap. The West

Cable reservoir is in Sleiper fluvial sandstone of Middle Jurassic age, and is located at 2950 meters depth.

Development

The Ivar Aasen unit development plan (Ivar Aasen and West Cable discoveries) includes production of the reserves also from the Hanz (PL028B) discovery. The approved PDO sets out that Ivar Aasen and West Cable (Ivar Aasen Unit) will be developed in the first phase and Hanz in the second phase. OKEA has no ownership interest in the Hanz field.

The Ivar Aasen and West Cable discoveries are developed with a steel jacket platform, with living quarters and processing facilities. Drilling and completion operations are performed from a separate jack-up rig adjacent to the Ivar Aasen platform. Water will be removed from the well stream on the platform and oil and gas rates are measured before transportation through multiphase pipelines to the Edvard Grieg installation for stabilization and export. Edward Grieg will also cover Ivar Aasen power demand until a joint solution for power from shore is established.

The drainage strategy for the Ivar Aasen assume water injection for pressure maintenance. West Cable will be produced through natural pressure support where the major driving force will be natural water influx and formation of a secondary gas cap. The plateau rate of Ivar Aasen is estimated at 56,600 bopd.

Status

Production from Ivar Aasen started in late 2016, and the field has produced 3.2 mmboe (by 31.12.2017). The recoverable volumes are classified as "Reserves / On Production". OKEA AS holds a 0,554 percent working interest in the Unit. The other licensees are Aker BP 34,37862%, Statoil Petroleum AS (41.4730), Bayerngas Norge AS (12.3173%), Wintershall Norge AS (6.4615%), VNG Norge AS (2.0230%) and Lundin Norway AS (1.3850%).

4.2. YME (PL316)

The Yme field in the Egersund Basin was discovered by Statoil in 1987 and was put in production in 1996. The field is located 160 km northeast of the Ekofisk field (Figure 4.2), in water depth of 93 meters. Yme ceased production in 2001 after having produced 51 mmboe as operation was no longer profitable. However, there were significant volumes left in the field, and in 2007 a redevelopment plan submitted by the new operator, Talisman, was approved. In 2013, after drilling 9 new development wells and 2 appraisal wells, the redevelopment project was abandoned due to structural deficiencies in the mobile offshore production unit. Then in 2015 OKEA initiated "Yme New Development", and in 2017 a new PDO was submitted to the authorities.

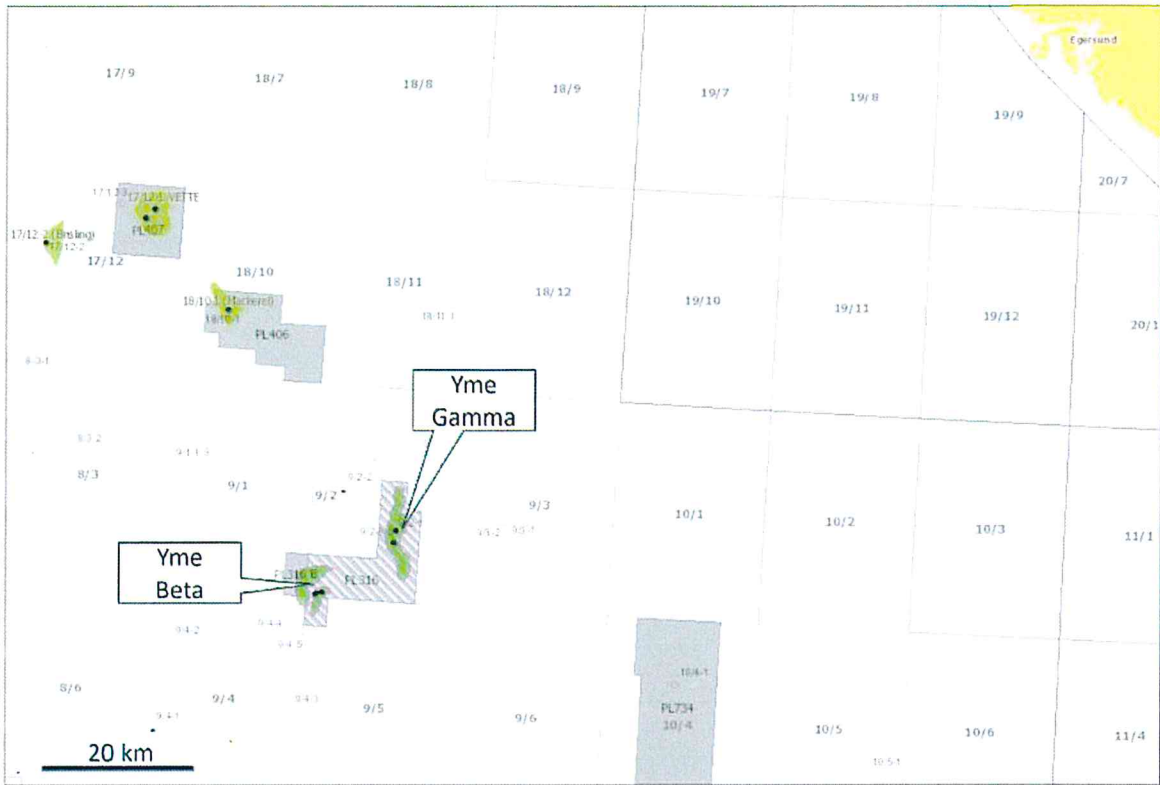


Figure 4.2: Yme Gamma and Yme Beta location map

Discovery

The Yme field was discovered in 1987, by the 9/2-1 well in the Gamma structure. In 1990, oil another discovery was made by the 9/2-3 well in the Beta structure, 12 km west of the Gamma structure.

Reservoir

The reservoir in Yme is the Middle Jurassic to Upper Jurassic Sandnes fm at a depth of approximately 3,200 meters. The two main structures, Gamma and Beta, located in the Egersund basin, are each subdivided in three segments separated by faults. All of these segments except Beta West will be redeveloped.

Development

The Yme field will be developed with a jack-up MOPU equipped with processing facilities. This will be connected to the existing MOPUSTOR tank, left by the previous operator, and oil will be exported by tanker.

The field will be producing from 12 horizontal production wells, supported by 2 WAG injectors (Water Alternating Gas) and 3 water injectors. Produced water reinjection, in combination with a regional aquifer, will maintain the reservoir pressure, and provide significant sweep towards the producers. Production wells will be artificially lifted by ESP's and gas lift. The plateau oil rate of Yme is estimated to approximately 55,000 bopd.

Status

DG3 was passed in October 2017, and the PDO was delivered in December the same year. As a result, the volumes are classified as reserves. First oil is expected in late 2019.

OKEA AS holds 15 percent in Yme. The remaining interests are held by Repsol (55%), Lotos (20%) and KUFPEC (10%).

5 Contingent Resources

OKEA holds contingent resources in all fields, with total net volumes ranging from 14.3 to 42.2 mmboe (1C – 3C). The following chapter gives a brief introduction to the Grevling field and the other contingent projects.

5.1. GREVLING (PL038D)

The Grevling field was discovered by Talisman in 2009. The field is located approximately 20 km south of the Sleipner field (Figure 5.1), at water depth of 86m. In 2017 operator Repsol relinquished their ownership in the licence, and supported the transfer of operatorship to Okea AS. The Grevling field is now being matured towards concept select / DG2 based on a new low-cost development scheme. The total Okea net volumes are ranging from 13.1 to 40.2 mmboe.



Figure 5.1: Grevling location map

Discovery

The field was discovered in 2009, by the 15/12-21 well. The total oil column was 67meters, and the well tested at rates of up to 124 Sm³/d. The discovery was later appraised by a sidetrack in 15/12-21A, a new well 15/12-23 and a sidetrack 15/12-23A.

Reservoir

The reservoir in Grevling is the Middle Jurassic Hugin and Sleipner fm, and the Triassic Skagerrak fm. The Sleipner coal fm separates the Hugin from the Bryne/Skagerrak fm., and the accumulation is further subdivided in an eastern and a western segment by a large north south trending fault.

Development

The Grevling field has recently passed DG1 and is now undergoing a detailed concept select study towards DG2. The main concepts evaluated are: Subsea development with a modified FPSO; subsea or conventional development with newbuild FPSO or jack-up; subsea tie-back to existing host.

The current base case drainage strategy includes 4 horizontal producers and 2 horizontal water-alternating gas injectors. Ongoing studies include multilateral wells in order to increase reservoir exposure, and gas injection into production wells in order to store gas and support reservoir pressure. Artificial lift is required, but the final selection of technology to use depends on the development concept. The plateau rate is estimated to approximately 30,000 bopd.

Status

OKEA is the operator for Grevling and holds 70% working interest in the field, with Petoro as licence partner with 30%.

5.2. OTHER CONTINGENT VOLUMES

5.2.1. Ivar Aasen IOR

Two infill targets have been identified on Ivar Aasen (IOR 07 + 08), with a total Okea net volume ranging from 0.1 – 0.4 mmboe. Maturation of infill targets on Ivar Aasen is a continuous process, and these volumes may increase as more information is acquired and new targets are identified.

5.2.2. Yme Lifetime Extension

Yme life extension is associated with extending the lifetime of the Maersk Inspirer rig. Current classing approval period extends for 10 years, and contingent volumes are associated with a 5-year extension. Net volumes are ranging from 1.22 – 1.92 mmboe.

6 Management's Discussion and Analysis

The reported 2P/P50 reserves include volumes which are believed to be recoverable based on reasonable assumptions about future economical, fiscal and financial conditions. Discounted future cash flows after tax are calculated for the various fields on the basis of expected production profiles and estimated proven and probable reserves. Cut-off time for the reserves is set at zero cash flow or when facility lease expires. The company has used a long-term inflation assumption of 2 percent, a long-term exchange rate of 7.75 NOK/USD, and a long-term oil price of 60 USD/ bbl (real 2017 terms).

The calculations of recoverable volumes are however associated with significant uncertainties. The 2P/P50 estimate represents our best estimate of reserves/resources while the 1P/P90 estimate reflects our high confidence volumes. The methods used for subsurface mapping do not fully clarify all essential parameters for either the actual hydrocarbons in place or the producibility of the hydrocarbons. Thus, there is a remaining risk that actual results may be lower than the 1P/P90. A significant change in oil prices may also impact the reserves. Low oil prices may force the licensees to close down producing fields early and lead to lower production. Similarly, better reservoir performance than expected or higher oil prices may extend the life time of the fields beyond what is currently assumed.

Erik Haugane

CEO



APPENDIX: Oil and FX assumptions

Forward market 1.3.2018

