Part A - Group 2
Gullfaks Village 2010

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Trondheim, 24.02.2010

Contents

1 Introduction

This report is a part of the final report in the course Experts in Team at the Gullfaks village. Our main task was to improve the oil recovery at Gullfaks Sør. In this part A, the task was to run an Eclipse reservoir simulation of the Gullfaks Sør. The simulation and the information that we needed was given by Statoil. In the simulation we used the wells that already had been planned and drilled, as well as four new oil producers and two gas injectors. These two cases was named Reference_Case, which had no new wells, and GFS_Restart, which included the new wells. After running the simulation we interpreted the results and compared them with each other. The additional production that we got from the new wells was included in an economic evaluations. Based upon these economic evaluations, we came up with some recommendations on what Statoil should do at the Gullfaks Sør field.

Trondheim, 24.02.2010

2 Gullfaks Sør - The Field

2.1 Field history

Gullfaks Sør was discovered in 1978. It is located in the northern part of the North Sea, approximately 175 km northwest of Bergen. Gullfaks Sør is located in the blocks 34/10 and 33/12, just a bit south of the mainfield Gullfaks. When the field first was discovered, the initial plan was to produce oil and condensate. After some years there came a new plan, that also included production of gas from the Brent group. The production on Gullfaks Sør is done by eleven subsea templates, that are connected to the platforms Gullfaks A and C trough the Gullfaks Sør satellite. From here the oil and gas are processed, stored and then shipped into the mainland. The driving mechanism for production on the field is injection with gas. According to numbers from Statoil 2008, the total oil volume in Gullfaks Sør is 39.3 MSm3 and 2.9 MSm3 condensate. The total gas volume is 1.25 GSm3 and the water volume is 175.1 MSm3. The information also state that the Gullfaks Sør field had produced 3,3MSm3 of oil/condensate and 2,0 GSm3 gas. Since September 2008, the field has been shut in due to low pressure.

2.2 Geology

The geology in the North Sea today is a result of the two rifting periods that took place there for over 200 million years ago. The first rifting period was in Trias, and during this period about 3000 m of sediments from the mainland were deposited. These sediments were mostly deposited in the Central Graben that developed during the rifting. The second period of rifting was during the Jurassic. It lead to the development of a huge riftdome between the Central Graben, Viking Graben and the Morey-Firth Graben. Due to some uplift and erosion of this dome, a lot of clastic sediments were deposited in particular in the Viking Graben. Some of the sandstones and shales that are good reservoirs and source rocks today, were deposited in the Viking Graben at this time.

The Gullfaks Sør field is located at the west flank of the Viking Graben, and has a pretty complex structural geology. Gullfaks Sør is distinguished from the mainfield Gullfaks, by an east-trending fault. But the Gullfaks Sør itself has faults that are N-S trending, and these faults dip approximately 15 degrees to the west. One can divide both Gullfaks and Gullfaks Sør into three structural areas. The first and the largest one is a domino-area with a lot of rotated fault blocks. The second area is an adaptation zone with complex folding. The third area is a horst area with a lot of faults.

The geology of Gullfaks Sør is quite diverse, and the age range from Middle Jurassic to Upper Trias. The top reservoir is found at 2860 m true vertical depth, but the whole reservoir is between 2400 m and 3400 m below sea level. This makes Gullfaks Sør one of the deepest structures in the area. The oil-water contact is found at 3362 m below sea level, and gas-oil contact is found at 3224 m. The stratigraphical structure of the Gullfaks Sør can be divided into five main formations, the Lunde, Statfjord, Amundsen, Cook and Brent formations. The production has mainly been from the Statfjord and Brent formations.

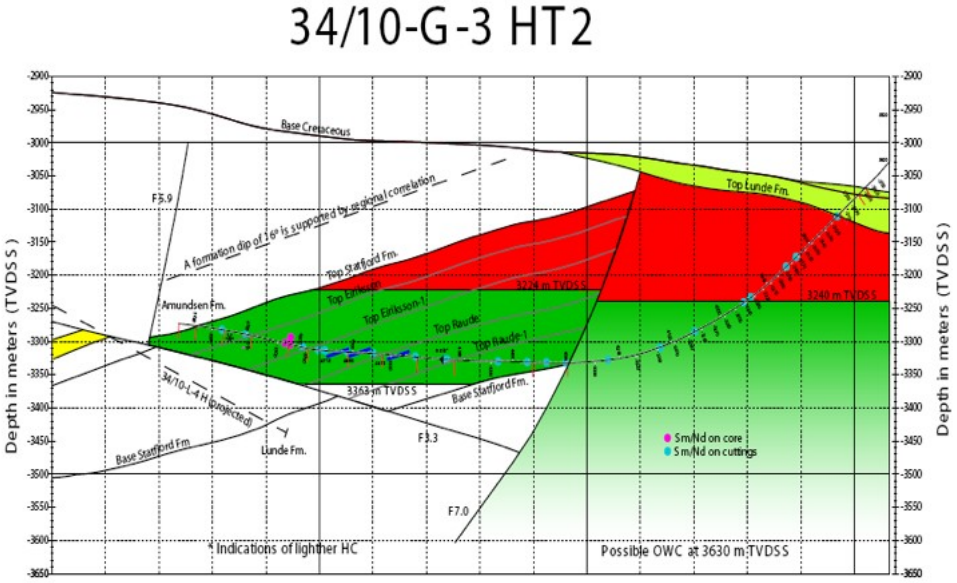

Figure 1: Cross-section of the Gullfaks Sør field showing the different formations

From figure 1, it is shown that the Brent formation is the one that is on the top of the Gullfaks Sør. The formation is dated back to middle Jurassic and consists manly of deltaic sandstone and shale deposits. It is difficult and dangerous to drill in the Brent formation due to large pressure differences trough out the formation. Hence the old wells has been drilled beneath the Brent formation and into the Statfjord formation. The next formation is the Cook formation, which is dated back to early Jurassic and it is 150 m thick. The Cook formation consists of sandstone, which is coarsening upwards. The Amundsen formation is from early Jurassic, and consists of marine shale. The

most important formation in Gullfaks Sør is the Statfjord formation. It is subdivided into three layers. The first one, which occurs on the top of the formation, is Nansen. This layer is mostly sandstone from channel systems and fluvial deposits. The permeability and porosity in Nansen are very good. The next layer is Eiriksson, which has the same history of deposition, hence the same very good reservoir quality. Both of these layers are from early Jurassic. The last layer is Raude, which is dated back to Trias. This layer has deposits from both fluvial and alluvial environments, hence poorer permeability and porosity. In addition a lot of shale between the sandstone, makes the net to gross ratio poor. This is a moderate good reservoir. The last formation in the Gullfaks Sør is the Lunde formation from Trias. It consists of sediments from an alluvial flat, with low sedimentation rate. This makes Lunde a poor reservoir. One of the largest uncertainties today in Gullfaks Sør, is the connectivity between the sand bodies in the reservoir.

2.3 Petrophyscis

Permeability is defined as a measure of the ability of a porous material (often, a rock or unconsolidated material) to transmit fluids. For a rock to be considered as an exploitable hydrocarbon reservoir without stimulation, its permeability must be greater than approximately 100 milliDarcy (1 darcy 1012m2). Depending on the nature of the hydrocarbon - gas reservoirs with lower permeabilities are most times still exploitable because of the lower viscosity of gas with respect to oil. Rocks with permeabilities significantly lower than 100 mD can form efficient seals. In figure 2, one can see that the good reservoirs(Eiriksson and Nansen) has a permeability between 500 - 5000 mD. Raude has a permeability about 100-500mD and Lunde has a very poor permeability ranging from 1-100mD.

Porosity is defined as the relative amount of pore space between the minerals to the bulk volume of the reservoir , it is expressed as a fraction or in percentages. Porosities in potential reservoirs tend to range from 10 percent to 30 percent. The Statfjord formation in the Gullfaks-Sør field has been determined to have a porosity of about 20 percent.

The Gullfaks - Sør field is characterized by reasonably high reservoir pressure ranging from 114.4bar to 522.11bar in different areas of the field as can been seen from figure 3.

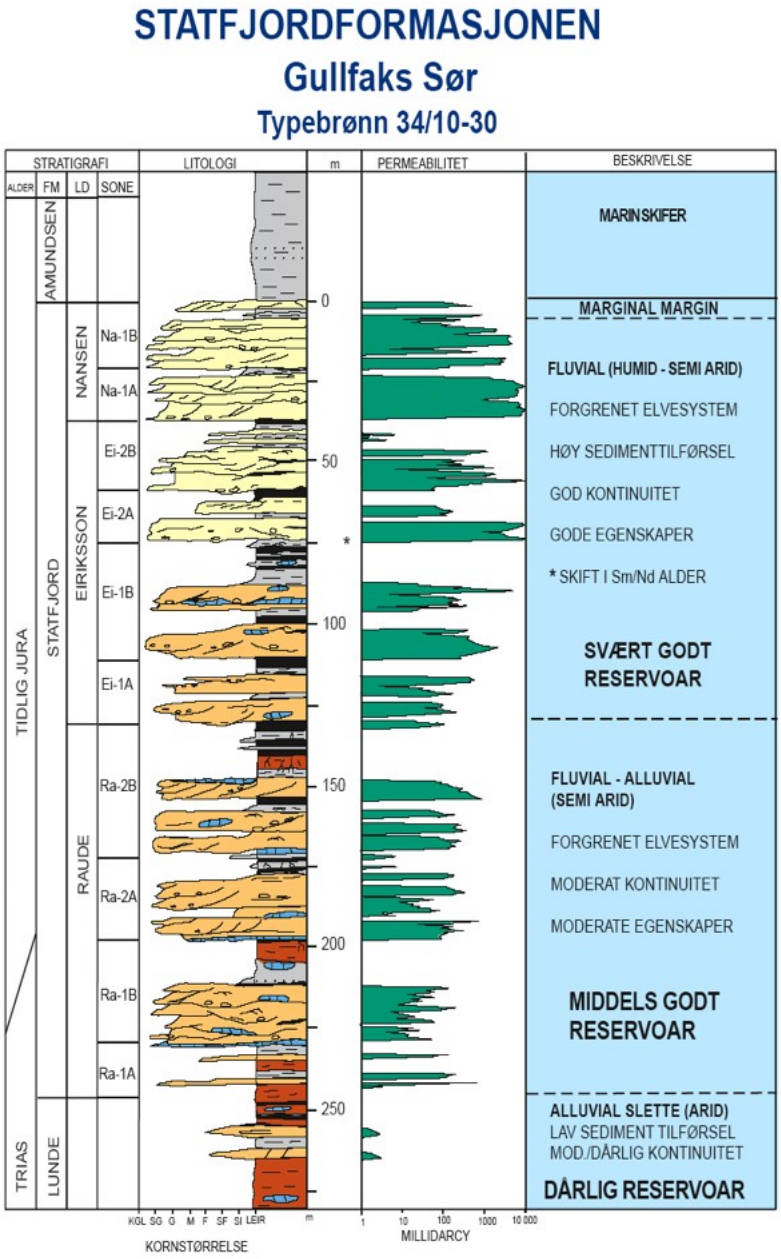

Figure 2: The Statfjord formation lithology log

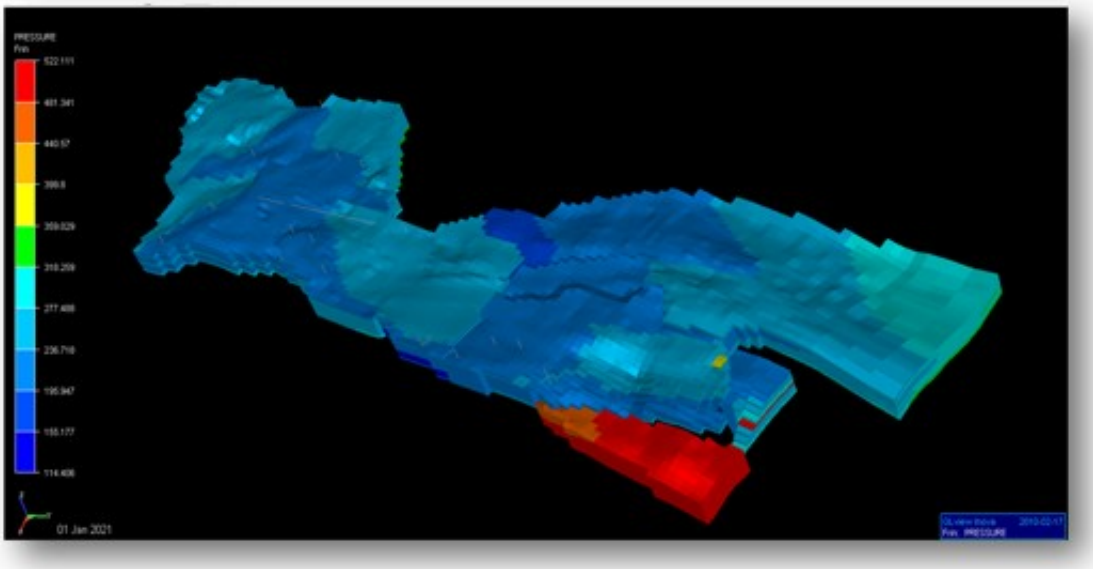

Figure 3: Distribution of pressure in the reservoir

3 Results from Eclipse

3.1 The new wells

To evaluate the Gullfaks field with new wells, the reservoir evaluation program Eclipse was used. By using of simulation results and plotting graphs afterwards, it was possible to get the relevant information about the field behaviour.

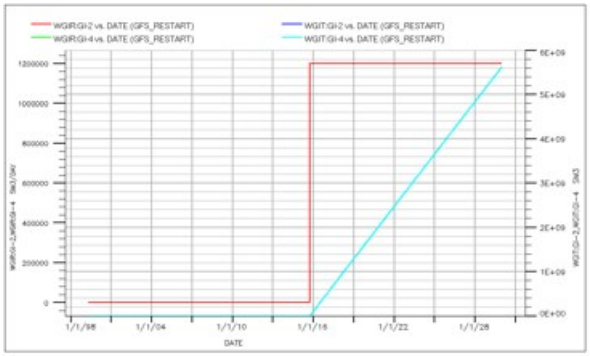

Figure 4: Gas Injection for Well GI-2 and GI-4

From figure 4, we can say gas injection will start from 02 October 2015 and it will continue till 01 January 2030 for both of gas injection wells GI-2 and GI-4. In case of both wells, gas injection rate is 1200000 Sm3/D. Total 5.6224799E+9 Sm3 gas will be injected for both of the wells to build up the pressure.

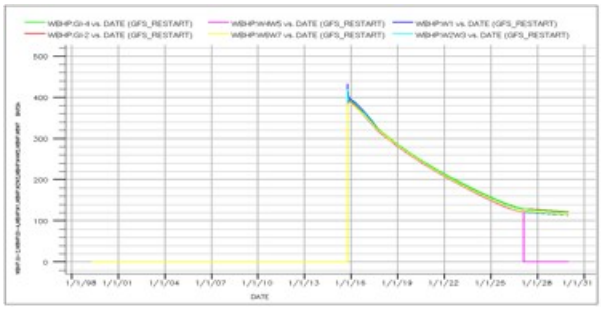

Figure 5: Bottom Hole Pressure for Two Injection Wells and Four Producing Wells

From figure 5 we can see the initial bottom hole pressure of gas injection well, GI-2 is 387.38501 bar and GI-4 is 426.10626 bar on 02 October 2015. Gradually BHP will be decreased and it will go down to be 120.83537 bar for GI-2 and 119.85867 bar for GI-4 on 01 January 2030. The initial bottom hole pressure of producing well, W1 is 432.73343 bar, W2W3 is 418.95245 bar, W4W5 is 383.28238 bar and W6W7 is 379.91541 bar on 02 October 2015.

Gradually BHP will be decreased and it will go down to be 113.50892 bar for W1, 113.99010 bar for W2W3, 114.73647 bar for W6W7 on 01 January 2030. BHP will go down to be 0.00000 bar for W4W5 on 10 February 2027. This mean that there will be no more oil production from the well W4W5 on that day.

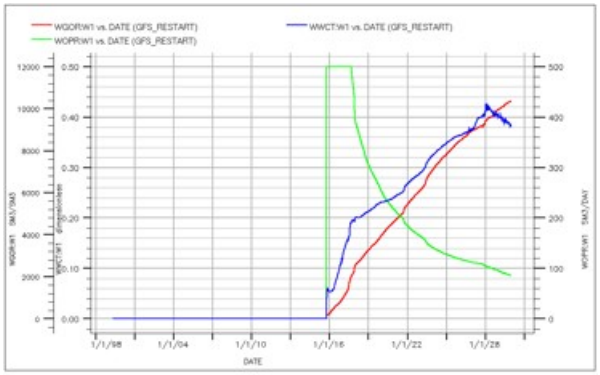

Figure 6: Gas Oil Ratio, Oil Production Rate and Water Cut for Producing Well, W1

By interpreting figure 6 we can say, the initial GOR is 187.65845 Sm3/Sm3 on 02 October 2015 and it will go up to be 10350.516 Sm3/Sm3 on 01 January 2030. This mean that gas production rate will be increased gradually than oil production rate. The initial oil production rate is 500 Sm3/D on 02 October 2015 and it will be constant till 03 September 2017. After that it will go down to be 85.450928 Sm3/D on 01 January 2030. The initial Water-Cut is 0.020448819 and it will be increased up to 0.42233464 on 31 January 2028, hence water production will be increased gradually. After that water-cut will be decreased from 0.42233464 to 0.38180426 on 01 January 2030.

Analyzing figure 7, we can say that the initial oil production rate (OPR) is 800 Sm3/D and it will be constant till 20 Jun 2017. After that OPR will go down gradually from 800 Sm3/D to 93. 707558 Sm3/D on 15 February 2027. Again OPR will be slightly increased up to 101.71559 Sm3/D on 13 August 2028. After that OPR will be decreased to 86.701073 Sm3/D on 01 January 2030. The initial GOR is 187.24797 Sm3/ Sm3. On 02 October 2015 and it will be increased to 10708.131 Sm3/ Sm3 on 05 February 2027. This mean that gas production will be increased during these years. After that GOR will be decreased to 9831.334 Sm3/ Sm3 on 05 February 2027. And again it will be increased to 11533.883 Sm3/ Sm3 on 01 January 2030. The initial water-cut is 0.056113884 and it will be increased abruptly to 0.25495565 on 09 August 2017. Hence during these years this well will produce more water. After that water-cut will be increased slowly to 0.31182933 on 31 May 2026. Again water-cut

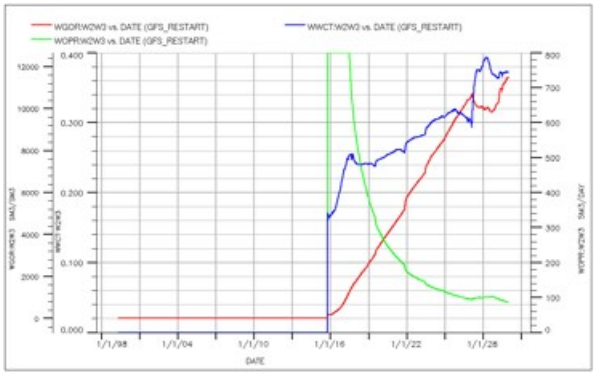

Figure 7: Gas Oil Ratio, Oil Production Rate and Water Cut for Producing Well, W2W3

will be increased abruptly to 0.39320382 and oil production will be decreased on 21 March 2028.

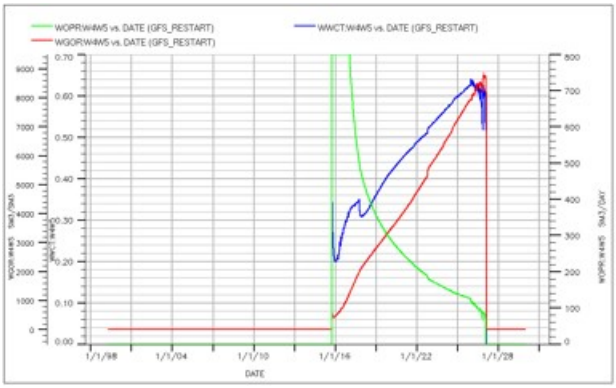

Figure 8: Gas Oil Ratio, Oil Production Rate and Water Cut for Producing Well, W4W5

From figure 8, we can say the initial GOR is 826.39404 Sm3/ Sm3 on 02 October 2015 and it will be increased to 8131.8071 Sm3/ Sm3 on 05 February 2027. After that it will go down to zero, that means there will be no more gas production. The initial oil production rate (OPR) is 800 Sm3/D and it will be constant till 11 January 2017. After that it will go down to be 2.3036892E-8 Sm3/D on 31 January 2027, there will be no more oil production after 31 January 2027. The initial water-cut is 0.35461435 on 02 October 2015 and it will be gradually increased up to 0.61189598 on 14 August 2026. After that it

will be decreased to 0.055502843 on 05 February 2027, after this date the well will be closed because there will be no more oil production from this well.

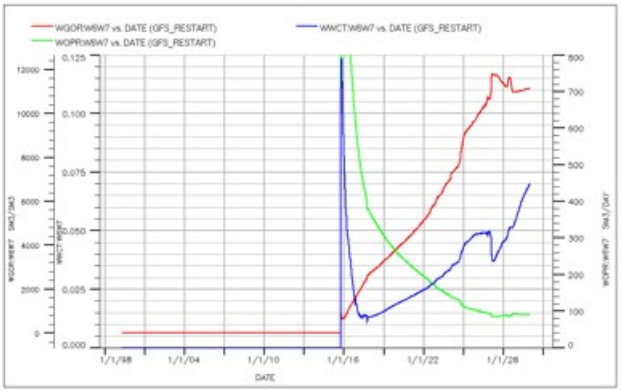

Figure 9: Gas Oil Ratio, Oil Production Rate and Water Cut for Producing Well, W6W7.

By analyzing the graphs in figure 9, we can explain that the initial GOR is 1512.8853 Sm3/ Sm3 on 02 October 2015 and it will be increased to 11635.893 Sm3/ Sm3 a lot of gas will be produced from this well. The initial oil production rate (OPR) is 800 Sm3/D and it will be constant till 29 Jun 2016. After this date it will go down to 89.642807 Sm3/D on 01 January 2030. The initial water-cut will be 0.1112828 and it will be decreased to 0.037029918 on 29 Jun 2016, oil production will be more than the water production at these periods. After that water cut will be increased to 0.069909818 on 01 January 2030, and more water will be produced.

By interpreting figure 10, we can say the total (cumulative) oil production (OPT) from well W1 will be 1039896.3 Sm3, from well W2W3 will be 1275609.5 Sm3, from well W6W7 will be 1111230.5 Sm3 on 01 January 2030 and from well W4W5 will be 1167215.5 Sm3 on 31 January 2027. After this there will be no more oil production from well W4W5. More oil will be produced from well W2W3.

By interpreting figure 11, we can say the total (cumulative) water production (WPT) from well W1 will be 327178.88 Sm3, from well W2W3 will be 429399.56 Sm3, from well W6W7 will be 39177.328 Sm3 on 01 January 2030 and from well W4W5 will be 793105.31 Sm3 on 31 January 2027. After this date there will be no more oil production and water production from well W4W5. More water will be produced from well W4W5.

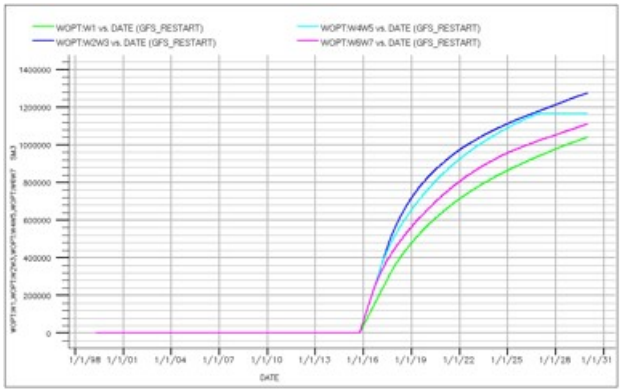

Figure 10: Total Oil Production for Producing Well - W1, W2W3, W4W5 and W6W7.

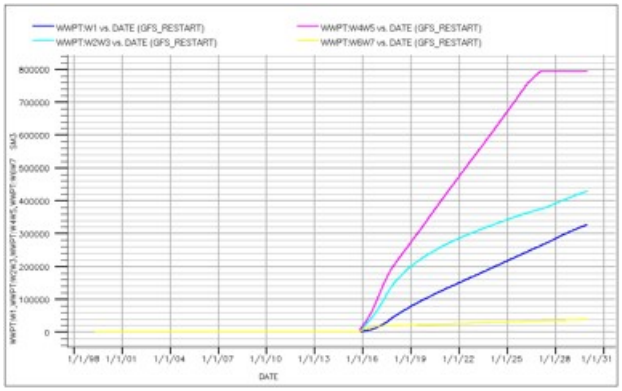

Figure 11: Total Water Production for Producing Well - W1, W2W3, W4W5 and W6W7.

3.2 The whole field

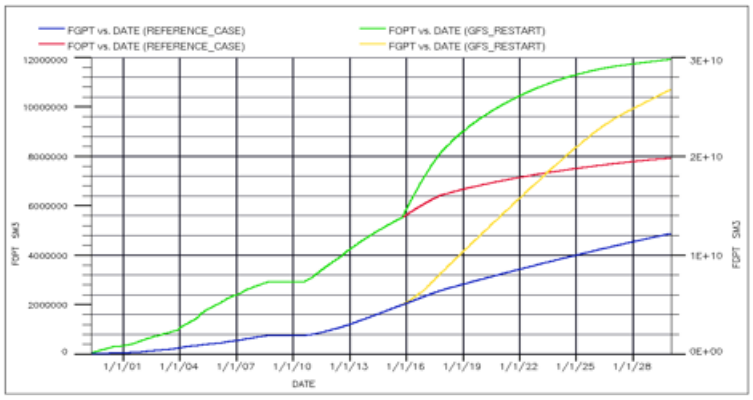

Figure 12: Total oil and gas production vs date

Let us start the interpretation of the field from the production side picture 12. After drilling and placing of the new wells, the amount of the total oil production increases starting at the end of the year 2015. As we can find from the graph, the total difference in oil produced would be 4 MSm3. It will grow up from 7.92 MSm3 to 11.92 MSm3. The total difference in gas produced would be 14.5 GSm3, it will grow up from 12.2 GSm3 to 26.7 GSm3. Big difference in gas production is occurring due to 2 gas injecting wells. Oil and gas will form the main income in the economical calculations. It is also very important to know that the money earned from the production would cover all the expenditures and make the project profitable.

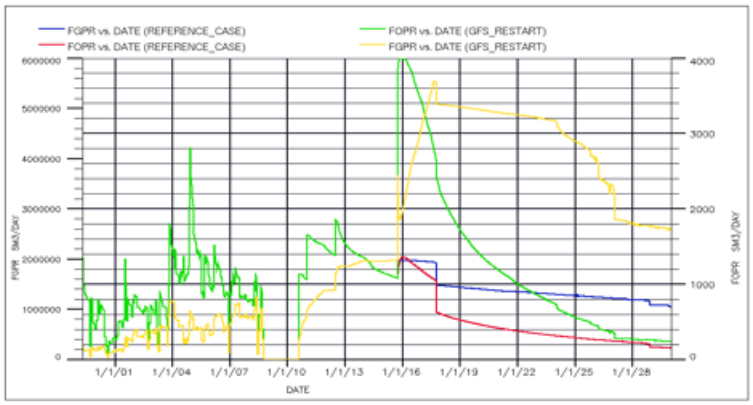

Figure 13: Production data of oil and gas vs date

Production data per each day, which represented on picture 13, can show that there is a big increase in oil production at the beginning of 2016. New wells helped to increase production from 1400 Sm3/day to 4000 Sm3/day in first months. During the next years the production is gradually decreasing and in the end gets to 250 Sm3/day (with new wells) and 150 Sm3/day (without new wells). As for the gas, as it was already discussed, there is an increase of production also and gas injection wells provide additional production of gas. New wells increase production from 1.97 MSm3/day to 3 - 5.53 MSm3/day in first months. During the next years the production is gradually decreasing, in the period of 2018 till 2024 the production changes slightly from 5.08 MSm3/day to 4.77 MSm3/day and in the end gets to 2.6 MSm3/day (with new wells) and 1.09 MSm3/day (without new wells).

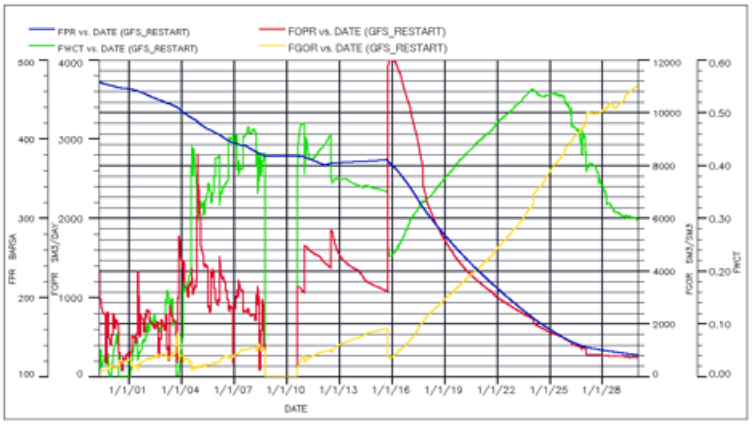

Figure 14: Reservoir parameters vs date (Restart Case)

Picture 14 shows the behavior of the main reservoir parameters. Looking at this picture, one could mention the gap in the period oct 2009 till aug 2010, this is due to putting the Statfjord formation on ice. The production was not profitable because it was far less than expected. At the beginning of the simulation (year 1999), you can see an initial reservoir pressure which is equal to nearly 470 bar. It is gradually decreases due to oil and gas production. The GOR (gas-oil ratio) is relatively low at the simulation start then there is a sharp increase at the end of 2015. It can be due to the new gas injection wells. The same increase could be mentioned in the production of oil after placing new wells. The WC (water cut) curve behaves in the same way. It decreases due to increase in oil production, but as the production continues the WC curve goes up again, but decreases after the middle of 2024 (this might happen due to closing of the well W4W5 in that period).

Before the simulation we had a reference case, in order to see what kind of changes we get with implementation of a new project. The data in graphical

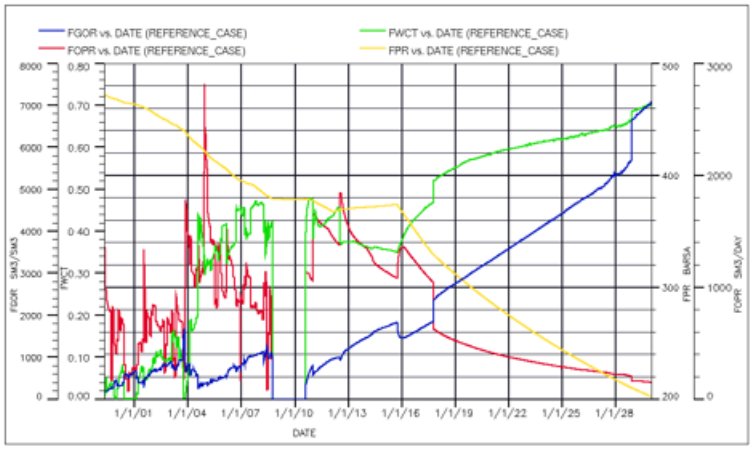

Figure 15: Reservoir parameters vs date (Reference Case)

form from the reference case is shown on the picture 15. It is good to mention the period after the end of 2015. As there were no new wells drilled, the oil production curve decreases and also the GOR is not that high then with the usage of gas injecting wells. To have a better interpretation of the difference in 2 cases, we made a new plot for comparison. As you can see from the picture 16, the GOR curves are different from each other. It was discussed previously that this is due to 2 new gas injecting wells. The GOR with new wells gets to 11059 Sm3/Sm3 at 2030, and the reference case GOR is 7085 Sm3/Sm3. For both cases GOR increases from 1800 Sm3/Sm3 from 2015.

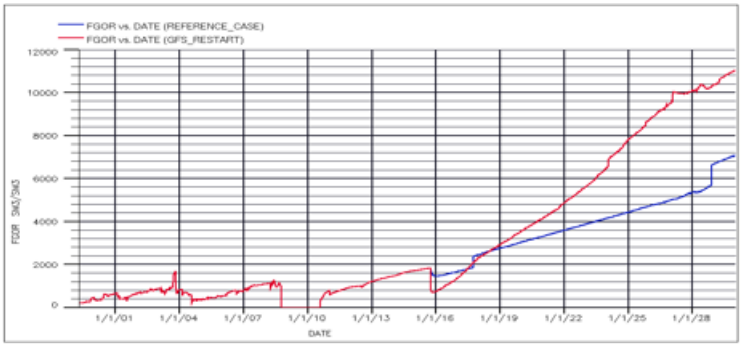

Figure 16: GOR vs date (Reference Case)

Other curves of interest could be pressure and water cut curves which presented on the picture 17. The pressure curve decreases due to depletion of the

reservoir. The initial reservoir pressure is 473 bar and it decreases to 203 bar in the reference case and till 128 bar in the case with new wells. That difference can be explained in the way that more oil is recovered from the reservoir thus it gets to 128 bar in the end. The water cut curve behavior is described by the gradual increase because of increased water production through the life of the reservoir. The special interest is the WC curve with new wells. There is a sharp decrease in WC at the end of 2015 because of new wells production. It returned to 23 percent from 35 percent. The subsequent condition is the gradual increase up to 54 percent from 2015 till the beginning of 2024. Then the decrease in WC can be observed. As was mentioned before, it might be due to shutting down of the well W4W5. The decrease was from 54 percent to 30 percent from 2024 till the beginning of 2030. The reference case has the same gradual increase which is obvious due to oil production. The WC is increasing from 35 percent to 47 percent in the period from the end of 2015 till the end of 2018, and then the sharp jump to 52 percent is occurring, which can mean that one of the field wells had a water break through. After this there is an increase up to 71 percent at the beginning of the 2030.

From Eclipse we also get information about the recovery factor. Before we introduced the new wells, the recovery factory in 2015 was 12,77 %, and after introducing the new wells this factor increased with 15 % up to 28,3 %. This recovery factor is both for oil and wet gas. This can be seen from figure 18. This is very good, and shows that the new wells are a good contribution to the Gullfaks Sør.

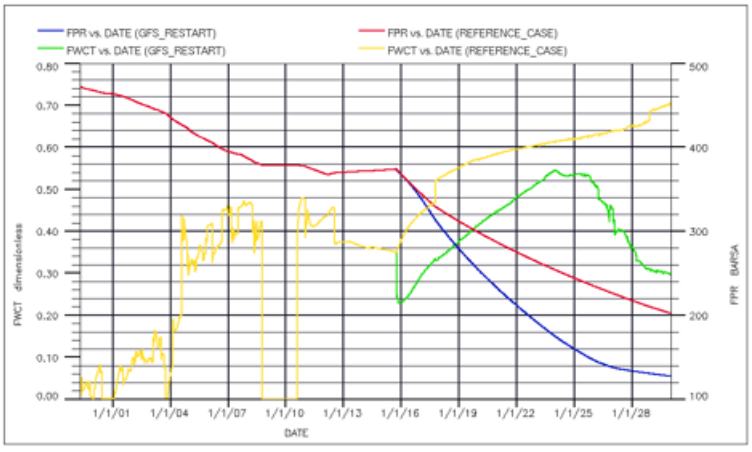

Figure 17: GOR vs date (Reference Case)

Figure 18: Recovery factor for both oil and wet gas

4 Economic evaluations and recommendations

For this part A an economical evaluation of further development of the Gullfaks Sør field should be done, the main goal was to see if the increased production and income could support a new production unit, or if a subsea solution was a better alternative. It is important to know that no cost data has been provided and we have made or own assumptions on CAPEX and OPEX. Estimating these cost over a period of time are quite complicated and time consuming. Therefore the calculations are simplified to some extent, giving a high amount of uncertainties.
The method of evaluation is calculating the net present value, from now on referred to as NPV, for the subsea alternative and the new production unit alternative. The criterion is that the NPV should be positive if the project is worth doing and with a discount rate of 8 %.

The uncertainties are dealt with using three different cases:

- A base oil/gas price case
- A high oil/gas price case
- A low oil/gas price case

The expected net present value is calculated from these three cases. The oil and gas price and the probability distribution for the different cases are taken from the background material handed out for GullfaksVillage 2009, which states an oil price of 75 USD/bbl and gas price of 2 NOK/Sm3 from 2014 and on. These values are used as the base case with the high/low prices +/- 40% of the base case. The probability distribution is 60% for base case, 20% for both high case and low case. Uncertainties in estimating CAPEX/OPEX are dealt in the same way using the same probability distribution and the costs are +/- 40% for the high case and low case respectively for each of the oil/gas price cases.

Estimation of income

For the estimation of income, increased production data are taken from Eclipse for both oil and gas production[1]. The amount of gas reinjected is also taken from Eclipse and the remaining gas production assumed sold.

Estimation of OPEX

The operational cost is estimated in a simplified way. Ten years ago an assumption of 10 USD/bbl was a recognized assumption[2]. We have therefore chosen to use 15 USD/bbl of produced oil for estimation of OPEX. The same operational costs are used for both alternatives. So the operational costs will not reflect on the differences in investment costs, but in general give an indication if the alternative is feasible or not.

[1] See chapter 3.2 for graphs and data
[2] See appendix for source references

4.1 Subsea alternative

For the subsea alternative it is assumed that there is a remaining capacity on the three existing platforms and also the infrastructure can handle the increased production.

Capital Expenses (CAPEX)

For the base case an investment cost of 700 million NOK are assumed per complete subsea well. Six wells make it 4,2 billion NOK[3]. An additional 1,8 billion NOK are assumed necessary for connecting of all six wells to the existing infrastructure. Outphasing cost for removing all the gear is assumed to be 10% of the initial investment. In the NPV calculations, 6 billion NOK are divided equally on three years assuming start up in 2013 and outphasing costs at the end year 2029.

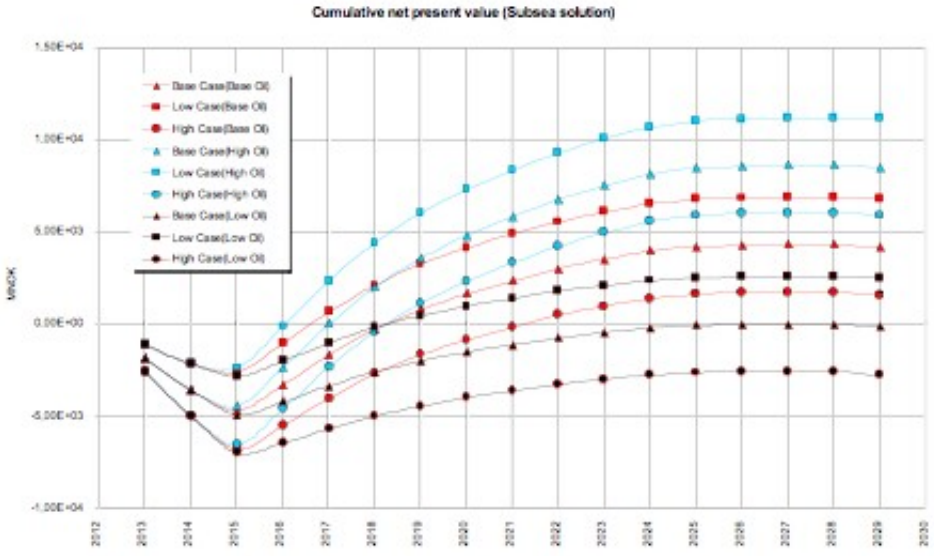

Figure 19: Cumulative net present value

Net present value calculations

Figure 19 illustrates cumulative net present value for all the cases for a subsea solution. For more detailed data on the NPV calculation it is referred to appendix A-C.

Expected net present value

The subsea alternative gives a positive E(NPV) of 4,232 billion NOK which indicates that this alternative may be worth doing and developing.

[3]See appendix for source reference

Expected Net Present Value - Subsea Solution				
Oilprice	Prob.	Capex/Opex	NPV	Prob.
Base Case	0,6			
		Base	4,230E+09	0,6
		Low	6,860E+09	0,2
		High	1,600E+09	0,2
E(NPV - Base)				4,230E+09
Low Case	0,2			
		Base	-6,940E+07	0,6
		Low	2,540E+09	0,2
		High	-2,720E+09	0,2
E(NPV - Low)				-8,964E+07
High Case	0,2			
		Base	8,560E+09	0,6
		Low	1,120E+10	0,2
		High	5,930E+09	0,2
E(NPV - High)				8,562E+09
E(NPV)				4,232E+09

Figure 20: Expected net present value

4.2 New production unit alternative

For a new production unit different possibilities are considered. However a concrete platform like the three existing platforms is considered to be too expensive today. And a production unit with good storage capabilities are assumed preferable, hence the NPV calculations are based on an FPSO solution.

Capital expenses

For estimation of capital expenses the Skarv/Idun field is considered. This field have similarities to the Gullfaks Sør development, using an FPSO but includes more wells and 80km of piping. This project is estimated to cost 19,7 billion NOK[4]. For the development of the Gullfaks Sør field only six wells are planned and less piping is needed to connect to existing transport network, hence a total installation cost is estimated to be 14 billion NOK and outfacing costs are assumed to be 180 million NOK at the base case.

Net present value calculations

Figure 21 illustrates cumulative net present value for all the cases for a new production unit. For more detailed data on the NPV calculation it is referred to appendix D-F.

[4]See appendix for source reference

Expected net present value
The E(NPV) for a new production is negative with 2,848 billion NOK which indicates that the increased production is from these six wells alone can not support building of a new production unit.

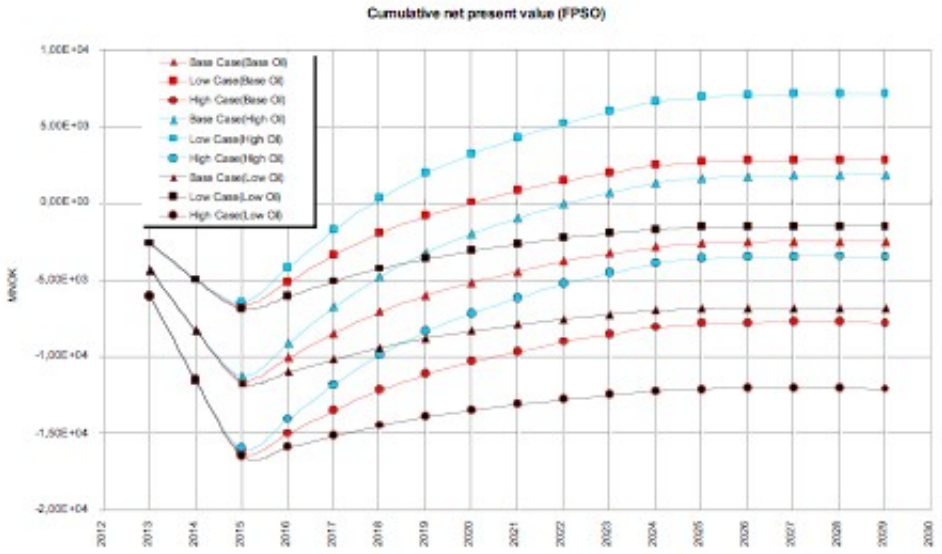

Figure 21: Cumulative net present value

Expected Net Present Value - New Production Unit Solution				
Oilprice	Prob.	Capex/Opex	NPV	Prob.
Base Case	0,6			
		Base	-2,460E+09	0,6
		Low	2,850E+09	0,2
		High	-7,750E+09	0,2
E(NPV - Base)				-2,456E+09
Low Case	0,2			
		Base	-8,940E+07	0,6
		Low	2,540E+09	0,2
		High	-2,720E+09	0,2
E(NPV - Low)				-8,964E+07
High Case	0,2			
		Base	-6,780E+09	0,6
		Low	-1,470E+09	0,2
		High	-1,210E+10	0,2
E(NPV - High)				-6,782E+09
E(NPV)				-2,848E+09

Figure 22: Expected net present value

5 Conclusions

In this report we have become very familiar with the Gullfaks Sør reservoir. We have gained knowledge about it's complexity and the difficulties tied to the Brent formation.

From the reservoir simulation we can see that by adding new producer wells and gas injectors, the gas production will be much higher than the oil production. The oil production will increase some in the first months of 2016, but after this it will decrease rapidly. The total oil production will be 11.92 MSm3, and out of this is 4 MSm3 due to the new well.The gas production will follow the same trend, but with smaller changes in production. The total production will be 26.7 GSm3, and from this is 14.5 GMSm3 due to the new wells. When comparing the Reference_Case with the GFS_Restart, one can see that it is profitable to make these new wells, because both oil- and gas production will increase some, compared with no new wells at all. This is shown by the fact that the recovery factor has increased to 28,3 % from 12,77 %.

From an economic point of view, it is clear that the enhanced oil- and gas recovery will give more income. When comparing the different production alternatives and their costs, it is quite clear that the subsea alternative connected to the existing platform is the best one. The expected net present value for this is 4,2 billion NOK, while expected net present value for the new production unit (FPSO) is -2.8 billion NOK. As long as the expected net present value is positive, the project should be considered done.

We could also have considered a jacket-strucutre and a jack-up, but since we misunderstood the water depth we did not consider it. We became aware of this after all the economic evaluations were done. If we get the time after the part B is done, we can make some new calculations on this and put them in the whole report due in April.

6 Appendix

Source references

- Researcher Jan Ivar Jensen at Department of Petroleum Engineering and Applied Geophysics NTNU
- Professor Sigbjørn Sangesland at Department of Petroleum Engineering and Applied Geophysics NTNU
- ConsecvenceEvaluation06 - Concequence Evaluation of the Skarv/Idun field, Nord-Trndelag Fylkeskommune, 2006
- http://www.ntfk.no/bibliotek/saker/2006/FR/FR06157.htm
- Documents and presentations given by Statoil

APPENDIX A - Economical calculations for subsea completion at base oil price.

Oil price	75	USD/Bbl	2830.414847	NOK/Sm^3
Gas price	2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	15	USD/Bbl	566.0829693	NOK/Sm^3

BASE CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-2.00E+09	0.00E+00	-1.84E+09	0.00E+00	-1.84E+09	-2.00E+09	-1.84E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-2.00E+09	0.00E+00	-1.69E+09	0.00E+00	-1.69E+09	-2.00E+09	-3.53E+09
3	2015	0.26	0.0915	0.209	0	0.78	5.73E+08	0.00E+00	-2.00E+09	-1.47E+08	-1.56E+09	-1.15E+08	-1.10E+09	-1.41E+09	-4.63E+09
4	2016	0.86	0.6925	0.767	0	0.72	1.74E+09	0.00E+00		-4.87E+08	0.00E+00	-3.49E+08	1.40E+09	1.95E+09	-3.24E+09
5	2017	0.73	1.196	0.804	0.392	0.66	1.36E+09	5.17E+08		-4.13E+08	0.00E+00	-2.72E+08	1.61E+09	2.44E+09	-1.63E+09
6	2018	0.5	1.33	0.76	0.57	0.61	8.58E+08	6.91E+08		-2.83E+08	0.00E+00	-1.72E+08	1.38E+09	2.27E+09	-2.53E+08
7	2019	0.42	1.31	0.81	0.5	0.56	6.63E+08	5.58E+08		-2.38E+08	0.00E+00	-1.33E+08	1.09E+09	1.95E+09	8.36E+08
8	2020	0.26	1.3	0.76	0.54	0.51	3.78E+08	5.54E+08		-1.47E+08	0.00E+00	-7.55E+07	8.56E+08	1.67E+09	1.69E+09
9	2021	0.29	1.23	0.81	0.42	0.47	3.88E+08	3.97E+08		-1.64E+08	0.00E+00	-7.75E+07	7.07E+08	1.50E+09	2.40E+09
10	2022	0.18	1.35	0.8	0.55	0.43	2.21E+08	4.78E+08		-1.02E+08	0.00E+00	-4.43E+07	6.55E+08	1.51E+09	3.05E+09
11	2023	0.16	1.26	0.8	0.46	0.40	1.81E+08	3.68E+08		-9.06E+07	0.00E+00	-3.62E+07	5.12E+08	1.28E+09	3.57E+09
12	2024	0.13	1.22	0.77	0.45	0.37	1.35E+08	3.31E+08		-7.36E+07	0.00E+00	-2.71E+07	4.39E+08	1.19E+09	4.01E+09
13	2025	0.08	1.05	0.8	0.25	0.34	7.66E+07	1.69E+08		-4.53E+07	0.00E+00	-1.53E+07	2.30E+08	6.81E+08	4.24E+09
14	2026	0.03	0.85	0.76	0.09	0.31	2.64E+07	5.60E+07		-1.70E+07	0.00E+00	-5.28E+06	7.72E+07	2.48E+08	4.31E+09
15	2027	0.05	0.58	0.83	0	0.29	4.05E+07	0.00E+00		-2.83E+07	0.00E+00	-8.10E+06	3.24E+07	1.13E+08	4.35E+09
16	2028	0.01	0.59	0.82	0	0.26	7.46E+06	0.00E+00		-5.66E+06	0.00E+00	-1.49E+06	5.96E+06	2.26E+07	4.35E+09
17	2029	0.05	0.59	0.72	0	0.24	3.43E+07	0.00E+00	-6.00E+08	-2.83E+07	-1.45E+08	-6.86E+06	-1.18E+08	-4.87E+08	4.23E+09
TOTAL:		4.01	14.64	11.22	4.222		6.69E+09	4.12E+09	-6.60E+09	-2.27E+09	-5.24E+09	-1.34E+09	4.23E+09	1.09E+10	

Oil price	75	USD/Bbl	2830.414847	NOK/Sm^3
Gas price	2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	9	USD/Bbl	339.6497816	NOK/Sm^3

LOW CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-1.20E+09	0.00E+00	-1.10E+09	0.00E+00	-1.10E+09	-1.20E+09	-1.10E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-1.20E+09	0.00E+00	-1.02E+09	0.00E+00	-1.02E+09	-1.20E+09	-2.12E+09
3	2015	0.26	0.0915	0.209	0	0.78	5.73E+08	0.00E+00	-1.20E+09	-8.83E+07	-9.34E+08	-6.88E+07	-4.30E+08	-5.52E+08	-2.55E+09
4	2016	0.86	0.6925	0.767	0	0.72	1.74E+09	0.00E+00		-2.92E+08	0.00E+00	-2.09E+08	1.53E+09	2.14E+09	-1.02E+09
5	2017	0.73	1.196	0.804	0.392	0.66	1.36E+09	5.17E+08		-2.48E+08	0.00E+00	-1.63E+08	1.72E+09	2.60E+09	7.00E+08
6	2018	0.5	1.33	0.76	0.57	0.61	8.58E+08	6.91E+08		-1.70E+08	0.00E+00	-1.03E+08	1.45E+09	2.39E+09	2.15E+09
7	2019	0.42	1.31	0.81	0.5	0.56	6.63E+08	5.58E+08		-1.43E+08	0.00E+00	-7.96E+07	1.14E+09	2.05E+09	3.29E+09
8	2020	0.26	1.3	0.76	0.54	0.51	3.78E+08	5.54E+08		-8.83E+07	0.00E+00	-4.53E+07	8.87E+08	1.73E+09	4.17E+09
9	2021	0.29	1.23	0.81	0.42	0.47	3.88E+08	3.97E+08		-9.85E+07	0.00E+00	-4.65E+07	7.38E+08	1.56E+09	4.91E+09
10	2022	0.18	1.35	0.8	0.55	0.43	2.21E+08	4.78E+08		-6.11E+07	0.00E+00	-2.66E+07	6.73E+08	1.55E+09	5.58E+09
11	2023	0.16	1.26	0.8	0.46	0.40	1.81E+08	3.68E+08		-5.43E+07	0.00E+00	-2.17E+07	5.27E+08	1.32E+09	6.11E+09
12	2024	0.13	1.22	0.77	0.45	0.37	1.35E+08	3.31E+08		-4.42E+07	0.00E+00	-1.62E+07	4.50E+08	1.22E+09	6.56E+09
13	2025	0.08	1.05	0.8	0.25	0.34	7.66E+07	1.69E+08		-2.72E+07	0.00E+00	-9.19E+06	2.37E+08	6.99E+08	6.80E+09
14	2026	0.03	0.85	0.76	0.09	0.31	2.64E+07	5.60E+07		-1.02E+07	0.00E+00	-3.17E+06	7.93E+07	2.55E+08	6.88E+09
15	2027	0.05	0.58	0.83	0	0.29	4.05E+07	0.00E+00		-1.70E+07	0.00E+00	-4.86E+06	3.57E+07	1.25E+08	6.91E+09
16	2028	0.01	0.59	0.82	0	0.26	7.46E+06	0.00E+00		-3.40E+06	0.00E+00	-8.95E+05	6.56E+06	2.49E+07	6.92E+09
17	2029	0.05	0.59	0.72	0	0.24	3.43E+07	0.00E+00	-3.60E+08	-1.70E+07	-8.72E+07	-4.12E+06	-5.71E+07	-2.35E+08	6.86E+09
TOTAL:		4.01	14.64	11.22	4.222		6.69E+09	4.12E+09	-3.96E+09	-1.36E+09	-3.14E+09	-8.03E+08	6.86E+09	1.45E+10	

Oil price	75	USD/Bbl	2830.414847	NOK/Sm^3
Gas price	2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	21	USD/Bbl	792.5161571	NOK/Sm^3

HIGH CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.58E+09	0.00E+00	-2.58E+09	-2.80E+09	-2.58E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.37E+09	0.00E+00	-2.37E+09	-2.80E+09	-4.95E+09
3	2015	0.26	0.0915	0.209	0	0.78	5.73E+08	0.00E+00	-2.80E+09	-2.06E+08	-2.18E+09	-1.60E+08	-1.77E+09	-2.27E+09	-6.71E+09
4	2016	0.86	0.6925	0.767	0	0.72	1.74E+09	0.00E+00		-6.82E+08	0.00E+00	-4.88E+08	1.26E+09	1.75E+09	-5.46E+09
5	2017	0.73	1.196	0.804	0.392	0.66	1.36E+09	5.17E+08		-5.79E+08	0.00E+00	-3.81E+08	1.50E+09	2.27E+09	-3.96E+09
6	2018	0.5	1.33	0.76	0.57	0.61	8.58E+08	6.91E+08		-3.96E+08	0.00E+00	-2.40E+08	1.31E+09	2.16E+09	-2.65E+09
7	2019	0.42	1.31	0.81	0.5	0.56	6.63E+08	5.58E+08		-3.33E+08	0.00E+00	-1.86E+08	1.04E+09	1.86E+09	-1.62E+09
8	2020	0.26	1.3	0.76	0.54	0.51	3.78E+08	5.54E+08		-2.06E+08	0.00E+00	-1.06E+08	8.26E+08	1.61E+09	-7.90E+08
9	2021	0.29	1.23	0.81	0.42	0.47	3.88E+08	3.97E+08		-2.30E+08	0.00E+00	-1.09E+08	6.76E+08	1.43E+09	-1.15E+08
10	2022	0.18	1.35	0.8	0.55	0.43	2.21E+08	4.78E+08		-1.43E+08	0.00E+00	-6.20E+07	6.37E+08	1.47E+09	5.23E+08
11	2023	0.16	1.26	0.8	0.46	0.40	1.81E+08	3.68E+08		-1.27E+08	0.00E+00	-5.07E+07	4.98E+08	1.25E+09	1.02E+09
12	2024	0.13	1.22	0.77	0.45	0.37	1.35E+08	3.31E+08		-1.03E+08	0.00E+00	-3.79E+07	4.28E+08	1.16E+09	1.45E+09
13	2025	0.08	1.05	0.8	0.25	0.34	7.66E+07	1.69E+08		-6.34E+07	0.00E+00	-2.14E+07	2.24E+08	6.63E+08	1.67E+09
14	2026	0.03	0.85	0.76	0.09	0.31	2.64E+07	5.60E+07		-2.38E+07	0.00E+00	-7.40E+06	7.50E+07	2.41E+08	1.75E+09
15	2027	0.05	0.58	0.83	0	0.29	4.05E+07	0.00E+00		-3.96E+07	0.00E+00	-1.13E+07	2.92E+07	1.02E+08	1.78E+09
16	2028	0.01	0.59	0.82	0	0.26	7.46E+06	0.00E+00		-7.93E+06	0.00E+00	-2.09E+06	5.37E+06	2.04E+07	1.78E+09
17	2029	0.05	0.59	0.72	0	0.24	3.43E+07	0.00E+00	-8.40E+08	-3.96E+07	-2.04E+08	-9.60E+06	-1.79E+08	-7.38E+08	1.60E+09
TOTAL:		4.01	14.64	11.22	4.222		6.69E+09	4.12E+09	-9.24E+09	-3.18E+09	-7.33E+09	-1.87E+09	1.60E+09	7.38E+09	

APPENDIX B - Economical calculations for subsea completion at high oil price.

Oil price	105	USD/Bbl	3962.580785	NOK/Sm^3
Gas price	2.8	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	15	USD/Bbl	566.0829693	NOK/Sm^3

BASE CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-2.00E+09	0.00E+00	-1.84E+09	0.00E+00	-1.84E+09	-2.00E+09	-1.84E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-2.00E+09	0.00E+00	-1.69E+09	0.00E+00	-1.69E+09	-2.00E+09	-3.53E+09
3	2015	0.26	0.0915	0.209	0	0.78	8.02E+08	0.00E+00	-2.00E+09	-1.47E+08	-1.56E+09	-1.15E+08	-8.70E+08	-1.12E+09	-4.40E+09
4	2016	0.86	0.6925	0.767	0	0.72	2.44E+09	0.00E+00		-4.87E+08	0.00E+00	-3.49E+08	2.09E+09	2.92E+09	-2.31E+09
5	2017	0.73	1.196	0.804	0.392	0.66	1.91E+09	7.23E+08		-4.13E+08	0.00E+00	-2.72E+08	2.36E+09	3.58E+09	4.76E+07
6	2018	0.5	1.33	0.76	0.57	0.61	1.20E+09	9.68E+08		-2.83E+08	0.00E+00	-1.72E+08	2.00E+09	3.29E+09	2.05E+09
7	2019	0.42	1.31	0.81	0.5	0.56	9.28E+08	7.81E+08		-2.38E+08	0.00E+00	-1.33E+08	1.58E+09	2.83E+09	3.62E+09
8	2020	0.26	1.3	0.76	0.54	0.51	5.29E+08	7.76E+08		-1.47E+08	0.00E+00	-7.55E+07	1.23E+09	2.40E+09	4.85E+09
9	2021	0.29	1.23	0.81	0.42	0.47	5.43E+08	5.55E+08		-1.64E+08	0.00E+00	-7.75E+07	1.02E+09	2.16E+09	5.87E+09
10	2022	0.18	1.35	0.8	0.55	0.43	3.10E+08	6.69E+08		-1.02E+08	0.00E+00	-4.43E+07	9.35E+08	2.15E+09	6.81E+09
11	2023	0.16	1.26	0.8	0.46	0.40	2.53E+08	5.15E+08		-9.06E+07	0.00E+00	-3.62E+07	7.32E+08	1.83E+09	7.54E+09
12	2024	0.13	1.22	0.77	0.45	0.37	1.89E+08	4.63E+08		-7.36E+07	0.00E+00	-2.71E+07	6.26E+08	1.70E+09	8.16E+09
13	2025	0.08	1.05	0.8	0.25	0.34	1.07E+08	2.37E+08		-4.53E+07	0.00E+00	-1.53E+07	3.29E+08	9.72E+08	8.49E+09
14	2026	0.03	0.85	0.76	0.09	0.31	3.70E+07	7.84E+07		-1.70E+07	0.00E+00	-5.28E+06	1.10E+08	3.54E+08	8.60E+09
15	2027	0.05	0.58	0.83	0	0.29	5.67E+07	0.00E+00		-2.83E+07	0.00E+00	-8.10E+06	4.86E+07	1.70E+08	8.65E+09
16	2028	0.01	0.59	0.82	0	0.26	1.04E+07	0.00E+00		-5.66E+06	0.00E+00	-1.49E+06	8.95E+06	3.40E+07	8.66E+09
17	2029	0.05	0.59	0.72	0	0.24	4.80E+07	0.00E+00	-6.00E+08	-2.83E+07	-1.45E+08	-6.86E+06	-1.04E+08	-4.30E+08	8.56E+09
TOTAL:		4.01	14.64	11.22	4.222		9.36E+09	5.77E+09	-6.60E+09	-2.27E+09	-5.24E+09	-1.34E+09	8.56E+09	1.88E+10	

Oil price	105	USD/Bbl	3962.580785	NOK/Sm^3
Gas price	2.8	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	9	USD/Bbl	339.6497816	NOK/Sm^3

LOW CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-1.20E+09	0.00E+00	-1.10E+09	0.00E+00	-1.10E+09	-1.20E+09	-1.10E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-1.20E+09	0.00E+00	-1.02E+09	0.00E+00	-1.02E+09	-1.20E+09	-2.12E+09
3	2015	0.26	0.0915	0.209	0	0.78	8.02E+08	0.00E+00	-1.20E+09	-8.83E+07	-9.34E+08	-6.88E+07	-2.01E+08	-2.58E+08	-2.32E+09
4	2016	0.86	0.6925	0.767	0	0.72	2.44E+09	0.00E+00		-2.92E+08	0.00E+00	-2.09E+08	2.23E+09	3.12E+09	-8.85E+07
5	2017	0.73	1.196	0.804	0.392	0.66	1.91E+09	7.23E+08		-2.48E+08	0.00E+00	-1.63E+08	2.47E+09	3.74E+09	2.38E+09
6	2018	0.5	1.33	0.76	0.57	0.61	1.20E+09	9.68E+08		-1.70E+08	0.00E+00	-1.03E+08	2.07E+09	3.41E+09	4.44E+09
7	2019	0.42	1.31	0.81	0.5	0.56	9.28E+08	7.81E+08		-1.43E+08	0.00E+00	-7.96E+07	1.63E+09	2.92E+09	6.07E+09
8	2020	0.26	1.3	0.76	0.54	0.51	5.29E+08	7.76E+08		-8.83E+07	0.00E+00	-4.53E+07	1.26E+09	2.45E+09	7.33E+09
9	2021	0.29	1.23	0.81	0.42	0.47	5.43E+08	5.55E+08		-9.85E+07	0.00E+00	-4.65E+07	1.05E+09	2.23E+09	8.38E+09
10	2022	0.18	1.35	0.8	0.55	0.43	3.10E+08	6.69E+08		-6.11E+07	0.00E+00	-2.66E+07	9.52E+08	2.19E+09	9.34E+09
11	2023	0.16	1.26	0.8	0.46	0.40	2.53E+08	5.15E+08		-5.43E+07	0.00E+00	-2.17E+07	7.46E+08	1.87E+09	1.01E+10
12	2024	0.13	1.22	0.77	0.45	0.37	1.89E+08	4.63E+08		-4.42E+07	0.00E+00	-1.62E+07	6.36E+08	1.73E+09	1.07E+10
13	2025	0.08	1.05	0.8	0.25	0.34	1.07E+08	2.37E+08		-2.72E+07	0.00E+00	-9.19E+06	3.35E+08	9.90E+08	1.11E+10
14	2026	0.03	0.85	0.76	0.09	0.31	3.70E+07	7.84E+07		-1.02E+07	0.00E+00	-3.17E+06	1.12E+08	3.61E+08	1.12E+10
15	2027	0.05	0.58	0.83	0	0.29	5.67E+07	0.00E+00		-1.70E+07	0.00E+00	-4.86E+06	5.19E+07	1.81E+08	1.12E+10
16	2028	0.01	0.59	0.82	0	0.26	1.04E+07	0.00E+00		-3.40E+06	0.00E+00	-8.95E+05	9.54E+06	3.62E+07	1.12E+10
17	2029	0.05	0.59	0.72	0	0.24	4.80E+07	0.00E+00	-3.60E+08	-1.70E+07	-8.72E+07	-4.12E+06	-4.33E+07	-1.79E+08	1.12E+10
TOTAL:		4.01	14.64	11.22	4.222		9.36E+09	5.77E+09	-3.96E+09	-1.36E+09	-3.14E+09	-8.03E+08	1.12E+10	2.24E+10	

Oil price	105	USD/Bbl	3962.580785	NOK/Sm^3
Gas price	2.8	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	21	USD/Bbl	792.5161571	NOK/Sm^3

HIGH CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.58E+09	0.00E+00	-2.58E+09	-2.80E+09	-2.58E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.37E+09	0.00E+00	-2.37E+09	-2.80E+09	-4.95E+09
3	2015	0.26	0.0915	0.209	0	0.78	8.02E+08	0.00E+00	-2.80E+09	-2.06E+08	-2.18E+09	-1.60E+08	-1.54E+09	-1.98E+09	-6.48E+09
4	2016	0.86	0.6925	0.767	0	0.72	2.44E+09	0.00E+00		-6.82E+08	0.00E+00	-4.88E+08	1.95E+09	2.73E+09	-4.53E+09
5	2017	0.73	1.196	0.804	0.392	0.66	1.91E+09	7.23E+08		-5.79E+08	0.00E+00	-3.81E+08	2.25E+09	3.41E+09	-2.28E+09
6	2018	0.5	1.33	0.76	0.57	0.61	1.20E+09	9.68E+08		-3.96E+08	0.00E+00	-2.40E+08	1.93E+09	3.18E+09	-3.54E+08
7	2019	0.42	1.31	0.81	0.5	0.56	9.28E+08	7.81E+08		-3.33E+08	0.00E+00	-1.86E+08	1.52E+09	2.73E+09	1.17E+09
8	2020	0.26	1.3	0.76	0.54	0.51	5.29E+08	7.76E+08		-2.06E+08	0.00E+00	-1.06E+08	1.20E+09	2.34E+09	2.37E+09
9	2021	0.29	1.23	0.81	0.42	0.47	5.43E+08	5.55E+08		-2.30E+08	0.00E+00	-1.09E+08	9.89E+08	2.10E+09	3.36E+09
10	2022	0.18	1.35	0.8	0.55	0.43	3.10E+08	6.69E+08		-1.43E+08	0.00E+00	-6.20E+07	9.17E+08	2.11E+09	4.27E+09
11	2023	0.16	1.26	0.8	0.46	0.40	2.53E+08	5.15E+08		-1.27E+08	0.00E+00	-5.07E+07	7.17E+08	1.80E+09	4.99E+09
12	2024	0.13	1.22	0.77	0.45	0.37	1.89E+08	4.63E+08		-1.02E+08	0.00E+00	-3.79E+07	6.15E+08	1.67E+09	5.61E+09
13	2025	0.08	1.05	0.8	0.25	0.34	1.07E+08	2.37E+08		-6.34E+07	0.00E+00	-2.14E+07	3.23E+08	9.54E+08	5.93E+09
14	2026	0.03	0.85	0.76	0.09	0.31	3.70E+07	7.84E+07		-2.38E+07	0.00E+00	-7.40E+06	1.08E+08	3.47E+08	6.04E+09
15	2027	0.05	0.58	0.83	0	0.29	5.67E+07	0.00E+00		-3.96E+07	0.00E+00	-1.13E+07	4.54E+07	1.59E+08	6.08E+09
16	2028	0.01	0.59	0.82	0	0.26	1.04E+07	0.00E+00		-7.93E+06	0.00E+00	-2.09E+06	8.35E+06	3.17E+07	6.09E+09
17	2029	0.05	0.59	0.72	0	0.24	4.80E+07	0.00E+00	-8.40E+08	-3.96E+07	-2.04E+08	-9.60E+06	-1.65E+08	-6.81E+08	5.93E+09
TOTAL:		4.01	14.64	11.22	4.222		9.36E+09	5.77E+09	-9.24E+09	-3.18E+09	-7.33E+09	-1.87E+09	5.93E+09	1.53E+10	

APPENDIX C - Economical calculations for subsea completion at low oil price.

Oil price	45	USD/Bbl	1698.248908	NOK/Sm^3
Gas price	1.2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	15	USD/Bbl	566.0829693	NOK/Sm^3

BASE CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-2.00E+09	0.00E+00	-1.84E+09	0.00E+00	-1.84E+09	-2.00E+09	-1.84E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-2.00E+09	0.00E+00	-1.69E+09	0.00E+00	-1.69E+09	-2.00E+09	-3.53E+09
3	2015	0.26	0.0915	0.209	0	0.78	3.44E+08	0.00E+00	-2.00E+09	-1.47E+08	-1.56E+09	-1.15E+08	-1.33E+09	-1.71E+09	-4.86E+09
4	2016	0.86	0.6925	0.767	0	0.72	1.05E+09	0.00E+00		-4.87E+08	0.00E+00	-3.49E+08	6.98E+08	9.74E+08	-4.16E+09
5	2017	0.73	1.196	0.804	0.392	0.66	8.17E+08	3.10E+08		-4.13E+08	0.00E+00	-2.72E+08	8.55E+08	1.30E+09	-3.31E+09
6	2018	0.5	1.33	0.76	0.57	0.61	5.15E+08	4.15E+08		-2.83E+08	0.00E+00	-1.72E+08	7.58E+08	1.25E+09	-2.55E+09
7	2019	0.42	1.31	0.81	0.5	0.56	3.98E+08	3.35E+08		-2.38E+08	0.00E+00	-1.33E+08	6.00E+08	1.08E+09	-1.95E+09
8	2020	0.26	1.3	0.76	0.54	0.51	2.27E+08	3.33E+08		-1.47E+08	0.00E+00	-7.55E+07	4.84E+08	9.42E+08	-1.47E+09
9	2021	0.29	1.23	0.81	0.42	0.47	2.33E+08	2.38E+08		-1.64E+08	0.00E+00	-7.75E+07	3.93E+08	8.32E+08	-1.07E+09
10	2022	0.18	1.35	0.8	0.55	0.43	1.33E+08	2.87E+08		-1.02E+08	0.00E+00	-4.43E+07	3.75E+08	8.64E+08	-6.99E+08
11	2023	0.16	1.26	0.8	0.46	0.40	1.09E+08	2.21E+08		-9.06E+07	0.00E+00	-3.62E+07	2.93E+08	7.33E+08	-4.06E+08
12	2024	0.13	1.22	0.77	0.45	0.37	8.12E+07	1.99E+08		-7.36E+07	0.00E+00	-2.71E+07	2.53E+08	6.87E+08	-1.53E+08
13	2025	0.08	1.05	0.8	0.25	0.34	4.60E+07	1.01E+08		-4.53E+07	0.00E+00	-1.53E+07	1.32E+08	3.91E+08	-2.11E+07
14	2026	0.03	0.85	0.76	0.09	0.31	1.59E+07	3.36E+07		-1.70E+07	0.00E+00	-5.28E+06	4.42E+07	1.42E+08	2.31E+07
15	2027	0.05	0.58	0.83	0	0.29	2.43E+07	0.00E+00		-2.83E+07	0.00E+00	-8.10E+06	1.62E+07	5.66E+07	3.93E+07
16	2028	0.01	0.59	0.82	0	0.26	4.47E+06	0.00E+00		-5.66E+06	0.00E+00	-1.49E+06	2.98E+06	1.13E+07	4.23E+07
17	2029	0.05	0.59	0.72	0	0.24	2.06E+07	0.00E+00	-6.00E+08	-2.83E+07	-1.45E+08	-6.86E+06	-1.32E+08	-5.43E+08	-8.94E+07
TOTAL:		4.01	14.64	11.22	4.222		4.01E+09	2.47E+09	-6.60E+09	-2.27E+09	-5.24E+09	-1.34E+09	-8.94E+07	3.01E+09	

Oil price	45	USD/Bbl	1698.248908	NOK/Sm^3
Gas price	1.2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	9	USD/Bbl	339.6497816	NOK/Sm^3

LOW CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-1.20E+09	0.00E+00	-1.10E+09	0.00E+00	-1.10E+09	-1.20E+09	-1.10E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-1.20E+09	0.00E+00	-1.02E+09	0.00E+00	-1.02E+09	-1.20E+09	-2.12E+09
3	2015	0.26	0.0915	0.209	0	0.78	3.44E+08	0.00E+00	-1.20E+09	-8.83E+07	-9.34E+08	-6.88E+07	-6.59E+08	-8.47E+08	-2.78E+09
4	2016	0.86	0.6925	0.767	0	0.72	1.05E+09	0.00E+00		-2.92E+08	0.00E+00	-2.09E+08	8.37E+08	1.17E+09	-1.94E+09
5	2017	0.73	1.196	0.804	0.392	0.66	8.17E+08	3.10E+08		-2.48E+08	0.00E+00	-1.63E+08	9.64E+08	1.46E+09	-9.78E+08
6	2018	0.5	1.33	0.76	0.57	0.61	5.15E+08	4.15E+08		-1.70E+08	0.00E+00	-1.03E+08	8.27E+08	1.36E+09	-1.52E+08
7	2019	0.42	1.31	0.81	0.5	0.56	3.98E+08	3.35E+08		-1.43E+08	0.00E+00	-7.96E+07	6.53E+08	1.17E+09	5.01E+08
8	2020	0.26	1.3	0.76	0.54	0.51	2.27E+08	3.33E+08		-8.83E+07	0.00E+00	-4.53E+07	5.14E+08	1.00E+09	1.02E+09
9	2021	0.29	1.23	0.81	0.42	0.47	2.33E+08	2.38E+08		-9.85E+07	0.00E+00	-4.65E+07	4.24E+08	8.98E+08	1.44E+09
10	2022	0.18	1.35	0.8	0.55	0.43	1.33E+08	2.87E+08		-6.11E+07	0.00E+00	-2.66E+07	3.93E+08	9.05E+08	1.83E+09
11	2023	0.16	1.26	0.8	0.46	0.40	1.09E+08	2.21E+08		-5.43E+07	0.00E+00	-2.17E+07	3.07E+08	7.69E+08	2.14E+09
12	2024	0.13	1.22	0.77	0.45	0.37	8.12E+07	1.99E+08		-4.42E+07	0.00E+00	-1.62E+07	2.63E+08	7.17E+08	2.40E+09
13	2025	0.08	1.05	0.8	0.25	0.34	4.60E+07	1.01E+08		-2.72E+07	0.00E+00	-9.19E+06	1.38E+08	4.09E+08	2.54E+09
14	2026	0.03	0.85	0.76	0.09	0.31	1.59E+07	3.36E+07		-1.02E+07	0.00E+00	-3.17E+06	4.63E+07	1.49E+08	2.59E+09
15	2027	0.05	0.58	0.83	0	0.29	2.43E+07	0.00E+00		-1.70E+07	0.00E+00	-4.86E+06	1.94E+07	6.79E+07	2.61E+09
16	2028	0.01	0.59	0.82	0	0.26	4.47E+06	0.00E+00		-3.40E+06	0.00E+00	-8.95E+05	3.58E+06	1.36E+07	2.61E+09
17	2029	0.05	0.59	0.72	0	0.24	2.06E+07	0.00E+00	-3.60E+08	-1.70E+07	-8.72E+07	-4.12E+06	-7.08E+07	-2.92E+08	2.54E+09
TOTAL:		4.01	14.64	11.22	4.222		4.01E+09	2.47E+09	-3.96E+09	-1.36E+09	-3.14E+09	-8.03E+08	2.54E+09	6.55E+09	

Oil price	45	USD/Bbl	1698.248908	NOK/Sm^3
Gas price	1.2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	21	USD/Bbl	792.5161571	NOK/Sm^3

HIGH CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.58E+09	0.00E+00	-2.58E+09	-2.80E+09	-2.58E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.37E+09	0.00E+00	-2.37E+09	-2.80E+09	-4.95E+09
3	2015	0.26	0.0915	0.209	0	0.78	3.44E+08	0.00E+00	-2.80E+09	-2.06E+08	-2.18E+09	-1.60E+08	-2.00E+09	-2.56E+09	-6.94E+09
4	2016	0.86	0.6925	0.767	0	0.72	1.05E+09	0.00E+00		-6.82E+08	0.00E+00	-4.88E+08	5.58E+08	7.79E+08	-6.38E+09
5	2017	0.73	1.196	0.804	0.392	0.66	8.17E+08	3.10E+08		-5.79E+08	0.00E+00	-3.81E+08	7.46E+08	1.13E+09	-5.64E+09
6	2018	0.5	1.33	0.76	0.57	0.61	5.15E+08	4.15E+08		-3.96E+08	0.00E+00	-2.40E+08	6.89E+08	1.14E+09	-4.95E+09
7	2019	0.42	1.31	0.81	0.5	0.56	3.98E+08	3.35E+08		-3.33E+08	0.00E+00	-1.86E+08	5.47E+08	9.80E+08	-4.40E+09
8	2020	0.26	1.3	0.76	0.54	0.51	2.27E+08	3.33E+08		-2.06E+08	0.00E+00	-1.06E+08	4.53E+08	8.83E+08	-3.95E+09
9	2021	0.29	1.23	0.81	0.42	0.47	2.33E+08	2.38E+08		-2.30E+08	0.00E+00	-1.09E+08	3.62E+08	7.67E+08	-3.59E+09
10	2022	0.18	1.35	0.8	0.55	0.43	1.33E+08	2.87E+08		-1.43E+08	0.00E+00	-6.20E+07	3.58E+08	8.23E+08	-3.23E+09
11	2023	0.16	1.26	0.8	0.46	0.40	1.09E+08	2.21E+08		-1.27E+08	0.00E+00	-5.07E+07	2.79E+08	6.97E+08	-2.95E+09
12	2024	0.13	1.22	0.77	0.45	0.37	8.12E+07	1.99E+08		-1.02E+08	0.00E+00	-3.79E+07	2.42E+08	6.58E+08	-2.71E+09
13	2025	0.08	1.05	0.8	0.25	0.34	4.60E+07	1.01E+08		-6.34E+07	0.00E+00	-2.14E+07	1.26E+08	3.72E+08	-2.58E+09
14	2026	0.03	0.85	0.76	0.09	0.31	1.59E+07	3.36E+07		-2.38E+07	0.00E+00	-7.40E+06	4.21E+07	1.35E+08	-2.54E+09
15	2027	0.05	0.58	0.83	0	0.29	2.43E+07	0.00E+00		-3.96E+07	0.00E+00	-1.13E+07	1.30E+07	4.53E+07	-2.53E+09
16	2028	0.01	0.59	0.82	0	0.26	4.47E+06	0.00E+00		-7.93E+06	0.00E+00	-2.09E+06	2.39E+06	9.06E+06	-2.53E+09
17	2029	0.05	0.59	0.72	0	0.24	2.06E+07	0.00E+00	-8.40E+08	-3.96E+07	-2.04E+08	-9.60E+06	-1.93E+08	-7.95E+08	-2.72E+09
TOTAL:		4.01	14.64	11.22	4.222		4.01E+09	2.47E+09	-9.24E+09	-3.18E+09	-7.33E+09	-1.87E+09	-2.72E+09	-5.42E+08	

APPENDIX D - Economical calculations for new production unit at base oil price.

Oil price	75	USD/Bbl	2830.414847	NOK/Sm^3
Gas price	2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	15	USD/Bbl	566.0829693	NOK/Sm^3

BASE CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-4.67E+09	0.00E+00	-4.30E+09	0.00E+00	-4.30E+09	-4.67E+09	-4.30E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-4.67E+09	0.00E+00	-3.95E+09	0.00E+00	-3.95E+09	-4.67E+09	-8.25E+09
3	2015	0.26	0.0915	0.209	0	0.78	5.73E+08	0.00E+00	-4.67E+09	-1.47E+08	-3.64E+09	-1.15E+08	-3.18E+09	-4.08E+09	-1.14E+10
4	2016	0.86	0.6925	0.767	0	0.72	1.74E+09	0.00E+00		-4.87E+08	0.00E+00	-3.49E+08	1.40E+09	1.95E+09	-1.00E+10
5	2017	0.73	1.196	0.804	0.392	0.66	1.36E+09	5.17E+08		-4.13E+08	0.00E+00	-2.72E+08	1.61E+09	2.44E+09	-8.43E+09
6	2018	0.5	1.33	0.76	0.57	0.61	8.58E+08	6.91E+08		-2.83E+08	0.00E+00	-1.72E+08	1.38E+09	2.27E+09	-7.05E+09
7	2019	0.42	1.31	0.81	0.5	0.56	6.63E+08	5.58E+08		-2.38E+08	0.00E+00	-1.33E+08	1.09E+09	1.95E+09	-5.96E+09
8	2020	0.26	1.3	0.76	0.54	0.51	3.78E+08	5.54E+08		-1.47E+08	0.00E+00	-7.55E+07	8.56E+08	1.67E+09	-5.10E+09
9	2021	0.29	1.23	0.81	0.42	0.47	3.88E+08	3.97E+08		-1.64E+08	0.00E+00	-7.75E+07	7.07E+08	1.50E+09	-4.40E+09
10	2022	0.18	1.35	0.8	0.55	0.43	2.21E+08	4.78E+08		-1.02E+08	0.00E+00	-4.43E+07	6.55E+08	1.51E+09	-3.74E+09
11	2023	0.16	1.26	0.8	0.46	0.40	1.81E+08	3.68E+08		-9.06E+07	0.00E+00	-3.62E+07	5.12E+08	1.28E+09	-3.23E+09
12	2024	0.13	1.22	0.77	0.45	0.37	1.35E+08	3.31E+08		-7.36E+07	0.00E+00	-2.71E+07	4.39E+08	1.19E+09	-2.79E+09
13	2025	0.08	1.05	0.8	0.25	0.34	7.66E+07	1.69E+08		-4.53E+07	0.00E+00	-1.53E+07	2.30E+08	6.81E+08	-2.56E+09
14	2026	0.03	0.85	0.76	0.09	0.31	2.64E+07	5.60E+07		-1.70E+07	0.00E+00	-5.28E+06	7.72E+07	2.48E+08	-2.48E+09
15	2027	0.05	0.58	0.83	0	0.29	4.05E+07	0.00E+00		-2.83E+07	0.00E+00	-8.10E+06	3.24E+07	1.13E+08	-2.45E+09
16	2028	0.01	0.59	0.82	0	0.26	7.46E+06	0.00E+00		-5.66E+06	0.00E+00	-1.49E+06	5.96E+06	2.26E+07	-2.44E+09
17	2029	0.05	0.59	0.72	0	0.24	3.43E+07	0.00E+00	-1.80E+08	-2.83E+07	-4.36E+07	-6.86E+06	-1.62E+07	-6.68E+07	-2.46E+09
TOTAL:		4.01	14.64	11.22	4.222		6.69E+09	4.12E+09	-1.42E+10	-2.27E+09	-1.19E+10	-1.34E+09	-2.46E+09	3.33E+09	

Oil price	75	USD/Bbl	2830.414847	NOK/Sm^3
Gas price	2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	9	USD/Bbl	339.6497816	NOK/Sm^3

LOW CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.58E+09	0.00E+00	-2.58E+09	-2.80E+09	-2.58E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.37E+09	0.00E+00	-2.37E+09	-2.80E+09	-4.95E+09
3	2015	0.26	0.0915	0.209	0	0.78	5.73E+08	0.00E+00	-2.80E+09	-8.83E+07	-2.18E+09	-6.88E+07	-1.68E+09	-2.15E+09	-6.62E+09
4	2016	0.86	0.6925	0.767	0	0.72	1.74E+09	0.00E+00		-2.92E+08	0.00E+00	-2.09E+08	1.53E+09	2.14E+09	-5.09E+09
5	2017	0.73	1.196	0.804	0.392	0.66	1.36E+09	5.17E+08		-2.48E+08	0.00E+00	-1.63E+08	1.72E+09	2.60E+09	-3.37E+09
6	2018	0.5	1.33	0.76	0.57	0.61	8.58E+08	6.91E+08		-1.70E+08	0.00E+00	-1.03E+08	1.45E+09	2.39E+09	-1.93E+09
7	2019	0.42	1.31	0.81	0.5	0.56	6.63E+08	5.58E+08		-1.43E+08	0.00E+00	-7.96E+07	1.14E+09	2.05E+09	-7.85E+08
8	2020	0.26	1.3	0.76	0.54	0.51	3.78E+08	5.54E+08		-8.83E+07	0.00E+00	-4.53E+07	8.87E+08	1.73E+09	1.02E+08
9	2021	0.29	1.23	0.81	0.42	0.47	3.88E+08	3.97E+08		-9.85E+07	0.00E+00	-4.65E+07	7.38E+08	1.56E+09	8.40E+08
10	2022	0.18	1.35	0.8	0.55	0.43	2.21E+08	4.78E+08		-6.11E+07	0.00E+00	-2.66E+07	6.73E+08	1.55E+09	1.51E+09
11	2023	0.16	1.26	0.8	0.46	0.40	1.81E+08	3.68E+08		-5.43E+07	0.00E+00	-2.17E+07	5.27E+08	1.32E+09	2.04E+09
12	2024	0.13	1.22	0.77	0.45	0.37	1.35E+08	3.31E+08		-4.42E+07	0.00E+00	-1.62E+07	4.50E+08	1.22E+09	2.49E+09
13	2025	0.08	1.05	0.8	0.25	0.34	7.66E+07	1.69E+08		-2.72E+07	0.00E+00	-9.19E+06	2.37E+08	6.99E+08	2.73E+09
14	2026	0.03	0.85	0.76	0.09	0.31	2.64E+07	5.60E+07		-1.02E+07	0.00E+00	-3.17E+06	7.93E+07	2.55E+08	2.81E+09
15	2027	0.05	0.58	0.83	0	0.29	4.05E+07	0.00E+00		-1.70E+07	0.00E+00	-4.86E+06	3.57E+07	1.25E+08	2.84E+09
16	2028	0.01	0.59	0.82	0	0.26	7.46E+06	0.00E+00		-3.40E+06	0.00E+00	-8.95E+05	6.56E+06	2.49E+07	2.85E+09
17	2029	0.05	0.59	0.72	0	0.24	3.43E+07	0.00E+00	-1.08E+08	-1.70E+07	-2.62E+07	-4.12E+06	4.01E+06	1.65E+07	2.85E+09
TOTAL:		4.01	14.64	11.22	4.222		6.69E+09	4.12E+09	-8.51E+09	-1.36E+09	-7.15E+09	-8.03E+08	2.85E+09	9.92E+09	

Oil price	75	USD/Bbl	2830.414847	NOK/Sm^3
Gas price	2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	21	USD/Bbl	792.5161571	NOK/Sm^3

HIGH CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-6.53E+09	0.00E+00	-6.01E+09	0.00E+00	-6.01E+09	-6.53E+09	-6.01E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-6.53E+09	0.00E+00	-5.53E+09	0.00E+00	-5.53E+09	-6.53E+09	-1.15E+10
3	2015	0.26	0.0915	0.209	0	0.78	5.73E+08	0.00E+00	-6.53E+09	-2.06E+08	-5.08E+09	-1.60E+08	-4.67E+09	-6.00E+09	-1.62E+10
4	2016	0.86	0.6925	0.767	0	0.72	1.74E+09	0.00E+00		-6.82E+08	0.00E+00	-4.88E+08	1.26E+09	1.75E+09	-1.50E+10
5	2017	0.73	1.196	0.804	0.392	0.66	1.36E+09	5.17E+08		-5.79E+08	0.00E+00	-3.81E+08	1.50E+09	2.27E+09	-1.35E+10
6	2018	0.5	1.33	0.76	0.57	0.61	8.58E+08	6.91E+08		-3.96E+08	0.00E+00	-2.40E+08	1.31E+09	2.16E+09	-1.21E+10
7	2019	0.42	1.31	0.81	0.5	0.56	6.63E+08	5.58E+08		-3.33E+08	0.00E+00	-1.86E+08	1.04E+09	1.86E+09	-1.11E+10
8	2020	0.26	1.3	0.76	0.54	0.51	3.78E+08	5.54E+08		-2.06E+08	0.00E+00	-1.06E+08	8.26E+08	1.61E+09	-1.03E+10
9	2021	0.29	1.23	0.81	0.42	0.47	3.88E+08	3.97E+08		-2.30E+08	0.00E+00	-1.09E+08	6.76E+08	1.43E+09	-9.61E+09
10	2022	0.18	1.35	0.8	0.55	0.43	2.21E+08	4.78E+08		-1.43E+08	0.00E+00	-6.20E+07	6.37E+08	1.47E+09	-8.97E+09
11	2023	0.16	1.26	0.8	0.46	0.40	1.81E+08	3.68E+08		-1.27E+08	0.00E+00	-5.07E+07	4.98E+08	1.25E+09	-8.47E+09
12	2024	0.13	1.22	0.77	0.45	0.37	1.35E+08	3.31E+08		-1.03E+08	0.00E+00	-3.79E+07	4.28E+08	1.16E+09	-8.04E+09
13	2025	0.08	1.05	0.8	0.25	0.34	7.66E+07	1.69E+08		-6.34E+07	0.00E+00	-2.14E+07	2.24E+08	6.63E+08	-7.82E+09
14	2026	0.03	0.85	0.76	0.09	0.31	2.64E+07	5.60E+07		-2.38E+07	0.00E+00	-7.40E+06	7.50E+07	2.41E+08	-7.75E+09
15	2027	0.05	0.58	0.83	0	0.29	4.05E+07	0.00E+00		-3.96E+07	0.00E+00	-1.13E+07	2.92E+07	1.02E+08	-7.72E+09
16	2028	0.01	0.59	0.82	0	0.26	7.46E+06	0.00E+00		-7.93E+06	0.00E+00	-2.09E+06	5.37E+06	2.04E+07	-7.71E+09
17	2029	0.05	0.59	0.72	0	0.24	3.43E+07	0.00E+00	-2.52E+08	-3.96E+07	-6.11E+07	-9.60E+06	-3.64E+07	-1.50E+08	-7.75E+09
TOTAL:		4.01	14.64	11.22	4.222		6.69E+09	4.12E+09	-1.98E+10	-3.18E+09	-1.67E+10	-1.87E+09	-7.75E+09	-3.23E+09	

APPENDIX E - Economical calculations for new production unit at high oil price.

Oil price	105	USD/Bbl	3962.580785	NOK/Sm^3
Gas price	2.8	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	15	USD/Bbl	566.0829693	NOK/Sm^3

BASE CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-4.67E+09	0.00E+00	-4.30E+09	0.00E+00	-4.30E+09	-4.67E+09	-4.30E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-4.67E+09	0.00E+00	-3.95E+09	0.00E+00	-3.95E+09	-4.67E+09	-8.25E+09
3	2015	0.26	0.0915	0.209	0	0.78	8.02E+08	0.00E+00	-4.67E+09	-1.47E+08	-3.64E+09	-1.15E+08	-2.95E+09	-3.79E+09	-1.12E+10
4	2016	0.86	0.6925	0.767	0	0.72	2.44E+09	0.00E+00		-4.87E+08	0.00E+00	-3.49E+08	2.09E+09	2.92E+09	-9.11E+09
5	2017	0.73	1.196	0.804	0.392	0.66	1.91E+09	7.23E+08		-4.13E+08	0.00E+00	-2.72E+08	2.36E+09	3.58E+09	-6.75E+09
6	2018	0.5	1.33	0.76	0.57	0.61	1.20E+09	9.68E+08		-2.83E+08	0.00E+00	-1.72E+08	2.00E+09	3.29E+09	-4.75E+09
7	2019	0.42	1.31	0.81	0.5	0.56	9.28E+08	7.81E+08		-2.38E+08	0.00E+00	-1.33E+08	1.58E+09	2.83E+09	-3.17E+09
8	2020	0.26	1.3	0.76	0.54	0.51	5.29E+08	7.76E+08		-1.47E+08	0.00E+00	-7.55E+07	1.23E+09	2.40E+09	-1.94E+09
9	2021	0.29	1.23	0.81	0.42	0.47	5.43E+08	5.55E+08		-1.64E+08	0.00E+00	-7.75E+07	1.02E+09	2.16E+09	-9.24E+08
10	2022	0.18	1.35	0.8	0.55	0.43	3.10E+08	6.69E+08		-1.02E+08	0.00E+00	-4.43E+07	9.35E+08	2.15E+09	1.06E+07
11	2023	0.16	1.26	0.8	0.46	0.40	2.53E+08	5.15E+08		-9.06E+07	0.00E+00	-3.62E+07	7.32E+08	1.83E+09	7.42E+08
12	2024	0.13	1.22	0.77	0.45	0.37	1.89E+08	4.63E+08		-7.36E+07	0.00E+00	-2.71E+07	6.26E+08	1.70E+09	1.37E+09
13	2025	0.08	1.05	0.8	0.25	0.34	1.07E+08	2.37E+08		-4.53E+07	0.00E+00	-1.53E+07	3.29E+08	9.72E+08	1.70E+09
14	2026	0.03	0.85	0.76	0.09	0.31	3.70E+07	7.84E+07		-1.70E+07	0.00E+00	-5.28E+06	1.10E+08	3.54E+08	1.81E+09
15	2027	0.05	0.58	0.83	0	0.29	5.67E+07	0.00E+00		-2.83E+07	0.00E+00	-8.10E+06	4.86E+07	1.70E+08	1.86E+09
16	2028	0.01	0.59	0.82	0	0.26	1.04E+07	0.00E+00		-5.66E+06	0.00E+00	-1.49E+06	8.95E+06	3.40E+07	1.86E+09
17	2029	0.05	0.59	0.72	0	0.24	4.80E+07	0.00E+00	-1.80E+08	-2.83E+07	-4.36E+07	-6.86E+06	-2.47E+06	-1.02E+07	1.86E+09
TOTAL:		4.01	14.64	11.22	4.222		9.36E+09	5.77E+09	-1.42E+10	-2.27E+09	-1.19E+10	-1.34E+09	1.86E+09	1.13E+10	

Oil price	105	USD/Bbl	3962.580785	NOK/Sm^3
Gas price	2.8	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	9	USD/Bbl	339.6497816	NOK/Sm^3

LOW CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.58E+09	0.00E+00	-2.58E+09	-2.80E+09	-2.58E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.37E+09	0.00E+00	-2.37E+09	-2.80E+09	-4.95E+09
3	2015	0.26	0.0915	0.209	0	0.78	8.02E+08	0.00E+00	-2.80E+09	-8.83E+07	-2.18E+09	-6.88E+07	-1.45E+09	-1.86E+09	-6.39E+09
4	2016	0.86	0.6925	0.767	0	0.72	2.44E+09	0.00E+00		-2.92E+08	0.00E+00	-2.09E+08	2.23E+09	3.12E+09	-4.16E+09
5	2017	0.73	1.196	0.804	0.392	0.66	1.91E+09	7.23E+08		-2.48E+08	0.00E+00	-1.63E+08	2.47E+09	3.74E+09	-1.69E+09
6	2018	0.5	1.33	0.76	0.57	0.61	1.20E+09	9.68E+08		-1.70E+08	0.00E+00	-1.03E+08	2.07E+09	3.41E+09	3.72E+08
7	2019	0.42	1.31	0.81	0.5	0.56	9.28E+08	7.81E+08		-1.43E+08	0.00E+00	-7.96E+07	1.63E+09	2.92E+09	2.00E+09
8	2020	0.26	1.3	0.76	0.54	0.51	5.29E+08	7.76E+08		-8.83E+07	0.00E+00	-4.53E+07	1.26E+09	2.45E+09	3.26E+09
9	2021	0.29	1.23	0.81	0.42	0.47	5.43E+08	5.55E+08		-9.85E+07	0.00E+00	-4.65E+07	1.05E+09	2.23E+09	4.31E+09
10	2022	0.18	1.35	0.8	0.55	0.43	3.10E+08	6.69E+08		-6.11E+07	0.00E+00	-2.66E+07	9.52E+08	2.19E+09	5.26E+09
11	2023	0.16	1.26	0.8	0.46	0.40	2.53E+08	5.15E+08		-5.43E+07	0.00E+00	-2.17E+07	7.46E+08	1.87E+09	6.01E+09
12	2024	0.13	1.22	0.77	0.45	0.37	1.89E+08	4.63E+08		-4.42E+07	0.00E+00	-1.62E+07	6.36E+08	1.73E+09	6.65E+09
13	2025	0.08	1.05	0.8	0.25	0.34	1.07E+08	2.37E+08		-2.72E+07	0.00E+00	-9.19E+06	3.35E+08	9.90E+08	6.98E+09
14	2026	0.03	0.85	0.76	0.09	0.31	3.70E+07	7.84E+07		-1.02E+07	0.00E+00	-3.17E+06	1.12E+08	3.61E+08	7.09E+09
15	2027	0.05	0.58	0.83	0	0.29	5.67E+07	0.00E+00		-1.70E+07	0.00E+00	-4.86E+06	5.19E+07	1.81E+08	7.15E+09
16	2028	0.01	0.59	0.82	0	0.26	1.04E+07	0.00E+00		-3.40E+06	0.00E+00	-8.95E+05	9.54E+06	3.62E+07	7.16E+09
17	2029	0.05	0.59	0.72	0	0.24	4.80E+07	0.00E+00	-1.08E+08	-1.70E+07	-2.62E+07	-4.12E+06	1.77E+07	7.31E+07	7.17E+09
TOTAL:		4.01	14.64	11.22	4.222		9.36E+09	5.77E+09	-8.51E+09	-1.36E+09	-7.15E+09	-8.03E+08	7.17E+09	1.78E+10	

Oil price	105	USD/Bbl	3962.580785	NOK/Sm^3
Gas price	2.8	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	21	USD/Bbl	792.5161571	NOK/Sm^3

HIGH CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-6.53E+09	0.00E+00	-6.01E+09	0.00E+00	-6.01E+09	-6.53E+09	-6.01E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-6.53E+09	0.00E+00	-5.53E+09	0.00E+00	-5.53E+09	-6.53E+09	-1.15E+10
3	2015	0.26	0.0915	0.209	0	0.78	8.02E+08	0.00E+00	-6.53E+09	-2.06E+08	-5.08E+09	-1.60E+08	-4.44E+09	-5.71E+09	-1.60E+10
4	2016	0.86	0.6925	0.767	0	0.72	2.44E+09	0.00E+00		-6.82E+08	0.00E+00	-4.88E+08	1.95E+09	2.73E+09	-1.40E+10
5	2017	0.73	1.196	0.804	0.392	0.66	1.91E+09	7.23E+08		-5.79E+08	0.00E+00	-3.81E+08	2.25E+09	3.41E+09	-1.18E+10
6	2018	0.5	1.33	0.76	0.57	0.61	1.20E+09	9.68E+08		-3.96E+08	0.00E+00	-2.40E+08	1.93E+09	3.18E+09	-9.85E+09
7	2019	0.42	1.31	0.81	0.5	0.56	9.28E+08	7.81E+08		-3.33E+08	0.00E+00	-1.86E+08	1.52E+09	2.73E+09	-8.32E+09
8	2020	0.26	1.3	0.76	0.54	0.51	5.29E+08	7.76E+08		-2.06E+08	0.00E+00	-1.06E+08	1.20E+09	2.34E+09	-7.12E+09
9	2021	0.29	1.23	0.81	0.42	0.47	5.43E+08	5.55E+08		-2.30E+08	0.00E+00	-1.09E+08	9.89E+08	2.10E+09	-6.14E+09
10	2022	0.18	1.35	0.8	0.55	0.43	3.10E+08	6.69E+08		-1.43E+08	0.00E+00	-6.20E+07	9.17E+08	2.11E+09	-5.22E+09
11	2023	0.16	1.26	0.8	0.46	0.40	2.53E+08	5.15E+08		-1.27E+08	0.00E+00	-5.07E+07	7.17E+08	1.80E+09	-4.50E+09
12	2024	0.13	1.22	0.77	0.45	0.37	1.89E+08	4.63E+08		-1.03E+08	0.00E+00	-3.79E+07	6.15E+08	1.67E+09	-3.89E+09
13	2025	0.08	1.05	0.8	0.25	0.34	1.07E+08	2.37E+08		-6.34E+07	0.00E+00	-2.14E+07	3.23E+08	9.54E+08	-3.56E+09
14	2026	0.03	0.85	0.76	0.09	0.31	3.70E+07	7.84E+07		-2.38E+07	0.00E+00	-7.40E+06	1.08E+08	3.47E+08	-3.46E+09
15	2027	0.05	0.58	0.83	0	0.29	5.67E+07	0.00E+00		-3.96E+07	0.00E+00	-1.13E+07	4.54E+07	1.59E+08	-3.41E+09
16	2028	0.01	0.59	0.82	0	0.26	1.04E+07	0.00E+00		-7.93E+06	0.00E+00	-2.09E+06	8.35E+06	3.17E+07	-3.40E+09
17	2029	0.05	0.59	0.72	0	0.24	4.80E+07	0.00E+00	-2.52E+08	-3.96E+07	-6.11E+07	-9.60E+06	-2.27E+07	-9.35E+07	-3.42E+09
TOTAL:		4.01	14.64	11.22	4.222		9.36E+09	5.77E+09	-1.98E+10	-3.18E+09	-1.67E+10	-1.87E+09	-3.42E+09	4.69E+09	

APPENDIX F - Economical calculations for new production unit at low oil price.

Oil price	45	USD/Bbl	1698.248908	NOK/Sm^3
Gas price	1.2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	15	USD/Bbl	566.0829693	NOK/Sm^3

BASE CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-4.67E+09	0.00E+00	-4.30E+09	0.00E+00	-4.30E+09	-4.67E+09	-4.30E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-4.67E+09	0.00E+00	-3.95E+09	0.00E+00	-3.95E+09	-4.67E+09	-8.25E+09
3	2015	0.26	0.0915	0.209	0	0.78	3.44E+08	0.00E+00	-4.67E+09	-1.47E+08	-3.64E+09	-1.15E+08	-3.41E+09	-4.38E+09	-1.17E+10
4	2016	0.86	0.6925	0.767	0	0.72	1.05E+09	0.00E+00		-4.87E+08	0.00E+00	-3.49E+08	6.98E+08	9.74E+08	-1.10E+10
5	2017	0.73	1.196	0.804	0.392	0.66	8.17E+08	3.10E+08		-4.13E+08	0.00E+00	-2.72E+08	8.55E+08	1.30E+09	-1.01E+10
6	2018	0.5	1.33	0.76	0.57	0.61	5.15E+08	4.15E+08		-2.83E+08	0.00E+00	-1.72E+08	7.58E+08	1.25E+09	-9.35E+09
7	2019	0.42	1.31	0.81	0.5	0.56	3.98E+08	3.35E+08		-2.38E+08	0.00E+00	-1.33E+08	6.00E+08	1.08E+09	-8.75E+09
8	2020	0.26	1.3	0.76	0.54	0.51	2.27E+08	3.33E+08		-1.47E+08	0.00E+00	-7.55E+07	4.84E+08	9.42E+08	-8.26E+09
9	2021	0.29	1.23	0.81	0.42	0.47	2.33E+08	2.38E+08		-1.64E+08	0.00E+00	-7.75E+07	3.93E+08	8.32E+08	-7.87E+09
10	2022	0.18	1.35	0.8	0.55	0.43	1.33E+08	2.87E+08		-1.02E+08	0.00E+00	-4.43E+07	3.75E+08	8.64E+08	-7.49E+09
11	2023	0.16	1.26	0.8	0.46	0.40	1.09E+08	2.21E+08		-9.06E+07	0.00E+00	-3.62E+07	2.93E+08	7.33E+08	-7.20E+09
12	2024	0.13	1.22	0.77	0.45	0.37	8.12E+07	1.99E+08		-7.36E+07	0.00E+00	-2.71E+07	2.53E+08	6.87E+08	-6.95E+09
13	2025	0.08	1.05	0.8	0.25	0.34	4.60E+07	1.01E+08		-4.53E+07	0.00E+00	-1.53E+07	1.32E+08	3.91E+08	-6.82E+09
14	2026	0.03	0.85	0.76	0.09	0.31	1.59E+07	3.36E+07		-1.70E+07	0.00E+00	-5.28E+06	4.42E+07	1.42E+08	-6.77E+09
15	2027	0.05	0.58	0.83	0	0.29	2.43E+07	0.00E+00		-2.83E+07	0.00E+00	-8.10E+06	1.62E+07	5.66E+07	-6.76E+09
16	2028	0.01	0.59	0.82	0	0.26	4.47E+06	0.00E+00		-5.66E+06	0.00E+00	-1.49E+06	2.98E+06	1.13E+07	-6.75E+09
17	2029	0.05	0.59	0.72	0	0.24	2.06E+07	0.00E+00	-1.80E+08	-2.83E+07	-4.36E+07	-6.86E+06	-2.99E+07	-1.23E+08	-6.78E+09
TOTAL:		4.01	14.64	11.22	4.222		4.01E+09	2.47E+09	-1.42E+10	-2.27E+09	-1.19E+10	-1.34E+09	-6.78E+09	-4.58E+09	

Oil price	45	USD/Bbl	1698.248908	NOK/Sm^3
Gas price	1.2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	9	USD/Bbl	339.6497816	NOK/Sm^3

LOW CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.58E+09	0.00E+00	-2.58E+09	-2.80E+09	-2.58E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-2.80E+09	0.00E+00	-2.37E+09	0.00E+00	-2.37E+09	-2.80E+09	-4.95E+09
3	2015	0.26	0.0915	0.209	0	0.78	3.44E+08	0.00E+00	-2.80E+09	-8.83E+07	-2.18E+09	-6.88E+07	-1.91E+09	-2.45E+09	-6.85E+09
4	2016	0.86	0.6925	0.767	0	0.72	1.05E+09	0.00E+00		-2.92E+08	0.00E+00	-2.09E+08	8.37E+08	1.17E+09	-6.01E+09
5	2017	0.73	1.196	0.804	0.392	0.66	8.17E+08	3.10E+08		-2.48E+08	0.00E+00	-1.63E+08	9.64E+08	1.46E+09	-5.05E+09
6	2018	0.5	1.33	0.76	0.57	0.61	5.15E+08	4.15E+08		-1.70E+08	0.00E+00	-1.03E+08	8.27E+08	1.36E+09	-4.22E+09
7	2019	0.42	1.31	0.81	0.5	0.56	3.98E+08	3.35E+08		-1.43E+08	0.00E+00	-7.96E+07	6.53E+08	1.17E+09	-3.57E+09
8	2020	0.26	1.3	0.76	0.54	0.51	2.27E+08	3.33E+08		-8.83E+07	0.00E+00	-4.53E+07	5.14E+08	1.00E+09	-3.06E+09
9	2021	0.29	1.23	0.81	0.42	0.47	2.33E+08	2.38E+08		-9.85E+07	0.00E+00	-4.65E+07	4.24E+08	8.98E+08	-2.63E+09
10	2022	0.18	1.35	0.8	0.55	0.43	1.33E+08	2.87E+08		-6.11E+07	0.00E+00	-2.66E+07	3.93E+08	9.05E+08	-2.24E+09
11	2023	0.16	1.26	0.8	0.46	0.40	1.09E+08	2.21E+08		-5.43E+07	0.00E+00	-2.17E+07	3.07E+08	7.69E+08	-1.93E+09
12	2024	0.13	1.22	0.77	0.45	0.37	8.12E+07	1.99E+08		-4.42E+07	0.00E+00	-1.62E+07	2.63E+08	7.17E+08	-1.67E+09
13	2025	0.08	1.05	0.8	0.25	0.34	4.60E+07	1.01E+08		-2.72E+07	0.00E+00	-9.19E+06	1.38E+08	4.09E+08	-1.53E+09
14	2026	0.03	0.85	0.76	0.09	0.31	1.59E+07	3.36E+07		-1.02E+07	0.00E+00	-3.17E+06	4.63E+07	1.49E+08	-1.48E+09
15	2027	0.05	0.58	0.83	0	0.29	2.43E+07	0.00E+00		-1.70E+07	0.00E+00	-4.86E+06	1.94E+07	6.79E+07	-1.47E+09
16	2028	0.01	0.59	0.82	0	0.26	4.47E+06	0.00E+00		-3.40E+06	0.00E+00	-8.95E+05	3.58E+06	1.36E+07	-1.46E+09
17	2029	0.05	0.59	0.72	0	0.24	2.06E+07	0.00E+00	-1.08E+08	-1.70E+07	-2.62E+07	-4.12E+06	-9.71E+06	-4.01E+07	-1.47E+09
TOTAL:		4.01	14.64	11.22	4.222		4.01E+09	2.47E+09	-8.51E+09	-1.36E+09	-7.15E+09	-8.03E+08	-1.47E+09	2.01E+09	

Oil price	45	USD/Bbl	1698.248908	NOK/Sm^3
Gas price	1.2	NOK/Sm^3		
Interest rate	0.09			
Exchange rate	8	NOK/USD		
Discount rate	0.08			
Opex	21	USD/Bbl	792.5161571	NOK/Sm^3

HIGH CASE (CAPEX, OPEX)

	Time	Oil production(Oil Sale)	Gas production, excl. fuel	Gas Injection	Gas Sale	Discount factor	Income from Oil (Discounted)	Income from Gas (Discounted)	CAPEX	OPEX	CAPEX (discounted amount)	OPEX (discounted amount)	NPV	Net Cash Flow	Cumulative PV Cash Flow
	year	Msm3	Gsm3	Gsm3	Gsm3		NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK	NOK
1	2013	0	0	0	0	0.92	0.00E+00	0.00E+00	-6.53E+09	0.00E+00	-6.01E+09	0.00E+00	-6.01E+09	-6.53E+09	-6.01E+09
2	2014	0	0	0	0	0.85	0.00E+00	0.00E+00	-6.53E+09	0.00E+00	-5.53E+09	0.00E+00	-5.53E+09	-6.53E+09	-1.15E+10
3	2015	0.26	0.0915	0.209	0	0.78	3.44E+08	0.00E+00	-6.53E+09	-2.06E+08	-5.08E+09	-1.60E+08	-4.90E+09	-6.29E+09	-1.64E+10
4	2016	0.86	0.6925	0.767	0	0.72	1.05E+09	0.00E+00		-6.82E+08	0.00E+00	-4.88E+08	5.58E+08	7.79E+08	-1.59E+10
5	2017	0.73	1.196	0.804	0.392	0.66	8.17E+08	3.10E+08		-5.79E+08	0.00E+00	-3.81E+08	7.46E+08	1.13E+09	-1.51E+10
6	2018	0.5	1.33	0.76	0.57	0.61	5.15E+08	4.15E+08		-3.96E+08	0.00E+00	-2.40E+08	6.89E+08	1.14E+09	-1.44E+10
7	2019	0.42	1.31	0.81	0.5	0.56	3.98E+08	3.35E+08		-3.33E+08	0.00E+00	-1.86E+08	5.47E+08	9.80E+08	-1.39E+10
8	2020	0.26	1.3	0.76	0.54	0.51	2.27E+08	3.33E+08		-2.06E+08	0.00E+00	-1.06E+08	4.53E+08	8.83E+08	-1.34E+10
9	2021	0.29	1.23	0.81	0.42	0.47	2.33E+08	2.38E+08		-2.30E+08	0.00E+00	-1.09E+08	3.62E+08	7.67E+08	-1.31E+10
10	2022	0.18	1.35	0.8	0.55	0.43	1.33E+08	2.87E+08		-1.43E+08	0.00E+00	-6.20E+07	3.58E+08	8.23E+08	-1.27E+10
11	2023	0.16	1.26	0.8	0.46	0.40	1.09E+08	2.21E+08		-1.27E+08	0.00E+00	-5.07E+07	2.79E+08	6.97E+08	-1.24E+10
12	2024	0.13	1.22	0.77	0.45	0.37	8.12E+07	1.99E+08		-1.03E+08	0.00E+00	-3.79E+07	2.42E+08	6.58E+08	-1.22E+10
13	2025	0.08	1.05	0.8	0.25	0.34	4.60E+07	1.01E+08		-6.34E+07	0.00E+00	-2.14E+07	1.26E+08	3.72E+08	-1.21E+10
14	2026	0.03	0.85	0.76	0.09	0.31	1.59E+07	3.36E+07		-2.38E+07	0.00E+00	-7.40E+06	4.21E+07	1.35E+08	-1.20E+10
15	2027	0.05	0.58	0.83	0	0.29	2.43E+07	0.00E+00		-3.96E+07	0.00E+00	-1.13E+07	1.30E+07	4.53E+07	-1.20E+10
16	2028	0.01	0.59	0.82	0	0.26	4.47E+06	0.00E+00		-7.93E+06	0.00E+00	-2.09E+06	2.39E+06	9.06E+06	-1.20E+10
17	2029	0.05	0.59	0.72	0	0.24	2.06E+07	0.00E+00	-2.52E+08	-3.96E+07	-6.11E+07	-9.60E+06	-5.01E+07	-2.07E+08	-1.21E+10
TOTAL:		4.01	14.64	11.22	4.222		4.01E+09	2.47E+09	-1.98E+10	-3.18E+09	-1.67E+10	-1.87E+09	-1.21E+10	-1.11E+10	