

Appendix F – Tension leg platform without drilling facilities

F1 TECHNICAL REPORT

Tesla Date: 09.06.2015 Cost year: 2015 Currency: NOK Region: North Sea South

Topsides

Resume

Project name	Tesla
Location	th Sea South
Development	Stand Alone
Water Depth	115 m (MSL)
Reservoir De	2290 m (MSL)

Platform

Concept	TLP
Number of riser	1
Living quarters	40 beds
Liquid capacity	16000 Sm ³ /d

Cost

Capex facilities	5609 mill.NOK
Capex wells	1565 mill.NOK
Opex per year	487 mill.NOK
Lease costs	1905 mill.NOK
Removal and abandonment	0 mill.NOK
Cost Reference Year	2015
Currency	NOK
Currency Factor	6,00 NOK/USD

Topsides Weight Summary (tonnes)

	LQ	WH/riser	Drilling	Utilities	Process	Other	percent	Weights
Equipment	49	85	0	443	318	247	19,36	1143
Electrical	15	18	0	95	26	0	2,60	153
HVAC	17	9	0	27	0	0	0,90	53
Instrument/telecom	8	45	0	42	55	0	2,54	150
Piping	6	155	0	146	249	13	9,62	568
Surface protection, fire proof	6	18	0	18	12	0	0,91	54
Safety and loss prevention	6	45	0	15	23	0	1,51	89
Architectural	210	18	0	89	12	0	5,56	328
Structural steel/aluminium	524	501	0	951	464	925	57,00	3364
Total dry weight	840	893	0	1827	1158	1184	100,00	5903
Variable loads	21	134	0	183	232	59	10,65	629
Operating weight (ex riser)	861	1027	0	2010	1390	1243	110,65	6531

TECHNICAL REPORT

Tesla Date: 09.06.2015 Cost year: 2015 Currency: NOK Region: North Sea South

Topside – Stand Alone

	Procurement			Fabrication/installation				Total	
	Weight	kUSD/t	mill.USD	mhr/t	mhr	USD/mhr	mill.USD	kUSD/t	mill.USD
Equipment	1143	96,39	110	13	14670	103	2	98	112
Electrical	153	54,33	8	289	44286	103	5	84	13
HVAC	53	43,47	2	193	10206	103	1	63	3
Instrument/tel	150	114,10	17	289	43236	103	4	144	22
Piping	568	65,20	37	225	127628	103	13	88	50
Surface protec	54	32,60	2	1027	55174	103	6	138	7
Safety and loss	89	32,60	3	193	17198	103	2	52	5
Architectural	328	32,60	11	77	25285	103	3	41	13
Structural alun	0	6,52	0	183	0	103	0	0	0
Structural stee	3364	4,89	16	64	215964	103	22	11	39
Total	5903	-	207		553646		57	45	264
Hook-up (offsi	5903	-	-	3	17708	265	5	1	5
Commissionin	5903	-	-	5	29513	200	6	1	6
Commissionin	5903	-	-	5	29513	265	8	1	8
Engineering	5903	-	-	130	767340	216	166	28	166
Total	5903	-	207	0,00	1397720	0,00	241	76	448

Marine Operations

	mob/demob	operation	duration	Day-rate	mill.USD
Transportation/logistics	5	30	40	0,13	5
Total topsides installed					453
Living quarters material	Steel			0 tonnes of aluminium	

TECHNICAL REPORT

Tesla Date: 09.06.2015 Cost year: 2015 Currency: NOK Region: North Sea South

Substructure

Platform selected: TLP 2

ENG

Design parameters

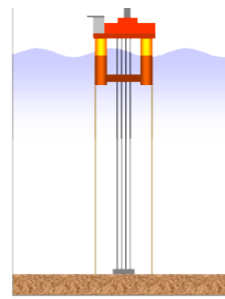
Water depth	Tesla
Operating topside weight	115 m
Dry topside weight	6531 tonnes
Oil storage volume	5903 tonnes
Loads from flexible risers, umbilicals and cables	0 m ³
	0 tonnes

2

Tension Leg Platform

Maximum of	6927 tonnes
Number of w	7 0
Operating dr	23 m
Air gap	27 m

Column dian	15 m	
Number of tr	12	0
Displacemen	24221 tonnes	
Hull dry weig	7390 tonnes	
Tether weigl	501 tonnes	
Anchor piles	543 tonnes	
Weight of all	72 tonnes	
0	0	0
0	0	0
0	0	0



TECHNICAL REPORT Tension leg platform

Tesla

Parameters and indicators

Summary of weights (steel and metals)	tonnes
Topside weight	5903
Substructure weight	7390
Conductors	0
Tensioned well risers	72
Piles or anchors	543
Mooring lines	501
Subsea equipment and structures	0
Other subsea structures	0
Flowlines	0
Flowline risers and J-tubes	0
Umbilicals and cables	0
Export pipelines	0
Wells	7709
Total weight	22118

Summary of marine operations – vessel days	days
Platform construction and installation	119
Mooring system installation	72
Subsea templates	0
Other subsea equipment	0
Flowlines/pipelines (S-lay and J-lay)	0
Flowlines/pipelines (Reel-lay)	0
Umbilicals and cables	0
Risers	0
Gravel dumping	0
Trenching	0
Surveys	0
Total number of vessel days	191

Summary of costs	mill.USD	mill.NOK
Platform	935	5609
Subsea production	0	0
Export pipelines	0	0
Wells	261	1565
Total costs	1196	7174

Average cost per tonne of steel

USD/tonne	54057
NOK/tonne	324339

Use of steel and metals	tonnes	kg/boe
All facilities	14409	0,286
Wells	7709	0,153
Total	22118	0,440

Fuel consumption (tonnes) – project execution

Drilling rig	3704
Drilling services	2344
Platform installation	1626
Subsea equipment installation	0
Pipelines, umbilicals, cables, risers	0
Gravel dumping, trenching, surveys	0
Total for project execution	7675

Fuel consumption (tonnes) – production phase

Production operations per year	8845
Production operations services per year	4993
Well maintenance operations per year	237

F2 COST REPORT

Date: 09.06.2015



Resume

Project name	Tesla
Location	North Sea South
Development Concept	Stand Alone
Water Depth	115 m (MSL)
Reservoir Depth	2290 m (MSL)

Wells	Number
Producers	4
Water Injectors	2
Gas Injectors	0
Total	6

Platform

Concept	TLP
Number of inlet systems	1
Living quarters capacity	40 beds
Liquid capacity	16000 Sm ³ /d

Cost

Capex facilities	5609 mill.NOK
Capex wells	1565 mill.NOK
Opex per year	487 mill.NOK
Lease costs	1905 mill.NOK
Removal and abandonment	0 mill.NOK
Cost Reference Year	2015
Currency	NOK
Currency Factor	6,00 NOK/USD

Price and tariff

Oil price	71,76 USD/bbl
Oil tariff	1,79 USD/bbl
Gas price	0,00 NOK/scm
Gas tariff	0,00 NOK/scm

COST REPORT

Tesla

Cost year: 2015

Currency: NOK

Region: North Sea South

Capex Facilities Overview mill.NOK

Cost element	Engineering	Procurement	Construction	SUM EPC	Marine op	SUM EPCI	Management	Base estimate	Contingency	Total
Topsides	996	1240	452	2688	30	2718	380	3098	465	3563
Substructure ii	187	474	206	867	417	1285	180	1464	220	1684
Piles, anchors	0	84	0	84	193	276	39	315	47	362
Sum Platform	1183	1798	658	3639	640	4279	599	4878	732	5609
Subsea produc	0	0	0	0	0	0	0	0	0	0
Flowlines	0	0	0	0	0	0	0	0	0	0
Flowline/pipel	0	0	0	0	0	0	0	0	0	0
Umbilicals/rise	0	0	0	0	0	0	0	0	0	0
Riser bases, Pl	0	0	0	0	0	0	0	0	0	0
Sum Subsea	0	0	0	0	0	0	0	0	0	0
Export pipelin	0	0	0	0	0	0	0	0	0	0
Power cables/r	0	0	0	0	0	0	0	0	0	0
SUM Facilities	1183	1798	658	3639	640	4279	599	4878	732	5609

Capex Wells Overview mill.NOK

	days per well	days	mill.NOK
Drilling	38	227	1199
Completion	11	63	365
Sum Drilling and completion	48	291	1565

COST REPORT

Tesla Cost year: 2015 Currency: NOK Region: North Sea South

Removal Cost Overview mill.NOK

	Engineering	Decommissioning	Removal operations	Dismantling	Sub-total	Management	Base estimate	Contingency	TOTAL
Well plugging and abandonm	36	0	822	0	857	86	943	141	1085
Platform topsides	19	47	0	85	151	15	166	25	191
Platform substructure	19	12	37	35	104	10	114	17	131
Mooring lines, piles, anchors	1	3	59	1	65	6	71	11	82
Risers, conductors	0	0	19	0	20	2	22	3	25
Flowlines, umbilicals and cab	0	0	0	0	0	0	0	0	0
Export pipelines	0	0	0	0	0	0	0	0	0
Subsea equipment and struct	0	0	0	0	0	0	0	0	0
Sea bottom clean-up	1	0	23	0	24	2	26	4	30
TOTAL	76	62	960	122	1220	122	1342	201	1543

COST REPORT

Tesla Cost year: 2015 Currency: NOK Region: North Sea South

Cost Phasing Assumptions

Capex Facilities		
Number of months from project sanction to production start-up:	38	mill.NOK
Expenditure in year	1	1320
Expenditure in year	2	2640
Expenditure in year	3	1616
Expenditure in year	4	34
Total expenditure		5609

Capex Wells		
Number of months for drilling and completion	10	mill.NOK
Expenditure in year	1	0
Expenditure in year	2	0
Expenditure in year	3	1565
Expenditure in year	4	0
Expenditure in year	5	0
Expenditure in year	6	0
Expenditure in year	7	0
Expenditure in year	8	0
Expenditure in year	9	0
Total expenditure	0	1565

COST REPORT

Tesla Cost year: 2015 Currency: NOK Region: North Sea South

Drilling and Completions Costs		
Time for drilling	227 days	8 months

Time for completion	63 days	2 months
Total time for drilling and completion	291 days	10 months
Drilling cost	186 mill.USD	1116 mill.NOK
Completion cost	57 mill.USD	340 mill.NOK
Planning and other costs	18 mill.USD	109 mill.NOK
Total cost for drilling and completion	261 mill.USD	1565 mill.NOK
Total number of wells	6	
Average well cost	43 mill.USD	261 mill.NOK
Drilling expenditure per month	27 mill.USD	162 mill.NOK
Total steel weight of all wells	7709 tonnes	
Average steel weight per well	1285 tonnes	
Diesel consumption of MODU	5811 tonnes	20 tonnes/d
Fuel gas consumption of platform rig	2905 tonnes	10 tonnes/d

Rates	Basis K USD/day	Index	Cost K USD/day
Platform drilling	59	1,11	66
Platform light intervention	24	1,11	27
MODU drilling – semisub	525	1,11	584
MODU drilling – jack-up	350	1,11	390
Service rate for drilling	400	1,09	437
Service rate for completion	440	1,09	481
Service rate for plugging and abandonment	260	1,09	284

OPEX REPORT

Tesla Cost year: 2015 Currency: NOK Region: North Sea South

Basis for cost phasing – OPEX			mill.NOK
Preparation for operation – last year before production start			313
First period; start-up	Duration – years	1	625
Second period; drilling and production	Duration – years	2	449
Third period; production, maintenance and modification	Duration – years	8	511
Fourth period; preparation for abandonment	Duration – years	2	-41
Total	Duration – years	13	3899

Opex Overview	mill. USD OPEX per year	mill.NOK OPEX per year
Offshore personnel	25	152
Catering	2	10
Production materials, chemicals and diesel	2	11
Communication	0	1
Maintenance materials/spare parts	2	11
Onshore base, purchase and contracts	1	6
Supply vessels	8	46
Stand-by vessels	16	97
Helicopter transportation	3	19
Well maintenance and well monitoring – platform wells	0	0
Well maintenance and well monitoring – subsea wells	5	32
Subsea inspection and maintenance	0	0
Stand-by maintenance of drilling package	0	0
Onshore organization, administration/support	2	14
Onshore organization, subsurface and licence adm	1	6
SUBTOTAL 1	68	406
Modifications/optimization/upgrading	1	6
Reservoir area fee	0	0
Contingency	7	41
SUBTOTAL 2	76	453
Insurance	3	20
CO2 tax	2	15
TOTAL OPEX	81	487
"Day-rate" (USD/day)	222566	1335397
Contingency (percent)	10	10

F3 NPV REPORT

Tesla Cost year: 2015 Currency: NOK Date: 09.06.2015 Region: North Sea South

Recoverable Volumes – metric units	
Recoverable volume of oil	8,00 mill.scm
Recoverable volume of gas	0,00 bill.scm
Daily Production – metric units	
Oil	8219 scm/d
Gas	0,00 mill scm/d

Case Description	
Concept	TLP
Water depth	115 metres
Reservoir depth	2290 metres
Number of producers	4 P
Number of water injectors	2 WI
Number of gas injectors	0 GI
Gas/oil – ratio	0 scm/scm
Field life (production)	8 scm/scm
Plateau length oil	1,0 years
Plateau length gas	1,0 years
Average number of streamdays	340,0 years

NPV Report Tension leg platform

Recoverable Volumes – oil field units	
Recoverable volume of oil	50,3 mill.bbl
Recoverable volume of gas	0,0 bill.scft
Daily Production – oil field units	
Oil	51693 bpd
Gas	0 mill scft/d

Basis for NPV calculations

Capex facilities	5609 mill.NOK
Capex wells	1565 mill.NOK
Opex	487 3899 mill.NOK
Lease costs	1905 mill.NOK
Removal and abandonment	0 mill.NOK
Cost reference year	2015
Currency (NOK/USD)	6 NOK/USD
Discount rate	10,00 percent

Price and Tariff

Oil price	71,76 USD/bbl
Gas price	0,00 NOK/scm
Oil tariff	1,79 USD/bbl
Gas tariff	0,00 NOK/scm

NPV Report Tension leg platform
Economic Indicators (pre-tax)

NPV	NPV	IRR	PI	Capex	Opex	Tariffs	TUC	TUC
mill.NOK	mill.USD	percent	-	USD/boe	USD/boe	USD/boe	USD/boe	NOK/scm
3571	595	30,93	0,62	23,76	19,23	1,79	51,76	1953

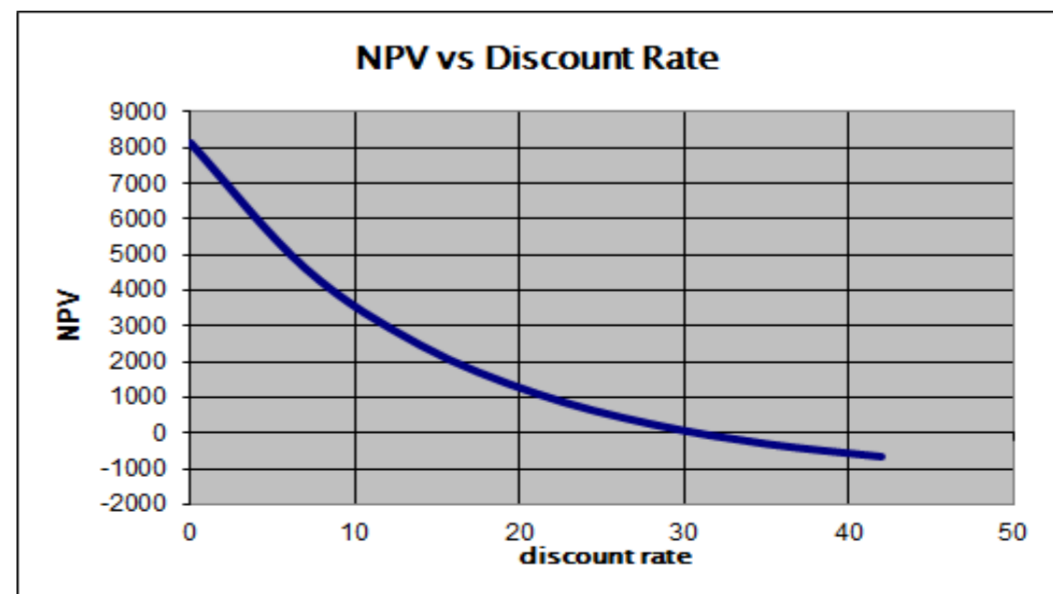
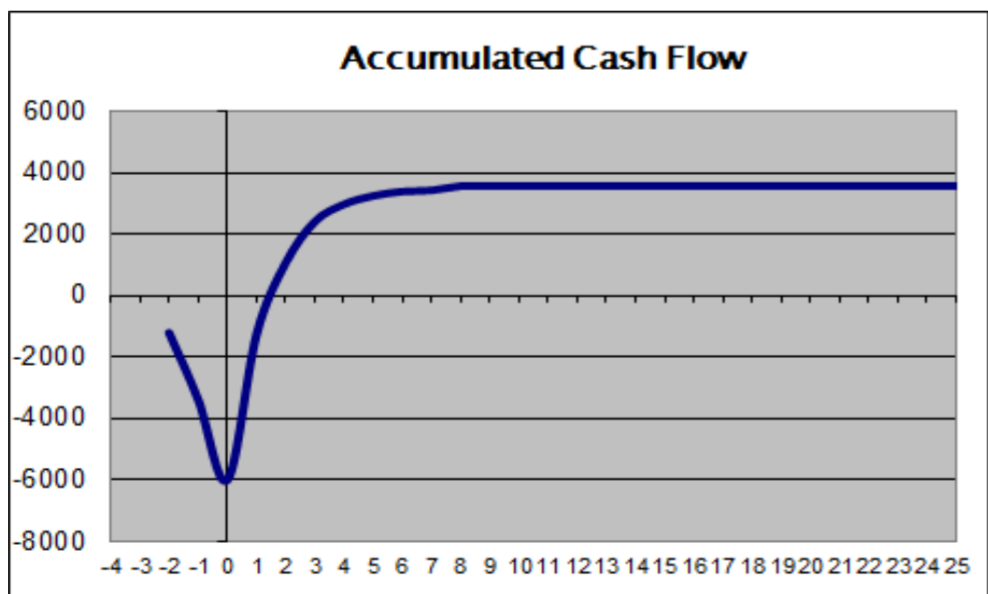
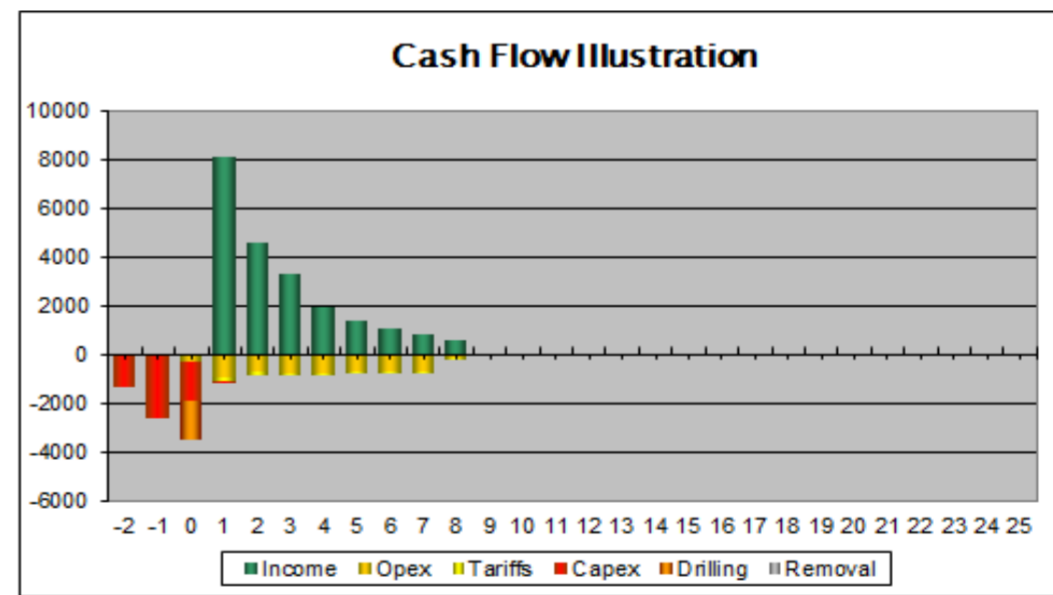
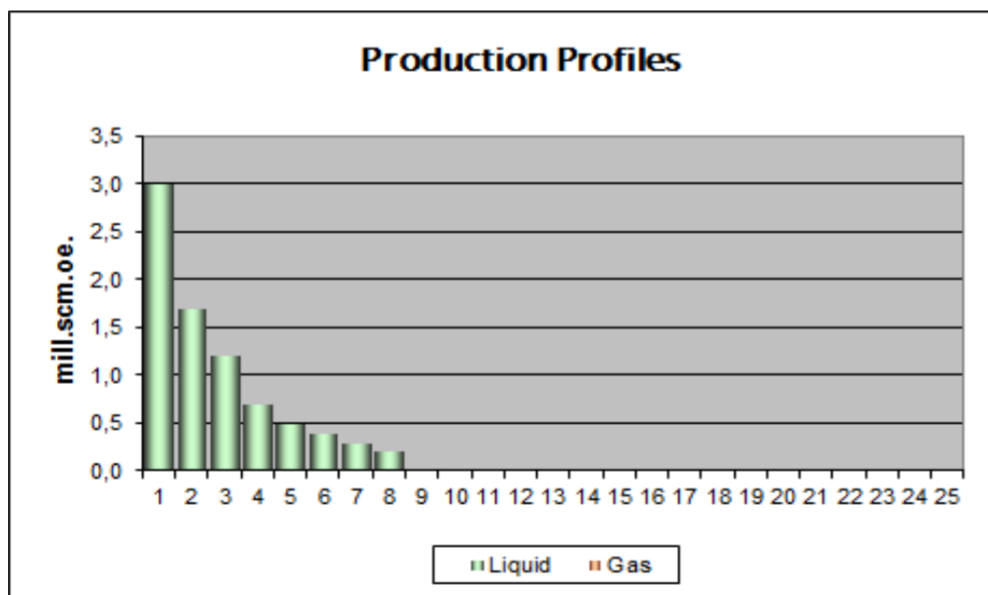
NPV REPORT

Tesla Cost year: 2015 Currency: NOK Region: North Sea South

Year	mill.scm Oil prod	bill.scm Gas prod	mill.NOK Oil inc	mill.NOK Gas inc	mill.NOK Income	mill.NOK Oil tariff	mill.NOK Gas tariff	mill.NOK Opex	mill.NOK Lease	mill.NOK Capex(f)	mill.NOK Capex(w)	mill.NOK Removal	mill.NOK Net CF
1	0	0	0	0	0	0	0	0	0	1320	0	0	-1320
2	0	0	0	0	0	0	0	0	0	2640	0	0	-2640
3	0	0	0	0	0	0	0	307	0	1616	1565	0	-3488
4	3,00	0,00	8124	0	8124	203	0	641	305	34	0	0	6942
5	1,70	0,00	4603	0	4603	115	0	456	286	0	0	0	3747
6	1,20	0,00	3250	0	3250	81	0	512	267	0	0	0	2390
7	0,70	0,00	1896	0	1896	47	0	508	248	0	0	0	1093
8	0,50	0,00	1354	0	1354	34	0	506	229	0	0	0	586
9	0,40	0,00	1083	0	1083	27	0	505	210	0	0	0	342
10	0,30	0,00	812	0	812	20	0	504	191	0	0	0	97
11	0,20	0,00	542	0	542	14	0	-38	172	0	0	0	394
12	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
13	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
14	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
15	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
16	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
17	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
18	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
19	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
20	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
21	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
22	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
23	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
24	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
25	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
26	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
27	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
28	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
29	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
30	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
31	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
32	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
33	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
34	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
35	0,00	0,00	0	0	0	0	0	0	0	0	0	0	0
SUM	8,00	0,00	21663	0	21663	540	0	3899	1905	5609	1565	0	8144
NPV	4,73	0,00	12808	0	12808	319	0	2132	992	4619	1176	0	3571
NPV	5,20	0,00	14089	0	14089	351	0	2345	1092	3761	1293	0	5247

NPV REPORT

Tesla Cost year: 2015 Currency: NOK Region: North Sea South



NPV REPORT

Tesla Cost year: 2015 Currency: NOK Region: North Sea South

Lease rate for production and storage units		
Capital cost of leased unit:		1996 mill.NOK
Contractor's interest rate (base unit)		8 percent
Contractor's interest rate (special equipment)		10 percent
Contract duration (equal field life)		8 years
Lease rate first year		139091 USD/day
Lease rate base unit		69742 USD/day
Sum of lease costs		1905 mill.NOK
NPV of lease costs		992 mill.NOK
NPV of lease costs; year 3 ref		1321 mill.NOK
Capital cost of equipment to be leased:		1996 mill.NOK
Capital cost of base unit		1500 mill.NOK
Capital cost of special equipment		496 mill.NOK
Economical life of base unit		20 years
Contract duration (special equipment)		8 years
Interest rate for base unit		8,0 percent
Interest rate for special equipment		10,0 percent
Lease rate for base unit	152,7 mill.NOK	69742 USD/d
Lease rate for special equipment	93,1 mill.NOK	42489 USD/d
Leased Storage Tanker included?		Yes
Leased Production Unit included?		Yes

Leasing of Storage Tanker or Production Unit	percent	mill.NOK
Production unit – base unit	30,0	1684
Production unit – special equipment	70,0	3925
Storage tanker – base unit	75,1	1500
Storage tanker – special equipment	24,9	496