



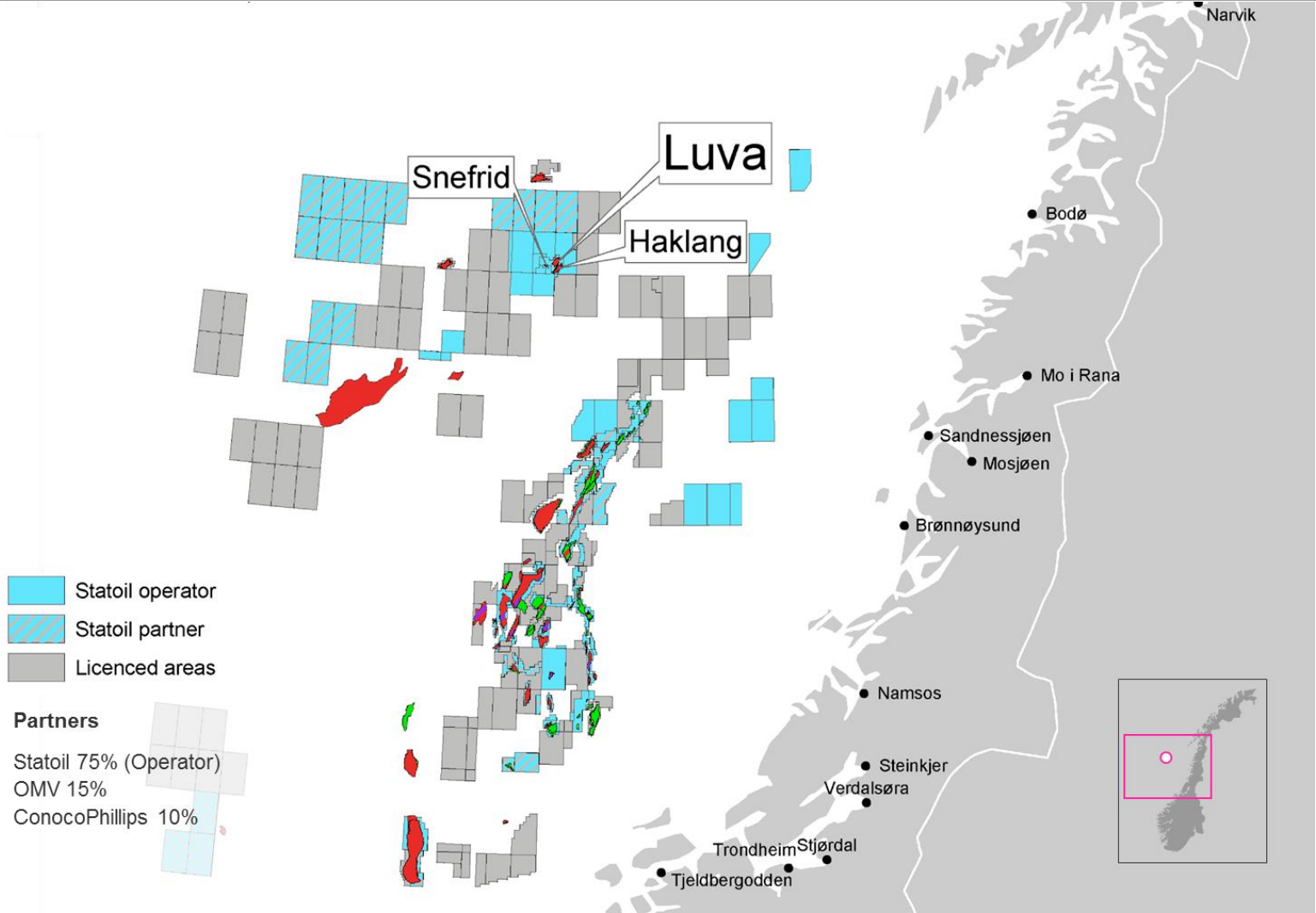
Aasta
Hansteen

Aasta Hansteen

Pioneer in Norwegian deep waters

MCE Deepwater Development 2014 Madrid

Aasta Hansteen – first deepwater platform development in the Norwegian Sea



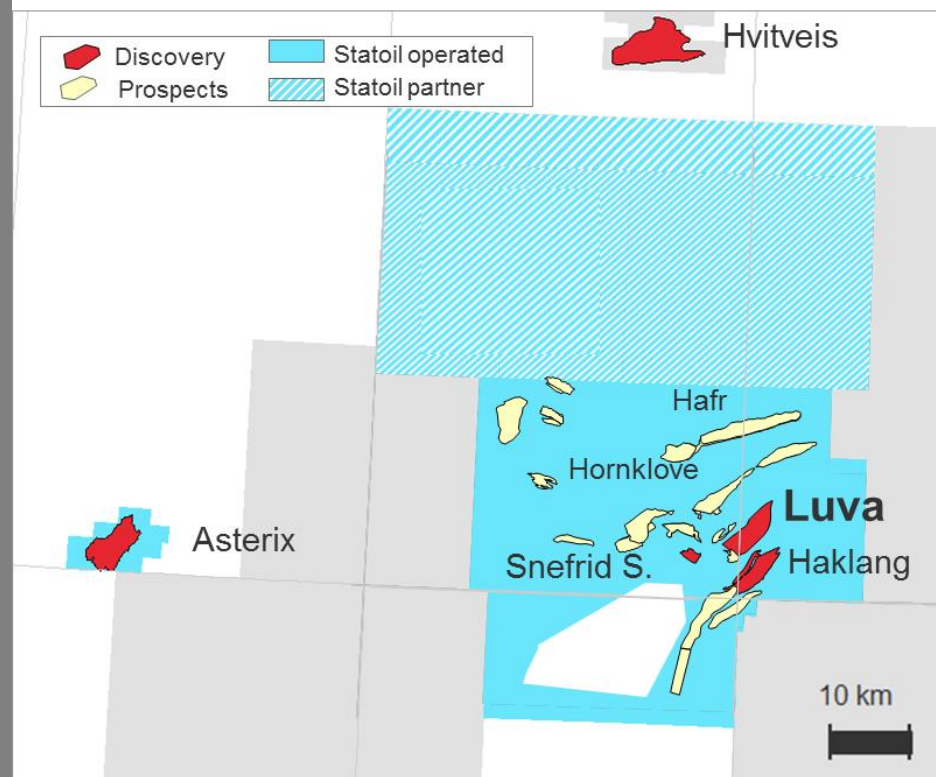
Greater Aasta Hansteen area – growth potential

Luva

- Medium size
 - Estimated to 47 GSm³ gas (incl. Haklang og Snefrid S)
- High GOR
- Low CO₂/H₂S content

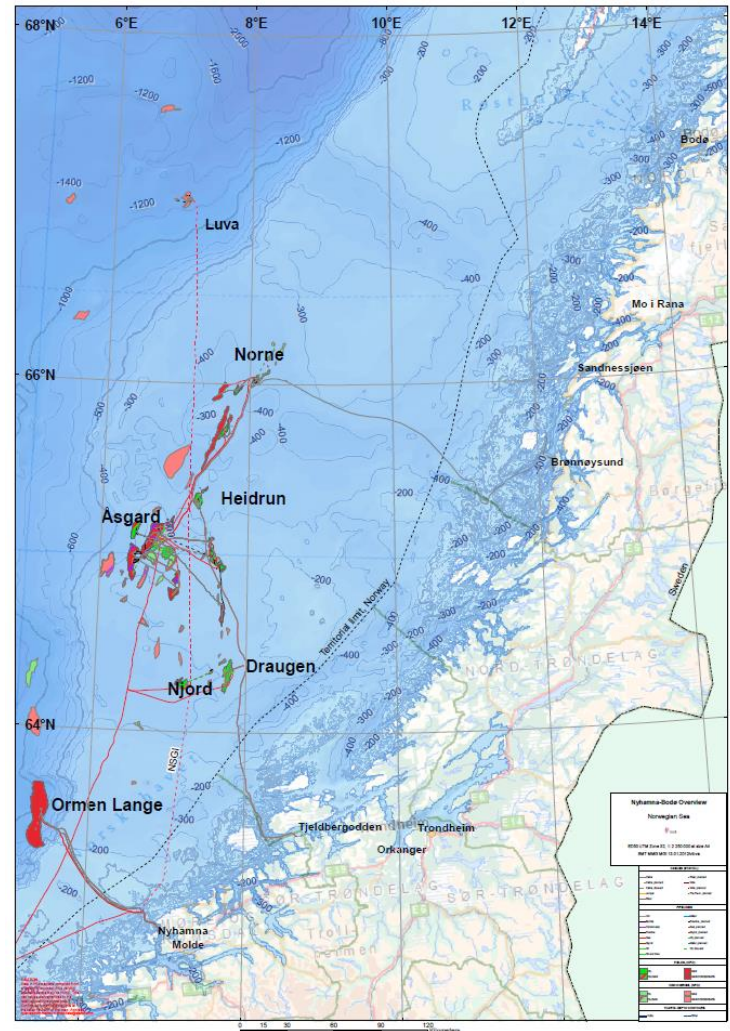
Prospective area

- Asterix discovered in 2009
- Promising prospects in the area



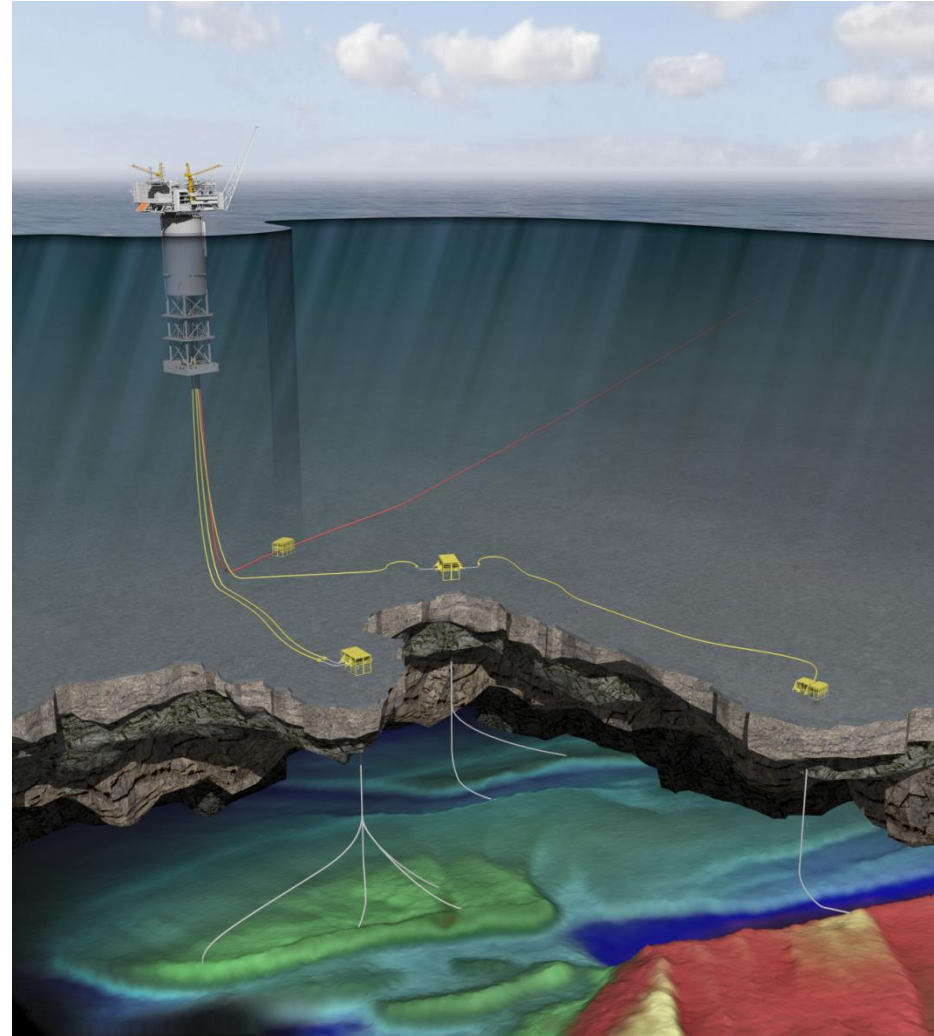
Development challenges

- Water depth 1300 m
 - Sub-zero temperature at depth
 - Harsh wave and current environment
 - Long distance from shore
- ↓
- Outside design envelope of “standard” equipment
 - Shorter installation windows – but longer durations
 - Logistics



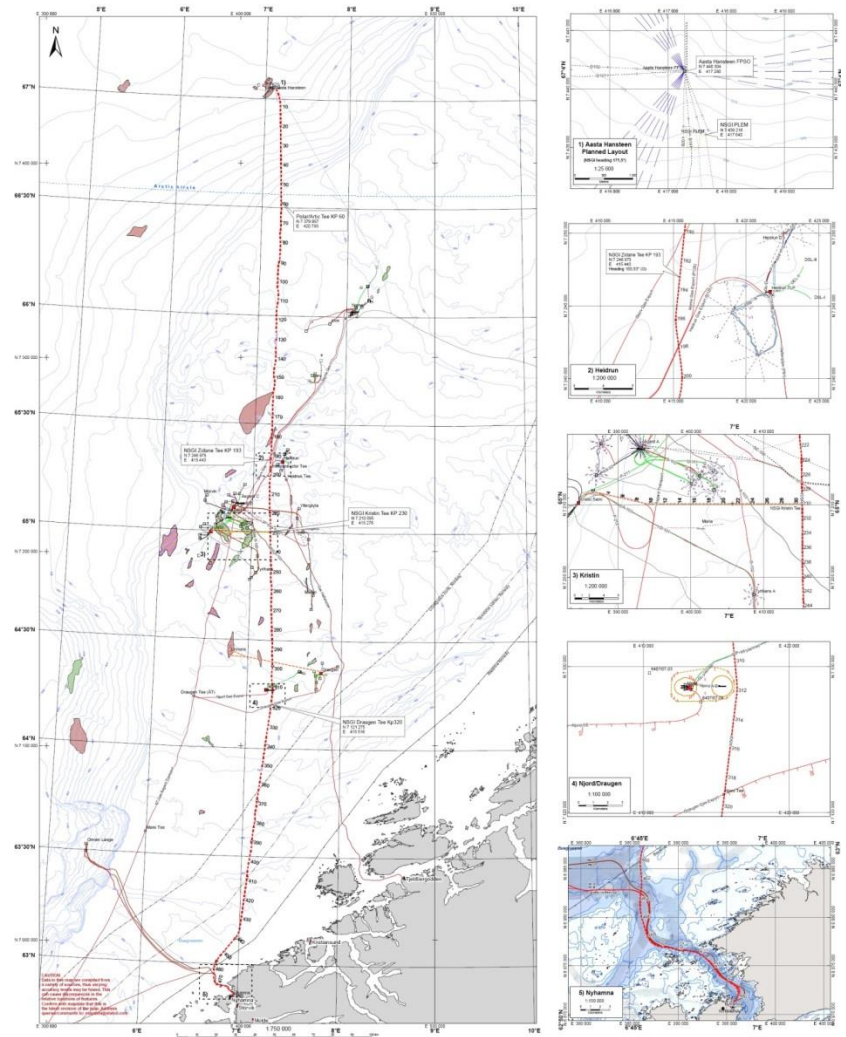
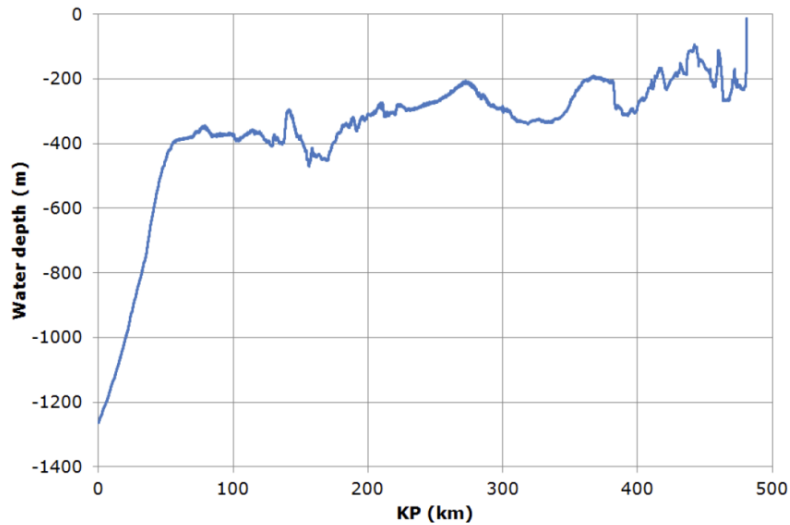
Selected development concept

- Spar FPSO
 - 23 MSm³/d
 - On-board power generation
 - Storage
 - Steel catenary risers
- Subsea system
 - 2 x 4-slots templates + 1 satellite
- Gas export through Polarled pipeline
- Margins included to serve as future hub



Polarled pipeline

- Tie-in of Aasta Hansteen, Linnorm, Zidane and future fields
- 480 km pipeline, 36" pipeline dimension
- Modifications at Nyhamna
 - accommodate extra gas processing
 - study export capacity up 84 MSm³/d
- Statoil development operator - Gassco from start operation



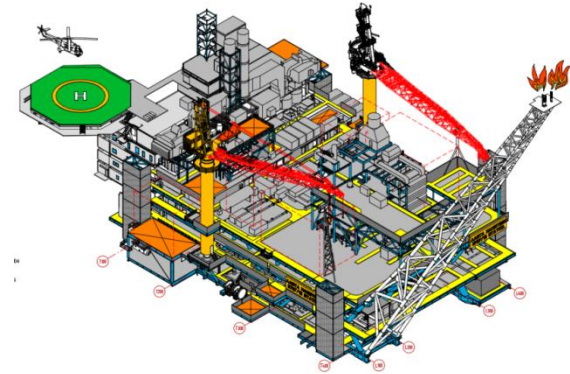
Spar FPSO

Topside

- Dry weight 23.000 tonnes
- Conventional gas processing plant
- Gas turbine power generation
- Produced water treatment and disposal to sea
- LQ 100 beds

Substructure

- Total length 198 m
- Spar deck freeboard 21 m
- Hard tank diameter 50 m
- Displacement 146.000 tonnes
- Condensate storage 25.000 Sm³
- Steel catenary risers - 12 riser and 4 umbilical slots
- 17 point polyester taut line mooring system



Harsh environmental condition – increased fatigue loading

Hs (m)	Spectral peak period (Tp) - (s)																								Sum
	0-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25		
0-1	15	290	1367	2876	3716	3527	2734	1849	1138	656	362	193	101	52	26	13	7	3	2	1	0	0	0	18930	
1-2	1	81	1153	5308	12083	17323	18143	15262	10980	7053	4169	2316	1229	631	315	155	75	36	17	8	4	2	1	96347	
2-3	0	2	94	1050	4532	10304	15020	15953	13457	9572	5991	3403	1795	894	426	197	88	39	17	7	3	1	1	82844	
3-4	0	0	2	72	686	2782	6171	8847	9189	7493	5082	2991	1577	762	345	148	61	24	9	4	1	0	0	46247	
4-5	0	0	0	2	51	433	1645	3495	4807	4750	3638	2286	1229	584	251	100	37	13	5	1	0	0	0	23328	
5-6	0	0	0	0	2	39	294	1037	2069	2664	2440	1709	968	463	193	72	25	8	2	1	0	0	0	11986	
6-7	0	0	0	0	0	2	32	215	692	1264	1485	1228	767	382	159	57	18	5	1	0	0	0	0	6307	
7-8	0	0	0	0	0	0	2	27	157	447	730	762	555	302	130	46	14	4	1	0	0	0	0	3176	
8-9	0	0	0	0	0	0	0	2	23	112	276	392	355	223	104	38	11	3	1	0	0	0	0	1539	
9-10	0	0	0	0	0	0	0	0	2	15	77	160	192	148	79	37	9	2	0	0	0	0	0	720	
10-11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	327	
11-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	144	
12-13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	
13-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	
14-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
15-16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
16-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
17-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Sum	16	374	2615	9308	21071	34410	44042	46688	42514	34033	24267	15503	8892	4588	2143	920	372	147	58	23	10	4	2	292001	

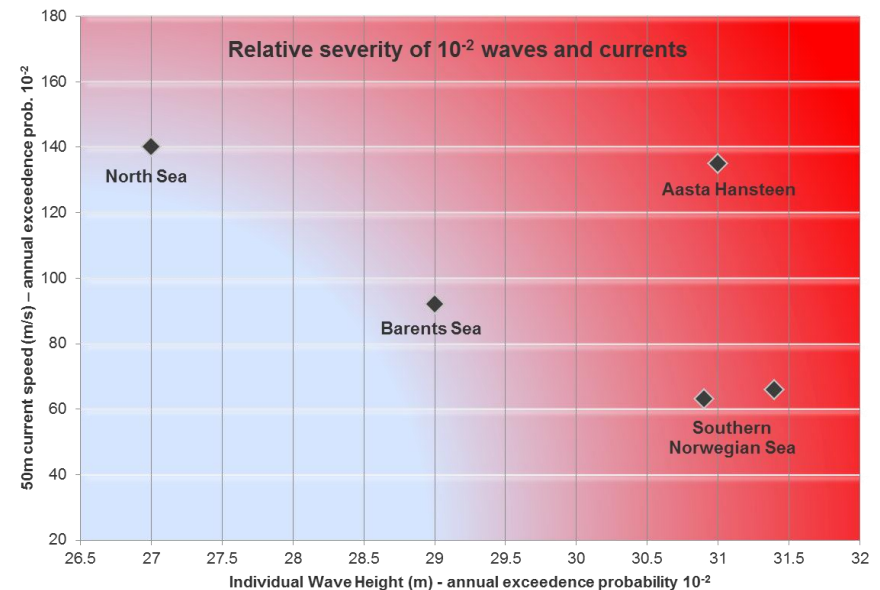
Aasta Hansteen
Hs: 1~14 m
Tp: 3~20 s

Hs, [m]	Spectral peak period Tp, [s]										Sum
	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	
0.0-0.5	109	0	766	21912	26048	1858	52	1	0	0	50746
0.5-1.0	0	0	357	19634	46614	11350	284	7	0	0	78246
1.0-1.5	0	0	27	3112	24810	21625	1447	17	1	0	51039
1.5-2.0	0	0	14	385	6687	15888	3172	105	0	0	26252
2.0-2.5	0	0	6	35	1000	6790	3804	166	4	0	11805
2.5-3.0	0	0	0	1	89	1767	2933	264	8	0	5062
3.0-3.5	0	0	0	0	8	279	1645	416	22	2	2372
3.5-4.0	0	0	0	0	3	42	626	402	21	0	1094
4.0-4.5	0	0	0	0	0	3	139	235	43	1	411
4.5-5.0	0	0	0	0	0	0	23	99	32	1	155
5.0-5.5	0	0	0	0	0	0	1	42	24	1	68
5.5-6.0	0	0	0	0	0	0	0	11	23	3	37
6.0-6.5	0	0	0	0	0	0	0	0	8	5	13
6.5-7.0	0	0	0	0	0	0	0	1	2	2	5
7.0-7.5	0	0	0	0	0	0	0	0	2	3	5
7.5-8.0	0	0	0	0	0	0	0	0	0	1	1
8.0-8.5	0	0	0	0	0	0	0	0	0	3	3
8.5-9.0	0	0	0	0	0	0	0	0	0	0	0
9.0-9.5	0	0	0	0	0	0	0	0	0	1	1
Sum	109	0	1170	45079	105259	59602	14116	1766	190	23	227315

GoM
Hs: 1~6 m
Tp: 1~10 s

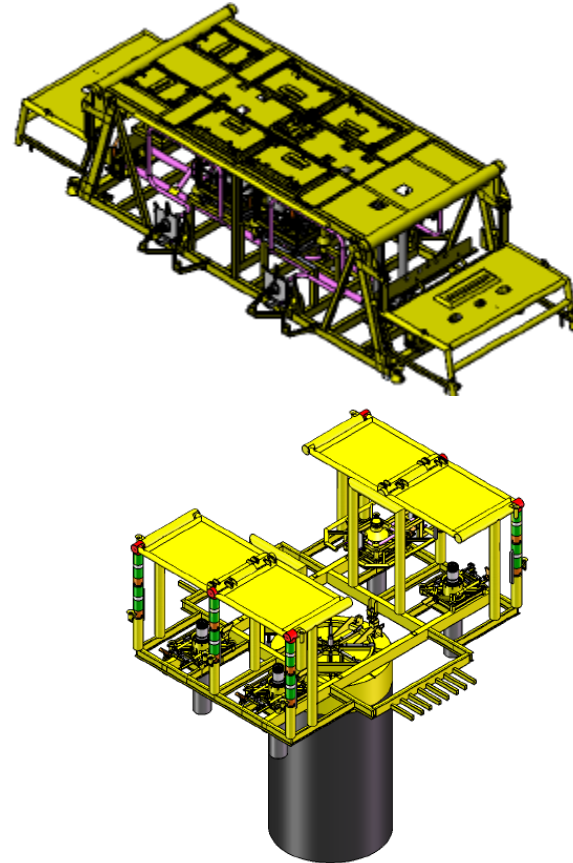
...and reduced operability

- Installations across three seasons
- Limit installation weight to some 250 tonnes to maintain 400 tonnes crane vessel segment
- Critical operations - pull-in of steel catenary risers after spar installation
- And diligent planning...

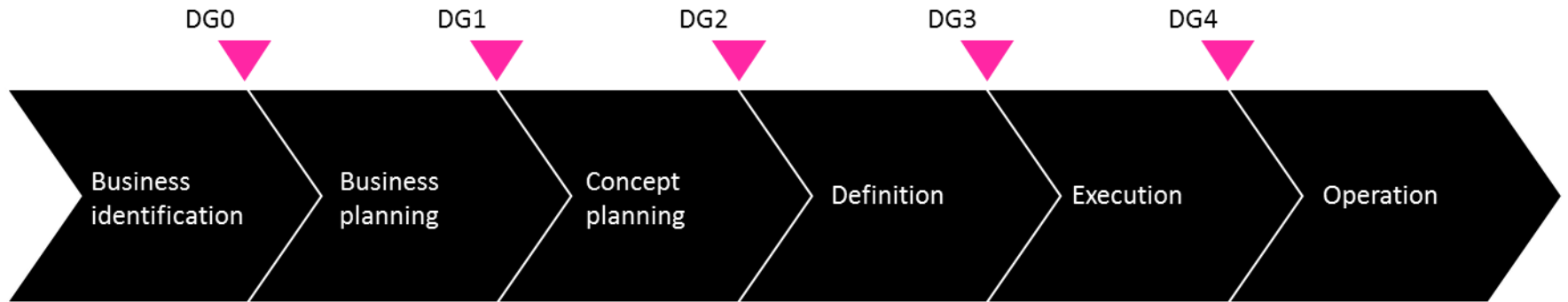


Subsea concept

- New deep-water 4-slot template
- Monopile template foundation
- No trawl protection
- Guide-wire less X- mas tree installation
- Work Over System technology qualifications

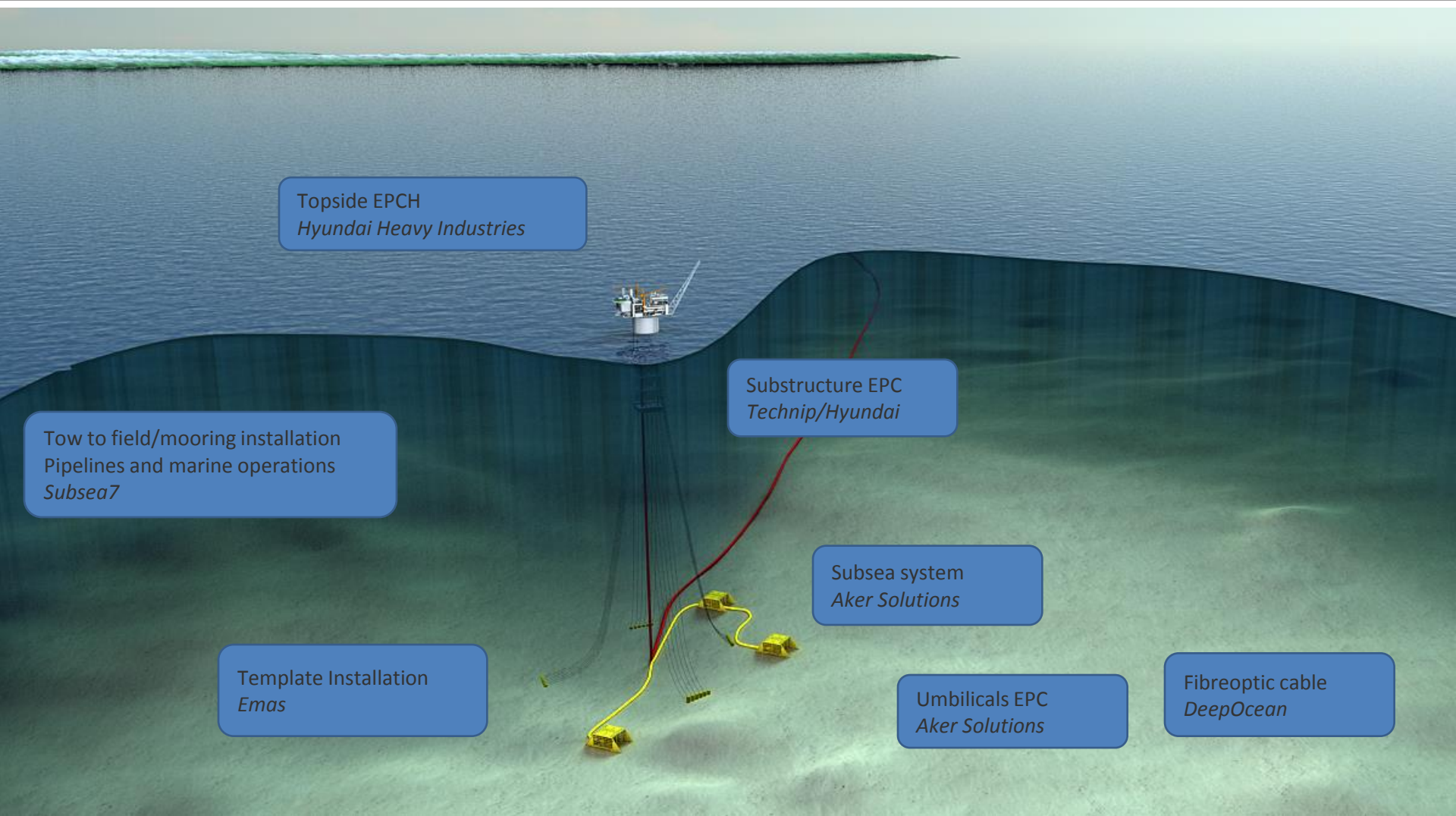


Aasta Hansteen – project status

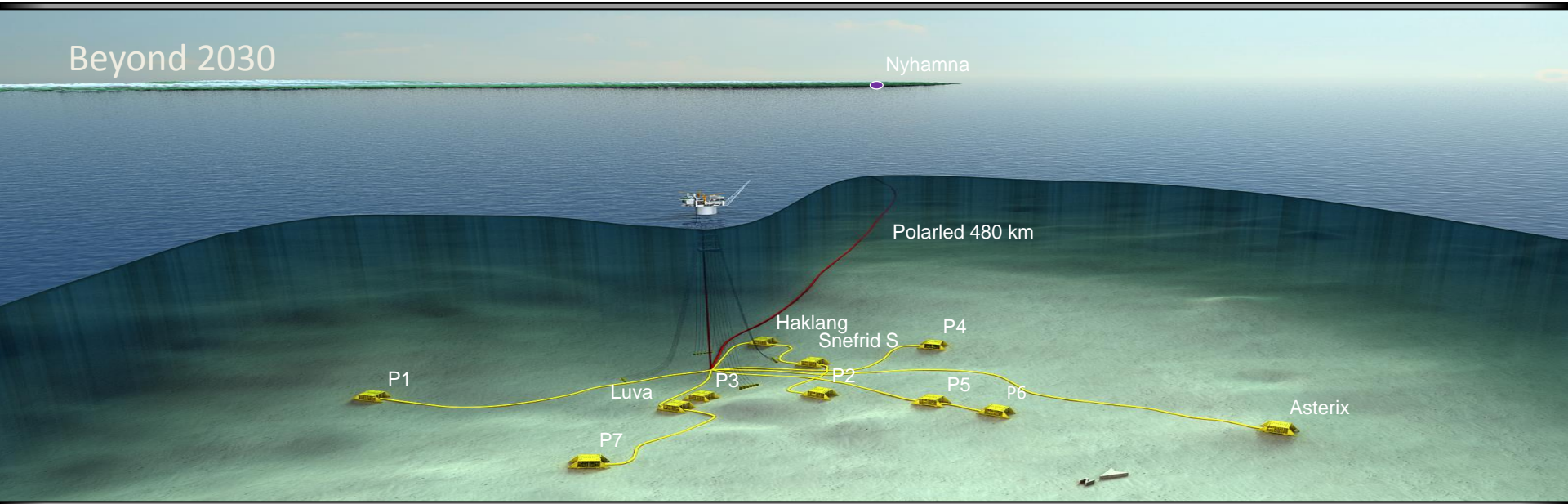


- Project sanction (DG3) December 2012
- Start construction April 2014
- Start production Q3 2017

Main contracts



Aasta Hansteen in summary



- An enabler for realization of the area
- First harsh environment deep-water development
- Support regional industrial development

There's never been a better
time for **good ideas**

Presentation title: Aasta Hansteen –
pioneer in Norwegian deep waters

Presenters name: T.B.Thommesen

Presenters title: Vice President

E-mail address: thbt@statoil.com

Tel: +4791590973

www.statoil.com