

## **Collaboration strategy on the NCS with special focus on production efforts**

# Background

The member organizations Norwegian Oil and Gas, GTO and EPIM have joined forces.  
From 1 July 2019, we are one integrated organization.

The drivers to increase value creation and collaboration on the NCS as one joint  
organization

# Background

- As part of the merger an new strategic direction was also set, with establishment of
  - A new digital forum to handle digital collaboration on the NCS
  - A strategic collaboration unit with participants from the member companies and Norsk olje og gass

# Norwegian Oil and Gas

A strategy for industry collaboration on competitiveness and digitalization

November 2020

### Ambition

Norwegian Oil and Gas shall be the strategic driving force on the NCS for increased competitiveness through active portfolio management of collaboration projects with high HSE and value potential

### Norwegian Oil and Gas Core Team

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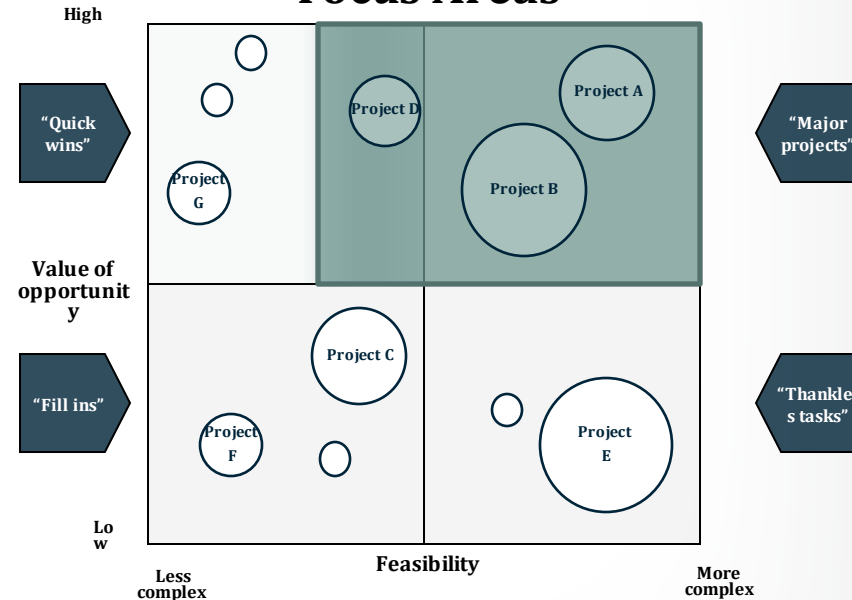
Ralph Daber  
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#### Single Points of Contact

Government  
Member Organizations  
Unions  
Research Organizations

Oil and Gas Companies  
Service Companies  
Joint Venture partners

### Focus Areas



○ Size - indicates investment required

■ Where Norwegian Oil and Gas should focus their efforts

# Executive Summary

## What is the collaboration strategy

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Portfolio Management of 5-6 transformative collaboration activities for the O&G Industry

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A collaboration building on from the 2018 Konkraft report

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A proactive, systematic and agile approach to accelerate value creation

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A dedicated 2 year commitment from the Norwegian Oil and Gas association, its members and sister organizations

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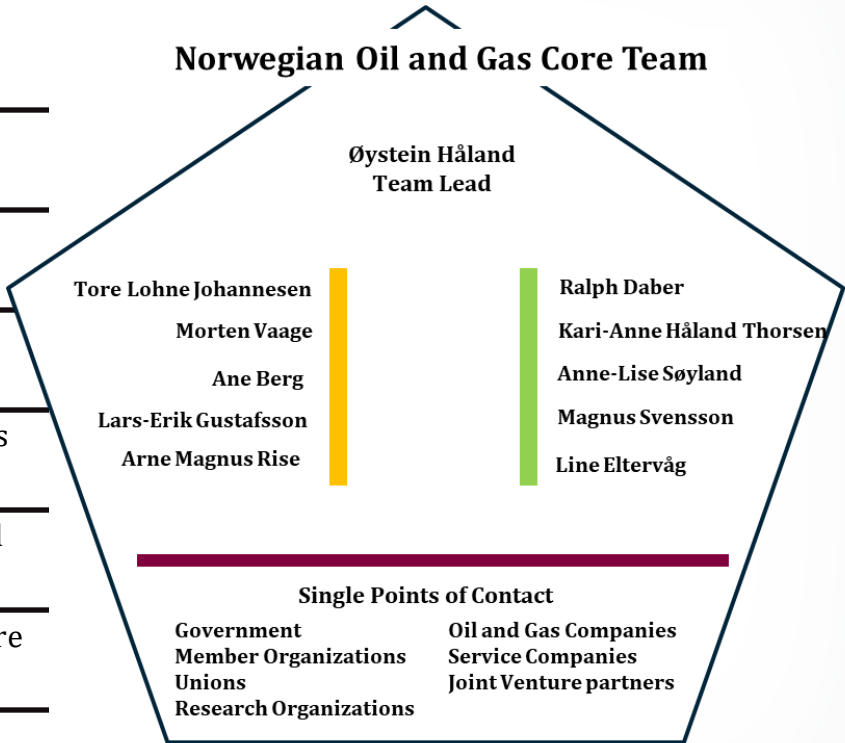
A dedicated core team from the industry and Norwegian Oil and Gas

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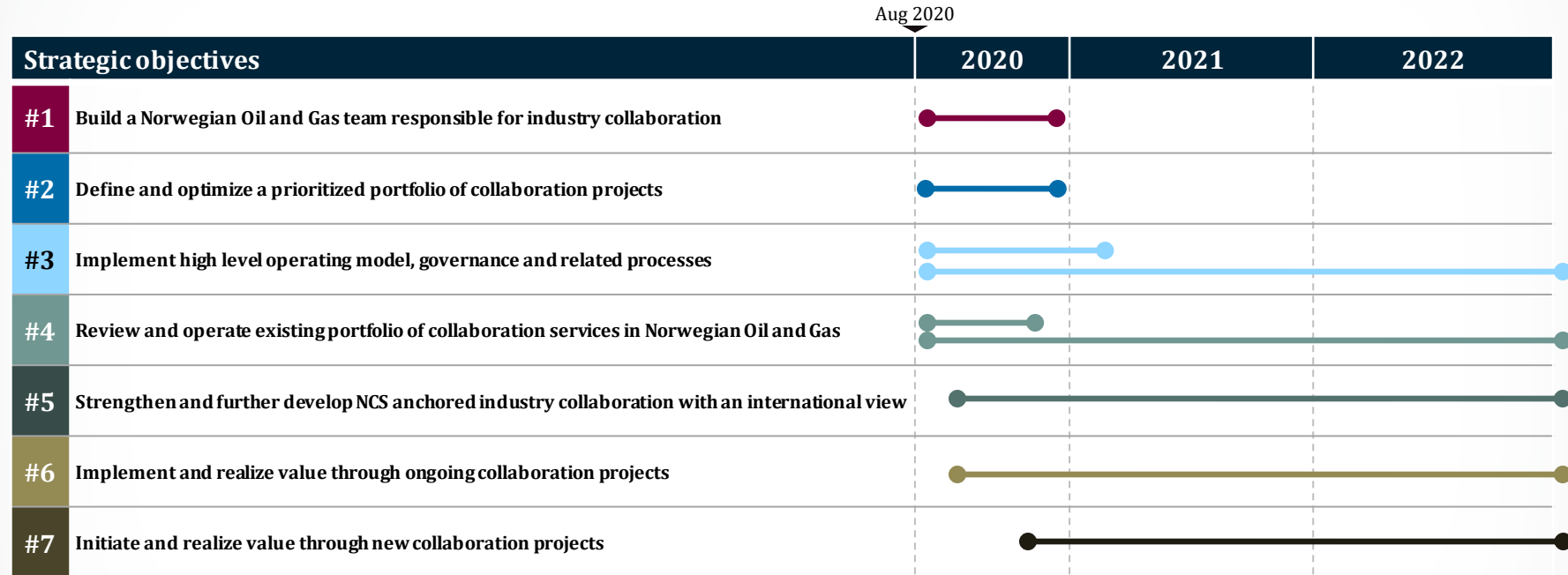
Top management anchoring in Norwegian Oil and Gas's structure

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A portfolio that combines existing and new collaboration initiatives under one governing structure and operating model



# Timeline



## Samhandlings arbeidsgruppe

- 18 ideer i ide bank

### Joint industry Projects

- Sub sea pool . Prosjekt etablert. Leveranse august 2021
- Lager optimalisering/min max. Etablering av prosjektgruppe pågår
  - Styringskomite etablert felles for begge prosjektene, bygger på sharing economy medlemmene

### Ide modning

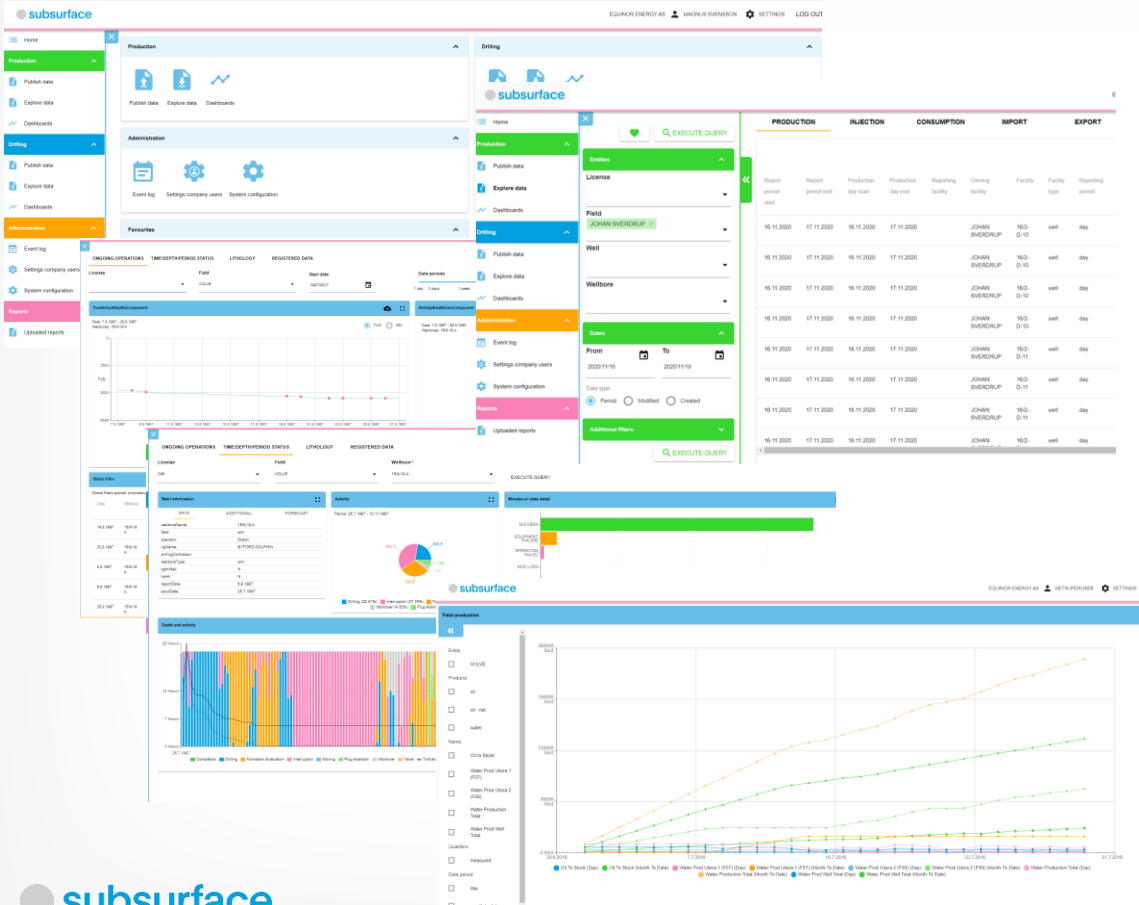
- In -licence data sharing. Presentert i digital forum, støtte til å etablere et lite prosjektteam for å jobbe fram forslag til arkitektur. Sub surface , bore og brønn, produsjonsdata. Sees opp mot JOA rammeverket. Bygger på bl annet på L2S og data hub erfaringene fra Johan Sverdrup.
- Plast gjenvinning sammen med andre industrier( fiskeoppdrett)

### Koordinering med eksisterende tjenester

- Standard facility data.
  - Resultatene fra READI prosjektet sees opp mot EQ HUB. Hvordan skal denne tjenesten settes opp, og hva er koblingene med tilhørende tjenester
- HMS – Ser på muligheten for å digitalisere RNNP arbeidsmiljødata og observasjonskort data
- Ytre miljødatarapportering. ENV HUB rapportering vrs Altinn



# Collaboration efforts – drilling and production



## KEY FACTS

- Approx. 98% of all daily production reports goes through the system each day (missing ones are under decommissioning or on the way in)
- Approx. 100% of all monthly production reports to the government goes through the system
- Approx. 98% of all drilling operations goes through the system
- All operators & partners on the NCS use the solution
- Connections to L2S, DISKOS and SMIL
- Approx. a daily average on 70000 requests for data through the cloud based services
- Utilises the NPD fact pages for metadata

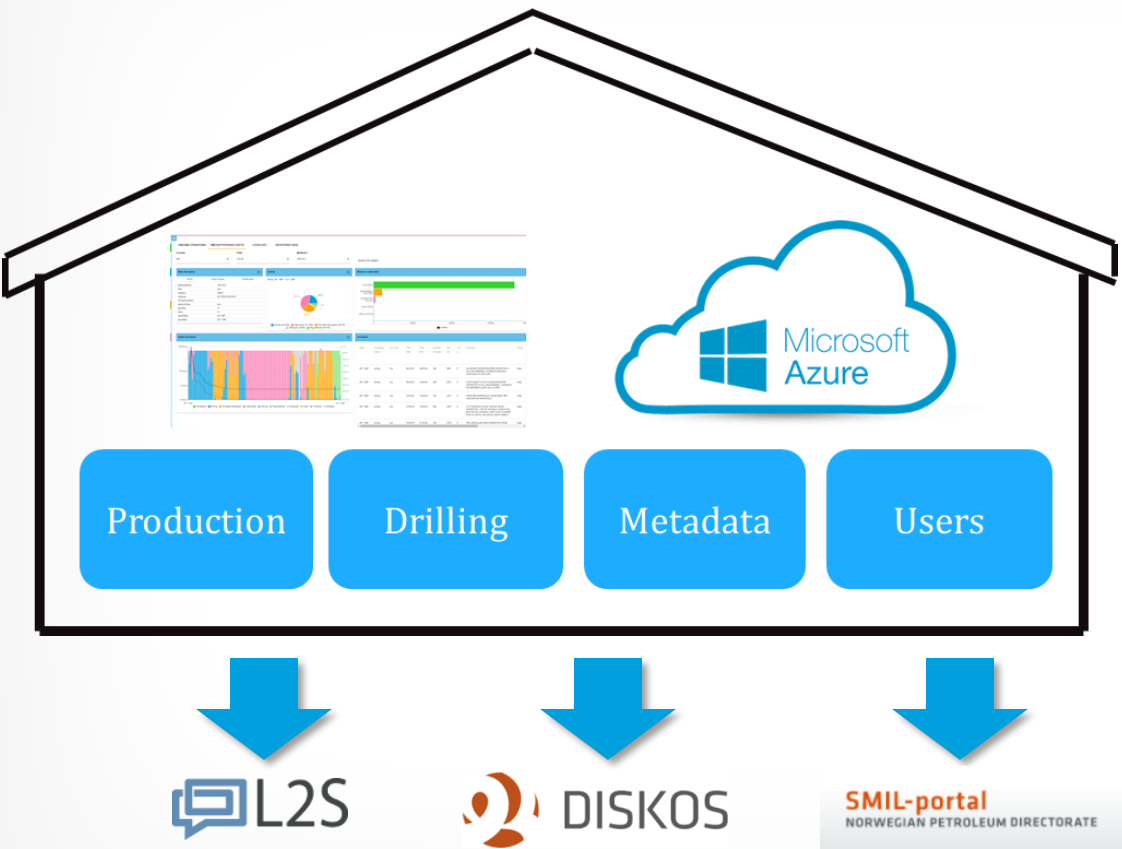
## KEY DRIVER

Work, visualize, extract & analyse data in "one unified data model" – work with the data and not physical files

# THE HOUSE OF SUBSURFACE

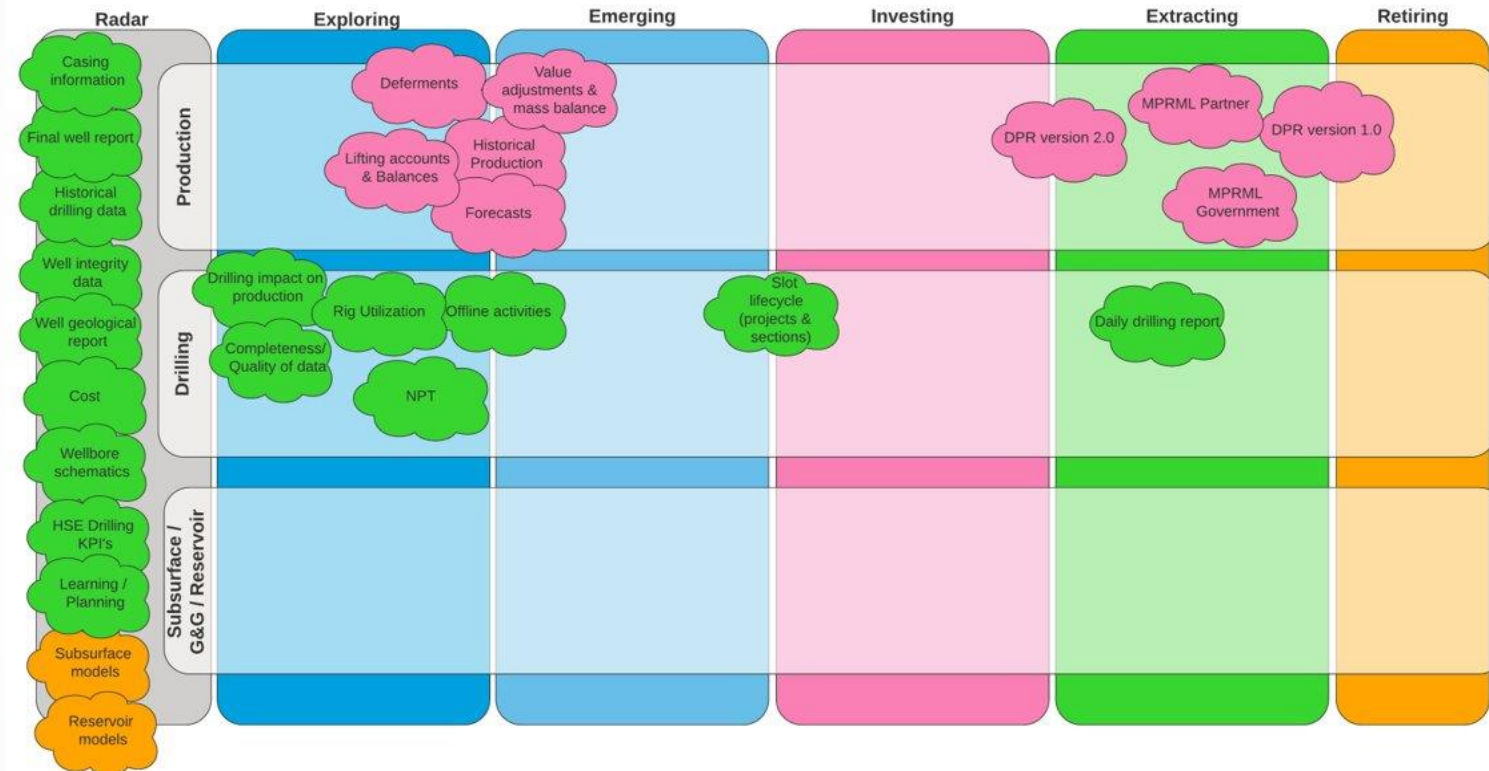
## KEY FUNCTIONS

- One common data model for production, drilling and metadata
- Querying & extraction of data through one common data model exposed using cloud based services from Microsoft Azure and using the global best practice standard GraphQL
- Access data through an end user interface in either tabular views with the possibility to query and export data to e.g. spreadsheets or through different dashboard visualizations
- Search for data using detailed filtering possibilities such as e.g. specific wells, time periods, products ++
- Connections to L2S, DISKOS and SMIL for physical file transfers



# Ongoing and early phase data sharing efforts

# EXTENDING OUR COLLABORATION



# Production efforts

## ***Daily Production – Mandatory content***

- Challenge with daily production reporting and standardization is to handle all deviations @scale...
  - Workgroup consisting of Equinor, Shell, Total, ConocoPhillips looking at a minimum best practice dataset to be exchanged on a daily basis
  - Divides the data into different categories, e.g. mandatory, recommended, optional
  - A standardized viewable report layout
  - Rules relating to e.g. rounding of numbers ++
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- Work accepted by companies in 2018 and rolled out during autumn 2018. The major operators will now use this when they roll-out upgrades in their systems



# Production efforts

- Currently working several cases
  - Approach -> minimum viable content, should be able to scale and not handle all deviations and special cases. Partnership should get a minimum dataset as needed for their business processes
- Cases
  - Forecasts: e.g. RNB, 15 months rolling, 6 months rolling, P/I plan ++
  - Deferments: deferments at the top level without going into lower level details, partnership should be able to explain top level deviations
  - Historical production: transfer and standardization of reconsolidated data on e.g. a daily basis since field start-up
  - Lifting accounts and balances: end of month closing status
  - Value adjustments: transfer and sharing of value adjustment data in a standardized way
- All cases have an active need to better be able to handle dimensions such as factor conversion based on e.g. quality parameters



# Production efforts – some examples

## Factor Information

### Factor conversions for ÅSGARD

Name	Asset	Asset Type	Factor Type	Product	From UoM	To UoM	Add Factor	Factor	Valid From	Valid To	Description
ÅSGARD asset factors	ÅSGARD	field	Volume	oil - net	m3	bbbl	1	6.29	2018-01-01	2018-01-31	
ÅSGARD asset factors	ÅSGARD	field	Mass		kg	tonUK		1000			
ÅSGARD asset factors	ÅSGARD	field	Mass		tonUK	kg		0.001			

- ÅSGARD asset factors
- ÅSGARD asset factors
- TRESTAKK asset factors

## Price Reference Information

### Factor conversions for ÅSGARD

Name	Asset	Asset Type	Name	Ticker	Source	Product	Currency	UoM	Valid From	Valid To	Description	Price
ÅSGARD price reference	ÅSGARD	field	NAPHTA	NGCLP01	PLATTS		USD		2018-01-01	2018-01-31	FIS London Naphtha FOB USGC Cargo Financial Mo01	100.1
ÅSGARD price reference	ÅSGARD	field	KEROSENE	PJPAC00	PLATTS		JPY		2018-01-01	2018-01-31	Kerosene FOB Tokyo Bay LC1 Waterborne	100.1

- ÅSGARD price reference
- TRESTAKK price reference

## Storage and Liftings Information - Month

Account	Start	End	Input to storage	Opening balance	Adjusted closing	Lifting entitlement	Lifted	Lifting entitlement remaining	Transaction	Swap	Closing balance
			<i>Sm3</i>	<i>Sm3</i>	<i>Sm3</i>	<i>Sm3</i>	<i>Sm3</i>	<i>Sm3</i>	<i>Sm3</i>	<i>Sm3</i>	<i>Sm3</i>
PETORO AS	2018-01-01	2018-01-31	133	125	131	184	142				163
EQUINOR ENERGY AS	2018-01-01	2018-01-31	196	191	142	112	143				101
VÅR ENERGI AS											107
<b>Total</b>											<b>451</b>

### ÅSGARD separator oil

Name	Description	Sample type	Asset	Aquisition date	Valid From	Valid To
sample_data_field_NPD_43765_ÅSGARD	ÅSGARD separator oil	separator oil	ÅSGARD	2018-01-01	2018-01-01 00:00	2018-01-31 00:00

Component name	Is primary	Component kind	Molecular weight	Weight percent	Mole percent	Specific gravity	Viscosity	Sulphur
				%	%		<i>At 30m2</i>	%
gas	true	frac		23	0	0	64	2
naphtha	false	frac		21	0	0	56	3
gas oil	false	frac		23	1	1	78	4

# Q&A