

Applied G&G Services

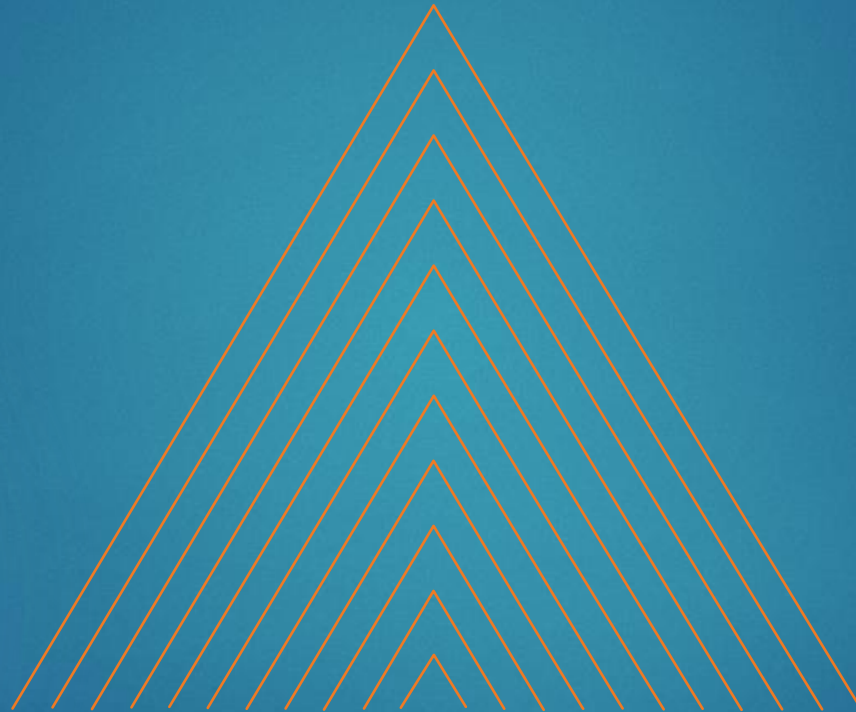
since 2013

1



Identity

Solid record from
Industry, Science and Management



Worldwide Experience

North-, Norwegian- & Barents-Sea
Middle East and North Africa

Integrated Multidisciplinary Approach

Know-how through long and direct industry involvement
Scientific Specialists

What we can do for you



List of Clients and Type of Projects

Clients (2020)

- ▶ Lundin
- ▶ Aker BP
- ▶ DNO Norge
- ▶ DNO international
- ▶ Petoro
- ▶ INPEX
- ▶ Lime
- ▶ Concedo
- ▶ Pandion
- ▶ PGNiG
- ▶ RN Nordic

Projects

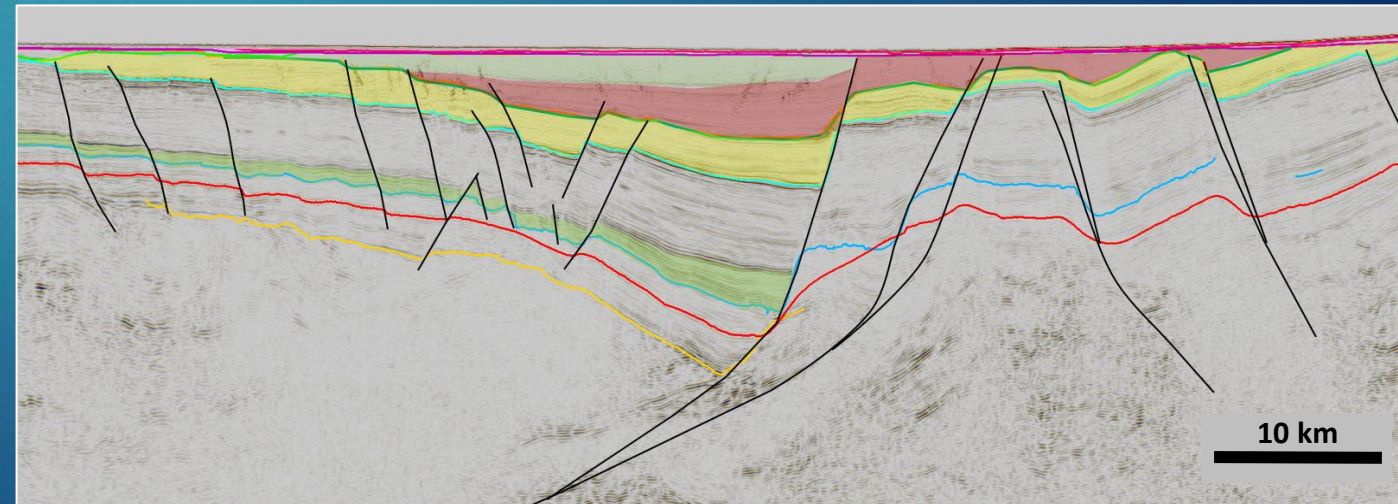
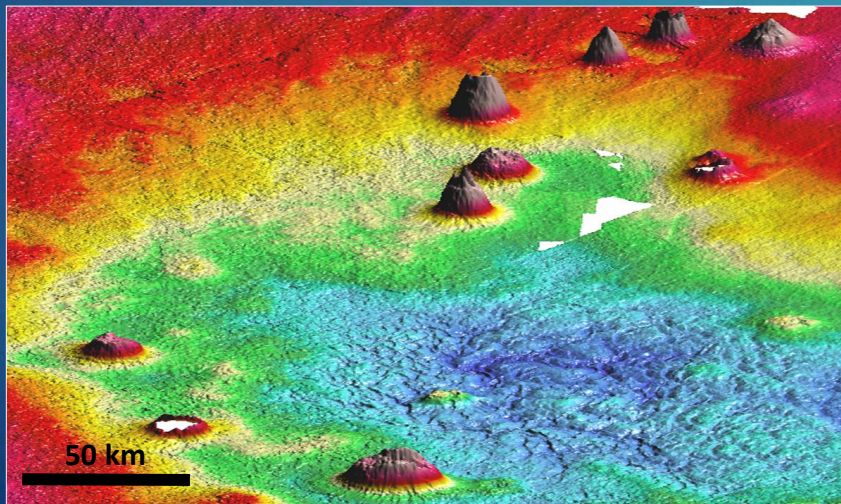
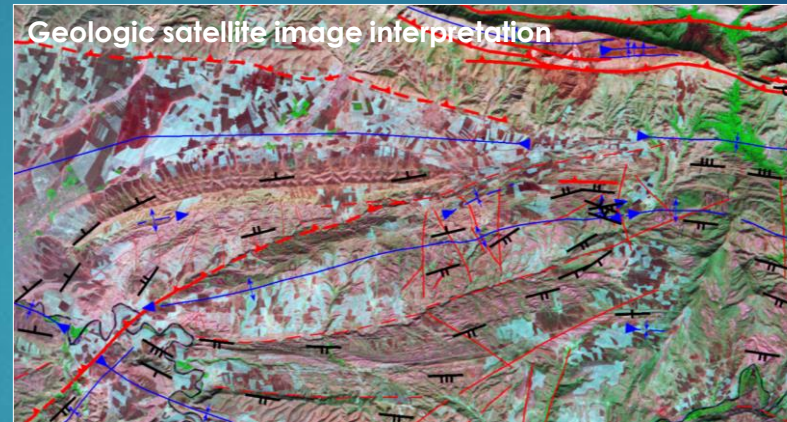
- ▶ APA and License round work
- ▶ Seismic
Interpretation, attribute, rock physics and quantitative analysis
- ▶ Petrography
Single well and regional studies
- ▶ Stratigraphy
Well analysis, Sequence-strat., Depositional models
- ▶ Reservoir characterisation
- ▶ Reserve evaluations
- ▶ Structural geology and back stripping
- ▶ Competent Person Reports
- ▶ Multiclient Data Bases

Software



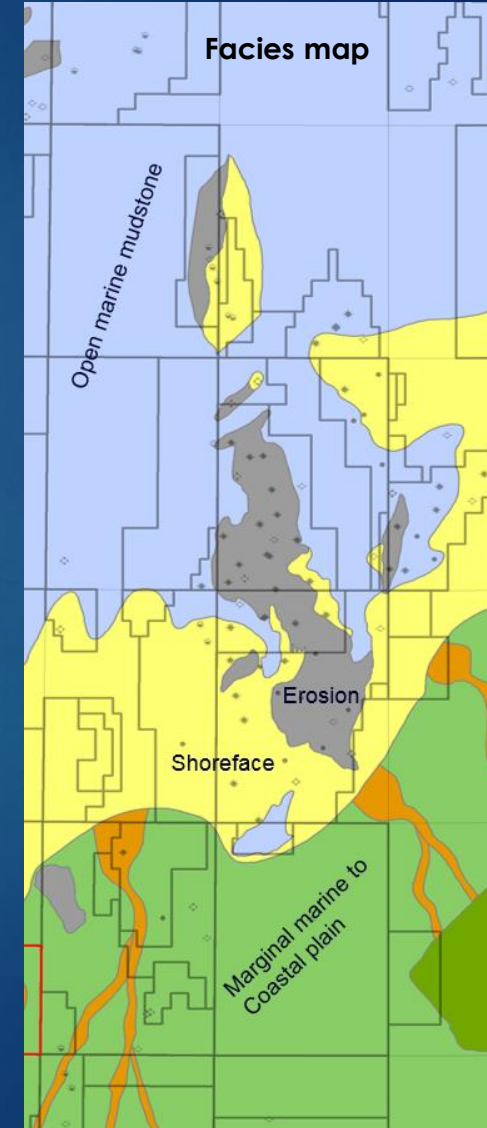
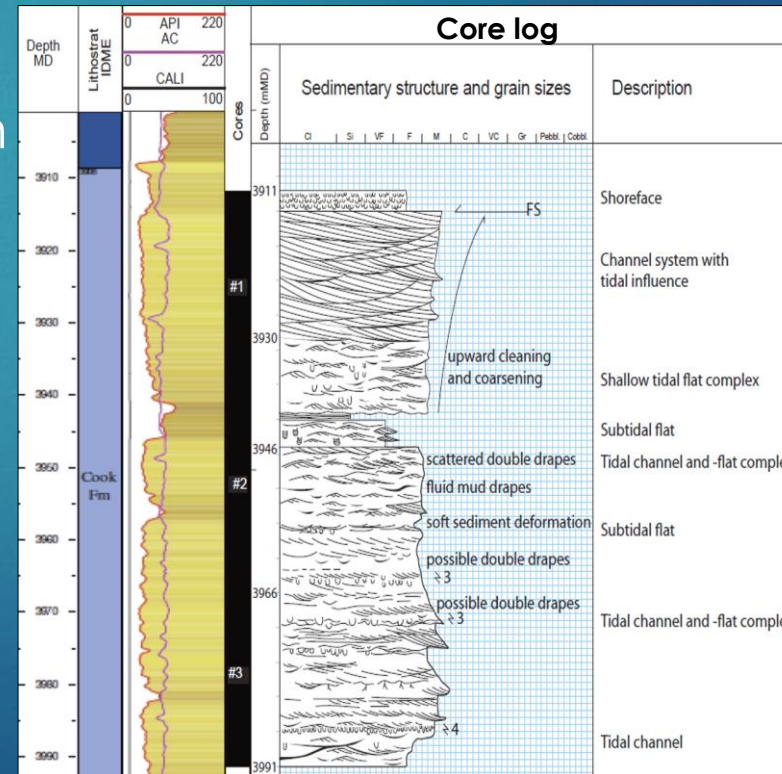
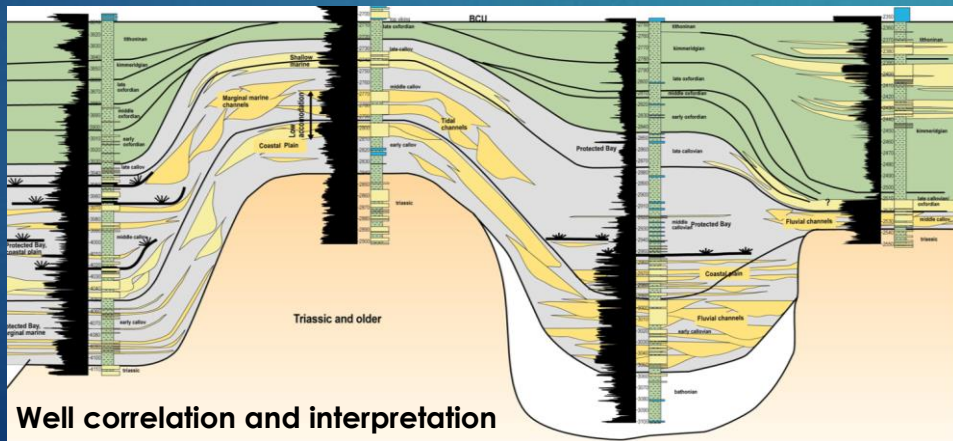
Geophysical & remote sensing

- ▶ Seismic 2&3D interpretation
- ▶ Attribute analyses
- ▶ Seismic processing supervision
- ▶ Seismic survey planning
- ▶ Satellite image interpretation



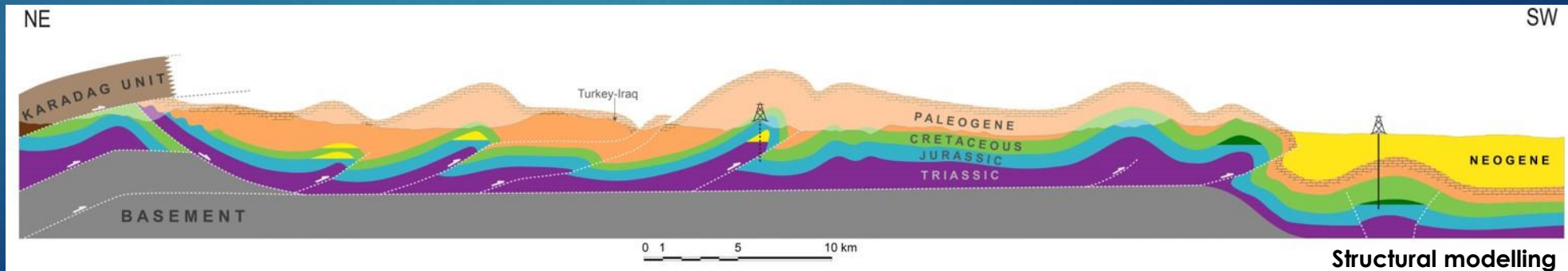
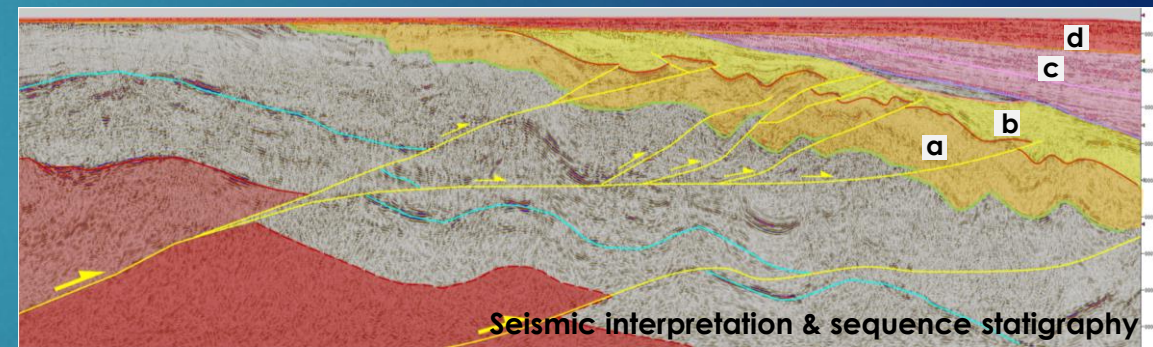
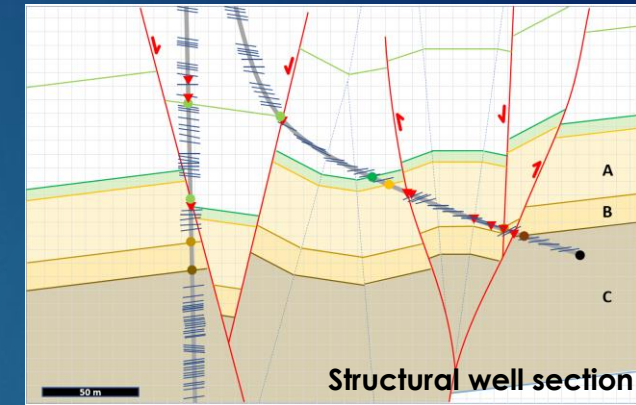
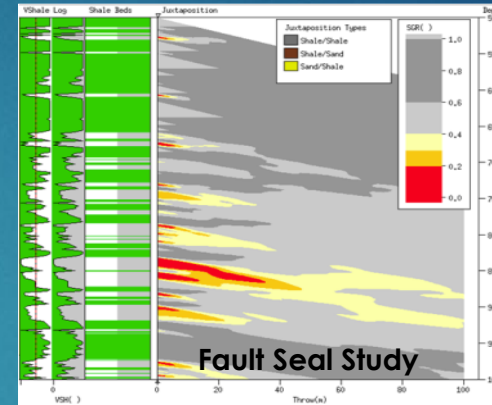
Sedimentology & stratigraphy

- ▶ Depositional models
- ▶ Facies maps
- ▶ Log interpretation and correlation
- ▶ Core interpretation and description
- ▶ Outcrop analogue studies



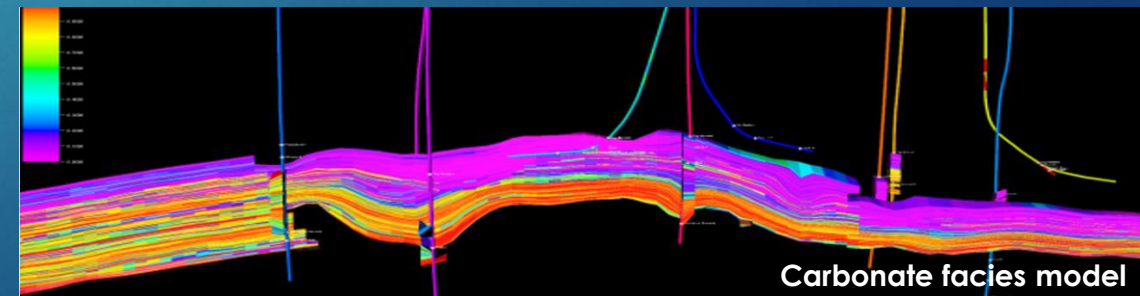
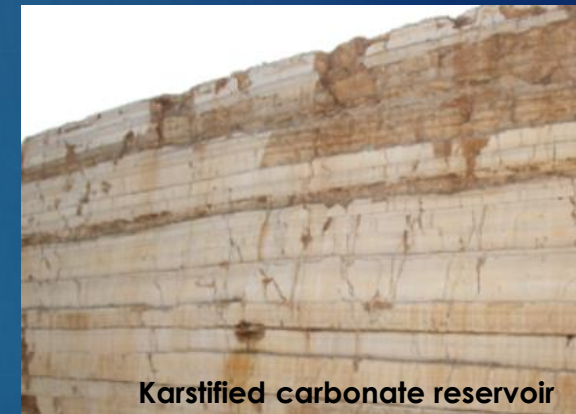
Structural geology

- ▶ Structural modelling and restoration
- ▶ Fracture modelling
- ▶ Fault seal studies
 - ▶ Structural trap risking
 - ▶ Static fault seal modeling and dynamic simulation
- ▶ Regional studies and reviews
- ▶ Outcrop analogue studies



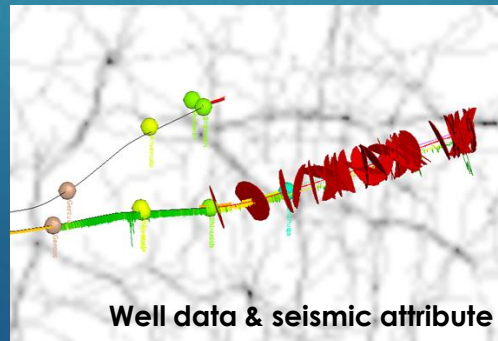
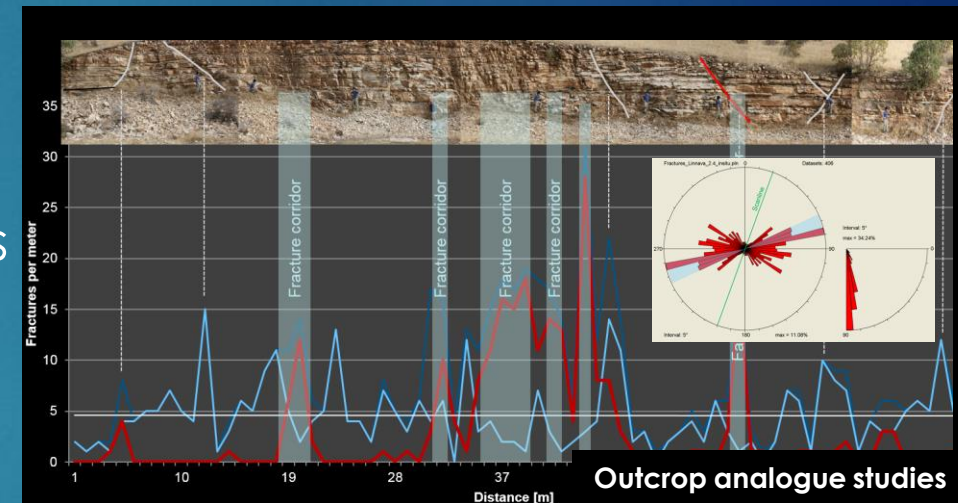
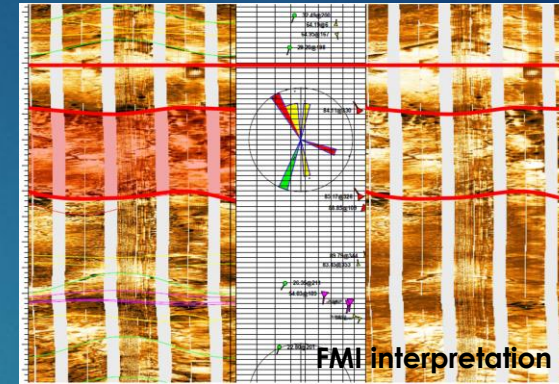
Carbonate reservoirs

- ▶ Reservoir characterization
- ▶ Depositional and diagenetic classification
- ▶ Porosity and permeability estimation
- ▶ Karst reservoir and vuggy porosity
- ▶ Fluid parameters and FWL
- ▶ Reservoir models; single and dual porosity



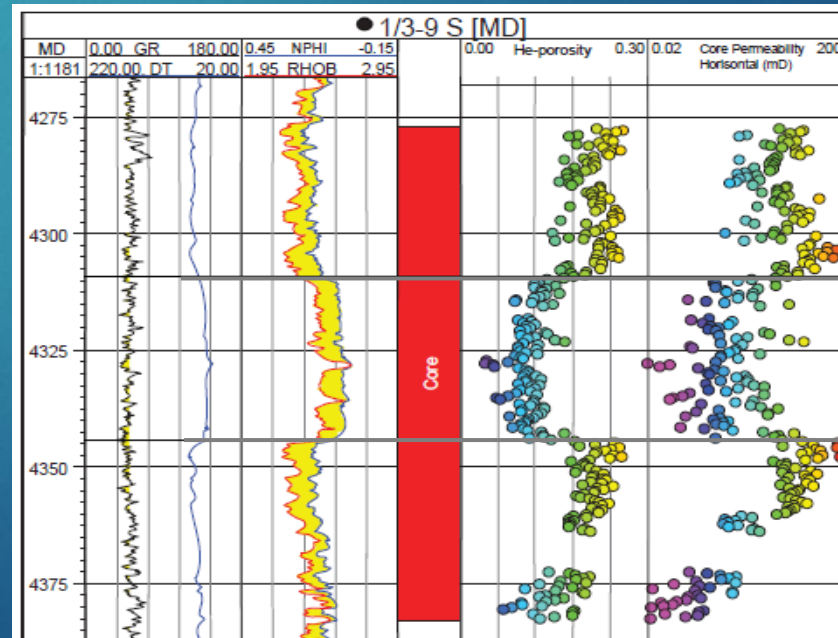
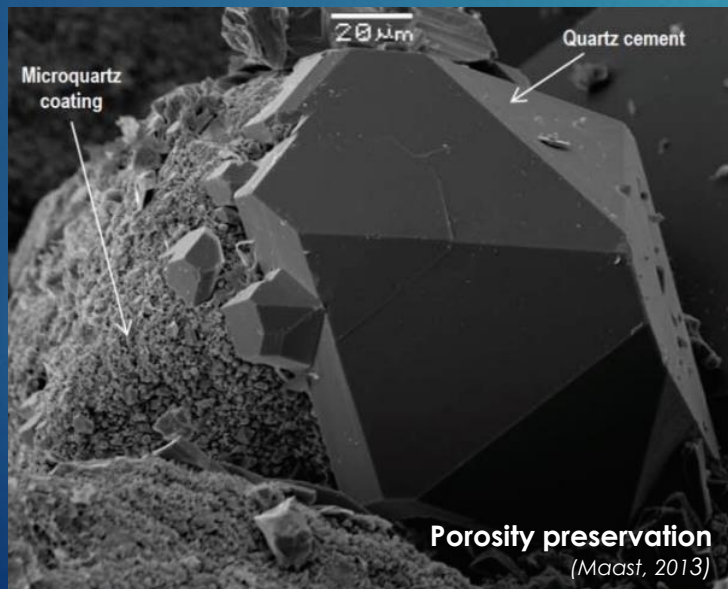
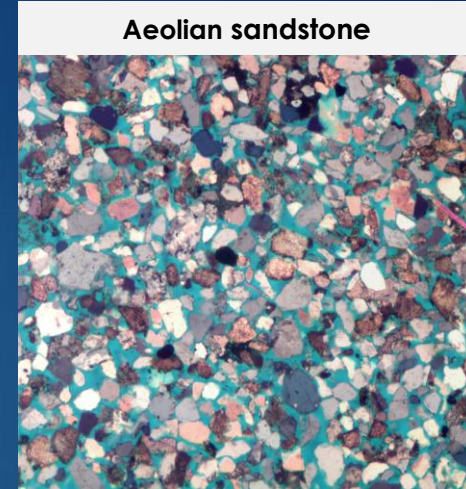
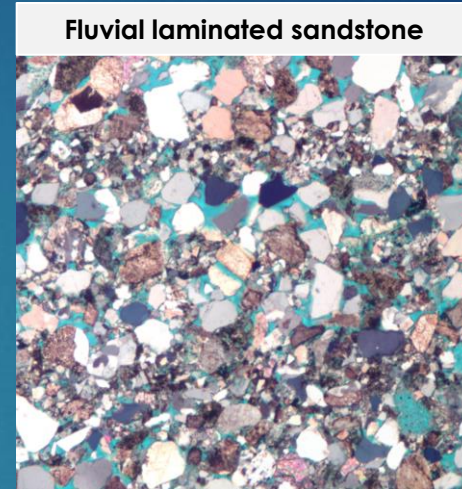
Fracture modelling

- ▶ Regional fracture analysis
- ▶ Fault, lineament and corridor mapping
- ▶ Formation image interpretation
- ▶ Fracture quantification and conceptual models
- ▶ Fracture porosity relations
- ▶ Discreet fracture network (DFN) modeling



Sedimentary petrology

- ▶ Mineralogy & diagenesis
- ▶ Chemostrat & provenance studies
- ▶ Integrated petrophysics/sed-strat database
- ▶ Reservoir quality evaluation and risking



Top Ula Fm

Sequence C1-2:
Quartz overgrowths: 1-2 vol. %
Fine grained (0,19 mm)
Moderately well sorted

Sequence C1-1:
Qtz overgrowths: 10-12 vol. %
Fine grained (0,21 mm)
Moderately well sorted

Sequence B:
Quartz overgrowths: 1-2 vol. %
Fine grained (0,21 mm)
Moderately well sorted

Special Studies

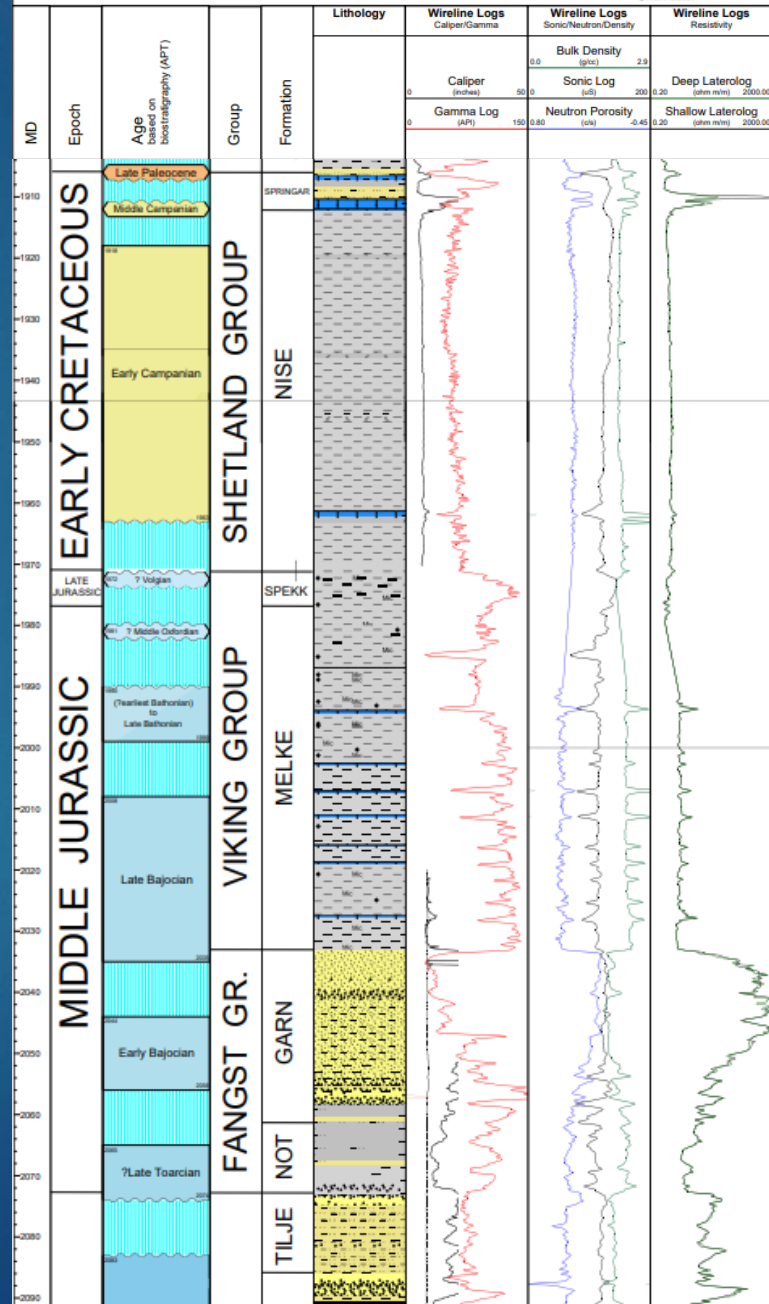
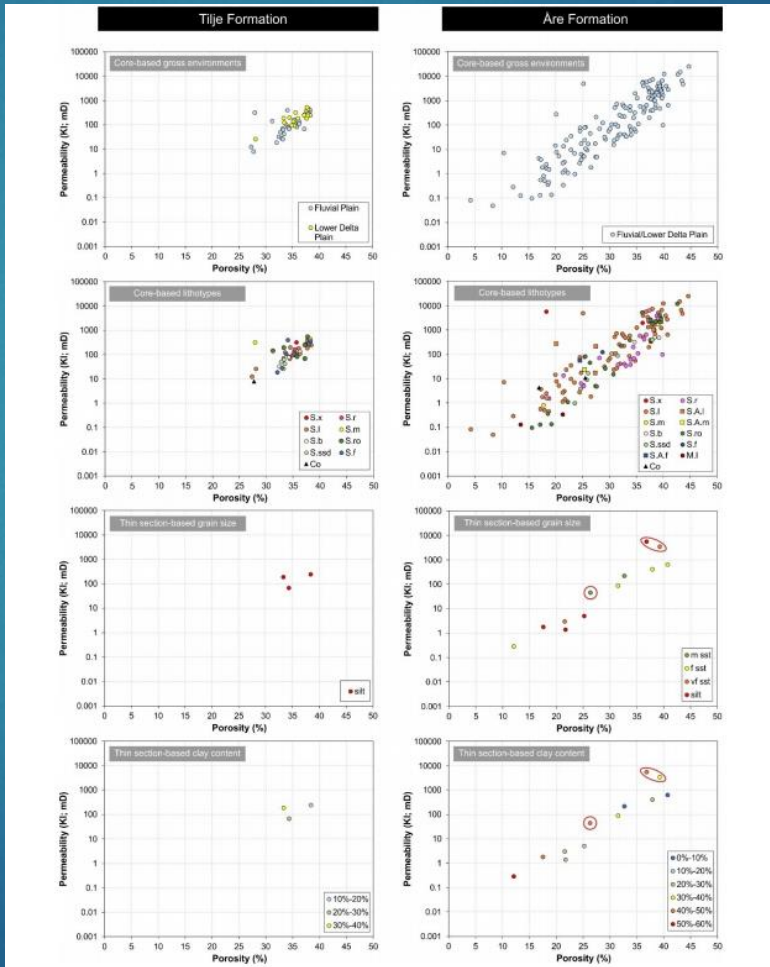
Well and reservoir descriptions



Well:
Operator:
Interval:

Chart date:

STRATI-GRAPHY		LITHOFACIES DESCRIPTION	CORE LOG	BIOTURBATION	INTERPRETATION	ENVIRONMENT
Epoch	Age	Group	Formation			
MIDDLE JURASSIC		AALENIAN - EARLY BAJOCIAN				
		FANGST GROUP				
		GARN FORMATION				
			Core No. / Core Depth	Degree of bioturbation	Interpretation	Environment
			2040			
			2041			
			2041.8			
			2042			
			2043			
			2044			
			2045			
			2046			
			2047			
			2048			
			2049			
			2050			
			2051			
			2052			
			2053			



License Round

Experience

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AGGS team has a solid and up to date track-record in License Round and APA application work:

8 Norwegian license rounds

15th, 16th, 17th, 18th, 19th, 20st, 23rd, 24th

13 APA rounds

2004, 2005, 2006, 2007, 2008, 2009, 2011, 2012, 2014, 2015, 2016, 2017, 2018, 2019, 2021

4 License round/APA Management assignments

APA 2005, 20th Round, APA 2007, APA 2008

▶ License Round and APA work for:



License Round

Deliverables

- ▶ Delivered exploration and production license applications in Norway, Turkey, Tunisia and Morocco
- ▶ Supported companies in evaluating and accessing licenses in many other countries

▶ We deliver:

- ▶ Regional Geology
- ▶ Basin analysis
- ▶ Seismic mapping
- ▶ Play concepts
- ▶ Prospect mapping
- ▶ Petrophysics
- ▶ Resource calculations
- ▶ Discovery probability
- ▶ Plan for exploration
- ▶ Development plan
- ▶ Special studies

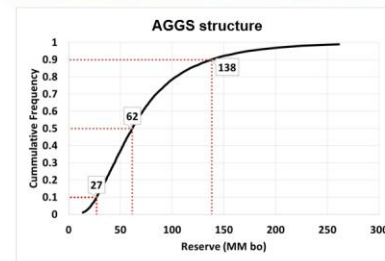
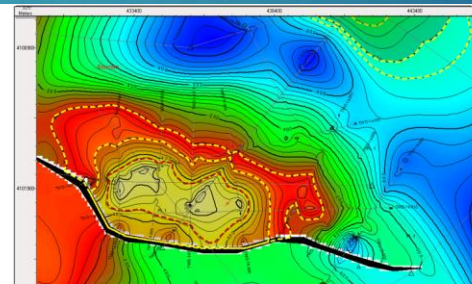
Prospect Data						
Country	Prospect	Reservoir	Block	Block no.	OPC share	
Turkey	Hakkari_B_Cret	Cretaceous	Hakkari		100%	

Reserves Forecast Model						
Input Values						
	Base	Min	Max	Stddev	Type	Distribution
Matrix	100%	100%	100%		Lognormal	100%
Fractures	43.3%	2.3%	83.3%		Triangular	70%
Total	100%	100%	100%		no	100%
Matrix	0.2%	0.1%	0.5%		Triangular	100%
Fractures	70%	70%	80%		Triangular	77%
Total	0.95%	0.83%	0.97%		Triangular	1

Total Summary Statistics			
STOOP (10 ⁹ Sm ³)	Reserves (10 ⁹ Sm ³)	MM BO	
Sample Size (n): 5,000	Sample Size (n): 5,000	Sample Size (n): 5,000	
MEAN: 66	MEAN: 12	MEAN: 75	
P90: 26	P90: 4	P90: 27	
Median (P50): 94	Median (P50): 10	Median (P50): 42	
P10: 119	P10: 22	P10: 138	
STDEV: 43	STDEV: 0.4	STDEV: 53	
Mean Standard Error: 0.43	Mean Standard Error: 0.004	Mean Standard Error: 5	

Matrix Summary Statistics			
STOOP (10 ⁹ Sm ³)	Reserves (10 ⁹ Sm ³)	MM BO	
Sample Size (n): 5,000	Sample Size (n): 5,000	Sample Size (n): 5,000	
MEAN: 60	MEAN: 6.0	MEAN: 50	
P90: 22	P90: 2.5	P90: 16	
Median (P50): 96	Median (P50): 6.3	Median (P50): 20	
P10: 111	P10: 15.5	P10: 97	
STDEV: 41	STDEV: 0	STDEV: 39	
Mean Standard Error: 0.41	Mean Standard Error: 0.002	Mean Standard Error: 4	

Fractures Summary Statistics			
STOOP (10 ⁹ Sm ³)	Reserves (10 ⁹ Sm ³)	MM BO	
Sample Size (n): 5,000	Sample Size (n): 5,000	Sample Size (n): 5,000	
MEAN: 1.5	MEAN: 1.5	MEAN: 25	
P90: 1.5	P90: 1.4	P90: 5	
Median (P50): 3.5	Median (P50): 3.2	Median (P50): 20	
P10: 6.0	P10: 7.2	P10: 45	
STDEV: 3.1	STDEV: 2.8	STDEV: 18	
Mean Standard Error: 0.0310	Mean Standard Error: 0.025	Mean Standard Error: 0	



Block	Prospect name	Discovery/Prospect/Lead	Prospect ID (or New)	NPD approved?		
XX.Y & YY.Z	AGGS	Prospect	<i>NPD will insert data</i>	<i>NPD will insert data</i>		
Play (name / new)	Structural element	Company/ reported by / Ref. doc.		Year		
<i>NPD will insert data</i>	Heimdall Terrace	Your Company		2019		
Oil/Gas case	Resources IN PLACE					
Oil	Main phase		Ass. phase			
	Low	Base	High	Low	Base	High
Oil 10 ⁹ Sm ³	2.28	4.19	6.45			
Gas 10 ⁹ Sm ³				0.11	0.23	0.38
	Resources RECOVERABLE					
	Main phase		Ass. phase			
	Low	Base	High	Low	Base	High
Oil 10 ⁶ Sm ³	0.73	1.49	2.42			
Gas 10 ⁹ Sm ³				0.04	0.08	0.13
	Which fractures are used as:		Low:	90	High:	10
Type of trap	Water depth (m)	Reservoir Chrono (from - to)	Reservoir Litho (from - to)			
4-way closure	125	Thanetian	Hermod Fm. sandstone			
Source Rock, Chrono	Source Rock, Litho	Seal, Chrono	Seal, Litho			
Kimmeridgian-Berriasian	Draupne Fm. shale	Thanetian	Sele Fm shale			
Seismic database (2D/3D):						
Probability of discovery:						
Technical (oil+gas case)	0.27		Prob for oil/gas case		1/0	
Probability (fraction):	Reservoir (P1)	Trap (P2)	Charge (P3)	Retention (P4)		
	1	0.9	0.6	0.5		
Parameters:	Low	Base	High	Comments		
Depth to top of prospect (m)		2052				
Area of closure (km ²)	1.4	2.4	4			
Reservoir thickness (m)	40	40	40			
HC column in prospect (m)	2045	2055	2070			
Gross rock vol. (10 ⁹ m ³)	0.018	0.038	0.089			
Net / Gross (fraction)	0.28	0.52	0.9			
Porosity (fraction)	0.2	0.28	0.31			
Water Saturation (fraction)	0.3	0.25	0.2			
Bg. (<1)						
Bo. (>1)	1.08	1.13	1.29			
GOR, free gas (Sm ³ /Sm ³)						
GOR, oil (Sm ³ /Sm ³)	30	50	100			
Recovery factor, main phase	0.25	0.35	0.45			
Recovery factor, ass. phase	0.25	0.35	0.45			
Temperature, top res (deg C) :	70	Pressure, top res(bar):		214		
For NPD use:						
Innrapp. av geolog:	Registrert:	Map OK:		Nr:		
Dato:	Dato:	Dato:				

AGGS consultancy

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- ▶ **AGGS** can manage and execute your subsurface projects
- ▶ **AGGS** specialists are ready to work and integrate with your teams
- ▶ **AGGS** carries out special studies helping to explore your acreage and fields
- ▶ **AGGS** is set to evaluate resources or assets you are interested in

<https://aggs.no>