

GEOMARK

PVT Database of the North Sea, Norwegian Sea and Barents Sea

Delivered by GeoMark Research

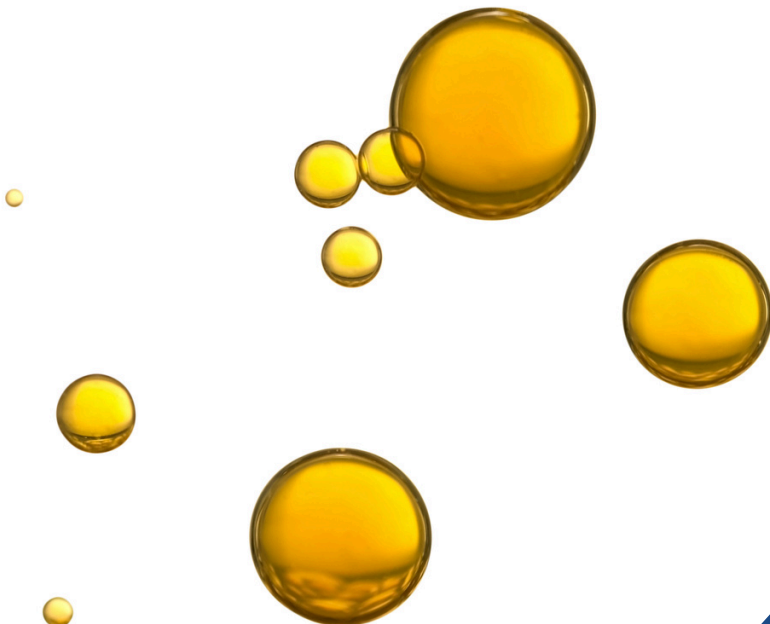


Table of Contents

 Company Overview	3
 Our Services	4
 Building the industry's first PVT database for the North Sea, Norwegian Sea and Barents Sea	5
 Applications of a PVT database for the North Sea, Norwegian Sea and Barents Sea	6
 PVT data loading efforts so far	7
 RFDbase - An online platform to easily access quality PVT, Geochemistry and Gas data	8
 PVT data capture & reporting	9
 Generalised workflow	10
 Pricing	11
 Contact us	12

Company Overview

GEOMARK

About Us

GeoMark Research is a full-service Geochemistry and PVT company established in 1991. With a passion for subsurface fluid characterisation, we've successfully served exploration and production companies across the globe, helping them enhance their subsurface knowledge and goals.

Mission

Our mission is to provide quality geochemical & PVT data and knowledge from a source you can trust. **Science, done right.**

Vision

Our vision is to have GeoMark Research data used and valued by all companies with geochemical and PVT needs.

33+

Years of operations

3

Offices worldwide

200+

Happy clients

35+

Employees

Our Services

Laboratory Analyses

- Source Rock
- Oil & Condensate
- Inorganic
- PVT
- Mud Gas
- TruSat
- CCS applications



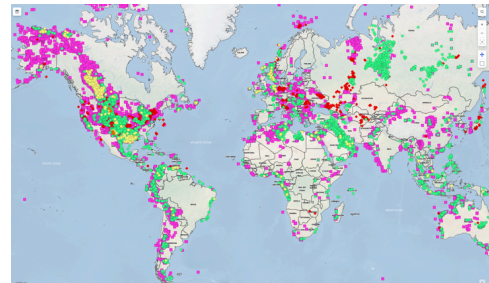
Consulting Services

- Time-Lapse Geochemistry & Allocation
- Reservoir Connectivity and Continuity
- Geochemistry & PVT Consulting
- Petroleum Systems Modeling (PSM)
- Petrophysics
- CCS planning
- Training



Data & Studies

- RFDbase - industry's largest geochemistry & PVT subscription database
- Non-exclusive basin studies
- Proprietary data loading and hosting



Research

- Commitment to research for joint industry and academia collaborations

Building the industry's first PVT database for the North Sea, Norwegian Sea and Barents Sea

GeoMark Research is actively building the industry's first PVT database for the North Sea, Norwegian Sea and Barents Sea to provide a platform to store, access, review and interrogate technically reviewed PVT reports and associated data.

Why GeoMark Research?

Over the past 30 years, GeoMark Research has gained significant experience in the collection and storage of laboratory measured subsurface data and has built the industry's largest Rock, Fluid and PVT database (RFDbase). At the time of writing this document, GeoMark Research has digitized, technically reviewed and uploaded over 11,000 PVT reports globally. Many of these reports are licensed by global exploration companies

What's the goal?

The Norwegian Offshore Directorate, formally Norwegian Petroleum Directorate (NDP), houses 100's to 1000's of PVT reports varying in vintage and file type. Figure 1 presents all reported wells across the North Sea and Norwegian that may host full or partial PVT data.

As part of GeoMark Research's global PVT databasing efforts, a small selection of this data is already available in RFDbase.

As exploration and infill development programs continue to increase across this region, GeoMark Research has committed to locating, digitizing, technically reviewing and uploading PVT reports and data to RFDbase.

Access to this data is available via a subscription which provides continuous updates of available PVT data.

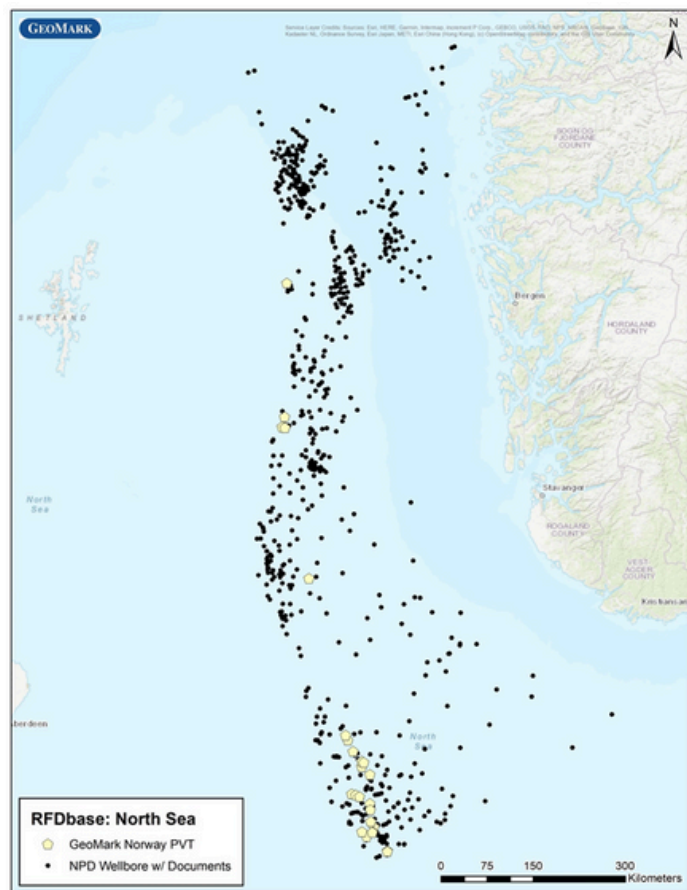


Figure 1. Map highlighting uploaded PVT data and potential PVT data sites within the NOD

Applications of a PVT database for the North Sea, Norwegian Sea and Barents Sea

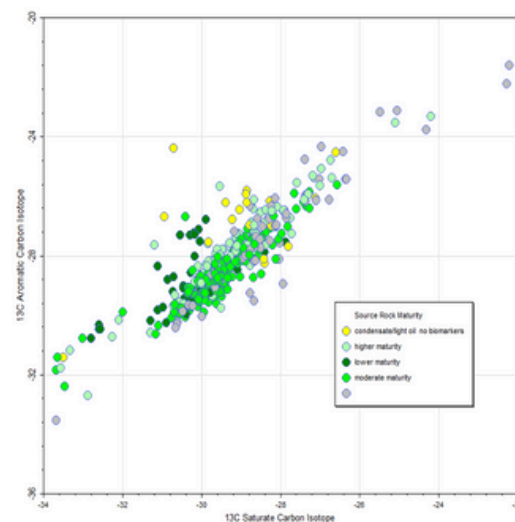
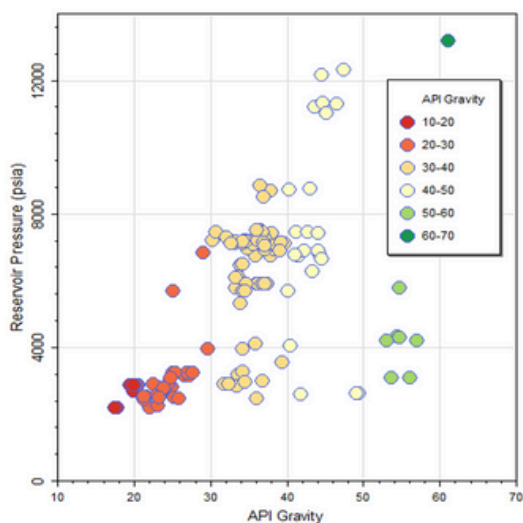
Accurate Fluid Characterisation: Providing information about the pressure, volume and temperature behavior of reservoir fluids, including oil, gas and water. Essential for reservoir engineers and geoscientists to understand fluid properties, behavior and phase behavior under different conditions.

Reservoir Simulation and Modeling: Serves as a valuable input for reservoir simulation and modeling. Accurate PVT data helps in developing reliable reservoir models, optimizing production strategies, estimating recoverable reserves and predicting reservoir performance. It enhances the accuracy of reservoir simulation, leading to better decision-making and improved field development plans.

Production Optimization: By incorporating PVT data into reservoir simulation models, operators can optimize production strategies. The database enables the identification of optimal well completion techniques, production rates and pressure management strategies. It aids in designing production facilities and determining the most efficient and cost-effective production methods for maximising hydrocarbon recovery.

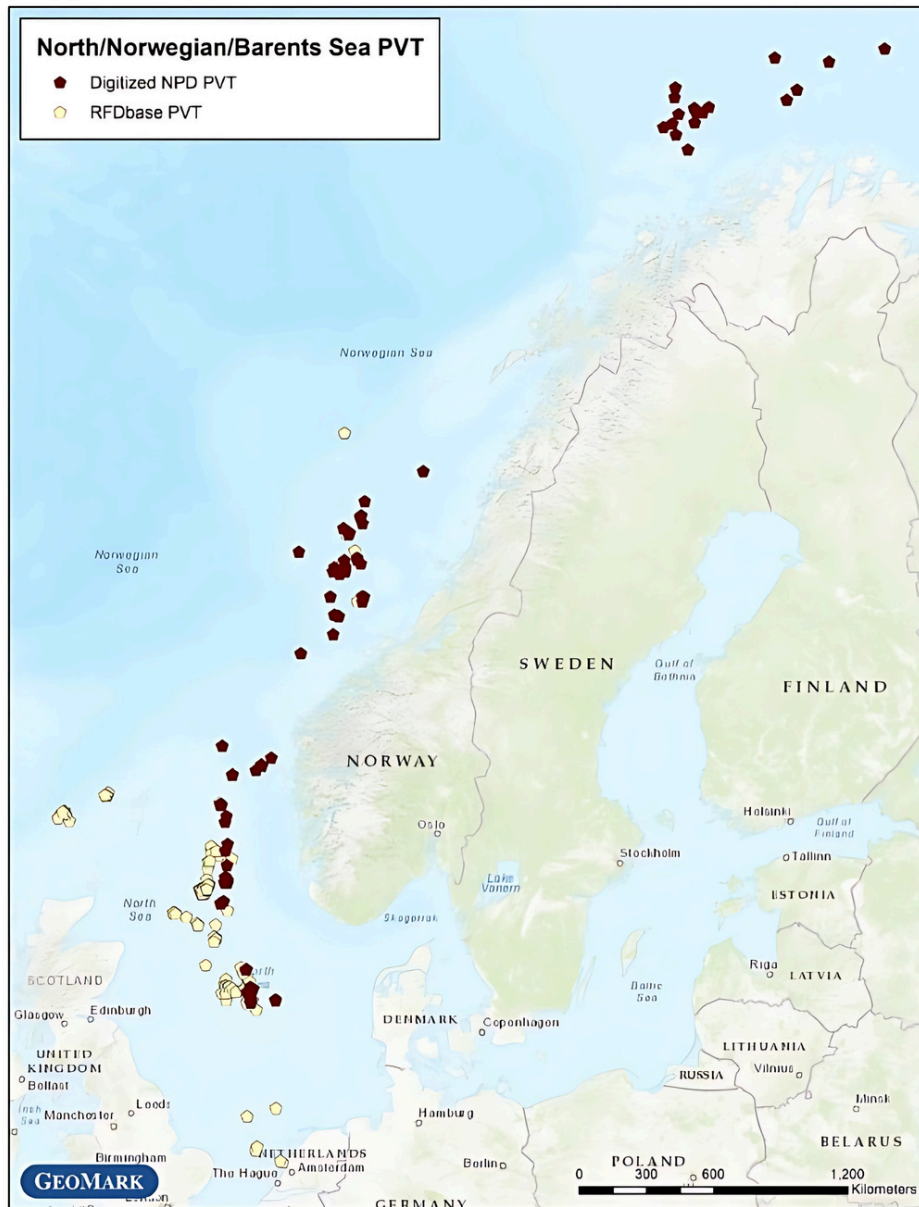
Improved Field Economics: Accurate PVT data enables operators to estimate reserves more accurately, optimise production rates and design efficient production facilities.

CO2 sequestration: Modeling of CO2 phase behavior at different pressures and temperatures and understanding the formation flow and capacity.



PVT data loading efforts so far

At the start of 2024, GeoMark Research's PVT data team started the process of identifying, downloading, digitizing and technically reviewing a selection of PVT data reports across the North Sea and Norwegian Sea. Immediate focus was given to regions of known infill drilling activity and areas where GeoMark Research's PVT data was missing. As the year progresses, the PVT data team will continue to identify and load quality PVT data across this region. The plan is to exhaust all current public PVT data resources to ensure both geographic and vertical representation of fluid phase properties.



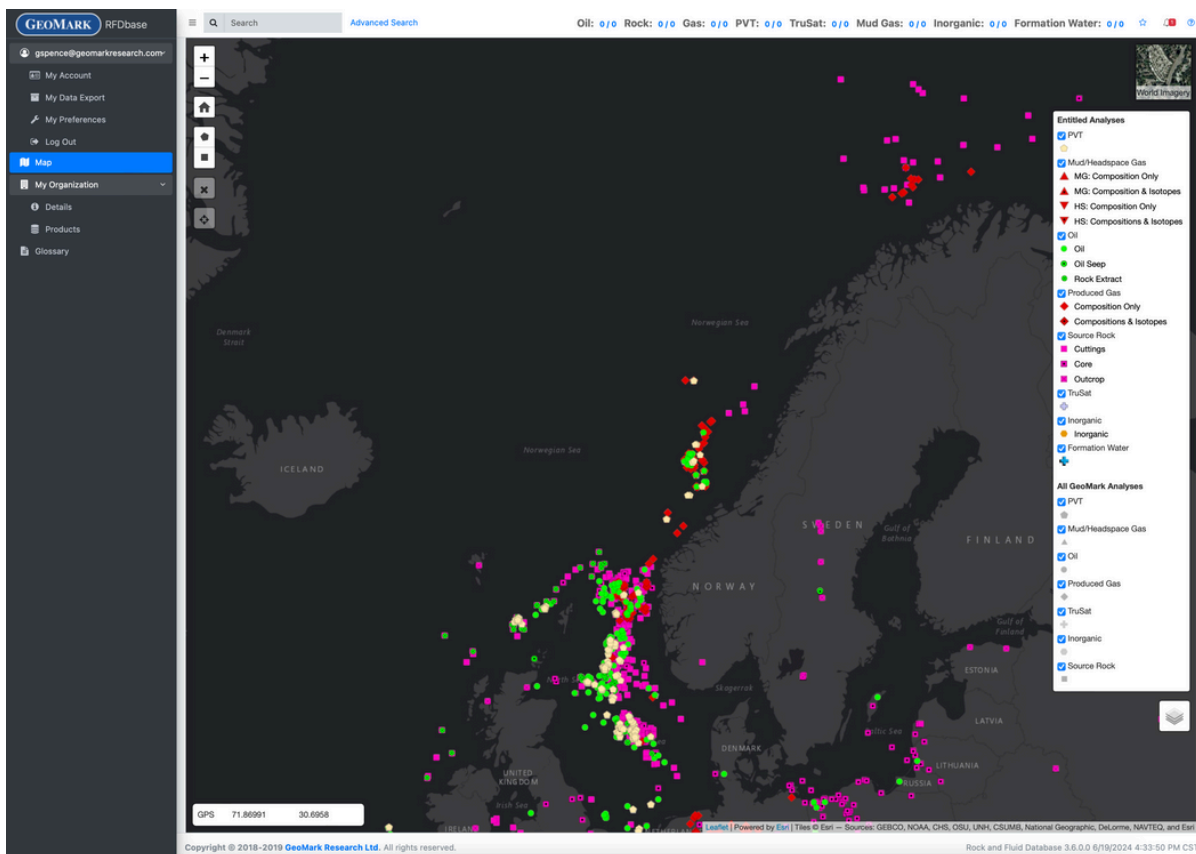
720+ PVT reports available now

344 Wells

RFDbase - An online platform to easily access quality PVT, Geochemistry and Gas data

GeoMark Research’s RFDbase platform was designed by geochemists, geologists and engineers for geochemists, geologists and engineers. Quality data, logical data exploration, reporting and data export was at the heart of RFDbase development and continues today with the inclusion of new data types. RFDbase provides data access to subscribing companies anywhere in the world, at any time and by anyone. Access is by organization which allows infinite company subscribers at no additional or hidden costs. Request demo access www.rfdbase.com/web/

GeoMark Research also offers proprietary data loading to provide a centralized data location for your PVT, geochemistry, water and gas data.



Map based search
24/7 online access
Standardised data

Text based search
Unlimited users
Proprietary data load

Evergreen
Proven
Trusted

PVT Data Capture & Reporting

Our data capture is inclusive of all associated PVT measurements to ensure the most complete PVT report is provided. The table below presents the PVT data types that are captured and reported within our reports.

Section	Features
Report Summary	Well, Report & Sample Information, Reservoir Properties, Key data points from the study (SSF, CCE, DL, CVD, MSST, Visc, Comp)
Sample History	Onsite Field Data (IDs, Production Data, Opening, Restoration, Closing)
Sample Validation	Preliminary Lab QC (Opening; Restoration; Saturation Pressure; Flash Data; Air, Water, BS&W Content)
Compositional Analyses	Sample Type; Flashed, Separator, Overall, Mud Compositions (mol, wt); Flash Data; Recombination GOR; Fluid Groupings; Mud Contamination
Constant Composition Expansion (CCE)	Oil, Gas, and Mud Properties
Differential Liberation (DL)	Oil and Gas Properties and Compositions
Constant Volume Depletion (CVD)	Oil and Gas Properties and Compositions
Multi-Stage Separator (MSST)	Oil and Gas Properties and Compositions
Swelling	Swollen Fluid Properties and Compositions; Solvent Composition
Live Viscosity	Oil and Gas Properties
Stock Tank Viscosity & Density	Absolute & Kinematic Viscosity, Density
Stock Tank Properties	Wax, Asphaltene, Cloud & Pour Point, SARA, RVP, Acid Number, Content (S, V, Ni, Water)
Sulfur Speciation	Flashed, Separator, Overall Fluids (ppm-mol, ppm-wt, ppm-wtS)
Water Analyses	Cations, Anions, Organic Acids, Physical Properties; Flash Data; Flash Gas Compositions (mol, wt)
EoS Model Parameters	Model Meta Data; EoS, Viscosity, BIPI(0) & BIPI(T) Parameters

The image below provides an example of our PVT Detailed Sample Report from a Norwegian well.. Users can export or directly link (API connection) data in a standard and consistent format, ready for consumption into any preferred modeling or visualisation software.

PVT Sample NOR-048470

GEOMARK PVT Detailed Sample Report

Sample ID: NOR-048470 Country: Norway Site ID: NOR-002978
 Alias ID: GMR-NO-880801 Basin: Viking Graben Province Formation: Elise
 Data ID: NOR-PVT-002303 State/Province: North Sea MD (ft): 1422.9
 API / OMI Well Number: Well: 35211-2 Field: Vigje OBM Present: OBM Content (wt % STO):

Pedigree Information

Sample ID: NOR-048470 Status:
 Alias ID: GMR-NO-880801 GEOID:
 Client ID:
 Lab ID:
 Data ID: NOR-PVT-002303
 Report Name: NOR-048470
 Report Date: 01 Aug 1988
 Analysis Type: Lab Measured
 Version #: 1
 Country: Norway
 State/Province: North Sea
 USGS Province: North Sea Graben
 Basin: Viking Graben Province
 Sub-Basin:
 Well/County:
 Field: Vigje
 API / OMI Well Number: 35211-2
 Well: 35211-2
 Location:
 Operator: Mobil Exploration Norway INC
 Formation: Elise
 MD (ft): 1422.9
 TVD (SS) (ft):
 Water Depth (ft): 1225.5
 Well Total Depth (ft): 13205.4
 Latitude: 61.37402
 Longitude: 3.49871
 Datum: ED50

Company Information

Requesting Company: Status:
 Analytical Laboratory: GEOID:
 Laboratory Location:
 Laboratory Type: Field

Reservoir Fluid Analysis

	Measured	Decomnated
N2:	0.88 mol%	
CO2:	3.52 mol%	
NDS:	0.00 mol%	
C1:	72.72 mol%	
C2:	6.98 mol%	
C3:	4.26 mol%	
iC4:	0.63 mol%	
nC4:	1.57 mol%	
iC5:	0.48 mol%	
nC5:	0.62 mol%	
C6:	0.70 mol%	
C7 +:	7.64 mol%	
C7 + H9C:	91.00 g/mol	
C7 + Density:	0.741 g/cm3	
Sec. Fluid H9C:	34.35 g/mol	
CBM Content:	wt% BF	

Reservoir Information

Reservoir Temperature: 272 °F
 Reservoir Pressure: 7385 psia
 Reservoir Age:
 Reservoir Fluid Type: Gas

Reservoir Condition Properties

Density: g/cm3
 Viscosity: cP
 Compressibility: 1/psi
 Separator PVP: MWB

Saturation Condition Properties

Sat. Pressure: 7300 psia
 Density: 1.282 g/cm3
 Viscosity: 0.055 cP
 Compressibility: 1/psi

Sampling Information

Sample Type: DST - Sep
 Sampling Company:
 Cylinder Used in Study: A182115 + A 10746
 Sample Used in Study: R55

Flash Comparison

Flash Comparison Experimental Procedure	Gas Oil Ratio wt%EO	Saturated PVP MWB	Vapor Gravity Air = 1.0	API Gravity °API

Mud-Free Estimated Properties

Single-Stage GOR:	wt% STO

Stock Tank Oil Properties

CBM Present:	wt% STO

Flash Comparison

Rg Dry		Rg (or Rgnet)	
Vapor (Pres or Pstat, Tstat) / VStd gas (from sep)		Vapor (Pres or Pstat, Tstat) / VStd gas	
R3/mud	Relative to Pres or Pstat	R3/mud	Relative to Pres or Pstat

Generalised workflow

Data import



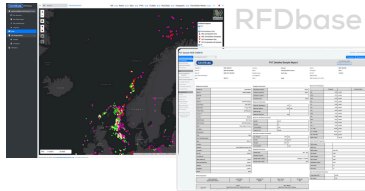
- Template file
- Original PVT report
- Supporting files



JSON



Data visualisation



Data export



- Data loading template
- Original PVT report
- Supporting files



- Summary PVT data
- Unlimited wells
- One row per record



- Calsep Templates



JSON



Data application



Pricing

Reach out to sales@geomarkresearch.com for more information about pricing.

GEOMARK



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