SOFTWARE RELEASE NOTES

dbMap/Web Version 2019.2

Overview

dbMap/Web 2019.2 sees the introduction of new Well Core Analysis functionality as well as further enhancements to the Petrosys Well Log Viewer with the addition of templates, display of formation tops and cross-plots.

Well Core Coal Analysis

Support for storing detailed information has been added for Samples and several analysis types: Adsorption isotherm, Desorption, Gas composition, Isotope, Petrology, Proximate, Rock evaluation, Rock mechanics and Ultimate.

In addition to Data management functionality such as import, creation of new records, editing existing records and deleting, there are also many calculations automatically performed on screens including ratios and summing of values.

The functionality has been developed on top of the PPDM 3.9 Sample Analysis module and the attributes for each analysis type can be tailored by clients.

A subset of the analysis screens is shown below.

Adsorption Isotherm Analysis

Isotherm Pressure Region		Isotherm BHT temp	1.000 degC
Isotherm Reservoir Pressure Eqn:M		Isotherm BHT depth (KB MD)	1300.000 m
Isotherm Reservoir Pressure Eqn:C		Time since circulation stopped	2.000 hr

Methane (CH_4) Isotherm

Sample mass	1104.000 g	Isotherm moisture & ash type	Air Dried
Isotherm helium grain density	1.000 g/cm3	Isotherm Langmuir volume raw	6.000 cm3/g
Isotherm moisture	2.000 %	Isotherm Langmuir volume DAF	7.000 cm3/g
Isotherm ash	3.000 %	Isotherm Langmuir pressure	8.000 MPa
Isotherm volatiles	4.000 %	Isotherm experimental temperature	9.000 degC
Isotherm fixed carbon	5.000 %	Isotherm remarks	Methane results

Ethane (C_2H_6) Isotherm

Desorption Analysis

Desorption problem?	Y
Problem description	Test problem

Express lab issues	Yes	Lost gas	40.000 %
Sorption time	1.000 hr	Diffusivity	7.000 1e6/s
Q1 raw	2.000 m3/t	Q1 DAF	8.000 m3/t
Q2 raw	3.000 m3/t	Q2 DAF	9.000 m3/t
Q3 raw	4.000 m3/t	Qt DAF	10.000 m3/t
Qt raw	5.000 m3/t	Q3 DAF	11.000 m3/t
Reservoir test temperature	6.000 degC		

Remark	Place holder additional information

Gas Composition Air Free Analysis

Sample A Analysis

Sample ID	First sample
Time sample taken	0.250 day
Desorbed gas (Q1+Q2, Raw) at time	1.000 m3/t
C1	2.000 mol%
C2	3.000 mol%
C3	4.000 mol%
iso C4	5.000 mol%
n C4	6.000 mol%
neo C5	7.000 mol%
iso C5	8.000 mol%
n C5	9.000 mol%
C6	10.000 mol%
CO2	11.000 mol%
N2	12.000 mol%
Air	13.000 mol%

Sample B Analysis

Sample ID	
Time sample taken	day
Desorbed gas (Q1+Q2, Raw) at time	m3/t
C1	mol%
C2	mol%
C3	mol%
iso C4	mol%
n C4	mol%
neo C5	mol%
iso C5	mol%
n C5	mol%
C6	mol%
CO2	mol%
N2	mol%
Air	mol%

Sample C Analysis

Sample D Analysis

Gas Isotope Analysis

Isotope Sample A Analysis

Sample ID	First sample
Date sample taken	31-May-2019
Time sample taken	0.250 day
Fluid type	Gas
Fluid source	Desorption
delta13C CH4	1.000 ppt VPDB
delta13C C2H6	2.000 ppt VPDB
delta13C C3H8	3.000 ppt VPDB
delta13C i-C4H10	4.000 ppt VPDB
delta13C n-C4H10	5.000 ppt VPDB
delta13C neo-C5H12	6.000 ppt VPDB
delta13C i-C5H12	7.000 ppt VPDB
delta13C n-C5H12	8.000 ppt VPDB
delta13C C6H14	9.000 ppt VPDB
delta13C CO2	10.000 ppt VPDB
delta DCH4	11.000 ppt VPDB

Isotope Sample B Analysis

Sample ID	Second sample
Date sample taken	31-May-2019
Time sample taken	0.500 day
Fluid type	Gas
Fluid source	Desorption
delta13C CH4	1.000 ppt VPDB
delta13C C2H6	2.000 ppt VPDB
delta13C C3H8	3.000 ppt VPDB
delta13C i-C4H10	4.000 ppt VPDB
delta13C n-C4H10	5.000 ppt VPDB
delta13C neo-C5H12	6.000 ppt VPDB
delta13C i-C5H12	7.000 ppt VPDB
delta13C n-C5H12	8.000 ppt VPDB
delta13C C6H14	9.000 ppt VPDB
delta13C CO2	10.000 ppt VPDB
delta DCH4	11.000 ppt VPDB

Isotope Sample C Analysis

Isotope Sample D Analysis

Petrographic Analysis

Vro Max	1.000 %		Vro Random	5.000 %
Alginite Reflectance	2.000 %		VRE Alginite	6.000 %
Bitumen Reflectance	3.000 %		VRE Bitumen	7.000 %
Bituminite Reflectance	4.000 %		VRE Bituminite	8.000 %

Group	%	%mmf	Sub group	%	%mmf	Macerial	%	%mmf	Sub macerial	%	%mmf
Vitrinite	1.000	2.000	Telovitrinite	10.000	12.000	Textinite	1.000	5.000			
						Texto-ulminite	2.000				
						Eu-ulminite	3.000	7.000			
						Telocollinite	4.000				
			Detrovitrinite	18.000	9.000	Attrinite	5.000				
						Densinite	6.000	9.000			
						Desmocollinite	7.000				
			Gelovitrinite	27.000	0.000	Corpogelinite	8.000				
						Porigelinite	9.000				
						Eugelinite	10.000				
Liptinite	3.000	4.000				Sporinite	11.000				
						Cutinite	12.000	20.000			
						Resinite	13.000				
						Liptodetrinite	14.000				
						Alginite	15.000		Telalginite	16.000	
									Lamalginite	17.000	8.000
									Non-fluorescing Alginite	18.000	
						Suberinite	19.000				
						Fluorinite	20.000				
						Exsudatinite	21.000				
						Bituminite	22.000				
Inertinite	5.000	6.000	Telo-inertinite	72.000	0.000	Fusinite	23.000				
						Semifusinite	24.000				
						Funginite	25.000				
			Detro-inertinite	53.000	0.000	Inertodetrinite	26.000				
						Micrinite	27.000				
			Gelo-inertinite	28.000		Macrinite	28.000				
Other / Non Plant Organic Matter						Zooclasts	29.000				
						Bitumen	30.000				
						Pyrobitumen	31.000				
						Organoclausts	32.000				
Minerals											
Mineral description											

Proximate Analysis

Relative density	1.000 g/cm3	Volatile matter	4.000 %
Moisture	2.000 %	Fixed carbon	5.000 %
Ash	3.000 %	Proximate moisture & ash type	Equilibrium

Remark	Placeholder Proximate Analysis remark

Rock Evaluation Analysis

Preparation method	Solvent Extracted	Sample lithology	Coal
Analysis method	Rock Eval 6 (Pyrolysis) / Leco (TOC)	Weight after acid wash	1104.000 g
TOC	1.000 wt %	HI [Hydrogen index]	300.000 mg/g/wt %
S1-volatile hydrocarbon content	2.000 mg/g	OI [Oxygen index]	400.000 mg/g/wt %
S2-HC generating Potential	3.000 mg/g	P1-production index	0.400
S3-organic CO2	4.000 mg/g	S1+S2 potential yield	5.000 mg/g
PC [Pryolysized carbon]	5.000 mg/g	S2 / S3	0.750
T max	6.000 degC	S1 *100 / TOC	200.000
Carbonate as CaCO3 equivalent	7.000 wt %	Interpreted kerogen type	Type IV
Drilling fluid	Mud		

Remark	Placeholder remark

Rock Mechanics Analysis

Analysis type	As Received	Cohesion	8.000
Test condition	TBA	Plug orientation	Horizontal
Bulk density	1.000 g/cm3	Dynamic shear modulus	9.000 psi
Confining pressure	2.000 psi	Dynamic bulk modulus	10.000 psi
Compressive strength	3.000 psi	Dynamic Youngs modulus	11.000 psi
Static Youngs modulus	4.000 psi	Dynamic Poissons ratio	12.000
Static Poissons ratio	5.000	Ultrasonic wave velocity shear	13.000 ft/sec
Ultrasonic wave velocity compressional	6.000 ft/sec	Tensile strength	14.000 psi
Unconfined compressive strength (UCS)	7.000 psi	Effective mean stress (confining)	15.000 psi

Remark	Placeholder remark

Ultimate Analysis

Sample preparation	Kerosene	Total sulfur	7.000 %
Carbon	1.000 %	Organic sulfur	8.000 %
Hydrogen	2.000 %	Inorganic sulfur	9.000 %
Nitrogen	3.000 %	Atomic H/C	23.833
Sulfur	4.000 %	Atomic O/C	3.753
Oxygen	5.000 %	Atomic S/C	1.498
Iron	6.000 %	Atomic N/C	2.572
		Atomic S(organic)/C	2.997

Remark	Placeholder remark

Well Log Viewer Enhancements

The new integrated well log viewer introduced in dbMap/Web 2019.1 has been further-improved, adding several new features:

Templates

Support for user-defined well log templates which incorporate track and curve layouts and styles. Once a well log view is configured, it can be saved as a template. Templates can be applied to any well log and provide a quick-and-easy method of displaying log curves with a consistent layout and style. Quickly switch between different views of your log data using templates.

Formation Tops

Added support for displaying formation tops from the database in a separate track and optionally across all tracks.
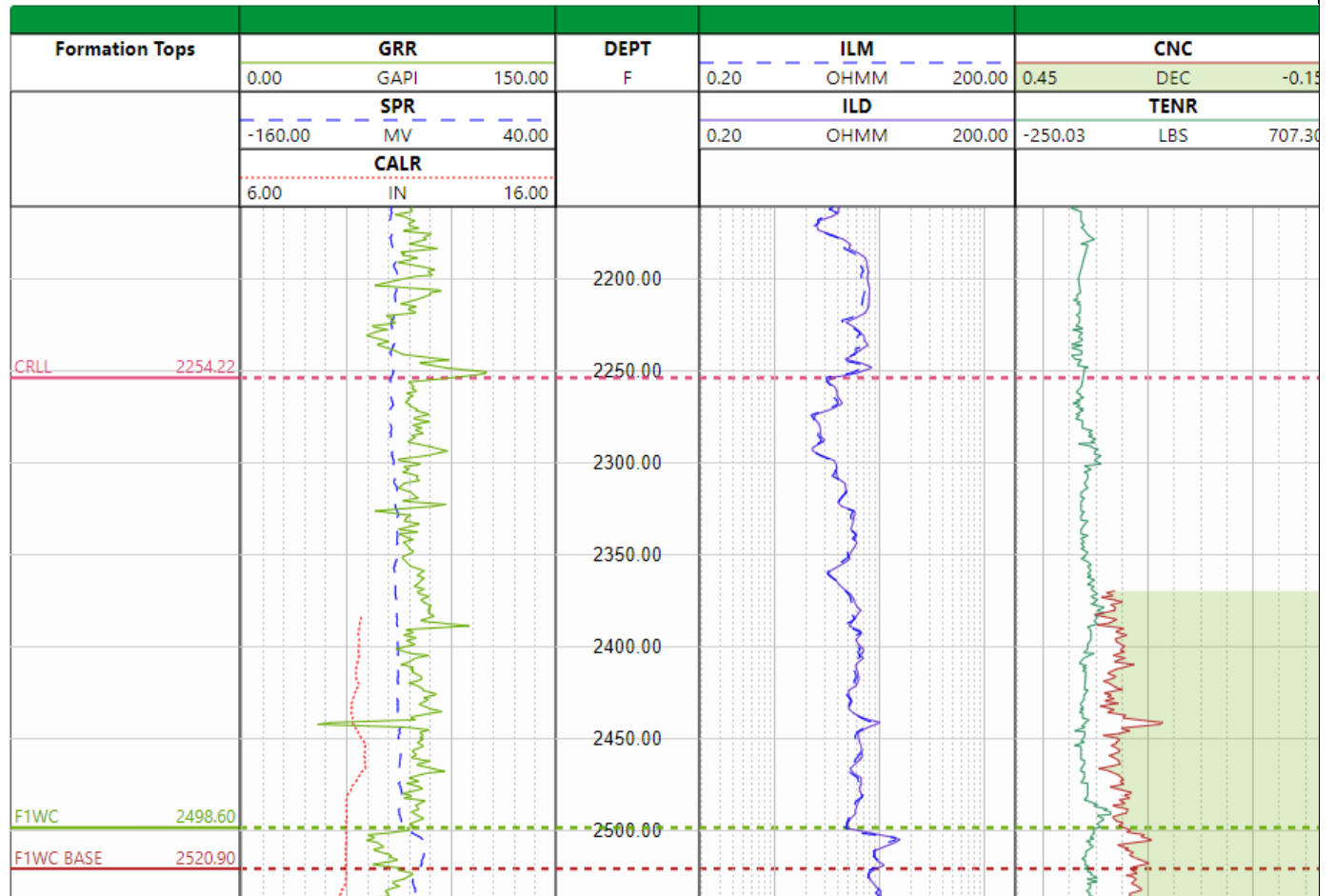
Cross-plots

A new display mode has been added to show the well log data in a cross plot. The cross-plot mode supports customizable axes and line of best fit calculations.
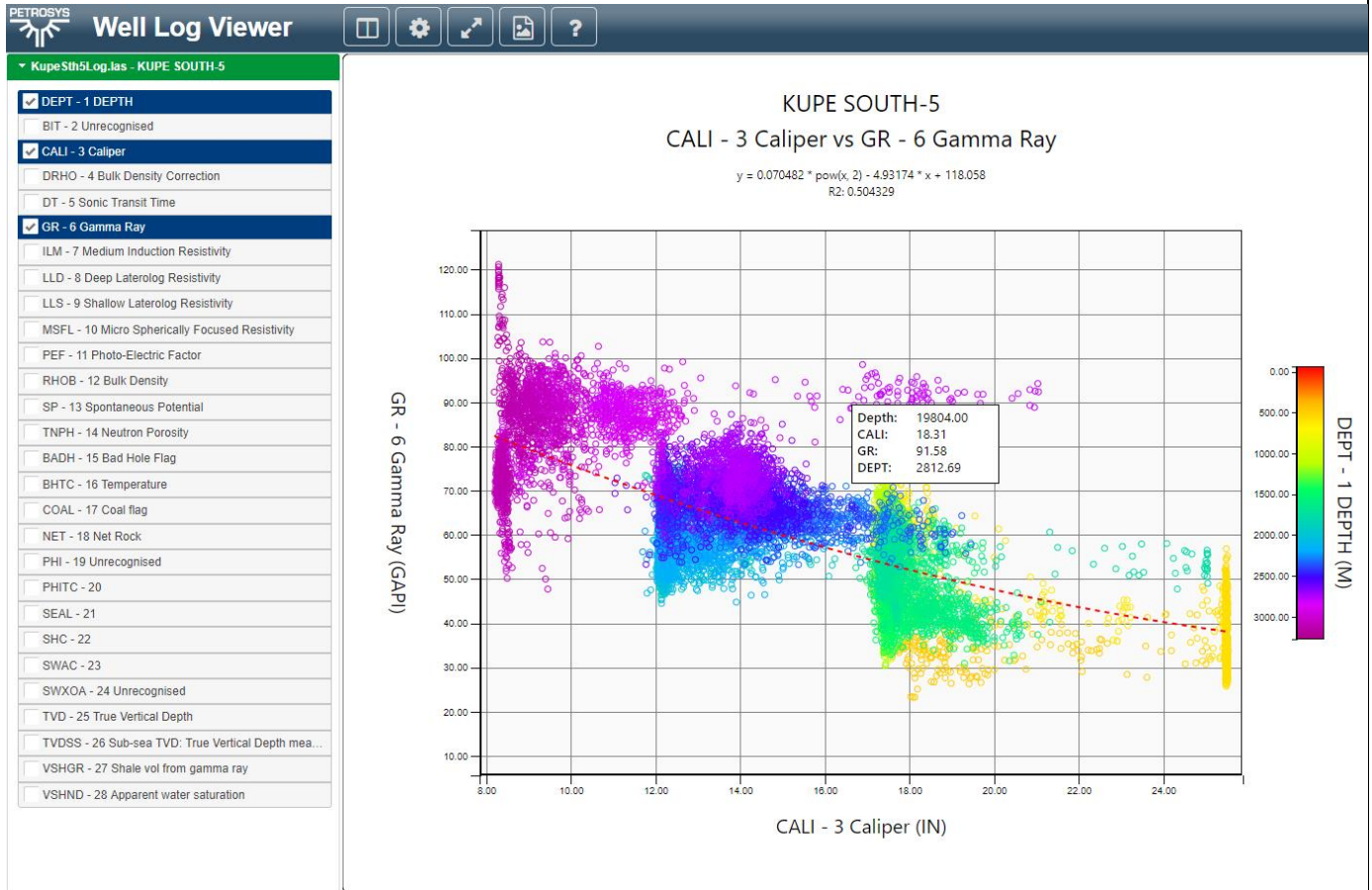
Wrapping

Well log curve data can optionally be wrapped to show the extents of data spikes. Up to two levels of wrapped data can be displayed.

Other Enhancements

• Support for selecting from multiple frames of DLIS data.
• The Well Log Viewer composite and cross-plot displays can now be exported to a PNG image file with a single click.
• Reverse a curve's display range with a single click.

Overview

dbMap/Web 2019.1 sees the introduction of the Petrosys Well Log Viewer as well as a Well Failure Analysis module and Common Risk Segments polygons support for PLDB.

Well Log Viewer

A new integrated well log viewer has been added to dbMap/Web which provides a quick and easy method to interactively view the well log curves within catalogued LAS and DLIS files.
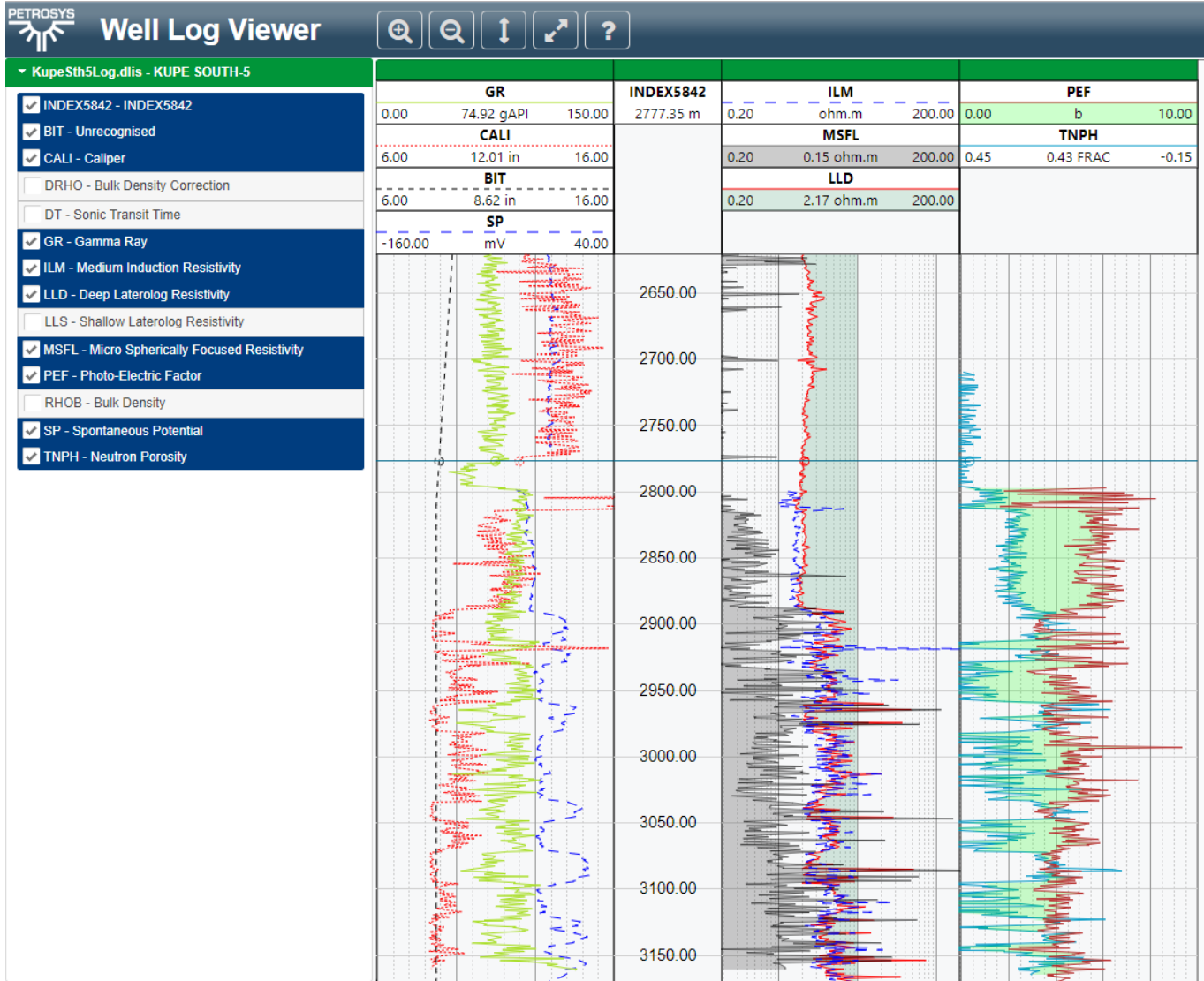
The new well log viewer provides the following features:

- Support for catalogued LAS and DLIS files.
- Interactive display of multiple tracks.
- Interactive display of multiple curves per track.
- Linear and logarithmic track value scales.
- Modify curve line style (color, style, width, opacity).
- Modify curve left and right fill styles (color, opacity, fixed limit, fill between curves).
- Modify major and minor graticule display styles (color, style, width, opacity, frequency).
- Modify curve display range (left and right values).
- Interactively re-order tracks and curves using drag and drop.
- Zoom, pan and cursor tracking.
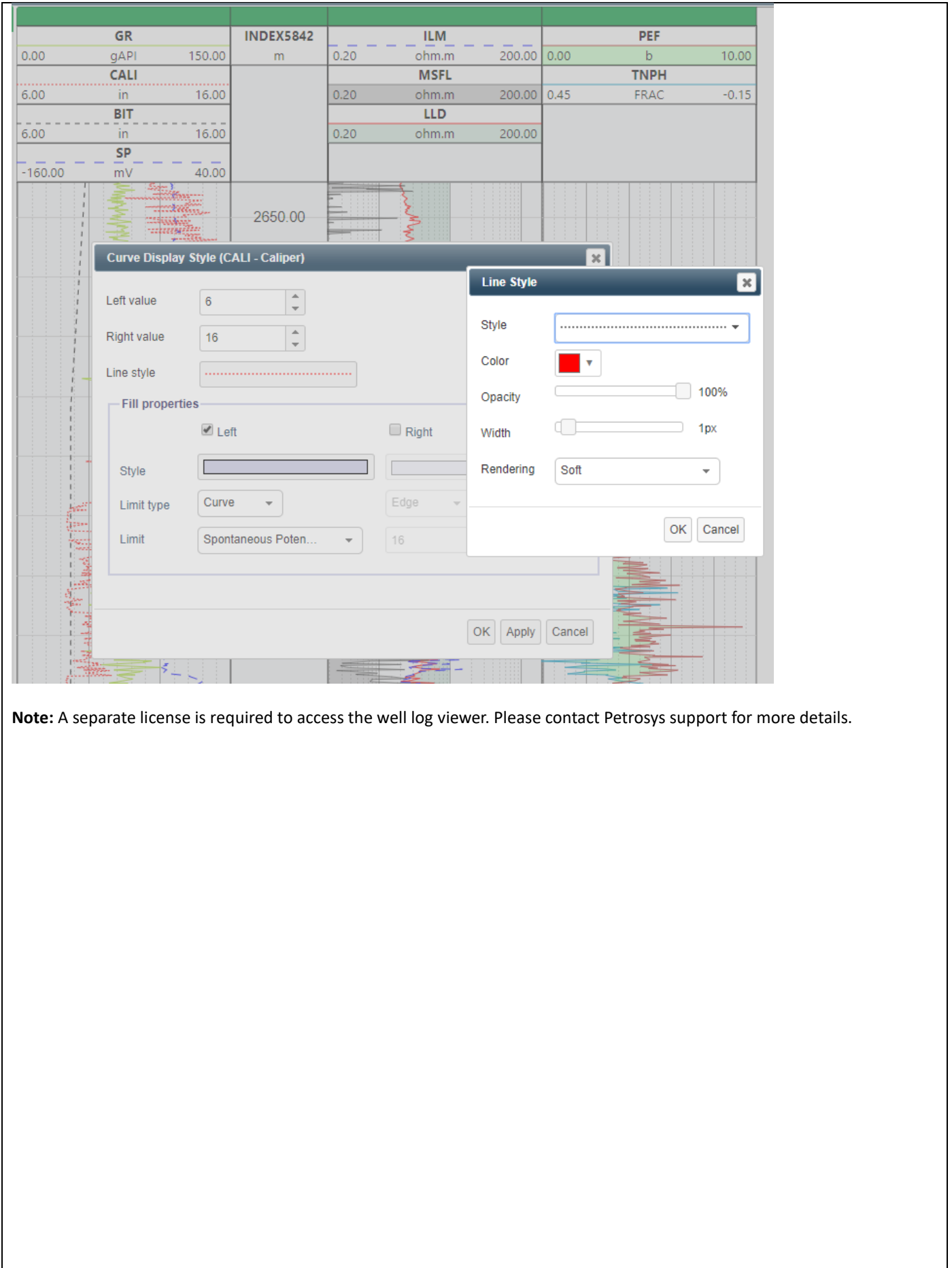
Note: A separate license is required to access the well log viewer. Please contact Petrosys support for more details.

Well Failure Analysis

A new module to conduct 'Well Failure Analysis' is now available. This module allows companies to analyse data from existing wells to determine where plays have been successful and unsuccessful. The reasons for the failure in the unsuccessful plays can be queried and mapped, allowing better decisions or research to be conducted ahead of future wells.

Filters and Queries

Users can filter on specific play names and high level information about where success/failure exists and the reasons for this failure.

In addition, more detailed queries can be run, for example; to identify which wells within a given play(s) have failed due to a particular play element.

Source Analysis

If source data exist, this can be stored against the well to indicate maturity in a given area.

| Well Summary | Source Analysis 1 | Temperature 2 | Pressure 1 | Play Analysis 5 |

▼ Source analysis : Kimmeridge, 152.1 Ma, Kimmeridgian, Kimmeridge Clay Fm, 200, 113, 5.6, 400, 0.6, Restricted Shallow Marine, API

⚙ ↔ ⬇ 📊 ┊ ✚ New Source analysis

	Source rock	Formation	Top age	Gross thickness	Net thickness	Average TOC	Hydrogen index	Maturity (VR)	Facies	Source
1	Kimmeridge	Kimmeridge C	152.1 Ma, Kimmeridgian	200	113	5.6	400	0.6	Restricted Shallow Marine	API

Temperature

Temperature measurements and calculated geothermal gradients can also be stored.

| Well Summary | Source Analysis | Temperature 2 | Pressure 1 | Play Analysis 5 |

▼ Temperature : 3168, 93.1, , 42, GEOVIC

⚙ ↔ ⬇ 📊 ┊ ✚ New Temperature

	Depth	Temperature	Temperature (corrected)	Geothermal gradient	Source
1	3168	93.1		42	GEOVIC
2	4024	129.1		42	GEOVIC

Pressure

If pressure has been measured within encountered fluids, this too can be stored within the module

| Well Summary | Source Analysis | Temperature 2 | Pressure 1 | Play Analysis 5 |

▼ Pressure : 3000, 3000.00045, Oil, GEOVIC

⚙ ↔ ⬇ 📊 ┊ ✚ New Pressure

	Depth	Pressure	Fluid type	Source
1	3000	3000.00045	Oil	GEOVIC

Play Analysis

One or more of the plays the well has penetrated can be analysed. The presence and effectiveness of charge, reservoir, seal and trap are stored. More detailed information about the play, such as lithology properties, are also captured.

| Well Summary | Source Analysis 1 | Temperature 2 | Pressure 1 | Play Analysis 5 |

▼ Play analysis : Plio_Piacen_Neog1 (Success)

⚙ ↔ ⬇ 📊 ┊ ✚ New Play analysis

	Play name	Series	Top age	Base age	Charge	Reservoir	Seal	Trap
1	Plio_Piacen_Neog1	Pliocene	2.6 Ma, Piacenzian		Present	Present + effective	Present + effective	Present
2	MioL_Burd_Serr_Sst_Neog2	Lower Miocene	11.6 Ma, Serravallian	16 Ma, Burdigalian	Present	Present + effective	Present + effective	Present
3	Eoc_Pria_Carb_Palg1	Eocene	33.9 Ma, Priabonian		Absent	Present + effective	Absent	Absent
4	Eoc_Bart_Sst_Palg2	Eocene	37.8 Ma, Bartonian		Present	Uncertain	Present + effective	Absent
5	Eoc_Lut_Sst_Palg3	Eocene	41.2 Ma, Lutetian		Present	Absent	Present + effective	Uncertain

Well Failure Analysis in PRO

Stop-light style displays, incorporating success and failure analysis results for wells are now even more easily created inside Petrosys PRO. This capability makes it very easy to visualise and analyse risk spatially.
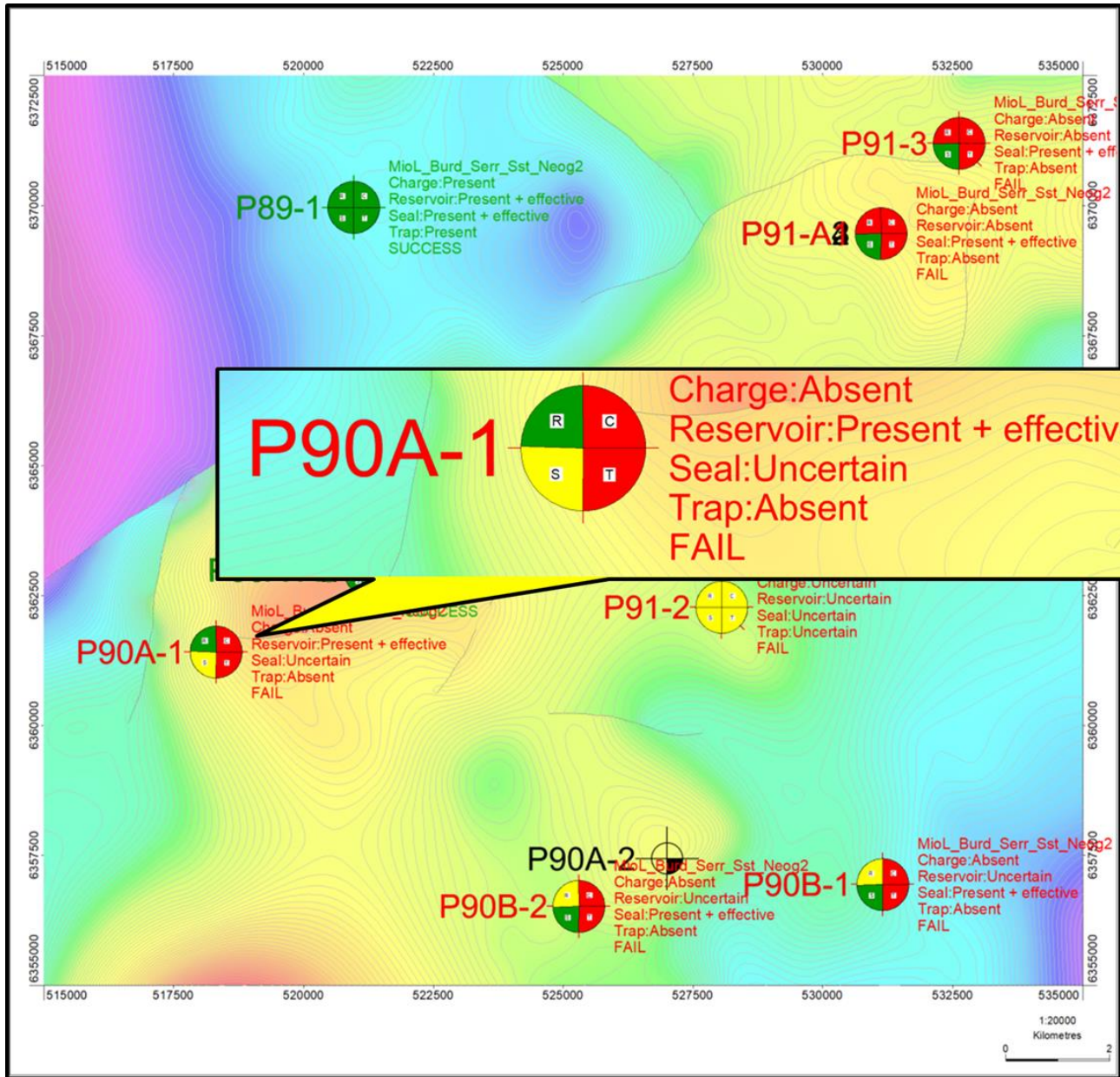
PDF Reporting

In addition to *displaying* the Well Failure data, it can also be analysed through the easy creation of PDF reports

Prospects & Leads

Common Risk Segments

Petrosys Prospects & Leads module now supports storing Common Risk Segment (CRS) polygons against play interval chance factors and using spatial comparison with the Prospect or Target polygon to determine the appropriate Play chance factors to use in the resource computation.

The CRS polygons are expected to have an attribute defining the risk for each polygon, and can be loaded into the database using the Petrosys PRO Spatial Data Translator, from data sources such as shape files exported from GIS-PAX Player software.
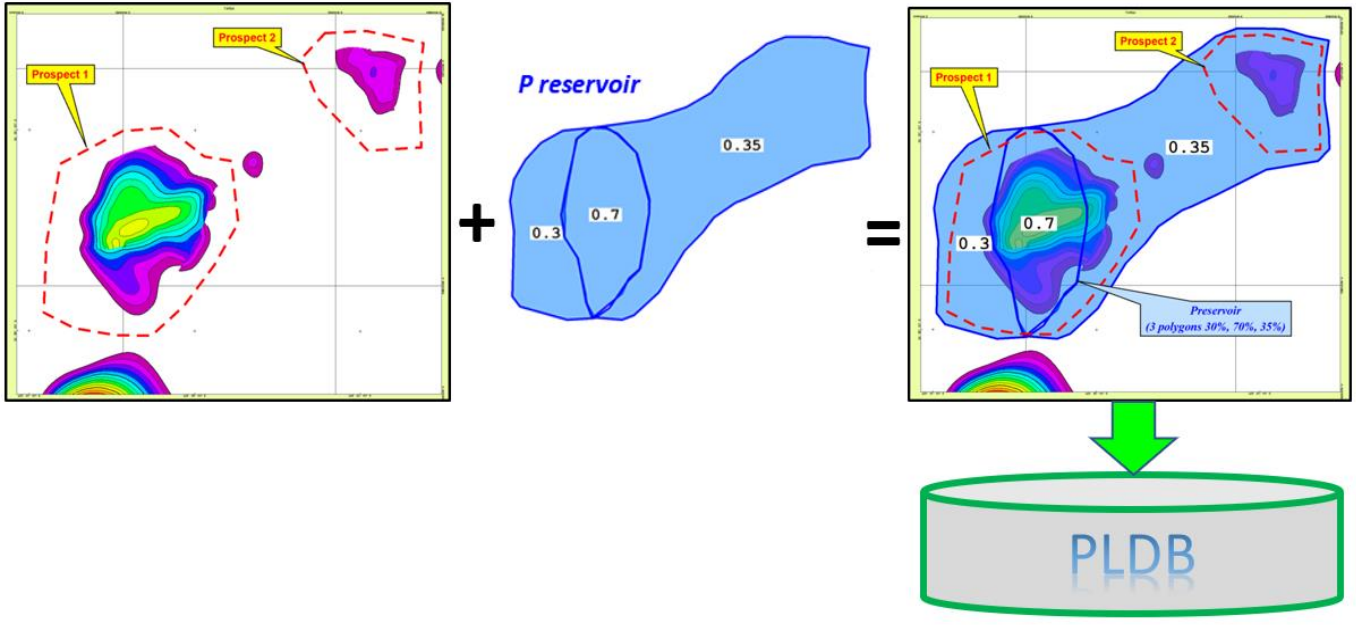
Detailed Release Notes Summary dbMap/Web 2019.2

Enhancements

dbMap/Web - Client

74341   PLDB activated for Origin

dbMap/Web - General

72863   Core Coal Analysis

73476   Well Log Viewer - Enhancements

74367   Well Perforation data loader extended to support additional columns

74521   Well Failure Analysis - Enhancements to data loading in 2019.2

dbMap/Web - PLDB

69405   PLDB - Size of distribution variable values has been increased

72682   Prospect roll-up now produces more consistent results for Prospects with single targets

Detailed Release Notes Summary dbMap/Web 2019.2

Bug Fixes

dbMap/Web - PLDB

74424   Correct play probability factors are now shown for target scenario resource computations

74305   Performance of PLDB_TARGET_POLYS view improved

Petrosys Release dbMap/Web 2019.2
Detailed Release Notes

dbMap/Web - Client   Enhancements

PLDB activated for Origin   74341

PLDB functionality has been enabled.

dbMap/Web - General   Enhancements

Core Coal Analysis   72863

A new coal core analysis module has been added to our well functionality. The PPDM 3.9 Sample Analysis model is used to manage Samples as well as analysis for :

- Adsorption isotherm
- Desorption
- Gas composition
- Isotope
- Petrology
- Proximate
- Rock evaluation
- Rock mechanics
- Ultimate

Well Log Viewer - Enhancements   73476

A number of enhancements have been made to the Well Log Viewer introduced with dbMap/Web 2019.1.

Templates

Support for user-defined well log templates which incorporate track and curve layouts and styles. Once a well log view is configured, it can be saved as a template. Templates can be applied to any well log and provide a quick-and-easy method of displaying log curves with a consistent layout and style. Quickly switch between different views of your log data using templates.

Formation Tops

Added support for displaying formation tops from the database in a separate track and across all tracks.

Crossplots

A new display mode has been added to show the well log data in a cross-plot. The cross-plot mode supports customizable axes and line of best fit calculations.

Wrapping

Well log curve data can optionally be wrapped to show the extents of data spikes. Up to two levels of wrapped data can be displayed.

Other Enhancements

- Support for selecting from multiple frames of DLIS data.
- The Well Log Viewer display can now be exported to a PNG image file with a single click.
- Reverse a curve's display range with a single click.

Well Perforation data loader extended to support additional columns

74367

The well perforation data loader has been extended to support importing additional columns.

Well Failure Analysis - Enhancements to data loading in 2019.2   74521

A series of enhancements and fixes have been made to the data loading functionality for Well Failure Analysis data. Changes include:

➢ Reference Elevation values including 'SS' are now supported. In some cases they are automatically translated to standard values such as 'MSL'.
➢ The allowed length of Data source values has been increased
➢ More information is now provided when the data to be imported has invalid numbers
➢ Play analysis well test types are now automatically created if they don't already exist
➢ The allowed length of Well result has been increased.

dbMap/Web - PLDB   Enhancements

PLDB - Size of distribution variable values has been increased 69405

The size of PLDB resource computation distribution variable values has been increased to support analysis of larger areas.

Prospect roll-up now produces more consistent results for Prospects with single targets   72682

The Prospect rollup of target resources now produces more consistent results for prospects with a single target. Previously you could get slight differences in the Total MMBOE distribution values compared with the target's original values.

dbMap/Web - PLDB   Bug Fixes

Correct play probability factors are now shown for target scenario resource computations   74424

When creating a new Prospect target scenario resource computation, the Probability factors tab now shows the correct Play chance factors. Previously it just showed the total as 1.

Performance of PLDB_TARGET_POLYS view improved 74305

The performance of the database view PLDB_TARGET_POLYS has been significantly improved. Where previously it could take 5 minutes to select all records from the view, it now takes about 2 seconds.

Detailed Release Notes Summary dbMap/Web 2019.1

Enhancements

dbMap/Web - Client

73439	Geological Province changed to Basin in the wells tree filter (Santos)
73640	Row-based security has been added for Wells (Origin)
73537	Easting/Northing values are now shown on well header (Greymouth)
73429	Three new columns have been added to the view FRAC_SPOTFIRE_VW (Santos).
73879	Spotfire link updated to latest version of Sportfire (Santos)

dbMap/Web - General

73014	Well Failure Analysis
73193	The formation summary records are re-calculated when using the data loader
73475	Well log viewer
72845	Performance improvements have been made to the Well log curve summary report
73287	CQ batch job has been optimised and can now continue from previous run
72942	Dashboard pie charts have been changed to donut charts
72766	Performance improvements have been made to displaying panels by caching the buttons

dbMap/Web - PLDB

| 70509 | New tree filter options have been added for Onshore and Offshore |

Detailed Release Notes Summary dbMap/Web 2019.1
Bug Fixes

dbMap/Web - Client

73606   Catalogued items are recorded with the media type of Electronic file (Origin)
73365   Users with a full stop in their username can now use web mapping

dbMap/Web - General

73274   Lookups in the Advanced search query builder no longer cause the embedded browser in PETROSYS PRO to crash
73928   Aliases can now be created for Formations
74106   Well log browser screen - Depths now have a space comma instead of a space as the thousand separator

Petrosys Release dbMap/Web 2019.1
Detailed Release Notes

dbMap/Web - Client   Enhancements

Geological Province changed to Basin in the wells tree filter (Santos)
73439

"Geological province" replaced by "Basin" for consistency with SANTOS DATA HUB (PPDM).

Row-based security has been added for Wells (Origin)   **73640**

Row-based security, that uses the well's confidential_type column as been added for Origin.

Easting/Northing values are now shown on well header (Greymouth)
73537

The Well header panel how shows Easting/Northing values.

Three new columns have been added to the view FRAC_SPOTFIRE_VW (Santos).
73429

The three new columns added to the view FRAC_SPOTFIRE_VW are Closure Gradient, Pore Gradient and Adjusted KH.

Spotfire link updated to latest version of Sportfire (Santos)   **73879**

The link 'Laboratory Data (LIMS)' on the Well panel was updated to match the latest configuration of Spotfire.

dbMap/Web - Client   Bug Fixes

Catalogued items are recorded with the media type of Electronic file (Origin)
73606

A bug with cataloguing RM items has been fixed so they are categorised as 'Electronic file' Media type.

Users with a full stop in their username can now use web mapping   **73365**

Fixed a bug causing mapping to fail for users with a full stop (.) in their username.

dbMap/Web - General   Enhancements

Well Failure Analysis   **73014**

A new module to conduct 'Well Failure Analysis' is now available. This module allows companies to analyse data from existing wells to determine where plays have been successful and unsuccessful. The reasons for the failure in the unsuccessful plays can also be queried and mapped, allowing better decisions or research to be conducted ahead of future wells.

The formation summary records are re-calculated when using the data loader
73193

When importing records via the data loader, the formation summary records will be re-calculated.

Well log viewer 73475

A new integrated well log viewer has been added to dbMap/Web which provides a quick and easy method to interactively view the well log curves within catalogued LAS and DLIS files.

Note: A separate license is required to access the well log viewer. Please contact Petrosys support for more details.

Performance improvements have been made to the Well log curve summary report 72845

The well log curve summary report is now faster to generate.

CQ batch job has been optimised and can now continue from previous run 73287

Confidence and Quality (CQ) batch job has been optimised to be faster with a new option added to continue from the last run.

Dashboard pie charts have been changed to donut charts 72942

All pie charts on all dashboards in dbMap/Web have been changed to donut charts that are easier to read and now have colors that are consistent with other charts.

Performance improvements have been made to displaying panels by caching the buttons 72766

By caching the panel buttons, panels are faster to load and display on the web page.

dbMap/Web - General   Bug Fixes

Lookups in the Advanced search query builder no longer cause the embedded browser in PETROSYS PRO to crash 73274

A bug causing the embedded browser to crash when a user activated the advanced search and tried to select values from a lookup has been fixed; only the embedded (PETROSYS PRO) browser was affected.

Aliases can now be created for Formations 73928

A bug that prevented Aliases from being added to Formations has been fixed.

Well log browser screen - Depths now have a space comma instead of a space as the thousand separator 74106

Previously on the well logs browser screen, depths that were larger than 999 were displayed with a space as the thousand separator in lists. They are now displayed with a comma instead. For example depths are now formatted as 1,234.56

dbMap/Web - PLDB   Enhancements

New tree filter options have been added for Onshore and Offshore 70509

New filter options for Onshore and Offshore have been added to the tree filter for Prospects.