OPERATOR:	**STATOILHYDRO ASA**
WELL:	**15/9-F-15**
WELLBORE:	**15/9-F-15 B**
FIELD:	**VOLVE**
RIG:	**MAERSK INSPIRER**
COUNTRY:	**NORWAY**
DRILL PERMIT#:	**3068-P**

Report

WLC_PETROPHYSICAL_COMPOSITE_1.DLIS

Prepared by: **LOGTEK AS**
Date: **27-JUN-2014**

WLC_PETROPHYSICAL_COMPOSITE_1_INF_2

The WLC_PETROPHYSICAL_COMPOSITE_1.DLIS has been created in accordance with the NPD "**Guidelines to the Petroleum Regulations/REPORTING REQUIREMENTS FOR DIGITAL WELL DATA (Drilling Regulations, Section 12)**".
http://www.npd.no/Global/Norsk/5%20-%20Regelverk/Tematiske%20veiledninger/B_og_b_digital_rapportering_e.pdf

Purpose

To preserve 'specialist' composited data curves that may be created for a well but which do not fall into the 'standard' Composite (Section 3.1) or the 'Interpreted Data Input' data sets (described in Section 4.1). These data may have additional work done such as environmental or bed thickness corrections. This data set would normally be used by Petrophysicists. Operators are strongly recommended to report this data set in order to preserve value-added work.

Quality

Similar quality guidelines apply to the compositing work as described in Section 3.1.3 above. All work that is carried out must also be documented in an Information File.

Operationally, it is expected that both the 'standard' Composite Log and this 'specialized' Composite Log would normally be created in the same process but split into 2 data sets for reporting purposes. This ensures that the same depth shifting is applied to both data sets – an important quality requirement.

Content

Data that are not part of the 'Composited' or 'Interpretation Input' data sets. This may include:

- additional composited resistivity, NMR or other specialized curve data.
- composited data at high sampling rates for thin-bed analysis.
- a good guide is to include all 'presentation curves' from log prints (apart from those already included in the 'standard' composite). If quality curves such as Tension or Cable Speed are included (not a requirement), information must be included in the Information Files to show which data curves they refer to.

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MWD data plotted and verified to prints.

Depth units are meters.

Quality comments:
Wellbore 15/9-F-15 B was sidetracked from 15/9-F-15 A at 3185.0m (MD).
Wellbore 15/9-F-15 A was sidetracked from 15/9-F-15 at 1380.0m (MD).

MWD ECOSCOPE/SonicVISION BestDT, run 11:
Log Remarks:
All depths are referenced to driller's depth and checked at least every stand.
All data from tool memory.
All data acquired while drilling.
Gamma Ray measurement is environmentally corrected for mud weight, bit size, collar thickness and neutron activation.
Resistivity measurements are borehole compensated and require no environmental correction for borehole effect.
Bulk density is compensated for tool standoff/mud cake.
Neutron Porosity measurement is calculated with limestone matrix, and is environmentally corrected for bit size, mud weight, temperature, pressure, and mud salinity.
This well is an open hole sidetrack of 15/9-F-15 A kicked off from a cement plug at 3185.0m.
8 ½ in. section TD at 3497.0m.
SonicVISION BestDT Remarks:
Delta-T Compressional (DTCO) derived from receiver and transmitter arrays.
Delta-T Compressional (DTCO) processed using a 10-16 kHz filter.
Moving Average 5 noise cut filter applied.

Editing on WLC_PETROPHYSICAL_COMPOSITE_1.DLIS:
No editing applied.

Depth shifts:
Depth shift applied to MWD ECOSCOPE Spectrolith, run 11 and MWD ECOSCOPE/SonicVISION BestDT, run 11, in order to match MWD ECOSCOPE, run 10 (Wellbore 15/9-F-15 A).

Reference curve: GRMA (MWD ECOSCOPE, run 10 (Wellbore 15/9-F-15 A)).
Offset curve: GRMA (MWD ECOSCOPE Spectrolith, run 11).
Curves shifted: All curves.

Shift pairs used:

Observed:	Actual:
2608.360	2607.354
2620.266	2618.414
2639.748	2638.940
2646.089	2645.031
2652.757	2650.957
2684.210	2682.628
2702.445	2700.487

2718.571	2716.727
2728.182	2727.014
2752.239	2750.704
2762.611	2761.812
2783.075	2783.528
2790.045	2789.307
2796.423	2795.149
2802.455	2802.071
2812.549	2812.294
2818.149	2817.565
2828.015	2826.454
2832.962	2831.852
2841.040	2841.250
2853.187	2852.997
2868.082	2868.301
2871.251	2871.222
2885.573	2885.827
2898.606	2899.029
2916.040	2915.417
2930.059	2930.657
2946.653	2946.532
2970.330	2971.107
2978.408	2978.727
2984.616	2985.902
2997.545	2997.777
3018.356	3019.240
3029.437	3029.336
3044.870	3045.465
3056.367	3056.705
3060.337	3061.277
3065.870	3066.356
3087.834	3088.416
3100.394	3101.486
3125.827	3126.833
3133.978	3134.717
3146.816	3147.682
3153.344	3153.820
3184.671	3185.993
3191.073	3191.073

CURVE SUMMARY, file WLC_PETROPHYSICAL_COMPOSITE_1.DLIS:

File #1. Incr.: 0.1524

Main Services	Input Curve	Run no.	Date (start)	Interval (meters)	Merge depth (meters)	Depth shifted	Edited
MWD ECOSCOPE	CRPM	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	DCAV*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	DCHO*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	DCVE*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	DRHB	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	DRHL*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	DRHO*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	DRHR*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	DRHU	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD SonicVISION BestDT	DTCO	11	13-JAN-09	3147.8-3471.7		Yes	No
MWD SonicVISION BestDT	DTTP	11	13-JAN-09	3150.9-3471.7		Yes	No
MWD SonicVISION BestDT	DTRP	11	13-JAN-09	3147.8-3465.7		Yes	No
MWD ECOSCOPE Spectrolith	DWAL_WALK2	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	DWCA_WALK2	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	DWFE_WALK2	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	DWGD_WALK2	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	DWSI_WALK2	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	DWSU_WALK2	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	DWTI_WALK2	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	DXFE_WALK2	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	GRMA	11	13-JAN-09	2600.2-3175.6	3175.7	Yes	No
MWD ECOSCOPE	GRMA	11	13-JAN-09	3175.7-3487.5		Yes	No
MWD ECOSCOPE	P16H	11	13-JAN-09	3175.7-3484.8		Yes	No
MWD ECOSCOPE	P22H	11	13-JAN-09	3175.7-3484.8		Yes	No
MWD ECOSCOPE	P28H	11	13-JAN-09	3175.7-3484.8		Yes	No
MWD ECOSCOPE	P34H	11	13-JAN-09	3175.7-3484.8		Yes	No
MWD ECOSCOPE	P40H	11	13-JAN-09	3175.7-3484.8		Yes	No
MWD ECOSCOPE	PEB	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	PEF*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	PEL*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	PER*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	PEU*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE Spectrolith	RHGE	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE	RHOB*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	ROBB	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	ROBL*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	ROBR*	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	ROBU	11	13-JAN-09	3175.7-3486.3		Yes	No
MWD ECOSCOPE	ROP5_RM	11	13-JAN-09	3175.7-3497.4		Yes	No
MWD ECOSCOPE Spectrolith	SIGE	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE	TAB_ARC_RES	11	13-JAN-09	3175.7-3484.8		Yes	No
MWD ECOSCOPE	TNPH	11	13-JAN-09	3175.7-3483.6		Yes	No
MWD ECOSCOPE	UCAV*	11	13-JAN-09	3175.7-3486.2		Yes	No
MWD ECOSCOPE	UCHO	11	13-JAN-09	3175.7-3486.2		Yes	No
MWD ECOSCOPE	UCVE	11	13-JAN-09	3175.7-3486.2		Yes	No
MWD ECOSCOPE Spectrolith	WCAR	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	WCLA	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	WPYR	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	WQFM	11	13-JAN-09	2600.2-3497.0		Yes	No
MWD ECOSCOPE Spectrolith	WSID	11	13-JAN-09	2600.2-3497.0		Yes	No

* Not presented on plot.

Definitions:

Dynamic depth shift *– variable depth shifting (stretch and pull) as opposed to linear depth shifting.*
Linear depth shift *– Constant depth shift through a certain depth interval.*
Reference curve *– Curve that will be used as the depth* ***Reference*** *for a set of logging curves.*
Offset Curve *– Curve that will be compared to the* ***Reference*** *curve in order to find required depth pairs.*
Curves shifted *– Curves that will be shifted with depth pairs found by comparing* ***Reference*** *to* ***Offset*** *curve.*
Observed *–* ***Observed*** *depth is the depth of a point before depth shifting*
Actual *–* ***Actual*** *depth is the depth of the point after depth shifting.*

WLC_PETROPHYSICAL_COMPOSITE_1.DLIS completed:	**08-JUL-2009**
WLC_PETROPHYSICAL_COMPOSITE_1_INF_2.PDF completed:	**26-JUN-2014**