OPERATOR:	STATOIL PETROLEUM AS
WELL:	15/9-F-15
WELLBORE:	15/9-F-15 D
FIELD:	VOLVE
RIG:	MAERSK INSPIRER
COUNTRY:	NORWAY
DRILL PERMIT#:	3667-P

Report

WLC_PETROPHYSICAL_COMPOSITE_2.DLIS

Prepared by: **LOGTEK AS**
Date: **08-APR-2014**

WLC_PETROPHYSICAL_COMPOSITE_2_INF_1

The WLC_PETROPHYSICAL_COMPOSITE_2.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.

WLC_PETROPHYSICAL_COMPOSITE_2_INF_1

OPERATOR:	STATOIL PETROLEUM AS
WELL:	15/9-F-15
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FIELD:	VOLVE
RIG:	MAERSK INSPIRER
COUNTRY:	NORWAY
DRILL PERMIT#:	3667-P

MWD data plotted and verified to prints.

Depth units are meters.

Quality comments:
15/9-F-15 D was kicked off from a cement plug from well 15/9-F-15 at 1380m (MD) in LWD Run#1.

MWD OTK-ZTK, run 1:
Data above 1368.0 m logged in casing (from MWD log heading).
Log comments:
Depth reference is driller's depth. All depths are measured depths (MD).
20" casing shoe was reported at 1368.4m (MD), and logged at 1367.8m (MD) in LWD Run#1.
Logger's TD in LWD Run#1 at 2618.4m (MD).

MWD OTK, run 2:
Data above 2612.0 m logged in casing (from MWD log heading).
Log comments:
Depth reference is driller's depth. All depths are measured depths (MD).
Logger's TD in LWD Run#2 at 3299.6m (MD).

MWD AZTK-CCN-ORD-ZTK, run 3:
Data above 3294.7 m logged in casing (from MWD log heading).
Log comments:
Depth reference is driller's depth. All depths are measured depths (MD).
ORD version 2.6 was used in LWD Run#3 with an ORD Wear Indicator:
Pre Run#3 : Stabilizer: N/A, Source: 4, Long Space Receiver: 4
Post Run#3 : Stabilizer: N/A, Source: 4, Long Space Receiver: 3
AzGR Image data starts at 3818.0m (MD). AzORD Image data starts at 3306.0m (MD). AzNBGR Image data starts at 3326.0m (MD). These are the depths of the first good survey in LWD Run#3.
Relog#1, interval 4337m - 4376m (MD) was logged while backreaming 11 - 12 hrs after being drilled.
Logger's TD in well 15/9-F-15 D at 4685m (MD).

Editing on WLC_PETROPHYSICAL_COMPOSITE_2.DLIS:
MWD OTK, run 2:
Resistivity data affected by casing above 2614.7 m and have been removed.

MWD AZTK-CCN-ORD-ZTK, run 3:
Resistivity data affected by casing above 3298.3 m and have been removed.

Depth shifts:
MWD OTK-ZTK, run 1:
NBGRCFM have been depth shifted in order to match other curve in same run:

Reference curve:	GRCFM (*MWD OTK-ZTK, run 1*)
Offset curve:	NBGRCFM (*MWD OTK-ZTK, run 1*)
Curves shifted:	NBGRCFM

Shift pairs used:

Observed:	Actual:
1354.900	1354.200
1367.000	1367.300
1374.200	1374.700
1382.000	1381.800
1412.900	1413.300
1499.400	1499.600
1501.500	1501.400
1523.000	1523.300
1552.200	1551.500
1563.900	1564.200
1603.600	1603.900
1630.400	1629.800
1638.900	1639.000
1673.000	1672.500
1701.400	1701.600
1712.900	1712.600
1727.900	1728.200
1774.800	1774.300
1795.000	1794.200
1798.700	1798.700
1822.700	1822.800
1826.800	1826.500
1844.000	1844.400
1859.100	1859.400
1879.000	1878.800
1887.000	1887.200
1911.900	1911.500
1922.700	1922.700
1941.900	1942.300
1952.000	1951.400
1959.700	1959.500
1971.300	1971.600
1984.400	1984.900
1998.200	1997.900
2054.900	2055.200
2103.600	2104.000
2111.200	2110.200
2115.100	2114.200
2116.400	2115.900
2127.300	2127.700
2133.300	2133.600
2139.400	2139.900
2146.800	2147.000
2161.800	2161.800
2178.000	2178.500
2201.900	2201.600
2204.900	2204.800
2215.900	2216.200
2224.700	2224.900
2229.700	2229.200
2316.600	2316.000
2338.800	2339.200
2345.300	2345.600
2349.000	2348.800

2354.100	2353.700
2364.100	2363.900
2387.300	2387.400
2399.400	2399.000
2419.300	2419.600
2429.800	2429.500
2432.600	2432.000
2447.100	2447.400
2492.700	2492.900
2500.500	2500.200
2517.800	2517.100
2527.600	2527.900
2545.200	2545.600
2561.900	2561.500
2571.900	2571.800
2580.900	2581.000
2592.000	2591.900
2596.800	2595.400
2604.600	2604.300

MWD OTK-ZTK, run 1:
Data depth shifted in order to match data from MWD POWERPULSE, run 2 (*wellbore 15/9-F-15*).

Reference curve:	GRM1 (*MWD POWERPULSE, run 2 (wellbore 15/9-F-15).*
Offset curve:	GRCFM (*MWD OTK-ZTK, run 1*)
Curves shifted:	All curves.

Shift pairs used:

Observed:	Actual:
1374.300	1374.600
1381.900	1381.000
1387.200	1386.800
1389.900	1389.900

MWD AZTK-CCN-ORD-ZTK, run 3:
NBGRCFM and NBGRCS01-16 have been depth shifted in order to match other curves in same run:

Reference curve:	GRCFM (*MWD AZTK-CCN-ORD-ZTK, run 3*)
Offset curve:	NBGRCFM (*MWD AZTK-CCN-ORD-ZTK, run 3*)
Curves shifted:	NBGRCFM, NBGRCS01-16

Shift pairs used:

Observed:	Actual:
3275.200	3275.300
3285.600	3283.100
3296.600	3298.000
3304.500	3304.700
3308.400	3308.200
3318.800	3318.700
3332.000	3332.400
3335.600	3334.300
3342.400	3342.000
3354.700	3354.500
3359.100	3359.200
3383.600	3384.200
3388.900	3387.100

3397.600	3397.500
3421.500	3422.000
3431.000	3430.900
3438.500	3438.300
3442.600	3441.600
3446.500	3446.200
3465.400	3465.400
3478.500	3478.400
3482.500	3481.800
3520.800	3520.400
3528.500	3526.900
3530.000	3530.200
3537.100	3537.400
3558.800	3558.500
3602.400	3602.400
3837.800	3837.700
3847.400	3845.600
3855.100	3855.400
3859.200	3859.500
3872.700	3872.300
3878.900	3878.300
3883.600	3883.800
3937.300	3938.200
3961.500	3961.100
3971.500	3971.800
3998.400	3998.500
4019.300	4019.600
4051.700	4051.600
4057.400	4058.100
4092.900	4092.700
4155.700	4155.400
4230.200	4230.700
4237.800	4237.400
4243.500	4242.700
4278.700	4278.200
4313.800	4313.600
4405.200	4404.700
4415.900	4415.800
4423.600	4422.800
4464.400	4464.600
4499.000	4499.200
4519.500	4518.900
4580.500	4580.500
4610.900	4610.800
4622.800	4623.100
4667.000	4666.600

CURVE SUMMARY, file WLC_PETROPHYSICAL_COMPOSITE_2.DLIS:

File #1. Incr.: 0.1m

Main Services	Input Curve	Run no.	Date (start)	Interval (meters)	Merge depth (meters)	Depth shifted	Edited
MWD AZTK-CCN-ORD-ZTK	ABDC01M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC02M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC03M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC04M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC05M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC06M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC07M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC08M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC09M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC10M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC11M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC12M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC13M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC14M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC15M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDC16M	3	28-NOV-13	3306.0-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDCQF01*	3	28-NOV-13	3227.5-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDCQF02*	3	28-NOV-13	3227.5-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDCQF03*	3	28-NOV-13	3227.5-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	ABDCQF04*	3	28-NOV-13	3227.5-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA01M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA02M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA03M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA04M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA05M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA06M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA07M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA08M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA09M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA10M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA11M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA12M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA13M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA14M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA15M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	APRA16M*	3	28-NOV-13	3238.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	AZRIT1T2	3	28-NOV-13	3305.2-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	AZRTBM	3	28-NOV-13	3320.0-4675.1		No	No
MWD AZTK-CCN-ORD-ZTK	BDCFM	3	28-NOV-13	3227.5-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	CALCM	3	28-NOV-13	3226.7-4660.5		No	No
MWD AZTK-CCN-ORD-ZTK	DPEFM*	3	28-NOV-13	3227.5-4661.1		No	No
MWD AZTK-CCN-ORD-ZTK	DRHFM	3	28-NOV-13	3227.5-4661.1		No	No
MWD OTK-ZTK	GRAFM*	1	10-NOV-13	1339.5-2605.6	2605.7	Yes	No
MWD OTK	GRAFM*	2	21-NOV-13	2605.7-3277.7	3277.8	No	No
MWD AZTK-CCN-ORD-ZTK	GRAFM*	3	28-NOV-13	3277.8-4673.0		No	No
MWD OTK-ZTK	GRCFM	1	10-NOV-13	1339.5-2605.6	2605.7	Yes	No
MWD OTK	GRCFM	2	21-NOV-13	2605.7-3277.7	3277.8	No	No
MWD AZTK-CCN-ORD-ZTK	GRCFM	3	28-NOV-13	3277.8-4673.0		No	No
MWD AZTK-CCN-ORD-ZTK	GRCS01M	3	28-NOV-13	3318.0-4673.1		No	No
MWD AZTK-CCN-ORD-ZTK	GRCS02M	3	28-NOV-13	3318.0-4673.1		No	No
MWD AZTK-CCN-ORD-ZTK	GRCS03M	3	28-NOV-13	3318.0-4673.1		No	No
MWD AZTK-CCN-ORD-ZTK	GRCS04M	3	28-NOV-13	3318.0-4673.1		No	No
MWD AZTK-CCN-ORD-ZTK	GRCS05M	3	28-NOV-13	3318.0-4673.1		No	No
MWD AZTK-CCN-ORD-ZTK	GRCS06M	3	28-NOV-13	3318.0-4673.1		No	No
MWD AZTK-CCN-ORD-ZTK	GRCS07M	3	28-NOV-13	3318.0-4673.1		No	No
MWD AZTK-CCN-ORD-ZTK	GRCS08M	3	28-NOV-13	3318.0-4673.1		No	No
MWD OTK-ZTK	NBGRCFM	1	10-NOV-13	1343.0-2614.4		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCFM	3	28-NOV-13	3247.5-4681.6		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS01	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS02	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS03	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS04	3	28-NOV-13	3327.2-4681.7		Yes	No

MWD AZTK-CCN-ORD-ZTK	NBGRCS05	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS06	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS07	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS08	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS09	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS10	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS11	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS12	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS13	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS14	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS15	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NBGRCS16	3	28-NOV-13	3327.2-4681.7		Yes	No
MWD AZTK-CCN-ORD-ZTK	NPCKLFM	3	28-NOV-13	3225.1-4658.5		No	No
MWD OTK-ZTK	RACEHM	1	10-NOV-13	1363.4-2608.5		Yes	No
MWD OTK	RACEHM	2	21-NOV-13	2614.7-3279.9		No	No
MWD AZTK-CCN-ORD-ZTK	RACEHM	3	28-NOV-13	3298.3-4675.1		No	No
MWD OTK-ZTK	RACELM	1	10-NOV-13	1363.4-2608.5		Yes	No
MWD OTK	RACELM	2	21-NOV-13	2614.7-3279.9		No	No
MWD AZTK-CCN-ORD-ZTK	RACELM	3	28-NOV-13	3298.3-4675.1		No	No
MWD OTK-ZTK	ROPAVG	1	10-NOV-13	1379.4-2618.0		Yes	No
MWD OTK	ROPAVG	2	21-NOV-13	2618.1-3299.4	3299.5	No	No
MWD AZTK-CCN-ORD-ZTK	ROPAVG	3	28-NOV-13	3299.5-4684.8		No	No
MWD OTK-ZTK	RPCEHM	1	10-NOV-13	1363.4-2608.5		Yes	No
MWD OTK	RPCEHM	2	21-NOV-13	2614.7-3279.9		No	No
MWD AZTK-CCN-ORD-ZTK	RPCEHM	3	28-NOV-13	3298.3-4675.1		No	No
MWD OTK-ZTK	RPCELM	1	10-NOV-13	1363.4-2608.5		Yes	No
MWD OTK	RPCELM	2	21-NOV-13	2614.7-3279.9		No	No
MWD AZTK-CCN-ORD-ZTK	RPCELM	3	28-NOV-13	3298.3-4675.1		No	No
MWD OTK-ZTK	RPTHM	1	10-NOV-13	1379.4-2608.5		Yes	No
MWD OTK	RPTHM	2	21-NOV-13	2618.0-3279.9		No	No
MWD AZTK-CCN-ORD-ZTK	RPTHM	3	28-NOV-13	3299.0-4675.1		No	No
MWD OTK-ZTK	TCDM	1	10-NOV-13	1350.9-2618.4	2618.5	Yes	No
MWD OTK	TCDM	2	21-NOV-13	2618.5-3299.2	3299.3	No	No
MWD AZTK-CCN-ORD-ZTK	TCDM	3	28-NOV-13	3299.3-4685.1		No	No
MWD OTK-ZTK	WOBAVG	1	10-NOV-13	1379.4-2618.0	2618.1	Yes	No
MWD OTK	WOBAVG	2	21-NOV-13	2618.1-3299.4	3299.5	No	No
MWD AZTK-CCN-ORD-ZTK	WOBAVG	3	28-NOV-13	3299.5-4684.8		No	No

* Not presented on plots.

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_2.DLIS completed: 08-APR-2014
WLC_PETROPHYSICAL_COMPOSITE_2_INF_1.PDF completed: 08-APR-2014