

**SURVEY MANAGEMENT****DEFINITIVE SURVEY SIGN-OFF**

Client:		Job No.:	17hol0035	Report Date:	18-May-18
Field:	Naaldwijk (Trias Westland)	Well Name:	NLW-GT-02	Borehole:	NLW-GT-02
Stru/Slot:	NLW-GT-02/NLW-GT-02	Survey:	NLW-GT-02 (LIH)		

Structure Reference:	445230.00	76154.00
	N 51° 59' 26.96188"	E 4° 14' 22.35732"
Slot Coordinates:	445230.00	76154.00
	N 51° 59' 26.96188"	E 4° 14' 22.35732"
Structure/Slot Uncertainty:	0.00 m(3.00 sigma)	0.00 m(3.00 sigma)
Grid Coordinate System:	Amersfoort * OGP-Nld / RD Dutch Onshore	
TVD Reference Datum:	Borehole: Rotary Table	
TVD Reference Elevation:	8.420 m above NAP	
Seabed/GroundLevel:	0.900 m below NAP	

Depth Units:	(m)	
Survey Date:	15-Mar-18	
Azimuth Reference:	Grid North	
Mag. Model / Mag. Decl. Date:	HDGM 2017	15-Mar-18
Magnetic Declination:	1.121 °	
Grid Convergence:	-0.90562969 °	
Total Correction:	2.0270 °	
Vertical Section Origin:	0.000 m, 0.000 m	
Vertical Section Plane:	0.000 ° (Grid North)	

**DEFINITIVE SURVEY CONSTRUCTION - ORIGINAL WELL**

Instrument Type	Survey From	Survey To	Hole Size	Casing Size
SLB_INC_ONLY<10-Depth Only	0.00	9.32		
SLB_INC_ONLY<10	9.32	120.21	30.00	30.00
SLB_INC_ONLY<10	120.21	137.00	30.00	30.00
SLB_INC_ONLY<10	137.00	1188.00	24.00	24.00
Projection to TD:		Type:		

**WELL REFERENCE POINT LOCATION**

MD	INC	AZ	TVD	VS	NS	EW	Northing	Easting	Latitude	Longitude
9.32	0.02	33.33	9.32	0.00	0.00	0.00	445230.00	76154.00	N 51° 59' 26.96192"	E 4° 14' 22.35736"

**BOTTOM HOLE LOCATION**

MD	INC	AZ	TVD	VS	NS	EW	Northing	Easting	Latitude	Longitude
1188.00	0.00	0.00	1187.98	-1.78	-1.78	-1.38	445228.22	76152.62	N 51° 59' 26.90359"	E 4° 14' 22.28669"

**BOTTOM HOLE LOCATION COMPARISON**

MD	INC	AZ	TVD	VS	NS	EW	Northing	Easting	Latitude	Longitude

**COMMENTS**

In Only surveys due to Drill string interference. BHA LIH due to total losses, loss of hydrostatic and WB collapse.

**Well Position Declaration**

Drilling Targets requirement met ?

No

**DEFINITIVE SURVEY SIGNED OFF**

For Schlumberger:	
Prepared By: (Sign)	
Name:	Taras Matviyuk
Position:	SDE
Date:	1/5/2018

For Schlumberger:	
Checked By: (Sign)	
Name:	Matteo Dessy
Position:	SDE
Date:	1/5/2018

For Client:	
Approved By: (Sign)	
Name:	
Position:	
Date:	

# NLW-GT-02 (LIH) Survey Geodetic Report

(Def Survey)

**Report Date:** May 18, 2018 - 09:55 AM  
**Client:**  
**Field:** Naaldwijk (Trias Westland)  
**Structure / Slot:** NLW-GT-02 / NLW-GT-02  
**Well:** NLW-GT-02  
**Borehole:** NLW-GT-02  
**UWI / API#:** Unknown / Unknown  
**Survey Name:** NLW-GT-02 (LIH)  
**Survey Date:** March 15, 2018  
**Tort / AHD / DDI / ERD Ratio:** 5.628 ° / 6.184 m / 2.058 / 0.005  
**Coordinate Reference System:** Amersfoort \* OGP-Nld / RD Dutch Onshore  
**Location Lat / Long:** N 51° 59' 26.96188", E 4° 14' 22.35732"  
**Location Grid N/E Y/X:** N 445230.000 m, E 76154.000 m  
**CRS Grid Convergence Angle:** -0.9056 °  
**Grid Scale Factor:** 0.99994799  
**Version / Patch:** 2.10.254.0

**Survey / DLS Computation:** Minimum Curvature / Lubinski  
**Vertical Section Azimuth:** 0.000 ° (Grid North)  
**Vertical Section Origin:** 0.000 m, 0.000 m  
**TVD Reference Datum:** Rotary Table  
**TVD Reference Elevation:** 8.420 m above NAP  
**Seabed / Ground Elevation:** 0.900 m below NAP  
**Magnetic Declination:** 1.121 °  
**Total Gravity Field Strength:** 1000.5836mgn (9.80665 Based)  
**Gravity Model:** GARM  
**Total Magnetic Field Strength:** 49043.012 nT  
**Magnetic Dip Angle:** 67.070 °  
**Declination Date:** March 15, 2018  
**Magnetic Declination Model:** HDGM 2017  
**North Reference:** Grid North  
**Grid Convergence Used:** -0.9056 °  
**Total Corr Mag North->Grid**  
**North:** 2.0270 °  
**Local Coord Referenced To:** Structure Reference Point

Comments	MD (m)	Incl (°)	Azim Grid (°)	TVD (m)	TVDSS (m)	VSEC (m)	NS (m)	EW (m)	DLS (°/30m)	Northing (m)	Easting (m)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
Tie-In	0.00	0.00	0.00	0.00	-8.42	0.00	0.00	0.00	N/A	445230.00	76154.00	N 51 59 26.96	E 4 14 22.36
	120.21	0.26	33.33	120.21	111.79	0.23	0.23	0.15	0.06	445230.23	76154.15	N 51 59 26.97	E 4 14 22.36
	148.06	0.13	83.37	148.06	139.64	0.28	0.28	0.22	0.22	445230.28	76154.22	N 51 59 26.97	E 4 14 22.37
	185.02	0.13	94.73	185.02	176.60	0.29	0.29	0.30	0.02	445230.29	76154.30	N 51 59 26.97	E 4 14 22.37
	212.62	0.13	45.62	212.62	204.20	0.31	0.31	0.35	0.11	445230.31	76154.35	N 51 59 26.97	E 4 14 22.38
	241.94	0.09	90.54	241.94	233.52	0.33	0.33	0.39	0.09	445230.33	76154.39	N 51 59 26.97	E 4 14 22.38
	269.76	0.15	285.77	269.76	261.34	0.34	0.34	0.38	0.26	445230.34	76154.38	N 51 59 26.97	E 4 14 22.38
	297.16	0.24	35.88	297.16	288.74	0.39	0.39	0.38	0.35	445230.39	76154.38	N 51 59 26.97	E 4 14 22.38
	325.90	0.29	12.86	325.90	317.48	0.51	0.51	0.43	0.12	445230.51	76154.43	N 51 59 26.98	E 4 14 22.38
	354.00	0.17	61.36	354.00	345.58	0.60	0.60	0.48	0.23	445230.60	76154.48	N 51 59 26.98	E 4 14 22.38
	381.34	0.10	52.71	381.34	372.92	0.64	0.64	0.54	0.08	445230.64	76154.54	N 51 59 26.98	E 4 14 22.39
	409.69	0.19	57.74	409.69	401.27	0.68	0.68	0.60	0.10	445230.68	76154.60	N 51 59 26.98	E 4 14 22.39
	437.26	0.17	30.45	437.26	428.84	0.74	0.74	0.66	0.09	445230.74	76154.66	N 51 59 26.99	E 4 14 22.39
	465.05	0.12	0.22	465.05	456.63	0.80	0.80	0.68	0.10	445230.80	76154.68	N 51 59 26.99	E 4 14 22.39
	493.34	0.14	29.62	493.34	484.92	0.86	0.86	0.70	0.07	445230.86	76154.70	N 51 59 26.99	E 4 14 22.39
	549.43	0.12	312.14	549.43	541.01	0.96	0.96	0.69	0.09	445230.96	76154.69	N 51 59 26.99	E 4 14 22.39
	576.32	0.12	12.24	576.32	567.90	1.01	1.01	0.67	0.13	445231.01	76154.67	N 51 59 26.99	E 4 14 22.39
	603.84	0.28	17.19	603.84	595.42	1.10	1.10	0.70	0.18	445231.10	76154.70	N 51 59 27.00	E 4 14 22.39
	631.41	0.18	21.45	631.41	622.99	1.20	1.20	0.73	0.11	445231.20	76154.73	N 51 59 27.00	E 4 14 22.39
	659.53	0.32	8.19	659.53	651.11	1.32	1.32	0.76	0.16	445231.32	76154.76	N 51 59 27.01	E 4 14 22.40
	687.44	0.22	43.13	687.44	679.02	1.44	1.44	0.81	0.20	445231.44	76154.81	N 51 59 27.01	E 4 14 22.40
	715.19	0.22	14.75	715.19	706.77	1.53	1.53	0.86	0.12	445231.53	76154.86	N 51 59 27.01	E 4 14 22.40
	742.91	0.29	247.43	742.91	734.49	1.55	1.55	0.81	0.50	445231.55	76154.81	N 51 59 27.01	E 4 14 22.40
	770.75	0.66	243.45	770.75	762.33	1.46	1.46	0.60	0.40	445231.46	76154.60	N 51 59 27.01	E 4 14 22.39
	798.73	0.67	238.61	798.72	790.30	1.30	1.30	0.31	0.06	445231.30	76154.31	N 51 59 27.00	E 4 14 22.37
	826.64	0.56	231.97	826.63	818.21	1.13	1.13	0.07	0.14	445231.13	76154.07	N 51 59 27.00	E 4 14 22.36
	853.62	0.68	214.76	853.61	845.19	0.92	0.92	-0.13	0.24	445230.92	76153.87	N 51 59 26.99	E 4 14 22.35
	882.88	0.58	214.15	882.87	874.45	0.65	0.65	-0.31	0.10	445230.65	76153.69	N 51 59 26.98	E 4 14 22.34
	909.27	0.63	209.85	909.26	900.84	0.41	0.41	-0.46	0.08	445230.41	76153.54	N 51 59 26.98	E 4 14 22.33
	937.97	0.57	210.10	937.96	929.54	0.15	0.15	-0.61	0.06	445230.15	76153.39	N 51 59 26.97	E 4 14 22.33
	966.42	0.46	207.83	966.40	957.98	-0.07	-0.07	-0.73	0.12	445229.93	76153.27	N 51 59 26.96	E 4 14 22.32
	994.19	0.53	206.07	994.17	985.75	-0.28	-0.28	-0.84	0.08	445228.72	76153.16	N 51 59 26.95	E 4 14 22.31
	1022.10	0.53	194.08	1022.08	1013.66	-0.52	-0.52	-0.93	0.12	445228.48	76153.07	N 51 59 26.94	E 4 14 22.31
	1050.55	0.50	195.73	1050.53	1042.11	-0.77	-0.77	-0.99	0.04	445228.23	76153.01	N 51 59 26.94	E 4 14 22.31
	1078.23	0.50	196.17	1078.21	1069.79	-1.00	-1.00	-1.06	0.02	445228.00	76152.94	N 51 59 26.93	E 4 14 22.30
	1106.58	0.62	203.28	1106.56	1098.14	-1.26	-1.26	-1.16	0.14	445228.74	76152.84	N 51 59 26.92	E 4 14 22.30
	1134.80	0.49	209.69	1134.78	1126.36	-1.51	-1.51	-1.28	0.15	445228.49	76152.72	N 51 59 26.91	E 4 14 22.29
	1162.00	0.38	191.36	1161.98	1153.56	-1.70	-1.70	-1.36	0.19	445228.30	76152.64	N 51 59 26.91	E 4 14 22.29
Proj. to TD	1188.00	0.00	0.00	1187.98	1179.56	-1.78	-1.78	-1.38	0.44	445228.22	76152.62	N 51 59 26.90	E 4 14 22.29

**Survey Type:** Def Survey

**Survey Error Model:** ICSWSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7955 sigma

**Survey Program:**

Description	Part	MD From (m)	MD To (m)	EOU Freq (m)	Hole Size	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	9.320	Act Stns	30.000	30.000	SLB_INC_ONLY<10-Depth Only	NLW-GT-02 / NLW-GT-02 (LIH)
	1	9.320	120.210	1/30.000	30.000	30.000	SLB_INC_ONLY<10	NLW-GT-02 / NLW-GT-02 (LIH)
	1	120.210	137.000	Act Stns	30.000	30.000	SLB_INC_ONLY<10	NLW-GT-02 / NLW-GT-02 (LIH)
	1	137.000	1188.000	Act Stns	24.000	24.000	SLB_INC_ONLY<10	NLW-GT-02 / NLW-GT-02 (LIH)