



**Anglian Oil Company Ltd.
Northern Lights
AA Pad
AA16**

**True North Directional Services Inc.
Torque and Drag Report**

**Job No. AB-CD-12345678
Revision: 1
Case #1**



True North
Directional Services Inc.

Torque and Drag Report for AA Pad, AA16, Design #1, Case #1

Operating Parameters (Operation Scenario)	
Bit Depth	1,794.29 m
Mud Weight	800.00 kg/m ³
Flow	0.86 m ³ /min
BHA Drag	5,000 N

Casing/Hole Details

Comp. #	Description	Outside Diameter (mm)	Inside Diameter (mm)	Friction Factor	From		To	
					Measured Depth (m)	Vertical Depth (m)	Measured Depth (m)	Vertical Depth (m)
1	13 3/8in Casing	340	323	0.20	<Surface>	<Surface>	250.00	250.00
2	9 5/8in Casing	244	229	0.20	<Surface>	<Surface>	500.00	441.03
3	7in Casing	178	166	0.20	<Surface>	<Surface>	1,000.00	486.60
3	171mm Open Hole		171	0.20	1,000.00	486.60	1,794.29	486.60

Drillstring Details

Comp. #	Component Type	Description	Outside Diameter (mm)	Inside Diameter (mm)	Weight (N/m)	Length (m)	Cumulative Length (m)
12	DP (S) - Used - Premium	4" DP (S) NC46(IF) - 15.70 lb/ft	102	82	263.13	338.47	1,794.29
11	HWDP	4" HWDP NC40(FH) - 29.70 lb/ft	102	65	433.44	800.00	1,455.82
10	DP (X) - Used - Premium	4" DP (X) H90 - 15.70 lb/ft	102	82	256.15	600.00	655.82
9	Sub	5.118" Cross Over	130	58	592.32	0.82	55.82
8	Jar	4 3/4" Mechanical Jar	121	57	666.85	4.99	55.00
7	Sub	5.236" Cross Over	133	63	592.32	0.58	50.01
6	4 3/4" Drill Collar	4 3/4" DC - 44.00 lb/ft	121	64	642.13	18.86	49.43
5	MWD	4 3/4" MWD	121	72	842.10	20.29	30.57
4	Sub	4.843" Float Sub	123	50	1,023.91	1.17	10.28
3	Sub	4.843" Float Sub	123	50	633.80	1.16	9.11
2	Motor	4 3/4" Motor Lobe 4:5 - 6.3 stg	121	57	603.50	7.73	7.95
1	Bit	6" Bit	152	57	2,043.00	0.22	0.22

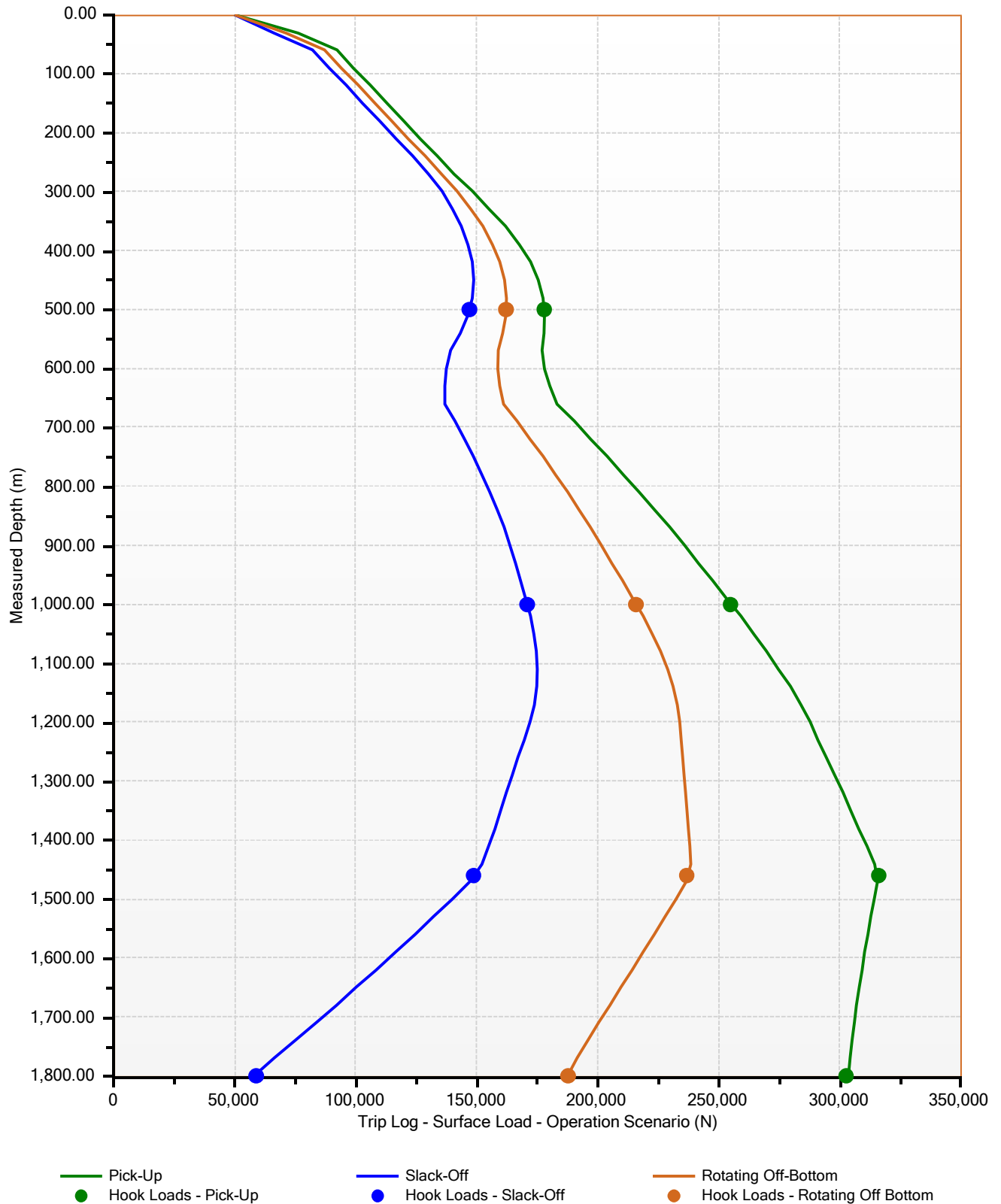
Trip Log - Surface Loads - Operation Scenario

Measured Depth (m)	Inclination (°)	Azimuth (°)	Dogleg Rate (°/30m)	Pick-Up (N)	Slack-Off (N)	Rotating Off Bottom (N)
0.00	0.000	0.000	0.000	50,000	50,000	50,000
30.00	0.000	0.000	0.000	76,241	66,241	71,241
60.00	0.000	0.000	0.000	92,241	82,241	87,241
90.00	0.000	0.000	0.000	99,141	89,141	94,141
120.00	0.000	0.000	0.000	106,042	96,042	101,042
150.00	0.000	0.000	0.000	112,942	102,942	107,942
180.00	0.000	0.000	0.000	119,843	109,843	114,843
210.00	0.000	0.000	0.000	126,743	116,743	121,743
240.00	0.000	0.000	0.000	133,643	123,643	128,643
270.00	8.000	131.739	8.000	140,642	130,189	135,486
300.00	16.000	131.739	8.000	148,164	135,722	141,930
330.00	24.000	131.739	8.000	155,204	140,134	147,683
360.00	32.000	131.739	8.000	161,922	143,594	152,610
390.00	40.000	131.739	8.000	167,746	146,360	156,614
420.00	48.000	131.739	8.000	172,325	148,157	159,617

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Trip Log - Surface Loads - Operation Scenario

Measured Depth (m)	Inclination (°)	Azimuth (°)	Dogleg Rate (°/30m)	Pick-Up (N)	Slack-Off (N)	Rotating Off Bottom (N)
450.00	56.000	131.739	8.000	175,487	148,803	161,561
480.00	64.000	131.739	8.000	177,379	148,225	162,408
510.00	72.000	131.739	8.000	178,131	146,362	162,142
540.00	80.000	131.739	8.000	177,778	143,179	160,767
570.00	82.747	131.739	0.000	177,029	139,337	158,890
600.00	82.747	131.739	0.000	178,125	137,448	158,702
630.00	82.747	131.739	0.000	180,305	136,819	159,543
660.00	82.747	131.739	0.000	183,249	136,893	161,079
690.00	83.010	127.253	8.000	190,334	141,040	166,703
720.00	83.588	119.219	8.000	197,242	144,968	172,156
750.00	84.290	111.205	8.000	203,997	148,651	177,425
780.00	85.102	103.212	8.000	210,616	152,139	182,548
810.00	86.009	95.239	8.000	217,130	155,428	187,524
840.00	86.993	87.285	8.000	223,534	158,509	192,348
870.00	88.034	79.345	8.000	229,769	161,291	197,019
900.00	89.113	71.416	8.000	235,864	163,791	201,538
930.00	90.000	65.000	0.000	241,692	166,147	205,901
960.00	90.000	65.000	0.000	247,575	168,166	210,284
990.00	90.000	65.000	0.000	253,532	170,297	214,695
1,020.00	90.000	65.000	0.000	259,290	172,201	218,867
1,050.00	90.000	65.000	0.000	264,637	173,698	222,676
1,080.00	90.000	65.000	0.000	269,692	174,694	226,047
1,110.00	90.000	65.000	0.000	274,765	175,100	228,914
1,140.00	90.000	65.000	0.000	279,687	174,836	231,221
1,170.00	90.000	65.000	0.000	284,071	173,829	232,924
1,200.00	90.000	65.000	0.000	287,820	172,023	233,990
1,230.00	90.000	65.000	0.000	291,116	169,633	234,607
1,260.00	90.000	65.000	0.000	294,521	167,216	235,210
1,290.00	90.000	65.000	0.000	297,934	164,791	235,813
1,320.00	90.000	65.000	0.000	301,354	162,359	236,416
1,350.00	90.000	65.000	0.000	304,639	159,970	237,010
1,380.00	90.000	65.000	0.000	307,994	157,491	237,560
1,410.00	90.000	65.000	0.000	311,322	154,934	238,056
1,440.00	90.000	65.000	0.000	314,593	152,284	238,488
1,470.00	90.000	65.000	0.000	315,689	147,354	236,679
1,500.00	90.000	65.000	0.000	314,405	139,881	232,371
1,530.00	90.000	65.000	0.000	313,027	132,271	227,978
1,560.00	90.000	65.000	0.000	311,690	124,514	223,496
1,590.00	90.000	65.000	0.000	310,412	116,550	218,929
1,620.00	90.000	65.000	0.000	309,284	108,409	214,340
1,650.00	90.000	65.000	0.000	308,170	100,255	209,752
1,680.00	90.000	65.000	0.000	307,073	92,088	205,164
1,710.00	90.000	65.000	0.000	306,114	83,891	200,571
1,740.00	90.000	65.000	0.000	305,151	75,079	196,025
1,770.00	90.000	65.000	0.000	304,342	66,363	191,610
1,794.29	90.000	65.000	0.000	303,851	59,319	188,191

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