



**Anglian Oil Company Ltd.  
Northern Lights  
AA Pad  
AA16  
Job No. AB-CD-12345678**

**True North Directional Services Inc.  
Daily Drilling Report**

**January 3, 2015**

**Daily Drilling Report for AA Pad, AA16 for January 3, 2015**

Job Number: AB-CD-12345678	Region: Northwest Territories, Canada	Lease/Block: 07654321	Company Rep. #1: Henry Samuel Quelch
Customer: Anglian Oil Company Ltd.	Field: Northern Lights	UWI No.:	Company Rep. #2: Eusebius Twigg
Well Name: AA16	Project: Northern Lights	Date: January 3, 2015	Geologist: Algernon Jasper Capper
Rig Name: Northern Skies III	Structure: AA Pad		Directional Supervisor: Herbert Henry Locke

**Personnel Summary**

Directional Drillers				MWD Operators				Gyro Surveyors			
Name	Start Date	End Date	Days	Name	Start Date	End Date	Days	Name	Start Date	End Date	Days
Robert Cherry	01/01/2015	12/01/2015	12	Herbert Henry Locke	01/01/2015	08/01/2015	8	Herbert Vernon-Smith	03/01/2015	12/01/2015	10
				Hurree Janset Ram Singh	01/01/2015	04/01/2015	4				

**Drilling Summary**

Start Depth: 1,043.50m	End Depth: 1,573.91m	Below Rotary Hours: 24.00hrs	Circulating Hours: 16.84hrs
Total Depth Drilled: 530.41m	Total Drilled Hours: 17.01hrs	Ave. Total ROP: 31.18m/hr	Percent Drilling: 70.89%
Total Rotating: 267.41m	Rotating Hours: 8.63hrs	Ave. Rotating ROP: 30.97m/hr	Percent Rotating: 50.75%
Total Sliding: 263.00m	Sliding Hours: 8.38hrs	Ave. Sliding ROP: 31.39m/hr	Percent Sliding: 49.25%

**Pump Details**

#	Model	Liner Size (mm)	Liner Rating (%)	Volume Efficiency (%)	Vol. per Stroke (m³)	Maximum Pressure (kPa)	Maximum Flow (m³/min)
1	National N-1000	140	100.00	100.00	0.02	27,200	1.72
2	National N-1300	152	100.00	100.00	0.03	29,647	2.05
3	National N-1600	152	100.00	100.00	0.02	37,507	2.00

**Drilling Parameters - MWD Run #3**

	Min	Max		Min	Max
WOB (N):	15	16	SPP Off Bottom (kPa):	5,013	5,096
Pick Up (N):	36	40	SPP On Bottom (kPa):	5,047	5,186
Slack Off (N):	35	40	Delta Pressure (kPa):	307	348
Rot. Off Bottom (N):	35	40	Flow Rate (m³/min):	2.51	2.98
Bottom Hole Temp (°C):	101.7	101.7	Pump Rate (SPM):	15	20
Rotary Speed (RPM):	29	38	Motor Speed (RPM):	38	48
Surface Torque (N-m):	3,008	3,483			

**Bit Record - MWD Run #3**

Bit Number: 3	Description:	
Manufacturer: GoodEnough	TFA: 962.0mm²	Jets: 6 x 14.3
Model: GE626 Revel	Bit Diameter: 200mm	Bit Hours: 5.38Hrs.
Type: PDC	IADC#:	Bit Footage: 173.65m
Serial Number: 90827349712	Condition: Good	

**Drillstring Components - MWD Run #3 (BHA #3)**

Item #	Description	Vendor	Serial No.	Outside Diameter (mm)	Inside Diameter (mm)	Fishing Neck OD (mm)	Fishing Neck Length (m)	Top Connection	Length (m)	Total Length (m)
1	6" PDC Bit			152	57	0	0.00		0.22	0.22
2	4 3/4" Motor Lobe 4:5 - 6.3 stg	GoodEnough	87623916	121	57	0	0.00		7.73	7.95
3	Float Sub			123	50	0	0.00		1.16	9.11
4	Float Sub			123	50	0	0.00		1.17	10.28
5	4 3/4" MWD			121	72	0	0.00		20.29	30.57
6	4 3/4" DC - 44.00 lb/ft			121	64	0	0.00		18.86	49.43
7	Cross Over			133	63	0	0.00		0.58	50.01
8	Mechanical Jar			121	57	0	0.00		4.99	55.00
9	Cross Over			130	58	0	0.00		0.82	55.82
10	4" DP (X) H90 - 15.70 lb/ft			102	82	0	0.00		600.00	655.82
11	4" HWDN NC40(FH) - 29.70 lb/ft			102	65	0	0.00		800.00	1,455.82
12	4" DP (S) NC46(IF) - 15.70 lb/ft			102	82	0	0.00		190.79	1,646.61

**Drilling Parameters - MWD Run #4**

	Min	Max		Min	Max
WOB (N):	15	16	SPP Off Bottom (kPa):	5,004	5,097
Pick Up (N):	35	40	SPP On Bottom (kPa):	5,017	5,174
Slack Off (N):	35	40	Delta Pressure (kPa):	304	349
Rot. Off Bottom (N):	35	39	Flow Rate (m³/min):	2.53	3.00
Bottom Hole Temp (°C):	100.4	108.7	Pump Rate (SPM):	16	20
Rotary Speed (RPM):	29	38	Motor Speed (RPM):	38	48
Surface Torque (N-m):	3,007	3,487			

**Bit Record - MWD Run #4**

Bit Number: 5	Description: 6 5/8in PDC Bit	
Manufacturer: GoodEnuff	TFA: 2591.8mm²	Jets: 2 x 10, 1 x 20, 3 x 30
Model: True Blue	Bit Diameter: 167mm	Bit Hours: 11.63Hrs.
Type: PDC Bit	IADC#:	Bit Footage: 356.76m
Serial Number: 12345678	Condition: NO - No Dull Characteristics	

**Daily Drilling Report for AA Pad, AA16 for January 3, 2015**

Motor Properties - MWD Run #4													
Description:	4 3/4" Motor Lobe 4:5 - 6.3 stg	Motor Type:	Motor	Manufacturer:	GoodEnuff	Model:	PowerPuff	Serial Number:	23456789	Lobe/Stage:	4:5/6.0		
Mud Type:		Stabilizer Type:		Rubber Type:		Fit Type:							
Pad OD:	114mm	NB Stabilizer:	114	Bit to Bend:	1.22m	Bend Angle:	2.00°	Pressure Drop:	6,206kPa	Rev. Rate:	2641.72Rev/m³	Rotor Jet:	12mm
Motor Footage:	356.76m	Below Rotary Hours:	15.80hrs	Circulating Hours:	11.63hrs	Rotating Footage:	187.76m	Rotating Hours:	5.92hrs	Sliding Footage:	169.00m	Sliding Hours:	5.71hrs
Proposed Build Rate:	11.81°/30m	Actual Build Rate:	11.81°/30m	Date/Time In:	03/01/2015 8:15 AM	Date/Time Out:	04/01/2015 6:52 AM	Number of Stalls:	0	Stall Duration:	0.00mins	Extended Motor:	No
Motor Failed:	No	Condition:	Showing signs of fatigue stress										

**Motor Discussion**

This is the Motor Comment

**Drillstring Components - MWD Run #4 (BHA #4)**

Item #	Description	Vendor	Serial No.	Outside Diameter (mm)	Inside Diameter (mm)	Fishing Neck OD (mm)	Fishing Neck Length (m)	Top Connection	Length (m)	Total Length (m)
1	6 5/8in PDC Bit	GoodEnuff	12345678	167	89	152	0.00	3 1/2 REG	0.35	0.35
2	4 3/4" Motor Lobe 4:5 - 6.3 stg	GoodEnuff	23456789	121	60	0	0.00	3 1/2 REG	7.87	8.22
3	Float Sub			123	50	0	0.00	3 1/2 REG	1.16	9.38
4	Float Sub			123	50	0	0.00	3 1/2 REG	1.17	10.55
5	4 3/4" MWD			121	72	0	0.00	3 1/2 REG	20.29	30.84
6	4 3/4" DC - 44.00 lb/ft			121	64	0	0.00	3 1/2 REG	18.86	49.70
7	Cross Over			133	63	0	0.00	3 1/2 REG	0.58	50.28
8	Mechanical Jar			121	57	0	0.00	3 1/2 REG	4.99	55.27
9	Cross Over			130	58	0	0.00	2 3/8 REG	0.82	56.09
10	4" DP (X) H90 - 15.70 lb/ft			102	82	0	0.00	2 3/8 REG	600.00	656.09
11	4" HWD NC40(FH) - 29.70 lb/ft			102	65	0	0.00	2 3/8 REG	800.00	1,456.09
12	4" DP (S) NC46(IF) - 15.70 lb/ft			102	82	0	0.00	2 3/8 REG	190.79	1,646.88

**Mud Properties**

Date	Time	Bit Depth (m)	Mud Weight (kg/m³)	Yield Point (Pa)	Plastic Viscosity (Pa-s)	Funnel Viscosity (Secs)	Chlorides (ppm)	pH	Oil (%)	Gas (%)	Sand (%)	Solids (%)	Water Line (m)	Bot.Hole Temp. (°C)	Flow Temp. (°C)
03 Jan 2015	00:00	1,052.37	1,638.25	10.58	0.02	51	105.37	5.62	0.00	2022.90	0.00	10.66	5.37	109.9	82.9
03 Jan 2015	02:48	1,144.09	1,515.96	10.11	0.02	54	100.80	5.58	0.00	2041.31	0.00	10.61	5.28	101.7	72.7
03 Jan 2015	14:18	1,299.22	1,623.61	10.54	0.02	52	101.71	5.95	0.00	2058.08	0.00	10.45	5.18	105.9	76.7
03 Jan 2015	17:07	1,390.76	1,509.98	10.39	0.02	51	109.24	5.32	0.00	2054.44	0.00	10.08	5.18	108.7	82.0
03 Jan 2015	20:15	1,463.55	1,635.90	10.18	0.02	54	100.44	5.28	0.00	2063.03	0.00	10.67	5.23	106.3	77.0
03 Jan 2015	23:09	1,555.23	1,623.14	10.10	0.02	54	103.61	5.54	0.00	2023.12	0.00	10.96	5.28	100.4	72.5

**Activity Breakdown**

Date	Start Time	End Time	Hours	Start Depth (m)	End Depth (m)	Course Length (m)	Rate of Penetr'n (m/hr)	Activity	Comment
03 Jan 2015	00:00	05:15	5.26	1,043.50	1,217.15	173.65	32.99	Drilling	*Estimated Depths
03 Jan 2015	05:15	08:15	3.00	1,217.15	1,217.15			Tripping Out	
03 Jan 2015	08:15	11:45	3.50	1,217.15	1,217.15			Tripping In	
03 Jan 2015	11:45	19:36	7.84	1,217.15	1,454.46	237.31	30.28	Drilling	
03 Jan 2015	19:36	19:56	0.34	1,454.46	1,454.46			Short Trip Out	
03 Jan 2015	19:56	20:15	0.32	1,454.46	1,454.46			Short Trip In	
03 Jan 2015	20:15	23:46	3.51	1,454.46	1,565.03	110.57	31.54	Drilling	
03 Jan 2015	23:46	00:00	0.23	1,565.03	1,573.91	8.88	38.89	Drilling	*Estimated Depths

**Drilling Records**

\*Surveys are interpolated from actual surveys

Date	Drilling Mode	Start Time	End Time	Hours	Start Depth (m)	End Depth (m)	Depth Drilled (m)	WOB (N)	ROP (m/hr)	RPM (RPM)	Surface Torque (N-m)	Flow Rate (m³/min)	Delta SPP (kPa)	TFO (°)	INC (°)	AZM (°)	DLS (°/30m)	Comment
03 Jan	Sliding	00:00	00:04	0.08	1,043.50	1,049.50	6.00		79.25					-140.00	90.30	64.39	2.57	*Estimated Depths
03 Jan	Rotating	00:04	00:12	0.13	1,049.50	1,052.37	2.87	16	21.48	34	3,408	2.75	303		90.29	64.63	2.57	
03 Jan	Sliding	00:12	00:22	0.17	1,052.37	1,058.37	6.00		36.29					-70.00	90.14	65.05	2.15	
03 Jan	Rotating	00:22	00:27	0.09	1,058.37	1,062.19	3.82	15	44.18	36	3,093	2.98	338		89.95	65.25	2.15	
03 Jan	Sliding	00:27	00:38	0.17	1,062.19	1,068.19	6.00		34.69					90.00	89.71	65.25	1.65	
03 Jan	Rotating	00:38	00:43	0.09	1,068.19	1,071.02	2.83	16	30.71	30	3,103	2.81	338		89.62	65.13	1.65	
03 Jan	Sliding	00:43	00:52	0.14	1,071.02	1,076.02	5.00		34.57					140.00	89.71	64.96	2.72	
03 Jan	Rotating	00:52	01:02	0.17	1,076.02	1,080.46	4.44	16	25.54	37	3,219	2.59	312		90.10	64.87	2.72	







**Daily Drilling Report for AA Pad, AA16 for January 3, 2015**

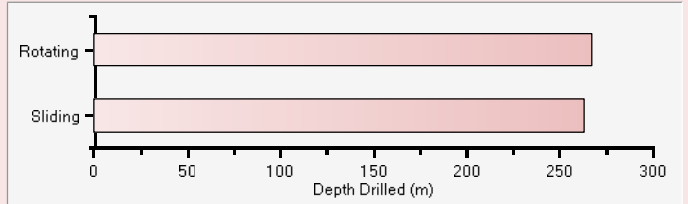
Survey Data										
Survey Depth (m)	Incl. (°)	(Grid) Azimuth (°)	Vertical Depth (m)	Subsea Depth (m)	Local Coordinates		Map Coordinates		Vertical Section (m)	Dogleg Rate (°/30m)
					Northings (m)	Eastings (m)	Northings (m)	Eastings (m)		
1,128.59	89.57	65.23	491.53	-138.08	153.30 S	647.31 E	6,789,176.91 N	573,140.35 E	628.44	0.72
1,137.54	89.56	64.18	491.59	-138.02	149.47 S	655.40 E	6,789,180.74 N	573,148.44 E	636.87	3.53
1,146.56	89.91	64.37	491.64	-137.97	145.56 S	663.52 E	6,789,184.65 N	573,156.57 E	645.35	1.31
1,156.25	89.81	64.57	491.66	-137.95	141.38 S	672.27 E	6,789,188.83 N	573,165.31 E	654.48	0.69
1,165.52	89.51	64.04	491.72	-137.89	137.36 S	680.62 E	6,789,192.85 N	573,173.66 E	663.19	1.97
1,174.55	89.68	64.31	491.78	-137.83	133.43 S	688.75 E	6,789,196.78 N	573,181.79 E	671.68	1.05
1,183.99	90.04	64.84	491.80	-137.81	129.37 S	697.27 E	6,789,200.84 N	573,190.32 E	680.57	2.06
1,192.39	90.25	65.10	491.78	-137.83	125.82 S	704.89 E	6,789,204.39 N	573,197.93 E	688.50	1.18
1,201.65	89.90	65.12	491.77	-137.84	121.92 S	713.29 E	6,789,208.29 N	573,206.33 E	697.25	1.14
1,209.07	90.30	64.09	491.76	-137.85	118.74 S	719.99 E	6,789,211.47 N	573,213.03 E	704.25	4.47
1,218.13	89.77	64.81	491.75	-137.86	114.83 S	728.16 E	6,789,215.38 N	573,221.20 E	712.77	2.96
1,227.07	89.72	64.12	491.79	-137.82	110.98 S	736.23 E	6,789,219.23 N	573,229.27 E	721.19	2.33
1,236.77	90.17	64.62	491.80	-137.81	106.78 S	744.97 E	6,789,223.43 N	573,238.02 E	730.31	2.09
1,246.15	89.62	65.21	491.82	-137.79	102.81 S	753.47 E	6,789,227.40 N	573,246.51 E	739.17	2.57
1,254.90	89.85	65.04	491.86	-137.75	99.12 S	761.41 E	6,789,231.09 N	573,254.45 E	747.44	0.98
1,263.61	89.64	65.19	491.90	-137.71	95.46 S	769.31 E	6,789,234.75 N	573,262.35 E	755.67	0.91
1,273.43	90.28	64.66	491.90	-137.71	91.30 S	778.20 E	6,789,238.91 N	573,271.24 E	764.94	2.55
1,282.22	90.01	65.82	491.88	-137.73	87.62 S	786.18 E	6,789,242.59 N	573,279.23 E	773.26	4.06
1,291.43	89.77	65.54	491.90	-137.71	83.82 S	794.58 E	6,789,246.39 N	573,287.62 E	781.99	1.19
1,300.61	89.79	65.15	491.94	-137.67	79.99 S	802.92 E	6,789,250.22 N	573,295.96 E	790.68	1.27
1,309.48	90.26	64.86	491.93	-137.68	76.25 S	810.96 E	6,789,253.96 N	573,304.00 E	799.06	1.87
1,318.75	89.99	65.47	491.91	-137.70	72.35 S	819.37 E	6,789,257.86 N	573,312.41 E	807.82	2.14
1,327.67	90.33	64.33	491.89	-137.72	68.57 S	827.45 E	6,789,261.64 N	573,320.49 E	816.24	4.00
1,337.31	89.92	64.12	491.87	-137.74	64.38 S	836.13 E	6,789,265.83 N	573,329.17 E	825.30	1.44
1,346.04	89.73	64.49	491.89	-137.72	60.59 S	844.00 E	6,789,269.62 N	573,337.04 E	833.51	1.42
1,355.95	90.27	65.52	491.89	-137.72	56.40 S	852.98 E	6,789,273.81 N	573,346.02 E	842.87	3.52
1,364.27	89.66	65.90	491.90	-137.71	52.98 S	860.56 E	6,789,277.23 N	573,353.60 E	850.76	2.60
1,373.76	89.66	64.69	491.95	-137.66	49.01 S	869.18 E	6,789,281.20 N	573,362.22 E	859.74	3.83
1,382.74	89.58	65.37	492.01	-137.60	45.22 S	877.32 E	6,789,284.99 N	573,370.36 E	868.22	2.28
1,392.49	89.75	65.58	492.07	-137.54	41.18 S	886.19 E	6,789,289.03 N	573,379.23 E	877.46	0.84
1,401.52	89.40	64.07	492.14	-137.47	37.34 S	894.37 E	6,789,292.87 N	573,387.41 E	885.98	5.15
1,410.19	90.14	65.59	492.17	-137.44	33.65 S	902.21 E	6,789,296.56 N	573,395.25 E	894.16	5.84
1,419.74	90.24	64.97	492.14	-137.47	29.65 S	910.89 E	6,789,300.56 N	573,403.93 E	903.19	1.98
1,428.48	89.68	64.41	492.15	-137.46	25.92 S	918.79 E	6,789,304.29 N	573,411.83 E	911.43	2.71
1,437.46	90.10	65.20	492.16	-137.45	22.10 S	926.91 E	6,789,308.11 N	573,419.95 E	919.90	3.00
1,446.55	89.81	65.82	492.17	-137.44	18.33 S	935.19 E	6,789,311.88 N	573,428.23 E	928.51	2.25
1,455.99	90.21	65.89	492.17	-137.44	14.47 S	943.80 E	6,789,315.74 N	573,436.84 E	937.47	1.31
1,465.61	90.14	65.31	492.14	-137.47	10.49 S	952.56 E	6,789,319.72 N	573,445.60 E	946.59	1.83
1,474.27	89.84	64.03	492.14	-137.47	6.79 S	960.39 E	6,789,323.42 N	573,453.43 E	954.75	4.55
1,483.36	89.48	64.82	492.20	-137.41	2.86 S	968.59 E	6,789,327.35 N	573,461.63 E	963.31	2.88
1,492.75	89.81	65.43	492.25	-137.36	1.09 N	977.11 E	6,789,331.30 N	573,470.15 E	972.18	2.21
1,501.67	89.74	63.52	492.29	-137.32	4.93 N	985.15 E	6,789,335.14 N	573,478.20 E	980.58	6.43
1,510.91	90.11	65.41	492.30	-137.31	8.91 N	993.49 E	6,789,339.12 N	573,486.53 E	989.28	6.25
1,519.76	89.71	63.65	492.31	-137.30	12.72 N	1,001.48 E	6,789,342.93 N	573,494.52 E	997.61	6.12
1,529.35	90.20	64.09	492.32	-137.29	16.94 N	1,010.09 E	6,789,347.15 N	573,503.13 E	1,006.61	2.05
1,538.23	89.55	64.67	492.34	-137.27	20.78 N	1,018.10 E	6,789,350.99 N	573,511.14 E	1,014.96	2.93
1,548.03	89.99	65.12	492.38	-137.23	24.94 N	1,026.97 E	6,789,355.15 N	573,520.01 E	1,024.21	1.93
1,556.91	90.36	63.58	492.35	-137.26	28.79 N	1,034.97 E	6,789,359.00 N	573,528.02 E	1,032.56	5.33

**Daily Drilling Report for AA Pad, AA16 for January 3, 2015**

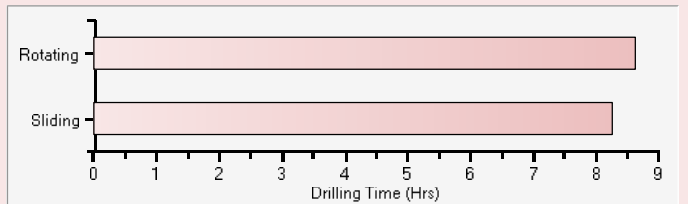
**Time vs Depth**



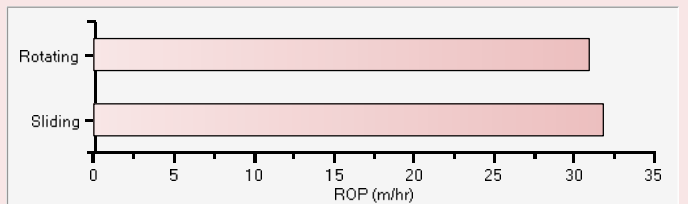
**Depth Drilled**



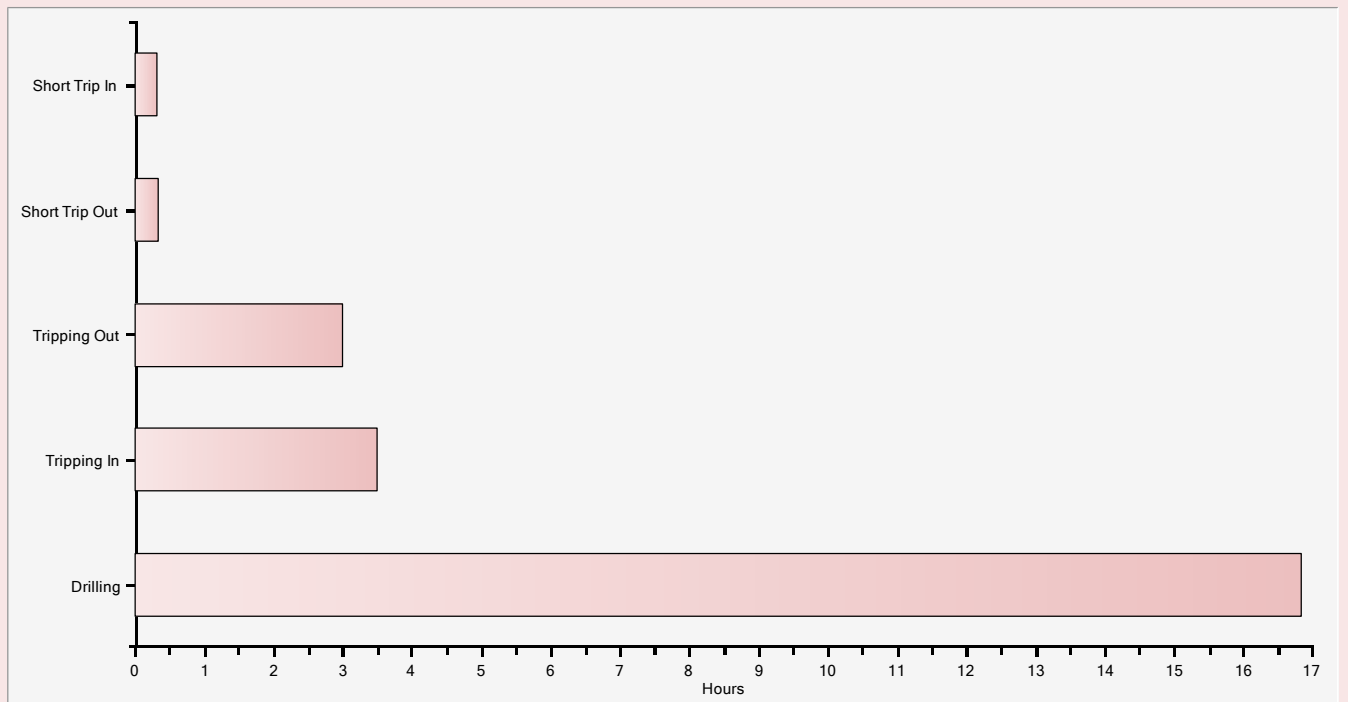
**Drilling Time**



**Average Rate of Penetration**



**Activity**





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**Daily Drilling Report for AA Pad, AA16 for January 3, 2015**

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