

115049

[illegible]

115048

LICENCE NO.: 1879	WELL NAME AND NO.: Northrock - 1 East Mackay 1-77
OPERATOR: Northrock Resources Ltd.	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 1-77-64-50-125-30	
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) HPS Signs Posted (if required)	Initial	Initial
(4) Well License & Stock Diagram Posted	Initial	Initial
(5) Flame Lines Staked	Initial	Initial
(6) BOP Drillis Performed	Initial	Initial
(7) Visually inspect BOP's - Flame/lines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crew/month)		Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/rig/month)		Initial
(3) Mast Inspection Before Raising or Lowering		Initial
(4) Crown Saver Checked		Initial
(5) Motor Kills checked		Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.	51		CASING	340	316	71.6	Prudential	J-55	3	43.21		93
FUEL @ 8:00			TUBING	244.5	226	53.2	Prudential	J-55	49	616		615
RIG	BOILER		OR LINER									
WEATHER	TEMPERATURE °C		DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL J.T.O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		1580	135		58	158	4.5X11	20	8-P-80	National	216
	WIND DIRECTION		1144W	62.5		61	158	4.5X11	57	8-P-80	National	216
	ROAD		1145D	39.7		62	158	4.5X11	240			

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES			
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	APPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.								NO.	TYPE		MORNING	DAY
MORN.							7										1						Handle T.J.D.					8	2	82x	500s			
DAY							5										1							2				8	TOP	250	TOP	180		
EVE							4.75	25																			8	MIDDLE	250	MIDDLE	145			
TOTAL							16.75	25									2						5				24	BOTTOM	250	BOTTOM	180			

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD																					
NO.	BIT	O.D. /mm	LENGTH											MUD TYPE		☐ WATER BASED		☐ OIL BASED																	
			m	BIT NO.								MUD TYPE																							
			m	SIZE (mm)								TIME																							
			m	IADC CODE								DENSITY kg/m ³																							
			m	MFG.								FUNNEL VIS. - (S/L)																							
			m	TYPE								W.L. (cm ³)																							
			m	SERIAL NO.								pH																							
			m	JETS (mm)																															
			m	DEPTH OUT (m)								MUD MATERIALS ADDED		SOLIDS CONTROL																					
			m	DEPTH IN (m)								PRODUCT		AMOUNT X UNIT		DESILTER																			
			m	TOTAL METRES DRILLED (m)								Barite		20		HOURS RUN		INTAKE DENSITY (kg/m ³)		OVERFLOW DENSITY (kg/m ³)		UNDERFLOW DENSITY (kg/m ³)													
			m	TOTAL HOURS RUN								Gel		41																					
	D.P.	STANDS		CUTTING STRUCTURE		T ₁		T ₂		MDC		LOC		B		Gage		ODC		Reason Pulled		Total Run m/hr.		Sphulsh		22		CENTRIFUGE							
	D.P.	SINGLES																						Lignite		3		HOURS RUN		INTAKE DENSITY (kg/m ³)		OVERFLOW DENSITY (kg/m ³)		UNDERFLOW DENSITY (kg/m ³)	
KELLY DOWN				HOLE CONDITION																															
TOTAL				HOLE DRAG																															
WT. OF DC				TORQUE AT BOTTOM																															
WT. OF STRING				FILL ON BOTTOM (m)																															

MORNING TOUR

METRES DRILLED					TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R.D. P.M.F.- CORRE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.		
					0000	0700	7	6	REN WITH TEST TOOL	
					0700	0800	1	16	Drill STEM TEST	
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	LINER SIZE (mm)	S.P.M.	PUMP NO. 2	LINER SIZE (mm)	S.P.M.				
REDUCED PUMP SPEED										
@		@								
DEVIATION SURVEY										
DEPTH (m)	DEVIATION (°)	DIRECTION								
									MJ 3868 AMT 167026	
					NOTES Crown Saver, Dead Line Anchors, Brakes & Linkages, Rimmed Chocks #2 Bailor Blks @ 10.5 STG TO					
DRILLER SIGNATURE					HRS. RAN	BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC	M.A.C.P.
Todd Black					8	10.5	450			

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD					
NO.	BIT	O.D. mm	LENGTH	BIT NO.										MUD TYPE	☐ WATER BASED	☐ OIL BASED			
			m	SIZE (mm)										TIME					
			m	IADC CODE										DENSITY kg/m ³					
			m	MFG.										FUNNEL VIS. - (S/L)					
			m	TYPE										W.L. (cm ³)					
			m	SERIAL NO.										pH					
			m	JETS (mm)															
			m	DEPTH OUT (m)										MUD MATERIALS ADDED		SOLIDS CONTROL			
			m	DEPTH IN (m)										PRODUCT	AMOUNT X UNIT	DESILTER			
			m	TOTAL METRES DRILLED (m)												HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
			m	TOTAL HOURS RUN															
	D.P.	STANDS	m	CUTTING STRUCTURE										CENTRIFUGE					
	D.P.	SINGLES	m	T ₁	T ₂	MOC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.			HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
KELLYDOWN			m	HOLE CONDITION															
TOTAL			m	HOLE DRAG															
WT. OF DC			1000 g/m	TORQUE AT BOTTOM												HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT. OF STRING			1000 g/m	FILL ON BOTTOM (m)															

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	DR-D R.M.F CORE-C	ROTARY R.P.M.	WT ON BIT (1000 lbs)	FROM	TO	ELAP TIME	CODE NO				
					0800			16	Attempt to soft Packers after inflating.			
						0900	1		Unsuccessful Test and head and sticks			
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2			0900			6	Hurst DST #1 Flow @ 2200, 2400, 1800, 1400			
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.	1400	1400	5		970, 850, 420, 100 and out (chained out)			
					1400	1600	2	27	Breakdown and require test tool			
REDUCED PUMP SPEED												
		@		@								
DEVIATION SURVEY												
DEPTH (m)	DEVIATION (°)		DIRECTION									
NOTES						✓ Crownwire, Deviation Anchors, Packers and Linkage Auger 4000						
						#2 Packers run 8 hrs. Playhouse Packers Reach = 120L Fluid						
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		
						HRS. RAN	ph	STACK TEMP.				
						3	5	150				

DRILLING ASSEMBLY (At End of Tour)										MUD RECORD																	
NO.		LENGTH		BIT RECORD										MUD TYPE				WATER BASED		OIL BASED							
		BIT		O.D. mm		m		BIT NO.						TIME													
						m		SIZE (mm)						DENSITY kg/m ³													
						m		IADC CODE						FUNNEL VIS. - (S/L)													
						m		MFG.						W.L. (cm ³)													
						m		TYPE						pH													
						m		SERIAL NO.																			
						m		JETS (mm)																			
						m		DEPTH OUT (m)						MUD MATERIALS ADDED		SOLIDS CONTROL											
						m		DEPTH IN (m)						PRODUCT		AMOUNT X UNIT		DESILTER									
						m		TOTAL METRES DRILLED (m)										HOURS RUN		INTAKE DENSITY (kg/m ³)		OVERFLOW DENSITY (kg/m ³)		UNDERFLOW DENSITY (kg/m ³)			
						m		TOTAL HOURS RUN																			
		D.P.		STANDS		m		CUTTING STRUCTURE		T ₁		T ₂		MDC		LOC		B		Gage		ODC		Reason Pulled		Total Run m/hr.	
		D.P.		SINGLES		m																					
						m																					
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METRES DRILLED							TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R.D. R.M.R CORE-C	ROTARY F.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.						
					18 ⁰⁰	19 ⁰⁰	3'22"		Breakdown and service Test tool all layout					
					19 ⁰⁰	19 ¹⁵	.25'	7	Run Service c/o Blindrams					
					19 ¹⁵	20 ⁰⁰	1'25"	C	RUN W/D.C. and 30stds of D.P					
					21 ⁰⁰	23 ⁰⁰	2'	6	L/D 60 pipe and BDC.					
					23 ⁰⁰	24 ⁰⁰	1'	6	RUN W/D.P. to 175ft					
REDUCED PUMP SPEED														
	@		@											
DEVIATION SURVEY														
DEPTH (m)	DEVIATION (°)		DIRECTION											
					NOTES ✓ Commenced, Dead Line anchor 2, Break off stages, Remote choke #2 Boiler Blows PH/MSSST 450 31w down Boilers 2x = 80									
DRILLER SIGNATURE					HRS. RAN		BOILER ph. STACK TEMP.		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
[Signature]					B 125450		450							

EVENTING TOUR

115047

LICENCE NO.: 1879	WELL NAME AND NO.: Northreek et al East Mackay 1-77
OPERATOR: Northreek Resources Ltd	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU INC. Incorporated
SURFACE LOCATION: 1-77-64-50-125-30	UNIQUE ID: AKITA/SAHTU DRILLING
SIGNATURE OF OPERATOR'S REPRESENTATIVE: <i>[Signature]</i>	SIGNATURE OF CONTRACTOR'S RIG MANAGER: <i>[Signature]</i>

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flowlines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (once/month)		Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (once/month)		Initial
(3) Mast Inspection Before Raising or Lowering		Initial
(4) Crown Saver Checked		Initial
(5) Motor Kills checked		Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.	51		CASING	340	316	71.6	Prodental	D-55	3	43.21		43
FUEL @ 8:00			TUBING OR	244.5	226	52.2	Prodental	D-55	49	616		615
RIG	BOILER		LINER									
W E A T H E R	TEMPERATURE	°C	D/O P SIZE	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JO D. (mm)	TYPE THREATH	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		DE 158	135		58	158	11/4x11	20	E-P-80	National	216
	WIND DIRECTION		Hw 114	62.5		61	158	11/4x11	57	E-P-80	National	216
	ROAD		DP 114	29.77	G+E	92	158	11/4x11	260			

TIME - HRS	CODE NO.																					TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		21	22	23	24	25	26	NO.	TYPE	MORN	DAY	EVE					
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.	Handle Tools										8	22x	5000			
MORN.						3.5				1		3.5																					8					
DAY						5.5	2.5																										8					
EVE						3.75	2.5																										8					
TOTAL						20	10.5	5		1		3.5																					24					

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD							
NO.	BIT	O.D. mm	LENGTH											MUD TYPE	☐ WATER BASED	☐ OIL BASED					
			m	BIT NO.								TIME									
			m	SIZE (mm)								DENSITY kg/m ³									
			m	IADC CODE								FUNNEL VIS. - (S/L)									
			m	MFG.								W.L. (cm ³)									
			m	TYPE								pH									
			m	SERIAL NO.																	
			m	JETS (mm)																	
			m	DEPTH OUT (m)								MUD MATERIALS ADDED		SOLIDS CONTROL							
			m	DEPTH IN (m)								PRODUCT		AMOUNT X UNIT		DESILTER					
			m	TOTAL METRES DRILLED (m)												HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
			m	TOTAL HOURS RUN																	
	D.P.	STANDS	m	CUTTING STRUCTURE		T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.			CENTRIFUGE				
	D.P.	SINGLES	m														HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
	KELLY DOWN		m	HOLE CONDITION																	
	TOTAL		m	HOLE DRAG																	
WT.OFDC			1000 daN	TORQUE AT BOTTOM														HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT.OF STRING			1000 daN	FILL ON BOTTOM (m)																	

[illegible]

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD							MUD RECORD							
NO.		BIT		O.D. mm	LENGTH	BIT NO.				MUD TYPE		☐ WATER BASED	☐ OIL BASED							
		BIS	.61	mm	SIZE (mm)	222			TIME		1300									
8	D.C	73.62	m	IADC CODE	617				DENSITY kg/m ³	1110										
			m	MFG.	Hughes			FUNNEL VIS. - (S/L)	92											
			m	TYPE	A-T-44			W.L. (cm ²)												
			m	SERIAL NO.	NB140			pH												
			m	JETS (mm)	3 x 1/3			PWT	35.6											
			m	DEPTH OUT (m)					MUD MATERIALS ADDED				SOLIDS CONTROL							
			m	DEPTH IN (m)					PRODUCT	AMOUNT X UNIT		DESILTER								
			m	TOTAL METRES DRILLED (m)					Barite	15 sx		HOURS RUN	INTAKE DENSITY (kg/m.)	OVERFLOW DENSITY (kg/m.)	UNDERFLC DENSITY (kg/m.)					
			m	TOTAL HOURS RUN																
122	D.P.	STANDS	2315.5	CUTTING STRUCTURE	T _c	T _e	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr..	CENTRIFUGE						
	D.P.	SINGLES												HOURS RUN	INTAKE DENSITY (kg/m.)	OVERFLOW DENSITY (kg/m.)	UNDERFLC DENSITY (kg/m.)			
KELLY DOWN				10.08	HOLE CONDITION															
TOTAL				2400.00	HOLE DRAG															
WT.OF DC				1000 drk	TORQUE AT BOTTOM										1000					
WT.OF STRING				67	FILL ON BOTTOM (m)										N/I					

[illegible]

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD								
NO.	BIT		LENGTH											MUD TYPE		☐ WATER BASED		☐ OIL BASED				
				BIT NO.								TIME										
				SIZE (mm)								DENSITY kg/m ³										
				IADC CODE								FUNNEL VIS. - (S/L)										
				MFG.								W.L. (cm ³)										
				TYPE								pH										
				SERIAL NO.																		
				JETS (mm)																		
				DEPTH OUT (m)								MUD MATERIALS ADDED		SOLIDS CONTROL								
				DEPTH IN (m)								PRODUCT		AMOUNT X UNIT		DESILTER						
				TOTAL METRES DRILLED (m)												HOURS RUN		INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
				TOTAL HOURS RUN																		
	D.P.	STANDS		CUTTING STRUCTURE		T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE							
	D.P.	SINGLES													HOURS RUN		INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)			
KELLY DOWN				HOLE CONDITION																		
TOTAL				HOLE DRAG																		
WT. OF DC			1000 data	TORQUE AT BOTTOM										HOURS RUN						INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT. OF STRING			1000 data	FILL ON BOTTOM (m)																		

METRES DRILLED					TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	D.F.D. R.M.R. CORE-C	ROTARY R.P.M.	WT ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.					
22400					1600	1900	3	6	P.O.O.H TO TEST. Fl...✓ @ 18GB, 933				
									75 end out				
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	LINER SIZE (mm)	S.P.M.	PUMP NO. 2	LINER SIZE (mm)	S.P.M.	1900	1915	.25	7	Rig Service c/o Phindromis 4/sec		
							1915	2315	4	22	Hold dia tools		
								2315	2400	.75	6	RI H with test tool	
REDUCED PUMP SPEED													
	@		@										
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)	DIRECTION											
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
					HRS. RAN	ph	STACK TEMP.						
Jared D. Black					8	103	450						

115046

LICENCE NO.: 1879	WELL NAME AND NO.: NORTH ROCK ETAL EAST MACKAY I 77
OPERATOR: NORTH ROCK RESOURCES	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-50-125-30	SIGNATURE OF CONTRACTOR'S RIG MANAGER:
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) HPS Signs Posted (if required)	Initial	Initial
(4) Wet License & Sick Diagram Posted	Initial	Initial
(5) Flow Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degassers Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crew/month)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/night/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
20	01	20	CASING	340	316	71.6	PRUD	35	3	43.21		413
RIG NO.	51		TUBING	244.5	226	52.2	PRUD	155	19	616		616
FUEL @ 8:00			OR									
RIG	BOILER		LINER									

W E A T H E R	TEMPERATURE	°C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL J.T.O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTR (mm)
	CURRENT CONDITIONS		158	135		58	158	114X110	20	SP80	NATIONAL	216
	WIND DIRECTION		141/114	62.5		61	158	114X110	57	SP80	NATIONAL	216
	ROAD		DP 114	39.77	61F	92	158	114X110	260			

TIME - HRS	CODE NO.																											TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		NO. TYPE	SIZE	MT	MORN	DAY	EVE	
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUO & CIRC	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP G.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DR. WORK	SAFETY MTG.							8	82X	500's	MT 8660			
MORN.						1.5	6	.25			.25																		8	SCREENS CHANGED	☐ YES ☐ NO	AMT 160 940			
DAY							4.5	.25				3.25																	8	TOP	1116	1116			
EVE												8																	8	MIDDLE	251	1116			
TOTAL						1.5	10.5	.5			3.5	11.25																	24	BOTTOM	250	1116			

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD								
NO.	BIT	O.D. mm	LENGTH	BIT NO.											MUD TYPE		☒ WATER BASED		☐ OIL BASED			
	515	115	3.00	SIZE	(mm)										TIME	02:00	04:00					
15	DC	158	115.72	IADC CODE										DENSITY kg/m ³	1040	1040						
15	HWD	114	139.06	MFG.											FUNNEL VIS. - (s/L)	71	78					
				TYPE											W.L. (cm ²)	7.0	7.0					
				SERIAL NO.											pH	10.0	10.0					
				JETS	(mm)																	
				DEPTH OUT	(m)										MUD MATERIALS ADDED		SOLIDS CONTROL					
				DEPTH IN	(m)										PRODUCT		AMOUNT X UNIT		DESILTER			
				TOTAL METRES DRILLED	(m)										GEL		27		HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
				TOTAL HOURS RUN											KELZAN		1		4	1040	1035	1240
110	D.P.	STANDS	2097.22	CUTTING STRUCTURE					B	Gage	ODC	Reason Pulled	Total Run m/hr.	BARITE		15		CENTRIFUGE				
	D.P.	SINGLES		T ₁	T ₂	MDC	LOC										HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
	KELLY DOWN		24.74	HOLE CONDITION														8	1040	1115	1895	
	TOTAL		2400	HOLE DRAG																		
WT. OF DC			1000 daN	TORQUE AT BOTTOM														HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
WT. OF STRING			1000 daN	FILL ON BOTTOM (m)																		

MORNING TOUR

METRES DRILLED					TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	DHD RM-F CORE-O	ROTARY P.L.P.M.	WT. ON BIT (1000 daPa)	FROM	TO	ELAP. TIME	CODE NO.			
2700	TD	O			0	05	25 7		RIG SERVICE C/O HYDRIL		
					15	230	25 6		WIPED TRIP LIT END FC 2390, 2295		
					230	400	15 5		CIRC AND MUD		
					400	415	25 10		PUMP DOWN SURVEY 4 PUMP PUL		
10500	152	105			415	800	375 6		MOVE TO LOG FC 2395, 2312, 1720		
REDUCED PUMP SPEED											
3160	@	52	@								
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (°)		DIRECTION								
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		
					HRS. RAN	ph	STACK TEMP.		M.A.C.P.		
					8	10.5	450		5123		

PLEN DOWN POILERS 2X3=120 L FLUID
 VERDOWN SAYER, BRAXEST LINKAGE, DEADLINE ANCHORS
 FUNCTION P.M.OTE CHOK, #2 BOILER S.A.P.S, PH 10.5, ST 450

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD							MUD RECORD					
NO.	BIT		O.D. mm	LENGTH	B.T. NO.						MUD TYPE	☒ WATER BASED	☐ OIL BASED					
				m	SIZE	(mm)					TIME							
				m	IADC CODE						DENSITY kg/m ³							
				m	MFG.						FUNNEL VIS. - (S/L)							
				m	TYPE						W.L. (cm ³)							
				m	SERIAL NO.						pH							
				m	JETS	(mm)												
				m	DEPTH OUT	(m)					MUD MATERIALS ADDED		SOLIDS CONTROL					
				m	DEPTH IN	(m)					PRODUCT	AMOUNT X UNIT	DESILER					
				m	TOTAL METRES DRILLED	(m)							HOURS RUN	INTAKE DENSITY (kg/m. ³)	OVERFLOW DENSITY (kg/m. ³)	UNDERFLOW DENSITY (kg/m. ³)		
				m	TOTAL HOURS RUN													
	D.P.	STANDS		m	CUTTING STRUCTURE								CENTRIFUGE					
				m	T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled					Total Run m/hr.	
	D.P.	SINGLES		m														
	KELLY DOWN			m	HOLE CONDITION													
	TOTAL			m	HOLE DRAG													
WT.OFDC				1000 daN	TORQUE AT BOTTOM										HOURS RUN	INTAKE DENSITY (kg/m. ³)	OVERFLOW DENSITY (kg/m. ³)	UNDERFLOW DENSITY (kg/m. ³)
WT.OF STRING				1000 daN	FILL ON BOTTOM (m)													

METRES DRILLED					TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS					
FROM	TO	DR-B RM CORE-C	ROTARY R.P.M.	WT. ON BIT (1500 psi)	FROM	TO	ELAP TIME	CODE NO.				
2400					0800	1100	3	6	Hoist To Log FC 1436, 327			
					1100	1200	1	6	L/O SWDOP			
					1200	1230	5	6	Hoist To Log FC in Bank			
					1230	1245	25	7	Rig Service C/O Blind Rams			
					1245	1600	325	11	Rig + Log Hole			
					Log on Bit @ 1500 TA 2395m							
REDUCED PUMP SPEED												
	@		@									
DEVIATION SURVEY												
DEPTH (m)	DEVIATION (°)	DIRECTION										
1796m	1°				STAP 2087.50							
					TAIR 2087.23							
					2.27							
					TR 2-82							
					TMV 12.78							
					DTS .04							
NOTES					✓ Crown Saver, Brakes & Linkage, Dead line anchor, Rammer (m)							
					#2 Boiler Burn 24 hr ST 450							
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
2nd Block					HRS. RUN ph		STACK TEMP.					
					8		105 450					

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD							MUD RECORD			
NO.	BIT	O.D. mm	LENGTH	BIT NO.			MUD TYPE	☒ WATER BASED	☐ OIL BASED							
			m	SIZE (mm)			TIME									
			m	IADC CODE			DENSITY kg/m ³									
			m	MFG.			FUNNEL VIS. - (S/L)									
			m	TYPE			W.L. (cm ³)									
			m	SERIAL NO.			pH									
			m	JETS (mm)												
			m	DEPTH OUT (m)			MUD MATERIALS ADDED			SOLIDS CONTROL						
			m	DEPTH IN (m)			PRODUCT	AMOUNT X UNIT		DESILTER						
			m	TOTAL METRES DRILLED (m)						HOURS RUN	INTAKE DENSITY (kg/m. ³)	OVERFLOW DENSITY (kg/m. ³)	UNDERFLOW DENSITY (kg/m. ³)			
			m	TOTAL HOURS RUN												
	D.P.	STANDS	m	CUTTING STRUCTURE			B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE				
	D.P.	SINGLES	m	T ₁	T ₂	MDC	LOC					HOURS RUN	INTAKE DENSITY (kg/m. ³)	OVERFLOW DENSITY (kg/m. ³)	UNDERFLOW DENSITY (kg/m. ³)	
KELLYDOWN			m	HOLE CONDITION												
TOTAL			m	HOLE DRAG												
WT.OF DC	29.000		1000 g/N	TORQUE AT BOTTOM								HOURS RUN	INTAKE DENSITY (kg/m. ³)	OVERFLOW DENSITY (kg/m. ³)	UNDERFLOW DENSITY (kg/m. ³)	
WT.OF STRING			1000 g/N	FILL ON BOTTOM (m)												

EVENTING TOUR

METRES DRILLED					TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS		
FROM	TO	O.D. B.M. CODE C.	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.			
2400					1600	2400	8	11	Log Hole		
CIRCULATION PRESSURE (kPa)		PUMP NO. 1		PUMP NO. 2							
		LINE SIZE (mm)	S.P.M.	LINE SIZE (mm)	S.P.M.						
		152									
REDUCED PUMP SPEED											
		@		@							
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (°)		DIRECTION								
NOTES ✓ Buckramed Linings, Walling anchors 1 Boiler ran this plus 55450° Functional Remote Choke											
DRILLER SIGNATURE					HRS. RUN		BOILER ph		STACK TEMP.		MAXIMUM EXPERIENCED HOOKLOAD
					5		12		2400		SAFETY TOPIC
											M.A.C.P.

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection Weekly (using checklist)	Initial	Initial
(3) HPS Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flame Lines Striked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flowlines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/month)		Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/month)		Initial
(3) Meet Inspection Before Raising or Lowering		Initial
(4) Crown Saver Checked		Initial
(5) Motor Kills checked		Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
60	01	14	CASING	340	316	716	PRUD	J55	2	43.21		47
FIG NO.	51		TUBING	244.5	226	532	PRUD	J55	44	116		615
FUEL @ 8:00			OR									
FIG	BOILER		LINER									

WEATHER	TEMPERATURE	°C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JO. O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		1X 158	135		58	158	114X11	20	8P80	NATIONAL	216
	WIND DIRECTION		HW 114	62.5		61	158	114X11	57	8P80	NATIONAL	216
	ROAD		DP 114	29.77	61E	92	158	114X11	260			

TIME HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES		MORN	DAY					
	OPER.	RIG UP A YEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND MUD & CNC	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WASH ON CEMENT	SHUFFLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.							NO. TYPE										
	MORN		5	.75			.5	1.5	.25																				8	SCREENS CHANGED	☐	YES			☐	NO	1182x	560's	MIS 7537
	DAY			7.75																									8	TOP	TOP						AMS 154812		
	EVE			6.25			1.5		.25																				8	MIDDLE	MIDDLE								
TOTAL			19	.75		2	1.5	.75																			24	BOTTOM	BOTTOM										

MORNING TOUR

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	GRD. PWR. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 GMS)	FROM	TO	ELAP. TIME	CODE NO.			
2342	2357	15	65	11-12	0	30	.5	6	R.I.H.		
					30	100	.5	5	BREAK CIRC		
					100	200	1	6	R.I.H.		
					200	245	.75	3	REAM F/ 2322-2342		
9200			152	105	245	530	.25	2	DRILL F/ 2342 - 2351		
REDUCED PUMP SPEED					530	545	.25	2	RIG SEPARATE C/O HYDRAULIC		
2600	@	50	@		545	800	.25	2	DRILL F/ 2351 - 2357		
DEVIATION SURVEY											
DEPTH (m)		DEVIATION (%)		DIRECTION							
					BLOWDOWN BOILERS 2x3 ± 120L FLUID						
					FORMATION HEAD ROCK						
					NOTES ✓ CROWN SAVER, BRANES + LINKAGE, DEADLINE ANCHORS, FUNCTION REMOTE CHOKER # 2 BOILER 8 LPS PSI 10.5 ST USED						
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.
					HRS. RAN	ph	STACK TEMP.				
					8	8.5	450			5123	

[illegible][illegible]

115044

LICENCE NO.: 1879	WELL NAME AND NO.: NORTH ROCK ET AL EAST Mackay I 77
OPERATOR: NORTH ROCK RESOURCES	CONTRACTOR: AKITA/SAHTU DRILLING,
SURFACE LOCATION: 64-50-125-30	is a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually Inspect BOP's - Firelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (once/mo/week)		Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (once/mo/week)		Initial
(3) Mast Inspection Before Raising or Lowering		Initial
(4) Crown Saver Checked		Initial
(5) Motor Kills checked		Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
20	01	18	CASING	340	311	716	PRUD	J55	3	43.21		417
RIG NO.	51		TUBING									
FUEL @ 8:00			OR	246.5	226	532	PRUD	J55	49	116		615
RIG	BOILER		LINER									
WEATHER	TEMPERATURE °C		DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		DC/DP	135		58	154	114 x H	20	SP80	NATIONAL	216
	WIND DIRECTION		H21W	62.5		61	154	114 x H	57	SP80	NATIONAL	216
	ROAD		DRPH	29.77	62E	92	154	114 x H	20			

TIME - HRS	CODE NO.																					TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		21	22	23	24	25	26	NO.	TYPE	MORN	DAY	EVE
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	PLAN CASE & CEMENT	WAIT ON CEMENT	NEPPEL UP B.G.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DRL. WORK	SAFETY MTG.							1	TYPE			
MORN.			7.15					25																				8	SCREENS CHANGED	☐ YES ☐ NO			
DAY			5			1	1.75	25																				8	TOP	TOP			
EVE							8																					8	MIDDLE	MIDDLE			
TOTAL			12.75			1	9.75	5																				24	BOTTOM	BOTTOM			

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD							MUD RECORD								
NO.	BIT		O.D. mm	LENGTH	BIT NO.					MUD TYPE	☒ WATER BASED		☐ OIL BASED						
	515		115	3.00	SIZE (mm)	222				TIME	02:00		04:00	06:00					
18	O.C.		158	115.72	IADC CODE	5 1 7				DENSITY kg/m ³	1140		1140	1140					
15	FWD DR		110	139.06	MFG.	HUGHES				FUNNEL VIS. - (S/L)	55		55	57					
					TYPE	GT-S30				W.L. (cm ³)	8.0		7.5	7.5					
					SERIAL NO.	E252A				pH	9.5		10.0	10.0					
					JETS (mm)	3 x 10.3				P.V.T	32.3		32.5	32.5					
					DEPTH OUT (m)	11				MUD MATERIALS ADDED			SOLIDS CONTROL						
					DEPTH IN (m)	22.70				PRODUCT	AMOUNT X UNIT		DESILTER						
					TOTAL METRES DRILLED (m)	65				GEL	15 SX		HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)			
					TOTAL HOURS RUN	17.75				CAUSTIC	1 SX		8	1140	1130	2010			
116	D.P.	STANDS	2011.15		CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.	STAFO	CENTRIFUGE				
	D.P.	SINGLES	9.56		T ₁	T ₂	MDC	LOC				3.7	LIGNITE	2 SX		HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
	KELLY DOWN		6.25		HOLE CONDITION								8		1140	1115	1260		
	TOTAL		2335		HOLE DRAG							7-8							
WT. OF DC	24		1000 g/m		TORQUE AT BOTTOM							4000							
WT. OF STRING	76		1000 g/m		FILL ON BOTTOM (m)														

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	DR-D RM-R CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)		FROM	TO	ELAP. TIME	CODE NO.					
2307	2335	26	85	15-20		0	1 ¹⁵	1.25	2	DRILL F1 2307 - 2313				
						1 ¹⁵	1 ³⁰	2.25	7	RIG. SERVICE C/O H/WORK ✓ RSPD				
						1 ³⁰	8 ⁰⁰	6.5	2	DRILL F1 2313 - 2335				
CIRCULATION PRESSURE (kPa)		PUMP NO. 1		PUMP NO. 2										
		LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.									
9300				152	105									
REDUCED PUMP SPEED														
2700	@	51	@											
DEVIATION SURVEY														
DEPTH (m)		DEVIATION (°)		DIRECTION										
						FORMATION BEAR ROCK								
						NOTES								
						✓ CROWN SAVE, DEADLINE ANCHORS, BLADES + LINER, REMOTE CHINE								
						#2 BOILER GARS PH. H/S. ST 1150 BREWERY BOILER 2% 24.3 = 17.6 FALLO								
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
						HRS. RAN	ph	STACK TEMP.						
Ben [Signature]						8	185	1150	84				5123	

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD									
NO.	BIT	O.D. mm	LENGTH	BIT NO.							MUD TYPE		☐ WATER BASED		☐ OIL BASED								
	S/S	165	2.25 m	7																			
				SIZE (mm)		222					TIME		0900		1200								
18	DC	158	165.72 m	IADC CODE		5 1 7					DENSITY kg/m ³		1145		1140								
15	HWDP	114	139.06 m	MFG.		HUGHES					FUNNEL VIS. - (S/L)		54		55								
				TYPE		G7-S20					W.L. (cm ²)		8.5										
				SERIAL NO.		F 252A					pH		10.0		9.5								
				JETS (mm)		3x10.3					API #3		31.8		32.2								
				DEPTH OUT (m)		2342					MUD MATERIALS ADDED		SOLIDS CONTROL										
				DEPTH IN (m)		2270					PRODUCT		AMOUNT X UNIT		DESILTER								
				TOTAL METRES DRILLED (m)		72					Stafo		1 SK		HOURS RUN		INTAKE DENSITY (kg/m ³)		OVERFLOW DENSITY (kg/m ³)		UNDERFLOW DENSITY (kg/m ³)		
				TOTAL HOURS RUN		22.75					Lignite		1 SK		8		1140		1135		1245		
106	D.P.	STANDS	2011.18 m	CUTTING STRUCTURE																			
1	D.P.	SINGLES	1.56 m	T ₁		T ₂		MDC		LOC		B		Gage		ODC		Reason Pulled		Total Run m/hr.			
																				32		Barite	
KELLYDOWN			13.26 m	HOLE CONDITION																			
TOTAL			2342.03 m	HOLE DRAG		7-10.																	
WT.OF DC		24	1000 g/m	TORQUE AT BOTTOM		4000																	
WT.OF STRING		76	1000 g/m	FILL ON BOTTOM (m)																			

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	DR-D RMR CORE-C	ROTARY R.P.M.	WT.ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO			
2335	2342	7	85	1830	2330	1300	5	2	Drill F/2325-2342		
					1300	1400	1	5	Circ up bottom Hole sample		
					1400	1425	.25	27	POPH to change bit Rtg service (10 H2		
					1415	1600	1.75	6	POPH for Bit FC 2342, 2144, 1783		
CIRCULATION PRESSURE (kPa)					PUMP NO. 1		PUMP NO. 2				
					LINER SIZE (mm)		S.P.M.				
9400					152		105				
REDUCED PUMP SPEED											
2700					@ 51		@				
DEVIATION SURVEY											
DEPTH (m)			DEVIATION (°)		DIRECTION						
NOTES ✓ crown swpr. Deadline anchors, brakes and linkage, Remote cl											
H2 Boiler 8hrs PHUSST 460											
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		
Jodi Black					HRS. RAN ph. STACK TEMP.						
					8 10.5 450				5132		

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD									
NO.	LENGTH			NO.					MUD TYPE		☐ WATER BASED ☐ OIL BASED						
	BIT	O.D. mm	225	m	SIZE	(mm)				TIME							
	315	115	300	m	IADC CODE	222				DENSITY							
	18	DC	158	m	117					kg/m ³							
	15	WOBP	114	m	139.06	MFG. Hughes				FUNNEL							
				m		TYPE ATJ-44				VIS. - (S/L)							
				m		SERIAL NO. N31YD				W.L. (cm ²)							
				m		JETS (mm) 210.3				pH							
				m		DEPTH OUT (m)				MUD MATERIALS ADDED		SOLIDS CONTROL					
				m		DEPTH IN (m) 2342				PRODUCT	AMOUNT X UNIT	DESILTER					
				m		TOTAL METRES DRILLED (m)						HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
				m		TOTAL HOURS RUN											
				m		CUTTING STRUCTURE						CENTRIFUGE					
	D.P.	STANDS	2071.18	m	T ₁	T ₂	MDC	LOC	B	Gags	ODC	Reason Pulled	Total Run m/hr.				
	D.P.	SINGLES	9.56	m													
	KELLY DOWN		13.26	m	HOLE CONDITION												
	TOTAL		2342.02	m	HOLE DRAG				7-10								
WT. OF DC			24	1000 gN	TORQUE AT BOTTOM									HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT. OF STRING			96	1000 gN	FILL ON BOTTOM (m)												

METRES DRILLED					TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	D.R. R.M.P. CORE-G	ROTARY R.P.M.	WT. ON BIT (1000 GMS)	FROM	TO	ELAP. TIME	CODE NO.					
0342					1600	2000	4	6	R.O.H. For B. + UZ40, 660, 301, ANCAUK				
					2000	2400	4	6	MAKE UP BIT + R.H. FC, 620,				
CIRCULATION PRESSURE (KPa)		PUMP NO. 1		PUMP NO. 2									
		LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.								
REDUCED PUMP SPEED													
		@		@									
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)	DIRECTION											
NOTES					FUNCTION BLINDRAME - 0.1m on BANK								
					CANN SAVER, DEADLINE ANCHORS, BRANCH 4 ANCHOR								
					#2 BOILER 8" BSP H.O.T. ST 40, BRANCH 10" POLY 15 2X33 12" 15" 15"								
DRILLER SIGNATURE					HRS. RAN	BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC		M.A.C.P.		
Rm 1-2-4					8	100	850						

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) HPS Signage Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flame Line Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Gassaver Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (once/monthly)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection (checklist) (one/monthly)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR	MONTH	DAY	LAST CASING TUBING OR LINER	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL LENGTH (m)	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.	51			340	316	71.6	PRUD	T&C	3	4321		413
FUEL @ 8:00				244.5	226	532	PRUD	T&C	49	1.16		615
RIG	BOLLER											
WEATHER	TEMPERATURE	°C	DC OP. SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL J. O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE (TH. (mm)
	CURRENT CONDITIONS		DC 154	175		54	158	11/4x11	20	SP80	NATIONAL	216
	WIND DIRECTION		11/4x14	62.5		61	158	11/4x11	97	SP80	NATIONAL	216
	ROAD		DP 114	29.77	64E	92	154	11/4x11	210			

DRILLING ASSEMBLY (At End of Tour)				LENGTH				BIT RECORD				MUD RECORD				METRES DRILLED				TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS									
NO.	BIT		O.D. mm	125	BIT NO.	7			MUD TYPE		☐ WATER BASED ☐ OIL BASED		FROM		TO	ELAP. TIME	CODE NO.																
	S/S		165	3.00	SIZE (mm)	222			TIME				2270		0	045	75	6	P.O.O.H FC ON BANK C/O BINDERMAN														
18	DC		158	185.72	ADC CODE	5 1 7			DENSITY kg/m ³				045		245	12	22	110 M.W.D. TOOLS															
19	HWP		114	1380L	MFG.	H26PICS			FUNNEL VIS. - (S/L)				CIRCULATION PRESSURE (kPa)		PUMP NO. 1		PUMP NO. 2		245		315	5	6	R.I.H									
					TYPE	G.T.S20			W.L. (cm ³)				315		900	25	9	S4 C 14W DEPTH LINE															
					SERIAL NO.	E202A			pH				400		415	125	7	RIG SERVICE															
					JETS (mm)	3/8 11.7							REDUCED PUMP SPEED		415		720	275	6	R.I.H													
					DEPTH OUT (m)				MUD MATERIALS ADDED		SOLIDS CONTROL		@		@		720		800		5		5		DRILL CIRC								
					DEPTH IN (m)	2270			PRODUCT		AMOUNT X UNIT		DESILTER																				
					TOTAL METRES DRILLED (m)				HOURS RUN		INTAKE DENSITY (kg/m ³)		OVERFLOW DENSITY (kg/m ³)		UNDERFLOW DENSITY (kg/m ³)																		
					TOTAL HOURS RUN								CENTRIFUGE																				
100	D.P.	STANDS	1934.51		CUTTING STRUCTURE				B		Gage		ODC		Reason Pulled		Total Run m/hr.								TCU 12.18								
	D.P.	SINGLES											HOURS RUN		INTAKE DENSITY (kg/m ³)		OVERFLOW DENSITY (kg/m ³)		UNDERFLOW DENSITY (kg/m ³)						TNU 12.02								
	KELLY DOWN		13.26		HOLE CONDITION																				DIFF 1.16								
	TOTAL		2255.81		HOLE DRAG																												
WT. OF DC			5724	1000 gals	TORQUE AT BOTTOM								HOURS RUN		INTAKE DENSITY (kg/m ³)		OVERFLOW DENSITY (kg/m ³)		UNDERFLOW DENSITY (kg/m ³)								NOTES						
WT. OF STRING			2417	1000 gals	FILL ON BOTTOM (m)																						VERDUN JAWER, BRACKS 4 FIRMING, DEADLINE 4W/1000, TOTAL PENETRATION						
																		DRILLER SIGNATURE		BOILER		HRS. RUN		ph		STACK TEMP.		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
																		P. V. P.		8		1025		440									

[illegible]

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD				METRES DRILLED				TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS						
NO.	BIT		O.D. mm	LENGTH m	B.T. NO.				MUD TYPE	☒ WATER BASED	☐ OIL BASED				FROM	TO	D.R. R.P.M.	WT. ON BIT (1000 gms)	FROM	TO	ELAP. TIME	CODE NO.				
	S/S	169	3.00	m	SIZE (mm)	222			TIME	1800	2105	2400		2075	2367	32	55	15-16	16 ⁰⁰	20 ¹⁵	425	2	DRILL F12275 - 2294			
K	DC	158	118.72	m	IADG CODE	5117			DENSITY kg/m³	1135	1135	1135							20 ¹⁵	20 ²⁷	25	7	RIG SERVICE C/O L PIPERAINS			
N	HUDD	114	135.06	m	MFG.	HUGUES			FUNNEL VIS. - (SL)	54	54	52		CIRCULATION PRESSURE (kPa)	PUMP NO. 1		- PUMP NO. 2		20 ³⁰	24 ⁰⁰	35	2	DRILL F12294 - 2307			
				m	TYPE	GT-S20			W.L. (cm³)	7.5	7.8	7.8		LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.									
				m	SERIAL NO.	F28ZA			pH	9.5	9.0	9.0				152	105									
				m	JETS (mm)	3x10.3			PVT m³	36.8	35.5	34.9		REDUCED PUMP SPEED												
				m	DEPTH OUT (m)	11			MUD MATERIALS ADDED				SOLIDS CONTROL				2700	@	52	@						
				m	DEPTH IN (m)	2270			PRODUCT		AMOUNT X UNIT		DESILTER													
				m	TOTAL METRES DRILLED (m)	37							HOURS RUN	INTAKE DENSITY (kgm.)	OVERFLOW DENSITY (kgm.)	UNDERFLOW DENSITY (kgm.)										
				m	TOTAL HOURS RUN	10							8	1155	1125	1266		DEVIATION SURVEY								
	D.P.	STANDS	1992.03	m	CUTTING STRUCTURE				CENTRIFUGE																	
	D.P.	SINGLES		m	T ₁	T ₀	MOC	LCC	B	Gage	ODC	Reason Pulled	Total Run m/hr.													
				m									3.7													
	KELLY DOWN		6.54	m	HOLE CONDITION								8	1135	1115	1010		NOTES								
	TOTAL		7307	m	HOLE DRAG														VERNON SAYER, MAKE 24 HOURS, DEAD LINE, 1000 LBS. REMOVED							
WT. OF DC			24	1000 gm	TORQUE AT BOTTOM														H2 BOILER SAYS, PH 11.5, 5140, DRILLER ON PH 11.5, 243-120, 1.24, 1.3							
WT. OF STRING			76	1000 gm	FILL ON BOTTOM (m)																					
															DRILLER SIGNATURE				BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
															Piper Puller				ph STACK TEMP.		84				5123	

115042

LICENCE NO.: 1879	WELL NAME AND NO.: NORTH ROCK ET AL 135 Mackay I 77
OPERATOR: NORTH ROCK RESOURCES	CONTRACTOR: AKITA/SAHTU DRILLING,
SURFACE LOCATION: 64-50-125-30	UNIQUE ID: a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SIGNATURE OF OPERATOR'S REPRESENTATIVE: <i>[Signature]</i>	SIGNATURE OF CONTRACTOR'S RIG MANAGER: <i>[Signature]</i>

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	initial	initial
(2) Detailed Inspection Weekly (using checklist)	initial	initial
(3) H/S Signs Posted (if required)	initial	initial
(4) Walk Licenser & Stick Diagram Posted	initial	initial
(5) Flare Lines Staked	initial	initial
(6) BOP Drill Performed	initial	initial
(7) Visually Inspect BOP's - Flareless & Degasser Lines	initial	initial
(1) Rig Site Health and Safety Meeting (once/monthly)		initial
(2) C.A.C.D.C. Rig Safety Inspection Checklist (once/monthly)		initial
(3) Meet Inspection Before Raising or Lowering		initial
(4) Crown Saver Checked		initial
(5) Motor Kills checked		initial

YEAR		MONTH		DAY		LAST		O.D. (mm)		MIN. I.D. (mm)		kg/m		MAKE		GRADE		NO. OF JOINTS		TOTAL (m) LENGTH		KB. TO CSG HEAD (m)		SET AT (m)	
RUG NO		80		01		16		CASING		340		316		71.6		PRUD		J55		3		42.21		413	
FUEL @ 8:00						TUBING		249.5		226		53.2		PRUD		J55		49		6.16		6.15			
RUG		BOILER				LINER																			
WEATHER	TEMPERATURE		°C		DC/OP SIZE (mm)		LINEAR MASS (kg/m)		GRADE		MIN. ID (mm)		TOOL JT O.D. (mm)		TYPE THREAD		NO. OF JOINTS		PUMP TYPE		PUMP MANUFACTURER		STROKE LTH. (mm)		
	CURRENT CONDITIONS				DC 158		135				58		158		114XH		20		8P80		NATIONAL		216		
	WIND DIRECTION				HW 114		625				61		158		114XH		53		8P80		NATIONAL		216		
	ROAD				OP 114		29.77		64E		92		158		114XH		210								

[illegible]

23	24	25	26	TOTAL	SHALE SHAKER(S)	RENTALS/SERVICES	MON	TUE	WED	THUR	FRI	SAT	SUN
				8	NO TYPE 82K 500'S	MS 8867							
				8	SCREENS CHANGED ☐ YES ☐ NO	AMS 151147							
					TOP	TOP							
					MIDDLE	MIDDLE							
					BOTTOM	BOTTOM							

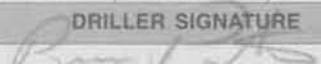
DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD										
NO.	BIT	O.D. (mm)	LENGTH m	BIT NO.				MUD TYPE	☒ WATER BASED	☐ OIL BASED								
	200112		6.07	SIZE (mm)	222			TIME	02:00	04:00	06:00							
	F15		.77	ADC CODE	617			DENSITY kg/m ³	1135	1135	1140							
	WBHO		.63	MFG.	HULHES			FUNNEL VIS. - (S/L)	57	55	54							
	NMDC		9.21	TYPE	ATJ-44			W.L. (cm ²)	8.5	9.2	8.0							
	X/O		.62	SERIAL NO.	N3140			pH	10.0	9.5	10.0							
13	OC		115.72	JETS (mm)	3x14.3			P.V.T	37.0	37.4	37.9							
15	HIWOP		139.06	DEPTH OUT (m)	1.1			MUD MATERIALS ADDED		SOLIDS CONTROL								
				DEPTH IN (m)	2.055			PRODUCT	AMOUNT X UNIT		DESILTER							
				TOTAL METRES DRILLED (m)	176			CAUSTIC	1	SK	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)				
				TOTAL HOURS RUN	31.25			LIGHTITE	1	SK	8	1135	1130	1290				
100	D.P.	STANDS	1896.20	CUTTING STRUCTURE			B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE						
	D.P.	SINGLES		T ₁	T ₂	MDC	LOC				5.6	STAFLO	1	SK	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
KELLYDOWN			13.20	HOLE CONDITION								8	1135	1110	1895			
TOTAL			2231.75	HOLE DRAG				5.7										
WT. OF DC			24	TORQUE AT BOTTOM				3.4000										
WT. OF STRING			87	FILL ON BOTTOM (m)														

MORNING TOUR

METRES DRILLED

TIME LOG

DETAILS OF OPERATION IN SEQUENCE AND REMARKS

FROM	TO	DR.D. T.M.R. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.	
2180	2231	51	40	15	0	45	.75	2	DRILL FI 2180-2189
					45	215	1.5	5	CIRCULATE UP SAMPLE
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2			215	245	.5	2	DRILL FI/2159-2193
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.	245	300	.25	7	RIG SERVICE C/O LADRAMS
9900			152	15	300	745	4.75	2	DRILL FI/2193-2231
REDUCED PUMP SPEED					745	800	.25	10	SURFING
2600	@	53	@						
DEVIATION SURVEY									
DEPTH (m)	DEVIATION (°)	DIRECTION							
2170	1.3	81.9							
2180	1.4	80.5							
2190	1.3	84.7							GREASED CROWN, BUSH & SLIDES
2199	1.1	95.3							FORMATION BEAR ROCK
2209	1.1	84.							
DRILLER SIGNATURE					NOTES				
					V.CROWN SAVER, BRAHSA INLEAK, DEADLINE ANGERS, FUNCTIONAL REVERSE CROW H2DRILLER SAYS PUMP IS STUCK & BLOWDOWN ROILERS 2x3=120.4 = 240				
					BOILER HRS. RAN pH STACK TEMP. MAXIMUM EXPERIENCED HOOKLOAD SAFETY TOPIC M.A.C.P.				
					8 10.5 450 79 5123				

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD				
NO.	BIT		O.D. mm	LENGTH	BIT NO.					MUD TYPE		☒ WATER BASED		☐ OIL BASED				
	Motor	171	6.07	m	SIZE (mm)	222				TIME	900	1300	1500					
	K/S	165	.77	m	ADC CODE	617				DENSITY kg/m ³	1135	1140	1190					
	WBRU	165	.63	m	MFG.	Hughes				FUNNEL VIS. - (SL)	53	52	55					
	MMDL	170	4.21	m	TYPE	ATJ-44				W.L. (cm ²)	9.0	7.5	7.5					
	X/O	162	.62	m	SERIAL NO.	N31YD				pH	9.5	9.5	9.5					
18	DC	158	165.72	m	JETS (mm)	3x14.3				POTW	36.8	37.0	36.5					
15	HWDP	114	135.06	m	DEPTH OUT (m)	2270				MUD MATERIALS ADDED		SOLIDS CONTROL						
				m	DEPTH IN (m)	2055				PRODUCT	AMOUNT X UNIT		DESILTER					
				m	TOTAL METRES DRILLED (m)	215				Barite	30 sk		HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
				m	TOTAL HOURS RUN	56.75				KELZAN	1 sk		8	1140	1135	12.35		
102	D.P.	STANDS	1439.51	m	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE				
	D.P.	SINGLES		m	T ₁	T ₂	MDC	LOC						HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
KELLYDOWN				13.26	HOLE CONDITION										8	1140	1120	19.20
TOTAL				2272.09	HOLE DRAG 5-7													
WT. OF DC				24	TORQUE AT BOTTOM 3-4000													
WT. OF STRING				68	FILL ON BOTTOM (m)													

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	DRILL CORRECTION	ROTARY R.P.M.	WT. ON BIT (1000 LBS)	FROM	TO	ELAP. TIME	CODE NO.			
2231	2270	37	40	18	08 ⁰⁰	08 ⁴⁵	25.7		Rig Service c/o Upper Pipe Cams		
					08 ¹⁵	13 ⁴⁵	5.52		Drill F/2231-2270		
					13 ⁴⁵	14 ⁰⁰	2x 10		Surveys		
					14 ⁰⁰	15 ³⁰	1.55		Circulate w/o Bottom hole sample		
					15 ³⁰	16 ⁰⁰	1.56		P.O.H FC 2260,		
REDUCED PUMP SPEED											
2500	@	51	@								
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (°)	DIRECTION									
2219	1.4	71.9									
2228	1.2	84.7									
2237	1.5	94.6									
2248	1.6	96.0									
2257	1.6	78.8									
NOTES						✓ Crown survey, Brokers & Linkage, Dead Line Anchors, Functions OK					
						ED Silver 8 hrs. DRILL 5 STACK 500 BLEW DOWN - 4x30 = 80' Fluid					
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC	
HRS. RAN						ph STACK TEMP.				M.A.C.P.	
8						105 + 35°					

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD							MUD RECORD								
NO.				LENGTH		BIT NO							MUD TYPE		☐ WATER BASED	☐ OIL BASED					
		BIT	O.D. mm	m		SIZE	(mm)						TIME								
				m		IADC CODE							DENSITY								
				m		MFG.							FUNNEL								
				m		TYPE							VIS. - (S/L)								
				m		SERIAL NO.							W.L. (cm ³)								
				m		JETS	(mm)						pH								
				m		DEPTH OUT	(m)						MUD MATERIALS ADDED		SOLIDS CONTROL						
				m		DEPTH IN	(m)						PRODUCT	AMOUNT X UNIT	DESILTER						
				m		TOTAL METRES DRILLED	(m)								HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)			
				m		TOTAL HOURS RUN															
		D.P.	STANDS	m		CUTTING STRUCTURE:								CENTRIFUGE							
		D.P.	SINGLES	m		T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.		HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
		KELLYDOWN		m		HOLE CONDITION															
		TOTAL		m		HOLE DRAG															
WT.OF DC				1000 lb/lb		TORQUE AT BOTTOM												HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT.OF STRING				1000 lb/lb		FILL ON BOTTOM (m)															

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	DMD RMR CORR-C	POTARY R.P.M.	WT. ON BIT (1000 Gm)	FROM	TO	ELAP. TIME	CODE NO.			
2170	2180	7			1600	1800	2	6	PUMP OUT 35 GALLONS 2212-2183, FC 2000, 1496		
					1800	1820	2	6	PUMP OUT FC, 645, 210,		
CIRCULATION PRESSURE (kPa)	PUMP NO. 1		PUMP NO. 2								
	LINEAR SIZE (mm)	S.P.M.	LINEAR SIZE (mm)	S.P.M.							
REDUCED PUMP SPEED											
	@		@								
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (°)	DIRECTION									
NOTES #2 BOILER BARS PH. 10.15 ST 440											
BLOWDOWN BOILER 2X3=1204 FLUID											
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.
B. P. S.					HRS. RAN 8:10.5		STACK TEMP. 440				5123

FOLD HERE →

115041

LICENCE NO.: 1879	WELL NAME AND NO.: NORTH RUM ET AL EAST MACHAY 177
OPERATOR: AKITA/SAHTU DRILLING, and SAHTU OIL Incorporated	CONTRACTOR: AKITA/SAHTU DRILLING, and SAHTU OIL Incorporated
SURFACE LOCATION: 64-50-125-30	UNIQUE NO.: 115041
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Inspected	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually Inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (once/week/month)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (once/monthly)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR: 20	MONTH: 01	DAY: 15	LAST CASING TUBING OR LINER	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO: 51	FUEL @ 8:00			3110	3110	71.6	PRUD	355	3	43.21		47
RIG: 51	BOILER			2410	224	52.2	PRUD	355	119	616		615
WEATHER	TEMPERATURE: -35 °C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JOINT (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)	
CURRENT CONDITIONS		158	135		58	158	11/4x1	20	SP80	NATIONAL	216	
WIND DIRECTION		HW 114	62.5		61	158	11/4x1	57	SP80	NATIONAL	216	
ROAD		DP 114	29.77	61E	92	158	11/4x1	260				

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTAL	SHALE SHAKER(S)		RENTALS/SERVICES			MORN	DAY	EVE				
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	COATING	COND. MUD & CEMENT	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP & D.D.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR WORK	SAFETY MTG.							NO.	TYPE										
																														8	2	MS	7890				#267			
	MORN		7.5					2.5			2.5																			8	8	TOP	TOP				MS	15070		
	DAY		7.5					2.5			2.5																			8	8	MIDDLE	MIDDLE							
	EVE		7.25					2.5			2.5																			8	8	BOTTOM	BOTTOM							
	TOTAL		21.25					7.5			7.5																			24	24									

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD					
NO.	BIT	O.D. (mm)	LENGTH	BIT NO.	SIZE (mm)	MUD TYPE	WATER BASED	OIL BASED	TIME	DENSITY kg/m³	FUNNEL VIS. (S/L)	W.L. (cm³)	pH
1	MOTOR	171	6.67	6	222		☒	☐	2:00	1135	51	7.8	9.5
2	FIS	165	.77				☒	☐	4:00	1140	49	8.2	9.5
3	UPH	163	.63				☒	☐					
4	NMDK	170	9.21				☒	☐					
5	YO	162	.62				☒	☐					
6	DC	158	145.72				☒	☐					
7	HWDP	138	139.06				☒	☐					
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115040

FOLD HERE →

LICENCE NO.: 1879 WELL NAME AND NO.: MAINPICK 126 EAST MACHAY 1-77

OPERATOR: NORTHWEST BUSINESS LTD. CONTRACTOR: AKITA/SAHTU DRILLING, INC.

SURFACE LOCATION: 64-50-125-30

SIGNATURE OF OPERATOR'S REPRESENTATIVE: SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS

- (1) Daily Walk Around Inspection
(2) Detailed Inspection Weekly (using checklist)
(3) H/S Signs Posted (if required)
(4) Well License & Stick Diagram Posted
(5) Flare Lines Staked
(6) BOP Daily Performed
(7) Visually inspect BOP's - Flarelines & Degasser Lines
- (1) Rig Site Health and Safety Meeting (weekly/monthly)
(2) C.A.O.D.C. Rig Safety Inspection Checklist (weekly/monthly)
(3) Mast Inspection Before Raising or Lowering
(4) Crown Saver Checked
(5) Motor Kills checked

O.P.R.

R.M.

YEAR

MONTH

DAY

FUEL @ 8:00

RIG NO.

BOILER

WATER

TEMPERATURE

CURRENT

CONDITIONS

WIND DIRECTION

ROAD

LAST

CASING

TUBING

OR

LINER

O.D. (mm)

MIN. I.D. (mm)

kg/m

MAKE

GRADE

NO. OF JOINTS

TOTAL (m)

KB TO CSG HEAD (m)

SET AT (m)

DC/DP SIZE (mm)

LINEAR MASS (kg/m)

GRADE

MIN. I.D. (mm)

TOOL JOINT (mm)

TYPE

THREAD

NO. OF JOINTS

PUMP TYPE

PUMP MANUFACTURER

STROKE LTH. (mm)

TIME	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHAPE SHAKER(S)	RENTALS/SERVICES	MORN	DAY	EVE
OPER	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	CONC. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOSS	REN. CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP & O.P.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.												
MORN						4.35	2.35																										
DAY						2.57	2.25																										
EVE		3	1.35			5	2	2.25																									
TOTAL		3	1.35			7.5	4.6	2.5																									

DRILLING ASSEMBLY (At End of Tour)

NO. BIT O.D. (mm) LENGTH

BIT NO. 6

SIZE (mm) 222

IADC CODE

MFG. R.E.D.

TYPE HUGHES

SERIAL NO. E.O. 4002

JETS 3x 14.3

DEPTH OUT (m) 2055

DEPTH IN (m) 2055

TOTAL METRES DRILLED (m)

TOTAL HOURS RUN

CUTTING STRUCTURE

HOLE CONDITION

HOLE DRAG

TORQUE AT BOTTOM

FILL ON BOTTOM (m)

MUD RECORD

MUD TYPE WATER BASED OIL BASED

TIME

DENSITY kg/m³

FUNNEL VIS. (S/L)

W.L. (cm³)

pH

MUD MATERIALS ADDED

SOLIDS CONTROL

DESILTER

CENTRIFUGE

DRILLER SIGNATURE

DRILLING ASSEMBLY (At End of Tour)

NO. BIT O.D. (mm) LENGTH

BIT NO. 6

SIZE (mm) 222

IADC CODE 6171

MFG. HUGHES

TYPE ATJ-44

SERIAL NO. N3140

JETS 3x 14.3

DEPTH OUT (m) 2055

DEPTH IN (m)

TOTAL METRES DRILLED (m)

TOTAL HOURS RUN

CUTTING STRUCTURE

HOLE CONDITION

HOLE DRAG

TORQUE AT BOTTOM

FILL ON BOTTOM (m)

MUD RECORD

MUD TYPE WATER BASED OIL BASED

TIME 21:00 24:00

DENSITY kg/m³ 1035 1035

FUNNEL VIS. (S/L) 46 51

W.L. (cm³) 9.8 7.8-9

pH 9.0 9.5

MUD MATERIALS ADDED

SOLIDS CONTROL

DESILTER

CENTRIFUGE

DRILLER SIGNATURE

DRILLING ASSEMBLY (At End of Tour)

NO. BIT O.D. (mm) LENGTH

BIT NO. 6

SIZE (mm) 222

IADC CODE 6171

MFG. HUGHES

TYPE ATJ-44

SERIAL NO. N3140

JETS 3x 14.3

DEPTH OUT (m) 2055

DEPTH IN (m)

TOTAL METRES DRILLED (m)

TOTAL HOURS RUN

CUTTING STRUCTURE

HOLE CONDITION

HOLE DRAG

TORQUE AT BOTTOM

FILL ON BOTTOM (m)

MUD RECORD

MUD TYPE WATER BASED OIL BASED

TIME 21:00 24:00

DENSITY kg/m³ 1035 1035

FUNNEL VIS. (S/L) 46 51

W.L. (cm³) 9.8 7.8-9

pH 9.0 9.5

MUD MATERIALS ADDED

SOLIDS CONTROL

DESILTER

CENTRIFUGE

DRILLER SIGNATURE

METRES DRILLED

FROM TO DR-D CORE-C ROTARY R.P.M. WT. ON BIT (1000 lbs)

FROM TO ELAP. TIME CODE NO.

CIRCULATION PRESSURE (kPa)

PUMP NO. 1 PUMP NO. 2

REDUCED PUMP SPEED

DEVIATION SURVEY

DEPTH (m) DEVIATION (°) DIRECTION

NOTES

DRILLER SIGNATURE

BOILER HRS. RAN ph STACK TEMP.

MAXIMUM EXPERIENCED HOOKLOAD

SAFETY TOPIC

M.A.C.P.

METRES DRILLED

FROM TO DR-D CORE-C ROTARY R.P.M. WT. ON BIT (1000 lbs)

FROM TO ELAP. TIME CODE NO.

CIRCULATION PRESSURE (kPa)

PUMP NO. 1 PUMP NO. 2

REDUCED PUMP SPEED

DEVIATION SURVEY

DEPTH (m) DEVIATION (°) DIRECTION

NOTES

DRILLER SIGNATURE

BOILER HRS. RAN ph STACK TEMP.

MAXIMUM EXPERIENCED HOOKLOAD

SAFETY TOPIC

M.A.C.P.

METRES DRILLED

FROM TO DR-D CORE-C ROTARY R.P.M. WT. ON BIT (1000 lbs)

FROM TO ELAP. TIME CODE NO.

CIRCULATION PRESSURE (kPa)

PUMP NO. 1 PUMP NO. 2

REDUCED PUMP SPEED

DEVIATION SURVEY

DEPTH (m) DEVIATION (°) DIRECTION

NOTES

DRILLER SIGNATURE

BOILER HRS. RAN ph STACK TEMP.

MAXIMUM EXPERIENCED HOOKLOAD

SAFETY TOPIC

M.A.C.P.

115039

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) HPS Signs Posted (if required)	Initial	Initial
(4) Wall License & Stick Diagram Posted	Initial	Initial
(5) Plain Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flareless & Degasser Lines	Initial	Initial
(1) Pig Site Health and Safety Meeting (once a month)		Initial
(2) C.A.O.D.C. Pig Safety Inspection Checklist (once a month)		Initial
(3) Mast Inspection Before Raising or Lowering		Initial
(4) Crown Saver Checked		Initial
(5) Motor Kills checked		Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIS NO.			CASING	940	316	21.6	Prudential	J-55	3	43.21		43.0
FUEL @ 8:00			TUBING OR	241.5	226	5.92	Prudential	J-55	49	616		616
RIS			LINER									
BOILER												
WEATHER	TEMPERATURE	-30 °C	D.C.P. SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JOINT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH (mm)
	CURRENT CONDITIONS		Q 158	135		58	158	114X114	20	8-P-80	National	216
	WIND DIRECTION		Hw 114	62.5		61	158	114X114	57	8-P-80	National	216
	ROAD		DP 114	29.77	G-6	92	158	114X114	260			

TIME - HRS	CODE NO.																										TOTAL	SHALE SHAKER(S)		RENTALS/SERVICES			AUX	EAY	EAT			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		NO.	TYPE	NO.	TYPE	NO.				TYPE		
	OPER.	HIS UP & TEAR DOWN	DRILL	REAMING	CORING	CONO MUD & CTD	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NUCLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	GR. WORK	SAFETY MTG.																
	MORN.		15.25			12.25	2.25			2.25	5																		8	SCREENS CHANGED	☒ YES ☐ NO	AMJ				146151		
	DAY		6			1.25																							8	TOP	145	TOP						
	EVE.		2.50			1	4.25	2.25																					3	MIDDLE		MIDDLE						
	TOTAL		10.25			3.50	7.50	7.5		7.5	7.5																		24	BOTTOM		BOTTOM						

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD							MUD RECORD				
NO.	BIT	O.D. mm	LENGTH	BITS NO.		MUD TYPE	☒ WATER BASED	☐ OIL BASED									
10	A.E.	171	8.25 m	SIZE (mm)	5	TIME											
	FIS	165	6.06 m	IADC CODE	222	DENSITY kg/m ³											
	DBHO	161	.77 m	MFG.	4127	FUNNEL VIS. - (S/L)											
	NWDC	170	.63 m	TYPE	Hughes	W.L. (cm ²)											
	X10	162	9.21 m	SERIAL NO.	GT-509C	pH											
18	P.C	KB	.62 m	JETS (mm)	6472V												
	K.H.W.D.P	KB	105.72 m	DEPTH OUT (m)	3x 14.3												
				DEPTH IN (m)		MUD MATERIALS ADDED	SOLIDS CONTROL										
				TOTAL METRES DRILLED (m)	1983	PRODUCT	AMOUNT X UNIT	DESILER									
				TOTAL HOURS RUN	15	Castic	1ok	HOURS RUN	INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)						
				CUTTING STRUCTURE				2	1130	1130	1270						
BB	D.P.	STANDS	166.67 m	T	T _o	MDC	LDC	B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE				
	D.P.	SINGLES										100	HOURS RUN	INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)	
	KELLYDOWN		9.01 m	HOLE CONDITION									8	1130	1130	1140	
	TOTAL		1998.0 m	HOLE DRAG													
WT.OFDC			24	1000 gal	TORQUE AT BOTTOM												
WT.OF STRING				1000 gal	FILL ON BOTTOM (m)												

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R.O. R.M.R. CODE-C	ROTARY R.P.M.	WT. ON BIT (1000 LBS)	FROM	TO	ELAP. TIME	CODE NO.			
1983	1998	15	30	15		00 ⁰⁰	25	7	Rig Service c/o Upper Piprams base		
					00 ⁰⁰	01 ⁰⁰	75	6	R.M.H. To 330m		
					01 ⁰⁰	01 ⁴⁵	78	9	Slip + Cut 19m 2 1/2 g line		
					01 ⁴⁵	02 ¹⁰	78	6	R.L.H. to 644m		
					02 ¹⁰	03 ¹⁰	75	5	Break circ and Test M.W.D		
					03 ¹⁰	05 ⁰⁰	128	6	R.L.H. to 1964m		
					05 ⁰⁰	05 ¹⁰	5	5	Break circ and Wash To 1974m		
					05 ¹⁰	06 ⁰⁰	75	3	Ream to 87m		
					06 ⁰⁰	06 ³⁰	25	10	Survey		
					06 ³⁰	08 ⁰⁰	1.5	2	Drill E/1983-1998		
									✓ Baseline Backhoe, Backlog, and Linings		
									Blowdown Boilers Breach = 1206 Fluid		
									✓ Crowsaver - #2 Boiler ran 8 hrs PH 10.5 to 450"		
REDUCED PUMP SPEED											
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (°)	DIRECTION									
1971	.3	191.6									
1980	.7	203.7									
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		
					HRS. RAN	ph	STACK TEMP.				
					85	105	450		65,000		
									5123		

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD			
NO.	BIT	Q.D. (mm)	LENGTH m	BIT NO.					MUD TYPE	☒ WATER BASED	☐ OIL BASED
	WATER	171	6.08	SIZE (mm)	222				TIME	12:00	15:00
	FIS	115	.77	IADC CODE	4 2 7				DENSITY kg/m ³	1140	1140
	URANO	111	.63	MFG.	HUGO NES				FUNNEL VIS. - (SL)	43	48
	NADOC	170	9.23	TYPE	67-509C				W.L. (cm)	10.5	9.6
	V/O	162	.62	SERIAL NO.	C472V				pH	9.0	9.0
14	D.L.	158	115.72	JETS (mm)	3x 14.3				P.V.T	32.5	32.2
15	WWDP	158	131.66	DEPTH OUT (m)	111				MUD MATERIALS ADDED		SOLIDS CONTROL
				DEPTH IN (m)	198.3				PRODUCT	AMOUNT X UNIT	DESILTER
				TOTAL METRES DRILLED (m)	66				CAUSTIC	1 SK	HOURS RUN
				TOTAL HOURS RUN	7.5				POLYSAFE	1 R	INTAKE DENSITY (kgm ⁻³)
90	D.P.	STANDS	1704.56	CUTTING STRUCTURE				Reason Pulled	Total Psh m/hr.	CENTRIFUGE	
	D.P.	SINGLES	9.58	T ₁	T ₂	MDC	LOC	B	Gage	ODC	HOURS RUN
	KELLYDOWN		13.26	HOLE CONDITION							INTAKE DENSITY (kgm ⁻³)
	TOTAL		2044.70	HOLE DRAG				2.4			OVERFLOW DENSITY (kgm ⁻³)
WT. OF DC	24	1000 g/m	TORQUE AT BOTTOM	3200							UNDERFLOW DENSITY (kgm ⁻³)
WT. OF STRING	63	1000 g/m	FILL ON BOTTOM (m)								

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R.D. R.M.R. CORE-G	ROTARY R.P.M.	WT. ON BIT (1000 LBS)	FROM	TO	ELAP. TIME	CODE NO.					
1998	2049	31	30	15	8:00	8:15	.25	7	RIG SERVICE				
					8:15	9:15	1	2	DRILL F1 1998-2010				
					9:15	10:30	1:15	5	CIRCULATE F1 304-34				
					10:30	15:30	5	2	DRILL F1 2010-2049				
					15:30	16:00	.5	10	TOTAL SURGEYS				
REDUCED PUMP SPEED													
2600	@	53	@										
DEVIATION SURVEY													
DEPTH (m)		DEVIATION (°)		DIRECTION									
1989		1.2		288.8									
1998		.8		295.8									
2007		1.2		280.9									
2017		.4		311.4									
2027		.6		313.3									
NOTES						FORMATION							
						VORUN SAWZ, BRACKET TUBING, DRAINAGE PIPING, PAVEMENT REPAIR CHASE							
						#2 BOILER FARS, R.H. IN ST. 450, BLOWDOWN, BLOWOFF, 24 35 1000 LBS.							
DRILLER SIGNATURE						BOILER HRS. BAN. ph. STACK TEMP.		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
[Signature]						8 115 450							

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD							
NO.	BIT		LENGTH		BIT NO.						MUD TYPE		☐ WATER BASED ☐ OIL BASED								
	MOTOR	171	6.01	m	SIZE	(mm)	222					TIME	1800								
	FIS	165	.77	m	IADC CODE	4	2	7				DENSITY	kg/m ³	1140							
	V340	161	.63	m	MFG.	HILTIWES				FUNNEL											
	NMDC	170	4.81	m	TYPE	LT-509C				VIS. - (SL)	77										
	410	162	.62	m	SERIAL NO.	C472V				W.L. (cm ³)	9.5										
18	D.C	138	165.72	m	JETS	(mm)	8	4	13				pH	9.0							
15	HWDP	138	139.06	m	DEPTH OUT	(m)					MUD MATERIALS ADDED		SOLIDS CONTROL								
				m	DEPTH IN	(m)	1983				PRODUCT	AMOUNT X UNIT	DESILTER								
				m	TOTAL METRES DRILLED	(m)	72				Cordic	1	38	HOURS RUN	INTAKE DENSITY (kgm ³)	OVERFLOW DENSITY (kgm ³)	UNDERFLOW DENSITY (kgm ³)				
				m	TOTAL HOURS RUN		10				GEL	15	55								
41	D.P.	STANDS	1773.75	m	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE							
	D.P.	SINGLES		m	T ₁	T ₂	MDC	LOC					Shyflb	1	32	HOURS RUN	INTAKE DENSITY (kgm ³)	OVERFLOW DENSITY (kgm ³)	UNDERFLOW DENSITY (kgm ³)		
				m									Lignite	1	32						
	KELLY DOWN		8.94	m	HOLE CONDITION										301.00	15	38				
	TOTAL		2055.01	m	HOLE DRAG																
WT. OF DC		2.4	1009	ash	TORQUE AT BOTTOM													HOURS RUN	INTAKE DENSITY (kgm ³)	OVERFLOW DENSITY (kgm ³)	UNDERFLOW DENSITY (kgm ³)
WT. OF STRING		3	1009		FILL ON BOTTOM (m)																

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	GRD. CORR. CORE-G	ROTARY R.P.M.	WT. ON BIT (1000 lbs)	FROM	TO	ELAP. TIME	CODE NO.					
2049	2055	6	37	15	16:30	16:45	15	3	Drill F/2044-2050				
					16:45	16:50	5	7	Rig Service				
CIRCULATION PRESSURE (kPa)		PUMP NO. 1		PUMP NO. 2		16:50	16:55	5	2	Drill F/2050-2055			
		LINE SIZE (mm)	S.P.M.	LINE SIZE (mm)	S.P.M.	17:05	17:45	1	5	Circ			
10300		152	115			17:45	24:00	4	56	2020400, 2020400 Flow 1446, 1520			
REDUCED PUMP SPEED													
2400		@	53	@									
DEVIATION SURVEY													
DEPTH (m)		DEVIATION (°)		DIRECTION									
2040		.6		315.4									
						NOTES							
						1. 100% H ₂ O. Brakes + Linkage. Drilling Machine Functioning							
						2. 3000' H ₂ O. 2020500 STUCK 2020500							
						Cable							
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
						HRS. RAN		STACK TEMP.					
2020500						8		2020500					

115038

LICENCE NO.: 1879	WELL NAME AND NO.: Northbrook et al East Mackay 1-77
OPERATOR: Northbrook Resources Ltd	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-50-125-30	
SIGNATURE OF OPERATOR'S REPRESENTATIVE: <i>[Signature]</i>	SIGNATURE OF CONTRACTOR'S RIG MANAGER: <i>[Signature]</i>

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial _____	Initial _____
(2) Detailed Inspection-Weekly (using checklist)	Initial _____	Initial _____
(3) HFS Signage Posted (if required)	Initial _____	Initial _____
(4) Well License & Stick Diagram Posted	Initial _____	Initial _____
(5) Flare Lines Staked	Initial _____	Initial _____
(6) BOP Drills Performed	Initial _____	Initial _____
(7) Visually inspect BOP's - Flarelines & Degasser Lines	Initial _____	Initial _____
(1) Rig Site Health and Safety Meeting (one/crew/month)	Initial _____	Initial _____
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/rit/month)	Initial _____	Initial _____
(3) Mast Inspection Before Raising or Lowering	Initial _____	Initial _____
(4) Crown Saver Checked	Initial _____	Initial _____
(5) Motor Kills checked	Initial _____	Initial _____

YEAR MONTH DAY			LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.	51		CASING	340	316	21.6	Prudential	5-55	3	43.21		43.6
FUEL @ 8:00			TUBING	244.5	226	53.2	Prudential	3-55	49	616		615
RIG	BOILER		OR LINER									
WEATHER	TEMPERATURE °C		DC/OP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		DC 158	135		58	158	114x114	20	8-P-80	National	216
	WIND DIRECTION		HW 114	62.5		61	158	114x114	57	8-P-80	National	216
	ROAD		DP 114	29.7	G.E	93	158	114x114	76			

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES		MORN	DAY		
	OPER.	RIG UP & TEAR DOWN	DRL ACTUAL	REAMING	CORING	COND MUD & CIRC	TRIPS	RIG SERVICE	REPAIR RIG	OUT OFF DRL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.							NO.	TYPE						
	MORN.		6.25						.25			1																		8	82X \$00.					
	DAY		6.5						.25			1.25																		8	SCREENS CHANGED ☐ YES ☒ NO					
	EVE		.5																											8	TOP 250	TOP 180				
	TOTAL		13.25						1.25			2.25																		24	MIDDLE 250	MIDDLE 145				
								.5																						8	BOTTOM 250	BOTTOM 180				

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD								MUD RECORD											
NO.	BIT	O.D. mm	LENGTH	BIT NO.							MUD TYPE	☒ WATER BASED	☐ OIL BASED										
	Motor	171	6.06	SIZE (mm)	222				TIME		0200		0400	0600									
	FIS	165	.77	IADC CODE	517				DENSITY kg/m ³		1135		1125	1155									
	UBHO	161	.63	MFG.	Hughes				FUNNEL VIS. - (S/L)		42		43	43									
	N.M.D.C	170	9.21	TYPE	GT-520				W.L (cm ²)		8		8	10									
	X10	162	.62	SERIAL NO.	E212A				pH		9		9	9									
18	D.C	158	165.72	JETS (mm)	3 x 14/3				PUT		39.9		40.5	39.7									
15	H.W.DP	158	139.06	DEPTH OUT (m)					MUD MATERIALS ADDED		SOLIDS CONTROL												
				DEPTH IN (m)	1414				PRODUCT		AMOUNT X UNIT		DESILTER										
				TOTAL METRES DRILLED (m)	474				CAUSTIC		1.5K		HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)							
				TOTAL HOURS RUN	58				Lignite		2.5K		8	1155	1170	1350							
82	D.P.	STANDS	1553.31	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr	CENTRIFUGE										
	D.P.	SINGLES		r ₁	r ₂	MDC	LOC					8.2	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)							
KELLY DOWN			13.26	HOLE CONDITION								8				1155	1155	1155					
TOTAL			1886.89	HOLE DRAG																			
WT. OF DC			24	TORQUE AT BOTTOM								4000				HOURS RUN				INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
WT. OF STRING			56	FILL ON BOTTOM (m)								27.1											

MORNING TOUR

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	DSD RMR CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 LBS)	FROM	TO	ELAP TIME	CODE NO.					
1822	1888	66	30	15-17	—	0130	15	2	Drill F/1822-1832				
					0130	0145	25	7	Rig Service c/o H.C.R 1sec				
					0145	0700	525	2	Drill F/1832-1888				
					0700	0800	1	10	Survey Total				
CIRCULATION PRESSURE (kPa)													
PUMP NO. 1		PUMP NO. 2											
LINER SIZE (mm)		S.P.M.		LINER SIZE (mm)		S.P.M.							
11000		152 115											
REDUCED PUMP SPEED													
2300		@ 53		@									
DEVIATION SURVEY													
DEPTH (m)		DEVIATION (°)		DIRECTION									
1809		1.6		52.4									
1819		1.3		51.0									
1828		1.6		0.4									
1847		2.2		4.6									
1866		2.8		36.2									
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
HRS. RAN						ph		STACK TEMP.					
21/10/21						115		450		65,000 lbs IV		4x1 01 Filters	
												5002	

Formation Ramparts
Blowdown Boilers 3x each = 120L Fluid

NOTES
✓ Crown saucer, Deadline Anchors, Brakes and Linkage
Acc Vol 40cm Functioned Remote Choke #2 Boiler 8hrs 9/10/5

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD							MUD RECORD				
NO.	BIT	O.D. mm	LENGTH m	B.T. NO.			MUD TYPE	☒ WATER BASED	☐ OIL BASED								
	MOTOR	171	6.06	SIZE (mm)	222		TIME	09:00	12:30	15:00							
	F/S	165	.77	IADC CODE	517		DENSITY kg/m ³	1150	1145	1135							
	VBHIO	161	.63	MFG.	Hughes		FUNNEL VIS. - (S/L)	45	47	45							
	N.M.D.C.	170	9.21	TYPE	GT-520		W.L. (cm ³)	11.0	10.0	9.2							
	X/O	162	.62	SERIAL NO.	E21ZA		pH	9.0	9.5	9.5							
14	DC	158	165.72	JETS (mm)	3 x 14.3		P.V.T. m ³	37.7	38.1	41.7							
15	HWOP	158	139.06	DEPTH OUT (m)	IN		MUD MATERIALS ADDED				SOLIDS CONTROL						
				DEPTH IN (m)	1414		PRODUCT	AMOUNT X UNIT	DESILER								
				TOTAL METRES DRILLED (m)	565		stafo	1 SK	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)					
				TOTAL HOURS RUN	64.5		lignite	1 SK	6	1150	1145	1310					
87	D.P.	STANDS	1648.16	CUTTING STRUCTURE			B	Gage	ODC	Reason Pulled	Total Run m/hr						
	D.P.	SINGLES		T _i	T _o	MDC	LOC				88						
KELLYDOWN			8.52	HOLE CONDITION							CENTRIFUGE						
TOTAL			1979.00	HOLE DRAG													
WT. OF DC			24	TORQUE AT BOTTOM													
WT. OF STRING			57	FILL ON BOTTOM (m)													
				15m ³ from sump													
				15m ³ from premix													

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	COLO R R R CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO						
1888	1979	91	30	10-16	0800	815	.75	2	RIG SERVICE LTD HYDRAULIC VRSPP					
					815	1445	6.5	2	DRILL F/1888-1979					
					1445	1600	1.25	10	TOTAL SURVEYS					
CIRCULATION PRESSURE (kPa)		PUMP NO. 1		PUMP NO. 2										
		LINE SIZE (mm)	S.P.M.	LINE SIZE (mm)	S.P.M.									
11500		152	115											
REDUCED PUMP SPEED														
2200		@	54	@										
DEVIATION SURVEY														
DEPTH (m)		DEVIATION (°)		DIRECTION										
1888		2.1		31.3										
1894		2		32.3										
1904		2.5		109.3										
1914		1.1		150.8										
1923		1.1		111.2										
1952		1.1		155.1										
						FORMATION. HUMIC								
1971						2								
139.6														
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
						HRS. RAN	ph	STACK TEMP.						
						4	105	450	61				6123	

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD								MUD RECORD				
NO.	BIT	O.D. mm	LENGTH	BIT NO.					MUD TYPE		☒ WATER BASED		☐ OIL BASED			
	NO. 358	171	2.25 m	SIZE (mm)	222		222		TIME	14.00						
	R/S	115	1.77 m	IADC CODE	S 1 7		4 2 7		DENSITY kg/m ³	1135						
	UBHD	161	1.63 m	MFG.	HUGHES		HUGHES		FUNNEL VIS. - (S/L)	44						
	NMDX	170	9.21 m	TYPE	GT-520		GT-509C		W.L. (cm ³)	9.9						
	X10	112	1.62 m	SERIAL NO.	E212A		C472V		pH	9.0						
R	DC	159	11.57 m	JETS (mm)	3x14.3				P.V.T	41.7						
W	HWD	159	139.01 m	DEPTH OUT (m)	1983				MUD MATERIALS ADDED		SOLIDS CONTROL					
				DEPTH IN (m)	1914		1983		PRODUCT	AMOUNT X UNIT		DESILTER				
				TOTAL METRES DRILLED (m)	569.06							HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
				TOTAL HOURS RUN	65											
51	D.P.	STANDS	1648.16 m	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE			
	D.P.	SINGLES		T ₁	T ₂	MOD	LOC						HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
KELLY DOWN			13.26 m	HOLE CONDITION									8			
TOTAL			1943.74 m	HOLE DRAG												
WT. OF DC			24	TORQUE AT BOTTOM									HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT. OF STRING			28	FILL ON BOTTOM (m)												

[illegible]

115037

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signage Posted (if required)	Initial	Initial
(4) Well License & Stock Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually Inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Pig Site Health and Safety Meeting (one/mo/month)		Initial
(2) C A O D C, Pig Safety Inspection Checklist (one/mo/month)		Initial
(3) Mast Inspection Before Raising or Lowering		Initial
(4) Crown Saver Checked		Initial
(5) Motor Kills checked		Initial

TIME - HRS	CODE NO.																										TOTAL	SHALE SHAKER(S)		RENTALS/SERVICES					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		NO.	TYPE	MOFRI	DAY	EVE			
OPR	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURV.	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.							8	R2x	500	MJ	8365			
MORN		7.25					.25			.5																		8	SCREENS CHANGED	☒ YES ☐ NO	AMJ	140645			
DAY		6.35					.25			1																		8	TOP	350	TOP	180			
EVE		7					.75			.75																		8	MIDDLE	350	MIDDLE	145			
TOTAL		21					.75			2.25																		24	BOTTOM	350	BOTTOM	180			

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	OLD RM-R CORE-C	POTARY R.P.M.	WT. ON BIT (1000 gals)	FROM	TO	ELAP. TIME	CODE NO.						
1642	1693	51	30	16.18	01 ¹⁵	01 ³⁰	.25	2	Drill F/1642-1652					
					01 ¹⁵	01 ³⁰	.25	7	Rig Service c/o Hydril 15 sec					
					01 ³⁰	07 ³⁰	6	2	Drill F/1652-1693					
					07 ³⁰	08 ⁰⁰	.5	10	Survey Total					
CIRCULATION PRESSURE (kPa)					PUMP NO. 1					PUMP NO. 2				
					LINER SIZE (mm)					S.P.M.				
					LINER SIZE (mm)					S.P.M.				
10800					152					115				
REDUCED PUMP SPEED														
2200					@ 54					@				
chke DEVIATION SURVEY														
DEPTH (m)			DEVIATION (°)			DIRECTION								
1648			.4			7.4								
1658			.4			4.6								
1664			.7			3.2								
1676			1.0			341.4								
NOTES														
✓ Crown Saver, Deadline Anchors, Brakes and Linkage														
Air Val 90cm Functioned Remote Choke # 2 Batteries 8hrs PH 10.5 ST 450°														
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
						HRS. RAN ph		STACK TEMP.						
						8 105		450°		57,000 chN		5062		

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	GR-D RPM COR-C	ROTARY R.P.M.	WT. ON BIT (1000 gN)	FROM	TO	ELAP. TIME	CODE NO			
1693	1755	62	30	13-17	0800	830	.5	2	DRILL 1693-1698		
					830	845	.25	7	RIG SERVICE C/O V/PIPERANE V/RSPP		
CIRCULATION PRESSURE (kPa)		PUMP NO. 1		PUMP NO. 2		845	1500	6.25	2	DRILL F/1698-1755	
		LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.	1500	1600	1	10	TOTALS SURVEY	
10800	152	115									
REDUCED PUMP SPEED											
9200	@	54	@								
DEVIATION SURVEY											
DEPTH (m)		DEVIATION (°)		DIRECTION							
1686		.9		346.3							
1695		1.1		349.1							
1705		1.5		355.4							
1714		1.5		6.7		NOTES ✓ CROWN SAKER, BRACKET LINKAGE, DEAD LINE ADJUSTERS, FURTHER REAMING F2 BOILER 8 HRS. 11.10.75 AT 450 PPM DOWN BOWERS 1732 1204 FUP					
1722		2		16.6							
1732		2.5		19.7							
1733		2.8		20.8							
DRILLER SIGNATURE						BOILER HRS. RAN		STACK TEMP.		MAXIMUM EXPERIENCED HOOKLOAD	
13-17						8 115		450		56	
										SAFETY TOPIC	
										USED GIL FILTERS	
										M.A.C.P.	
										5002	

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	DH/D RMR CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.					
1755	1822	67	30	1317	16 ⁰⁰	16 ¹⁵	.25	7	RIG SERVICE 4/0 4 PIPERMAN'S ✓ P3PD				
					16 ¹⁵	23 ¹⁵	7	2	DRILL 11/1755-1822				
					23 ¹⁵	24 ⁰⁰	.75	10	Total Surveys				
CIRCULATION PRESSURE (kPa)		PUMP NO. 1		PUMP NO. 2									
		LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.								
11000		152	115										
REDUCED PUMP SPEED													
2700		@	54	@									
2-man DEVIATION SURVEY													
DEPTH (m)		DEVIATION (°)		DIRECTION									
1743		2.5		30.6									
1753		2.9		34.0									
1763		2.5		41.9									
1771		2.0		73.1									
1781		2.4		60.1									
NOTES						BLOWDOWN BOILERS 3x each = 120L Fluid Formation Uguaman Imperial							
						VERNON SAKER, Reaction Anchors, Brackets and Linkage							
						An 161' Com #2 Boiler ran 8 hrs @ 10.5 ST 450" Functioned Remote Ctrl							
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
						HRS. RAN ph		STACK TEMP.					
						8 hrs 450		60,000				3002	

115036

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LICENCE NO.: 1879	WELL NAME AND NO.: Northbrook et al East Mackay 1-77
OPERATOR: Northbrook Resources Ltd	CONTRACTOR: AKITA/SAHTU DRILLING, Joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-50-125-30	SIGNATURE OF OPERATOR'S REPRESENTATIVE: [Signature]
	SIGNATURE OF CONTRACTOR'S RIG MANAGER: [Signature]

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crow/month)	Initial	Initial
(2) C.A.D.C. Rig Safety Inspection Checklist (one/rig/conty)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.	31	10	CASING	340	310	21.1	Prudential	J-55	3	43.21		43
			TUBING	244.5	226	53.2	Prudential	J-55	49	616		616
			OR									
			LINER									
W. TEMP.	TEMPERATURE	-34 °C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JOINT (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		2 1/2	135		58	158	11/14 X 20	8-P-80	National		216
	WIND DIRECTION		1 1/4	62.5		61	158	11/14 X 20	8-P-80	National		216
	ROAD		1 1/4	29.77	6+6	92	158	11/14 X 20				

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)				RENTALS/SERVICES		MORN	DAY		
	OPER.	RIG UP & TIE DOWN	DRILL ACTUAL	REAMING CORING	COND. MAID & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.									NO.	TYPE							
	MORN.		7.25				2.25				.5																			8	SCREENS CHANGED	☐ YES ☒ NO						
	DAY		4.5				2.75	2.25			.5																			8	TOP	145	TOP	180				
	EVE		7				.25	.25			.5																			8	MIDDLE	145	MIDDLE	145				
	TOTAL		18.75				3.25	2.75			1.5																			24	BOTTOM	145	BOTTOM	180				

NO.	DRILLING ASSEMBLY (At End of Tour)	LENGTH	BIT NO.	4	MUD TYPE	WATER BASED	OIL BASED		
	BIT	O.D. (mm)	SIZE (mm)	222	TIME	0200	0400	0600	
	FIS	165	.77	IADC CODE	5117	DENSITY kg/m³	1145	1150	1140
	VBHO	161	.63	MFG.	Hughes	FUNNEL VIS. (S/L)	45	46	47
	N.M.D.C.	170	9.21	TYPE	GT-520	W.L. (cm³)			
	X10	162	.62	SERIAL NO.	E212A	pH	8.5	8.5	9.0
	D.C.	158	165.72	JETS (mm)	3x14.3	PVT m³	46.1	47.5	44.8
	H.W.D.P.	158	139.06	DEPTH OUT (m)		MUD MATERIALS ADDED		SOLIDS CONTROL	
				DEPTH IN (m)	1414	PRODUCT	AMOUNT X UNIT	DESILTER	
				TOTAL METRES DRILLED (m)	151				
				TOTAL HOURS RUN	18.75				
	D.P.	STANDS	1231.51	CUTTING STRUCTURE				CENTRIFUGE	
	D.P.	SINGLES							
	KELLY DOWN		11.17	HOLE CONDITION					
	TOTAL		1565	HOLE DRAG	3-5000				
	WT. OF DC	24	1000 daN	TORQUE AT BOTTOM	3000				
	WT. OF STRING	50	1000 daN	FILL ON BOTTOM (m)	Dike				

NO.	DRILLING ASSEMBLY (At End of Tour)	LENGTH	BIT NO.	4	MUD TYPE	WATER BASED	OIL BASED		
	BIT	O.D. (mm)	SIZE (mm)	222	TIME	09:00	1200	1500	
	FIS	165	.77	IADC CODE	5117	DENSITY kg/m³	1140	1135	TR
	VBHO	161	.63	MFG.	Hughes	FUNNEL VIS. (S/L)	46	45	
	N.M.D.C.	170	9.21	TYPE	GT-520	W.L. (cm³)			
	X10	162	.62	SERIAL NO.	E212A	pH	9.0	9.5	P
	D.C.	158	165.72	JETS (mm)	3x14.3	PVT m³	42.0	41.5	
	H.W.D.P.	158	139.06	DEPTH OUT (m)	1414	MUD MATERIALS ADDED		SOLIDS CONTROL	
				DEPTH IN (m)	181	PRODUCT	AMOUNT X UNIT	DESILTER	
				TOTAL METRES DRILLED (m)	23.25				
				TOTAL HOURS RUN					
	D.P.	STANDS	1250.66	CUTTING STRUCTURE				CENTRIFUGE	
	D.P.	SINGLES	9.15						
	KELLY DOWN		13.26	HOLE CONDITION					
	TOTAL		1595.34	HOLE DRAG	2-3				
	WT. OF DC	24	1000 daN	TORQUE AT BOTTOM	2600				
	WT. OF STRING	52	1000 daN	FILL ON BOTTOM (m)					

NO.	DRILLING ASSEMBLY (At End of Tour)	LENGTH	BIT NO.	4	MUD TYPE	WATER BASED	OIL BASED		
	BIT	O.D. (mm)	SIZE (mm)	222	TIME	1800	2000	2300	
	FIS	165	.77	IADC CODE	5117	DENSITY kg/m³	1135	1140	
	VBHO	161	.63	MFG.	HUGHES	FUNNEL VIS. (S/L)	44	45	
	N.M.D.C.	170	9.21	TYPE	GT-520	W.L. (cm³)			
	X10	162	.62	SERIAL NO.	E212A	pH	9.5	8.5	8.5
	D.C.	158	165.72	JETS (mm)	3x14.3	PVT m³	40.4	42.2	42.0
	H.W.D.P.	158	139.06	DEPTH OUT (m)	1414	MUD MATERIALS ADDED		SOLIDS CONTROL	
				DEPTH IN (m)	228	PRODUCT	AMOUNT X UNIT	DESILTER	
				TOTAL METRES DRILLED (m)	30.25				
				TOTAL HOURS RUN					
	D.P.	STANDS	1367.26	CUTTING STRUCTURE				CENTRIFUGE	
	D.P.	SINGLES							
	KELLY DOWN		13.26	HOLE CONDITION					
	TOTAL		1647.84	HOLE DRAG	2-3				
	WT. OF DC	24	1000 daN	TORQUE AT BOTTOM	3300				
	WT. OF STRING	52	1000 daN	FILL ON BOTTOM (m)					

FROM	TO	ELAP. TIME	CODE NO.	DETAILS OF OPERATION IN SEQUENCE AND REMARKS
1505	1515	10	2	Drill F/1505-1519
1515	1530	15	7	Rig Service C/O Upper Kellyrock ✓ RSP
1530	1545	15	2	Drill F/1545-1545
1545	1555	10	10	Survey total
1555	1600	5		
1600	1615	15		
1615	1630	15		
1630	1645	15		
1645	1655	10		
1655	1700	5		
1700	1715	15		
1715	1730	15		
1730	1745	15		
1745	1755	10		
1755	1800	5		
1800	1815	15		
1815	1830	15		
1830	1845	15		
1845	1855	10		
1855	1900	5		
1900	1915	15		
1915	1930	15		
1930	1945	15		
1945	1955	10		
1955	2000	5		
2000	2015	15		
2015	2030	15		
2030	2045	15		
2045	2055	10		
2055	2100	5		
2100	2115	15		
2115	2130	15		
2130	2145	15		
2145	2155	10		
2155	2200	5		
2200	2215	15		
2215	2230	15		
2230	2245	15		
2245	2255	10		
2255	2300	5		
2300	2315	15		
2315	2330	15		
2330	2345	15		
2345	2355	10		
2355	2400	5		
2400	2415	15		
2415	2430	15		
2430	2445	15		
2445	2455	10		
2455	2500	5		
2500	2515	15		
2515	2530	15		
2530	2545	15		
2545	2555	10		
2555	2600	5		
2600	2615	15		
2615	2630	15		
2630	2645	15		
2645	2655	10		
2655	2700	5		
2700	2715	15		
2715	2730	15		
2730	2745	15		
2745	2755	10		
2755	2800	5		
2800	2815	15		
2815	2830	15		
2830	2845	15		
2845	2855	10		
2855	2900	5		
2900	2915	15		
2915	2930	15		
2930	2945	15		
2945	2955	10		
2955	3000	5		
3000	3015	15		
3015	3030	15		
3030	3045	15		
3045	3055	10		
3055	3100	5		
3100	3115	15		
3115	3130	15		
3130	3145	15		
3145	3155	10		
3155	3200	5		
3200	3215	15		
3215	3230	15		
3230	3245	15		
3245	3255	10		
3255	3300	5		
3300	3315	15		
3315	3330	15		
3330	3345	15		
3345	3355	10		
3355	3400	5		
3400	3415	15		
3415	3430	15		
3430	3445	15		
3445	3455	10		
3455	3500	5		
3500	3515	15		
3515	3530	15		
3530	3545	15		
3545	3555	10		
3555	3600	5		
3600	3615	15		
3615	3630	15		
3630	3645	15		
3645	3655	10		
3655	3700	5		
3700	3715	15		
3715	3730	15		
3730	3745	15		
3745	3755	10		
3755	3800	5		
3800	3815	15		
3815	3830	15		
3830	3845	15		
3845	3855	10		
3855	3900	5		
3900	3915	15		
3915	3930	15		
3930	3945	15		
3945	3955	10		
3955	4000	5		
4000	4015	15		
4015	4030	15		
4030	4045	15		
4045	4055	10		
4055	4100	5		
4100	4115	15		
4115	4130	15		
4130	4145	15		
4145	4155	10		
4155	4200	5		
4200	4215	15		
4215	4230	15		
4230	4245	15		
4245	4255	10		
4255	4300	5		
4300	4315	15		
4315	4330	15		
4330	4345	15		
4345	4355	10		
4355	4400	5		
4400	4415	15		
4415	4430	15		
4430	4445	15		
4445	4455	10		
4455	4500	5		
4500	4515	15		
4515	4530	15		
4530	4545	15		
4545	4555	10		
4555	4600	5		
4600	4615	15		
4615	4630	15		
4630	4645	15		
4645	4655	10		
4655	4700	5		
4700	4715	15		
4715	4730	15		
4730	4745	15		
4745	4755	10		
4755	4800	5		
4800	4815	15		

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115035

LICENCE NO.: 1879	WELL NAME AND NO.: Northbrook et al Mackay 1-77
OPERATOR: Northbrook Resources Ltd	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-50-125-30	SIGNATURE OF OPERATOR'S REPRESENTATIVE: [Signature]
SIGNATURE OF CONTRACTOR'S RIG MANAGER: [Signature]	

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stock Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crow/month)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
2014	01	01	CASING	340	316	7.6	Prudential	J-55	3	43.2		47
FUEL @ 8:00			TUBING	244.5	226	53.2	Prudential	J-55	49	616		615
RIG			BOILER									
W	TEMPERATURE	-31 °C	DC/DP SIZE (mm)	135	58	158	14X14	20	8-P-80	National	216	
E	CURRENT CONDITIONS		LINEAR MASS (kg/m)	62.5	61	158	14X14	60	8-P-80	National	216	
A	WIND DIRECTION		GRADE	29.77	6.5	92	158	14X14	260			
T	ROAD											

TIME	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)	RENTALS/SERVICES	MORNING	DAY	EVE
OPR.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING CORING	CONDO. MUD & CIRC	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP R.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.													
MORNING					5.5	2.5																											
DAY		4.5				2.5																											
EVE																																	
TOTAL		4.5				5.0																											

DRILLING ASSEMBLY (At End of Tour)		LENGTH	BIT RECORD		MUD RECORD		
NO.	BIT	O.D. (mm)	BIT NO.	SIZE (mm)	MUD TYPE	WATER BASED	
	Motor	171	6.06	222			
	FIS	165	.77				
	UBHO	161	.63				
	N.A.D.C.	170	9.21				
	X10	162	.62				
18	D.C.	158	16.72				
15	H.W.D.P.	158	139.06				
D.P.		STANDS	CUTTING STRUCTURE		CENTRIFUGE		
D.P.		SINGLES	HOLE CONDITION		HOLE DRAG		
KELLYDOWN		TOTAL		TORQUE AT BOTTOM		FILL ON BOTTOM (m)	
WT.OFDC		1000 daN		1000 daN			
WT.OFSTRING		1000 daN		1000 daN			

DRILLING ASSEMBLY (At End of Tour)		LENGTH	BIT RECORD		MUD RECORD		
NO.	BIT	O.D. (mm)	BIT NO.	SIZE (mm)	MUD TYPE	WATER BASED	
	Motor	171	6.06	222			
	FIS	165	.77				
	UBHO	161	.63				
	N.A.D.C.	170	9.21				
	X10	162	.62				
18	D.C.	158	16.72				
15	H.W.D.P.	158	139.06				
D.P.		STANDS	CUTTING STRUCTURE		CENTRIFUGE		
D.P.		SINGLES	HOLE CONDITION		HOLE DRAG		
KELLYDOWN		TOTAL		TORQUE AT BOTTOM		FILL ON BOTTOM (m)	
WT.OFDC		1000 daN		1000 daN			
WT.OFSTRING		1000 daN		1000 daN			

DRILLING ASSEMBLY (At End of Tour)		LENGTH	BIT RECORD		MUD RECORD		
NO.	BIT	O.D. (mm)	BIT NO.	SIZE (mm)	MUD TYPE	WATER BASED	
	Motor	171	6.06	222			
	FIS	165	.77				
	UBHO	161	.63				
	N.A.D.C.	170	9.21				
	X10	162	.62				
18	D.C.	158	16.72				
15	H.W.D.P.	158	139.06				
D.P.		STANDS	CUTTING STRUCTURE		CENTRIFUGE		
D.P.		SINGLES	HOLE CONDITION		HOLE DRAG		
KELLYDOWN		TOTAL		TORQUE AT BOTTOM		FILL ON BOTTOM (m)	
WT.OFDC		1000 daN		1000 daN			
WT.OFSTRING		1000 daN		1000 daN			

METRES DRILLED		TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS	
FROM	TO	ELAP. TIME	CODE NO.		
1414	200	2	22	Makeup and Test Dir. Tools	
02:00	03:45	175	6	R.I.H. + 650m	
03:45	04:00	25	7	Rig Service C/O Hydril 15 sec	
04:00	04:30	5	10	Break Circ and Survey	
04:30	06:30	2	6	R.I.H. Surveying every 750m	
06:30	08:00	15	6	Fallout 21st to relieve screen + Run Back in	
REDUCED PUMP SPEED					
DEVIATION SURVEY					
DEPTH (m)	DEVIATION (°)	DIRECTION			
DRILLER SIGNATURE		BOILER		MAXIMUM EXPERIENCED HOOKLOAD	
HRS. RAN		ph		SAFETY TOPIC	
8		45		5123	

METRES DRILLED		TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS	
FROM	TO	ELAP. TIME	CODE NO.		
1414	1437	23	0	R.I.H. + SURVEY 4 ON WAY IN	
08:00	10:30	25	6	RIG SERVICE C/O D. PROCRANIS VRSPP	
10:30	10:45	25	7	DRILL F/1414 - 1437	
10:45	15:15	45	2	TOTAL SURVEYS	
15:15	16:00	75	10		
REDUCED PUMP SPEED					
DEVIATION SURVEY					
DEPTH (m)	DEVIATION (°)	DIRECTION			
1401	3.3	84.7			
1411	3.2	85.4			
1420	3.5	85.4			
DRILLER SIGNATURE		BOILER		MAXIMUM EXPERIENCED HOOKLOAD	
HRS. RAN		ph		SAFETY TOPIC	
8		45		5123	

METRES DRILLED		TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS	
FROM	TO	ELAP. TIME	CODE NO.		
1437	1505	68	30	DRILL F/1437 - 1443	
16:00	17:45	75	2	RIG SERVICE C/O D. PROCRANIS VRSPP	
17:00	23:15	675	2	DRILL F/1442 - 1505	
23:15	24:00	75	10	Total Surveys	
REDUCED PUMP SPEED					
DEVIATION SURVEY					
DEPTH (m)	DEVIATION (°)	DIRECTION			
1430	2.5	82.6			
1478	1.5	89.0			
1488	1.9	89.7			
DRILLER SIGNATURE		BOILER		MAXIMUM EXPERIENCED HOOKLOAD	
HRS. RAN		ph		SAFETY TOPIC	
8		45		5123	

115034

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually Inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/week/month)	Initial	Initial
(2) C-A-O-D-C, Rig Safety Inspection Checklist (one/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
2008	01	08	CASING	340	316	71.6	Prudential	J-55	3	43.21		43
RIG NO.	51			TUBING	241.5	226	53.2	Prudential	J-55	49	616	615
FUEL @ 8:00				OR								
RIG	BOILER			LINER								
WEATHER	TEMPERATURE	-31 °C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JO.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		2158	135		58	158	114x114	20	8-P-80	National	216
	WIND DIRECTION		114x114	62.5		61	158	114x114	60	8-P-80	National	216
	ROAD		DP114	29.77	G+E	92	158	114x114	264			

TIME - HRS	CODE NO.																										TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES		MORNING	DAY	EVENING				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		NO.	TYPE									
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	RIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DR. WORK	SAFETY MTG.	Handle Tools															
	MORN.		7.25					2.25			.5																		8	SCREENS CHANGED	☒ YES ☐ NO							
	DAY		7.75					2.25																					8	TOP	145				TOP	180	Mj	136080
	EVE.		2				2.5	4	2.5																				8	MIDDLE	145				MIDDLE	145		
	TOTAL		17				2.5	4	7.25		.5																		24	BOTTOM	145				BOTTOM	180		

DRILLING ASSEMBLY (At End of Tour)				LENGTH	BIT RECORD										MUD RECORD														
NO.	BIT		O.D. mm	LENGTH	BIT NO.	SIZE (mm)					MUD TYPE					☒ WATER BASED		☐ OIL BASED											
	Motor		190	6.06		222					TIME		0200	0400	0600														
	X10			.62		1117					DENSITY kg/m ³		1130	1130	1140														
18	D.C		158	165.72		HUGHES					FUNNEL VIS. - (S/L)		43	38	41														
	15 H.W.D.P		114	139.06		GT-61					W.L. (cm ²)																		
						SERIAL NO. X79 YE					pH		9.5	9.0	9.0														
						JETS (mm) 3x 14.3					PIT		41.9	41.6	41.9														
	BHA			311.71		DEPTH OUT (m)					MUD MATERIALS ADDED		SOLIDS CONTROL																
						DEPTH IN (m) 1224					PRODUCT		AMOUNT X UNIT		DESILTER														
						TOTAL METRES DRILLED (m) 156					Gel		22	5x	HOURS RUN	INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)											
						TOTAL HOURS RUN 29					Caustic		1	5k	8	1130	1130	1270											
56	D.P.	STANDS	1060.81		CUTTING STRUCTURE					Reason Putted					CENTRIFUGE														
	D.P.	SINGLES			T ₁	T ₂	MDC	LOC	B	Gage	ODC	Total Run m/hr.	5.4	HOURS RUN					INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)								
KELLY DOWN				7.48	HOLE CONDITION										8					1130	1100	1870							
TOTAL				1380.00	HOLE DRAG 3-5000 daN																								
WT. OF DC				24	TORQUE AT BOTTOM 2500															HOURS RUN					INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)		
WT. OF STRING				48	FILL ON BOTTOM (m) Drk																								

[illegible]

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD							BIT RECORD							
NO.	BIT		O.D. mm	LENGTH	BIT NO.				MUD TYPE		☒ WATER BASED		☐ OIL BASED					
	MOTOR		150	2.25 m	SIZE	(mm)			222	TIME	9:00	12:00	15:00					
	X/O			.62 m	IADC CODE	1117				DENSITY	kg/m ³	1130	1130	1130				
18	O.C.		150	105.72 m	MFG.	Hughes				FUNNEL	VIS. - (S/L)	45	44	42				
19	HWDOP		119	139.06 m	TYPE	GT-61				W.L. (cm ²)								
					SERIAL NO.	X79 YE				pH	9.5	9.5	9.0					
	CHA			34.71 m	JETS	(mm)			3x14/3	POT m ³	39.6	40.5	41.5					
					DEPTH OUT	(m)			10	MUD MATERIALS ADDED		SOLIDS CONTROL						
					DEPTH IN	(m)			12.24	PRODUCT	AMOUNT X UNIT	DESILTER						
					TOTAL METRES DRILLED	(m)			183	GEL	15	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)			
					TOTAL HOURS RUN				36.75	CAUSTIC	1	8	100	105	120			
57	D.P.	STANDS	1079.93		CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr	CENTRIFUGE				
	D.P.	SINGLES	9.14		T ₁	T ₀	MDC	LOC					5	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
	KELLY DOWN		6.22		HOLE CONDITION									6	1130	1115	105	
TOTAL			1407.80		HOLE DRAG									2-4				
WT. OF DC		24	1000 g/m		TORQUE AT BOTTOM									2900				
WT. OF STRING		52	1000 g/m		FILL ON BOTTOM (m)													

[illegible]

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD							MUD RECORD			
NO.	BIT (At End of Tour)		LENGTH	BIT NO.		SIZE (mm)		IADC CODE		MUD TYPE		☒ WATER BASED ☐ OIL BASED		
	BIT	O.D. mm	25	SIZE	(mm)					TIME				
	1/2	150	6.06							DENSITY				
	X 1/8		.62							kg/m ³				
	BC	158	115.72	MFG.						FUNNEL				
	HOPE	118	139.04	TYPE						VIS. - (S/L)				
				SERIAL NO.						W.L. (cm ²)				
				JETS	(mm)					pH				
				DEPTH OUT	(m)					MUD MATERIALS ADDED		SOLIDS CONTROL		
				DEPTH IN	(m)					PRODUCT	AMOUNT X UNIT	DESILTER		
				TOTAL METRES DRILLED	(m)							HOURS RUN	INTAKE DENSITY (kg/m ³)	
				TOTAL HOURS RUN								OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
57	D.P.	STANDS	1079.43	CUTTING STRUCTURE		B	Gage	ODC	Reason Pulled	Total Run	CENTRIFUGE			
	D.P.	SINGLES	9.14	T ₁	T ₀	MDC	LOC			4.9	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	
	KELLYDOWN		13.26	HOLE CONDITION									UNDERFLOW DENSITY (kg/m ³)	
	TOTAL		1414.84	HOLE DRAG										
WT. OF DC		24	1700 gals	TORQUE AT BOTTOM									HOURS RUN	INTAKE DENSITY (kg/m ³)
WT. OF STRING		52	1000 gals	FILL ON BOTTOM (m)									OVERFLOW DENSITY (kg/m ³)	
													UNDERFLOW DENSITY (kg/m ³)	

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R. / R.R. / CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 gms)		FROM	TO	ELAP. TIME	CODE NO.				
1407	1414	7	50	12		1600	1800	2	2	DRILL F/1407-1414			
						1800	1815	.25	7	RIG SERVICE AND UP JOBS. V.R.S.P.A.			
						1815	1900	.75	5	CIRC BOTTOM UP + PUMP PILL			
						1900	2300	4	6	HOIST TO CRANING B.M.A. FC, 1900, 1320, 654, 110-m			
8300	152	115				2300	2400	1	25	Handle Die. Tools			
REDUCED PUMP SPEED													
2000	@	54	@										
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)		DIRECTION										
										TMV 9.00			
										TCV 8.42			
										dF .67			
										c/o B. Ind. on Bank 3 rec			
NOTES						V.CROWN SAVER New Down Boilers 3c each = 120L Fluid							
						#2 Boiler ran 8 hrs Pit 10.5 Acc Vol 40cm							
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
						HRS. RAN	DR. STACK TEMP.						
						8 hrs	150	60000 L.W.				5123	

115033

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stock Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crew/month)	Initial	Initial
(2) C.A.O.D.G. Rig Safety Inspection Checklist (one/rig/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.	51		CASING	340	316	71.6	Prudential	J-55	3	43.21		43
FUEL @ 8:00			TUBING	244.5	226	53.2	Prudential	J-55	49	616		615
RIG	BOILER		OR LINER									
WEATHER	TEMPERATURE - 34 °C		DC/DP SIZE	LINEAR MASS	GRADE	MIN. ID	TOOL JTD O.D	TYPE	NO OF	PUMP TYPE	PUMP MANUFACTURER	STROKE
	CURRENT CONDITIONS		DC 158	135		58	158	43xH	20	8-P-80	National	216
	WIND DIRECTION		Hw 114	62.5		61	158	43xH	60	8-P-80	National	216
	ROAD		OP 114	29.77	6+E	98	158	43xH	216			

TIME - HRS	CODE NO.																										TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		NO.	TYPE	MORNING	DAY	EVENING				
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	PLAN CASE & CEMENT	WAIT ON CEMENT	MIRPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.	B.O.P. DRILL													
	MORN.		7.75					2.25																					8	SCREENS CHANGED	☐ YES ☐ NO					
	DAY		6.75					2.25			7.75																		8	TOP	145	TOP	180			
	EVE		7.75					2.25			5.75																		8	MIDDLE	145	MIDDLE	145			
	TOTAL		21.75					7.75			12.75																		24	BOTTOM	145	BOTTOM	180			

DRILLING ASSEMBLY (At End of Tour)				LENGTH	BIT RECORD							MUD RECORD								
NO.	BIT	O.D. mm		BIT NO.				MUD TYPE				WATER BASED		OIL BASED						
	Motor	190	6.06	SIZE (mm)	222			TIME		0130		0400		0600						
	X10		.62	IADC CODE	117			DENSITY kg/m ³		1110		1110		1120						
18	D.C	158	115.72	MFG.	Hughes			FUNNEL VIS. - (SL)		38		40		42						
15	H.W.D.P	114	139.06	TYPE	GT-61			W.L (cm ²)												
				SERIAL NO.	X79YE			pH		8.5		8.5		8.5						
				JETS (mm)	3 x 14/3			PWT -		45.4		46.3		47.1						
	BHA		311.71	DEPTH OUT (m)				MUD MATERIALS ADDED		SOLIDS CONTROL										
				DEPTH IN (m)	1224			PRODUCT		AMOUNT X UNIT		DESILTER								
				TOTAL METRES DRILLED (m)	25			Gel		15 sx		HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)					
				TOTAL HOURS RUN	7.75			Caustic		2 sx		8	1110	1110	135					
49	D.P.	STANDS	927.89	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE							
	D.P.	SINGLES		T ₁	T ₀	MDC	LOC					3.2	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)				
KELLYDOWN			9.40	HOLE CONDITION									8		1110		1100		199	
TOTAL			1249.00	HOLE DRAG																
WT.OF D.C		24	1000 daN	TORQUE AT BOTTOM		1800						HOURS RUN		INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)				
WT.OF STRING		47	1000 daN	FILL ON BOTTOM (m)		2.6														

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	G.D. R.M.R CONC.	ROTARY R.P.M.	WT. ON BIT (1000-lbf)		FROM	TO	ELAP. TIME	CODE NO.				
1224	1249	25	50	6-8		/	0345	35	2	Drill F/1224-1234			
						0345	0400	35	7	Rig Service C/O Hydrol 15 sec ✓ R.S.P.F.			
						0400	0800	4	2	Drill F/1234-1249			
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	LINER SIZE (mm)	S.P.M.	PUMP NO. 2	LINER SIZE (mm)	S.P.M.							
7100	152	115											
REDUCED PUMP SPEED													
1750	@	54	@				P/gf						
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)	DIRECTION											
							Formation Crst. Slater River						
							Blowdown Boilers 3x each = 120L fluid						
							NOTES MS 3267 AMS 135547 ✓ Leadline Anchors						
							✓ Crownover Acc Vol 40cm #2 Boiler ran 8 hrs PH 10.5 SF 450"						
DRILLER SIGNATURE			HRS. RUN	BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC		M.A.C.P.				
			8	10.4	450"	50,000lb			5243				

DRILLING ASSEMBLY (At End of Tour)				LENGTH	BIT RECORD										MUD RECORD									
NO.	BIT	O.D. mm													MUD TYPE		☒ WATER BASED		☐ OIL BASED					
				2.25	BIT NO. 3																			
				6.66	SIZE (mm) 222										TIME		09:06		12:00		15:00			
				6.2	IADC CODE 1 1 7										DENSITY kg/m ³		1110		1110		1110			
				116.72	MFG. 1166M5										FUNNEL VIS. - (S/L)		47		46		45			
				139.06	TYPE 6.5 - 6.1										W.L. (cm ³)									
					SERIAL NO. X74 VE										pH		9.5		9.5		9.5			
					JETS (mm) 3 1/2 3										RVT		47.0		46.8		43.1			
				34.71	DEPTH OUT (m) 12										MUD MATERIALS ADDED		SOLIDS CONTROL							
					DEPTH IN (m) 1224										PRODUCT		AMOUNT X UNIT		DESILTER					
					TOTAL METRES DRILLED (m) 60																			
					TOTAL HOURS RUN 14.5																			
51	D.P.	STANDS	966.18	CUTTING STRUCTURE																				
	D.P.	SINGLES		T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr												
												4.1												
KELLYDOWN				62.11	HOLE CONDITION																			
TOTAL				1284	HOLE DRAG 2.3																			
WT.OFDC		24	1000 lbN	TORQUE AT BOTTOM 28000																				
WT.OF STRING		118	1000 lbN	FILL ON BOTTOM (m)																				

METRES DRILLED					TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS					
FROM	TO	DR. D. REEL CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO						
1249	1254	35	50	11-12	08 ⁰⁰	8 ⁴⁵	.75	2	DRILL F/1249-1252					
					8 ⁴⁵	9 ⁰⁰	.75	7	Rtg. SERVICE C/O L.P.M. RA. 100.5. 4 SEC ✓ RSP					
CIRCULATION PRESSURE (KPa)	PUMP NO. 1		PUMP NO. 2		9 ⁰⁰	13 ¹⁵	4.30	2	DRILL F/1252-1272					
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.	13 ¹⁵	14 ⁰⁰	.75	10	SURVEY					
7500	152	115			14 ⁰⁰	14 ¹⁵	.25	23	DRILL F/1272-1284 B.O.P. DRILL					
REDUCED PUMP SPEED					14 ¹⁵	16 ⁰⁰	1.75	2	DRILL F/1272-1284					
1750	@	55	@											
DEVIATION SURVEY														
DEPTH (m)	DEVIATION (°)		DIRECTION											
1270	2°													
NOTES					✓ DEADLINE ANCHORS, ✓ CROWN SAFETY, ✓ FUNCTION REMOTE CONTROL ✓ DRAWING 11-11-11-11 #2 BOILER PADS, PH. 105.51450									
DRILLER SIGNATURE					BOILER HRS. RAN ph		STACK TEMP. °C		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
					8		145						5243	

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD								MUD RECORD						
NO.	BIT	O.D. mm	LENGTH m	BIT NO.					MUD TYPE		☒ WATER BASED	☐ OIL BASED						
	MoJo	190	6.25	SIZE (mm)	222				TIME	18:00	20:00	23:00						
	X10		62	IADC CODE	1117				DENSITY kg/m ³	1110	1120	1120						
18	P.C	158	165.72	MFG.	HUGHES				FUNNEL VIS. (S/L)	44	39	40						
15	H.W.D.P	114	139.06	TYPE	GT-61				W.L. (cm ³)									
				SERIAL NO.	X 79 115				pH	9.0	9.0	9.0						
				JETS (mm)	3 x 4.7				P.V.T	44.2	43.6	43.2						
	BHA		311.71	DEPTH OUT (m)					MUD MATERIALS ADDED		SOLIDS CONTROL							
				DEPTH IN (m)	1224				PRODUCT	AMOUNT X UNIT		DESILTER						
				TOTAL METRES DRILLED (m)	109							HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)			
				TOTAL HOURS RUN	21.75							8	1120	1120	1290			
53	D.P.	STANDS	1004.52	CUTTING STRUCTURE				B.	Gage	ODC	Reason Pulled	Total Run m/hr	CENTRIFUGE					
X	D.P.	SINGLES	913	T ₁	T ₂	MDC	LOC					5.0	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
													8	1120	1100	184		
	KELLY DOWN		7.64	HOLE CONDITION														
	TOTAL		1333.09	HOLE DRAG 2-4000 daN														
WT.OF DC		24	1000 g/m	TORQUE AT BOTTOM 2500											HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT.OF STRING		48	1000 g/m	FILL ON BOTTOM (m) 7.14														

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	ODD R.M.F. CORRECT	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.					
1284	1333	49	50	12	1600	1700	1	2	DRILL F/1284-1291				
					1700	1710	25	7	RIG, SCENIC C/O V. HARRIS 4500				
CIRCULATION PRESSURE (kPa)	PUMP NO. 1		PUMP NO. 2		1710	2100	45	2	DRILL F/1291-1319				
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.	2100	2200	5	10	Survey C 1312m				
8000	132	115			2200	2400	175	3	Drill F/1319-1333				
REDUCED PUMP SPEED													
1750	@	55	@										
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)		DIRECTION										
1312	2 1/2°												
NOTES										Blowdown Boilers 4x each = 160L fluid			
										LEAKAGE SAVING Functioned Remote Choke ✓ Brakes - Linkage			
										No. 1 40cm #2 Boiler ran 8hrs Ph. 10.5 ST 950°			
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
					HRS. RAN ph STACK TEMP.								
					8 10.5 450°		52.00				52.43		

115032

LICENCE NO.: 1879	WELL NAME AND NO.: Northrock ETAL East Mackay 1-77
OPERATOR: Northrock Resources	CONTRACTOR:
SURFACE LOCATION: 69-60-125-30	UNIQUE ID.:
SIGNATURE OF OPERATOR'S REPRESENTATIVE: <i>[Signature]</i>	SIGNATURE OF CONTRACTOR'S RIG MANAGER: <i>[Signature]</i>

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection Weekly (using checklist)	Initial	Initial
(3) HS Signs Posted (if required)	Initial	Initial
(4) Wall License & Stick Diagram Posted	Initial	Initial
(5) Flame Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degassifier Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (once a month)		Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (once a month)		Initial
(3) Mast Inspection Before Raising or Lowering		Initial
(4) Crown Saver Checked		Initial
(5) Motor Kills checked		Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)	
2022		2	CASING	390	316	71.6	Prudential	J-55	3	43.21		43	
FIB. NO.			TUBING	314.5	276	53.2	Prudential	J-55	44	616		615	
FUEL @ 8:00			OR										
RUG			LINER										
BOILER													
W E A T H E R	TEMPERATURE		-C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT. O.D.	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. mm
	CURRENT CONDITIONS			158DC	135		58	158	4.5H	20	8-P-80	National	216
	WIND DIRECTION			14 HW	63.5		61	158	4.5H	60	8-P-80	National	216
	ROAD			14 DP	29.77	G-1E		158	4.5H	260			

[illegible]

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD								MUD RECORD				
NO.	BIT	O.D. mm	LENGTH m	BIT NO.					MUD TYPE		☒ WATER BASED		☐ OIL BASED			
	Motor	140	6.06	SIZE (mm)	222				TIME	0200	0400	0600				
	XO		62	IADC CODE	1117				DENSITY kg/m ³	1120	1120	1120				
18	DL	158	165.72	MFG	Hughes				FUNNEL VIS. - (s/L)	43	42	41				
19	HWDP	114	139.01	TYPE	GT-361				W.L. (cm ²)							
				SERIAL NO.	W59YR				pH	9.0	9.0	9.5				
				JETS (mm)	3/12.7				PVT m ³	36.3	36.1	36.3				
				DEPTH OUT (m)					MUD MATERIALS ADDED		SOLIDS CONTROL					
				DEPTH IN (m)	1031				PRODUCT	AMOUNT X UNIT		DESILTER				
				TOTAL METRES DRILLED (m)	178				Cautic	1 sk		HOURS RUN	INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)	
				TOTAL HOURS RUN	425							8	1120	1115	1135	
47	D.P.	STANDS	810.16	CUTTING STRUCTURE								CENTRIFUGE				
	D.P.	SINGLES		1	2	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.	HOURS RUN	INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)
												8	1120	1100	1134	
	KELLY DOWN		7.78	HOLE CONDITION												
	TOTAL		1209.35	HOLE DRAG 2-3												
WT. OF DC		24	1000 mwt	TORQUE AT BOTTOM 1800-2500								HOURS RUN	INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)	
WT. OF STRING		41	1000 mwt	FILL ON BOTTOM (m)												

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	DRD / PWR / CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 gms)	FROM	TO	ELAP. TIME	CORE NO.					
1176	1209	33	50	6-8	0000	3 ⁰⁰	32	2	Drill F/1176-1186				
					03 ¹⁵	03 ³⁰	25	7	Rig service C/O Lower Dixie Rams 3 sec				
					03 ³⁰	08 ⁰⁰	45	2	Drill F/1186-1209				
CIRCULATION PRESSURE (kPa)		PUMP NO. 1		PUMP NO. 2									
		LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.								
6700		152	110										
REDUCED PUMP SPEED													
1800		@	55	@									
DEVIATION SURVEY													
DEPTH (m)		DEVIATION (°)		DIRECTION									
NOTES													
1 Crown Sucker MS-1912 AMS 133642													
B2 Boiler BNG 24/05/88 0362W down 30.1m/s 2x=40													
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
Jaid B. B. B.					HRS. RAN ph STACK TEMP.								
					8 105 450						5043		

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD			
NO.	BIT	D.D. (mm)	LENGTH	BIT NO.				MUD TYPE	☒ WATER BASED	☐ OIL BASED	
	M.T.	190	6.06	SIZE (mm)	222			TIME	0900	1200	
	X/O		62	IADC CODE	1117			DENSITY kg/m ³	1120	1120	
18	D.C	158	105.7	MFG	Hughes			FUNNEL VIS. - (S/L)	40	40	
15	H.W.D.P	114	139.06	TYPE	GT-3GI			W.L. (cm ³)			
				SERIAL NO.	W594R			pH	9.0	9.0	
				JETS (mm)	3 x 12.7			RTM ³	38.5	45.7	
				DEPTH OUT (m)	1224			MUD MATERIALS ADDED		SOLIDS CONTROL	
				DEPTH IN (m)	1031			PRODUCT		AMOUNT X UNIT	
				TOTAL METRES DRILLED (m)	193			Desite		15 gr	
				TOTAL HOURS RUN	47.75			HOURS RUN		8	
48	D.P.	STANDS	709.37	CUTTING STRUCTURE				CENTRIFUGE			
	D.P.	SINGLES		T ₁	T ₂	MDC	LOC	B	Gage	ODC	
								Reason Pulled	Total Run	4.0	
KELLYDOWN			3.62	HOLE CONDITION				pumped over G ⁺			
TOTAL			1224.70	HOLE DRAG				at premium to the active system.			
WT. OF DC		24	1000	TORQUE AT BOTTOM				2400			
WT. OF STRING		41	1000	FILL ON BOTTOM (m)							

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS					
FROM	TO	GR-D RMR CORE-C	ROTARY R.P.M.	WT ON BIT (100% dist)	FROM	TO	ELAP TIME	CODE NO					
1209	1224		50	6	0800	1000	2	2	Drill F/1209-1215				
					1000	1015	25	7	Rig Service etc H.C.R. Inc				
					1015	1015	5	10	Survey @ 1208m				
					1015	1400	325	2	Drill F/1215-1224				
					1400	1415	25	22	B.O.P. Drill				
					1415	1415	5	10	Survey @ 1218m				
					1415	1515	5	5	Circ up Sample				
					1515	1600	75	6	Trip for Bit Flow @ 1218 and 1121m				
REDUCED PUMP SPEED													
1800	@	55	@										
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)	DIRECTION											
1208	2 1/4"												
1218	2 1/8"												
NOTES													
Blowdown Boilers 4x each = 1602 Fluid Functioned Remote Choke													
✓ Crown valves Acc Val 40cm 11.2 Boilers run 8 hrs P1105.5 to 45													
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
HRS. JIAN						ph. STACK TEMP.		%				5243	

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD					
NO.	BIT	O.D. (mm)	LENGTH	BIT NO					MUD TYPE	☐ WATER BASED	☐ OIL BASED		
	190	6.66	m	3					TIME				
	X 10	.62	m	SIZE (mm)	222				DENSITY				
			m	ADDC CODE	117				kg/m ³				
14	05	158	m	MFG.	HJHMH3				FUNNEL				
15	H20P	124	m	TYPE	GT-61				VIS. - (S/L)				
			m	SERIAL NO	X797E				W.L. (cm ³)				
			m	JETS (mm)	14.3K2				pH				
			m	DEPTH OUT (m)					MUD MATERIALS ADDED	SOLIDS CONTROL			
			m	DEPTH IN (m)	1724								
			m	TOTAL METRES DRILLED (m)						PRODUCT	AMOUNT X UNIT		
			m	TOTAL HOURS RUN									
18	D.P.	STANDS	m	CUTTING STRUCTURE				Reason Pulled	Total Run m/hr.	CENTRIFUGE			
	D.P.	SINGLES	m	T ₁	T ₂	MDC	LOC					B	Gage
KELLYDOWN			m	HOLE CONDITION						HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
TOTAL			m										
WT.OFDC		1000 g/m		TORQUE AT BOTTOM						HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT.OF STRING		1000 g/m		FILL ON BOTTOM (m)									

[illegible]

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115031

LICENCE NO.: 1879	WELL NAME AND NO.: Northrock ETAL East Mackay 1-77
OPERATOR: Northrock Resources	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-60-125-30	UNIQUE ID: 115031
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) HPS Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Line Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crew/month)	Initial	Initial
(2) C.A.Q.D.C. Rig Safety Inspection Checklist (one/rig/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR: 2008	MONTH: 7	DAY: 3											
RIG NO: 51	LAST CASING TUBING OR LINER: 340 316 716 Prudential 3-55	O.D. (mm): 340	MIN. I.D. (mm): 316	kg/m: 716	MAKE: Prudential	GRADE: 3-55	NO. OF JOINTS: 3	TOTAL(m) LENGTH: 43.21	KB. TO CSG HEAD (m): 43	SET AT (m): 615			
FUEL @ 8:00	BOILER	TEMPERATURE °C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JOINT (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)	
158 DC 135	114 DP 62.5	114 DP 29.7	64E	158	45AH	260	8-P-80	National	216	8-P-80	National	216	
WIND DIRECTION	ROAD	WATER	TEMPERATURE °C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JOINT (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
114 DP 62.5	114 DP 29.7	64E	158	45AH	260	8-P-80	National	216	8-P-80	National	216	216	

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES							
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DRL. WORK	SAFETY MTG.								NO.	TYPE	DFTS	DFTS			MORN	DAY	EVE
	MORN.		6.75					2.5			1																			6	SCREENS CHANGED	☐ YES	☐ NO					
	DAY		7.25					2.5			5																		8	TOP	145	TOP	180					
	EVE		7					2.5			7.5																		8	MIDDLE	145	MIDDLE	145					
	TOTAL		21					7.5			22.5																		24	BOTTOM	145	BOTTOM	180					

DRILLING ASSEMBLY (At End of Tour)										BIT RECORD										MUD RECORD												
NO.	BIT	O.D. (mm)	LENGTH (m)	BIT NO.	SIZE (mm)	IADC CODE	MFG.	TYPE	SERIAL NO.	JETS (mm)	DEPTH OUT (m)	DEPTH IN (m)	TOTAL METRES DRILLED (m)	TOTAL HOURS RUN	CUTTING STRUCTURE	Reason Pulled	Total Run m/hr.	MUD TYPE	WATER BASED	OIL BASED	TIME	DENSITY kg/m³	FUNNEL VIS. (S/L)	W.L. (cm³)	pH	MUD MATERIALS ADDED	SOLIDS CONTROL	DESILTER	CENTRIFUGE			
18	D.C.	158	165.72	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	77	20.5	774.20	1108.67	2-3	2500-3800	0900	1120	1120	0400	1120	1110	39	9.0	33.8	34.1	35.6				
15	HWD P	114	139.06	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
43	D.P.	STANDS	813.88	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
X	D.P.	SINGLES	9.32	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
KELLYDOWN										HOLE CONDITION																						
TOTAL										HOLE DRAG																						
WT.OFDC										TORQUE AT BOTTOM																						
WT.OFSTRING										FILL ON BOTTOM (m)																						

DRILLING ASSEMBLY (At End of Tour)										BIT RECORD										MUD RECORD												
NO.	BIT	O.D. (mm)	LENGTH (m)	BIT NO.	SIZE (mm)	IADC CODE	MFG.	TYPE	SERIAL NO.	JETS (mm)	DEPTH OUT (m)	DEPTH IN (m)	TOTAL METRES DRILLED (m)	TOTAL HOURS RUN	CUTTING STRUCTURE	Reason Pulled	Total Run m/hr.	MUD TYPE	WATER BASED	OIL BASED	TIME	DENSITY kg/m³	FUNNEL VIS. (S/L)	W.L. (cm³)	pH	MUD MATERIALS ADDED	SOLIDS CONTROL	DESILTER	CENTRIFUGE			
18	D.C.	158	165.72	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
15	HWD P	114	139.06	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
43	D.P.	STANDS	813.88	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
X	D.P.	SINGLES	9.32	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
KELLYDOWN										HOLE CONDITION																						
TOTAL										HOLE DRAG																						
WT.OFDC										TORQUE AT BOTTOM																						
WT.OFSTRING										FILL ON BOTTOM (m)																						

DRILLING ASSEMBLY (At End of Tour)										BIT RECORD										MUD RECORD												
NO.	BIT	O.D. (mm)	LENGTH (m)	BIT NO.	SIZE (mm)	IADC CODE	MFG.	TYPE	SERIAL NO.	JETS (mm)	DEPTH OUT (m)	DEPTH IN (m)	TOTAL METRES DRILLED (m)	TOTAL HOURS RUN	CUTTING STRUCTURE	Reason Pulled	Total Run m/hr.	MUD TYPE	WATER BASED	OIL BASED	TIME	DENSITY kg/m³	FUNNEL VIS. (S/L)	W.L. (cm³)	pH	MUD MATERIALS ADDED	SOLIDS CONTROL	DESILTER	CENTRIFUGE			
18	D.C.	158	165.72	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
15	HWD P	114	139.06	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
43	D.P.	STANDS	813.88	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
X	D.P.	SINGLES	9.32	2	222	1117	Hughes	GT-561	W59YR	3 x 12.7	1031	112	27.75	813.88	932	2-3	2000	1120	1120	1120	1200	1120	1120	45	9.5	37.3	37.5	36.9				
KELLYDOWN										HOLE CONDITION																						
TOTAL										HOLE DRAG																						
WT.OFDC										TORQUE AT BOTTOM																						
WT.OFSTRING										FILL ON BOTTOM (m)																						

METRES DRILLED										TIME LOG										DETAILS OF OPERATION IN SEQUENCE AND REMARKS									
FROM	TO	BRD R.P.M.	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.		FROM	TO	ELAP. TIME	CODE NO.		FROM	TO	ELAP. TIME	CODE NO.											
1096	1108	12	50	6	0000	0230	2.5	2	Drill F/1096-1101	0230	0245	1.25	7	Rig Service	0245	0345	1	10	Survey										
1108	1119	12	50	6	0345	0800	4.25	2	Drill F/1108-1119	0800	0815	1.25	2	Rig Service	0815	0830	1.25	2	Survey										
REDUCED PUMP SPEED										DEVIATION SURVEY																			
DEPTH (m)										DEVIATION (°)										DIRECTION									
1096										1.5																			
DRILLER SIGNATURE										BOILER										M.A.C.P.									
8/10/08										8/10/08										8/10/08									

METRES DRILLED										TIME LOG										DETAILS OF OPERATION IN SEQUENCE AND REMARKS									
FROM	TO	BRD R.P.M.	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.		FROM	TO	ELAP. TIME	CODE NO.		FROM	TO	ELAP. TIME	CODE NO.											
1108	1143	35	50	6-8	0800	0900	1.25	2	Drill F/1108-1119	0900	1000	1.25	7	Rig Service	1000	1200	2	2	Drill F/1119-1129										
1143	1159	35	50	6-8	1200	1300	1.25	2	Drill F/1143-1159	1300	1400	1.25	2	Rig Service	1400	1500	1.25	2	Survey										
REDUCED PUMP SPEED										DEVIATION SURVEY																			
DEPTH (m)										DEVIATION (°)										DIRECTION									
1120										1.5																			
DRILLER SIGNATURE										BOILER										M.A.C.P.									
8/10/08										8/10/08										8/10/08									

METRES DRILLED										TIME LOG										DETAILS OF OPERATION IN SEQUENCE AND REMARKS									
FROM	TO	BRD R.P.M.	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.		FROM	TO	ELAP. TIME	CODE NO.		FROM	TO	ELAP. TIME	CODE NO.											
1143	1176	33	50	8-10	1600	1900	3	2	Drill F/1143-1176	1900	1915	1.25	7	Rig Service	1915	2000	1.25	2	Drill F/1176-1186										
1176	1186	33	50	8-10	2000	2100	1.25	2	Drill F/1176-1186	2100	2200	1.25	2	Rig Service	2200	2300	1.25	2	Survey										
REDUCED PUMP SPEED										DEVIATION SURVEY																			
DEPTH (m)										DEVIATION (°)										DIRECTION									
1176										2																			
DRILLER SIGNATURE										BOILER										M.A.C.P.									
8/10/08										8/10/08										8/10/08									

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1879

Jan 5 - 23/00

Rec'd
Feb 14/00

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115030

LICENCE NO.: 1879	WELL NAME AND NO.: Northrock ETAL East Mackay 1-77
OPERATOR: Northrock Resources	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-60-125-30	UNIQUE ID: 115030
SIGNATURE OF OPERATOR'S REPRESENTATIVE: [Signature]	SIGNATURE OF CONTRACTOR'S RIG MANAGER: [Signature]

DAILY CHECKS	OPR. Initial	R.M. Initial
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crow/month)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/high/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Killa checked	Initial	Initial

YEAR	MONTH	DAY	LAST CASING TUBING OR LINER	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
2011	01	01	FUEL @ 8:00	340	316	71.6	Prudential	J-553	43.21	43		
				244.5	226	53.2	Prudential	J-5549	616	615		
RIG NO.	BOILER	TEMPERATURE °C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
51		225 DC	286	74	225	7490	2	8-P-80	W. National	216		
		158 DC	135	58	158	4511	20	8-P-80	W. National	216		
		114 HW	62.5	61	158	4511	60					

TIME - HOURS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES		MORN	DAY	EVE			
	OPER.	RIG UP & TIE DOWN	DRILL ACTUAL	REAMING CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.								NO.	TYPE	DFTS	DFTS						
	MORN.			1.25		.5	4.75			1.5																			8	SCREENS CHANGED	☐ YES ☐ NO							
	DAY			6.75			5.25				5																		8	TOP 145	TOP 145							
	EVE.			7				1.25				.75																	8	MIDDLE 145	MIDDLE 145							
TOTAL			13.75	1.25		.5	5.25	5		1.5	1.25																24	BOTTOM 145	BOTTOM 145									

NO.	DRILLING ASSEMBLY (At End of Tour)	LENGTH	BIT NO.	SIZE (mm)	MUD TYPE	WATER BASED	OIL BASED
1	M/M	140	25	6.06	222		
2	X10	158	62	165.72	117		
3	DC	114	139.06	Hughes	GT-SG1		
4	HWDP	114	139.06	W594R	3x12.7		
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LICENCE NO.: 1879	WELL NAME AND NO.: Northrock ETAL East Mackay 1-77
OPERATOR: Northrock Resources	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-60-125-30	UNIQUE ID:
SIGNATURE OF OPERATOR'S REPRESENTATIVE: <i>[Signature]</i>	SIGNATURE OF CONTRACTOR'S RIG MANAGER: <i>[Signature]</i>

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) HFS Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's: Flarelines & Degassifier Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crew/month)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/mo/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Sevier Checked	Initial	Initial
(5) Motor Killa checked	Initial	Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.	51		CASING	340	316	71.6	PRUD-HILL	J-55	3	43.26		43
FUEL @ 8:00			TUBING		53.2			J-55	44			115
RIG	BOILER		OR LINER									
WEATHER	TEMPERATURE °C		DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		225DC	286		74	225	7H90	2	8-P-80	National	216
	WIND DIRECTION		158DC	135		58	158	4.5xH	20	8-P-80	National	216
	ROAD		114NW	62.5		61	158	4.5xH	60			

TIME - HRS	CODE NO.	DATE																										TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		NO.	TYPE									
		OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	RIG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.	Work Light Hole									SCREENS CHANGED	☐ YES ☐ NO	MORN.	DAY.	EVE.		
MORN.			5.25					.25			1													1.5						8		DETS	DETS						
DAY			6					.25			1													.75						8	TOP	145	TOP	145					
EVE.			1.5			.5	5	.25			.45																			8	MIDDLE	145	MIDDLE	145					
TOTAL			12.75			.5	5	.75			2.45													2.25						24	BOTTOM	145	BOTTOM	145					

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD										
NO.	BIT		LENGTH	BIT NO.				MUD TYPE		☐ WATER BASED ☐ OIL BASED								
	S/S	165	3.00 m	SIZE (mm)	222			TIME	0200	0400	0630							
18	DL	158	165.72 m	IADC CODE	1117			DENSITY kg/m ³	1120	1135	1120							
15	WDWDP	114	139.06 m	MFG.	Hughes			FUNNEL VIS. - (S/L)	35	37	38							
				TYPE	GT-361			W.L. (cm ³)										
				SERIAL NO.	AB6 G160			pH	10.5	10.5	10.0							
				JETS (mm)	3 x 10.3			MT m ³	28.2	29.0	30.1							
				DEPTH OUT (m)				MUD MATERIALS ADDED		SOLIDS CONTROL								
				DEPTH IN (m)	615			PRODUCT	AMOUNT X UNIT		DESILTER							
				TOTAL METRES DRILLED (m)	354			Caustic	1	5X	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)				
				TOTAL HOURS RUN	40.25			GEZ	75	5X	8	1130	1105	1510				
34	D.P.	STANDS	643.54 m	CUTTING STRUCTURE			B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE						
1	D.P.	SINGLES	9.34 m	T ₁	T ₂	MDC	LOC					HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)			
KELLYDOWN			13.26 m	HOLE CONDITION								Primmer	2	5X	8	1120	1065	1795
TOTAL			474.22 m	HOLE DRAG								Sewolust	10	5X				
WT. OF DC			24	1000 daN			TORQUE AT BOTTOM			3300			HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
WT. OF STRING			37	1000 daN			FILL ON BOTTOM (m)											

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	DRD T.M.R. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.					
918	979.22	56	40	12	00 ⁰⁰	00 ³⁰	.5	10	Survey misrun				
					00 ³⁰	01 ³⁰	1	2	Drill F/G18-927				
					01 ³⁰	01 ⁴⁵	.25	7	Rig Service				
					01 ⁴⁵	03 ¹⁵	.5	10	Survey				
8200	152	110			02 ¹⁵	04 ¹⁵	2	2	Drill F/127-946				
REDUCED PUMP SPEED					04 ¹⁵	05 ⁴⁵	1.5	22	Work Tight Hole				
2000	@	54	@		05 ⁴⁵	08 ⁰⁰	2.25	2	Drill F/946-974				
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)		DIRECTION										
919	1°												
					NOTES								
					✓ Crown saver MS 6005 AMJ 131005								
					#2 Boiler Bhrs DH 10.5 ST 450° Blowdown Boilers 24215-405								
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
Jared Black					ph STACK TEMP.								
					8 135 450								

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD				MUD RECORD						
NO.	BIT	O.D. mm	LENGTH m	B.T. NO.		MUD TYPE	☒ WATER BASED	☐ OIL BASED								
	SK	105	3.00	SIZE (mm)	222	TIME	0900	1200	1500							
18	D.C	158	165.7	IADC CODE	1117	DENSITY kg/m ³	1120	1120	1120							
15	H.W.D.P	114	139.06	MFG.	Hughes	FUNNEL VIS. - (S/L)	40	44	42							
				TYPE	GT-5G1	W.L. (cm ³)										
				SERIAL NO.	A86 G160	pH	10	10	10							
				JETS (mm)	3 x 10.3	POT m ³	29.1	30.5	31.0							
				DEPTH OUT (m)		MUD MATERIALS ADDED		SOLIDS CONTROL								
				DEPTH IN (m)	615	PRODUCT	AMOUNT X UNIT	DESILTER								
				TOTAL METRES DRILLED (m)	407	Lignite	2 sy	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)					
				TOTAL HOURS RUN	46.25	Gel	10 sy	8	1120	1100	1390					
37	D.P.	STANDS	700.80	CUTTING STRUCTURE		B	Gage	ODC	Reason Pulled	Total Run m/hr.	Sawdust	3 sy	CENTRIFUGE			
	D.P.	SINGLES		T _i	T _o	MDC	LOC				Barite	15 sy	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
													8	1120	1055	1789
	KELLYDOWN		13.26	HOLE CONDITION												
	TOTAL		1022.09	HOLE DRAG												
WT.OFDC	24	1000 g/l		TORQUE AT BOTTOM												
WT.OF STRING	29	1000 g/l		FILL ON BOTTOM (m)												

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	DR-G RPM CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.					
974	1022	48	100	10-16	08 ⁰⁰	08 ¹⁵	.25	7	Rig Service c/w Hydril 16 sec ✓ RSP				
					08 ¹⁵	08 ⁴⁵	.5	10	Survey @ 960m				
					08 ⁴⁵	13 ⁰⁰	4.25	2	Drill F/974-1002				
					13 ⁰⁰	13 ³⁰	.5	10	Survey @ 998m				
					13 ³⁰	15 ¹⁵	1.75	2	Drill F/1002-1022				
					15 ¹⁵	16 ⁰⁰	.75	22	Total Working Time hole				
REDUCED PUMP SPEED													
2000	@	53	@										
2000					DEVIATION SURVEY								
DEPTH (m)	DEVIATION (°)		DIRECTION										
960	1°												
998	1°												
					NOTES								
					Blowdown Boilers 3x each = 120L fluid								
					✓ Crownsewer Acc Vol 40cm #2 Boiler ran 8hrs 1054								
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
HRS. RAN					ph		STACK TEMP.						
8					105		450		60,000 daN				

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD								MUD RECORD			
NO.	LENGTH		m	BIT NO.		MUD TYPE			☒ WATER BASED		☐ OIL BASED				
BIT		O.D. mm													
			25	1RR					TIME	1800					
				SIZE (mm)					DENSITY	1120					
				IADC CODE					FUNNEL	38					
				MFG.					VIS. - (SL)						
				TYPE					W.L. (cm ³)						
				SERIAL NO.					pH	10					
				JETS (mm)					PWT "	34.4					
				DEPTH OUT (m)					MUD MATERIALS ADDED		SOLIDS CONTROL				
				DEPTH IN (m)					PRODUCT	AMOUNT X UNIT	DESILTER				
				TOTAL METRES DRILLED (m)							HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
				TOTAL HOURS RUN											
	D.P.	STANDS		CUTTING STRUCTURE		B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE				
	D.P.	SINGLES		T ₁	T ₂	MDC	LOC				HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
KELLY DOWN				HOLE CONDITION											
TOTAL				HOLE DRAG											
WT. OF DC			1000	TORQUE AT BOTTOM								HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT. OF STRING			1000	FILL ON BOTTOM (m)											

METRES DRILLED					TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS					
FROM	TO	W.D. H.M. C.O.E.C.	ROTARY R.P.M.	WT. ON BIT (1000-lbs)	FROM	TO	ELAP. TIME	CODE NO.				
1022	1031	9	100	10-12	16 ⁰⁰	16 ¹⁵	.25	7	Rig Service 210 Upper Parameters 3sec			
					16 ¹⁵	16 ⁴⁵	.25	10	Survey @ 1020 miron			
CIRCULATION PRESSURE (kPa)	PUMP NO. 1		PUMP NO. 2		16 ³⁰	17 ⁰⁰	.5	2	Drill F/1022-1026			
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.	17 ⁰⁰	17 ³⁰	.5	10	Survey @ 1017 m			
	152 110				17 ³⁰	18 ³⁰	1	2	Drill F/1026-1031			
REDUCED PUMP SPEED					18 ³⁰	19 ⁰⁰	.5	5	Circ Potions up			
2000	@	53	@		19 ⁰⁰	20 ⁰⁰	5	6	P.O.O.H To Pickup Motor Flow 130.352			
DEVIATION SURVEY									20 = 24 Hole			
DEPTH (m)	DEVIATION (°)		DIRECTION									
1017	1.28											
					NOTES							
					V.L. DOWN 3000'							
					E.D. Driller Bkng 24 35 51/1500							
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
J. J. J. J.					HRS. RAN ph		STACK TEMP.					
					8 1500							

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LICENCE NO.: 1074	WELL NAME AND NO.: Northrock ETAL East 16, 1641-77
OPERATOR: Northrock Resources	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-60-125-30	UNIQUE ID: 1641-77
SIGNATURE OF OPERATOR'S REPRESENTATIVE: [Signature]	SIGNATURE OF CONTRACTOR'S RIG MANAGER: [Signature]

DAILY CHECKS	OPR	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually Inspect BOP's, Flowlines & Degasser Lines	Initial	Initial
(1) Rig Safe Health and Safety Meeting (one/two/month)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/two/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR	MONTH	DAY	LAST CASING TUBING OR LINER	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB TO CSG HEAD (m)	SET AT (m)
2017	10	10		340	316	26.6	Endential	3:52	3	13.26		43
FUEL @ 8:00					53.2			J-35	44			615
W. TEMP	TEMPERATURE °C	DC/OP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JOINT (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH (mm)	
1	17.5	200	28.6		74	225	2410	2	8-P-80	National	216	
2	17.8	200	13.5		58	158	4514	20	8-P-80	National	216	
3	14.4	200	62.5		61	158	4514	60				

TIME	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTAL	SHAPE SHAKER(S)	RENTALS/SERVICES	MORN	DAY	EVE
MORN	OPR																																
DAY	OPR																																
EVE	OPR																																
TOTAL	OPR																																

DRILLING ASSEMBLY (At End of Tour)		LENGTH		BIT RECORD		MUD RECORD	
NO.	BIT	O.D. (mm)	LENGTH (m)	BIT NO.	SIZE (mm)	MUD TYPE	WATER BASED
17	DC	158	165.72	1	222	TIME	0200
15	WDP	114	139.06	1	222	DENSITY kg/m³	1010
						FUNNEL VIS. (S/L)	28
						W.L. (cm³)	10.5
						pH	10.5
						PTM	44.2
						MUD MATERIALS ADDED	
						SOLIDS CONTROL	
						PRODUCT	AMOUNT X UNIT
						DESILTER	
						CENTRIFUGE	
						HOURS RUN	
						INTAKE DENSITY (kg/m³)	
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						HOURS RUN	
						INTAKE DENSITY (kg/m³)	
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						UNDERFLOW DENSITY (kg/m³)	
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						UNDERFLOW DENSITY (kg/m³)	
						HOURS RUN	
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LICENCE NO.: 1877
WELL NAME AND NO.: Northrock ETAL East Monkey 1-77
OPERATOR: Northrock Resources
CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-60-125-30
SIGNATURE OF OPERATOR'S REPRESENTATIVE: [Signature]
SIGNATURE OF CONTRACTOR'S RIG MANAGER: [Signature]

DAILY CHECKS
(1) Daily Walk Around Inspection
(2) Detailed Inspection-Weekly (using checklist)
(3) H/S Signs Posted (if required)
(4) Well License & Stick Diagram Posted
(5) Flare Lines Staked
(6) BOP Drills Performed
(7) Visually Inspect BOP's - Flarelines & Degasser Lines
(1) Rig Site Health and Safety Meeting (once/monthly)
(2) C.A.O.D.C. Rig Safety Inspection Checklist (once/monthly)
(3) Mast Inspection Before Raising or Lowering
(4) Crown Saver Checked
(5) Motor Kills checked

OPR: [Initials]
R.M.: [Initials]

YEAR: 2017 MONTH: 5 DAY: 7
RIG NO.: 51
FUEL @ 8:00
LAST CASING TUBING OR LINER: 240' 316 716 Pressure 233 3 7.5-26 532 3-33 49
W.E.A.T.H.E.R.: TEMPERATURE: °C 22.5 D.C. SIZE (mm) 240 LINEAR MASS (kg/m) 286 GRADE 74 225 7140 2 8-P-80 National 216
CURRENT CONDITIONS: 15.8 D.C. 135 50 158 4.54 20 8-P-80 National 216
WIND DIRECTION: 114 NW 62.5 61 158 4.54 60
ROAD

TIME	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHAPE SHAKER(S)	RENTALS/SERVICES	MOON	DAY	EVE
MORN	OPER.	DRILL ACTUAL	REAMING	CORING	CONC. MUD & DISC	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	SHUTTL UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.	21	22	23	24	25	26	8	NO. TYPE DFTS DFTS	3 B.R. of Anti Fracture			
DAY						1.5	2.25								4.25													8	SCREENS CHANGED YES NO	3 B.R. of Anti Fracture			
EVE										1																		8	TOP 180 TOP 180	Phaser to North Rock 302			
TOTAL						5.75	2.5								2.25													24	MIDDLE 180 MIDDLE 180	Perforator 8" 10" 12" 14" 16" 18" 20" 22" 24" 26" 28" 30" 32" 34" 36" 38" 40" 42" 44" 46" 48" 50" 52" 54" 56" 58" 60"			

DRILLING ASSEMBLY (At End of Tour) LENGTH: 2.25 m
BIT NO. 1
SIZE (mm) 222
IADC CODE 1117
MFG. Hughes
TYPE GT-561
SERIAL NO. 312123
JETS (mm) 3/16 10/32
DEPTH OUT (m) 615
DEPTH IN (m) 615
TOTAL METRES DRILLED (m) 615
TOTAL HOURS RUN 14
CUTTING STRUCTURE: T₁ T₂ MDC LOC B Gage ODC Reason Pulled Total Run m/hr.
D.P. STANDS 284.53
D.P. SINGLES 9.75
KELLY DOWN
TOTAL 294.28
WT. OF DC 24
WT. OF STRING 30
HOLE DRAG 10
TORQUE AT BOTTOM 3500
FILL ON BOTTOM (m) 30

MUD RECORD
MUD TYPE WATER BASED OIL BASED
TIME
DENSITY kg/m³
FUNNEL VIS. (S/L)
W.L. (cm)
pH
MUD MATERIALS ADDED
PRODUCT AMOUNT X UNIT
Gypsum 6 SK
Emulsifier 3 SK
Alkylphenol 1 SK
Sulphuric Acid 2 SK
CENTRIFUGE
HOURS RUN INTAKE DENSITY OVERFLOW DENSITY UNDERFLOW DENSITY
HOURS RUN INTAKE DENSITY OVERFLOW DENSITY UNDERFLOW DENSITY

METRES DRILLED
FROM TO D.R. R.P.M. ROTARY R.P.M. WT. ON BIT (1000 daN)
615 700 85 85 12
CIRCULATION PRESSURE (kPa) PUMP NO. 1 PUMP NO. 2
LINEAR SIZE (mm) S.P.M. LINEAR SIZE (mm) S.P.M.
REDUCED PUMP SPEED
DEVIATION SURVEY
DEPTH (m) DEVIATION (°) DIRECTION

TIME LOG
FROM TO ELAP. TIME CODE NO.
0800 1000 2 6
1000 1015 1 25 7
1015 1045 3 5 5
1045 1100 15 15
1100 1115 15 15
1115 1130 15 15
1130 1145 15 15
1145 1200 15 15
1200 1215 15 15
1215 1230 15 15
1230 1245 15 15
1245 1300 15 15
1300 1315 15 15
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1330 1345 15 15
1345 1400 15 15
1400 1415 15 15
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1445 1500 15 15
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1545 1600 15 15
1600 1615 15 15
1615 1630 15 15
1630 1645 15 15
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2630 2645 15 15
2645 2700 15 15
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3100 3115 15 15
3115 3130 15 15
3130 3145 15 15
3145 3200 15 15
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3630 3645 15 15
3645 3700 15 15
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LICENCE NO.: 1879	WELL NAME AND NO.: Northrock ETAL East McKay I-77
OPERATOR: Northrock Resources	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-60-125-30	UNIQUE ID: A-1000
SIGNATURE OF OPERATOR'S REPRESENTATIVE: [Signature]	SIGNATURE OF CONTRACTOR'S RIG MANAGER: [Signature]

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crew/month)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/rig/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kils checked	Initial	Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
2015	12	21	CASING	340	316	7.6	Prudential	J-55	3	43.26		43
FUEL @ 8:00			TUBING			53.2		J-55	49			615
RIG			OR									
BOILER			LINER									
W	TEMPERATURE	°C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
E	CURRENT CONDITIONS		225 DC	286		74	225	7H40	2	8-P-80	National	216
A	WIND DIRECTION		150 DC	135		58	158	4541	20	8-P-80	National	216
T	ROAD		114 HW	62.5		69	158	4541	60			

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES		MORN	DAY	EVE						
	OPFR.	RIG UP & TIE DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.	Well on Bowl								NO. TYPE	2FTS				1/2 DFTS					
	MORN														5.5								2.5							8	SCREENS CHANGED	☒ YES ☐ NO									
	DAY														1															8	TOP	180				TOP	180				
	EVE																															MIDDLE				180	MIDDLE	180			
	TOTAL																																			BOTTOM	180	BOTTOM	180		

NO.	DRILLING ASSEMBLY (At End of Tour)	LENGTH	BIT RECORD	MUD RECORD
	BIT	O.D. (mm)	BIT NO.	MUD TYPE ☐ WATER BASED ☐ OIL BASED
			SIZE (mm)	TIME
			IADC CODE	DENSITY kg/m ³
			MFG.	FUNNEL VIS. - (S/L)
			TYPE	W.L. (cm ³)
			SERIAL NO.	pH
			JETS (mm)	
			DEPTH OUT (m)	MUD MATERIALS ADDED
			DEPTH IN (m)	SOLIDS CONTROL
			TOTAL METRES DRILLED (m)	PRODUCT AMOUNT X UNIT
			TOTAL HOURS RUN	DESILTER
				HOURS RUN INTAKE DENSITY (kg/m ³) OVERFLOW DENSITY (kg/m ³) UNDERFLOW DENSITY (kg/m ³)
	D.P.	STANDS	CUTTING STRUCTURE	CENTRIFUGE
	D.P.	SINGLES	T ₁ T ₂ MDC LOC B Gage ODC Reason Pulled Total Run m/hr.	HOURS RUN INTAKE DENSITY (kg/m ³) OVERFLOW DENSITY (kg/m ³) UNDERFLOW DENSITY (kg/m ³)
	KELLY DOWN		HOLE CONDITION	
	TOTAL		HOLE DRAG	
WT.OFDC		1000 daN	TORQUE AT BOTTOM	HOURS RUN INTAKE DENSITY (kg/m ³) OVERFLOW DENSITY (kg/m ³) UNDERFLOW DENSITY (kg/m ³)
WT.OFSTRING		1000 daN	FILL ON BOTTOM (m)	

METRES DRILLED	TIME LOG	DETAILS OF OPERATION IN SEQUENCE AND REMARKS
FROM TO	FROM TO	
	00 ⁰⁰ 05 ³⁰	5.513 W.O.C.
	05 ³⁰ 08 ⁰⁰	2.522 Well on Bowl
CIRCULATION PRESSURE (kPa)	PUMP NO. 1 PUMP NO. 2	
	LINEAR SIZE (mm) S.P.M. LINEAR SIZE (mm) S.P.M.	
REDUCED PUMP SPEED		
@ @		
DEVIATION SURVEY		
DEPTH (m)	DEVIATION (°)	DIRECTION
NOTES		
Blow down Boilers MJ 4277 11/15 129277		
#2 Boiler 8hrs PH 11.5 Stack Temp 450°		
DRILLER SIGNATURE	BOILER HRS. RAN ph STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD SAFETY TOPIC M.A.C.P.
[Signature]	8 11.5 450°	

NO.	DRILLING ASSEMBLY (At End of Tour)	LENGTH	BIT RECORD	MUD RECORD
	BIT	O.D. (mm)	BIT NO.	MUD TYPE ☐ WATER BASED ☐ OIL BASED
			SIZE (mm)	TIME
			IADC CODE	DENSITY kg/m ³
			MFG.	FUNNEL VIS. - (S/L)
			TYPE	W.L. (cm ³)
			SERIAL NO.	pH
			JETS (mm)	
			DEPTH OUT (m)	MUD MATERIALS ADDED
			DEPTH IN (m)	SOLIDS CONTROL
			TOTAL METRES DRILLED (m)	PRODUCT AMOUNT X UNIT
			TOTAL HOURS RUN	DESILTER
				HOURS RUN INTAKE DENSITY (kg/m ³) OVERFLOW DENSITY (kg/m ³) UNDERFLOW DENSITY (kg/m ³)
	D.P.	STANDS	CUTTING STRUCTURE	CENTRIFUGE
	D.P.	SINGLES	T ₁ T ₂ MDC LOC B Gage ODC Reason Pulled Total Run m/hr.	HOURS RUN INTAKE DENSITY (kg/m ³) OVERFLOW DENSITY (kg/m ³) UNDERFLOW DENSITY (kg/m ³)
	KELLY DOWN		HOLE CONDITION	
	TOTAL		HOLE DRAG	
WT.OFDC		1000 daN	TORQUE AT BOTTOM	HOURS RUN INTAKE DENSITY (kg/m ³) OVERFLOW DENSITY (kg/m ³) UNDERFLOW DENSITY (kg/m ³)
WT.OFSTRING		1000 daN	FILL ON BOTTOM (m)	

METRES DRILLED	TIME LOG	DETAILS OF OPERATION IN SEQUENCE AND REMARKS
FROM TO	FROM TO	
	08 ⁰⁰ 15 ⁰⁰	7.22 Well Bowl
	15 ⁰⁰ 16 ⁰⁰	1.14 Nipple up
CIRCULATION PRESSURE (kPa)	PUMP NO. 1 PUMP NO. 2	
	LINEAR SIZE (mm) S.P.M. LINEAR SIZE (mm) S.P.M.	
REDUCED PUMP SPEED		
@ @		
DEVIATION SURVEY		
DEPTH (m)	DEVIATION (°)	DIRECTION
NOTES		
Blowdown Boilers 2x each - 80L Fluid		
#2 Boiler 8hrs PH 11.5 Stack Temp 440°		
DRILLER SIGNATURE	BOILER HRS. RAN ph STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD SAFETY TOPIC M.A.C.P.
[Signature]	8 11.5 440°	

NO.	DRILLING ASSEMBLY (At End of Tour)	LENGTH	BIT RECORD	MUD RECORD
	BIT	O.D. (mm)	BIT NO.	MUD TYPE ☐ WATER BASED ☐ OIL BASED
			SIZE (mm)	TIME
			IADC CODE	DENSITY kg/m ³
			MFG.	FUNNEL VIS. - (S/L)
			TYPE	W.L. (cm ³)
			SERIAL NO.	pH
			JETS (mm)	
			DEPTH OUT (m)	MUD MATERIALS ADDED
			DEPTH IN (m)	SOLIDS CONTROL
			TOTAL METRES DRILLED (m)	PRODUCT AMOUNT X UNIT
			TOTAL HOURS RUN	DESILTER
				HOURS RUN INTAKE DENSITY (kg/m ³) OVERFLOW DENSITY (kg/m ³) UNDERFLOW DENSITY (kg/m ³)
	D.P.	STANDS	CUTTING STRUCTURE	CENTRIFUGE
	D.P.	SINGLES	T ₁ T ₂ MDC LOC B Gage ODC Reason Pulled Total Run m/hr.	HOURS RUN INTAKE DENSITY (kg/m ³) OVERFLOW DENSITY (kg/m ³) UNDERFLOW DENSITY (kg/m ³)
	KELLY DOWN		HOLE CONDITION	
	TOTAL		HOLE DRAG	
WT.OFDC		1000 daN	TORQUE AT BOTTOM	HOURS RUN INTAKE DENSITY (kg/m ³) OVERFLOW DENSITY (kg/m ³) UNDERFLOW DENSITY (kg/m ³)
WT.OFSTRING		1000 daN	FILL ON BOTTOM (m)	

METRES DRILLED	TIME LOG	DETAILS OF OPERATION IN SEQUENCE AND REMARKS
FROM TO	FROM TO	
	16 ⁰⁰ 24 ⁰⁰	8.11 Nipple Up
CIRCULATION PRESSURE (kPa)	PUMP NO. 1 PUMP NO. 2	
	LINEAR SIZE (mm) S.P.M. LINEAR SIZE (mm) S.P.M.	
REDUCED PUMP SPEED		
@ @		
DEVIATION SURVEY		
DEPTH (m)	DEVIATION (°)	DIRECTION
NOTES		
Blow Boiler down		
#2 Boiler 8hrs		
DRILLER SIGNATURE	BOILER HRS. RAN ph STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD SAFETY TOPIC M.A.C.P.
[Signature]		

115025

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial _____	Initial _____
(2) Detailed Inspection-Weekly (using checklist)	Initial _____	Initial _____
(3) IFS Signs Posted (if required)	Initial _____	Initial _____
(4) Well License & Stick Diagram Posted	Initial _____	Initial _____
(5) Flare Lines Staked	Initial _____	Initial _____
(6) BOP Drills Performed	Initial _____	Initial _____
(7) Visually Inspect BOP's - Flarelines & Degasser Lines	Initial _____	Initial _____
(1) Rig Site Health and Safety Meeting (once/crow/month)		Initial _____
(2) C.A.D.D.C. Rig Safety Inspection Checklist (once/month)		Initial _____
(3) Mast Inspection Before Raising or Lowering		Initial _____
(4) Crown Saver Checked		Initial _____
(5) Motor Kits checked		Initial _____

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.	51		CASING	340	316	71.43	PROGRESSAL	150	3	43.26		43
FUEL @ 8:00			TUBING			55.42		255	49			
OR												
RIG	BOILER		LINER									

WEATHER	TEMPERATURE	°C	DC/OP. SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL J.T.O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		225 DC	246		74	225	7/16-20	2	8P80	NATIONAL	216
	WIND DIRECTION		154 DL	135		55	154	4.5xH	20	8P80	NATIONAL	216
	ROAD		114 HWS	122.45		69	157	4.5xH	60			

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES		MORN	DAY	EVE		
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	HAFFLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.							NO.	TYPE							
																													8	1	DPIS	2	DPIS				
	MORN		4.75				7.5	2	.25			.25																	8	0	SCREENS CHANGED	☒	YES	☐	NO		
	DAY							1.5						3.25									1.25						8	0	TOP	170	TOP	170			
	EVE						1.25		.25					5.25									.25						8	0	MIDDLE	170	MIDDLE	170			
	TOTAL		4.75				2	3.5	5			.25		11									.5						24	0	BOTTOM	170	BOTTOM	170			

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD							MUD RECORD					
NO.	BIT	O.D. mm	LENGTH m	BIT NO.	SIZE (mm)			MUD TYPE				☒ WATER BASED		☐ OIL BASED		
	B1/2	225	1.22	7A	311			TIME	1:00	3:00	5:00					
2	OC	225	1.89	ADC CODE				DENSITY kg/m ³	1150	1150	1155					
	VO		.43	MFG.	SMITH			FUNNEL VIS. - (S/L)	52	65	64					
	VO		.90	TYPE	MFDSSHC			W.L. (cm ³)								
16	DC	156	115.01	SERIAL NO.	LW 3201			pH	8.5	8.0	8.0					
15	MWD	114	126.16	JETS (mm)	19	19	19	PVT-3	34.5	34.3	34.0					
				DEPTH OUT (m)	615			MUD MATERIALS ADDED				SOLIDS CONTROL				
				DEPTH IN (m)	465			PRODUCT	AMOUNT X UNIT		DESILTER					
				TOTAL METRES DRILLED (m)	150			GEL	28	5X	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
				TOTAL HOURS RUN	29.75			GEL	5	5X	8	1150	1145	1360		
15	D.P.	STANDS	254.63	CUTTING STRUCTURE							CENTRIFUGE					
	D.P.	SINGLES		T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
				HOLE CONDITION												
	KELLY DOWN		5.51	HOLE DRAG												
	TOTAL		615													
WT. OF DC	23	1000 g/m		TORQUE AT BOTTOM												
WT. OF STRING	34	1000 g/m		FILL ON BOTTOM (m)												

MORNING TOUR

METRES DRILLED

TIME LOG

DETAILS OF OPERATION IN SEQUENCE AND REMARKS

METRES DRILLED					TIME LOG					DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	DRD RMR CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 gals)	FROM	TO	ELAP. TIME	CODE NO.						
599	615	16	52	19	60	615	.25	7	RIG SERVICE					
					615	500	.40	2	DRAWN F1 599-615					
CIRCULATION PRESSURE (KPa)	PUMP NO. 1		PUMP NO. 2		500	515	.75	5	CIRC					
	LINE SIZE (mm)	S.P.M.	LINE SIZE (mm)	S.P.M.	515	600	.25	10	SURVEY					
8300	152	85	152	85	600	800	2	6	HOIST TO RUN CSL					
REDUCED PUMP SPEED														
	@		@											
DEVIATION SURVEY														
DEPTH (m)	DEVIATION (°)		DIRECTION											
615	1°													
NOTES					WEDOWN SAVER #2 BOILER EARS R.H. 10.5 TEMP 450°									
					MT 3521 A.M.T 125521 PROUDOWN RINGERS 250000 T.M.D									
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.			
					HRS. RAN	ph	STACK TEMP.							
					8	165	430							

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD					
NO.	BIT	O.D. mm	LENGTH											MUD TYPE		☐ WATER BASED		☐ OIL BASED	
			m	BIT NO.								TIME							
			m	SIZE (mm)								DENSITY kg/m ³							
			m	IADC CODE								FUNNEL VIS. - (S/L)							
			m	MFG.								W.L. (cm ³)							
			m	TYPE								pH							
			m	SERIAL NO.															
			m	JETS (mm)															
			m	DEPTH OUT (m)								MUD MATERIALS ADDED		SOLIDS CONTROL					
			m	DEPTH IN (m)								PRODUCT		AMOUNT X UNIT		DESILTER			
			m	TOTAL METRES DRILLED (m)												HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
			m	TOTAL HOURS RUN															
	D.P.	STANDS	m	CUTTING STRUCTURE		T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr	CENTRIFUGE				
	D.P.	SINGLES	m												HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
	KELLY DOWN		m	HOLE CONDITION															
	TOTAL		m	HOLE DRAG															
WT. OF DC			1000 daN	TORQUE AT BOTTOM												HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT. OF STRING			1000 daN	FILL ON BOTTOM (m)															

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	G.R. OR R.M. CORE-C	ROTARY R.P.M.	W.T. ON BIT (1000 dwt)	FROM	TO	ELAP. TIME	CODE NO.			
					0800	0830	15	6	Lay down 9 inch D.C		
					0830	1030	1	22	Rig to Run casing		
					1030	1045	22	21	Safety meeting		
					1045	1600	=	12	Run casing		
							5.25				
CIRCULATION PRESSURE (kPa)						PUMP NO. 1		PUMP NO. 2			
REDUCED PUMP SPEED											
	@		@								
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (°)	DIRECTION									
						NOTES ✓ Crown sawer Blowdown Boilers					
						#2 Boiler BURS PHDQS Stack temp 400					
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		
Indra S. K. [Signature]					HRS. RUN	ph	STACK TEMP.			M.A.C.P.	
					8	105	420				

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD						
NO.	BIT	O.D. mm	LENGTH	BIT NO.											MUD TYPE	☒ WATER BASED	☐ OIL BASED			
			m	SIZE	(mm)										TIME	2130				
			m	IADC CODE										DENSITY						
			m	MFG.											kg/m ³					
			m	TYPE											FUNNEL	50				
			m	SERIAL NO.											VIS. - (S/L)					
			m	JETS	(mm)										W.L. (cm ³)					
			m	DEPTH OUT	(m)										pH					
			m	DEPTH IN	(m)										MUD MATERIALS ADDED	SOLIDS CONTROL				
			m	TOTAL METRES DRILLED	(m)										PRODUCT	AMOUNT X UNIT	DESILTER			
			m	TOTAL HOURS RUN											Desco	2 SK	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
	D.P.	STANDS	m	CUTTING STRUCTURE					B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE						
	D.P.	SINGLES	m	T ₁	T ₂	MDC	LOC							HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)			
KELLYDOWN			m	HOLE CONDITION																
TOTAL			m	HOLE DRAG																
WT. OF DC			1000 ash	TORQUE AT BOTTOM																
WT. OF STRING			1000 ash	FILL ON BOTTOM (m)																

METRES DRILLED					TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R.D. R.M.R. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.				
					16.00	20.00	4	12	Run Csg			
					20.00	20.45	.25	7	Rig Set-up etc			
					20.45	21.00	1.25	5	Circ Csg			
					21.00	21.00	.25	21	Safety M/Ts w/ Cementers			
					21.00	21.30	6.3	12	Cement Csg			
					21.30	21.40	1	13	w/ C.C.			
REDUCED PUMP SPEED												
		@		@								
DEVIATION SURVEY												
DEPTH (m)	DEVIATION (°)	DIRECTION			1. From 21.00 to 21.30 m, deviation is 1.5° to the right. 2. From 21.30 to 21.40 m, deviation is 1.5° to the left. 3. From 21.40 to 21.50 m, deviation is 1.5° to the right.							
					NOTES							
					1. Run Csg 100 m. 2. Set Cement 100 m. 3. Set Cement 100 m.							
DRILLER SIGNATURE					HRS. RAN	BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC	M.A.C.P.		
					0	120	420		Cementation			

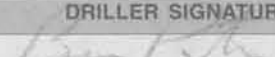
115024

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines.	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crew/month)		Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/shift/month)		Initial
(3) Mast Inspection Before Raising or Lowering		Initial
(4) Crown Saver Checked		Initial
(5) Motor Kills checked		Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
97	5	29	CASING	340	316	7143	PRODUCTION	T55	3	4326		43
RIG NO.			TUBING OR LINER									
FUEL @ 8:00												
RIG			BOILER									
W E A T H E R	TEMPERATURE	°C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		225 DC	286		74	225	71190	2	8P80	NATIONAL	216
	WIND DIRECTION		158 DC	135		58	158	45 X 11	20	8P80	NATIONAL	216
	ROAD		114 110	12.15		69	154	45 X 11	60			

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES			MORN	DAY	EVE		
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPLER UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.								N ₁ TYPE								
			7					.25			.75																		8	SCREENS CHANGED	☐ YES ☐ NO							
	MORN.		7					.25			.75																		8	TOP 170	TOP 170							
	DAY		7.5					.25			.25																		8	MIDDLE 170	MIDDLE 170							
	EVE		1.5				.5	5.75	.75																				8	MIDDLE 170	MIDDLE 170							
	TOTAL		16				.5	5.75	.75		1																		24	BOTTOM 170	BOTTOM 170							

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD					
NO.	BIT	O.D. mm.	LENGTH m	BIT NO.				MUD TYPE	☒ WATER BASED	☐ OIL BASED			
	B19		1.22	SIZE (mm)	3 1/4			TIME	02:00	04:00	06:00		
2	DC	225	16.59	IADC CODE				DENSITY kg/m ³	1135	1130	1130		
	XO		.93	MFG.	SMITH			FUNNEL VIS. - (SL)	44	43	43		
	YO		.80	TYPE	RFDSHC			W.L. (cm ³)					
18	DC	154	145.01	SERIAL NO.	LK 3201			pH	9.0	9.0	9.5		
15	PIWDP	114	137.06	JETS (mm)	3/16 1/27			2.07 13	43.1	43.1	43.4		
				DEPTH OUT (m)	1N			MUD MATERIALS ADDED		SOLIDS CONTROL			
				DEPTH IN (m)	46.5			PRODUCT	AMOUNT X UNIT	DESILTER			
				TOTAL METRES DRILLED (m)	85			GEL	15 SK	HOURS RUN	INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)
				TOTAL HOURS RUN	16			CAUSTIC	1 SK	6	1135	1130	1355
11	D.P.	STANDS	209.39	CUTTING STRUCTURE						CENTRIFUGE			
	D.P.	SINGLES	9.54	T	Y	MDC	LOG	B	Gage	ODC	Reason Pulled	Total Pmt m/ft.	
KELLY DOWN				HOLE CONDITION									
TOTAL				HOLE DRAG									
WT. OF DC				TORQUE AT BOTTOM									
WT. OF STRING				FILL ON BOTTOM (m)									

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	LOGD R.M.R CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 LBS)	FROM	TO	ELAP. TIME	CODE NO.					
519	550	31	50	12	000	015	.35	7	RIG SERVICE				
					015	045	.5	10	SURVEY				
					045	630	5.25	2	DRILL F/519-547				
					630	645	.25	10	SURVEY				
7500	152	85	152	85	645	800	1.25	2	DRILL F/547-550				
REDUCED PUMP SPEED													
	@		@										
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)		DIRECTION										
519	1												
547	.750												
NOTES						✓ DOWN SAVER #2 BOILER 2 BARS @ 10.5 TEMP 450 MT 2620 AMT 127620 PLUG DOWN BOILERS 243 FILL FLUID							
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
						HRS. RAN	ph	STACK TEMP.			Steam HOSES		
						8	10.5	430					

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD								MUD RECORD					
NO.	BIT	O.D. mm	LENGTH m	BIT NO.			MUD TYPE	☒ WATER BASED	☐ OIL BASED								
	B/S		1.35	SIZE (mm)	3/1		TIME	0700	1200	1530							
2	DC	225	13.59	IADC CODE			DENSITY kg/m ³	1145	1140	1140							
	XO		.42	MFG.	Smith		FUNNEL V/S - (S/L)	40	41	45							
	XO		.80	TYPE	MFDSSHC		W.L. (cm ³)										
18	DC	15B	16.50	SERIAL NO.	LK 3201		pH	9.5	9.5	9.5							
15	NWDIP	114	139.05	JETS (mm)	19 19 19 K7		PVT m ³	34.1	36.7	39.0							
				DEPTH OUT (m)			MUD MATERIALS ADDED			SOLIDS CONTROL							
				DEPTH IN (m)	46.5		PRODUCT	AMOUNT X UNIT	DESILTER								
				TOTAL METRES DRILLED (m)	129		GEL	5x	HOURS RUN	INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)					
				TOTAL HOURS RUN	23.5		Soda Ash	1 x	8	1140	1130	1315					
13	D.P.	STANDS	246.61	CUTTING STRUCTURE						CENTRIFUGE							
1	D.P.	SINGLES	9.45	T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.					
	KELLY DOWN		13.26	HOLE CONDITION							8	1140	1125	1525			
	TOTAL		594.75	HOLE DRAG													
WT.OF DC		83	1000 w/h	TORQUE AT BOTTOM							3500						
WT.OF STRING		31	1000 w/h	FILL ON BOTTOM (m)							1						

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R.O. B.M.B. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 gms)	FROM	TO	ELAP. TIME	CODE NO.			
550	594	44	50	12	08 ⁰⁰	12 ⁰⁰	4	2	Drill F/550-575		
					12 ⁰⁰	12 ¹⁵	.25	7	Rigservic		
					12 ¹⁵	12 ³⁰	.25	10	Survey		
					12 ³⁰	16 ⁰⁰	3.5	2	Drill F/575-574		
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2									
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.							
7500	152	85	152	85							
REDUCED PUMP SPEED											
-	@		@								
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (°)	DIRECTION									
372	.75										
NOTES					TALLY	594.78					
					STRAP	594.66					
					DIFF.	.12					
					#2 Driller BHS PH 105 STACK TEMP 450° Flow Down 4 x 20 = 80°						
DRILLER SIGNATURE					BOILER	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC		M.A.C.P.		
3rd Shift					HRS. BAN	ph	STACK TEMP.				
					8	105	470				

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD					
NO.	BIT	O.D. mm	LENGTH m	BIT NO.						MUD TYPE		☐ WATER BASED		☐ OIL BASED					
	B13		1.35	SIZE (mm)	311					TIME									
2	DC	225	16.5	IADC CODE						DENSITY kg/m ³									
	XO		4.3	MFG.	SMITH					FUNNEL VIS. - (S/L)									
	XO		8.1	TYPE	MPDSHC					W.L. (cm ³)									
16	DC	156	45.01	SERIAL NO.	14 3251					pH									
17	HWDP	122	139.06	JETS (mm)	19	19	19	127											
				DEPTH OUT (m)	7N					MUD MATERIALS ADDED		SOLIDS CONTROL							
				DEPTH IN (m)	465					PRODUCT		AMOUNT X UNIT		DESILTER					
				TOTAL METRES DRILLED (m)	134									HOURS RUN		INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
				TOTAL HOURS RUN	25														
14	D.P.	STANDS	265.03	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE						
	D.P.	SINGLES		T ₁	T ₂	MDC	LOC						HOURS RUN		INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
KELLYDOWN			6.51	HOLE CONDITION															
TOTAL			699	HOLE DRAG 3-5															
WT.OFDC			23	1000 g/m ³		TORQUE AT BOTTOM		3800							HOURS RUN		INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT.OF STRING			34	1000 g/m ³		FILL ON BOTTOM (m)													

METRES DRILLED							TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	GEO. RMR CODE-2	ROTARY R.P.M.	WT. ON BIT (1000 LBS)	FROM	TO	ELAP. TIME	CODE NO.						
594	599	S	S2	13	16 ⁰⁰	16 ²⁰	.5	8	Circ					
					16 ²⁰	16 ⁴⁵	.25	7	Rig Service					
					16 ⁴⁵	22 ³⁰	5.75	6	Whip Trip					
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2			22 ³⁰	24 ⁰⁰	1.5	2	DRILL F/594 - 599					
LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.											
8100	152	85	152	85										
REDUCED PUMP SPEED														
@		@												
DEVIATION SURVEY														
DEPTH (m)	DEVIATION (°)	DIRECTION												
NOTES					✓ CROWN SAVER #2 BORE SHRS FOLLOWING TEMP 450°									
					Bore hole Bore 3X3 Tool Flow									
DRILLER SIGNATURE					HRS. RUN	BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD			SAFETY TOPIC		M.A.C.P.	
<i>[Signature]</i>					8	11	430							

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
94	11	25	CASING	340	316	71.43	PRUDENTIAL	345	3	43.26		43
RIG NO. 51			TUBING OR									
FUEL @ 8:00			LINER									
RIG			BOILER									
WEATHER	TEMPERATURE	°C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		225 DC	286		74	225	7H90	2	8P80	NATIONAL	216
	WIND DIRECTION		158 DC	135		58	158	4.5XH	20	8P80	NATIONAL	216
	ROAD		114 HW	62.45		69	158	4.5XH	60			

DRILLING ASSEMBLY (At End of Tour)				LENGTH	BIT RECORD				MUD RECORD				METRES DRILLED					TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
NO.	BIT		O.D. mm	35	BIT NO.	7A				MUD TYPE ☐ WATER BASED ☐ OIL BASED				FROM	TO	DRD RMR CORE-C	ROTARY R.P.M.	WT. ON BIT (1000-gram)	FROM	TO	ELAP TIME	CODE NO.			
	BIS			1.22	SIZE (mm)	311				TIME	1:00	2:00	24:00	472	519	47	50	12	16:00	18:00	2	2	Drill 11412-471		
2	DC		225	18.59	ADC CODE					DENSITY kg/m ³	1140	1140	1140					18:00	18:00	2	7	Rig Service			
	XO			.45	MFG.	Smith				FUNNEL VIS. - (S/L)	42	42	38					18:00	18:00	2	10	Survey			
	XO			.80	TYPE	MEDS HC				W.L (cm ³)								18:30	24:00	5	2	Drill P/981-519			
18	DC			115.01	SERIAL NO.	1K 3201				pH	9.5	9.5	9.5												
19	HOIPP		114	139.06	JETS (mm)	3x19/10.7					43.1	43.1	44.6												
					DEPTH OUT (m)	11				MUD MATERIALS ADDED				SOLIDS CONTROL											
					DEPTH IN (m)	465				PRODUCT	AMOUNT X UNIT				DESILTER										
					TOTAL METRES DRILLED (m)	54				HOURS RUN	INTAKE DENSITY (kgm ⁻³)	OVERFLOW DENSITY (kgm ⁻³)	UNDERFLOW DENSITY (kgm ⁻³)												
					TOTAL HOURS RUN	9				8	1140	1130	1310												
9	D.P.	STANDS		170.96	CUTTING STRUCTURE				CENTRIFUGE																
1	D.P.	SINGLES		9.48	T ₁	T ₀	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.												
KELLYDOWN				73.26	HOLE CONDITION																				
TOTAL				519.06	HOLE DRAG				3-5																
WT.OFDC		23		1000 gN	TORQUE AT BOTTOM				3500																
WT.OFSTRING		30		1000 gN	FILL ON BOTTOM (m)																				

EVENING TOUR

REDUCED PUMP SPEED			
@	@	@	@
DEVIATION SURVEY			
DEPTH (m)	DEVIATION (°)	DIRECTION	
477	75		
DRILLER SIGNATURE			

NOTES

✓ GROWN SAVER #2 BOILER 8225 RD. 10.5 T/M P 4:50

BLUDDOWN BOILERS 2X3= 120 L FLUID

BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
HRS. RUN	ph	STACK TEMP.					
8	10.5	430°					

115022

LICENCE NO.: 1879	WELL NAME AND NO.: NORTH ROCK Fm. East Mackay I77
OPERATOR: NORTH ROCK RESOURCES	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-60-125-30	UNIQUE ID: a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SIGNATURE OF OPERATOR'S REPRESENTATIVE: <i>[Signature]</i>	SIGNATURE OF CONTRACTOR'S REPRESENTATIVE: <i>[Signature]</i>

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H2S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flame Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - FlameLines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (once/monthly)		Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (once/monthly)		Initial
(3) Mast Inspection Before Raising or Lowering		Initial
(4) Crown Saver Checked		Initial
(5) Motor Kills checked		Initial

YEAR	MONTH	DAY	LAST CASING TUBING OR LINER	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	K8. TO CSG HEAD (m)	SET AT (m)	
REG. NO.													
FUEL @ 8:00													
PRO	SOLER												
WEATHER	TEMPERATURE	°C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JO D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE (Ltr./min)	
	CURRENT CONDITIONS		325 DC	246		74	225	7-MPH	2	8P80	NATIONAL	211	
	WIND DIRECTION		158 DC	135		53	158	45°H	20	8P80	NATIONAL	216	
	ROAD		114 HW	62.45		69	158	45°H	60				

TIME - HRS	CODE NO.																											TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		TYPE		MORN	DAY	EVE				
OPER.		LOG LIP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NEPHEE LIFT B.G.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DRL WORK	SAFETY MTG.									2	TYPE					
MORN			5.75	1.5				.25			.5																			6	SCREENS CHANGED	☐ YES	☒ NO				
DAY			6.75					.25			1																			8	TOP	170	TOP	170			
EVE			7					.25			.75																			8	MIDDLE	170	MIDDLE	170			
TOTAL			19.5	1.5				.75			2.25																			24	BOTTOM	170	BOTTOM	170			

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD							MUD RECORD							
NO.	BIT		O.D. (mm)	LENGTH	BIT NO.						MUD TYPE	☒ WATER BASED	☐ OIL BASED							
	BIS			1.35 m	SIZE (mm)	6A					TIME	02:00	04:00	06:00						
2	DC	225	18.59	IADC CODE	311					DENSITY kg/m ³	1095	1110	1110							
	XO		.412	MFG.	Smith					FUNNEL VIS. - (SL)	44	55	50							
	XO		.80	TYPE	MF DSS					W.L. (cm ³)										
18	DC	158	185.01	SERIAL NO.	139150					pH	10.0	10.0	9.5							
				JETS (mm)	0.7 x 4					R.O.T. #	39.1	40.1	40.5							
1				DEPTH OUT (m)	2N					MUD MATERIALS ADDED				SOLIDS CONTROL						
				DEPTH IN (m)	236					PRODUCT	AMOUNT X UNIT			DESILTER						
				TOTAL METRES DRILLED (m)	75					GEL	15 SK	HOURS RUN	INTAKE DENSITY (g/cm.)	OVERFLOW DENSITY (g/cm.)	UNDERFLOW DENSITY (g/cm.)					
				TOTAL HOURS RUN	6.25					SODA ASH	1 SK									
6	D.P.	STANDS	111.71	CUTTING STRUCTURE					B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE						
	D.P.	SINGLES		T ₁	T ₂	MDC	LDC						HOURS RUN	INTAKE DENSITY (g/cm.)	OVERFLOW DENSITY (g/cm.)	UNDERFLOW DENSITY (g/cm.)				
KELLY DOWN				HOLE CONDITION										8						
TOTAL				311.37	HOLE DRAG					1-2										
WT. OF DC				23	1000 gals	TORQUE AT BOTTOM					100					HOURS RUN				
WT. OF STRING				27	1000 gals	FILL ON BOTTOM (m)										INTAKE DENSITY (g/cm.)				

METRES DRILLED						TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	PRO- BUMP CORRECTION	ROTARY R.P.M.	WT. ON BIT (1000 gms)	FROM	TO	ELAP. TIME	CODE NO.			
247	290	43	150	5	000	015	.25	7	RIG SERVICE		
290	311	21	150	2-3	015	145	1.5	3	REAM RAT HOLE		
CIRCULATION PRESSURE (KPa)	PUMP NO. 1		PUMP NO. 2		145	215	.5	2	DRILL 311 mm HOLE F/290-293		
	LINE SIZE (mm)	S.P.M.	LINE SIZE (mm)	S.P.M.	215	230	.25	10	SURVEY		
8150	152	85	152	85	230	500	2.5	2	DRILL F/293-302		
REDUCED PUMP SPEED					500	515	.25	10	SURVEY		
	@		@		515	800	2.75	2	DRILL F/302-311		
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (°)		DIRECTION								
293	.5										
302	10										
					NOTES ✓ CROWN SAVER #2 BOILER BARS RIG 10.5 TEMP 225						
					MS 1575 AMT 126575 (DOWNDOWN BOILERS 243=1204 FLUID						
DRILLER SIGNATURE					BOILER HRS. RAN ph		STACK TEMP.		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC
[Signature]					8		MT 410				M.A.C.P.

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD					
NO.	BIT	O.D. mm	LENGTH m	BIT NO.					MUD TYPE	☒ WATER BASED	☐ OIL BASED		
	B13		1.32	SIZE (mm)	3H				TIME	0900	1200	1500	
	DC	225	18.54	IADC CODE	T				DENSITY kg/m ³	1120	1115	1120	
	10		.43	MFG	Smith				FUNNEL VIS. - (S/L)	48	43	43	
	10		.80	TYPE	HFDSS				W.L. (cm ³)				
18	DC	188	16.50	SERIAL NO.	259150				pH	10.0	9.0	9.5	
15	HDD	114	139.06	JETS (mm)	12.7 x 4				PVT m ³	40.0	40.7	40.4	
				DEPTH OUT (m)					MUD MATERIALS ADDED		SOLIDS CONTROL		
				DEPTH IN (m)	236				PRODUCT	AMOUNT X UNIT		DESILTER	
				TOTAL METRES DRILLED (m)	124				Soda Ash	2	5	10	
				TOTAL HOURS RUN	13				HOURS RUN	INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)	
1	D.P.	STANDS	19.21	CUTTING STRUCTURE				CENTRIFUGE					
	D.P.	SINGLES		T ₁	T ₂	T ₃	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.
KELLY DOWN			13.26	HOLE CONDITION									
TOTAL			357.23	HOLE DRAG									
WT. OF DC			23	TORQUE AT BOTTOM									
WT. OF STRING			28	FILL ON BOTTOM (m)									

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	DR-D RUL-R CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 lbs)	FROM	TO	ELAP. TIME	CODE NO.					
311	327	46	50	12-3	08 ²⁰	08 ¹⁵	00:05	7	Ry Service				
					08 ¹⁵	08 ⁰⁵	00:10		Survey				
					08 ⁰⁵	10 ⁰⁰	01:52		Drill F/311-320				
					10 ⁰⁰	10 ⁰⁵	00:10		Survey				
4500	152	85	152	85	10 ⁰⁵	13 ⁰⁰	02:52		Drill F/320-338				
REDUCED PUMP SPEED					13 ⁰⁰	13 ¹⁵	00:10		Survey				
	@		@		13 ¹⁵	16 ⁰⁰	02:45		Drill F/338-357				
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)	DIRECTION											
311	1.35°												
320	1.35°												
334	1.0°												
					NOTES								
					V.C. DOWN SURVEY 311-4 DOWN SURVEY 4x2 = 21' FILLING								
					2x BOLLER 8 HRS. 74 HRS. STACK 450' = 1.8 HRS. 21.5 HRS. 21.5 HRS.								
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
Jodi Black					HRS. RAN	ph	STACK TEMP.						

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD			
NO.	BIT	D.D. mm	LENGTH m	BIT NO.					MUD TYPE		☒ WATER BASED		☐ OIL BASED				
	P15		1.22	SIZE (mm)	311				TIME		1800	21:00	2300				
2	DC	775	16.59	ADC CODE					DENSITY kg/m ³		1125	1130	1130				
	X.O.		1.03	MFG.	SANTUM				FUNNEL VIS. - (SL)		44	42	42				
	X.O.		1.80	TYPE	P15 D33				W.L. (cm ²)								
18	DC	779	15.01	SERIAL NO.	15950				pH		9.5	9.0	9.0				
15	HWDP	110	139.06	JETS (mm)	4 X 12.7				PVT m ³		41.0	42.5	42.0				
				DEPTH OUT (m)	11				MUD MATERIALS ADDED		SOLIDS CONTROL						
				DEPTH IN (m)	236				PRODUCT		AMOUNT X UNIT		DESILTER				
				TOTAL METRES DRILLED (m)	1169						HOURS RUN		INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)		
				TOTAL HOURS RUN	20						4		1130	1125	1360		
2	D.P.	STANDS	57.01	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE				
1	D.P.	SINGLES	9.37	T ₁	T ₂	MDC	LOC						HOURS RUN	INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)	
KELLYDOWN			13.26	HOLE CONDITION									8	1130	1120	1470	
TOTAL			405.10	HOLE DRAG									2.3				
WT. OF DC		23	1000 gN	TORQUE AT BOTTOM		3800				HOURS RUN		INTAKE DENSITY (g/cm ³)	OVERFLOW DENSITY (g/cm ³)	UNDERFLOW DENSITY (g/cm ³)			
WT. OF STRING		28	1000 gN	FILL ON BOTTOM (m)													

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	GRD. BHA- CORE-G	ROTARY R.P.M.	WT. ON BIT (1000MM)	FROM	TO	ELAP. TIME	CODE NO.					
357	405	48	50	72	18 ⁰⁰	18 ⁰⁰	2 2		Drill = 1357-367				
					18 ⁰⁰	18 ³⁰	.5 10		Survey				
					18 ³⁰	18 ⁰⁵	.3 7		Rig SERVICE				
					18 ⁴⁵	22 ³⁰	3 25		Drill F/367-395				
					22 ³⁰	22 ⁰⁵	.25 10		Survey				
					22 ⁴⁵	24 ⁰⁰	1 25 2		Drill F/395-405				
REDUCED PUMP SPEED													
	@		@										
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)	DIRECTION											
367	1°												
395	.75												
					NOTES: VERBOW SAVED FOR PAPER 2 9HRS RUN 105 TEMP 450								
					RUN DOWN BOILER'S 243 TEMP 450								
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
					HRS. RUN	ph	STACK TEMP.						
					8	100	4/10						

115021

LICENCE NO.: 1879	WELL NAME AND NO.: NORTH ROCK ETAL EAST Mackay I 77
OPERATOR: NORTH ROCK RESOURCES	CONTRACTOR: AKITA/SAHTU DRILLING, a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SURFACE LOCATION: 64-60-125-30	UNIQUE ID.:
SIGNATURE OF OPERATOR'S REPRESENTATIVE: <i>[Signature]</i>	SIGNATURE OF CONTRACTOR'S RIG MANAGER: <i>[Signature]</i>

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial _____	Initial _____
(2) Detailed Inspection-Weekly (using checklist)	Initial _____	Initial _____
(3) H/S Signs Posted (if required)	Initial _____	Initial _____
(4) Well License & Stick Diagram Posted	Initial _____	Initial _____
(5) Flare Lines Staked	Initial _____	Initial _____
(6) BOP Drills Performed	Initial _____	Initial _____
(7) Visually Inspect BOP's - Flameless & Degasser Lines	Initial _____	Initial _____
(1) Rig Site Health and Safety Meeting (one/twice/month)	Initial _____	Initial _____
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/twice/month)	Initial _____	Initial _____
(3) Mast Inspection Before Raising or Lowering	Initial _____	Initial _____
(4) Crown Saver Checked	Initial _____	Initial _____
(5) Motor Kills checked	Initial _____	Initial _____

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)	
99	12	26	CASING	340	316	71.43	PRUD'ENTIAL	J55	3	43.26		43	
RIG NO.	51		TUBING										
FUEL @ 8:00			OR										
RIG	BOILER		LINER										
W E A T H E R	TEMPERATURE °C		DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT. O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER		STROKE LTH. (mm)
	CURRENT CONDITIONS		2750	286		74	225	7-180	2	8P 80	NATIONAL		216
	WIND DIRECTION		155 DC	135		58	158	45X41	20	8P 80	NATIONAL		216
	ROAD		114 MW	2.445		19	158	45X41	60				

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES			MORN	DAY	EVE					
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	PLAN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIL. WORK	SAFETY MTG.								NO.	TYPE	YES	NO								
	MORN.		3				1	3.5	.25			.25																		8	SCREENS CHANGED	☒	☐				NO				
	DAY		7						.25			.75																		0	TOP										
	EVE.		3.75					3.75	.25			.25																		8	MIDDLE										
	TOTAL		13.75	.5			1	7.25	.75			1.25																		24	BOTTOM										

[illegible]

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R.D. R.M.F.- CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)		FROM	TO	ELAP. TIME	CORE NO.				
236	253	17	150	2-3		0:00	1:00	1	5	CIRC			
						1:00	1:15	25	7	R/L SERVICE			
						1:15	4:45	35	6	HOLD TO CHANGE P.H.A.			
CIRCULATION PRESSURE (kPa)	PUMP NO. 1		PUMP NO. 2			4:45	6:15	15	2	DRILL F/236-244 PILOT HOLE SURVEY			
LINER SIZE (mm)	S.P.M.		LINER SIZE (mm)	S.P.M.		6:15	6:30	25	10				
4500	152	90	152			6:30	8:00	15	2	DRILL F/244-253			
REDUCED PUMP SPEED													
	@		@										
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)		DIRECTION										
244	1°												
NOTES						✓ CROWN SAVED BLOWDOWN BOILERS 243-126 L FLUID #2 CORNER FLARE PH 10.5 - TEMP 225 MT 980 AMT 125960							
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
						HRS.	ph	STACK TEMP.					
						8	10.5	410					

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD			
NO.	BIT	O.D. mm	LENGTH m	BIT NO.						MUD TYPE		☒ WATER BASED		☐ OIL BASED			
	13/5		235	SIZE (mm)	222					TIME	0900	1200	1500				
13	2C	158	165.0	IADC CODE	1 1 7					DENSITY kg/m ³	1095	1095	1100				
11	HWDP	114	102.4	MFG.	HUGHES					FUNNEL VIS. - (S/L)	40	45	44				
				TYPE	GT-541					W.L. (cm ²)							
				SERIAL NO.	W614 R					pH	9.0	9.5	10				
				JETS (mm)	3 10.3					PVT m ²	40.7	41.0	40.9				
				DEPTH OUT (m)	1 IN					MUD MATERIALS ADDED		SOLIDS CONTROL					
				DEPTH IN (m)	236					PRODUCT	AMOUNT X UNIT		DESILTER				
				TOTAL METRES DRILLED (m)	45					GEL	10 S		HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
				TOTAL HOURS RUN	10					CAUSTIC	1 SK						
D.P.		STANDS		CUTTING STRUCTURE					B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE			
	D.P.	SINGLES		T ₁	T ₂	MDC	LOC						HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
KELLY DOWN		13.36		HOLE CONDITION									8	1100	1095	1740	
TOTAL		281.56		HOLE DRAG													
WT. OF DC		18	1200 SH	TORQUE AT BOTTOM									HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
WT. OF STRING		33	1200 SH	FILL ON BOTTOM (m)													

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	DR-D RJ-D CORE-C	ROTARY R.P.M.	WT ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO					
253	281	28	160	2.3	28 ⁰⁰	28 ¹⁵	15	7	Rig set/bc				
					28 ¹⁵	28 ³⁰	15	12	Survey 15"				
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2			28 ³⁰	10 ³⁰	2	2	Drill F/253-263				
	LINEAR SIZE (mm)	S.P.M.	LINEAR SIZE (mm)	S.P.M.	10 ³⁰	10 ⁴⁵	15	10	Survey				
5400	152	100	152		10 ⁴⁵	13 ³⁰	27	2	Drill F/263-272				
REDUCED PUMP SPEED					13 ³⁰	13 ⁴⁵	15	10	Survey				
	@		@		13 ⁴⁵	16 ⁰⁰	27	2	Drill F/272-281				
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)		DIRECTION										
253	1.5°												
263	1.0°												
272	78°												
					NOTES								
					✓ Crown Saver Blowdown Bailers								
					#3 Bailer								
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
2000.2.06					HRS. RAN 0 hrs		STACK TEMP. 400						

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD			
NO.	BIT	O.D. (mm)	LENGTH	BIT NO.	5A		6A		MUD TYPE	☐ WATER BASED	☐ OIL BASED						
	BIS		1.35 m	SIZE (mm)	222		311		TIME	1500		24:00					
2	DC		18.59 m	IADC CODE	1117				DENSITY kg/m ³	1095		1100					
	XO		.93 m	MFG.	HOBAS		SMITH		FUNNEL VIS. - (S/L)	43		45					
	XA		.80 m	TYPE	GR SHL		MIDSS		W.L. (cm ³)								
18	DC		11.50 m	SERIAL NO.	W614R		259150		pH	9.5		9.5					
5			46.51 m	JETS (mm)	3 x 10.3		127 x 4			48.1		46.9					
				DEPTH OUT (m)	290		247		MUD MATERIALS ADDED		SOLIDS CONTROL						
				DEPTH IN (m)	236		236		PRODUCT	AMOUNT X UNIT		DESILER					
				TOTAL METRES DRILLED (m)	1344		11					HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
				TOTAL HOURS RUN			.5										
	D.P.	STANDS		CUTTING STRUCTURE										CENTRIFUGE			
				T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.					
	D.P.	SINGLES															
	KELLYDOWN		13.26 m	HOLE CONDITION										8 1100 1095 1695			
	TOTAL		247.11 m	HOLE DRAG													
WT.OF DC			23 1000 gN	TORQUE AT BOTTOM													
WT.OF STRING			29 1000 gN	FILL ON BOTTOM (m)													

METRES DRILLED					TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D&D R.M.S. CORRECTION	ROTARY R.P.M.	WT. ON BIT (1000-GMS)	FROM	TO	ELAP. TIME	CODE NO.				
281	290	9	160	2-3	16-02	19-15	3:25	2	DRILL F/281-290			
236	247	11	160	5	19-15	19-30	15	7	Rig service			
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2			19-30	19-45	15	10	Survey			
LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.		19-45	23-30	3:45	6	HOLE TO CHAIN BYPASS 216 PHOSPHOR			
6000	152	85	152	85					RUN IN WITH 311 mm BIT			
REDUCED PUMP SPEED					23-30	24-00	5	3	REAM F/236-247 WITH 311 MM			
@		@										
DEVIATION SURVEY												
DEPTH (m)	DEVIATION (%)	DIRECTION										
290	.5											
NOTES ✓ CROWN SAVER BLENDRAIN BOILER'S 2X3=1 DOLL FLUID #3 BOILER 6 HRS PH KIL TEMP 225°												
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
<i>[Signature]</i>					HRS. RAN ph STACK TEMP							
					6 155 410							

FOLD HERE →

115020

LICENCE NO.: 1579	WELL NAME AND NO.: NORTH ROCK F1AL EAST Mackay 177
OPERATOR: NORTH ROCK RESOURCES LTD	CONTRACTOR: AKITA/SAHTU DRILLING
SURFACE LOCATION: 64-60-125-30	UNIQUE ID: a joint venture of AKITA Drilling Ltd. and SAHTU OIL Incorporated
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection Weekly (using checklist)	Initial	Initial
(3) HPS Signs Posted (if required)	Initial	Initial
(4) Well License & Stock Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Gels Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/one/one)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/one/one)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kils checked	Initial	Initial

YEAR: 97	MONTH: 12	DAY: 25	LAST CASTER TUBING OR LINER	O.D. (mm): 340	MIN. I.D. (mm): 316	kg/m: 71.03	MAKE: PRUDENTIAL	GRADE: T55	NO. OF JOINTS: 3	TOTAL(m) LENGTH: 42.2	KB TO CSG HEAD (m):	SET AT (m): 43
FUEL @ 8:00												
TEMPERATURE °C	DO/D.P. SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. I.D. (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER			
CURRENT CONDITIONS	225.2	286	74	225	7-140	2	8-P-80	National	210			
WIND DIRECTION	1580	130	54	158	4.5X40	2	8-P-80	National	216			
ROAD	144W	67.0	69	158	4.5X560							

TIME - H - R S	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES		MORN	DAY	EVE					
	OPER.	RIG UP & TEST DOWN	DRILL ACTUAL	REAMING	CORING	CORING MUD & CIRC.	THIPS	RIG SERVICE	REPAIR RIG	CUT OFF CIRC. LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	IRP/LE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.								PS	TYPE	B2X				5003				
	MORN.		5.25				2.25	.25			.25																				8	SCREENS CHANGED				☐ YES	☐ NO			
	DAY		7.5					.25			.25																				5	TOP				170	TOP	170		
	EVE		7					.25			.75																				8	MIDDLE				170	MIDDLE	170		
TOTAL		19.75					2.75	.75		1.25																			24	BOTTOM	170	BOTTOM	170							

DRILLING ASSEMBLY (At End of Tour)		LENGTH		BIT RECORD		MUD RECORD	
NO.	BIT	O.D. (mm)	LENGTH (m)	BIT NO.	SIZE (mm)	MUD TYPE	TIME
2	B/S	225	1.22	2A	311	WATER BASED	02:00
	OC	225	18.59				04:00
	XO		.43				06:00
	XO		.80				
16	DC	158	146.72				
D.P.		STANDS		MFG.		W.L. (cm)	
D.P.		SINGLES		TYPE		PH	
KELLY DOWN			13.24	SERIAL NO.		P.U.T	
TOTAL			180.21	JETS		43.3	
WT. OF DC				DEPTH OUT		44.5	
WT. OF STRING				DEPTH IN			
				TOTAL METRES DRILLED			
				TOTAL HOURS RUN			
				CUTTING STRUCTURE			
				HOLE CONDITION			
				HOLE DRAG			
				TORQUE AT BOTTOM			
				FILL ON BOTTOM (m)			

METRES DRILLED		TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS	
FROM	TO	ELAP. TIME	CODE NO.		
162	180	18	140	2-3	88:00
CIRCULATION PRESSURE (kPa)		PUMP NO. 1	PUMP NO. 2		
6100		152 85	152 85		
REDUCED PUMP SPEED					
DEVIATION SURVEY					
DEPTH (m)	DEVIATION (°)	DIRECTION			
162	1°				
DRILLER SIGNATURE		BOILER		NOTES	
8 10.5 400		HRS. RAN		✓ CROWN SAVER MT 593 AMT 125593	
		PH		#2 POWER BARPS PH. MS. 104P 225 BLEWDOWN BARPS 243=170610	
		STACK TEMP.			
		MAXIMUM EXPERIENCED HOOKLOAD			
		SAFETY TOPIC			
		M.A.C.P.			

DRILLING ASSEMBLY (At End of Tour)		LENGTH		BIT RECORD		MUD RECORD	
NO.	BIT	O.D. (mm)	LENGTH (m)	BIT NO.	SIZE (mm)	MUD TYPE	TIME
2	B/S	225	1.32	2A	311	WATER BASED	08:00
	OC	225	18.59				12:00
	XO		.43				15:00
	XO		.80				
14	DC	158	164.72				
D.P.		STANDS		MFG.		W.L. (cm)	
D.P.		SINGLES		TYPE		PH	
KELLY DOWN			11.24	SERIAL NO.		P.U.T	
TOTAL			216.00	JETS		40.6	
WT. OF DC				DEPTH OUT		41.1	
WT. OF STRING				DEPTH IN		41.9	
				TOTAL METRES DRILLED			
				TOTAL HOURS RUN			
				CUTTING STRUCTURE			
				HOLE CONDITION			
				HOLE DRAG			
				TORQUE AT BOTTOM			
				FILL ON BOTTOM (m)			

METRES DRILLED		TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS	
FROM	TO	ELAP. TIME	CODE NO.		
180	216	38	140	2-3	8:00
CIRCULATION PRESSURE (kPa)		PUMP NO. 1	PUMP NO. 2		
6500		152 85	152 85		
REDUCED PUMP SPEED					
DEVIATION SURVEY					
DEPTH (m)	DEVIATION (°)	DIRECTION			
190	1°				
DRILLER SIGNATURE		BOILER		NOTES	
8 11 400		HRS. RAN		✓ CROWN SAVER	
		PH		#2 POWER BARPS PH. 11 TAND 450°F BLEWDOWN BARPS 4280610	
		STACK TEMP.			
		MAXIMUM EXPERIENCED HOOKLOAD			
		SAFETY TOPIC			
		M.A.C.P.			

DRILLING ASSEMBLY (At End of Tour)		LENGTH		BIT RECORD		MUD RECORD	
NO.	BIT	O.D. (mm)	LENGTH (m)	BIT NO.	SIZE (mm)	MUD TYPE	TIME
2	B/S	225	1.32	2A	311	WATER BASED	18:00
	OC	225	18.59				21:00
	XO		.43				24:00
	XO		.80				
14	DC	158	164.72				
D.P.		STANDS		MFG.		W.L. (cm)	
D.P.		SINGLES		TYPE		PH	
KELLY DOWN			13.26	SERIAL NO.		P.U.T	
TOTAL			236.63	JETS		40.1	
WT. OF DC				DEPTH OUT		39.7	
WT. OF STRING				DEPTH IN			
				TOTAL METRES DRILLED			
				TOTAL HOURS RUN			
				CUTTING STRUCTURE			
				HOLE CONDITION			
				HOLE DRAG			
				TORQUE AT BOTTOM			
				FILL ON BOTTOM (m)			

METRES DRILLED		TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS	
FROM	TO	ELAP. TIME	CODE NO.		
216	236	20	150		16:00
CIRCULATION PRESSURE (kPa)		PUMP NO. 1	PUMP NO. 2		
7150		152 85	152 85		
REDUCED PUMP SPEED					
DEVIATION SURVEY					
DEPTH (m)	DEVIATION (°)	DIRECTION			
227	1.25°				
236	1.25°				
DRILLER SIGNATURE		BOILER		NOTES	
8 11.5 430		HRS. RAN		✓ CROWN SAVER #2 POWER BARPS PH. 11 TAND 450°F BLEWDOWN BARPS 243=1204110	
		PH			
		STACK TEMP.			
		MAXIMUM EXPERIENCED HOOKLOAD			
		SAFETY TOPIC			
		M.A.C.P.			

115019

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial _____	Initial _____
(2) Detailed Inspection Weekly (using checklist)	Initial _____	Initial _____
(3) H/S Signs Posted (if required)	Initial _____	Initial _____
(4) Wet License & Stick Diagram Posted	Initial _____	Initial _____
(5) Flame Lines Staked	Initial _____	Initial _____
(6) BOP Drills Performed	Initial _____	Initial _____
(7) Visually inspect BOP's - Flowlines & Degasser Lines	Initial _____	Initial _____
(1) Rig Site Health and Safety Meeting (one/week/month)	Initial _____	Initial _____
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/week/month)	Initial _____	Initial _____
(3) Mast Inspection Before Raising or Lowering	Initial _____	Initial _____
(4) Crown Saver Checked	Initial _____	Initial _____
(5) Motor Killa checked	Initial _____	Initial _____

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
99	12	24	CASING	340	318	70.13	Phoenix Tool	T55	3	43.26		43
RIG NO.	51		TUBING									
FUEL @ 8:00			OR									
RIG	BOILER		LINER									
WEATHER	TEMPERATURE	°C	D.C./D.P. SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JOINT D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		DC 125	288		74	225	7-H50	2	SP 80	NATIONAL	211
	WIND DIRECTION		DC 158	135		58	158	45H	20	SP 80	NATIONAL	211
	ROAD		H2 114	62.45		69	158	45 X 11	60			

TIME - HRS	CODE NO.																											TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		NO.	TYPE	MORN.	DAY				
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	R/O SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. BUREY	WIRE LINE LOGS	FLR. CASE & CEMENT	WALL ON CEMENT	APPLE UP B.O.P.	TEST B.G.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.	300 Drill										2	B24		
MORN.			6.75					.25			1																				8	SCREENS CHANGED	☒ YES ☐ NO			
DAY			5					2.25																							8	TOP	TOP 170			
EVE			7.25					.25			.25																					MIDDLE 170	MIDDLE 170			
TOTAL																																BOTTOM 170	BOTTOM 170			

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD			
NO.	BIT	O.D. mm	LENGTH m	BIT NO.				MUD TYPE	☒ WATER BASED	☐ OIL BASED	
	BIS	235	2.35	SIZE (mm)	311			TIME	02:00	04:00	
2	DC	235	16.55	IADC CODE				DENSITY kg/m ³	1070	1060	
	XO		.93	MPG.	2550			FUNNEL VIS. (SL)	38	44	
	XB		.90	TYPE	HP 136			W.L. (cm)		45	
9	DC	1174	8.23	SERIAL NO.	FB 5537			pH	10.5	10.5	
				JETS (mm)	15/16 x 2/16 x 3			P.V.T.	42.3	40.2	
				DEPTH OUT (m)	14			MUD MATERIALS ADDED	SOLIDS CONTROL		
				DEPTH IN (m)	4.3			PRODUCT	AMOUNT X UNIT	DESILTER	
				TOTAL METRES DRILLED (m)	73			GEL	34 SX	HOURS RUN	
				TOTAL HOURS RUN	15.25			SUGARSH	1 SX	INTAKE DENSITY (kgm ³)	
	D.P.	STANDS		CUTTING STRUCTURE						OVERFLOW DENSITY (kgm ³)	
	D.P.	SINGLES		T ₁	T ₂	MDC	LOC	S	Gage	ODC	
								Reason Pulled	Total Run m/hr.	UNDERFLOW DENSITY (kgm ³)	
	KELLY DOWN		13.26	HOLE CONDITION						CENTRIFUGE	
	TOTAL		116.88	HOLE DRAG	2.2					HOURS RUN	
WT. OF CDC		16	1000 gals	TORQUE AT BOTTOM	104					INTAKE DENSITY (kgm ³)	
WT. OF STRING		16	1000 gals	FILL ON BOTTOM (in)						OVERFLOW DENSITY (kgm ³)	
										UNDERFLOW DENSITY (kgm ³)	

METRES DRILLED					TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	1500 RPM CORRECT	ROTARY R.P.M.	WT. ON BIT (1000 LBS)	FROM	TO	ELAP. TIME	CODE NO.			
62	114	54	150	2-3	00 ⁰⁰	0 ¹⁵	.25	7	RIG SERVICE		
					15	30	.25	10	SURVEY @ 62 .5		
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2			30	33	3	2	DRILL F/62-90		
	LINE SIZE (mm)	S.P.M.	LINE SIZE (mm)	S.P.M.	33	400	.5	10	SURVEY @ 90 MISRUN +.75		
5300	152	90	152	90	420	745	375	2	DRILL F/90-116		
REDUCED PUMP SPEED					745	800	.25	10	SURVEY @ 116		
@ @											
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (")	DIRECTION									
62	.8										
90	.75										
					NOTES						
					U CROWN SAVED PLUG DOWN (BOILER 3Y2 GEL FLUID)						
					MS 228 AMT 125 228						
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.
B. J. [Signature]					HRS. RAN	ph	STACK TEMP.				
					8	95	400				

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD								MUD RECORD				
NO.	BIT	O.D. (mm)	LENGTH	BIT NO.					MUD TYPE		☐ WATER BASED		☐ OIL BASED			
2	B/S		1.35	SIZE (mm)	1A		2A		TIME	0800	1400	1800				
	DC	285	1.22	IADC CODE	311		311		DENSITY kg/m ³	1065	1060	1065				
	YO		18.5	MFG.	REED		SMITH		FUNNEL VIS. - (S/L)	42	40	39				
	YO		.93	TYPE	H.P. 13G		MFD 55		W.L. (cm ³)							
	DC	158	.80	SERIAL NO.	E38837		C59150		pH	10.0	10.0	10.0				
			100.34	JETS (mm)	15.9 x 12.143		12.7 x 4		105.0	43.7	41.9	42.8				
				DEPTH OUT (m)	122				MUD MATERIALS ADDED		SOLIDS CONTROL					
				DEPTH IN (m)	93		122		PRODUCT	AMOUNT X UNIT		DESILER				
				TOTAL METRES DRILLED (m)	79		25		GEL	15 SX		HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)	
				TOTAL HOURS RUN	17.25		3									
D.P.	STANDS			CUTTING STRUCTURE								CENTRIFUGE				
D.P.	SINGLES			T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason	Total Run m/hr.	HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
KELLYDOWN			1326	HOLE CONDITION								8	1065	1055	1700	
TOTAL			134.99	HOLE DRAG												
WT. OF DC			17	TORQUE AT BOTTOM												
WT. OF STRING			17	FILL ON BOTTOM (m)												

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	CIRCU- TION CORE-G	ROTARY R.P.M.	W.T ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO					
116	122	6	140	2-3	08 ⁰⁰	08 ¹⁵	.25	7	Rig service				
122	127	5	140	2-3	08 ¹⁵	08 ³⁰	.25	22	BOP Drill				
					08 ³⁰	10 ³⁰	2	2	Drill F/116 - 122				
					10 ³⁰	13 ⁰⁰	2.56		Trip for B.O.				
					13 ⁰⁰	16 ⁰⁰	3	2	Drill F/122 - 127				
REDUCED PUMP SPEED													
	@		@										
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)	DIRECTION											
116	1												
					NOTES ✓ CROWN GAGE 2 Blue crown boiler 4x 80L FLUID								
DRILLER SIGNATURE					BOILER HRS. RAN ph STACK TEMP.		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
Ladd Black					7 145 1100								

[illegible]

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	CIR- PUMP CORE G	ROTARY R.P.M.	WT ON BIT (1000kilo)		FROM	TO	ELAP. TIME	CODE NO.				
107	162	35	140	2.3		1600	1845	2.75	2	Drill #1 127-135			
						1945	1900	.25	10	SURVEY @ 134			
						1900	1914	.25	7	RIG SERVICE ✓	MOTOR HOOKS		
						1914	2230	3.25	2	DRILL #1 135-152			
						2230	2345	.25	22	B.O.P. DRILL			
						2345	2400	1.25	2	DRILL #1 152-162			
REDUCED PUMP SPEED													
	@		@										
DEVIATION SURVEY													
DEPTH(m)	DEVIATION (°)	DIRECTION											
139.7	.5												
NOTES ✓ CROWN SAVER #2 BOILER & KRS PH 10.25 TEMP 225°													
BLEND DOWN BOILERS 2x3x = 120L FLUID													
DRILLER SIGNATURE						BOILER				SAFETY TOPIC		M.A.C.P.	
						HRS. RAN	ph	STACK TEMP.					
						8	125	430					

115018

LICENCE NO.: 1879	WELL NAME AND NO.: Northbrook et al East Mackay I-77
OPERATOR: Northbrook Resources Ltd	CONTRACTOR: AKITA/SAHTU DRILLING
SURFACE LOCATION:	UNIQUE ID: Joint venture of AKITA Drilling Ltd and SAHTU OIL Incorporated
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS	O.P.R.	R.M.
(1) Daily Walk Around Inspection	initial	initial
(2) Detailed Inspection-Weekly (using checklist)	initial	initial
(3) HFS Signs Posted (If required)	initial	initial
(4) Well Lineins & Stick Diagram Posted	initial	initial
(5) Flare Lines Staked	initial	initial
(6) BOP Drills Performed	initial	initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines	initial	initial
(1) Rig Site Health and Safety Meeting (one/crew/month)		initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/ry/month)		initial
(3) Mast Inspection Before Raising or Lowering		initial
(4) Crown Saver Checked		initial
(5) Motor Kills checked		initial

YEAR	71	MONTH	12	DAY	23	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO C. HEAD (m)	
RIG NO.	51					CASING	340		71.43		340	3			
FUEL @ 8:00						TUBING									
OR															
RIG	Fuel					BOILER									
LINER															
W E A T H E R	TEMPERATURE °C					DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JO. O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS					22.25	286		71	225	7/8" x 2	2	8-P-80	National	216
	WIND DIRECTION					22.158	135		58	158	1/2" x 1/2"	20	8-P-80	National	216
	ROAD					HWIM	62.45		69	158	1/2" x 1/2"	60			

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES			MORN	DAY	EVE
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIP WORK	SAFETY MTG.														
MORN.							1																0.5	Drillhouse Hole				8	NO. 2 TYPE 82X	SCREENS CHANGED	☐ YES ☐ NO					
DAY							1																1.5				8	TOP 40	TOP 100							
EVE			3.75			.25					.25					1.75								2.5			6	MIDDLE 40	MIDDLE 100							
TOTAL			3.75			.25	1				.25					1.25	.75						2.5	2.5			24	BOTTOM 40	BOTTOM 100							

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD						
NO.	BIT	O.D. mm	LENGTH	BIT NO.					MUD TYPE	☒ WATER BASED	☐ OIL BASED			
				SIZE (mm)	1A 311				TIME					
				IADC CODE					DENSITY kg/m ³					
				MFG.	REED				FUNNEL VIS. - (S/L)					
				TYPE	4P13G				W.L. (cm ³)					
				SERIAL NO.	ER8837				pH					
				JETS (mm)	2x15.7/11.3									
				DEPTH OUT (m)					MUD MATERIALS ADDED		SOLIDS CONTROL			
				DEPTH IN (m)					PRODUCT	AMOUNT X UNIT	DESILER			
				TOTAL METRES DRILLED (m)					GOL	20SK	HOURS RUN INTAKE DENSITY (kg/m ³) OVERFLOW DENSITY (kg/m ³) UNDERFLOW DENSITY (kg/m ³)			
				TOTAL HOURS RUN					CAUSTIC	1SK				
	D.P.	STANDS		CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.		
	D.P.	SINGLES												
KELLYDOWN				HOLE CONDITION										
TOTAL				HOLE DRAG										
WT.OFDC			1000 daN	TORQUE AT BOTTOM										
WT.OF STRING			1000 daN	FILL ON BOTTOM (in)										

[illegible]

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD								
NO.	LENGTH		BIT NO.		MUD TYPE										WATER BASED				OIL BASED			
BIT		O.D. (mm)	SIZE (mm)		TIME																	
2	BIS	725	1.32	1A																		
	D.C	725	1.59	311																		
	Y.O		.43																			
	Y.O		.80																			
	D.C	158																				
			IADC CODE												DENSITY kg/m ³							
			MFG.		REED										FUNNEL VIS. - (S/L)							
			TYPE		HP 136										W.L. (cm ²)							
			SERIAL NO.		E.B. 8837										pH							
			JETS (mm)		159x2 1/4																	
			DEPTH OUT (m)												MUD MATERIALS ADDED				SOLIDS CONTROL			
			DEPTH IN (m)												PRODUCT				AMOUNT X UNIT			
			TOTAL METRES DRILLED (m)																DESILTER			
			TOTAL HOURS RUN																HOURS RUN			
																			INTAKE DENSITY (kg/m ³)			
																			OVERFLOW DENSITY (kg/m ³)			
																			UNDERFLOW DENSITY (kg/m ³)			
D.P.		STANDS			CUTTING STRUCTURE														CENTRIFUGE			
																			HOURS RUN			
D.P.		SINGLES																	INTAKE DENSITY (kg/m ³)			
																			OVERFLOW DENSITY (kg/m ³)			
																			UNDERFLOW DENSITY (kg/m ³)			
KELLY DOWN					HOLE CONDITION																	
TOTAL					HOLE DRAG																	
WT. OF DC			1000 daN		TORQUE AT BOTTOM														HOURS RUN			
WT. OF STRING			1000 daN		FILL ON BOTTOM (m)														INTAKE DENSITY (kg/m ³)			
																			OVERFLOW DENSITY (kg/m ³)			
																			UNDERFLOW DENSITY (kg/m ³)			

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS	
FROM	TO	D.R.-O. R.M.-H CORE-C	ROTARY R.P.M.	WT-ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.			
					8 ⁵⁰	10 ⁰⁰	2	14	NIPPLE UP		
					10 ⁰⁰	10 ³⁰	.5"	6	MAKE UP BIT & RUN IN WENT 6", PULL OUT		
					10 ³⁰	11 ¹⁵	.75	14	NIPPLE DOWN TO CUT DOWEL SWEDGE		
CIRCULATION PRESSURE (kPa)	PUMP NO. 1		PUMP NO. 2		11 ¹⁵	14 ³⁰	3.25	22	CUT CONDUCTOR SWEDGING DOWN TO SIZE		
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.	14 ³⁰	15 ⁰⁰	.5	6	MAKE UP BIT & RUN IN		
	152		152		15 ⁰⁰	16 ⁰⁰	1	14	NIPPLE UP B.O.P.S.		
REDUCED PUMP SPEED											
	@		@								
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (°)	DIRECTION									
NOTES						BLEW DOWN BOLLER 3X = 60L FLUID					
DRILLER SIGNATURE						# 2 R-111 S.H.C.					
BOILER						MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
HRS. RAN ph STACK TEMP.											
8 9.5 410											

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD								
NO.	BIT		O.D. mm	LENGTH	BIT NO.					MUD TYPE		☒ WATER BASED		☐ OIL BASED								
2	B15	122	1.32	m	SIZE (mm)	311				TIME		22:00		23:30								
	OC	325	18.59	m	IADC CODE					DENSITY kg/m³		1070		1090								
	X.O		.93	m	MFG.	REED				FUNNEL VIS. - (S/L)		26		38								
	X.O		.80	m	TYPE	HP136				W.L (cm³)												
3	2C.	158	26.34	m	SERIAL NO.	E88837				pH		10.0		10.5								
				m	JETS (mm)	15.4x2/M.3								28.1								
				m	DEPTH OUT (m)					MUD MATERIALS ADDED		SOLIDS CONTROL										
				m	DEPTH IN (m)	43.39				PRODUCT		AMOUNT X UNIT		DESILTER								
			m	TOTAL METRES DRILLED (m)	19								HOURS RUN		INTAKE DENSITY (kgm. l)		OVERFLOW DENSITY (kgm. l)		UNDERFLOW DENSITY (kgm. l)			
			m	TOTAL HOURS RUN	6.5																	
D.P.				STANDS	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE								
D.P.				SINGLES	T ₁	T ₂	MDC	LOC						HOURS RUN		INTAKE DENSITY (kgm. l)		OVERFLOW DENSITY (kgm. l)		UNDERFLOW DENSITY (kgm. l)		
KELLY DOWN					HOLE CONDITION																	
TOTAL					HOLE DRAG																	
WT. OF DC				1000 (gal)	TORQUE AT BOTTOM										HOURS RUN		INTAKE DENSITY (kgm. l)		OVERFLOW DENSITY (kgm. l)		UNDERFLOW DENSITY (kgm. l)	
WT. OF STRING				1000 (gal)	FILL ON BOTTOM (m)																	

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	GRD. RMR CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.					
43	62	19	140	2000	1600	1700	1	4	MIDDLE UP				
					1700	1715	.25	5	CIRC				
					1715	1800	.75	15	PRESSURE TEST				
					1800	3030	2.5	23	DRILL MOUSE HOLE				
1220	152		152	95	2030	2045	25	10	Survey				
					2045	2400	3.25	2	Drill E/43-62				
REDUCED PUMP SPEED													
	@		@										
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)	DIRECTION											
34	1 1/16												
NOTES					✓ CROWN SAVER BLEND DOWN BOILER 34 = 6.0 C FLUID #2 BOILER 8 HRS.								
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.		
					HRS. RUN	ph	STACK TEMP.						
John B. Lock					8	95	4.10						

115017

LICENCE NO.: 1879	WELL NAME AND NO.: MACKEY 1-77 NORTH ROCK FISH EAST MACKEY 1-77
OPERATOR: Northrock Resources LTD	CONTRACTOR: AKITA/SAHTU DRILLING,
SURFACE LOCATION: 1-77	UNIQUE ID.: a joint venture of AKITA Drilling Ltd.
SIGNATURE OF OPERATOR'S REPRESENTATIVE: <i>[Signature]</i>	SIGNATURE OF CONTRACTOR'S FIELD MANAGER: <i>[Signature]</i>

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) HPS Signage Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually Inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crowmonth)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.	51		CASING									
FUEL @ 8:00			TUBING OR									
RIG	15992 L		LINER									
WEATHER	TEMPERATURE	°C	DC/DP SIZE	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JO.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
	CURRENT CONDITIONS		2225	286		74	225	74x2	2	8-P-80	46+ionsl	216
	WIND DIRECTION		DC158	135		58	158	45xH	20	8-P-80	National	216
	ROAD		HM114	62.45		69	158	75xH	60			

TIME - HRS	CODE NO.																										TOTAL	SHALE SHAKER(S)		RENTALS/SERVICES							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		NO.	TYPE	MORN	DAY	EVE					
	OPER	RIS UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RID SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP R.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIP WORK	SAFETY MTG.															
	MORN.		6:30				1	.25			.25												11:00	8:15													
	DAY		2:25			2.5	1	.25					1.75									.25															
	EVE					2							1.5	4.25								.25															
	TOTAL		8:25			4.5	2	.5			.25		3.25	4.25								.5		.5													
																												</									

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD							MUD RECORD							
NO.	BIT		O.D. mm	LENGTH		BIT NO.		JA		2A		MUD TYPE		☒ WATER BASED ☐ OIL BASED						
	B/S			45 m	SIZE (mm)		311		444		TIME		0200		0400					
2	DC		225	18.59 m	IADC CODE						DENSITY kg/m³		1070		1080					
	X/O			.80 m	MFG.		REED		SMITH		FUNNEL VIS. - (S/L)		50		40					
	X/O			.43 m	TYPE		HP13G		SDSCF		W.L. (cm²)									
	DC		158	m	SERIAL NO.		EB 8837		XH5405		pH		9.5		9.5					
				m	JETS (mm)		21.5/4/163		3 x 19		RTN³		11.8		10.9					
				m	DEPTH OUT (m)		42.5				MUD MATERIALS ADDED				SOLIDS CONTROL					
				m	DEPTH IN (m)		0		0		PRODUCT		AMOUNT X UNIT		DESILTER					
				m	TOTAL METRES DRILLED (m)		42.5		20		GEL		50 sy		HOURS RUN	INTAKE DENSITY (g/cm.)	OVERFLOW DENSITY (g/cm.)	UNDERFLOW DENSITY (g/cm.)		
				m	TOTAL HOURS RUN		4.75		2.25		SAWDUST		20 sy							
	D.P.	STANDS		m	CUTTING STRUCTURE		T _r	T _c	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.	PRIMEASEAL	4 sy	CENTRIFUGE		
	D.P.	SINGLES		m												EASTEC	1 sk			
	KELLY DOWN			m	HOLE CONDITION															
	TOTAL		2137	m	HOLE DRAG		N/I													
WT.OF DC	10	1000 daN			TORQUE AT BOTTOM		100													
WT.OF STRING	10	1000 daN			FILL ON BOTTOM (m)															

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.B. ^m R.M.R. CORREC.	ROTARY R.P.M.	WT. ON BIT (1000 daN)		FROM	TO	ELAP. TIME	CODE NO.				
4	42	38	190	AH				25	7	Ric Service			
0	20	20	190	S				25	2	Drill F14-34			
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2						25	10	Surgey @ 21m			
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.				5	2	Drill F134-42			
300	127	80	127					1	6	Legislature D.C. to pick up 444 mm Bit			
REDUCED PUMP SPEED								5	20	Make Up Bit			
	@		@					225	2	Return F10-20.			
DEVIATION SURVEY										DRILL			
DEPTH (m)	DEVIATION (°)		DIRECTION										
21	1°												
					NOTES	Blowdown Boiler 3x = 60L off fluid							
						✓ Crown sawer MS 0 AMT 125000							
DRILLER SIGNATURE					BOILER ph	STACK TEMP.		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
48/50					HRS. RAN 8	9.5 400		15,000					

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD							MUD RECORD							
NO.	BIT	O.D. mm	LENGTH	BIT NO.		MUD TYPE	☒ WATER BASED	☐ OIL BASED												
	B1S		1.10 m	SIZE (mm)	444	TIME	09:00	12:00	15:00											
2	D.C	225	14.59 m	IADC CODE		DENSITY kg/m ³	1130	1110	CAY											
	X/D		.80 m	MFG.	SMITH	FUNNEL VIS. - (S/L)	75	65	S.W.G											
	V/D		.43 m	TYPE	SDSCF	W.L. (cm ³)														
	D.S.	100	8.74 m	SERIAL NO.	X115805	pH	8.5	8.5												
				JETS (mm)	3x19															
				DEPTH OUT (m)	43.0	MUD MATERIALS ADDED				SOLIDS CONTROL										
				DEPTH IN (m)	0	PRODUCT		AMOUNT X UNIT		DESILTER										
				TOTAL METRES DRILLED (m)	43	GEL		16 SX		HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)							
				TOTAL HOURS RUN	4.5	DESCO		1 SX												
D.P.				STANDS	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE						
D.P.				SINGLES	T ₁	T ₂	MDC	LOC						HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)			
KELLY DOWN				12.89 m	HOLE CONDITION															
TOTAL				430 m	HOLE DRAG NIL															
WT.OF DC				6	1000 daN	TORQUE AT BOTTOM 150									HOURS RUN					
WT.OF STRING				6	1000 daN	FILL ON BOTTOM (m) 1m														

METRES DRILLED					TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	DR-D RM-F CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO			
					8 ⁰⁰	9 ³⁰	1.5	2	DRILL F 20 - 34		
					9 ³⁰	9 ⁴⁵	.25	7	RIG SERVICE		
CIRCULATION PRESSURE (kPa)	PUMP NO. 1		PUMP NO. 2		9 ⁴⁵	10 ³⁰	.75	2	DRILL F134 - 43		
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.	10 ³⁰	13 ⁰⁰	2.5	5	CARE + WIPER TRIPS		
					13 ⁰⁰	14 ⁰⁰	1	6	HOIST TO RUN CSG		
					14 ⁰⁰	14 ¹⁵	.25	21	RIG TO + RUN CSG		
REDUCED PUMP SPEED					14 ¹⁵	16 ⁰⁰	1.75	12	RIG TO + RUN CSG		
	@		@								
DEVIATION SURVEY											
DEPTH (m)	DEVIATION (")	DIRECTION									
41	.75			Run 20' to 41' of 1 1/2" conductor. Lanner 43m Formed in 4' from 61' after cement slurry in 180' High. Highline in PMT in station 30m. Required to Surface							
				NOTES ✓ CRAWNSAVER BROWN DOWN BOILER 34 = 60L FLUID							
DRILLER SIGNATURE					BOILER HRS. RAN ph		STACK TEMP.		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC
B. 15A					8 9.5		400				M.A.C.P.

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD																			
NO.	BIT	O.D. mm	LENGTH	BIT NO.										MUD TYPE	☒ WATER BASED	☐ OIL BASED																	
				SIZE (mm)										TIME	18:00																		
				IADC CODE										DENSITY kg/m ³	1110																		
				MFG.										FUNNEL VIS. - (S/L)	44																		
				TYPE										W.L. (cm ²)																			
				SERIAL NO.										pH	8.5																		
				JETS (mm)										MUD MATERIALS ADDED			SOLIDS CONTROL																
				DEPTH OUT (m)																													
				DEPTH IN (m)										PRODUCT			AMOUNT X UNIT			DESILTER													
				TOTAL METRES DRILLED (m)																													
				TOTAL HOURS RUN										HOURS RUN			INTAKE DENSITY (kg/m ³)			OVERFLOW DENSITY (kg/m ³)			UNDERFLOW DENSITY (kg/m ³)										
				CUTTING STRUCTURE																													
	D.P.	STANDS		T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈	T ₉	T ₁₀	T ₁₁	T ₁₂	T ₁₃	T ₁₄	T ₁₅	T ₁₆	T ₁₇	T ₁₈	T ₁₉	T ₂₀	CENTRIFUGE									
	D.P.	SINGLES		MDC LOC										B				Gage				ODC						Reason Pulled				Total Run m/hr.	
KELLY DOWN				HOLE CONDITION																						HOURS RUN							
TOTAL				HOLE DRAG										HOURS RUN			INTAKE DENSITY (kg/m ³)			OVERFLOW DENSITY (kg/m ³)			UNDERFLOW DENSITY (kg/m ³)										
WT. OF DC			1000 daN	TORQUE AT BOTTOM																						HOURS RUN			INTAKE DENSITY (kg/m ³)			OVERFLOW DENSITY (kg/m ³)	
WT. OF STRING			1000 daN	FILL ON BOTTOM (m)																													

METRES DRILLED					TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D&D R.M.R. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 gms)	FROM	TO	ELAP TIME	CODE NO.				
					16.00	16.15	25	21	SAFE 74 MEETING			
					16.15	18.15	2	5	CIRC CSG			
CIRCULATION PRESSURE (kPa)	PUMP NO. 1		PUMP NO. 2		18.15	19.45	15	12	CEMENT Csg			
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.	19.45	24.00	4.20	13	Wait on Cement			
REDUCED PUMP SPEED												
	@		@									
DEVIATION SURVEY												
DEPTH (m)	DEVIATION (°)		DIRECTION									
					NOTES	Shutdown Boilers 3x = 60L fluid						
DRILLER SIGNATURE					HRS. RUN	BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.
					8.95	400						

YEAR	MONTH	DAY	LAST CASING TUBING OR LINER	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)	
RIG NO.	51												
FUEL @ 8:00													
RIG	137924 BOILER												
WEATHER	TEMPERATURE	°C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)	
	CURRENT CONDITIONS		R 225	286		74	225	7H-90	2	8-P-80	Naturel	210	
	WIND DIRECTION		R 158	135		58	158	4 1/2 x 11	20	8-P-80	Naturel	210	
	ROAD		H 114	63 45		69	154	4 1/2 x 11	60				

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115015

[illegible]

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD				MUD RECORD				METRES DRILLED				TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
NO.	BIT	O.D. mm	LENGTH	BIT NO.					MUD TYPE	☒ WATER BASED	☐ OIL BASED	FROM	TO	D.R. RM-R CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 g/s)	FROM	TO	ELAP. TIME	CODE NO.				
			m	SIZE (mm)					TIME									1600	2300	7	1	RIG TO SPUR		
			m	ADC CODE					DENSITY kg/m ³									2300	2400	1	23	Drill through hole		
			m	MFG.					FUNNEL VIS. - (S/L)															
			m	TYPE					W.L. (cm ³)															
			m	SERIAL NO.					pH															
			m	JETS (mm)																				
			m	DEPTH OUT (m)					MUD MATERIALS ADDED				SOLIDS CONTROL											
			m	DEPTH IN (m)					PRODUCT	AMOUNT X UNIT	DESILTER													
			m	TOTAL METRES DRILLED (m)								HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)									
			m	TOTAL HOURS RUN																				
	D.P.	STANDS	m	CUTTING STRUCTURE					CENTRIFUGE															
	D.P.	SINGLES	m	T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.												
			m										HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)								
	KELLY DOWN			HOLE CONDITION																				
	TOTAL			HOLE DRAG																				
WT. OF DC			1000 g/s	TORQUE AT BOTTOM								HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)									
WT. OF STRING			1000 g/s	FILL ON BOTTOM (m)																				

EVENING TOUR

FROM	TO	D.R. RM-R CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 g/s)
CIRCULATION PRESSURE (kPa)		PUMP NO. 1		PUMP NO. 2
		LINER SIZE (mm)	S.P.M.	LINER SIZE (mm) S.P.M.
REDUCED PUMP SPEED				
	@		@	
DEVIATION SURVEY				
DEPTH (m)	DEVIATION (°)	DIRECTION		
DRILLER SIGNATURE				
HRS. RUN		BOILER ph		STACK TEMP.

FROM	TO	ELAP. TIME	CODE NO.			
				MAXIMUM EXPERIENCED HOOKLOAD		
				SAFETY TOPIC		
				M.A.C.P.		

1600 2300 7 1 RIG TO SPUR

2300 2400 1 23 Drill through hole

NOTES

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115014

LICENCE NO.:	WELL NAME AND NO.:
OPERATOR:	CONTRACTOR:
SURFACE LOCATION:	UNIQUE ID:
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) HPS Signs Posted (if required)	Initial	Initial
(4) Well License & Stock Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crew/month)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/right/month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kills checked	Initial	Initial

YEAR	MONTH	DAY	LAST	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.			CASING TUBING OR LINER									
TEMPERATURE	-38°C	DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)	
CURRENT CONDITIONS	Clear											
WIND DIRECTION												
ROAD												

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES			MORN	DAY	EVE	
	OPER.	RIG UP & TEAR DOWN	DWELL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DH1 STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.					NO.		TYPE								
	MORN.																												SCREENS CHANGED	☐ YES	☐ NO						
	DAY	8																											TOP	TOP							
	EVE	9																												MIDDLE	MIDDLE						
	TOTAL	16																												8	8	16	BOTTOM				BOTTOM

DRILLING ASSEMBLY (At End of Tour)	LENGTH	BIT NO.	SIZE (mm)	IADC CODE	MFG.	TYPE	SERIAL NO.	JETS (mm)	DEPTH OUT (m)	DEPTH IN (m)	TOTAL METRES DRILLED (m)	TOTAL HOURS RUN	CUTTING STRUCTURE	B	Gage	ODC	Reason Pulled	Total Run m/hr.	HOLE CONDITION	HOLE DRAG	TORQUE AT BOTTOM	FILL ON BOTTOM (m)
D.P.	STANDS																					
D.P.	SINGLES																					
KELLYDOWN																						
TOTAL																						
WT.OFDC																						
WT.OFSTRING																						

METRES DRILLED	TIME LOG	DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	ELAP. TIME	CODE NO.			
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2				
	LINEAR SIZE (mm)	S.P.M.	LINEAR SIZE (mm)	S.P.M.		
REDUCED PUMP SPEED	@	@				
DEVIATION SURVEY						
DEPTH (m)	DEVIATION (°)	DIRECTION				
DRILLER SIGNATURE	HRS. RAN	BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC	M.A.C.P.

DRILLING ASSEMBLY (At End of Tour)	LENGTH	BIT NO.	SIZE (mm)	IADC CODE	MFG.	TYPE	SERIAL NO.	JETS (mm)	DEPTH OUT (m)	DEPTH IN (m)	TOTAL METRES DRILLED (m)	TOTAL HOURS RUN	CUTTING STRUCTURE	B	Gage	ODC	Reason Pulled	Total Run m/hr.	HOLE CONDITION	HOLE DRAG	TORQUE AT BOTTOM	FILL ON BOTTOM (m)
D.P.	STANDS																					
D.P.	SINGLES																					
KELLYDOWN																						
TOTAL																						
WT.OFDC																						
WT.OFSTRING																						

METRES DRILLED	TIME LOG	DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	ELAP. TIME	CODE NO.			
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2				
	LINEAR SIZE (mm)	S.P.M.	LINEAR SIZE (mm)	S.P.M.		
REDUCED PUMP SPEED	@	@				
DEVIATION SURVEY						
DEPTH (m)	DEVIATION (°)	DIRECTION				
DRILLER SIGNATURE	HRS. RAN	BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC	M.A.C.P.

DRILLING ASSEMBLY (At End of Tour)	LENGTH	BIT NO.	SIZE (mm)	IADC CODE	MFG.	TYPE	SERIAL NO.	JETS (mm)	DEPTH OUT (m)	DEPTH IN (m)	TOTAL METRES DRILLED (m)	TOTAL HOURS RUN	CUTTING STRUCTURE	B	Gage	ODC	Reason Pulled	Total Run m/hr.	HOLE CONDITION	HOLE DRAG	TORQUE AT BOTTOM	FILL ON BOTTOM (m)
D.P.	STANDS																					
D.P.	SINGLES																					
KELLYDOWN																						
TOTAL																						
WT.OFDC																						
WT.OFSTRING																						

METRES DRILLED	TIME LOG	DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
FROM	TO	ELAP. TIME	CODE NO.			
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2				
	LINEAR SIZE (mm)	S.P.M.	LINEAR SIZE (mm)	S.P.M.		
REDUCED PUMP SPEED	@	@				
DEVIATION SURVEY						
DEPTH (m)	DEVIATION (°)	DIRECTION				
DRILLER SIGNATURE	HRS. RAN	BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC	M.A.C.P.

115013

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Stained	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flatlines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (once/a month)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/a month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crow's Saver Checked	Initial	Initial
(5) Motor Kicks checked	Initial	Initial

YEAR		MONTH		DAY		LAST CASING TUBING OR LINER	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)
RIG NO.															
FUEL @ 8:00															
RIG		BOILER													
WEATHER	TEMPERATURE		°C		DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER		STROKE LTH. (mm)
	CURRENT CONDITIONS														
	WIND DIRECTION														
	ROAD														

DRILLING ASSEMBLY (At End of Tour)			BIT RECORD								MUD RECORD						METRES DRILLED				TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS										
NO.	BIT	O.D. mm	LENGTH								MUD TYPE		☐ WATER BASED		☐ OIL BASED		FROM	TO	D.R.D. P.M.P. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 daN)	FROM	TO	ELAP. TIME	CODE NO.										
			m	B.T. NO.								TIME																							
			m	SIZE (mm)								DENSITY kg/m³																							
			m	IADC CODE									FUNNEL VIS. - (S/L)																						
			m	MFG.								W.L. (cm³)																							
			m	TYPE								pH																							
			m	SERIAL NO.																															
			m	JETS (mm)																															
			m	DEPTH OUT (m)								MUD MATERIALS ADDED		SOLIDS CONTROL																					
			m	DEPTH IN (m)								PRODUCT		AMOUNT X UNIT		DESILTER																			
			m	TOTAL METRES DRILLED (m)												HOURS RUN		INTAKE DENSITY (g/cm³)		OVERFLOW DENSITY (g/cm³)		UNDERFLOW DENSITY (g/cm³)													
			m	TOTAL HOURS RUN																															
			m	CUTTING STRUCTURE													CENTRIFUGE																		
			m	Y ₁	Y ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.					HOURS RUN		INTAKE DENSITY (g/cm³)		OVERFLOW DENSITY (g/cm³)		UNDERFLOW DENSITY (g/cm³)												
			m	D.P.	STANDS																														
			m	D.P.	SINGLES																														
			m	KELLY DOWN								HOLE CONDITION																							
			m	TOTAL								HOLE DRAG																							
			m	WT.OF DC								TORQUE AT BOTTOM						HOURS RUN		INTAKE DENSITY (g/cm³)		OVERFLOW DENSITY (g/cm³)		UNDERFLOW DENSITY (g/cm³)											
			m	WT.OF STRING								FILL ON BOTTOM (m)																							
			m					1000 daN																											
			m					1000 daN																											
			m																																
			m																																
			m																																
			m																																
			m																																

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD								MUD RECORD				METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
NO.	BIT		O.D. mm	LENGTH	B.T. NO.					MUD TYPE	☐ WATER BASED	☐ OIL BASED	FROM	TO	D.R. R.M.R. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 gms)	FROM	TO	ELAP. TIME	CODE NO.								
				m	SIZE (mm)					TIME																			
				m	IADC CODE					DENSITY kg/m ³																			
				m	MFG.					FUNNEL VIS. - (S/L)																			
				m	TYPE					W.L. (cm ³)																			
				m	SERIAL NO.					pH																			
				m	JETS (mm)																								
				m	DEPTH OUT (m)																								
				m	DEPTH IN (m)																								
				m	TOTAL METRES DRILLED (m)																								
				m	TOTAL HOURS RUN																								
	D.P.	STANDS		m	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.																
	D.P.	SINGLES		m	T ₁	T ₂	MDC	LOC																					
	KELLY DOWN			m	HOLE CONDITION																								
	TOTAL			m	HOLE DRAG																								
WT. OF DC			1000 gms		TORQUE AT BOTTOM									HOURS RUN	INTAKE DENSITY (kgm.)	OVERFLOW DENSITY (kgm.)	UNDERFLOW DENSITY (kgm.)												
WT. OF STRING			1000 gms		FILL ON BOTTOM (m)									HOURS RUN	INTAKE DENSITY (kgm.)	OVERFLOW DENSITY (kgm.)	UNDERFLOW DENSITY (kgm.)												
				DAY TOUR	CIRCULATION PRESSURE (kPa)	PUMP NO. 1 LINER SIZE (mm)	S.P.M.	PUMP NO. 2 LINER SIZE (mm)	S.P.M.																				
					REDUCED PUMP SPEED																								
					@			@																					
					DEVIATION SURVEY																								
					DEPTH (m)	DEVIATION (")			DIRECTION																				
													NOTES																
													DRILLER SIGNATURE																
													HRS. RUN	BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD			SAFETY TOPIC			M.A.C.P.							

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115012

LICENCE NO.:	WELL NAME AND NO.:
OPERATOR:	CONTRACTOR:
SURFACE LOCATION:	UNIQUE ID.:
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection/Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Well License & Stick Diagram Posted	Initial	Initial
(5) Flare Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Pressure & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/one month)	Initial	Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/one month)	Initial	Initial
(3) Mast Inspection Before Raising or Lowering	Initial	Initial
(4) Crown Saver Checked	Initial	Initial
(5) Motor Kils checked	Initial	Initial

YEAR	MONTH	DAY	LAST CASING TUBING OR LINER	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL (m) LENGTH	KB. TO CSG HEAD (m)	SET AT (m)	
RIG NO.	FUEL @ 8:00												
RIG	BOILER												
TEMPERATURE	°C			DC/DP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH. (mm)
CURRENT CONDITIONS													
WIND DIRECTION													
ROAD													

TIME HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS		SHALE SHAKER(S)		RENTALS/SERVICES		MORN		DAY		EVE																		
	OPER	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIP IN	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	CLAY CASE & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DIR. WORK	SAFETY MTG.															SCREENS CHANGED		☐ YES ☐ NO																	
	MORN																																																							
	DAY																																																							
	EVE																																																							
TOTAL																																																								

DRILLING ASSEMBLY (At End of Tour)		LENGTH	BIT RECORD		MUD RECORD	
NO.	BIT	O.D. (mm)	BIT NO.	MUD TYPE ☐ WATER BASED ☐ OIL BASED		
			SIZE (mm)	TIME		
			IADC CODE	DENSITY kg/m ³		
			MFG.	FUNNEL VIS. - (S/L)		
			TYPE	W.L. (cm ³)		
			SERIAL NO.	pH		
			JETS (mm)			
			DEPTH OUT (m)			
			DEPTH IN (m)			
			TOTAL METRES DRILLED (m)			
			TOTAL HOURS RUN			
	D.P.	STANDS	CUTTING STRUCTURE			
	D.P.	SINGLES	MDC LOC B Gage ODC Reason Pulled Total Run m/hr.			
	KELLY DOWN		HOLE CONDITION			
	TOTAL		HOLE DRAG			
WT. OF DC			TORQUE AT BOTTOM			
WT. OF STRING			FILL ON BOTTOM (m)			

METRES DRILLED		TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS	
FROM	TO	DRD R.P.M.	ROTARY R.P.M.	WT. ON BIT (1000 daN)	
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2			
	LINEAR SIZE (mm)	S.P.M.	LINEAR SIZE (mm)	S.P.M.	
REDUCED PUMP SPEED					
@ @					
DEVIATION SURVEY					
DEPTH (m)	DEVIATION (°)	DIRECTION			
NOTES					
DRILLER SIGNATURE					
HRS. RAN		BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC
					M.A.C.P.

DRILLING ASSEMBLY (At End of Tour)		LENGTH	BIT RECORD		MUD RECORD	
NO.	BIT	O.D. (mm)	BIT NO.	MUD TYPE ☐ WATER BASED ☐ OIL BASED		
			SIZE (mm)	TIME		
			IADC CODE	DENSITY kg/m ³		
			MFG.	FUNNEL VIS. - (S/L)		
			TYPE	W.L. (cm ³)		
			SERIAL NO.	pH		
			JETS (mm)			
			DEPTH OUT (m)			
			DEPTH IN (m)			
			TOTAL METRES DRILLED (m)			
			TOTAL HOURS RUN			
	D.P.	STANDS	CUTTING STRUCTURE			
	D.P.	SINGLES	MDC LOC B Gage ODC Reason Pulled Total Run m/hr.			
	KELLY DOWN		HOLE CONDITION			
	TOTAL		HOLE DRAG			
WT. OF DC			TORQUE AT BOTTOM			
WT. OF STRING			FILL ON BOTTOM (m)			

METRES DRILLED		TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS	
FROM	TO	DRD R.P.M.	ROTARY R.P.M.	WT. ON BIT (1000 daN)	
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2			
	LINEAR SIZE (mm)	S.P.M.	LINEAR SIZE (mm)	S.P.M.	
REDUCED PUMP SPEED					
@ @					
DEVIATION SURVEY					
DEPTH (m)	DEVIATION (°)	DIRECTION			
NOTES					
DRILLER SIGNATURE					
HRS. RAN		BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC
					M.A.C.P.

DRILLING ASSEMBLY (At End of Tour)		LENGTH	BIT RECORD		MUD RECORD	
NO.	BIT	O.D. (mm)	BIT NO.	MUD TYPE ☐ WATER BASED ☐ OIL BASED		
			SIZE (mm)	TIME		
			IADC CODE	DENSITY kg/m ³		
			MFG.	FUNNEL VIS. - (S/L)		
			TYPE	W.L. (cm ³)		
			SERIAL NO.	pH		
			JETS (mm)			
			DEPTH OUT (m)			
			DEPTH IN (m)			
			TOTAL METRES DRILLED (m)			
			TOTAL HOURS RUN			
	D.P.	STANDS	CUTTING STRUCTURE			
	D.P.	SINGLES	MDC LOC B Gage ODC Reason Pulled Total Run m/hr.			
	KELLY DOWN		HOLE CONDITION			
	TOTAL		HOLE DRAG			
WT. OF DC			TORQUE AT BOTTOM			
WT. OF STRING			FILL ON BOTTOM (m)			

METRES DRILLED		TIME LOG		DETAILS OF OPERATION IN SEQUENCE AND REMARKS	
FROM	TO	DRD R.P.M.	ROTARY R.P.M.	WT. ON BIT (1000 daN)	
CIRCULATION PRESSURE (kPa)	PUMP NO. 1	PUMP NO. 2			
	LINEAR SIZE (mm)	S.P.M.	LINEAR SIZE (mm)	S.P.M.	
REDUCED PUMP SPEED					
@ @					
DEVIATION SURVEY					
DEPTH (m)	DEVIATION (°)	DIRECTION			
NOTES					
DRILLER SIGNATURE					
HRS. RAN		BOILER ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD	SAFETY TOPIC
					M.A.C.P.

FOLD HERE →

115011

LICENCE NO.:	WELL NAME AND NO.:	DAILY CHECKS (1) Daily Walk Around Inspection (2) Detailed Inspection-Weekly (using checklist) (3) H/S Signs Posted (if required) (4) Well License & Stick Diagram Posted (5) Flare Lines Staked (6) BOP Drills Performed (7) Visually inspect BOP's - Flarelines & Degasser Lines (8) Rig Site Health and Safety Meeting (once/month) (9) O.A.O.D.G. Rig Safety Inspection Checklist (once/month) (10) Mast Inspection Before Raising or Lowering (11) Crown Saver Checked (12) Motor Kils checked		OPR. Initial _____ Initial _____ Initial _____ Initial _____ Initial _____ Initial _____ Initial _____ Initial _____	R.M. Initial _____ Initial _____ Initial _____ Initial _____ Initial _____ Initial _____ Initial _____ Initial _____	YEAR: 2012 MONTH: 12 DAY: 16	LAST CASING TUBING OR LINER	O.D. (mm)	MIN. I.D. (mm)	kg/m	MAKE	GRADE	NO. OF JOINTS	TOTAL(m) LENGTH	KB TO CSG HEAD (m)	SET AT (m)		
OPERATOR: <i>Mike Brock</i>	CONTRACTOR: <i>ARL D. J. LTD</i>							FUEL @ 8:00										
SURFACE LOCATION:	UNIQUE ID.:							TEMPERATURE °C	DC/OP SIZE (mm)	LINEAR MASS (kg/m)	GRADE	MIN. ID (mm)	TOOL JOINT D (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LTH (mm)
SIGNATURE OF OPERATOR'S REPRESENTATIVE: <i>Mike Brock</i>	SIGNATURE OF CONTRACTOR'S RIG MANAGER: <i>Mike Brock</i>							WEATHER										
								ROAD										

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES			MOON	DAY	EVE				
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & DISC	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	DEV SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	RIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	ORL WORK	SAFETY MTG.								NO. TYPE										
	MORN.																														SCREENS CHANGED ☐ YES ☐ NO									
	DAY																														TOP	TOP								
	EVE																														MIDDLE	MIDDLE								
	TOTAL																																BOTTOM				BOTTOM			

NO.	DRILLING ASSEMBLY (At End of Tour)		LENGTH	BIT RECORD										MUD RECORD										METRES DRILLED				TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS						
	BIT	O.D. mm		BIT NO.	SIZE (mm)	IADC CODE	MFG.	TYPE	SERIAL NO.	JETS (mm)	DEPTH OUT (m)	DEPTH IN (m)	TOTAL METRES DRILLED (m)	TOTAL HOURS RUN	MUD TYPE ☐ WATER BASED ☐ OIL BASED	TIME	DENSITY kg/m ³	FUNNEL VIS. - (S/L)	W.L. (cm ³)	pH	MUD MATERIALS ADDED					SOLIDS CONTROL					FROM		TO					

115010

LICENCE NO.:	WELL NAME AND NO.:
OPERATOR:	CONTRACTOR:
SURFACE LOCATION:	UNIQUE ID.:
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial _____	Initial _____
(2) Detailed Inspection-Weekly (using checklist)	Initial _____	Initial _____
(3) H'S Signs Posted (if required)	Initial _____	Initial _____
(4) Well License & Stick Diagram Posted	Initial _____	Initial _____
(5) Flare Lines Staked	Initial _____	Initial _____
(6) BOP Drills Performed	Initial _____	Initial _____
(7) Visually Inspect BOP's - Flowlines & Geggasser Lines	Initial _____	Initial _____
(1) Rig Site Health and Safety Meeting (one/crew/month)	Initial _____	Initial _____
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/rig/month)	Initial _____	Initial _____
(3) Mast Inspection Before Raising or Lowering	Initial _____	Initial _____
(4) Crown Saver Checked	Initial _____	Initial _____
(5) Motor Kills checked	Initial _____	Initial _____

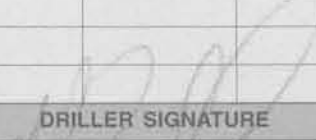
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DRILLING ASSEMBLY (At End of Tour)				LENGTH	BIT RECORD										MUD RECORD				METRES DRILLED				TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
NO.	BIT	O.D. mm		BIT NO.											MUD TYPE		☐ WATER BASED		☐ OIL BASED		FROM	TO	ELAP. TIME	CODE NO.							
				SIZE (mm)											TIME																
				IADC CODE										DENSITY kg/m ³																	
				MFG.											FUNNEL VIS. - (S/L)																
				TYPE											W.L. (cm ³)																
				SERIAL NO.											pH																
				JETS (mm)																											
				DEPTH OUT (m)											MUD MATERIALS ADDED		SOLIDS CONTROL														
				DEPTH IN (m)											PRODUCT	AMOUNT X UNIT	DESILTER														
				TOTAL METRES DRILLED (m)													HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)											
				TOTAL HOURS RUN															CENTRIFUGE												
	D.P.	STANDS		CUTTING STRUCTURE																											
	D.P.	SINGLES		T ₁	T ₂	MDC	LOC	B	Gage	OOB	Reason Pulled	Total Run m/hr.																			
	KELLY DOWN			HOLE CONDITION																											
	TOTAL			HOLE DRAG																											
WT. OF DC				1000 gal	TORQUE AT BOTTOM																										
WT. OF STRING				1000 gal	FILL ON BOTTOM (m)																										

DRILLING ASSEMBLY (At End of Tour)			LENGTH	BIT RECORD										MUD RECORD				METRES DRILLED				TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS								
NO.	BIT	O.D. mm												MUD TYPE		☐ WATER BASED		☐ OIL BASED		FROM	TO	OP-D RM-R CORE-C	POTARY R.P.M.	WT ON BIT (1000 daN)	FROM	TO	ELAP TIME	CODE NO						
			m	BIT NO.										TIME																				
			m	SIZE (mm)										DENSITY kg/m³																				
			m	IADC CODE										FUNNEL VIS. (S/L)																				
			m	MFG.										W.L. (cm³)																				
			m	TYPE										pH																				
			m	SERIAL NO.																														
			m	JETS (mm)																														
			m	DEPTH OUT (m)										MUD MATERIALS ADDED		SOLIDS CONTROL																		
			m	DEPTH IN (m)										PRODUCT		AMOUNT X UNIT		DESILTER																
			m	TOTAL METRES DRILLED (m)														HOURS RUN		INTAKE DENSITY (kgm.)	OVERFLOW DENSITY (kgm.)	UNDERFLOW DENSITY (kgm.)												
			m	TOTAL HOURS RUN																														
	D.P.	STANDS	m	CUTTING STRUCTURE														CENTRIFUGE																
	D.P.	SINGLES	m	T ₁	T ₂	MDC	LOC	B	Gage	ODC	Reason Pulled	Total Run m/hr.					HOURS RUN		INTAKE DENSITY (kgm.)	OVERFLOW DENSITY (kgm.)	UNDERFLOW DENSITY (kgm.)													
	KELLY DOWN		m	HOLE CONDITION																														
	TOTAL		m	HOLE DRAG																														
WT. OF DC			1000 daN	TORQUE AT BOTTOM														HOURS RUN		INTAKE DENSITY (kgm.)	OVERFLOW DENSITY (kgm.)	UNDERFLOW DENSITY (kgm.)												
WT. OF STRING			1000 daN	FILL ON BOTTOM (m)																														

DAY TOUR

Mured sub, both mud tanks, ramp
 pipe lubs to lease and engineer shack
 Fixed up rig light plant @
 Staging area and got Richshack
 and other rig shack ready
 for more people



NOTES

DRILLER SIGNATURE

BOILER
HRS. RAN ph STACK TEMP.

MAXIMUM EXPERIENCED HOOKLOAD

SAFETY TOPIC

M.A.C.P.

[illegible]

115009

LICENCE NO.:	WELL NAME AND NO.:
OPERATOR:	CONTRACTOR:
SURFACE LOCATION:	UNIQUE ID.:
SIGNATURE OF OPERATOR'S REPRESENTATIVE:	SIGNATURE OF CONTRACTOR'S RIG MANAGER:

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Wall Licenses & Stick Diagram Posted	Initial	Initial
(5) Flame Lines Staked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flarelines & Degasser Lines	Initial	Initial
(1) Rig Site Health and Safety Meeting (one/crew/month)		Initial
(2) C.A.O.D.C. Rig Safety Inspection Checklist (one/rig/month)		Initial
(3) Mast Inspection Before Raising or Lowering		Initial
(4) Crown Saver Checked		Initial
(5) Motor Kills checked		Initial

[illegible]

TIME - HRS	CODE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	TOTALS	SHALE SHAKER(S)		RENTALS/SERVICES			
	OPER.	RIG UP & TEAR DOWN	DRILL ACTUAL	REAMING	CORING	COND. MUD & CIRC.	TRIPS	RIG SERVICE	REPAIR RIG	CUT-OFF DRILL LINE	DEV. SURVEY	WIRE LINE LOGS	RUN CASE & CEMENT	WAIT ON CEMENT	PIPE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	SQUEEZE CEMENT	FISHING	DRL. WORK	SAFETY MTG.								NO.	TYPE		MORN	DAY
MORN.																														SCREENS CHANGED	☐ YES ☐ NO			
DAY																														TOP	TOP			
EVE																														MIDDLE	MIDDLE			
TOTAL																														BOTTOM	BOTTOM			

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD								MUD RECORD			
NO.	BIT	O.D. mm	LENGTH	B.T. NO.		MUD TYPE	☐ WATER BASED	☐ OIL BASED									
			m	SIZE (mm)		TIME											
			m	IADC CODE		DENSITY kg/m ³											
			m	MFG.		FUNNEL VIS. - (S/L)											
			m	TYPE		W.L. (cm ³)											
			m	SERIAL NO.		pH											
			m	JETS (mm)													
			m	DEPTH OUT (m)		MUD MATERIALS ADDED			SOLIDS CONTROL								
			m	DEPTH IN (m)		PRODUCT		AMOUNT X UNIT		DESILTER							
			m	TOTAL METRES DRILLED (m)						HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)				
			m	TOTAL HOURS RUN													
	D.P.	STANDS	m	CUTTING STRUCTURE					CENTRIFUGE								
	D.P.	SINGLES	m	T _i	T _d	MDC	LCC	B	Gage	ODC	Reason Pulled	Total Run m/hr.					
	KELLY DOWN			HOLE CONDITION													
	TOTAL			HOLE DRAG													
WT.OF DC	1000 daN			TORQUE AT BOTTOM													
WT.OF STRING	1000 daN			FILL ON BOTTOM (m)													

[illegible]

DRILLING ASSEMBLY (At End of Tour)						BIT RECORD							MUD RECORD							
NO.	BIT		O.D. mm	LENGTH										MUD TYPE	☐ WATER BASED	☐ OIL BASED				
				m	BIT NO.															
				m	SIZE (mm)								TIME							
				m	IADC CODE								DENSITY kg/m ³							
				m	MFG.								FUNNEL VIS. - (S/L)							
				m	TYPE								W.L. (cm ³)							
				m	SERIAL NO.								pH							
				m	JETS (mm)															
				m	DEPTH OUT (m)								MUD MATERIALS ADDED		SOLIDS CONTROL					
				m	DEPTH IN (m)								PRODUCT	AMOUNT X UNIT	DESILTER					
				m	TOTAL METRES DRILLED (m)										HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
				m	TOTAL HOURS RUN															
	D.P.	STANDS		m	CUTTING STRUCTURE					B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE					
		D.P.	SINGLES	m	T _r	T _q	MDC	LOC							HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)		
	KELLYDOWN			m	HOLE CONDITION															
	TOTAL			m	HOLE DRAG															
WT. OF DC				1000 daN	TORQUE AT BOTTOM												HOURS RUN	INTAKE DENSITY (kg/m ³)	OVERFLOW DENSITY (kg/m ³)	UNDERFLOW DENSITY (kg/m ³)
WT. OF STRING				1000 daN	FILL ON BOTTOM (m)															

METS DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R. R.M.R. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 GMS)		FROM	TO	ELAP. TIME	CODE NO				
										Moved Matting, Seacans, and Derrick E/ Staging area To Lease. And pinned Derrick back together on Lease and Moved Ironworks to the Lease From staging area			
CIRCULATION PRESSURE (kPa)		PUMP NO. 1		PUMP NO. 2									
		LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.								
REDUCED PUMP SPEED													
		@		@									
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)		DIRECTION										
[Signature]						NOTES							
DRILLER SIGNATURE						BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
HRS. RAN		ph		STACK TEMP.									

DRILLING ASSEMBLY (At End of Tour)				BIT RECORD										MUD RECORD					
NO.	BIT	O.D. mm	LENGTH	BIT NO.						MUD TYPE					☐ WATER BASED		☐ OIL BASED		
			m	SIZE	(mm)					TIME									
			m	ADC CODE							DENSITY								
			m	MFG.						FUNNEL									
			m	TYPE						VIS: - (S/L)									
			m	SERIAL NO.						W.L. (cm ³)									
			m	JETS	(mm)					pH									
			m	DEPTH OUT	(m)					MUD MATERIALS ADDED					SOLIDS CONTROL				
			m	DEPTH IN	(m)					PRODUCT					AMOUNT X UNIT				
			m	TOTAL METRES DRILLED	(m)										DESILTER				
			m	TOTAL HOURS RUN											HOURS RUN				
			m	CUTTING STRUCTURE															
	D.P.	STANDS	m	T ₁	T ₂	T ₃	MDC	LOC	B	Gage	ODC	Reason	Total Run						
	D.P.	SINGLES	m									Pulled	m/hr.						
			m	HOLE CONDITION															
	KELLY DOWN		m	HOLE DRAG															
	TOTAL		m																
	WT. OF DC		1000 osN	TORQUE AT BOTTOM										HOURS RUN					
	WT. OF STRING		1000 osN	FILL ON BOTTOM (m)															

METRES DRILLED					TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R.D. R.M.R. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 lbs)	FROM	TO	ELAP. TIME	CODE NO.				
CIRCULATION PRESSURE (kPa)	PUMP NO. 1		PUMP NO. 2									
	LINER SIZE (mm)	S.P.M.	LINER SIZE (mm)	S.P.M.								
REDUCED PUMP SPEED												
	@		@									
DEVIATION SURVEY												
DEPTH (m)	DEVIATION (°)		DIRECTION									
					NOTES							
DRILLER SIGNATURE					BOILER		MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		M.A.C.P.	
					HRS. RAN	ph	STACK TEMP.					

DAILY CHECKS	OPR.	R.M.
(1) Daily Walk Around Inspection	Initial	Initial
(2) Detailed Inspection-Weekly (using checklist)	Initial	Initial
(3) H/S Signs Posted (if required)	Initial	Initial
(4) Wet License & Stop Diagram Posted	Initial	Initial
(5) Floor Lanes Striked	Initial	Initial
(6) BOP Drills Performed	Initial	Initial
(7) Visually inspect BOP's - Flameless & Degasser Lines	Initial	Initial
(1) Pig Site Health and Safety Meeting (once/monthly)	Initial	Initial
(2) C.A.G.D.C. Pig Safety Inspection Checklist (once/monthly)	Initial	Initial
(3) Main Inspection Before Relining or Lining	Initial	Initial
(4) Crown Survey Checklist	Initial	Initial
(5) Motor VSS checked	Initial	Initial

[illegible][illegible][illegible][illegible]

METRES DRILLED						TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS			
FROM	TO	D.R.D. R.M.R. CORE-C	ROTARY R.P.M.	WT. ON BIT (1000 Gm)		FROM	TO	ELAP. TIME	CODE NO.				
CIRCULATION PRESSURE (kPa)	PUMP NO. 1		PUMP NO. 2										
	LINE SIZE (mm)	S.P.M.	LINE SIZE (mm)	S.P.M.									
REDUCED PUMP SPEED													
	@		@										
DEVIATION SURVEY													
DEPTH (m)	DEVIATION (°)		DIRECTION										
NOTES													
DRILLER SIGNATURE						BOILER							
						HRS. RUN	ph	STACK TEMP.	MAXIMUM EXPERIENCED HOOKLOAD		SAFETY TOPIC		
											M.A.C.P.		

[illegible]

DRILLING ASSEMBLY (At End of Tour)			LENGTH	BIT RECORD										MUD RECORD				METRES DRILLED				TIME LOG				DETAILS OF OPERATION IN SEQUENCE AND REMARKS				
NO.	BIT	O.D. mm		BIT NO.					MUD TYPE		☐ WATER BASED		☐ OIL BASED		FROM	TO	DRD R.M.R CORE-C	ROTARY R.P.M.	WT. ON BIT (1000'S)N	FROM	TO	ELAP TIME	CODE NO.							
				m	SIZE	(mm)				TIME																				
				m	ADC CODE					DENSITY																				
				m	MFG.					FUNNEL																				
				m	VIS. - (S/L)					W.L. (cm ³)																				
				m	TYPE					pH																				
				m	SERIAL NO.																									
				m	JETS	(mm)																								
				m	DEPTH OUT	(m)				MUD MATERIALS ADDED		SOLIDS CONTROL																		
				m	DEPTH IN	(m)				PRODUCT	AMOUNT X UNIT		DESILTER																	
				m	TOTAL METRES GRILLED	(m)							HOURS RUN	INTAKE DENSITY (kgm ⁻³)	OVERFLOW DENSITY (kgm ⁻³)	UNDERFLOW DENSITY (kgm ⁻³)														
				m	TOTAL HOURS RUN																									
	D.P.	STANDS		m	CUTTING STRUCTURE				B	Gage	ODC	Reason Pulled	Total Run m/hr.	CENTRIFUGE																
	D.P.	SINGLES		m	T ₁	T ₂	MDC	LOC						HOURS RUN	INTAKE DENSITY (kgm ⁻³)	OVERFLOW DENSITY (kgm ⁻³)	UNDERFLOW DENSITY (kgm ⁻³)													
				m	HOLE CONDITION																									
	KELLY DOWN			m																										
	TOTAL			m	HOLE DRAG																									
WT.OFDC			1000 lbW		TORQUE AT BOTTOM																									
WT.OF STRING			1000 dwt		FILL ON BOTTOM (m)																									

EVENING TOUR

CIRCULATION PRESSURE (kPa)

PUMP NO. 1
LINER SIZE (mm) S.P.M.

PUMP NO. 2
LINER SIZE (mm) S.P.M.

REDUCED PUMP SPEED

@
@

DEVIATION SURVEY

DEPTH (m)

DEVIATION (°)

DIRECTION

DRILLER SIGNATURE

HRS. RUN

BOILER
ph

STACK TEMP.

MAXIMUM EXPERIENCED HOOKLOAD

SAFETY TOPIC

M.A.C.P.