NiMo PROJECT

PROPERTY: Rich

HOLE: RI07-20

Easting	Northing	Elev.	Depth (m)
444880	7356092	646	189.28

Contractor: North Star
Drill: MD-001

SURVEY							
Depth (m)	Azimuth	Dip	Method	Depth (m)	Azimuth	Dip	Method
collar	060°	-75°	compass				

Core size: BTW
Casing depth: 51.82 (m) out

Drilling dates: August 7 to 11, 2007

Logged by: D. MacDonald

Target: _____

SUMMARY				
From (m)	To (m)	Interval	Unit	Comments
0.00	51.30	51.30	OVB	
51.30	74.42	23.12	DME	
74.42	74.51	0.09	NiMo?	oblique TCA, 1 cm thick, not typical NiMo
74.51	178.22	103.71	OSR?	not typical OSR, DME?
178.22	189.28	11.06	OSR	

SAMPLES

Numbers: C488415 - C488436

Total: 22
Date sent: August 27, 2007

COMMENTS

NiMo horizon does not have typical appearance, greater organic content in shale, OSR underlaying NiMo does not have characteristic fizz until last 11.06 m.

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LITHOLOGY										ALT.			MINERALS				SAMPLES							Blocks			GEOTECHNICAL						JOINTS					
Struct.																											REC		RQD									
Type	Attitude	From (m)	To (m)	Interval (m)	Type	Unit	Texture	Modifier	Notes:				Ca	Sx	Fe	Qz	From (m)	To (m)	Interval (m)	Sample	Ni (ppm)	Zn (ppm)	Mo (ppm)	From (m)	To (m)	Intvl. (m)	(m)	Percent	(m)	Percent	Weathering	Hardness	Frequency	Attitude	Shape	Roughness	Infilling
		0.00	51.30	51.30	OVB				0 - 51.30 m Overburden - Highly friable, dark BK clay and sand, earthy odour.	m-s																											
																								51.39	51.82	0.43	0.43	100	0.00	0	SW	W	30	80	2	2	ALS
BD	65-7	51.30	74.42	23.12	SHL	DME	LA	BK	51.30 - 55.03 m Highly fissile, finely laminar BK SHL with moderate amount of fractures parallel to BD; generally poor recovery; from 53.37 m - 53.42 m, common limonite on fracture surfaces and corroded appearance; common disseminated, vfg Py grains over whole interval.	f				+	+								51.82	54.87	3.05	1.70	56	0.00	0	SW	MS	30	70	3	3	Li
																								54.87	57.91	3.04	1.62	53	0.23	8	FR	MS	30	70	3	3	ALS
BD	70				LST/S	DME	LA	GY	55.03 - 56.10 m V finely laminar GY calcareous SLT (LST) that becomes v slightly sandy at base of interval; common, vfg Py grains in interval, becoming more concentrated towards end of interval.	w-f			+	+																									
BD	70				SHL	DME	LA	BK-	(51.30 - 55.03 m), except SHL becomes slightly darker with a v slight metallic-green hue; abundance of disseminated Py increases with depth, as do isolated stringers of lenses (3 mm x 1 mm) oriented ~parallel to BD. Organic (bitumen?) content increases over last 1.5 m of interval.	w-f				+								57.91	60.93	3.02	2.72	90	0.00	0	FR	MS	20	60	3	3	ALS
																								60.93	64.01	3.08	2.56	83	0.11	4	FR	MS	20	70	3	3	ALS
																								64.01	67.06	3.05	2.86	94	0.60	20	FR	MS	20	70	2	2	ALS
BD	75-80				SHL	DME	LA	BK	65.03 - 69.43 m Finely laminar BK SHL becomes slightly more competent and less fractured than in above intervals; BD angle changes over interval to ~80 degrees tca, and is slightly finer-grained towards end of interval; rare quartz veinlets ~2 mm wide parallel to BD; common Py blebs (stringers of lenses) parallel to BD; abundant disseminated, vfg Py over whole interval.	w				+		+	66.89	68.39	1.50	C488415	98.4	171	29.30																
																	68.39	69.89	1.50	C488416	83.8	235	18.95														
																	69.89	70.89	1.00	C488417	105.0	177	36.90	67.06	70.10	3.04	2.81	92	0.92	30	FR	MS	14	70	2	2	Qz
																	70.89	71.89	1.00	C488418	94.5	193	20.20														
																	71.89	72.89	1.00	C488419	110.0	212	36.60														

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Struct. Type	Struct. Attitude	LITHOLOGY From (m)	To (m)	Interval (m)	Type	Unit	Texture	Modifier	Notes:	ALT.			MINERALS Ca	Sx	Fe	Qz	SAMPLES From (m)	To (m)	Interval (m)	Sample	Ni (ppm)	Zn (ppm)	Mo (ppm)	Blocks From (m)	To (m)	Intvl. (m)	GEOTECHNICAL REC (m)	REC Percent	RQD (m)	RQD Percent	Weathering	Hardness	JOINTS Frequency	Attitude	Shape	Roughness	Infilling
BD	80-60				SHL	DME	LA	BK-	69.43 - 69.56 m Same BK SHL as in previous interval, except more highly weathered to clay, and much more fractured; BD angle varies from 80 to 60 degrees; common, disseminated vfg Py grains.	f				+			72.89	73.39	0.50	C488420	138.0	224	49.20	70.10	73.15	3.05	2.95	97	0.68	22	FR	MS	13	60	2	2	ALS
BD	50-65				SHL	DME	LA	BK-	69.56 - 73.39 m Finely laminar, slightly greenish black SHL that shows ~50 degree BD angle at start of interval, to ~65 degrees at end of interval; SHL is slightly more competent than that of the previous interval, and there is only on bed of GY calcareous SLT (finely laminar) at 71.95-72.04 m; common Py lenses as above.	w			+	+			73.39	73.54	0.15	C488421	31.9	156	7.34															
																	73.54	73.82	0.28	C488423	74.2	100	22.20													
BD	50				SLT/L	DME	LA	GY	73.39 - 73.54 m Finely laminar, slightly sandy GY calcareous SLT (LST), with wavy laminae at the bottom of the interval	w			+				73.82	74.12	0.30	C488424	148.5	164	51.80	73.15	76.20	3.05	2.88	94	1.00	33	FR	MS	11	50	2	2	ALS
BD	45				SHL	DME	LA	BK-	73.54 - 74.42 m Finely laminar BK SHL with abundant Py laminae up to 1 mm thick and parallel to BD, as well as disseminated, vfg Py that increases in abundance in BK SHL beds up to 3 cm thick (I.e., graded with respect to concentration).	w				+			74.12	74.42	0.30	C488425	216.0	346	73.20															
BD	50	74.42	74.51	0.09	SX	NIMO	LA	BZ	74.42 - 74.51 m V finely laminar BZ Sx (wavy laminar) parallel to BD - 2 sets of generally parallel laminae ~4 mm thick sandwich a thin bed (~1 cm wide) of algal material (possibly an algal mat/growth bed) in a LST-rich/BK SHL-poor matrix. NIMO? layers only slightly bioturbated.	w			+	+			74.42	74.51	0.09	C488426	795.0	439	129.50															
BD	50	74.51	178.22	103.71	SHL	OSR?	LA	BK	74.51 - 75.94 m Finely laminar, non-calcareous BK SHL, interbedded with uncommon GY siliceous SLT and abundant Py blebs, and vfg, disseminated Py grains.	w				+			74.51	74.81	0.30	C488427	141.5	218	38.90	76.20	79.25	3.05	2.90	95	0.77	25	FR	MS	12	50	2	2	Qz
BD	50				SHL	OSR?	LA	BK	75.94 - 80.37 m Same BK SHL as in previous interval, except abundant quartz veinlets begin from this interval onwards, mostly parallel to BD, ranging in thickness from 1 mm - 5 mm; common Py blebs and disseminated grains, as above.	w				+		+	74.81	75.11	0.30	C488428	166.5	425	43.70															
																	75.11	75.61	0.50	C488429	125.0	481	37.60													
																	75.61	76.11	0.50	C488430	136.0	369	37.60	79.25	82.30	3.05	2.98	98	0.60	20	FR	MS	13	50	2	2	Qz
BD	60				SLT/L	OSR?	LA/I	GY	80.37 - 80.50 m Finely laminar, slightly lenticular-bedded GY calcareous SLT-fg SS bed with common, vfg Py grains	w			+	+			76.11	77.11	1.00	C488431	190.0	331	35.80															

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Struct. Type	Struct. Attitude	LITHOLOGY From (m)	To (m)	Interval (m)	Type	Unit	Texture	Modifier	Notes:	ALT.			MINERALS Ca	Sx	Fe	Qz	SAMPLES From (m)	To (m)	Interval (m)	Sample	Ni (ppm)	Zn (ppm)	Mo (ppm)	Blocks From (m)	To (m)	Intvl. (m)	GEOTECHNICAL REC (m)	REC Percent	RQD (m)	RQD Percent	Weathering	Hardness	JOINTS Frequency	Attitude	Shape	Roughness	Infilling
BD	50				SHL	OSR?	LA	BK	80.50 - 95.60 m BK SHL becomes slightly silty overall from this depth downwards. Finely laminar BK SHL interbedded with rare GY siliceous SLT in bottom half of interval; abundant quartz veinlets up to 1 cm wide generally parallel to BD; common zones of earthy, slightly weathered and corroded BK SHL throughout interval, up to 10 cm wide; cream coloured mineral intergrown with quartz in quartz-rich veinlets @ 83.16 m and 83.85 m; bitumen-rich zone from 84.40 - 84.50 m; thin (1 mm) wavy laminar Py bands @ 85.73 m and 88.03 m (NiMo-esque); intersected, concentrically zoned Py lenses @ 95.39 - 95.53 m.	w-f			+	+		+	77.11	78.11	1.00	C488432	144.5	413	33.40																	
																	78.11	79.11	1.00	C488433	125.5	321	41.30	82.30	85.34	3.04	2.89	95	1.01	33	FR	MS	11	50	2	2	Qz
																	79.11	80.37	1.26	C488434	149.0	265	44.00														
																	80.37	80.50	0.13	C488435	106.5	215	27.70														
																	80.50	82.00	1.50	C488436	154.5	308	54.30	85.34	88.39	3.05	2.65	87	0.59	19	FR	MS	12	50	1	1	Qz
																	BLANK			C488422	3.2	18	0.31														
																								88.39	91.44	3.05	2.87	94	0.82	27	FR	MS	11	50	1	1	Qz
																								91.44	94.49	3.05	2.15	70	0.24	8	FR	MS	13	60	1	1	Qz
																								94.49	97.54	3.05	2.05	67	0.00	0	FR	MS	15	60	1	1	Qz
BD	50				SHL	OSR?	BX	BK-	95.60 - 99.82 m Poor overall recovery in this interval; highly brecciated BK SHL with corroded, earthy texture (almost vuggy); abundant quartz veinlets support the BK SHL clasts (angular, avg 1 cm x 2 cm); Sx (Py) blebs common	f				+		+																							
																								97.54	100.58	3.04	1.03	34	0.32	11	FR	MS	16	60	1	1	Qz
BD	50				SHL	OSR?	LA	BK	99.82 - 103.70 m Same BK SHL as in previous interval, except that SHL is more competent and not brecciated. Sx (Py) blebs uncommon; quartz veinlets decrease in abundance sharply by the end of the interval (almost absent).	w				+		+																							
																								100.58	103.63	3.05	2.97	97	1.16	38	FR	MS	8	60	1	2	Qz
BD	55				SHL	OSR?	LA	BK	103.70 - 112.38 m Finely laminar BK SHL as above, but generally fining downwards slightly by end of interval. Almost no quartz veinlets.	w				+																							
																								103.63	106.68	3.05	2.98	98	0.56	18	FR	MS	11	50	1	2	Qz
																								106.68	109.73	3.05	1.91	63	0.00	0	FR	MS	20	50	1	2	Qz
																								109.73	112.78	3.05	1.62	53	0.00	0	FR	MS	20	50	1	2	Qz

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Struct.		LITHOLOGY								ALT.			MINERALS				SAMPLES						
Type	Attitude	From (m)	To (m)	Interval (m)	Type	Unit	Texture	Modifier	Notes:				Ca	Sx	Fe	Qz	From (m)	To (m)	Interval (m)	Sample	Ni (ppm)	Zn (ppm)	Mo (ppm)
					SHL	OSR?	FX	BK	112.38 - 112.78 m Poor recovery, v fractured and reduced to rubbly BK SHL; Sx (Py) both disseminated and as rare blebs.	m				+									
BD	60				SHL	OSR?	LA	BK		w			+	+		+							
									112.78 - 178.22 m Interval comprises several coarsening downwards packages of dominantly BK SHL (85%) beds (finely laminar) up to 2 - 3 cm thick interbedded with finely laminar, GY siliceous vfg SS - sandy SLT (15%) up to 10 - 20 cm thick; quartz veinlets are uncommon-to-rare over most of this interval (0.5 - 1.0 cm wide, parallel to BD); rare, thin (1 mm) high-angle calcite veinlets; common-to-uncommon disseminated Py and rare-to-uncommon Py lenses parallel to BD (3 mm x 2 mm); several zones of minor brecciation; a few coarsening downwards packages end with corroded BK SHL (open pores). At 148.37 m, GY SLT beds become calcareous for most of the rest of the hole.														

Blocks			GEOTECHNICAL						JOINTS				
			REC		RQD								
From (m)	To (m)	Intvl. (m)	(m)	Percent	(m)	Percent	Weathering	Hardness	Frequency	Attitude	Shape	Roughness	Infilling
112.78	115.83	3.05	2.24	73	0.00	0	FR	MS	15	50	1	2	Qz
115.83	118.87	3.04	2.56	84	0.00	0	FR	MS	20	50	1	2	Qz
118.87	121.92	3.05	2.55	84	0.42	14	FR	MS	15	50	1	2	Qz
121.92	124.97	3.05	0.84	28	0.00	0	FR	MS	15	50	1	2	Qz
124.97	128.17	3.20	2.20	69	0.20	6	FR	MS	13	50	1	2	Qz
128.01	131.06	3.05	1.62	53	0.10	3	FR	MS	14	50	1	2	Qz
131.06	134.11	3.05	1.85	61	0.10	3	FR	MS	14	50	1	2	Qz
134.11	137.16	3.05	2.15	70	0.35	11	FR	MS	13	50	1	2	Cb
137.16	140.21	3.05	2.83	93	0.41	13	FR	MS	17	50	1	2	Cb
140.21	143.26	3.05	0.46	15	0.00	0	FR	MS	13	50	1	2	Cb
143.26	146.30	3.04	0.97	32	0.22	7	FR	MS	14	50	1	2	Cb
146.30	149.30	3.00	1.33	44	0.15	5	FR	MS	5	50	1	2	Cb
149.35	150.35	1.00	1.90	190	0.24	24	FR	MS	11	50	1	2	Cb
152.40	155.45	3.05	1.56	51	0.40	13	FR	MS	10	50	1	2	Cb
155.45	158.50	3.05	1.81	59	0.00	0	FR	MS	18	50	1	2	Cb
158.50	161.54	3.04	2.45	81	0.00	0	FR	MS	20	50	1	2	Cb
161.54	164.60	3.06	0.60	20	0.00	0	FR	MS	20	50	1	2	Cb

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Struct.		LITHOLOGY								ALT.			MINERALS				SAMPLES							Blocks			GEOTECHNICAL						JOINTS					
																											REC		RQD									
Type	Attitude	From (m)	To (m)	Interval (m)	Type	Unit	Texture	Modifier	Notes:				Ca	Sx	Fe	Qz	From (m)	To (m)	Interval (m)	Sample	Ni (ppm)	Zn (ppm)	Mo (ppm)	From (m)	To (m)	Intvl. (m)	(m)	Percent	(m)	Percent	Weathering	Hardness	Frequency	Attitude	Shape	Roughness	Infilling	
																								164.60	167.64	3.04	1.45	48	0.29	10	FR	MS	18	50	1	2	Cb	
																								167.64	170.64	3.00	1.37	46	0.00	0	FR	MS	20	50	1	2	Cb	
																								170.64	173.43	2.79	0.61	22	0.00	0	FR	MS	20	80	1	2	Cb	
																								173.74	176.78	3.04	1.53	50	0.10	3	FR	MS	20	80	1	2	Cb	
																								176.78	179.83	3.05	2.50	82	0.22	7	FR	MS	16	80	1	2	Cb	
BD	70	178.22	185.63	7.41	SHL	OSR	LA	BK	178.22 - 185.63 m Finely laminar BK SHL becomes slightly calcareous and is IB with GY fg-sandy SLT beds, which coarsen downwards; SHL is more competent than in previous interval, and becomes slightly calcareous; common Sx (Py) lenses (1 - 3 mm thick, up to 2.5 cm long, oriented parallel to BD); uncommon, thin (1 mm) calcite veinlets, mostly at high angles to BD (v much like OSR in other holes)	w			+	+													179.83	182.88	3.05	2.48	81	0.77	25	FR	MS	12	80	1	2	Cb	
																								182.88	185.93	3.05	3.05	100	0.83	27	FR	MS	9	80	1	2	Cb	
BD	50	185.63	189.28	3.65	SHL	OSR	LA	BK																185.93	188.98	3.05	2.75	90	0.70	23	FR	MS	20	80	1	2	Cb	
									185.63 - 189.28 m (EOH) Finely laminar BK SHL that is moderately fissile, similar to SHL in 112.78 - 178.22 m, with uncommon Py beds (up to 5 mm thick)(fg, wavy laminar, parallel to BD and slightly slumped) EOH														188.98	189.28	0.30	0.25	83	0.00	0	FR	MS	20	80	1	2	Cb	
		189.28							END OF HOLE																													