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MGM ENERGY CORP.

MGM ET AL WINDY ISLAND J-39

300/J-39-6500-12530/00
NORTHWEST TERRITORIES

PERMIT TO PRACTICE
RPS ENERGY CANADA LTD.

Signature _____

Date _____

PERMIT NUMBER: P 4348
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

GEOLOGICAL REPORT

ON

MGM ET AL WINDY ISLAND J-39
300/J-39-6500-12530/00

FOR

MGM ENERGY CORP.

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March 2011

Ian Andrews
Wellsite Consultant

RPS ENERGY
Suite 1400, 800 – 5th Avenue SW., Calgary, Alberta Canada T2P 3T6

WELL DATA SUMMARY

WELL NAME	MGM et al Windy Island J-39
SURFACE LOCATION	Lat 64 58' 42.4" Long 125 36' 22.8"
UNIQUE WELL I.D.	300/J-39-6500-12530/00
BOTTOM LOCATION	Lat 64 58' 42.4" Long 125 36' 22.8"
FIELD/REGION	Tulita / Sahtu / NWT
OPERATOR	MGM Energy Corp.

SITE DATA

BOTTOMHOLE COORDINATES	N 660142 m; E 7210149 m		
SURFACE COORDINATES	N 660142 m; E 7210149 m		
WELL CLASSIFICATION	Exploratory	WELL LICENSE	2072
AFE NUMBER	10D0006		
DRILLING CONTRACTOR	Akita Sahtu Drilling Rig # 51		

ELEVATIONS

GROUND LEVEL	191.00	(m)
KELLY BUSHING	196.15	(m)

DRILLING DATES

SPUD DATE	7-Feb-11	**TIME**	01:15 hours
T.D. DATE	20-Feb-11	**TIME**	06:45 hours
RIG RELEASE	23-Feb-11	**TIME**	23:59 hours

HOLE SIZE & MUD TYPE

SURFACE	311.0 mm; Gel-Chem
INTERMEDIATE	N/A
MAIN	216.0 mm; Gel-Chem

CASING DATA

SURFACE	Ran 244.0 mm, 69.9 kg/m, L-80 Csg, Landed at 407.0 mKB
INTERMEDIATE	N/A
PRODUCTION	Ran 178.0 mm, 38.7 kg/m, L-80 Csg, Landed at 1292.0 mKB
ABANDONMENT PLUGS	PBTD to 1280.0 m; Set Cement Plug at 40.0 to 30.0 m

GEOLOGICAL DATA

SAMPLE INTERVAL	20.0 m to 1300.0 m
GAS DETECTION INTERVAL	20.0 m to 1300.0 m
LOGGING SUITE	HDIL, XMAC, ZDL/CN

WELL STATUS **Cased - Abandoned**

FORMATION TOPS

MGM et al Windy Island J-39
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K.B.(m): 196.15 **G.L.(m):** 191.00

FORMATION	PROGNOSIS		SAMPLE		LOG	
	MD(m)	SS(m)	MD(m)	SS(m)	MD(m)	SS(m)
Quaternary	1.7	194.5	20.0	176.2	26.0	170.2
Tertiary - Summit Creek	49.7	146.5	44.0	152.2	48.0	148.2
Pyritic marker bed	N/A	N/A	105.0	-	105.0	91.2
Cretaceous						
** Little Bear	141.7	54.5	174.5	21.7	174.5	21.7
Little Bear Marker	N/A	N/A	363.0	-166.9	363.0	-166.9
Surface Casing	400.0	-203.8	407.0	-210.9	407.0	-210.9
Mid Little Bear Unconf	N/A	N/A	490.0	-293.9	491.5	-295.4
Slater River	517.7	-321.5	746.0	-549.9	572.0	-375.9
Slater River - Shale	910.7	-714.5	853.0	-656.9	857.0	-660.9
Basal Sand (Martin Hs)	N/A	N/A	864.0	-667.9	863.5	-667.4
Devonian						
Hare Indian	934.7	-738.5	*Eroded*			
Bluefish	1001.7	-805.5	*Eroded*			
* Hume	1018.7	-822.5	909.0	-712.9	908.0	-711.9
Middle Hume	N/A	N/A	917.0	-720.9	922.3	-726.2
Lower Hume - Headless	1045.7	-849.5	960.5	-764.4	941.4	-745.3
** Landry	1110.7	-914.5	979.0	-782.9	963.0	-766.9
* Bear Rock	1140.7	-944.5	1014.0	-817.9	1012.5	-816.4
** Fort Norman	1198.7	-1002.5	-	-	1074.0	-877.9
Ordovician						
Pre-Devonian (Franklin Mtn)	1270.7	-1074.5	-	-	1225.0	-1028.9
TOTAL DEPTH	1501.7	-1305.5	1300.0	-1103.9	1300.0	-1103.9

** Primary Objective*

*** Secondary Objective*

DEVIATION SURVEYS

MGM et al Windy Island J-39

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Depth	*Inclination*
12.0	0.0
56.0	0.5
127.0	0.5
156.0	1.0
184.0	0.5
211.0	0.5
240.0	0.5
270.0	0.5
297.0	0.5
325.0	0.5
353.0	0.5
381.0	0.5
490.0	0.2
605.0	0.5
698.0	1.0
802.0	1.0
869.0	2.0
869.0	2.5
907.0	1.5
894.0	2.0
934.0	1.5
962.0	1.5
991.0	2.0
998.0	2.0
1038.0	3.0
1067.0	3.0
1083.0	5.5
1187.0	8.0

WELLSITE BIT RECORD

NuVista Senlac HZ 8C5-7-1A11-12-39-26
191/11-12-039-26 W3/00

SPUD DATE: February 24, 2011
T.D. DATE: March 3, 2011

Surface Casing: 244.0 mm, 69.9 kg/m, L-80 Csg, Landed at 407.0 mKB

Bit #	**1**	**2**	**3**	**4**
Bit Size (mm)	311	216	216	216
Manufacturer	Hughes	Hughes	Hughes	Hughes
Type	GX-C09	DP-505	GX-30EX	GX-35DX
IADC Code	4-3-7	Q-5-0-5	5-3-7	5-4-7
Serial	5182683	7900014	6077369	5166364
Nozzle	3x17.5	5x12	3x14.3	3x12.7
Depth in (m)	15.00	407.00	1005.00	1210.00
Depth out (m)	407.00	1005.00	1210.00	1300.00
Metres Drilled	392.00	598.00	205.00	90.00
Accumulated (m)	392	990	1195	1285
Bit hrs	47	53.7	39.00	28.75
Accumulated hrs	47	100.7	139.70	168.45
Bit Weight	2-6K	1-5K	12-14K	12-14K
ROP	8.3	11.1	5.3	3.1
Pump Type	AP80	AP80	AP80	AP80
Remarks	National	National	National	National
Size (mm)	152	152	152	152
Stroke Length (mm)	216	216	216	216
Pump Pressure	6400-8400	4500-5700	3300-4000	4000-4400
RPM	120	120	80-90	80
Mud Type	Gel Chem	Gel Chem	Gel Chem	Gel Chem
WT	1035-1115	1030-1115	1080-1090	1075-1105
Vis	34-45	39-44	38-43	37-43
W.L.	-	7.8-9.5	7.2-8	7.2-8
pH	10 to 8	8 to 10	9 to 11	10.0
Condition:	1	6	8	2
	1	8	8	2
	NO	CT	BT	FC
	AP80	S	S	Gel-Chem
	1	8	8	3
	0	1	1	0
		PN	PN	BT
	TD - Scf	PR	PR	TD

DAILY DRILLING SUMMARY

MGM et al Windy Island J-39

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Date	Depth	Progress	Drilling Hours	ROP (m/hr)	Mud Properties Density	Vis	WL	pH	Operations Summary
3-Feb-11	0	0	0.0	0.0	-	-	-	-	MIRT, rigged up.
4-Feb-11	0	0	0.0	0.0	-	-	-	-	Rigged up, raised derrick and rigged to spud.
5-Feb-11	0	0	0.0	0.0	-	-	-	-	Rigged to spud.
6-Feb-11	0	0	0.0	0.0	1020	35	-	-	Rigged to spud.
7-Feb-11	137	137	16.5	8.3	1015	36	-	11.0	Spudded at 01:15 hours, drilled 311.0 mm surface hole.
8-Feb-11	280	143	13.0	11.0	1095	44	-	9.0	Drilled 311.0 mm surface hole to 212.0 m. Wiper trip. Ran in hole and drilled ahead.
9-Feb-11	407	127	14.0	9.1	1145	47	-	8.0	Drilled 311.0 mm surface hole to 391.0 m. Wiper trip to surface. Ran in hole and drilled to 407.0 m Casing point. Circulated to rig up casing.
10-Feb-11	407	0	0.0	-	1145	47	-	8.0	Pulled out of hole to rig up surface casing. Rigged to 244.0 mm casing. Circulated casing. Circulated and conditioned mud. Cemented casing. Waited on cement.
11-Feb-11	407	0	0.0	-	1050	40	-	8.0	Cut casing, welded bowl, cut casing and re welded bowl. Pressure tested bowl, nippled up BOP.
12-Feb-11	407	0	0.0	0.0	1010	50	9.5	9.0	Nippled up BOP. Pressure tested. Ran in hole. Prepared to drill out cement.
13-Feb-11	605	198	16.0	12.4	1050	44	9.5	10.0	Leaked off formation test. Changed out and displaced fresh mud system. Drilled out. Drilled ahead. Changed out and displaced fresh mud system. Drilled out, drilled ahead 216.0 mm main hole, wiper tripped at 595.0 m.
14-Feb-11	879	274	19.3	14.2	1115	42	9.0	8.0	Drilled 216.0 mm hole, surveyed as required.
15-Feb-11	1005	126	9.0	14.0	1075	44	7.8	9.0	Drilled 216.0 mm hole, surveyed as required. Circulated bottom up for bit trip at 1005.0 m.

16-Feb-11	1056	51	8.8	5.8	1085	43	7.2	10.0	Tripped for new bit. Reamed and cleaned to bottom. Drilled ahead / new bit. Reamed and cleaned to bottom. Drilled ahead/ new bit # 3 Reamed and cleaned to bottom. Surveyed as required.
17-Feb-11	1162	106	21.5	4.9	1090	37	8.0	10.0	Drilled 216.0 mm hole, surveyed as required.
18-Feb-11	1210	48	8.8	5.5	1080	37	7.6	10.0	Drilled ahead to 1210.0 m, recovered bottom hole sample, tripped for bit. Ran in hole / w new bit # 4, Cleaned to bottom.
19-Feb-11	1279	69	22.5	3.1	1075.0	37.0	8.0	10.0	Cleaned to bottom / w new bit # 4. Drilled 216.0 mm hole, surveyed as required.
20-Feb-11	1300	21	22.5	6.5	1095.0	63.0	7.5	10.0	Drilled 216.0 mm hole to Total Depth at 1300.0 m MD. Circulated and conditioned hole, wiper tripped to casing shoe. Circulated and conditioned hole for logging. Rigged upon. Pulled out of hole to rig up open hole logs. Rigged to and logged.
21-Feb-11	1300	0	0.0	0.0	1095	48	7.2	10.0	Opened log with Baker Hughes. Rigged out loggers. Made up new BHA and ran in hole. Circulated and conditioned mud for casing. Rigged up. Pulled out of hole. LDDP & DC.
22-Feb-11	1300	0	0.0	0.0	1095	48	7.2	10.0	LDDP & DC. Rigged to and rigged up 177.8 mm casing.

WELLSITE LOGGING REPORT

MGM et al Windy Island J-39

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HOLE DATA		*MUD DATA*		*LOGGING COMPANY*	
Hole Size:	216.0 mm			**Logging Co.:**	Baker Hughes
TD Driller:	1300.0 m MD	**Type:**	Gel-Chem	**Engineer:**	Alexander Chirinos
Strap:	0.22 difference	**Density:**	1085 kg/m3	**Truck No.:**	HL6701 (GP)
TD Logger:	1298.5 m	**Viscosity:**	37 sec	**Start Date:**	20-Feb-11
Casing Driller:	407.0 m	**W.L.:**	8.0 cc	**Start Time:**	21:00
Casing Logger:	407.2 m	**pH:**	9.5	**End Date:**	21-Feb-11
Hole Condition:	Good, no tight spots			**End Time:**	13:00

LOGGING SEQUENCE

Run Number	Logged Interval From	To	Hours	Logs	Remarks
1	TD	Sfc Csg	14.0	HDIL, XMAC, ZDL/CN,	Good run
				Run GR & CN thru Csg to Sfc	No tight spots
		Total Hours:	14.0		

LOGGING OPERATIONS SUMMARY

Date	From	To	Description of Operation
20 Feb 11	8:00	13:15	Wiper tripped, Total Depth, 1300.0 m.
-	13:15	16:15	Conditioned mud and circulated
-	16:15	21:00	Pulled out of hole to run logs.
-	21:00	21:15	Baker Hughes Safety meeting, cable tension, radioactivity, Fish/SP
21 Feb 11	21:00	9:00	Rigged up and logged /w Baker Hughes Wireline, logged to bottom at 02:30 hours.
-	9:00	10:30	Rigged out loggers - Logs posted at 09:50 hours.
-	10:30	12:00	Waited on possible FMT run over Bear Rock, and Slater River Basal SS.
-	12:00	13:00	Finished rigging out loggers.

REMARKS & COMMENTS

Logged truck arrived 17th Feb, well depth extended afterwards, resulting in two days extra drilling.

WELL SUMMARY AND FORMATION EVALUATIONS

MGM ET AL WINDY ISLAND J-39
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OBJECTIVE:

The Windy Island J-39 well was planned as a vertical hole that was to be drilled to a Total Depth of 1500.0 m, some 130.0 m, into the Ordovician - Franklin Mountain Formation. The main objective was to locate porosity development and prove potential hydrocarbon reservoirs along a dolomitized, fractured Devonian carbonate sub-crop. The primary targets were the middle Devonian Bear Rock and Hume Formations, with secondary targets in the Landry and Fort Norman Formations. The well was targeted to evaluate potential hydrocarbon presence in middle Devonian rock, observed at the intersection of three high frequency, high fold, 2D seismic lines TUL-01, TUL-02 and TUL-03.

A further objective was to acquire geological and geophysical data for the adjustment and fine-tuning of the carbonate play concept developed as a framework for exploration in the MGM/Devon Tulita / Sahtu land concession.

Subsequently, and depending on the presence of hydrocarbon (HC), it was planned to prove that enough HC is entrapped to provide sustainable flow via a well testing program.

RESULTS:

One wellbore was drilled to reach the prognosed Total Depth of 1500.0 m. However, the Final Total Depth was shortened to 1300.0 m, approximately 75.0 m into the lower Ordovician Franklin Mountain Formation when no evidence of hydrocarbons were present in the Bear Rock, and when the absence of Fort Norman evaporates was observed.

Data gathered while drilling the Windy Island J-39 well indicated a loss of seal integrity to the Devonian sub-crop by the presence of 44.5 meters of highly porous “Basal Sandstone” at the base of the Cretaceous, resting unconformably on the dipping Devonian sub-crop beds.

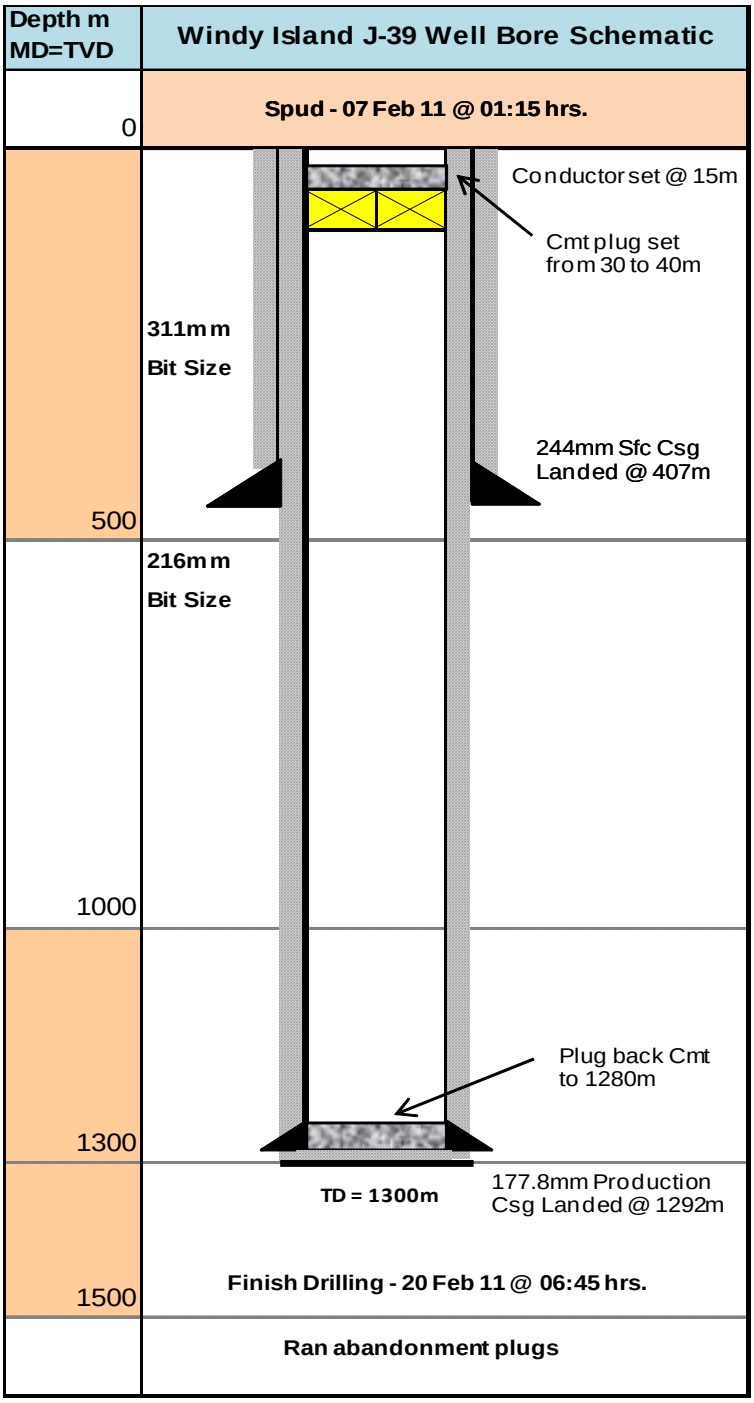
Formation evaluations based drill cutting samples, mud logging data from the flow line, and initial wire line logs, proved the absence of hydrocarbon at the Windy Island J-39 well location. The well was cased, and plugs set for a speedy abandonment reclamation process.

OPERATION SUMMARY

The well was spudded the 7th of February 2011 and took 13 days to drill to a final Total Depth of 1300.0 m. Drilling was followed by 14 hours of open hole logging operations prior to abandonment procedures. Akita Sahtu Rig # 51 was released back to the contractor on February 23, 2011.

A 311.0 mm hole was drilled from surface (Conductor at 15.0 m) to surface casing point Total Depth at 407.0 m with fresh water Gel-Chem mud system. Mud parameters had increasingly higher MBT measurements indicating this interval to contain high amounts of soft soluble shale or clays. Ran 29 joints of 244.5 mm, 69.944 kg/m, LT80, BT casing. Total length of 407.88 m including float collar and shoe, landed at 407.0 m, and cemented as per program. Welded casing bowl, nippled up BOP stack, and pressure tested as per regulatory authority and MGM standards.

A 216.0 mm hole was drilled from 407.0 to Final Total Depth at 1300.0 m. Performed “integrity Formation leak off test” upon drilling out cement at 407.0 m KB. Drilling was normal without losses – MW between 1050 to 1095 kg/m3 for the entire interval. Ran Baker - Hughes wire line logs. Ran 177.5 mm casing to 1300.0 m and cemented as per program. Cement plugs and abandonment procedures were done immediately after cementing the 177.5 mm casing string.



FORMATION EVALUATIONS

CRETACEOUS – BASAL SAND (863.5 to 908.0 m MD)

A very porous and massive (44.5m) basal sandstone overlies the mid-Devonian Hume carabonate uncomformably at 908.0 meters at the Windy Island J-39 location. These porous sands would indicate that a top seal breach has occurred to all mid-Devonian sub-crop carbonates coming into contact with this sand, allowing HC from any potential underlying Devonian reservoirs to migrate elsewhere.

This Basal sand interval is overlain 7.0 m of Slater River radioactive shales, and a further massive interval of impermeable Slater River shale and tight silty beds. The sand was very clean, consisting of clear quartz with minor white chert grains - tripolitic in part, slightly siliceous, friable and generally unconsolidated in samples.

Very fine to predominant fine grained, with medium grains in part, moderately well sorted, sub angular to sub rounded, with occasional well formed quartz crystals. Conglomeritic intervals were evident with traces of druse quartz growths. Consolidated sand chips displayed good to excellent relief, with 25%+ intergranular porosity. No hydrocarbon (HC) shows were observed.

CONCLUSION: Porous, wet sand with excellent reservoir properties. Zone of no economic value.

MIDDLE DEVONIAN CARBONATES (908.0 m to 1225.0 m KB)

The Windy Island J-39 drill test proved that the Devonian sub-crop was erroded down into the Hume Formation,
and that any potential Devonian reservoir beds could be exposed to overlying porous “Basal Sand“, causing the loss of seal integrity allowing HC migration. This was proven for all potential Devonion reservoir intervals at this location by the absence of HC reported in drill cutting samples, by mud gas measured at the flow line by a gas detector, and by initial open hole log analysis. Also, a fairly massive evaporate interval expected in the Fort Norman Formation was absent, and regional log and seismic correlations were later required to interpret various Formation horizons, and facies change for the Fort Norman.

DEVONIAN – HUME FORMATION (908.0 to 963.0 m KB)

The Devonian at the Windy Island J-39 location was eroded down through the “Hare Indian”, “Bluefish”, and down into dense mudstones of the upper “Hume” Formation. The “Hume” was a primary target for this well as potential producing hydrocarbon (oil) reservoir. Three intervals or members of the Hume Formation were observed….

1.) Upper Hume mudstones (908.0 to 23.3 m KB) Light to medium gray and gray brown, dense micritic limestone, with minor thin dark grey shale stringers and laminations. The limestone was microcrystalline to cryptocrystalline, moderately argillaceous, and traces of small calcite blebs, inclusions, and hairline fractures, were evident.

2.) Middle Hume dolomite (923.3 to 941.4 m KB) This interval consisted of a very clean, white to light buff tan colored, micro to very fine crystalline dolomite. Finely crystalline in part, with estimated 1-3% intercrystalline porosity, and minor streaky interlaminated pin-point vuggy porosities ranging from 3-5%. No hydrocarbon fluorescence was observed. Minor dense and tight cryptocrystalline to microcrystalline interlaminations were common.

3.) Lower Hume – Headless member (941.4 to 963.0 m KB)Dolomite, basically very similar to the overlying middle Hume, but with increasing size in crystalline. Becoming fine crystalline in part, clean, limy in part. 3% intercrystalline porosity, with minor isolated pinpoint vuggy porosity at 3 to 5%, and occasional isolated vuggy sections with fine to coarse calcite crystal growths. No hydrocarbon fluorescence was observed through this interval.

CONCLUSION: The middle and lower Hume contained porous laminated intervals with good reservoir characteristics; however, no hydrocarbons were present. Zone of no economic value.

DEVONIAN – LANDRY FORMATION (963.0 to 1012.5 m KB)

The Landry immediately underlies the Hume, and consists of a denser and more argillaceous dolomite, with increasing thin shale stingers and thinly laminated shaly intervals. The dolomite grades from a darker tan and brown colored more argillaceous dolomite, to a cleaner white to cream color. It is generally a dense, cryptocrystalline to microcrystalline type dolomite with littler no porosity development. The shale appears as thin stringers or laminations, gray to gray green colored, calcareous, and bentonitic.

CONCLUSION: The Landry was considered a secondary target, but was tight and shaly, and of no economic value.

DEVONIAN – BEAR ROCK FORMATION (1012.5 to 1074.0 m KB)

The “Bear Rock” was a primary target for the Windy Island J-39 location. The Formation was a good prospect for the development of permeable hydrocarbon (oil) bearing beds, and despite the presence of the Cretaceous seal breach over the “Hume”, it was hoped that the “Landry” could have acted as a seal to a point where both the “Landry” and “Bear Rock” would sub-crop into, hopefully a overlying “Slater River” impermeable shale, instead of “Basal sand”. This was not the case as porosity was developed throughout the “Bear Rock” Formation and no evidence of any hydrocarbons were detected.

The top Bear Rock Formation was quickly recognized as a Formation change by a significant increase in penetration rates, and the appearance brecciated chert intervals, consisting of angular, white and cream colored to translucent chert fragments. White tripolitic chert fragments were common.

White and cream to tan color dolomite predominant the Bear Rock interval, consisting of a very clean, generally fine to medium crystalline calcarenite, with occasional coarse crystalline intervals. Flat rhomb crystal faces were common throughout, and sample chips displayed fair relief with estimated 6 to 9% intercrystalline and isolated vuggy porosity. Dolomitized rhomb crystal growths were developed in available vuggy interstices. Intervals with a dense and tightly packed matrix were common. Cherty intervals were common as well through the Formation, possibly disseminated or brecciated. No hydrocarbon fluorescence was observed in the Bear Rock Formation.

CONCLUSION: Intervals with reservoir quality rock, no hydrocarbons present. Zone of no economic value.

DEVONIAN – FORT NORMAN FORMATION (1074.0 to 1225.0 m KB)

Nearest wells used to correlate stratigraphy to this location had indicated that a fairly massive anhydrite sequence was to occur in the Fort Norman indicating the Formation change. However, anhydrites were absent at this location and only subtle changes were observed in lithology from what was observed in the overlying “Bear Rock” Formation. The top of the Fort Norman was determined after regionally correlating open hole logs to various widespread markers and re-evaluating seismic data. Lithology here at the Windy Island J-39 location represents a facies change or disconformity.

In samples, the Fort Norman consisted of a white to light tan colored, very fine to coarsely crystalline dolomite with a fairly dense packed matrix and less porosity as seen in the overlying “Bear Rock”. The dolomite contained a terrigenous constituent in the form of clear quartz sand and silt grains. White, light buff and white tripolitic angular fragments were common in samples either disseminated, or from brecciated intervals. Visual intercrystalline and isolated pin-point vuggy porosities described through the Fort Norman were estimated in the 0-3% range. Isolated voids or vugs were evident by the appearance of dolomitize calcite crystal growths with excellent rhomb structure, and interestingly, occasional scattered clear angular quartz grains and well formed hexagonal quartz crystal growths. This mineral crystallization could appear in cherty disseminated or brecciated intervals, or possible fracture zones.

No hydrocarbon presence was observed in samples, or detected in the mud system through the Fort Norman Formation.

CONCLUSION: Zone of no economic value for the production of hydrocarbons.

ORDOVICIAN – FRANKLIN MOUNTAIN (1225.0 to 1300.0 m KB to Total Depth)

The Franklin Mountain was the terminating Formation prognosed for the Windy Island J-39 well. Seismic data indicated a harder boundary, and data collected from logs would be helpful to fine tune future concept play models.

A finer crystalline dolomite appears in the Franklin Mountain, the Formation was denser and tighter, penetration rates were slower, and chert was absent in samples. Crystalline ranged predominantly from microcrystalline to

very finely crystalline. Intervals with darker, more argillaceous dolomites were also apparent. Thin gray green calcareous shale laminations and inclusion were observed in the lighter dolomite intervals, and black sub-bituminous shale was observed in the darker argillaceous dolomite intervals. No hydrocarbons shows were observed

CONCLUSION: Zone of no economic value.

LITHOLOGICAL DESCRIPTIONS

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15-20 m — **SHALE**: light grey brown, bentonitic, soft, sandy, silty. **SANDSTONE**: light grey brown, silt to fine grained clear and frosted quartz with dark lithic grains, poorly sorted, sub-rounded to subangular, carbonaceous flakes and trace carbonaceous partings.

QUATERNARY 20.0 m MD, (176.2 m SS)

20-25 m — Sandstone with **SHALE** interbeds, as above. **SANDSTONE**: light grey brown, clear and frosted quartz with minor grey to dark grey and brown chert grains, friable, clayey, silt to fine grained, poorly sorted, subrounded to subangular, trace carbonaceous debris.

25-40 m — **SANDSTONE**: salt and pepper to grey speckled, fine to lower medium grained clear and frosted quartz with grey to black and brown chert grains, medium sorted, subrounded to subangular, moderately calcareous and kaolinitic, generally unconsolidated in sample, minor dense intervals with 80 to 90% matrix framework; minor grey brown clayey Sandstone as above.

40-45 m — **SANDSTONE**: light grey brown argillaceous ...clayey sand with 70% matrix framework, silty to fine grained, poor sorted, subrounded to subangular, carbonaceous flakes and occasional partings, clayey or bentonitic, slightly to moderately calcareous, soft, friable, no effective porosity.

TERTIARY - SUMMIT CREEK 44.0 m MD, (152.2 m SS)

45-65 m — **SHALE**: light to medium grey brown, soft, clayey, arenaceous, carbonaceous flakes, mica flakes.

65-80 m — **SHALE**: as above. **SANDSTONE**: (20%) stringers or laminated intervals, light to medium grey brown, silty to very fine grained clear and frosted quartz with dark lithic grains, medium sorted, subrounded to subangular, calcareous, argillaceous, carbonaceous flakes, 70 to 80% matrix framework.

80-90 m — **SHALE**: predominant throughout, light to medium grey brown, very soft, clayey, slightly to moderately calcareous in part, calcareous montmorillonite, silty, mica and carbonaceous flakes.

90-105 m — **CLAYSTONE** with **SHALE**: very poor samples, very soft, soluble, waxy in part, minor dark grey colored **SHALE**.

105-110 m — **SHALE**: as above,increasing dark grey **SHALE**, moderate carbonaceous and pyritic, pyritic specs and crystals common throughout, trace pyrite nodules and pyritic burrows, possible heavy mineral marker bed, probable Low resistivity with high DRHO.

110-115 m — **SHALE** to **CLAYSTONE**: predominant throughout, light to medium grey brown, soft, flaky, soluble, bentonitic or montmorillonite, slightly calcareous.

115-135 m — **SHALE** to **CLAYSTONE**: as above. **SANDSTONE**: minor thin stringers, inclusions or lenses, silty to fine grained clear and frosted quartz with minor dark lithic grains, unconsolidated.

135-160 m — **SHALE** to **CLAYSTONE**, generally as above, light to medium grey brown, very soft and flaky, water soluble, slightly calcareous.

160-175 m **SHALE**: various; white to light grey to bentonitic, waxy; light to medium grey brown soft **CLAYSTONE** as above, becoming indurated in parts. Trace pyritic burrows, thin pyritic bands or inclusions, disseminated pyrite. good trace white calcite ...probable shell fragments. **SANDSTONE**: scattered cherty sand grains, fine to medium grained subangular to angular.

CRETACEOUS - LITTLE BEAR 174.5 m MD, (21.7 m SS)

175-205 m **SHALE**: light to medium grey, grey brown, soft, clayey, bentonitic, occasional carbonaceous debris. **SANDSTONE**: thin beds or lenses (20%), trace chert fragments or pbls, fine to medium grained, unconsolidated grains scattered throughout. Calcite, Shell fragments. Trace pyrite and pyritic burrows.

205-215 m **SHALE**: generally as above, increasing, dark grey to black carbonaceous **SHALE**, silty, moderately pyritic. Trace **COAL**, occasional thin coaly partings. **SANDSTONE**: occasional scattered sand grains.

215-225 m **SHALE**: various; white to light grey, soft, waxy, bentonitic; light to medium grey brown soft, clayey, soluble, slightly calcareous,; dark grey carbonaceous **SHALE** with pyrite specs and s crystals. **SANDSTONE**: stringers, thin beds, (20 to 30%), unconsolidated fine to medium clear and frosted quartz with grey to black and brown chert grains, subangular to angular, medium sorted, questionable clay content.

225-250 m **SHALE**, **CLAYSTONE**: increasing grey brown **CLAYSTONE**, soft clayey, soluble. **SANDSTONE**: stringers, lenses or laminations, (20%), scattered silty to fine grained, sand grains, poorly sorted, subrounded, occasional medium grained clear quartz subrounded to angular, trace conodonts, questionable clay content.

250-260 m **SHALE**, **CLAYSTONE**: as above. **SANDSTONE**: stringers, thin beds, (20 to 30%), cherty, very fine to medium grained clear and frosted quartz with dark chert grains, poor sorted, subrounded to subangular, unconsolidated, occasional dark chert pebbles, questionable clay content.

260-280 m **SHALE**, **CLAYSTONE**: increasing, generally as above, light to medium grey brown, soft, clayey, occasional thin silty inclusions or laminations. **SANDSTONE**: occasional laminations, as above, silty to fine grained.

280-300 m **SHALE**, **CLAYSTONE**: predominant throughout, generally as above, light to medium grey brown, soft, soluble, trace carbonaceous flake and debris, trace pyritic burrows; occasional grain and grey, soft, waxy bentonitic **SHALE**. **SANDSTONE**: stringers, thin beds, (20%), very fine to medium grained clear and frosted quartz with dark chert grains, poor sorted, subrounded to subangular, unconsolidated, questionable clay content.

300-305 m **SHALE** and **CLAYSTONE**: predominant throughout, generally as above, light to medium grey brown, very soft and clayey; minor medium to dark grey and dark grey grain **SHALE**, bentonitic, occasional hard silty laminations or inclusions. **SANDSTONE**: (20%) stringers or thin bed, unconsolidated clear and frosted quartz with minor grey to black and dark brown chert grains, cherty, very fine to medium grained, poor to medium sorted, subrounded to subangular, questionable clay content. Trace black Chert grains, medium to very coarse grained. Trace Coal.

305-315 m **SHALE**: predominant throughout, as above, good trace as above medium to very coarse black Chert grains.

315-330 m **SHALE**: predominant throughout, generally as above. **SANDSTONE**: thin bed or stringers, (20%), silty to fine grained, subrounded to subangular, poor sorted, as above quartz and chert grains.

330-340 m Interbedded **SHALE** and Sandstone. **SHALE**: increasing medium to dark grey, dark grey grain, blocky, slightly micromicaceous, bentonitic, firm to soft, flaky; minor soft clayey light to medium grey brown **SHALE** as above, trace pyritic burrows. Pyrite becoming more common. **SANDSTONE**: unconsolidated clear and frosted quartz with various colored chert grains, fine to coarse grained, poorly sorted, subrounded to angular, occasional very coarse to pebble size. Trace **COAL** grains, inclusions, partings.

340-355 m **SHALE** and Sandstone interbeds as above. Pyrite common, thin bands or disseminated inclusions, burrows. Trace Conodonts. Minor Chert pebbles.

355-365 m **SHALE**: medium to dark grey grain color, subblocky, micromicaceous, very micaceous in part, dolomitic, firm to becoming soft and flaky in water, bentonitic.

LITTLE BEAR SEISMIC MARKER 363.0 m MD, (-166.9 m SS)

365-380 m **SANDSTONE**: light to medium grey brown, clear quartz with minor dark lithics, silt to fine grained, subrounded, poor sorted, calcareous, moderately argillaceous, rare trace glauconite, firm to friable, 75% matrix framework, streaky 6 to 11% intergranular porosity, no cut fluorescence; ...Increasing mud Viscosity ...**SANDSTONE**; minor unconsolidated sand grains, cherty, fine to medium grained, clear and frosted quartz with varicolored chert grains, subrounded to subangular, occasional black Chert pebbles and coarse grains, questionable porosity and clay content.

380-395 m (poor samples) **SANDSTONE**: unconsolidated silty to fine grained sand, generally as above, poor sorted, subrounded, argillaceous.

395-400 m **SANDSTONE**: unconsolidated, fine to medium grained clear and fro quartz with dark chert grains, subrounded to subangular, poor to moderately sorted, questionable clay content and porosity. **SHALE**: interbeds, light to medium grey brown, soft, clayey, and soluble. Pyrite common.

400-407 m Interbedded **SHALE** and Sandstone. **SHALE**: as above, minor tan color **SHALE**, blocky, dolomitic, hard, dense. **SANDSTONE**: generally unconsolidated as above, fine to medium grained, occasional light and dark color Chert granules, subrounded to subangular. Pyrite.

407-425 m **SHALE**, **CLAYSTONE**: light to medium grey brown, ft clayey **SHALE** or **CLAYSTONE**. soft, soluble, trace carbonaceous and mica flakes, sand grains or thin sandy inclusions, very fine to fine grained clear and frosted quartz with minor dark chert grains; minor light grey grain and dark grey bentonite **SHALE** laminations or inclusions.

425-435 m **SHALE**, **CLAYSTONE**: generally as above, soft, flakey, soluble **SHALE** and **CLAYSTONE**, bentonitic, occasional scattered sand grains, trace pyrite.

435-445 m **SHALE**, **CLAYSTONE**: light to medium grey brown, soft, flakey, soluble in water, arenaceous, trace carbonaceous flakes. **SANDSTONE**: thin laminations and inclusions, (5 to 10%), unconsolidated, silty to fine grained, poor sorted subrounded, clear and frosted quartz with minor dark chert grains. Trace light color Chert granules and pebbles.

445-455 m **NO SAMPLE**

455-460 m **SHALE** and Sandstone: as above, pyrite becoming common. **SANDSTONE**: highly pyritic sand, silt very fine grained, trace scattered light and dark color Chert grains to granules to pebbles.

460-465 m **SANDSTONE**: predominant throughout, generally unconsolidated, light grey brown speckled, composed of clear and frosted quartz with grey to black and brown chert grains, trace carbonaceous flakes and grains, silty to fine grained, poor sorted, subrounded, slightly to moderately calcareous in parts, slightly to moderately argillaceous, questionable clay content.

465-485 m **SHALE** and **CLAYSTONE**: increasing (60%), light grey brown, very soft and soluble, slightly calcareous, bentonitic.

485-490 m **SHALE** and **CLAYSTONE**: light brown, as above, silty; minor medium to dark grey, soft, flaky, bentonitic, and pyritic.

MIDDLE LITTLE BEAR UNCONFORMITY 490.0 m MD, (-293.9 m SS)

490-500 m **CONGLOMERATE**: various colored light and dark Chert granules and pebbles, subrounded to rounded, lower pebbles, lower angular fragments common, bimodal, sand grained support, clear quartz with chert grains, fine to coarse grained, unconsolidated, occasional pyrite.

500-510 m **SANDSTONE**: unconsolidated clear and frosted quartz with minor grey to black and brown chert grains, fine to very coarse grained, poor sorted, subangular to subrounded, increasing chert with grained size, minor chert pebbles as above, questionable porosity and clay content, slightly kaolinitic and silica with 70% framework, estimated 20 to 25% porosity.

510-530 m **SANDSTONE** and **CONGLOMERATE**. **SANDSTONE**: generally as above, moderately siliceous, trace quartz growths and druse quartz. **CONGLOMERATE**: as above, various colored, light and dark, trace bimodal, questionable unimodal, lower angular fragments common, trace pyrite.

530-550 m **SANDSTONE**: increasing throughout, generally as above, very fine to medium grained clear and frosted quartz with minor grey to black and brown chert grains, occasional carbonaceous grains, subrounded to subangular, poor to medium sorted, slightly to moderately siliceous, trace quartz growths and druse quartz, questionable clay content and porosity estimated ~25%+, pyrite common throughout. **CHERT**: varicolored light and dark granules to pebbles and lower angular fragments floating in sand matrix, as above.

550-555 m **SANDSTONE**; #1) light grey and light grey brown, composed of clear and frosted quartz with grey to black and brown chert grains, very silty to fine grained, poor sorted, subrounded to subangular, argillaceous, kaolinitic, 70 to 80% matrix framework, occasional fair relief with good porosity 12 to 15%, questionable effective porosity, pyrite becoming common; #2) minor unconsolidated Sandstone, fine to lower medium grained quartz and chert grains as above, trace pyrite and chert granules to lower angular fragments as above light and dark varicolored, bimodal, questionable unimodal, questionable porosity, questionable cavings.

555-570 m **SANDSTONE**: tan color sandstone predominant throughout, silty to fine grained, very silty and argillaceous in part, composed of frosted quartz with minor dark lithic grains chert and occasional carbonaceous specs and flakes, pyrite common, 70 to 80% matrix

framework, tight. **CLAYSTONE**: inclusions or laminations, tan color, hard, dense, blocky, occasional very silty.

SLATER RIVER 746.0 m MD, (-549.9 m SS)

570-580 m **CLAYSTONE**: tan, light brown, firm, dolomitic, soft becoming indurated; minor medium to dark grey **SHALE** interlaminations, firm to soft, bentonitic. Sandstone and **SILTSTONE**: thin beds and stringers (30%), tan color, generally as above, becoming very fine grained and very silty throughout, very argillaceous, dolomitic, 70% matrix framework, tight.

580-600 m **SHALE** and **CLAYSTONE**: as above, increasing throughout. **SANDSTONE**: (30 to 40%), light grey speckled to salt and pepper, composed of clear and frosted quartz with minor dark lithics ...chert and occasional carbonaceous flakes, silty to very fine grained, scattered fine grains, poor sorted, sub to angular to subrounded, moderately calcareous, pyrite, tight; minor unconsolidated fine to lower medium quartz and chert grained throughout sample, ~20%, questionable cavings.

600-605 m **SHALE** and **CLAYSTONE**: predominant throughout, light to medium grey brown, soft, soluble, indurated in part; minor medium to dark grey brown **SHALE**, firm, bentonitic, flaky. **SANDSTONE**: light grey brown, silt to very fine grained, very silty and argillaceous, clear and frosted quartz with minor dark lithics ...chert grains and occasional carbonaceous specks and flakes, tight.

605-610 m **SHALE** and **CLAYSTONE**: as above.

610-625 m **SHALE** and **CLAYSTONE**: as above; minor grain bentonitic **SHALE**, soft to firm, flake. Sandstone and **SILTSTONE**: minor inclusions, laminations, grey brown, silty to very fine grained, argillaceous, clayey, bentonitic, slightly calcareous in part, trace carbonaceous specks and flakes.

625-650 m **SHALE** and **CLAYSTONE**: generally as above, light to medium grey, soft, flaky, water soluble; medium to dark grey **SHALE**, soft to firm, bentonitic; occasional grain color **SHALE** laminations, bentonitic; occasional Silty laminations, as above, very argillaceous, clayey, sandy in part.

650-655 m **SANDSTONE**: salt and pepper to grey speckled, silty to very fine grained, scattered fine grains, poor sorted, subrounded to subangular, slightly to moderately calcareous, very silty, firm to friable, fair relief with streaky porosity 6 to 9%, no HC shows, pyrite, pyritic burrows.

655-660 m **SHALE** with minor **SILTSTONE** stringers, laminations and inclusions. **SHALE**: light to medium grey brown, bentonitic, firm to soft, blocky, minor thin grey grain **SHALE** interlaminations or inclusions. **SILTSTONE**: (20 %+), light brown to brown, firm to hard, moderately calcareous, argillaceous, trace pyritic burrows.

660-665 m **SANDSTONE**: grey speckled to salt and pepper, composed of clear and frosted quartz with minor grey to black and brown chert grains, silty to fine grained, poor sorted, subrounded to subangular, friable, very silty, trace carbonaceous specks and flakes, trace green chlorite or glauconite mineral, trace pyrite and pyritic burrows, slightly siliceous with trace quartz growths, fair relief in part with estimated 9 to 12% porosity, **SHALE**: thin stringers or laminations, minor dense brown, dolomitic **CLAYSTONE** inclusions.

665-675 m **SANDSTONE**: as above. **SHALE**: as above, increasing thin interbeds.

675-680 m **CLAYSTONE**, **SHALE**: light to medium grey brown, very soft and soluble, flaky, bentonitic.

680-685 m **CLAYSTONE**, **SHALE**: as above. **SANDSTONE**: (30%), minor thin interbeds, very silty and argillaceous, silt to very fine grained, poorly sorted, no effective porosity.

685-695 m **SILTSTONE** and **SHALE**: as above. **SHALE**: light to medium grey brown soft, soluble, flaky, bentonitic, occasional thin silty and sandy inclusions, as above. **SILTSTONE**: light brown to brown, firm to hard, moderately calcareous, and argillaceous, trace pyritic burrows.

695-700 m **SANDSTONE**: (60%), grey speckled, clear and frosted quartz with dark lithic grains ...grey to black and brown chert grains and carbonaceous specs and flakes, silt to fine grained, poor sorted, subrounded to subangular, slightly argillaceous, moderately calcareous, good trace pyrite, green color mineral ...chlorite or glauconite. **SILTSTONE**: (30%) interbeds, tan to brown color, dense, blocky, dolomitic, argillaceous, carbonaceous specs, pyrite specs and disseminated pyrite; minor dense brown **CLAYSTONE**, dolomitic, hard. Pyrite common throughout, trace pyritic burrows. **SHALE**: thin beds or stringers, dark grey, firm, flaky, bentonitic; trace green **SHALE**, slightly waxy, flaky and bentonitic

700-710 m **SILTSTONE** and dense **CLAYSTONE**: increasingly common, as above. Minor Sandstone and **SHALE**: thin beds or stringers, as above.

710-725 m Interbedded **SHALE** and **SILTSTONE**. **SHALE**: light to medium grey brown, soft, soluble, clayey **SHALE** common, bentonitic; medium to dark grey color bentonitic **SHALE**, firm to soft, flaky. **SILTSTONE** beds: (30 to 40%), generally as above, pyrite common, pyritic burrows.

725-735 m **SHALE** and **CLAYSTONE**. as above. **SILTSTONE**: as above; minor dense dolomitic **CLAYSTONE** inclusions, tan to brown color, pyrite common throughout, pyrite specks and disseminated pyrite, pyritic burrows. **SANDSTONE**: stringers, laminations, grey speckled sand, very silty to very fine grained, poor sorted, subrounded, moderately calcareous, carbonaceous specks and flakes.

735-755 m **CLAYSTONE**: brown, subblocky, hard, and dense; minor **SHALE** laminations, medium to dark grey brown, firm, flaky, bentonitic. **SILTSTONE**: minor inclusions, pyritic. **SANDSTONE**: occasional inclusions or laminations grey speckled, very silty to very fine grained, poor sorted, argillaceous, slightly to moderately calcareous, tight. questionable amounts of soft soluble **CLAYSTONE**.

755-765 m **SHALE**, **CLAYSTONE**: increasing light to medium grey brown, soft, soluble; minor **SHALE**: medium to dark grey, firm to soft, bentonitic.

765-775 m **CLAYSTONE**, **SHALE**: as above. **SILTSTONE** and very silty Sandstone: occasional silty and sandy inclusions, laminations or stringers, grey, very silty to very fine grained, poorly sorted, subrounded, carbonaceous specs, moderately calcareous, tight.

775-785 m **CLAYSTONE**, **SHALE**: as above. **SILTSTONE** and very fine **SANDSTONE** interbeds: (40 to 50%) light grey and grey brown, very silty to very fine grained, poor sorted, argillaceous, bentonitic, slightly to moderately calcareous. Pyrite.

785-815 m **CLAYSTONE**: predominant throughout, brown, blocky, hard, dense, slightly dolomitic; minor **SHALE** and **CLAYSTONE** as above, soft, bentonite, clayey. **SILTSTONE** and **SANDSTONE**: thin beds, as above. Pyrite.

815-845 m **SHALE** and **CLAYSTONE** increasing throughout, generally as above. **CLAYSTONE**: light to medium grey brown, soft, water soluble, clayey with bentonitic; SHALE: minor medium to dark grey bentonitic **SHALE**, soft, flaky.

845-855 m **SHALE** and **CLAYSTONE**: as above. Minor dense brown **CLAYSTONE**, as above.

SLATER RIVER SHALE 853.0 m MD, (-656.9 m SS)

855-870 m **SHALE**: dark grey to dark grey brown, firm to soft, flaky, bentonitic.

BASAL SAND 864.0 m MD, (-667.9 m SS)

870-875 m **SANDSTONE**: very clean, clear quartz with minor white chert grains - tripolitic in part, unconsolidated in sample, very fine to predominant fine grained, occasional scattered medium grains, medium well sorted, subangular to subrounded, occasional well formed crystals, trace consolidated sand - friable with good to excellent relief and 25%+ intergranular porosity, no HC shows. **CHERT**: granules and very coarse grains, white, subrounded, minor tripolitic chert, trace oolites.

875-880 m **SANDSTONE**: conglomeritic. **SANDSTONE**: clear quartz with minor white chert grains, white tripolitic chert in part, unconsolidated sand, very friable, silt to medium grained, subrounded to subangular, poorly sorted, slight siliceous, druse quartz and well formed quartz crystal growths, excellent relief with excellent intergranular porosity, 25%+, trace pyrs, no HC shows. **CHERT**: increasing loose white to light grey chert granules and pebbles, minor lower angular fragments, tripolitic in part, trace leached and silicified carbonate granules and pebbles, trace druse quartz, trace pyrite, probable thin bimodal chert band.

880-909 m **SANDSTONE**: as above clear quartz with minor white chert grains, unconsolidated in sample, very friable, predominant very fine to fine grained, scattered medium grains, medium to well sorted, subrounded to subangular, 25%+ intergranular porosity.

DEVONIAN HUME 909.0 m MD, (-712.9 m SS)

909-911.5 m **LIMESTONE**: light to medium grey, grey brown, micritic, mudstone, aphanocrystalline, dense, argillaceous, trace calcite ...small blebs to inclusions, hairline fractures, tight. **SHALE**: thin stringers or laminations, dark grey, subfissile, micromicaceous, bentonitic

911.5-915 m **DOLOMITE**: calcareous, white to cream to light buff brown, very fine to medium crystalline, very clean, tight packed matrix, no HC shows.

MIDDLE HUME 917.0 m MD, (-720.9 m SS)

915-930 m **DOLOMITE**: calcareous, white to cream to light buff, microcrystalline to very fine crystalline, very clean, sparite, streaky porosity, minor intervals of thin laminae with pinpoint vuggy porosity ~3 to 5%, trace porosity in calcite filled vugs /w excellent rhomb crystal growths, estimated 1 to 3% intercrystalline porosity; minor dense aphanocrystalline interlaminations, no HC shows; minor dense and tight cryptocrystalline to microcrystalline interlaminations.

930-940 m **DOLOMITE**: cream to light tan, aphanocrystalline micritic, clean, dense, occasional microcrystalline to very fine interlaminations.

940-945 m **DOLOMITE**: as above, increasing crystalline, becoming very fine crystalline in part, clean, tight.

945-964 m **DOLOMITE**: cream to light tan color, increasing crystalline, microcrystalline to very fine crystalline, fine crystalline in part, clean, limy in part, 3% intercrystalline porosity with minor isolated pinpoint vuggy porosity at 3 to 5% porosity, occasional isolated vuggy sections with fine to coarse calcite crystal growths, no HC shows.

DEVONIAN - HEADLESS 960.5 m MD, (-764.4 m SS)

964-980 m **DOLOMITE**: dolomitic mudstone, tan, brown, aphanocrystalline, dense, argillaceous, occasional very fine crystalline dense packed matrix, tight throughout. **SHALE**: stringers, grey to grey green, calcareous, firm.

DEVONIAN-LANDRY 979.0 m MD, (-782.9 m SS)

980-995 m **DOLOMITE**: calcareous, white, cream, aphanocrystalline, dense hard, tight. **SHALE**: thin interbeds and stringers, light grey grain, calcareous, bentonitic.

995-1005 m **DOLOMITE**: white to light buff, cryptocrystalline to microcrystalline, dense, clean, and hard. **SHALE**: lam, inclusions, light grey grain to grey green, dolomitic to calcareous, firm, grading to very argillaceous mudstone.

1005-1014 m **DOLOMITE**: tan to brown, microcrystalline, dense, hard, slightly to moderately argillaceous, slightly silty; minor intervals with very fine crystalline and traces pinpoint porosity 1 to 3%, trace dead oil, trace stylolites; trace grey to medium grey dolomitic Mudstone interlaminations, argillaceous, microcrystalline. **SHALE**: thin beds, stringers and laminations, (30%), light to medium grey, grey green, calcareous, soft, flaky, and bentonitic.

BEAR ROCK 1014.0 m MD, (-817.9 m SS)

1014-1017 m BRECCIA: chert, white to cream to light buff to translucent, angular fragments, tripolitic in part. **DOLOMITE**: #1) white to light buff, very clean, microcrystalline to very fine crystalline, fine crystalline in parts, dolomitized biosparite, becoming silicified, vuggy with excellent porosity, trace dead oil specks, probable carbonate structure. #2) tan to light grey to grey, trace orchre, fine to medium crystalline, dense packed matrix. Trace stylolite.

1017-1025 m **DOLOMITE**: light to tan color, trace orchre, minor light grey, fine to coarse crystalline, dense, flat rhomb crystal faces common throughout, fair relief, estimated 6 to 9% intercrystalline and isolated vuggy porosity with excellent rhomb crystal growths, dolomitized calcite growths; minor dense packed interlaminations, tight. **CHERT**: trace angular Chert fragments, white, tripolitic in part.

1025-1035 m **DOLOMITE**: generally as above, minor dense packed interlaminations, as above. **CHERT**: increasing throughout, as above (20%), white to cream, angular fragments, tripolitic in part.

1035-1055 m **CHERT**: as above (20%) white to cream to occasional light grey and translucent, tripolitic in part, rare oolites. **DOLOMITE**: white to cream to tan color, very clean, fine to medium crystalline calcarenite or dolomitized biosparite, as above, flat rhomb crystal faces and growths common fine to coarse crystalline, fair relief with estimated 6 to 9% intercrystalline porosity with minor isolated pinpoint vuggy porosity, rare trace dead oil; dense packed interlaminae.

1055-1080 m **DOLOMITE**: generally as above, becoming tighter, very fine to medium crystalline calcarenite or dolomitized biosparite, minor dense cryptocrystalline to microcrystalline interlaminae, minor streaky porosity as above 3 to 5% intercrystalline with occasional isolated pinpoint vugs, generally dense packed matrix. **CHERT**: common, as above, (20 to 30%), Breccia? inclusions or laminae?

FORT NORMAN **1074.0 m MD, (-877.9 m SS)**

1080-1085 m **DOLOMITE**: cream to light tan, occasional light grey and light red orchre discoloration, increasing crystalline, fine to coarse crystalline, very clean grainstone, dense pack matrix, 0 to 3% intercrystalline porosity with occasional isolated vugs, dolomitized calcite crystal growths with excellent rhomb structure.

1085-1090 m **DOLOMITE**: as above, decreasing crystalline, very fine to medium crystalline, clean as above, microcrystalline interlaminations.

1090-1115 m **DOLOMITE** generally as above, interlaminations with changing crystalline, very fine to coarse crystalline with very fine to fine crystalline, occasional microcrystalline, dolomitized calcarenite with dense packed matrix, sandy constituents very fine to fine grained sand grains in matrix, rare trace clear quartz /well excellent crystal structure to crystal growths with Dolomite edges questionable fractures, occasional white to cream angular Chert fragments, tripolitic in part, 0 to 3% porosity with occasional isolated pinpoint vugs, no HC shows.

1115-1125 m **DOLOMITE**: cream to tan color, very fine to fine crystalline, occasional microcrystalline, dense pack matrix, clean, 0 to 3% porosity, as above.

1125-1140 m **DOLOMITE** light buff to tan color various crystalline interlamination, very fine to fine crystalline, fine to coarse crystalline, occasional microcrystalline, 0 to 3% porosity as above, trace vugs with crystal growths, dense pack matrix. **CHERT**: (~20%), white, light buff, white tripolitic, angular fragments

1140-1155 m **DOLOMITE** generally as above, minor **CHERT** as above. **SHALE**: thin beds or stringers, green, soft, bentonitic.

1155-1170 m **DOLOMITE**; cream to light buff, interlaminated very fine to coarse crystalline dolomitized calcarenite with 0 to 3% intercrystalline porosity with trace vugs, clean, dense packed matrix. **CHERT**: (~20%), light buff tan, white tripolitic, questionable void or fractures with traces well formed quartz growths and dolomitized calcite growths, no HC shows.

1170-1205 m **DOLOMITE**: white to cream, generally as above, varied crystalline, terrigenous ...sandy, dolomitized calcarenite, (V:Ts,D2-3), occasional scattered clear angular quartz grains, vugs or voids trace well formed hexagonal quartz crystal growths, and well formed dolomitized calcite rhombs, dense packed matrix with 0 to 3% intercrystalline porosity and isolated vugs; minor tight, microcrystalline interlaminations. **CHERT**: (~20% to Breccia intervals, questionable fracturing) white, buff, white tripolitic, clear angular quartz fragments.

1205-1210 m **DOLOMITE**: white to light buff, predominantly microcrystalline to very fine crystalline in part with micro-sucrossic texture, 0 to 3% intercrystalline porosity, dense, tight. **CHERT**: as above.

1210-1225 m **DOLOMITE**: light buff to tan color, becoming darker colored, fine to coarse crystalline, clean, dense packed matrix, 0 to 3% intercrystalline porosity with isolated vugs, trace well formed dolomitized calcite crystals. **CHERT**: (~20%), white to cream to light buff tan and grey, translucent, angular fragments, white tripolitic Chert common.

ORDOVICIAN TO FRANKLIN MOUNTAIN 1225.0 m MD, (-1028.0 m SS)

1225-1240 m **DOLOMITE**: white to cream to light buff, fine to coarse crystalline, clean dense pack matrix, as above with minor very fine to fine crystalline interlaminated with micro sucrossic texture in part, occasional dense microcrystalline, generally as above, 0 to 3% porosity with trace isolated vuggy and crystal growths. **CHERT**: (~20%), as above.

1240-1265 m **DOLOMITE**: white to light buff, predominantly very fine crystalline, micro sucrossic, occasionally fine crystalline in part and dense microcrystalline in part, clean, (V:D1-2), 0 to 3% intercrystalline porosity. **CHERT**: absent. **SHALE**: occasional thin green **SHALE** inclusions, or lam, waxy, bentonitic, soft and flaky in water, trace pyrite specks and small crystals.

1265-1280 m **DOLOMITE**: becoming darker color, tan to brown color interbeds with as above white to light buff Dolomite, microcrystalline to very fine crystalline, minor fine crystalline sections, slightly argillaceous, dense, 0 to 3% intercrystalline porosity.

1280-1290 m **DOLOMITE**: tan to dark brown, dark grey brown, microcrystalline very fine crystalline, fine crystalline in part, slightly to moderately argillaceous, minor shaly flakes, dense, tight. **SHALE**: thin laminations and inclusions, black, sub bitumen, bentonitic, firm to soft; minor medium grey green **SHALE**, moderately dolomitic or calcareous, slightly silty.

1290-1300 m **DOLOMITE**: white to light buff with tan to light brown interlaminations, very fine to fine crystalline, micro sucrossic texture, 0 to 3% porosity, minor dense microcrystalline interlaminations, minor argillaceous dolomite as above.

TOTAL DEPTH at 1300.0 m MD, (-1103.9 m SS) was reached on February 20th, 2011 at 06:45 hours.

RPS ENERGY

TERMS

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