Geological Report

on

COPRC Mirror Lake N-20

Unit:N Section:20, Grid: 65-00 126-45

Well Reached Total Depth on
Mar 20, 2013 @ 01:00

for

ConocoPhillips Canada Resources Corp.

Well License # : 470

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ConocoPhillips Canada Resources Co

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Black Gold Geotechnical Services Ltd.

Dave Lawrence

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The COPRC Mirror Lake N-20 well is a strat well that was drilled to thoroughly investigate and evaluate the Canol & Hare Indian & Bluefish formations for potiential hydrocarbon production in a future horizontal well drilling program. The entire shale section (Canol & Hare Indian & Bluefish) from the base of the Imperial formation to 15 meters into the Hume limestone platform was cored with wireline retrieveable cores. The well was also logged completely with a very extensive logging program by Schlumberger. Also the well was logged from surface to total depth with full gas chromatagraphy and a total gas analyzer. Mud samples were taken from various points while the well was drilled and will also be analyzed. While we were coring desorbtion tests were performed on site by corelab technicians. Full analysis of the gas & any fliud from the desorbtion tests and also a full analysis of the cores will also be completed at a later date by corelabs.

Well Summary

Storage Units: Metric

Well Information

Operator:	**ConocoPhillips Canada Resources Corp.**
Well Name:	**COPRC Mirror Lake N-20**
Location:	**Unit:N Section:20, Grid: 65-00 126-45**
UWI:	300N206500126450
Pool:	Undefined
Field:	Mirror Lake
State / Province:	Northwest Territories
Country:	Canada
License Number:	470
Well Status:	**Cased**

Surface Co-ordinates

Hole Type: Vertical **Fault Indicator:**

Latitude: 64 59' 46.8" N **Longitude:** 126 48' 14.6" W

UTM Northing: 7209651.62 **UTM Easting:** 603555.85

N / S :

E / W :

Int. Casing Co-ordinates

Latitude: **Longitude:**

N / S :

E / W :

Bottom Hole Co-ordinates

Latitude: **Longitude:**

N / S : 39.94 Meters North

E / W : 39.96 Meters East of surface location

Elevations

Reference: Ground

Ground Elevation:	281.30	**Kelly Bushing to Ground:**	5.20
Kelly Bushing Elevation:	286.50	**Cut (-):**	
Casing Flange Elevation:	281.63	**Fill (+):**	

Total Depth

	Measured Depth	True Vertical Depth
Total Depth Driller (Tally) :	2,146.00	2,144.50
Total Depth Driller (Strap or SLM):		
Total Depth Logger:	2,148.75	2,147.25

Miscellaneous Depths

Plugback Depth:	**Water Depth Reference:**
Sidetrack Depth:	**Water Depth:**

Well Summary

Drilling Contractor: Beaver Drilling Ltd. **Spud Date:** Feb 25, 2013 @ 17:00

Rig Release Date: Mar 25, 2013 @ 00:00 **Total Depth Date:** Mar 20, 2013 @ 01:00

Cores

#	Formation	Interval		Cut	Recovered	%
1	Imperial / Canol	1,891.50	1,919.00	27.50	27.50	100.00
2	Imperial / Canol	1,919.00	1,946.00	27.00	27.00	100.00
3	Canol	1,946.00	1,973.00	27.00	27.00	100.00

4	Canol	1,973.00	2,000.00	27.00	27.00	100.00
5	Canol	2,000.00	2,027.00	27.00	27.00	100.00
6	Canol	2,027.00	2,054.00	27.00	27.00	100.00
7	Canol	2,054.00	2,081.00	27.00	27.00	100.00
8	Canol / Hume	2,081.00	2,108.00	27.00	27.00	100.00

Casing Summary

Casing Type	Casing Size	Landed Depth	Hole Size
Surface	244.5	598.00	311.0
Production	177.8	2,146.00	222.0

Logging Summary

Company	Engineer	Total Depth (MD)	Logging tools
Schlumberger	Jeffrey Tatlock	601.00	ATI-DSI-GPIT-PPC
		2,146.00	RST-GR
			USIT-CBL
			ADT / HNGS / PPC / CMR+ / GR
			UBI / dual OBMI / GPIT /PPC / SSCAN / PPC / GR
			AIT/Lithoscanner/TLD/HGNS/GR/TLD2

Daily Drilling Summary

Storage Units: Metric

Date	Depth	Progress	Rotating Hours	Avg. P.R.	Daily Costs	Formation	Operational Status @ Report Time
Feb 25, 13	0.00		0.00	0.00		Surface	Rig to spud
Feb 26, 13	135.00	135.00	12.50	10.80		Little Bear	Drilling 311mm hole
Feb 27, 13	300.00	165.00	15.50	10.65		Slater River	Wiper trip/work tite hole
Feb 28, 13	368.00	68.00	5.00	13.60		Slater River	Drilling 311mm hole
Mar 01, 13	529.00	161.00	13.75	11.71		Slater River	Drilling 311mm hole
Mar 02, 13	601.00	72.00	7.75	9.29		Slater River	POOH to log
Mar 03, 13	601.00	0.00	0.00	0.00		Slater River	WOC
Mar 04, 13	601.00	0.00	0.00	0.00		Slater River	Pick up dir tools
Mar 05, 13	820.00	219.00	13.75	15.93		Slater River	Drilling 222mm hole
Mar 06, 13	1,145.00	325.00	19.50	16.67		Martin House	Drilling 222mm hole
Mar 07, 13	1,465.00	320.00	21.50	14.88		Imperial	Drilling 222mm hole
Mar 08, 13	1,775.00	310.00	20.75	14.94		Imperial	Drilling 222mm hole
Mar 09, 13	1,890.00	115.00	8.00	14.38		Imperial	Pick up core BHA
Mar 10, 13	1,919.00	29.00	2.50	11.60		Imperial	Wireline out / Core#1
Mar 11, 13	1,946.00	27.00	3.00	9.00		Canol	Wireline out / Core#2
Mar 12, 13	1,973.00	27.00	3.00	9.00		Canol	Recover Core#3
Mar 13, 13	2,000.00	27.00	3.75	7.20		Canol	Circ btms up
Mar 14, 13	2,027.00	27.00	3.50	7.71		Canol	Trip out & recover core#5
Mar 15, 13	2,027.00	0.00	0.00	0.00		Canol	RIH while drifting drillpipe
Mar 16, 13	2,054.00	27.00	5.00	5.40		Canol	Wireline out Core#6
Mar 17, 13	2,081.00	27.00	3.00	9.00		Canol	Wireline out Core#7
Mar 18, 13	2,108.00	27.00	3.75	7.20		Hume	Wireline out Core#8
Mar 19, 13	2,108.00	0.00	0.00	0.00		Hume	Pick up 10 drill collars
Mar 20, 13	2,146.00	38.00	12.25	3.10		Hume	POOH sideways to log
Mar 21, 13	2,146.00	0.00	0.00	0.00		Hume	Logging with Schlumberger
Mar 22, 13	2,146.00	0.00	0.00	0.00		Hume	Logging with Schlumberger
Mar 23, 13	2,146.00	0.00	0.00	0.00		Hume	Run 177.8mm csg
Mar 24, 13	2,146.00	0.00	0.00	0.00		Hume	Tear out rig

Accumulated Daily Costs:

Casing Data Summary

Storage Units: Metric

Casing Type: Surface

Casing Size:	244.5	**Hole Size:**	311.0
Casing Landed @:	598.00	**Total Joints:**	47
Casing Date:	Mar 2, 2013 @ 22:30	**Plug Down Date:**	Mar 3, 2013 @ 04:00

# of Joints / Length / O.D. / Weight:
1 guide shoe
1 float collar
1 jt casing
1float collar
46 jts of 244.5mm, 59.53 kg/m, J-55 casing

Cementing Details:
Cement casing with 35T (33.9m3) thixotropic D804A-P cement @ 1740 kg/m3 with 2@ CaCl2, .2% antifoam. Bumped plug and pressure tested casing to 11500 kpa. Recieved 10m3 good cement slurry returns @ surface. Annulus remained static after job complete.

Remarks:

Casing Type: Production

Casing Size:	177.8	**Hole Size:**	222.0
Casing Landed @:	2,146.00	**Total Joints:**	179
Casing Date:	Mar 23, 2013 @ 15:30	**Plug Down Date:**	Mar 23, 2013 @ 21:15

# of Joints / Length / O.D. / Weight:
1 float shoe
1 jt 177.8mm casing
1 float collar
178 jts of 177.8mm, 38.6kg/m, P110, LT&C casing

Cementing Details:
Cement casing as follows. Pump 4m3 preflush ahead, from 200-1600m 30m3 (27T) slurry @ 1400kg/m3 Hilite cement with 1.2% FLACB348, 0.3% retarder and 0.2% antifoam. From 1600-2146m 11.5m3 (12T) 1600kg/m3 slurry Class G cement with additives, displaced with 43m3 water.

Remarks:
Full circ thru job until last 10m3, cement top estimated @ 200m, Floats held pressure test casing @ 18200 kpa.

Bit Record Table (IADC Grading System)

Storage Units: Metric

**** For more detailed Bit Information refer to Bit Record ****

Bit #	Make	Type	Size	Depth In	Depth Out	Made	Hours	Avg. P.R.	I.A.D.C. Bit Condition								
									I	O	MDC	Loc	B	G	ODC	RP1	RP2
1A	Varel	HE04JMF	311.0	0.0	601.0	601.0	54.50	11.03	2	3	WT	H	E	3	ER	TD	
1	Reed	MSR616M	222.0	601.0	1,890.0	1,289.0	83.50	15.44	1	2	CT	H	X	I	NO	CP	
1C	NOV	PR513	222.0	1,890.0	2,027.0	137.0	16.25	8.43	1	1	BT	M	X	I	NO	DTF	
2C	NOV	CEPR513	222.0	2,027.0	2,108.0	81.0	11.75	6.89	2	2	CT	A	X	I	BT	FM	
1RR	Reed	MSR616M	222.0	2,108.0	2,146.0	38.0	12.25	3.10	1	3	WT	A	X	I	NO	TD	

Total Rotating Hours: 178.25

Core Report

Storage Units: Metric

Date: March 9, 2013
Core #: 1
Formations Cored: **Imperial / Canol**

Cored Interval
From: 1,891.50 **To:** 1,919.00
Cut: 27.50 **Recovered:** 27.50 100.00 %
Core Diameter: 89.0

Coring Company: Corion
Service Representative: R. Nichol, D. Zbitnoff, E. Chouckalis S.Gilburtson

Core Bit Information
Bit Make: NOV **Bit Type:** PR513
Bit Size (OD): 222.0 **Serial #:** E140308
Original Hole Size: 222.0

Remarks:

Detailed Core Descriptions

1,893.00 to 1,893.10 (0.10)	**Shale** medium gray, firm, subfissile, slightly micromicaceous, slightly silty, trace unidentifiable fossil casts (brachiopods?) trace dark carbonaceous matter, no dry fluorescence, very faint pale white yellow cloudy cut.
1,894.50 to 1,894.60 (0.10)	**Shale** as above, slightly darker, trace dark carbonaceous matter (plant rmns?), fluorescence as above.
1,896.00 to 1,896.10 (0.10)	**Shale** medium gray, firm, subfissile, slightly micromicaceous, slightly silty, trace unidentifiable fossil casts (brachiopods?) trace dark carbonaceous matter, fluorescence as above.
1,897.50 to 1,897.60 (0.10)	**Shale** medium gray, firm, subfissile, slightly micromicaceous, slightly silty, trace unidentifiable fossil casts (brachiopods?) trace dark carbonaceous matter, show as above.
1,899.00 to 1,899.10 (0.10)	**Shale** as above, grading to dark gray.
1,900.50 to 1,900.60 (0.10)	**Shale** dark gray, becoming carbonaceous, as above with abundant fossil casts as above & occasional carbonaceous matter as above, fluorescence as above.
1,902.00 to 1,902.10 (0.10)	**Shale** medium to dark gray, slightly micromicaceous, sub fissile, increasing silty? trace dark carbonaceous matter as above, show as above.
1,903.50 to 1,903.60 (0.10)	**Shale** dark gray, decreasing fossil casts, poor trace carbonaceous matter, show as above.

1,905.00 to 1,905.10 (0.10)	**Shale** dark gray, moderately firm, subfissile, slightly micromicaceous, slightly silty, poor trace dark carbonaceous matter, slight hydrocarbon odor, show as above.
1,906.50 to 1,906.60 (0.10)	**Shale** dark gray as above, abundant fossil casts (brachiopods?) as above with carbonaceous matter as above, no dry fluorescence, very faint pale white yellow cut.
1,908.00 to 1,908.10 (0.10)	**Shale** dark gray, moderately firm, subfissile, slightly micromicaceous, slightly silty, trace fossil casts, trace dark carbonaceous matter, show as above.
1,909.80 to 1,909.90 (0.10)	**Shale** as above
1,911.30 to 1,911.40 (0.10)	**Shale** dark gray, slightly micromicaceous, slightly silty, trace fossil & carbonaceous matter as above, fluorescence as above.
1,912.80 to 1,912.90 (0.10)	**Shale** dark gray, slightly micromicaceous, slightly silty, subfissile, moderately firm, no dry fluorescence, very faint light white yellow cut.
1,914.30 to 1,914.40 (0.10)	**Shale** dark gray, increasing micromicaceous, increasing silty, subfissile, moderately firm, no dry fluorescence, very faint light white yellow cut.
1,915.80 to 1,915.90 (0.10)	**Shale** as above, very contaminated with mud.
1,917.30 to 1,917.40 (0.10)	**Shale** as above

Core Report

Storage Units: Metric

Date: March 10, 2013
Core #: 2
Formations Cored: **Imperial / Canol**

Cored Interval
From: 1,919.00 **To:** 1,946.00
Cut: 27.00 **Recovered:** 27.00 100.00 %
Core Diameter: 89.0

Coring Company: Corion
Service Representative: R. Nichol, D. Zbitnoff, E. Chouckalis S.Gilburtson

Core Bit Information
Bit Make: NOV **Bit Type:** PR513
Bit Size (OD): 222.0 **Serial #:** E140308
Original Hole Size: 222.0

Remarks:

Detailed Core Descriptions

1,920.50 to 1,920.50 (0.00)	**Shale** dark gray, sub fissile, slightly micromicaceous, silty, trace disseminated pyrite, trace very pale white slow cloudy fluorescence.
1,922.00 to 1,922.10 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, silty, trace dark carbonaceous specks (matter), show as above.
1,923.50 to 1,923.60 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, becoming firm (slightly siliceous?), show as above.
1,925.00 to 1,925.10 (0.10)	**Shale** dark gray, sub fissile, moderately firm, slightly micromicaceous, trace silty, minor dark carbonaceous matter, trace unidentifiable fossil casts, trace very pale white slow cloudy fluorescence.
1,926.50 to 1,926.60 (0.10)	**Shale** dark gray, sub fissile, moderately firm, slightly micromicaceous, trace silty, minor dark carbonaceous matter, trace pyrite, show as above.
1,928.00 to 1,928.10 (0.10)	**Shale** dark gray, sub fissile, moderately firm, slightly micromicaceous, trace silty, increasing dark carbonaceous matter, abundant spong spicules, trace plant rmns? increasing pale white cloudy fluorescence.
1,929.50 to 1,929.60 (0.10)	**Shale** darker gray, sub fissile, moderately firm, slightly micromicaceous, slightly silty, trace dark carbonaceous matter, trace spicules, slow pale fluorescence cut as above.

Upper Canol: 1,931.00 MD, 1,931.00 TVD, -1,644.50 SSL

1,931.00 to 1,931.10 (0.10)	**Shale** slightly darker gray, sub fissile, slightly micromicaceous, slightly silty, poor trace spicules, trace black carbonaceous matter, no dry fluorescence, slow very faint white cloudy cut.
1,932.50 to 1,932.60 (0.10)	**Shale** very dark gray, sub fissile, slightly micromicaceous, slightly silty, soft to moderately firm, trace black carbonaceous matter, show as above.
1,934.00 to 1,934.10 (0.10)	**Shale** very dark gray to black, sub fissile, slightly micromicaceous, slightly silty, soft to moderately firm, trace black carbonaceous matter, show as above.
1,935.50 to 1,935.60 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, soft to moderately firm, trace black carbonaceous matter, occasional spicules, show as above.
1,937.00 to 1,937.10 (0.10)	**Shale** dark gray to dark gray brown, sub fissile, slightly silty, slightly micromicaceous, very abundant spicules, trace dark carbonaceous matter (plant rmns), show as above.
1,938.50 to 1,938.60 (0.10)	**Shale** dark gray to dark gray brown, sub fissile, pyritic, slightly silty, slightly micromicaceous, very abundant spicules, trace dark carbonaceous matter (plant rmns), fossil occasionally infilled with pyrite, show as above.
1,940.00 to 1,940.10 (0.10)	**Shale** dark gray to dark gray brown, sub fissile, slightly silty, slightly micromicaceous, trace pyritic, poor trace spicules, show as above.
1,941.50 to 1,941.60 (0.10)	**Shale** dark gray, sub fissile, slightly silty, slightly micromicaceous, trace pyritic, trace dark carbonaceous matter (plant rmns), trace spicules as above, show as above.
1,943.00 to 1,943.10 (0.10)	**Shale** dark gray, sub fissile, slightly silty, slightly micromicaceous, trace pyritic, trace dark carbonaceous matter (plant rmns), no dry fluorescence, slow very pale white cloudy cut.
1,944.50 to 1,944.60 (0.10)	**Shale** dark gray, occasionally grades to black, sub fissile, soft to moderately firm, slightly silty, slightly micromicaceous, trace pyritic, trace dark carbonaceous matter (plant rmns), show as above.
1,945.90 to 1,946.00 (0.10)	**Shale** as above with abundant fossil casts (pellets or oolites) infilled with pyrite, no dry fluorescence, pale white streaming cut.

Core Report

Storage Units: Metric

Date: March 11, 2013
Core #: 3
Formations Cored: **Canol**

Cored Interval
From: 1,946.00 **To:** 1,973.00
Cut: 27.00 **Recovered:** 27.00 100.00 %
Core Diameter: 89.0

Coring Company: Corion
Service Representative: R. Nichol, D. Zbitnoff, E. Chouckalis S.Gilburtson

Core Bit Information
Bit Make: NOV **Bit Type:** PR513
Bit Size (OD): 222.0 **Serial #:** E140308
Original Hole Size: 222.0

Remarks:

Detailed Core Descriptions

1,947.50 to 1,947.60 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, trace minor carbonaceous matter (plant rms?), no dry fluorescence, faint to no show.
1,949.00 to 1,949.20 (0.20)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, trace minor carbonaceous matter (plant rms?), no dry fluorescence, very faint to no show.
1,950.50 to 1,950.60 (0.10)	**Shale** as above with fossil casts (pellets?) infilled with pyrite.
1,952.00 to 1,952.10 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, trace minor carbonaceous matter (plant rms?), no dry fluorescence, predominately no show.
1,953.50 to 1,953.60 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, moderately firm, trace minor carbonaceous matter (plant rms?), no show
1,955.00 to 1,955.10 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, trace minor carbonaceous matter (plant rms?), faint to no show.
1,956.50 to 1,956.60 (0.10)	**Shale** dark gray to black, sub fissile, trace micromicaceous, carbonaceous, sub fissile, moderately firm. Can't do show due to mud contamination.
1,958.00 to 1,958.10 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, moderately firm, trace minor carbonaceous matter (plant rms?), no dry fluorescence, faint to no show.
1,959.50 to 1,959.60 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, trace minor carbonaceous matter (plant rms?), show as above.

1,961.00 to 1,961.10 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, trace minor carbonaceous matter (plant rms?), show as above.
1,962.50 to 1,962.60 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, trace minor carbonaceous matter (plant rms?), show as above.
1,964.00 to 1,964.10 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, slightly silty, abundant disseminated pyrite, trace minor carbonaceous matter (plant rms?), show as above.
1,965.50 to 1,965.60 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, moderately firm, slightly silty, trace minor carbonaceous matter (plant rms?), show as above.
1,967.00 to 1,967.10 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, moderately firm, slightly siliceous, slightly silty, trace minor carbonaceous matter (plant rms?), show as above. Core broken to rubble in part
1,968.50 to 1,968.60 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, moderately firm, slightly siliceous, slightly silty, trace minor carbonaceous matter, show as above.
1,970.00 to 1,970.10 (0.10)	**Shale** dark gray, sub fissile, slightly micromicaceous, moderately firm to hard, carbonaceous, slightly siliceous, slightly silty, no dry fluorescence, faint pale white cloudy cut.
1,971.50 to 1,971.60 (0.10)	**Shale** as above.
1,972.90 to 1,973.00 (0.10)	**Shale** as above, disseminated pyrite.

Core Report

Storage Units: Metric

Date: March 12, 2013
Core #: 4
Formations Cored: **Canol**

Cored Interval
From: 1,973.00 **To:** 2,000.00
Cut: 27.00 **Recovered:** 27.00 100.00 %
Core Diameter: 89.0

Coring Company: Corion
Service Representative: R. Nichol, D. Zbitnoff, E. Chouckalis S.Gilburtson

Core Bit Information
Bit Make: NOV **Bit Type:** PR513
Bit Size (OD): 222.0 **Serial #:** E140308
Original Hole Size: 222.0

Remarks:

Detailed Core Descriptions

1,974.50 to 1,974.60 (0.10)	**Shale** dark gray to black, slightly micromicaceous, firm to hard, siliceous? carbonaceous, trace silty, trace disseminated pyrite, show as above.
1,976.00 to 1,976.10 (0.10)	**Shale** as above, abundant carbonaceous matter.
1,977.50 to 1,977.60 (0.10)	**Shale** dark gray to blocky, slightly micromicaceous, firm to hard (siliceous), carbonaceous with abundant carbonaceous matter.
1,979.00 to 1,979.10 (0.10)	**Shale** as above with abundant pyrite, trace unidentifiable fossil casts (plant rmns)
1,980.50 to 1,980.60 (0.10)	**Shale** as above
1,982.00 to 1,982.10 (0.10)	**Shale** dark gray to black, fissile, splintery, slightly micromicaceous, firm to hard (siliceous), trace pyritic, no dry fluorescence, faint pale slow white cloudy cut.
1,983.50 to 1,983.60 (0.10)	**Shale** dark gray to black, fissile, splintery, slightly micromicaceous, firm to hard (siliceous), trace pyritic, no dry fluorescence, faint pale slow white cloudy cut.
1,985.00 to 1,985.10 (0.10)	**Shale** as above, occasional carbonaceous matter, trace micro fractures infilled with carbonaceous matter & calcite & trace pyrite, shows as above.
1,986.50 to 1,986.60 (0.10)	**Shale** dark gray, splintery, slightly micromicaceous, firm to hard (siliceous), trace pyritic, no dry fluorescence, faint pale slow white cloudy cut.
1,988.00 to 1,988.10 (0.10)	**Shale** dark gray, firm, siliceous, slightly micromicaceous, trace pyrite, show as above.

1,989.50 to 1,989.60 (0.10)	**Shale** dark gray, firm to hard, siliceous, slightly micromicaceous, occasional carbonaceous matter, show as above.
1,991.00 to 1,991.10 (0.10)	**Shale** dark gray, hard, siliceous? slightly micromicaceous, occasional carbonaceous matter (fossil casts & plant rmns?) show as above.
1,992.50 to 1,992.60 (0.10)	**Shale** as above
1,994.00 to 1,994.10 (0.10)	**Shale** dark gray, hard, siliceous? slightly micromicaceous, trace pyrite, occasional carbonaceous matter, show as above.
1,995.50 to 1,995.60 (0.10)	**Shale** dark gray, hard, siliceous? slightly micromicaceous, trace pyrite, occasional carbonaceous matter, show as above.
1,997.00 to 1,997.10 (0.10)	**Shale** dark gray, hard, siliceous? slightly micromicaceous, trace pyrite, occasional carbonaceous matter, very thin pyritic laminae, show as above.
1,998.50 to 1,998.60 (0.10)	**Shale** dark gray, hard, siliceous? slightly micromicaceous, trace pyrite, occasional carbonaceous matter, show as above.
1,999.90 to 2,000.00 (0.10)	**Shale** dark gray, hard, siliceous? slightly micromicaceous, trace pyrite, occasional carbonaceous matter, show as above.

Core Report

Storage Units: Metric

Date: March 13, 2013
Core #: 5
Formations Cored: **Canol**

Cored Interval
From: 2,000.00 **To:** 2,027.00
Cut: 27.00 **Recovered:** 27.00 100.00 %
Core Diameter: 89.0

Coring Company: Corion
Service Representative: R. Nichol, D. Zbitnoff, E. Chouckalis S.Gilburtson

Core Bit Information
Bit Make: NOV **Bit Type:** PR513
Bit Size (OD): 222.0 **Serial #:** E140308
Original Hole Size: 222.0

Remarks: Core# 5: No recovery at surface. Upper shoe backed off from bottom of inner tubes and core emptied out of tubes. Schlumberger wireline lost 200 lbs @ 1500m, then they lost 1200 lbs of weight @ 110 meters. Started recovering core from drill pipe after 3 stands. Core was mixed up in the first four tubes due to unorthodox lay down procedures (tubes & core possibly reversed). Tubes 5-10 were relatively in order, tubes 11-13 are mixed up as they were recovered from mouse hole after the core fell out of the drill pipe while in the mouse hole. The core was jammed in the pipe and we had to hit the pipe with a sledge hammer to free the core and the thread protector we had screwed on the bottom of the drill pipe to catch the core failed. We then pulled the mouse hole out and layed it down on the pipe racks and had to dump the core out on the ground while raising one end of the mouse hole and then we put the core into the tubes as best we could. Tubes 14-19 were recovered from the core barrels at surface on the drill floor after the bit was removed and are relatively in order. Estimate almost full recovery.

Detailed Core Descriptions

2,015.00 to 2,015.10 (0.10)	**Shale** dark gray, hard, siliceous? slightly micromicaceous, pyritic with thin laminated pyrite and occasional pyrite nodules, no dry fluorescence, very pale slow cloudy white cut fluorescence.
2,026.90 to 2,027.00 (0.10)	**Shale** dark gray, hard, siliceous? slightly micromicaceous, becoming very slightly calcareous, disseminated pyrite, occasional carbonaceous matter, no dry fluorescence, very pale white slow cloudy cut.

Core Report

Storage Units: Metric

Date: March 15, 2013
Core #: 6
Formations Cored: **Canol**

Cored Interval
From: 2,027.00 **To:** 2,054.00
Cut: 27.00 **Recovered:** 27.00 100.00 %
Core Diameter: 89.0

Coring Company: Corion
Service Representative: R. Nichol, D. Zbitnoff, E. Chouckalis S.Gilburtson

Core Bit Information
Bit Make: NOV **Bit Type:** CEPR5135
Bit Size (OD): 222.0 **Serial #:** A1/E140305
Original Hole Size: 222.0

Remarks:

Detailed Core Descriptions

2,028.50 to 2,028.60 (0.10)	**Shale** dark gray, firm, slightly siliceous, slightly micromicaceous, disseminated pyrite, occasional carbonaceous matter, no dry fluorescence, very pale white slow cloudy cut.
2,030.00 to 2,030.10 (0.10)	**Shale** dark gray to black, slightly micromicaceous, firm becoming brittle, siliceous? very slightly calcareous, carbonaceous matter (plant rmns?), no dry fluorescence, very faint slow white cloudy cut.
2,031.50 to 2,031.60 (0.10)	**Shale** dark gray to black, slightly micromicaceous, firm becoming brittle, siliceous? very slightly calcareous, carbonaceous matter (plant rmns?), no dry fluorescence, very faint slow white cloudy cut.
2,033.00 to 2,033.10 (0.10)	**Shale** dark gray to black, slightly micromicaceous, firm becoming brittle, siliceous? very slightly calcareous, carbonaceous matter (plant rmns?), no dry fluorescence, very faint slow white cloudy cut.
2,034.50 to 2,034.60 (0.10)	**Shale** dark gray to black, slightly micromicaceous, carbonaceous, firm, brittle, siliceous? very slightly calcareous, carbonaceous matter (plant rmns?), no dry fluorescence, very faint slow white cloudy cut.
2,036.00 to 2,036.10 (0.10)	**Shale** dark gray to black, slightly micromicaceous, carbonaceous, firm, brittle, siliceous? very slightly calcareous, carbonaceous matter (plant rmns?), no dry fluorescence, very faint slow white cloudy cut.
2,037.50 to 2,037.60 (0.10)	**Shale** dark gray to black, slightly micromicaceous, carbonaceous, firm, brittle, siliceous? very slightly calcareous, carbonaceous matter (plant rmns?), no dry fluorescence, very faint slow white cloudy cut.

2,039.00 to 2,039.10 (0.10)	**Shale** as above
2,040.50 to 2,040.60 (0.10)	**Shale** black, firm, brittle, splintery, slightly siliceous, slightly micromicaceous, carbonaceous, trace pyritic, mud invasion along shale laminations, hydrocarbon odor? shows as above.
2,042.00 to 2,042.10 (0.10)	**Shale** black, firm, brittle, splintery, slightly siliceous, slightly micromicaceous, carbonaceous, trace pyritic, mud invasion along shale laminations, hydrocarbon odor? shows as above.
2,043.50 to 2,043.60 (0.10)	**Shale** dark gray to black, firm, brittle, splintery, slightly siliceous?, slightly micromicaceous, carbonaceous, slightly calcareous, trace pyritic, shows as above.
2,045.00 to 2,045.10 (0.10)	**Shale** dark gray to black, firm, brittle, splintery, slightly siliceous?, slightly micromicaceous, carbonaceous, increasing calcareous, trace pyritic, shows as above.
2,046.50 to 2,046.60 (0.10)	**Shale** dark gray to black, firm, brittle, splintery, slightly siliceous?, slightly micromicaceous, carbonaceous, calcareous, trace pyritic, shows as above.
2,048.00 to 2,048.10 (0.10)	**Shale** dark gray to black, firm, brittle, splintery, slightly siliceous?, slightly micromicaceous, carbonaceous, calcareous, trace pyritic, dark carbonaceous matter (plant rmns?), shows as above.
2,049.50 to 2,049.60 (0.10)	**Shale** dark gray to black, firm, brittle, splintery, slightly siliceous?, slightly micromicaceous, carbonaceous, calcareous, becoming silty, dark carbonaceous matter (plant rmns?), shows as above.
2,051.00 to 2,051.10 (0.10)	**Shale** dark gray to black, firm, brittle, splintery, slightly siliceous?, slightly micromicaceous, carbonaceous, very slightly calcareous, trace pyritic, dark carbonaceous matter (plant rmns?), faint shows as above.
2,052.50 to 2,052.60 (0.10)	**Shale** very dark gray, firm, brittle, siliceous? slightly micromicaceous, slightly silty, trace calcareous, faint show as above.
2,053.90 to 2,054.00 (0.10)	**Shale** very dark gray, firm, brittle, slightly siliceous?, slightly micromicaceous, carbonaceous, trace pyritic, trace dark carbonaceous matter (plant rmns?), shows as above.

Core Report

Date: March 16, 2013
Core #: 7
Formations Cored: **Canol**

Cored Interval
From: 2,054.00 **To:** 2,081.00
Cut: 27.00 **Recovered:** 27.00 100.00 %
Core Diameter: 89.0

Coring Company: Corion
Service Representative: R. Nichol, D. Zbitnoff, E. Chouckalis S.Gilburtson

Core Bit Information
Bit Make: NOV **Bit Type:** CEPR5135
Bit Size (OD): 222.0 **Serial #:** A1E140305
Original Hole Size: 222.0

Remarks:

Detailed Core Descriptions

2,055.50 to 2,055.60 (0.10)	**Shale** very dark gray to black, firm, brittle, slightly siliceous?, slightly micromicaceous, carbonaceous, trace dark carbonaceous matter (plant rmns?), shows as above
2,057.00 to 2,057.10 (0.10)	**Shale** very dark gray to black, firm, brittle, siliceous?, slightly micromicaceous, carbonaceous, trace disseminated pyrite, trace dark carbonaceous matter (plant rmns?), shows as above
2,058.50 to 2,058.60 (0.10)	**Shale** very dark gray to black, firm, brittle, slightly siliceous?, carbonaceous, trace dark carbonaceous matter (plant rmns?), shows as above
2,060.00 to 2,060.10 (0.10)	**Shale** very dark gray to black, firm, brittle, slightly siliceous?, slightly micromicaceous, trace pyrite, carbonaceous, trace dark carbonaceous matter (plant rmns?), shows as above
2,061.50 to 2,061.60 (0.10)	**Shale** very dark gray to black, firm, brittle, slightly siliceous?, slightly micromicaceous, carbonaceous, trace dark carbonaceous matter (plant rmns?), shows as above
2,063.00 to 2,063.10 (0.10)	**Shale** very dark gray to black, firm, brittle, slightly siliceous?, slightly micromicaceous, carbonaceous, trace dark carbonaceous matter (plant rmns?), shows as above
2,064.50 to 2,064.60 (0.10)	**Shale** very dark gray to black, firm, brittle, slightly siliceous?, slightly micromicaceous, disseminated pyrite, carbonaceous, trace dark carbonaceous matter (plant rmns?), no dry fluorescence, faint slow pale white cloudy cut.

2,066.00 to 2,066.10 (0.10)	**Shale** very dark gray to black, firm, brittle, slightly siliceous?, slightly micromicaceous, disseminated pyrite, carbonaceous, trace dark carbonaceous matter (plant rmns?), no dry fluorescence, faint slow pale white cloudy cut.
2,067.50 to 2,067.60 (0.10)	**Shale** very dark gray to black, firm, brittle, slightly siliceous?, slightly micromicaceous, disseminated pyrite, carbonaceous, trace dark carbonaceous matter (plant rmns?), show as above.
2,069.00 to 2,069.10 (0.10)	**Shale** very dark gray to black, firm, brittle, slightly siliceous?, slightly micromicaceous, becoming slightly calcareous, disseminated pyrite, carbonaceous, trace dark carbonaceous matter (plant rmns?), show as above.
2,070.50 to 2,070.60 (0.10)	**Shale** very dark gray, firm, splintery, brittle, siliceous? very slightly micromicaceous, carbonaceous, show as above.
2,072.00 to 2,072.10 (0.10)	**Shale** very dark gray, firm, splintery, brittle, siliceous? very slightly micromicaceous, carbonaceous, slightly silty, show as above.
2,073.50 to 2,073.60 (0.10)	**Shale** very dark gray, firm, splintery, brittle, siliceous? very slightly micromicaceous, carbonaceous, trace pyrite, slightly silty, show as above.
2,075.00 to 2,075.10 (0.10)	**Shale** very dark gray, firm, splintery, brittle, siliceous? very slightly micromicaceous, carbonaceous, slightly silty, show as above.
2,076.50 to 2,076.60 (0.10)	**Shale** very dark gray, firm, splintery, brittle, siliceous? very slightly micromicaceous, carbonaceous, show as above.
2,078.00 to 2,078.10 (0.10)	**Shale** very dark gray, firm, splintery, brittle, siliceous? very slightly micromicaceous, dark carbonaceous matter (plant rmns?), slightly silty, show as above.
2,079.50 to 2,079.60 (0.10)	**Shale** very dark gray, firm, splintery, brittle, siliceous? very slightly micromicaceous, very abundant spotted (pellets?) dark carbonaceous matter (grades to bitumen?), show as above but slightly brighter.
2,080.90 to 2,081.00 (0.10)	**Shale** as above

Core Report

Date: March 17, 2013
Core #: 8
Formations Cored: **Canol / Hume**

Cored Interval
From: 2,081.00 **To:** 2,108.00
Cut: 27.00 **Recovered:** 27.00 100.00 %
Core Diameter: 89.0

Coring Company: Corion
Service Representative: R. Nichol, D. Zbitnoff, E. Chouckalis S.Gilburtson

Core Bit Information
Bit Make: NOV **Bit Type:** CEPR5135
Bit Size (OD): 222.0 **Serial #:** A1E140305
Original Hole Size: 222.0

Remarks:

Detailed Core Descriptions

2,082.50 to 2,082.60 (0.10) **Shale**
very dark gray, becoming less brittle, slightly micromicaceous, carbonaceous, slightly silty, dark carbonaceous matter, trace unidentifiable fossil casts, shows as above.

Bluefish: 2,084.00 MD, 2,084.00 TVD, -1,797.50 SSL

2,084.00 to 2,084.10 (0.10) **Shale**
very dark gray, moderately brittle, platy, firm, slightly siliceous, slightly micromicaceous, abundant rounded carbonaceous spots, shows as above.

2,085.50 to 2,085.60 (0.10) **Shale**
as above with disseminated pyrite.

2,087.00 to 2,087.10 (0.10) **Shale**
very dark gray, platy, sub fissile, slightly micromicaceous, carbonaceous, very slightly calcareous, show as above.

2,088.50 to 2,088.60 (0.10) **Shale**
dark gray, platy, fissile, siliceous, increasing calcareous, carbonaceous, abundant fossil casts infilled with pyrite, carbonaceous matter as above, show as above.

2,090.00 to 2,090.10 (0.10) **Shale**
as above, increasing calcareous.

2,091.50 to 2,091.60 (0.10) **Shale**
very dark gray, moderately brittle, platy, firm, calcareous, slightly siliceous, slightly micromicaceous, abundant fossil casts occasionally infilled with pyrite, carbonaceous matter (plant & fossil remains), no dry fluorescence, very pale faint white cloudy cut.

2,093.00 to 2,093.10 (0.10) **Shale**
as above, very calcareous.

2,094.50 to 2,094.60 (0.10)	**Limestone** light brown, fragal wackestone, recrystallized in part fine to medium crystalline, slightly argillaceous, unidentifiable fossil casts (coral) infilled with cxln frosted calcite, dense, no shows.
2,096.00 to 2,096.10 (0.10)	**Limestone** light brown, floatstone, micrite matrix, recrystallized in part fine to medium crystalline, slightly argillaceous, amphipora, unidentifiable fossil casts (coral) infilled with cxln frosted calcite, slightly shaly in part, dense, no shows.
2,097.50 to 2,097.60 (0.10)	**Limestone** as above
2,099.00 to 2,099.10 (0.10)	**Limestone** light brown, mudstone to wackestone, slightly argillaceous, unidentifiable fossil shadow, dense, no shows.
2,100.50 to 2,100.60 (0.10)	**Limestone** brown, floatstone? as above, shaly, (mud comtaminated)
2,102.00 to 2,102.10 (0.10)	**Limestone** light brown, wackestone? unidentifiable fossil shadow, slightly argillaceous, dense, no shows.
2,103.50 to 2,103.60 (0.10)	**Limestone** brown, wackestone, occasional unidentifiable fossil fragments, gastropods? unidentifiable coral casts infilled with calcite, slightly argillaceous, dense, no visible shows.
2,105.00 to 2,105.10 (0.10)	**Limestone** as above
2,106.50 to 2,106.60 (0.10)	**Limestone** brown, mudstone to wackestone, occasionally recrystallized fine crystalline, minor unidentifiable fossil shadow, dense, no shows.
2,107.90 to 2,108.00 (0.10)	**Limestone** as above

Wireline Logging Summary

Storage Units: Metric

Logging Suite Number: 1
Wireline Logging Company: Schlumberger
District: Grande Prairie
Witness: Dave Lawrence

Engineer: Jeffrey Tatlock
Unit Number: 2187

Was Pressure Control Equipment Utilized: No
Was the Logging Job Mechanically Assisted: No

Maximum Deviation: 1.300 º
Hole Size: 311.0

Total Lost Time: 0.00
Loggers' Total Down Time: 0.00
Total Job Time (From Rig up to Rig down):

	Measured Depth	True Vertical Depth
Casing Depth Driller	20.00	0.00
Casing Depth Logger	20.00	0.00
Total Depth Driller (Tally)	601.00	601.00
Total Depth Driller (Strap or SLM)		

General Remarks: Original logging string split into 2 logging runs. 1st Run was AIT-DSI-PPC-GPIT. Run 2 cancelled due to hole conditions.

Logging Run #: 1
Date: Mar 2, 2013

Drilling Fluid Data

Drilling Fluid Type: Gel Chem
Fluid Density: 1100.0 **Viscosity:** 60 **pH:** 9.5 **Fluid Loss:** 8.0

Mud Resistivity (Rm): 4.190 @ 0.0 º
Mud Resistivity (Rm) @ BHT: 1.820 @ 28.0 º
Mud Filtrate Resistivity (Rmf): 3.140 @ 0.0 º
Mud Cake Resistivity (Rmc): 4.650 @ 0.0 º

Maximum Temperature: 28.1 º
Source (Rmf): Active tank
Source (Rmc): Active Tank

Logging Run Information

Date on Bottom: Mar 2, 2013
Total Depth Logger: 602.00 (MD) 602.00 (TVD)

Logging Tools: ATI-DSI-GPIT-PPC

Remarks: Cancelled Run#2 over hole concerns on Conoco orders.

Hole Conditions: Wiper trip to collars, hit 1 bridge @ 469m, Schlumberger pulled over 300 lbs @ 204 meters

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Wireline Logging Summary

Storage Units: Metric

Logging Suite Number: 2
Wireline Logging Company: Schlumberger
District: Grande Prairie
Witness: Dave Lawrence

Engineer: Jeffrey Tatlock
Unit Number: 2187

Was Pressure Control Equipment Utilized: No
Was the Logging Job Mechanically Assisted: No

Maximum Deviation: 6.500 °
Hole Size: 222.0

Total Lost Time: 5.43
Loggers' Total Down Time: 0.00
Total Job Time (From Rig up to Rig down): 70.50

	Measured Depth	True Vertical Depth
Casing Depth Driller	598.00	598.00
Casing Depth Logger	598.00	598.00
Total Depth Driller (Tally)	2,146.00	2,146.00
Total Depth Driller (Strap or SLM)		

General Remarks:

Logging Run #: 1
Date: Mar 20, 2013

Drilling Fluid Data

Drilling Fluid Type: Invert (Versaclean)
Fluid Density: 990.0 **Viscosity:** 88 **pH:** **Fluid Loss:**

Mud Resistivity (Rm): @ °
Mud Resistivity (Rm) @ BHT: @ °
Mud Filtrate Resistivity (Rmf): @ °
Mud Cake Resistivity (Rmc): @ °

Maximum Temperature: 77.3 °
Source (Rmf):
Source (Rmc):

Logging Run Information

Date on Bottom: Mar 20, 2013
Total Depth Logger: 2,148.75 (MD) 2,148.75 (TVD)

Logging Tools: AIT/Lithoscanner/TLD/HGNS/GR/TLD2

Remarks:

Hole Conditions: Good, 5 stand wiper trip after TD.

Logging Run #: 2
Date: Mar 21, 2013

Drilling Fluid Data

Drilling Fluid Type: Versaclean
Fluid Density: 990.0 **Viscosity:** 88 **pH:** **Fluid Loss:**

Mud Resistivity (Rm): @ º
Mud Resistivity (Rm) @ BHT: @ º **Maximum Temperature:** 77.3 º
Mud Filtrate Resistivity (Rmf): @ º **Source (Rmf):**
Mud Cake Resistivity (Rmc): @ º **Source (Rmc):**

Logging Run Information

Date on Bottom: Mar 21, 2013
Total Depth Logger: 2,148.00 (MD) 2,148.00 (TVD)

Logging Tools: UBI / dual OBMI / GPIT /PPC / SSCAN / PPC / GR

Remarks: Had trouble with the UBI on Run#2 and had to make an extra run with another UBI tool.

Hole Conditions: Good

Logging Run #: 3
Date: Mar 22, 2013

Drilling Fluid Data

Drilling Fluid Type: Versaclean
Fluid Density: 990.0 **Viscosity:** 88 **pH:** **Fluid Loss:**

Mud Resistivity (Rm): @ º
Mud Resistivity (Rm) @ BHT: @ º **Maximum Temperature:** 77.0 º
Mud Filtrate Resistivity (Rmf): @ º **Source (Rmf):**
Mud Cake Resistivity (Rmc): @ º **Source (Rmc):**

Logging Run Information

Date on Bottom: Mar 22, 2013
Total Depth Logger: 2,148.00 (MD) 2,148.00 (TVD)

Logging Tools: ADT / HNGS / PPC / CMR+ / GR

Remarks:

Hole Conditions: Good

Logging Run #: 4
Date: Mar 22, 2013

Drilling Fluid Data

Drilling Fluid Type: Versaclean
Fluid Density: 990.0 **Viscosity:** 88 **pH:** **Fluid Loss:**

Mud Resistivity (Rm): @ º
Mud Resistivity (Rm) @ BHT: @ º **Maximum Temperature:** 77.0 º
Mud Filtrate Resistivity (Rmf): @ º **Source (Rmf):**
Mud Cake Resistivity (Rmc): @ º **Source (Rmc):**

Logging Run Information

Date on Bottom: Mar 22, 2013
Total Depth Logger: 2,148.00 (MD) 2,148.00 (TVD)

Logging Tools: RST-GR

Remarks: RST failed, POOH and switch components and re-run, 2nd attempt RST also failed.

Hole Conditions: Good

Logging Run #: 5
Date: Mar 22, 2013

Drilling Fluid Data

Drilling Fluid Type: Versaclean
Fluid Density: 990.0 **Viscosity:** 88 **pH:** **Fluid Loss:**

Mud Resistivity (Rm): @ º
Mud Resistivity (Rm) @ BHT: @ º **Maximum Temperature:** 77.0 º
Mud Filtrate Resistivity (Rmf): @ º **Source (Rmf):**
Mud Cake Resistivity (Rmc): @ º **Source (Rmc):**

Logging Run Information

Date on Bottom: Mar 22, 2013
Total Depth Logger: 2,148.00 (MD) 2,148.00 (TVD)

Logging Tools: USIT-CBL

Remarks:

Hole Conditions: Good

Deviation / Directional Survey Report

Directional Drilling Company: Beaver
Directional Drillers:
Measured While Drilling (MWD) Hands:
Survey Type: drift
Survey Mode: wireline
Survey Date: Feb 24, 2013
Survey Calculation Method: minimum curvature
Target Azimuth: 0.00 °
Dog Leg Severity Characteristic: 30.00

Survey Tie-In Information

Tie-In Co-Ordinates
Latitude:
Longitude:
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity

Kick-Off (Whipstock) Information

Kick-Off Co-Ordinates
Latitude:
Longitude:
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity

Remarks:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
30.00		0.500					
61.00		0.700					
92.00		0.400					
121.00		0.500					
143.00		0.200					
181.00		0.500					
219.00		0.100					
257.00		0.900					
287.00		0.100					
326.00		0.200					
355.00		0.900					
393.00		0.200					
431.00		0.000					
470.00		1.300					
509.00		0.000					
547.00		0.100					

Deviation / Directional Survey Report

Directional Drilling Company: Schlumberger
Directional Drillers:
Measured While Drilling (MWD) Hands:
Survey Type: magnetic
Survey Mode: wireline
Survey Date: Mar 2, 2013
Survey Calculation Method: minimum curvature
Target Azimuth: 0.00 °
Dog Leg Severity Characteristic: 30.00

Survey Tie-In Information

Tie-In Co-Ordinates
Latitude:
Longitude:
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00

Kick-Off (Whipstock) Information

Kick-Off Co-Ordinates
Latitude:
Longitude:
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00

Remarks:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
20.00	20.00	0.275	162.98	-0.05	0.01	-0.05	0.41
30.00	30.00	0.108	150.37	-0.08	0.03	-0.08	0.51
40.00	40.00	0.254	28.30	-0.07	0.04	-0.07	0.98
50.00	50.00	0.234	31.75	-0.03	0.06	-0.03	0.07
60.00	60.00	0.117	75.79	-0.01	0.08	-0.01	0.51
70.00	70.00	0.209	313.52	0.01	0.08	0.01	0.87
80.00	80.00	0.347	335.67	0.05	0.05	0.05	0.52
90.00	90.00	0.182	69.06	0.08	0.06	0.08	1.20
100.00	100.00	0.178	80.40	0.09	0.09	0.09	0.11
110.00	110.00	0.202	9.13	0.11	0.10	0.11	0.67
120.00	120.00	0.240	28.33	0.14	0.12	0.14	0.25
130.00	130.00	0.076	16.16	0.17	0.13	0.17	0.50
140.00	140.00	0.162	353.08	0.19	0.13	0.19	0.29
150.00	150.00	0.148	30.37	0.21	0.13	0.21	0.30
160.00	160.00	0.093	90.28	0.23	0.15	0.23	0.39
170.00	170.00	0.036	310.57	0.23	0.15	0.23	0.37
180.00	180.00	0.198	102.31	0.23	0.17	0.23	0.69
190.00	190.00	0.288	54.91	0.24	0.21	0.24	0.64
200.00	200.00	0.147	38.49	0.26	0.23	0.26	0.46
210.00	210.00	0.260	56.06	0.28	0.26	0.28	0.38
220.00	220.00	0.501	350.82	0.34	0.27	0.34	1.37
230.00	230.00	0.405	0.68	0.42	0.27	0.42	0.37
240.00	240.00	0.380	5.13	0.49	0.27	0.49	0.12
250.00	250.00	0.465	357.73	0.56	0.27	0.56	0.30
260.00	260.00	0.420	356.20	0.64	0.27	0.64	0.14
270.00	270.00	0.489	1.86	0.72	0.27	0.72	0.25
280.00	280.00	0.517	349.04	0.80	0.26	0.80	0.35
290.00	290.00	0.439	355.76	0.89	0.25	0.89	0.29
300.00	300.00	0.534	349.43	0.97	0.24	0.97	0.33
310.00	310.00	0.591	350.94	1.07	0.22	1.07	0.18
320.00	320.00	0.563	351.07	1.17	0.20	1.17	0.08
330.00	329.99	0.616	352.92	1.27	0.19	1.27	0.17

340.00	339.99	0.692	347.52	1.38	0.17	1.38	0.29
350.00	349.99	0.724	349.69	1.50	0.15	1.50	0.13
360.00	359.99	0.773	351.75	1.63	0.12	1.63	0.17
370.00	369.99	0.925	354.12	1.78	0.11	1.78	0.47
380.00	379.99	0.946	354.18	1.94	0.09	1.94	0.06
390.00	389.99	1.034	354.32	2.11	0.07	2.11	0.26
400.00	399.99	1.004	356.99	2.29	0.06	2.29	0.17
410.00	409.99	0.971	3.85	2.46	0.06	2.46	0.37
420.00	419.98	1.116	3.02	2.64	0.07	2.64	0.44
430.00	429.98	1.094	6.65	2.83	0.09	2.83	0.22
440.00	439.98	1.129	6.01	3.03	0.11	3.03	0.11
450.00	449.98	1.069	13.20	3.22	0.14	3.22	0.45
460.00	459.98	1.174	12.47	3.41	0.18	3.41	0.32
470.00	469.97	1.335	12.20	3.62	0.23	3.62	0.48
480.00	479.97	1.461	12.58	3.86	0.28	3.86	0.38
490.00	489.97	1.444	14.76	4.10	0.34	4.10	0.17
500.00	499.96	1.418	11.07	4.35	0.40	4.35	0.29
510.00	509.96	1.474	12.15	4.60	0.45	4.60	0.19
520.00	519.96	1.435	14.66	4.84	0.51	4.84	0.22
530.00	529.95	1.514	17.81	5.09	0.58	5.09	0.34
540.00	539.95	1.406	16.93	5.33	0.66	5.33	0.33
550.00	549.95	1.488	19.12	5.57	0.73	5.57	0.30
560.00	559.95	1.508	17.22	5.82	0.82	5.82	0.16
570.00	569.94	1.560	18.20	6.08	0.90	6.08	0.18

Deviation / Directional Survey Report

Directional Drilling Company: Extreme
Directional Drillers: Chris
Measured While Drilling (MWD) Hands: Reg
Survey Type: magnetic
Survey Mode: MWD
Survey Date: Mar 4, 2013
Survey Calculation Method: minimum curvature
Target Azimuth: 0.00 °
Dog Leg Severity Characteristic: 30.00

Survey Tie-In Information

Tie-In Co-Ordinates
Latitude:
Longitude:
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
570.00	569.94	1.560	18.20	6.08	0.90	6.08	0.18

Kick-Off (Whipstock) Information

Kick-Off Co-Ordinates
Latitude:
Longitude:
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity

Remarks:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
621.34	621.26	1.890	26.41	7.50	1.49	7.50	0.24
640.42	640.33	1.490	22.98	8.01	1.73	8.01	0.65
660.05	659.95	1.490	23.29	8.48	1.93	8.48	0.01
679.36	679.25	1.580	22.41	8.96	2.13	8.96	0.14
698.75	698.64	2.020	19.42	9.53	2.35	9.53	0.70
717.69	717.56	2.200	21.71	10.18	2.59	10.18	0.31
737.87	737.72	2.590	18.50	10.97	2.88	10.97	0.61
756.53	756.37	1.800	11.60	11.66	3.07	11.66	1.34
775.49	775.32	1.890	7.99	12.26	3.18	12.26	0.23
795.33	795.15	2.200	12.61	12.96	3.31	12.96	0.53
804.51	804.32	1.580	7.20	13.25	3.36	13.25	2.11
814.26	814.07	1.320	9.40	13.50	3.40	13.50	0.82
833.54	833.35	1.100	4.70	13.90	3.45	13.90	0.38
852.78	852.58	0.620	8.08	14.19	3.48	14.19	0.75
872.25	872.05	0.620	112.89	14.25	3.59	14.25	1.51
891.44	891.24	1.190	125.50	14.10	3.85	14.10	0.94
910.59	910.39	1.320	119.09	13.87	4.20	13.87	0.30
938.56	938.35	1.710	98.92	13.65	4.90	13.65	0.70
958.42	958.20	1.710	96.90	13.57	5.48	13.57	0.09
977.66	977.43	2.110	85.60	13.56	6.12	13.56	0.85
996.46	996.21	2.200	82.48	13.64	6.82	13.64	0.24
1,015.67	1,015.41	2.290	86.09	13.71	7.57	13.71	0.26
1,034.96	1,034.68	2.500	91.49	13.73	8.38	13.73	0.48
1,053.95	1,053.66	1.490	101.99	13.66	9.03	13.66	1.69
1,073.33	1,073.04	1.190	105.60	13.56	9.47	13.56	0.48
1,092.66	1,092.36	1.190	95.62	13.48	9.87	13.48	0.32
1,111.93	1,111.63	1.410	79.58	13.51	10.30	13.51	0.66
1,131.20	1,130.89	1.710	79.41	13.60	10.81	13.60	0.47
1,150.43	1,150.11	1.320	80.81	13.69	11.31	13.69	0.61
1,169.86	1,169.54	0.880	81.38	13.75	11.68	13.75	0.68
1,188.82	1,188.49	1.710	76.20	13.84	12.10	13.84	1.32
1,208.02	1,207.68	2.590	55.98	14.15	12.74	14.15	1.80

1,227.25	1,226.89	2.020	65.70	14.53	13.41	14.53	1.08
1,246.32	1,245.96	1.410	78.40	14.72	13.94	14.72	1.13
1,265.44	1,265.07	1.490	81.21	14.80	14.42	14.80	0.17
1,284.64	1,284.26	1.580	66.31	14.95	14.91	14.95	0.64
1,303.85	1,303.46	2.500	51.02	15.32	15.48	15.32	1.66
1,313.60	1,313.20	2.590	50.89	15.59	15.81	15.59	0.28
1,323.16	1,322.75	2.290	43.28	15.87	16.11	15.87	1.38
1,332.61	1,332.20	1.890	48.91	16.11	16.36	16.11	1.43
1,342.37	1,341.95	1.320	56.12	16.27	16.57	16.27	1.86
1,351.96	1,351.54	0.790	79.32	16.35	16.73	16.35	2.10
1,361.53	1,361.11	0.790	88.62	16.36	16.86	16.36	0.40
1,371.24	1,370.82	0.790	75.10	16.38	16.99	16.38	0.57
1,390.50	1,390.08	1.010	62.71	16.49	17.27	16.49	0.46
1,409.79	1,409.36	1.580	74.79	16.64	17.68	16.64	0.98
1,429.06	1,428.63	1.190	52.60	16.83	18.10	16.83	1.02
1,438.69	1,438.25	1.320	46.40	16.97	18.26	16.97	0.59
1,448.31	1,447.87	1.410	42.32	17.13	18.42	17.13	0.41
1,467.61	1,467.16	1.800	48.29	17.51	18.80	17.51	0.66
1,487.22	1,486.76	1.800	38.41	17.96	19.22	17.96	0.47
1,505.93	1,505.47	1.190	41.48	18.33	19.53	18.33	0.99
1,525.44	1,524.97	1.710	39.50	18.71	19.85	18.71	0.80
1,544.48	1,544.00	2.020	36.69	19.20	20.23	19.20	0.51
1,563.80	1,563.31	1.580	38.19	19.68	20.60	19.68	0.69
1,583.15	1,582.66	0.480	75.32	19.91	20.85	19.91	1.91
1,602.34	1,601.85	0.790	70.40	19.97	21.05	19.97	0.49
1,621.91	1,621.41	1.100	51.72	20.14	21.32	20.14	0.66
1,641.37	1,640.87	1.410	49.70	20.41	21.65	20.41	0.48
1,660.77	1,660.27	1.010	46.80	20.68	21.96	20.68	0.63
1,679.83	1,679.32	1.320	34.89	20.97	22.21	20.97	0.62
1,698.97	1,698.45	2.200	34.19	21.46	22.54	21.46	1.38
1,718.17	1,717.64	2.200	41.00	22.04	22.99	22.04	0.41
1,737.50	1,736.96	1.580	73.61	22.40	23.49	22.40	1.89
1,756.66	1,756.11	1.320	96.41	22.45	23.96	22.45	0.98
1,775.91	1,775.36	0.620	95.71	22.41	24.28	22.41	1.09
1,795.03	1,794.48	1.320	75.71	22.45	24.60	22.45	1.20

1,814.27	1,813.71	1.010	1.89	22.68	24.82	22.68	2.22
1,833.39	1,832.83	1.580	14.28	23.10	24.89	23.10	0.99
1,852.66	1,852.08	2.900	31.68	23.77	25.21	23.77	2.29
1,871.80	1,871.20	2.500	30.32	24.55	25.68	24.55	0.63
1,875.34	1,874.74	2.590	38.89	24.68	25.77	24.68	3.31

Deviation / Directional Survey Report

Directional Drilling Company: Schlumberger Wireline
Directional Drillers:
Measured While Drilling (MWD) Hands:
Survey Type: magnetic
Survey Mode: wireline
Survey Date: Mar 23, 2013
Survey Calculation Method: minimum curvature
Target Azimuth: 0.00 °
Dog Leg Severity Characteristic: 30.00

Survey Tie-In Information

Tie-In Co-Ordinates
Latitude:
Longitude:
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
570.00	569.94	1.560	18.20	6.08	0.90	6.08	0.18

Kick-Off (Whipstock) Information

Kick-Off Co-Ordinates
Latitude:
Longitude:
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity

Remarks: Last survey is an extrapolation.

Measured Depth	T.V.D.	Drift Angle (º)	Azimuth (º)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
600.00	599.93	1.654	25.76	6.86	1.22	6.86	0.23
610.00	609.92	1.841	25.59	7.13	1.35	7.13	0.56
620.00	619.92	2.080	23.49	7.44	1.49	7.44	0.75
630.00	629.91	1.371	27.83	7.72	1.62	7.72	2.16
640.00	639.91	1.418	23.30	7.94	1.72	7.94	0.36
650.00	649.91	1.400	22.77	8.16	1.82	8.16	0.06
660.00	659.90	1.465	24.12	8.39	1.92	8.39	0.22
670.00	669.90	1.644	24.03	8.64	2.03	8.64	0.54
680.00	679.90	1.841	20.33	8.92	2.14	8.92	0.68
690.00	689.89	1.939	20.21	9.23	2.26	9.23	0.29
700.00	699.88	2.044	21.22	9.55	2.38	9.55	0.33
710.00	709.88	2.228	19.85	9.90	2.51	9.90	0.57
720.00	719.87	2.440	15.71	10.29	2.63	10.29	0.81
730.00	729.86	2.592	14.50	10.72	2.75	10.72	0.48
740.00	739.85	2.828	13.97	11.17	2.86	11.17	0.71
750.00	749.84	1.849	12.81	11.57	2.96	11.57	2.94
760.00	759.83	1.890	11.93	11.89	3.03	11.89	0.15
770.00	769.83	1.961	10.18	12.22	3.09	12.22	0.28
780.00	779.82	2.161	8.52	12.57	3.15	12.57	0.62
790.00	789.82	2.044	12.38	12.93	3.22	12.93	0.55
800.00	799.81	1.111	9.83	13.20	3.27	13.20	2.81
810.00	809.81	1.144	9.87	13.40	3.31	13.40	0.10
820.00	819.81	1.196	9.48	13.60	3.34	13.60	0.16
830.00	829.81	0.849	16.28	13.77	3.38	13.77	1.10
840.00	839.81	0.719	23.48	13.90	3.43	13.90	0.49
850.00	849.80	0.241	34.15	13.98	3.46	13.98	1.45
860.00	859.80	0.394	98.58	13.99	3.51	13.99	1.09
870.00	869.80	1.025	130.42	13.93	3.61	13.93	2.16
880.00	879.80	1.113	128.17	13.81	3.75	13.81	0.29
890.00	889.80	1.196	122.15	13.69	3.92	13.69	0.44
900.00	899.80	1.241	112.21	13.60	4.11	13.60	0.65
910.00	909.80	1.264	105.72	13.53	4.31	13.53	0.43

920.00	919.79	1.286	103.15	13.47	4.53	13.47	0.18
930.00	929.79	1.374	102.00	13.42	4.76	13.42	0.27
940.00	939.79	1.518	99.18	13.37	5.00	13.37	0.48
950.00	949.78	1.637	91.51	13.35	5.28	13.35	0.73
960.00	959.78	1.717	87.36	13.35	5.57	13.35	0.44
970.00	969.77	1.793	86.36	13.37	5.88	13.37	0.25
980.00	979.77	1.923	86.56	13.39	6.20	13.39	0.39
990.00	989.76	2.085	86.69	13.41	6.55	13.41	0.49
1,000.00	999.76	2.167	82.15	13.45	6.92	13.45	0.56
1,010.00	1,009.75	2.375	82.61	13.50	7.31	13.50	0.63
1,020.00	1,019.74	2.209	88.84	13.53	7.71	13.53	0.90
1,030.00	1,029.73	2.418	88.79	13.54	8.11	13.54	0.63
1,040.00	1,039.72	2.470	92.39	13.53	8.54	13.53	0.49
1,050.00	1,049.72	1.894	98.47	13.50	8.92	13.50	1.86
1,060.00	1,059.71	1.133	113.84	13.43	9.17	13.43	2.57
1,070.00	1,069.71	1.023	105.05	13.37	9.35	13.37	0.59
1,080.00	1,079.71	1.003	98.17	13.34	9.52	13.34	0.37
1,090.00	1,089.71	1.063	90.27	13.32	9.70	13.32	0.46
1,100.00	1,099.71	1.201	86.03	13.33	9.90	13.33	0.48
1,110.00	1,109.70	1.421	84.54	13.35	10.12	13.35	0.67
1,120.00	1,119.70	1.579	77.70	13.39	10.38	13.39	0.72
1,130.00	1,129.70	1.674	73.27	13.46	10.66	13.46	0.47
1,140.00	1,139.69	1.740	72.21	13.55	10.94	13.55	0.22
1,150.00	1,149.69	1.279	84.38	13.61	11.20	13.61	1.68
1,160.00	1,159.68	1.267	83.28	13.63	11.42	13.63	0.08
1,170.00	1,169.68	1.242	83.59	13.66	11.64	13.66	0.08
1,180.00	1,179.68	1.392	76.54	13.70	11.86	13.70	0.66
1,190.00	1,189.68	1.618	69.79	13.77	12.11	13.77	0.86
1,200.00	1,199.67	1.822	66.55	13.89	12.39	13.89	0.68
1,210.00	1,209.67	2.097	64.31	14.03	12.70	14.03	0.86
1,220.00	1,219.66	2.435	58.27	14.22	13.05	14.22	1.24
1,230.00	1,229.65	2.232	71.67	14.39	13.41	14.39	1.74
1,240.00	1,239.64	2.071	71.95	14.51	13.77	14.51	0.48
1,250.00	1,249.64	1.243	83.21	14.58	14.05	14.58	2.66
1,260.00	1,259.64	1.350	75.65	14.62	14.27	14.62	0.60

1,270.00	1,269.63	1.417	66.06	14.70	14.50	14.70	0.72
1,280.00	1,279.63	1.686	59.42	14.82	14.74	14.82	0.97
1,290.00	1,289.62	2.010	51.50	15.01	15.00	15.01	1.24
1,300.00	1,299.62	2.310	47.06	15.26	15.29	15.26	1.03
1,310.00	1,309.61	2.557	44.36	15.55	15.59	15.55	0.81
1,320.00	1,319.60	2.505	46.31	15.86	15.90	15.86	0.30
1,330.00	1,329.59	2.007	42.25	16.14	16.18	16.14	1.57
1,340.00	1,339.59	1.657	48.53	16.37	16.41	16.37	1.21
1,350.00	1,349.58	0.929	68.55	16.49	16.59	16.49	2.54
1,360.00	1,359.58	0.717	81.68	16.53	16.73	16.53	0.85
1,370.00	1,369.58	0.756	80.42	16.55	16.85	16.55	0.13
1,380.00	1,379.58	0.811	72.81	16.58	16.99	16.58	0.35
1,390.00	1,389.58	1.016	64.88	16.64	17.13	16.64	0.72
1,400.00	1,399.58	1.323	57.71	16.74	17.31	16.74	1.02
1,410.00	1,409.57	1.471	54.34	16.88	17.51	16.88	0.51
1,420.00	1,419.57	1.809	52.38	17.05	17.74	17.05	1.03
1,430.00	1,429.57	1.156	61.20	17.19	17.96	17.19	2.07
1,440.00	1,439.56	1.265	49.05	17.32	18.13	17.32	0.83
1,450.00	1,449.56	1.353	45.08	17.47	18.30	17.47	0.38
1,460.00	1,459.56	1.543	42.05	17.65	18.47	17.65	0.62
1,470.00	1,469.55	1.798	42.03	17.87	18.66	17.87	0.77
1,480.00	1,479.55	2.011	42.49	18.12	18.89	18.12	0.64
1,490.00	1,489.54	1.107	45.10	18.31	19.07	18.31	2.72
1,500.00	1,499.54	1.181	42.07	18.46	19.21	18.46	0.29
1,510.00	1,509.54	1.234	36.15	18.62	19.34	18.62	0.41
1,520.00	1,519.54	1.473	34.10	18.82	19.48	18.82	0.73
1,530.00	1,529.53	1.685	33.34	19.05	19.63	19.05	0.64
1,540.00	1,539.53	1.909	34.96	19.30	19.81	19.30	0.69
1,550.00	1,549.52	2.101	36.68	19.59	20.01	19.59	0.60
1,560.00	1,559.52	2.136	35.94	19.89	20.23	19.89	0.13
1,570.00	1,569.51	1.152	41.80	20.11	20.41	20.11	2.99
1,580.00	1,579.51	0.646	71.01	20.21	20.53	20.21	2.00
1,590.00	1,589.51	0.535	63.18	20.24	20.63	20.24	0.41
1,600.00	1,599.51	0.498	58.77	20.29	20.70	20.29	0.16
1,610.00	1,609.51	0.558	53.45	20.34	20.78	20.34	0.23

1,620.00	1,619.51	0.694	54.82	20.40	20.87	20.40	0.41
1,630.00	1,629.51	1.006	47.50	20.50	20.98	20.50	0.99
1,640.00	1,639.51	1.269	46.78	20.63	21.13	20.63	0.79
1,650.00	1,649.50	1.605	43.17	20.81	21.30	20.81	1.04
1,660.00	1,659.50	1.224	45.66	20.99	21.48	20.99	1.16
1,670.00	1,669.50	1.058	43.48	21.13	21.62	21.13	0.52
1,680.00	1,679.50	1.236	38.04	21.28	21.75	21.28	0.63
1,690.00	1,689.49	1.527	36.06	21.47	21.89	21.47	0.89
1,700.00	1,699.49	1.919	35.96	21.72	22.07	21.72	1.18
1,710.00	1,709.48	2.331	33.67	22.02	22.28	22.02	1.26
1,720.00	1,719.47	2.125	46.35	22.32	22.53	22.32	1.60
1,730.00	1,729.47	2.108	41.80	22.58	22.78	22.58	0.51
1,740.00	1,739.46	1.541	69.48	22.77	23.03	22.77	3.10
1,750.00	1,749.46	1.195	103.99	22.79	23.26	22.79	2.63
1,760.00	1,759.46	1.213	96.68	22.75	23.47	22.75	0.46
1,770.00	1,769.45	1.317	92.74	22.74	23.69	22.74	0.41
1,780.00	1,779.45	0.407	86.19	22.73	23.84	22.73	2.74
1,790.00	1,789.45	0.579	74.37	22.75	23.92	22.75	0.60
1,800.00	1,799.45	0.493	15.99	22.80	23.98	22.80	1.58
1,810.00	1,809.45	0.883	13.99	22.92	24.01	22.92	1.17
1,820.00	1,819.45	1.301	12.38	23.10	24.05	23.10	1.26
1,830.00	1,829.45	1.739	12.76	23.36	24.11	23.36	1.31
1,840.00	1,839.44	2.196	13.17	23.70	24.19	23.70	1.37
1,850.00	1,849.43	2.578	15.09	24.10	24.29	24.10	1.17
1,860.00	1,859.42	2.803	17.72	24.55	24.42	24.55	0.77
1,870.00	1,869.41	2.318	39.73	24.94	24.63	24.94	3.26
1,880.00	1,879.40	2.485	40.85	25.26	24.90	25.26	0.52
1,890.00	1,889.39	2.620	42.17	25.59	25.19	25.59	0.44
1,900.00	1,899.38	2.647	41.01	25.94	25.50	25.94	0.18
1,910.00	1,909.37	2.779	40.12	26.30	25.81	26.30	0.41
1,920.00	1,919.36	2.904	39.25	26.68	26.12	26.68	0.40
1,930.00	1,929.34	3.054	40.08	27.08	26.45	27.08	0.47
1,940.00	1,939.33	3.228	42.23	27.49	26.82	27.49	0.63
1,950.00	1,949.31	3.403	44.03	27.91	27.21	27.91	0.61
1,960.00	1,959.29	3.579	45.20	28.35	27.64	28.35	0.57

1,970.00	1,969.27	3.769	46.00	28.79	28.10	28.79	0.59
1,980.00	1,979.25	3.937	46.05	29.26	28.58	29.26	0.51
1,990.00	1,989.23	4.071	45.76	29.75	29.08	29.75	0.41
2,000.00	1,999.20	4.250	44.62	30.26	29.60	30.26	0.59
2,010.00	2,009.17	4.407	43.92	30.80	30.12	30.80	0.50
2,020.00	2,019.14	4.584	44.47	31.36	30.67	31.36	0.54
2,030.00	2,029.11	4.765	45.81	31.93	31.25	31.93	0.64
2,040.00	2,039.07	4.908	46.52	32.52	31.86	32.52	0.47
2,050.00	2,049.03	5.131	47.38	33.12	32.49	33.12	0.71
2,060.00	2,058.99	5.323	47.68	33.73	33.17	33.73	0.58
2,070.00	2,068.95	5.554	47.82	34.37	33.87	34.37	0.69
2,080.00	2,078.90	5.730	47.75	35.03	34.60	35.03	0.53
2,090.00	2,088.85	5.964	47.60	35.71	35.35	35.71	0.70
2,100.00	2,098.79	6.246	47.42	36.43	36.13	36.43	0.85
2,110.00	2,108.73	6.446	47.73	37.18	36.95	37.18	0.61
2,120.00	2,118.66	6.526	47.37	37.94	37.78	37.94	0.27
2,146.00	2,144.50	6.530	47.40	39.94	39.96	39.94	0.01

Drilling Fluid Summary

Storage Units: Metric

Drilling Fluid Type:	Gel Chem	**From:**	0	**To:**	601
Drilling Fluid Type:	Invert (Versaclean)	**From:**	601	**To:**	2,146

Work Schedule

Storage Units: Metric

Company: Black Gold Geotechnical
Geologist: **Dave Lawrence**

Work Performed	**From:**	Feb 25, 2013	**To:**	Mar 20, 2013
Depths Logged	**From:**	0.0	**To:**	2,146.0

Remarks: Stayed until logging completed Mar 23 and left location Mar 24, 2013

Formation Top Summary

Storage Units: Metric

Kelly Bushing Elevation: 286.50 **Casing Flange Elevation:** 281.63
Ground Elevation: 281.30

**** All Depths measured from Kelly Bushing Elevation ****

Group *Formation* Member	Prognosis (TVD)	Sample Top (MD)	Sample Top (TVD)	Log Top (MD)	Log Top (TVD)	Subsea	Thickness
Little Bear	25.00	17.00	0.00			286.50	
Slater River	217.00	241.00	241.00	250.50	250.50	36.00	588.00
Artic Red	792.00	829.00	829.00	832.00	832.00	-545.50	159.00
San Sault	962.00	988.00	988.00	990.00	990.00	-703.50	150.00
Martin House	1037.00	1138.00	1138.00	1140.30	1140.30	-853.80	34.50
Imperial	1112.00	1172.50	1172.50	1174.50	1174.50	-888.00	758.50
Upper Canol	1892.00	1931.00	1931.00	1937.50	1937.50	-1651.00	35.00
Lower Canol	1927.00	1966.00	1966.00	1969.00	1969.00	-1682.50	108.00
Hare Indian	2037.00	2074.00	2074.00	2074.00	2074.00	-1787.50	10.00
Bluefish	2062.00	2084.00	2084.00	2084.30	2084.30	-1797.80	9.50
Hume	2082.00	2093.50	2093.50	2096.00	2096.00	-1809.50	

Kelly Bushing Elevation: 286.50 **Casing Flange Elevation:** 281.63
Ground Elevation: 281.30

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Little Bear
Member:
Boundary Type: conformable
Fault Type:

Era: mesozoic
Series:
Period: Cretaceous
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	17.00	0.00	286.50	
Log Top				

Evaluation:

The Little Bear consisted of interbedded Sandstones & Shales. The Sands appeared to be possibly a stacked channel sand sequence and were predominately Sandstone: light gray, salt and pepper, upper fine grained grading down to upper very fine grained, sub angular, moderately well sorted, clay cement, abundant pyrite, carbonaceous matter, trace glauconitic, occasional fair intergranular porosity 10-15%, no visible show

Conclusion:

The lack of shows indicate that these sands were wet.

Group:
Formation: Slater River
Member:
Boundary Type: conformable
Fault Type:

Era: mesozoic
Series:
Period: Cretaceous
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	241.00	241.00	45.50	588.00
Log Top	250.50	250.50	36.00	

Evaluation:

The Slater River consisted predominately of Shale: medium gray, blocky, slightly micromicaceous, trace silty, minor sandy in part, trace carbonaceous specks with minor Siltstone stringers, light gray, sandy in part, trace dark lithic grains, clay cement, no visible porosity, no shows.

Conclusion:

Zone of little interest.

Kelly Bushing Elevation: 286.50 **Casing Flange Elevation:** 281.63
Ground Elevation: 281.30

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Artic Red
Member:
Boundary Type: conformable
Fault Type:

Era: mesozoic
Series:
Period: Cretaceous
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	829.00	829.00	-542.50	159.00
Log Top	832.00	832.00	-545.50	

Evaluation:

The Artic Red consisted predominately of Shale: medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus with minor Siltstone and Claystone stringers.

Conclusion:

Zone of little interest.

Group:
Formation: San Sault
Member:
Boundary Type: conformable
Fault Type:

Era: mesozoic
Series:
Period: Cretaceous
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	988.00	988.00	-701.50	150.00
Log Top	990.00	990.00	-703.50	

Evaluation:

The San Sault consisted predominately of Shale: predominately medium gray, sub fissile, slightly micromicaceous, trace pyrite, with occasional minor light brown siderite fragments.

Conclusion:

Zone of little interest.

Kelly Bushing Elevation: 286.50 **Casing Flange Elevation:** 281.63
Ground Elevation: 281.30

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Martin House
Member:
Boundary Type: conformable
Fault Type:

Era: mesozoic
Series:
Period: Cretaceous
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1138.00	1138.00	-851.50	34.50
Log Top	1140.30	1140.30	-853.80	

Evaluation:

The Martin House consisted of Sandstone: cream to light gray, upper very fine grained, sub angular, moderately well sorted, calcareous & clay cement, grades to sandy limestone in part, very glauconitic, trace minor dark lithic grains, slightly silty, trace shale laminations, no visible porosity, no shows interbedded with Shale.

Conclusion:

The sands appear to be predominately tight with no shows.

Group:
Formation: Imperial
Member:
Boundary Type: disconformable
Fault Type:

Era: paleozoic
Series:
Period: Devonian
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1172.50	1172.50	-886.00	758.50
Log Top	1174.50	1174.50	-888.00	

Evaluation:

The Imperial consisted predominately of upper Shale: gray green, medium gray, sub fissile, slightly micromicaceous, slightly calcareous, slightly waxy texture in part, occasionally sandy, trace silty in part with minor Sandstone stringers, light gray, gray green, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, silty, shaly, trace sideritic in part, tight, no shows. The middle of the formation consisted of interbedded Sandstone: very light gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, trace dark lithic grains, grades to siltstone in part, trace shaly in part, tight, no shows and Siltstone: light gray, calcareous & clay cement, sandy, glauconitic in part, slightly shaly, trace carbonaceous specks, tight, no show. There was a sand at 1620 meters Sandstone: cream to light gray, spotty light tan, very fine grained, sub angular, well sorted, quartzose, minor light colored chert, calcareous, clay cement in part, trace dark lithic grains, tight to poor intergranular porosity 3%, spotty light brown dead oil stain, no visible fluorescence. The Lower Imperial was predominately Shale: predominately medium gray, slightly micromicaceous, subfissile in part, silty in part, poor trace carbonaceous specks with trace minor Siltstone stringers, medium gray, clay cement, slightly calcareous, shaly, tight, no shows.

Conclusion:

The last sand at 1620 meters should be investigated because of the gas show, but the porosity values appear to be too low for hydrocarbon production and the sand is probably too thin for a resevoir of any size.

Kelly Bushing Elevation: 286.50 **Casing Flange Elevation:** 281.63
Ground Elevation: 281.30

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Upper Canol
Member:
Boundary Type: conformable
Fault Type:

Era: paleozoic
Series:
Period: Devonian
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1931.00	1931.00	-1644.50	35.00
Log Top	1937.50	1937.50	-1651.00	

Evaluation:

The Upper Canol was cored with sleeve cores and only the ends of the sleeves were described, so a formation evaluation is not possible.

Conclusion:
None.

Group:
Formation: Lower Canol
Member:
Boundary Type: conformable
Fault Type:

Era: paleozoic
Series:
Period: Devonian
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1966.00	1966.00	-1679.50	108.00
Log Top	1969.00	1969.00	-1682.50	

Evaluation:

The Lower Canol was cored with sleeve cores and only the ends of the sleeves were described, so a formation evaluation is not possible.

Conclusion:
None.

Kelly Bushing Elevation: 286.50 **Casing Flange Elevation:** 281.63
Ground Elevation: 281.30

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Hare Indian
Member:
Boundary Type: conformable
Fault Type:

Era: paleozoic
Series:
Period: Devonian
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	2074.00	2074.00	-1787.50	10.00
Log Top	2074.00	2074.00	-1787.50	

Evaluation:

The Hare Indian was cored with sleeve cores and only the ends of the sleeves were described, so a formation evaluation is not possible.

Conclusion:
None.

Group:
Formation: Bluefish
Member:
Boundary Type: conformable
Fault Type:

Era: paleozoic
Series:
Period: Devonian
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	2084.00	2084.00	-1797.50	9.50
Log Top	2084.30	2084.30	-1797.80	

Evaluation:

The Blue Fish was cored with sleeve cores and only the ends of the sleeves were described, so a formation evaluation is not possible.

Conclusion:
None.

Kelly Bushing Elevation: 286.50 **Casing Flange Elevation:** 281.63
Ground Elevation: 281.30

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Hume
Member:
Boundary Type: conformable
Fault Type:

Era: paleozoic
Series:
Period: Devonian
Stage:
Age (Approx): Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	2093.50	2093.50	-1807.00	
Log Top	2096.00	2096.00	-1809.50	

Evaluation:

The Hume Consisted of Limestone brown, mudstone to wackestone & occasional reef floatstone occasional unidentifiable fossil fragments, amphiporas? gastropods? unidentifiable coral casts infilled with calcite, slightly argillaceous, dense, no visible shows.

Conclusion:

There was no visable porosity or shows in the Hume and it should prove to be unproductive.

0.00 to 5.00 (5.00)	60%	**Sandstone** light gray, upper very fine grained, sub angular, well sorted, clay cement, trace glauconitic, minor dark (carbonaceous?) lithic grains, silty, trace ferruginous, trace pyrite nodules, no visible porosity, no shows with Sandstone (chert conglomerate) occasional varicolored chert pebbles & quartz pebbles with Sandstone matrix, light gray, medium grained, quartz & chert, sub rounded, medium sorting, unconsolidated, porosity? no visible shows.
	40%	**Shale** light gray, blocky, silty, trace sandy, trace minor carbonaceous specks.
5.00 to 10.00 (5.00)	100%	**Sandstone** light gray, upper very fine grained, sub angular, well sorted, clay cement, trace glauconitic, minor dark (carbonaceous?) lithic grains, slightly silty, no visible porosity, no shows
10.00 to 15.00 (5.00)	100%	**Sandstone** light gray, upper very fine grained, sub angular, well sorted, clay cement, trace glauconitic, minor dark (carbonaceous?) lithic grains, slightly silty, increasing shaly, no visible porosity, no shows
15.00 to 20.00 (5.00)	80%	**Sandstone** as above with Sandstone salt and pepper, fine grained, sub angular to moderately well sorted, clear & vitreous quartz & light colored chert, minor kaolin cement, trace siliceous, dark (carbonaceous?) lithic grains, very pyritic, abundant unconsolidated, fair to good intergranular porosity? 15%, trace spotty dead light brown oil stain, no visible fluorescence.
	20%	**Shale** as above
20.00 to 25.00 (5.00)	100%	**Cement** 100% cement
25.00 to 30.00 (5.00)	100%	**Sandstone** light gray, upper fine grained, sub angular, moderately well sorted, quartz & chert, clay cement, abundant unconsolidated, trace glauconitic, dark colored lithic grains, trace pyritic, poor to fair intergranular porosity 10-14%, no visible shows.
30.00 to 35.00 (5.00)	100%	**Sandstone** light gray, upper fine grained, sub angular, medium sorted, quartz & gray chert, clay cement, abundant unconsolidated, trace glauconitic, dark colored lithic grains, minor gray chert pebbles, poor to fair intergranular porosity 8-10%, no visible shows.
35.00 to 40.00 (5.00)	100%	**Sandstone** as above, grading down to very fine grained sandstone, becoming shaly with 5% interbedded Shale laminations, light gray, soft, silty, occasionally sandy, trace carbonaceous specks, occasionally grades to shaly siltstone & sandstone in part.

40.00 to 45.00 (5.00)	100%	**Sandstone** light gray, lower fine grained, sub angular, moderately well sorted, quartz & gray chert, clay cement, unconsolidated in part, trace glauconitic, dark colored lithic grains, occasionally shaly & silty, poor intergranular porosity 4-7%, no visible shows.
45.00 to 50.00 (5.00)	100%	**Sandstone** as above with Sandstone light gray, coarse grained, sub rounded, medium sorting, quartz & varicolored chert, unconsolidated with occasional clay cement, trace pyritic, poor porosity? no visible shows.
50.00 to 55.00 (5.00)	100%	**Sandstone** salt and pepper, upper fine grained, sub angular, moderately well sorted, quartz & gray chert, minor kaolin cement, slightly siliceous, abundant unconsolidated, carbonaceous lithic grains, poor trace glauconitic, 12% porosity? no visible shows.
55.00 to 60.00 (5.00)	100%	**Sandstone** salt and pepper, upper fine grained, sub angular, medium sorting, quartz & gray chert, minor kaolin cement, slightly siliceous, predominately unconsolidated, carbonaceous lithic grains, poor trace glauconitic, trace occasional gray chert pebble fragments, 15% intergranular porosity? no visible shows.
60.00 to 65.00 (5.00)	100%	**Sandstone** as above with minor Shale laminations, light gray, blocky, silty, sandy in part, trace pyrite.
65.00 to 70.00 (5.00)	100%	**Sandstone** light gray, fine grained, sub angular, medium sorting, clay cement, abundant unconsolidated, carbonaceous lithic grains, trace pyritic, trace glauconitic, occasional varicolored chert pebbles, 10% porosity? no visible shows with minor Shale laminations as above.
70.00 to 75.00 (5.00)	100%	**Sandstone** as above with Sandstone very light gray, vitreous quartzose, minor light gray chert, fine grained, sub angular, moderately well sorted, clay cement, trace minor dark lithic grains, trace pyritic, poor intergranular porosity 4-7%, no visible shows.
75.00 to 80.00 (5.00)	100%	**Sandstone** as above
80.00 to 85.00 (5.00)	100%	**Sandstone** very light gray as above with Sandstone salt and pepper, upper fine grained, sub angular, moderately well sorted, kaolin cement, dark lithic grains, trace pyritic, trace glauconitic, minor carbonaceous matter, poor to fair intergranular porosity 4-9%, no visible shows.
85.00 to 90.00 (5.00)	100%	**Sandstone** salt and pepper as above with 10% Shale laminations, light gray, blocky, silty, sandy in part, occasionally grades to shaly very fine grained sandstone in part, carbonaceous matter.

90.00 to 95.00 (5.00)	80%	**Shale** light to medium gray, blocky, occasionally silty, slightly sandy in part, trace carbonaceous matter, poor trace pyrite nodules.
	20%	**Sandstone** as above
95.00 to 100.00 (5.00)	80%	**Sandstone** light gray, salt and pepper, upper fine grained, sub angular, medium sorting, slightly siliceous, minor kaolin cement, abundant unconsolidated, dark lithic grains, pyritic, trace glauconitic, fair intergranular porosity? 14%, no visible shows.
	20%	**Shale** light to medium gray, blocky, occasionally silty, slightly sandy in part, trace carbonaceous matter, poor trace pyrite nodules.
100.00 to 105.00 (5.00)	100%	**Sandstone** as above, very pyritic, abundant carbonaceous plant matter with 10% shale laminations as above.
105.00 to 110.00 (5.00)	100%	**Sandstone** light gray, salt and pepper, upper fine grained, sub angular, moderately well sorted, clay cement, abundant pyrite, carbonaceous matter, trace glauconitic, good trace frosted calcite from vugs or fractures? fair intergranular porosity? 10%, no visible shows with 10% shale laminations as above.
110.00 to 115.00 (5.00)	100%	**Sandstone** light gray, salt and pepper, upper fine grained, sub angular, moderately well sorted, clay cement, abundant pyrite, carbonaceous matter, trace glauconitic, good trace frosted calcite from vugs or fractures? fair intergranular porosity? 10%, no visible shows
115.00 to 120.00 (5.00)	60%	**Sandstone** as above, very abundant frosted calcite.
	40%	**Shale** as above
120.00 to 125.00 (5.00)	80%	**Shale** light to medium gray, blocky, silty, sandy, grades to shaly siltstone in part, trace glauconitic, trace carbonaceous specks.
	20%	**Sandstone** light gray, very fine grained, sub angular, well sorted, clay cement, trace carbonaceous matter, silty, shaly, tight, no show
125.00 to 130.00 (5.00)		**Missed Sample** Missed Sample

130.00 to 135.00 (5.00)	100%	**Sandstone** light to medium gray, very fine grained, grades to sandy siltstone in part, sub angular, well sorted, clay cement, silty, shaly, carbonaceous specks & matter, trace glauconitic, trace pyritic, trace frosted calcite as above, no visible porosity, no shows with 10% Shale laminations as above.
135.00 to 140.00 (5.00)	100%	**Sandstone** light to medium gray, very fine grained, grades to sandy siltstone in part, sub angular, well sorted, clay cement, silty, shaly, carbonaceous specks & matter, trace glauconitic, trace pyritic, trace frosted calcite as above, no visible porosity, no shows with 20% Shale laminations as above.
140.00 to 145.00 (5.00)	60%	**Sandstone** as above with Sandstone very light gray, upper very fine grained, sub angular, well sorted, clay cement, slightly calcareous, dark lithic grains, silty, trace pyritic, trace shaly, predominately tight, no shows.
	40%	**Shale** medium gray, blocky, silty, sandy in part, trace carbonaceous matter, occasionally grades to shaly sandstone in part.
145.00 to 150.00 (5.00)	100%	**Sandstone** poor sample abundant LCM, light gray, lower fine grained, sub angular, moderately well sorted, clay cement, abundant unconsolidated, trace glauconitic, dark lithic grains, minor ferruginous, trace frosted calcite, fair intergranular porosity? no visible shows with 10% Shale as above.
150.00 to 155.00 (5.00)	90%	**Sandstone** light gray, upper very fine grained, sub angular, moderately well sorted, clay cement, trace calcareous, trace glauconitic, dark lithic grains, trace frosted calcite, tight to poor intergranular porosity, no visible shows.
	10%	**Shale** as above
155.00 to 160.00 (5.00)	80%	**Shale** medium gray, blocky, slightly micromicaceous, occasionally silty, trace sandy, trace carbonaceous specks & matter.
	20%	**Sandstone** light gray, upper very fine grained, sub angular, moderately well sorted, clay cement, trace calcareous, trace glauconitic, dark lithic grains, trace frosted calcite, tight to poor intergranular porosity, no visible shows
160.00 to 165.00 (5.00)	90%	**Siltstone** light gray, occasionally grades to very fine grained sandstone in part, clay cement, trace calcareous, dark lithic grains, trace pyritic, trace glauconitic, predominately tight, no shows.
	10%	**Shale** as above

165.00 to 170.00 (5.00)	50%	**Shale** medium gray, blocky, silty, occasionally sandy, occasionally grades to shaly siltstone, carbonaceous specks & matter, trace pyrite.
	30%	**Sandstone** light gray, very fine grained, sub angular, moderately well sorted, clay cement, dark lithic grains, trace glauconitic, silty, shaly in part, tight, no shows.
	20%	**Siltstone** as above
170.00 to 175.00 (5.00)	50%	**Sandstone** light gray, salt and pepper, fine grained, sub angular, medium sorting, abundant unconsolidated, clay cement in part, dark lithic grains, trace glauconitic, trace pyritic, poor porosity? no visible shows.
	50%	**Shale** medium gray, blocky, silty, occasionally sandy, occasionally grades to shaly siltstone, carbonaceous specks & matter, trace pyrite.
175.00 to 180.00 (5.00)	80%	**Sandstone** light gray, very fine grained, sub angular, moderately well sorted, abundant unconsolidated, clay cement, dark lithic grains, trace glauconitic, silty, slightly shaly in part, trace pyritic, tight to poor intergranular porosity, no visible shows.
	20%	**Shale** as above
180.00 to 185.00 (5.00)	80%	**Sandstone** as above
	20%	**Shale** as above
185.00 to 190.00 (5.00)	90%	**Sandstone** light gray, lower very fine grained, sub angular, well sorted, well cement with clay cement, slightly calcareous, dark lithic grains, silty, trace glauconitic, shaly in part, tight, no shows.
	10%	**Shale** as above
190.00 to 195.00 (5.00)	60%	**Sandstone** as above, increasing shaly.
	40%	**Shale** medium gray, blocky, silty, occasionally sandy, occasionally grades to shaly siltstone, carbonaceous specks & matter, trace pyrite.
195.00 to 200.00 (5.00)	90%	**Shale** medium gray, blocky, silty, occasionally sandy, occasionally grades to shaly siltstone, carbonaceous specks & matter.

195.00 to 200.00 (5.00)	10%	**Sandstone** as above
200.00 to 205.00 (5.00)	80%	**Sandstone** salt and pepper, fine grained, sub angular, moderately well sorted, clay cement, occasional unconsolidated, dark lithic grains, trace glauconitic, disseminated pyrite, trace frosted calcite, poor intergranular porosity 7%, no visible shows
	20%	**Shale** as above
205.00 to 210.00 (5.00)	80%	**Sandstone** as above with Sandstone light gray, very fine grained, sub angular, moderately well sorted, clay cement, silty, shaly in part, trace glauconitic, trace pyritic, tight, no visible shows
	20%	**Shale** as above
210.00 to 215.00 (5.00)	80%	**Sandstone** salt and pepper, light gray as above.
	20%	**Shale** as above
215.00 to 220.00 (5.00)	80%	**Sandstone** light gray, fine grained as above.
	20%	**Shale** as above
220.00 to 225.00 (5.00)	70%	**Sandstone** light gray, fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, dark lithic grains, trace glauconitic, trace pyritic, minor carbonaceous matter, silty in part, occasionally shaly, tight to poor intergranular porosity 4%, no visible shows.
	30%	**Shale** medium gray, blocky, silty, occasionally sandy, occasionally grades to shaly siltstone, carbonaceous specks & matter, trace pyrite.
225.00 to 230.00 (5.00)	70%	**Sandstone** light gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, dark lithic grains, trace glauconitic, trace pyritic, minor carbonaceous matter, silty in part, occasionally shaly, predominately tight, no visible shows.
	30%	**Shale** as above

230.00 to 235.00 (5.00)	80%	**Sandstone** light gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, dark lithic grains, trace glauconitic, trace pyritic, minor carbonaceous matter, silty in part, occasionally shaly, predominately tight, no visible shows.
	20%	**Shale** as above
235.00 to 240.00 (5.00)	70%	**Sandstone** light gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, dark lithic grains, trace glauconitic, trace pyritic, minor carbonaceous matter, silty in part, occasionally shaly, predominately tight, no visible shows.
	30%	**Shale** medium gray, blocky, slightly micromicaceous, silty in part, trace sandy, carbonaceous matter.
240.00 to 245.00 (5.00)	50%	**Sandstone** light gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, dark lithic grains, trace glauconitic, trace pyritic, minor carbonaceous matter, silty in part, occasionally shaly, predominately tight, no visible shows.
	50%	**Shale** as above
245.00 to 250.00 (5.00)	80%	**Shale** light to medium gray, blocky, slightly micromicaceous, silty in part, trace carbonaceous matter, trace pyrite nodules.
	20%	**Sandstone** as above
250.00 to 255.00 (5.00)	100%	**Shale** predominately medium gray, blocky, slightly micromicaceous, silty in part, trace carbonaceous matter, trace pyrite nodules with 10% Sandstone stringers as above.
255.00 to 260.00 (5.00)	100%	**Shale** as above with minor Shale dark blue green, blocky, flat waxy texture with 5% Sandstone stringers as above.
260.00 to 265.00 (5.00)	100%	**Shale** as above
265.00 to 270.00 (5.00)	100%	**Shale** predominately medium gray, blocky, slightly micromicaceous, trace silty, trace carbonaceous matter, trace pyrite nodules with minor blue green shale as above.

270.00 to 275.00 (5.00)	100%	**Shale** predominately medium gray, slightly micromicaceous, silty in part, trace carbonaceous matter, trace minor green shale as above with 10% Sandstone stringers as above.
275.00 to 280.00 (5.00)	100%	**Shale** predominately medium gray, minor dark gray, subfissile in part, slightly micromicaceous, silty in part, trace carbonaceous matter, trace blue green shale as above with 10% Sandstone stringers as above.
280.00 to 285.00 (5.00)	100%	**Shale** as above with 10% Sandstone stringers as above.
285.00 to 290.00 (5.00)	100%	**Shale** predominately medium gray, minor dark gray, subfissile in part, slightly micromicaceous, silty in part, trace carbonaceous matter, becoming sideritic with brown siderite fragments.
290.00 to 295.00 (5.00)	100%	**Shale** medium gray, gray brown in part, trace dark gray, minor sub fissile, occasionally sideritic, slightly micromicaceous, trace silty, abundant brown siderite fragments.
295.00 to 300.00 (5.00)	100%	**Shale** medium gray, gray brown in part, trace dark gray, minor sub fissile, occasionally sideritic, slightly micromicaceous, trace silty, abundant brown siderite fragments with trace minor Sandstone stringers as above.
300.00 to 305.00 (5.00)	100%	**Shale** medium gray, blocky, slightly micromicaceous, trace silty, minor sandy in part, trace carbonaceous specks with minor Siltstone stringers, light gray, sandy in part, trace dark lithic grains, clay cement, no visible porosity, no shows.
305.00 to 310.00 (5.00)	100%	**Shale** medium gray, blocky, slightly micromicaceous, trace silty, minor sandy in part, trace carbonaceous specks with minor Siltstone stringers, light gray, sandy in part, trace dark lithic grains, clay cement, no visible porosity, no shows.
310.00 to 315.00 (5.00)	100%	**Shale** medium gray, blocky, slightly micromicaceous, trace silty, minor sandy in part, trace carbonaceous specks with minor Siltstone stringers, light gray, sandy in part, trace dark lithic grains, clay cement, no visible porosity, no shows.
315.00 to 320.00 (5.00)	100%	**Shale** medium gray, blocky, slightly micromicaceous, trace silty, minor sandy in part, trace carbonaceous specks with minor Siltstone stringers, light gray, sandy in part, trace dark lithic grains, clay cement, no visible porosity, no shows.
320.00 to 325.00 (5.00)	100%	**Shale** medium gray, blocky, slightly micromicaceous, trace silty, minor sandy in part, trace carbonaceous specks with minor Siltstone stringers, light gray, sandy in part, trace dark lithic grains, clay cement, no visible porosity, no shows.

325.00 to 330.00 (5.00)	100%	**Shale** medium gray, blocky, slightly micromicaceous, trace silty, minor sandy in part, trace carbonaceous specks with minor Siltstone stringers, light gray, sandy in part, trace dark lithic grains, clay cement, no visible porosity, no shows.
330.00 to 335.00 (5.00)	100%	**Shale** medium gray, blocky, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter with trace Siltstone stringers as above.
335.00 to 340.00 (5.00)	100%	**Shale** medium gray, blocky, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter with trace Siltstone stringers as above.
340.00 to 345.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter with trace Siltstone stringers as above.
345.00 to 350.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter with trace Siltstone stringers as above.
350.00 to 355.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter with trace Siltstone stringers as above.
355.00 to 360.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, good trace disseminated pyrite with trace Siltstone stringers as above.
360.00 to 365.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, good trace disseminated pyrite with trace Siltstone stringers as above.
365.00 to 370.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, good trace disseminated pyrite with 5% Sandstone stringers, light gray, lower fine grained, sub angular, medium sorting, clay cement, slightly calcareous, dark lithic grains, silty in part, tight, no shows.
370.00 to 375.00 (5.00)	100%	**Shale** as above
375.00 to 380.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, good trace disseminated pyrite with minor Sandstone stringers as above
380.00 to 385.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, good trace disseminated pyrite with minor Sandstone stringers as above

385.00 to 390.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, good trace disseminated pyrite with 5% Sandstone stringers, light gray, very fine grained, sub angular, medium sorting, clay cement, slightly calcareous, dark lithic grains, silty in part, tight, no shows.
390.00 to 395.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, good trace disseminated pyrite with 5% Sandstone stringers, light gray, very fine grained, sub angular, medium sorting, clay cement, slightly calcareous, dark lithic grains, silty in part, tight, no shows.
395.00 to 400.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, good trace disseminated pyrite with 5% Sandstone stringers, light gray, very fine grained, sub angular, medium sorting, clay cement, slightly calcareous, dark lithic grains, silty in part, tight, no shows.
400.00 to 405.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, with 3% Sandstone stringers, light gray, very fine grained, sub angular, medium sorting, clay cement, very slightly calcareous, dark lithic grains, silty in part, tight, no shows.
405.00 to 410.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, with 3% Sandstone stringers, light gray, very fine grained, sub angular, medium sorting, clay cement, very slightly calcareous, dark lithic grains, silty in part, tight, no shows.
410.00 to 415.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, with 3% Sandstone stringers, light gray, very fine grained, sub angular, medium sorting, clay cement, very slightly calcareous, dark lithic grains, silty in part, tight, no shows.
415.00 to 420.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, with 3% Sandstone stringers, light gray, very fine grained, sub angular, medium sorting, clay cement, very slightly calcareous, dark lithic grains, silty in part, tight, no shows.
420.00 to 425.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, with 3% Sandstone stringers, light gray, very fine grained, sub angular, medium sorting, clay cement, very slightly calcareous, dark lithic grains, silty in part, tight, no shows.
425.00 to 430.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, with occasional Sandstone stringers as above.

430.00 to 435.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, with occasional Sandstone stringers as above.
435.00 to 440.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous matter, with occasional Sandstone stringers as above.
440.00 to 445.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace inoceramus with occasional Sandstone stringers as above.
445.00 to 450.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace inoceramus with occasional Sandstone stringers as above.
450.00 to 455.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace inoceramus, trace disseminated pyrite with occasional Sandstone stringers as above.
455.00 to 460.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace inoceramus, trace disseminated pyrite with occasional Sandstone stringers as above.
460.00 to 465.00 (5.00)	100%	**Shale** as above
465.00 to 470.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic, trace inoceramus with occasional Sandstone stringers as above.
470.00 to 475.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules with minor Sandstone stringers medium gray, very fine grained, sub angular, well sorted, clay cement, dark lithic grains, trace pyritic, trace glauconitic, silty, shaly, no visible porosity, no shows.
475.00 to 480.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules with minor Sandstone stringers medium gray, very fine grained, sub angular, well sorted, clay cement, dark lithic grains, trace pyritic, trace glauconitic, silty, shaly, no visible porosity, no shows.

480.00 to 485.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, abundant pyrite nodules with minor Sandstone stringers as above.
485.00 to 490.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules with minor Sandstone stringers medium gray, as above.
490.00 to 495.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules with 5% Sandstone stringers as above.
495.00 to 500.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules with minor Sandstone stringers as above.
500.00 to 505.00 (5.00)	80%	**Shale** as above
	20%	**Sandstone** light to medium gray, very fine grained, sub angular, moderately well sorted, clay cement, silty, shaly, dark lithic grains, trace glauconitic, trace pyrite, no visible porosity or shows.
505.00 to 510.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules with 5% Sandstone stringers as above.
510.00 to 515.00 (5.00)	100%	**Shale** as above, good trace pyrite nodules
515.00 to 520.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules with minor Sandstone stringers as above.
520.00 to 525.00 (5.00)	100%	**Shale** medium gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules with 10% Sandstone stringers as above.
525.00 to 530.00 (5.00)	100%	**Shale** medium to occasionally dark gray as above.

530.00 to 535.00 (5.00)	100%	**Shale** medium to occasionally dark gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules, trace minor frosted calcite (fractures closed @ depth?) with 5% Sandstone stringers as above.
535.00 to 540.00 (5.00)	100%	**Shale** medium to occasionally dark gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules, trace minor micro fractures infilled with calcite with 5% Sandstone stringers as above.
540.00 to 545.00 (5.00)	100%	**Shale** medium to occasionally dark gray, blocky, soft to firm, slightly micromicaceous, trace silty, minor sandy in part, trace minor carbonaceous specks, trace sideritic in part, trace inoceramus, pyrite nodules, trace minor frosted calcite as above with 5% Sandstone stringers as above.
545.00 to 550.00 (5.00)	100%	**Shale** medium to occasionally dark gray, blocky, moderately firm, slightly micromicaceous, trace silty, trace sandy in part, slightly carbonaceous in part, trace sideritic in part, trace inoceramus, pyrite nodules & disseminated pyrite, trace minor frosted calcite as above with 5% Sandstone stringers as above.
550.00 to 555.00 (5.00)	100%	**Shale** medium to occasionally dark gray, gray brown in part, minor sub fissile, slightly micromicaceous, slightly carbonaceous, occasionally sideritic, disseminated pyrite, trace frosted calcite as above, with 3% Sandstone stringers, medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, dark lithic grains, trace pyritic, silty, shaly, no visible porosity or shows.
555.00 to 560.00 (5.00)	100%	**Shale** medium to occasionally dark gray, gray brown in part, minor sub fissile, slightly micromicaceous, slightly carbonaceous, occasionally sideritic, disseminated pyrite, trace frosted calcite as above, with 3% Sandstone stringers, medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, dark lithic grains, trace pyritic, silty, shaly, no visible porosity or shows.
560.00 to 565.00 (5.00)	100%	**Shale** medium to occasionally dark gray, gray brown in part, minor sub fissile, slightly micromicaceous, slightly carbonaceous, occasionally sideritic, disseminated pyrite, trace frosted calcite as above, with occasional Sandstone stringers as above.
565.00 to 570.00 (5.00)	100%	**Shale** medium to occasionally dark gray, gray brown in part, minor sub fissile, slightly micromicaceous, slightly carbonaceous, occasionally sideritic, disseminated pyrite, trace frosted calcite as above, with 3% Sandstone stringers, medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, dark lithic grains, trace pyritic, silty, shaly, no visible porosity or shows.

570.00 to 575.00 (5.00)	100%	**Shale** medium to occasionally dark gray, minor sub fissile, slightly micromicaceous, slightly carbonaceous, trace sideritic, trace pyrite nodules & disseminated pyrite with 3% Sandstone stringers as above.
575.00 to 580.00 (5.00)	100%	**Shale** medium to occasionally dark gray, minor sub fissile, slightly micromicaceous, slightly carbonaceous, trace sideritic, pyrite, trace clear coarse crystalline calcite with minor Sandstone stringers as above.
580.00 to 585.00 (5.00)	100%	**Shale** medium to occasionally dark gray, minor sub fissile, slightly micromicaceous, slightly carbonaceous, trace sideritic, trace disseminated pyrite with 3% Sandstone stringers as above, occasionally grades to siltstone in part.
585.00 to 590.00 (5.00)	100%	**Shale** medium to occasionally dark gray, trace sub fissile, slightly micromicaceous, slightly carbonaceous, poor trace sideritic, trace disseminated pyrite with minor Sandstone stringers as above, occasionally grades to siltstone in part.
590.00 to 595.00 (5.00)	100%	**Shale** medium to occasionally dark gray, trace sub fissile, slightly micromicaceous, slightly carbonaceous, poor trace sideritic, trace disseminated pyrite with trace Sandstone stringers & laminations as above, occasionally grades to siltstone in part.
595.00 to 600.00 (5.00)	100%	**Shale** medium to occasionally dark gray, sub fissile in part, slightly micromicaceous, slightly carbonaceous, poor trace sideritic, trace disseminated pyrite, trace frosted calcite with minor Sandstone stringers & laminations as above, occasionally grades to siltstone in part.
600.00 to 605.00 (5.00)	100%	**Shale** medium to dark gray, slightly micromicaceous, trace carbonaceous specks with minor interbedded Sandstone stringers & laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, trace glauconitic, slightly silty, shaly, no visible porosity, no shows.
605.00 to 610.00 (5.00)	100%	**Shale** medium to dark gray, slightly micromicaceous, subfissile in part, trace carbonaceous specks, trace silty, trace pyrite with minor interbedded Sandstone stringers & laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, trace glauconitic, slightly silty, shaly, no visible porosity, no shows.
610.00 to 615.00 (5.00)	100%	**Shale** medium to dark gray, slightly micromicaceous, subfissile in part, trace carbonaceous specks, trace silty, trace pyrite with minor interbedded Sandstone stringers & laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, trace glauconitic, slightly silty, shaly, no visible porosity, no shows.

615.00 to 620.00 (5.00)	100%	**Shale** medium to dark gray, slightly micromicaceous, subfissile in part, trace carbonaceous specks, trace silty, trace pyrite with 10% interbedded Sandstone stringers & laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, trace glauconitic, slightly silty, shaly, no visible porosity, no shows.
620.00 to 625.00 (5.00)	70%	**Shale** medium to dark gray, slightly micromicaceous, subfissile in part, trace carbonaceous specks, trace silty, trace pyrite.
	30%	**SANDSTONE** light to medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, trace glauconitic, slightly silty, shaly, no visible porosity, no shows
625.00 to 630.00 (5.00)	70%	**Shale** as above
	30%	**Sandstone** light to medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, trace glauconitic, slightly silty, shaly, no visible porosity, no shows
630.00 to 635.00 (5.00)	100%	**Shale** medium to dark gray, slightly micromicaceous, subfissile in part, trace carbonaceous specks, trace silty, trace pyrite with 10% interbedded Sandstone stringers & laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, trace glauconitic, slightly silty, shaly, no visible porosity, no shows.
635.00 to 640.00 (5.00)	100%	**Shale** medium to dark gray, slightly micromicaceous, subfissile in part, trace carbonaceous specks, trace silty, trace pyrite with minor interbedded Sandstone stringers & laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay cement, slightly calcareous, trace glauconitic, slightly silty, shaly, no visible porosity, no shows.
640.00 to 645.00 (5.00)	100%	**Shale** medium to dark gray, slightly micromicaceous, subfissile in part, trace carbonaceous specks, trace silty, trace pyrite with minor interbedded Sandstone stringers & laminations as above.
645.00 to 650.00 (5.00)	100%	**Shale** medium to dark gray, slightly micromicaceous, subfissile in part, trace carbonaceous specks, trace silty, trace pyrite with minor interbedded Sandstone laminations as above.
650.00 to 655.00 (5.00)	100%	**Shale** medium to dark gray, slightly micromicaceous, subfissile in part, trace carbonaceous specks, trace silty, trace pyrite with minor interbedded Sandstone laminations as above.

655.00 to 660.00 (5.00)	100%	**Shale** medium to dark gray, slightly micromicaceous, subfissile in part, trace carbonaceous specks, trace silty, trace frosted coarse crystalline calcite with minor interbedded Sandstone laminations as above.
660.00 to 665.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, minor silty with occasional Sandstone laminations as above.
665.00 to 670.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, minor silty with occasional Sandstone laminations as above.
670.00 to 675.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, minor silty with occasional Sandstone laminations as above.
675.00 to 680.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, minor silty with occasional Sandstone laminations as above.
680.00 to 685.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, minor silty with occasional Sandstone laminations as above.
685.00 to 690.00 (5.00)	100%	**Shale** as above with abundant coarse crystalline frosted calcite (fracture?)
690.00 to 695.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, minor silty, trace calcite as above with occasional Sandstone laminations as above.
695.00 to 700.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations as above.
700.00 to 705.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, abundant frosted coarse crystalline calcite, trace minor Sandstone laminations as above.
705.00 to 710.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations as above.
710.00 to 715.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations as above.

715.00 to 720.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations as above.

720.00 to 725.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations as above.

725.00 to 730.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations as above.

730.00 to 735.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray, very fine grained, sub angular, moderately wsrt, clay matrix, slightly calcareous, trace glauconitic, trace dark lithic grains, silty in part, no visible porosity, no shows.

735.00 to 740.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray, very fine grained, sub angular, moderately wsrt, clay matrix, slightly calcareous, trace glauconitic, trace dark lithic grains, silty in part, no visible porosity, no shows.

740.00 to 745.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray, very fine grained, sub angular, moderately wsrt, clay matrix, slightly calcareous, trace glauconitic, trace dark lithic grains, silty in part, no visible porosity, no shows.

745.00 to 750.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray, very fine grained, sub angular, moderately wsrt, clay matrix, slightly calcareous, trace glauconitic, trace dark lithic grains, silty in part, no visible porosity, no shows.

750.00 to 755.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray as above.

755.00 to 760.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray as above.

760.00 to 765.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray as above.

765.00 to 770.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray as above.

770.00 to 775.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray as above.

775.00 to 780.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray as above.

780.00 to 785.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite, minor calcite as above, trace minor Sandstone laminations, light to medium gray as above.

785.00 to 790.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite with 5% Sandstone laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay matrix, slightly calcareous, silty, shaly in part, trace pyritic, dark lithic grains, no visible porosity, no shows.

790.00 to 795.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite with 10% Sandstone laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay matrix, slightly calcareous, silty, shaly in part, trace pyritic, dark lithic grains, no visible porosity, no shows.

795.00 to 800.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite with 10% Sandstone laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay matrix, slightly calcareous, silty, shaly in part, trace pyritic, dark lithic grains, no visible porosity, no shows.

800.00 to 805.00 (5.00) 100% **Shale**
medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite with 5% Sandstone laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay matrix, slightly calcareous, silty, shaly in part, trace pyritic, dark lithic grains, no visible porosity, no shows.

805.00 to 810.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite with 5% Sandstone laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay matrix, slightly calcareous, silty, shaly in part, trace pyritic, dark lithic grains, no visible porosity, no shows.
810.00 to 815.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite with minor Sandstone laminations as above.
815.00 to 820.00 (5.00)	100%	**Shale** as above
820.00 to 825.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace pyrite with minor Sandstone laminations, light to medium gray, very fine grained, sub angular, moderately well sorted, clay matrix, slightly calcareous, silty, shaly in part, trace pyritic, dark lithic grains, no visible porosity, no shows.
825.00 to 830.00 (5.00)	100%	**Shale** medium to dark gray, subfissile in part, slightly carbonaceous, trace silty, slightly micromicaceous, trace disseminated pyrite, trace fish scales with trace minor Sandstone laminations as above with trace Limestone stringers, buff fragmental wackestone, trace pyritic, dense, no shows.
830.00 to 835.00 (5.00)	100%	**Shale** medium to dark gray, platy, fissile, slightly micromicaceous, trace pyrite, trace limestone as above with trace light bue claystone, soft, waxy texture.
835.00 to 840.00 (5.00)	100%	**Shale** medium to dark gray, platy in part, occasionally fissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace minor Limestone laminations as above.
840.00 to 845.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus.
845.00 to 850.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus with minor 2% Siltstone stringers, light to medium gray, clay & calcareous cement, grades to very fine grained sandstone in part, tight, no shows.
850.00 to 855.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus with minor Siltstone stringers as above.

855.00 to 860.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus with minor Siltstone stringers as above.
860.00 to 865.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus with minor Siltstone stringers as above.
865.00 to 870.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus with minor Siltstone stringers as above with trace light blue claystone as above.
870.00 to 875.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus with minor Siltstone stringers as above.
875.00 to 880.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus, trace frosted calcite.
880.00 to 885.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus, trace frosted calcite with trace minor Limestone stringers light gray to buff brown, mudstone to wackestone, micrite matrix, slightly argillaceous, dense, no shows.
885.00 to 890.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, trace inoceramus, trace frosted calcite.
890.00 to 895.00 (5.00)	100%	**Shale** as above with abundant inoceramus with minor Limestone stringers as above.
895.00 to 900.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, abundant inoceramus, trace Limestone as above.
900.00 to 905.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, inoceramus, trace micro fractures infilled with calcite & limestone as above.
905.00 to 910.00 (5.00)	100%	**Shale** as above
910.00 to 915.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, inoceramus, trace Limestone as above.

915.00 to 920.00 (5.00)	100%	**Shale** medium to dark gray, subfissile, slightly micromicaceous, slightly carbonaceous, trace pyrite, trace silty in part, abundant inoceramus, trace Limestone as above.
920.00 to 925.00 (5.00)	100%	**Shale** as above with trace minor Claystone light gray, waxy, trace mica flakes, disseminated pyrite.
925.00 to 930.00 (5.00)	100%	**Shale** medium gray, occasionally dark gray, sub fissile, slightly carbonaceous, slightly micromicaceous, inoceramus, trace micro fractures infilled with white calcite, trace minor claystone as above.
930.00 to 935.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus, trace micro fractures infilled with white calcite.
935.00 to 940.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus, trace micro fractures infilled with white calcite.
940.00 to 945.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus.
945.00 to 950.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus, poor trace sideritic in part.
950.00 to 955.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus.
955.00 to 960.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus, trace micro fractures infilled with white calcite.
960.00 to 965.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus, trace micro fractures infilled with white calcite.
965.00 to 970.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus, trace micro fractures infilled with white calcite.
970.00 to 975.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus, trace micro fractures infilled with white calcite.
975.00 to 980.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus, trace light gray claystone, waxy, trace sandy, mica flakes.

980.00 to 985.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus, trace light gray claystone, waxy, trace sandy, mica flakes.
985.00 to 990.00 (5.00)	100%	**Shale** medium to dark gray, sub fissile, carbonaceous, slightly micromicaceous, trace pyrite, trace inoceramus, increasing light gray claystone, waxy, trace sandy, mica flakes.
990.00 to 995.00 (5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, increasing silty, trace glauconitic, trace pyritic, slightly micromicaceous,
995.00 to 1,000.00 (5.00)	100%	**Shale** as above
1,000.00 to 1,005.00 (5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, slightly silty, trace glauconitic, trace pyritic, slightly sideritic.
1,005.00 to 1,010.00 (5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, slightly silty, trace glauconitic, trace pyritic, slightly sideritic.
1,010.00 to 1,015.00 (5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, slightly silty, trace glauconitic, trace pyritic, slightly sideritic.
1,015.00 to 1,020.00 (5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, slightly silty, trace pyritic, slightly sideritic.
1,020.00 to 1,025.00 (5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, slightly silty, trace pyritic, slightly sideritic.
1,025.00 to 1,030.00 (5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, slightly silty, trace pyritic, slightly sideritic.
1,030.00 to 1,035.00 (5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, slightly silty, trace pyritic, slightly sideritic.
1,035.00 to 1,040.00 (5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, slightly silty, trace pyritic, slightly sideritic.
1,040.00 to 1,045.00 (5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, slightly silty, trace pyritic, slightly sideritic.

1,045.00 to 1,050.00	(5.00)	100%	**Shale** as above with minor light green claystone laminations, soft, waxy texture. coarse crystalline calcite (mud add?)
1,050.00 to 1,055.00	(5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, poor trace slightly silty, trace pyritic.
1,055.00 to 1,060.00	(5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, poor trace slightly silty, trace pyritic, sideritic in part with trace brown siderite fragments with trace minor Limestone stringers light brown, mudstone, argillaceous, grades to marlstone in part, dense, no show.
1,060.00 to 1,065.00	(5.00)	100%	**Shale** medium gray, dark gray in part, sub fissile, poor trace slightly silty, trace pyritic, sideritic in part with trace brown siderite fragments with trace minor Limestone stringers light brown, mudstone, argillaceous, grades to marlstone in part, dense, no show.
1,065.00 to 1,070.00	(5.00)	100%	**Shale** medium gray, sub fissile, slightly micromicaceous, trace pyrite, trace minor Limestone stringers as above.
1,070.00 to 1,075.00	(5.00)	100%	**Shale** medium gray, sub fissile, slightly micromicaceous, trace pyrite, trace minor Limestone stringers as above.
1,075.00 to 1,080.00	(5.00)	100%	**Shale** as above
1,080.00 to 1,085.00	(5.00)	100%	**Shale** predominately medium gray, sub fissile, slightly micromicaceous, trace pyrite, trace minor limestone stringers as above with trace minor light brown siderite fragments.
1,085.00 to 1,090.00	(5.00)	100%	**Shale** predominately medium gray, sub fissile, slightly micromicaceous, trace pyrite, trace minor limestone stringers as above with trace minor light brown siderite fragments.
1,090.00 to 1,095.00	(5.00)	100%	**Shale** predominately medium gray, sub fissile, slightly micromicaceous, trace pyrite.
1,095.00 to 1,100.00	(5.00)	100%	**Shale** predominately medium gray, sub fissile, slightly micromicaceous, trace pyrite, trace minor limestone stringers as above with trace minor light bnr siderite fragments.
1,100.00 to 1,105.00	(5.00)	80%	**Shale** as above

1,100.00 to 1,105.00 (5.00)	20%	**Sandstone** light gray, very fine grained, sub angular, moderately well sorted, calcareous, silty, trace glauconitic, trace minor dark lithic grains, tight, no shows.
1,105.00 to 1,110.00 (5.00)	100%	**Shale** predominately medium gray, sub fissile, slightly micromicaceous, trace pyrite, trace minor sandstone stringers as above, trace brown siderite fragments.
1,110.00 to 1,115.00 (5.00)	100%	**Shale** medium gray, minor dark gray, sub fissile, slightly micromicaceous, trace pyrite, poor trace sandstone stringers as above.
1,115.00 to 1,120.00 (5.00)	100%	**Shale** medium gray, sub fissile, slightly micromicaceous, trace pyrite, poor trace sandstone stringers as above, trace crinoids with trace minor Limestone stringers as above.
1,120.00 to 1,125.00 (5.00)	100%	**Shale** as above
1,125.00 to 1,130.00 (5.00)	100%	**Shale** medium gray, minor dark gray, sub fissile, moderately firm, slightly micromicaceous, pyrite.
1,130.00 to 1,135.00 (5.00)	100%	**Shale** as above
1,135.00 to 1,140.00 (5.00)	50%	**Sandstone** light gray, upper very fine grained, sub angular, moderately well sorted, very calcareous, grades to sandy limestone in part, very glauconitic, trace minor dark lithic grains, slightly silty, no visible porosity, no shows.
	50%	**Shale** as above, sandy & glauconitic.
1,140.00 to 1,145.00 (5.00)	70%	**Sandstone** cream to light gray, upper very fine grained, sub angular, moderately well sorted, very calcareous, grades to sandy limestone in part, very glauconitic, trace minor dark lithic grains, slightly silty, no visible porosity, no shows.
	30%	**Shale** medium gray, blocky, occasionally silty, sandy in part, glauconitic, slightly micromicaceous.
1,145.00 to 1,150.00 (5.00)	50%	**Sandstone** cream to light gray, upper very fine grained, sub angular, moderately well sorted, calcareous & clay cement, grades to sandy limestone in part, very glauconitic, trace minor dark lithic grains, slightly silty, trace shale laminations, no visible porosity, no shows.
	50%	**Shale** medium to occasionally dark gray, sub fissile in part, occasionally glauconitic, occasionally sandy, trace silty, slightly micromicaceous.

1,150.00 to 1,155.00 (5.00)	70%	**Sandstone** cream to light gray, upper very fine grained, sub angular, moderately well sorted, calcareous & clay cement, grades to sandy limestone in part, very glauconitic, trace minor dark lithic grains, slightly silty, trace shale laminations, no visible porosity, no shows.
	30%	**Shale** as above
1,155.00 to 1,160.00 (5.00)	80%	**Shale** medium to dark gray, sub fissile in part, slightly micromicaceous, slightly carbonaceous, occasionally silty, trace sandy in part, trace glauconitic, trace pyrite.
	20%	**Sandstone** as above, medium gray in part as above, shaly.
1,160.00 to 1,165.00 (5.00)	70%	**Shale** medium to dark gray, sub fissile in part, slightly micromicaceous, slightly carbonaceous, occasionally silty, trace sandy in part, trace glauconitic, trace pyrite.
	30%	**Sandstone** cream to light gray, lower very fine grained, sub angular, moderately well sorted, calcareous & clay cement, grades to sandy limestone in part, very glauconitic, trace minor dark lithic grains, slightly silty, trace shale laminations, no visible porosity, no shows.
1,165.00 to 1,170.00 (5.00)	80%	**Shale** medium to dark gray, sub fissile in part, slightly micromicaceous, slightly carbonaceous, occasionally silty, trace sandy in part, trace glauconitic, trace pyrite.
	20%	**Sandstone** as above
1,170.00 to 1,175.00 (5.00)	70%	**Shale** predominately as above with trace light gray green shale laminations, slightly micromicaceous, trace pyritic, slightly waxy texture in part.
	30%	**Sandstone** cream to light gray, very fine grained, sub angular, medium sorting, calcareous & clay cement, trace glauconitic, trace quartz pebbles, trace light colored chert pebbles, silty, occasionally shaly in part, no visible porosity, no shows with minor Sandstone cream to light gray, fine grained, sub angular, moderately well sorted, calcareous & clay cement, glauconitic, slightly shaly in part, minor unconsolidated, poor intergranular porosity?, no visible shows
1,175.00 to 1,180.00 (5.00)	80%	**Shale** as above
	20%	**Sandstone** as above with Sandstone cream to light gray, fine grained, sub angular, moderately well sorted, calcareous & clay cement, glauconitic, slightly shaly in part, minor unconsolidated, poor intergranular porosity?, no visible shows

1,180.00 to 1,185.00 (5.00)	80%	**Shale** predominately medium to dark gray as above with trace gray green shale as above.
	20%	**Sandstone** as above
1,185.00 to 1,190.00 (5.00)	90%	**Shale** light gray green, slightly micromicaceous, sub fissile in part, slightly waxy texture, trace silty & minor sandy in part.
	10%	**Sandstone** light gray very fine grained as above, grades to siltstone in part.
1,190.00 to 1,195.00 (5.00)	100%	**Shale** light gray green, slightly micromicaceous, sub fissile in part, slightly waxy texture, trace silty & minor sandy in part.
1,195.00 to 1,200.00 (5.00)	100%	**Shale** light gray green, slightly micromicaceous, sub fissile in part, slightly waxy texture, trace silty & minor sandy in part with light gray to buff marlstone, soft, chalky, dense.
1,200.00 to 1,205.00 (5.00)	100%	**Shale** gray green, medium gray, sub fissile, slightly micromicaceous, slightly calcareous, slightly waxy texture in part, occasionally sandy, trace silty in part with minor Sandstone stringers, light gray, gray green, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, silty, shaly, trace sideritic in part, tight, no shows.
1,205.00 to 1,210.00 (5.00)	100%	**Shale** gray green, medium gray, sub fissile, slightly micromicaceous, slightly calcareous, slightly waxy texture in part, occasionally sandy, trace silty in part with minor Sandstone stringers, light gray, gray green, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, silty, shaly, trace sideritic in part, tight, no shows.
1,210.00 to 1,215.00 (5.00)	100%	**Shale** gray green, medium gray, sub fissile, slightly micromicaceous, slightly calcareous, slightly waxy texture in part, occasionally sandy, trace silty in part with minor Sandstone stringers, light gray, gray green, very fine grained, sub nag, moderately well sorted, calcareous & clay cement, silty, shaly, trace sideritic in part, tight, no shows.
1,215.00 to 1,220.00 (5.00)	100%	**Shale** gray green, medium gray, sub fissile, slightly micromicaceous, slightly calcareous, slightly waxy texture in part, occasionally sandy, trace silty in part with minor Sandstone stringers, light gray, gray green, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, silty, shaly, trace sideritic in part, tight, no shows.

1,220.00 to 1,225.00 (5.00) 100% **Shale**
gray green, medium gray, gray brown in part, sub fissile, slightly micromicaceous, slightly waxy texture in part, occasionally sandy, trace silty in part with minor Sandstone & siltstone stringers.

1,225.00 to 1,230.00 (5.00) 100% **Shale**
gray green, medium gray, gray brown in part, sub fissile, slightly micromicaceous, slightly waxy texture in part, pyrite, occasionally sandy, trace silty in part with minor Siltstone stringers gray, gray green, clay cement, sandy, grades to very fine grained sandstone in part, shaly, occasionally slightly sideritic, tight, no shows.

1,230.00 to 1,235.00 (5.00) 100% **Shale**
gray green, medium gray, gray brown in part, sub fissile, slightly micromicaceous, slightly waxy texture in part, pyrite, occasionally sandy, trace silty in part with minor Siltstone stringers gray, gray green, clay cement, sandy, grades to very fine grained sandstone in part, shaly, occasionally slightly sideritic, tight, no shows.

1,235.00 to 1,240.00 (5.00) 100% **Shale**
gray green, medium gray, gray brown in part, sub fissile, slightly micromicaceous, slightly waxy texture in part, pyrite, occasionally sandy, trace silty in part with minor Siltstone stringers gray, gray green, clay cement, sandy, grades to very fine grained sandstone in part, shaly, occasionally slightly sideritic, tight, no shows.

1,240.00 to 1,245.00 (5.00) 100% **Shale**
gray green, medium gray, gray brown in part, sub fissile, slightly micromicaceous, slightly waxy texture in part, pyrite, occasionally sandy, trace silty in part with minor Siltstone stringers gray, gray green, clay cement, sandy, grades to very fine grained sandstone in part, shaly, occasionally slightly sideritic, tight, no shows.

1,245.00 to 1,250.00 (5.00) 100% **Shale**
as above with trace Limestone stringers, buff, light brown, mudstone to wackestone, micro matrix, argillaceous, sandy, dense, no shows

1,250.00 to 1,255.00 (5.00) 100% **Shale**
predominately gray green, sub fissile, slightly micromicaceous, slightly waxy texture in part, pyrite, occasionally sandy, trace silty in part with minor Siltstone stringers gray, gray green, clay cement, sandy, grades to very fine grained sandstone in part, shaly, occasionally slightly sideritic, tight, no shows.

1,255.00 to 1,260.00 (5.00) 100% **Shale**
predominately gray green, sub fissile, slightly micromicaceous, slightly waxy texture in part, trace pyrite, trace sandy, trace silty in part with minor Siltstone stringers gray, gray green, clay cement, sandy, grades to very fine grained sandstone in part, shaly, occasionally slightly sideritic, tight, no shows.

1,260.00 to 1,265.00 (5.00) 100% **Shale**
predominately gray green, sub fissile, slightly micromicaceous, slightly waxy texture in part, trace pyrite, trace sandy, trace silty in part with minor Siltstone stringers as above with Sandstone stringers, light gray, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, trace glauconitic, shaly, silty, tight, no shows.

1,265.00 to 1,270.00 (5.00) 100% **Shale**
predominately gray green, sub fissile, slightly micromicaceous, slightly waxy texture in part, trace pyrite, trace sandy, trace silty in part with minor Siltstone stringers as above with Sandstone stringers, light gray, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, trace glauconitic, shaly, silty, tight, no shows.

1,270.00 to 1,275.00 (5.00) 100% **Shale**
predominately gray green, sub fissile, slightly micromicaceous, slightly waxy texture in part, trace pyrite, trace sandy, trace silty in part with minor Siltstone stringers as above with Sandstone stringers, light gray, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, trace glauconitic, shaly, silty, tight, no shows.

1,275.00 to 1,280.00 (5.00) 100% **Shale**
gray green, gray, sub fissile, slightly micromicaceous, slightly waxy texture in part, trace pyrite, trace sandy, trace silty in part with minor Siltstone stringers as above with Sandstone stringers, light gray, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, trace glauconitic, shaly, silty, tight, no shows.

1,280.00 to 1,285.00 (5.00) 100% **Shale**
gray green, gray, sub fissile, slightly micromicaceous, slightly waxy texture in part, trace pyrite, trace sandy, trace silty in part with minor Siltstone stringers as above with minor Sandstone stringers, light gray, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, trace glauconitic, shaly, silty, tight, no shows.

1,285.00 to 1,290.00 (5.00) 100% **Shale**
gray green, gray, sub fissile, micromicaceous, slightly waxy texture in part, trace pyrite, trace sandy, trace silty in part with minor Siltstone stringers as above with Sandstone stringers, light gray, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, trace glauconitic, shaly, silty, tight, no shows.

1,290.00 to 1,295.00 (5.00) 100% **Shale**
gray green, gray, sub fissile, micromicaceous, slightly waxy texture in part, trace pyrite, trace sandy, trace silty in part with minor Siltstone stringers as above with Sandstone stringers, light gray, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, trace glauconitic, shaly, silty, tight, no shows.

1,295.00 to 1,300.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace pyrite, trace sandy, trace silty in part with minor Siltstone stringers as above with Sandstone stringers, light gray, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, trace glauconitic, shaly, silty, tight, no shows.

1,300.00 to 1,305.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace pyrite, trace sandy, trace silty in part with minor Siltstone stringers as above with Sandstone stringers as above.

1,305.00 to 1,310.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace sandy, trace silty in part with minor Sandstone & Siltstone stringers as above.

1,310.00 to 1,315.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace sandy, trace silty in part with minor Sandstone & Siltstone stringers as above.

1,315.00 to 1,320.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace sandy, trace silty in part with minor Sandstone & Siltstone stringers as above.

1,320.00 to 1,325.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace sandy, trace silty in part with minor Sandstone & Siltstone stringers as above.

1,325.00 to 1,330.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace sandy, trace silty in part with minor Sandstone & Siltstone stringers as above.

1,330.00 to 1,335.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace sandy, trace silty in part with minor Sandstone & Siltstone stringers as above.

1,335.00 to 1,340.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace sandy, trace silty in part.

1,340.00 to 1,345.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace sandy, trace silty in part.

1,345.00 to 1,350.00 (5.00) 100% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace sandy, trace silty in part with 10% Sandstone stringers, light gray, gray green, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, shaly in part, occasionally silty, trace glauconitic, tight, no shows.

1,350.00 to 1,355.00 (5.00) 60% **Sandstone**
light gray, light gray brown, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, grades to sandy limestone in part, trace arkosic in part, trace sideritic, no visible porosity, no shows.

40% **Shale**
light to medium gray, gray green, sub fissile, micromicaceous, slightly waxy texture in part, trace sandy, trace silty in part.

1,355.00 to 1,360.00 (5.00)	80%	**Sandstone** as above
	20%	**Shale** as above
1,360.00 to 1,365.00 (5.00)	70%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part.
	30%	**Sandstone** as above
1,365.00 to 1,370.00 (5.00)	80%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part.
	20%	**Sandstone** as above
1,370.00 to 1,375.00 (5.00)	60%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part.
	40%	**Sandstone** as above
1,375.00 to 1,380.00 (5.00)	50%	**Sandstone** light to medium gray, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, silty, shaly in part, trace arkosic, trace glauconitic, no visible porosity, no show.
	50%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part.
1,380.00 to 1,385.00 (5.00)	60%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part.
	40%	**Sandstone** as above
1,385.00 to 1,390.00 (5.00)	100%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part with minor Sandstone stringers as above.

1,390.00 to 1,395.00 (5.00)	100%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part.
1,395.00 to 1,400.00 (5.00)	100%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part.
1,400.00 to 1,405.00 (5.00)	70%	**Sandstone** light gray, cream, light rust in part, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, silty, shaly in part, trace arkosic, trace ferruginous in part, trace dark lithic grains, no visible porosity, no shows.
	30%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part.
1,405.00 to 1,410.00 (5.00)	100%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part with 20% Sandstone stringers as above
1,410.00 to 1,415.00 (5.00)	100%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part, grades to shaly siltstone in part
1,415.00 to 1,420.00 (5.00)	100%	**Shale** light to medium gray, gray green, sub fissile in part, slightly micromicaceous, trace sandy, trace silty in part with light gray Claystone, soft, calcareous, grades to marlstone in part with 20% Siltstone stringers, light to medium gray, clay cement, sandy, shaly, tight, no shows.
1,420.00 to 1,425.00 (5.00)	100%	**Shale** as above with 20% Siltstone as above.
1,425.00 to 1,430.00 (5.00)	70%	**Shale** light to medium gray, subfissile in part, slightly micromicaceous, trace silty with 10% Siltstone stringers, light gray, calcareous & clay cement, shaly, tight, no shows.
	30%	**Sandstone** light gray, very fine grained, sub angular, moderately well sorted, calcareous & clay cement, silty, shaly in part, trace glauconitic, trace arkosic, tight, no shows.
1,430.00 to 1,435.00 (5.00)	80%	**Shale** as above
	20%	**Sandstone** as above, gray green in part.

1,435.00 to 1,440.00 (5.00)	80%	**Shale** light to medium gray, slightly micromicaceous, occasionally silty, soft to moderately firm, sub fissile in part with abundant Siltstone stringers & laminations, light to medium gray, gray green in part, clay matrix, slightly calcareous, shaly, sandy in part, tight, no shows.
	20%	**Sandstone** as above
1,440.00 to 1,445.00 (5.00)	80%	**Shale** light to medium gray, slightly micromicaceous, occasionally silty, soft to moderately firm, sub fissile in part with abundant Siltstone stringers & laminations, light to medium gray, gray green in part, clay matrix, slightly calcareous, shaly, sandy in part, tight, no shows.
	20%	**Sandstone** as above
1,445.00 to 1,450.00 (5.00)	80%	**Shale** light to medium gray, slightly micromicaceous, occasionally silty, soft to moderately firm, sub fissile in part with abundant Siltstone stringers & laminations, light to medium gray, gray green in part, clay matrix, slightly calcareous, shaly, sandy in part, tight, no shows.
	20%	**Sandstone** as above
1,450.00 to 1,455.00 (5.00)	70%	**Shale** light to medium gray, slightly micromicaceous, occasionally silty, soft to moderately firm, sub fissile in part with abundant Siltstone stringers & laminations, light to medium gray, gray green in part, clay matrix, slightly calcareous, shaly, sandy in part, tight, no shows.
	30%	**Sandstone** light gray, very fine grained, sub angular, moderately well sorted, sub angular, calcareous & clay cement, trace glauconitic, trace arkosic, trace dark lithic grains, silty, shaly, tight, no shows.
1,455.00 to 1,460.00 (5.00)	100%	**Shale** light to medium gray, slightly micromicaceous, occasionally silty, soft to moderately firm, sub fissile in part with abundant Siltstone stringers & laminations, light to medium gray, gray green in part, clay matrix, slightly calcareous, shaly, sandy in part, tight, no shows.
1,460.00 to 1,465.00 (5.00)	90%	**Shale** light to medium gray, slightly micromicaceous, occasionally silty, soft to moderately firm, sub fissile in part with abundant Siltstone stringers & laminations, light to medium gray, gray green in part, clay matrix, slightly calcareous, shaly, sandy in part, tight, no shows.
	10%	**Sandstone** as above

1,465.00 to 1,470.00 (5.00)	90%	**Shale** predominately medium gray, slightly micromicaceous, slightly silty, soft to moderately firm, sub fissile in part with abundant Siltstone stringers & laminations, light to medium gray, gray green in part, clay matrix, slightly calcareous, shaly, sandy in part, tight, no shows.
	10%	**Sandstone** as above
1,470.00 to 1,475.00 (5.00)	60%	**Shale** as above
	40%	**Sandstone** cream, light to medium gray, very fine grained, sub angular, moderately well sorted, quartz with light colored chert, calcareous & clay cement, silty, shaly in part, trace minor dark lithic grains, poor trace arkosic, very slightly sideritic? in part, no visible porosity or show.
1,475.00 to 1,480.00 (5.00)	70%	**Shale** predominately medium gray, slightly micromicaceous, slightly silty, soft to moderately firm, sub fissile in part with abundant Siltstone stringers & laminations, light to medium gray, gray green in part, clay matrix, slightly calcareous, shaly, sandy in part, tight, no shows.
	30%	**Sandstone** as above
1,480.00 to 1,485.00 (5.00)	70%	**Siltstone** light to medium gray, clay cement, slightly calcareous, trace sandy, grades to silty shale in part, trace dark lithic grains, trace carbonaceous matter, tight, no shows.
	30%	**Shale** as above, very silty, grades to siltstone.
1,485.00 to 1,490.00 (5.00)	80%	**Siltstone** light to medium gray, clay cement, slightly calcareous, trace sandy, grades to silty shale in part, trace dark lithic grains, trace carbonaceous matter, tight, no shows.
	20%	**Shale** as above
1,490.00 to 1,495.00 (5.00)	80%	**Siltstone** light to medium gray, clay cement, slightly calcareous, trace sandy, grades to silty shale in part, trace dark lithic grains, trace carbonaceous matter, tight, no shows.
	20%	**Shale** as above
1,495.00 to 1,500.00 (5.00)	80%	**Shale** light to medium gray, blocky, very silty, slightly micromicaceous, grades to shaly siltstone in part, subfissile in part.

1,495.00 to 1,500.00 (5.00)	20%	**Siltstone** light to medium gray, clay cement, slightly calcareous, trace sandy, grades to silty shale in part, trace dark lithic grains, trace carbonaceous matter, tight, no shows.
1,500.00 to 1,505.00 (5.00)	70%	**Shale** as above
	20%	**Siltstone** as above
	10%	**Sandstone** as above
1,505.00 to 1,510.00 (5.00)	60%	**Shale** light to medium gray, blocky, very silty, subfissile in part, slightly micromicaceous, trace sandy, trace carbonaceous specks.
	30%	**Siltstone** light to medium gray, clay cement, slightly calcareous, trace sandy, grades to silty shale in part, trace dark lithic grains, trace carbonaceous matter, tight, no shows.
	10%	**Sandstone** as above
1,510.00 to 1,515.00 (5.00)	90%	**Shale** as above
	10%	**Siltstone** as above
1,515.00 to 1,520.00 (5.00)	70%	**Sandstone** cream to light gray, very fine grained, sub angular, well sorted, calcareous & clay cement, trace dark lithic grains, trace glauconitic, silty, tight, no shows.
	30%	**Shale** as above
1,520.00 to 1,525.00 (5.00)	100%	**Shale** medium gray, slightly micromicaceous, subfissile in part, occasionally silty, trace slightly sideritic in part with abundant Siltstone stringers as above with occasional Sandstone stringers as above.
1,525.00 to 1,530.00 (5.00)	100%	**Shale** medium gray, slightly micromicaceous, subfissile in part, occasionally silty, trace slightly sideritic in part with abundant Siltstone stringers as above with occasional Sandstone stringers as above.
1,530.00 to 1,535.00 (5.00)	100%	**Shale** medium gray, slightly micromicaceous, subfissile in part, occasionally silty, trace slightly sideritic in part with abundant Siltstone stringers as above with occasional Sandstone stringers as above.

1,535.00 to 1,540.00 (5.00)	70%	**Sandstone** cream to light gray, very fine grained as above.
	30%	**Shale** as above
1,540.00 to 1,545.00 (5.00)	80%	**Sandstone** light gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, grades to siltstone in part, occasionally shaly, tight, no shows.
	20%	**Shale** as above
1,545.00 to 1,550.00 (5.00)	70%	**Sandstone** light to medium gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, grades to siltstone in part, occasionally shaly, tight, no shows.
	30%	**Shale** as above, grades to siltstone in part
1,550.00 to 1,555.00 (5.00)	100%	**Sandstone** very light gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, trace dark lithic grains, grades to siltstone in part, trace shaly in part, tight, no shows.
1,555.00 to 1,560.00 (5.00)	100%	**Sandstone** very light gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, trace dark lithic grains, grades to siltstone in part, trace shaly in part, tight, no shows.
1,560.00 to 1,565.00 (5.00)	100%	**Sandstone** very light gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, trace dark lithic grains, grades to siltstone in part, trace shaly in part, tight, no shows with minor Shale laminations as above.
1,565.00 to 1,570.00 (5.00)	100%	**Sandstone** very light gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, trace dark lithic grains, grades to siltstone in part, trace shaly in part, tight, no shows with minor Shale laminations as above.
1,570.00 to 1,575.00 (5.00)	100%	**Sandstone** very light gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, trace dark lithic grains, grades to siltstone in part, trace shaly in part, tight, no shows with minor Shale laminations as above.
1,575.00 to 1,580.00 (5.00)	100%	**Sandstone** very light gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, trace dark lithic grains, grades to siltstone in part, trace shaly in part, tight, no shows with minor Shale laminations as above.

1,580.00 to 1,585.00 (5.00)	50%	**Sandstone** very light gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, trace dark lithic grains, grades to siltstone in part, trace shaly in part, tight, no shows with minor Shale laminations as above.
	50%	**Siltstone** light gray, calcareous & clay cement, sandy, slightly shaly, trace carbonaceous specks, tight, no show.
1,585.00 to 1,590.00 (5.00)	70%	**Sandstone** very light gray, lower very fine grained, sub angular, well sorted, calcareous & clay cement, trace glauconitic, silty, trace dark lithic grains, grades to siltstone in part, trace shaly in part, tight, no shows with minor Shale laminations as above.
	30%	**Siltstone** as above
1,590.00 to 1,595.00 (5.00)	100%	**Siltstone** as above, grades to very fine grained sandstone in part, grades to silty shale in part.
1,595.00 to 1,600.00 (5.00)	100%	**Siltstone** light gray, calcareous & clay matrix, trace carbonaceous specks, trace glauconitic, sandy & shaly in part, tight, no shows.
1,600.00 to 1,605.00 (5.00)	100%	**Siltstone** as above
1,605.00 to 1,610.00 (5.00)	100%	**Siltstone** light gray, calcareous & clay matrix, trace carbonaceous specks, trace glauconitic, sandy & shaly in part, tight, no shows with minor Shale as above.
1,610.00 to 1,615.00 (5.00)	100%	**Siltstone** light gray, calcareous & clay matrix, trace carbonaceous specks, trace glauconitic, sandy & shaly in part, tight, no shows with 10% Shale laminations as above.
1,615.00 to 1,620.00 (5.00)	100%	**Siltstone** light gray, calcareous & clay matrix, trace carbonaceous specks, trace glauconitic, sandy & shaly in part, tight, no shows with 10% shale laminations.
1,620.00 to 1,625.00 (5.00)	50%	**Siltstone** as above
	30%	**Sandstone** cream to light gray, spotty light tan, very fine grained, sub angular, well sorted, quartzose, minor light colored chert, calcareous, clay cement in part, trace dark lithic grains, tight to poor intergranular porosity 3%, spotty light brown dead oil stain, no visible fluorescence.
	20%	**Shale** as above

1,625.00 to 1,630.00 (5.00)	50%	**Shale** medium to occasionally dark gray, sub fissile in part, slightly micromicaceous, silty in part, trace sandy in part.
	30%	**Sandstone** as above
	20%	**Siltstone** as above
1,630.00 to 1,635.00 (5.00)	50%	**Shale** medium to occasionally dark gray, sub fissile in part, slightly micromicaceous, silty in part, trace sandy in part.
	30%	**Siltstone** as above
	20%	**Sandstone** as above
1,635.00 to 1,640.00 (5.00)	50%	**Siltstone** light gray, medium gray in part, calcareous & clay matrix, occasionally sandy, shaly in part, tight, no shows.
	30%	**Shale** medium to occasionally dark gray, sub fissile in part, slightly micromicaceous, silty in part, trace sandy in part.
	20%	**Sandstone** light gray, lower very fine grained, sub angular, well sorted, as above.
1,640.00 to 1,645.00 (5.00)	80%	**Shale** medium to occasionally dark gray, sub fissile in part, slightly micromicaceous, silty in part, trace sandy in part.
	20%	**Siltstone** as above
1,645.00 to 1,650.00 (5.00)	80%	**Shale** medium gray, slightly micromicaceous, subfissile in part, occasionally silty, poor trace carbonaceous specks.
	20%	**Siltstone** as above
1,650.00 to 1,655.00 (5.00)	100%	**Shale** medium gray, slightly micromicaceous, subfissile in part, occasionally silty, grades to shaly siltstone in part, poor trace carbonaceous specks with 10% Siltstone stringers as above.

1,655.00 to 1,660.00 (5.00) 100% **Shale**
medium gray, slightly micromicaceous, subfissile in part, occasionally silty, grades to shaly siltstone in part, poor trace carbonaceous specks with minor Siltstone stringers as above.

1,660.00 to 1,665.00 (5.00) 100% **Shale**
medium gray, slightly micromicaceous, subfissile in part, occasionally silty, grades to shaly siltstone in part, poor trace carbonaceous specks with minor Siltstone stringers as above.

1,665.00 to 1,670.00 (5.00) 100% **Shale**
medium gray, slightly micromicaceous, subfissile in part, occasionally silty, grades to shaly siltstone in part, poor trace carbonaceous specks with minor Siltstone stringers as above.

1,670.00 to 1,675.00 (5.00) 100% **Shale**
medium gray, slightly micromicaceous, subfissile in part, occasionally silty, grades to shaly siltstone in part, poor trace carbonaceous specks with minor Siltstone stringers as above.

1,675.00 to 1,680.00 (5.00) 100% **Shale**
medium gray, slightly micromicaceous, subfissile in part, occasionally silty, grades to shaly siltstone in part, poor trace carbonaceous specks with trace Siltstone stringers as above.

1,680.00 to 1,685.00 (5.00) 100% **Shale**
medium gray, slightly micromicaceous, subfissile in part, occasionally silty, grades to shaly siltstone in part, poor trace carbonaceous specks with trace Siltstone stringers as above.

1,685.00 to 1,690.00 (5.00) 100% **Shale**
medium gray, slightly micromicaceous, subfissile in part, trace silty, grades to shaly siltstone in part, poor trace carbonaceous specks.

1,690.00 to 1,695.00 (5.00) 100% **Shale**
medium gray, slightly micromicaceous, subfissile in part, trace silty, grades to shaly siltstone in part, poor trace carbonaceous specks.

1,695.00 to 1,700.00 (5.00) 100% **Shale**
medium gray, slightly micromicaceous, subfissile in part, trace silty, grades to shaly siltstone in part, poor trace carbonaceous specks.

1,700.00 to 1,705.00 (5.00) 100% **Shale**
medium to occasionally dark gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks.

1,705.00 to 1,710.00 (5.00) 100% **Shale**
medium to occasionally dark gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks.

1,710.00 to 1,715.00 (5.00) 100% **Shale**
medium to occasionally dark gray, slightly micromicaceous, subfissile, trace silty, poor trace carbonaceous specks.

1,715.00 to 1,720.00	(5.00)	100%	**Shale** medium to occasionally dark gray, slightly micromicaceous, subfissile, trace silty, poor trace carbonaceous specks.
1,720.00 to 1,725.00	(5.00)	100%	**Shale** medium to occasionally dark gray, slightly micromicaceous, subfissile, trace silty, poor trace carbonaceous specks.
1,725.00 to 1,730.00	(5.00)	100%	**Shale** medium to occasionally dark gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks.
1,730.00 to 1,735.00	(5.00)	100%	**Shale** predominately medium gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks.
1,735.00 to 1,740.00	(5.00)	100%	**Shale** predominately medium gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks.
1,740.00 to 1,745.00	(5.00)	100%	**Shale** predominately medium gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks.
1,745.00 to 1,750.00	(5.00)	100%	**Shale** predominately medium gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks.
1,750.00 to 1,755.00	(5.00)	100%	**Shale** predominately medium gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks.
1,755.00 to 1,760.00	(5.00)	100%	**Shale** predominately medium gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks with trace minor Siltstone stringers, medium gray, clay cement, slightly calcareous, shaly, tight, no shows.
1,760.00 to 1,765.00	(5.00)	100%	**Shale** predominately medium gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks with trace minor Siltstone stringers, medium gray, clay cement, slightly calcareous, shaly, tight, no shows.
1,765.00 to 1,770.00	(5.00)	100%	**Shale** predominately medium gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks with trace minor Siltstone stringers, medium gray, clay cement, slightly calcareous, shaly, tight, no shows.
1,770.00 to 1,775.00	(5.00)	100%	**Shale** predominately medium gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks with trace minor Siltstone stringers, medium gray, clay cement, slightly calcareous, shaly, tight, no shows.

1,775.00 to 1,780.00 (5.00) 100% **Shale**
predominately medium gray, slightly micromicaceous, subfissile in part, trace silty, poor trace carbonaceous specks with trace minor Siltstone stringers, medium gray, clay cement, slightly calcareous, shaly, tight, no shows.

1,780.00 to 1,785.00 (5.00) **Sample Missed**

1,785.00 to 1,790.00 (5.00) 100% **Shale**
predominately medium gray, slightly micromicaceous, subfissile in part, silty in part, poor trace carbonaceous specks with trace minor Siltstone stringers, medium gray, clay cement, slightly calcareous, shaly, tight, no shows.

1,790.00 to 1,795.00 (5.00) 100% **Shale**
predominately medium gray, slightly micromicaceous, subfissile in part, silty in part, poor trace carbonaceous specks with trace minor Siltstone stringers, medium gray, clay cement, slightly calcareous, shaly, tight, no shows.

1,795.00 to 1,800.00 (5.00) 100% **Shale**
predominately medium gray, slightly micromicaceous, subfissile in part, silty in part, poor trace carbonaceous specks with trace minor Siltstone stringers, medium gray, clay cement, slightly calcareous, shaly, tight, no shows.

1,800.00 to 1,805.00 (5.00) 100% **Shale**
predominately medium gray, minor dark gray, slightly micromicaceous, subfissile in part, silty in part, poor trace carbonaceous specks.

1,805.00 to 1,810.00 (5.00) 100% **Shale**
predominately medium gray, minor dark gray, slightly micromicaceous in part, subfissile, silty in part, poor trace carbonaceous specks.

1,810.00 to 1,815.00 (5.00) 100% **Shale**
predominately medium gray, minor dark gray, slightly micromicaceous, subfissile in part, silty in part, poor trace carbonaceous specks.

1,815.00 to 1,820.00 (5.00) 100% **Shale**
predominately medium gray, trace dark gray, slightly micromicaceous, subfissile in part, poor trace silty in part, poor trace carbonaceous specks.

1,820.00 to 1,825.00 (5.00) 100% **Shale**
predominately medium gray, trace dark gray, slightly micromicaceous, increasing subfissile, poor trace silty in part, poor trace carbonaceous specks.

1,825.00 to 1,830.00 (5.00) 100% **Shale**
predominately medium gray, trace dark gray, slightly micromicaceous, subfissile, poor trace silty in part, poor trace carbonaceous specks.

1,830.00 to 1,835.00 (5.00) 100% **Shale**
predominately medium gray, increasing dark gray, slightly micromicaceous, subfissile, poor trace silty in part, poor trace carbonaceous specks.

1,835.00 to 1,840.00 100% **Shale**
(5.00) predominately medium gray, increasing dark gray, slightly micromicaceous, subfissile, poor trace silty in part, poor trace carbonaceous specks.

1,840.00 to 1,845.00 100% **Shale**
(5.00) predominately medium gray, occasional dark gray, slightly micromicaceous, subfissile, poor trace silty in part, poor trace carbonaceous specks.

1,845.00 to 1,850.00 100% **Shale**
(5.00) predominately medium gray, minor darker gray, subfissile, slightly micromicaceous, trace silty in part with trace minor Siltstone laminations, medium gray, clay matrix, slightly calcareous, shaly, tight, no shows.

1,850.00 to 1,855.00 100% **Shale**
(5.00) predominately medium gray, minor darker gray, subfissile, moderately firm, slightly micromicaceous, trace silty in part.

1,855.00 to 1,860.00 100% **Shale**
(5.00) predominately medium gray, minor darker gray, subfissile, moderately firm, slightly micromicaceous, trace silty in part.

1,860.00 to 1,865.00 100% **Shale**
(5.00) predominately medium gray, minor darker gray, subfissile, moderately firm, slightly micromicaceous, trace silty in part.

1,865.00 to 1,870.00 100% **Shale**
(5.00) predominately medium gray, minor darker gray, subfissile, moderately firm, slightly micromicaceous, trace silty in part.

1,870.00 to 1,875.00 100% **Shale**
(5.00) predominately medium gray, minor darker gray, subfissile, moderately firm, slightly micromicaceous, trace silty in part.

1,875.00 to 1,880.00 100% **Shale**
(5.00) predominately medium gray, minor darker gray, subfissile, moderately firm, slightly micromicaceous, trace silty in part.

1,880.00 to 1,885.00 100% **Shale**
(5.00) predominately medium gray, minor darker gray, subfissile, moderately firm, slightly micromicaceous, trace silty in part.

1,885.00 to 1,890.00 100% **Shale**
(5.00) predominately medium gray, minor darker gray, subfissile, moderately firm, slightly micromicaceous, trace silty in part.

2,108.00 to 2,110.00 100% **Limestone**
(2.00) gray brown, mudstone to wackestone, unidentifiable fossil shadow & debris, slightly argillaceous, no visible porosity or shows.

2,110.00 to 2,115.00 100% **Limestone**
(5.00) gray brown, mudstone to wackestone, unidentifiable fossil shadow & debris, slightly argillaceous, no visible porosity or shows.

2,115.00 to 2,120.00 (5.00) 100% **Limestone**
gray brown, mudstone to wackestone, unidentifiable fossil shadow & debris, slightly argillaceous, no visible porosity or shows.

2,120.00 to 2,125.00 (5.00) 100% **Limestone**
gray brown, mudstone to wackestone, unidentifiable fossil shadow & debris, slightly argillaceous, no visible porosity or shows.

2,130.00 to 2,135.00 (5.00) 100% **Limestone**
as above

2,135.00 to 2,140.00 (5.00) 100% **Limestone**
gray brown, mudstone to wackestone, soft, chalky, unidentifiable fossil shadow & debris, slightly argillaceous, no visible porosity or shows.

2,140.00 to 2,146.00 (6.00) 100% **Limestone**
gray brown, mudstone to wackestone, soft, chalky, unidentifiable fossil shadow & debris, slightly argillaceous, no visible porosity or shows.

Well Information

Operator:	**ConocoPhillips Canada Resources Corp.**
Well Name:	**COPRC Mirror Lake N-20**
Location:	**Unit:N Section:20, Grid: 65-00 126-45**
UWI:	300N206500126450
Pool / Field:	Undefined / Mirror Lake
Well License #:	470
Province / State:	Northwest Territories
Country:	Canada

Elevations

Reference:	Ground	**Ground:**	281.3 m
Cut(-) / Fill(+):		**Kelly Bushing:**	286.5 m
K.B. to Ground:	5.2 m	**Casing Flange:**	281.63 m

Total Depth

Measurement Type	Measured Depth	True Vertical Depth
Drillers TD (Tally)	2146 m	2144.5 m
Drillers TD (Strap or SLM)	m	m
Loggers TD	2148.75 m	2147.25 m

Well Co - Ordinates

	Longitude	Latitude	
			Well Type: Vertical
Surface Co-Ordinates:	126 48' 14.6" W	64 59' 46.8" N	**NS:** **EW:**
Int. Casing Co-Ordinates:			**NS:** **EW:**
Bottom Hole Co-Ordinates:			**NS:** 39.94 Meters North **EW:** 39.96 Meters East of surface location
UTM Surface Co-Ordinates:	**Northing:** 7209651.62		**Easting:** 603555.85

Drilling Fluid Summary

Fluid Type	From	To
Gel Chem	0 m	601 m
Invert (Versaclean)	601 m	2146 m

Casing Summary

Type	Hole Size	Casing Size	Landed At
Surface	311 mm	244.5 mm	598 m
Production	222 mm	177.8 mm	2146 m

Well Summary

Spud Date:	Feb 25, 2013 @ 17:00hrs	**Contractor:**	Beaver Drilling Ltd.
TD Date:	Mar 20, 2013 @ 01:00hrs	**Rig Release Date:**	Mar 25, 2013

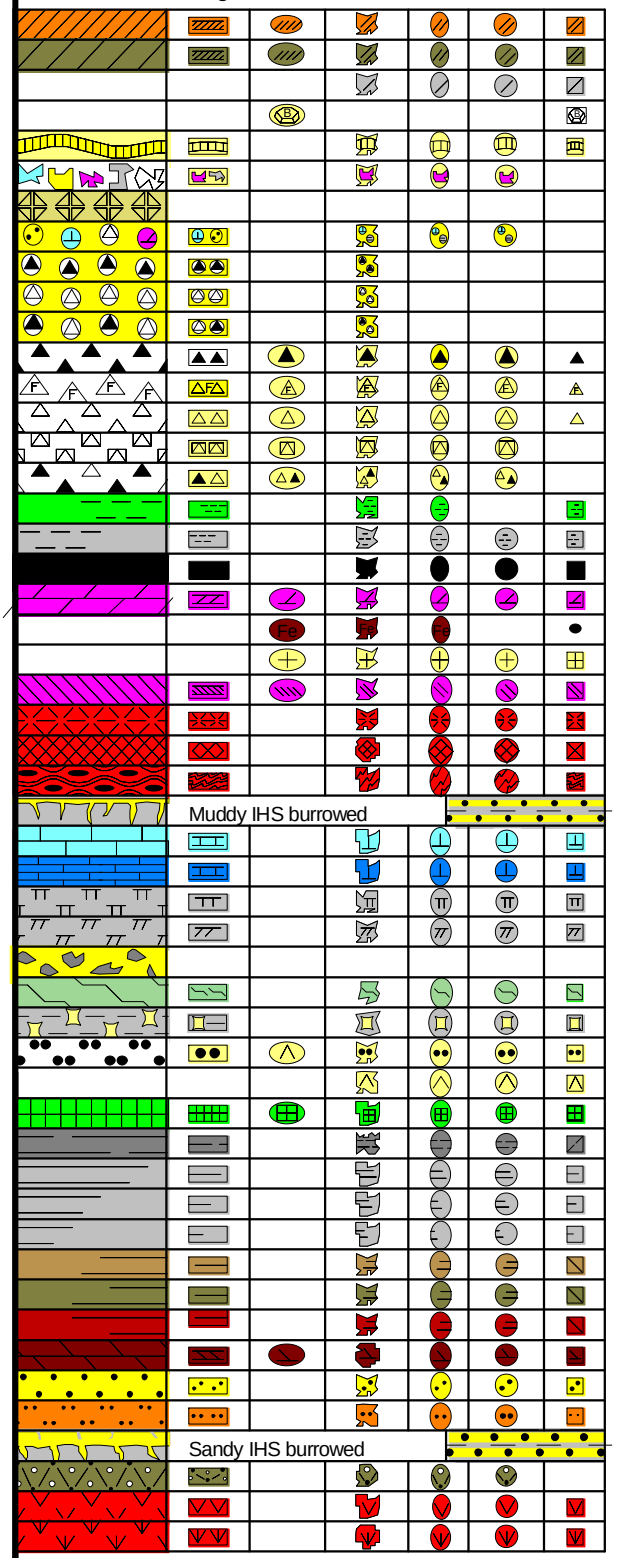
Work Schedule

Contractor	Geologist	Log Interval	Dates Logged
Black Gold Geotechnical	Dave Lawrence	0 m - 2146 m	Feb 25, 2013 - Mar 20, 2013

Remarks

Legend

Rock Types and Thin Beds



Accessories

	Anhydritic	G	Gibbsitic
	Argillaceous	I	Illitic
	Baritic	K	Kaolinitic
	Bentonitic	L	Lithic Fragment
	Bituminous		Marly - calcareous
	Calcareous		Marly - dolomitic
	Carbonaceous		Micromicaceous
	Cherty - dark	ML	Mixed layer clayey
F	Cherty - fossiliferous	M	Montmorillonitic
	Cherty - light		Phosphate pellets
	Cherty - tripolitic	P	Pyritic
	Cherty - varicolored		Salt casts
C	Chloritic		Sandy
	Clayey		Sideritic
	Dolomitic		Siliceous
Fe	Ferruginous staining		Silty
	Fractures		Stylolitic
	Glauconitic		Tuffaceous
	Gypsiferous	Z	Zeolitic

Fossils (Rock Builders)

	Aggregate grains		Foraminifera
	Algae - laminations	F	Fossil
	Algae - non descript		Fragmental
	Algae - ootoid		Gastropod
	Algae - skeletal		Graptolite
	Amphipora		Hydrozoa
	Belemnite		Intraclast
	Bioclastic		Mollusc
	Brachiopod		Oncolite
	Bryozoa		Oolite
	Calciphaera		Ostracod
	Cephalopod		Pelecypod
	Chaetetes		Pellet
	Coated grain		Pisolite
	Conodont		Plant Remains
	Coral	S	Plant Spores
	Coral - branching		Scaphopod
	Coral - head		Spicule
	Coral - colonial		Sponge
S	Coral - solitary		Stromatoporoid
	Crinoid	B	Stromatoporoid - bulbous
	Diatom	M	Stromatoporoid - massive
	Echnoid		Stromatoporoid - tabular
	Echnoid - spine		Tentaculites
	Fish Remains		Trilobite
	Euryamphipora		

Matrix

	Argillaceous		Marl - calcareous
BFS	Bafflestone		Marl - dolomitic
B	Bentonite		Micrite
BS	Bindstone	ML	Mixed Clay
	Bituminous	M	Montmorillonite
	Clay	MS	Mudstone
C	Chlorite	PS	Packstone
FLS	Floatstone	RS	Rudstone
FS	Framestone		Sand
G	Gibbsite		Silt
GS	Grainstone		Sparry Calcite
I	Illite	WS	Wackestone
K	Kaolinite	Z	Zeolite

Textures

C	Chalky	e	Earthy	mx	Microcrystalline
CX	Cryptocrystalline	L	Lithographic		Slickenside
MS	Mudstone	GS	Grainstone	BFS	Bafflestone
WS	Wackestone	FLS	Floatstone	BS	Bindstone
PS	Packstone	RS	Rudstone	FS	Framestone

Miscellaneous Grains

	Biotite		Mineral crystal		Orthoclase
	Glauconite		Mineral - dark		Plagioclase
	Mica flakes		Muscovite		Sand grain

Porosity Type Track

e	Earthy - low permeability - crystals / grains less than 1 / 16 mm		
	Fenestral - voids from gas bubbles - shrinkage cracks - birdseye texture		
X	Intercrystalline - Interfragmental - Intergranular		
F	Fracture	O	Organic - Bridged - Intrafossil
	Interoolitic - Interpelletoidal	P	Pinpoint - voids less than 1/ 16 mm
	Moldic	V	Vuggy - voids greater than 1 / 16 mm

Oil Show Track

	Even staining (75 - 100% of the rock is stained) - fluoresces in solvent
	Spotted staining (50 - 75% of the rock is stained) - fluoresces in solvent
	Spotted staining (25 - 50% of the rock is stained) - fluoresces in solvent
	Spotted staining (1 - 25% of the rock is stained) - fluoresces in solvent
	Questionable oil staining - No fluorescents in solvent
D	Dead oil staining - asphaltic - bitumen - pyrobitumen etc.
F	Fluoresces - no visible oil staining

Trace Fossil Track

An	Anconichnus	Ar	Arenicolites	At	Arthrophycus	As	Asterosoma
Au	Aulichnites	Be	Bergaueria	Cg	Camborygma	Cf	Celliforma
Cb	Chabutolithes	Ch	Chondrites	Cl	Climactichnites	Co	Conichnus
Cp	Cosmoraphe	C	Cruziana	Cy	Cylindrichnus	Da	Dactyloidites
Dm	Dimorphichnus	D	Diplocraterion	Ea	Eatonichnus	En	Entobia
Et	Entomichnus	Esc	Escape Traces	Ga	Gastrochaenolites	Gl	Glossifungites
G	Gyrolithes	Gy	Gyrophyllites	H	Helminthopsis	K	Kouphichnium
L	Lockeia	Lo	Lorenzinia	Mp	Macanopsis	Ma	Macaronichnus
Mo	Monocraterion	Ne	Neonereites	N	Nereites	O	Ophiomorpha
Pa	Palaeophycus	Pd	Paleodictyon	Pc	Paleohelcura	Pl	Paleoscolytus
Pt	Petalichnus	Py	Phycodes	Ph	Phycosiphon	P	Planolites
Pm	Psammichnites	Ps	Psilonichnus	Rh	Rhizocorallium	Rg	Rogerella
Ro	Rosselia	Ru	Rusophycus	Sb	Scalarituba	Sc	Schaubcylindrichnus
Sy	Scoyenia	Si	Siphonichnus	S	Skolithos	Sp	Spirophycus
Su	Subphyllochorda	Syn	Synaeresis Cracks	Te	Teichichnus	Tr	Terebellina
Td	Teredolites	Th	Thalassinoides	Tc	Trichichnus	Tp	Trichophycus
Ty	Trypanites	Z	Zoophycos				

Sedimentary Structures

	Ball and pillow		Bioturb-churned		Bioturb-slightly		Bioturb-moderate
	Bioturb-mod well		Bioturb-well		Boudinage		Burrows
	Clastic Dike		Clastic sill		Desiccation crack		Dish structure
	Fault-Large scale		Fault-Small scale		Flame structure		Flute mark
	Geopetal		Groove casts		Gutter casts		Load casts
	Inclined heterolithic strata				Mud chips		Mud drapes
	Neptunian dike		Pit marks		Pull-a-part		Rill marks
	Rip up clasts		Roots / root trace		Scour and Fill		Slump structure
	Swash marks		Synersis crack		Teepee structure		Tool marks
	Water Escape						

Cement

	Anhydritic		Gypsiferous
	Baritic		Hematitic
	Bituminous		Limonitic
	Calcareous		Pyritic
	Chert - dark		Salt
	Chert - light		Siderite
	Dolomitic		Siliceous
	Ferruginous		

Sorting Track

vP	Very poorly sorted - > 10 phi size grade classes
P	Poorly sorted - 6-10 phi size grade classes
M	Moderately sorted - 3-6 phi size grade classes
mW	Moderately well sorted - 2-3 phi size grade classes
W	Well sorted - < 2 phi size grade classes

Rounding Track

vA	Very Angular	**r**	Subrounded
A	Angular	**R**	Rounded
a	Subangular	**wR**	Well Rounded

Framework Track

Framework is a ratio between clastic material greater than 1/16 mm and primary void filler less than 1/16 mm.
? indicates questionable interpretation

Core Track

Indicates Cored Interval
Indicates Lost Core

Test Track

Indicates Tested Interval

Sedimentary Structures Bedding / Cross Bedding

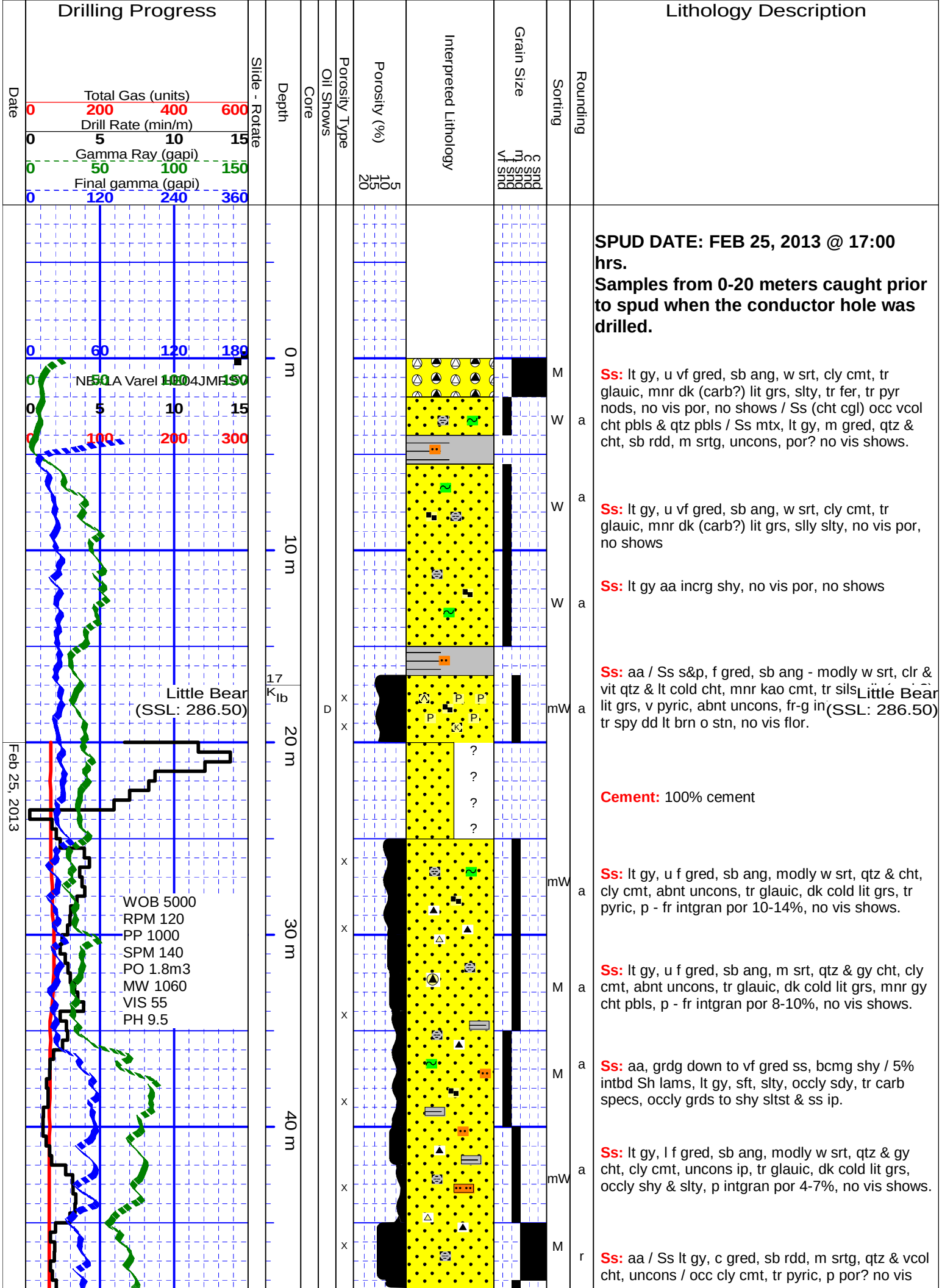
CM	Centimeter bedding		Inverted graded bedding
DM	Decimeter bedding		Massive bedding
MM	Millimeter bedding		Normal graded bedding
	Chevron x-bedding		Herringbone x-bedding
	Sigmoidal x-bedding		Hummocky x-bedding
	Swaley x-bedding		Planar/Tabular x-bedding
	Trough x-bedding		

Sedimentary Structures Laminations / Cross Laminations

	Climbing ripple xlam		Contorted/Slumped lams
	Current ripple xlam		Flaser laminations
	High angle xlam		High angle parrallel lams
	Lenticular lams		Low angle xlam
	Low angle para lam		Parallel laminations
	Trough xlam		Varved laminations
	Wave ripple xlam		Wavy laminations

Sedimentary Bedding Contacts

BIO	Bioturbated	BORED	Bored	CAL	Caliche / calcrete	COR	Corrosional	DC	Dessication cracks
EX	Exposure	FS	Flooding surface	GLOSS	Glossifungites	GRAD	Gradational	HG	Hardground
INCL	Inclined - sharp	IRR	Irregular - sharp	MFS	Maximum flooding surface			MC	Mud cracks
NOD	Nodular	PB	Parasequence boundary	RS	Ravinement surface	RSE	Regressive surface of erosion		
ROOT	Rooted	SCOUR	Scour	SB	Sequence boundary	SHARP	Sharp	TRUN	Truncation
TSE	Transgressive surface of erosion			UNCON	Unconformity	WAVY	Wavy		



SPUD DATE: FEB 25, 2013 @ 17:00 hrs.
Samples from 0-20 meters caught prior to spud when the conductor hole was drilled.

Ss: lt gy, u vf gred, sb ang, w srt, cly cmt, tr glauic, mnr dk (carb?) lit grs, slty, tr fer, tr pyr nods, no vis por, no shows / Ss (cht cgl) occ vcol cht pbls & qtz pbls / Ss mtx, lt gy, m gred, qtz & cht, sb rdd, m srtg, uncons, por? no vis shows.

Ss: lt gy, u vf gred, sb ang, w srt, cly cmt, tr glauic, mnr dk (carb?) lit grs, slly slty, no vis por, no shows

Ss: lt gy aa incrg shy, no vis por, no shows

Ss: aa / Ss s&p, f gred, sb ang - modly w srt, clr & vit qtz & lt cold cht, mnr kao cmt, tr sils, lit grs, v pyric, abnt uncons, fr-g in, tr spy dd lt brn o stn, no vis flor.

Cement: 100% cement

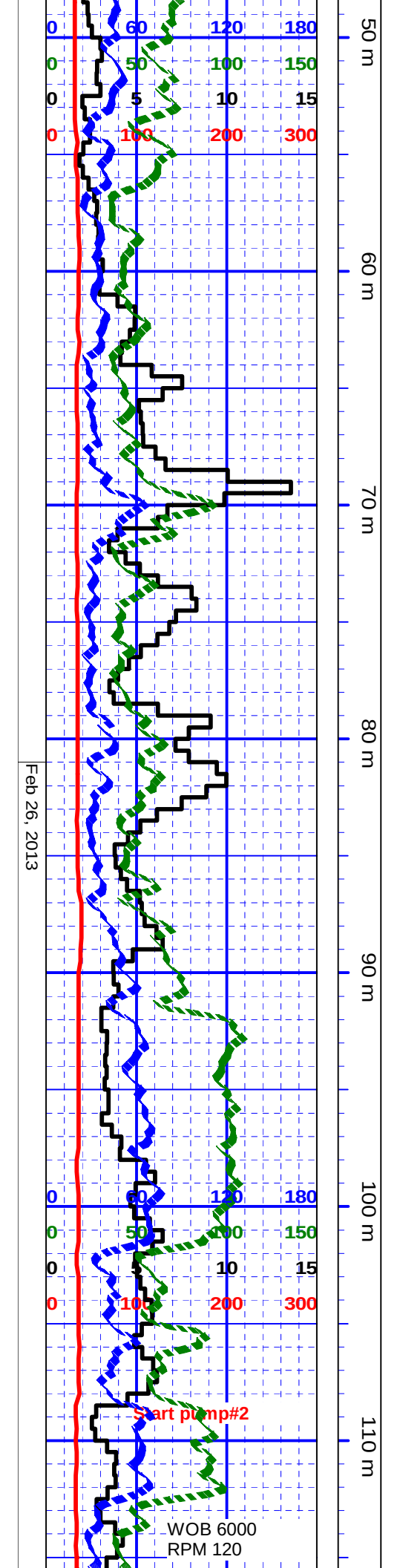
Ss: lt gy, u f gred, sb ang, modly w srt, qtz & cht, cly cmt, abnt uncons, tr glauic, dk cold lit grs, tr pyric, p - fr intgran por 10-14%, no vis shows.

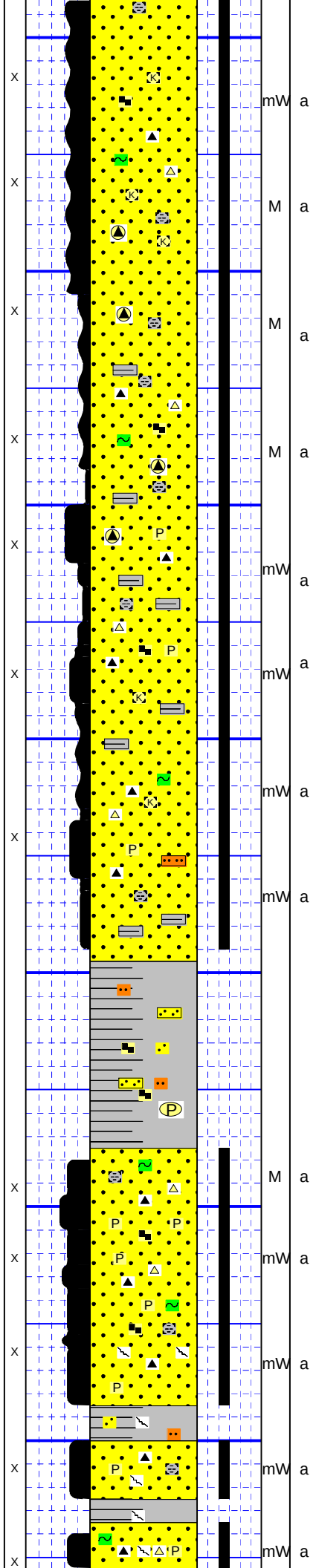
Ss: lt gy, u f gred, sb ang, m srt, qtz & gy cht, cly cmt, abnt uncons, tr glauic, dk cold lit grs, mnr gy cht pbls, p - fr intgran por 8-10%, no vis shows.

Ss: aa, grdg down to vf gred ss, bcmg shy / 5% intbd Sh lams, lt gy, sft, slty, occly sdy, tr carb specs, occly grds to shy sltst & ss ip.

Ss: lt gy, l f gred, sb ang, modly w srt, qtz & gy cht, cly cmt, uncons ip, tr glauic, dk cold lit grs, occly shy & slty, p intgran por 4-7%, no vis shows.

Ss: aa / Ss lt gy, c gred, sb rdd, m srtg, qtz & vcol cht, uncons / occ cly cmt, tr pyric, p por? no vis





shows.

Ss: s&p, u f gred, sb ang, modly w srt, qtz & gy cht, mnr kao cmt, slly sils, abnt uncons, carb lit grs, p tr glauic, 12% por? no vis shows.

Ss: s&p, u f gred, sb ang, m srtg, qtz & gy cht, mnr kao cmt, slly sils, predly uncons, carb lit grs, p tr glauic, tr occ gy cht pbl frags, 15% intgran por? no vis shows.

Ss: aa / mnr Sh lams, lt gy, blky, slty, sdy ip, tr pyr.

Ss: lt gy, f gred, sb ang, m srtg, cly cmt, abnt uncons, carb lit grs, tr pyric, tr glauic, occ vcol cht pbls, 10% por? no vis shows / mnr Sh lams aa.

Ss: aa / Ss v lt gy, vit qtzs, mnr lt gy cht, f gred, sb ang, modly w srt, cly cmt, tr mnr dk lit grs, tr pyric, p intgran por 4-7%, no vis shows.

Ss: aa

Ss: v lt gy aa / Ss s&p, u f gred, sb ang, modly w srt, kao cmt, dk lit grs, tr pyric, tr glauic, mnr carb mat, p - fr intgran por 4-9%, no vis shows.

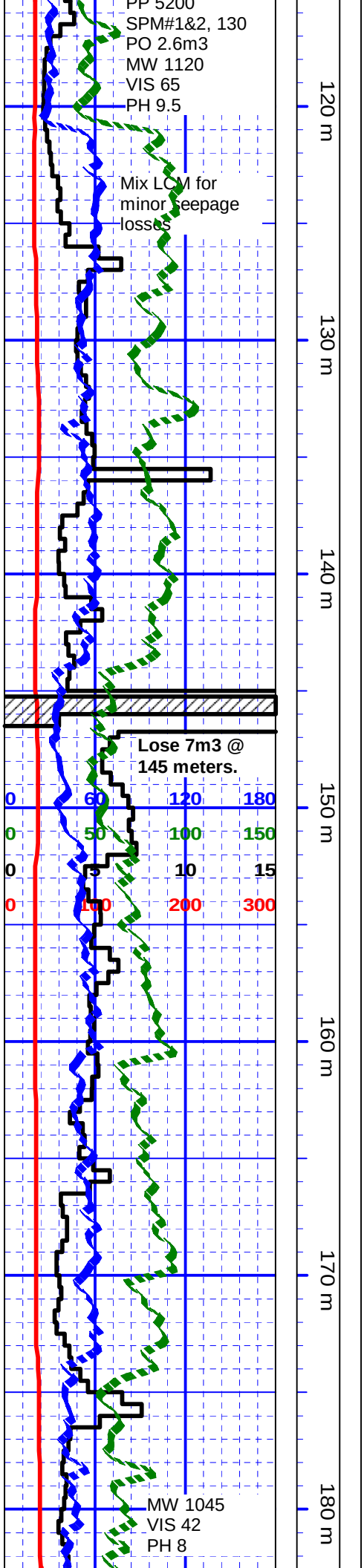
Ss: s&p aa / 10% Sh lams, lt gy, blky, slty, sdy ip, occly grds to shy vf gred ss ip, carb mat.

Sh: lt - m gy, blky, occly slty, slly sdy ip, tr carb mat, p tr pyr nods.

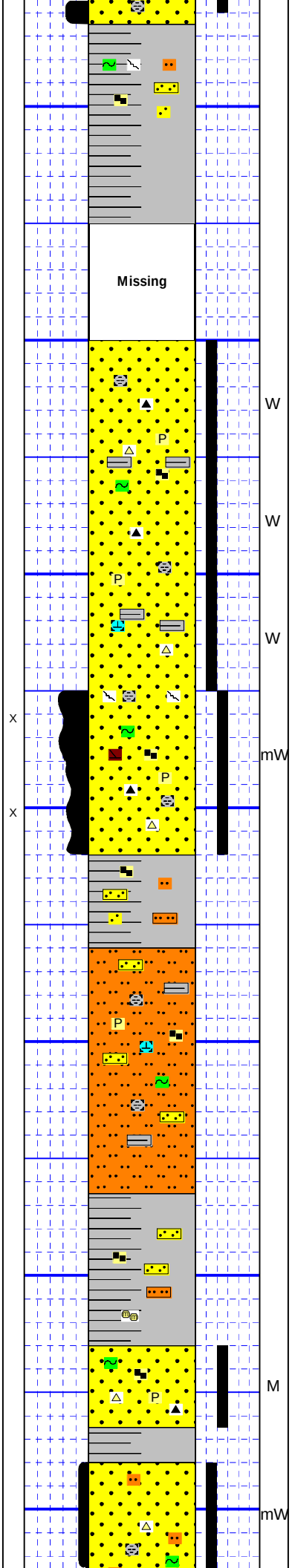
Ss: lt gy, s&p, u f gred, sb ang, m srtg, slly sils, mnr kao cmt, abnt uncons, dk lit grs, pyric, tr glauic, fr intgran por? 14%, no vis shows.

Ss: lt gy, s&p, u f gred, sb ang, modly w srt, cly cmt, abnt pyr, carb mat, tr glauic, g tr fros calc from vugs or fracs? fr intgran por? 10%, no vis shows / 10% sh lams aa.

Ss: lt gy, s&p, u f gred, sb ang, modly w srt, cly cmt, abnt pyr, carb mat, tr glauic, g tr fros calc from vugs or fracs? fr intgran por? 10%, no vis shows



120 m
130 m
140 m
150 m
160 m
170 m
180 m



W a

W a

W a

mW a

M a

mW a

Sh: lt - m gy, blky, slty, sdy, grds to shy sltst ip, tr glauic, tr carb specs.

Missed Sample

Ss: lt - m gy, vf gred, grds to sdy sltst ip, sb ang, w srt, cly cmt, slty, shy, carb specs & mat, tr glauic, tr pyric, tr fros calc aa, no vis por, no shows / 20% Sh lams aa.

Ss: aa / Ss v lt gy, u vf gred, sb ang, w srt, cly cmt, slly calcs, dk lit grs, slty, tr pyric, tr shy, predly tt, no shows.

Ss: p sample abnt LCM, lt gy, l f gred, sb ang, modly w srt, cly cmt, abnt uncons, tr glauic, dk lit grs, mnr fer, tr fros calc, fr intgran por? no vis shows / 10% Sh aa.

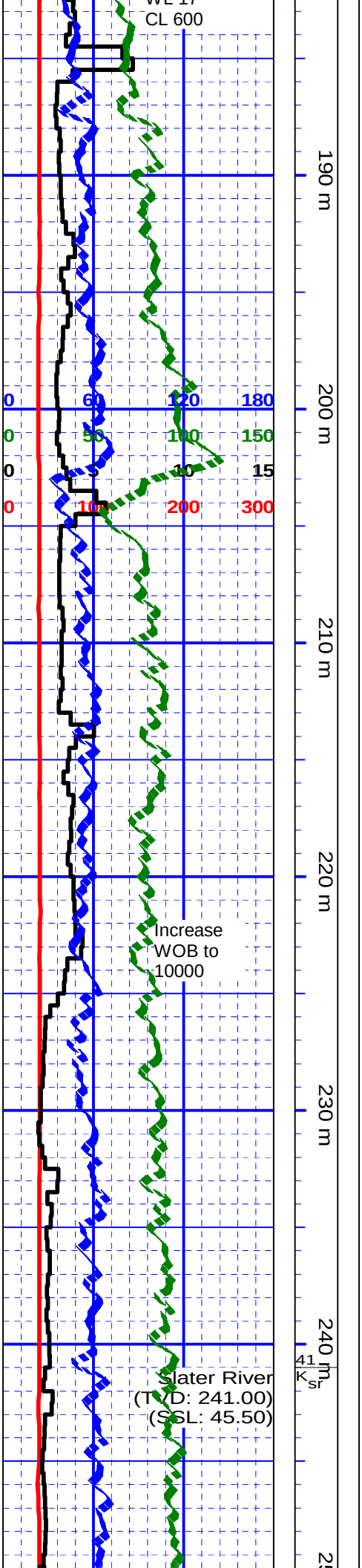
Sh: m gy, blky, slly mmca, occly slty, tr sdy, tr carb specs & mat.

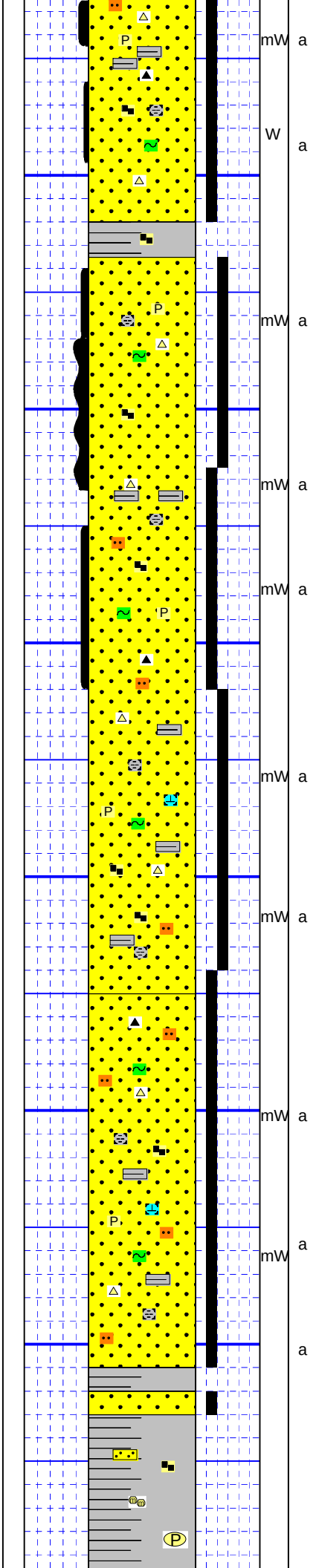
Sltst: lt gy, occly grds to vf gred ss ip, cly cmt, tr calcs, dk lit grs, tr pyric, tr glauic, predly tt, no shows.

Sh: m gy, blky, slty, occly sdy, occly grds to shy sltst, carb specs & mat, tr pyr.

Ss: lt gy, s&p, f gred, sb ang, m srtg, abnt uncons, cly cmt ip, dk lit grs, tr glauic, tr pyric, p por? no vis shows.

Ss: lt gy, vf gred, sb ang, modly w srt, abnt uncons, cly cmt, dk lit grs, tr glauic, slty, slly shy





ip, tr pyric, tt - p intgran por, no vis shows.

Ss: lt gy, l vf gred, sb ang, w srt, w cmt / cly cmt, slly calcs, dk lit grs, slty, tr glauic, shy ip, tt, no shows.

Ss: s&p, f gred, sb ang, modly w srt, cly cmt, occ uncons, dk lit grs, tr glauic, dism pyr, tr fros calc, p intgran por 7%, no vis shows

Ss: aa / Ss lt gy, vf gred, sb ang, modly w srt, cly cmt, slty, shy ip, tr glauic, tr pyric, tt, no vis shows

Ss: s&p, lt gy aa.

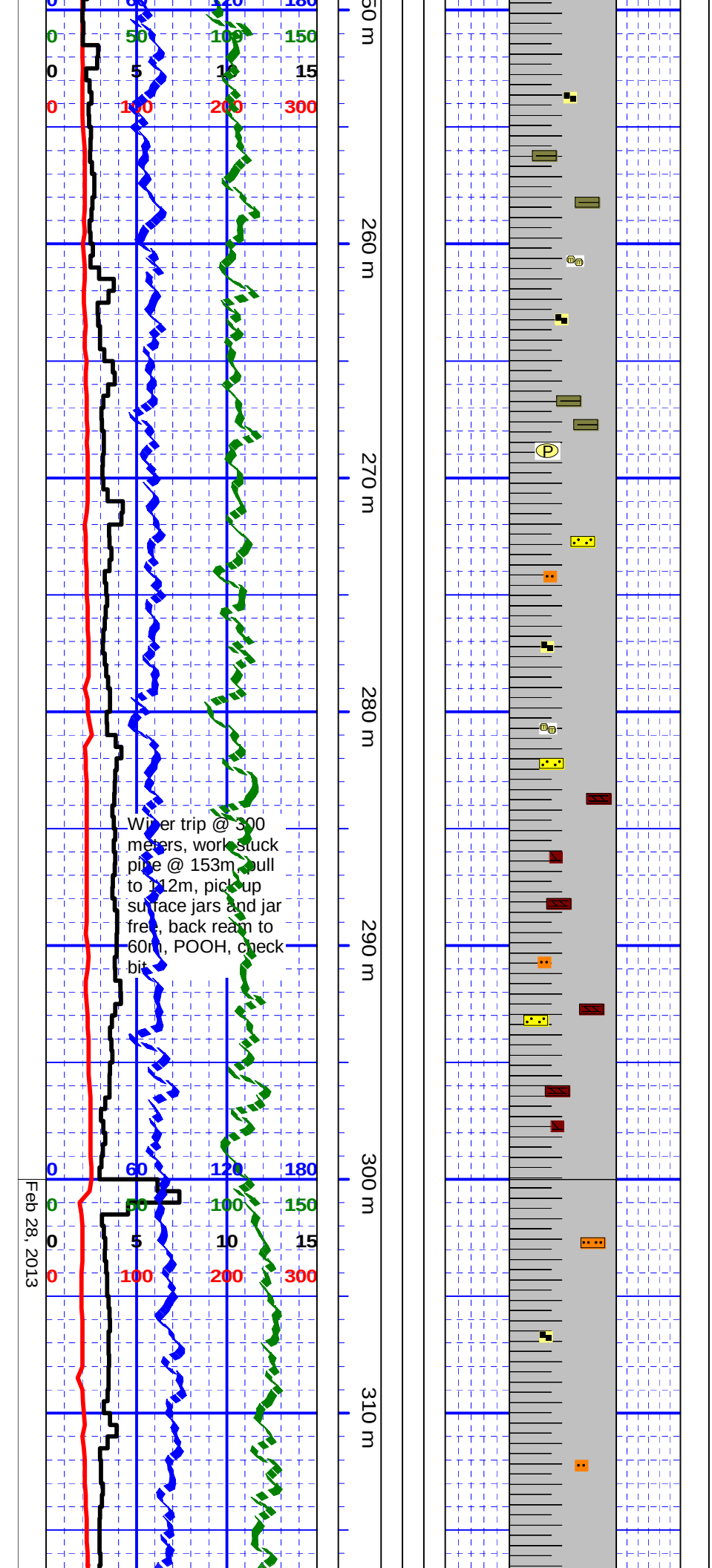
Ss: lt gy, f gred, sb ang, modly w srt, cly cmt, slly calcs, dk lit grs, tr glauic, tr pyric, mnr carb mat, slty ip, occly shy, tt - p intgran por 4%, no vis shows.

Ss: lt gy, vf gred, sb ang, modly w srt, cly cmt, slly calcs, dk lit grs, tr glauic, tr pyric, mnr carb mat, slty ip, occly shy, predly tt, no vis shows.

Ss: lt gy, vf gred, sb ang, modly w srt, cly cmt, slly calcs, dk lit grs, tr glauic, tr pyric, mnr carb mat, slty ip, occly shy, predly tt, no vis shows.

Slater River
(TVD: 241.00)
(SSL: 45.50)

Sh: lt - m gy, blky, slly mmca, slty ip, tr carb mat, tr pyr nods.



Sh: predly m gy, blky, slly mmca, slty ip, tr carb mat, tr pyr nods / 10% Ss strgs aa.

Sh: aa / mnr Sh blue gn, blky, flat wxy tex / 5% Ss strgs aa.

Sh: aa

Sh: predly m gy, blky, slly mmca, tr slty, tr carb mat, tr pyr nods / mnr gn sh aa.

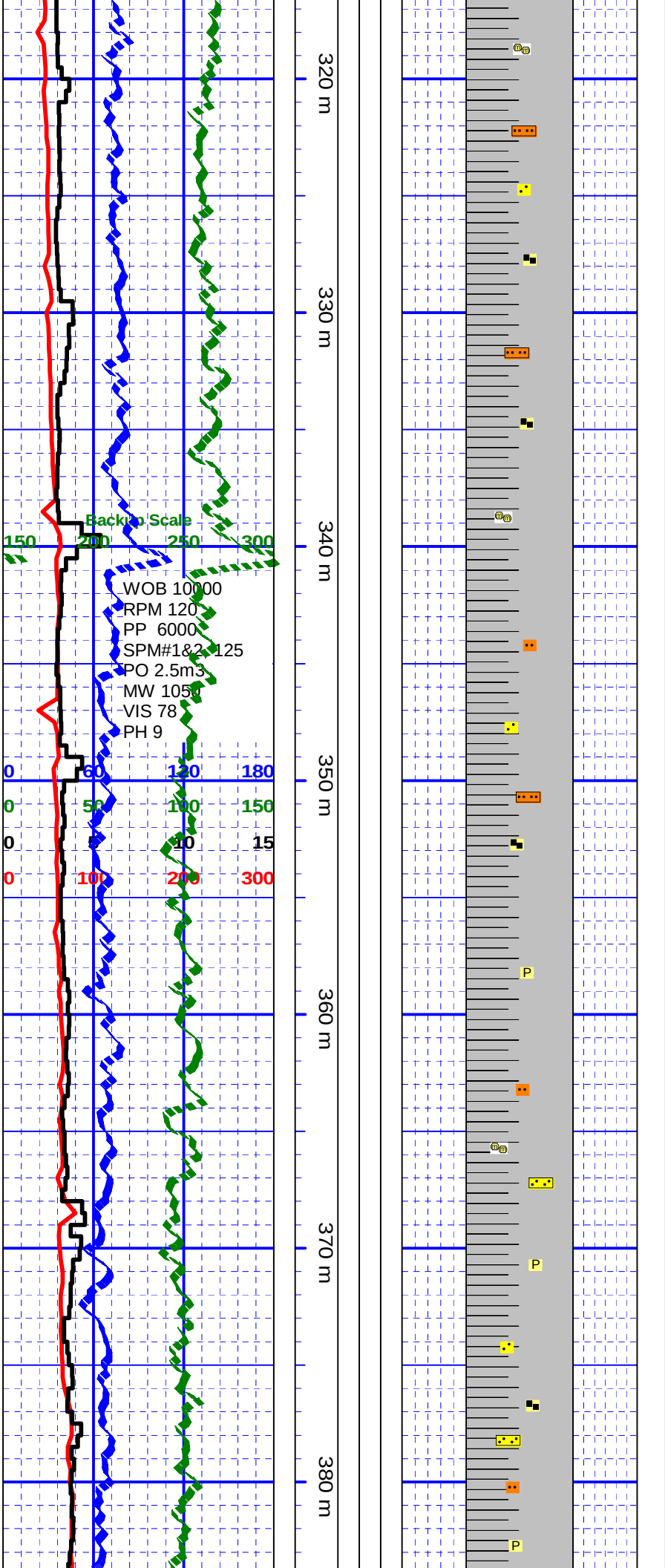
Sh: predly m gy, mnr dk gy, sbfis ip, slly mmca, slty ip, tr carb mat, tr blue gn sh aa / 10% Ss strgs aa.

Sh: predly m gy, mnr dk gy, sbfis ip, slly mmca, slty ip, tr carb mat, bcmg sidic / brn sid frags.

Sh: m gy, gy brn ip, tr dk gy, mnr sb fis, occly sidic, slly mmca, tr slty, abnt brn sid frags / tr mnr Ss strgs aa.

Sh: m gy, blky, slly mmca, tr slty, mnr sdy ip, tr carb specs / mnr Sltst strgs, lt gy, sdy ip, tr dk lit grs, cly cmt, no vis por, no shows.

Sh: m gy, blky, slly mmca, tr slty, mnr sdy ip, tr



carb specs / mnr Sltst strgs, lt gy, sdy ip, tr dk lit grs, cly cmt, no vis por, no shows.

Sh: m gy, blky, slly mmca, tr slty, mnr sdy ip, tr carb specs / mnr Sltst strgs, lt gy, sdy ip, tr dk lit grs, cly cmt, no vis por, no shows.

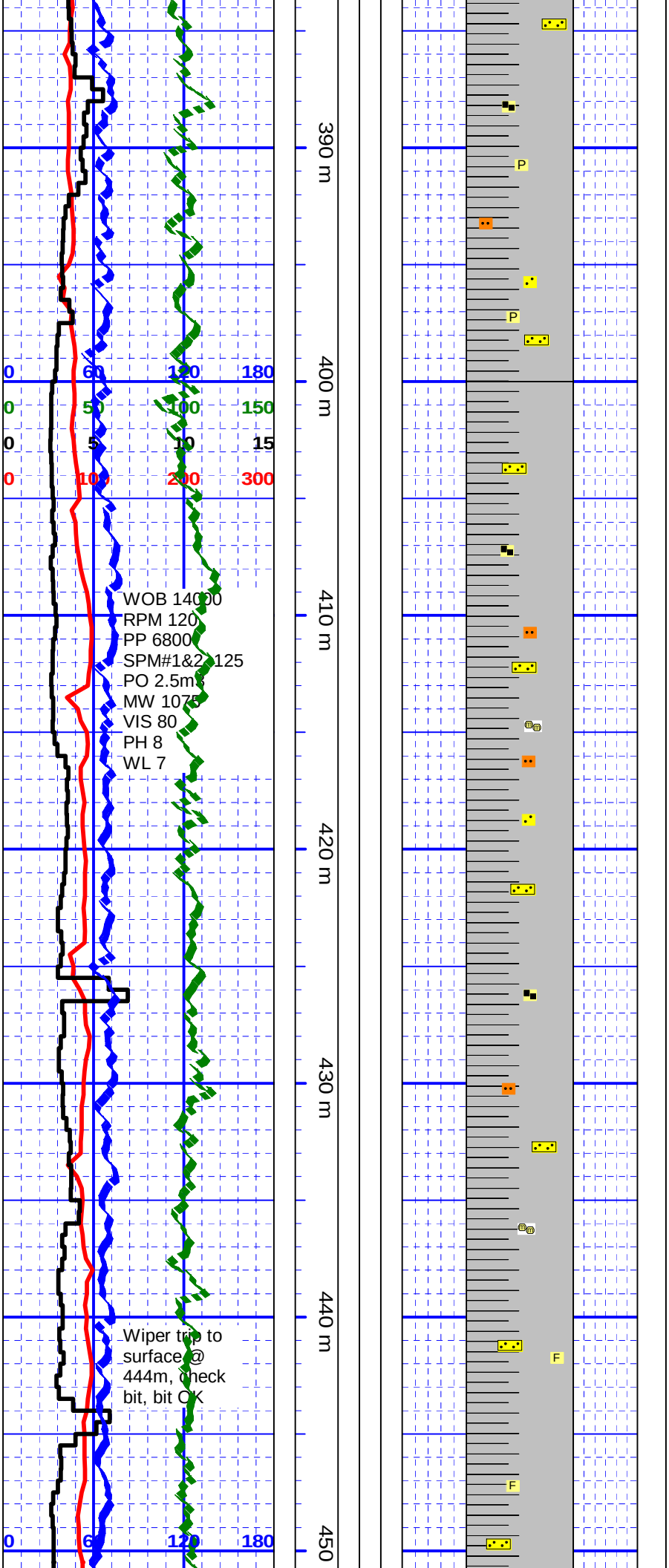
Sh: m gy, blky, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat / tr Sltst strgs aa.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat / tr Sltst strgs aa.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat, g tr dism pyr / tr Sltst strgs aa.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat, g tr dism pyr / 5% Ss strgs, lt gy, l f gred, sb ang, m srtg, cly cmt, slly calcs, dk lit grs, slty ip, tt, no shows.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat, g tr dism pyr / mnr Ss strgs aa



Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat, g tr dism pyr / mnr Ss strgs, lt gy, vf gred, sb ang, m srtg, cly cmt, slly calcs, dk lit grs, slty ip, tt, no shows.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat, g tr dism pyr / mnr Ss strgs, lt gy, vf gred, sb ang, m srtg, cly cmt, slly calcs, dk lit grs, slty ip, tt, no shows.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat, / 3% Ss strgs, lt gy, vf gred, sb ang, m srtg, cly cmt, v slly calcs, dk lit grs, slty ip, tt, no shows.

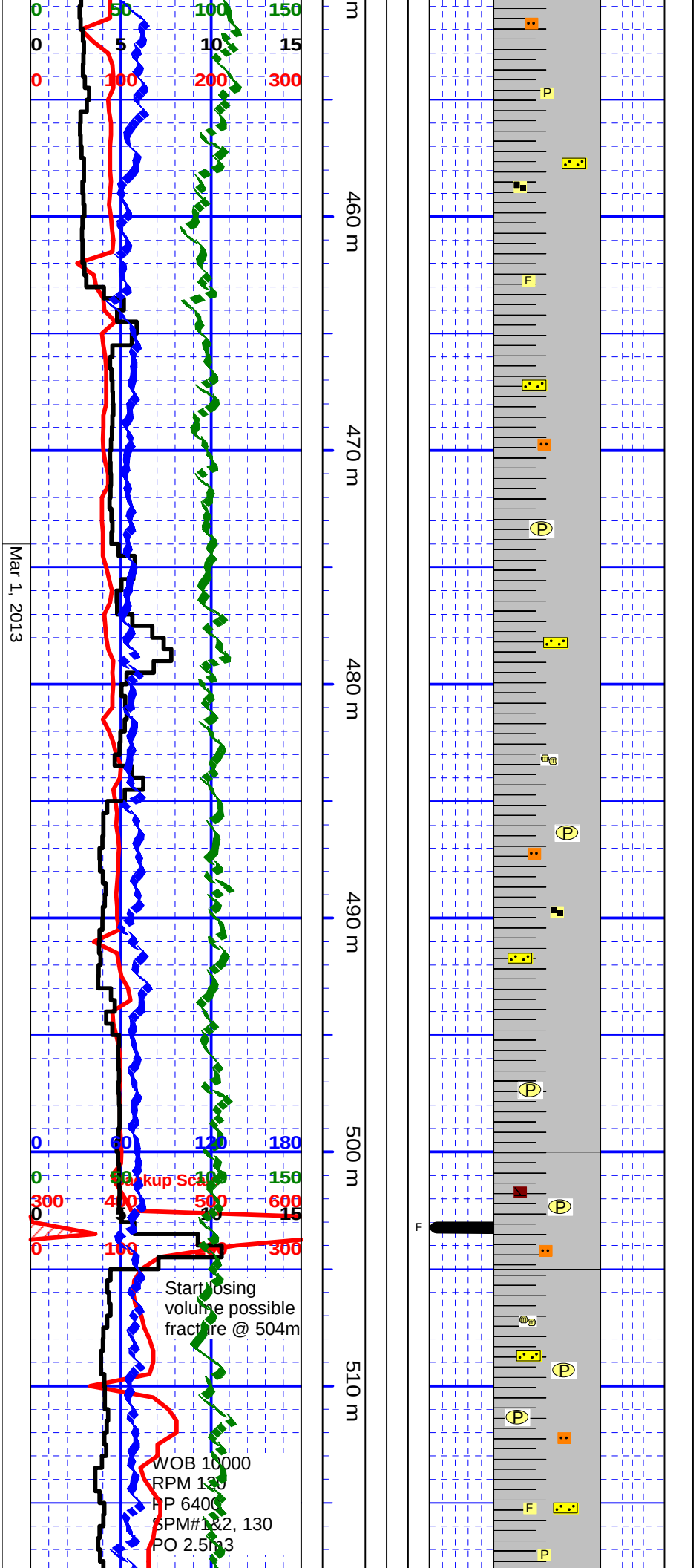
Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat, / 3% Ss strgs, lt gy, vf gred, sb ang, m srtg, cly cmt, v slly calcs, dk lit grs, slty ip, tt, no shows.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat, / occ Ss strgs aa.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb mat, / occ Ss strgs aa.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb specs, tr inoc / occ Ss strgs aa.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb specs, tr inoc / occ Ss strgs aa.



Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb specs, tr inoc, tr dism pyr / occ Ss strgs aa.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb specs, tr sidic, tr inoc / occ Ss strgs aa.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb specs, tr sidic ip, tr inoc, pyr nods / mnr Ss strgs m gy, vf gred, sb ang, w srt, cly cmt, dk lit grs, tr pyric, tr glauic, slty, shy, no vis por, no shows.

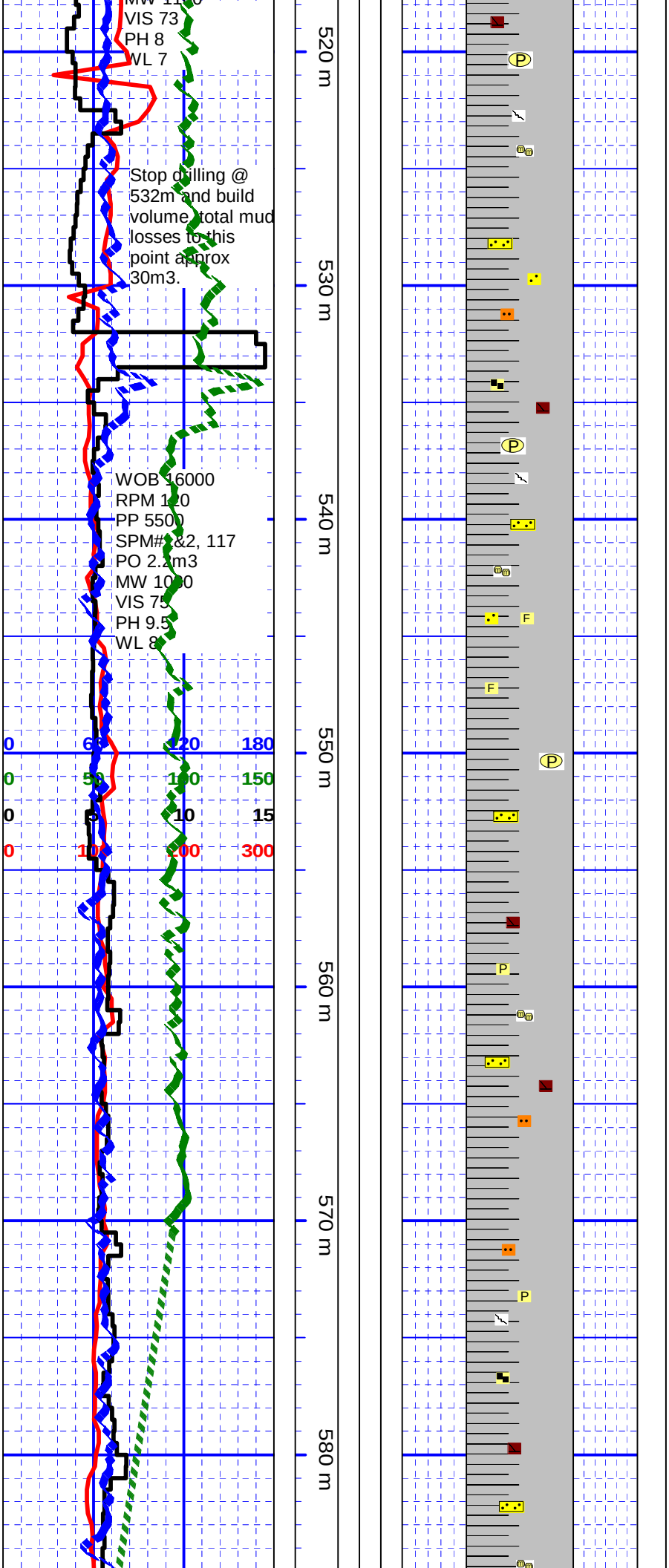
Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb specs, tr sidic ip, tr inoc, pyr nods / mnr Ss strgs m gy, aa.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb specs, tr sidic ip, tr inoc, pyr nods / mnr Ss strgs aa.

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb specs, tr sidic ip, tr inoc, pyr nods / 5% Ss strgs aa.

Sh: aa, g tr pyr nods

Sh: m gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb specs, tr sidic ip, tr inoc, pyr



nods / mnr Ss strgs aa.

Sh: m - occly dk gy aa.

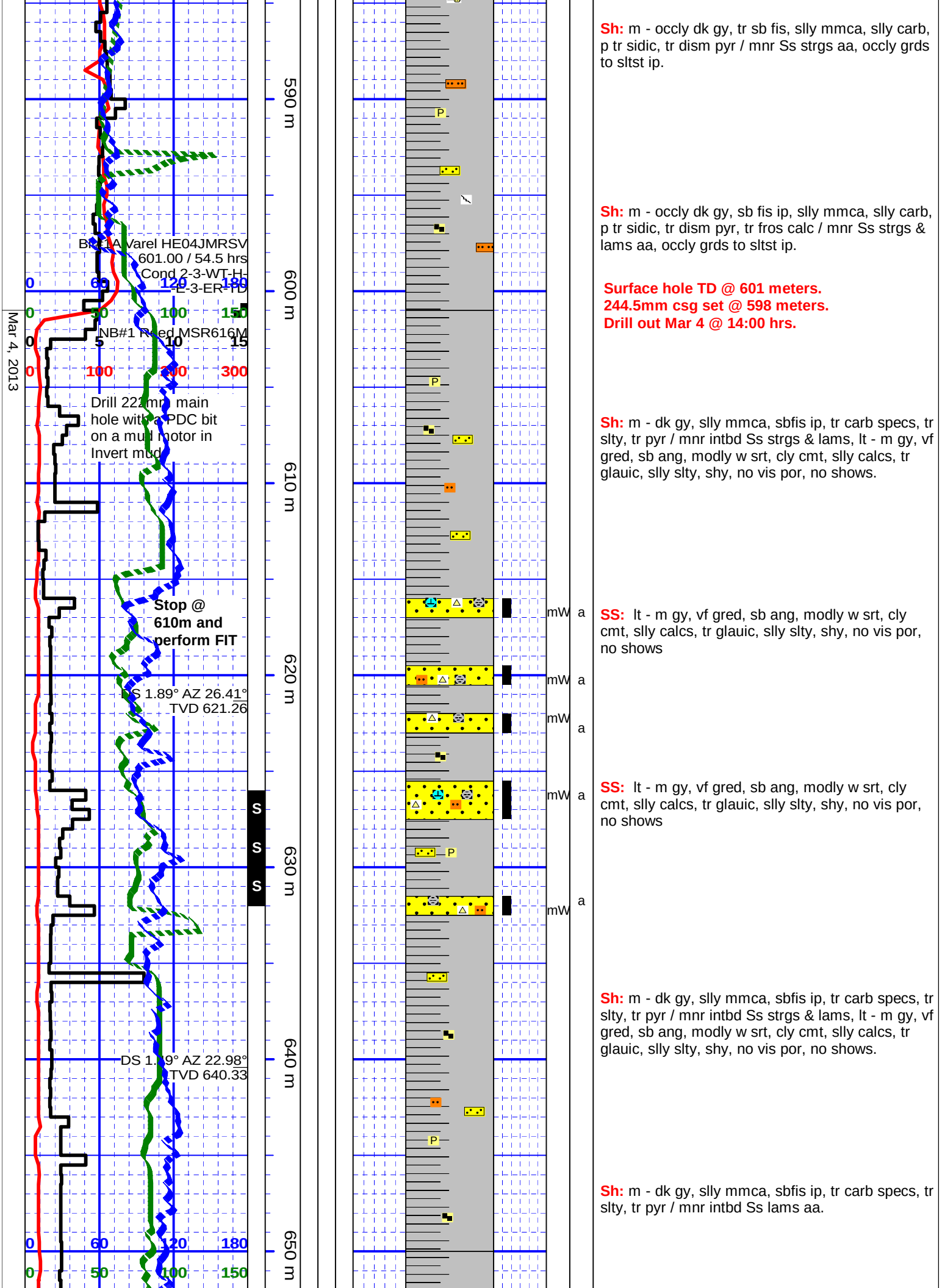
Sh: m - occly dk gy, blky, sft - frm, slly mmca, tr slty, mnr sdy ip, tr mnr carb specs, tr sidic ip, tr inoc, pyr nods, tr mnr micro fracs infilled /calc / 5% Ss strgs aa.

Sh: m - occly dk gy, blky, modly frm, slly mmca, tr slty, tr sdy ip, slly carb ip, tr sidic ip, tr inoc, pyr nods & dism pyr, tr mnr fros calc aa / 5% Ss strgs aa.

Sh: m - occly dk gy, gy brn ip, mnr sb fis, slly mmca, slly carb, occly sidic, dism pyr, tr fros calc aa, / 3% Ss strgs, m gy, vf gred, sb ang, modly w srt, cly cmt, slly calcs, dk lit grs, tr pyric, slty, shy, no vis por or shows.

Sh: m - occly dk gy, gy brn ip, mnr sb fis, slly mmca, slly carb, occly sidic, dism pyr, tr fros calc aa, / occ Ss strgs aa.

Sh: m - occly dk gy, mnr sb fis, slly mmca, slly carb, tr sidic, pyr, tr clr c xln calc / mnr Ss strgs aa.



Sh: m - occly dk gy, tr sb fis, slly mmca, slly carb, p tr sidic, tr dism pyr / mnr Ss strgs aa, occly grds to sltst ip.

Sh: m - occly dk gy, sb fis ip, slly mmca, slly carb, p tr sidic, tr dism pyr, tr fros calc / mnr Ss strgs & lams aa, occly grds to sltst ip.

Surface hole TD @ 601 meters.
244.5mm csg set @ 598 meters.
Drill out Mar 4 @ 14:00 hrs.

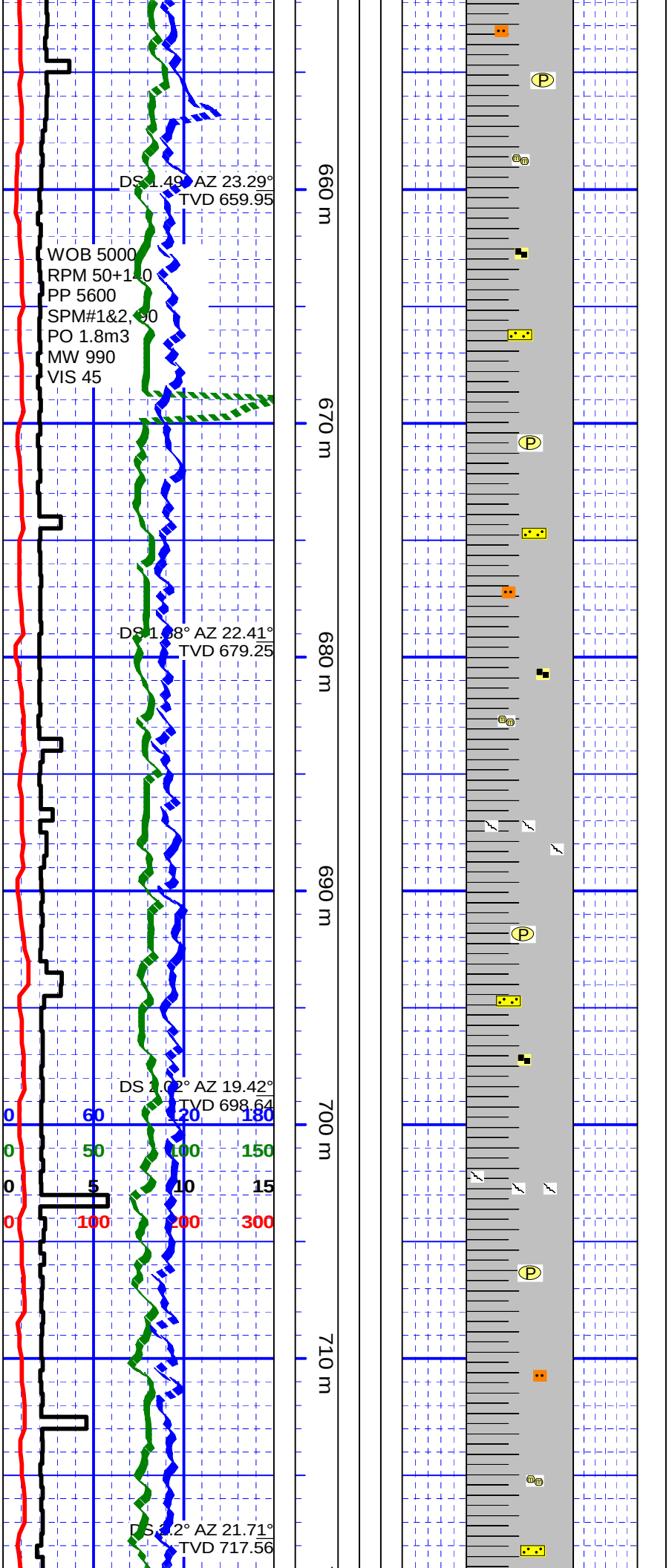
Sh: m - dk gy, slly mmca, sbfis ip, tr carb specs, tr slty, tr pyr / mnr intbd Ss strgs & lams, lt - m gy, vf gred, sb ang, modly w srt, cly cmt, slly calcs, tr glauic, slly slty, shy, no vis por, no shows.

SS: lt - m gy, vf gred, sb ang, modly w srt, cly cmt, slly calcs, tr glauic, slly slty, shy, no vis por, no shows

SS: lt - m gy, vf gred, sb ang, modly w srt, cly cmt, slly calcs, tr glauic, slly slty, shy, no vis por, no shows

Sh: m - dk gy, slly mmca, sbfis ip, tr carb specs, tr slty, tr pyr / mnr intbd Ss strgs & lams, lt - m gy, vf gred, sb ang, modly w srt, cly cmt, slly calcs, tr glauic, slly slty, shy, no vis por, no shows.

Sh: m - dk gy, slly mmca, sbfis ip, tr carb specs, tr slty, tr pyr / mnr intbd Ss lams aa.



Sh: m - dk gy, slly mmca, sbfis ip, tr carb specs, tr slty, tr fros cxln calc / mnr intbd Ss lams aa.

Sh: m - dk gy, sbfis ip, slly carb, mnr slty / occ Ss lams aa.

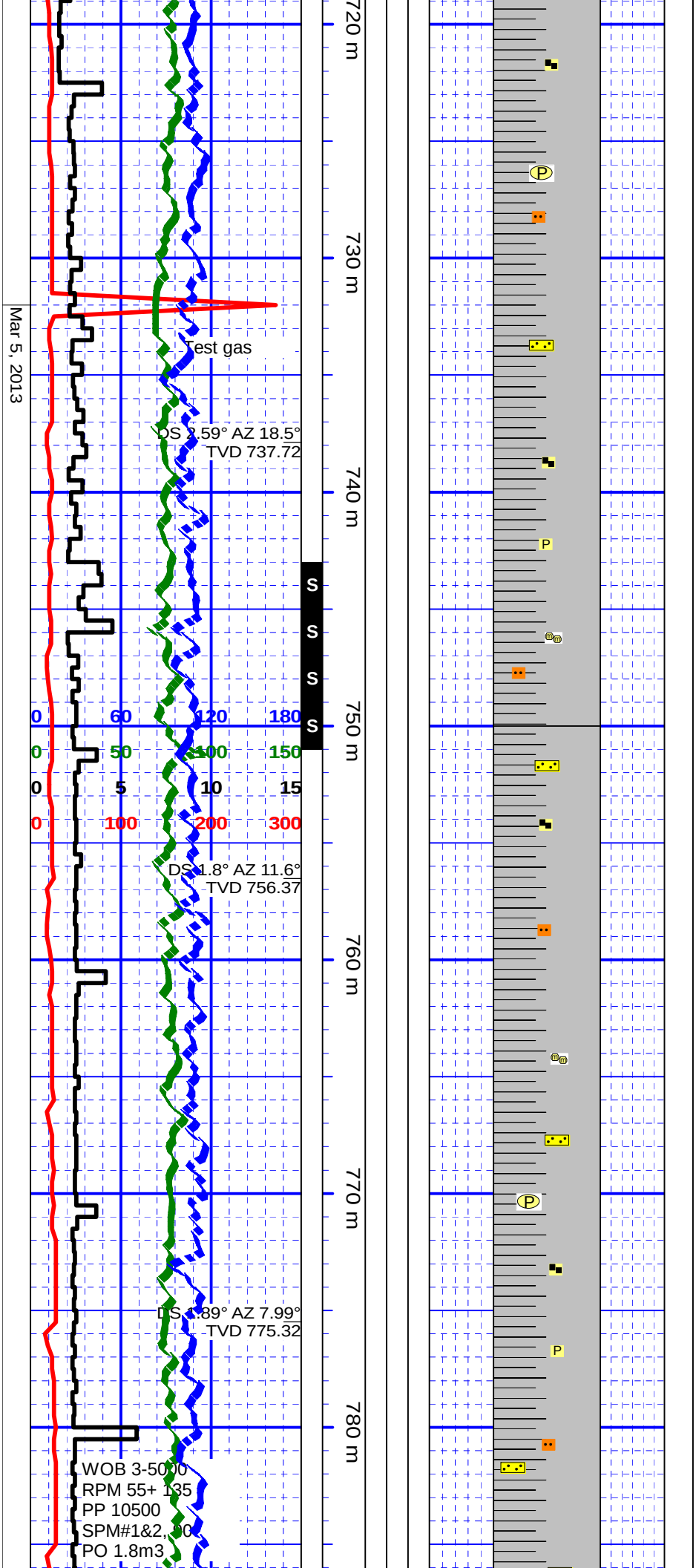
Sh: m - dk gy, sbfis ip, slly carb, mnr slty / occ Ss lams aa.

Sh: aa / abnt c xln fros calc (frac?)

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr, mnr calc aa, tr mnr Ss lams aa.

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr, abnt fros c xln calc, tr mnr Ss lams aa.

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr, mnr calc aa, tr mnr Ss lams aa.



Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr, mnr calc aa, tr mnr Ss lams aa.

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr, mnr calc aa, tr mnr Ss lams aa.

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr, mnr calc aa, tr mnr Ss lams, lt - m gy, vf gred, sb ang, modly wsrt, cly mtx, slly calcs, tr glauic, tr dk lit grs, slty ip, no vis por, no shows.

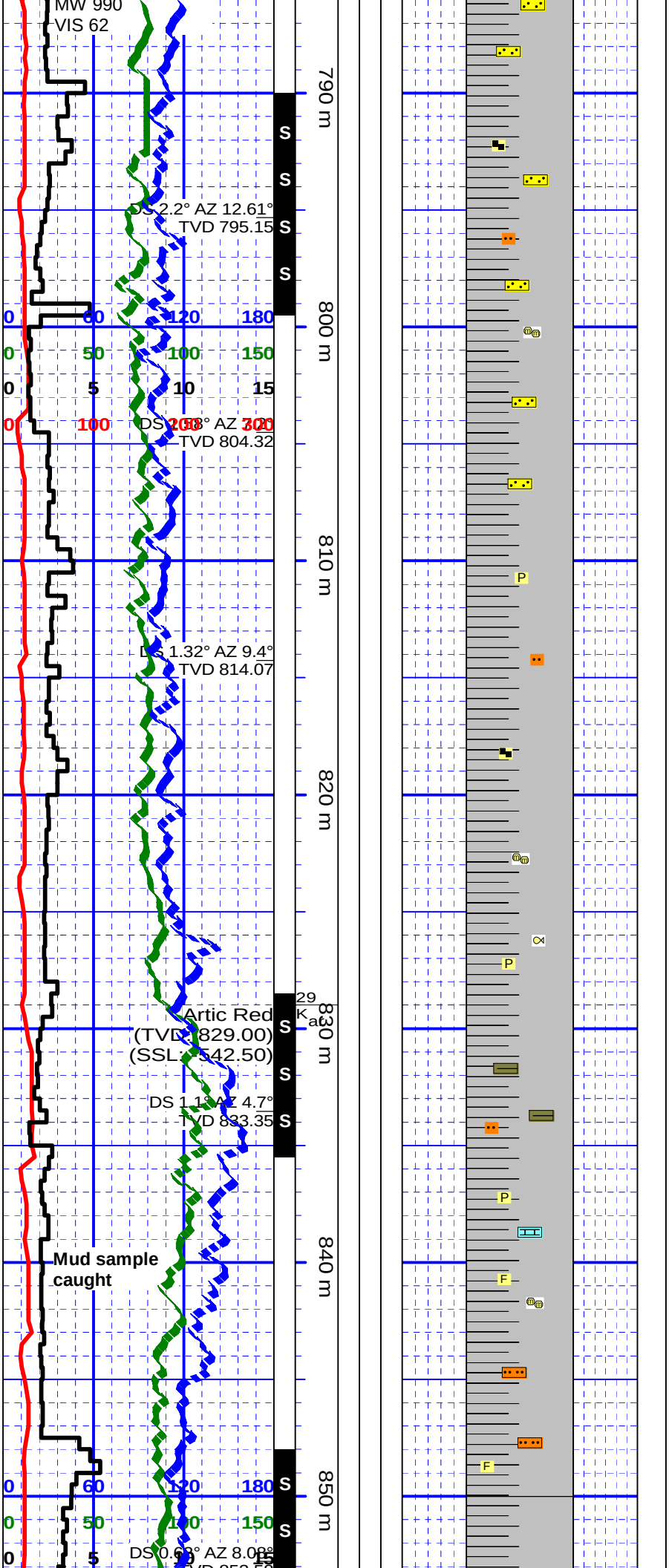
Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr, mnr calc aa, tr mnr Ss lams, lt - m gy, vf gred, sb ang, modly wsrt, cly mtx, slly calcs, tr glauic, tr dk lit grs, slty ip, no vis por, no shows.

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr, mnr calc aa, tr mnr Ss lams, lt - m gy aa.

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr, mnr calc aa, tr mnr Ss lams, lt - m gy aa.

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr, mnr calc aa, tr mnr Ss lams, lt - m gy aa.

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly



mmca, tr pyr / 10% Ss lams, lt - m gy, vf gred, sb ang, modly w srt, cly mtx, slly calcs, slty, shy ip, tr pyric, dk lit grs, no vis por, no shows.

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr / 5% Ss lams, lt - m gy, vf gred, sb ang, modly w srt, cly mtx, slly calcs, slty, shy ip, tr pyric, dk lit grs, no vis por, no shows.

Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr pyr / 5% Ss lams, lt - m gy, vf gred, sb ang, modly w srt, cly mtx, slly calcs, slty, shy ip, tr pyric, dk lit grs, no vis por, no shows.

Sh: aa

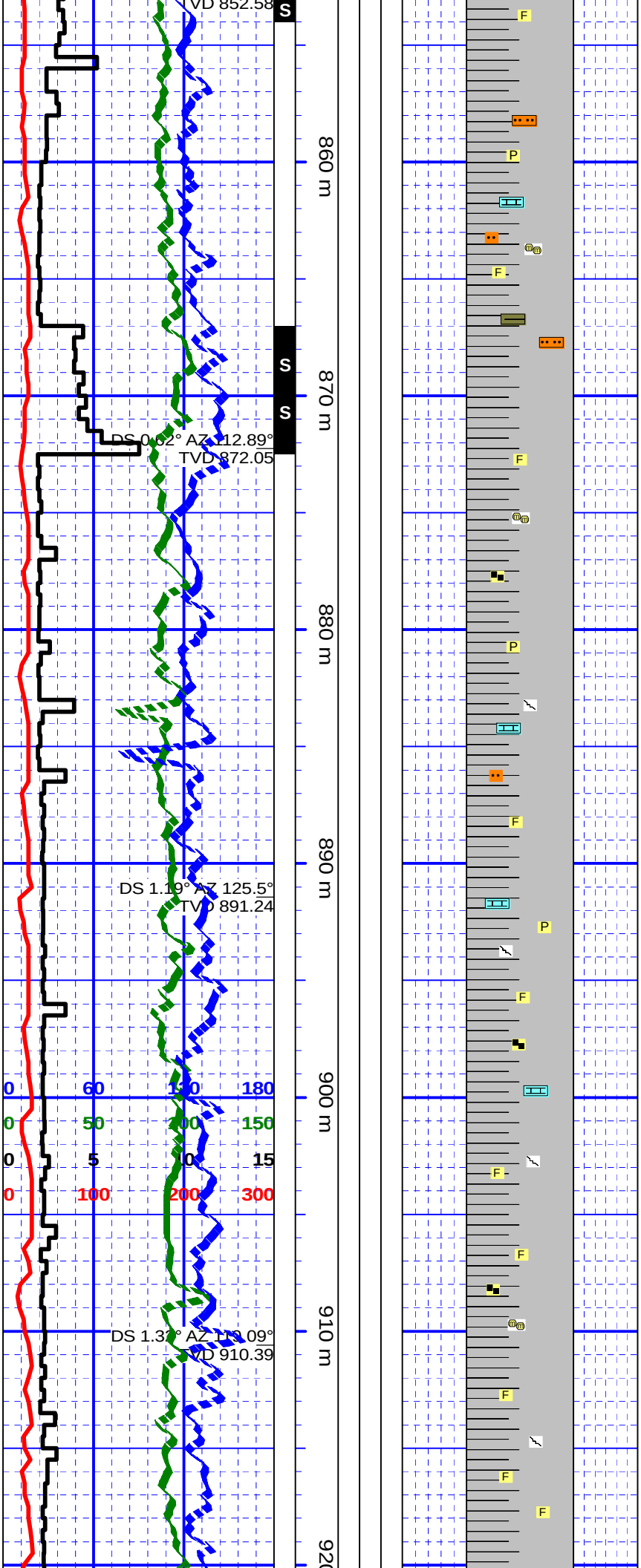
Sh: m - dk gy, sbfis ip, slly carb, tr slty, slly mmca, tr dism pyr, tr fish scales / tr mnr Ss lams aa / tr Ls strgs, bf fragal wkest, tr pyric, dns, no shows.

Artic Red
(TVD: 829.00)
(SSL: -542.50)

Sh: m - dk gy, plty, fis, slly mmca, tr pyr, tr ls aa / tr lt bue clyst, sft, wxy tex.

Sh: m - dk gy, plty ip, occly fis, slly mmca, slly carb, tr pyr, tr mnr Ls lams aa.

Sh: m - dk gy, sbfis, slly mmca, slly carb, tr pyr, tr slty ip, tr inoc / mnr 2% Sltst strgs, lt - m gy, cly & calcs cmt, grds to vf gred ss ip, tt, no shows.



Sh: m - dk gy, sbfis, slly mmca, slly carb, tr pyr, tr slty ip, tr inoc / mnr Sltst strgs aa.

Sh: m - dk gy, sbfis, slly mmca, slly carb, tr pyr, tr slty ip, tr inoc / mnr Sltst strgs aa / tr lt blue clyst aa.

Sh: m - dk gy, sbfis, slly mmca, slly carb, tr pyr, tr slty ip, tr inoc, tr fros calc.

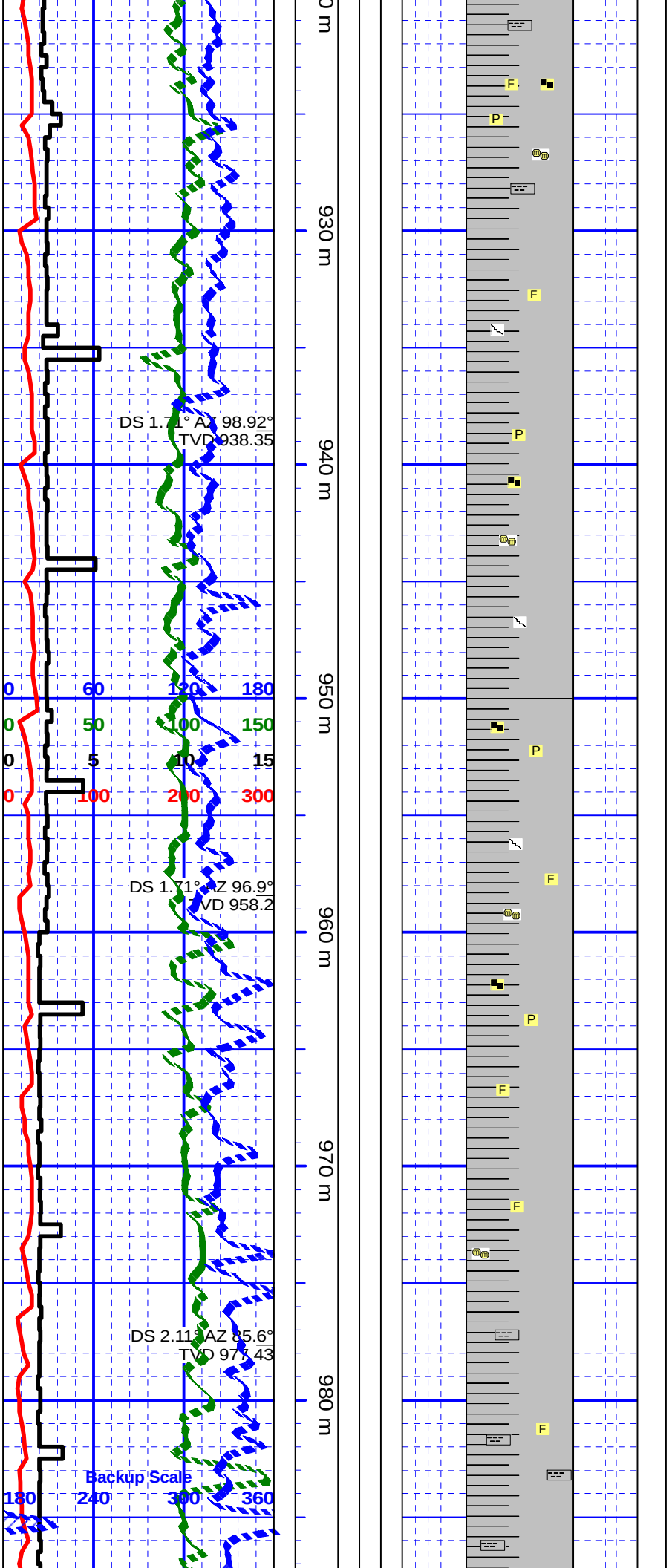
Sh: m - dk gy, sbfis, slly mmca, slly carb, tr pyr, tr slty ip, tr inoc, tr fros calc / tr mnr Ls strgs lt gy - bf brn, mdst - wkest, micr mtx, slly arg, dns, no shows.

Sh: aa / abnt inoc / mnr Ls strgs aa.

Sh: m - dk gy, sbfis, slly mmca, slly carb, tr pyr, tr slty ip, inoc, tr micro fracs infilled / calc & ls aa.

Sh: aa

Sh: m - dk gy, sbfis, slly mmca, slly carb, tr pyr, tr slty ip, abnt inoc, tr Ls aa.



Sh: aa / tr mnr Clyst lt gy, wxy, tr mica flks, dism pyr.

Sh: m gy, occly dk gy, sb fis, slly carb, slly mmca, inoc, tr micro fracs infilled / wh calc, tr mnr clyst aa.

Sh: m - dk gy, sb fis, carb, slly mmca, tr pyr, tr inoc, tr micro fracs infilled / wh calc.

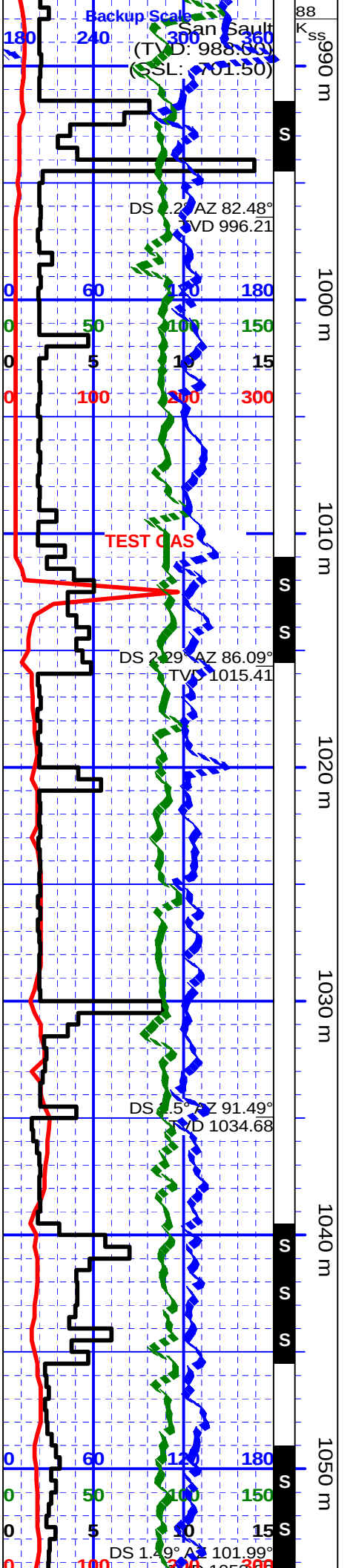
Sh: m - dk gy, sb fis, carb, slly mmca, tr pyr, tr inoc, p tr sidic ip.

Sh: m - dk gy, sb fis, carb, slly mmca, tr pyr, tr inoc, tr micro fracs infilled / wh calc.

Sh: m - dk gy, sb fis, carb, slly mmca, tr pyr, tr inoc, tr micro fracs infilled / wh calc.

Sh: m - dk gy, sb fis, carb, slly mmca, tr pyr, tr inoc, tr lt gy clyst, wxy, tr sdy, mica flks.

Sh: m - dk gy, sb fis, carb, slly mmca, tr pyr, tr inoc, incrg lt gy clyst, wxy, tr sdy, mica flks.



San Sault
(TVD: 988.00)
(SSL: -701.50)

Sh: m gy, dk gy ip, sb fis, incrg slty, tr glauic, tr pyric, slly mmca,

Sh: m gy, dk gy ip, sb fis, slly slty, tr glauic, tr pyric, slly sidic.

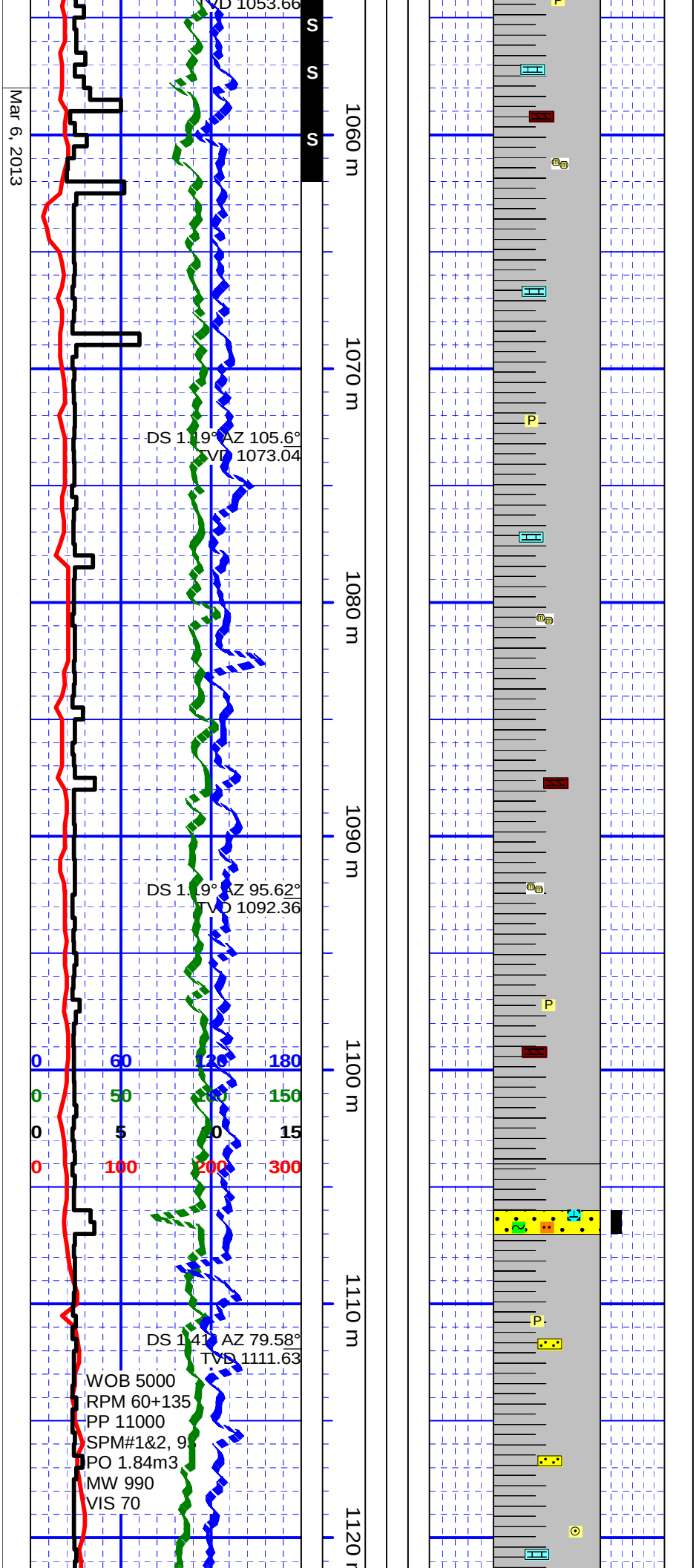
Sh: m gy, dk gy ip, sb fis, slly slty, tr glauic, tr pyric, slly sidic.

Sh: m gy, dk gy ip, sb fis, slly slty, tr pyric, slly sidic.

Sh: m gy, dk gy ip, sb fis, slly slty, tr pyric, slly sidic.

Sh: m gy, dk gy ip, sb fis, slly slty, tr pyric, slly sidic.

Sh: aa / mnr lt gn clyst lams, sft, wxy tex. c xln calc (mud add?)



Sh: m gy, dk gy ip, sb fis, p tr slly slty, tr pyric, sidic ip / tr brn sid frags / tr mnr Ls strgs lt brn, mdst, arg, grds to mrlst ip, dns, no show.

Sh: m gy, sb fis, slly mmca, tr pyr, tr mnr Ls strgs aa.

Sh: m gy, sb fis, slly mmca, tr pyr, tr mnr Ls strgs aa.

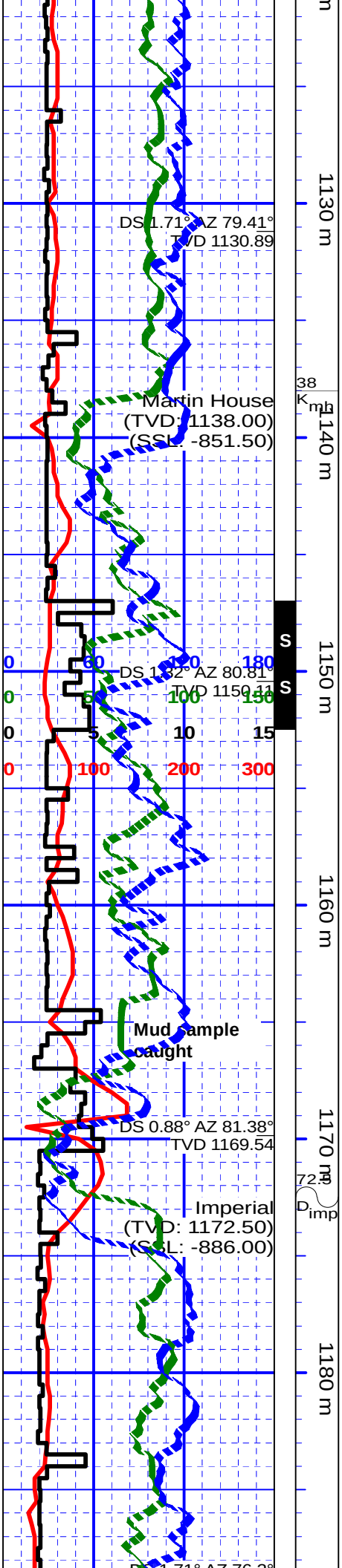
Sh: predly m gy, sb fis, slly mmca, tr pyr, tr mnr ls strgs aa / tr mnr lt brn sid frags.

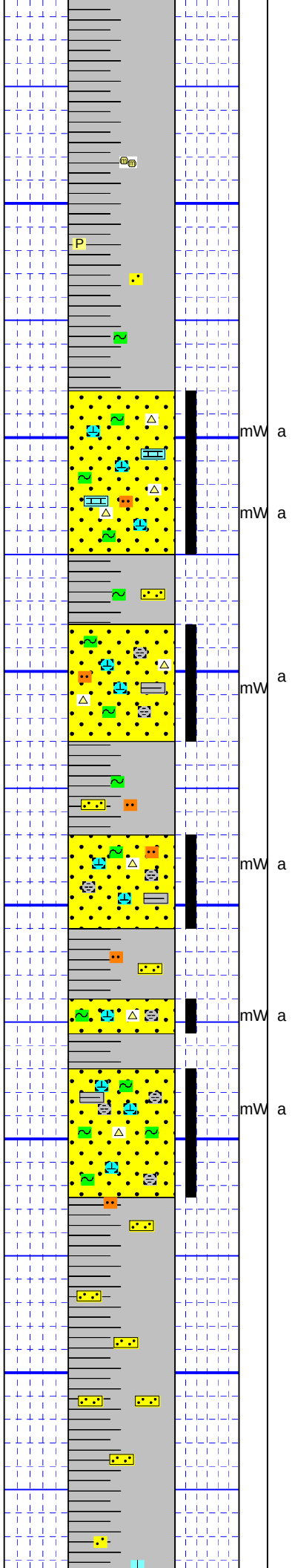
Sh: predly m gy, sb fis, slly mmca, tr pyr, tr mnr ls strgs aa / tr mnr lt brn sid frags.

Ss: lt gy, vf gred, sb ang, modly w srt, calcs, slty, tr glauic, tr mnr dk lit grs, tt, no shows.

Sh: m gy, mnr dk gy, sb fsi, slly mmca, tr pyr, p tr ss strgs aa.

Sh: m gy, sb fis, slly mmca, tr pyr, p tr ss strgs aa, tr crins / tr mnr Ls strgs aa.





Sh: m gy, mnr dk gy, sb fis, modly frm, slly mmca, pyr.

Sh: aa, sdy & glauic.

Martin House
(TVD: 1138.00)
(SSL: -851.50)

Ss: lt gy, u vf gred, sb ang, modly w srt, v calcs, grds to sdy ls ip, v glauic, tr mnr dk lit grs, slly slty, no vis por, no shows.

Ss: crm - lt gy, u vf gred, sb ang, modly w srt, calcs & cly cmt, grds to sdy ls ip, v glauic, tr mnr dk lit grs, slly slty, tr sh lams, no vis por, no shows.

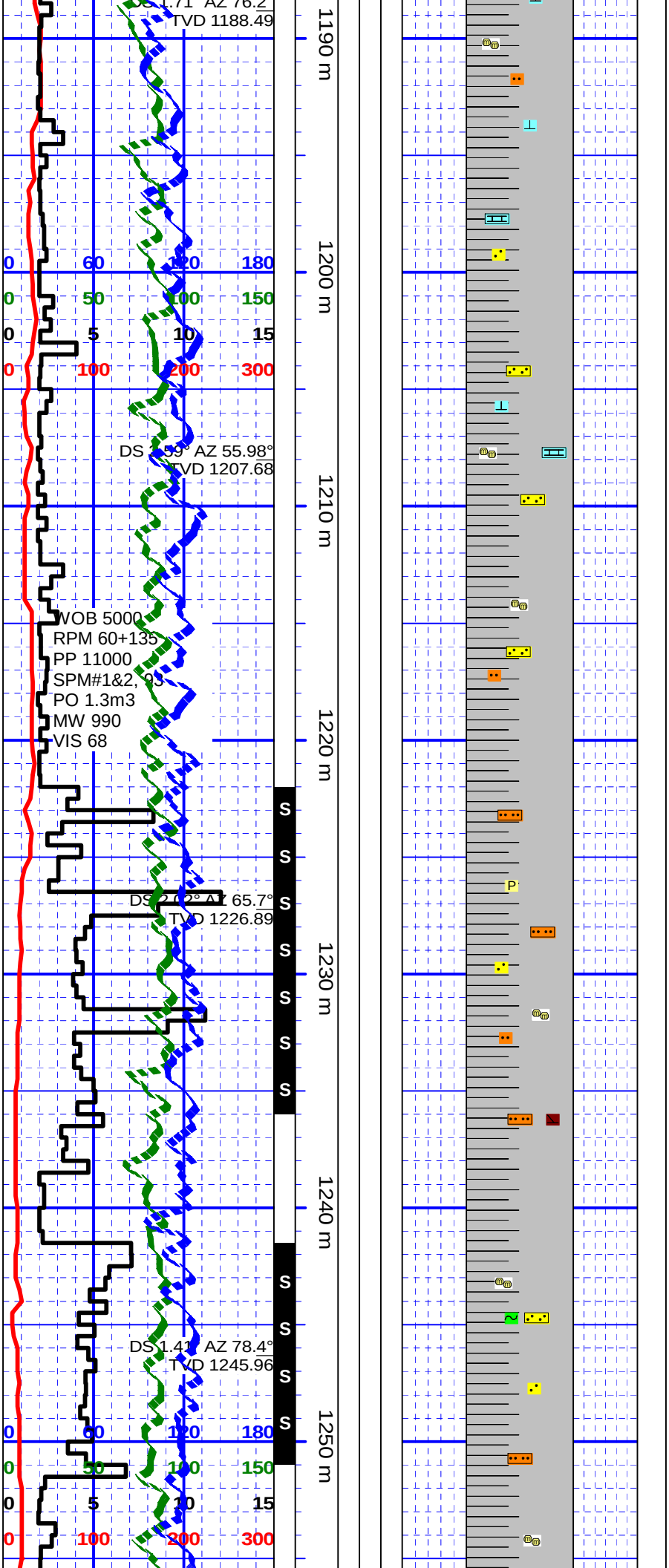
Ss: aa, m gy ip aa, shy.

Ss: crm - lt gy, l vf gred, sb ang, modly w srt, calcs & cly cmt, grds to sdy ls ip, v glauic, tr mnr dk lit grs, slly slty, tr sh lams, no vis por, no shows.

Imperial
(TVD: 1172.50)
(SSL: -886.00)

Sh: predly aa / tr lt gy gn sh lams, slly mmca, tr pyric, slly wxy tex ip.

Sh: lt gy gn, slly mmca, sb fis ip, slly wxy tex, tr slty & mnr sdy ip.



Sh: lt gy gn, slly mmca, sb fis ip, slly wxy tex, tr slty & mnr sdy ip / lt gy - bf mrlst, sft, chky, dns.

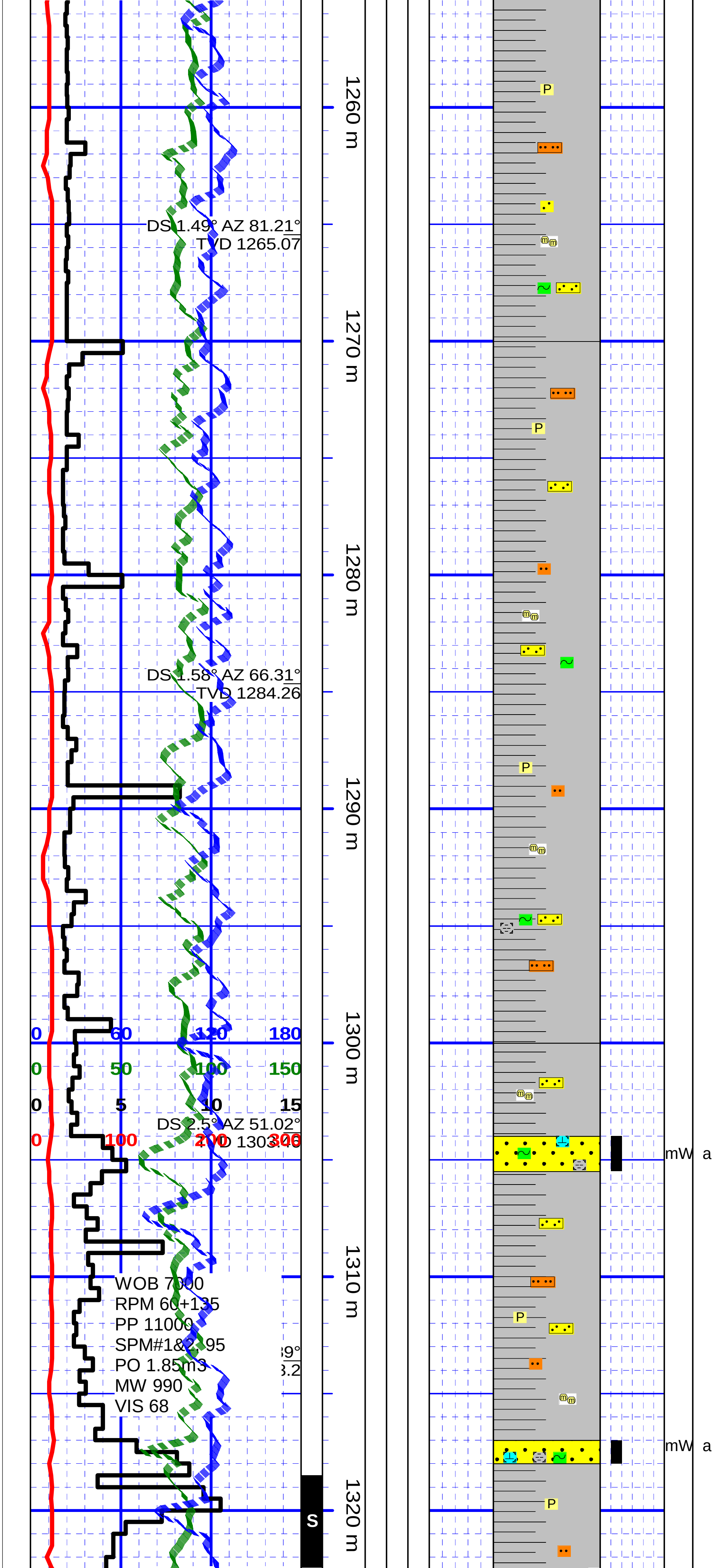
Sh: gy gn, m gy, sb fis, slly mmca, slly calcs, slly wxy tex ip, occly sdy, tr slty ip / mnr Ss strgs, lt gy, gy gn, vf gred, sb ang, modly w srt, calcs & cly cmt, slty, shy, tr sidic ip, tt, no shows.

Sh: gy gn, m gy, sb fis, slly mmca, slly calcs, slly wxy tex ip, occly sdy, tr slty ip / mnr Ss strgs, lt gy, gy gn, vf gred, sb ang, modly w srt, calcs & cly cmt, slty, shy, tr sidic ip, tt, no shows.

Sh: gy gn, m gy, gy brn ip, sb fis, slly mmca, slly wxy tex ip, pyr, occly sdy, tr slty ip / mnr Sltst strgs gy, gy gn, cly cmt, sdy, grds to vf gred ss ip, shy, occly slly sidic, tt, no shows.

Sh: gy gn, m gy, gy brn ip, sb fis, slly mmca, slly wxy tex ip, pyr, occly sdy, tr slty ip / mnr Sltst strgs gy, gy gn, cly cmt, sdy, grds to vf gred ss ip, shy, occly slly sidic, tt, no shows.

Sh: aa / tr Ls strgs, bf, lt brn, mdst - wkest, mic mtx, arg, sdy, dns, no shows



Sh: predly gy gn, sb fis, slly mmca, slly wxy tex ip, tr pyr, tr sdy, tr slty ip / mnr Sltst strgs gy, gy gn, cly cmt, sdy, grds to vf gred ss ip, shy, occly slly sidic, tt, no shows.

Sh: predly gy gn, sb fis, slly mmca, slly wxy tex ip, tr pyr, tr sdy, tr slty ip / mnr Sltst strgs aa / Ss strgs, lt gy, vf gred, sb ang, modly w srt, calcs & cly cmt, tr glauic, shy, slty, tt, no shows.

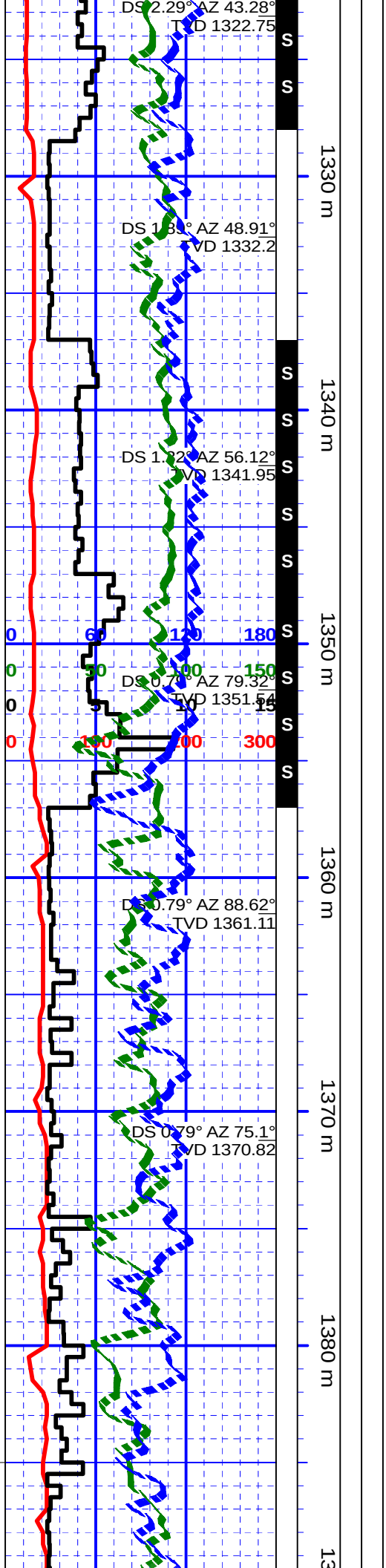
Sh: gy gn, gy, sb fis, slly mmca, slly wxy tex ip, tr pyr, tr sdy, tr slty ip / mnr Sltst strgs aa / Ss strgs, lt gy, vf gred, sb ang, modly w srt, calcs & cly cmt, tr glauic, shy, slty, tt, no shows.

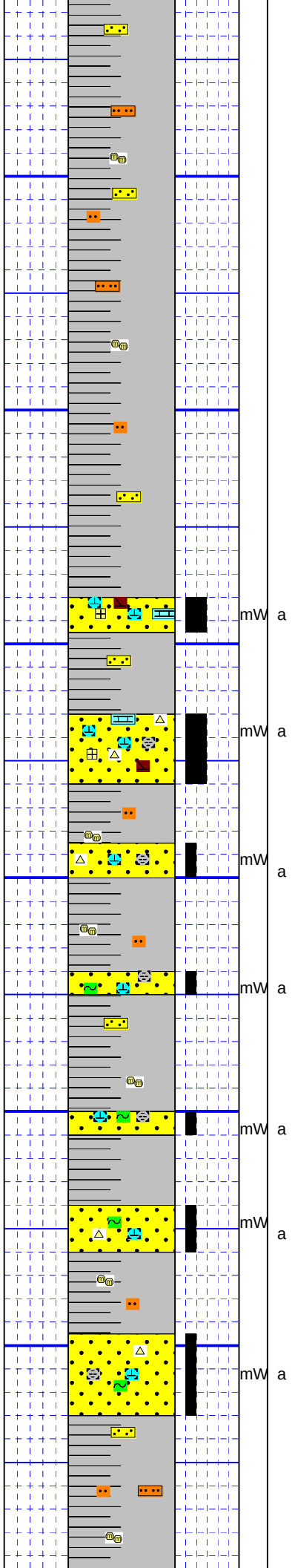
Sh: gy gn, gy, sb fis, mmca, slly wxy tex ip, tr pyr, tr sdy, tr slty ip / mnr Sltst strgs aa / Ss strgs, lt gy, vf gred, sb ang, modly w srt, calcs & cly cmt, tr glauic, shy, slty, tt, no shows.

Sh: gy gn, gy, sb fis, mmca, slly wxy tex ip, tr pyr, tr sdy, tr slty ip / mnr Sltst strgs aa / Ss strgs, lt gy, vf gred, sb ang, modly w srt, calcs & cly cmt, tr glauic, shy, slty, tt, no shows.

Sh: gy gn, gy, sb fis, mmca, slly wxy tex ip, tr pyr, tr sdy, tr slty ip / mnr Sltst strgs aa / Ss strgs, lt gy, vf gred, sb ang, modly w srt, calcs & cly cmt, tr glauic, shy, slty, tt, no shows.

Sh: gy gn, gy, sb fis, mmca, slly wxy tex ip, tr pyr, tr sdy, tr slty ip / mnr Sltst strgs aa / Ss strgs, lt gy, vf gred, sb ang, modly w srt, calcs & cly cmt, tr glauic, shy, slty, tt, no shows.





Sh: lt - m gy, gy gn, sb fis, mmca, slly wxy tex ip, tr sdy, tr slty ip / mnr Ss & Sltst strgs aa.

Sh: lt - m gy, gy gn, sb fis, mmca, slly wxy tex ip, tr sdy, tr slty ip.

Sh: lt - m gy, gy gn, sb fis, mmca, slly wxy tex ip, tr sdy, tr slty ip.

Ss: lt gy, lt gy brn, vf gred, sb ang, modly w srt, calcs & cly cmy, grds to sdy ls ip, tr arkic ip, tr sidic, no vis por, no shows.

Ss: lt gy, lt gy brn, vf gred, sb ang, modly w srt, calcs & cly cmy, grds to sdy ls ip, tr arkic ip, tr sidic, no vis por, no shows.

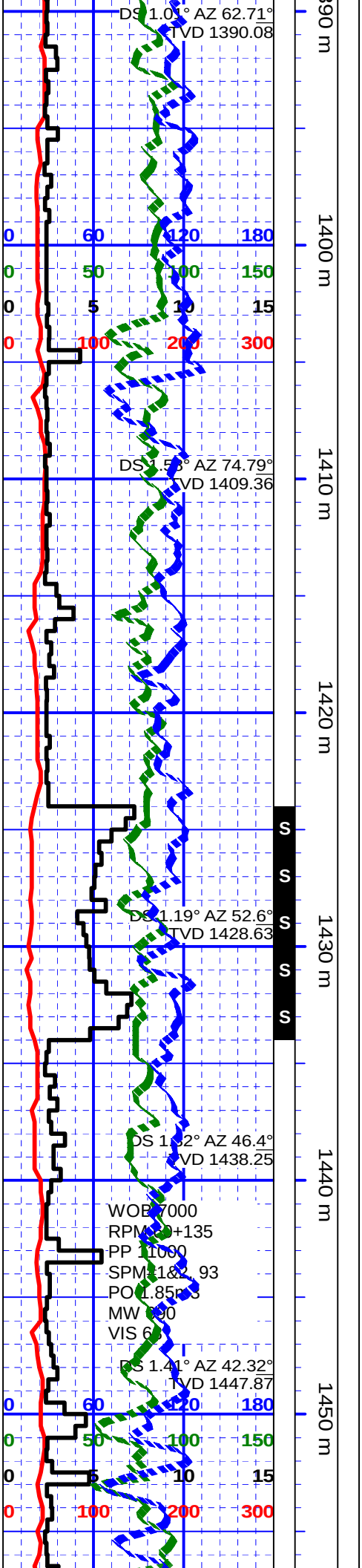
Ss: aa

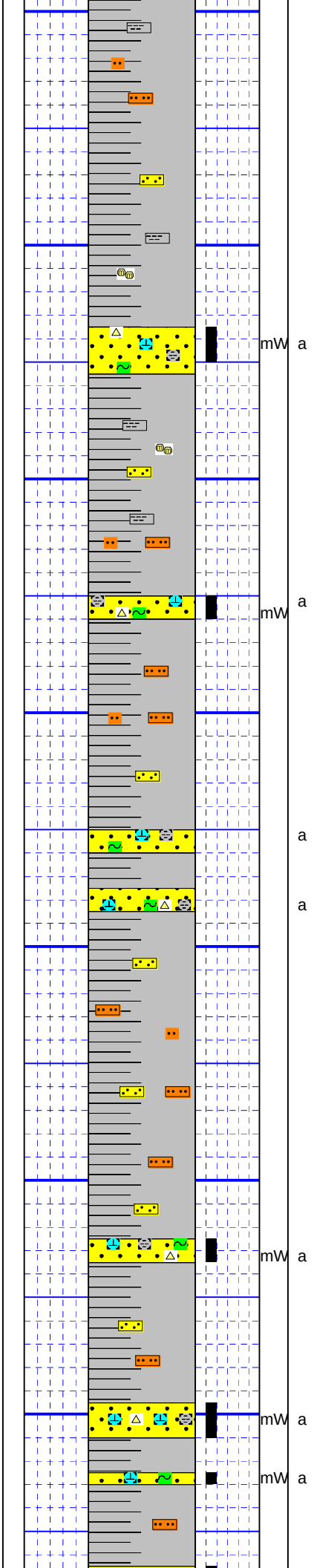
Ss: aa

Ss: lt - m gy, vf gred, sb ang, modly w srt, calcs & cly cmt, slty, shy ip, tr arkic, tr glauic, no vis por, no show.

Ss: lt - m gy, vf gred, sb ang, modly w srt, calcs & cly cmt, slty, shy ip, tr arkic, tr glauic, no vis por, no show.

Sh: lt - m gy, gy gn, sb fis ip, slly mmca, tr sdy, tr slty ip / lt gy Clyst, sft, calcs, grds to mrlst ip / mnr





Ss strgs aa.

Sh: lt - m gy, gy gn, sb fis ip, slly mmca, tr sdy, tr slty ip / lt gy Clyst, sft, calcs, grds to mrlst ip.

Ss: lt gy, crm, lt rust ip, vf gred, sb ang, modly w srt, calcs & cly cmt, slty, shy ip, tr arkic, te fer ip, tr dk lit grs, no vis por, no shows.

Ss: lt gy, crm, lt rust ip, vf gred, sb ang, modly w srt, calcs & cly cmt, slty, shy ip, tr arkic, te fer ip, tr dk lit grs, no vis por, no shows.

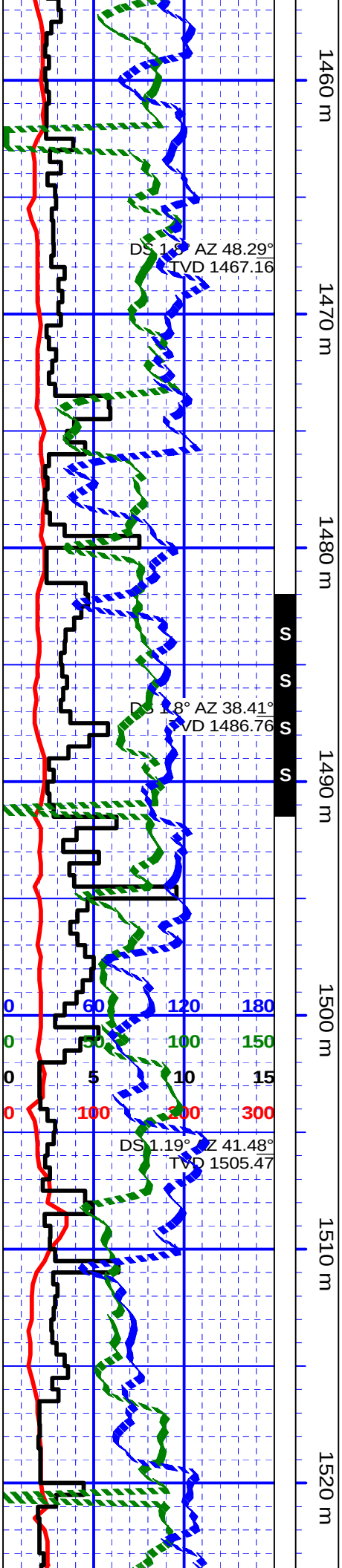
Sh: lt - m gy, gy gn, sb fis ip, slly mmca, tr sdy, tr slty ip / lt gy Clyst, sft, calcs, grds to mrlst ip / 20% Sltst strgs, lt - m gy, cly cmt, sdy, shy, tt, no shows.

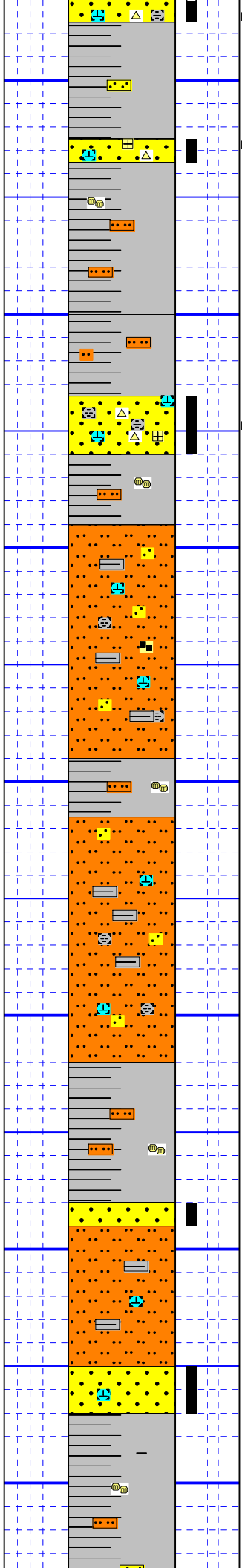
Ss: lt gy, crm, lt rust ip, vf gred, sb ang, modly w srt, calcs & cly cmt, slty, shy ip, tr arkic, te fer ip, tr dk lit grs, no vis por, no shows.

Sh: lt - m gy, slly mmca, occly slty, sft - modly frm, sb fis ip / abnt Sltst strgs & lams, lt - m gy, gy gn ip, cly mtx, slly calcs, shy, sdy ip, tt, no shows.

Ss: lt gy, vf gred, sb ang, modly w srt, sb ang, calcs & cly cmt, tr glauic, tr arkic, tr dk lit grs, slty, shy, tt, no shows.

Ss: lt gy, vf gred, sb ang, modly w srt, sb ang, calcs & cly cmt, tr glauic, tr arkic, tr dk lit grs, slty, shy, tt, no shows.





Sh: lt - m gy, slly mmca, occly slty, sft - modly frm, sb fis ip / abnt Sltst strgs & lams, lt - m gy, gy gn ip, cly mtx, slly calcs, shy, sdy ip, tt, no shows.

Ss: lt gy, vf gred, sb ang, modly w srt, sb ang, calcs & cly cmt, tr glauic, tr arkic, tr dk lit grs, slty, shy, tt, no shows.

Sh: predly m gy, slly mmca, slly slty, sft - modly frm, sb fis ip / abnt Sltst strgs & lams, lt - m gy, gy gn ip, cly mtx, slly calcs, shy, sdy ip, tt, no shows.

Ss: crm, lt - m gy, vf gred, sb ang, modly w srt, qtz / lt cold cht, calcs & cly cmt, slty, shy ip, tr mnr dk lit grs, p tr arkic, v slly sidic? ip, no vis por or show.

Sltst: lt - m gy, cly cmt, slly calcs, tr sdy, grds to slty sh ip, tr dk lit grs, tr carb mat, tt, no shows.

Sltst: lt - m gy, cly cmt, slly calcs, tr sdy, grds to slty sh ip, tr dk lit grs, tr carb mat, tt, no shows.

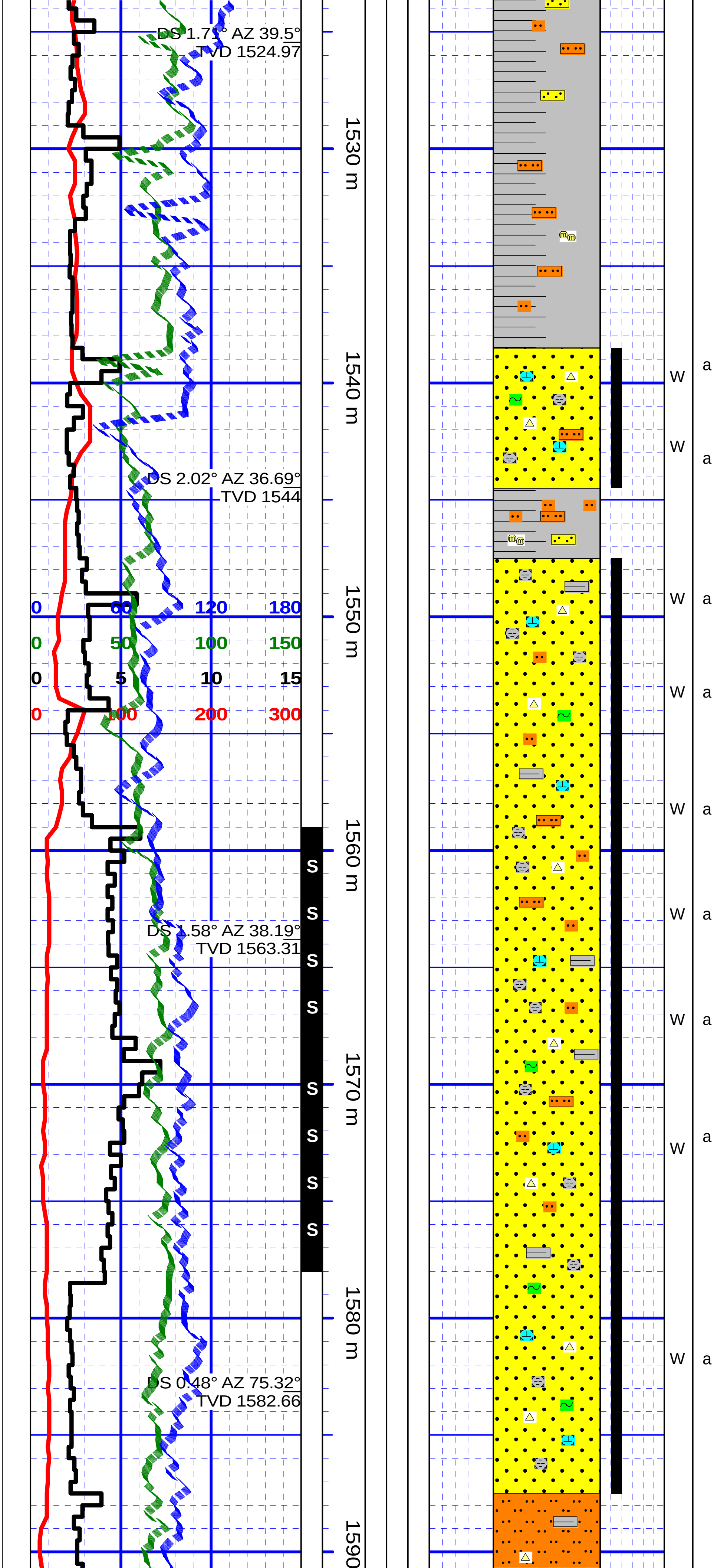
Sltst: lt - m gy, cly cmt, slly calcs, tr sdy, grds to slty sh ip, tr dk lit grs, tr carb mat, tt, no shows.

Sh: lt - m gy, blky, v slty, slly mmca, grds to shy sltst ip, sbfis ip.

Sltst: lt - m gy, cly cmt, slly calcs, tr sdy, grds to slty sh ip, tr dk lit grs, tr carb mat, tt, no shows.

Ss: crm - lt gy, vf gred, sb ang, w srt, calcs & cly cmt, tr dk lit grs, tr glauic, slty, tt, no shows.

Sh: lt - m gy, blky, v slty, sbfis ip, slly mmca, tr



Sh: m gy, slly mmca, sbfis ip, occly slty, tr slly sidic ip / abnt Sltst strgs aa / occ Ss strgs aa.

Sh: m gy, slly mmca, sbfis ip, occly slty, tr slly sidic ip / abnt Sltst strgs aa / occ Ss strgs aa.

Ss: lt gy, l vf gred, sb ang, w srt, calcs & cly cmt, tr glauic, slty, grds to sltst ip, occly shy, tt, no shows.

Sh: aa

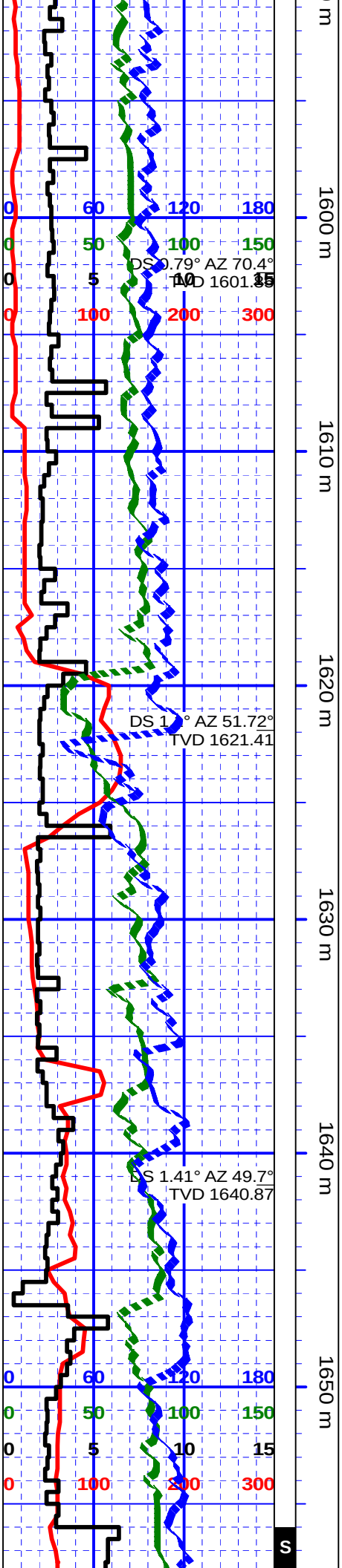
Ss: v lt gy, l vf gred, sb ang, w srt, calcs & cly cmt, tr glauic, slty, tr dk lit grs, grds to sltst ip, tr shy ip, tt, no shows.

Ss: v lt gy, l vf gred, sb ang, w srt, calcs & cly cmt, tr glauic, slty, tr dk lit grs, grds to sltst ip, tr shy ip, tt, no shows / mnr Sh lams aa.

Ss: v lt gy, l vf gred, sb ang, w srt, calcs & cly cmt, tr glauic, slty, tr dk lit grs, grds to sltst ip, tr shy ip, tt, no shows / mnr Sh lams aa.

Ss: v lt gy, l vf gred, sb ang, w srt, calcs & cly cmt, tr glauic, slty, tr dk lit grs, grds to sltst ip, tr shy ip, tt, no shows / mnr Sh lams aa.

Ss: v lt gy, l vf gred, sb ang, w srt, calcs & cly cmt, tr glauic, slty, tr dk lit grs, grds to sltst ip, tr shy ip, tt, no shows / mnr Sh lams aa.



1600 m

1610 m

1620 m

1630 m

1640 m

1650 m

D X

W a

W a

W a

W a

Sltst: lt gy, calcs & cly cmt, sdy, slly shy, tr carb specs, tt, no show.

Sltst: lt gy, calcs & cly mtx, tr carb specs, tr glauic, sdy & shy ip, tt, no shows.

Sltst: lt gy, calcs & cly mtx, tr carb specs, tr glauic, sdy & shy ip, tt, no shows / mnr Sh aa.

Sltst: lt gy, calcs & cly mtx, tr carb specs, tr glauic, sdy & shy ip, tt, no shows / 10% sh lams.

Ss: crm - lt gy, spy lt tan, vf gred, sb ang, w srt, qtzs, mnr lt cold cht, calcs, cly cmt ip, tr dk lit grs, tt - p intgran por 3%, spy lt brn dd o stn, no vis flor.

Sh: m - occly dk gy, sb fis ip, slly mmca, slty ip, tr sdy ip.

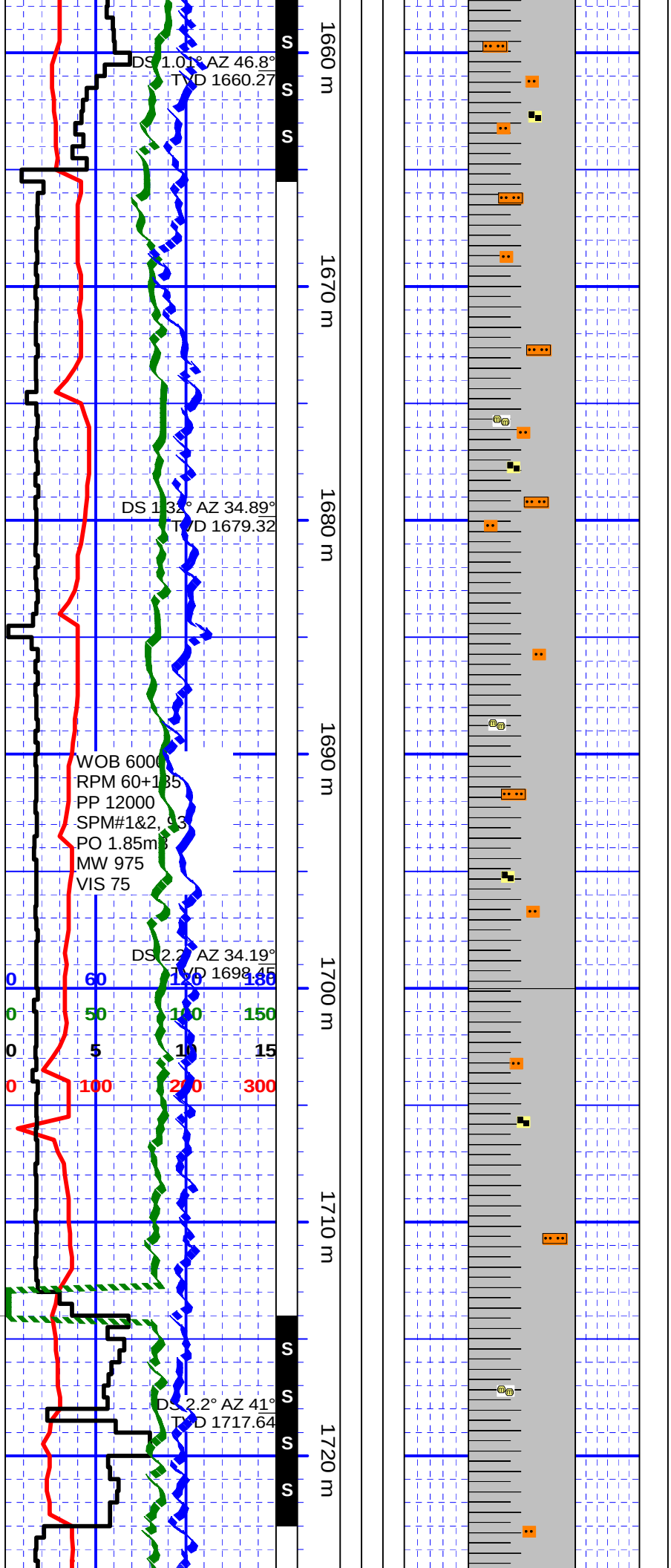
Sltst: lt gy, m gy ip, calcs & cly mtx, occly sdy, shy ip, tt, no shows.

Ss: lt gy, l vf gred, sb ang, w srt, aa.

Sh: m - occly dk gy, sb fis ip, slly mmca, slty ip, tr sdy ip.

Sltst: lt gy, m gy ip, calcs & cly mtx, occly sdy, shy ip, tt, no shows.

Sh: m gy, slly mmca, sbfis ip, occly slty, grds to shy sltst ip, p tr carb specs / 10% Sltst strgs aa.



Sh: m gy, slly mmca, sbfis ip, occly slty, grds to shy sltst ip, p tr carb specs / mnr Sltst strgs aa.

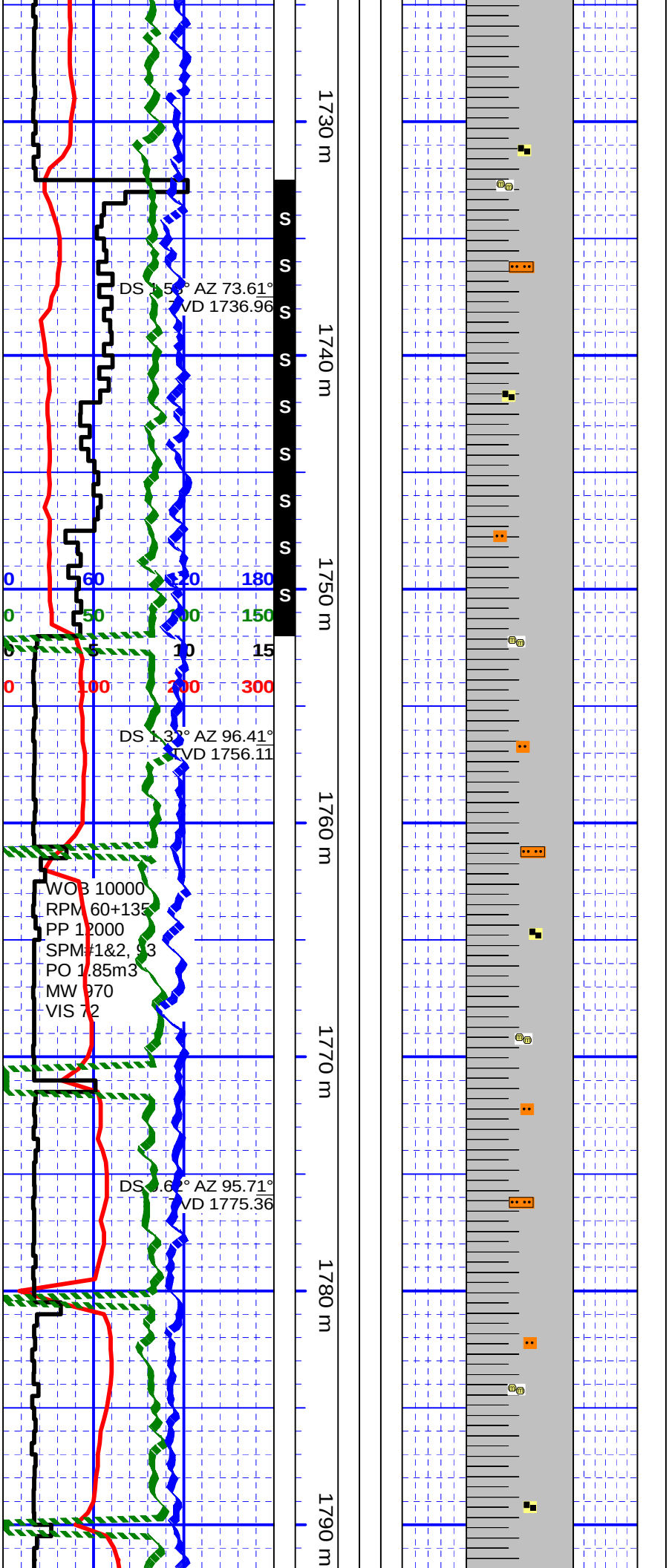
Sh: m gy, slly mmca, sbfis ip, occly slty, grds to shy sltst ip, p tr carb specs / tr Sltst strgs aa.

Sh: m gy, slly mmca, sbfis ip, tr slty, grds to shy sltst ip, p tr carb specs.

Sh: m gy, slly mmca, sbfis ip, tr slty, grds to shy sltst ip, p tr carb specs.

Sh: m - occly dk gy, slly mmca, sbfis ip, tr slty, p tr carb specs.

Sh: m - occly dk gy, slly mmca, sbfis, tr slty, p tr carb specs.



Sh: m - occly dk gy, slly mmca, sbfis, tr slty, p tr carb specs.

Sh: predly m gy, slly mmca, sbfis, tr slty, p tr carb specs.

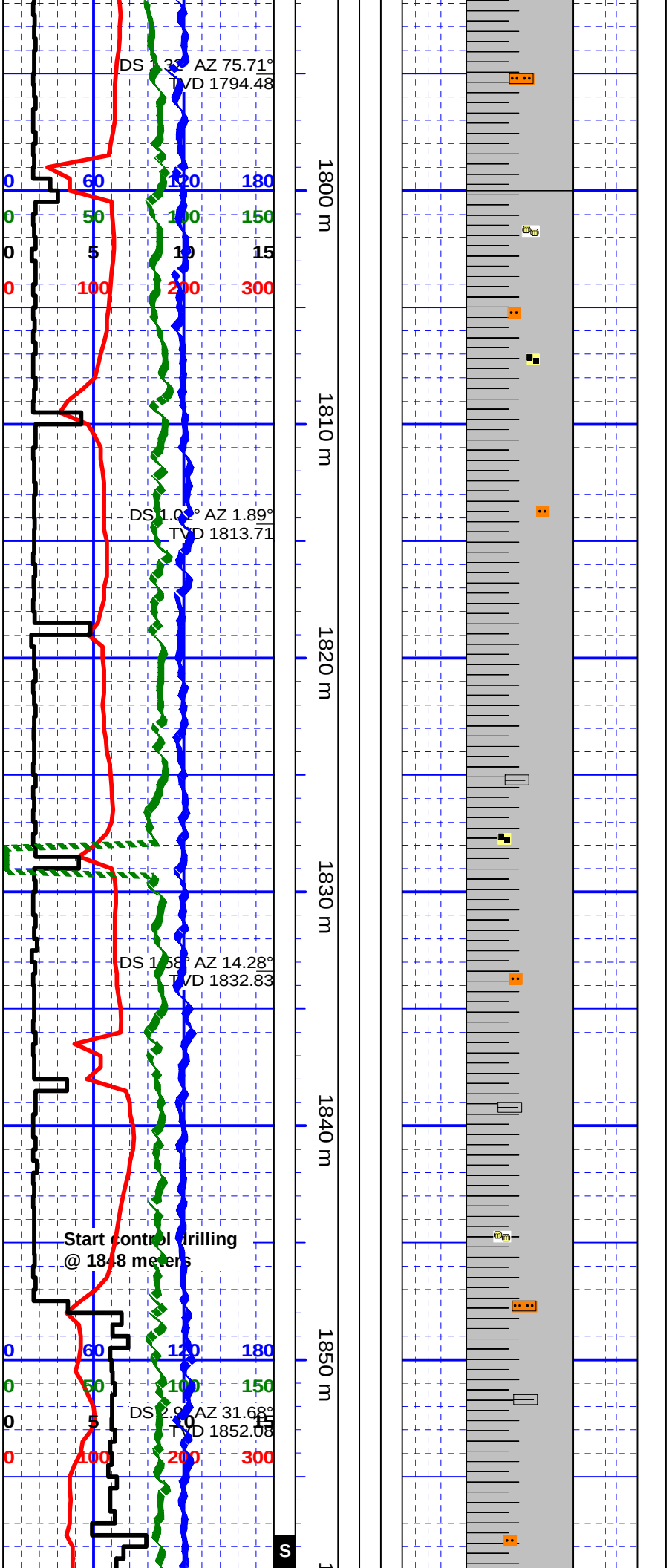
Sh: predly m gy, slly mmca, sbfis, tr slty, p tr carb specs.

Sh: predly m gy, slly mmca, sbfis, tr slty, p tr carb specs / tr mnr Sltst strgs, m gy, cly cmt, slly calcs, shy, tt, no shows.

Sh: predly m gy, slly mmca, sbfis ip, tr slty, p tr carb specs / tr mnr Sltst strgs, m gy, cly cmt, slly calcs, shy, tt, no shows.

Sh: predly m gy, slly mmca, sbfis ip, tr slty, p tr carb specs / tr mnr Sltst strgs, m gy, cly cmt, slly calcs, shy, tt, no shows.

Sh: predly m gy, slly mmca, sbfis ip, slty ip, p tr carb specs / tr mnr Sltst strgs, m gy, cly cmt, slly calcs, shy, tt, no shows.



Sh: predly m gy, slly mmca, sbfis ip, slty ip, p tr carb specs / tr mnr Sltst strgs, m gy, cly cmt, slly calcs, shy, tt, no shows.

Sh: predly m gy, mnr dk gy, slly mmca, sbfis ip, slty ip, p tr carb specs.

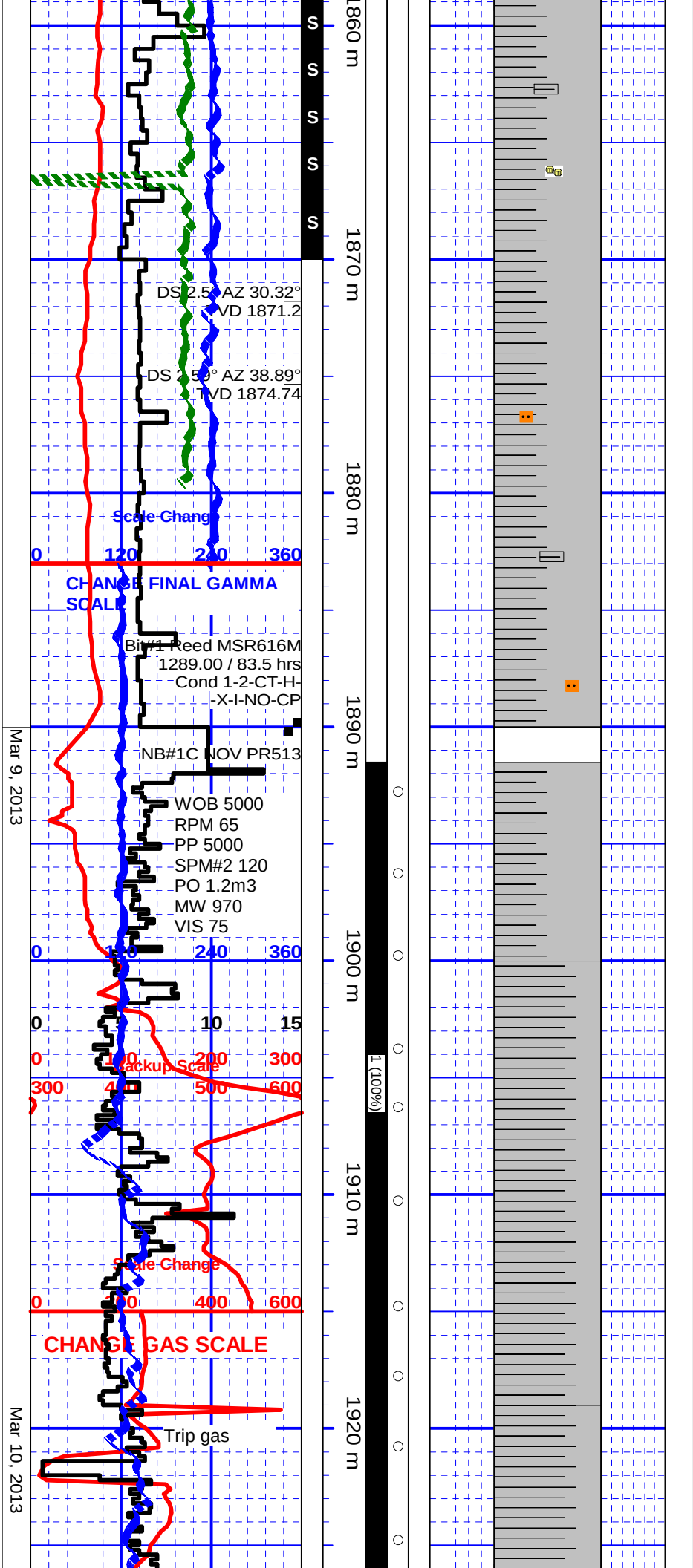
Sh: predly m gy, tr dk gy, slly mmca, sbfis ip, p tr slty ip, p tr carb specs.

Sh: predly m gy, tr dk gy, slly mmca, incrg sbfis, p tr slty ip, p tr carb specs.

Sh: predly m gy, incrg dk gy, slly mmca, sbfis, p tr slty ip, p tr carb specs.

Sh: predly m gy, mnr dkr gy, sbfis, slly mmca, tr slty ip / tr mnr Sltst lams, m gy, cly mtx, slly calcs, shy, tt, no shows.

Sh: predly m gy, mnr dkr gy, sbfis, modly frm, slly mmca, tr slty ip.



Sh: predly m gy, mnr dkr gy, sbfis, modly frm, slly mmca, tr slty ip.

Sh: predly m gy, mnr dkr gy, sbfis, modly frm, slly mmca, tr slty ip.

Sh: predly m gy, mnr dkr gy, sbfis, modly frm, slly mmca, tr slty ip.

Make 1.5 meter depth correction @ corepoint

Sh: m gy, frm, sbfis, slly mmca, slly slty, tr unident fos casts (bracs?) tr dk carb mat, no dry

Sh: aa, slly dkr, tr dk carb mat (pl rmns?), flor aa.

Sh: m gy, frm, sbfis, slly mmca, slly slty, tr unident fos casts (bracs?) tr dk carb mat, flor aa.

Sh: aa, grdg to dk gy.
Corepoint marker 1900m

Sh: dk gy, bcmg carb, aa / abnt fos casts aa & occ carb mat aa, flor aa

Sh: m - dk gy, slly mmca, sb fis, incrg slty? tr dk carb mat aa, show aa.

Sh: dk gy, decrg fos casts, p tr carb mat, show aa.

Sh: dk gy, modly frm, sbfis, slly mmca, slly slty, p tr dk carb mat, sl hydc odor, show aa

Sh: dk gy aa, abnt fos casts (bracs?) aa / carb mat aa, no dry flor, v faint pale wh cut.

Sh: dk gy, modly frm, sbfis, slly mmca, slly slty, tr fos casts, tr dk carb mat, show aa.

Sh: dk gy, slly mmca, slly slty, tr fos & carb mat aa, flor aa.

Sh: dk gy, slly mmca, slly slty, sbfis, modly frm, no dry flor, v faint lt wh cut.

Sh: dk gy, incrg mmca, incrg slty, sbfis, modly frm, no dry flor, v faint lt wh yel cut.

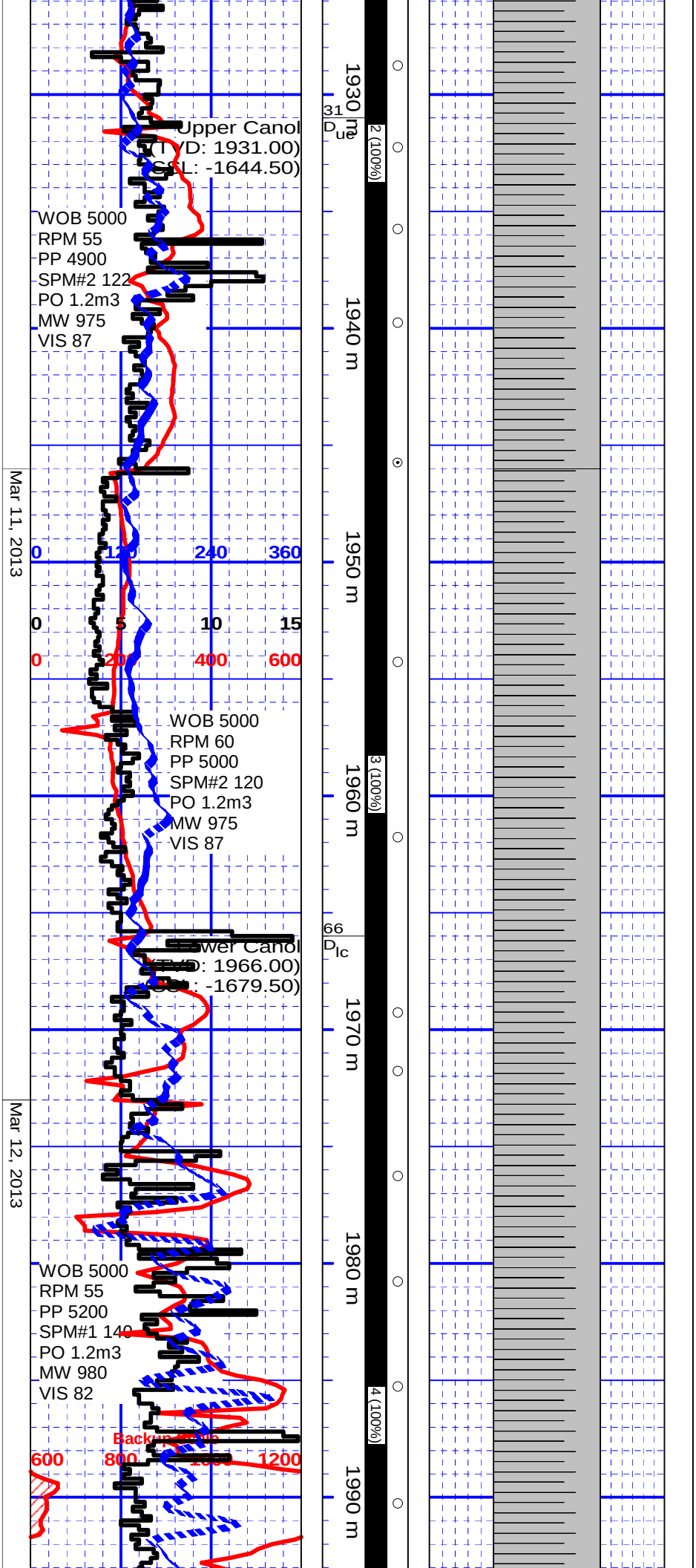
Sh: dk gy, incrg mmca, slty, sbfis, modly frm, no dry flor, v faint lt wh cut.

Sh: dk gy, sb fis, slly mmca, slty, tr dism pyr, tr v pale wh slow cloudy flor.

Sh: dk gy, sb fis, slly mmca, slty, tr dk carb specs (mat), show aa

Sh: dk gy, sb fis, slly mmca, bcmg frm (slly sils?), show aa

Sh: dk gy, sb fis, modly frm, slly mmca, tr slty,



Sh: dk gy, sb fis, modly frm, slly mmca, tr slty, mnr dk carb mat, tr pyr, show aa.

Sh: dk gy, sb fis, modly frm, slly mmca, tr slty, incrg dk carb mat, abnt spong spics, tr pl rmns?

Sh: dkr gy, sb fis, modly frm, slly mmca, slly slty, tr dk carb mat, tr spics, slow pale flor cut aa

Sh: slly dkr gy, sb fis, slly mmca, sl spics, tr blk carb mat, no dry flor

Upper Canol
(TVD: 1931.00)
(SSL: -1644.50)

Sh: v dk gy, sb fis, slly mmca, slly slty, sft - modly frm, tr blk carb mat, show aa

Sh: v dk gy - blk, sb fis, slly mmca, slly slty, sft - modly frm, tr blk carb mat, show aa

Sh: dk gy, sb fis, slly mmca, slly slty, sft - modly frm, tr blk carb mat, occ spics, show aa

Sh: dk gy - dk gy brn, sb fis, slly slty, slly mmca, v abnt spics, tr dk carb mat (pl rmns), show aa

Sh: dk gy - dk gy brn, sb fis, pyric, slly slty, slly mmca, v abnt spics, tr dk carb mat (pl rmns), fos

Sh: dk gy - dk gy brn, sb fis, slly slty, slly mmca, tr pyric, p tr spics, show aa.

Sh: dk gy, sb fis, slly slty, slly mmca, tr pyric, tr dk carb mat (pl rmns), tr spics aa, show aa.

Sh: aa / abnt fos casts (pels or ools) infilled / pyr, no dry flor, pale wh stmg cut.

Sh: dk gy, sb fis, slly mmca, slly slty, tr mnr carb mat (pl rms?), no dry flor, v pale lt wh cut flor.

Sh: dk gy, sb fis, slly mmca, slly slty, tr mnr carb mat (pl rms?), no dry flor, v faint to no show

Sh: aa / fos casts (pels?) infilled / pyr.

Sh: dk gy, sb fis, slly mmca, slly slty, tr mnr carb mat (pl rms?), no dry flor, predly no show.

Sh: dk gy, sb fis, slly mmca, slly slty, tr mnr carb mat (pl rms?), faint to no show.

Sh: dk gy, sb fis, slly mmca, slly slty, modly frm, tr mnr carb mat (pl rms?), no dry flor, faint to no

Sh: dk gy, sb fis, slly mmca, slly slty, tr mnr carb mat (pl rms?), show aa

Sh: dk gy, sb fis, slly mmca, slly slty, tr mnr carb mat (pl rms?), show aa.

Sh: dk gy, sb fis, slly mmca, slly slty, tr mnr carb mat (pl rms?), show aa.

Sh: dk gy, sb fis, slly mmca, slly slty, abnt dism pyr, tr mnr carb mat (pl rms?), show aa.

Sh: dk gy, sb fis, slly mmca, modly frm, bcmg sils, slly slty, tr mnr carb mat (pl rms?), show

Lower Canol
(TVD: 1966.00)
(SSL: -1679.50)

Sh: dk gy, sb fis, slly mmca, modly frm, slly sils, carb, slly slty, no dry flor, faint pale wh cloudy cut.

Sh: aa, dism pyr.

Sh: dk gy - blk, slly mmca, frm - hd, sils? carb, tr slty, tr dism pyr, show aa

Sh: aa, abnt carb mat.

Sh: dk gy - blky, slly mmca, frm - hd (sils), carb / abnt carb mat.

Sh: aa / abnt pyr, tr unident fos casts (pl rmns)

Sh: dk gy - blk, fis, splty, slly mmca, frm - hd (sils), tr pyric, no dry flor, faint pale slow wh

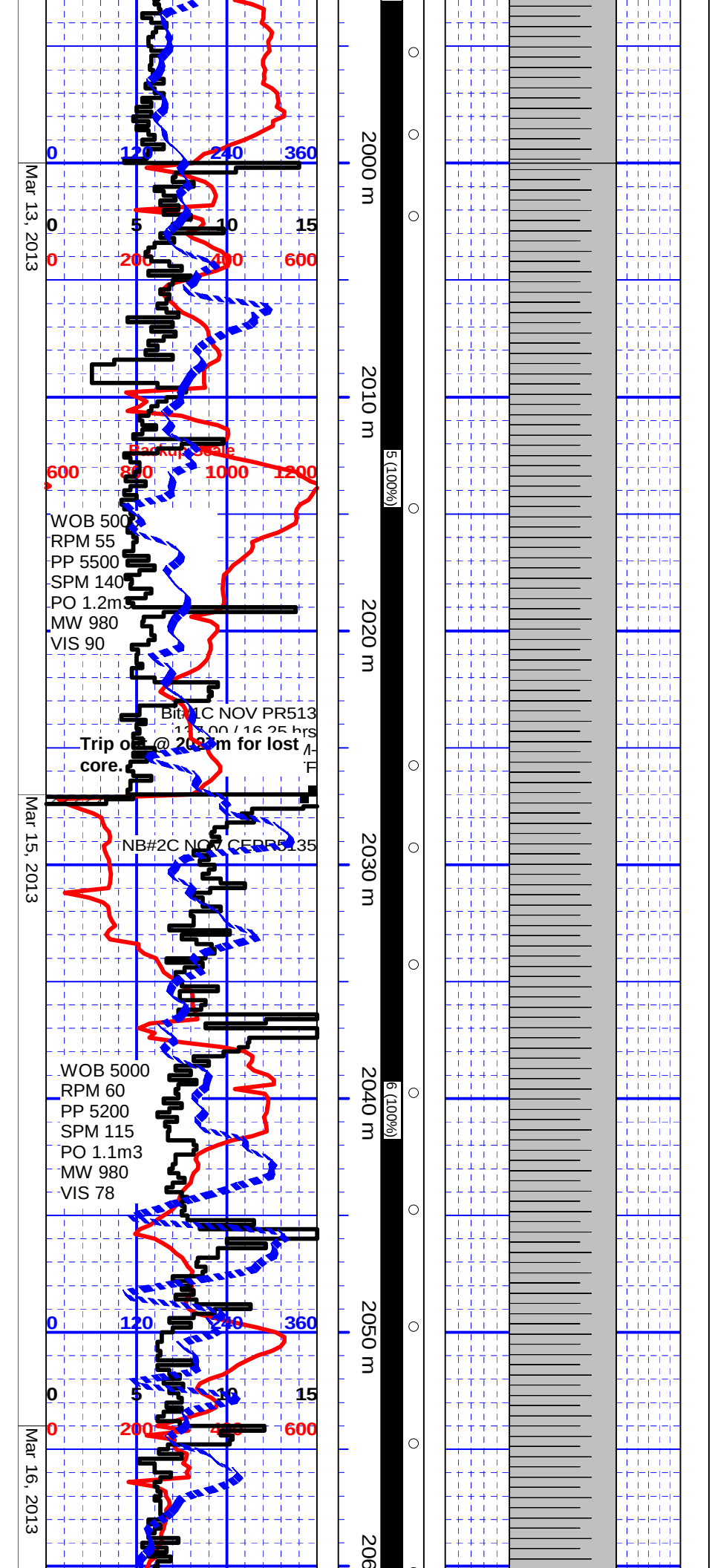
Sh: dk gy - blk, fis, splty, slly mmca, frm - hd (sils), tr pyric, no dry flor, faint pale slow wh

Sh: aa, occ carb mat, tr micro fracs infilled / carb mat & calc & tr pyr, shows aa.

Sh: dk gy, splty, slly mmca, frm - hd (sils), tr pyric, no dry flor, faint pale slow wh cloudy cut.

Sh: dk gy, frm - hd, sils, slly mmca, occ carb mat, show aa.

Sh: dk gy, hd, sils? slly mmca, occ carb mat (fos



casts & pl rmns?) show aa.

Sh: dk gy, hd, sils? slly mmca, tr pyr, occ carb mat, show aa.

Sh: dk gy, hd, sils? slly mmca, tr pyr, occ carb mat, v thin pyric lam, show aa.

Sh: dk gy, hd, sils? slly mmca, tr pyr, occ carb mat, show aa.

Sh: dk gy, hd, sils? slly mmca, tr pyr, occ carb mat, show aa.

Core# 5: No recovery at surface. Upper shoe backed off from bottom of inner tubes and core emptied out of tubes. Schlumberger wireline lost 200 lbs @ 1500m, then they lost 1200 lbs of weight @ 110 meters. Started recovering core from drill pipe after 3 stands. Core was mixed up in the first four tubes due to unorthodox lay down procedures (tubes & core possibly reversed). Tubes 5-10 were relatively in order, tubes 11-13 are mixed up as they were recovered from mouse hole after the core fell out of the drill pipe while in the mouse hole. The core was jammed in the pipe and we had to hit the pipe with a sledge hammer to free the core and the thread protector we had screwed on the bottom of the drill pipe to catch the core failed. We then pulled the mouse hole out and laved it down on the pipe racks and had

Sh: dk gy, hd, sils? slly mmca, pyric / thin lamd pyr and occ pyr nods, no dry flor, v pale slow cloudy wh cut flor.

were recovered from the outer core barrels at surface on the drill floor after the bit was removed and are relatively in order. Estimate almost full recovery.

Sh: dk gy, hd, sils? slly mmca, bcmg v slly calcs, dism pyr, occ carb mat, no dry flor, v pale wh slow cloudy cut.

Sh: dk gy, frm, slly sils, slly mmca, dism pyr, occ carb mat, no dry flor, v pale wh slow cloudy cut.

Sh: dk gy - blk, slly mmca, frm bcmg brit, sils? v slly calcs, carb mat (pl rmns?), no dry flor, v faint

Sh: dk gy - blk, slly mmca, frm bcmg brit, sils? v slly calcs, carb mat (pl rmns?), no dry flor, v faint

Sh: dk gy - blk, slly mmca, carb, frm, brit, sils? v slly calcs, carb mat (pl rmns?), no dry flor, v faint

Sh: dk gy - blk, slly mmca, carb, frm, brit, sils? v slly calcs, carb mat (pl rmns?), no dry flor, v faint slow wh cloudy cut.

Sh: blk, frm, brit, splty, slly sils, slly mmca, carb, tr pyric, mud invasion along sh lams, hydc odor? shows aa.

Sh: blk, frm, brit, splty, slly sils, slly mmca, carb, tr pyric, mud invasion along sh lams, hydc odor? shows aa.

Sh: dk gy - blk, frm, brit, splty, slly sils?, slly mmca, carb, incrg calcs, tr pyric, shows aa.

Sh: dk gy - blk, frm, brit, splty, slly sils?, slly mmca, carb, calcs, tr pyric, shows aa

Sh: dk gy - blk, frm, brit, splty, slly sils?, slly mmca, carb, calcs, tr pyric, dk carb mat (pl

Sh: dk gy - blk, frm, brit, splty, slly sils?, slly mmca, carb, calcs, bcmg slty, dk carb mat (pl

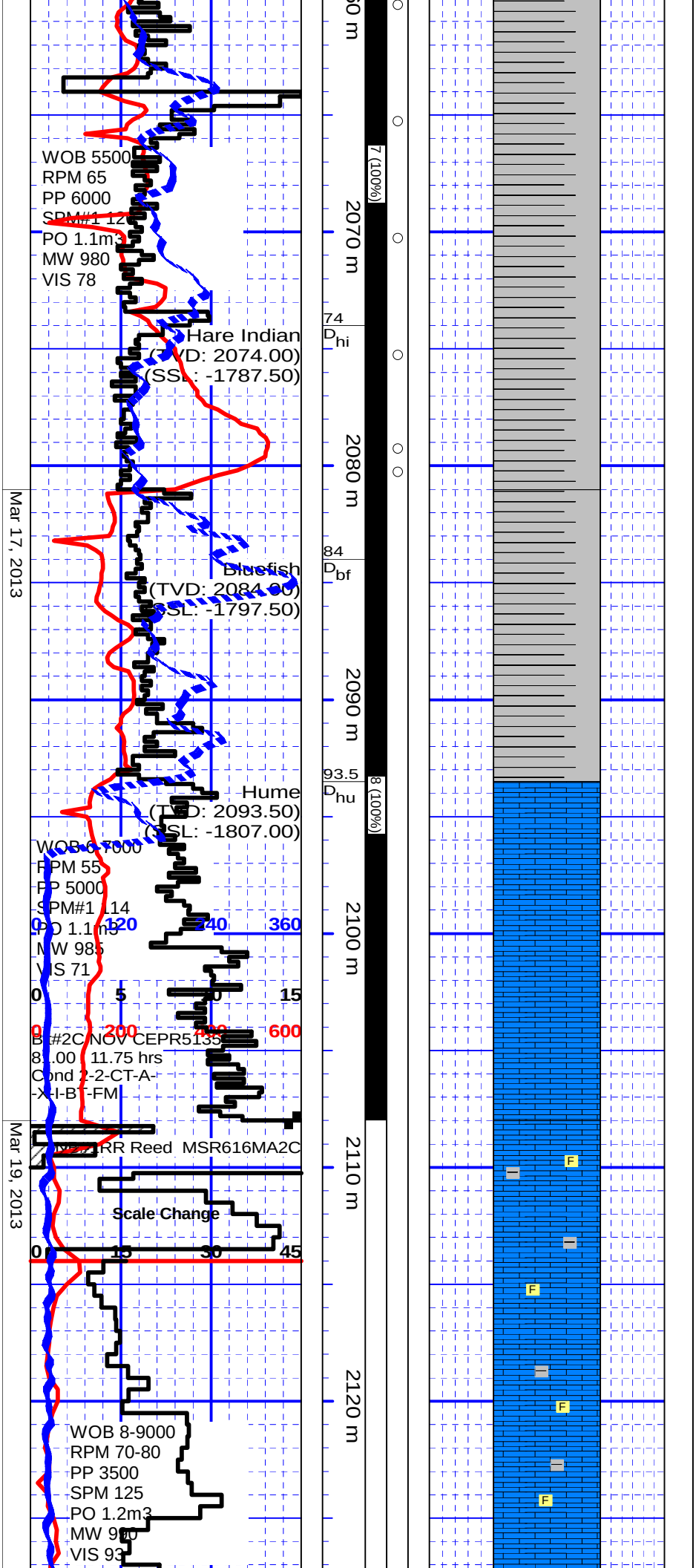
Sh: dk gy - blk, frm, brit, splty, slly sils?, slly mmca, carb, v slly calcs, tr pyric, dk carb mat (pl

Sh: v dk gy, frm, brit, slly sils?, slly mmca, carb, tr pyric, tr dk carb mat (pl rmns?), shows aa.

Sh: v dk gy - blk, frm, brit, slly sils?, slly mmca, carb, tr dk carb mat (pl rmns?), shows aa

Sh: v dk gy - blk, frm, brit, sils?, slly mmca, carb, tr dism pyr, tr dk carb mat (pl rmns?), shows aa

Sh: v dk gy - blk, frm, brit, slly sils?, slly mmca, tr



pyr, carb, tr dk carb mat (pl rmns?), shows aa

Sh: v dk gy - blk, frm, brit, slly sils?, slly mmca, carb, tr dk carb mat (pl rmns?), shows aa

Sh: v dk gy - blk, frm, brit, slly sils?, slly mmca, dism pyr, carb, tr dk carb mat (pl rmns?), no dry flor, faint slow pale wh cloudy cut.

Sh: v dk gy - blk, frm, brit, slly sils?, slly mmca, dism pyr, carb, tr dk carb mat (pl rmns?), show

Sh: v dk gy, frm, splty, brit, sils? v slly mmca, carb, show aa.

Sh: v dk gy, frm, splty, brit, sils? v slly mmca, carb, slly slty, show aa.

Sh: v dk gy, frm, splty, brit, sils? v sll carb, slly slty, show aa.

Hare Indian (TVD: 2074.00) (SSL: -1787.50)

Sh: v dk gy, frm, splty, brit, sils? v slly mmca,

Sh: v dk gy, frm, splty, brit, sils? v slly mmca, dk carb mat (pl rmns?), slly slty, show aa.

Sh: v dk gy, frm, splty, brit, sils? v slly mmca, v abnt spotted (pels?) dk carb mat (grds to bit?), show aa but slly brighter.

Sh: aa

Sh: v dk gy, bcmg less brit, slly mmca, carb, slly slty, dk carb mat, tr unident fos casts, shows aa

Sh: v dk gy, modly brit, plty, frm, slly sils, mmca, abnt rdd carb spots, sho

Bluefish (TVD: 2084.00) (SSL: -1797.50)

Sh: aa / dism pyr.

Sh: v dk gy, plty, sb fis, slly mmca, carb, v slly calcs, show aa

Sh: dk gy, plty, fis, sils, incrg calcs, carb, abnt fos casts infilled / pyr, carb mat aa, show aa.

Sh: aa, incrg calcs.

Sh: v dk gy, modly brit, plty, frm, calcs, slly sils, slly mmca, abnt fos casts occly infilled / pyr, carb

Sh: aa, v calcs.

Ls: lt brn, fragal wkest, rexld ip f m xln, slly

Hume (TVD: 2093.50) (SSL: -1807.00)

unident fos casts (cor) infilled w

Ls: lt brn, fltst, micr mtx, rexld ip amph, unident fos casts (cor) infilled with cxln fros

Ls: aa

Ls: lt brn, mdst - wkest, slly arg, unident fos shad, dns, no shows

Ls: brn, fltst? aa, shy, (mud comtaminated)

Ls: lt brn, wkest? unident fos shad, slly arg, dns, no shows

Ls: brn, wkest, occ unident fos frags, gasts? unident cor casts infilled / calc, slly arg, dns, no vis shows.

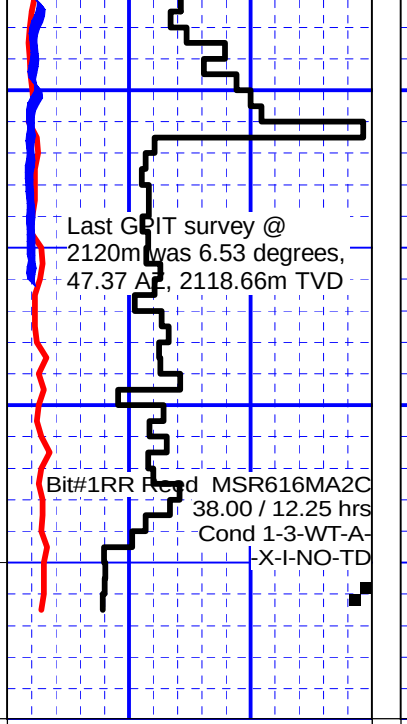
Ls: brn, mdst - wkest, occly rexld f xln, mnr unident fos shad, dns, no shows.

Ls: gy brn, mdst - wkest, unident fos shad & debris, slly arg, no vis por or shows.

Ls: gy brn, mdst - wkest, unident fos shad & debris, slly arg, no vis por or shows.

Ls: gy brn, mdst - wkest, unident fos shad & debris, slly arg, no vis por or shows.

Ls: gy brn, mdst - wkest, unident fos shad & debris, slly arg, no vis por or shows.



Mar 20, 2013

2130 m

2140 m

215

F

F

F

Ls: gy brn, mdst - wkest, sft, chky, unident fos shad & debris, slly arg, no vis por or shows.

Ls: gy brn, mdst - wkest, sft, chky, unident fos shad & debris, slly arg, no vis por or shows.

TD: 2146 Meters (2144.5m TVD) on Mar 20, 2013 @ 01:00 hrs. 40 m north & 40m east of surface location.

Final gamma (gapi)
0 120 240 360
Gamma Ray (gapi)
0 50 100 150
Drill Rate (min/m)
0 15 30 45
Total Gas (units)
0 200 400 600

Date

Drilling Progress

Slide - Rotate

Depth

Core

Oil Shows

Porosity Type

5 10 15 20

Porosity (%)

Interpreted Lithology

c snd
m snd
f snd
vf snd

Grain Size

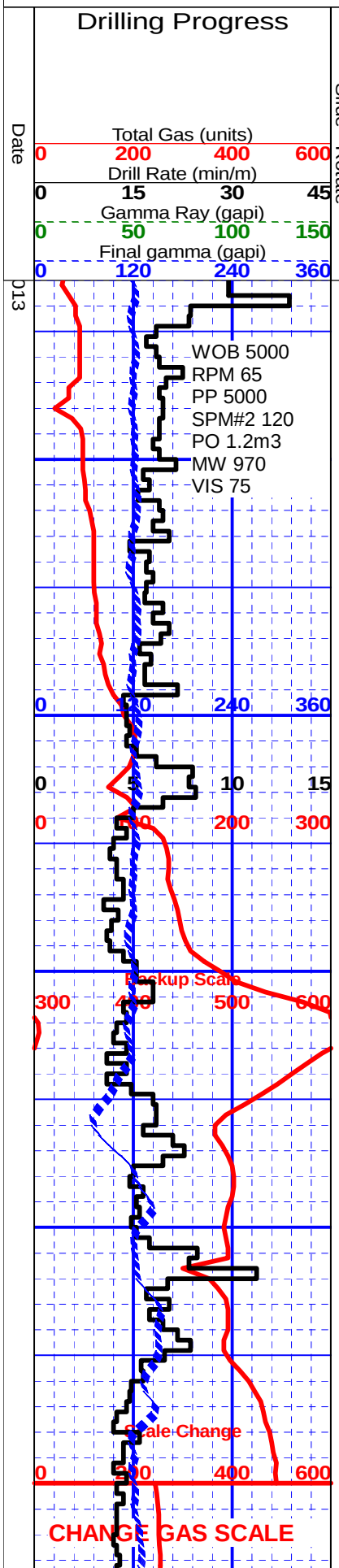
Sorting

Rounding

Lithology Description

Expanded Core Log (1:120) Mar 9, 2013

Core #1 Interval: 1891.50m to 1919.00m Cut: 27.5m Recovered: 27.5m (100%)



Lithology Description

Sh: m gy, frm, sbfis, slly mmca, slly slty, tr unident fos casts (bracs?) tr dk carb mat, no dry flor, v faint pale wh cloudy cut.

Sh: aa, slly dkr, tr dk carb mat (pl rmns?), flor aa.

Sh: m gy, frm, sbfis, slly mmca, slly slty, tr unident fos casts (bracs?) tr dk carb mat, flor aa.

Sh: aa, grdg to dk gy.

Corepoint marker 1900m

Sh: dk gy, bcmg carb, aa / abnt fos casts aa & occ carb mat aa, flor aa.

Sh: m - dk gy, slly mmca, sb fis, incrg slty? tr dk carb mat aa, show aa.

Sh: dk gy, decrg fos casts, p tr carb mat, show aa.

Sh: dk gy, modly frm, sbfis, slly mmca, slly slty, p tr dk carb mat, sl hydc odor, show aa.

Sh: dk gy aa, abnt fos casts (bracs?) aa / carb mat aa, no dry flor, v faint pale wh cut.

Sh: dk gy, modly frm, sbfis, slly mmca, slly slty, tr fos casts, tr dk carb mat, show aa.

Sh: dk gy, slly mmca, slly slty, tr fos & carb mat aa, flor aa.

Sh: dk gy, slly mmca, slly slty, sbfis, modly frm, no dry flor, v faint lt wh cut.

Sh: dk gy, incrg mmca, incrg slty, sbfis, modly frm, no dry flor, v faint lt wh yel cut.

Sh: dk gy, incrg mmca, slty, sbfis, modly frm, no dry flor, v faint lt wh cut.

Date

Drilling Progress

Slide - Rotate

Depth

Core

Oil Shows

Porosity Type

Porosity (%)
5
10
15
20

Interpreted Lithology

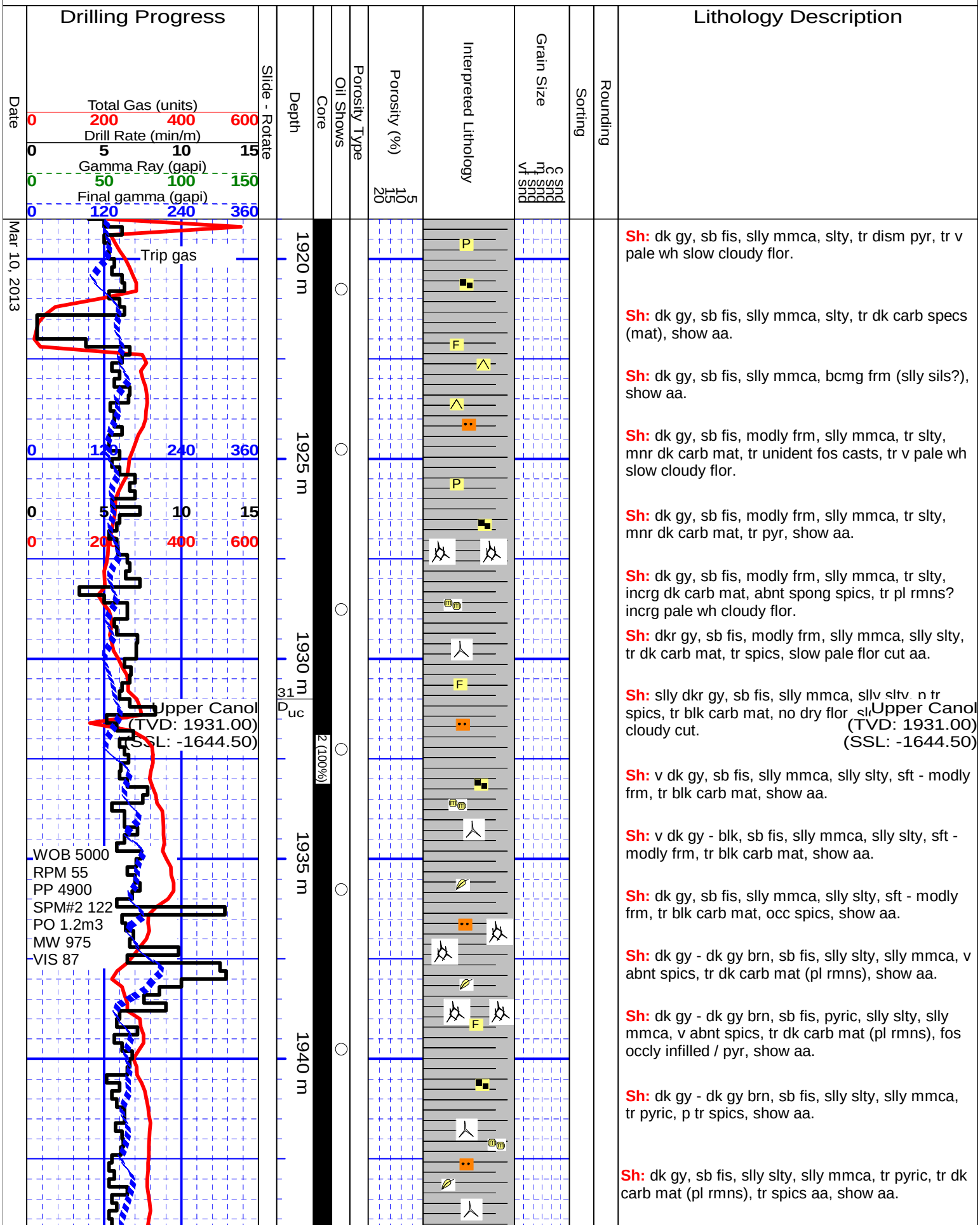
Grain Size
c snd
c snd
m snd
f snd
vf snd

Sorting

Rounding

Lithology Description

Expanded Core Log (1:120) Mar 10, 2013
Core #2 Interval: 1919.00m to 1946.00m Cut: 27m Recovered: 27m (100%)



Sh: aa / abnt fos casts (pels or ools) infilled / pyr, no dry flor, pale wh stmg cut.

Final gamma (gapi)
0 120 240 360
Gamma Ray (gapi)
0 50 100 150
Drill Rate (min/m)
0 5 10 15
Total Gas (units)
0 200 400 600

Date

Drilling Progress

Slide - Rotate

Depth

Core

Oil Shows

Porosity Type

Porosity (%)
5
10
15
20

Interpreted Lithology

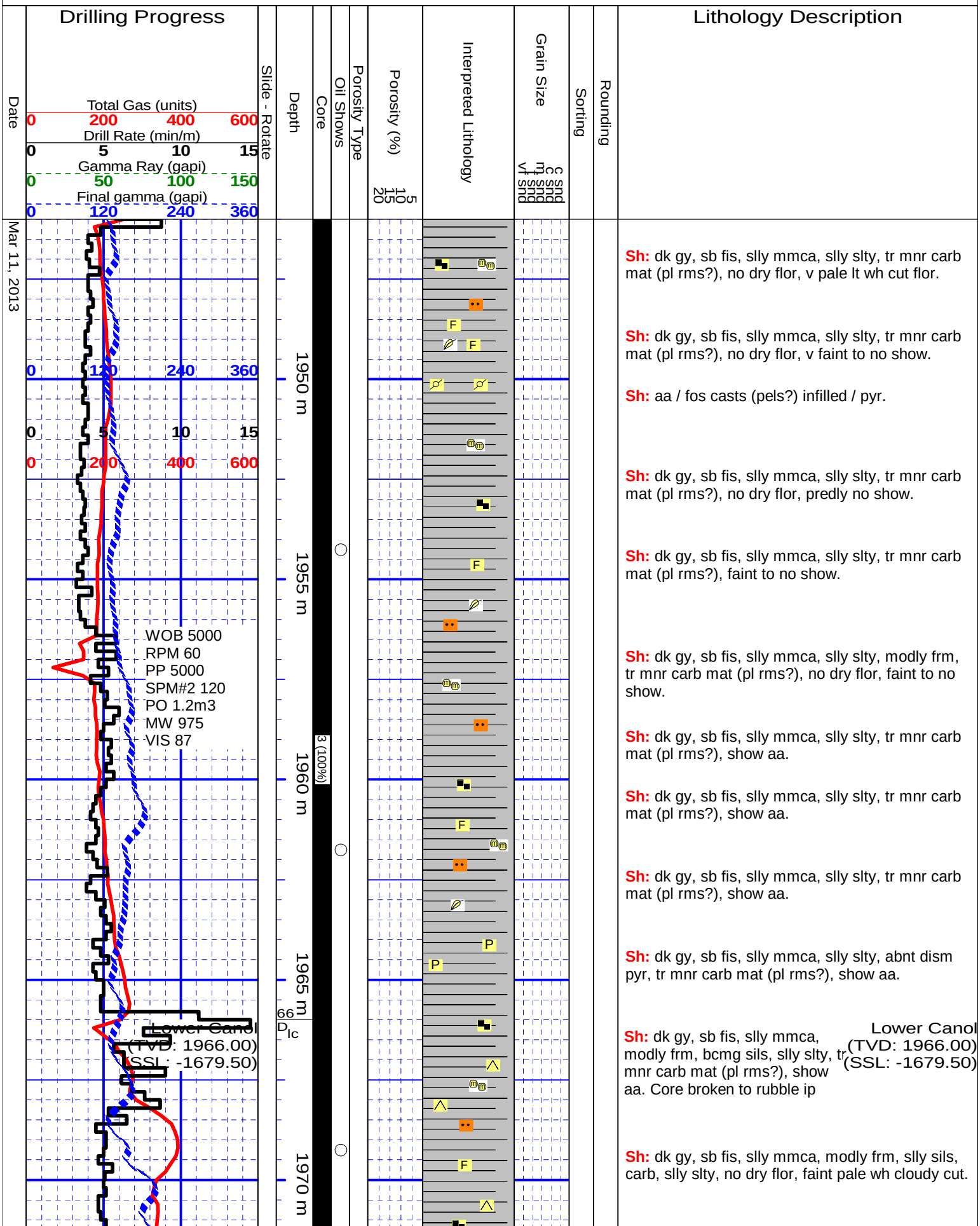
Grain Size
c snd
m snd
f snd
vf snd

Sorting

Rounding

Lithology Description

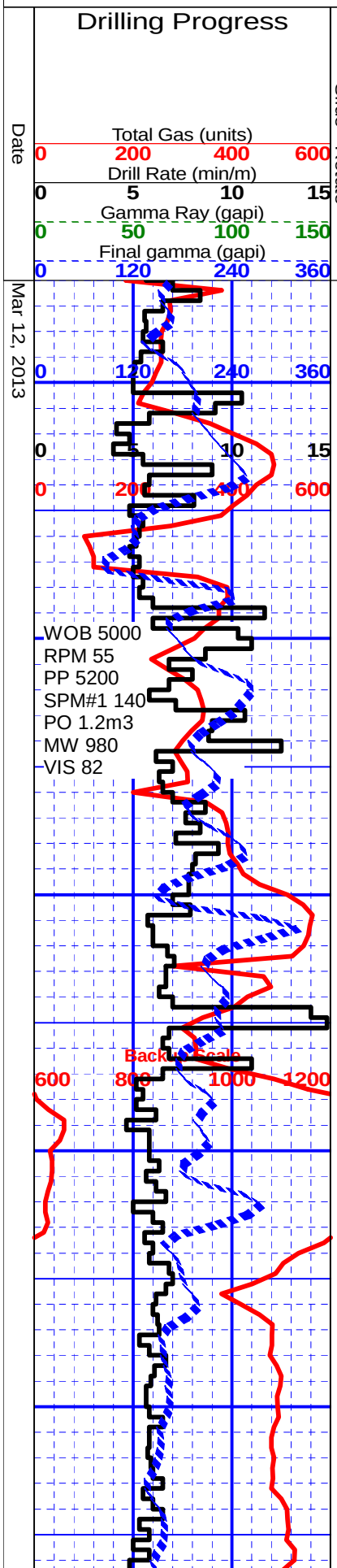
Expanded Core Log (1:120) Mar 11, 2013
Core #3 Interval: 1946.00m to 1973.00m Cut: 27m Recovered: 27m (100%)

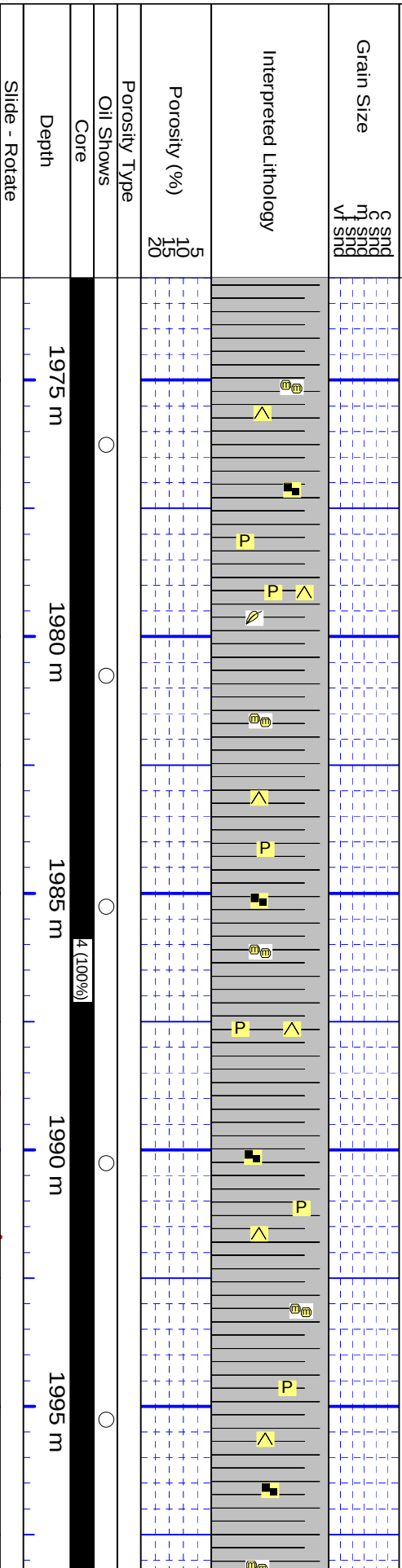


Final gamma (gapi)
0
120
240
360
Gamma Ray (gapi)
0
50
100
150
Drill Rate (min/m)
0
5
10
15
Total Gas (units)
0
200
400
600
Date
Drilling Progress
Slide - Rotate
Depth
Core
Oil Shows
Porosity Type
Porosity (%)
5
10
15
20
Interpreted Lithology
P
P
Grain Size
c snd
c snd
m snd
f snd
vf snd
Sorting
Rounding
Lithology Description
Sh: aa, dism pyr.

Expanded Core Log (1:120) Mar 12, 2013

Core #4 Interval: 1973.00m to 2000.00m Cut: 27m Recovered: 27m (100%)





Lithology Description

Sh: dk gy - blk, slly mmca, frm - hd, sils? carb, tr slty, tr dism pyr, show aa.

Sh: aa, abnt carb mat.

Sh: dk gy - blky, slly mmca, frm - hd (sils), carb / abnt carb mat.

Sh: aa / abnt pyr, tr unident fos casts (pl rmns)

Sh: dk gy - blk, fis, splty, slly mmca, frm - hd (sils), tr pyric, no dry flor, faint pale slow wh cloudy cut.

Sh: dk gy - blk, fis, splty, slly mmca, frm - hd (sils), tr pyric, no dry flor, faint pale slow wh cloudy cut.

Sh: aa, occ carb mat, tr micro fracs infilled / carb mat & calc & tr pyr, shows aa.

Sh: dk gy, splty, slly mmca, frm - hd (sils), tr pyric, no dry flor, faint pale slow wh cloudy cut.

Sh: dk gy, frm - hd, sils, slly mmca, occ carb mat, show aa.

Sh: dk gy, hd, sils? slly mmca, occ carb mat (fos casts & pl rmns?) show aa.

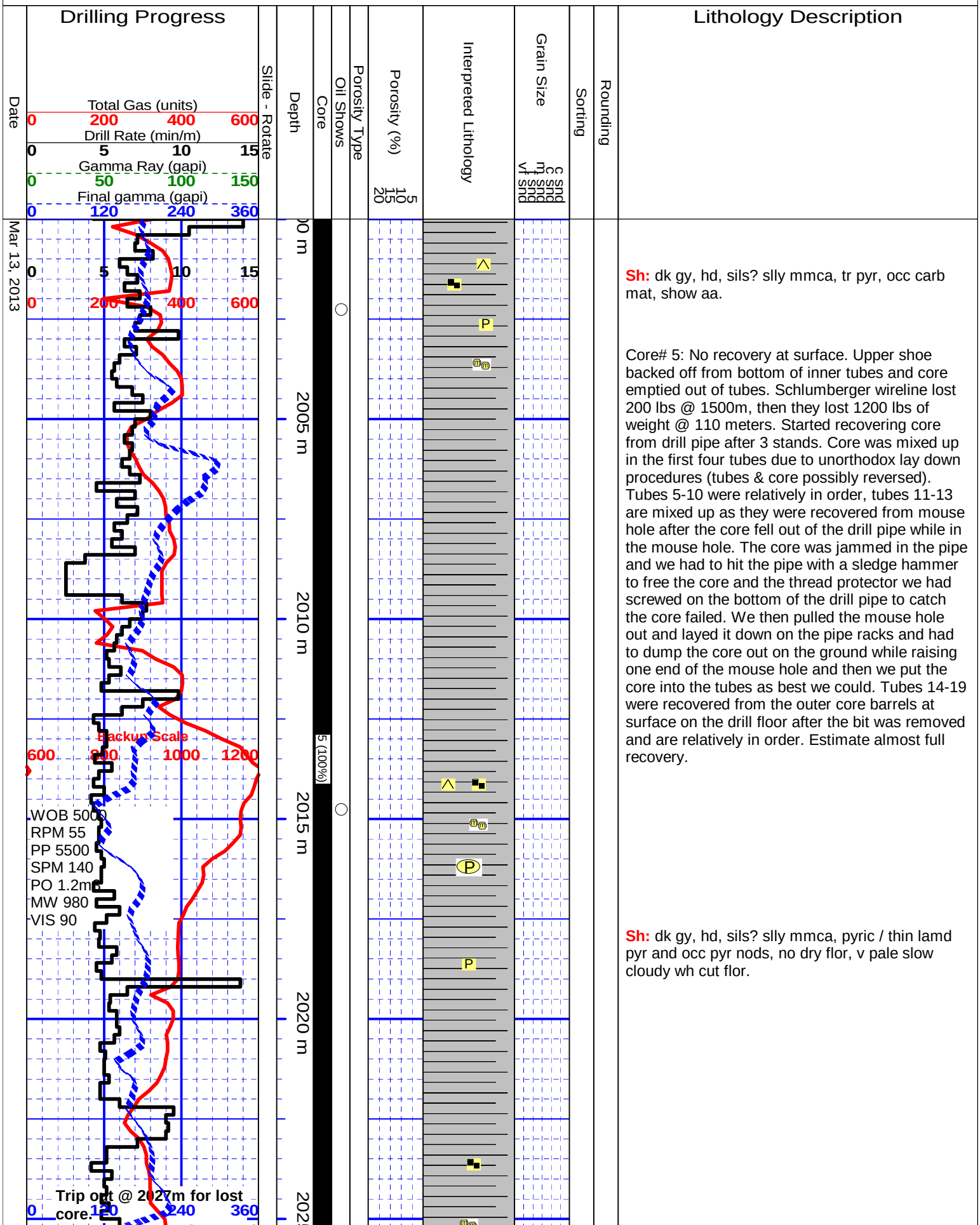
Sh: dk gy, hd, sils? slly mmca, tr pyr, occ carb mat, show aa.

Sh: dk gy, hd, sils? slly mmca, tr pyr, occ carb mat, v thin pyric lam, show aa.

Sh: dk gy, hd, sils? slly mmca, tr pyr, occ carb mat, show aa.

Expanded Core Log (1:120) Mar 13, 2013

Core #5 Interval: 2000.00m to 2027.00m Cut: 27m Recovered: 27m (100%)



Sh: dk gy, hd, sils? slly mmca, tr pyr, occ carb mat, show aa.

Core# 5: No recovery at surface. Upper shoe backed off from bottom of inner tubes and core emptied out of tubes. Schlumberger wireline lost 200 lbs @ 1500m, then they lost 1200 lbs of weight @ 110 meters. Started recovering core from drill pipe after 3 stands. Core was mixed up in the first four tubes due to unorthodox lay down procedures (tubes & core possibly reversed). Tubes 5-10 were relatively in order, tubes 11-13 are mixed up as they were recovered from mouse hole after the core fell out of the drill pipe while in the mouse hole. The core was jammed in the pipe and we had to hit the pipe with a sledge hammer to free the core and the thread protector we had screwed on the bottom of the drill pipe to catch the core failed. We then pulled the mouse hole out and layed it down on the pipe racks and had to dump the core out on the ground while raising one end of the mouse hole and then we put the core into the tubes as best we could. Tubes 14-19 were recovered from the outer core barrels at surface on the drill floor after the bit was removed and are relatively in order. Estimate almost full recovery.

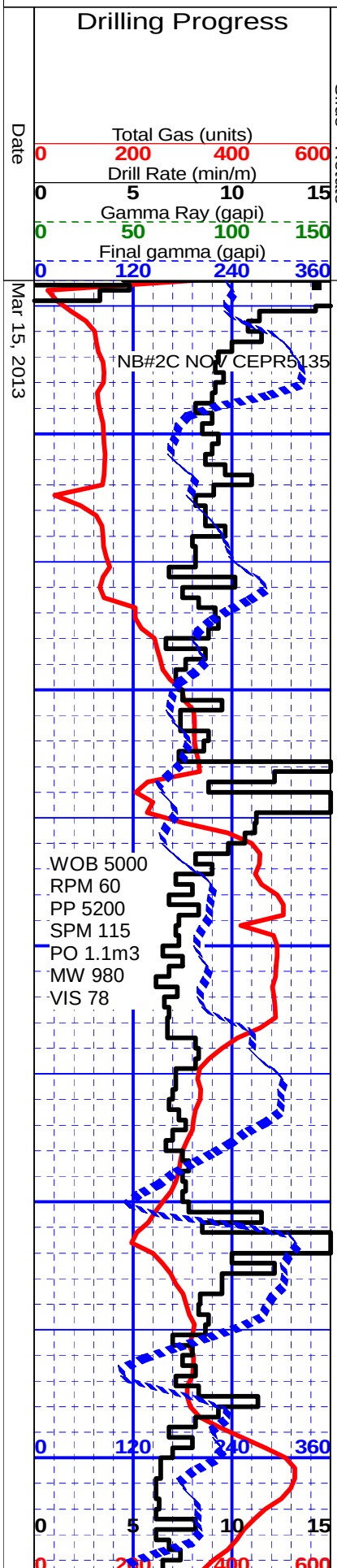
Sh: dk gy, hd, sils? slly mmca, pyric / thin lamd pyr and occ pyr nods, no dry flor, v pale slow cloudy wh cut flor.

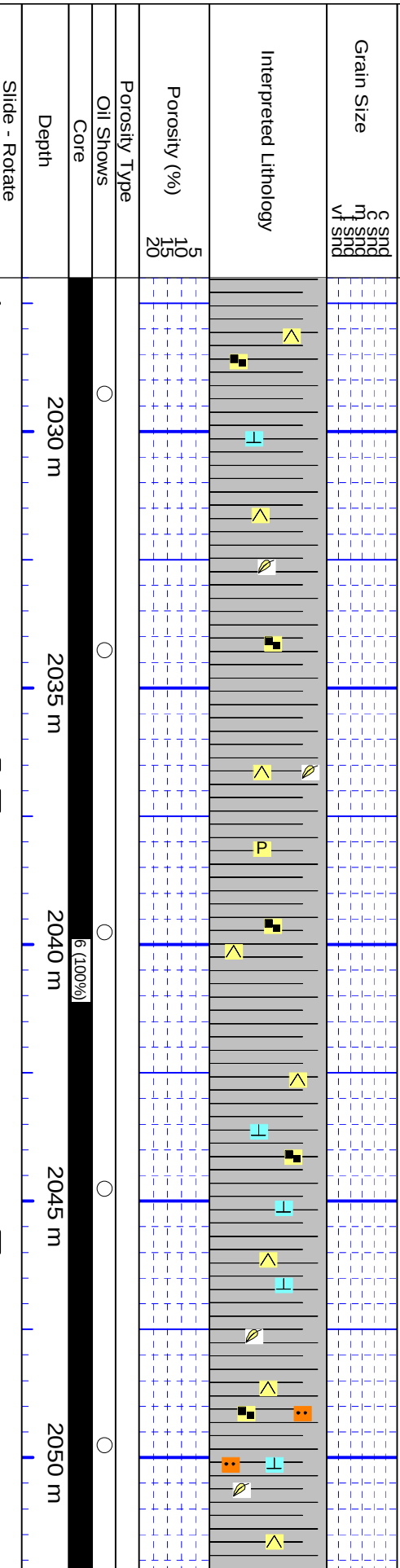
Sh: dk gy, hd, sils? slly mmca, bcmg v slly calcs, dism pyr, occ carb mat, no dry flor, v pale wh slow cloudy cut.

Lithology Description

Expanded Core Log (1:120) Mar 15, 2013

Core #6 Interval: 2027.00m to 2054.00m Cut: 27m Recovered: 27m (100%)





Lithology Description

Sh: dk gy, frm, slly sils, slly mmca, dism pyr, occ carb mat, no dry flor, v pale wh slow cloudy cut.

Sh: dk gy - blk, slly mmca, frm bcmg brit, sils? v slly calcs, carb mat (pl rmns?), no dry flor, v faint slow wh cloudy cut.

Sh: dk gy - blk, slly mmca, frm bcmg brit, sils? v slly calcs, carb mat (pl rmns?), no dry flor, v faint slow wh cloudy cut.

Sh: dk gy - blk, slly mmca, carb, frm, brit, sils? v slly calcs, carb mat (pl rmns?), no dry flor, v faint slow wh cloudy cut.

Sh: dk gy - blk, slly mmca, carb, frm, brit, sils? v slly calcs, carb mat (pl rmns?), no dry flor, v faint slow wh cloudy cut.

Sh: blk, frm, brit, splty, slly sils, slly mmca, carb, tr pyric, mud invasion along sh lams, hydc odor? shows aa.

Sh: blk, frm, brit, splty, slly sils, slly mmca, carb, tr pyric, mud invasion along sh lams, hydc odor? shows aa.

Sh: dk gy - blk, frm, brit, splty, slly sils?, slly mmca, carb, incrg calcs, tr pyric, shows aa.

Sh: dk gy - blk, frm, brit, splty, slly sils?, slly mmca, carb, calcs, tr pyric, shows aa.

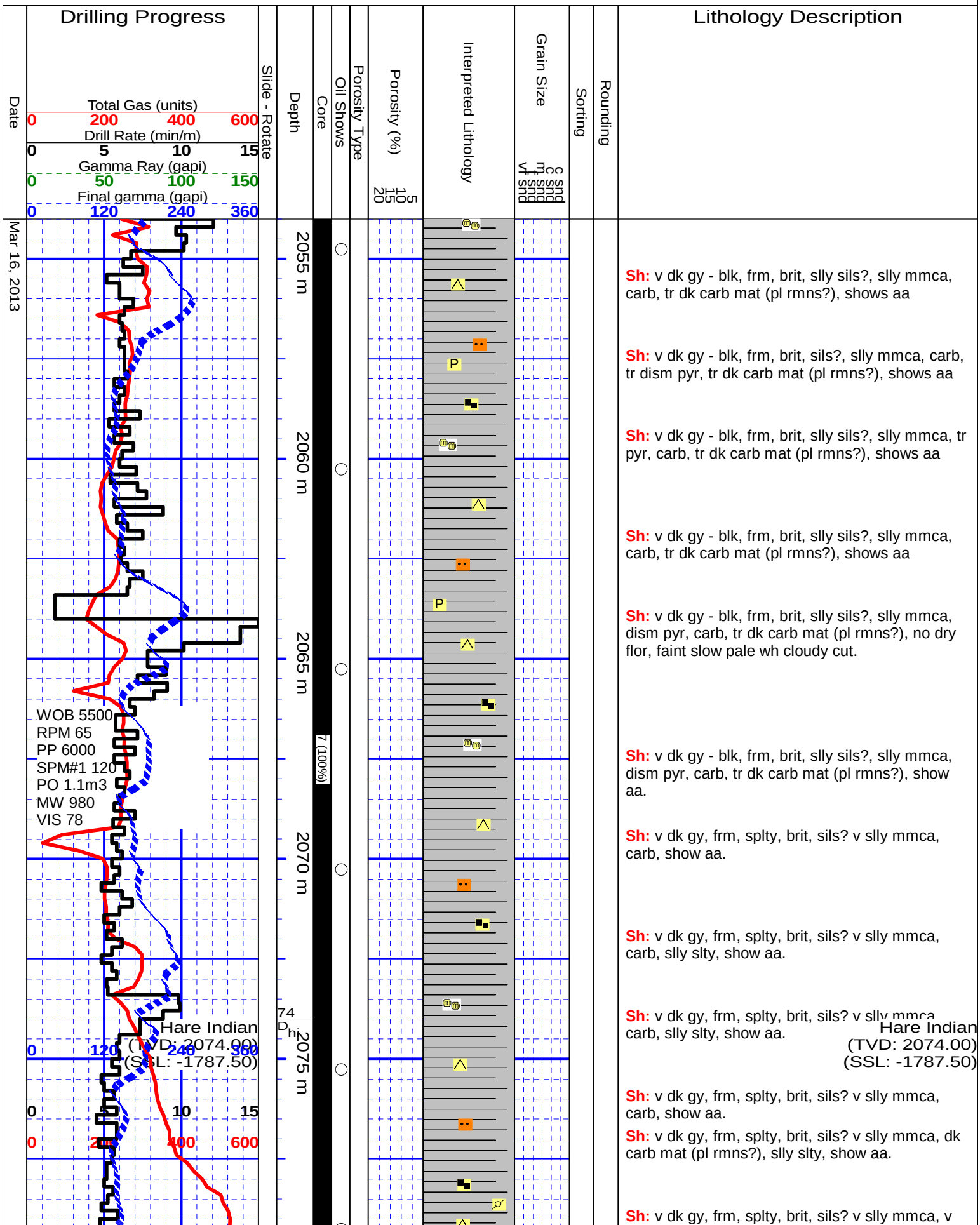
Sh: dk gy - blk, frm, brit, splty, slly sils?, slly mmca, carb, calcs, tr pyric, dk carb mat (pl rmns?), shows aa.

Sh: dk gy - blk, frm, brit, splty, slly sils?, slly mmca, carb, calcs, bcmg slty, dk carb mat (pl rmns?), shows aa.

Sh: dk gy - blk, frm, brit, splty, slly sils?, slly mmca, carb, v slly calcs, tr pyric, dk carb mat (pl rmns?), faint shows aa.

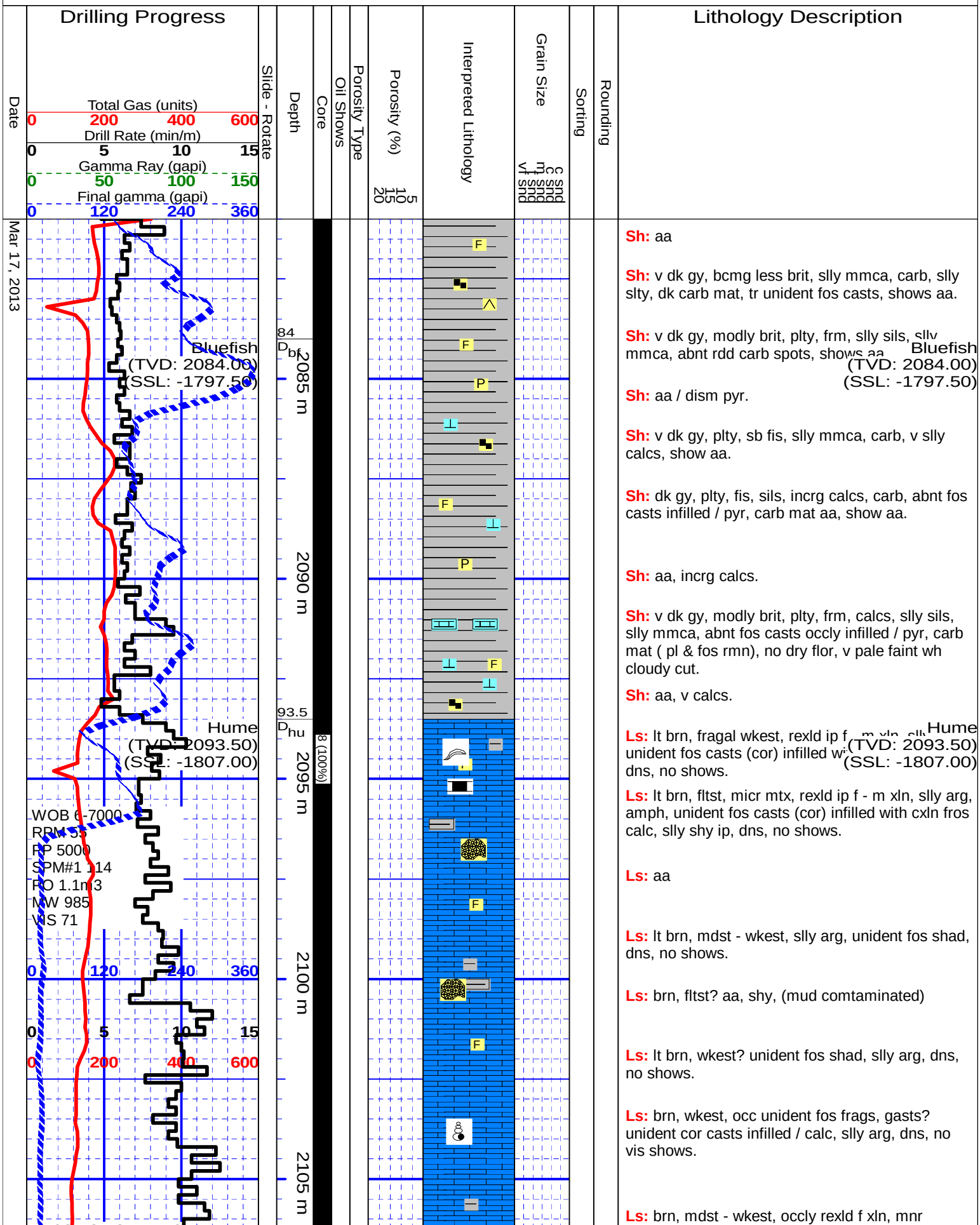
Sh: v dk gy, frm, brit, slly sils?, slly mmca, carb, tr pyric, tr dk carb mat (pl rmns?), shows aa.

Expanded Core Log (1:120) Mar 16, 2013
Core #7 Interval: 2054.00m to 2081.00m Cut: 27m Recovered: 27m (100%)



abnt spotted (pels?) dk carb mat (grds to bit?), show aa but slly brighter.

Expanded Core Log (1:120) Mar 17, 2013
Core #8 Interval: 2081.00m to 2108.00m Cut: 27m Recovered: 27m (100%)



unident fos shad, dns, no shows.