

DM 631634



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Husky Slater River H-64
300H6450012600
Geological Report

Well Licence Number: 462

Spud Date: 19/02/12 @ 11:30

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Prepared By: Hans J. Papenhoven

SUMMARY

WELL SUMMARY

WELL NAME:	Husky Slater River H-64		UNIQUE WELL ID:	300H6450012600	
SURFACE LOCATION:	300H64650012600		BOTTOM HOLE LOCATION:	300H64650012600	
OPERATOR:	Husky Oil Operations Limited	PROVINCE:	NWT	LICENCE NUMBER:	462
COORDINATES:	7199091.91N & 633062.92E	FIELD:		POOL:	Slater River
DRILLING CONTRACTOR:	Nabours Drilling		RIG NUMBER:	23	
SPUD DATE:	19/02/12 @ 11:30	FINISHED DRILLING:	06/03/12 @ 10:40	RIG RELEASE:	10/03/2012 @ 23:59
GROUND ELEV (m):	178	KB ELEV (m):	183.2	KB-CE (m):	

HOLE DATA:

	Size (mm)	From (m)	To (m)
SURFACE HOLE:	311.0	25.0	510.0
FIRST INTERMEDIATE:			
SECOND INTERMEDIATE:			
FINAL:	222.0	510.0	1341.8

CASING & CEMENTING DATA:

Surface:	Size (mm):	244.5	Weight (kg/m):	53.57	Grade:	J-55			
	Landed at (m):	510.0	Plug down:	Feb 23, 2012 @ 03:10					
	Cemented with:	Cement casing with 4.0m ³ preflush water. Mix and pump 43 tonnes RFC cement + 2.0% CaCl ² +0.2% anti foam @ 1740 kg/m ³							
First Intermediate:	Size (mm):		Weight (kg/m):		Grade:				
	Landed at (m):		Plug down:						
	Cemented with:								
Second Intermediate:	Size (mm):		Weight (kg/m):		Grade:				
	Landed @ (m):		Plug down:						
	Cemented with:								
Final	Size (mm):	177.8	Weight (kg/m):	34.23	Grade:	OL-80 LT&C			
	Landed @ (m):	1341	Plug down:	Mar 9, 2012 @ 07:00					
	Cemented with:	Cemented with 14.8t Hilite 1400 cement with additives, tailed in with 15.2t Type "G" + additives.							
FINAL WELL STATUS:	Cased for Canol Observation Well								
FINAL TOTAL ESTIMATED COST:	\$8,946,597.00			AFE #:	US-51822-EX-02-DR-ID				

GEOLOGICAL SUMMARY

DST & CORE SUMMARY

CORE SUMMARY

CORE No.	FORMATION	FROM	TO	CUT	RECOVERED
1	Lower Canol	1170.00	1204.00	34.00	29.00
2	Lower Canol	1204.00	1222.40	18.40	16.80
3	Lower Canol	1222.40	1241.20	18.80	18.20
4	Lower Canol & Hare Indian	1241.20	1256.60	15.40	15.00
5	Hare Indian	1256.60	1258.40	1.80	1.70
6	Hare Indian	1258.40	1259.40	1.00	0.70
7	Hare Indian, Bluefish & Hume	1270.00	1302.85	32.85	31.95

DST SUMMARY

BIT RECORD

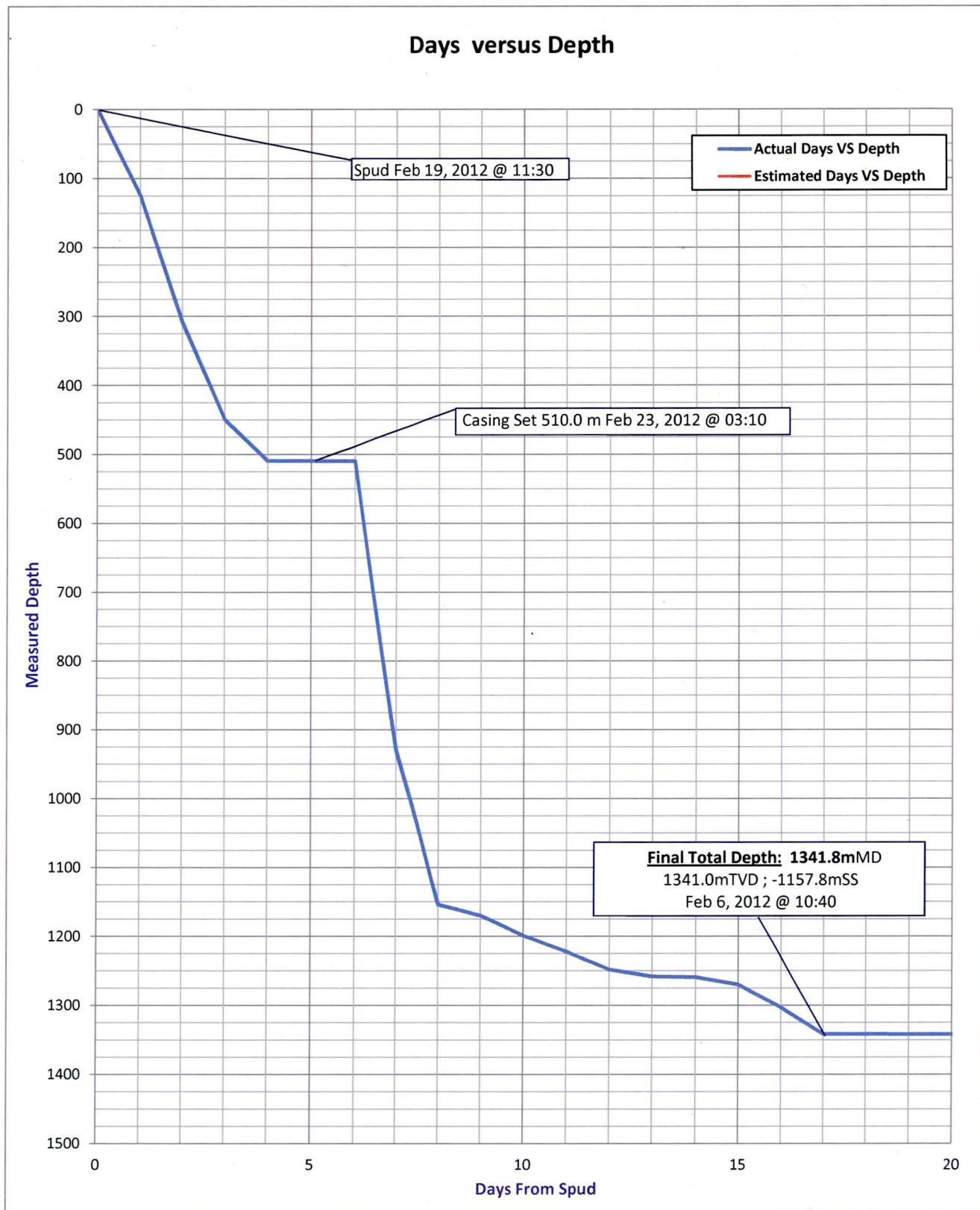
DEVIATION SURVEYS

DEVIATION SURVEYS (MWD Surveys)								Grnd (m):	178.00
								KB (m):	183.20
No.	DEPTH	DRIFT	AZIMUTH	TVD	SS DEPTH	N+/S-	E+/W-	SECTION	DOGLEG
1	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
2	29.00			29.00	154.20				
3	42.00	0.20	69.40	42.00	141.20	0.01	0.02	0.01	0.46
4	72.00	0.40	53.80	72.00	111.20	0.09	0.15	0.09	0.21
5	109.52	0.50	50.50	109.52	73.68	0.27	0.39	0.27	0.08
6	136.58	0.80	39.20	136.58	46.62	0.49	0.60	0.49	0.36
7	163.98	0.80	34.80	163.97	19.23	0.80	0.83	0.80	0.07
8	191.53	1.20	26.00	191.52	-8.32	1.21	1.06	1.21	0.47
9	219.85	1.50	28.80	219.83	-36.63	1.81	1.37	1.81	0.33
10	238.71	1.20	5.30	238.69	-55.49	2.22	1.51	2.22	0.99
11	257.17	1.50	335.40	257.14	-73.94	2.63	1.43	2.63	1.23
12	276.05	1.60	317.70	276.01	-92.81	3.05	1.15	3.05	0.77
13	294.50	1.80	301.00	294.46	-111.26	3.39	0.72	3.39	0.86
14	312.93	1.80	289.80	312.88	-129.68	3.64	0.20	3.64	0.57
15	340.72	2.10	265.50	340.65	-157.45	3.74	-0.71	3.74	0.94
16	359.55	1.70	245.60	359.47	-176.27	3.60	-1.31	3.60	1.22
17	378.12	1.60	199.00	378.04	-194.84	3.24	-1.65	3.24	2.11
18	397.07	1.90	178.30	396.98	-213.78	2.68	-1.72	2.68	1.10
19	415.68	2.30	171.10	415.57	-232.37	2.00	-1.66	2.00	0.77
20	434.02	1.60	160.70	433.90	-250.70	1.40	-1.52	1.40	1.28
21	452.48	1.10	135.30	452.36	-269.16	1.03	-1.31	1.03	1.25
22	471.60	1.30	113.60	471.47	-288.27	0.81	-0.98	0.81	0.77
23	495.00	1.20	116.50	494.87	-311.67	0.59	-0.52	0.59	0.15
24	510.00	1.46	108.21	509.86	-326.66	0.46	-0.19	0.46	0.65
25	517.53	1.60	105.10	517.39	-334.19	0.41		0.41	0.65
26	536.47	1.10	81.60	536.33	-353.13	0.36	0.43	0.36	1.17
27	554.92	0.30	118.60	554.78	-371.58	0.37	0.65	0.37	1.43
28	573.69	0.30	68.60	573.55	-390.35	0.36	0.74	0.36	0.41
29	591.98	0.70	70.80	591.83	-408.63	0.42	0.89	0.42	0.66
30	610.47	0.50	47.90	610.32	-427.12	0.51	1.06	0.51	0.50
31	637.80	0.70	259.70	637.65	-454.45	0.56	0.98	0.56	1.27
32	666.16	0.50	307.50	666.01	-482.81	0.60	0.71	0.60	0.55
33	694.31	0.70	12.50	694.16	-510.96	0.84	0.65	0.84	0.71
34	722.68	0.40	282.90	722.53	-539.33	1.04	0.59	1.04	0.85
35	750.61	0.30	4.60	750.46	-567.26	1.13	0.50	1.13	0.50
36	778.08	0.50	32.40	777.93	-594.73	1.30	0.57	1.30	0.30
37	805.78	0.90	39.00	805.63	-622.43	1.57	0.78	1.57	0.44

DEVIATION SURVEYS

(MWD Surveys)

Grnd (m):	178.00
KB (m):	183.20



DAILY OPERATIONS SUMMARY

SAMPLE DESCRIPTIONS

Sample Descriptions

Storage Units: Metric

30.00 to 35.00 (5.00)	50%	SANDSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, moderately consolidated, slightly siliceous, quartz, common light chert grains, trace micro carbonaceous, rare to trace disseminated pyrite, slightly argillaceous to argillaceous in part, poor to fair (4 to 8%) intergranular porosity.
	40%	SHALE light to medium gray, light brown, subfissile to subblocky, earthy, silty & sandy, trace to occasional micro carbonaceous, rare disseminated pyrite, trace coal flakes, grading to argillaceous Siltstone, soft to firm.
	10%	CEMENT off white.
35.00 to 40.00 (5.00)	85%	SANDSTONE light gray, slightly salt and pepper, silt to lower fine grained, moderately well sorted, subangular to subrounded, poorly consolidated, clay cement, moderately consolidated, slightly siliceous, quartz, common light chert grains, trace micro carbonaceous, rare to trace disseminated pyrite, slightly argillaceous to argillaceous in part, poor to fair (4 to 8%) intergranular porosity.
	15%	SHALE light to medium gray, light brown, subfissile to subblocky, as above.
40.00 to 45.00 (5.00)	80%	SANDSTONE light gray, slightly salt and pepper, silt to lower fine grained, moderately well sorted, subangular to subrounded, as above.
	20%	SHALE light to medium gray, light brown, subfissile to subblocky, earthy, very silty & sandy, trace to occasional micro carbonaceous, rare disseminated pyrite, trace coal flakes, occasional light chert grains, grading to argillaceous Siltstone, soft to firm.
45.00 to 50.00 (5.00)	75%	SANDSTONE light gray, slightly salt and pepper, silt to lower fine grained, moderately well sorted, subangular to subrounded, poorly consolidated, clay cement, moderately consolidated, slightly siliceous, quartz, common light chert grains, trace micro carbonaceous, rare to trace disseminated pyrite, slightly argillaceous to argillaceous in part, poor to fair (4 to 8%) intergranular porosity.
	25%	SHALE light to medium gray, light brown, subfissile to subblocky, earthy, as above.
50.00 to 55.00 (5.00)	80%	SHALE light to medium gray, light brown, subfissile to subblocky, earthy, very silty & sandy in part, trace to occasional light chert grains, trace micro carbonaceous, trace mica flakes, rare disseminated pyrite, trace coal flakes, grading to argillaceous Siltstone & Small in part, soft to firm.

Sample Descriptions

Storage Units: Metric

50.00 to 55.00 (5.00)	20%	SANDSTONE light gray, slightly salt and pepper, silt to lower fine grained, moderately well sorted, as above.
55.00 to 60.00 (5.00)	60%	SHALE light to medium gray, light brown, subfissile to subblocky, earthy, very silty & sandy in part, trace to occasional light chert grains, trace micro carbonaceous, trace mica flakes, rare disseminated pyrite, trace pyritic blebs, trace coal flakes, grading to argillaceous Siltstone & Sandstone in part, soft to firm.
	20%	SILTSTONE light to medium gray, silt to lower fine grained, well sorted, subangular to subrounded, poorly consolidated, very argillaceous, quartz, trace micro carbonaceous, trace dark lithic, occasional light chert grains, grading to silty Sandstone in part, tight.
	20%	SANDSTONE light gray, slightly salt and pepper, silt to lower fine grained, moderately well sorted, subangular to subrounded, poorly consolidated, clay cement, moderately consolidated, slightly siliceous, trace pyritic cement, quartz, common light chert grains, trace micro carbonaceous, rare to trace disseminated pyrite, slightly argillaceous to argillaceous in part, poor to fair (4 to 8%) intergranular porosity.
60.00 to 65.00 (5.00)	70%	SHALE light to medium gray, light brown, subfissile to subblocky, earthy, as above.
	15%	SANDSTONE light gray, slightly salt and pepper, silt to lower fine grained, moderately well sorted, as above.
	15%	SILTSTONE light to medium gray, silt to lower fine grained, well sorted, subangular to subrounded, poorly consolidated, very argillaceous, quartz, trace micro carbonaceous, trace dark lithic, occasional light chert grains, grading to silty Sandstone in part, tight.
65.00 to 70.00 (5.00)	80%	SANDSTONE light gray, salt and pepper, silt to lower fine grained, moderately well sorted, subangular to subrounded, poorly consolidated, clay cement, slightly silica in part, quartz, occasional light chert grains, trace coal flakes, rare kaolin, rare disseminated pyrite, trace dark lithic, argillaceous, poor to fair (3 to 6%) intergranular porosity.
	20%	SHALE light to medium gray, light brown, subfissile to subblocky, earthy, very silty & sandy in part, trace coal flakes, rare disseminated pyrite, grading to argillaceous Siltstone in part, soft to firm.
70.00 to 75.00 (5.00)	70%	SHALE medium gray, light brown, subfissile to subblocky, earthy, silty & sandy, trace coal flakes, occasional light chert grains, rare kaolin, trace pyritic blebs, grading to argillaceous Siltstone in part, soft to firm.

Sample Descriptions

Storage Units: Metric

70.00 to 75.00 (5.00)	30%	SANDSTONE light gray, salt and pepper, silt to lower fine grained, moderately well sorted, as above.
75.00 to 80.00 (5.00)	70%	SHALE light brown, medium gray, subblocky, earthy, silty & sandy, trace coal flakes, occasional light chert grains, rare kaolin, trace pyritic blebs, grading to argillaceous Siltstone in part, soft to firm.
	30%	SANDSTONE light gray, salt and pepper, silt to lower fine grained, moderately well sorted, subangular to subrounded, poorly consolidated, clay cement, slightly silica in part, well consolidated, pyritic cement, quartz, occasional light chert grains, trace coal flakes, rare kaolin, rare disseminated pyrite, trace dark lithic, argillaceous, poor to fair (3 to 6%) intergranular porosity.
80.00 to 85.00 (5.00)	75%	SHALE medium gray, light brown, subfissile to subblocky, earthy, silty & sandy, trace coal flakes, trace to occasional light chert grains, rare disseminated pyrite, trace pyritic blebs, grading to argillaceous Siltstone in part, soft to firm.
	25%	SANDSTONE light gray, salt and pepper, silt to lower fine grained, moderately well sorted, as above.
85.00 to 90.00 (5.00)	60%	SHALE light brown, medium gray, subblocky, earthy, silty & sandy, trace coal flakes, occasional light chert grains, rare kaolin, trace pyritic blebs, grading to argillaceous Siltstone in part, soft to firm.
	40%	SANDSTONE light gray, salt and pepper, silt to lower fine grained, moderately well sorted, as above.
90.00 to 95.00 (5.00)	70%	SANDSTONE light gray, salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace coal flakes, occasional light chert grains, trace dark lithic, trace kaolin, argillaceous in part, rare disseminated pyrite, poor to fair (3 to 9%) intergranular porosity.
	30%	SHALE light brown, medium gray, subblocky, earthy, as above.
95.00 to 100.00 (5.00)	80%	SHALE medium gray, medium brown gray, subfissile to subblocky, earthy, silty & sandy, trace coal flakes, rare disseminated pyrite, trace light chert grains, bentonitic, grading to argillaceous Siltstone, soft.

Sample Descriptions

Storage Units: Metric

95.00 to 100.00 (5.00)	20%	SANDSTONE light gray, salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, well consolidated, pyritic cement, quartz, trace coal flakes, occasional light chert grains, trace dark lithic, trace kaolin, argillaceous in part, rare disseminated pyrite, poor to fair (3 to 9%) intergranular porosity.
100.00 to 105.00 (5.00)	85%	SHALE medium gray, medium brown gray, subfissile to subblocky, as above.
	15%	SANDSTONE light gray, salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, as above.
105.00 to 110.00 (5.00)	90%	SHALE medium gray, medium brown gray, subfissile to subblocky, earthy, silty & sandy, trace coal flakes, rare disseminated pyrite, trace light chert grains, bentonitic, grading to argillaceous Siltstone, soft.
	10%	SANDSTONE light gray, salt and pepper, silt to very fine grained, well sorted, as above.
110.00 to 115.00 (5.00)	90%	SHALE light to medium gray, occasional dark gray, subfissile to subblocky, earthy, occasional silty & sandy, trace to occasional coal flakes, occasional disseminated pyrite & pyritic streaks, trace pyritic blebs, soft to firm.
	10%	SANDSTONE light gray, salt and pepper, silt to very fine grained, well sorted, as above.
115.00 to 120.00 (5.00)	95%	SHALE light to medium gray, trace dark gray, subfissile to subblocky, earthy, occasional silty & sandy, trace to occasional coal flakes, occasional disseminated pyrite & pyritic streaks, trace pyritic blebs, soft to firm.
	5%	SANDSTONE light gray, salt and pepper, silt to very fine grained, well sorted, as above.

Slater River: 122.00 MD, 122.00 TVD, 61.20 SSL

120.00 to 125.00 (5.00)	100%	SHALE light to medium gray, trace dark gray, subfissile to subblocky, earthy, as above.
125.00 to 130.00 (5.00)	100%	SHALE medium gray, light to medium brown gray, subfissile to subblocky, earthy, silty & sandy in part, trace coal flakes, trace to occasional disseminated pyrite & pyritic streaks, rare pyritic blebs, occasional light chert grains, slightly bentonitic, soft to firm.
130.00 to 135.00 (5.00)	100%	SHALE medium gray, light to medium brown gray, subfissile to subblocky, earthy, as above.

Sample Descriptions

Storage Units: Metric

135.00 to 140.00	100%	SHALE (5.00) medium to dark gray, darker than above, slightly laminated, subfissile to subblocky, earthy, silty & sandy, trace coal flakes, trace to occasional disseminated pyrite, occasional light chert grains, soft to firm.
140.00 to 145.00	100%	SHALE (5.00) medium to dark gray, slightly laminated, subfissile to subblocky, earthy, silty & sandy, trace to occasional coal flakes, occasional disseminated pyrite, pyritic streaks in bedding laminations, occasional light chert grains, trace light to medium gray argillaceous Sandstone stringers, soft to firm.
145.00 to 150.00	100%	SHALE (5.00) dark gray, occasional medium gray, becoming laminated, subfissile to subblocky, earthy, slightly silty & sandy, trace to occasional coal flakes, occasional to common disseminated pyrite, common disseminated pyrite along bedding laminations, soft to firm.
150.00 to 155.00	100%	SHALE (5.00) dark gray, blackish in part, laminated, subfissile to trace subblocky, earthy, slightly silty & sandy, trace to occasional coal flakes, occasional disseminated pyrite, common disseminated pyrite along bedding laminations, soft to firm.
155.00 to 160.00	90%	SHALE (5.00) dark gray, dark brown gray, blackish in part, laminated, subfissile to trace subblocky, slightly silty & sandy, occasional coal flakes, trace to occasional disseminated pyrite & streaks, rare calcite crystals possible fractures, soft to firm.
	10%	CLAYSTONE off white to very light gray, slightly mottled, trace to occasional disseminated pyrite, dissolves in acid but not water, slightly silty & sandy.
160.00 to 165.00	95%	SHALE (5.00) dark gray, dark brown gray, blackish in part, laminated, as above.
	5%	CLAYSTONE off white to very light gray, slightly mottled, trace to occasional disseminated pyrite, dissolves in acid but not water, slightly silty & sandy.
165.00 to 170.00	100%	SHALE (5.00) dark gray, dark brown gray, blackish in part, laminated, subfissile to trace subblocky, slightly silty & sandy, occasional coal flakes, trace to occasional disseminated pyrite & streaks, trace medium gray to medium brown argillaceous Sandstone stringers, soft to firm.
170.00 to 175.00	100%	SHALE (5.00) dark gray, dark brown gray, blackish in part, laminated, subfissile to trace subblocky, as above.

Sample Descriptions

Storage Units: Metric

175.00 to 180.00	100%	SHALE (5.00) medium gray, occasional dark gray, subfissile to subblocky, earthy, slightly silty & sandy, trace to occasional coal flakes, trace disseminated pyrite & pyritic blebs, trace disseminated pyrite streaks, trace medium brown Limestone stringers, soft to firm.
180.00 to 185.00	100%	SHALE (5.00) medium gray, occasional dark gray, subfissile to subblocky, earthy, slightly silty & sandy, trace to occasional coal flakes, trace disseminated pyrite & pyritic blebs, trace disseminated pyrite streaks, occasional mica flakes, trace light to medium gray argillaceous Siltstone & Sandstone stringers, soft to firm.
185.00 to 190.00	100%	SHALE (5.00) medium gray, medium brown gray, subfissile to subblocky, earthy, slightly silty & sandy, occasional coal flakes, trace disseminated pyrite, trace light chert grains, trace light to medium brown Limestone stringers, soft to firm.
190.00 to 195.00	100%	SHALE (5.00) medium gray, medium brown gray, subfissile to subblocky, earthy, slightly silty & sandy, occasional coal flakes, trace disseminated pyrite, trace light chert grains, trace light Sandstone stringers, soft to firm.
195.00 to 200.00	100%	SHALE (5.00) medium gray, medium brown gray, subfissile to subblocky, earthy, as above.
200.00 to 205.00	100%	SHALE (5.00) medium gray, subfissile to subblocky, earthy, silty & sandy, trace coal flakes, trace disseminated pyrite, rare calcite crystals possible filled fractures, trace light gray very fine Sandstone stringers, rare light to medium brown Limestone stringers, soft to firm.
205.00 to 210.00	100%	SHALE (5.00) medium gray, subfissile to subblocky, earthy, as above.
210.00 to 215.00	100%	SHALE (5.00) medium gray, subfissile to subblocky, earthy, silty & sandy, trace coal flakes, trace disseminated pyrite, rare to trace fossil fragments, soft to firm.
215.00 to 220.00	100%	SHALE (5.00) medium gray, subfissile to subblocky, earthy, as above.
220.00 to 225.00	100%	SHALE (5.00) medium gray, subfissile to subblocky, earthy, slightly silty & sandy, rare coal flakes, trace disseminated pyrite, trace calcareous filled fractures, soft to firm.
225.00 to 230.00	100%	SHALE (5.00) light to medium gray, subfissile to trace subblocky, earthy, slightly silty & sandy, rare to trace disseminated pyrite, rare coal flakes, occasional micaceous, soft to firm.

Sample Descriptions

Storage Units: Metric

230.00 to 235.00	100%	SHALE (5.00)	light to medium gray, subfissile to trace subblocky, earthy, silty & sandy, rare to trace disseminated pyrite, rare to trace coal flakes, occasional micro micaceous, trace light to medium gray lenses & stringers, soft to firm.
235.00 to 240.00	100%	SHALE (5.00)	light to medium gray, subfissile to trace subblocky, earthy, silty & sandy, rare to trace disseminated pyrite, rare pyritic blebs, rare to trace coal flakes, occasional micro micaceous, trace light to medium gray lenses & stringers, soft to firm.
240.00 to 245.00	100%	SHALE (5.00)	light to medium gray, subfissile to trace subblocky, earthy, silty & sandy, rare to trace disseminated pyrite, rare to trace coal flakes, occasional micro micaceous, trace light to medium gray lenses & stringers, soft to firm.
245.00 to 250.00	100%	SHALE (5.00)	light to medium gray, subfissile to trace subblocky, earthy, silty & sandy, rare to trace disseminated pyrite, trace coal flakes, occasional micro micaceous, trace light to medium gray lenses & stringers, soft to firm.
250.00 to 255.00	100%	SHALE (5.00)	light brown gray, light gray brown, subfissile to subblocky, slightly laminated, earthy, slightly silty & sandy, rare coal flakes, trace to occasional micro disseminated pyrite, slightly bentonitic, trace plant remains, soft to firm.
255.00 to 260.00	100%	SHALE (5.00)	light brown gray, light gray brown, subfissile to subblocky, as above.
260.00 to 265.00	100%	SHALE (5.00)	light brown gray, light gray brown, subfissile to subblocky, slightly laminated, as above.
265.00 to 270.00	100%	SHALE (5.00)	light brown gray, light gray brown, subfissile to subblocky, slightly laminated, earthy, slightly silty & sandy, rare coal flakes, trace to occasional micro disseminated pyrite, slightly bentonitic, trace plant remains, soft to firm.
270.00 to 275.00	100%	SHALE (5.00)	light brown gray, light gray brown, subfissile to subblocky, as above.
275.00 to 280.00	100%	SHALE (5.00)	light gray, light brown gray, light gray brown, subfissile to subblocky, slightly silty & sandy, rare micro carbonaceous, trace disseminated pyrite, micro mica, rare biotite flakes, slightly bentonitic, soft to firm.
280.00 to 285.00	100%	SHALE (5.00)	light gray, light brown gray, light gray brown, subfissile to subblocky, slightly silty & sandy, rare to trace micro carbonaceous, trace disseminated pyrite, micro mica, rare biotite flakes, slightly bentonitic, soft to firm.

Sample Descriptions

Storage Units: Metric

285.00 to 290.00	100%	SHALE (5.00) light gray, light brown gray, light gray brown, subfissile to subblocky, slightly silty & sandy, rare coal flakes, trace disseminated pyrite, micro mica, rare biotite flakes, slightly bentonitic, soft to firm.
290.00 to 295.00	100%	SHALE (5.00) light gray, light brown gray, light gray brown, subfissile to subblocky, as above.
295.00 to 300.00	100%	SHALE (5.00) light gray, light brown gray, light gray brown, subfissile to subblocky, earthy, occasional silty & sandy, trace coal flakes, trace disseminated pyrite, rare pyritic streaks, slightly bentonitic, trace to occasional micro mica, soft to firm.
300.00 to 305.00	100%	SHALE (5.00) light gray, light brown gray, light gray brown, subfissile to subblocky, earthy, slightly silty & sandy, rare coal flakes, trace disseminated pyrite, rare plant remains, slightly bentonitic, trace to occasional micro mica, trace argillaceous Sandstone stringers, soft to firm.
305.00 to 310.00	100%	SHALE (5.00) light gray, light brown gray, light gray brown, subfissile to subblocky, earthy, slightly silty & sandy, rare coal flakes, rare to trace disseminated pyrite, rare plant remains, slightly bentonitic, trace to occasional micro mica, soft to firm.
310.00 to 315.00	100%	SHALE (5.00) light gray, light brown gray, light gray brown, subfissile to subblocky, slightly silty & sandy, rare coal flakes, rare to trace disseminated pyrite, slightly bentonitic, rare calcite crystals, possible filled microfractures, soft to firm.
315.00 to 320.00	100%	SHALE (5.00) light gray, light brown gray, light gray brown, subfissile to subblocky, as above.
320.00 to 325.00	100%	SHALE (5.00) light gray, light brown gray, light gray brown, subfissile to subblocky, slightly silty & sandy, rare coal flakes, rare to trace disseminated pyrite, rare pyritic blebs, slightly bentonitic, rare calcite crystals, possible filled microfractures, soft to firm.
325.00 to 330.00	100%	SHALE (5.00) light gray, light gray brown, light brown gray, slightly laminated, subfissile to subblocky, slightly silty & sandy, rare coal flakes, occasional disseminated pyrite, occasional pyritic streaks, slightly bentonitic, soft to firm.
330.00 to 335.00	100%	SHALE (5.00) light gray, light gray brown, light brown gray, slightly laminated, subfissile to subblocky, slightly silty & sandy, rare coal flakes, occasional disseminated pyrite, occasional pyritic streaks, rare calcareous filled microfractures, slightly bentonitic, soft to firm.

Sample Descriptions

Storage Units: Metric

335.00 to 340.00	100%	SHALE (5.00)	light gray, light gray brown, light brown gray, slightly laminated, subfissile to subblocky, slightly silty & sandy, rare coal flakes, occasional disseminated pyrite, occasional pyritic streaks, trace calcareous filled microfractures, slightly bentonitic, soft to firm.
340.00 to 345.00	100%	SHALE (5.00)	light gray, light gray brown, light brown gray, slightly laminated, as above.
345.00 to 350.00	100%	SHALE (5.00)	light gray, light gray brown, light brown gray, slightly laminated, as above.
350.00 to 355.00	100%	SHALE (5.00)	light gray, light brown gray, subfissile to subblocky, slightly laminated, earthy, slightly silty & sandy, rare coal flakes, trace to occasional micromicaceous, occasional to common disseminated pyrite, occasional disseminated pyrite lining bedding laminations, trace to occasional calcareous filled fractures, rare pyritic blebs, soft to firm.
355.00 to 360.00	100%	SHALE (5.00)	light gray, light brown gray, subfissile to subblocky, slightly laminated, earthy, slightly silty & sandy, rare coal flakes, trace to occasional micromicaceous, occasional disseminated pyrite, occasional disseminated pyrite lining bedding laminations, trace calcareous filled fractures, rare pyritic blebs, soft to firm.
360.00 to 365.00	100%	SHALE (5.00)	light gray, light brown gray, subfissile to subblocky, slightly laminated, as above.
365.00 to 370.00	100%	SHALE (5.00)	light gray, light brown gray, subfissile to subblocky, slightly laminated, earthy, slightly silty & sandy, rare coal flakes, trace to occasional micromicaceous, trace to occasional disseminated pyrite, trace to occasional disseminated pyrite lining bedding laminations, rare to trace calcareous filled fractures, soft to firm.
370.00 to 375.00	100%	SHALE (5.00)	light gray, light brown gray, subfissile to subblocky, slightly laminated, earthy, slightly silty & sandy, rare coal flakes, trace to occasional micromicaceous, trace disseminated pyrite, trace disseminated pyrite lining bedding laminations, rare calcareous filled fractures, soft to firm.
375.00 to 380.00	100%	SHALE (5.00)	light to medium gray, brownish in part, subfissile to subblocky, earthy, slightly silty & sandy, rare coal flakes, trace to occasional disseminated pyrite, trace calcareous filled microfractures, soft to fair.
380.00 to 385.00	100%	SHALE (5.00)	light to medium gray, brownish in part, subfissile to subblocky, as above.
385.00 to 390.00	100%	SHALE (5.00)	light to medium gray, brownish in part, subfissile to subblocky, as above.

Sample Descriptions

Storage Units: Metric

390.00 to 395.00	75%	SHALE light to medium gray brown, light to medium brown gray, subfissile to subblocky, earthy, silty & sandy, rare coal flakes, trace to occasional disseminated pyrite, trace pyritic streaks, trace mica flakes, trace micromicaceous, trace calcareous filled fractures, grading to argillaceous Siltstone, soft to firm.
	25%	SANDSTONE off white, light brown, sly salt and pepper, silt to lower fine grained, moderately well sorted, subangular to subrounded, poorly consolidated, argillaceous, moderately consolidated, slightly siliceous, quartz, trace to occasional light chert grains, trace dark lithic, trace disseminated pyrite, trace kaolin, trace to occasional mica flakes, tight to poor (0 to 5%) intergranular porosity.
395.00 to 400.00	60%	SHALE medium gray, medium brown gray, earthy, slightly silt & sandy to silty & sandy in part, very slightly bentonitic, rare coal flakes, trace disseminated pyrite, grading to argillaceous Siltstone & Sandstone in part, soft to firm.
	40%	SANDSTONE light gray, light brown, off white, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly to moderately consolidated, very argillaceous, clayey in part, slightly siliceous, quartz, rare to trace micro carbonaceous, trace light chert grains, trace kaolin, trace disseminated pyrite, rare mica flakes, tight to poor (0 to 4%) intergranular porosity.
400.00 to 405.00	95%	SHALE medium gray, subfissile to subblocky, earthy, slightly silty & sandy, rare micro cab, rare to trace disseminated pyrite, rare pyritic blebs, slightly bentonitic, soft to firm.
	5%	SILTSTONE light brown, silt to lower very fine grade, well sorted, subangular to subrounded, moderately consolidated, siliceous cement, quartz, trace kaolin, trace coal flakes, rare disseminated pyrite, tight.
405.00 to 410.00	90%	SHALE medium gray, subfissile to subblocky, earthy, as above.
	10%	SILTSTONE light brown, silt to lower very fine grade, well sorted, subangular to subrounded, as above.
410.00 to 415.00	90%	SHALE medium gray, subfissile to subblocky, earthy, silty & sandy in part, rare micro carbonaceous, trace disseminated pyrite, rare glauconite grains, trace Siltstone & Sandstone lenses & stringers, soft to firm.
	10%	SILTSTONE light brown, silt to lower very fine grade, well sorted, subangular to subrounded, moderately consolidated, siliceous cement, quartz, trace kaolin, trace coal flakes, rare disseminated pyrite, tight.

Sample Descriptions

Storage Units: Metric

415.00 to 420.00	55%	SANDSTONE light brown, off white, clear in part, silt to fine grained, moderately sorted, subangular to subrounded, rare rounded, unconsolidated to friable to poorly consolidated, slightly siliceous, quartz, very glauconitic, trace kaolin, trace disseminated pyrite, fair to good to assumed excellent (8 to 16 to assumed 20%) intergranular porosity.
	35%	SHALE medium gray, subfissile to subblocky, earthy, silty & sandy in part, rare micro carbonaceous, trace disseminated pyrite, glauconitic in part, trace Siltstone & Sandstone lenses & stringers, soft to firm.
	10%	SILTSTONE light brown, silt to lower very fine grade, well sorted, as above.
420.00 to 425.00	60%	SANDSTONE light brown, off white, clear in part, silt to fine grained, moderately sorted, as above.
	30%	SHALE medium gray, subfissile to subblocky, earthy, as above.
	10%	SILTSTONE medium brown, medium gray brown, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, argillaceous, trace micro carbonaceous, trace kaolin, trace light chert grains, trace disseminated pyrite, rare to trace glauconite grains, tight.
425.00 to 430.00	60%	SANDSTONE light brown, off white, clear, very fine to medium grained, moderately sorted, subangular to subrounded, rounded in part, unconsolidated to friable to poorly consolidated, slightly siliceous, rare pyrite cement, quartz, trace glauconite grains, trace kaolin, trace disseminated pyrite, fair to good to assumed excellent (8 to 16 to assumed 20%) intergranular porosity.
	30%	SHALE medium gray, subfissile to subblocky, earthy, as above.
	10%	SILTSTONE medium brown, medium gray brown, silt to lower very fine grained, well sorted, as above.

Lower Cretaceous: 430.00 MD, 429.88 TVD, -246.68 SSL

430.00 to 435.00	80%	SHALE very light gray, subblocky, earthy, silty & sandy in part, rare micro carbonaceous, rare disseminated pyrite, occasional bentonitic, soft.
	20%	SILTSTONE light gray, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, argillaceous, slightly siliceous, quartz, trace micro carbonaceous, trace kaolin, rare dark lithic, tight.

Sample Descriptions

Storage Units: Metric

435.00 to 440.00	85%	SHALE very light gray, subblocky, earthy, silty & sandy in part, rare micro carbonaceous, rare disseminated pyrite, trace bentonitic, grading to argillaceous Siltstone, soft.
	15%	SILTSTONE light gray, silt to very fine grained, well sorted, subangular to subrounded, moderately consolidated, siliceous cement, quartz, trace to occasional micro carbonaceous, trace kaolin, slightly argillaceous, grading to silty Sandstone, tight.
440.00 to 445.00	90%	SHALE very light gray, subblocky, earthy, silty & sandy in part, as above.
	10%	SILTSTONE light gray, silt to very fine grained, well sorted, subangular to subrounded, as above.
445.00 to 450.00	70%	SHALE very light gray, subblocky, earthy, silty & sandy in part, rare micro carbonaceous, rare disseminated pyrite, slightly bentonitic, grading to argillaceous Siltstone, soft.
	30%	SILTSTONE light gray, silt to very fine grained, well sorted, subangular to subrounded, moderately consolidated, siliceous cement, quartz, trace to occasional micro carbonaceous, trace kaolin, slightly argillaceous, grading to silty Sandstone, tight.
450.00 to 455.00	80%	SHALE light gray, light brown, subblocky, slightly silty & sandy to silty & sandy in part, rare micro carbonaceous to rare coal flakes, slightly bentonitic, trace Siltstone lenses, soft.
	20%	SILTSTONE light gray, silt to lower very fine grained, well sorted, subangular to subrounded, moderately consolidated, siliceous cement, trace micro carbonaceous, rare glauconite, rare kaolin, rare disseminated pyrite, tight.
455.00 to 460.00	70%	SHALE light gray, light brown, slightly subfissile to subblocky, earthy, silty & sandy, trace to occasional coal flakes, rare disseminated pyrite, very slightly bentonitic, soft to firm.
	20%	SANDSTONE light gray, slightly salt and pepper, silt to lower fine grained, moderately sorted, subangular to subrounded, moderately consolidated, siliceous cement, quartz, occasional micro carbonaceous, to trace coal flakes, rare feldspar, trace to occasional kaolin, rare disseminated pyrite, trace dark lithic grains, tight to poor (0 to 5%) intergranular porosity.

Sample Descriptions

Storage Units: Metric

455.00 to 460.00 (5.00)	10%	SILTSTONE light gray, silt to lower very fine grained, well sorted, subangular to subrounded, as above.
460.00 to 465.00 (5.00)	90%	SHALE light gray, light brown, slightly subfissile to subblocky, earthy, as above.
	10%	SANDSTONE light gray, slightly salt and pepper, silt to lower fine grained, moderately sorted, subangular to subrounded, moderately consolidated, siliceous cement, quartz, occasional micro carbonaceous, to trace coal flakes, rare feldspar, trace to occasional kaolin, rare disseminated pyrite, trace dark lithic grains, tight to poor (0 to 5%) intergranular porosity.
465.00 to 470.00 (5.00)	95%	SHALE light gray, light brown, slightly subfissile to subblocky, as above.
	5%	SANDSTONE light gray, slightly salt and pepper, silt to lower fine grained, moderately sorted, as above.
470.00 to 475.00 (5.00)	85%	SHALE light gray, rare medium brown, slightly subfissile to subblocky, earthy, silty & sandy, trace to occasional coal flakes, rare disseminated pyrite, very slightly bentonitic, soft to firm.
	10%	SANDSTONE light gray, slightly salt and pepper, silt to lower fine grained, moderately sorted, as above.
	5%	SILTSTONE light gray, silt to lower very fine grained, well sorted, subangular to subrounded, moderately consolidated, siliceous cement, trace micro carbonaceous, rare glauconite, rare kaolin, rare disseminated pyrite, tight.
475.00 to 480.00 (5.00)	100%	SHALE light gray, very light brown, slightly mottled in part, slightly subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, very rare disseminated pyrite, soft to firm.
480.00 to 485.00 (5.00)	80%	SHALE light gray, very light brown, very slightly mottled in part, slightly subfissile to subblocky, as above.
	20%	SANDSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, argillaceous, moderately consolidated, slightly siliceous, quartz, trace dark lithic, rare disseminated pyrite, rare to trace coal flakes, tight to poor (0 to 5%) intergranular porosity.
485.00 to 490.00 (5.00)	95%	SHALE light gray, very light brown, slightly subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, very rare disseminated pyrite, soft to firm.

Sample Descriptions

Storage Units: Metric

485.00 to 490.00 (5.00)	15%	SANDSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, grading to sandy Siltstone in part, as above.
490.00 to 495.00 (5.00)	95%	SHALE light gray, very light brown, slightly subfissile to subblocky, earthy, as above.
	5%	SANDSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, as above.
495.00 to 500.00 (5.00)	100%	SHALE light gray, very light brown, slightly mottled in part, slightly subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, very rare disseminated pyrite, trace Siltstone & Sandstone lens, soft to firm.
500.00 to 505.00 (5.00)	85%	SHALE light gray, very light brown, slightly subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, very rare disseminated pyrite, trace Siltstone & Sandstone lens, soft to firm.
	15%	SANDSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, argillaceous, moderately consolidated, slightly siliceous, quartz, trace dark lithic, rare disseminated pyrite, rare to trace coal flakes, tight to poor (0 to 5%) intergranular porosity.
505.00 to 510.00 (5.00)	90%	SHALE light gray, very light brown, slightly subfissile to subblocky, earthy, as above.
	10%	SANDSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, as above.
510.00 to 515.00 (5.00)	55%	SHALE light gray, light brown, subblocky, earthy, silty & sandy, trace to occasional coal flakes, trace plant remains, trace kaolin, trace light chert grains, occasional to common micromicaceous, grading to argillaceous Siltstone, soft to firm.
	40%	SANDSTONE light green, light brown, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace coal flakes, trace to occasional kaolin, rare feldspar, trace dark chert lithic, trace millimeter, tight to poor (0 to 4%) intergranular porosity.
	5%	CEMENT off white.
515.00 to 520.00 (5.00)	75%	SHALE light gray, light brown, subblocky, earthy, silty & sandy, as above.

Sample Descriptions

Storage Units: Metric

515.00 to 520.00 (5.00)	25%	SANDSTONE light green, light brown, slightly salt and pepper, silt to very fine grained, well sorted, rare calcareous grains, as above.
520.00 to 525.00 (5.00)	70%	SHALE light gray brown, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy, trace coal flakes to occasional coal streaks, trace kaolin, trace plant remains, grading to argillaceous Siltstone, soft to firm.
	30%	SANDSTONE light green, light gray, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace coal flakes, trace to occasional kaolin, rare feldspar, rare to trace light chert grains, tight to poor (0 to 4%) intergranular porosity.
525.00 to 530.00 (5.00)	75%	SHALE light gray brown, light brown gray, subfissile to subblocky, earthy, as above.
	25%	SANDSTONE light green, light gray, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace coal flakes, trace to occasional kaolin, rare feldspar, rare to trace light chert grains, grading to sandy Siltstone in part, tight to poor (0 to 4%) intergranular porosity.
530.00 to 535.00 (5.00)	80%	SANDSTONE light green gray, light gray green, medium brown in part, silty & sandy, silt to very fine grained, medium brown fine grained, moderately sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, occasional to coal flakes, bituminous in part, occasional kaolin, occasional disseminated pyrite in part, medium brown Sandstone, poor to fair (3 to 6%) intergranular porosity, no shows.
	20%	SHALE light gray, light brown gray, subfissile to subblocky, earthy, silty & sandy, trace coal flakes, trace kaolin, grading to argillaceous Siltstone lenses, soft to firm.
535.00 to 540.00 (5.00)	60%	SHALE light gray, light green gray, subfissile to subblocky, earthy, silty & sandy, trace coal flakes, trace kaolin, rare disseminated pyrite, grading to argillaceous Siltstone, soft to firm.
	25%	SANDSTONE light green, light gray green, silt to very fine grained, well sorted, subangular to subrounded, moderately consolidated, siliceous cement, slightly calcareous in part, quartz, quartz, trace kaolin, trace light chert grains, tight to poor (0 to 4%) intergranular porosity.
	15%	SILTSTONE light green, light gray green, light gray, silt to lower very fine grained, well sorted, subangular to subrounded, moderately consolidated, siliceous cement, quartz, trace coal flakes, argillaceous in part, trace kaolin, trace light chert grains, tight.

Sample Descriptions

Storage Units: Metric

540.00 to 545.00	50%	SANDSTONE very light gray, off white, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly to moderately consolidated, siliceous cement, quartz, occasional light chert grains, trace coal flakes, trace kaolin, argillaceous in part, tight to poor (0 to 4%) intergranular porosity.
	40%	SHALE very light brown, very light brown gray, very light gray, subfissile to subblocky, earthy, silty & sandy in part, rare coal flakes, rare disseminated pyrite, rare kaolin, trace Siltstone lenses, soft to firm.
	10%	SILTSTONE light green, light gray green, light gray, silt to lower very fine grained, well sorted, as above.
545.00 to 550.00	80%	SHALE light gray, very light brown, subfissile to subblocky, earthy, slightly silty & sandy, rare kaolin, very rare disseminated pyrite, soft to firm.
	15%	SANDSTONE very light gray, off white, slightly salt and pepper, silt to very fine grained, well sorted, as above.
	5%	SILTSTONE light green, light gray green, light gray, silt to lower very fine grained, well sorted, as above.
550.00 to 555.00	85%	SHALE very light gray, very light brown, subfissile to subblocky, earthy, slightly silty & sandy to silty & sandy in part, trace coal flakes, rare kaolin, rare disseminated pyrite, slightly micromicaceous, soft to firm.
	15%	SANDSTONE light green, light gray, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, slightly siliceous, quartz, trace coal flakes, trace kaolin, trace light chert grains, rare disseminated pyrite, argillaceous in part, tight to poor (0 to 4%) intergranular porosity.
555.00 to 560.00	90%	SHALE very light gray, very light brown, subfissile to subblocky, earthy, as above.
	10%	SANDSTONE light green, light gray, slightly salt and pepper, silt to very fine grained, well sorted, as above.
560.00 to 565.00	90%	SANDSTONE light green, light gray, slightly salt and pepper, silt to very fine grained, well sorted, as above.

Sample Descriptions

Storage Units: Metric

560.00 to 565.00 (5.00)	90%	SHALE very light brown, very light gray, subfissile to subblocky, earthy, silty & sandy in part, trace coal flakes, trace disseminated pyrite, rare kaolin, grading to argillaceous Siltstone, soft to firm.
565.00 to 570.00 (5.00)	95%	SHALE very light brown, very light gray, subfissile to subblocky, earthy, as above.
	5%	SANDSTONE light green, light gray, slightly salt and pepper, silt to very fine grained, well sorted, as above.
570.00 to 575.00 (5.00)	80%	SHALE very light brown, very light gray, subfissile to subblocky, earthy, as above.
	20%	SANDSTONE light green gray, light gray green, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay matrix, quartz, occasional coal flakes, trace kaolin, trace dark lithic, trace light chert grains, tight to poor (0 to 5%) intergranular porosity.
575.00 to 580.00 (5.00)	100%	SHALE very light gray, very light brown, subfissile to subblocky, earthy, slightly silty & sandy, rare coal flakes, rare disseminated pyrite, rare micromicaceous, trace light gray Siltstone & Sandstone lenses, soft to firm.
580.00 to 585.00 (5.00)	90%	SHALE light gray, subfissile to subblocky, earthy, silty & sandy, trace micro carbonaceous, trace coal flakes, trace Siltstone lenses, soft to firm.
	10%	SANDSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay matrix, quartz, trace coal flakes, rare kaolin, rare disseminated pyrite, trace light chert grains, tight to poor (0 to 4%) intergranular porosity.
585.00 to 590.00 (5.00)	65%	SHALE very light brown, light gray, subfissile to subblocky, earthy, silty & sandy, rare coal flakes, rare disseminated pyrite, grading to argillaceous Siltstone, soft to firm,
	35%	SANDSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, as above.
590.00 to 595.00 (5.00)	60%	SHALE very light brown, light gray, subfissile to subblocky, earthy, as above.
	20%	SILTSTONE light gray, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous, trace kaolin, trace light chert grains, grading to silty Sandstone in part, tight.

Sample Descriptions

Storage Units: Metric

590.00 to 595.00	20%	SANDSTONE light gray, silt to very fine grained, well sorted, subangular to subrounded, poorly con, clay cement, quartz, trace micro carbonaceous, trace kaolin, trace light chert grains, grading to sandy Siltstone in part, tight to poor (0 to 4%) intergranular porosity.
595.00 to 600.00	60%	SHALE very light brown, light gray, subfissile to subblocky, earthy, as above.
	30%	SANDSTONE light gray, silt to very fine grained, well sorted, as above.
	10%	SILTSTONE light gray, silt to lower very fine grained, well sorted, as above.
600.00 to 605.00	75%	SHALE very light brown, very light gray, subfissile to subblocky, earthy, silty & sandy, rare micro carbonaceous, rare disseminated pyrite, slightly bentonitic, grading to argillaceous Siltstone, soft to firm.
	25%	SILTSTONE light gray, light brown, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, rare micro carbonaceous, rare micro carbonaceous, trace kaolin, rare disseminated pyrite, argillaceous, grading to silty Sandstone in part, tight.
605.00 to 610.00	85%	SHALE very light brown, very light gray, subfissile to subblocky, earthy, silty & sandy, trace micro carbonaceous to trace coal flakes, rare disseminated pyrite, slightly bentonitic, grading to argillaceous Siltstone, soft to firm.
	15%	SILTSTONE light gray, light brown, silt to lower very fine grained, well sorted, as above.
610.00 to 615.00	85%	SHALE very light brown, very light gray, subfissile to subblocky, earthy, silty & sandy, rare micro carbonaceous to trace coal flakes, rare disseminated pyrite, slightly bentonitic, grading to argillaceous Siltstone, soft to firm.
	15%	SILTSTONE light gray, light brown, silt to lower very fine grained, well sorted, as above.
615.00 to 620.00	90%	SHALE very light brown, very light gray, subfissile to subblocky, earthy, silty & sandy, rare micro carbonaceous to rare coal flakes, rare disseminated pyrite, bentonitic, grading to argillaceous Siltstone, soft to firm.
	10%	SILTSTONE light gray, light brown, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, rare micro carbonaceous, rare micro carbonaceous, trace kaolin, rare disseminated pyrite, argillaceous, grading to silty Sandstone in part, tight.

Sample Descriptions

Storage Units: Metric

620.00 to 625.00	95%	SHALE very light brown, very light gray, subfissile to subblocky, earthy, as above.
	5%	SILTSTONE light gray, light brown, silt to lower very fine grained, well sorted, as above.
625.00 to 630.00	100%	SHALE light gray, light brown, subfissile to subblocky, earthy, silty & sandy, rare micro carbonaceous to rare coal flakes, rare to trace disseminated pyrite, very bentonitic, grading to argillaceous Siltstone, soft to trace firm.
630.00 to 635.00	100%	SHALE light gray, light brown, subfissile to subblocky, earthy, as above.
635.00 to 640.00	100%	SHALE light gray, light brown, subfissile to subblocky, earthy, silty & sandy, very bentonitic, rare micro carbonaceous to trace coal flakes, trace Siltstone & Sandstone lenses & stringers, soft to occasional firm.
640.00 to 645.00	75%	SHALE light gray, light brown, subfissile to subblocky, earthy, rare coal flakes, rare disseminated pyrite, rare mica flakes, very bentonitic, grading to argillaceous Siltstone in part, soft.
	25%	SANDSTONE light gray, slightly salt and pepper, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, rare coal flakes, trace kaolin, trace light chert grains, very rare disseminated pyrite, grading to sandy Siltstone in part, tight to poor (0 to 3%) intergranular porosity.

Middle Imperial Sands: 649.50 MD, 649.35 TVD, -466.15 SSL

645.00 to 650.00	80%	SHALE light gray, light brown, subfissile to subblocky, earthy, as above.
	20%	SANDSTONE light gray, slightly salt and pepper, silt to lower very fine grained, well sorted, as above.
650.00 to 655.00	60%	SILTSTONE light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous to rare coal flakes, argillaceous, trace kaolin, trace light chert grains, grading to silty Sandstone in part, tight.
	40%	SHALE light gray to occasional medium gray, subfissile to subblocky, earthy, silty & sandy, very bentonitic, rare micro carbonaceous, rare disseminated pyrite, grading to argillaceous Siltstone in part, soft.

Sample Descriptions

Storage Units: Metric

655.00 to 660.00 (5.00)	60%	SILTSTONE light gray, light brown, slightly salt and pepper, silt to lower very fine grained, as above.
	40%	SHALE light gray to occasional medium gray, subfissile to subblocky, earthy, as above.
660.00 to 665.00 (5.00)	80%	SHALE light gray to occasional medium gray, subfissile to subblocky, earthy, silty & sandy, very bentonitic, rare micro carbonaceous, rare disseminated pyrite, grading to argillaceous Siltstone in part, soft.
	20%	SILTSTONE light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, as above.
665.00 to 670.00 (5.00)	90%	SHALE light gray to occasional medium gray, subfissile to subblocky, earthy, as above.
	20%	SILTSTONE light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous to rare coal flakes, argillaceous, trace kaolin, trace light chert grains, grading to silty Sandstone in part, tight.
670.00 to 675.00 (5.00)	60%	SILTSTONE light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous to rare coal flakes, argillaceous, trace kaolin, trace light chert grains, grading to silty Sandstone in part, tight.
	40%	SHALE light gray to occasional medium gray, subfissile to subblocky, earthy, as above.
675.00 to 680.00 (5.00)	65%	SHALE light gray to occasional medium gray, subfissile to subblocky, earthy, as above.
	35%	SILTSTONE light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, as above.
680.00 to 685.00 (5.00)	75%	SHALE light gray to occasional medium gray, subfissile to subblocky, earthy, as above.
	25%	SILTSTONE light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, as above.
685.00 to 690.00 (5.00)	80%	SHALE light gray to occasional medium gray, subfissile to subblocky, earthy, silty & sandy, very bentonitic, rare micro carbonaceous, rare disseminated pyrite, grading to argillaceous Siltstone in part, soft.

Sample Descriptions

Storage Units: Metric

685.00 to 690.00	20%	SILTSTONE (5.00) light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous to rare coal flakes, argillaceous, trace kaolin, trace light chert grains, grading to silty Sandstone in part, tight.
690.00 to 695.00	70%	SHALE (5.00) light gray, light brown, subfissile to subblocky, earthy, silty & sandy, trace micro carbonaceous, rare disseminated pyrite, bentonitic, grading to argillaceous Siltstone in part, soft, samples washing through screens with water.
	30%	SILTSTONE light gray, slightly salt and pepper, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous, trace kaolin, rare disseminated pyrite, trace light chert grains, argillaceous, grading to silty Sandstone in part, tight.
695.00 to 700.00	70%	SILTSTONE (5.00) light gray, slightly salt and pepper, silt to lower very fine grained, well sorted, as above.
	30%	SHALE light gray, light brown, subfissile to subblocky, earthy, silty & sandy, as above.
700.00 to 705.00	70%	SILTSTONE with SANDSTONE (5.00) light gray, light brown, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous, argillaceous, trace kaolin, rare disseminated pyrite, trace light chert grains, grading to silty Sandstone in part, tight to poor (0 to 4%) intergranular porosity.
	30%	SHALE light gray, light brown, subfissile to subblocky, earthy, as above.
705.00 to 710.00	75%	SILTSTONE with SANDSTONE (5.00) light gray, light brown, slightly salt and pepper, silt to very fine grained, well sorted, as above.
	25%	SHALE light gray, light brown, subfissile to subblocky, earthy, slightly silty & sandy, trace micro carbonaceous, rare disseminated pyrite, bentonitic, grading to argillaceous Siltstone in part, soft, samples washing through screens with water.
710.00 to 715.00	80%	SILTSTONE with SANDSTONE (5.00) light gray, light brown, slightly salt and pepper, silt to very fine grained, well sorted, as above.
	20%	SHALE light gray, light brown, subfissile to subblocky, earthy, as above.

Sample Descriptions

Storage Units: Metric

715.00 to 720.00	85% (5.00)	SILTSTONE light gray, light brown, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous, argillaceous, trace kaolin, rare disseminated pyrite, trace light chert grains, grading to silty Sandstone in part, tight to poor (0 to 4%) intergranular porosity.
	15%	SHALE light to occasional medium gray, subfissile to subblocky, earthy, silty & sandy, bentonitic, rare kaolin, rare disseminated pyrite, trace micro carbonaceous, grading to argillaceous Siltstone in part, soft, samples washing away with water.
720.00 to 725.00	75% (5.00)	SILTSTONE with SANDSTONE light gray, very slightly salt and pepper, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous to rare coal flakes, trace kaolin, rare disseminated pyrite, trace light chert grains, tight to trace poor (0 to 3%) intergranular porosity.
	25%	SHALE light to occasional medium gray, subfissile to subblocky, earthy, as above.
725.00 to 730.00	50% (5.00)	SILTSTONE light gray, very slightly salt and pepper, silt to lower very fine grained, well sorted, as above.
	50%	SHALE light to occasional medium gray, subfissile to subblocky, earthy, silty & sandy, as above.
730.00 to 735.00	60% (5.00)	SILTSTONE /SS light gray, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous, trace kaolin, argillaceous, trace light chert grains, very rare disseminated pyrite, grading to silty Sandstone in part, tight to poor (0 to 4%) intergranular porosity.
	40%	SHALE light gray, occasional medium gray, subfissile to subblocky, earthy, silty & sandy, rare micro carbonaceous, trace disseminated pyrite, very rare micromicaceous, grading to argillaceous Siltstone in part, soft, samples washing through screens with water, poor sample quality, dusty.
735.00 to 740.00	60% (5.00)	SILTSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, as above.
	40%	SHALE light gray, occasional medium gray, subfissile to subblocky, as above.

Sample Descriptions

Storage Units: Metric

740.00 to 745.00	50%	SILTSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, as above.
	50%	SHALE light gray, occasional medium gray, subfissile to subblocky, earthy, silty & sandy, as above.
745.00 to 750.00	60%	SILTSTONE light gray, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous, trace kaolin, argillaceous, trace light chert grains, very rare disseminated pyrite, grading to silty Sandstone in part, tight to poor (0 to 4%) intergranular porosity.
	40%	SHALE light gray, occasional medium gray, subfissile to subblocky, earthy, as above.
750.00 to 755.00	70%	SHALE light gray, light brown, subfissile to subblocky, earthy, very silty & sandy, rare micro carbonaceous, rare disseminated pyrite, bentonitic, grading to argillaceous Siltstone in part, soft, samples washing through screens, dusty.
	30%	SANDSTONE /SLTST light gray, slightly salt and pepper, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous, trace kaolin, trace light chert grains, rare dark lithic, grading to sandy Siltstone in part, tight to poor (0 to 4%) intergranular porosity.
755.00 to 760.00	70%	SANDSTONE /SLTST light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous, trace kaolin, trace light chert grains, rare dark lithic, grading to sandy Siltstone in part, tight to poor (0 to 4%) intergranular porosity.
	30%	SHALE light gray, light brown, subfissile to subblocky, earthy, as above.
760.00 to 765.00	60%	SHALE light gray, light brown, subfissile to subblocky, earthy, very silty & sandy, rare micro carbonaceous to trace coal flakes, rare disseminated pyrite, bentonitic, grading to argillaceous Siltstone in part, soft, samples washing through screens, dusty.
	40%	SANDSTONE with SILTSTONE light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, as above.

Sample Descriptions

Storage Units: Metric

765.00 to 770.00	80%	SANDSTONE with SILTSTONE light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous, trace kaolin, trace light chert grains, rare dark lithic, grading to sandy Siltstone in part, tight to poor (0 to 4%) intergranular porosity.
	20%	SHALE light gray, light brown, subfissile to subblocky, earthy, very silty & sandy, as above.
770.00 to 775.00	75%	SANDSTONE with SILTSTONE light gray, light brown, slightly salt and pepper, silt to lower very fine grained, well sorted, as above.
	25%	SHALE light gray, light brown, subfissile to subblocky, earthy, as above.
775.00 to 780.00	75%	MUD ADDITIVES CaCl2: clear, off white, crystals.
	15%	SANDSTONE /SLTST light gray, occasional medium gray, slightly salt and pepper, silt to lower fine grained, moderately well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous to trace coal flakes, trace to occasional kaolin, rare disseminated pyrite, tight to poor (0 to 4%) intergranular porosity.
780.00 to 785.00	10%	SHALE light gray, light brown, subfissile to subblocky, earthy, very silty & sandy, rare micro carbonaceous to trace coal flakes, rare disseminated pyrite, bentonitic, grading to argillaceous Siltstone in part, soft, samples washing through screens, dusty.
	50%	MUD ADDITIVES CaCl2: clear, off white, crystals.
	30%	SANDSTONE with SILTSTONE light gray, occasional medium gray, slightly salt and pepper, silt to lower very fine grained, moderately well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, trace micro carbonaceous to trace coal flakes, trace to occasional kaolin, rare disseminated pyrite, tight to poor (0 to 4%) intergranular porosity.
	20%	SHALE light gray, light brown, subfissile to subblocky, earthy, as above.
785.00 to 790.00	70%	MUD ADDITIVES CaCl2: clear, off white, crystals.
	25%	SILTSTONE with SANDSTONE light gray, occasional medium gray, slightly salt and pepper, silt to lower fine grained, as above.

Sample Descriptions

Storage Units: Metric

785.00 to 790.00	5%	SHALE light gray, light brown, subfissile to subblocky, earthy, as above.
790.00 to 795.00	90%	SANDSTONE with SILTSTONE very light gray, very light brown, slightly s&, silt to very fine grained, well sorted, subangular to subrounded, moderately consolidated, clay cement, slightly calcareous, quartz, trace to occasional micro carbonaceous to trace to occasional coal flakes, trace kaolin, trace dark lithic, rare feldspar, poor to fair (3 to 6%) intergranular porosity.
	10%	SHALE light gray, light brown, subfissile to subblocky, earthy, very silty & sandy, rare micro carbonaceous to trace coal flakes, rare disseminated pyrite, bentonitic, grading to argillaceous Siltstone in part, soft, samples washing through screens, dusty.
795.00 to 800.00	100%	SANDSTONE very light gray, very light brown, slightly s&, silt to very fine grained, well sorted, subangular to subrounded, moderately consolidated, clay cement, slightly calcareous, quartz, trace to occasional micro carbonaceous to trace to occasional coal flakes, trace kaolin, trace dark lithic, rare feldspar, poor to fair (3 to 6%) intergranular porosity.
800.00 to 805.00	85%	SANDSTONE light gray, light brown, light green gray, silt to lower very fine grained, well sorted, subangular to subrounded, poorly to moderately consolidated, clay cement, slightly calcareous, slightly siliceous, quartz, trace to occasional micro carbonaceous, trace kaolin, argillaceous in part, rare micro mica flakes, poor to fair (3 to 6%) intergranular porosity.
	15%	SHALE light gray, light brown, subfissile to subblocky, earthy, silty & sandy, trace micro carbonaceous, trace coal flakes, rare disseminated pyrite, rare kaolin, grading to argillaceous Siltstone, soft, samples washing away.
805.00 to 810.00	85%	SANDSTONE light gray, light brown, light green gray, silt to lower very fine grained, well sorted, as above.
	15%	SHALE light gray, light brown, subfissile to subblocky, earthy, as above.

Lower Imperial: 812.00 MD, 812.00 TVD, -628.80 SSL

810.00 to 815.00	90%	SANDSTONE light gray, light brown, light green gray, silt to lower very fine grained, well sorted, as above.
	10%	SHALE light gray, light brown, subfissile to subblocky, earthy, silty & sandy, as above.

Sample Descriptions

Storage Units: Metric

815.00 to 820.00	95%	SANDSTONE (5.00) light gray, light brown, light green gray, silt to lower very fine grained, well sorted, subangular to subrounded, poorly to moderately consolidated, clay cement, slightly calcareous, slightly siliceous, quartz, trace to occasional micro carbonaceous, trace kaolin, argillaceous in part, rare micro mica flakes, poor to fair (3 to 6%) intergranular porosity.
	5%	SHALE light gray, light brown, subfissile to subblocky, earthy, silty & sandy, trace micro carbonaceous, trace coal flakes, rare disseminated pyrite, rare kaolin, grading to argillaceous Siltstone, soft, samples washing away.
820.00 to 825.00	80%	SHALE (5.00) light brown, light gray, subfissile to subblocky, earthy, very silty & sandy, rare micro carbonaceous, very rare disseminated pyrite, trace Siltstone lenses & stringers, firm.
	20%	SANDSTONE light gray, light brown, light green gray, silt to lower very fine grained, well sorted, as above.
825.00 to 830.00	100%	SHALE (5.00) light to occasional medium gray, light brown, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, rare disseminated pyrite, trace to occasional micro micaceous, trace Siltstone lenses, firm.
830.00 to 835.00	100%	SHALE (5.00) light to occasional medium gray, light brown, subfissile to subblocky, earthy, as above.
835.00 to 840.00	100%	SHALE (5.00) medium gray, medium brown gray, subfissile to subblocky, earthy, silty & sandy, trace micro carbonaceous, trace coal flakes, rare kaolin, rare disseminated pyrite, occasional micro micaceous, trace Siltstone lenses, firm.
840.00 to 845.00	100%	SHALE (5.00) medium gray, medium brown gray, subfissile to subblocky, earthy, as above.
845.00 to 850.00	100%	SHALE (5.00) medium gray, medium brown gray, subfissile to subblocky, as above.
850.00 to 855.00	100%	SHALE (5.00) medium gray, medium brown gray, subfissile to subblocky, slightly silty & sandy, trace micro carbonaceous, trace mica flakes, trace micro micaceous, rare disseminated pyrite, trace Siltstone lenses & stringers, firm.
855.00 to 860.00	100%	SHALE (5.00) medium gray, medium brown gray, subfissile to subblocky, slightly silty & sandy, trace micro carbonaceous, trace mica flakes, trace micro micaceous, rare disseminated pyrite, rare Siltstone lenses & stringers, firm.
860.00 to 865.00	100%	SHALE (5.00) medium gray, medium brown gray, subfissile to subblocky, earthy, as above.

Sample Descriptions

Storage Units: Metric

865.00 to 870.00	100%	SHALE (5.00)	medium gray, medium brown gray, subfissile to subblocky, slightly silty & sandy, trace micro carbonaceous, trace mica flakes, trace micro micaceous, rare disseminated pyrite, trace Siltstone lenses & stringers, firm.
870.00 to 875.00	100%	SHALE (5.00)	medium gray, medium brown gray, subfissile to subblocky, slightly silty & sandy, trace micro carbonaceous, trace mica flakes, trace micro micaceous, rare disseminated pyrite, trace Siltstone & Sandstone lenses & stringers, firm.
875.00 to 880.00	100%	SHALE (5.00)	light gray to occasional medium gray, subfissile to subblocky, slightly silty & sandy, trace micro carbonaceous, trace mica flakes, trace micro micaceous, rare disseminated pyrite, trace Siltstone lenses & stringers, firm.
880.00 to 885.00	100%	SHALE (5.00)	light gray to occasional medium gray, subfissile to subblocky, slightly silty & sandy, trace micro carbonaceous, trace mica flakes, trace micro micaceous, rare disseminated pyrite, rare Siltstone & Sandstone lenses, firm.
885.00 to 890.00	100%	SHALE (5.00)	light gray to medium gray, darker than above, subfissile to subblocky, as above.
890.00 to 895.00	100%	SHALE (5.00)	light to medium gray, slightly brownish, subfissile to subblocky, earthy, silty & sandy, rare micro carbonaceous, rare disseminated pyrite, trace micro micaceous, trace light gray Siltstone & Sandstone lenses, firm.
895.00 to 900.00	100%	SHALE (5.00)	light to medium gray, slightly brownish, subfissile to subblocky, earthy, as above.
900.00 to 905.00	100%	SHALE (5.00)	light to medium gray, slightly brownish, subfissile to subblocky, as above.
905.00 to 910.00	100%	SHALE (5.00)	light to medium gray, rare light to medium brown, subfissile to subblocky, slightly silty & sandy, rare micro carbonaceous to rare coal flakes, very rare mica flakes, trace micro micaceous, trace light gray Siltstone & Sandstone stringers, firm.
910.00 to 915.00	100%	SHALE (5.00)	light to medium gray, rare light to medium brown, subfissile to subblocky, earthy, as above.
915.00 to 920.00	100%	SHALE (5.00)	light to medium gray, rare light to medium brown, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, very rare mica flakes, trace micro micaceous, trace light gray Siltstone & Sandstone stringers, firm.

Sample Descriptions

Storage Units: Metric

920.00 to 925.00	100%	SHALE (5.00) light to medium gray, rare light to medium brown, subfissile to subblocky, earthy, as above.
925.00 to 930.00	100%	SHALE (5.00) medium gray, occasional medium brown gray, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous to very rare coal flakes, rare to trace micro micaceous, very rare mica flakes, trace light to medium gray Siltstone & Sandstone lenses, firm.
930.00 to 935.00	100%	SHALE (5.00) medium gray, occasional medium brown gray, subfissile to subblocky, earthy, as above.
935.00 to 940.00	100%	SHALE (5.00) light to medium gray, lighter than above, slightly brownish, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous to very rare coal flakes, rare to trace micro micaceous, very rare mica flakes, trace light to medium gray Siltstone & Sandstone lenses, firm.
940.00 to 945.00	100%	SHALE (5.00) light gray, subfissile to subblocky, earthy, silty & sandy, rare micro carbonaceous to rare coal flakes, rare to trace mica flakes, rare kaolin, rare disseminated pyrite & very r pyritic streaks, trace Siltstone lenses, firm.
945.00 to 950.00	100%	SHALE (5.00) light gray, subfissile to subblocky, earthy, as above.
950.00 to 955.00	100%	SHALE (5.00) light gray, trace to occasional medium gray, light brown in part, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous to rare coal flakes, very rare disseminated pyrite, rare mica flakes, trace micro micaceous, rare Siltstone lenses, firm.
955.00 to 960.00	100%	SHALE (5.00) light gray, trace to occasional medium gray, light brown in part, subfissile to subblocky, trace mica flakes, becoming more silty & sandy, as above.
960.00 to 965.00	100%	SHALE (5.00) light gray, trace to occasional medium gray, light brown in part, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous to rare coal flakes, very rare disseminated pyrite, very rare pyritic blebs, trace mica flakes, trace micro micaceous, rare Siltstone lenses, firm.
965.00 to 970.00	100%	SHALE (5.00) light gray to trace medium gray, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy, trace micro carbonaceous to trace coal flakes, trace mica flakes, trace micro micaceous, rare disseminated pyrite, rare Siltstone lenses, firm.
970.00 to 975.00	100%	SHALE (5.00) light gray to trace medium gray, light brown gray, subfissile to subblocky, as above.

Sample Descriptions

Storage Units: Metric

975.00 to 980.00	100%	SHALE (5.00)	light gray to trace medium gray, light brown gray, subfissile to subblocky, earthy, trace Siltstone lenses, as above.
980.00 to 985.00	100%	SHALE (5.00)	light gray to occasional medium gray, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy, rare to trace micro carbonaceous to rare coal flakes, rare mica flakes, rare to trace micro micaceous, very rare disseminated pyrite, rare light gray Siltstone lenses, firm.
985.00 to 990.00	100%	SHALE (5.00)	light gray to occasional medium gray, light brown gray, subfissile to subblocky, earthy, as above.
990.00 to 995.00	100%	SHALE (5.00)	light gray to occasional medium gray, light brown gray, subfissile to subblocky, earthy, as above.
995.00 to 1,000.00	100%	SHALE (5.00)	light gray to occasional medium gray, light brown gray, as above.
1,000.00 to 1,005.00	100%	SHALE (5.00)	light gray to occasional medium gray, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy, trace micro carbonaceous to trace coal flakes, rare mica flakes, rare to trace micro micaceous, very rare disseminated pyrite, rare light gray Siltstone lenses, firm.
1,005.00 to 1,010.00	100%	SHALE (5.00)	light to medium gray, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, very rare disseminated pyrite, trace micro micaceous, rare Siltstone lenses, firm.
1,010.00 to 1,015.00	100%	SHALE (5.00)	light to medium gray, light brown gray, subfissile to subblocky, as above.
1,015.00 to 1,020.00	100%	SHALE (5.00)	light to medium gray, light brown gray, subfissile to subblocky, earthy, as above.
1,020.00 to 1,025.00	100%	SHALE (5.00)	light to medium gray, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, very rare disseminated pyrite, trace micro micaceous, rare Siltstone lenses, firm.
1,025.00 to 1,030.00	100%	SHALE (5.00)	light to medium gray, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy to silty & sandy in part, rare micro carbonaceous, trace mica flakes, rare Siltstone lenses, firm.
1,030.00 to 1,035.00	100%	SHALE (5.00)	light to medium gray, light brown gray, subfissile to subblocky, earthy, as above.

Sample Descriptions

Storage Units: Metric

1,035.00 to 1,040.00	100%	SHALE (5.00) medium gray, light gray in part, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy to silty & sandy in part, rare to trace micro carbonaceous, trace micro micaceous, trace mica flakes, grading to argillaceous Siltstone, firm.
1,040.00 to 1,045.00	100%	SHALE (5.00) medium gray, light gray in part, light brown gray, subfissile to subblocky, as above.
1,045.00 to 1,050.00	100%	SHALE (5.00) light to medium gray, light brown gray, subfissile to subblocky, slightly silty & sandy, rare micro carbonaceous, rare to trace disseminated pyrite, trace micro micaceous trace Siltstone lenses, firm.
1,050.00 to 1,055.00	100%	SHALE (5.00) medium gray, darker than above, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, rare to trace disseminated pyrite, slightly micro mica, rare Siltstone lens, firm.
1,055.00 to 1,060.00	100%	SHALE (5.00) medium gray, darker than above, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy, more silty than above, rare micro carbonaceous, rare to trace disseminated pyrite, rare kaolin, slightly micro mica, rare Siltstone lens, firm.
1,060.00 to 1,065.00	100%	SHALE (5.00) light to medium gray, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, rare disseminated pyrite, slightly micro micaceous, rare Siltstone lenses, firm.
1,065.00 to 1,070.00	100%	SHALE (5.00) light to medium gray, light brown gray, subfissile to subblocky, earthy, as above.
1,070.00 to 1,075.00	100%	SHALE (5.00) light to medium gray, light brown gray, subfissile to subblocky, as above.
1,075.00 to 1,080.00	100%	SHALE (5.00) light to medium gray, light brown gray, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, rare disseminated pyrite, slightly micro micaceous, rare Siltstone lenses, firm.
1,080.00 to 1,085.00	100%	SHALE (5.00) light to medium gray, light brown gray, subfissile to subblocky, as above.
1,085.00 to 1,090.00	100%	SHALE (5.00) light to medium gray, light brown gray, subfissile to subblocky, earthy, as above.

Sample Descriptions

Storage Units: Metric

1,090.00 to 1,095.00	100%	SHALE (5.00) medium gray, medium brown gray, medium gray brown, subfissile to subblocky, earthy, slightly silty & sandy, rare micro carbonaceous, rare disseminated pyrite, trace siltstone & Sandstone lenses, soft to firm.
1,095.00 to 1,100.00	100%	SHALE (5.00) light gray, trace dark gray, subfissile to subblocky, slightly silty & sandy, rare micro carbonaceous, slightly micro micaceous, rare to trace disseminated pyrite, rare Siltstone lenses, soft to firm.
1,100.00 to 1,105.00	95%	SHALE (5.00) light gray, trace dark gray, subfissile to subblocky, slightly silty & sandy, rare micro carbonaceous, slightly micro micaceous, rare to trace disseminated pyrite, rare Siltstone lenses, soft to firm.
	5%	SANDSTONE light gray, light brown in part, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, quartz, rare micro carbonaceous, rare disseminated pyrite, very rare dark lithic, tight to poor (0 to 3%) intergranular porosity.
1,105.00 to 1,110.00	90%	SHALE (5.00) light gray, light brown, subblocky to subfissile, earthy, very slightly silty & sandy, rare micro carbonaceous, rare disseminated pyrite, trace Siltstone lenses, silt to firm
	10%	SANDSTONE very light gray, off white, very light brown, silt to very fine grained, well sorted, subangular to subrounded, poorly consolidated, clay cement, quartz, rare micro carbonaceous, rare kaolin, r dark lithic, tight.
1,110.00 to 1,115.00	98%	SHALE (5.00) medium to dark brown, trace dark gray, subfissile to subblocky, earthy, silty & sandy, rare micro carbonaceous, rare to trace disseminated pyrite, trace Siltstone lenses, soft to firm.
	2%	SANDSTONE very light gray, off white, very light brown, silt to very fine grained, as above.
1,115.00 to 1,120.00	100%	SHALE (5.00) medium to dark brown, slightly lighter in color, trace dark gray, subfissile to subblocky, earthy, as above.
1,120.00 to 1,125.00	100%	SHALE (5.00) medium to dark gray, medium to dark brown, subfissile to subblocky, slightly silty & sandy, rare micro carbonaceous, rare to trace disseminated pyrite, trace Siltstone lenses, soft to firm.
1,125.00 to 1,130.00	100%	SHALE (5.00) dark gray, medium to dark brown, rare black, subfissile to subblocky, earthy, silty & sandy, carbonaceous, trace anhydrite filled microfractures, rare to trace disseminated pyrite, soft.

Sample Descriptions

Storage Units: Metric

Upper Canol: 1,134.00 MD, 1,133.81 TVD, -950.61 SSL

1,130.00 to 1,135.00 100% **SHALE**
(5.00) dark gray, medium to dark brown, rare black, subfissile to subblocky, rare anhydrite filled microfractures, as above.

1,135.00 to 1,140.00 100% **SHALE**
(5.00) dark brown, light brown in part, subblocky, earthy, silty & sandy, carbonaceous, trace disseminated pyrite, rare anhydrite filled microfractures, soft to firm.

Middle Canol: 1,143.00 MD, 1,142.81 TVD, -959.61 SSL

1,140.00 to 1,145.00 100% **SHALE**
(5.00) light brown, medium to dark brown in part, subfissile to subblocky, earthy, slightly silty & sandy, rare micro disseminated pyrite, carbonaceous, rare Siltstone lenses, soft to firm.

1,145.00 to 1,150.00 100% **SHALE**
(5.00) light brown, medium to dark brown in part, subfissile to subblocky, earthy, slightly silty & sandy, rare micro disseminated pyrite, carbonaceous, rare coal flakes, rare Siltstone lenses, soft to firm.

1,150.00 to 1,155.00 100% **SHALE**
(5.00) light to medium brown, appear much darker dry, subfissile to subblocky, rare disseminated pyrite, trace coal flakes, slightly bituminous, firm.

1,155.00 to 1,160.00 100% **SHALE**
(5.00) light to medium brown, darker than above, appear much darker dry, subfissile to subblocky, rare disseminated pyrite, trace coal flakes, slightly bituminous, firm.

1,160.00 to 1,165.00 100% **SHALE**
(5.00) medium brown to occasional dark brown, subfissile to subblocky, earthy, slightly silty & sandy, carbonaceous, slightly bituminous, rare to trace disseminated pyrite, rare pyrite blebs, firm.

Lower Canol: 1,169.00 MD, 1,168.80 TVD, -985.60 SSL

1,165.00 to 1,170.00 100% **SHALE**
(5.00) dark brown, dark gray, subfissile to subblocky, earthy, slightly silty & sandy, carbonaceous, rare pyritic blebs, trace slickenside, soft to firm.

1,170.00 to 1,175.00 100% **SHALE**
(5.00) dark gray, dark brown, blackish in part, subfissile to subblocky, earthy, silty & sandy, carbonaceous, bituminous in part, rare slickenside, trace to occasional disseminated pyrite, soft.

1,175.00 to 1,180.00 100% **SHALE**
(5.00) dark gray, dark brown, blackish, becoming darker in color, subfissile to subblocky, earthy, silty & sandy, carbonaceous, bituminous in part, rare slickenside, trace to occasional disseminated pyrite, soft.

Sample Descriptions

Storage Units: Metric

1,180.00 to 1,185.00	100%	SHALE (5.00) dark gray, dark brown, occasional black, subfissile to subblocky, earthy, silty & sandy, more silty than above, carbonaceous, bituminous, rare slickenside, trace to occasional disseminated pyrite, soft.
1,185.00 to 1,190.00	100%	SHALE (5.00) dark gray, dark gray brown, occasional black, as above.
1,190.00 to 1,195.00	100%	SHALE (5.00) dark gray, dark brown, occasional black, subfissile to subblocky, earthy, silty & sandy, carbonaceous, bituminous, rare slickenside, trace to occasional disseminated pyrite, soft, no fluorescence, slow bright milky yellow & blooming cut, trace medium brown oil residue.
1,195.00 to 1,200.00	100%	SHALE (5.00) dark gray, dark brown, occasional black, subfissile to subblocky, as above.
1,200.00 to 1,205.00	100%	SHALE (5.00) dark gray, dark brown gray, black in part, subfissile to subblocky, slightly silty & sandy, carbonaceous, slightly bituminous, trace to occasional disseminated pyrite, trace pyritic streaks, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut, occasional medium brown oil residue.
1,205.00 to 1,210.00	100%	SHALE (5.00) dark gray, dark brown gray, subfissile to subblocky, earthy, silty & sandy, carbonaceous, occasional bituminous, trace disseminated pyrite & pyritic streaks, soft to firm, no fluorescence, fast bright yellow blooming & streaming cut, occasional medium brown oil residue.
1,210.00 to 1,215.00	100%	SHALE (5.00) dark gray, dark brown gray, subfissile to subblocky, earthy, silty & sandy, carbonaceous, occasional bituminous, trace disseminated pyrite & pyritic streaks, rare calcareous filled microfractures, soft to firm, no fluorescence, fast bright yellow blooming & streaming cut, occasional medium brown oil residue.
1,215.00 to 1,220.00	100%	SHALE (5.00) dark gray to dark brown, black in part, subfissile to subblocky, earthy, silty & sandy in part, carbonaceous to coaly in part, bituminous in part, t disseminated pyrite, trace pyritic streaks & nodules, poss slickenside, rare to trace calcareous filled microfractures, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut.
1,220.00 to 1,225.00	100%	SHALE (5.00) dark gray, dark brown gray, black in part, subfissile to subblocky, as above.
1,225.00 to 1,230.00	100%	SHALE (5.00) dark brown y, dark gray brown, trace black, subfissile to subblocky, earthy, silty & sandy, carbonaceous coaly to bituminous in part, trace disseminated pyrite, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut, occasional medium brown oil residue.

Sample Descriptions

Storage Units: Metric

1,230.00 to 1,235.00 100%	SHALE	
(5.00)		dark brown y, dark gray brown, trace black, subfissile to subblocky, earthy, silty & sandy, carbonaceous coaly to bituminous in part, trace disseminated pyrite & pyritic streaks, possible slickenside, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut, occasional medium brown oil residue.
1,235.00 to 1,240.00 100%	SHALE	
(5.00)		dark brown gray, dark gray brown, black in part, subfissile to subblocky, subfissile to subblocky, earthy, silty & sandy, carbonaceous to coaly to bituminous, possible slickenside, trace disseminated pyrite, trace pyritic streaks & nodules, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut.
1,240.00 to 1,245.00 100%	SHALE	
(5.00)		dark brown gray, dark gray brown, black in part, subfissile to subblocky, subfissile to subblocky, earthy, silty & sandy, carbonaceous to coaly to bituminous, possible slickenside, rare to trace calcareous filled microfractures, trace disseminated pyrite, trace pyritic streaks & nodules, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut.

Hare Indian: 1,245.00 MD, 1,244.79 TVD, -1,061.59 SSL

1,245.00 to 1,250.00 100%	SHALE	
(5.00)		dark brown gray, dark gray brown, black in part, subfissile to subblocky, subfissile to subblocky, earthy, silty & sandy, carbonaceous to coaly to bituminous, slickenside, trace calcareous filled microfractures, trace disseminated pyrite, trace pyritic streaks & nodules, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut.
1,250.00 to 1,255.00 100%	SHALE	
(5.00)		dark brown gray, dark gray brown, black in part, subfissile to subblocky, subfissile to subblocky, earthy, silty & sandy, carbonaceous to coaly to bituminous, slickenside, trace calcareous filled microfractures, trace disseminated pyrite, trace pyritic streaks & nodules, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut.
1,255.00 to 1,260.00 100%	SHALE	
(5.00)		dark brown gray, dark gray brown, black in part, subfissile to subblocky, slightly earthy to waxy, silty & sandy, carbonaceous to bituminous, occasional slickenside, occasional calcareous filled microfractures, trace to occasional disseminated pyrite, trace pyritic streaks & nodules, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut.
1,260.00 to 1,262.50 100%	SHALE	
(2.50)		dark brown gray, dark gray brown, black in part, subfissile to subblocky, slightly earthy to waxy, silty & sandy, carbonaceous to bituminous, occasional slickenside, occasional calcareous filled microfractures, trace to occasional disseminated pyrite, trace pyritic streaks & nodules, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut.

Sample Descriptions

Storage Units: Metric

1,262.50 to 1,265.00 100%	SHALE	
(2.50)		dark brown gray, dark gray brown, black in part, subfissile to subblocky, slightly earthy to waxy, silty & sandy, carbonaceous to bituminous, trace to occasional slickenside, trace to occasional calcareous filled microfractures, trace to occasional disseminated pyrite, trace pyritic streaks & nodules, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut, occasional medium brown oil residue.
1,265.00 to 1,267.50 100%	SHALE	
(2.50)		dark brown gray, dark gray brown, black in part, subfissile to subblocky, earthy to slightly waxy, silty & sandy, carbonaceous to bituminous, trace slickenside, trace calcareous filled microfractures, trace disseminated pyrite, rare pyritic streaks & nodules, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut, occasional medium brown oil residue.
1,267.50 to 1,270.00 100%	SHALE	
(2.50)		dark brown gray, dark gray brown, black in part, subfissile to subblocky, earthy to slightly waxy, silty & sandy, carbonaceous to bituminous, rare to trace slickenside, rare to trace calcareous filled microfractures, trace disseminated pyrite, rare pyritic streaks, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut, occasional medium brown oil residue.
1,270.00 to 1,275.00 100%	SHALE	
(5.00)		dark gray, medium to dark brown, black in part, subfissile to subblocky, earthy to slightly waxy, slightly silty & sandy, occasional carbonaceous, bituminous in part, trace disseminated pyrite, rare pyritic streaks, trace calcareous filled microfractures, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut, occasional medium brown oil residue.
1,275.00 to 1,280.00 100%	SHALE	
(5.00)		dark gray, medium to dark brown, blackish in part, subfissile to subblocky, earthy, to slightly waxy, slightly silty & sandy, occasional carbonaceous, bituminous in part, trace slickenside, trace disseminated pyrite, rare pyritic streaks, rare to trace calcareous filled microfractures, soft to firm, no fluorescence, fast bright milky yellow blooming & streaming cut, occasional medium brown oil residue.

Bluefish: 1,281.00 MD, 1,280.79 TVD, -1,097.59 SSL

1,280.00 to 1,285.00 100%	SHALE	
(5.00)		dark gray, medium to dark brown, blackish in part, subfissile to subblocky, earthy, to slightly waxy, slightly silty & sandy, occasional carbonaceous, bituminous in part, rare slickenside, trace disseminated pyrite, rare pyritic streaks & blebs, rare calcareous filled microfractures, rare off white argillaceous Limestone lenses, soft to firm, no fluorescence, moderate bright milky yellow blooming & streaming cut, trace medium brown oil residue.

Sample Descriptions

Storage Units: Metric

1,285.00 to 1,290.00	100%	SHALE (5.00) dark gray, medium to dark brown, blackish in part, subfissile to subblocky, earthy, to slightly waxy, slightly silty & sandy, occasional carbonaceous, bituminous in part, rare slickenside, rare to trace disseminated pyrite, rare pyritic streaks & blebs, rare calcareous filled microfractures, calcareous in part, trace off white argillaceous Limestone lenses, soft to firm, no fluorescence, moderate bright milky yellow blooming & streaming cut, trace medium brown oil residue.
1,290.00 to 1,295.00	100%	SHALE (5.00) dark gray, medium to dark brown, becoming more brownish, blackish in part, subfissile to subblocky, earthy, to slightly waxy, slightly silty & sandy, occasional carbonaceous, bituminous in part, rare slickenside, rare to trace disseminated pyrite, rare pyritic streaks & blebs, rare calcareous filled microfractures, calcareous in part, occasional off white argillaceous Limestone lenses, soft to firm, no fluorescence, moderate bright milky yellow blooming & streaming cut, trace medium brown oil residue.
1,295.00 to 1,300.00	100%	SHALE (5.00) dark brown gray, dark brown gray, dark gray, subfissile to subblocky, earthy, carbonaceous, slightly bituminous, rare disseminated pyrite, rare pyritic streaks, rare calcareous filled microfractures, calcareous in part, occasional off white argillaceous Limestone lenses & stringers, soft to firm, no fluorescence, slower bright milky yellow blooming & streaming cut, trace medium brown oil residue.

Hume: 1,300.20 MD, 1,299.99 TVD, -1,116.79 SSL

1,300.00 to 1,305.00	90%	LIMESTONE (5.00) light brown, light yellow brown, trace medium brown, slightly mottled, cryptocrystalline to microcrystalline, massive, dense, rare coal flakes, rare disseminated pyrite, argillaceous, very rare bituminous, rare to trace calcareous filled microfractures, soft to firm, tight, no fluorescence, very slow bright milky yellow blooming & streaming cut.
	10%	SHALE dark brown gray, dark brown gray, dark gray, subfissile to subblocky, as above.
1,305.00 to 1,310.00	98%	LIMESTONE (5.00) medium brown, light brown, mottled in part, cryptocrystalline to microcrystalline, massive, dense, argillaceous, very rare disseminated pyrite, rare bituminous material, rare coal flakes, rare to trace calcareous filled microfractures, tight, no fluorescence, no fluorescence, very slow bright milky yellow blooming & streaming cut.
	2%	SHALE dark brown gray, dark brown gray, dark gray, subfissile to subblocky, as above.

Sample Descriptions

Storage Units: Metric

1,310.00 to 1,315.00 100%	LIMESTONE	
(5.00)		medium brown, light brown, becoming darker in color than above, mottled in part, cryptocrystalline to microcrystalline, massive, dense, argillaceous, very rare disseminated pyrite, rare bituminous material, rare coal flakes, rare to trace calcareous filled microfractures, tight, no fluorescence, no fluorescence, very slow bright milky yellow blooming & streaming cut.
1,315.00 to 1,320.00 100%	LIMESTONE	
(5.00)		light to medium brown, mottled in part, cryptocrystalline to microcrystalline, massive, dense, argillaceous, very rare disseminated pyrite, rare bituminous material, rare coal flakes, rare to trace calcareous filled microfractures, tight, no fluorescence, no fluorescence, very slow bright milky yellow blooming & streaming cut.
1,320.00 to 1,325.00 100%	LIMESTONE	
(5.00)		off white, very light brown to light brown, mottled in part, cryptocrystalline to microcrystalline, massive, dense, rare coal flakes, bituminous in part, occasional white calcareous filled micro fractures, very rare disseminated pyrite, soft in part, to firm, tight, no fluorescence, very slow bright yellow blooming & streaming cut.
1,325.00 to 1,330.00 100%	LIMESTONE	
(5.00)		light brown, off white, mottled in part, cryptocrystalline to microcrystalline, massive, dense, rare coal flakes, argillaceous, rare bituminous material, very rare disseminated pyrite, trace white calcareous filled micro fractures, soft to firm, tight, no fluorescence, very slow bright yellow blooming & streaming cut.
1,330.00 to 1,335.00 100%	LIMESTONE	
(5.00)		light to medium brown, off white, slightly mottled, cryptocrystalline to microcrystalline, massive, dense, rare coal flakes, trace bituminous material, very rare disseminated pyrite, argillaceous, trace to occasional white calcareous filled microfractures, soft to firm, tight, no fluorescence, very slow bright yellow blooming & streaming cut.
1,335.00 to 1,340.00 100%	LIMESTONE	
(5.00)		light to medium brown, off white, slightly mottled, cryptocrystalline to microcrystalline, as above.
1,340.00 to 1,341.00 100%	LIMESTONE	
(1.00)		light to medium brown, off white, becoming lighter than above, slightly mottled, cryptocrystalline to microcrystalline, massive, dense, rare coal flakes, rare bituminous material, very rare ism pyrite, argillaceous, trace white calcareous filled microfractures, soft to firm, tight, no fluorescence, very slow bright yellow blooming & streaming cut.

Core Descriptions

Storage Units: Metric

1,170.00 to 1,170.00 (0.00)	SHALE dark gray, blackish, slightly subfissile, earthy, slightly silty & sandy, trace disseminated pyrite, rare pyritic needles, carbonaceous, bituminous in part, rare micro fractures, firm.
1,170.90 to 1,170.90 (0.00)	SHALE dark brown to black, dark gray, slightly subfissile, earthy, very slightly silty, carbonaceous in part, bituminous, trace disseminated pyrite, firm.
1,172.40 to 1,172.40 (0.00)	SHALE dark brown, dark gray, blackish, slightly subfissile, earthy, very slightly silty, rare micro carbonaceous, trace disseminated pyrite, firm.
1,173.90 to 1,173.90 (0.00)	SHALE dark brown, dark gray, blackish, slightly subfissile, earthy, very slightly silty, rare micro carbonaceous, trace disseminated pyrite, trace pyritic streaks, firm.
1,175.40 to 1,175.40 (0.00)	SHALE dark brown, dark gray, blackish, slightly subfissile, as above.
1,176.90 to 1,176.90 (0.00)	SHALE dark brown, dark gray, blackish, slightly subfissile, as above.
1,178.40 to 1,178.40 (0.00)	SHALE dark brown, dark gray, blackish, slightly subfissile, earthy, very slightly silty, rare micro carbonaceous, trace disseminated pyrite, trace pyritic streaks, bituminous in part, firm.
1,179.90 to 1,179.90 (0.00)	SHALE dark gray to black, dark brown, slightly subfissile, earthy, bituminous, trace coal flakes, trace pyrite blebs & streaks, trace disseminated pyrite, rare micro fractures, trace medium brown streaks, pyritic nodules, firm.
1,180.60 to 1,180.60 (0.00)	SHALE dark gray to black, slightly subfissile to subblocky, earthy, very slightly silty, carbonaceous to bituminous in part, rare disseminated pyrite, trace coal streaks, firm.
1,182.10 to 1,182.10 (0.00)	SHALE black, dark gray, slightly subfissile, earthy, very slightly sandy, carbonaceous to coaly to very bituminous, rare disseminated pyrite, soft.
1,183.60 to 1,183.60 (0.00)	SHALE black, dark gray, slightly subfissile, earthy, very slightly sandy, carbonaceous to coaly to very bituminous to occasional pyrobitumen, rare disseminated pyrite, soft.
1,185.40 to 1,185.40 (0.00)	SHALE black, dark gray, slightly subfissile, earthy, as above.
1,186.60 to 1,186.60 (0.00)	SHALE dark gray, dark brown, black in part, slightly subfissile, earthy, very slightly silty, trace coal flakes, slightly bituminous, rare disseminated pyrite, soft to firm.

Core Descriptions

Storage Units: Metric

1,188.10 to 1,188.10 (0.00)	SHALE dark gray, dark brown, black in part, slightly subfissile, as above.
1,189.80 to 1,189.80 (0.00)	SHALE dark gray to black, slightly subfissile, very slightly silty, common coal flakes, very bituminous, trace disseminated pyrite, soft.
1,191.30 to 1,191.30 (0.00)	SHALE dark gray to black, slightly subfissile, very slightly silty, common coal flakes, bituminous, trace disseminated pyrite, soft.
1,192.80 to 1,192.80 (0.00)	SHALE dark gray to black, slightly subfissile, very slightly silty, common coal flakes, very bituminous, trace disseminated pyrite, soft.
1,194.30 to 1,194.30 (0.00)	SHALE dark gray to black, slightly subfissile, as above,
1,195.80 to 1,195.80 (0.00)	SHALE dark gray to black, slightly subfissile, very slightly silty, as above.
1,197.30 to 1,197.30 (0.00)	SHALE dark gray to black, slightly subfissile, very slightly silty, common coal flakes, very bituminous, trace disseminated pyrite, soft.
1,198.30 to 1,198.30 (0.00)	SHALE dark gray to black, slightly subfissile, very slightly silty, common coal flakes, very bituminous, trace disseminated pyrite, soft.
1,199.00 to 1,199.00 (0.00)	SHALE dark gray to black, slightly subfissile, very slightly silty, carbonaceous to very coaly, very bituminous, trace disseminated pyrite, soft.
1,204.40 to 1,204.40 (0.00)	SHALE black, dark gray, subfissile to subblocky, waxy, slightly silty carbonaceous, coal flakes, bituminous, fair.
1,205.90 to 1,205.90 (0.00)	SHALE dark gray, blackish, slightly subfissile, earthy, waxy in part, slightly silty & sandy, carbonaceous, occasional coal flakes, bituminous in part, trace disseminated pyrite, rare pyrite nodules, soft to firm.
1,207.40 to 1,207.40 (0.00)	SHALE dark gray, black, subfissile, increasing silt than above, carbonaceous, trace coal flakes, bituminous in part, trace disseminated pyrite, firm medium brown streaks, subfissile to fissile, slightly silty, occasional disseminated pyrite along bedding, soft, fractured.
1,208.90 to 1,208.90 (0.00)	SHALE dark gray, blackish, subfissile, waxy, slightly silty & sandy, carbonaceous, occasional coal flakes, bituminous, trace slickenside, trace disseminated pyrite, soft to firm.

Core Descriptions

Storage Units: Metric

1,210.40 to 1,210.40 (0.00)	SHALE dark gray, blackish, waxy, slightly silty & sandy, carbonaceous, trace to occasional coal flakes, bituminous, trace disseminated pyrite, trace pyritic streaks, trace calcareous along slickenside, soft to firm.
1,211.90 to 1,211.90 (0.00)	SHALE dark gray, trace blackish, slightly waxy, slightly silty & sandy, carbonaceous, trace coal flakes, bituminous in part, trace disseminated pyrite, firm.
1,213.90 to 1,213.90 (0.00)	SHALE dark gray, blocky, earthy, slightly silty & sandy, carbonaceous, slightly bituminous, trace disseminated pyrite, rare to trace disseminated pyrite, firm.
1,214.90 to 1,214.90 (0.00)	SHALE dark gray, blocky, earthy, waxy in part, slightly silty & sandy, carbonaceous, slightly bituminous, rare disseminated pyrite, firm.
1,216.40 to 1,216.90 (0.50)	SHALE dark gray, blocky, earthy, waxy in part, slightly silty & sandy, carbonaceous, slightly bituminous, rare disseminated pyrite, rare calcareous filled microfractures, firm.
1,217.90 to 1,217.90 (0.00)	SHALE dark gray to black, blocky, waxy, slightly silty & sandy, carbonaceous, bituminous in part, trace to occasional calcareous filled microfractures, rare to trace disseminated pyrite, firm.
1,219.40 to 1,219.40 (0.00)	SHALE dark gray, black, blocky, waxy, slightly silty & sandy, carbonaceous, bituminous, trace conchoidal fractures, trace disseminated pyrite, trace pyrite nodules, firm.
1,220.40 to 1,220.40 (0.00)	SHALE dark gray to black, blocky, waxy, slightly silty, carbonaceous, bituminous, trace disseminated pyrite, trace to occasional calcareous filled microfractures to fractures, occasional calcareous, firm.
1,221.20 to 1,221.20 (0.00)	SHALE dark gray to black, blocky, waxy, slightly silty, carbonaceous, bituminous, trace disseminated pyrite, trace to occasional calcareous filled microfractures to fractures, calcareous in part, firm.
1,222.40 to 1,222.40 (0.00)	SHALE dark gray, dark brown, earthy, silty & sandy, conchoidal fractures, trace coal flakes, slightly bituminous, trace disseminated pyrite, calcareous in part, firm.
1,223.90 to 1,223.90 (0.00)	SHALE dark gray, dark brown, earthy, silty & sandy, trace disseminated pyrite & pyritic needles, carbonaceous, bituminous in part, calcareous in part, firm.

Core Descriptions

Storage Units: Metric

1,225.90 to 1,225.90 (0.00)	SHALE dark gray, dark brown, earthy, silty & sandy, trace disseminated pyrite & pyritic needles, increasing pyrite from above, carbonaceous, bituminous in part, calcareous in part, firm.
1,228.40 to 1,228.40 (0.00)	SHALE dark gray, black, subfissile, earthy, slightly silty & sandy, carbonaceous, slightly bituminous, trace disseminated pyrite, firm.
1,229.90 to 1,229.90 (0.00)	SHALE dark gray, slightly subfissile, earthy, slightly silty & sandy, carbonaceous, slightly bituminous, rare calcareous filled microfractures, rare to trace disseminated pyrite, firm.
1,231.20 to 1,231.20 (0.00)	SHALE dark gray, black, earthy, becoming waxy, slightly silty & sandy, carbonaceous, slightly bituminous, conchoidal fractures, rare disseminated pyrite, slickenside, trace disseminated pyrite, trace pyrite nodules, firm.
1,232.80 to 1,232.80 (0.00)	SHALE dark gray, black, earthy to waxy, silty & sandy, occasional carbonaceous, trace to occasional disseminated pyrite, rare micro fractures, occasional bituminous, firm.
1,234.30 to 1,234.30 (0.00)	SHALE dark gray, dark brown, earthy, silty & sandy, occasional carbonaceous, slightly bituminous, trace disseminated pyrite, firm.
1,235.80 to 1,235.80 (0.00)	SHALE dark gray, earthy, waxy in part, silty & sandy, occasional carbonaceous, slightly bituminous, trace disseminated pyrite, rare calcareous filled microfractures, firm.
1,237.30 to 1,237.30 (0.00)	SHALE dark gray, earthy, waxy in part, silty & sandy, occasional carbonaceous, slightly bituminous, trace disseminated pyrite, trace calcareous filled microfractures, firm.
1,238.80 to 1,238.80 (0.00)	SHALE dark gray, earthy, waxy in part, silty & sandy, occasional carbonaceous, slightly bituminous, trace disseminated pyrite, rare calcareous filled microfractures, possible conchoidal fractures, firm.
1,239.80 to 1,239.80 (0.00)	SHALE dark gray, earthy, waxy in part, silty & sandy, occasional carbonaceous, slightly bituminous, trace disseminated pyrite, trace to occasional calcareous filled microfractures, possible conchoidal fractures, firm.
1,240.50 to 1,240.50 (0.00)	SHALE dark gray, earthy, waxy in part, silty & sandy, occasional carbonaceous, slightly bituminous, trace to occasional disseminated pyrite, trace to occasional calcareous filled microfractures, possible conchoidal fractures, firm.

Core Descriptions

Storage Units: Metric

1,241.20 to 1,241.20 (0.00)	SHALE dark gray to black, slightly subfissile, earthy, slightly waxy, slightly silty & sandy, slightly calcareous, carbonaceous, occasional bituminous, rare disseminated pyrite, firm.
1,242.70 to 1,242.70 (0.00)	SHALE dark gray to black, slightly subfissile, earthy, slightly silty & sandy, carbonaceous, occasional bituminous, rare disseminated pyrite, slightly calcareous in part, firm.
1,244.20 to 1,244.20 (0.00)	SHALE dark gray, dark brown, slightly subfissile, earthy, waxy in part, slightly silty, carbonaceous, trace pyritic streaks, coaly in part, bituminous to pyrobitumen in part, slightly calcareous to calcareous in part, firm.
1,245.70 to 1,245.70 (0.00)	SHALE dark gray, dark brown, slightly subfissile, earthy, slightly silty, rare to trace to occasional disseminated pyrite, carbonaceous to bituminous in part, rare micro fractures, very slightly calcareous, firm.
1,246.90 to 1,246.90 (0.00)	SHALE dark gray, dark brown, subblocky, earthy, silty & sandy, siliceous in part, carbonaceous, occasional bituminous, trace disseminated pyrite, firm to medium hard.
1,248.40 to 1,248.40 (0.00)	SHALE dark gray, dark brown, slightly subblocky, earthy, slightly silty, carbonaceous, occasional bituminous, trace disseminated pyrite, firm.
1,249.80 to 1,249.80 (0.00)	SHALE dark gray, dark brown, slightly subblocky, earthy, slightly silty, carbonaceous, occasional bituminous, trace to occasional disseminated pyrite, firm.
1,251.40 to 1,251.40 (0.00)	SHALE dark gray, dark brown, subblocky, earthy, silty & sandy, trace to occasional disseminated pyrite, carbonaceous to bituminous in part, trace microfractures, calcareous along fractures, firm to medium hard.
1,252.90 to 1,252.90 (0.00)	SHALE dark gray, dark brown, hockey pucks, earthy, silty, carbonaceous, occasional bituminous, trace disseminated pyrite, firm.
1,254.40 to 1,254.40 (0.00)	SHALE dark gray, slightly subblocky, earthy, slightly waxy, silty, trace to occasional calcareous feldspar microfractures, trace disseminated pyrite, occasional pyritic blebs, carbonaceous to bituminous in part, firm.
1,255.40 to 1,255.40 (0.00)	SHALE dark gray, earthy to waxy in part, slightly silty, carbonaceous to bituminous in part, occasional slickenside, occasional micro fractures, calcareous filled microfractures, firm.

Core Descriptions

Storage Units: Metric

1,256.20 to 1,256.20 (0.00)	SHALE dark gray, earthy to waxy in part, slightly silty, carbonaceous to bituminous in part, occasional slickenside, occasional micro fractures, calcareous filled microfractures, calcareous in part, firm.
1,256.60 to 1,256.60 (0.00)	SHALE dark gray, dark brown, slightly subfissile, earthy, slightly waxy, silty & sandy, carbonaceous, bituminous in part, trace disseminated pyrite, trace pyritic streaks & blebs, trace micro fractures, trace calcareous filled microfractures, calcareous in part, firm.
1,258.30 to 1,258.30 (0.00)	SHALE dark gray, black, subfissile, slightly earthy to waxy, silty & sandy, carbonaceous, bituminous, trace slickenside, occasional microfractures, occasional calcareous filled microfractures, calcareous in part, firm to brittle.
1,258.40 to 1,258.40 (0.00)	SHALE dark gray, blackish, fractured, earthy, slightly bituminous, silty & sandy, carbonaceous to bituminous in part, occasional to common disseminated pyrite, occasional pyritic blebs & nodules, occasional calcareous filled microfractures, occasional slickenside, firm to brittle in part.
1,259.10 to 1,259.10 (0.00)	SHALE dark gray, blackish, very fractured, earthy, slightly bituminous, silty & sandy, carbonaceous to bituminous in part, occasional to common disseminated pyrite, occasional pyritic blebs & nodules, occasional calcareous filled microfractures, occasional slickenside, firm to brittle.
1,270.00 to 1,270.00 (0.00)	SHALE dark gray, blackish, slightly hockey pucks, earthy to slightly waxy, silty & sandy, rare disseminated pyrite, rare micro fractures, slightly calcareous, trace carbonaceous, bituminous in part, trace slickenside, firm.
1,271.50 to 1,271.50 (0.00)	SHALE dark gray, blackish, slightly hockey pucks, earthy to slightly waxy, silty & sandy, trace carbonaceous, bituminous in part, rare disseminated pyrite, rare microfractures, slightly calcareous, firm.
1,273.00 to 1,273.00 (0.00)	SHALE dark gray, black, conchoidal fractures, slightly earthy to waxy, slightly silty & sandy, carbonaceous, bituminous, rare disseminated pyrite, common slickenside, occasional to common microfractures, firm, brittle.
1,274.20 to 1,274.20 (0.00)	SHALE dark gray, black, conchoidal fractures, waxy, slightly silty & sandy, carbonaceous, bituminous, rare disseminated pyrite, common slickenside, occasional to common microfractures, firm, brittle.
1,275.70 to 1,275.70 (0.00)	SHALE dark gray, black, conchoidal fractures, as above.

Core Descriptions

Storage Units: Metric

1,277.20 to 1,277.20 (0.00)	SHALE dark gray, black, fractured, waxy to shiny, carbonaceous, bituminous, calcareous filled microfractures, conchoidal fractures, common slickenside, firm to brittle.
1,278.70 to 1,278.70 (0.00)	SHALE dark gray, black, fractured, waxy to shiny, as above.
1,280.20 to 1,280.20 (0.00)	SHALE dark gray, black, fractured, waxy to shiny, as above.
1,281.70 to 1,281.70 (0.00)	SHALE dark gray, black, fractured, conchoidal fractures, waxy to shiny, carbonaceous, bituminous, occasional calcareous filled microfractures, rare disseminated pyrite, calcareous in part, common slickenside, trace pyritic streaks along fractures, firm, brittle.
1,282.70 to 1,282.70 (0.00)	SHALE dark gray, black, fractured, conchoidal fractures, waxy to shiny, carbonaceous, bituminous, occasional calcareous filled microfractures, rare disseminated pyrite, calcareous in part, common slickenside, trace pyritic streaks along fractures, firm, brittle.
1,283.40 to 1,283.40 (0.00)	SHALE dark gray, black, fractured, conchoidal fractures, waxy to shiny, carbonaceous, bituminous, trace to occasional calcareous filled microfractures, less than above, rare disseminated pyrite, calcareous in part, common slickenside, trace pyritic streaks along fractures, firm, brittle.
1,284.90 to 1,284.90 (0.00)	SHALE dark gray, black, slightly hockey pucks, slightly subfissile, earthy to waxy in part, slightly silty & sandy, carbonaceous, bituminous, trace disseminated pyrite & pyritic blebs, trace slickenside, trace calcareous filled microfractures, firm,
1,286.90 to 1,286.90 (0.00)	SHALE dark gray, black, slightly hockey pucks, as above.
1,287.90 to 1,287.90 (0.00)	SHALE dark gray, black, slightly hockey pucks, slightly subfissile, as above.
1,289.40 to 1,289.40 (0.00)	SHALE dark gray, black, slightly hockey pucks, slightly earthy to waxy in part, carbonaceous, bituminous, trace disseminated pyrite, occasional pyritic blebs, trace calcareous filled microfractures, trace to occasional slickenside, slightly calcareous in part, firm to brittle in part.
1,290.90 to 1,290.90 (0.00)	SHALE dark gray to black, slightly hockey pucks, slightly earthy to waxy, shiny in part, slightly silty & sandy, trace disseminated pyrite, trace calcareous filled microfractures, trace to occasional slickenside, firm, brittle poor.

Core Descriptions

Storage Units: Metric

1,291.90 to 1,291.90 (0.00)	SHALE dark gray to black, fractured, slightly earthy to waxy, shiny, slightly silty & sandy, trace disseminated pyrite, trace to occasional calcareous filled microfractures, occasional slickenside, firm, brittle poor.
1,292.70 to 1,292.70 (0.00)	SHALE dark gray, slightly hockey pucks, earthy, slightly waxy, slightly silty & sandy, calcareous in part, trace carbonaceous, slightly bituminous, trace micro fractures, trace calcareous filled microfractures, firm, trace slickenside, brittle in part.
1,294.20 to 1,294.20 (0.00)	SHALE dark gray to black, slightly hockey pucks, slightly earthy to waxy, shiny in part, slightly silty & sandy, trace disseminated pyrite, trace to occasional calcareous filled microfractures, trace to occasional slickenside, firm, brittle poor.
1,295.70 to 1,295.70 (0.00)	SHALE dark gray, medium to dark brown, slightly hockey pucks, earthy, slightly silty, abundant fossil fragments, calcareous, trace carbonaceous, slightly bituminous, rare micro fractures, firm.
1,297.20 to 1,297.20 (0.00)	SHALE dark gray to black, slightly hockey pucks, slightly earthy to waxy, shiny in part, slightly silty & sandy, trace disseminated pyrite, trace to occasional calcareous filled microfractures, trace to occasional slickenside, firm, brittle poor.
1,298.70 to 1,298.70 (0.00)	SHALE dark gray to black, slightly hockey pucks, slightly earthy to waxy, shiny in part, slightly silty & sandy, trace disseminated pyrite, trace pyritic streaks, trace calcareous filled microfractures, trace slickenside, slightly calcareous, firm, brittle poor.
1,299.20 to 1,299.20 (0.00)	SHALE dark gray, black, slightly hockey pucks, earthy to slightly waxy, slightly silty, earthy, trace carbonaceous, slightly bituminous, rare to trace micro fractures, occasional pyritic blebs, firm.
1,301.20 to 1,301.20 (0.00)	LIMESTONE dark brown, dark gray, cryptocrystalline, very argillaceous, carbonaceous, bituminous, tight
1,301.95 to 1,301.95 (0.00)	LIMESTONE dark brown, dark gray, cryptocrystalline, very argillaceous, carbonaceous, bituminous, tight