

RESPEC
RAPID CITY, SD

CORE LOG DATA SHEET

CORE RUN # _____
PAGE ____ OF ____

9-29-2014

SITE _____
CORE BARREL LENGTH _____
CORE BARREL DIAMETER _____
TOP CORE INTERVAL _____
BOTTOM CORE INTERVAL _____
LENGTH CORED INTERVAL _____

RECOVERY _____
TIME RECOVERED _____
DATE RECOVERED _____
RUN RQD _____
LOGGED BY _____

214

Depth	Interval		Lith	RQD	Description
	From	To			
214	209'	214'		58.5"	COLOR: N3 THICKLY BEDDED SHALE MASSIVE UNIFORM FOSSILIFEROUS (SHELL FRAGMENTS ON BREAK ENDS) NONCALCAREOUS MATRIX
214	214'	219'		62.5"	COLOR: N2-N3 MASSIVE, NON-FISSILE SHALE MASSIVE : 1/2" BENTONITE BED @ 217' NONFOSSILIFEROUS NONCALCAREOUS MATRIX
219	219'	224'		58"	Gray shale N3, massive, non-fissile, noncalcareous matrix; nonfossiliferous; Bentonite (2" thick) with vertical filled (5-16/11) structures but some appear to be open at 221.5' May be worm burrow in PSS-36 (Shore sample).
224					

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PAGE ____ OF ____

9-30-2014

SITE _____
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TOP CORE INTERVAL _____
BOTTOM CORE INTERVAL _____
LENGTH CORED INTERVAL _____

RECOVERY _____
TIME RECOVERED _____
DATE RECOVERED _____
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LOGGED BY _____

Recovery

Depth	Interval		Lith	RQD	Description
	From	To			
227'				4' 11"	N3 matrix; 5 y 6/1 for bentonite Grey black shale; bentonite (1.5") at 227'; non calcareous matrix; non- fossiliferous. Discontinuous bentonite bleb at 228.5'; Bentonite at 227' Shows some vertical fracture fracture
229'				62"	Grey shale, ^{N3} non fossiliferous. non-calceous; 1/4" thick bentonite at 233.5' 5 y 6/1 micaceous toward bottom of core. TOOK PLW-5 at 233' (7 inches).
234'				5'	Gray shale; non-fossiliferous; noncalcareous; no discernable bedding; massive; very well indurated. Matrix color N3-N4
239'				43'	Grey shale - very well indurated N3 color of matrix; non-fossiliferous. Bentonite bed (not continuous) Q.A. at 239' Bentonite color 5 y R 6/4
40'					
44'					

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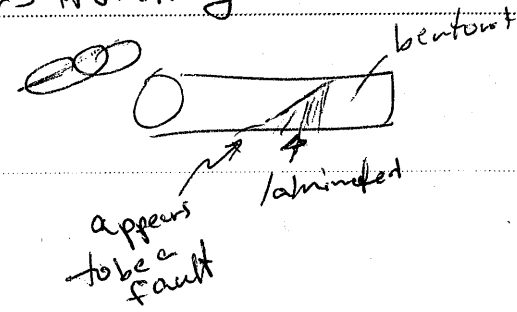
RECOVERY _____
TIME RECOVERED _____
DATE RECOVERED _____
RUN RQD _____
LOGGED BY _____

Depth	Interval		Lith	RQD	Description
	From	To			
248' - (41)		45		55"	Grey shale ^{1.3} , non-calcareous; very well indurated; irregular bentonite (O/A O) bentonite; angular relationship often in wedges. 5 y 2/1, dat 248.5'; small 1/2" bentonite at 247'
251' - (42)				67"	Grey shale; well indurated; picked up at ~ 2 ft from previous run; bentonite (1/2") at 251'. Massive no obvious better with exception of bentonite; Bentonite is lenticular and does not extend through the core.
254' - (43)				34"	matrix non-calcareous; non-fossiliferous. Took PW-6 @ 254-60" (i.e. 248' because from previous run. massive gray shale; moderately indurated (indent slightly with fingernail); non-fossiliferous; no bentonite; matrix w/ higher clay content; very finely laminated (although subtle laminations).

9-~~10~~-2014

SITE Presho
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Depth	Interval		Lith	RQD	Description
	From	To			
(44)					gray shale; short cone (but recovered material from last shot run - 1" thick bentonite at 73' 26.5' matrix N3; Bentonite color N5; but indurated moderately indurated; 50:44 for 3 ft of drilling  The sketch shows a rectangular core sample. On the left, there are two small circles representing drill holes. An arrow points to a diagonal line across the core with the text 'appears to be a fault'. Another arrow points to a shaded area at the bottom right with the text 'laminated'. The top right corner is labeled 'bentonite'.
62					

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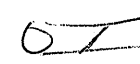
CORE LOG DATA SHEET

CORE RUN # _____
PAGE ____ OF ____

10-1-2014

SITE Presho
CORE BARREL LENGTH _____
CORE BARREL DIAMETER _____
TOP CORE INTERVAL _____
BOTTOM CORE INTERVAL _____
LENGTH CORED INTERVAL _____

RECOVERY _____
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Depth	Interval		Lith	RQD	Description
	From	To			
(45)				2'	Recovered for and drilled 2' from where stopped previous day. Matrix US, shell material at 263.5' and 262.5' - probably inoceramus.
264' -1					
(46)				52"	Grey shale; shell material at 265' 265' (inoceramus); 265.5' shell material (inoceramus) 267' small shell layer; non calcareous matrix
269'					
(47)				70"	265 266 272.5 inoceramus 271.5 shear fracture  massive above fracture; Grey shale; slightly calcareous
274					
(48)				52"	Grey shale 278' fault - very good offset Small grains everywhere this flesh occur throughout the core; they do not react to HCl - too small to identify 275.5 Bentonite; many small faults  @ 277' fault zone
279					

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SITE Fresho

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LOGGED BY _____

10-1-2014

Depth	Interval		Lith	RQD	Description
	From	To			
49'					Grey Black shale color N3 (maybe N2) Finely laminated; Grey band at 283'. Deformed 67" Grey band at 282.5 that has fracture running through it. Porewater sample PW-7 taken at 283-284.
4'- (50)				14"	Grey Shale with bentonite at 288.9' Finely laminated; laminations incl bentonite dipping ~ 8°. Went back in and recovered 29" core 14 + 28 = 43" recovery. The upper part was labeled as 289 but the bottom section is "Corrected 289, Bentonite (1") at 288'
289'					

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10-2-2014

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	From	To			
(51)	PW-8 from top 5 inches (separate piece from previous run)				Grey shale, Bentonite @ 290.5' 10GR 7/4 and 1/2" thick; This bentonite has an underlying whiter layer directly above that is 1/2" thick which has a slightly calcareous composition. At 291.75' grey (bentonitic?) layer occurs that shows some layering in upper part. This layer is ~1" thick. Remainder of shale is finely laminated and well indurated.
294	Took PSS-51 from upper broken @ 288'				Grey shale N30 color (could also be greenish black)
(52)				56"	Bentonite (1/2" thick) at 295.5'; finely laminated shale with very dip
299'					Bentonite Pale yellowish brown at 293.75'; the bentonite at 295.5' is yellowish grey; non fossiliferous