



STATE OF ALASKA  
DEPARTMENT OF NATURAL RESOURCES

Alaska Geologic Materials Center *Data Report No. 397*

*No. 397*

Apache Corp., Alaska Division of Oil & Gas, and Weatherford Laboratories, 2011, Porosity and permeability, XRD data, core sample photos, and core descriptions from the Shell Western E&P Inc. MGS #A43-11 well, Cook Inlet Basin.

Zip file available for download

Received May, 2011

All data reports may be downloaded free of charge from the [DGGs website](#).



BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		CONG	SAND ST	MUD ST	SD MUD	MUDST	SHALE	COAL	CEL	PEL	GRAN	VC	C	M	F	VE	SILT	CLAY	1	2	3				4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
8330																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

Rubble

Rubble

Imbricated  
Clasts

Scattered  
shale clasts  
Imbricated  
Clasts

Rubble

Mixed Gravelly/Sandy Stream Complex

42.5  
46.5  
44.5

4264

4259  
#18

BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT	
		CONG SD	SAND ST	MUD ST	SD MUD	MUD ST	SHALE	COAL	CL	PEL	GRAN	VC	C	M	F	UL	UL	UL	SAT	CLAY	1				2	3	4							
	8350																																	
0	51																																	
	52																																	
	53																																	
	54																																	
	58																																	
	56																																	
	54																																	
	58																																	
	59																																	
	60																																	
0	61																																	
	62																																	
	63																																	
	64																																	
0	65																																	
	66																																	
	67																																	
0	68																																	
	69																																	

G. MAEN 6-93

GMC Data Report 397

4 of 18

Mixed Gravelly/Sandy  
Stream Complex

Sandy Braided Stream Complex

T. Po. fl  
Scattered  
Mud Clasts

G. W. B. 6-93

GMC Data Report 397

4 of 18

~ *Abundant*
*Concreted*
*Imbricated  
Clasts*
*M*
*M?*
*Rubble*
*Rubble*
*H*
*H*
*H*
*T*
*T, Part*
*Scattered  
Mud Clasts*
*Mixed Gravelly  
Stream Complex*
*Sandy Braided Stream Complex*
*Top Cycle*



BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT			
		CONG	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	CEL	PEL	GRAN	VC	C	M	F	VF	SILT	CLAY				1	2	3	4								
	8391																																			
	92																																			
	93																																			
	94																																			
0	95																																			
	96																																			
	97																																			
	98																																			
	99																																			
	8400																																			
	01																																			
	02																																			
0	03																																			
	04																																			
	05																																			
	06																																			
0	07																																			
	08																																			
	09																																			
0	8410																																			
GMC Data Report 397																																				

6 of 18

Gravelly Braided Stream Complex

Gravelly Braided Stream Complex

Channel Lag

Imbricated Clasts

Imbricated Clasts

Imbricated Clasts

Rubble

Rubble

Rubble

Rubble

Imbricated  
ClastsImbricated  
Clasts

(LSPF)

Sand  
FlatGravelly Braided Stream  
ComplexImbricated  
Clasts

Channel Lag

4258 #17  
4257 #16

G. M. G. 6-92

BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		CONG	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	CL	SL	GR	VC	U	C	M	S	VF	ST				CL	1	2	3						4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	841																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

4256  
#15

Late Stage  
Channel Fill?  
(LSOF)

Imbricated  
Clasts

Rubble

Imbricated Clasts

Rubble

Gravelly Banded Stream Complex



BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT			
		CONG SB	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	U/L	U/L	U/L	U/L	U/L	U/L	U/L	U/L	U/L	U/L				1	2	3	4								
	8431																																			
	32																																			
	33																																			
	34																																			
	35																																			
	36																																			
	37																																			
	38																																			
	39																																			
	40																																			
	41																																			
	42																																			
	43																																			
	44																																			
	45																																			
	46																																			
	47																																			
	48																																			
	49																																			
	8450																																			
GMC Data Report 397																																				

6. MAR 6-93

8 of 18

Gravelly Braided Stream Complex

Rubble

Rubble

Rubble

(Rubble)  
Imbricated  
Clasts

Imbricated  
Clasts

Imbricated  
Clasts

Imbricated  
Clasts

Gravelly Branched Stream Complex



BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		CONG	CONG ST	SAND ST	MUD ST	SD MUD	MUDST	SHALE	COAL	CEL	PBL	GRAY	VC	C	M	F	U	U	U	U	U				U	U	U	U						U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE							LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		CONG	CONG SD	SAND ST	SAND	SHALE	COAL	CL	FE	GRAN	UL	VC	C	M	F	VF	SET	CLAY				1	2	3	4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
4252	84.84																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

BOX NO.	DEPTH FT/M	LITHOLOGY												GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		CONG	SAND ST	SAND ST	SD MUD	MUDST	SHALE	COAL	CEL	PEL	GRAN	VC	C	M	F	VF	SILT	CLAY	1	2	3	4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
8504																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

Cobble @ 10.5

Channel Log?  
Base Channel  
or lag in Sand  
flat

Channel Log  
Scattered (Hoe log)  
Granules

Alosts  
Imbricated

18.5 - 21  
Rubble

Pebbles on foresets

8524 - 8543  
Poor quality Core

Overbank  
(Sand flats)

Multi-story Sandy  
Banded CH

Multi-story  
Sandy  
CH

G. WAGEN 6-93

BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		CONG	CONG SS	SAND ST	MUD ST	SD MUD	HARDST	SHALE	COAL	GR	PBL	GRAN	VC	C	M	F	SP	SILT	CLAY	1	2				3	4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	8590																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

G. WAGNER 6-93

BOX NO.	DEPTH FT/M	LITHOLOGY											GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT		
		CONG SS	SAND ST	SD MED	AUGST SHALE	COAL	CEL	PBL	GRAN	VC	U L	U M	U L	U M	U L	U M	SILT CLAY	1	2	3	4															
	8610																																			
	11																																			
	12																																			
	13																																			
	14																																			
	15																																			
	16																																			
	17																																			
	18																																			
	19																																			
	20																																			
	21																																			
	22																																			
	23																																			
	24																																			
	25																																			
	26																																			
	27																																			
	28																																			
	8629																																			

GMC Data Report 397

13 of 18

5B

BOX NO.	DEPTH FT/M	LITHOLOGY													GRAIN SIZE							LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX 1 2 3 4	NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
		CONG	CONG SD	SAND ST	MUD ST	SD MUD	MAUD ST	SHALE	COAL	CEL	PBL	GRAN	VC	U/L	U/L	U/L	M	F	VF	SILT	CLAY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	30																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

G. W. G. 6-83

BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT			
		CONG	CONG SD	SAND ST	SD MUD	MUDST	SHALE	COAL	CEL	PBL	GRAN	VC	C	H	F	VF	SILT	CLAY	1	2	3				4											
	96																																			
	97																																			
	98																																			
	2699																																			
	2700																																			
	01																																			
	02																																			
	03																																			
	04																																			
	05																																			
	06																																			
	07																																			
	08																																			
	09																																			
	10																																			
	11																																			
	12																																			
	13																																			
	14																																			
	2715																																			
GMC Data Report 397																																				
15 of 18																																				

G-10000 6-99



BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE										LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
		CONG	CONG SD	SAND ST	MUD ST	SD MUD	MUDST	SHALE	COAL	CEL	FBL	GRAN	VC	G	M	F	VF	SILT	CLAY	1	2				3	4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	8716																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		</

G. W. B. 6-95

GMC Data Report 397

16 of 18

BOX NO.	DEPTH FT/M	LITHOLOGY										GRAIN SIZE							LAMINAE GEOMETRY	BED INTERPRE- TATION	SEDIMENTARY STRUCTURES	BIOTURBATION INDEX				NOTES	LITHO FACIES	FACIES ASSN	DEP ENV	CHRONO STRAT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		CONG SS	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	SAND ST	VC	C	M	F	VF	SILT	CLAY				1	2	3	4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	8841																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</

# LEGEND

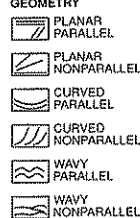
## SURFACE DESCRIPTION

PL = PLANAR  
CR = CURVED  
W = WAVY

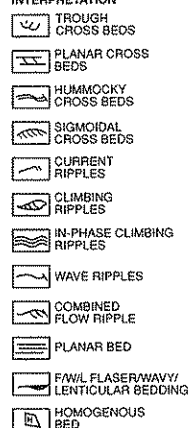
## SURFACE INTERPRETATION

LSS = LAMINAE-SET SURFACE  
BS = BED SURFACE  
BSS = BEDSET SURFACE

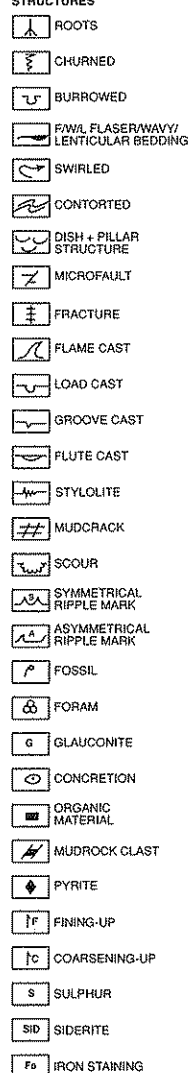
## LAMINAE GEOMETRY



## BED TYPE INTERPRETATION



## SEDIMENTARY STRUCTURES



## CHRONOSTRATIGRAPHY

PSSB = PARASEQUENCE SET BOUNDARY  
SB = SEQUENCE BOUNDARY  
CS = CONDENSED SECTION  
LST = LOWSTAND SYSTEMS TRACT  
TST = TRANSGRESSIVE SYSTEMS TRACT  
HST = HIGHSTAND SYSTEMS TRACT  
FS = FLOODING SURFACE

## LITHOLOGY

CONG = CONGLOMERATE  
CONG SD = CONGLOMERATE SANDSTONE  
SAND ST = SANDSTONE  
MUD ST = MUDDY SANDSTONE  
SD MUD = SANDY MUDSTONE  
MUDST = MUDSTONE  
SHALE  
COAL

## GRAIN SIZE

CBL = COBBLE 256 mm  
PBL = PEBBLE 64 mm  
GRAN = GRANULE 4 mm  
VC = VERY COARSE SAND 2 mm

C = COARSE SAND

M = MEDIUM SAND

F = FINE SAND

VF = VERY FINE SAND .062 mm

SLT = SILT

CL = CLAY

## TRACE FOSSILS

Ar = *Arenicolites*  
An = *Anconichnus*  
As = *Asterosoma*  
B = *Bergaueria*  
Ch = *Chondrites*  
Co = *Conichnus*  
Cy = *Cylindrichnus*  
D = *Diplocraterion*  
H = *Helminthopsis*  
L = *Lockeia*  
Ma = *Macaronichnus*  
Mo = *Monocraterion*  
O = *Ophiomorpha*  
Pa = *Palaeophycus*  
Pi = *Planolites*  
Rh = *Rhizocorallium*  
Ro = *Rosselia*  
Sk = *Skolithos*  
Su = *Subphyllochora*  
Ta = *Taenidium*  
Te = *Teichichnus*  
Tr = *Terebellina*  
Ti = *Trichichnus*  
T = *Thalassinoides*  
Z = *Zoophycos*

? QUESTIONABLE

GR GRADATIONAL

CLAST

## BIOTURBATION INDEX

