



E. I. DU PONT DE NEMOURS & COMPANY

INCORPORATED

NIAGARA FALLS, N.Y. 14302

CHEMICALS AND PIGMENTS DEPARTMENT
RESEARCH & DEVELOPMENT DIVISION

CC PB

Peter: these are
per my request. Master,
report totally illegible.

January 19, 1984

Mr. Jim Wilding
New York State Department of
Environmental Conservation
600 Delaware Avenue
Buffalo, NY 14202-1073

Dear Jim:

Enclosed are four (4) copies of the geologic logs prepared by Woodward-Clyde Consultants for our site groundwater study. These logs were originally included as pages A-3 to A-57 of Appendix A, Volume II of the report submitted January 9, 1984. The enclosed have not been reduced in size and should be more readable.

Please let me know if you need anything further.

Sincerely,

T. D. VanDomelen
Engineer - R&D

TDV:jrm
Enclosures

CC 613

CHIT 100 10 80



E. I. du Pont de Nemours & Company

NIAGARA FALLS, N. Y. 14302

CHEMICALS AND FIBERS DEPARTMENT
RESEARCH & DEVELOPMENT DIVISION

Mr. Jim Wilkins
New York State Department of
Environmental Conservation
600 West 4th Avenue
Albany, NY 12243-1000

Enclosed are (4) copies of the analysis report prepared
by Westinghouse Electric Corporation for the State of New York
Department of Environmental Conservation. The report was prepared
on January 11, 1984, and is dated January 11, 1984.
The enclosed report has been prepared in accordance with the
requirements of the New York State Department of Environmental
Conservation. If you need any further information, please
contact me.

[Handwritten signature]

Dr. J. Wilkins
New York State Department of
Environmental Conservation

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JAN 20 1984
E. I. du Pont de Nemours & Company
Environmental Conservation
NIAGARA FALLS, N. Y.

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GROUND WATER OBSERVATION								JOB <u>DUPONT NIAFAT PLANT</u> NO. <u>83C2286-2</u>		BORING NUMBER <u>1-B</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.2</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Dave Schock</u>		DATE START <u>4/19/83</u> FINISH <u>4/25/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
12												
	TOP OF BEDROCK											
13												
	NO SAMPLE											
14	RUN 1								13.9 0° FRACTURE ALONG STYLOLITE 13.7-14.2 MINOR VUG OCCURRENCE			
15	13.7-19.0		2.3	5.3	5.3	100%			14.2 0° JOINT 14.2-14.3 VUG (5mm) SURFACE, WEATHERED	5		
16			43%		100%				14.3 0° JOINT			
17									14.5 TWO PARALLEL 0° JOINTS	0		
18									14.6 0° JOINT			
19									15.7-16.4 VUG (1-10mm) SURFACE WEATHERED	5		
20									16.0 150° FRACTURE ALONG STYLOLITE			
21									16.1 0° FRACTURE ALONG STYLOLITE (1-10mm) SURFACE WEATHERED	5		
22									16.6 0° JOINT			
23									16.8 0° JOINT	5		
24									16.9 10° JOINT			
25									17.0 0° JOINT	6		
26									17.5 0° JOINT, GYPSUM COAT			
27									17.6 TWO 0° FRACTURES ALONG STYLOLITE			
28									17.8 0° FRACTURE ALONG GYPSUM VEIN	3+		
29									18.0 GYPSUM VEIN (0°)			
30									18.1 0° JOINT, GYPSUM COAT	4+		
31									18.25 0° JOINT, " "			
32									18.35 0° JOINT, " "			
33									18.5 50° JOINT, " "	0		
34									18.55 GYPSUM VEIN (0°), 50° JOINT, GYPSUM COAT			
35									18.9 0° JOINT, GYPSUM COAT			
36									19.0 0° JOINT, " "	1		
37									20.4-20.5 VUG (.1mm) SURFACE			
38									19.55 0° FRACTURE ALONG STYLOLITE			
39									19.7 0° FRACTURE ALONG STYLOLITE			
40									19.9-20.1 BROKEN ZONE (? > 4 JOINTS)			
41									20.3 50° JOINT			
42									20.4-20.5 TWO 0° FRACTURES ALONG STYLOLITES			
GENERAL NOTES:										Total Depth <u>220'</u>		
LOG NOTES LOSS OF WATER AT 24'										"ROCK" Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>1-B</u>		

GROUND WATER OBSERVATION										JOB <u>DUPONT NIAGARA PLANT</u> NO. <u>83C2236-2</u>		BORING NUMBER <u>1-3</u>	
At _____ Ft. at Completion										DRILLING RIG _____		BORING OFFSET _____	
At _____ Ft. after _____ hrs.										OPERATOR _____		SURFACE ELEVATION <u>568.2'</u>	
At _____ Ft. after _____ hrs.										INSPECTOR <u>Dave Schack</u>		DATE START <u>4/19/83</u> FINISH <u>4/25/83</u>	
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED	
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP
25									20.9 0° FRACTURE ALONG STYLOLITE				
									22.4 0° " " " " 22.6 - 24.1	1			
									23.0 0° " " " " STYLOLITES AND	0			
									23.9-24 LARGE IRREGULAR FRACTURE, DEEPLY NOTCHED AND WEATHERED (? 0°)				
26									24.5 0° FRACTURE ALONG STYLOLITE (MECH ?)				
									26.7 LARGE IRREGULAR FRACTURE, WEATHERED (? 0°)	1	0	(Large)	
27									26.85 40° JOINT (? MECH) 25.4 - 26.7				
									SPARSE VUG (.1-2mm) SURFACE (GYPSUM BLEBS)				
									END OF BORE				

GENERAL NOTES:

Total Depth 27-0

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 1-B

GROUND WATER OBSERVATION						<u>Point</u> JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>B-1-C</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>569.7'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>		DATE START <u>4/27/83</u> FINISH <u>5/4/83</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
14	Top		OF		ROCK		14.0'					
15												
16												
17												
18												
19												
20												
21												
22	RUN 1											
23	Box 1											
24			8.4'		10'							
25			10'		10'							
26			84%		100%							
21.0' - 31.0' - med. gray to dark gray brown laminated dolomite. Stylolites common. Vugs vary in size and abundance along length of core. Granular texture from vugs. 21.6' - 22.0' - Small to med sized vugs (.02") abundant and sometimes connected. 21.75' - 21.85' - 21.95' - Horizontal Fractures. Black coating on 21.75' (stylolite?). 22.2' - Horizontal Fracture w/ a white gypsum coat. 21.95' - 22.2' - Vertical Fracture 24.6' - 26.0' - Black stylolite contact at both ends. Between this interval, Dol. is more strongly laminated. Also contains many long, linear wss from 25.2' - 25.6'. 24.75' - 25.5' - Joint (100) along stylolites. 25.1' - 25.25' - Horizontal Fracture. Also coated w/ black residue (stylolite?).										3		0°
										2		
										0		
										1	10°	
										2	0°	0°
										3	0°	0°
GENERAL NOTES:										Total Depth <u>42.6'</u>		
										'ROCK' Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>B-1-C</u>		



GROUND WATER OBSERVATION								Dupont		BORING NUMBER <u>B-1-C</u>		
At _____ Ft. at Completion								JOB <u>Niagara Plant</u> NO: <u>83C2236</u>		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>569.7'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>4/27/83</u> FINISH <u>5/4/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
27									26.0' - 28.1' - med gray, brown dolomite. Pin-hole vugs abundant. Granular texture	0		
28									28.1' - Fracture at a gypsum pod. Partially coated w/ black residue (Stylolite?)	0	0°	0°
29									28.1' - 29.4' - med. sized and large (.1") vugs & common. Some connected linearly. Yellowish brown color added to Dolo.	1	10°	
30									29.8' - Large gypsum pod.	2	0°	
31									29.3' - Dolo is eaten away along a stylolite by vugs. (10° fracture).	1	0°	
32									29.4' - 31.0' - Only 1 or 2 long linear vugs. Some pin-hole vugs.	0		
33									29.6' - 30.3' - Horizontal Fracture along stylolites.	0	30°	0°
34									31.0' - 33.3' - Dolomite is a darker brown color. Laminated. Stylolites present. See occasional long, linear vugs (.15"), as well as other small (.3") circular vugs. Large gypsum pods or veins present in 5 places along this stretch.	0	0°	
35	RUN 2 Box 2	2.6' 3.0'	2.7' 3.0'	87%	90%				33.0' - Joint, 30°, coated w/ black residue (stylolite) and a thin gypsum layer.	2	0°	
36									33.15' - Fracture in rock at a large gypsum pod.	0	0°	
37									33.3' - 34.0' - med. to dark gray brown Dolo. Granular texture due to abundant small vugs.	1	5°	
38									34.0' - 36.0' - very dark brown well laminated Dolomite. Vugs are very common and med. sized (.1"). Gives a somewhat "punky" look to dolo.	0	0°	
39									35.15' - Horizontal Fracture.	1	0°	
									36.0' - Joint, 5°, along a stylolite.	1	0°	
									36.0' - 42.6' - same color Dolo except vugs are much smaller. Not imparting such a porous look to the rock as above. Still well laminated w/ thick dark brown and yellow brown laminations. V. large pods and veins of gypsum occur. Stylolites present as usual.	1	0°	0°
									37.6' - 37.8' - Horizontal breaks near large gypsum pods.	2	0°	
									38.05' - large gypsum pods w/ thin black lining.	1	0°	
									38.5' - Horizontal Fracture coated w/ gypsum.	0		

GENERAL NOTES:		Total Depth <u>42.6'</u>
		'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>B-1C</u>

GROUND WATER OBSERVATION										<u>Point</u> JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>B-1-C</u> BORING OFFSET _____ SURFACE ELEVATION <u>569.7'</u> DATE START <u>4/27/83</u> FINISH <u>5/4/83</u>		
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.										DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED		
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP	
40									39.75' - Horizontal Fracture. 38.4' - 42.6' - Small pods filled w/ dirty gypsum are occasionally seen.	1	0°			
41									40.4' - Horizontal break along a gypsum pod. 40.5' - Joint, 10°, coated w/ black residue & some white gypsum.	4	0°	0°		
42									40.6' - 40.7' - Horizontal Fracture. 41.4' - Horizontal break along a gypsum seam. 42.0' - 42.2' - high angle joint (80°)	1	0°			
43	Total													
44														
GENERAL NOTES:										Total Depth <u>42.6'</u> "ROCK" Drilling _____				
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>B-1-C</u>				

Sheet 1 of 3

GROUND WATER OBSERVATION								<u>Report</u> JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>B-1D</u> BORING OFFSET _____ SURFACE ELEVATION <u>568.8'</u> DATE START <u>5/4/83</u> FINISH <u>5/9/83</u>		
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.								DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Reqlst.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
15												
	Top	of	Rock		15.6'							
42	n	c	A									
43	Run 1								42.5' - 51.0' Dark gray brown, laminated Dolomite. Stylolites common. Pin-hole vugs throughout. Larger, deep vugs present in places but well scattered. Gypsum pods also present in places.	2	0°	
44	Box 1								43.2' - Horizontal Fracture. 43.55' - Joint, 30° (stylolite). 44.2' - Joint, 20° 44.4' - Horizontal Fracture. 44.4' - 45.15' - 3 or 4 long, linear (.5") vugs. 45.15' - Joint, 10° Thin white (gypsum?) coat 44.8' - large gypsum pod. 45.35' - Fracture along stylolite. 45.15' - 45.35' - Vertical Fracture. 45.9' and 46.0' - Horiz. Fracture (stylolites?)	2	30°	0°
45									47.3' - Horizontal Fracture along a stylolite. Some vugs present.	1	0°	
46									48.2' - Joint, 25° 48.5' - Large (.6") and deep vug w/ small gypsum x'tals inside.	3	25°	
47									48.6' - 48.75' - many small gypsum filled vugs. 48.75' - Fracture along vugs & stylolite. 48.95' - Horizontal Fracture (mechanical?) 49.5' - Horizontal Fracture along stylolite. 50.15' - Large gypsum pods. 50.55' - Horizontal Fracture along stylolite. 50.65' - Horizontal Fracture, gypsum seam. 50.7' - Horizontal Fracture	1	0°	0°
48										3	0°	
49										2	0°	
50										3	0°	
51										0		
52	Run 2									0		
	Box 2									0		
GENERAL NOTES:										Total Depth <u>74.6'</u> "ROCK" Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>B-1D</u>		

GROUND WATER OBSERVATION								Dupont		BORING NUMBER <u>B-1D</u>		
At _____ Ft. at Completion								JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.8'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/4/83</u> FINISH <u>5/9/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
53			99%	100%					51.0' - 62.2' - med gray to gray brown, well laminated Dolomite. Many swirling streaks in this section. Pin-hole vugs still common w/ occasional areas of larger, connecting vugs. No areas are intensely vuggy. Stylolites present.	0	0°	0°
54									52.65' - Horizontal fracture (mechanical?)	0		
55									55.4' - Horizontal Fracture (mechanical?)	0		
56									55.5' - 56.4' - Relatively vuggy. Linear vugs (.8") w/ many smaller, circular vugs.	0	0°	
57									57.1' - Horizontal Fracture along a stylolite	0	0°	0°
58										0		
59										0		
60									59.5' - 62.4' - Relatively vuggy again. med. sized vugs (.05" - .1") common. Not connected. Swirling laminations.	0		
61										0		
62										0		
63									62.4' - 66.85' - Dark gray to dark gray brown, Dol. Not as distinctly laminated as above. Pin-hole vugs abundant giving a granular texture to the rock. No swirling laminations.	0		
64									62.8' - Large gypsum pod.	2		
65									63.25' and 63.3' - Horizontal Frac. along stylolite	0		
GENERAL NOTES:										Total Depth <u>74.6'</u>		
										"ROCK" Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>B-1D</u>		

GROUND WATER OBSERVATION								<u>Superior</u> JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>B-1 D</u> BORING OFFSET _____ SURFACE ELEVATION <u>568.8'</u> DATE START <u>5/4/83</u> FINISH <u>5/9/83</u>		
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.								DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
66										0		
67	RUN 3 Box 3								66.85' - 68.7' - Dolo again becomes med to dark gray, w/ swirling laminations. Pin-hole vugs common, some larger ones but not many. Stylolites rare.	0		0°
68										0		
69									68.7' - 70.4' - Dolo becomes horizontally laminated w/ thin streaks. No swirls. Only some pin-hole vugs. Stylolites common. Fractured.	0		0°
70									Horizontal Fractures (most along stylolites) at: 69.0, 69.05, 69.1, 69.35, 69.4, 69.5, 69.7, 69.95, 70.05.	8		
71									70.4' - 74.5' - med gray dolomite, laminated and somewhat streaky. Stylolites common. Pin-hole vugs abundant; gives granular texture to the dolomite. A few small gypsum pods.	1		
72										0		
73										0		0°
74										0		
75	Total	Depth					74.6'			0		

GENERAL NOTES:	Total Depth <u>74.6'</u>
	ROCK Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%	HOLE NO. <u>B-1D</u>



GROUND WATER OBSERVATION										JOB <u>Dupont Niagara Plant</u> NO. <u>83C2236</u> DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>		BORING NUMBER <u>1-E</u> BORING OFFSET _____ SURFACE ELEVATION <u>567.6</u> DATE START <u>5/11/83</u> FINISH <u>5/13/83</u>		
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.														
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED		
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP	
15	Top of		Rock		15'									
74	End of		Casing		74'									
75									74.0'-88.4' - med. gray, poorly laminated dolomite. Stylolites present as well as black streaks that are less sutured. Wgs rare.	1	0°	0°		
76									74.65' - Horizontal Fracture.	1	15°			
77									75.5' - Joint, 15°, along a stylolite.					
78									76.5' - Horizontal Fracture.	1	0°			
79	RUN 5 Box 1		13.2'		14.4'					0		0°		
80			14.4'		14.4'				78.0' - Fracture along a stylolite.	2	0°			
81			92%		100%				78.5' - Horizontal Fracture.	1				
82									79.3' - Fracture along a stylolite.	1				
83									80.1' - Horizontal Fracture.	2	0°			
84									80.7' - Horizontal Fracture (mechanical?).	1	0°			
85									81.7' - Horizontal Fracture.	2				
									82.4' and 82.5' - Horizontal Fractures.	1				
									83.3' - Horizontal Fracture.	2				
									83.3' - 83.5' - Broken pebbles.	1		0°		
									84.0, 84.1, 84.3' - Horizontal Fractures.	4	0°			
									84.7' - Horizontal Fracture.	1	0°			
									85.1' - Horizontal Fracture	1	0°			

GENERAL NOTES:		Total Depth <u>88.2'</u>
1) 84.0' water bearing bedding joint.		"ROCK" Drilling _____
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>1-E</u>

GROUND WATER OBSERVATION										Report				
At _____ Ft. at Completion										JOB <u>Niagara Plant</u> NO. <u>83-2236</u>		BORING NUMBER <u>1-E</u>		
At _____ Ft. after _____ hrs.										DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.										OPERATOR _____		SURFACE ELEVATION <u>567.6</u>		
At _____ Ft. after _____ hrs.										INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/1/83</u> FINISH <u>5/13/83</u>		
DEPTH	CORE RUN		R Q D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED		
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP	
86									86.05' - Fracture along black streak (stylolite)	1		0°		
87								86.8' - Horizontal Fracture w/ gypsum? coat. 87.2' - Horizontal Fracture w/ gypsum? coat. 87.55' - Joint, 25°, along a black streak.	2	0°				
88								88.2' - Fracture along a black streak (stylolite).	2	25°				
89	Total	Depth			88.4'				1					
GENERAL NOTES:										Total Depth <u>88.2'</u> 'ROCK' Drilling _____				
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>1-E</u>				

GROUND WATER OBSERVATION						<u>Report</u> JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>1-1</u> BORING OFFSET _____ SURFACE ELEVATION <u>569.4</u> DATE START <u>5/5/83</u> FINISH <u>5/18/83</u>				
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.						DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Paul Taylor</u>						
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
15	Top	of	Rock	15.0'								
90	n	c	a									0°
91	Run 6 Box								90.0' - 97.1' - med to dark brown, distinctly and thinly laminated dolomite. stylolites present. vugs absent. Fractures every 1" to 5". Some fractures may be mechanical. The fractures are all horizontal but very jagged in outline, possibly following stylolites.	3		
92									Horizontal Fractures at:	2		
93		2.0'	7.1'	7.1'					90.5', 90.8', 90.9', 91.3', 91.8', 92.4', 92.55', 92.7', 93.0', 93.15', 93.3', 93.4', 93.9', 94.0', 94.1', 94.35', 94.6', 94.8', 95.0', 95.2', 95.65', 95.7', 96.0', 96.2', 96.4', 96.8', 96.9'	3		
94										5		
95		28%	100%							5		0°
96										4		
97										5		
98	Total	Depth		92.0'								

GENERAL NOTES:	Total Depth <u>92.0'</u>
	'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%	HOLE NO. <u>1-1</u>



GROUND WATER OBSERVATION							Depot		Boring Number <u>1-6</u>			
At _____ Ft. at Completion							JOB <u>Niagara Plant</u> NO. <u>83c2236</u>		BORING OFFSET _____			
At _____ Ft. after _____ hrs.							DRILLING RIG _____		BORING OFFSET _____			
At _____ Ft. after _____ hrs.							OPERATOR _____		SURFACE ELEVATION <u>568.6'</u>			
At _____ Ft. after _____ hrs.							INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/5/83</u> FINISH <u>5/24/83</u>			
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
	Top of Rock						15.0'					
97	end of casing						97.0'		97.0' - 104.25' - med gray to med gray brown, well, and thinly laminated dolomite. Vugs rare. stylolites present.	1	0°	0°
98									97.3' - Horizontal Fracture along a stylolite			
99	Run 7 Box 1								98.8' - 98.9' - Thin band of finer grained, light gray Dolo. Horizontal Fracture at 98.8', stylolite at 98.9'	1	0°	
100									100.3' - Horizontal Fracture (mechanical?)	0	0°	
101			10.3'		12.0'				101.7' - Horizontal Fracture along a stylolite	1	0°	0°
102			86%		100%				102.1' - Joint, 5° along a stylolite.	1	0°	
103									102.85' - 103.4' 103.85' Horizontal Fractures. (mechanical?)	2	0°	
104									104.15' - Joint, 15°	2	0°	
105									104.25' - 109.9' - Dolomite becomes lighter in color, a med. to light gray, well laminated. Still no vugs.	2	15°	0°
106									104.4' Fracture along a stylolite.	1	5°	
107									105.45' - Joint, 5°	2	0°	
									105.7' Fracture along a stylolite.			
									106.3' Fracture along a stylolite.			
									107.05' - Irregular fracture (missing length of core?)	1		0°

GENERAL NOTES:	Total Depth <u>170.0'</u>
	ROCK Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%	HOLE NO. <u>1-6</u>

GROUND WATER OBSERVATION								Dupont JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>1-6</u> BORING OFFSET _____ SURFACE ELEVATION <u>568.6'</u> DATE STARTS <u>5/83</u> FINISH <u>9/24/83</u>		
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.								DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
108									108.0' - Fracture along a stylolite (50°) 108.2' - Horizontal Fracture (mechanical?). 108.7' - Horizontal Fracture (mechanical?).	1	50°	
109									109.7' and 109.9' - Fractures along stylolites.	2	0°	
110	Box 1								110.0' - Horizontal Fracture (mechanical?). 110.0' - 111.25' - Dolo has dark black streaks, well laminated, and several small gypsum pods.	2	0°	
111	Box 2								111.0' and 111.25' - Horizontal Fractures, coated w/ gypsum?	1	0°	
112	Run 8								112.25' - 117.05' - Dolo becomes med gray to med brown, w/ fine grained brown patches. Laminated stylolites. Occasional gypsum pods and black streaks.	2	0°	
113									Vugs - pin-hole to .05" vugs become very common from 113.1' to 115.7'. 112.25' Horizontal Fracture along a stylolite. 112.75' - 113.0' - Large gypsum concentration.	2	0°	
114									112.9' - Horizontal Fracture along gypsum seam. 113.5' - Large (.5") vug, partially filled w/ gypsum.	0	0°	
115									114.1' - Irregular Fracture. 115.4' - 115.8' - Concentration of gypsum. 115.6' - Horizontal Fracture.	1	0°	
116									116.15' - Horizontal Fracture.	1	0°	
117									117.05' - Horizontal Fracture along stylolites. 117.05' - 132.9' - The Dolo quickly becomes dark gray black, distinctly laminated, and containing very few, if any vugs.	3	0°	
118									117.55' 117.8' Horizontal Fractures. 118.45' Joint, 10° along a thick stylolite.	2	10°	
119									118.95' 119.25' - Horizontal Fractures.	1	0°	
120												
GENERAL NOTES:										Total Depth <u>170.0'</u> "ROCK" Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>1-6</u>		

GROUND WATER OBSERVATION								Depot		BORING NUMBER <u>1-6</u>		
At _____ Ft. at Completion								JOB <u>Niagara Plant</u> NO. <u>83C 2236</u>		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		SURFACE ELEVATION <u>568.6'</u>		
At _____ Ft. after _____ hrs.								OPERATOR _____		DATE START <u>5/5/83</u> FINISH <u>5/24/83</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
121									120.6' - 121.0' - Large, solid gypsum seam. 120.8' - Horizontal Fracture (mechanical ?)	1	0°	0°
122									121.7' 122.1' 122.5' 122.7' 123.15' 123.5' - Irregular fractures, most along stylolites.	1	0°	
123										2		
124									123.5' - 123.75' - Thick, solid gypsum seam. 124.25' 124.6' - Irregular Fractures (stylolites)	3		
125									125.2' - 125.3' - Thick, solid gypsum seam.	2		
126	Box 2 Box 3								125.8' - 132.9' - Tolo still dark gray black, well laminated. Vugs more common. Also get more swirling black streaks, some linear, shallow vugs. 125.7' Irregular Fracture along a stylolite. 126.0' Irregular Fracture; partial gypsum coat. 126.0' - 126.5' - contains vugs filled w/ black and some gypsum. 126.5' - Horizontal Fracture along gypsum seam. 126.5' - 126.7' - Large gypsum pod. 126.95' - Thin gypsum seam. (1.5'). 127.4' 127.65' 127.95' 128.1' 128.4' 128.7' 128.75' 129.1' Horizontal, irregular Fractures, generally along stylolites. Gypsum coat on 128.75' and 129.1'	1	0°	0°
127										2	0°	
128										3		
129	Run 9									4		
130			9.8'		15.1'				127.7' - Large gypsum concentration. 129.1' - 129.4' - Vertical Fracture. 129.4' - Horizontal Fracture: gypsum coat. 129.4' - 129.5' - Pebbles: broken core. 129.7' - Fracture (5") along a stylolite. 130.15' - 130.2' - Gypsum seam. 130.2' - Horizontal Fracture. 130.2' - 130.3' - Much darker, v. fine-gr. Dolo. 130.3' - 130.5' - Large gypsum seam. 130.6' - 130.85' - Several long connecting vugs; not deep. 130.9' - Horizontal Fracture. 131.0' - Joint, 15" 131.35' 131.55' 131.75' 132.2' 132.4' 132.65' Irregular Fractures.	6	5°	
131			15.4'		15.4'					2	0°	
132										4	15°	0°
133										3		
										1		
GENERAL NOTES:										Total Depth <u>120.0'</u>		
										"ROCK" Drilling _____		
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>1-6</u>		

GROUND WATER OBSERVATION								Depot		Boring Number		
At _____ Ft. at Completion								JOB <u>Negare Plant</u> NO. <u>83C2236</u>		<u>1-G</u>		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.6'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/5/83</u> FINISH <u>5/20/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
134									132.9' - 142.3' - Dolo becomes light to medium gray, somewhat laminated. Stylolites present. Small and medium sized (.05") vugs throughout. Less Fractured.	1	0°	
135									133.3' - Fracture along a stylolite. 134.0' - Horizontal Fracture 134.3' - 134.9' - Vertical seam w/ gypsum (core not broken).	2	0°	
136									135.6' - Horizontal Fracture, gypsum? coated.	1	0°	0°
137									136.3' - Fracture along stylolite (some of core missing above this)? 136.3' - 137.0' - Vertical seam.	2	0°	
138										0	0°	
139									138.1' - Horizontal Fracture. (mechanical)? 138.5' - Horizontal Fracture. "	2	0°	
140									139.2' - Horizontal Fracture. "	1	0°	0°
141									141.0' - Horizontal Fracture along stylolite. [most Fractures in Run 10 look mechanical]	0	0°	
142									142.3 - stylolite. 142.3 - 156.0' - med gray, poorly laminated Dolomite. Stylolites present. Small and med. vugs throughout, becoming large in places.	0		
143									142.75', 143.65', 144.1', 144.7', 145.35', 146.15' -	0		0°
144									1 - Horizontal breaks (mechanical)	0		
145										0		
146										0		

GENERAL NOTES:		Total Depth <u>170.6'</u>
1) Flaky Gypsum coating on core from 144.3' - 155.3'		'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%	HOLE NO. <u>1-G</u>
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GROUND WATER OBSERVATION								Dupont JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>1-G</u> BORING OFFSET _____ SURFACE ELEVATION <u>568.6'</u> DATE START <u>5/5/83</u> FINISH <u>5/24/83</u>		
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.								DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
147									146.5' - 149.1' - Vugs become relatively large. up to .3" diameter and deep. 146.8', 147.35' - Horizontal (mechanical) breaks.	0		
148									148.0' - Horizontal fracture along a stylolite. Partial gypsum coat. 148.2', 148.35' - Horizontal fracture along a stylolite.	0		0°
149										3	2	0°
150									150.5' - Horizontal fracture along a stylolite. Some gypsum.	0		0°
151									151.15' - Horizontal fracture.	1		0°
152										1		0°
153									153.1' - Horizontal fracture.	0		0°
154									154.0' - Horizontal fracture.	1		0°
155									154.6' - Horizontal fracture along a stylolite. 154.6' - 155.3' - Dolo. starts to contain small black patches - A spotted appearance. 155.0' - Horizontal fracture along a stylolite.	2	1	0°
156	Run 11 Box 5								156.0' - 163.0' - Dolo. quickly changes back to more thinly laminated, med gray color. Black spots are gone. Small thin black laminations also present. Stylolites rare. Vugs also rare.	0		0°
157			5.3'		6.3'					0		0°
158			6.3'		6.3'					0		0°
159									159.2' - Horizontal fracture along a stylolite. 159.25' - Horizontal fracture	0		0°
										2		0°
GENERAL NOTES:										Total Depth <u>170.0'</u>		
1) no gypsum "powder" on rock core.										'ROCK' Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>1-G</u>		

GROUND WATER OBSERVATION								Depot		BORING NUMBER <u>1-G</u>		
At _____ Ft. at Completion								JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		SURFACE ELEVATION <u>568.6'</u>		
At _____ Ft. after _____ hrs.								OPERATOR _____		DATE START <u>5/5/83</u> FINISH <u>5/24/83</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Joe Taylor</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
160									159.4' - Joint, 10°	3	0°	
161									161.15' - Horizontal Fracture. 161.4' - Irregular break.	0	0°	
162									162.2' - Irregular break. 162.3' - Joint, 30° 162.5' - Joint, 10° 162.6' - Joint, 10° 162.9' - Joint, 25°	5	0°	
163	Run 12								163.0' - 170' - Dolosha becomes v. dark gray to black. No streaky laminations as above. No vugs or apparent stylolites. Many fractures, mostly along bedding (mechanical?). 163.0', 163.1', 163.25', 163.45', 163.7', 163.8', 164.0', 164.25', 164.4' - Joints ranging from -5° - 10° angles.	6	0°	
164	Box 5								This stretch of Dolo is very dense and fine grained. Sometimes just dropping the core makes a fracture.	3	0°	
165									164.9', 165.0', 165.2', 165.45', 165.9', 166.1', 166.35', 166.8', 166.9', 167.2', 167.45', 167.85', 168.0', 168.25', 168.6', 169.25', 169.65', 169.7', 169.75' - Horizontal Fractures. Many may be mechanical.	4	0°	
166			0.9'		8.4'					4	0°	
167			8.4'		8.4'					4	0°	
168										3	0°	
169										3	0°	
170										4	0°	
171	Total	Depth			170'							

GENERAL NOTES:	Total Depth <u>170.0'</u>
	'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%	HOLE NO. <u>1-G</u>

GROUND WATER OBSERVATION						Report		BORING NUMBER <u>2-C</u>				
At _____ Ft. at Completion						JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						DRILLING RIG _____		SURFACE ELEVATION <u>570.1'</u>				
At _____ Ft. after _____ hrs.						OPERATOR _____		DATE START <u>4/2/83</u> FINISH _____				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>						
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
14	Top of		Rock		14.0'							
15												
16	n	c	a									
17									17.0' - 31.0' - med gray to dark gray black poorly laminated Dolomite w/ local variations in color. Vugs also vary in sections. Stylolites common.	2	0°	0°
18									17.0' - 18.0' - Large and small vugs common. Some vugs filled w/ black material and gypsum.	2	0°	
19	Run 1								17.3' - 17.9' - Horizontal Fractures along stylolites.			
20	Box 1								18.65' - Horizontal Fracture along a stylolite.			
21									18.8' - 19.8' - Large, linear, deep vugs common. (1' long). Have eaten away the rock at 18.9'.	3	20°	
22									19.2' - 19.4' - Fractures along stylolites.	2	0°	
23									19.8' - 20.3' - Rock becomes light gray - bleached.		0°	
24									20.2' - Joint, 20°	2	0°	
25									20.2' - 21.2' - Back to dark gray black color. Pin-hole vugs abundant. Granular appearance.	2	0°	
26									20.4' - 21.0' - Horizontal Fractures.			
27									21.2' - 23.0' - Vugs less abundant. Some small vugs filled w/ black material.	0		
28									23.0' - 26.0' - Pin-hole vugs abundant. Granular texture.	3	0°	0°
29									23.7' - Horizontal Fracture.		10°	
30									23.2' - 23.9' - Joint, 10°	0		
31										0		
32										0		
33										0		
34												
35												
36									26.0' - 27.2' - Ddo becomes finer gr., thinly laminated and lighter gray.			

GENERAL NOTES:		Total Depth <u>45.5'</u>
		'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>2-C</u>

GROUND WATER OBSERVATION								Report		BORING NUMBER <u>2-C</u>		
At _____ Ft. at Completion								JOB <u>Niagara Plant</u> NO. <u>832236</u>		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		SURFACE ELEVATION <u>570.1</u>		
At _____ Ft. after _____ hrs.								OPERATOR _____		DATE START <u>9/2/83</u> FINISH _____		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
27									contains some long, linear vugs from 26.4'-26.7' and from 27.0'-27.2', otherwise vug-free. 26.35'-26.45', 26.5', 26.65', 27.2' - Fractures.	4		0°
28									27.9'-28.1' - Another small, thinly laminated area as was 26.0'-27.2'. No vugs. Gypsum seam at 28.1'. Fractured at both ends. 28.4'-28.7' - Fracture along stylolites.	2	0°	
29									29.2'-30.2' - Concentration of small vugs, some up to .1" diameter. Also some bleached areas.	3	0°	
30									29.8' - Fracture.	1	0°	
31									30.2' - Horizontal Fracture	1	0°	
32									31.5' - 38.0' - Dark brown to yellow brown laminated dolomite. Small vugs common in 2 intervals: 1) 31.5' - 32.4'; 2) 34.0' - 34.85'. Otherwise, vugs are rare.	0	25°	0°
33									31.6' - Large (1") gypsum pod. 32.4' - Joint, 25°	1	0°	
34									33.05' - Horizontal Fracture.	1		
35										0		
36									36.0' - Horizontal Fracture. 36.05' - Horizontal Fracture.	0	0°	
37									37.0' and 37.1' - Irregular Fracture along a stylolite and gypsum seam.	2	0°	
38									37.35' - Horizontal Fracture along a stylolite.	4	0°	
39									38.0' - Horizontal Fracture along gypsum pods. Some gypsum is discolored to an amber color.	0	0°	
39									38.0' - 38.3' - Has connected vugs filled w/ gypsum. 38.7' - 39.7' - lighter color, relatively vuggy, some bleached areas w/ dirty (comb) gypsum.	0		

GENERAL NOTES:										Total Depth <u>45.5'</u>	
1) Partial loss of circulation at 38'										"ROCK" Drilling _____	
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>2-C</u>	



GROUND WATER OBSERVATION		Report		JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>2-C</u>	
At _____ Ft. at Completion		DRILLING RIG _____		BORING OFFSET _____		SURFACE ELEVATION <u>570.1'</u>	
At _____ Ft. after _____ hrs.		OPERATOR _____		DATE START <u>12/2/83</u> FINISH _____			
At _____ Ft. after _____ hrs.		INSPECTOR <u>Ted Taylor</u>					

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
40									37.75' - Irregular Fracture along a stylolite and .3" thick gypsum seam. Gypsum streaked w/ black material. Gypsum pod continues to 39.9'	1		0°
41									39.9' - 45.5' - Dark gray brown to gray black laminated dolomite. Pin-hole vugs common and concentrated in certain areas.	2	30°	
42									40.3' - Fracture along a stylolite.	0	10°	
									40.55' - Joint along a stylolite and gypsum pod (30°)			
									41.5' - 41.7' - several large gypsum pods.	2	10°	
									42.0' - Joint (10°) along a stylolite.			
									42.6' - Joint (10°) along a gypsum seam.			
43												
44									43.6' - 43.7' - Concentration of large, linear vugs (-3" long). "Punky" looking.	1		0°
									43.7' - Fracture along vugs.			
									44.0' - 44.1' - Thin concentration of very small vugs.	1		
45									44.55' - Irregular Fracture along a stylolite.			
									45.0', 45.1', 45.45' - Irregular Fractures.	3		
									45.0' - thin gypsum coat.			
46	Total	Depth			45.5'							

GENERAL NOTES:

Total Depth 45.5'

'ROCK' Drilling _____

Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 2-C

GROUND WATER OBSERVATION								<u>Dupont</u> JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>3-B</u> BORING OFFSET _____ SURFACE ELEVATION <u>569.0'</u> DATE STARTS <u>5/23/83</u> FINISH <u>7/12/83</u>		
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.								DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
11	Top of Rock						11.6'					
12												
13												
14												
15									15.0' - 17.2' - med gray to dark gray brown somewhat laminated dolomite. Vugs rare and small when present. Stylolites present.	0		0°
16									16.05' - Joint, 15° along a gypsum pod.		150	
17									16.05' - 16.5' - High concentration of white gypsum pods (.5" diameter).	1		
18									17.2' - 22.8' - med gray to med gray brown dolomite. Not laminated. Stylolites present. Some minor concentrations of small vugs but generally very few vugs.	0		
19	Run 1 Box 1									0		
20										0		
21										0		0°
22										0		
23									22.8' - 24.7' - Dolo becomes a lighter gray, laminated, and has swirling stylolites. med. and large, linear vugs common.	1		
									22.9', 23.05' - Breaks due to vugs. (also 23.25')	2		
GENERAL NOTES:										Total Depth <u>26.1'</u> 'ROCK' Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>3-B</u>		

GROUND WATER OBSERVATION		JOB <u>Report</u>		BORING NUMBER <u>3-B</u>	
At _____ Ft. at Completion		JOB <u>Niagara Plant</u> NO. <u>83CE236</u>		BORING OFFSET _____	
At _____ Ft. after _____ hrs.		DRILLING RIG _____		SURFACE ELEVATION <u>569.0'</u>	
At _____ Ft. after _____ hrs.		OPERATOR _____		DATE START <u>5/23/83</u> FINISH <u>7/12/83</u>	
At _____ Ft. after _____ hrs.		INSPECTOR <u>Ted Taylor</u>			

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
24								✓ ↑	23.4' - Joint, 20°	3	20°	0°
									23.0' - 23.5' - Many Large (.75") linear, deep vugs. "Punky" looking dolomite			
									24.1' - 24.6' - Another area of large, connecting vugs.	2	0°	
25								✓	24.5' - Horizontal Fracture		0°	
									24.7' - 26.0' - med. gray, poorly laminated Dolomite. Vugs absent.			
26									24.65' - Horizontal break.			
27	Total Depth		26.1'									

GENERAL NOTES:

Total Depth 26.1'
 "ROCK" Drilling _____

GROUND WATER OBSERVATION						Dupont		BORING NUMBER <u>4-C</u>				
At _____ Ft. at Completion						JOB <u>Niagara Plant</u> NO. <u>83c2236</u>		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						DRILLING RIG _____		SURFACE ELEVATION <u>570.0'</u>				
At _____ Ft. after _____ hrs.						OPERATOR _____		DATE START <u>5/24/83</u> FINISH <u>6/29/83</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>						
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
13	Top		of		Rock		13.6'					
14												
15												
16												
17												
18												
19												
20	no		sample									
21												
22												
23												
24												
25												

GENERAL NOTES:										Total Depth <u>46.0'</u>	
										'ROCK' Drilling _____	
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>4-C</u>	

GROUND WATER OBSERVATION						JOB <u>Dpont</u> <u>Niagara Plant</u> NO. <u>8302236</u>		BORING NUMBER <u>4-C</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>570.0'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/21/83</u> FINISH <u>6/29/83</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												

no sample

?

Run 1 Box

30.0' - 40.8' - med gray to gray brown, poorly laminated Dolomite. Becomes a lighter gray in areas. Stylolites common. Pin-hole vugs abundant. Become larger in 2 areas. Well fractured, usually along stylolites.

Horizontal Fractures at:
30.15', 30.35', 31.95', 32.0', 32.05', 32.4', 32.7', 32.8', 33.05', 33.15', 33.2', 33.25', 33.4', 33.8', 34.0', 34.15', 34.25', 34.55', 34.7'.

Joints at: 30.65' (15°), 30.9' (30°).

32.3' - 34.0' - Abundant vugs .05" and smaller.

36.8' - Joint, 15°

37.15' - 37.5' - Quite vuggy. Connected vugs have broken the rock at 37.4'.

37.2' - Horizontal Fracture along a stylolite.

37.85' - Joint, 10° along a stylolite. Partial gypsum coat.

43%

100%

2.6' 8.3'

8.3' 8.3'

4

1

6

6

5

0

1

3

0°

0°

10°

15°

10°

GENERAL NOTES:

Total Depth 460'

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-C

GROUND WATER OBSERVATION						JOB <u>Depot Niagara Plant NO. 83C2236</u>		BORING NUMBER <u>4-C</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>570.0'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/24/83</u> FINISH <u>6/29/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
39									30.0' - 40.8' - med brown to gray brown, poorly laminated Dolomite. Vugs .1" diam; present but not abundant. Fractured every 3" to 4". Stylolites present.	2	0°	0°
40								Horizontal Fractures (along stylolites): 38.5', 39.1', 39.4', 39.7', 40.0', 40.1', 40.4', 40.5', 40.8'.	4	0°		
41								40.8' - 42.6' - Dolo. distinctly darker; Dark Brown w/ black streaks. Vugs still present but rare.	5	0°		
42								Horizontal Fractures at: 41.2', 41.5', 42.0', 42.4', 42.6'.	2	0°		
43								42.6' - 45.0' - Dolo. becomes med. brown to gray brown, and relatively vuggy. Connecting vugs have formed fractures in some places. Large patches of dirty white gypsum abundant. Dolo looks "punky."	4	0°		
44								42.8' - Gypsum seam and horizontal fracture.	3	0°		
45								43.0' - Fracture from vugs.	5	0°		
46								43.3', 43.8', 44.2', 44.4', 44.6', 44.75', 45.0' - Horizontal Fractures.	3	0°		
47								44.4' - 45.0' - Vertical Fracture.	1	0°		
48								45.0' - (46.8'); med gray brown, laminated Dolo. Not as vuggy - Abundant pin-hole vugs, some as large as .05" but rare.				
49								45.15', 45.3', 45.5', 46.2' - Horizontal Fractures.				
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
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89												
90												
91												
92												
93												
94												
95												
96												
97												
98												
99												
100												
GENERAL NOTES:										Total Depth <u>46.0'</u>		
1) Too much core.										'ROCK' Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>4-C</u>		

GROUND WATER OBSERVATION							JOB <u>DUPONT-NIAGARA PLANT NO. R3C2236</u>			BORING NUMBER <u>4-J</u>		
At _____ Ft. at Completion							DRILLING RIG _____			BORING OFFSET _____		
At _____ Ft. after _____ hrs.							OPERATOR _____			SURFACE ELEVATION _____		
At _____ Ft. after _____ hrs.							INSPECTOR _____			DATE START <u>11-3-83</u> FINISH _____		
At _____ Ft. after _____ hrs.							Logged by <u>REZ 11/22/83</u>					
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
SOIL DRILLING TO 15.4'												
* SEE SOIL LOGS *												
16									15.6' - 10° Dip joint - WEATHERED, CARBONACEOUS	2		
									15.8' - 20° Dip joint, BLACK, CARBONACEOUS			
									16.1 - 30° Dip joint, BLACK, CARBONACEOUS	6		
17									16.3 - 30° Dip joint BLACK, CARBONACEOUS			
									16.5 - 40° & 40° opposing joint, BLACK, CARBONACEOUS			
									16.6 - 10° Dip joint - BLACK, CARBONACEOUS	2		
18									16.8 - 10° Dip joint - BLACK, CARBONACEOUS			
									17.3 - Horizontal joint, BLACK, CARBONACEOUS	2		
19									17.7 - Irregular joint, BLACK CARBONACEOUS			
									18.5 - Horizontal joint - CARBONACEOUS, BLACK			
									18.8 - 20° Dip joint.	2+		
20									19.8 - Irregular fracture - BLACK CARBONACEOUS			
									20.0 - Irregular fracture BLACK, CARBONACEOUS			
21									20.3 - 5° dip joint - BLACK, CARBONACEOUS	4		
									20.5 - 20° dip joint - Gypsum			
22									20.7 - 20° dip joint - Gypsum			
									21.1 - Horizontal joint - Gypsum	5		
23									21.4 - Horizontal joint - Gypsum			
									21.7 - Irregular joint - Gypsum	3		
24									21.9 - Horizontal joint - Gypsum			
									21.95 - Irregular joint - Gypsum			
25									22.1 - Horizontal joint - Gypsum	2		
									22.4 - Horizontal joint - Gypsum			
26									23.6 - 20° dip joint - Gypsum			
									23.75 - Irregular joint -	3		
									24.3 - Horizontal joint -			
									24.65 - Horizontal joint - Gypsum			
									24.8 - 20° dip joint - Gypsum	0		
									26.6 - Irregular joint - Gypsum			
									26.6 - 26.8, Vertical fracture @ 90° ±			
									26.8 - 40° dip joint			
GENERAL NOTES:										Total Depth _____		
LIGHT + DARK GREY DOLOMITE - THIN bedded, fine grained, & numerous black carbonaceous joints or partings. Numerous gypsum interbeds and small (< 1/4") irregular shaped gypsum inclusions. Some depths are pitted due to the solution of gypsum from the rock.										"ROCK" Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>4-J</u>		

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZBORING NUMBER 4-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		R Q D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
27									27.1 20° dip joint - BLACK, CARBONACEOUS	5+		
28	Box 1								28.5-20° Dip joint - BLACK, CARBONACEOUS	1		
29	Box 2								28.2-10° irregular joint - BLACK, CARBONACEOUS	8+		
30									28.2-28.3 badly fractured - " "			
31									28.4 10° Dip joint - " "			
32									28.4-29.1 - 80° joint - FRESH	4		
33									28.5 - irregular joint - BLACK, CARBONACEOUS	1		
34									28.9 - 10° Dip joint - BLACK, CARBONACEOUS			
35									29.2 - horizontal joint - GYPSUM	1		
36									29.3 horizontal joint - BLACK, CARBONACEOUS	1		
37									29.6 - irregular joint - " "			
38									30.0 - irregular joint - GYPSUM	1		
39									30.1 - irregular joint - BLACK, CARBONACEOUS			
40									31.2 - irregular joint - " "	1		
41									32.4 - horizontal joint - GYPSUM			
42									33.1 - nearly horizontal joint - GYPSUM	3		
43									33.1-33.6 vertical fracture			
44									34.0 - horizontal joint	6+		
45									34.1 - 10° dip joint			
46									34.4 10° dip joint			
47									35.0-20° dip joint - BLACK, CARBONACEOUS	3		
48									35.4 - irregular fracture - PITTED	1		
49									35.45 - irregular fracture - PITTED			
50									35.65 - irregular fracture - BLACK, CARBONACEOUS, PITTED			
51									36.3 - horizontal joint	0		
52												
53									38.1 - 20° dip joint	2		
54									38.4 - irregular joint			

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DuPont Plant Site NO. 8362236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

BORING NUMBER 4-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
40									39.7 - horizontal joint - BLACK, CARBONACEOUS	2		
41									39.9 - irregular joint - BLACK, CARBONACEOUS, Gypsum			
									40.4 - irregular fracture			
									40.4 - 40.55 - 90° fracture	5+		
									40.55 - horizontal joint			
									40.75 - irregular joint			
									40.9 & 40.95 Horizontal joint	4		
									41.1 Horizontal joint			
									41.5 - irregular joint - PITTED			
									41.6 - 10° dip joint - PITTED	5+		
									41.9 - irregular joint - BLACK, CARBONACEOUS			
43	Box 2											
44	Box 3								42.1 - 5° dip joint - PITTED			
									42.4 - 42.6 - multiple fractures	5+		
									42.65 - irregular joint			
									42.8 - horizontal joint - BLACK, CARBONACEOUS			
									42.8 - 43.0 - badly fractured	0		
									43.0 - 43.2 - badly fractured, PITTED			
									43.3 - 45.4 - badly fractured - BLACK, CARBONACEOUS	4+		
									45.4 - 20° dip joint			
									46.0 - horizontal joint			
									47.5 - horizontal joint - BLACK, CARBONACEOUS	0		
									48.0 - horizontal joint - Gypsum			
									48.25 - 48.85 - badly fractured - BLACK, CARBONACEOUS	2		
									48.85 - horizontal joint			
									49.1 - 49.25 - badly fractured - BLACK, CARBONACEOUS	5+		
									49.5 - 20° dip joint - BLACK, CARBONACEOUS			
									50.0 - irregular fracture	4+		
									50.7 - irregular fracture - BLACK, CARBONACEOUS			
									51.8 - 10° dip joint - BLACK, CARBONACEOUS			
									52.7 - 20° dip joint - BLACK, CARBONACEOUS	1		
									DARK GREY DOLOMITE - thin bedded, fine grained occl. gypsum blebs, and hairline shale units, Numerous carbonaceous partings			

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT PLANT SITE NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

BORING NUMBER 4-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
53									54.0 - irregular fracture	2		
54									54.4 - irregular fracture - BLACK, CARBONACEOUS	0		
55									54.7 - 10° dip joint - BLACK, CARBONACEOUS	3		
56									55.3 - irregular joint - BLACK, CARBONACEOUS	1		
57									57.0 - 10° dip joint	0		
58	Box 3								57.5 - irregular fracture	2		
59	Box 4								59.3' - irregular fracture - black, smooth - SHALE	0		
60									60.9 - irregular fracture	1		
61									... dispersed gypsum - very small xls.	0		
62									62.4 - irregular joint - BLACK, CARBONACEOUS	1		
63	Run 4								63.6 - irregular fracture	1		
64	58.0'	14.1'			15.0'					1		
65	TO									1		
	73.0'	94%			100%				65.0 - 20° dip joint - BLACK, CARBONACEOUS			

GENERAL NOTES:

Total Depth _____

"ROCK" Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DuPont Plant Site NO. 93C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

BORING NUMBER 4-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
66									65.9 - 66.2 - 3 approx horizontal fractures - BLACK, CARBONACEOUS	2		
67									66.7 - 10° dip joint	3		
68									67.9 - irregular fracture	1		
69									LIGHT + DARK GREY DOLOMITE - numerous thin gypsum laminae, irregular shaped black laminae thick units	0		
70										0		
71									70.9 - 5° dip joint - BLACK, CARBONACEOUS	1		
72									72.0 - 5° dip joint - GYPSUM	1		
									72.4 - 5° dip joint - GYPSUM			
									72.5 - 5° dip joint - BLACK, CARBONACEOUS			
									72.6 - 5° dip joint - " "	5		
73	Box 4								72.65 - 5° dip joint " "			
	Box 5								72.7 - 5° dip joint " "			
74									73.1 - irregular fracture	2		
									73.4 - 20° dip joint			
									73.9 - 5° dip joint - GYPSUM	1		
75	Run 5								74.6 - irregular fracture - GYPSUM			
									74.7 - 75.6 - 20° fracture			
									75.1 - horizontal joint - GYPSUM	3		
76	73.0'		13.5'		13.8'				75.4 - horizontal joint - GYPSUM			
									75.9 - irregular fracture - GYPSUM			
77	TO		90%		92%				77.1 - horizontal joint - BLACK, CARBONACEOUS	1		
78	88.0'								78.7 - irregular fracture - GYPSUM	1		

GENERAL NOTES:

Total Depth _____
 'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DuPont Plant Site NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

BORING NUMBER 4-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
79									79.1 - horizontal joint - BLACK, CARBONACEOUS	1		
80									80.1 - 25° dip joint - BLACK, CARBONACEOUS	1		
81	Run 5								81.3 - horizontal joint	1		
82	73.0		13.5'		13.8'				81.8 - 25° dip joint - BLACK, CARBONACEOUS	2		
83	to		90%		92%				82.3 - irregular fracture " "	1		
84	88.0								83.1 - 5° dip joint - BLACK, CARBONACEOUS	0		
85									85.4 - horizontal joint - BLACK, CARBONACEOUS	0		
86									86.7 - horizontal joint - GYPSUM	1		
87									86.8 - 5° dip joint	2		
88	Box 5								GRAY DOLOMITE - f. grained, thin bedding, numerous shaly interbeds, joints usual along shale, ool. gypsum blebs and iron laminar.			
89	Box 6								88.1 - irregular bedding fracture, smooth, BLACK, SHALE	3		
90	Run 6								88.2 - irregular fracture, smooth, BLACK, SHALE	1		
91									88.7 - 5° dip joint - smooth, BLACK, SHALE			
									90.0 - irregular fracture - smooth, BLACK, SHALE			
									90.3 - irregular joint fracture	1		
									91.4 - irregular joint fracture - smooth, BLACK, SHALE			

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-J

GROUND WATER OBSERVATION							JOB <u>DePort Plant Site</u> NO. <u>B3C2236</u>		BORING NUMBER <u>4-J</u>			
At _____ Ft. at Completion							DRILLING RIG _____		BORING OFFSET _____			
At _____ Ft. after _____ hrs.							OPERATOR _____		SURFACE ELEVATION _____			
At _____ Ft. after _____ hrs.							INSPECTOR _____		DATE START _____ FINISH _____			
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
92	Box 6	88.0	13.0'	14.9'	87%	94%	Dark Grey Dolomite	91.7 - horizontal joint - smooth, black, shale	2			
93								92.0 - irregular joint - " " "	1			
94								92.5 - irregular joint - " " "				
95								93.4 - irregular joint - " " "	3			
96								93.6 - irregular joint - " " "				
97	Box 7	103.0					93.9 - 5° dip joint - " " "					
98							94.5 - irregular fracture - gypsum	1				
99							95.0 - 20° dip joint					
100							95.2 - horizontal joint	5				
101							95.4 - horizontal joint - smooth, black, shale					
102	Box 6					Dark Grey Dolomite	95.65 - 95.70 badly fractured - smooth, black, shale	2				
103							95.9 - 20° dip joint - smooth, black, shale					
104							96.1 - 20° dip joint - " " "					
105							96.9 - irregular fracture - gypsum + shale	1				
106							97.6 - 97.65 2 - horizontal fractures - black, carbonaceous gypsum					
107	Box 7					Light Grey Dolomite	98.0 - horizontal joint - black, carbonaceous	3				
108							98.4 - irregular fracture - gypsum					
109							98.6 - irregular fracture - black, smooth, shale	1				
110							99.0 - horizontal joint					
111							101.5 - irregular fracture - black, smooth, shale	1				
112	Box 6						102.1 - horizontal fracture	2				
113							102.0 - 102.1 - 40° fracture slickensides - shale					
114							103.0 - slickensides matches above run.	0				

GENERAL NOTES:

Total Depth _____
"ROCK" Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DuPont Plant site NO. 9362236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

BORING NUMBER 4-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
105									105.1 - 20° FRACTURE	0		
106										1		
107										0		
108	Run?									0		
109										0		
110	103.0	14.5'			15.0'				109.1 - horizontal fracture - BLACK, CARBONACEOUS	1		
111	TO									0		
112	119.0	97%			100%					0		
113										0		
114									112.7 - 10° dip joint - BLACK, CARBONACEOUS	1		
115									113.75 - irregular fracture - BLACK, CARBONACEOUS	1		
116									114.25 - irregular fracture - BLACK, CARBONACEOUS	1		
117									115.1 - irregular dip joint - BLACK, smooth, sharp	3		
									115.15 - ditto			
									115.3 - ditto			

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion

At _____ Ft. after _____ hrs.

At _____ Ft. after _____ hrs.

At _____ Ft. after _____ hrs.

JOB DUPONT-PLANT SITE NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

BORING NUMBER 4-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
118	Box 7								117.1 - irregular fracture - smooth, black, shale	2		
	Box 8								118.0 - irregular fracture	0		
119									118.9 - Gypsum BUGS 1/2" x 1"	0		
120									LIGHT GRAY DOLOMITE - wavy bedding, (no horiz. bedding), irregular shaped thin black laminae 6. grained.	0		
121	Run 8								120.9 - irregular fracture - gypsum	1		
122									121.5 - irregular fracture (horizontal) - Gypsum	2		
123	118.0'	13.3'			15.0'				121.9 - horizontal fracture - smooth, black, shale	1		
124	to	89.9.			100%				122.9 - irregular fracture " " "	1		
125	133.0'								123.6 - irregular fracture " " "	2		
126									123.9 - 5° dip joint " " "	0		
127									125.5 - 20° dip joint " " "	4		
128									125.7 - horizontal joint " " "	0		
129									125.7 - 125.8 badly fractured " " "	1		
130									125.8 - 10° dip joint " " "	0		
									127.3 - 10° dip irregular joint " " "	1		
									128.0 - 5° dip joint " " "	1		
									... Numerous thin shale interbeds			
									129.5 - irregular fracture " " "	1		

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-PLANT SITE NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

BORING NUMBER 4-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
131									130.4 - 20° dip joint - smooth, black, shale 130.6 - 10° dip joint " " " 130.9 - irregular fracture " " "	3		
132									131.5 - 5° dip joint " " " 131.6 - horizontal joint - Gypsum 131.8 - irregular joint smooth, black, shale 132.1 - 5° dip joint " " " 132.4 - 40° dip joint " " " 132.8 - 5° dip joint " " "	3		
133	Box 8								133.1 - horizontal joint - Gypsum 133.3 - 20° dip joint - smooth, black, shale 133.5 - horizontal joint " " " 134.0 - 20° dip joint " " " 134.3 - 20° dip joint " " " 134.7 - 5° dip joint " " " 135.0 - irregular horizontal joint " " " 135.7 - uneven horizontal joint " " " 135.9 - uneven 5° joint " " " 136.4 - 10° dip joint " " " 136.8 - horizontal joint " " " 137.0 - irregular fracture " " " 137.3 - uneven horizontal fracture " " " 137.6 - uneven horizontal fracture " " " 137.6 - 138.5 - 80° fracture - fresh surface - p. grained	4		
134	Box 9											
135												
136												
137	Run 9											
138												
139	133.0											
140	to											
141	148.0											
142												
143												

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

GROUND WATER OBSERVATION						JOB <u>DUPONT-NIAGARA PLANT NO. 83C2236</u>		BORING NUMBER <u>4-J</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION _____				
At _____ Ft. after _____ hrs.						INSPECTOR _____		DATE START _____ FINISH _____				
DEPTH	CORE RUN		RQ.D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
144	Run 9								143.4 - horizontal fracture SMOOTH, BLACK, SHALE	2		
145	133.0'		12.1'		13.0'				143.7 - horizontal fracture " " "			
	To		81%		100%				144.1 - 10° dip fracture " " "	2		
146	148.0'								144.4 - 20° fracture " " "			
147									145.0 - irregular horizontal fracture " " "	2		
									145.5 - horizontal fracture " " "			
148	Box 9								146.4 - 10° dip joint " " "	3		
	Box 10								146.7 - horizontal fracture " " "			
149									147.0 - irregular horizontal fracture - BLACK, CARBONACEOUS	1		
150									147.9 - horizontal fracture - SMOOTH, BLACK, SHALE			
151									148.3 - irregular fracture - SMOOTH, BLACK, SHALE			
152	Run 10								150.5 - irregular horizontal fracture - BLACK CARBONACEOUS	0		
153	148.0'								LIGHT GRAY DOLOMITE - f. grained, thin bedded, occ. black carbonaceous partings, no shale interbeds	0		
154	To		14.3'		15.0'					0		
155	163.0'		95%		100%					0		
156									155.9 - horizontal joint - BLACK, CARBONACEOUS	1		

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-J



GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

BORING NUMBER 4-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
157	Run 10	148.0'	14.3'	95%	15.0'	100%	LIGHT GREY DOLomite	156.6 - 10° dip joint - BLACK, CARBONACEOUS	1			
158								157.6 - 20° dip joint - BLACK, CARBONACEOUS	1			
159								158.4 - horizontal joint - BLACK, CARBONACEOUS	2			
160								158.8 - 10° dip joint - Gypsum				
161	Box 10	163.0'	14.3'	95%	15.0'	100%	DARK GREY SHALE DOLomite	159.5 - 10° dip joint - SMOOTH, GREY, SHALE	1			
162								161.1 - 10° irregular dip joint - SMOOTH, GREY, SHALE	0			
163								162.0 - irregular horizontal joint, SMOOTH, GREY SHALE	1			
164								162.9 - 20° dip joint SMOOTH, BLACK, SHALE	2			
165	Box 11	163.0'	14.3'	95%	15.0'	100%	DARK GREY SHALE	163.1 - 20° dip joint " " "				
166								163.3 - horizontal fracture " " "	5			
167								163.4 - horizontal fracture " " "				
168								163.5 - irregular fracture " " "				
169	Run 11	173.0'	9.6	96%	10.0	100%	BLACK SHALE	163.7 - 20° dip joint " " "	0			
170								165.2 - 5° dip joint " " "	1			
171								166.6 - 20° dip joint " " "	1			
172								167.6 - 10° dip joint " " "	1			
173	Box 12	173.0'	9.6	96%	10.0	100%	BLACK SHALE	168.5 - irregular fracture	2			
174								168.9 - horizontal fracture				

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____



GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT - NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

BORING NUMBER 4-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
170	Run 11								169.5 - horizontal joint	1		
171	163.0								170.3 - horizontal joint 170.6 - horizontal joint	2		
172	70								171.7 - horizontal joint	1		
173	173.0								172.5 - horizontal joint	1		
									E.O.B. 173.0'			

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 4-J

GROUND WATER OBSERVATION								<u>Dupont</u> JOB <u>Niagara Plant NO. 83C2236</u>		BORING NUMBER <u>5-B</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>569.4'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/24/83</u> FINISH <u>6/30/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
13	Top of		Rock		13'							
14												
15	No		sample									
16												
17									17.0'-26.0' - med gray, laminated to poorly laminated Dolomite. Stylolites present but not common. Pin-hole vugs usually abundant throughout core.	1		0°
18									17.0'-18.0' - Vugs abundant and large. Eating away at core.	1		
19									17.5' - Fracture (mechanical?)	0		
20									18.0' - Fracture from vugs?	1		
21	Run 1 Box 1								19.9' - Fracture along a stylolite	0		
22			7.0'		9.0'					0		
23			9.0'		9.0'				22.35' - Horizontal Fracture.	0		
24									22.5' - 24.5' - Dolo becomes well laminated, lighter gray, and very vuggy.	2	30°	0°
25									22.95' - Joint, 30° along stylolite.	4	30°	
									23.05' - Joint, 30° along stylolite.	5		
			78%		100%				23.35', 23.45' - Fractures (from vugs?)			
									23.8', 23.95' - Horizontal Fractures.	2		
									24.35', 24.6' - Horizontal Fractures	0		

GENERAL NOTES:		Total Depth <u>26.0'</u>
		'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>5-B</u>



GROUND WATER OBSERVATION At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.								Dupont JOB <u>Niagara Plant</u> <u>NO. 83C 2236</u> DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>				BORING NUMBER <u>5-B</u> BORING OFFSET _____ SURFACE ELEVATION _____ DATE START <u>5/24/83</u> FINISH <u>6/24/83</u>			
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED			
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP			
26									25.7, 25.9, Horizontal Fractures.	2		0°			
27	Total		Depth		26'										
GENERAL NOTES: Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										Total Depth <u>26.0'</u> "ROCK" Drilling _____ HOLE NO. <u>5-B</u>					

GROUND WATER OBSERVATION						<u>Dupont</u> JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>5 - CD (92-50)</u> <u>5 - D (50-60)</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>569.4'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>		DATE START <u>10/2/83</u> FINISH <u>10/4/83</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
13	Top	of			Rock		13.0'					
42	n	c			A				42.0' - 50.0' - Dark gray brown to yellowish brown, well laminated Dolomite. Stylolites present. Vugs present in certain areas.	3	0°	0°
43									42.4' - 42.6' - Large, deep vugs.			
44									42.55' - Horizontal Fracture, and 42.75'.			
45	Run 1								42.95' - Joint, 15° (stylolite).			
46	Box 1								43.4' - Fracture.	4		
47									43.8', 43.95', 44.2', 44.3' - Fractures. Pebbles.			
48									44.7' - Fracture (does not fit together).	3		
49									45.9' - Fracture w/ gypsum coat.	1	0°	0°
50									47.3' - Large gypsum pod.	0		
51									47.3', 47.4' - Fractures w/ gypsum coats.	2		
52									47.65' to 47.9' - Large gypsum pod.	0		
53									47.6' - 48.8' - Dolo. becomes bleached and vuggy. Many gypsum pods and dirty combs (fossils).	0		
54									49.75' - Horizontal Fracture.	1	0°	
55									50.0' - 60.0' - Same dark gray brown laminated Dolomite.	1	0°	
56									50.4' - Horizontal Fracture.	1	0°	
57									51.35' - Horizontal Fracture, edge of gypsum pod.	0		
58									51.4' - 7" gypsum pod.	1		0°
59									51.9' - Fracture, along a stylolite.	1		
60									52.1' - 52.2' - Broken pebbles.	5		
61									52.35' - Fracture along a stylolite.	1		
62									52.6' - Horizontal Fracture.	1		
63									52.25' - Fracture along stylolite: some gypsum	1		

GENERAL NOTES: 1) 100% water loss at 44' 1" void at 44'		Total Depth <u>60'</u> "ROCK" Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>5-CD</u> <u>5-D</u>

GROUND WATER OBSERVATION At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.						JOB <u>Dupont Niagara Plant</u> NO. <u>83C2236</u> DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Jed Taylor</u>				BORING NUMBER <u>5-CD</u> <u>5-D</u> BORING OFFSET _____ SURFACE ELEVATION <u>569.4'</u> DATE START <u>12/18/83</u> FINISH <u>12/11/83</u>			
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DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
54									53.65' 54.0' - Fractures along stylolites -	2		0°
55									54.25' 54.6' 54.8' - Irregular fractures. (Do not fit together)	4		
56									55.0' 55.5' - Fractures that do not fit together.	2		0°
57									56.1' - Irregular Fracture.	1		0°
58									57.3' - Horizontal Fracture.	1		0°
59									58.5' 58.75' 58.9' - Irregular Fractures.	3		0°
60												
61												
	Total	Depth	60'									

GENERAL NOTES: 1) lost 100% Circulation at 55'		Total Depth <u>60'</u> 'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>5-CD</u> <u>5-D</u>

GROUND WATER OBSERVATION						JOB <u>Dupont Niagara Plant NO. 83C226</u>		BORING NUMBER <u>S-F</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>569.4'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>		DATE START <u>10/1/83</u> FINISH <u>10/2/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
13	Top		of		Rock		13'					
14												
15	N		C		A							
16												
17									17.0' - 32.0' - Dark gray brown to yellowish brown, laminated dolomite. Vugs vary. Stylolites present.	3	0°	
18									17.8' - Large gypsum pod.			
19									17.0' - 18.3' - Pin-hole vugs abundant. Granular texture. Well fractured.	2	0°	
20	Run 1								Horizontal fractures at: 17.3', 17.45', 17.55', 17.7', 17.8', 17.85', 18.0', 18.2'. All but 18.2' partially coated w/ gypsum.	3	0°	
21	Box 1								18.3' - 22.4' - vugs much less common.	0		
22	17 to 32'		11.2'		15.0'				19.5', 19.75' - Horizontal fractures.	0		
23			15.0'		15.0'				19.95' - Joint, 20°	0		
24									22.3' - Horizontal fracture along a stylolite	0		
25									22.3' - 23.75' - Dolo. lighter in color; more thinly laminated. Many long linear vugs. some over 1" long.	3	35°	
			75%		100%				22.6' - Joint, 35°	3		
									22.8', 23.1', 23.5', 23.75' - Fractures, along vugs.	3		
									23.75' - 32.0' - Darker, laminated, dolo. Many small pin-hole vugs; only a few large vugs near 25.6'.	0		
									25.4' - 25.7' - Large vugs fracturing rock.			

GENERAL NOTES:		Total Depth <u>96.0'</u>
1) 100% water loss at 25' (25.6'?)		'ROCK' Drilling _____
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>S-F</u>

GROUND WATER OBSERVATION								JOB <u>Dupont Niagara Plant</u> NO. _____		BORING NUMBER <u>S-F</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>569.4'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>10/1/83</u> FINISH <u>10/2/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
26									26.4' - Gypsum pod. (-6").	3		0°
27									27.7' - Fracture along a stylolite.	0		
28									28.2' - Fracture along a stylolite.	1	0°	
29									29.2' - Fracture along a stylolite.	0		
30									29.9' - Fracture along a stylolite	2		
31									30.0' and 30.2' - Large gypsum pods.	0		
32									30.9' - Large gypsum pod.	0		
33									32.0' - 47.0' - same dark gray brown to yellowish brown, laminated Dol as above. Vugs not abundant except in places. Stylolites present.	0		0°
34									32.0' - 33.7' - Pin-hole vugs abundant	0		
35									33.7' - 33.9' - Zone of vugs - 1" large.	0		
36									34.25', 34.4' - Irregular Fracture along stylolites.	2		
37									35.1' - Fracture along a stylolite.	2		
38									35.1' - 35.5' - Zone of several vugs .1" large.	4	0°	
									35.5' - Fracture from connecting vugs.	4		
									35.65' - 35.7' - Horizontal Fractures.	4		
									36.0', 36.1', 36.2', 36.25' - Fractures along stylolites.	0		0°
										0		
										0		

GENERAL NOTES:		Total Depth <u>96.0'</u>
1) Void at 44.5'		'ROCK' Drilling _____
2) Void at 44.75'		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>S-F</u>



GROUND WATER OBSERVATION								JOB <u>REPORT</u>		BORING NUMBER <u>5-F</u>		
At _____ Ft. at Completion								JOB <u>Ningara Plant NO. EXC236</u>		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>569.4'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>10/1/83</u> FINISH <u>10/2/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
39										0		0°
40										0		
41									41.1' - 42.0' - Area w/ comb gypsum and several dirty white patches. Some small vugs.	0		
42										0		
43									42.65' - Dirty white gypsum seam.	0		
44									43.0' - 42.8' - Several long, linear, deep vugs (.5").	0		
45									44.2' - 45.6' - Zone of large deep vugs. 44.4' - Horizontal Fracture 44.75' - 45.0' - Broken pebbles.	4		0°
46									45.6' - 47.0' - Some gypsum combs (fossils?) vugs absent except from 46.4' to 46.6'.	0		
47									47.0' - 62.0' - Same dark gray brown, laminated Dol. & little less yellow-brown color. Stylolites present. Vugs in places. Some diffuse, black laminations.	0		
48									47.5' - thin (.2") gypsum seam.	3	2	15°
49									47.85' - 48.0' - Vugs and gypsum combs. 48.05' - Horizontal Fracture along a stylolite. 48.4' - Joint, 15°, along a stylolite. 48.6' - Horizontal Fracture along a stylolite.	2		0°
50	RUN 3 Box 3		12.5'		15.0'				48.9' - Large (1") gypsum pod. 49.1' and 49.2' - Irregular Fractures. 50.0' - 50.5' - many gypsum combs or fossils; bleached areas, also several vugs (.3"). 50.5' - Horizontal Fracture.	1		0°
51			15.0'		15.0'					1		20°

GENERAL NOTES:		Total Depth <u>960'</u>
		'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>5-F</u>

Sheet 4 of 7

GROUND WATER OBSERVATION								JOB <u>Report</u> <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>5-F</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>569.4'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>10/1/83</u> FINISH <u>10/2/83</u>		
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
51									51.1' - Joint, 20' along a stylolite.		20°	
52									51.8' - stylolite below which there is a thin bleached zone. Same cor above the stylolite at 52.35'	2		0°
53									51.9' - 52.0' - Large gypsum seam. Fractured at 51.95'.	1	0°	
54									52.7' - Horizontal Fracture.	0		
55									52.9' - Small gypsum pod.			
56									54.25' - Irregular Fracture along a thick stylolite.	2		
57									54.9' - Fracture.			
58									55.7' - Horizontal Fracture; Partial gypsum coat	1	0°	
59									56.05' - Fracture along a stylolite. (does not fit together well).			0°
60									56.95' - Irregular Fracture along a stylolite.	2		
61									58.0' - 58.8' - Small (.03") vugs common. Some slightly bleached areas.	0		
62									60.1' - Fracture along a stylolite (ends do not fit together).	1		
63									61.75' - Fracture along a stylolite and gypsum seam.	1		
64									61.7' - 62.0' - Large gypsum pod. Bounded by a stylolite.			0°
65	62.0'											
66	77.0'											
GENERAL NOTES:										Total Depth <u>96.0'</u>		
										"ROCK" Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>5-F</u>		

GROUND WATER OBSERVATION								Depot JOB <u>Niagara Plant</u> NO: <u>83C2236</u>		BORING NUMBER <u>5-F</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>569.4'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>10/1/83</u> FINISH <u>10/2/83</u>		
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
65												
66												
67												
68												
69												
70												
71												
72												
73												
74												
75												
76												
77												

GENERAL NOTES:	Total Depth <u>96.0'</u>
	"ROCK" Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%	HOLE NO. <u>5-F</u>

GROUND WATER OBSERVATION								<u>Report</u> JOB <u>Niagara Plant NO. 83C2236</u>		BORING NUMBER <u>5-F</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>569.4'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>10/1/83</u> FINISH <u>10/2/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
78									77.6' - 84.4' - Same dark gray brown, laminated dolomite, some diffuse black laminations. Stylolites present. Vugs vary, generally rare.	1	0°	0°
79									77.6' - Fracture along a stylolite. 78.3' - 79.75' - Dolo. has abundant pin-hole vugs. Granular texture. 79.5' - 79.75' - Fractures along stylolites.	0		
80										2		
81	Run 5								80.6' - Fracture along a stylolite. Some gypsum. 81.0' - 82.0' - Area w/ several small gypsum pods. 81.1' - Horizontal Fracture.	1	0°	0°
82	Box 5									1		
83			10.4'		11.0'				82.35' - Fracture along a stylolite.	1	0°	
84			11.0'		11.0'				83.2' - Fracture.	1		
85									84.4' - 88.0' - Dolo becomes med. to dark gray w/ no laminations. Vugs also absent. Stylolites rare.	0		
86									85.25' - 85.4' - Thin area bounded by stylolites that has many small gypsum pods. Same between 85.9' and 86.0'. Fractured at both ends.	2		
87									86.2' - Horizontal Fracture.	2	0°	
88									87.1', 87.2' - Horizontal Fractures.	2	0°	0°
89	88.0'	to			90.0'							
90	missing											

GENERAL NOTES:	Total Depth <u>96.0'</u>
	'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%	HOLE NO. <u>5-F</u>



GROUND WATER OBSERVATION						JOB <u>Depot Niagara Plant NO. 8302236</u> DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>		BORING NUMBER <u>5-F</u> BORING OFFSET _____ SURFACE ELEVATION <u>569.4'</u> DATE START <u>10/1/83</u> FINISH <u>10/2/83</u>				
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.												
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
91	RUN 6								90.0' - 96.0' - Back to the dark gray brown well laminated dolomite. Some black and some yellowish brown, diffuse laminations. Stylolites and vugs very rare.	1		0°
92	Box 6		4.0'		5.5'				90.9' - Fracture. 90.9' - 91.0' - Large gypsum seam. 91.3, 91.35, 91.45, 91.5' - Horizontal Fractures. 91.95' - Horizontal Fracture; Partial gypsum coat. 92.1' - area of several small gypsum pods. 92.35' - Fracture along a stylolite 92.4' - 93.6' - many long, thin gypsum streaks. 92.95' - Horizontal Fracture. 93.5' - Horizontal Fracture. 93.75, 93.8' - Horizontal Fractures.	5		0°
93			6.0'		6.0'					2		0°
94										3		0°
95										0		0°
96										0		
97	Total Depth				96.0'							

GENERAL NOTES:		Total Depth <u>96.0'</u>
1) No indication on box where top of core was. May be logged backwards.		'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>5-F</u>

GROUND WATER OBSERVATION								JOB <u>DUPONT NIAGARA PLANT NO. 836236</u>		BORING NUMBER <u>7-C</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.0'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Dave Schaefer</u>		DATE START <u>5/25/83</u> FINISH <u>7/7/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
16	TOP OF BEDROCK											
17	NO SAMPLE											
18												
19												
20	RUN 1 19.0- 33.5'	11.3 14.5	14.3 14.5				LT. GRAY DOL. WITH GYPSUM + STYLOLITE	19.2 IRREGULAR FRACT. 19.35 FRACT ALONG STYLOLITE 19.8-20.0 BROKEN ZONE (2' BREAK) VUGGY 21.0-21.1 BROKEN ZONE (2' BREAK) 21.25 0° JOINT (VUGGY) 23.4 IRREGULAR FRACT. 24.3 0° JOINT 25.2 0° JOINT 26.1 IRREGULAR FRACT. (-15°) 26.25 " " " " " " 26.3 0° JOINT 26.4 IRREGULAR FRACT. 26.65 " " (-0°) 26.95 15° JOINT 27.6 10° JOINT 29.65 5° JOINT + VUGGY (5mm) 30.5 FRACT ALONG STYLOLITE	19.0-20.0 DENUE PINHOLE VUGS 21.1-21.4 VUG SURFACE + BROWN STAIN 24.1-24.4 VUG SURFACE 23.2 GYPSUM (5cm) 23.7 GYPSUM 29.2 GYPSUM 27.0-30.3 VUG SURFACE (1-5mm)	4+ 0 3+ 0 1 1 1 6 1	SE 02 0 0 0 0 15 10	
GENERAL NOTES:										Total Depth <u>45'</u> "ROCK" Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>7-C</u>		

GROUND WATER OBSERVATION						JOB <u>Dupont</u> <u>Niagara Plant</u> NO. <u>8362236</u>		BORING NUMBER <u>7-C</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>568-0'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Dave Schaefer</u>		DATE START <u>7/25/83</u> FINISH <u>7/27/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
29									30.7 IRREGULAR FRACT			
									31.1 " "			
									31.8 50° JOINT + GYPSUM COAT			
									31.85 5° " + " "			
30									32.5 LINEAR VUG (4cm/.5cm)			
									33.05 5° JOINT + GYPSUM COAT			
31									33.2 IRREGULAR FRACT			
									32.75 LINEAR VUG (6cm/.5cm)			
32												
33												
34	RUN 2								33.5 15° JOINT			
	33.5-45.0		10.2 11.5		17.3 11.5				34.1 IRREGULAR FRACT			
35									36.0 " "			
									36.65 " " (~5°)			
36									37.85 10° JOINT			
									38.65 0° JOINT			
37									39.45 IRREGULAR FRACT (~0°)			
									40.8 " "			
38									41.35 " " (~0°)			
									41.6 " "			
39									41.7 " "			
									41.85 " "			
40									43.55 " " (~15°)			
									44.0 " " (~0°)			
41												
GENERAL NOTES:										Total Depth <u>45'</u>		
										"ROCK" Drilling _____		
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>7-C</u>		



GROUND WATER OBSERVATION								Report		Boring Number		
At _____ Ft. at Completion								JOB <u>Niagara Plant</u> NO. <u>8302236</u>		BORING NUMBER <u>7-C</u>		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.0'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Dave Schuck</u>		DATE START <u>5/25/83</u> FINISH <u>7/7/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
42									44.4 - 44.45 BRN MENZONITE (2 BRN HJ)	4		
43									44.85 IRREGULAR FRACT ALONG GYPSUM BLEB (5cm / 1cm)	0		
44									45.0 GYP BLEB (4cm)	1		
45										4+		82
	END OF CORE											

GENERAL NOTES:										Total Depth <u>45'</u>
										'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>7-C</u>



GROUND WATER OBSERVATION						JOB <u>DUPONT NIAGARA PLANT</u> NO. <u>83C2236</u>		BORING NUMBER <u>8-B</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>568.0'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Dave Schack</u>		DATE START <u>5/26/83</u> FINISH <u>7/14/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
12	TOP OF BEDROCK											
13	NO SAMPLE											
14	RUN 1 14.0 - 17.0		1.8 3.0		3.0 3.0		LT OR DOLO WITH VUGS STYLOLITE FOSSILS	14.45 10° JOINT 14.6 IRREGULAR FRACT. 14.9 0° JOINT + GYPSUM 15.05 IRREGULAR FRACT. 15.35 5° JOINT + GYPSUM 15.4 0° JOINT 15.5 0° JOINT 16.0 0° JOINT + GYPSUM 16.1 0° JOINT 16.5 5° JOINT 16.9 5° JOINT + GYPSUM 17.0 0° JOINT + GYPSUM 17.25 0° JOINT 17.6 IRREGULAR FRACT. 17.9 0° JOINT + GYPSUM 18.1 IRREGULAR FRACT. (~0°) 18.7 IRREGULAR FRACT. 20.6 0° JOINT 20.7 0° JOINT 20.8 IRREGULAR FRACT. (~15°) 20.35 " " (~10°) 21.1 0° JOINT 21.4 LARGE IRREGULAR FRACTURE WITH VUGS 21.8 0° JOINT 22.05 FRACT. ALONG STYLOLITE	15.0 - 15.65 PINHOLE VUGS 16.6, 16.7, 16.85 GYPSUM VEINS (1mm WIDE)	3	10	
15									4	5		
16			60%		100%				4	5		
17	RUN 2 17.0 - 25.6'		6.0 8.6		8.6 8.6				4	0		
18									2			
19								0				
20								4				
21								3				
22								1				
23								1				
24			70%		100%							

GENERAL NOTES:

1' RECOVERED ON RUN 3

SAMPLE BOX DOES NOT CLEARLY DELINEATE TOP OF THIS RUN, ∴ LOG MAY BE IN REVERSE ORDER FOR THIS RUN.

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Total Depth 28.6'
"ROCK" Drilling _____

HOLE NO. 8-B

GROUND WATER OBSERVATION						JOB <u>SUPONT NIAGARA PLANT NO. 8302236</u>		BORING NUMBER <u>8-3</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>568.0'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Dave Schrock</u>		DATE START <u>5/26/83</u> FINISH <u>7/14/83</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
25									23.1 IRREGULAR FRACT (-00) + VUGS	3	5	
									24.4 " " (-50)		10	
									24.7 " " + VUGS	3	5	
26	Run 3								24.35 5° JOINT			
	25.6'				3.0				27.7-27.9 VUGS (41-10	1	0	
	28.6'				3.0				==) SURFACE			
27									25.0 10° JOINT			
									25.1 0° JOINT	0		
28									25.8 5° JOINT	0		
									26.5 0° JOINT + GYALUM	0		
29	END OF BORE								28.5 MARKED CHANGE DARK GR ABOVE TO LT GRAY (CLEAN) BELOW.			

GENERAL NOTES:										Total Depth <u>28.6'</u>
										"ROCK" Drilling _____
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>8-3</u>



GROUND WATER OBSERVATION						JOB <u>DUPONT-NIAGARA PLANT NO. 83C2236</u>		BORING NUMBER <u>8-J</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION _____				
At _____ Ft. after _____ hrs.						INSPECTOR _____		DATE START <u>11-3-83</u> FINISH _____				
At _____ Ft. after _____ hrs.						LOGGED BY <u>REZ 11/17/83</u>						
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
SOIL DRILLING TO 13.0'												
* SEE SOIL LOGS*												
14	Run 1	13.0'	7.7'	14.7'	15.0'	PITTED	GREY DOLOMITE	13.45' - 30° DIP JOINT - OXIDIZED - CARBONACEOUS - SURROUNDING AREA IS HIGHLY PITTED	3+			
15								13.90 - UNEVEN FRACTURE	5			
16								13.90' - 14.1' - BROKEN - HIGHLY FRACTURED				
17								14.1' - HORIZONTAL JOINT - OXIDIZED - CARBONACEOUS				
18								14.2' - JOINT - 50°				
19	Box 1	28.0'	15.0'	15.0'	PITTED	GREY DOLOMITE	14.4' - JOINT - 80° - OXIDIZED - CARBONACEOUS (SHINY BLACK)	4				
20							14.7' - JOINT - 30°					
21							14.85' - JOINT - HORIZONTAL					
22							15.3' - JOINT - 10° - PITTED - OXIDIZED					
23							15.35' - JOINT - HORIZONTAL - OXIDIZED - PITTED					
24	Run 1				PITTED	GREY DOLOMITE	15.7' - JOINT - 20° - OXIDIZED	8				
25							15.35' - 15.7' - VERTICAL JOINT - CARBONACEOUS - OXIDIZED					
26							16.0' - JOINT - 30° - OXIDIZED					
27							15.7' - 16.0' - VERTICAL JOINT					
28							16.05' - JOINT - HORIZONTAL - CARBONACEOUS					
29					PITTED	GREY DOLOMITE	16.05' - 16.05' - VERTICAL JOINT	3				
30							16.3' - HORIZONTAL JOINT - GREEN STAINING					
31							16.05' - 16.3' - VERTICAL JOINT					
32							16.55' - HORIZONTAL JOINT					
33							16.3' - 16.55' - VERTICAL JOINT					
34					PITTED	GREY DOLOMITE	16.8' - HORIZONTAL JOINT - OXIDIZED - PITTED	1				
35							17.0' - JOINT - 20° - GYPSUM + BROWN STAINING					
36							17.1' - HORIZONTAL JOINT - GYPSUM ON FACE					
37							17.2' - HORIZONTAL JOINT - CARBONACEOUS - GYPSUM					
38							18.8' - JOINT - 10° - GYPSUM					
39					PITTED	GREY DOLOMITE	19.0' - JOINT - 20° - GYPSUM	4				
40							19.4' - JOINT - 10° - GYPSUM					
41							19.45' - JOINT - HORIZONTAL - GYPSUM					
42							19.7' - JOINT - 30°					
43							20.2' - JOINT - 10°					
44					PITTED	GREY DOLOMITE	20.9' - HORIZONTAL JOINT - GYPSUM	3				
45							20.85' - 20.9' - GYPSUM ON 1/2 IF CORE					
46							21.3' - JOINT - 10°					
47							21.35' - JOINT - HORIZONTAL - LITTLE BIT OF GYPSUM					
48							21.55' - 21.5' - 2 HORIZ. + 1 VERT. FRACTURE					
49					PITTED	GREY DOLOMITE	21.5' - JOINT - 20° - CARBONACEOUS - BRILL	2				
50							22.1' - UNEVEN JOINT - CARBONACEOUS - OXIDIZED - PITTED					
51							PITTED FROM 21.6' - 22.8'					
52							22.2' - JOINT - 40°					
53							22.5' - HORIZONTAL - UNEVEN JOINT - GYPSUM					
54					PITTED	GREY DOLOMITE	23.4' - JOINT - 20° - CARBONACEOUS					
55							23.9' - JOINT - HORIZONTAL - CARBONACEOUS					
GENERAL NOTES:										Total Depth <u>169.5</u>		
WHITE STRIATIONS - probably gypsum - JOINTS COMMONLY ROUGH AND UNEVEN										'ROCK' Drilling <u>156.5</u>		
PITTED AREAS MOST LIKELY THE RESULT OF DISSOLVED GYPSUM												
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>8-J</u>		



GROUND WATER OBSERVATION								JOB <u>DUPONT-NIASARA PLANT NO. 83C2236</u>				BORING NUMBER <u>8-T</u>			
At _____ Ft. at Completion								DRILLING RIG _____				BORING OFFSET _____			
At _____ Ft. after _____ hrs.								OPERATOR _____				SURFACE ELEVATION _____			
At _____ Ft. after _____ hrs.								INSPECTOR _____				DATE START <u>11-3-83</u> FINISH _____			
At _____ Ft. after _____ hrs.								LOGGED BY <u>REZ</u> <u>11/17/83</u>							
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED			
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP		
25	RUN 1							GREY DOLOMITE	GREY - DARK GREY DOLOMITE - fine grained; white striations (gypsum); frequent carbonaceous joints or partings; ool. pitted areas; numerous gypsum inclusions	0					
26	13.0'	7.7'	14.7'						25.1' - UNEVEN JOINT - GYPSUM - PITTED	5					
	to	15.0'	15.0'						PITTED FROM 24.7' - 25.3'						
	28.0'								25.4' - JOINT - 20° - GYPSUM						
27								GREY DOLOMITE	25.6' - JOINT - 20° - CARBONACEOUS	2					
									25.7' - JOINT - 10°						
									25.7' - 26.1' - NUMEROUS HAIRLINE FRACTURES ~ 10-20°						
									26.2' - JOINT - 10° - CARBON GYPSUM						
28	Box 1							GYPSUM	26.8' - JOINT - 20° - GYPSUM (26.75' - 26.8)	1					
	Box 2								27.8' - UNEVEN JOINT - GYPSUM - (GYPSUM 27.8' - 28.8)						
29	RUN 2								28.3' - 10° JOINT - HIGHLY CARBONACEOUS - BLACK	1					
									29.0' - HORIZONTAL JOINT						
30	28.0'							GREY DOLOMITE	29.4' - 30.6' - PITTED W/ ALOT OF GYPSUM INTERMIXED THROUGHOUT DOLOMITE	2					
	to								31.0' - 31.5' - PITTED	0					
31	43.0'	13.7'	15.0'						31.45' - 20° JOINT - CARBONACEOUS (BLACK)	1					
		15.0'	15.0'						32.5' - 10° JOINT - CARBONACEOUS - (black)	1					
32								GREY DOLOMITE	33.75' - HORIZONTAL JOINT	1					
33									Thin gypsum layers (1/4" thick) at 34.6' + 32.2' (30°)						
34									34.55' - 20° JOINT - SLIGHTLY CARBONACEOUS	1					
35	RUN 2								35.35' - 20° JOINT - CARBONACEOUS	1					
36	Box 2							GREY DOLOMITE	Gypsum bleb at 36.0' (1 1/2" x 1 1/2")	1					
									36.2' - 10° JOINT - CARBONACEOUS	1					
37									37.0' - HORIZONTAL JOINT						
									Gypsum vug at joint (1 1/4" x 3/4" x 1/4" thick)						

GENERAL NOTES:

 Total Depth 169.5
 'ROCK' Drilling 169.5

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 8-T



GROUND WATER OBSERVATION								JOB <u>DUPONT-NIAGARA PLANT NO. 83C2236</u>				BORING NUMBER <u>8-J</u>			
At _____ Ft. at Completion								DRILLING RIG _____				BORING OFFSET _____			
At _____ Ft. after _____ hrs.								OPERATOR _____				SURFACE ELEVATION _____			
At _____ Ft. after _____ hrs.								INSPECTOR _____				DATE START <u>11-3-83</u> FINISH _____			
At _____ Ft. after _____ hrs.								LOGGED BY <u>REZ</u> <u>11/17/83</u>							
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED			
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP		
38	RUN 2								38.0' - HORIZONTAL JOINT	1					
39									38.45' - 30° JOINT - SLIGHTLY CARBONACEOUS	2					
40	28.0'	to	13.7'		15.0'				39.1' - 10° JOINT	4					
41	43.0'		15.0		15.0				39.4' - 39.6' - VERTICAL JOINT	1					
42					100%				39.25' - HORIZONTAL JOINT	0					
43	Box 2								40.4' - 30° JOINT - HIGHLY CARBONACEOUS	0					
44	Box 3								... occasional vugs and hairline to 1/4" thick veins of gypsum randomly scattered throughout	0					
45	RUN 3								GREY-DARK GREY DOLOMITE - fine grained, thin bedded, frequent carbonaceous partings, ool. pitted areas, numerous small irregular shaped gypsum inclusions, white gypsum striations or laminae	0					
46	43.0'	to	14.1		15.0'				46.0' - HORIZONTAL JOINT - BLACK-CARBONACEOUS	0					
47	58.0'		15.0		15.0'				46.6' - 20° JOINT	2					
48					100%				47.0' - 20° JOINT - HIGHLY CARBONACEOUS - BLACK -	1					
49									LIGHT GREY DOLOMITE - fine grained, thin bedded, frequent carbonaceous partings, ool. pitted areas, small irregular shaped gypsum inclusions	0					
50									49.8' - 10° JOINT	1					

GENERAL NOTES:

Total Depth 116.5'
'ROCK' Drilling 156'

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 8-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZ 11/17/83BORING NUMBER 8-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

LOGGED BY REC 11/11/82

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
51	RUN 3						LIGHT GREY DOLOMITE	50.3'-HORIZONTAL JOINT	2			
								50.9'-30° JOINT-BLACK, CARBONACEOUS				
52								52.35'-40° JOINT-gypsum	1			
53								54.1'-HORIZONTAL JOINT	1			
54								54.9'-UNEVEN JOINT-BLACK-HIGHLY CARBONACEOUS	0			
55	BOX 3					55.15'-30° JOINT-		2				
56								1				
57						56.35'-20° JOINT-BLACK, HIGHLY CARBONACEOUS		1				
58						57.85'-30° JOINT-carbonaceous-black		1				
59						GREY DOLOMITE-Light + dark bedding, ool. irregular shale partings, wavy bedding		0				
60	RUN 4					GREY (LT. + DK.) DOLOMITE		60.25'-UNEVEN JOINT-CARBONACEOUS	0			
61									1			
62								61.7'-10° JOINT-BLACK, CARBONACEOUS	1			
63								6				

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 8-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZ 11/17/83BORING NUMBER 8-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
64										0		
65										0		
66	RUN 4									0		
67	58.0'		14.35		15.0'					0		
68	to		15.0		15.0'					0		
69	73.0'									0		
70										0		
71										0		
72										0		
73	BOX 4									0		
74	Box 5									0		
75	RUN 5									0		
76	73.0'		14.2		15.0'					0		
77	to		15.0		15.0'					0		
78	88.0									0		

GREY DOLOMITE - light and dark sections,
 occ. irregular shaped hairline black laminar
 some gypsum dispersed throughout, occ. gypsum
 interbeds, fine grained, thin bedded

68.75' - 30° JOINT - pretty black - partially carbonaceous

69.5' - 30° JOINT

69.5' - 69.7' - Broken - horiz + vert. fractures - carbonaceous

69.7' - 70.0' JOINT

69.5' - 70.0' JOINT

70.0' - 10° JOINT - CARBONACEOUS

70.55' - 50° JOINT

72.2' - 20° JOINT

74.75' - 30° JOINT - BLACK, CARBONACEOUS

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 8-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZ 11/17/83BORING NUMBER 8-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
77									GREY DOLOMITE - light + dark sections, irregular shaley units	0		
78										0		
79										0		
80	RUN 5									2		
81	73.0'		14.2'		15.0'				79.5' - HORIZONTAL JOINT - BLACK, CARBONACEOUS.	2		
82	to		15.0'		15.0'				79.7' - HORIZ. + 40° JOINT - BLACK, CARBONACEOUS	3		
83	88.0'				100%				80.0' - 81.6' - 86° JOINT	0		
84									80.1' - UNEVEN JOINT - ~10° - PARTLY BLACK, CARBONACEOUS	0		
85									80.6' - 82.2' - 80° JOINT	3		
86									81.1' - Horizontal joint 1/4" DEEP - INTERSECTS 80° JOINT + STOPS - Bottom of Gypsum bleb	0		
87									81.2' - HORIZONTAL JOINT - SLIGHTLY UNEVEN 1"x1" Gypsum bleb	0		
88										3		
89									84.35' - 10° JOINT - BLACK, CARBONACEOUS	2		
90									84.65' - 10° JOINT - BLACK, CARBONACEOUS	1		
91									84.15' - UNEVEN JOINT - SLIGHTLY CARBONACEOUS - NON-CALCAREOUS CRYSTALS PROTRUDING MAKING IT UNEVEN	3		
92									85.5' - 40° JOINT - BLACK, CARBONACEOUS	1		
93									85.75' - 10° JOINT, BLACK, CARBONACEOUS	1		
94									86.05' - 20° JOINT			
95									86.3' - 40° JOINT - SMOOTH, GREY, CARBONACEOUS			
96									86.8' - UNEVEN JOINT - SMOOTH, GREY, CARBONACEOUS			
97									87.2' - 30° JOINT - SMOOTH - GREY, CARBONACEOUS			
98									88.3' - 30° JOINT - SMOOTH, GREY, CARBONACEOUS			
99									89.1' - HORIZONTAL JOINT			

GENERAL NOTES:

Total Depth _____
 'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 8-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZ 11/17/83BORING NUMBER 8-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc. -	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
90	RUN 6	88.0'	13.3'	15.0'	15.0'	100%	GREY SHALY DOLOMITE - wavy BEDDING	GREY DOLOMITE - black shale laminae, thin gypsum interbeds dispersed throughout, commonly jointed along these planes	1			
91								90.7' - 20° JOINT - GREY, SMOOTH, NON-CALCAREOUS - CLAYSTONE SHALE	1			
92								91.4' - UNEVEN JOINT				
								91.5' - UNEVEN JOINT	7			
								91.5' - 91.6' - BROKEN, FRACTURED				
								91.6' - HORIZONTAL JOINT				
								91.6' - HORIZONTAL JOINT	3			
								91.8' - 40° JOINT				
								91.95' - 45° JOINT - Gypsum Blebs 1/2" x 1/2" Gypsum in surface	2			
								92.35' - 10° JOINT - SMOOTH, GRAY, CALCAREOUS				
94	to							92.6' - 10° JOINT, SMOOTH, GRAY, NON-CALCAREOUS CLAYSTONE - SHALE	5			
95	103.0'							92.1' - 92.7' - Gypsum				
								92.7' - UNEVEN JOINT - Gypsum				
								93.45' - 20° JOINT, SMOOTH, GRAY, NON-CALCAREOUS CLAYSTONE - SHALE				
96								93.7' - 30° JOINT (WAVY), SMOOTH, GRAY, NON-CALCAREOUS CLAYSTONE SHALE PARALLEL Hairline CLAYSTONE 3/8" BELOW	1			
								94.0' - 30° JOINT	2			
								94.4' - 30° JOINT				
97								94.5' - 30° JOINT - SMOOTH, GRAY, CLAYSTONE - SHALE				
								94.5' - 94.65' - BROKEN, HIGHLY FRACTURED (NO WEATHERING)	1			
								94.65' - 30° JOINT - Gypsum BLEBS				
98	80x6							95.5' - 45° JOINT - BLACK, CARBONACEOUS				
								96.45' - 20° JOINT, BLACK, CARBONACEOUS - NON CALCAREOUS	0			
								96.85' - UNEVEN JOINT, BLACK, CARBONACEOUS				
99								97.05' - 30° JOINT - BLACK - SHALE				
								97.8' - Gypsum Blebs (1/2" x 3/4") - PITTED	0			
100	RUN 6											
101								GREY DOLOMITE - occl. gypsum blebs 1/2" x 1"; numerous shaly laminae, (irregular - wavy), light and dark colored	1			
102								102.8' - 20° JOINT	0			

GENERAL NOTES:

Total Depth _____
 'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 8-J

GROUND WATER OBSERVATION						JOB <u>DUPONT-NIAGARA PLANT</u> NO. <u>83C2236</u>		BORING NUMBER <u>8-J</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION _____				
At _____ Ft. after _____ hrs.						INSPECTOR _____		DATE START _____ FINISH _____				
At _____ Ft. after _____ hrs.						LOGGED BY <u>REZ 11-17-83</u>						
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
103	RUN 6		13.3		15.0					0		
	Box 6		15.0		15.0					2		
104	Box 7								103.65' - 10° JOINT - GREY, CARBONACEOUS			
									103.70' - UNEVEN JOINT, BLACK, SHALE			
105	RUN 7								104.5' - 105.1' - WHITE SILTSTONE - NON CALCAREOUS 1/2" x 1" (Vertical)	1		
									104.5' - HORIZONTAL JOINT			
106									105.0' - SILTSTONE BLEB - 1/2" x 1"	1		
									105.5' - IRREGULAR SHAPED (~1/2" - 3/4" THICK) LAYER OF WHITE SILTSTONE			
107	103.0'								NON CALCAREOUS			
	to		14.8'		15.0'				105.9' - UNEVEN JOINT - GRAY, CALCAREOUS - SHALE - Smooth	1		
108	118.0'		15.0'		15.0'				106.3' - 30° JOINT - DK. GRAY - NON CALCAREOUS - SHALE			
									106.9' - SILTSTONE BLEB - 3/4" x 1"	1		
109									107.75' - 107.85' - WHITE, SILTSTONE B.			
									107.85' - 45° JOINT	0		
110									109.25' - 10° JOINT, SMOOTH, GRAY, SHALE	2		
									109.25' - HORIZONTAL JOINT - ROUGH, CARBONACEOUS	0		
111									109.7' - 111.2' - numerous quartz blebs			
									111.6' - HORIZONTAL JOINT - FRESH SURFACE	1		
112									112.8' - 60° JOINT - PITTED SURFACE	1		
									PITTED SURFACE FROM 112.3' to 113.6'			
113									113.4' - 20° JOINT - PITTED	1		
114	RUN 7									0		
115									115.15' - UNEVEN JOINT - BLACK, CARBONACEOUS, OILY BOOR			

GENERAL NOTES:

Total Depth _____
"ROCK" Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 8-J



GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZ 11/17/83BORING NUMBER 8-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
116	Run 7									1		
	103.0'											
	to		14.8'		15.0'							
117	118.0'		15.0'		15.0'				116.8' - ~60° UNEVEN JOINT - Grey, smooth, shale	1	~60°	
									117.3' - UNEVEN (~30°) JOINT - Grey, smooth, shale	2	~30°	
118	Box 7								117.9' - HORIZONTAL JOINT			
	Box 8								118.0' - 30° JOINT - Grey, shale	2	30°	
119									118.55' - HORIZONTAL JOINT, 150' grey, smooth, shale			
120	Run 8								119.4' - BLACK, smooth, shale - 20° JOINT	1	20°	
121									120.75' - UNEVEN JOINT - grey shale	1		
122	118.0'								121.25' - 30° JOINT - shale - grey	2	30°	
	to		14.2'		14.8'				121.6' - UNEVEN JOINT - grey - shale			
123	133.0'		15.0'		15.0'				122.4' - 20° JOINT - Grey - uneven	2	20°	
									122.9' - 20° JOINT - 45° JOINT (OTHER END)			
124									123.4' - UNEVEN JOINT - smooth, grey	3	20°	
									123.55' - 45° JOINT, smooth grey			
									123.4' - 123.55' - BROKEN, FRACTURED			
125										0		
126									125.1' - 10° JOINT	1	10°	
	Run 8								126.45' - UNEVEN JOINT - grey, smooth	1		
127									126.8' - 127.5' - QUARTZ	1		
									127.7' - UNEVEN JOINT			
128									128.0' - UNEVEN JOINT			

GENERAL NOTES:

JOINTS ARE GENERALLY ALONG THE SHALE AREAS

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 8-J



GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZ 11/17/87BORING NUMBER 8-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH _____

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
129	RUN 8								128.9' - UNEVEN JOINT	1		
130	118.0'	to	14.2'		14.8'				129.35' - 10° JOINT - BLACK, smooth, shale	1	10°	
131	133.0'		15.0'		15.0				130.8' - UNEVEN JOINTS - GYPSUM	1		
					99%				131.55' - ~10° UNEVEN JOINT	1	~10°	
132									132.05' - 30° JOINT	1	30°	
133	Box 8	Box 9							133.5' - UNEVEN JOINT	2		
134									133.9' - ~10° UNEVEN JOINT - grey - shale	2	10°	
135	RUN 9								134.5' - 20° JOINT	1	20°	
136	133.0'		14.15'		15.0'				135.45' - 20° JOINT	2	20°	
137	to		15.0'		15.0'				135.65' - 30° JOINT - grey, smooth, shale	1	30°	
138	148.0'								136.3' - HORIZONTAL JOINT - grey, smooth, shale	1	0°	
									137.5' - HORIZONTAL UNEVEN JOINT	1	~0°	
139									138.5' - 30° JOINT - BLACK, smooth, shale	1	30°	
140									140.0' - 30° JOINT - SHALE	6	30°	
									140.35' - 30° JOINT - Grey - smooth, shale	2	30°	
141									141.0' - 10° JOINT - Black, smooth, shale		0°	

GENERAL NOTES:

Total Depth _____

"ROCK" Drilling _____

HOLE NO. 8-J

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT- NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZ 11-21-83BORING NUMBER 8-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START 11-3-83 FINISH _____

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
142	RUN 9								144.4' - UNEVEN HORIZ. JOINT	2	20°	
143									142.0' - 20° JOINT - GREY, SMOOTH, SHALE	2	10°	
144									142.7' - 10° JOINT			
145									143.1' - 10° JOINT			
146	133.0'		14.15'		15.0'				143.65' - UNEVEN HORIZONTAL JOINT - GYPSUM	3		
147	to		15.0'		15.0'				143.85' - 20° JOINT - GREY - SMOOTH - SHALE			
148	148.0'								144.3' - 20° JOINT - GREY - SMOOTH - SHALE - GYPSUM	1	20°	
149									145.7' - 20° JOINT			
150									GREY SHALY DOLOMITE - numerous hairline shale seams and gypsum laminae, grey swirled appearance w/ quartz - patchy	1	20°	
151									146.3' - 10° JOINT - GREY SHALE	2	10°	
152									146.5' - HORIZ. JOINT			
153									147.0' - 10° JOINT - SMOOTH, BLACK, SHALE	2	20°	
154									147.6' - 20° JOINT - GYPSUM			
155	BOX 9								148.4' - 10° JOINT - GREY, SMOOTH SHALE + GYPSUM	1	10°	
156	BOX 10								149.2' - 60° JOINT - GREY, SMOOTH, SHALE	2	60°	
157									149.3' - 10° JOINT - GREY - SMOOTH, SHALE, SUCCESSIONS			
158	RUN 10								150.15' - 10° JOINT - GYPSUM	3	10°	
159									150.7' - 20° JOINT - Gypsum + shale, grey, SBT			
160	148.0'		13.4		14.9				150.9' - 10° JOINT - GREY, SMOOTH, SHALE	2	10°	
161	to		15.0'		15.0'				151.0' - HORIZONTAL JOINT - GREY - SMOOTH, SHALE			
162	163.0'								151.6' - 20° JOINT - GREY, SMOOTH, SHALE	2	20°	
163									152.0' - 20° UNEVEN JOINT - GREY, SMOOTH, SHALE			
164									152.4' - 10° JOINT - BLACK CARBONACEOUS	2	10°	
165									LIGHT GREY DOLOMITE - thin bedded, numerous shale interbeds (shaly dolomite)			
166									153.7' - 10° JOINT - BLACK, SMOOTH, SHALE	1	10°	
167									154.1' - HORIZONTAL JOINT - BLACK, SMOOTH, SHALE			

GENERAL NOTES:

Total Depth _____

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 8-J

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA PLANT NO. B3C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZ 11-21-83BORING NUMBER 8-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START 11-3-83 FINISH _____

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
155	RUN 10	148.0' to 163.0'	14.15'	14.9'	15.0'	15.0'	LIGHT GRAY DOLOMITIC SHALE	155.0' - 10° JOINT - grey, smooth, shale		1	10°	
156								155.8' - 20° JOINT, grey, smooth, shale		3	20°	
157								155.9' - 10° JOINT - grey, smooth shale + gypsum			10°	
158								156.2' - HORIZONTAL JOINT - gypsum + grey shale		1	0°	
159								DARK GREY DOLOMITIC SHALE - constant interbeds of dolomite and shale w/ shale predominating - all joints occur along shale units		0	0°	
160	Box 10 Box 11	163.0'	-	99.3%	-	-	DARK GRAY DOLOMITIC SHALE	158.1' - HORIZONTAL JOINT - grey shale		1	0°	
161								159.4' - 20° JOINT - shale - grey, smooth		2	20°	
162								159.9' - HORIZONTAL JOINT - hard grey, smooth, shale			0°	
163								160.0' - 10° JOINT - smooth, grey, shale		1	0°	
164								161.1' - HORIZONTAL JOINT - smooth, black, shale		1	0°	
165	RUN 11	163.0' to 170.5'	8.04'	8.24	-	-	BLACK-DK. GRAY SHALE	163.15 - 1/4" Gypsum seam (30°)		0	10°	
166								163.2' - 10° JOINT - shale		1	0°	
167								164.4' - shale - uneven JOINT - shale		1	0°	
168								165.4' - 10° JOINT - gypsum, shale		2	10°	
169								165.95' - 10° JOINT			10°	
170								166.55' - 20° JOINT -		1	20°	
171								BLACK SHALE (ROCHESTER) - thin bedded, black-dk. grey, calcareous				

GENERAL NOTES:

Total Depth _____
 'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 8-J



GROUND WATER OBSERVATION						JOB <u>DUPONT-NIAGARA PLANT NO. 83C2236</u>		BORING NUMBER <u>B-J</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION _____				
At _____ Ft. after _____ hrs.						INSPECTOR _____		DATE START <u>11-3-83</u> FINISH <u>11-8-83</u>				
LOGGED BY <u>REZ 11-21-83</u>												
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
168	Run 11								167.5' - HORIZONTAL JOINT	1	0°	
169	163.0'		8.04		8.24				168.2' - HORIZONTAL JOINT	4	0°	
	170.5'								168.65' - 10° JOINT		10°	
170									168.65' - 169.6' - 2 ⊥ VERTICAL JOINTS		0°	
									169.6' - HORIZONTAL JOINT	1	0°	
									170.2' - 10° JOINT	1	10°	
END OF BORING 170.5'												
GENERAL NOTES:												
										Total Depth <u>170.5'</u>		
										'ROCK' Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>B-J</u>		



GROUND WATER OBSERVATION								JOB <u>Dupont Niagara Plant NO. P3C2236</u>		BORING NUMBER <u>10-C</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>567.1'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/26/83</u> FINISH <u>7/26/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
7	Top of Rock						2.6'					
8												
9	No Sample											
10												
11									10.5' - 16.4' - med. gray to med gray brown, poorly laminated Dolomite. Pin-hole vugs give dolo a granular texture. Few if any larger vugs. stylolites present.	0	0°	
12									11.1' - Horizontal Fracture.	2	0°	
13									11.2' - Horizontal Fracture.	0	0°	0°
14	Run 1 Box 1								13.5' - Horizontal Fracture (mechanical?)	1	0°	
15									15.3' - Horizontal Fracture along a stylolite.	0	0°	
16									16.0' - 16.4' - Dolo is more vuggy w/ .1" vugs common.	1	0°	
17									16.4' - 18.3' - Dolo contains some large, connecting vugs making rock look punky in areas. stylolites common and often swirling. Some gypsum pods.	3	0°	
18									16.4', 17.0', 18.05', 18.2' - Horizontal Fractures	2	40°	
19									17.6' - Joint, 40° along a stylolite.	6	0°	0°
									18.3' - 19.4' - Dolo same as 10.5' - 16.4'.		0°	
									18.6', 18.65', 18.75', 18.9' Horiz. Frac. along stylol.		0°	

GENERAL NOTES:		Total Depth <u>28.8'</u>
1) Lost Rock at 16.5'. (added .5' to measurements after 16.4')		'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>10-C</u>

GROUND WATER OBSERVATION						JOB <u>Niagara Plant</u> NO. <u>8362236</u>		BORING NUMBER <u>10-C</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>567.1'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/26/83</u> FINISH <u>7/26/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
20	Run 2 Box 2								19.4' - 23.5' - Dolo gets vuggy w/ .05" vugs; some connecting. Slightly more laminated. Some gypsum combs. and pods. med gray brown color.	0		0°
21								20.65', 20.75', 20.9' - Horizontal breaks. 20.9' is along a thick (.4") gypsum seam or pod.	3	0°		
22								21.4' - Horizontal Fracture along a stylolite.	1	0°		
23								22.1' - Horizontal Fracture along a stylolite.		0°		
								22.6' - Horizontal Fracture along a stylolite.	2	0°		
								23.0' - 4 or 5 large (.4") vugs close together.				
								23.2' - Fracture along a stylolite.	1	0°		
24								23.5' - 24.0' - Distinctly gray Dolo w/ small .1" whitish patches. Connecting vugs present.	1	0°		
								24.0' - 25.5' - Brown to light gray brown Dolo. (gradual color change). Small vugs w/ few linear ones.	1	0°		
25								24.85' - Horizontal Fracture along a stylolite.		0°		
26							25.1', 25.4' - Horizontal Fractures.	3	0°			
							25.6' - Large fracture along vugs					
27							25.6' - 28.1' - med gray to gray brown, poorly laminated Dolo. Small pin-hole vugs and larger common. Very granular texture to Dolo.	1	0°	0°		
28							26.3' - Horizontal Fracture.					
29	Total Depth						28.8'	28.1' - 28.8' - Dolo gets very "punky" right below a stylolite. Vugs up to .4" long. Many Gypsum combs.				

GENERAL NOTES:

1) 100% water loss at 25.5' - 25.8'

Total Depth 28.8'

'ROCK' Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 10-C

GROUND WATER OBSERVATION								Depot		BORING NUMBER 10-D		
At _____ Ft. at Completion								JOB Niagara Plant NO. 83C2236		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		SURFACE ELEVATION 567.1'		
At _____ Ft. after _____ hrs.								OPERATOR _____		DATE START 9/1/83 FINISH 9/29/83		
At _____ Ft. after _____ hrs.								INSPECTOR Ted Taylor				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
19	TOP OF ROCK		7.0'									
20									19.5' - 24.5' - med gray to dark gray brown, laminated Dolomite. Stylolites abundant. Vugs not common, except at 24.0' where there are large, connecting vugs (1" long). Highly fractured, every .5" to 2".	4	0°	
21	RUN 1 Box 1									11	0°	
22			0'		3.7'					7	0°	
23			5.0'		5.0'					4	10°	
24			0%		74%				(missing 1.3')	3		
25									24.5' - 29.5' - Dark gray brown, well laminated Dolo. Many long, linear, deep vugs.	2		
26	RUN 2								26.0' - Broken from vugs	0		
27	Box 2		2.8'		5.0'				26.9' - Joint, 40°	2	40°	
28			5.0'		5.0'				27.4' - 29.0' - Dolo looks like a sponge w/ many med sized circular vugs. Rock <u>smells</u> . Has med. brown and dark blackish patches	0		
29			56%		100%				29.0' - Vugs present but small and not as common.	0		
30										0		
31	A		C		A ?							

GENERAL NOTES:		Total Depth 70'
1) Bad odor to the rock at 27.4' - 29.0'		'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. 10-D



GROUND WATER OBSERVATION						JOB <u>Report</u> <u>Niagara Plant</u> NO. <u>8362236</u>		BORING NUMBER <u>10-D</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>567.1'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>		DATE START <u>9/1/83</u> FINISH <u>9/29/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
38									38.0'-54' - Dark gray to dark gray brown, laminated Dolomite. Almost the entire section of core is rotten and 'punky' looking w/ some areas worse than others.	1		0°
39									38.0' - 39.3' - Large, connecting vugs throughout. Some filled w/ a dirty yellow-gray comb gypsum	1		
40									38.65' - 39.3' - Fractures due to vugs.			
41									39.3' - 40.9' - much less rotten but still has small vugs.	1		
41									40.9' - 41.1' - very vuggy, broken due to connecting vugs.			
42									41.3' - 41.5' - Horizontal Fractures.	4	0°	0°
42									41.85' - 42.05' - Joint along stylolites, 15°		15°	0°
43									41.8' - 44.3' - Abundant small to med. sized (.15") connected vugs, many filled w/ gypsum combs. Not as rotten as 38.0' - 39.3' but still punky.	1		
43									42.35' - 43.0' - 43.4' - 43.95' - 44.3' - Fractures due to connecting vugs.	3		
44									43.6' - Large vug w/ terminated gypsum crystals.			
45									44.3' - 44.6' - Dolo is much darker and less vuggy below this point. V. dark brown, blackish. Linear + pin-hole vugs present. V. few large vugs.	1		
46									46.1' - 46.3' - Horizontal fractures.	0		
47										2		
48										0		
49									49.0' - 51.7' - Dolo becomes lighter in color, med to dark gray brown, and much more vuggy. Large vugs (.2") present and connecting. Gypsum comes also present.	0		
50									50.95' - Horizontal Fracture	0		
GENERAL NOTES:										Total Depth <u>20'</u>		
										"ROCK" Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>10-D</u>		



GROUND WATER OBSERVATION								Dupont		BORING NUMBER <u>10-D</u>		
At _____ Ft. at Completion								JOB <u>Niagara Plant NO. 23C2236</u>		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		SURFACE ELEVATION <u>562.1'</u>		
At _____ Ft. after _____ hrs.								OPERATOR _____		DATE START <u>9/1/83</u> FINISH <u>9/29/83</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Fed Taylor</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
51									50.95' - Horizontal Fracture	1	0°	0°
52									51.7' - 54.0' - Below a stylolite, Dolo gets slightly darker, med to dark brown. Also much fewer large vugs although pin-hole and small vugs still abundant.	0		
53									Slightly lighter in color to med brown toward 54.0'.	0		
54									54.0' - 66.9' - med gray brown to dark gray brown, laminated dolomite. Vugs very abundant throughout. They are small (.1" and less) from 54.0' to ~57.0'. They then get larger and become connected from ~57.0' to 66.9'. In most places the dolomite is very "punky" looking. Very dirty gypsum fills some vugs. Vugs may be .5" long and deep. Most vugs are .05 to .1" in diameter.	0		0°
55	7									1		
56	RUN #									0		
57	Box 2								55.9' - Core broken along stylolite.	0		
58										0		
59			12.9'		15'					0		
60			16'		16'					0		
61										0		0°
62			81%		94%					0		
63									62.4' - Horizontal Fracture	1	0°	

GENERAL NOTES:										Total Depth <u>70'</u>	
										"ROCK" Drilling _____	
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>10-D</u>	



GROUND WATER OBSERVATION								Depont JOB <u>Niagara Plant</u> NO. <u>8362236</u>		BORING NUMBER <u>10-D</u> BORING OFFSET _____ SURFACE ELEVATION _____ DATE START <u>9/1/83</u> FINISH <u>9/29/83</u>		
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.								DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
64										0		
65										0		0°
66									65.5' - Horizontal Fracture 65.7' - Horizontal Fracture 66.2' - Horizontal Fracture 66.55' - Horizontal Fracture	2	0°	
67									66.9' - 67.65' - Dark gray brown Dolomited. well laminated w/ black swirls towards 67.65. Very few vugs. Small when present.	2	0°	
68									67.3' - Joint, 10°	3	10°	0°
69									67.65' - 70.0' - Dark gray brown to blackish, poorly laminated Dolomite. Vugs absent.	5	0°	
70									67.8', 67.85', 68.1', 68.3', 68.55', 68.6', 68.65' Horizontal Fractures.	0		
71												
	Total Depth ?		70'									

GENERAL NOTES:		Total Depth <u>70'</u>
1) Fracture 66'		"ROCK" Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>10-D</u>



GROUND WATER OBSERVATION						Report		BORING NUMBER <u>10-F</u>				
At _____ Ft. at Completion						JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>567.1'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>		DATE START _____ FINISH <u>9/29/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
7	Top of		Rock		7'							
8	n		c		A							
9												
10	Runs not marked								9.5' - 28' - med to dark gray brown, laminated Dolomite. Small pin-hole vugs abundant throughout. Larger, deep vugs common in areas. Stylolites present.	2	10°	0°
11	9.5' to 28'								9.5' - 9.8' - vertical Fracture.	2		
12									9.8' - Joint 10°			
13	Run 1 Box 1		2.4'		14.8'				10.15' - Joint 20° along stylolite. Gypsum.	2		
14			18.5'		18.5'				10.4' - Fracture from vugs. Large gypsum seam.	2		
15									11.65' - Fracture along gypsum seam. Some Ram Horn gypsum on surface.			
16									11.8' - Horizontal Fracture.	1		0°
17									12.0' - 12.5' - Large, deep vugs. Many filled w/ comb gypsum. 12.4' - vug width of core.			
18									12.5' - 13.0' - Vertical Fracture.	2		
19									13.0' - Horizontal Fracture.			
									13.8' - Horizontal Fracture.			
									14.45' - Horizontal Fracture; Small gypsum vug.	1		
									14.9' - 17.4' - Large vugs abundant. "Punky" looking dolo. Dirty white gypsum combos common. Vugs - 3", some larger.	0		
			45%		80%				16.15', 16.45', 16.7', 16.95', 17.4' - Irregular Fractures, Eaten away by vugs.	4		
									17.4' - 19.6' - Still abundant pin-hole vugs. Many Fractures.	4		0°
									Horizontal Fractures at: 17.6', 17.7', 17.95', 18.05', 18.4', 18.6', 18.7', 18.9', 19.15', 19.3', 19.45', 19.55', 19.6'	6		
										2		

GENERAL NOTES:		Total Depth <u>105'</u>
1) Loss of water at 13(?) Footage could be off in this box		"ROCK" Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>10-F</u>

GROUND WATER OBSERVATION		DUPONT		BORING NUMBER <u>10-F</u>	
At _____ Ft. at Completion		JOB <u>Niagara Plant</u> NO. <u>8362236</u>		BORING OFFSET _____	
At _____ Ft. after _____ hrs.		DRILLING RIG _____		SURFACE ELEVATION <u>562.1'</u>	
At _____ Ft. after _____ hrs.		OPERATOR _____		DATE START _____ FINISH <u>9/29/83</u>	
At _____ Ft. after _____ hrs.		INSPECTOR <u>Ted Taylor</u>			

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
20									20.3' - Horizontal Fracture. (mechanical?)	5	0°	0°
21									20.8' - Horizontal Fracture. 20.9' - Joint, 10°	3	10°	
22									21.95' - Horizontal Fracture.	1	0°	
23										0		
24									23.5' - 28.0' - Dol. becomes finer grained more black, thin laminations. Some long, linear vugs.	0		0°
25												
26										?		
27												
28									28.0' - 43.0' - med to dark gray brown, laminated (poorly in places) Dolomite.			
29									28.0' - 30.0' - moderately vuggy. Some vugs .2" to .5" long. Abundant pin-hole vugs. Some white bleached areas.			
30									29.8' - Horizontal Fracture.	1		
31									30.0' - 31.0' - Small, pin-hole vugs; a few connected linear ones.	0		
32									31.0' - 31.4' - very vuggy & funky looking. Dirty white gypsum in some vugs. Up to .5" long. 31.25' - Fracture from vugs. 31.4' - 33.5' - Just small, pin-hole vugs. Except 2 large vugs at 31.6'.	1		

GENERAL NOTES:

Total Depth 105'
'ROCK' Drilling _____

GROUND WATER OBSERVATION								JOB <u>Dupont Niagara Plant NO. 8362236</u>		BORING NUMBER <u>10-F</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>567.1'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START _____ FINISH <u>9/29/83</u>		
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
33									32.0; 32.4' - Horizontal Fractures.	2	0°	
34									33.5' - 35.6' - Large, deep vugs w/ many white bleached (gypsum) areas. Vugs .3" to .5" abundant and deep. Many lined w/ gypsum.	0		0°
35									34.0, 34.25' - Horizontal Fractures from vugs.	2		
36									35.4' - Irregular Fracture near vugs.	1		
37									35.6' - 37.2' - only small, pin-hole vugs. Except 2 or 3 large (.5") deep vugs at 36.1' and 37.1'.	1	50°	
38									36.0' - Joint, 50°.	1		0°
39									37.2' - 43.8' - Again very vuggy and "punky" looking w/ many dirty white bleached areas. Gypsum combs common. Long, linear, deep vugs.	4	50°	
40									37.2' - Joint, 50°.	1		
41									37.55' - 37.7' - Horizontal Fractures: Pebbles in between. Vugs abundant.			
42									38.55', 39.1', 39.3', 39.6' Fractures along vugs. Pebbles, 39.3' - 39.6'.	4		
43									40.6' - 41.2' - Pebbles from vugs.	2		
44									42.0' - 42.4' - Pebbles.	2		0°
45									43.6', 43.8' - Irregular Fractures.	3		
									43.8' - 46.8' - Less vuggy. Still a med to dark gray brown dol. Pin-hole vugs rare. Only a few vugs from .05 to .1" diameter. Dol has a spotty, thin white coating (gypsum) in areas.	2		
									45.05' - Joint, 10°.	0	10°	
										1		

GENERAL NOTES:										Total Depth <u>105'</u>	
										"ROCK" Drilling _____	
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>10-F</u>	



GROUND WATER OBSERVATION										JOB <u>Dupont Niagara Plant NO. 83c2236</u>		BORING NUMBER <u>10-F</u>		
At _____ Ft. at Completion										DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.										OPERATOR _____		SURFACE ELEVATION <u>567.1'</u>		
At _____ Ft. after _____ hrs.										INSPECTOR <u>Ted Taylor</u>		DATE START _____ FINISH <u>9/29/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED		
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP	
46										1	10°	0°		
47									46.8' - 50.5' - Dolo gets relatively vuggy. many large vugs but not as deep as before (37.2' - 43.8'). Moderately punky looking. Gypsum present but not abundant.	0				
48										0				
49										0				
50									49.5' Joint, 40° 49.55' - 49.7' - Pebbles.	4	40°	0°		
51									50.5' - 56.3' - much less vuggy. Pin-hole vugs abundant, some larger (.02") vugs. 51.0' - Joint, 60°	0	60°			
52										1				
53										0				
54										0				
55										0				
56										0				
57									56.3' - 58.0' - Abundant small vugs with some long, linear vugs 1/4" long. Somewhat "Punky."	0				
58										0				
GENERAL NOTES:										Total Depth <u>105'</u>				
										"ROCK" Drilling _____				
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>10-F</u>				

GROUND WATER OBSERVATION										Dipant		BORING NUMBER	
At _____ Ft. at Completion										JOB <u>Diagara Plant</u> NO. <u>8302236</u>		<u>10-F</u>	
At _____ Ft. after _____ hrs.										DRILLING RIG _____		BORING OFFSET _____	
At _____ Ft. after _____ hrs.										OPERATOR _____		SURFACE ELEVATION <u>567.1</u>	
At _____ Ft. after _____ hrs.										INSPECTOR <u>Ted Taylor</u>		DATE START _____ FINISH <u>7/29/83</u>	
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED	
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP
59									58.0' - 63.7' - Dolo remains quite vuggy. No large vugs but abundant vugs .02" to .05" in diameter. Not deep. Poorly laminated. Stylolites present. med to dark gray brown. This stretch of dolo has abundant dark brown spots, due to vug size.	2	10°	0°	
60									58.25' - Joint, 10°	0	0°		
61									50.5' Horizontal Fracture.	0	0°		
62	Run 4									0	0°		
63	Run ?									0	0°		
64	Box 4									0	0°		
65									63.7' - 64.6' - Dolo gradually becomes less vuggy. Vugs become pin-hole size.	0	0°		
66									64.6' - 81.5' - Dolo becomes well laminated, and vugs are almost gone. Very irregular and swirling laminations in areas.	0	0°		
67									65.9' - Joint, 10°, along a stylolite.	1	10°		
68									66.15', 66.3', 66.65', 66.75', 66.8' - Horizontal Fractures	5	0°		
69									66.85' - Vug, .6" long x .5" wide: Filled w/ a silver-gray metallic mineral (galena??) and a thin pyrite? coat.	0	0°		
70									68.1' - 69.4' - Relatively vuggy. many pin-hole vugs.	1	0°		
71									68.2' - Horizontal Fracture along a gypsum seam.	0	0°		
										0	0°		

GENERAL NOTES:

1) 66.85' - vug w/ sulfides?
2) 72' to 73' are in next box) not marked as such.

Total Depth 605'
'ROCK' Drilling _____

HOLE NO. 10-F

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

GROUND WATER OBSERVATION								Dupont JOB <u>Niagara Plant NO. 83C2236</u>		BORING NUMBER <u>10-F</u> BORING OFFSET _____ SURFACE ELEVATION <u>567.1'</u> DATE START _____ FINISH <u>7/29/83</u>		
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.								DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED DIP
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
72										0		
73									73.05' - Thin (.2") gypsum seam.	0		0°
74										0		
75										0		
76									76.5' - 76.9' - Several white gypsum pods in this area. Vugs also increase in number.	0		
77										0		
78										0		0°
79									78.8' - Horizontal Fracture along a stylolite.	1		
80									79.45' - Horizontal Fracture - Partial gypsum coat. 79.8' - Joint, 30°.	2		30°
81									80.2' - Fracture along a stylolite. 80.4' - Joint, 10° 80.55' - Horizontal Fracture. 80.85' - Horizontal Fracture along a stylolite. 80.95' - Joint, 20°	5		10° 0° 20°
82									81.5' - 82.1' - Ddo is very irregularly laminated. 81.6', 81.7' - Horizontal Fractures.	2		
83									82.1' - 84.0' - Ddo becomes med to dark gray (no brown color). No vugs. Several very black bands; not sutured like stylolites. Fine grain. 82.2', 82.25', 82.3' - Horizontal Fractures. 83.0' - Irregular Fracture along a stylolite. 83.2' - Joint, 20°	3		0° 0°
84										2		20°

GENERAL NOTES:		Total Depth <u>105'</u>
1) Boxes mis-marked: Box 5 has 1' too much; Box 4 1' too little so I'm starting Box 5 1' down.		'ROCK' Drilling _____
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>10-F</u>

GROUND WATER OBSERVATION						Dupont JOB <u>Niagara Plant NO. 83C2236</u> DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>		BORING NUMBER <u>10-F</u> BORING OFFSET _____ SURFACE ELEVATION <u>567.1'</u> DATE START _____ FINISH <u>7/29/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
85	Run 6 Run? Box 6 84' to 100'								84.0' - 95.1' - Dark gray Dolomite. otherwise just as 82.1' - 84.0'. Vugs absent. Fractures common. Black streaks (not sutured) present. Horizontal Fractures at: 84.9', 85.3', 85.65', 85.9', 86.1', 86.2', 86.75', 87.05', 87.4', 87.7', 87.8', 88.05', 88.45', 88.55', 88.8', 89.05', 89.15', 89.65', 90.2', 90.4', 91.35' (gypsum coat); 92.1', 92.8', 93.4', 94.3'.	1	0°	0°
86									3	0°		
87									3	0°		
88									4	0°		
89									4	0°		
90									3	0°		
91									2	0°		
92									1	0°		
93									3	10°		
94									2	0°		
95	1	0°	0°									
96	2	0°										
97	2	0°										
92.4' - Joint, 10° 93.1' - Break along a thick (.1") black streak, (stylolite)? 93.7' and 93.9' - Large gypsum pods. (.5" diam). 95.1' - 105' - Dolo. becomes lighter in color - A med. gray. Well laminated. Still has thick black streaks. Also has other, more diffuse black swirls and streaks. Finer grained, no vugs. Irregular Fractures at: 95.5', 95.75', 96.3', 96.8'.										Total Depth <u>105'</u> "ROCK" Drilling _____		
GENERAL NOTES: Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>10-F</u>		



GROUND WATER OBSERVATION								JOB <u>Dupont Niagara Plant NO. 83C2236</u> DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>		BORING NUMBER <u>10-F</u> BORING OFFSET _____ SURFACE ELEVATION <u>567-1'</u> DATE START _____ FINISH <u>9/29/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
98									97.4' - Irregular Fracture along a black streak (shylolite). Also has gypsum.	1		
									97.6' - Gypsum pod.		0°	
									98.1' - Horizontal Fracture.	2		0°
99									98.7' - Fracture along a shylolite.			
									[missing core length]	0?		
100									100.3' - Irregular Fracture (mechanical?).			
	7								100.75' - Large, irregular Fracture. Along a thick black streak. Also looks broken.	2		
101	Box?								101' - 105' - Dol. gets vuggy. Small vugs abundant.	0		
102										0		
			4.7'		5.0'							
103			5.0'		5.0'				102.8' - Horizontal Fracture (mechanical?).	1		
										0		
104										0		
										0		
105												
	Total Depth				105'							
106												

GENERAL NOTES:		Total Depth <u>105'</u>
1) Lost circulation at 101' (may be off).		'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>10-F</u>

Sheet 1 of 2

GROUND WATER OBSERVATION				Dup on		BORING NUMBER <u>12-B</u>	
At _____ Ft. at Completion				JOB <u>Niagara Plant</u> NO. <u>8362236</u>		BORING OFFSET _____	
At _____ Ft. after _____ hrs.				DRILLING RIG _____		SURFACE ELEVATION <u>568.9'</u>	
At _____ Ft. after _____ hrs.				OPERATOR _____		DATE START <u>5/26/83</u> FINISH <u>7/13/83</u>	
At _____ Ft. after _____ hrs.				INSPECTOR <u>Ted Taylor</u>			

DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
11	Top	of	Rock				11.0'					
12												
13	n	c	p									
14									14.0'-17.0' - Dark gray brown to med gray, laminated dolomite. Small, pin-hole vugs abundant. A few larger, linear vugs at 14.9' stylolites present.	3	35°	
15									14.3' - Joint, 35°			
16									14.6' - Jagged Fracture (Mechanical?) - and 14.8'			
17									15.5' - Joint 35°	0		0°
18									16.2' - Horizontal Fracture	4		
19	Run 1								16.35' - Fracture along a large gypsum pod, and stylolite.			
20	Box 1								16.5' - 16.7' - many small vugs eating away at Dolo. Broken at 16.5' and 16.55'.	0		
21									17.0' - 20.3' - med gray to med gray brown, poorly laminated Dolo. stylolites present. Small vugs only, not abundant.	0		
22									18.0' - Horizontal Fracture	2		
23									18.5' - Horizontal Fracture along a stylolite. Partial gypsum coat.	0		
										0		
										6		15°
									20.3' - 21.2' - Below a thick stylolite, Dolo. becomes med gray brown and very pitted from abundant small vugs. Not laminated. No stylolites. Well fractured. Horizontal Fractures at: 20.4', 20.5', 20.75', 20.85'. Joints at 20.6', 20.65' (15°)	0		
									21.2' - 23.0' - same as 17.0' - 20.3'	0		
									23.0' - Horizontal Fracture.	0		0°
									23.0' - 24.8' - Dolo becomes very vuggy, swirling laminations. "Punky" looking.	1		

GENERAL NOTES:

- 1) Lost some water at ~ 21.5'
- 2) Lost all water at 23.5'

Total Depth 27.0'

"ROCK" Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 12-B



GROUND WATER OBSERVATION								JOB <u>Dupont Niagara Plant</u> NO. <u>8312236</u>		BORING NUMBER <u>12-B</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.9'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/26/83</u> FINISH <u>7/18/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
24									23.15' - Joint, 15°.	5	15°	0°
									23.45' - Fracture along vugs.			
									23.65' - 23.8' - Jagged (Vuggy?) Fractures.			
									24.5' - Jagged Fracture along stylolite and vugs.	3		
25									24.8' - Fracture, along a stylolite			
									24.8' - 27.0' - Dolomite as at 17.0' - 20.3' and 21.2' - 23.0'. Poorly laminated, small vugs abundant, granular texture.	1	15°	
26									24.9' - Joint, 15°.			
									25.9' - Horizontal Fracture.	1		0°
									26.2' - Jagged Fracture along stylolite.			
27												
	Total		Depth				27.0'					
28												

GENERAL NOTES:		Total Depth <u>27.0'</u>
		"ROCK" Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>12-B</u>

GROUND WATER OBSERVATION						Dipont		BORING NUMBER <u>14-C</u>				
At _____ Ft. at Completion						JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>568.9'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Ted Taylor</u>		DATE START <u>10/1/83</u> FINISH _____				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
8	Top of Rock											
9												
10	n		c		A							
11									11.0' - 25.0' - med gray, somewhat laminated Dolomite. Vugs abundant and concentrated in areas. Stylolites present. Fairly well fractured.	5	40°	
12	Runs 1 1/2'								11.0' - 11.5' - Broken core. 11.5' - Joint, 40°	5	50°	
13	Box 1								11.6', 11.8' - Fractures. 11.7' - Joint, 50°	5		0°
14	11' to 25'		3.3'		8.6'				12.15' - Fracture.	5		
15			14.0'		14.0'				12.15' - 12.7' - Several large (.3") vugs.	1		
16									12.45', 12.8', 12.7' - Fractures. Along stylolites.	0		
17									12.7' - 13.7' - Small vugs abundant. "Sponge" looking. A brown color to base.	2	0°	
18									12.9' - 13.2' - Pebbles.	2	0°	
19									13.2' - 13.5' - Vertical Fracture.	2	0°	
20									13.7', 14.4' - Fractures along stylolites.	2	15°	
									16.75', 16.9', 17.1', 17.4' - Horizontal Fractures.		0°	
									18.3' - Horizontal Fracture along a stylolite.		0°	
									18.9' - Horizontal Fracture along a stylolite.		0°	
									19.2' - Joint, 15° along a stylolite.		0°	
									19.3' - Fracture along a stylolite.		0°	
									19.0' - 19.6' - relatively vuggy.		0°	

GENERAL NOTES:

1) 19.6' is end of core in this box.

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Total Depth 70.0'

"ROCK" Drilling _____

HOLE NO. 14-C

Sheet 2 of 5

GROUND WATER OBSERVATION						<u>Dupont</u> JOB <u>Niagara Plant</u> NO. <u>83c2236</u>		BORING NUMBER <u>14-C</u> BORING OFFSET _____ SURFACE ELEVATION <u>562.9'</u> DATE START <u>9/1/83</u> FINISH _____				
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.						DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Ted Taylor</u>						
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
21												
22												
23												
24												
25									25.0' - 40.0' - Dark gray to gray brown, laminated to poorly laminated Dolomite. Vugs concentrated in areas. Pin-hole vugs abundant throughout. Granular texture.	0		
26									25.7' - Rim of linear (.3") long vugs.	0		0°
27									26.7' - 27.6' - Linear vugs concentrated. Some .4" long.	0		
28									27.35' - Joint, 15°		15°	
29									27.75' - Horizontal Fracture.	2	0°	
30									27.75' - 28.4' - Large vugs (.1" diam.) concentrated. Gypsum combs and pods present. somewhat "punk".	0		
31									28.3' - Large gypsum pod.	0		
32									30.35' - Irregular Fracture along a stylolite.			
33									30.95' - Horizontal Fracture.	2	0°	
									31.3', 31.7' - Horizontal Fractures w/ a gypsum coat.	2	0°	
									32.1' - Joint, 20°, along a stylolite. Some gypsum.		20°	
									32.9' - Fracture - Broken off pieces.	2		
GENERAL NOTES: Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										Total Depth <u>70'</u> "ROCK" Drilling _____		
										HOLE NO. <u>14-C</u>		

GROUND WATER OBSERVATION						Dupont JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING NUMBER <u>14-c</u> BORING OFFSET _____ SURFACE ELEVATION <u>562.9'</u> DATE START <u>4/1/83</u> FINISH _____				
At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.						DRILLING RIG _____ OPERATOR _____ INSPECTOR _____						
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
34									33.5' - Irregular fracture. 33.0' - 34.0' - slightly vuggy than before. A few large (.15) vugs. 34.25' - Fracture along a stylolite. Some gyp.	1		0°
35									35.0' - Horizontal fracture. 35.65' - Joint, 10° 35.65' - 36.1' - moderately vuggy. Abundant small vugs. Some gypsum combs. 36.1' - Horizontal fracture. 36.85' - 37.9' - Vertical fracture. 37.2' - Horizontal fracture. Partial gyp. coat 37.9' - Horizontal fracture. " 38.5' - Gypsum pod, (.6')	1	0°	0°
36										1	10°	0°
37										1		
38										3		
39									39.4' - 40' - Gets relatively vuggy. Some dirty white gypsum combs.	0		
40									40.0' - 53' - Dark gray to dark gray brown, Patchy Dolomite. Also laminated. Vugs vary from place to place. Stylolites present. 40.0' - 42.5' - Pin-hole vugs abundant. Granular texture. Some small gypsum pods.	0		0°
41										0		
42									42.25' - Irregular fracture along a stylolite. Gypsum present.	2		
43									42.85', 43.05' - Horizontal fractures. 43.5' - 44.5' - very dense, few vugs. 43.9', 44.05' - Horizontal fractures along stylolites. Broken piece in-between. 44.5' - 53.0' - Pin-hole vugs again abundant.	2	0°	0°
44										1	0°	10.5°
45										0		
46									45.8' - Large (.75) gypsum pod.	0		

GENERAL NOTES: Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%	Total Depth <u>70'</u> 'ROCK' Drilling _____ HOLE NO. <u>14-c</u>
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GROUND WATER OBSERVATION								JOB <u>Dupont</u>		BORING NUMBER <u>14-c</u>		
At _____ Ft. at Completion								JOB <u>Niagara Plant</u> NO. <u>83C2236</u>		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								DRILLING RIG _____		SURFACE ELEVATION <u>568-9'</u>		
At _____ Ft. after _____ hrs.								OPERATOR _____		DATE START <u>9/1/83</u> FINISH _____		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
47									47.35' - 47.7' - Lighter colored, many small dirty gypsum patches. Sharp boundary between both ends at 2 stylolites.	0		0°
48									47.7' - Fracture at a stylolite.	1		
49									48.5' - Horizontal Fracture. Along several small gypsum pods.	1		
50									49.5' - 49.9', 50.25' - Horizontal Fractures along stylolites.	2		
51									51.3' - Horizontal Fracture.	1		0°
52										0		0°
53									53.0 - 61.4' - Some Rock - Dark gray to gray black, w streaking laminations. Vugs rare: some small, thin concentrations. All fractures and joints are along stylolites.	1		
54									53.3' - Horizontal Fracture.	3	20°	
55	20' 4" Box 4								54.35', 54.5' - Joints, 20°	1	30°	
56	53 to 70'		13.3'		14.5'				54.65' - Horizontal Fracture.	1	50°	
57			17.0'		17.0'				55.0' - Joint, 50°	1	35°	
58									55.9' - 56.0' - Large gypsum pod.	1		0°
59									56.05' - Joint, 25°	1		
									57.05' - Horizontal Fracture.	1		
									58.5' - Horizontal Fracture.	0		
									59.25' - Horizontal Fracture.	1		
GENERAL NOTES:										Total Depth <u>70'</u>		
										'ROCK' Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>14-c</u>		



GROUND WATER OBSERVATION								JOB <u>Dugout Niagara Plant NO. 83-2236</u>		BORING NUMBER <u>14-C</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.9'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>01/18/83</u> FINISH _____		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
60									59.3' - Thin gypsum seam.	2		0°
									59.5' - Horizontal Fracture.			
									60.1' - Horizontal Fracture.			
									60.25' - Joint, 10°	2		10°
61									61.4' - 70.0' - Dolo. becomes dark gray brown, laminated. A more spotty appearance to the Dolo rather than distinct laminations.	1		10°
62									Pin-hole vugs abundant throughout.			
									61.7' - Joint (along stylolites as usual). 10°	1		
63									62.25' - Horizontal Fracture.			
64										0		
65										0		0°
66										0		
67									66.6' - Joint, 20°	2		20°
									66.7' - Horizontal Fracture			
68									67.8' - end of core			
									[Do not know where missing] core is from			
69												
70												
71												
	Total								Depth 70'			

GENERAL NOTES:		Total Depth <u>70</u>
1) Lost circulation at 66' (footage may be off) (may be at 66.6')		*ROCK* Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>14-C</u>

HOLE NO. 15-C

GROUND WATER OBSERVATION							JOB <u>DUPONT NIAGARA PLANT NO. BSC 2236</u>		BORING NUMBER <u>15-C</u>				
At _____ Ft. at Completion							DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.							OPERATOR _____		SURFACE ELEVATION <u>568.2'</u>				
At _____ Ft. after _____ hrs.							INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/25/83</u> FINISH <u>8/1/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED	
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP
19									13.25 50° JOINT (VUG) ON CORE + JOINT)	0			
20									13.85 50° JOINT 13.9 IRREGULAR FRACT (-50°) 14.1 " " (-100°) 14.5 0° JOINT + GYPSUM 14.6 IRREGULAR FRACT (-50°) 16.6 " " (-0°) + GYPSUM 16.8 " " "	17.3 - 20.0 PINHOLE VUG CONCENTRATED	2		
21										2			
22										1			
23	RUN 2 22.5 - 24.7		2.2 2.2		2.2 2.2				17.5 50° JOINT 17.65 0° JOINT 17.7 IRREGULAR FRACT (-50°) 19.35 " " 19.6 " " 20.1 " " + GYPSUM CONT 20.5 " " ON LARGE GYPSUM BLEB 21.0 100° JOINT (7 cm) 22.9 IRREGULAR FRACT (-0°)	19.1 - 19.6 HAIRLINE CRACKS	2		
24			100%		100%					1			
25	NO SAMPLE, DRILLED TO CLEAN OUT HOLE (CORE BLOCKAGE)										NO SAMPLE		
26													
27	RUN 3 26.7 - 31.0'		3.6 4.3		3.8 4.3				23.3 " " 23.9 " " 24.35 " "		1		
28									26.7 IRREGULAR FRACT VUG ON JOINT + CORE 27.15 IRREGULAR FRACT 27.25 " " 27.3 " " 27.8 " " 28.2 " " (-0°) + GYPSUM	26.7 - 27.4 VUG (1-20 cm) SURFACE WEATHERED 27.1 GYPSUM BLEB (3 cm) 28.0 - 28.6 VUG (1-1 mm) SURFACE	2	5	
29										1			
30										0			
31	END OF CORE								28.65 50° JOINT 29.55 IRREGULAR FRACT				
GENERAL NOTES:										Total Depth <u>31'</u> 'ROCK' Drilling _____			
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>15-C</u>			



GROUND WATER OBSERVATION						JOB <u>DUPONT NIAGARA PLANT NO. 836236-2</u>		BORING NUMBER <u>15-CD</u>						
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____						
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>568.2'</u>						
At _____ Ft. after _____ hrs.						INSPECTOR <u>Dave Schock</u>		DATE START <u>10/1/83</u> FINISH <u>10/2/83</u>						
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED		
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP	
35	Run 1 35'-42'		4.0		6.3		OK GRAY DOL WITH BANDING	START SAMPLE AT 35.7 36.1 5° JOINT 36.25 IRREGULAR FRACT (~20°) 36.85 5° JOINT 37.05 IRREGULAR FRACT 37.3 10° JOINT 37.55 0° JOINT 37.7 0° JOINT 38.0 0° JOINT 38.2 IRREGULAR FRACT + VUGS (MINOR) 38.45 5° JOINT 38.7 IRREGULAR FRACT (-5°) 39.5 5° JOINT 40.1 IRREGULAR FRACT (-10°) 40.5 0° JOINT ON GYPSUM BLEB 41.0 IRREGULAR FRACTURE 41.35 5° JOINT 42.4 FRACT. ALONG STYLOLITE 43.2 IRREGULAR FRACT 43.3 5° JOINT 43.75 IRREGULAR FRACT. 44.0 5° JOINT 44.1 TWO 5° JOINTS 44.3 5° JOINT 45.0 IRREGULAR FRACT 45.1 10° JOINT + GYPSUM 45.4 IRREGULAR FRACT (~5°) 45.5 0° JOINT	0	5	5			
36		7.0	7.0											
37		57%	90%											
38														
39														
40														
41														
42	Run 2 42'-47'	3.5	5.0	5.0										
43		5.0	5.0											
44														
45		70%	100%											
46														
47														
GENERAL NOTES:										Total Depth <u>47'</u>				
										"ROCK" Drilling _____				
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>15-CD</u>				

Sheet 1 of 2

GROUND WATER OBSERVATION						JOB <u>DUPONT NIGARA PLANT NO. 83C2236</u>		BORING NUMBER <u>15-0</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>568.2'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Dave Schack</u>		DATE START <u>10/12/83</u> FINISH <u>10/14/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
	TOR =		6'									
51	RUN 1								51.4 IRREGULAR FRACT (~0°)	6'		
52	51'-65'		11.2 14.0		13.6 14.0		DARK GRAY GLO. WITH DARK SAUSAGE AND STYLOLITE		51.5 0° JOINT + GYPSUM			
53									51.75 IRREGULAR FRACT (~0°)	2'		
54									51.85 " " "			
55									51.95-52.15: BROKEN ZONE (~2 FRACTURES) Some GYPSUM PRESENT (BLEB)	3		
56			80%		97%				52.8 0° JOINT			
57									53.3 5° JOINT + GYPSUM	2		
58									53.6 IRREGULAR FRACT. (~10°) 52.4-52.6 VUG (~2mm) ZONE	3		
59									53.8 FRACT ALONG JTYLOLITE			
60									54.35 5° JOINT 54.5 GYP BLEB (2cm)	1		
61									54.8 5° JOINT			
62									55.1 IRREGULAR FRACT (~10°) (JTYLOLITE)	2		
63									55.4 " FRACT ALONG JTYLOLITE			
									55.9 " " " "			
									56.35 " " " "	2		
									57.1 " " " "			
									57.7 " " " "	2		
									58.1 0° JOINT			
									58.6 FRACT ALONG JTYLOLITE 58.7 GYP BLEB (~1cm)	1		
									59.05 5° JOINT			
									59.8 5° JOINT 60.3-64.0 VUG (~1-1mm) SURFACE	1		
									60.2 FRACT ALONG JTYLOLITE			
									60.9, 61.2, TWO FRACTS (MECH?)	2		
									61.9 5° JOINT			
									62.4 5° JOINT			

GENERAL NOTES:		Total Depth <u>23'</u>
		"ROCK" Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>15-0</u>



GROUND WATER OBSERVATION								JOB <u>DUPONT NINCARA PLANT NO. 8362236</u>		BORING NUMBER <u>15-D</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.2'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Dave Schaeck</u>		DATE START <u>10/12/83</u> FINISH <u>10/14/83</u>		
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
64									62.8 IRREGULAR FRACT + VUG ON SURFACE (1cm)	2	0	
									63.25 0° JOINT			
									63.75 IRREGULAR FRACTURE	1		
65									64.2 " " (~15°)		0	
	Run 2								65.25 0° JOINT	1		
66	65' - 73'		6.0		7.7				66.5 IRREGULAR FRACTURE ALONG GYALUM BLED	1		
			8.0		8.0				67.4 FRACT. ALONG STYLOLITE			
67									67.85 IRREGULAR FRACT.	2		
68				75%		96%			69.2 " " 69.2 - 70.2 VUG SURFACE (1-3mm)	0		
									69.55 0° JOINT			
69									70.5 10° JOINT	2	0	
70									71.05 5° JOINT	1	10	
									71.65 IRREGULAR FRACT.		5	
71									71.9 " "	3		
									72.0 0° JOINT			
72									72.25 10° JOINT	4	10	
									72.5 IRREGULAR FRACT (~00)			
73									72.55 " " (~50)			
	END OF BORE											

BLACK
VERY
FINE
GRAIN
(MICRITE)

GENERAL NOTES: LOG NOTES LOSS OF WATER AT 68'

Total Depth 73'
"ROCK" Drilling _____

Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 15-D



GROUND WATER OBSERVATION						JOB DUPONT NIAGARA PLANT NO. 83C2236-2		BORING NUMBER <u>15-F</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>568.2</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Dave Schoske</u>		DATE START <u>9/22/83</u> FINISH <u>10/7/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
31	Run 1								32.6 0° JOINT GYPSUM COAT	31.0 - 43.5	0	
32	31.0 - 43.5'		11.7		12.8 ?				34.35 0° JOINT	PINHOLE BUGS ON SURFACE	1	0
33			12.8		12.5				34.45 0° FRACTURE ALONG STYLOLITE		0	
34									34.6 0° FRACTURE ALONG STYLOLITE		0	
35									34.9 50° JOINT (MECH?)	36.0 GYPSUM ALBERT	4	0
36									35.7 0° JOINT		1	0
37									36.4 10° JOINT, GYPSUM MIN.	37.8 - 38.35	2	0
38									37.25 5° JOINT	BUGS (-2-3mm) ON SURFACE	1	0
39									37.8 0° JOINT, GYPSUM COAT		1	0
40									38.35 0° " " "		1	0
41									39.1 0° JOINT, " "		1	0
42									39.8 0° JOINT		0	
43									40.7 0° JOINT		0	
									41.4 0° JOINT		0	
									43.1 0° FRACTURE ALONG STYLOLITE		0	

GENERAL NOTES:		Total Depth <u>105</u>
lost circulation at 93'		"ROCK" Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>15-F</u>



GROUND WATER OBSERVATION								JOB DUPONT NIAGARA PLANT NO. 83C2236-2		BORING NUMBER <u>15-F</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.2'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Dave Schrock</u>		DATE START <u>9/22/83</u> FINISH <u>10/7/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
44	Run 2								43.5 50° JOINT 43.9 GYP. BLEB (2cm)	3	5	
45	43.5' - 58.0		12.0		14.5				43.6 30° JOINT 44.6-44.8 LARGE GYPSUM BLEB (6cm)	2	15	
46			14.5		14.5				44.3 0° JOINT + GYPSUM RIM		30	
47									44.8 15° JOINT		0	
48									45.2 20° JOINT	2	0	
49									45.3 0° JOINT			
50									47.2 0° JOINT + GYPSUM 47.4-47.6 GYPSUM VEIN	0		
51									47.55 0° JOINT + GYPSUM			
52									47.45 0° JOINT + XTL FILLED VUG		0	
53									48.25 5° FRACTURE ALONG JTYLOLITE	2	0	
54									50.15 0° " " " "		0	
55									50.2-50.8 >30° FRACTURE	1	0	
56									51.6 5° JOINT		5	
									52.5 0° FRACTURE ALONG JTYLOLITE	1	0	
									53.0 0° " " " "		0	
									52.5-53.65 >80° FRACTURE	2	300	
									53.65 0° JOINT			
									55.9 0° JOINT	1	5	
									53.0 0° JOINT		0	
									53.7 - 55.7 CONTORTED BEDDING	1	0	
										3	0	
										0		
										1	0	

GENERAL NOTES: IN RUN 2, PINHOLE VUGS CONTINUE EXCEPT AS NOTED ABOVE		Total Depth <u>105'</u>
		"ROCK" Drilling _____
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>15-F</u>

GROUND WATER OBSERVATION								JOB <u>DUPONT NIAAGRA PLANT NO. 83C2236-2</u>		BORING NUMBER <u>15-F</u>				
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.2'</u>				
At _____ Ft. after _____ hrs.								INSPECTOR <u>Dave Schock</u>		DATE START <u>9/22/83</u> FINISH <u>10/7/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED		
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP	
57										0				
58										0				
59	RUN 3	58.0-68.5	9.8	10.5	10.5				58.35 0° JOINT 58.75 0° JOINT 59.95 0° JOINT 60.7 20° JOINT 61.15 50° JOINT 61.85 50° JOINT 62.95 15° JOINT 63.45 0° JOINT 63.95 0° JOINT 65.0 0° JOINT 66.3 0° JOINT 67.0 0° JOINT 67.3 0° JOINT 67.4 0° JOINT 67.5 0° JOINT 67.6 0° JOINT 67.75 0° JOINT 68.1 10° JOINT 68.5 5° JOINT	59.8 - 60.6 VERY FINE GRAIN, NO PINHOLE VUGS 63.2 - 64.9 VUG (.1-1mm) SURFACE 66.4 - 68.0 VERY FINE GRAIN, DARK GRAY (MICRITE), NO PINHOLE VUGS	3			
60										1				
61			93%	100%						1	20°			
62										2	5°			
63										1	15°			
64										2	0°			
65										0	0°			
66										1	0°			
67										6	0°			
68										2	5°			
69	RUN 4	68.5-83.5	13.2	15.0	15.0				69.0 0° JOINT		0°			

GENERAL NOTES:		Total Depth <u>105'</u>
		'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>15-F</u>

GROUND WATER OBSERVATION At _____ Ft. at Completion At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs. At _____ Ft. after _____ hrs.						JOB <u>DUPONT NIAGARA PLANT NO. 83C2236-1</u> DRILLING RIG _____ OPERATOR _____ INSPECTOR <u>Dave Schocv</u>				BORING NUMBER <u>15-F</u> BORING OFFSET _____ SURFACE ELEVATION <u>568.2'</u> DATE START <u>7/22/83</u> FINISH <u>10/7/83</u>			
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED	
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP
70									70.7 0° JOINT, BROWN OXIDE STAIN (minor) 70.9 10° JOINT	1			
71									72-76 PINHOLE UUGT	2	0		
72									76.0 0° JOINT 77.15 0° JOINT	0	10		
73									77.5-77.7 TWO GRANITE BLEBS (1-2 cm)	0			
74									78.9 5° JOINT	0			
75									80.45 5° JOINT	0			
76									80.8 15° JOINT	0			
77									81.7 5° JOINT	0			
78									82.0 5° JOINT	0			
79									83.1-83.2 TWO 0° JOINTS (1.5 cm)	0			
80										1	0		
81										1	0		
82										1	5		
										0	5		
										2	15		
										1	5		
											5		

GENERAL NOTES:

 Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

Total Depth 105'
 "ROCK" Drilling _____

 HOLE NO. 15-F



GROUND WATER OBSERVATION						JOB <u>DUPONT NIAGARA PLANT NO. 83C2236-2</u>		BORING NUMBER <u>15-F</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>568.2'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Dave Schock</u>		DATE START <u>9/22/83</u> FINISH <u>10/7/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
83										1	0	
84	RUN 5								84.1 TWO 0° JOINTS	2	0	
	83.5 -		11.0		13.5				34.5 0° JOINT		0	
	90.5		13.5		15.0				84.8 50° JOINT	4	5	
85									85.2 0° JOINT	2	0	
									85.5 0° JOINT		0	
86									86.4 0° JOINT	1	0	
									87.0 0° JOINT		0	
87									87.95 5° JOINT	2	5	
									88.25 0° JOINT		0	
88									88.6 0° JOINT	2	0	
									89.2 0° JOINT		0	
89									89.4 5° JOINT	3	5	
									89.6 15° JOINT, GYPSUM COAT		15	
90									90.25 0° JOINT	2	5	
									90.75 5° JOINT		5	
91									91.2 5° JOINT	3	0	
									91.45 0° JOINT + GYPSUM XTLJ		0	
92									91.9 0° JOINT + GYPSUM	1	5	
									92.5 5° JOINT + GYPSUM COAT		0	
93									93.0 0° JOINT + GYPSUM COAT	3	0	
									93.5 0° JOINT		5	
94									93.95 15° JOINT (IRREGULAR)	2	15	
									94.3 15° JOINT (IRREGULAR)		40	

NO VULS ON CORE
SURFACE THROUGHOUT
RUN

89.55 GYPSUM BLEB
90.1 " "

91.6 GYPSUM BLEB
91.9-92.3 GYPSUM BLEB(V)
92.2 CROSS CUTTING GYPSUM VEIN

GENERAL NOTES: LOG INDICATES PARTIAL LOSS OF WATER AT ~ 93'

Total Depth 105'
"ROCK" Drilling _____

Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%

HOLE NO. 15-F

GROUND WATER OBSERVATION							JOB <u>DUPONT NIAGARA PLANT</u> NO. <u>8362236-2</u>		BORING NUMBER <u>15-F</u>			
At _____ Ft. at Completion							DRILLING RIG _____		BORING OFFSET _____			
At _____ Ft. after _____ hrs.							OPERATOR _____		SURFACE ELEVATION <u>563.2'</u>			
At _____ Ft. after _____ hrs.							INSPECTOR <u>Dave Schrock</u>		DATE START <u>9/22/83</u> FINISH <u>10/7/83</u>			
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
96									94.8 40° JOINT (IRREGULAR), BUGGY SURFACE	○		
97	END OF SAMPLE								94.0 - END: SAMPLE IS DISTINCTLY LIGHTER IN COLOR, DARK BANDING EVIDENT	○		
98	END OF CORE											
NOTE: DISCREPANCY OF ~ .5-1 FOOT BETWEEN ORIGINAL LOG AND SAMPLE BOX WRITTEN INTERNALLY AFTER RUN 3, SUGGEST POSSIBLE ERROR OF 1' AFTER 63' IN THIS LOG.												
GENERAL NOTES:										Total Depth <u>105'</u> "ROCK" Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>15-F</u>		

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA PLANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZ 11/22/83BORING NUMBER 15-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH 11-10-87

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
154									* SEE LOGS FOR OTHER NO. 15 WELLS,			
155	Box 1								ROLLER-ROCKED TO 154.5'			
156									155.0' - 25° JOINT - BLACK, (CARBONACEOUS)			
157									155.4' - 20° JOINT - BLACK, SMOOTH, SHALE			
158									155.7' - HORIZONTAL JOINT, BLACK, SHALE, SMOOTH			
159									156.6' - 20° JOINT - SMOOTH, BLACK, SHALE			
160									156.75' - HORIZ. JOINT - SMOOTH, BLACK, SHALE			
161									157.2' - 10° JOINT - SMOOTH, UNEVEN, BLACK, SHALE			
162									157.55' - HORIZ. JOINT - SMOOTH, BLACK, SHALE			
163									157.75' - HORIZ. JOINT - SMOOTH, BLACK, SHALE			
164									158.6' - 10° JOINT - SMOOTH, BLACK, SHALE			
									159.1' - HORIZONTAL JOINT - BLACK, SMOOTH, SHALE			
									159.25' - 20° JOINT - SHALE + GYPSUM			
									160.55' - 10° JOINT - SMOOTH, BLACK, SHALE			
									161.0' - HORIZ. JOINT - SMOOTH, BLACK, SHALE - GYPSUM ON MATCHING SIDE			
									161.65' - HORIZ. JOINT - SMOOTH, BLACK, SHALE			
									162.3' - HORIZ. JOINT - BLACK, SMOOTH, SHALE			
									162.55' - HORIZ. JOINT - BLACK, SMOOTH, SHALE			
									162.75' - 10° JOINT			
									163.2' - HORIZ. JOINT			
									163.5' - HORIZ. JOINT			
									163.75' - HORIZ. JOINT			

GENERAL NOTES:

Total Depth 169.5'

'ROCK' Drilling _____

GROUND WATER OBSERVATION

At _____ Ft. at Completion
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.
 At _____ Ft. after _____ hrs.

JOB DUPONT-NIAGARA RANT NO. 83C2236

DRILLING RIG _____

OPERATOR _____

INSPECTOR _____

LOGGED BY REZ 11/22/83BORING NUMBER 15-J

BORING OFFSET _____

SURFACE ELEVATION _____

DATE START _____ FINISH 11-10-83

DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES			BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP	
165	RUN 1 154.5' to 169.5'	15.0'	15.0'	15.0'			BLACK SHALE	164.5' - HORIZONTAL JOINT					
166								164.8' - HORIZONTAL JOINT					
167								165.4' - HORIZONTAL JOINT					
168								166.35' - HORIZ. JOINT					
169								166.85' - HORIZ. JOINT					
								167.2' - HORIZ. JOINT					
								167.25' - HORIZ. JOINT					
								167.35' - HORIZ. JOINT					
								167.4' - HORIZ. JOINT					
								167.95' - HORIZ. JOINT					
								168.4' - HORIZ. JOINT					
								168.8' - 10° JOINT					
								170.1' - HORIZ. JOINT					
								168.8' - 170.1' - VERTICAL JOINT					
170								170.05' - HORIZ. JOINT					
								END OF HOLE 169.5'					
								154.5' - 161.7' - GREY SHALY DOLOMITE - Lt. + dark grey, thin bedded, fine grained, numerous shale interbeds, joints usually along shale, occl. gypsum laminae, smooth joints					
								161.7' - 169.5' - BLACK SHALE - thin bedded, black-dark grey, calcareous					

GENERAL NOTES:

Total Depth 169.5'

'ROCK' Drilling _____

Sheet 1 of 2

GROUND WATER OBSERVATION								JOB <u>Dupont Niagara Plant NO. 83C2236</u>		BORING NUMBER <u>16-B</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>569.3'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/25/83</u> FINISH <u>7/17/83</u>		
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
11	Top of		Rock		11.5'							
12												
13	No		Sample									
14												
15									14.5' - 17.0' - med gray to med gray brown laminated dolomite. Large vugs (.2") abundant, some connected in early giving 2nd a "punky" look. No gypsum. Horizontal Fractures every 1 to 2" either along bedding planes or due to connecting vugs.	2		
16									14.9' - Joint, 40°	9		0°
17									17.0' - 18.1' - med brown, poorly laminated Dol. vugs common but not nearly as large as 14.5' - 17.0'. Fractures still every 1" to 2" now along bedding or stylolites.	5		
18	Run 1								17.5' - 18.1' - Vertical fracture splits core.	11		0°
19	Box 1		4.4'		10'				18.1' - 24.1' - med gray brown, poorly laminated Dolomite. Pin-hole vugs only but they are rare.	2	0°	0°
20			10'		10'				18.75' 19.15' 19.6' 20.2' 20.6' - Horizontal Fractures along bedding and/or stylolites. Some surfaces have partial coats of gypsum. 19.15' is completely coated w/ gyp.	2	0°	
21									20.6' - 21.1' - Vertical fracture	4	0°	
22									20.9' 21.2' 21.35' 21.7' 21.75' - Horizontal Fractures along bedding or stylolites. 20.2' is gypsum coated.	4	0°	
23			44%		100%				22.3' 22.45' - Horizontal Fractures along stylolites.	2	0°	
GENERAL NOTES:										Total Depth <u>36-3'</u>		
										'ROCK' Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>16-B</u>		

GROUND WATER OBSERVATION								JOB <u>Dupont</u>		BORING NUMBER <u>16-B</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>569.3</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Ted Taylor</u>		DATE START <u>5/25/83</u> FINISH <u>7/19/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
24									24.1'-25.3'-Med. to light gray, well laminated dolomite. 24.1' is a sharp contact at a stylolite. Few med. sized vugs (.15") present	0		0°
25									24.3'- Fracture along a stylolite. Stylolites abundant.	3	50°	0°
26									24.6'- Joint, 50°	2	30°	0°
27									24.8'- Horizontal Fracture	2	30°	0°
28									25.2'- Joint, 30°	2	0°	0°
29									25.3'- 36.3' - med gray to med gray brown, laminated dolomite. many small vugs giving dol a granular texture. Larger vugs found in certain intervals.	3	0°	0°
30									25.5'- Joint, 30°; Large vugs nearby.	1	0°	0°
31									25.65'- Large vug eating away at core (.15" x .5")	1	10°	0°
32									26.4'- Horizontal Fracture	4	30°	0°
33									26.9'- Horizontal Fracture along stylolite. Gypsum coat. Same at 27.1' and 27.25' except no gypsum.	2	0°	0°
34									27.6'- Horizontal Fracture	3	10°	0°
35									27.8'- Large, gypsum filled vug.	3	0°	0°
36									28.1'- Horizontal Fracture along stylolite and connecting vugs.	0	0°	0°
									29.1'- Joint, 10°	4	30°	0°
									28.0'- 30.0'- Groups of small vugs common.	2	0°	0°
									31.1'- Horizontal Fracture.	3	10°	0°
									31.5'- Joint, 20°	3	0°	0°
									31.5'- 33.0' - Vugs, .15" and larger very common. Beginning to look "punky."	3	10°	0°
									31.5'- 32.0' - Vertical Fracture.	3	0°	0°
									31.7', 32.0' - Horizontal Fracture.	3	10°	0°
									32.2', 32.4' - Fracture due to connecting vugs.	3	0°	0°
									33.15' - 33.45' - V. large, connecting vugs. Gypsum coats present. Broken at 33.2'	3	0°	0°
									33.45' - Piece of metal (Drum)?	3	0°	0°
									33.6' - Joint, 10°	3	0°	0°
									33.9' - Horizontal Fracture	3	0°	0°
									34.3' - Joint, 100, Gypsum coat	3	0°	0°
									34.5' - 34.7' - Vuggy, Broken in 2 places.	0	0°	0°
									34.8' - Gypsum pod lined w/ black	0	0°	0°
									36.1' - Horizontal Fracture along stylolite	1	0°	0°
36	Total Depth						36.3'					

GENERAL NOTES:		Total Depth <u>36.3'</u>
1) Drillers lost water at ~ 33.3'		"ROCK" Drilling _____
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>16-B</u>



GROUND WATER OBSERVATION						JOB <u>DUPONT NIAGARA PLANT NO. 83C 2236</u>		BORING NUMBER <u>17-B</u>				
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____				
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>568-9'</u>				
At _____ Ft. after _____ hrs.						INSPECTOR <u>Dave Schock</u>		DATE START <u>5/26/83</u> FINISH <u>7/21/83</u>				
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
21	TOP OF GEORGY											
22	NO SAMPLE											
23												
24												
25	Run 1 24.5- 35.3'		10.2 10.8	10.8 10.8			LT GRAY DOL. WITH FERRUG. OXIDATION, STYOLITES	24.9 5° JOINT + GYPSUM 25.0 5° JOINT 25.4 GYPSUM BLEB + IRREGULAR FRACT. 25.9 2cm VUG 26.4 IRREGULAR FRACT 27.3 IRREGULAR FRACT (~10°) 30.6 0° JOINT 30.8 5° JOINT 31.7 IRREGULAR FRACT (~25°) 31.9 5° JOINT 32.0 5° JOINT 32.6 5° JOINT + INTERSECTION WITH VERTICAL VUG (5cm) 33.35 10° JOINT 33.6-35.3 VUG SURFACE (1-5mm) PINHOLE AND LINEAR VUGS DISPERSED LOCALLY THROUGHOUT RUN (SPARSE DENSITY)	25.2 2.5 cm VUG 25.8 GYPS. BLEB (3cm) 25.9 2cm VUG	1 2 1 1 0 0 2 2 2	5 5 5 5 5 5 5 5 5	
26												
27												
28			94%	100%								
29												
30												
31												
32												
33												

GENERAL NOTES:		Total Depth <u>57-8'</u>
		"ROCK" Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%		HOLE NO. <u>17-B</u>

GROUND WATER OBSERVATION								JOB <u>DUPONT NIAGARA PLANT NO. 842236</u>		BORING NUMBER <u>17-B</u>			
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____			
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.9'</u>			
At _____ Ft. after _____ hrs.								INSPECTOR <u>Dave Schrock</u>		DATE START <u>7/26/83</u> FINISH <u>7/27/83</u>			
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED	
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP
34										1	10		
35										0			
36	RUN 2 35.3' - 45.5'		9.7 10.2		10.2 10.2				36.15 5° JOINT 39.9 5° FRACT ALONG STYLOLITE 40.2 10° FRACT ALONG STYLOLITE 40.45 0° JOINT 42.2 0° FRACT ALONG STYLOLITE 43.1 15° JOINT 44.8 IRREGULAR FRACTURE 45.1 10° JOINT	35.5 3cm GYP. GLEB 38.3-38.4 CRACK CUTTING GYPSUM VEIN PINHOLE VUGS CONCENTRATED LOCALLY THROUGHOUT RUN. FEWER VUGS THAN RUN 1. NO LARGE VUGS.	1	5	
37										0			
38										0			
39										0			
40										1	5		
41										2	10		
42										0			
43										1	0		
44										1	15		
45										1			
46	RUN 3 45.5 - 51.8'		5.4 6.3		6.2 6.3				45.5 10° JOINT 46.0 5° JOINT	46.2 RADIAL VUG ZONE 46.8 " PINHOLE VUG ZONE	2	10 5	
GENERAL NOTES:										Total Depth <u>51-8'</u> "ROCK" Drilling _____			
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>17-B</u>			



GROUND WATER OBSERVATION								JOB <u>DUPONT NIA GMA PLANT NO. 832236</u>		BORING NUMBER <u>17-B</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>568.9'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Dave Schock</u>		DATE START <u>5/26/83</u> FINISH <u>7/24/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	
47									47.2-47.3 BROKEN ZONE, 0°-10° FRACTURES, 4+ BREAKS	1		
48									47.6 0° JOINT 47.75 IRREGULAR FRACT (~100) 48.2 0° JOINT 47.9 GYP. VEIN	6	0	02
49			86%		98%				48.5-48.6 BROKEN ZONE (LARGE FRACTURE)	3+	0	02
50									50.45 5° JOINT 48.6 - END OF RUN: MUGGY ZONE (1-2--)	0		
51										1	5	
52									END OF CORE	0		

GENERAL NOTES: LOG NOTES LOSS OF WATER AT 48.6'	Total Depth <u>51.8'</u>
	'ROCK' Drilling _____
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%	HOLE NO. <u>17-B</u>

GROUND WATER OBSERVATION								JOB <u>DUPONT NIAHARA PLANT</u> NO. <u>85C2236</u>		BORING NUMBER <u>18-C</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>567.6'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Oave Scholze</u>		DATE START <u>5/27/83</u> FINISH <u>7/22/83</u>		
DEPTH	CORE RUN		RQ D		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
13	TOP OF BEDROCK											
14	NO SAMPLE											
15												
16	RUN 1											
17	16.0 -								18.35 IRREGULAR FRACTURE	0		
18	21.3'		3.0		5.3				18.5 - 18.8 BROKEN ZONE; FRACTURED 0°-10°, 4+ BREAKS	0		
19			5.3		5.3				18.5 - 19.0 VUG (.1mm - 10mm) SURFACE	5+		
20									19.1 5° JOINT			
21									19.4 10° JOINT			
22									19.6 IRREGULAR JOINT (-5°-10°), SURFACE OF CORE IS VUGGY AROUND JOINT	4		
23									19.75 IRREGULAR JOINT (-0°), VUGGY CORE SURFACE AROUND JOINT	1		
24									20.3 IRREGULAR FRACTURE (-0°) (MECH?)	4		
25									21.1 10° JOINT	6+		
26									21.2 - 22.6: 10° JOINT VUG (.1-3mm) SURFACE, WEATHERED			
27									21.3 15° JOINT			
28									21.75 5° JOINT (VUG ON JOINT)			
29									21.9 0° JOINT	2		
30									22.0 5° JOINT			
31									22.0 - 22.4 BROKEN ZONE, 0°-10°, 4+ BREAKS	1		
32									22.65 30° JOINT			
33									23.0 5° JOINT			
GENERAL NOTES: LOG NOTES LOSS OF WATER AT 18.5										Total Depth <u>35.9'</u>		
										"ROCK" Drilling _____		
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>18-C</u>		



GROUND WATER OBSERVATION						JOB <u>DUPONT NIA GARY PLANT NO. 832236</u>		BORING NUMBER <u>18-C</u>					
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____					
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>567.6'</u>					
At _____ Ft. after _____ hrs.						INSPECTOR <u>Dave Schrock</u>		DATE START <u>7/27/83</u> FINISH <u>7/22/83</u>					
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED	
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP
26									23.6 5° JOINT	25.65 - 27.0 VUG (-10°) SURFACE + FOSSIL ZONE	4		
27									24.0 0° JOINT + GYPSUM	27.4 - 28.1 SPARSE VUG SURFACE	1		
28									25.0 5° JOINT		0		
29									25.1 5° JOINT		1		
30									25.55 IRREGULAR FRACT (-10°) + GYPSUM		0		
31									25.9 0° JOINT	28.5 - 31.8 : PINHOLE VUG SURFACE	1		
32									26.9 IRREGULAR FRACT. (-5°)		0		
33									28.8 IRREGULAR FRACT (-5°)	28.8 - 29.4 GYPSUM VEIN	0		
34									32.3 IRREGULAR FRACT (-5°)		0		
35									33.05 5° JOINT		0		
36									33.15 5° JOINT		0		
37									33.3 5° JOINT		0		
38									33.8 IRREGULAR FRACT ON GYPSUM SLABS		1		
39									34.7 BROKEN ZONE (SMALL PIECES, 2+ BREAKS)		4		
40									35.5 10° JOINT		2+		
41											1		
42													
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GENERAL NOTES: LOG NOTES "LOST PARTIAL RETURNS 22.2"										Total Depth <u>35.9'</u>			
"LOST TOTAL RETURNS 34.7"										"ROCK" Drilling _____			
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. / 8-C			

GROUND WATER OBSERVATION						JOB DUPONT NIAGARA PLANT NO. 8302236-2		BORING NUMBER <u>19-B</u>					
At _____ Ft. at Completion						DRILLING RIG _____		BORING OFFSET _____					
At _____ Ft. after _____ hrs.						OPERATOR _____		SURFACE ELEVATION <u>569.8'</u>					
At _____ Ft. after _____ hrs.						INSPECTOR <u>Dave Schock</u>		DATE START <u>5/25/83</u> FINISH <u>7/27/83</u>					
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED	
	From	To	Inch	%	Inch	%				No./Ft.	DIP		DIP
10	TOP OF ROCK		10.5'										
11													
12	NO SAMPLE												
13													
14													
15	RUN 1								14.4 0° JOINT 14.5 5° JOINT, BLACK STAIN 14.65 5° JOINT 14.7 0° JOINT 14.8 5° JOINT, GYPSUM COAT 15.1 5° JOINT, GYPSUM COAT 15.3 5° JOINT 15.4 0° JOINT 15.7 5° JOINT 16.4 5° JOINT 17.1 20° FRACTURE ALONG STYLOLITE 17.2 20° JOINT (? MECH) 19.9 0° FRACTURE ALONG STYLOLITE 20.15 0° JOINT 20.25 0° JOINT 20.5 0° FRACTURE ALONG STYLOLITE 21.0 0° JOINT, GYPSUM COAT	14.4 - 14.7 VUG, (1-1mm) SURFACE, WEATHERED, ENDOZONE	5	0	5
16	BOX 1										4	5	
17			7.1 9.4		9.2 9.4						1	5	
18											2	10	
19			76%		98%						0		
20											1	0	
21									20.1 - 20.3 VUG (5-10mm) SURFACE, WEATHERED. 20.1 - 21.0 STYLOLITE CONCENTRATION 20.8 GYPSUM BLEB		3	0	
22											1	0	
GENERAL NOTES: LOG NOTES LOSS OF WATER AT 20.15'										Total Depth <u>23.4'</u> 'ROCK' Drilling _____			
Proportions used: trace-0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>19-B</u>			

GROUND WATER OBSERVATION								JOB <u>DUPONT NIAGARA PLANT</u> NO. <u>83C1236-2</u>		BORING NUMBER <u>19-B</u>		
At _____ Ft. at Completion								DRILLING RIG _____		BORING OFFSET _____		
At _____ Ft. after _____ hrs.								OPERATOR _____		SURFACE ELEVATION <u>569.8'</u>		
At _____ Ft. after _____ hrs.								INSPECTOR <u>Dave Schock</u>		DATE START <u>5/25/83</u> FINISH <u>7/27/83</u>		
DEPTH	CORE RUN		RQD		RECOVERY		Core Type & Resist.	STRATA CHANGE DEPTH	FIELD IDENTIFICATION, TYPE AND COLOR WEATHERING, SEAMS IN ROCK, etc.	FRACTURES		BED
	From	To	Inch	%	Inch	%				No./Ft.	DIP	DIP
13									23.4 0° JOINT, GYPSUM COAT 23.0 - 23.4 VUL (.1-2mm) SURFACE	0		
	END OF CORE									1	0	
GENERAL NOTES:										Total Depth <u>23.4'</u> 'ROCK' Drilling _____		
Proportions used: trace 0-10%, little 10-20%, some 20-35%, and 35-50%										HOLE NO. <u>19-B</u>		