

GEOLOGICAL and ENGINEERING REPORT
ON
HOUSTON et al COMEAULT PROV. (STH) No. 1.

Lat. $56^{\circ} 40'$ Long: $90^{\circ} 55'$

Located in the Central Basin
of the
HUDSON BAY LOWLANDS
Northern Manitoba

December 1968

Copy Number 4 of 10

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ADDENDA

ELECTRIC LOGS

STRATIGRAPHIC COMPARISON LOG

INTRODUCTION

This hole was drilled and programmed to utilize a hardrock diamond drill rig as a stratigraphic test of a residual gravity anomaly on Permit No. 42 - granted to Houston Oils Limited of Calgary.

Because of marsh and bogland ground conditions, and the suitability of float aircraft approach, the actual borehole was required to be established at:

15 VXN 281796

Using the Military 10,000 Metre Grid System on MAP # 54B - KASKATTAMA RIVER - Manitoba - Ontario. Scale of 1 : 250,000 in the National Topographic System

OR

MAP	54B
Edition	1 ASE
Series	A 501

90° 55'

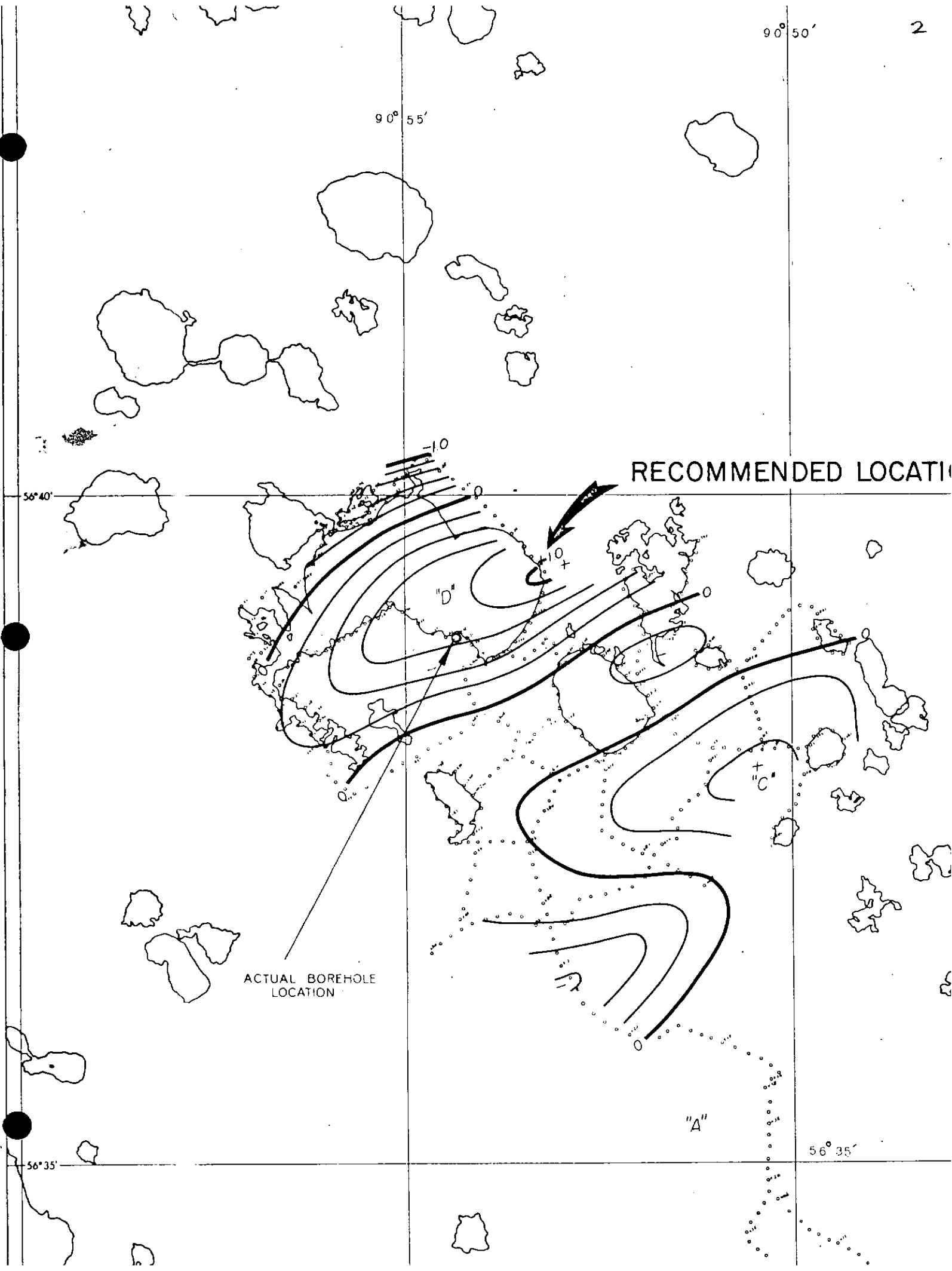
56° 40'

RECOMMENDED LOCATION

ACTUAL BOREHOLE LOCATION

56° 35'

56° 35'



WELL PROGRAM AND PROGNOSISHouston et al Comeault Prov. (STH) #1

LOCATION: 56° 40' Latitude, 90° 52' Longitude (approximate)

ELEVATION: 260' approximate

<u>GEOLOGICAL MARKERS:</u>	<u>Formation</u>	<u>Elevation</u>	<u>Depth</u>
Silurian	Upper Kenogami	+ 260	0
	Lower Kenogami	- 240	500
	Attawapiskat * Reef)	- 390	650
	Ekwan * Reef)		
	Severn River		
Ordovician	Port Nelson		
	Red Head Rapids	-1390	1650
	Churchill River *		
PreCambrian	Bad Cache *	-2090	2350

* Expected porous zones.

OBJECTIVE: To core the sedimentary section from the top of Bedrock to the top of Precambrian.

SURFACE HOLE:

- (a) Drill HX (4 5/8") hole to bedrock.
- (b) Run H casing to bottom.
- (c) Core HQ (3 25/32" hole, 2 1/2" core) to approximately 100' (50' into bedrock).
- (d) Run N casing to bottom. Pull H casing.
- (e) Cement N casing with good returns to surface. Allow 12 hours for cement to set.
- (f) Run B casing as liner to bottom. Install rubber gasket between top of B casing and top of N casing.
- (g) Install 3" Tee on top of N casing and Regan Blowout preventer on top of Tee. Check BOP to 700 psi, hold 15 minutes.

MAIN HOLE:

- (a) Core ahead with BQ (2 23/64" hole, 1 7/16" core) equipment.
- (b) When a few feet below casing shoe pressure up to approximately 700 psi, hold 15 minutes.
- (c) Keep 10' drilling time.
- (d) Run inclination survey every 200'. If hole deviates more than 3° run survey every 100' until hole returns to less than 3°.
- (e) Check Blowout preventer daily to assure that it is serviceable.
- (f) If hole problems occur ream to T.D. with BX (2 31/32") casing shoe bit. Set B casing with crandal shoe. Continue coring with BQ equipment to T.D.

AT TOTAL DEPTH:

(g) Cores are to be shipped out weekly or when plane service is available.

ABANDONMENT:

(a) Run Electronic Log from surface shoe to T. D.

(a) Abandonment Program to be approved by Manitoba Mines Branch.

(b) Tentative program is to run continuous cement plug from T. D. to surface in one or more stages as deemed advisable from subsurface data.

REPORTS:

(a) Daily - Depth and status.

(b) Weekly (mailed) - detailed drilling and geological information.

TELEPHONE CALLS:

Houston Oils Limited, Calgary 262-1242 (403)
1690 Elveden House, Calgary 2, Alberta

After Hours C. D. Gould 242-5789 (403)
A. E. Whitehead 255-8975 (403)

Manitoba Mines Branch 946-7428 (204)
(Winnipeg)
901 Norquay Building,
401 York Avenue
Winnipeg 1, Manitoba

Drilling Engineer (Virden)

PERTINENT WELL DATA

Name: Houston et al Comeault Prov. (STH) No. 1

Location: North Latitude 56° 40'
West Longitude 90° 55'

License No. 2337 Mines Branch, Province of Manitoba.

Elevation: Estimated and unurveyed = 260 ± Floor Elevation.

Total Depth: 2125' F. L.

Classification: Wildcat - Stratigraphic test hole

Status: Dry and abandoned

Operator: Houston Oils Limited - Calgary.

Contractor: Midwest Diamond Drilling Co. Ltd. - Winnipeg.

Date spudded: 2:00 p.m. Sun. 13 October, 1968

Date Drilling Completed: 3:00 a.m. Tues. 19 November, 1968

Rig Released: 8:00 p.m. Mon. 25 November, 1968

Rig: G.M. 353 Diesel BB No. 2 Rig #1022
185 H.P. Model BBS - 35A 64 Series

Swivel head: S-35 H. H. D. - 65 Serial 2-435-033-37
Bus 23 H. H. Serial 3-502-511-97

Surface Casing
Details: H Csg. 4 1/2 set at 156' outside
N Csg. 3 1/2 set at 250 intermediate
B Csg. 2 7/8 set at 246 inside tubing
H & N cemented with 14 Sx Portland cement + 6 sx
Luminite

Core Size: Top hole = HQ (2 1/2")
Under hole = BQ (1 7/16")

Core Disposition: Boxed, logged and secured in wooden boxes of
25 ft. lengths.
Shipped to Geological Division
Dept. of Mines
Room 900 Norquay Bldg.
Winnipeg 1, Manitoba
c/o Dr. Hugh McCabe - Chief Geologist.

PERTINENT WELL DATA (cont'd)

Logging Program: S. P. and Resistivity Slim hole curve run only.
Run I Floor level to 2012 Sat. 23 Nov. '68
Run II 1830 - 2123 Sat. 23 Nov. '68
Run III 250 - 293 Sun. 24 Nov. '68
By Electronic Logging & Velocity Co. Ltd.

Geology & Engineering: J. Frank Blue, P. Geol.

DAILY PROGRESS REPORT

Date	Depth		Footage	Remarks
	From	To		
13 Sept. 68				Midwest Drilling Co. loaded boxcar with equipment and supplies and shipped this date via CNR consigned to Ilford.
27 Sept. 68				Established Camp - men & equipment commenced moving in, via Airlift by Lambair Otter Aircraft.
1st Oct. 68				
3 Oct. 68				Wait on weather in Ilford.
4 Oct. 68				Moved to Wellsite - general rig up.
5 Oct. 68				Push not in Camp - waiting on weather in Ilford - rig crew W.O. Push to spud and on equipment and supplies - general rigging up - crew W.O.O.
11 Oct. 68				
12 Oct. 68				Airlift resumed - Push arrived - spotted drill and built structure
13 Oct. 68				Erected Prefabs and general rigging up. Well spudded in
14 Oct. 68	0	58	58	Drilling surface hole - HX Csg. shoe & tricone to extent of length of H Csg. - Tricone M4N drilled N Csg. to 156'
15 Oct. 68	58	156	98	Believed to hit bedrock - no sample or core possible - suspend operations & W.O. H & N Csg.
16 Oct. 68	156	-		W.O. Csg. - Push & self to Gillam to arrange same. No intercom.
17 Oct. 68	156			W.O. Csg. & weather to fly same in.
18 Oct. 68	156			
19 Oct. 68	156			
20 Oct. 68	156			
21 Oct. 68	156			Resumed operations @ 8:00 a.m. - Drilling H Csg. down to depth of hole. Pulled out to core - Cut 4' core N1.
22 Oct. 68	156	160	4	Continued to drill w/Tricone to bedrock. Pulled rods to cut core. Run into core cut core from 2045 to 214 bedrock at 201. Intercom U.S. - require more Csg. - N & B. Ordered same.
23 Oct. 68	160	214	54	W.O. Csg. & weather to fly same in.

Date	Depth		Footage	Remarks
	From	To		
24 Oct. 68	214		✓	W.O. Csg. & weather to fly same in.
25 Oct. 68	214			Rig resumed operations - Csg. arr. @ 11:00 a.m. Hammer down H rigidly stuck in hole @ 158'. Run in w/N Csg. & cut core with Bx equipment. Cut 10' & ream down N Csg. -
26 Oct. 68	214	225	11	Coring ahead w/Bx equipment - ream out for N Csg.
27 Oct. 68	225	244	19	Reach cement or Csg. Point - wait on N Csg.
28 Oct. 68	244	244	-	W.O. Csg. - enough N to reach Csg. Pt. - 30' u. s. Left camp for Winnipeg - Lake froze over this p. m. - Ream and work down Csg. - Cement same.
29 Oct. 68	244	250	6	Cemented N Csg. in at 250' - H Csg. from below up to 158' and from surface down to 156'. Used 14 Sx. Portland & 6 Sx Luminite. W. O. C. 4 hrs. - Drill out shoe & cement with BX Casing shoe
30 Oct. 68	250	250	-	Rigging up BOP installation & W. O. C. Cement in collar at surface.
31 Oct. 68	250	367	117	Coring ahead with BX equipment - ream down B Csg.
1 Nov. 68	367	389	22	Coring ahead & ream down BX Csg.
2 Nov. 68	389	393	4	Coring ahead & ream down BX Csg. - Toolpush left camp.
3 Nov. 68	393	482	89	Coring ahead - BX Csg. @ 393 - stuck at this point - Radio u. s.
4 Nov. 68	482	620	138	Coring BX ahead. Survey
5 Nov. 68	620	671	51	Coring BX ahead. Survey @ 400 & 600'
6 Nov. 68	671	776	105	Coring BX ahead. Survey @ 800.
7 Nov. 68	776	948	172	Coring ahead - Pulled rods to rec. core and change bits. Survey @ 1000
8 Nov. 68	948	1138	190	Coring ahead - hole caving - trouble getting to btm. Wireline cable continues to break off at top of overshot recovery tool - Pull rods.

Date	Depth		Footage	Remarks
	From	To		
9 Nov. 68	1138	1230	92	Coring ahead. Survey @ 1200. Trouble with wireline.
10 Nov. 68	1230	1325	95	Coring ahead. Erected tuned aerial 50 & 60' high with copter - used 11 jts. BX Rods - Radio finally okay.
11 Nov. 68	1325	1471	146	Coring ahead - Pulled rods to rec. core wireline broke - lost 430' wireline - had to cut each 20' pull to get out of hole.
12 Nov. 68	1471	1520	49	Coring ahead - rig repairs - pulled rods to recover core. Lost core - run in to recover same - drill & mill up - pull rods - coring ahead - Survey @ 1400 & 1600.
13 Nov. 68	1520	1682	162	Coring ahead - pull rods to recover core - run in with <u>new</u> bit.
14 Nov. 68	1682	1778	96	Coring ahead. Survey @ 1800. Rig repairs to Start on motor.
15 Nov. 68	1778	1928	150	Coring ahead. Splicing 20 ft. lengths of wireline to get to bottom - 4 times. Plane W.O. weather to bring in same.
16 Nov. 68	1928	2018	90	W.O. wireline - wait on weather to fly in cable - Lambair. Water level measured in hole - 96' depth = $.4333 \times (393-96) = 115$ psi hydrostatic pressure in well
17 Nov. 68	2018	2018	Nil	W.O. Wireline - Crew spliced 8 pcs. of 20ft. lengths to wireline recovery cable - Cored ahead to PreCambrian. Trip for bit.
18 Nov. 68	2018	2087	69	Run in Bit #5 - Coring ahead. Survey tests @ 2008 & 2025.
19 Nov. 68	2087	2125	38	At Final Total Depth. 103 feet into PreC. W.O. Loggers. Coring completed @ 3:00 a.m.
20 Nov. 68	2125			W.O. Loggers.
21 Nov. 68	2125	FTD.		W.O. Loggers.
22 Nov. 68	2125			W.O. Loggers - personnel & equipment arrived at site. Require larger output generator to log.

Date	Depth		Footage	Remarks
	From	To		
23 Nov. 68	FTD.			W.O. Generator to log - 3 KW generator flown to wellsite - ran partial SP and Resistivity logs by Electronic Logging & Velocity Co. Ltd. - hole blocked - Ran in with rods and attempted to clear hole.
24 Nov. 68	FTD.			Logging. Pulled B Csg. back to btm of N Csg. (250') - Made Run III attempting to log upper part of pre-cased hole - unable to get below 289'. Run in rods & attempt to clean hole - Blocked tight at 309'. Completed logging run - Ram in B rods and cleaned bridges and caving hole to btm. Prepared to abandon. Weather out.
25 Nov. 68				Rig to abandon. Pulled B Csg. - stuck firm by flared casing shoe 4 feet into N Csg. unable to move or hammer further. Prepared to cement hole bottom to top with one complete plug. Dropped in 4 stages. Rig released at 8:00 p.m.
26 Nov. 68				Flew crew out via Lambair. Left 2 man watchman crew to attend Airlift of equipment and supplies as arranged by Midwest Drilling Co.

SEPT.

OCTOBER

NOVEMBER

DAYS SINCE SPUD

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43

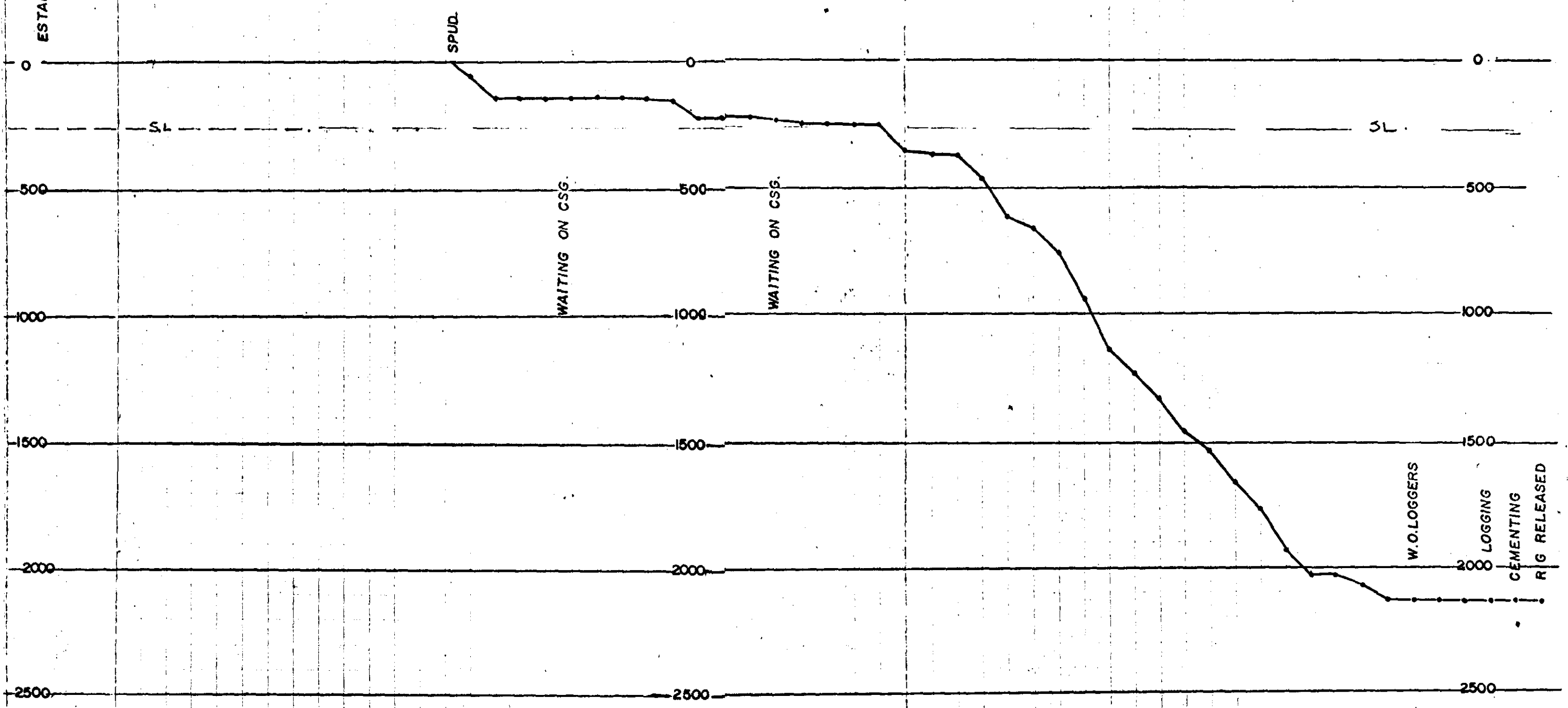
DAILY PROGRESS REPORT GRAPH OF

HOUSTON ET AL COMEAULT PROV. (STH) No. 1
56° 40' 90° 55'

ESTABLISHED CAMP

----- MIDWEST WAITING ON ORDERS

----- TIME ----- WAITING ----- ON ----- WEATHER TO FLY IN ----- ESSENTIALS.



DEVIATION SURVEY RECORD

<u>Date</u>	<u>Depth</u>	<u>Degrees</u>	<u>Degrees Off Vertical</u>
23 Oct. 68	210'	90°	0°
4 Nov. 68	400'	89°	1°
	600'	90°	0°
6 Nov. 68	800'	89°	1°
7 Nov. 68	1000'	90°	0°
9 Nov. 68	1200'	89°	1°
12 Nov. 68	1400'	90°	0°
13 Nov. 68	1600'	90°	0°
14 Nov. 68	1800'	90°	0°
18 Nov. 68	2000	90°	0°
	2125	90°	0°

Tests were made using 'E' type Tube and 4% Hydroflouratic Acid with 1/2 hour etching time.

Miniscus was then marked and corrected against Gibson chart.

BIT RECORD

<u>Bit No.</u>	<u>Size</u>	<u>Type</u>	<u>Depth</u>		<u>Footage Cut</u>	<u>Remarks</u>
			<u>In</u>	<u>Out</u>		
Surface Hole						
1A	4 5/8"	H Csg. Shoe	0	156.3	156.3	Left in hole
1	3 25/32"	HQ Diam.	156.3	160.7	4.4	Sharp
2A	3 3/4"	M4N Tricone	160.7	204.5	43.8	2-2-1
Underhole						
1	2 3/8"	BQ Diam.	204.5	643	438.5	Dull
2	2 3/8"	BQ Diam.	643	1078	435	Dull - Worn.
3	2 3/8"	BQ Diam.	1078	1682	604	Worn
4	2 3/8"	BQ Diam.	1682	2087	405	Worn
5	2 3/8"	BQ Diam.	2087	2125	38	Sharp

#4

DIAGRAM OF SURFACE HOLE CONDITIONS

SURFACE

LAKE

cut out fuel drum cemented on surface as collar.

cemented from surface by pressure pump from rig.

H CSG-SHOE 4 5/8"

H CSG 4 1/2" = 1/8" clearance for cement

GLACIAL TILL + DRIFT

GLACIAL TILL DRIFT + DEBRIS

clearance 1/8"

GRAVEL

QUARTZITE ERRATIC 156'

GRAVEL 158'

N CSG-SHOE 3 7/8"

N CSG 3 1/2"

1/6" for cement

Cement squeezed by displacement down N CSG. - to 156'

BEDROCK 201'

KENOGAMI FM.

SHALES + SLTSTONES

250'

TABLE OF FORMATIONS

Floor Level		260 † (estimated - unsurveyed)				
GSC	Formation	Aquitaine	Prognosis		Core	
			Depth	Subsea	Depth	Subsea
	(Houston Oils)	Banff -nomenclature-				
	Base of Glacial Drift		30	+230	201	+60
- Up	<u>Silurian</u>					
- M	Upper Kenogami <i>Lower Dev</i>		0	+260	201	+60
201	Lower Kenogami	Upper Ekwan	500	-240	276	-16
{ 401-446 501-521	Attawapiskat	Middle Ekwan	650	-390	414	-154
521	Ekwan River	Kaskattama Fm.			585	-325
661	Severn River	Lower Ekwan			775	-515
1416	Port Nelson				1060	-800
	<u>Ordovician</u>					
m.a. X	Red Head Rapids		1650	-1390	1351	-1091
		(Chasm Creek			1504	-1244
1532	Churchill River	(
		(Caution Creek			1737	-1477
		(Surprise Creek				
	Bad Cache	(
		(Portage Chute			1811	-1551
	PRECAMBRIAN		2350	-2090	2022	-1762
	Total Depth				2125	-1865

CORE RECORD

H. O. L. ET AL COMEAULT PROV. #1
56° 40' - 90° 52'

<u>Box No.</u>	<u>Interval</u>	<u>Cut</u>	<u>Rec.</u>	<u>%</u>	<u>Remarks</u>
<u>N Core</u> 1	156.3 - 160.7	4.4	4.4	100%	Till - Drift
<u>B Core</u> 1	204.5 - 214.0 214.0 - 225.0	9.5 11.0 <u>20.5</u>	4.7 9.0 <u>13.7</u>	66%	Middle Kenogami Fm. Siltst - Sh. calc.
2	225 - 244.0 244 - 250.0	19.0 6.0 <u>25.0</u>	11.0 4.0 <u>15.0</u>	60%	"
3	250 - 275	25.0	20.0	80%	Lower Kenogami
4	275 - 300	25.0	22.0	88%	Lower Kenogami
5	300 - 325	25.0	8.0	32%	
6	325 - 350	25.0	1.0	4%	
7	350 - 375	25.0	11.0	44%	
8	375 - 400	25.0	7.2	29%	
9	400 - 425	25.0	17.4	70%	Attawapiskat
10	425 - 450	25.0	24.4	98%	
11	450 - 475	25.0	25.0	100%	
12	475 - 500	25.0	25.0	100%	
13	500 - 525	25.0	25.0	100%	
14	525 - 550	25.0	25.0	100%	
15	550 - 575	25.0	25.0	100%	
16	575 - 600	25.0	25.0	100%	Kaskattama Fm. Reefoid
17	600 - 625	25.0	24.0	96%	
18	625 - 650	25.0	17.0	68%	
19	650 - 675	25.0	25.0	100%	
20	675 - 700	25.0	24.4	99%	
21	700 - 725	25.0	25.0	100%	
22	725 - 750	25.0	25.0	100%	
23	750 - 775	25.0	25.0	100%	
24	775 - 800	25.0	25.0	100%	Lower Ekwan
25	800 - 825	25.0	25.0	100%	
26	825 - 850	25.0	25.0	100%	
27	850 - 875	25.0	25.0	100%	
28	875 - 900	25.0	25.0	100%	
29	900 - 925	25.0	25.0	100%	
30	925 - 950	25.0	25.0	100%	
31	950 - 975	25.0	25.0	100%	
32	975 - 1000	25.0	25.0	100%	

<u>Box No.</u>	<u>Interval</u>	<u>Cut</u>	<u>Rec.</u>	<u>%</u>	<u>Remarks</u>
<u>B Core</u>					
33	1000 - 1025	25.0	25.0	100%	
34	1025 - 1050	25.0	25.0	100%	
35	1050 - 1075	25.0	25.0	100%	Port Nelson
36	1075 - 1100	25.0	25.0	100%	
37	1100 - 1125	25.0	25.0	100%	repetitive series of
38	1125 - 1150	25.0	25.0	100%	lms & dol.
39	1150 - 1175	25.0	25.0	100%	
40	1175 - 1200	25.0	25.0	100%	
41	1200 - 1225	25.0	25.0	100%	
42	1225 - 1250	25.0	25.0	100%	
43	1250 - 1275	25.0	25.0	100%	
44	1275 - 1300	25.0	25.0	100%	
45	1300 - 1325	25.0	25.0	100%	
46	1325 - 1350	25.0	25.0	100%	
47	1350 - 1375	25.0	25.0	100%	Red Head Rapids
48	1375 - 1400	25.0	25.0	100%	
49	1400 - 1425	25.0	25.0	100%	Dolomites and
50	1425 - 1450	25.0	25.0	100%	evaporites
51	1450 - 1475	25.0	25.0	100%	
52	1475 - 1500	25.0	16.5	66%	
53	1500 - 1525	25.0	25.0	100%	Chasm Creek Anhy.
54	1525 - 1550	25.0	25.0	100%	
55	1550 - 1575	25.0	25.0	100%	warpled dol. &
56	1575 - 1600	25.0	25.0	100%	lms -
57	1600 - 1625	25.0	25.0	100%	
58	1625 - 1650	25.0	25.0	100%	
59	1650 - 1675	25.0	25.0	100%	
60	1675 - 1700	25.0	25.0	100%	
61	1700 - 1725	25.0	25.0	100%	
62	1725 - 1750	25.0	25.0	100%	Caution Creek
63	1750 - 1775	25.0	25.0	100%	
64	1775 - 1800	25.0	25.0	100%	
65	1800 - 1825	25.0	25.0	100%	Portage Chute
66	1825 - 1850	25.0	25.0	100%	
67	1850 - 1875	25.0	25.0	100%	dense lms.
68	1875 - 1900	25.0	25.0	100%	
69	1900 - 1925	25.0	25.0	100%	
70	1925 - 1950	25.0	25.0	100%	
71	1950 - 1975	25.0	25.0	100%	
72	1975 - 2000	25.0	25.0	100%	

<u>Box No.</u>	<u>Interval</u>	<u>Cut</u>	<u>Rec.</u>	<u>%</u>	<u>Remarks</u>
73	2000-2025	25.0	25.0	100%	Precambrian
74	2025-2050	25.0	25.0	100%	
75	2050-2075	25.0	25.0	100%	medamorphic
76	2075-2100	25.0	24.0	96%	and igneous
77	2100-2125	25.0	24.0	96%	

SAMPLE DESCRIPTION

156.3 - 156.7	QUARTZITE	erratic slab in gravel bed - buff, cryptoxline-glacial erratic boulder
156.7 - 157.7	GRAVEL	Loose, coarse, feldspathic, granitic PreC. pebs - qtzite, lms in pt. water worn - sub-angular, arkosic.
157.7 - 160.7	TILL	water sorted glacial rock fluorescent - agglomeratic - adhesive and plastic compaction - Scat. sub angular sedimentary pebble fragments and PreC. qtz and granitic water worn unequi sized pbs.
160.7 - 204.5	GLACIAL Till and Drift	drilled with NX equipment and Sec. M4N Tricone bit - no recovery or returns - sludge sampling indicates Till.

TOP OF BEDROCK 201 (+60 ±)
(Middle Kenogami Fm.)

204.5 - 206.1	STLST/SH	pale grey green - earthy and microporous in pt. sl. calcareous - sl. inclined bding - minute leached organic vugs - fractures and sutures.
206.1 - 206.9		Missing.
206.9 - 207.3		As above
207.3 - 211.4		Missing
211.4 - 214.0	SHALY SLTST	lt/pale grey green - mudstone. Sporadic individual Favosites type coral remnants - X bd. at base -
214.0 - 225.0	SLTST/SH	All as above. lt. col. grey grn - pale - whitish gy - stratified and lithofied-kaolinitic - in pt. sl. limy and calcareous - Sporadic isolated fossil forms & relics - minute leached organic porosity - fractured and sutured - earthy micro Ø
225.0 - 226.2		As above but bcm sl. calc. & limy.
226.2 - 229.2		Lost core
229.2 - 239.0	SLTST/SHALE	- all as above, inclined & sl. X bd. fractured & sutured. micro Ø. Sporadic isolated leached vugs, microgranular - compacted. Sec. calcitic vug lining xllization.
239.0 - 246.0		LOST CORE.

246.0 - 246.6	Sandstone - Calcarenite - lime sand - mottled f. g. - med. gy. calc. cement - micro interxline & granular porosity.
246.6 - 250.5	SLTST/SHALES - as above formerly rubbled & crumbled broken & mulched.
250.5 - 251.0	LOST CORE
251.0 - 255.5	- as above - in pt. calc. & calcilutitic thinly laminated - pale to lt. colored gy/buff/greenish - strgrs lms. Solution \emptyset & vugs - earthy.
255.5 - 256.0	DOLOMITIC SLTST - lithographic/cryptoxline - lt buff calcilutitic.
256.0 - 259.5	SLTST/SHALE - All as above, formerly basal pt. bcm calcareous & limy
259.5 - 260.0	LOST CORE
260.0 - 263.0	SLTST/SHALE - continuation of above, broken, crumbled and rubbleized.
263.0 - 264.5	LOST CORE
264.5 - 266.5	LIME SILT - Calcilutitic - Buff to lt. col. calc. & marl-like.
266.5 - 269.0	<u>LWR KENOGAMI 276/16</u>
269.0 - 276.5	SLTST/SHALE - gy greenish - pale - all as above formerly w/breaks of lms, stringers & laminae - fossilized lattice work & remnants of coral type fossils - banded - fractured & broken.
276.5 - 279.0	SILTY LMS. - fossiliferous coral lattice relic - calcilutitic - crm/buff w/intbd of sltst & shales as above - oriented solution & leached organic vugs paralleling bding planes. Porous.
279.0 - 283.0	SLTST - or calc. mud - microgranular /litho - stratified & laminated - highly fractured - broken & rubbled.
283.0 - 294.0	LMS - vugular - crm/buff - large sporadic solution cavities & leached vugs - Calcilutitic, in pt. mottled - vesicular and leached organic Porosity - II to bding. low perm. - Fossiliferous in pt. color gy to crmy buff - intbd w/dns laminae & finely bd. calcilutite & siltstones - microgran to lithographic. Exhibiting reefoid relic structures w/vesicular textures in streaks.

294.0 - 296.0	Calcilutite - limy silt or mudstone - crm/w as above.
296.0 - 299.0	LOST CORE
299.0 - 304.0	Calcilutite - crm/w/buff - lt. colored Lms. in pt. reefal distorted, brecciated & Sec. recemented interbds - in pt. as blebs & strgrs, vesicular porous vug cavities w/calcite infill.
304.0 - 314.5	LOST CORE
314.5 - 315.5	- microgran. - lithographic bcm dense & cmpt. Tight.
315.5 - 322.0	LOST CORE
322.0 - 323.0	- all as above.
323.0 - 324.0	Calcarenite - porous - oolitic & pelletoid - a recalcified lime sand - in pt. sucrosic v. f. xline.
324.0 - 326.0	LMS - calcilutitic - microxline/lithographic dns & cmpt. Tight, fractured and rubbled.
326.0 - 356.5	LOST CORE
356.5 - 358.0	Calcilutite LMS - marl - fos - dns.
358.0 - 362.0	Calcarenite - bioclastic marl type - reefal debris - distorted and disturbed turgid deposition - Bivalves - lt. colored - variegated crm to mottled gy green.
362.0 - 364.0	LMS SAND coarse calcarenite - sucrosic. Excellent intergranular porosity and permeability.
364.0 - 367.0	Calcilutite - laminated, thinly bd. lms. inclined bd - earthy micro porosity.
367.0 - 367.5	MARL SAND Lms - lt crm.
367.5 - 379.0	LOST CORE.
379.0 - 380.2	- porous - calcarenitic
380.2 - 390.0	LOST CORE
390.0 - 393.5	LMS - Grey/blue gy - crypto/lithographic vuggy - highly fossiliferous - leached & solution \emptyset low perm.
393.5 - 394.0	SS. - lime sand & calcarenite - brecciated (washing out?)

394.0 - 396.0	LIMESTONE	- as above - formerly
396.0 - 400.0	LOST CORE	
400.0 - 403.5		- mottled gy to buff with dolitic phases - microxline - very vuggy - fos. vesicular & solution cavities - (back reef facies) (dense pseudo nebulous \emptyset)
403.5 - 405.0	LOST CORE	
405.0 - 406.0		- as above.
406.0 - 406.8	LOST CORE	
406.8 - 410.0		- all as above - cryptoxline - mottled
410.0 - 411.0	LOST CORE	
411.0 - 412.2	LIMESTONE	- dolomitic, crypto, mottled - lt. buff - vugular.
412.2 - 414.0	LOST CORE	
<u>ATTAWAPISKAT Fm. 414/-154</u>		
414.0 - 417.2	LIMESTONE	- Reefal in pt. - vesicular, leached coralline lattice work - cryptoxline sporadic vugs.
417.2 - 419.7	LOST CORE	
419.7 - 432.5		- w/sl. dolomitic intbds & infilling - Reefoid patches & strgrs - all very vuggy - fractured & brecciated- buff/gy - microxline to crypto- xline reefal debris - mottled, distorted and inclined bd. Dense pts w/reefal strgrs - highly fossiliferous and marl-like.
432.5 - 438.0	REEFAL LMS	- very porous - vuggy - solution cavities & leached organic \emptyset - calcarenitic, marly - reefoid character inc. towards base.
438.0 - 438.6	LOST CORE	
438.6 - 460.0	SLTST/SHALE	- lt. gy green to rusty buff - turgid bd. exhibited - sl. calc. & limy - in pt. mottled. kaolinitic - sporadic isolated fossil forms. BRACHS. thinly bd. - fine laminations - Blebs & strgrs blk to dk brn - horny brittle - hard flint or chalcedony infillings -translucent Sl. dolitic phases.

- 460.0 - 472.5 SLTST/SHALE - all as above, but bcm grey with greenish tinge - distorted bding - exhibits patchy brecciation - Sl. dolitic - (disturbed depositional conditions). Cherty and flinty stringers & blebs common.
- 472.5 - 481.0 LIMESTONE - lt. colored, mottled, gys and buffs - dense - cryptoxline - fossiliferous w/large leached organic vugs & porosity - low permeabilities - Ab. secondary clear calcite euhedral rexlizations as infill & vug linings - fractured and sutured.
- 481.0 - 482.0 REEFAL LMS - vesicular latticewk - euhedral xls of clear calcite rhombs.
- 482.0 - 486.0 LIMESTONE - as above formerly
- 486.0 - 487.0 REEFAL LMS - lattice relic & remnant - buff/brn sec. calcite infill - as above.
- 487.0 - 492.5 LMS - all as above formerly
- 492.5 - 493.5 REEFOID LMS - vesicular lattice relic stringer
- 493.5 - 505.0 LMS - brecciated lms as above - lt buff/brn - cryptoxline/microxline - distorted crumpled bding - fos. isolated leached vugs - dns & massive.
- 505.0 - 511.5 Calcarenite - sucrosic in pt. - some (marl) secondary euhedral lmsrexls, - fragmental - intergran. Fair \emptyset - pelletoid - bio - marl.
- 511.5 - 521 LIMESTONE - crypto/micro xline - fos. mottled - with stringers, patches & inter laminations of med. granular interxline \emptyset - sporatically so - with low permeabilities. Generally dense, compt. & tight.
- 521 - 523 - bcm uniform, even textured, mottled with dense fossilization - coralline forms - brachs - crinoids -

KASKATTAMA 585/-325

- 523 - 587 - bcm more massive & competent, firm - a continuing series of massive compact - generally dense and tight buff to mottled grey/gy blue/brn- cryptoxline strata with minor interbeds of shaly siltstones and sl. dolomitic phases -
 - In pt. as patches and layered interbeds of fragmental, bioclastic calcarenitic and marly buff lms - densely recemented in a matrix of primary evaporitic micro/cryptoxline ground mass - in pt patches of recalified breccia

587 - 602.2		- Bcm mottled blue grey - frag. & brecciated - pelletoid & bioclastic. Dns - with shaly finely bded laminae of evaporitic lithographic strata of primary character - flat bding in attitude - massive - competent towards base - tight. Minor vertical fracturing - speckled and streaked in color.
602.2 - 614.0	Calcarenite	- brecciated - fragmental and bioclastic - medium to grs granular minute vugs - vesicular leached coquinc porosity - (Biostromal?) 1" chert strgr. Fair Porous
614.0 - 616.5	LIMESTONE	Cryptoxline/lithographic - calcilutitic primary evaporitic type.
616.5 - 625.0	LIMESTONE	Breccia - coarse to fine - fragmental & bioclastic. Highly fossiliferous - rexlization & infilling of fragmented particles - dns - lithographic ground mass or matrix. Zaphrentses. Porous in patches.
625.0 - 628.5		- inc. amt. calcilutite - earthy \emptyset & microporous - limy mudstone - cryptoxline.
628.5 - 636.5		LOST CORE
636.5 - 637.0		- shaly dns crypto/litho - as above.
637.0 - 645.2	Calcarenite	- Fragmental & brecciated - as above formerly - a unique textured breccia in a matrix of lime mudstone - generally dense but with patches of earthy/micro \emptyset . Chert/flint/silica blebs common. Sl. minor clr calcite xls as infill.
645.2 - 647.3	LIMESTONE	Cryptoxline - shaly - evaporitic/primary lithographic.
647.3 - 650.3	Calcarenite	All as above.
650.3 - 652.6	SHALY LMS	- flat bd. - laminated - thinly banded - varved - intbd frag. & bioclastic strgrs.
652.6 - 657.5	LIMESTONE	- Biostromal - reefoid - brecciated - bioclastic reef debris - marl type - Porous - intergran. & vugular - Dense - crypto band.
658.6 - 661.5		- All as above formerly. - with ab. chert infill and as irregular blebs.
661.5 - 667.5	LIMESTONE	- dense - cryptoxline matrix & infill of fragmental & brecciated lms - cmpt. distorted, disturbed turgid deposition at base. Ab. chert blebs.

667.5 - 672.5	DOLOMITE	Shaly - thinly laminated variegated grey colors - to buff - varved - a biscuit or book of poker chip cleavable shales - ab. chert strgrs.
672.5 - 673.0	DOLOMITIZED	Reefoid breccia & debris.
673.0 - 675.0	SHALE	- Dolomitic - as above. Lt. buff finely laminated choc. brn. soft - calc. shale - breaks common.
675.0 - 681.0	SHALY LMS	- crypto - dolitic - buff - lithofied & thinly laminated at base, highly sutured.
681.0 - 682.6	LIMESTONE	- brecciated in cryptoxline matrix - mottled, buff - dense. Chert nodules & disseminations.
682.6 - 688.0	LIMY SHALE	- Sl. dolomitic in pt. - friable, Shale sandwich of flat bedded thinly laminated stratum with possible Fault at
684		Possible Fault Plane - exhibiting soft, cleaveable - rock gouge - washes out in coring.
688.0 - 692.0	LIMESTONE	Massive - uniform - dense - cryptoxline - w/frag. & bioclastic well recalcified buff colored dns lms.
692.0 - 696.4	SHALY LMS	partly stratified & laminated with ab. rock fluor. & friable soft earthy blk/dk brn rock gouge. Possible Fault Plane - Rem. massive, dns rubbled & broken.
696.4 - 697.0		LOST CORE
697.0 - 703.0	CALCIRUDITE	- coarse fragmental & bioclastic densely recalcified, fossiliferous lms breccia - Biostromal reefoid debris - Calcite XI rhombs - Large organic open & vesicular leached organic vugs with Fair \emptyset and permeability.
703.0 - 724.8	SHALE	- Dolomitic - w/intbd stratified lms - a shale sandwich of repetitious beds of varied thinly laminated banded dolomitic cryptoxline - dense & massive - sparse, irregular sporadic solution cavities & fracture vugs. Minor narrow zones of brecciation - gen. flat bedded with minor distorted zones. Less than 1 ft. total of thin bioclastic reefal/biostromal stringers w - Ex vug \emptyset . Bcm whitish gy/crm & variegated lt. colored at base.

- 724.8 - 725.4 REEFAL LMS - open reefoid lattice relic.
- 725.4 - 727.0 - as above formerly.
- 727.0 - 734.0 CALCIRUDITE - coarse Reef debris & brecciated zone. Coraline, stomatoporoid forms - organic & leached vug \emptyset - Ex. Mottled brn, highly bioclastic in a buff col. matrix. Minor chert/flint blebs & nodules.
- 734.0 - 736.5 LIMESTONE - dense, crypto, crm/buff breccia zone.
- 736.5 - 769.5 - a continuing repetitive sandwiched series of alternating massive, uniform, compact, dense & tight vertically fractured lms strata and Brecciated, microxline, mottled, crm to buff - dense infilled w/patches of vuggy reefoid 2" stringers - chert nodules & blebs common - Stratified & shaly. Gen. flat, varved laminated.
- 757.0 Ab. Chert/fling - dk brn - fossil infill and as nodules & erratic & irregular blebs.
- 769.5 - 771.5 SHALE Lmy & Dol. - highly distorted and disturbed zone - gy green with soft
- 771.5 - 772.5 Rock Gouge - friable, dk brn - cleaveable - fissile - for 1 ft.
- 772.5 - 773.5 All as above.
- 773.5 - 775.2 REEFAL LMS - buff - Amphipora & Stromatoporoids - fractured & open vesicular Ex \emptyset & permeability.
- LWR. EKWAN 775/-515
- 775.2 - 798.0 LIMESTONE - Massive, cryptoxline/microxline, lt. colored buff/brn/crm - banded. Generally flat bd. but with narrow patches of inclined to nearly vertical bd @ 780 - for 1 ft. - highly fractured & sutured - pp. \emptyset -
- At 796 Possible Fault Plane 1" rock gouge
- 798.0 - 801.3 SLTST - SHALE - pale green - friable - soft - poker chip - calc. buff in pt. Dolomitic.
- 801.3 - 814.0 LIMESTONE - distorted & brecciated generally lt. brn. to buff - in pt. Stratified and massive - dense & tight. Cryptoxline.

814.0 - 819.0	DOLOMITE	- highly distorted & brecciated with ab. shale ptgs & rock gouge at 815 = possible fracture/fault plane - bcm buff & massive w/vertical fracturing recemented.
819.0 - 822	DOLOMITIC SHALE	- brn - cleaveable friable & fissile.
822 - 831.5	LIMESTONE	Microxline - fine granular - brecciated - buff/gy - in pt. stratified.
831.5 - 843	DOLOMITE	- massive - crny buff to blue gy - in pt. stratified & bedded - In pt. fragmental bioclastic fossilized zone - cryptoxline matrix. Buff & massive, compact with inclined bedding at base - disconformable contact at base.
843 - 850.5	LIMESTONE	- Flat bedded - laminated microxl. to med. xline - fissured and recemented/calcified.
850.5 - 870	DOLOMITE	- blue gy - stratified & laminated with inclined bedding - varved - lithofied - distorted & brecciated in pt. Patches and zones of mottled fossilized incipient reefal structures - wavy or dappled bedding - rippling. Generally dense with sporadic isolated irregular organic & leached vugs and fracture fissures.
870 - 904	LIMESTONE	- Mottled & waxy or ripple marked - buff partings in blue gy ground color. Coarser xline textures - minute clear calcite euhedral xl rhombs - as secondary deposits along fracture fissures. Generally dense, tight with minor areas of minute p.p. \emptyset - low perm.
904 - 910	DOLOMITE	- Grey blue - microxline - fine xline - Amphipora and Coralline colonies - in pt. as patches. Remainder is stratified. Strgrs dolomitized vesicular reef lattices & chert infill and as strgrs.
910 - 921	LIMESTONE	- as above with isolated colonial coral forms - Amphipora type fos. relics - Favosites - Patchy blebs & narrow bands of above in isolated and sporadic occurrence throughout. Some sl. vug & fracture \emptyset
921 - 937	DOLOMITE	- as above . 1 ft. of lms as above interbedded.

937	- 946	LIMESTONE	- as above.
946	- 1021	DOLOMITE/LIMESTONE	- An interbeds repetitive series of interbeds dol. & lms all as above. Dol. is blue gy to buff broadly mottled. Series is bcm more massive firm and competent - with less crumbling and rubbleization - less fracturing - varies from cryptoxline to fragmental & bielastic medium granular lms - all recalcified and dense. Patches of broad banding & wavy bedding - or incipient brecciation - Occasional zones 3"/6" in thickness of biostromal relic reef growths. Remainder is stratified and lithofied - with recemented fracture fissures and sutures common. Towards base beds are more compacted and lack fossils or vugs - barren.
1021	- 1025	LMS/SHALE	- banded, laminated - gy green to blue gy w/blk specklings - Kaolinitic
1025	- 1029		- same as above - friable, soft, cleavable - fissile - gy green - platy and thinly laminated.
1029	- 1046.5	DOLOMITE	- stratified - massive - dns & barren - cryptoxline grey to crmy buff - in pt. zones of thin laminations - minor sparse p.p. minute vugs.

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1046.5	- 1061	LIMESTONE	- medium granular - Fair interstitial Porosity buff/lt brn. Streaks of brecciation in dns cryptoxline matrix.
1061	- 1091	DOLOMITE	- Stratified & lithofied - cryptoxline laminated - massive - Gen. flat bd. but with narrow zones of distorted & inclined bd. lt buff/brn. Minor strgrs - 2" ± vuggy, leached organic p.p. ∅. Isolated cavities & fracture fissures Rubbleized and broken in middle.
1091	- 1098	LIMESTONE	Mottled and marbled - distorted and inclined bding - fractured & recalcified - uniform buff - dns - massive

- 1098 - 1107 DOLOMITE - as above. Lt. buff/crm - dns - cryptoxline - banded and laminated.
- 1107 - 1112 - reefoid complex - chert infilled - disturbed and distorted. Shattered debris redolomitized.
- 1112 - 1115 - Dense and as above formerly.
- 1115 - 1118 - Reefoid as above formerly.
- 1118 - 1125 - as above - massive - dns - stratified-Blue gy green - to crmy buff.
- 1125 - 1131 LIMESTONE - Stratified & marbled - all as above. Contact breccia - dk brn at base.
- 1131 - 1202 DOLOMITE - Crmy/buff - microxline - dns - Bands of blue greens to gy - shaly & cleavable laminae intbd - Zones of breccia in a cryptoxline matrix.
- Some narrow patches of coarser textured to fine & med. xline layers - micro \emptyset . Scattered, isolated leached vugs. & minor zones of p.p. & interxline \emptyset .
- 1202 - 1216 LIMESTONE - All as above - wavy bd in pt. gen. dns. crypto to fine xline - laminated, shaly & thinly bd - with leaching along partings poker chip & cleaveable - gy/gy green -
- 1216 - 1275 DOL & LMS - interbd all of above. bcm massive buff - consolidated - to lt gy cryptoxline Patches of mottling & wavy bedding and in places bcm. Shaly -
Minor intbds of lt. grey-gy green stratified lms bands - micro granular to finely xline - sporatic large leached vugs Calcite lined -
Bcm wavy & distorted & brecciated with ab. fossils - Favosites common.
- 1275 - 1300 LMS & DOL - Thin biostromal incipient reefoid bands of all variant shades of brown. Dolomitic in pt.
- At 1290 - a 2ft. Reefal zone or lattice work - Good vesicular & vug and pin point porosity.
- 1300 - 1325 LIMESTONE - Lt gy - in pt. white med. xline dns - laminated & stratified w/buff dolomitic lms breaks.

1325 - 1350.5 LIMESTONE - a continuation of all above - lt gy-buff. wavy and turgid bedding. Patches of large fragmentation & brecciation - Bcm contorted, broken & fissured - numerous calcite ptgs and as recementing and filling of old and along fracture & suture planes. Broadly banded.

RED HEAD RAPIDS Fm. 1350/1090

1350.5 - 1361 DOLOMITE - Primarily fine to medium xline, to medium granular - All colorations of greys to buffs - Bcm massive & uniform textured towards base.

1361 - 1364 REEFAL - lattice relic - Good to ex. Porosity - interxline & vug.

1364 - 1385.5 DOLOMITE - as above. Massive & uniform - bcm finer xline to cryptoxline

1385.5 - 1389 - marked color change to blue greys - dk grey - argillaceous with brecciated zone at base.

1389 - 1405 - as above, formerly - buff, massive, compt. - uniform - lithographic to cryptocrystalline -

1405 - 1416 - Bcm. dappled - broadly wavy & contorted - fragmental and bioclastic

1416 - 1420 - Bcm. dk blue grey - uniquely banded & massive - calcareous. Shaly, argillaceous dappled stratification.

1420 - 1427 ANHYDRITE - dk brown, massive, mottled, white, Cryptoxline - gypsiferous - minute clear white veinlets & ptgs throughout. The odd fracture plane recemented & infilled with white xline gypsum.

1427 - 1432 DOLOMITE - Stratified & uniform and as above. Cryptoxline to microxline - massive & compact.

1432 - 1450 - brown/buff - mottled & dappled. Broadly brecciated - interspersed with limy & calcareous phases. Some patches at base of highly fossiliferous - fragmental with Amphipora types of Coralline relics.

1450 - 1467.5	LIMESTONE	- Broadly mottled & wavy - in patches and blebs. Ab. calcified fossil forms - lt. buff to grey - cryptoxline.
1467.5 - 1473.5	DOLOMITE	- blue grey - Stratified & massive - fine xline.
1473.5 - 1475.5	ANHYDRITE	- dark brn - with minute veinlets and dendritic calcite/gypsum strgrs - - 1" clear - milky white gypsum fibrous fracture infilling - Xline.
1476.5 - 1482.5	DOLOMITE	- Lt. buff/brown - microxline - massive & dns - uniform - barren - stratified & lithofied - vertically fractured exhibiting normal faulting displacement.
1482.5 - 1486.5	LIMESTONE	Lt. buff - Crypto - dns broken & rubbled (redrilled to recover) barren.
1486.5 - 1495		LOST CORE
1495 - 1502.2		- as above, bcm mottled & wavy bd.
1502.2 - 1504.7	DOLOMITE	- Lt greyish blue - Cryptoxline - dns - massive & cmpt.
<u>CHASM CK 1504/-1244</u>		
1504.7 - 1515.5	ANHYDRITE	- brown, blebbed and veined - gypsiferous - bcm blue gy.
1515.5 - 1516.4	LIMESTONE	- Fine xline - banded.
1516.4 - 1521.5	ANHYDRITE	- as above - speckled.
1521.5 - 1534	DOLOMITE	- buff - veinlets of anhy. - contorted bedded - bcm. flat stratified & massive
1534 - 1542.5	LIMESTONE	- Lt. buff grading into grey/lt. brn. - cryptoxline/microxline - minor dolomitic phases - Some vertical fracturing - recemented.
1542.5 - 1551.5		- as above but bcm. dappled - wavy turgid bding - cx/mx - broadly brecciated nobbly and rippled - warped - ab. large coral, brachs & cephs -
1551.5 - 1580	DOLOMITE	- similar structure and texture as above but all shades of variant buffs and browns - lt. col. Broadly brecciated - turgid - rippled & warped - nobbly & dappled - blebs and patches. Some sl. p. p. & minute vugs - suggestive

- 1551.5 - 1580
(continued) Amphipora relics in a X matrix of gy colored dol. Radiating spicules rosette shaped fos. Massive - cmpt & dns.
- 1580 - 1682 LIMESTONE - as above but bcm less turgid, lighter in color - more broadly warped and mottled - more rhythmic and banded - fossiliferous. Microxline to cryptoxline. A massive series of strata of lt. grey to lt brn uniquely nobbly mottling.
- 1682 - 1695 LIMESTONE - as above, but losing its unique warpling and rippled bedding habit. Bcm stratified. Sl. brecciated dense & lithofied. Fine to medium xline. Fossiliferous & in pt. fragmental - color gy to buff/gy.
- 1695 - 1701 - massive - stratified - fos. cmpt. & dns.
- 1701 - 1711.5 LIMESTONE - as above formerly - dappled, rippled, wavy, warped & nobbly - with ab. isolated fossil remnants & some brecciation. Chert/flint fill the large fossil forms. Silicified - dns - Patches & blotches of vug - minute p.p. & sl. vesicular \emptyset . - lt buff/gy.
- 1711.5 - 1722 - Bcm dense & massive - broadly banded in an alternating series of interbeds of buff/brn. limestone in a cryptoxline lt gy slaty ground mass. Large flint filled coralline fossil forms. Narrow lt. buff dolitic int. bds.
- 1722 - 1724.5 - Again as above formerly - wavy, warped detritus & brecciated - suggestive of reefoid structure. Large open leached vugs & irregular organic cavities.
- 1724.5 - 1726.5 - dense minutely speckled - Cx.
- CAUTION CK. 1737/-1477
- 1726.5 - 1737 - As above, formerly - with narrow zones of sl. brecciation - grey, nobbly wavy vuggy lms - turgid, warped bedding.

- 1737 - 1747.5 DOLOMITE - dk gy/lt gy - all shades of gy to lt brn - to yellow buff.
- Shaly and part laminated - minor iron rich dol. strgrs - hamatitic - inclined & some sl. brecciation.
Zones of medium Xline - in pt. sl. limy.
- 1747.5 - 1752 ANHYDROUS DOLOMITE - Anhydrite as blebs & stringers - lt. brn/w. anhydrite - and as a matrix of fragmented & brecciated dol.
Bcm glue grey with phenocrysts of euhedral gypsum Xls.
- 1752 - 1787.5 DOLOMITE - A repetitive & rythematic alternating series of bedded strata - primary slaty shaly cryptoxline - evaporitic dol. anhydrite - and shaly. Fe rich limy dolomite - with intbds of blue gy/lt brn anhydrite strgrs up to 6" and as blebs, blotches & irregular infilled masses - Minor numerous veinlets of Xline gypsum - milky bluish white - Dappling of buff cryptoxline dol. in blue gy anhy. matrix at base. Primary evaporitic dol. - cx - blue gy anhy. matrix at base. Primary evaporitic dol. cx - blue gy. sparsely fos.
- 1787.5 - 1792 DOLOMITE - Bcm. buff colored & sl. coarser Xlization turgid deposition - breccia & globes of buff dol. in anhydrous blue gy matrix.
- 1792 - 1803.5 DOLOMITE - as above, formerly, primarily a color change back to gy/blue gy - anhydrous - dappled & mottled.
- 1803.5 - 1811 DOLOMITE - banded & streaked - buff col. with pp. & vug porosity - earthy micro porous. Microxline
Stratified & in pt. dappled - traces of limy phases.

PORTAGE CHUTE 1811/-1551

- 1811 - 1814.5 LIMESTONE - colored as above - buff/brn. Sl. laminated - flat bd. - massive - dense & cmpt.
- 1814.5 - 1823 - Bcm. mottled & dappled - in shades of buff - with bands of highly fos. & fragmental/bioclastic cyclic occurring zones up to 3" - rythematic in occurrence.
Salt xls upon exposure -Some vesicular organic & earthy \emptyset .

- 1823 - 1832.5 - turgid deposition & bedding -
bcm gy in color - anhydrous intbds -
otherwise all as above - dappled -
narrow shaly breaks - Saline.
- 1832.5 - 1837.5 LIMESTONE - Bcm brn/buff - strong & marked
dappling -
Zones of fine sucrosic/med. Xline with
p.p. & interxline Porosity - vesicular
coraline organic lattices.
- 1837.5 - 1853 LIMESTONE - Bcm. massive - cmpt & dense - all
variants of lt brn to buff - to smatterings
of grey blebs - in cryptocrystalline pri-
mary evaporitic type lithographic lms.
Exhibits a rythematic/cyclic repetition
of biostromal zones with narrow (up to
2") streaks of p.p. minute vug Porosity
coral colony relic forms & sporatic
some isolated hematitic Fe rich phases.
- 1853 - 2016 LIMESTONE - Bcm. fos. & in pt. fragmental with
amphipora type mottling & remnants.
Silicified - cherty & flint blebs and
fracture fillings & fossil replacement.
Grades into a uniform massive wavy,
mottled - broadly banded warped fos/
bioclastic lms. of variant shades of lt.
brown to buff - fragmental - microxline/
medium Xline - dappled, wavy, rippled,
warpled, and nobbly bedding.
Large isolated, sporatic fossil relics
Bioclastic in pt.
A relatively massive bed of broadly
banded even textured and uniformly
competent, dense, compacted lms.
Some sl. oblique & vertical fissures
recemented.
- 2016 - 2018.5 SHALE/SS. - brownish muddy dirty grey colored
indurated cleaveable arenaceous shale.
Clear well water worn & rounded glassy
qtz:pbs & grains embedded. - Bcm. dk
grey to greenish grey.
Ss. very cemented & as indurated fused
clusters - whole rock is dense & comp-
act.
- 2018.5 - 2020 - bcm dolomitic as above putty colored.
- 2020 - 2021.4 SANDSTONE - dark muddy grey brown - friable yet
dense and well cemented & compacted -
sl. calc. binder - uniuigranular - con-
glomeratic - clear glassy rounded qtz
grains agglomerated with siliceous & calc.
cement interfilling.

2021.4 - 2022.2 LIMY SS. - completely calcified & interstitial filling of above - sandy lms or limy silt - grades into with gradational contact.

PRECAMBRIAN 2022/-1762

2022.2 - 2026.5 SCHIST - dk green, chloritized greenstone, Schistose metasedimentary rock - speckled - with Qtzose & siliceous blebs Adioritic paragneiss in pt. - pyritic minute veinlets & specs.

2026.5 - 2049 GNEISS - and Schists - chloritized ultra basic meta sediments - dark green to blackish green - pyritic & speckled as disseminations - fractured & veined - Qtz intrusives.

2049 - 2057 GRANITE GNEISS - bcm granitoid - meta sediments granitized - granodioritic paragneisses.

2057 - 2068 GRANITE - Rosy - feldspathic (orthoclase) obliquely fractured & broken -

2068 - 2078.5 SCHISTOSE - paragneisses & schists - meta granites - dk green - highly fractured - granitic intrusive veinlets & dykelets.

2078.5 - 2088 - dk green - chloritized dioritic paragneisses & meta seds.

2088 - 2108 GRANITE Rosy/red - orthoclase rich - highly fractured & extensively broken - slivered & blocky.

2108 - 2125 - bcm. monzonitic -

2125 FINAL TOTAL DEPTH.

DRILLING TIME	DST. Ø CORE	DEPTH	LITHOLOGY
		155.0	NX CORE - FROM 156.3 TO 160.7
		156.3	QUARTZITE - erratic glacial slab - lt buff -
		156.7	microcline -
		1.0	GRAVEL - Coarse - loose - w.w.
		157.7	GLACIAL TILL - Rock flour - water worn
			and sorted - granitic feldspathic
		3.0	+qtz pbs - minor lt col. LMS
			frags. - calomeric +
		160.0	unconsolidated -
		160.7	
			DRILLED w/ MAN tricone bit on
			NX rods - no returns -
			sludge sampling + drill performance
			color change of water returns
			stream + rough, then smooth
			penetration indicate :-
			TOP OF BEDROCK 201 (+60')
			- Middle Kenogami Fm. -
			BX CORE - FROM 204.5 TO 214.0
		1.6	SLTST/SH - lt pale g.y. grn. - sl. limy -
		205.0	chalky + earthy - microporous -
			sl. inclined bed. - minute fractures
		206.1	+ sutures - organic leached vugs.
		.8	stratified + laminated.
		206.9	
		207.3	SLTST - as above -
		4.1	
		210.0	
		211.4	
		2.6	SLTST/SH - with minor lms bands
			sporadic small FAVOSITES type
			coral relic forms - leached
			organic ϕ + vugs.
			x bd. at base. -
		215.0	

Sheet No. 1

K.B. elev. 260
Geologist J. FRANK BLUE P. GEO.

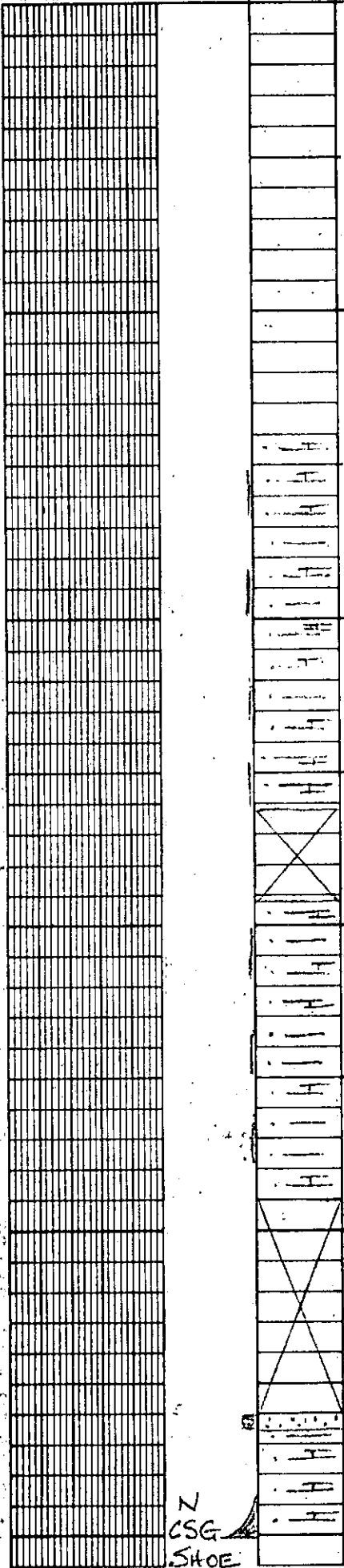
Well name HOUSTON ET AL COMEAULT PROV. (STH) No. 1
Location 560. 491 900 551

DRILLING TIME

DST. Ø
CORE

DEPTH

LITHOLOGY



200

210

220

230

240

250

MIDDLE KENDOGAMI 201/+60

SLTST / SHALE - lt col. gy am - pale whitish
 stratified + lithified - kaolinitic
 - in pt. sl limy + calc. - sporadic
 isolated single fossil forms +
 relic remnants - minute leached
 organic Φ -
 fractured + sutured.
 - BRACHS -
 - CORALS -

- pale gy am - calc + limy.

missing

- inclined + sl. X bd. -
 fractured + sutured -
 sporadic vugs - earthy
 microgranular
 compacted + dns.

missing

SS + SILT - v. f q - mottled - calc cement - micro Φ .

SLTST / SHALE - all as above -
 rubble + crumbled - broken

N
CSG
SHOE

Sheet No. 2

K.B. elev. 260 ft
 Geologist J. FRANK BLUE
 P. G.F.O.L.

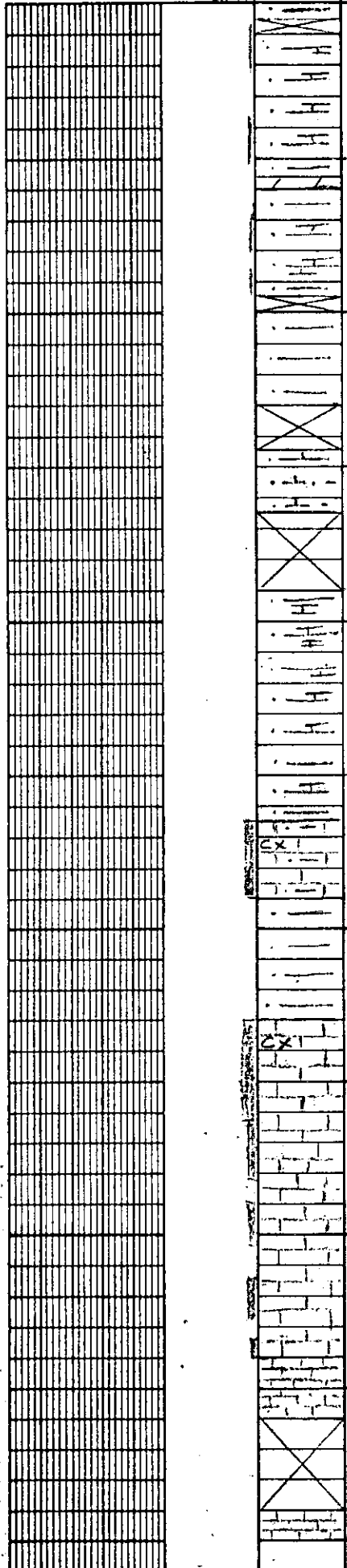
Well name HOUSTON ET AL COMEAU PT. (STW) No. 1
 Location 569 401 900 55'

DRILLING TIME

DST. CORE

DEPTH

LITHOLOGY



250

missing

- calcilutitic - Thinly laminated lms -
gy green/buff - Porous - waxy
earthy - leached -

DOLOMITIC SLTST - cryptoline - lt buff - calcilutitic
SLTST/SHALE - as above.

basal pt. bcm lmy + calc.

260

missing

- fractured
broken + crumbled.

missing

LIMY SILT - Buff - lt col. - variegated - calc
calcilutitic

missing

270

SLTST/SH. - gy grn - w/ strars + bands of
lms - stratified - fractured -
sporadic fos. lattice remnants
laminated -

UPPER EKWAN (Aquit. Nomenclature)
LOWER KENOZAMI 276/-16

LMS - silty - calcilutitic - coral relic fos -
crm/buff - intbd sltst + shales -
solution vugs || to bding. -

280

SLTST - microgranular - mudstone -
stratified - fractured, rubbled -

LMS - vugular - crm/buff - large
irregular sporadic solution
cavities + leached vugs - in
calcilutite - mottled - vesicular
+ leached organic porosity - fos.
intbd dms laminae sltst + sh.

290

inpt. reefoid relic structures
w/ vesicular texture.

CALCILUTITE - lmy mud crm/buff -

missing

300

- as above

Sheet No. 3

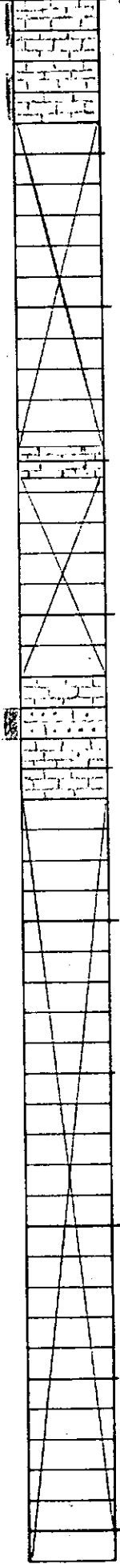
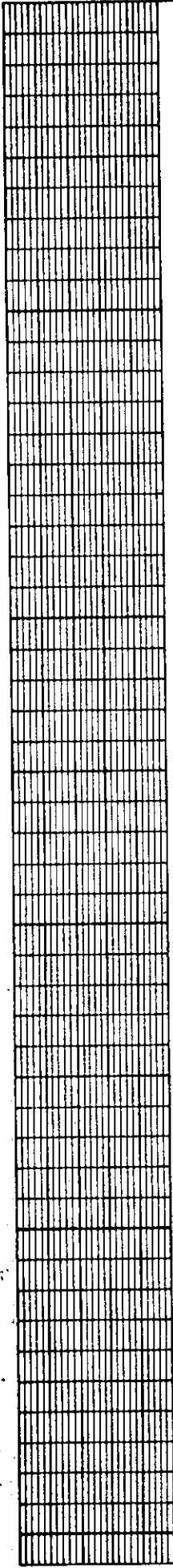
K.B. elev. 260 ±
Geologist J. FRANK BLUE

Well name HOUSTON ET AL COMEALT PROV. (STH) NO. 1
Location 560 401 990 551

DRILLING TIME | DST. Ø
CORE

DEPTH

LITHOLOGY



300
310
320
330
340
350

- crm/buff - vesicular fos. relics
distorted + brecciated -
recemented. vug φ.

MISSING-

- calcilutite - microgranular - dns -
lithographic compact - Tight.

MISSING-

- as above

CALCARENITE - recalc. hm sd - Porous -
CALCILUTITE - lithographic - dns - cmpt.
fractured + rubbled

MISSING-

Sheet No. 4

K.B. elev. 260 ±
Geologist J. FRANK BLUE P. GEOL

Well name HOUSTON ET AL COMEAULT PROV (STH) No. 1
Location 560 401 900 55'

DRILLING TIME	DST. Ø. CORE	DEPTH	LITHOLOGY
		350	missing.
			- marl - fos - dns -
		360	CALCARENITE - bioclastic - marl - reefal - fragmental - distorted bd. - BRACHS - Hcol. - crm / mottled gy. ann. -
			MARL - LM SD - Ex Por. - intergran - sucrosic -
			LMS - Calcilutite - laminated + thinly bd. - inclined - microporous
		370	MARL - trace bio - Porous - CALCIRUDITE -
			missing
		380	MARL - calcarenitic Porous - frag. -
			missing
		390	LMS - Gray/blue gy - crypto/litho ugs - highly fos - leached + solution p. - low perm - LIME SD - brecciated - frag - porous - LMS - as above.
			missing
		400	

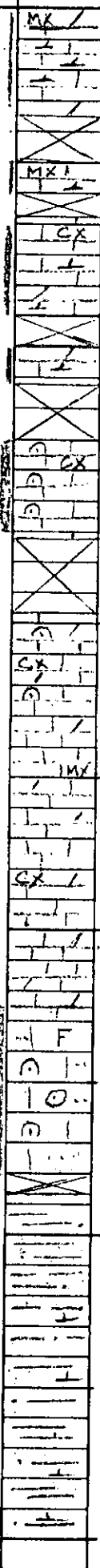
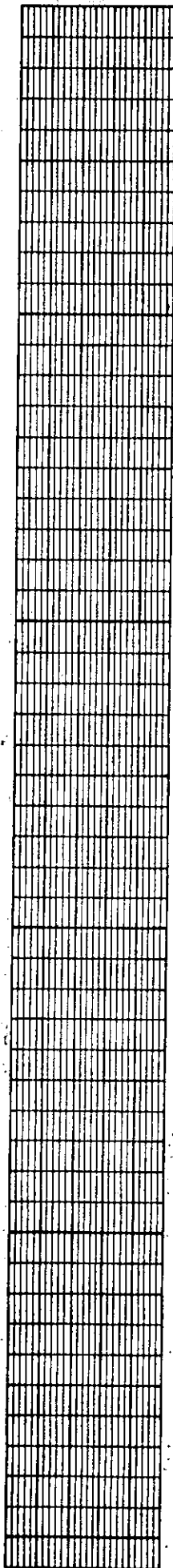
Well name... HOUSTON ET. AL COMEAULT PROV. (STH) No. 1
 Location... 560 401 900 551
 K.B. elev. ... 260 ±
 Geologist... J. FRANK BLUE
 Sheet No. 5

DRILLING TIME

DST. OF CORE

DEPTH

LITHOLOGY



400
410
420
430
440
450

LMS - mottled - ay / buff - with dolitic phases
 Microxline - very vuggy - fos -
 vesicular + solution cavities -
 (back reef facies)

- brn cryptoxline -

- dolomitic - lt buff - vugular.

MIDDLE EKWANI (AQUIT. Nomenclature)
ATTAWAPISKAT FM 414/-54

LMS - Reefal in pt. - vesicular - leached
 latticework - cryptoxline - vuggy -
 low perm. -

LMS - with dolomitic intbds - Reefal patches
 - extensive vugs -
 fractured + brecciated.
 reefal debris - buff/ay -
 microxline / cryptoxline

mottled - distorted + inclined bd -
 dense patches - with reefoid
 stringers -
 highly fos. - marly - bio -
 (biostromal)

REEFOID LMS - Calcic dolomitic + marly -
 fragmental - very porous -
 vuggy + solution cavities w/
 leached organic ϕ -
 Reefal at base.

SHALE/SILTST - lt ay grn - to rusty buff.
 - turbid deposition - sl. calc + limy
 in pt. mottled -
 Kaolinitic -
 sporadic isolated fossil forms -
 thin bd + fine laminations -

Blebs + strars. blk. microxline
 to dk. brn. flinty / chalcedony -
 infill - horny + translucent. -

Sheet No. 6

K.B. elev. Geologist J. FRANK BLUE

WELL NAME HOUSTON ET AL COMEAULT PROV. (STH) NO. 1
 Location 560 401 900 551

DRILLING TIME	DST. OF CORE	DEPTH	LITHOLOGY
		450	- lt buff w/ greenish tinge. - sl. dolomitic phases - blebs of flint. / silica -
		460	- brn gy green - distorted bd - patchy brecciation sl dolitic (disturbed depositional conditions) CHERT - Flint strgr. - blebs common SLTST/SHALE - as above. lt buff
		470	LMS - same coloration brn mottled. dense + cryptocrystalline fossiliferous
		480	leached large organic unq. p w/ cle calcite xl infill. - - REEFAL - lattice relic - vesicular euhedral xls calcite as secondary recrystallizations + infill -
		490	- REEFAL - cle / buff / brn calcite rhombs - secondary
		500	- Reefoid - vesicular lattice relic w/ stringers - biostronal. - brecciated.

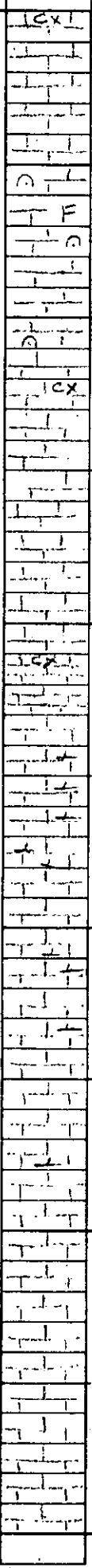
Well name HOUSTON ET AL COMEAULT PROV. (STUD) No. 1
 Location 560 401 900 551
 K.B. elev. 260 ±
 Geologist J. FRANK BLUE P. GEOL.
 Sheet No. 7

DRILLING TIME
25 20 15 10 5

DST. Ø
CORE

DEPTH

LITHOLOGY



500
510
520
530
540
550

- H buff / brn - crypto / microcline -
distorted bd. - fos - dnt + cmt -
isolated solution ovas -

CALCARENITE - Sucrosic in pt - FAIR ϕ -
oolitic - fragmental intergran. -
bioclastic - highly fos - MARL.

LMS - calcilutitic - as above formerly -
crypto - mottled. -
strars med. gran lms w/ intergran ϕ
sporadic patches
Generally dense + cmt

- crypto - uniform textured ay/buff -
CORALS - BRACHS - CRIN -
mottled.

intba silt + shale fingerings -
w/ sl dolomitic shale facies -

ben H buff colored -

blue grey - stratified -

grey - mottled buff being
basic coloration -

Well name HOUSTON ET AL COMEALI PROV. (STH) No. 1
Location 560 401 900 551

K.B. elev. 260.1
Geologist J. FRANK BLUE P. GEOL.

Sheet No. 8

DRILLING TIME		DST. & CORE	DEPTH	LITHOLOGY	
25	20				15
			550	LMS - bcn more massive competent + firm -	
				A continuing series of massive compact, generally dense + tight buff to mottled gy/gy greenish blue / brn - crypto xline strata.	
				Minor intbeds of shaly siltstones & sl. dolomitic shales.	
			560		
				In pt. as patches of layered intbeds fragmental, bioclastic calcarenitic + marly buff lms - densely recemented + infilled by a matrix of primary evaporitic micro/crypto xline & groundmass -	
				- In pt. blebs of re calcified brucite	
			570	- Bcn brecciated + fragmental buff colored. -	
				minor clr xline calcite blebs + uug linings + fracture infill - euhedral. - secondary -	
				- Bcn blue gy.	
			580		
				585/- 325	
				KASKATTAMA FM - (BANFF nomenclature)	
				- bcn lithographic + shaly - buff	
				- bcn mottled blue gy - frag + brecciated bio - pelletoid - dns -	
			590		
				SHALY - Very brecciated + bioclastic	
				LMS crypto - lt buff / brn - dns lithographic - primary + evap -	
				Thinly laminated flat bedded stratified shaly - massive dns -	
				vertical fracturing	
			600		

Sheet No. 9

K.B. elev. 260 ±
Geologist J. FRANK BLUE P. GEOL.

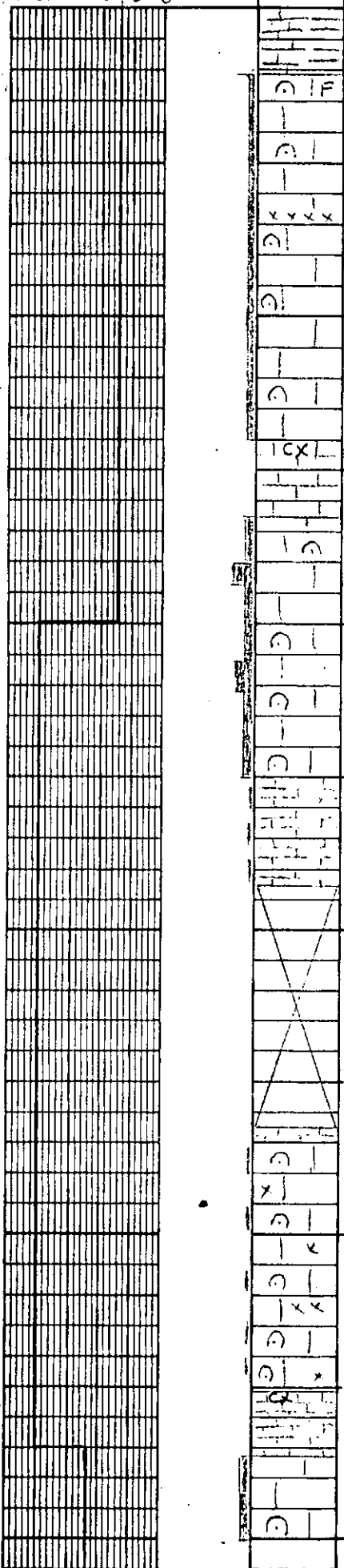
Well name HOUSTON ET AL COMPAULI PROV. (SIH) No. 1
Location 560 401 900 551

DRILLING TIME
25 20 15 10 5 0

DST. Ø
CORE

DEPTH

LITHOLOGY



600

Stratified - flat bd - laminated
microcline - cm/w - speckled -
CALCARENITE - breccia - Reefoid -
Biostromal - medium granular -
fragmental + bioclastic

605

CHERT/FLINT/SILICA 2" string
vesicular vugs + Porous lattice

610

LMS - cryptoxline - dns -

620

LMS BRECCIA - Relined + infilled
coarse line breccia - earthy ϕ
bio + frag - ZAPHRENITES -
Porous patches
highly fos -

630

CALCULUTITE - crypto - lime mud
earthy ϕ

LAST CORE

640

SHALY LMS - dense - crypto / litho
CALCIRUDITE - Fragmental + bioclastic
+ brecciated - coarse -
recalcified -
The breccia is in a matrix of
lime mud -
gen dns w/ micro ϕ earthy
chert blebs common

650

SHALY LMS - evaporitic lithographic
to cryptoxline -
CALCARENITE - as above -

K.B. elev. 260
 Geologist J. FRANK BLUE P. GEOL.
 HOUSTON ET AL. CONVENT. PROV. (STH) No. 1
 Location 560 401 900 55
 Sheet No. 10
 J.V.F. BLUE P. Geol.

DRILLING TIME
25 20 15 10 5 0

DST. Ø
CORE

DEPTH
650

LITHOLOGY

SHALY LMS - flat bd - laminated - banded -
warved - intbd frag. biostromal
strars -

CALCARENITE - Biostromal - brecciated
Porous -
frag. + bio. patchy Φ -
vesicular + wuggy -
- 1 dense crypto stratified

660

- Reefal - bio + frag - gen. dns
calcareous infill - earthy Φ .

LMS - dense.

ab chert infill - irregular blebs
Breccia in crypto xline matrix -
distorted + disturbed deposition
towards base

670

DOLOMITIC SHALE - thinly laminated +
stratified - variegated gys -
warved - chert strars -

DOLOMITIZED Reefoid debris + breccia -
SHALY DOL. - buff - fine choc. brn.
Soft calc shale ptas. -

SHALY LMS - crypto-dolitic - buff -
lithified + thinly laminated at
base - highly sutures -

680

LMS - brecciated in crypto matrix -
mottled, buff - chert nod. - DNS -

LIMY SHALE - sl. dolomitic - friable -
shale sandwich of flat bd. Thinly
laminated stratum with possible
FAULT ZONE at 684 - soft rock
gouge - (washing out) -

690

LMS - massive, uniform - dense - Crypto -
w/frag + bio well recalcified buff
col. dns lms.

695

SHALY LMS - partly stratified +
laminated with ab. rock flour
+ friable soft earthy blk/dk brn
rak gouge - Fault? @ 693.

700

CALCIRUDITE - coarse frag - bio -
dns recalc - fos - breccia -
Biostromal reefoid debris
Calcite - rhombs -

45'

25'

buff

f. fine

Sheet No. 11

K.B. elev. 260' J.F. BLUE Geologist

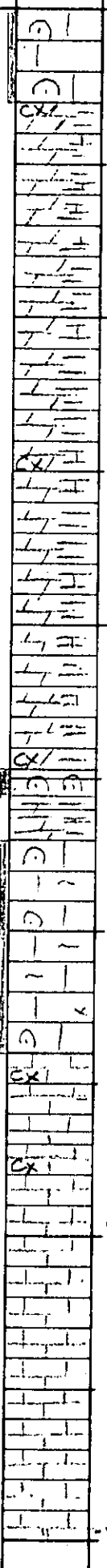
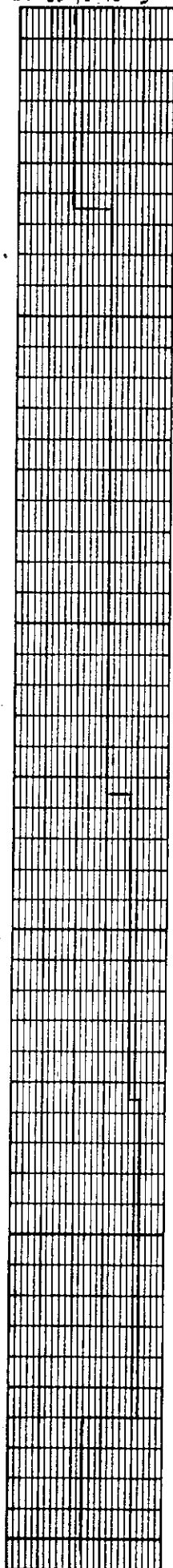
Well name: F.O.L. ET AL. LUMEAU. ENVY. T. Location: F.O.L. ET AL. LUMEAU. ENVY. T.

DRILLING TIME
25 20 15 10 5 0

DST. Ø.
CORE

DEPTH

LITHOLOGY



700
710
720
730
740
750

large organic open + vesicular
leached vugs FAIR ϕ -
and Perm.

SHALE - DOLOMITIC - w/ interbedded stratified lms
repetitive series of sandwiching
varved thinly laminated.
banded dol. - crypto - dns
massive -
irregular sporadic vugs -
narrow zones brecciation

distorted in pt. -

minor strars bioclastic
biostromal reefoid relics
EX ϕ -

Bem w/qy/crm at base

REEFAL LMS - latticework relic - ϕ -
- as above formerly -

CALCIRUDITE - coarse Reefal debris
Breccia -
coral-stromatoporeid forms -
organic + leached vug ϕ Ex
Mottled brn - bio in buff
matrix - chert blebs + nodules

LMS - dns - crypto - crm / buff breccia

- a sandwiched series of uniform
compt. - massive dns + tight
vert. fractured - lms strata
and
Brecciated, microxlme, mottled crm
to buff - dns infilled w/ patches
of vug reefoid 2" strars -
chert nodules - + blebs common.
Stratified + shaly in pt.
Gen flt varved - laminated.

Well name HOUSTON ET AL COMEAULT PROV. (STH) No. 1
 Location 560 401 900 551
 K.B. elev. 2607
 Geologist J. FRANK BLUE
 Sheet No. 12

DRILLING TIME 20 15 10 5 0	DST. OF CORE	DEPTH	LITHOLOGY
	EXL	750	
	MX		- ab chert/flint - dk bin - fossil infill & as nodules + erratic disseminations
	EXL	760	
	MX	770	SHALE - Lmy + DOL - highly distorted + disturbed zone - gy arm - soft rock gouge - friable - fis.
	EXL		REEFAL LMS - buff - Amphipora - Stroms - fractured + open vesicular EX Φ .
	MX	780	LMS - Massive - crypto/micro x line - lt col. buff / lt brn. / crm - banded. Gen. flat but w/ narrow zones of highly inclined to nearly vert bedding @ 780. highly fractured + sutured - pp Φ .
	EXL		LWR EKWAN 775/-515 (Aquit. Nomenclature)
	MX	790	
	EXL		Possible Fault Plane
	EXL	800	SLTST/SHALE - pale green - friable soft - broken chip - calc - buff - Dolitic

Well name HOUSTON ET AL CONSULT PROJ. (STH) No. 1
 Location 560 401 900 551
 K.B. elev. J. FRANK BLUE Geologist P. GEOL.
 Sheet No. 13

DRILLING TIME		DST. Ø CORE	DEPTH	LITHOLOGY
20	10	0		
			800	LMS - distorted + brecciated - 11 brn to buff - In pt stratified + massive - denser tight - crypto xline.
			810	
			815	DOLomite - highly distorted + brecciated ab shale. ptygs - rock gouge. brn buff - massive - recalcified frac fissures -
			820	DOLOMITIC SHALE - brn. cleavable - friable + fissile. LIMESTONE - Micro xline / fine gran brecciated buff / qy. in pt. stratified.
			830	DOLomite - massive - - army buff - to blue qy - in pt stratified + laminated - in pt. frag. bio - fos cx matrix Buff. cmpt. with inclined bd at base
			840	disconformable contact with LIMESTONE - Flat bd - laminated Micro xl. To med. xl. - fissured + recalcified -
			850	

Sheet No. 14

K.B. elev. Geologist J. FRANK BLUE P. GEOL.

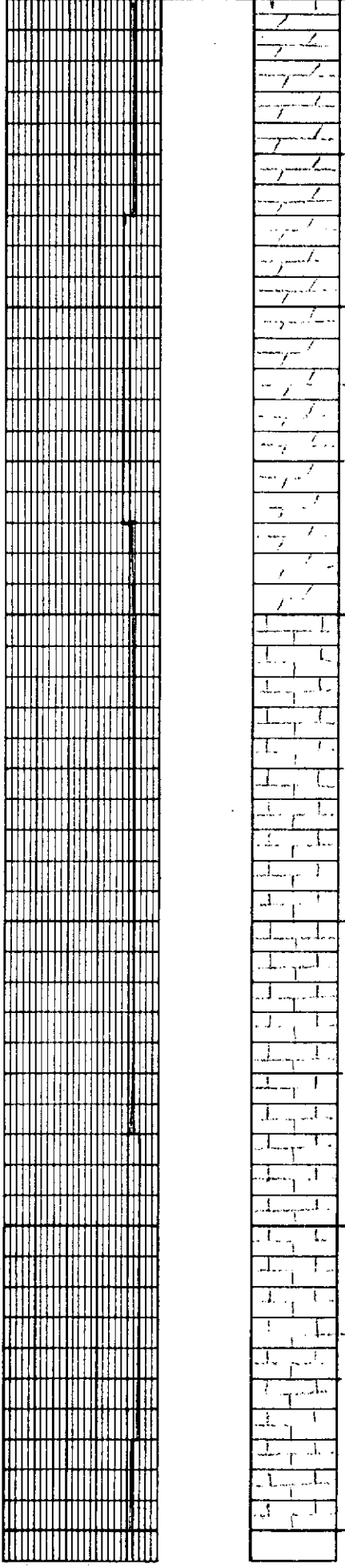
Well name HOUSTON ET AL COMEAU PROV. (STH) NO. 1
Location 560 401 900 551

DRILLING TIME
25 20 15 10 5 0

DST. Ø.
CORE

DEPTH
850

LITHOLOGY



850

860

870

880

890

900

DOLomite - Bluegy -
stratified + laminated - varved -
inclined bd - lithofied
distorted + brecciated in pt

Patches & zones of mottled
fos. incipient reefoid structures -

wavy - dappled + rippled bd -

Gen. Ans. with sporadic
isolated irregular organic
+ leached vugs + fracture
fissures -

LIMESTONE -
Mottled blue gy ground color
with buff wavy + rippled
markings + ptgs -

Coarser xline textures -

minute clear rhombic euhedral
calcite secondary xls -
along fracture fissures.

Generally dense tight with
minor areas of p.p.d &
low permeability -

Sheet No. 15

K.B. elev. Geologist J. FRANK BLUE P. Geol.

HOUSTON ET AL. COMEALTY PROV. (STH) No. 1
560 401 900 551

Location

DRILLING TIME
25 20 15 10 5 0

DST. Ø.
CORE

DEPTH

LITHOLOGY

900

DOLomite - Grey blue - Microcline/Fine Xline
stratified

Amphipora + coralline colonial forms
in patches. -

Strings dol. vesicular reef lattices -
chert filled -

910

LIMESTONE - as above -

isolated coral colonies +

amphipora type fossil relics -

FAVOSITES -

Patchy blebs + narrow bands of
above in isolated + sporadic
scattered thro'out.

Some sl. vug + fracture φ. -

920

DOLomite - as above -

some int'rd lms as above

in thin laminae. -

930

LIMESTONE - all as above.

940

DOLomite + LIMESTONE*

An interbedded alternating +
repetitive series of dol + lms
beds all as above. -

950

Sheet No. 16

K. B. elev.
Geologist

Well name HOUSTON ET AL CONSULT PROV. (STH) No. 1
Location 560 401 900 551

J. FRANK BLUE
Geol.

DRILLING TIME

15 5

DST. OF CORE

DEPTH

LITHOLOGY

950

Dolomite is bluey to buff. broadly mottled.

Strata beds more massive, firm & competent - less crumbling + rubble + fracturing -

960

Varies from cryptoline to fragmental + bioclastic - medium granular -

All well cemented, mottled + dms -

Patches of broad banding & wavy bedding - or incipient brecciation -

970

Occasional zones 3" to 6" in thickness of biostromal reef relics -

Remainder is stratified + lithified with recemented fracture fissures & sutures common -

980

990

1000

Sheet No. 17

K.B. elev. J. FRANK BLUE P. GEOL. Geologist

Well name HOUSTON - EI - AL - COMEAULT - PROV. - (STH) NO. 1 Location 560 40' 900 551

DRILLING TIME 25 20 15 10 5 0	DST. # CORE	DEPTH	LITHOLOGY
		1000	
		1010	
			Towards base strata bcms more
			compactd - + barren -
			Lacks fos. + vugs -
		1020	
			LIMY SHALE - banded - laminated gy grn -
			to blue gy - with blk speckles
			Kaolinitic + in pt scale.
			fioble - cleaveable, fissile - platy.
		1030	
			DOLOMITE
			Stratified - dns - barren -
			gy - with intbd buff. -
			in pt. Thinly laminated -
			minute sparsely scat pp vugs.
		1040	
		1050	
			LIMESTONE - Stratified: dns -
			cryptoxline - varinacol. -
			flatly bded. laminated:

Well name HOUSTON ET AL COMEALTY PROV (STH) NO. 1
 Location 560 40' 00" 55' 18"
 K.B. elev. Geologist J. FRANK BLUE
 Sheet No. 18

DRILLING TIME			DST. Ø. CORE	DEPTH	LITHOLOGY
25	15	5		1050	- med. gran. F. Porous with F. permeabilities - buff / lt brn. streaks of brecciation in dns cryptoxl. matrix.
					sl. marbled. -
				1060	PORT NELSON 1060/-800
			/cx		DOLOMITE -
			/		stratified - lithified - cryptoxline laminated + massive
			/		
			/		
			/		generally flat but with zones of distortion + inclined deposition. -
			/	1070	lt buff / brn.
			/		
			/		Minor narrow layers 2" of wug + leached organic φ. -
			/		
			/		Rubbed - crumbled + broken.
			/	1080	
			/		isolated leached cavities + organic wug openings. -
			/		
			/		
			/	1090	
			/		LIMESTONE -
			/		Mottled + marbled. - inclined bd. - distorted - fractured + recalcified.
			/		uniform buff dns - massive.
			/		DOLOMITE - as above.
			/	1100	

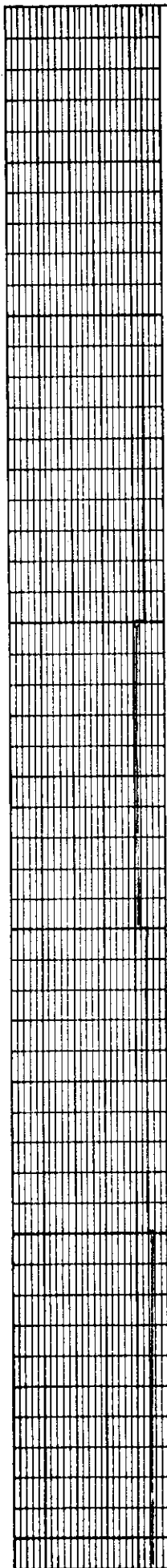
Well name HOUSTON ET AL COMCAULT PROV. (STH) No. 1
 Location 560 401 900 55
 K.B. elev. J. FRANK BLUE Geologist P. GEOL.
 Sheet No. 19

DRILLING TIME
2018 10 5

DST - Ø
CORE

DEPTH

LITHOLOGY



1150

DOLOMITE -

cryptoxline to Amexline -
buff to gray -

sporadic fossils - Favosites -

patches + zones of narrow
coarser crystallization

1160

Brecciated zones of up to 8"
with calcite Nls - dns. -

Ab. vugs in a narrow zone.
leached relic cavities
see calcite xls as lining -

pin point + minor inter xline
limited porosity

1170

1180

1190

- distorted - marbled - warped bd.
+ breccia zone.

1200

Sheet No. 21

260+
K.B. elev. J. FRANK BLUE
Geologist P. G.S.G.

Well name HOUSTON ET AL - COMEAU ET PROV. (STU) No. 1
Location 560 401 900 551

DRILLING TIME 10 5	DST. OF CORE	DEPTH	LITHOLOGY
		1200	LMS - banded - dns cx -
			- bcm SHALY - poker chips laminated + cleaveable friable + 'weathered' grey-green. -
		1210	laminated leached parting planes Sporadic leached vugs. -
		1220	DOLOMITE + LMS - interbeds of all above - gy. grn - bluegy - buff in pt - crypto
			bcm massive - uniform buff minor distorted bd.
			microgranular to finely xline dns + compact -
		1230	Sporadic leached vugs - catle lined - relics
			bcm distorted & wavy bd.
		1240	
			very wavy - distorted + contorted with broad brecciation - in pt dolomitic lms. -
		1250	

Well name HOUSTON ET AL CUMENULT PROV. (SIH) No. 1
 Location 560 40 55
 K.B. elev. 260 ±
 Geologist J. FRANK BLUE
 Sheet No. 22

DRILLING TIME 10 50	DST. Ø CORE	DEPTH	LITHOLOGY
		1250	highly contorted strata - Ab. Fossils - corals + single forms - also colonies - FAVOSITES -
			Minor strings of Good Porosity - biostromal incipient reefal - all shades of browns - cryptoxene to medium xene -
		1260	Narrow breaks of laminated flat strata -
			the old fracture fissure
			patches of broad large breccia fragments - in crypto matrix -
		1270	
			LMS + DOL. - all as above - but with more numerous reefal strings. up to 8" thick.
		1280	
		1290	2 ft Reefoid lattice zone - vesicular + pp - Good ϕ -
			Reef lattice Favosites?
		1300	

Sheet No. 23

260±
K.B. elev. J. FRANK BLUE
Geologist P. GEOL.

Well name HOUSTON ET AL COMEALTI PROV. (STH) No. 1
Location 560 401 900 55J

DRILLING TIME 2015 10 50	DST. # CORE	DEPTH	LITHOLOGY
	CX1	1300	LMS - light blue green - cryptoxene - dense + cmt. - in pt. white marbly calcitic lms. minor reefal coralline strars - + vugs - laminated + stratified intbd buff dolomitic lms breaks.
		1310	troad brecciation - with large fragmental inclusions in a cryptoxene matrix. Reefal stringer -
		1320	grey to buff wavy + broadly turgid bd. - patches of large fragmentation & brecciation.
		1330	
		1340	Ben contacted - broken - fissured - fractured - all recemented + recalcified - numerous calcite pths. vein fillings + fracture recementing - Vertical & intensely fractured ancient + recemented Broadly banded.
		1350	broken -

Well name HOUSTON ET AL-COMEAULT PROV. (SEH) No. 1
 Location 560 401 900 551
 K.B. elev. 260+
 Geologist J. FRANK BLUE
 Sheet No. 2A

DRILLING TIME			DST. Ø	DEPTH	LITHOLOGY
25	15	5	CORE		
				1350	RED HEAD RAPIDS 1351/-1091
			FX/		DOLOMITE - Primarily fine/medium Xline
			/ M		To medium granular
			/		greys to buffs
			/		
			/		
			/		massive + uniform
			/		It grey to grey blue.
			/	1360	
			0/		REEFAL lattice relic - Good to EX. ϕ
			0/		interXline + uug.
			0/		
			/		
			/		Ben buff colored.
			/		
			/		massive + uniform.
			/		
			/	1370	
			/		
			/		ben finer grained to crypto-
			CX/		crystalline.
			/		
			/ FX		
			/		
			/		
			/	1380	
			/		
			/		
			/		
			/		- blue gy - dk gy - with breccia
			/		zone.
			/		
			/	1390	
			/		
			CX/		Rem. - buff - massive, compact.
			/		uniform lithographic to
			/		cryptocrystalline
			/		
			/		
			/		
			/	1400	

Sheet No. 25

K.B. elev. 260+
Geologist J. FRANK BLUE P. GEOL.

Well name HOUSTON ET AL COMEAU PT FROM (STH) No. 1
Location 560 401 900 591

DRILLING TIME		DST. Ø CORE	DEPTH	LITHOLOGY
20	10	0		
			1450	LIMESTONE - Broadly mottled & wavy bedding - patches & blebs. ab. calcified fos. It buff / grey
			1460	
			1470	DOLOMITE - blue gy - stratified massive 1" fracture - infilled w/ clear gypsum - xline milky w. xline gypsum
			1480	ANHYDRITE - dk brn - veinlets + minute stringers - cx - dns - DOLOMITE - It buff / brn - micro xline mass. - dns - uniform barren - stratified + lithified - vertical fracturing exhibiting normal faulting + displacement.
			1490	LMS. - It buff - cx - dns - broken + tubbled - barren (re-drilled) LOST CORE 8 1/2 FT -
			1500	as above brn wavy bedded massive dns - barren. sl. coarser to med xline with minute p.p. frags -

Well name HOUSTON ET AL CONEAU PT. PROJ. (STH) No. 1
 Location 560 401 900 551
 K.B. elev. 46
 Geologist FRANK BLUE
 Sheet No. 27

DRILLING TIME			DST. # CORE	DEPTH	LITHOLOGY
20	10	0			
				1500	Lms. as above - mottled & wavy - DOLOMITE - lt. gy blue - crypto - dus massive, + crpt. <u>CHASM CREEK 1504/-1244</u> ANHYDRITE - brn. - blebbd & as veins - gypsiferous - brn blue gy.
				1510	interspersed irregular blebs & inclusions of buff dol. Speckled irregularly with 'phenocrysts' of euhedral gypsum X15 - in matrix of blue gy anhy. LMS. - finely xline - banded. ANHYDRITE - as above. Speckled.
				1520	
				1530	DOLOMITE - buff - veinlets of anhy - contorted bd. - brn flat - stratified + massive. massive stratified banded - ans - all shades of buff to brn.
				1540	LIMESTONE - lt. buff - blending & grading into gy/buff. - CX / mx. minor dolomitic phases + intbd. reconcent vertical fractures. - Brn dappled + wavy bd. broadly brecciated. cx to mx. nobby + rippled - ab. large coral + brach fossils - turgid bd.
				1550	

Well name HOUSTON ET AL CONSULT PROJ. (STH) No. 1
 Location 560 401 900 551
 K.B. elev. 260 ±
 Geologist J. FRANK BLUE
 Sheet No. 28

DRILLING TIME			DST. CORE	DEPTH	LITHOLOGY
20	10	0			
				1550	DOLOMITE - as above - rippled + dappled. broadly brecciated - Turbid bd conditions - nobbly - rippled + warped. - infilled blebs + irregular patches - sl. pp + minute vug ϕ -
				1560	
				1570	amphipora type relics - et: brn / buff m cx matrix of gy col. dol. radial fos. - Spicular - rosette shaped. - massive - c.mpt + dns.
				1580	LMS - as above but bem. < turbid - nobbly & ripple - More widely banded and stratified - lighter colored - fos.
				1590	microline / crypto warped. -
				1600	

Well name: ...
 Location: ...
 K.B. elev. 260 ±
 Geologist: J. FRANK BLUE
 Sheet No. 29

DRILLING TIME 20 15 10 5 0	DST. Ø. CORE	DEPTH	LITHOLOGY
		1600	LMS. - all as above - massive Series of stratified lt colored greys to browns + buffs - dense + compact - massive - fos. common - cryptoxline with patches + intbds microxline phases -
		1610	
		1620	
		1630	
		1640	
		1650	

Well name HOUSTON FL M COMEANT 190W ASTAR No. 550 401 900 55
 Location
 K.B. elev. 260 ±
 Geologist J. FRANK BLUE
 Sheet No. 30

DRILLING TIME		DST. OF CORE	DEPTH	LITHOLOGY
20	10			
			1650	
				worpled + rippled bedding as above. - dns.
			1660	
			1670	
			1680	
				- been more uniform + even textured & losing the unique rippling, wavy nature
				been stratified & lithified fine/ med. xline/ micro.
				fossiliferous + in pt. fragmental.
			1690	gy - gy buff -
				LINESTONE - massive - stratified - fos - emp. - dns.
			1700	

Well name HOUSTON ET AL COMEAULT PROV. (STH) - No. 1
 Location 560 401 900 551
 K.B. elev. 250 ±
 Geologist J. FRANK BLUE
 Sheet No. 31

DRILLING TIME		DST. Ø CORE	DEPTH	LITHOLOGY
20	10			
			1700	LIMESTONE - as above formerly - but with inc fossils + brecciation - dappled, wavy, rippled, warped, nobbly - flint/chert filled fossil relics - Patches + blotches of vug - minute p.p. & sl. vesicular Φ It buff / gy.
			1710	
			1720	LIMESTONE - brn dense massive broadly banded + alternating intbds of buff/brn lms in groundmass of cx It gy strata. Large flint filled single coralline forms + relics - narrow It buff dolitic intbds -
			1730	LMS. - as above formerly - wavy warped brecciated detritus suggestive of reef structure - leached organic vugs LMS - dns minutely speckled - cx LMS - as above formerly - with sl. brecciated, narrow zones. Grey - nobbly - wavy - vug lms reefal. turgid warped bedding. SALINE - upon test. -
			1740	<u>CAUTION CK 1737/-1477</u> DOLomite - dk gy to It gy - all colors of gy to It brn - yellowish buff. Shaly + pt laminated. - undulating, minor Fe rich dol. strags - hematitic - inclined + some sl. brecciation zones of medium Xline sl. limy + calc.
			1750	ANHYDROUS DOLomite - as blebs + strags. It brn / w anhy. - and as.

Well name: LOCATION: 560 401 022 551
 Geologist: J. FRANK BLUE
 K.B. elev. 560
 Sheet No. 32
 J.F. BLUE P. Geol.

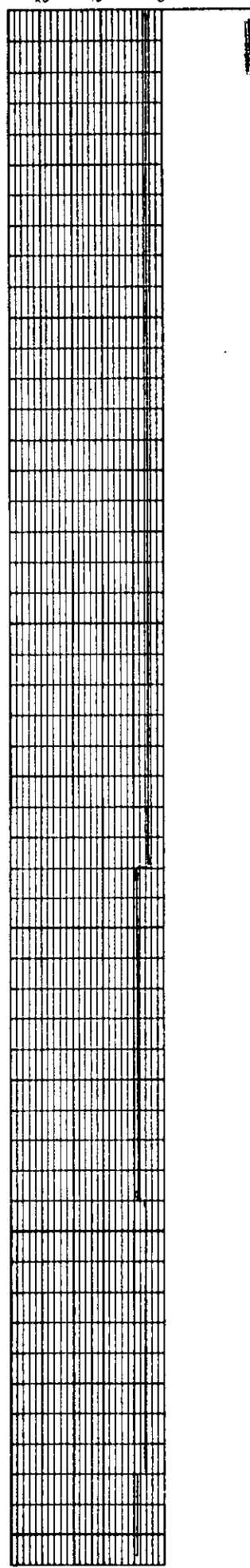
DRILLING TIME		DST. Ø CORE	DEPTH	LITHOLOGY
20	10			
			1750	matrix of fragmental brecciation Euhedral xls gypsum as phenocrysts -
		/		DOLomite - A repetitive & rhythmic
		CX /		Series of alternating evap.
		/		dol. + anhy. -
		" /		Shaly Fe rich limy dolomite -
		MX /		with intbds blue gy / lt. brn -
		/		anhy up to 6" - and as
		CX /		intbd blebs - blotches +
		/ " "	1760	irregular masses -
		/		minor numerous veinlets
		/ " "		of xline gypsum - milky blue
		/		gy - 1/8"
		/		dappling of buff cryptoxline
		MX /		dol in a blue gy anhy.
		/		matrix at base. -
		/		Primary evap cx dol. -
		" " /	1770	
		/		
		/ " "		- Ben mottled - anhydrous intbds
		/		lt brn / gy / white. -
		/ " "		
		/		
		/		
		/ " "	1780	- ben uniformly blue gy -
		/		lithified - massive + dns.
		/ " "		cx to mx.
		/		
		/		Sparsely fossiliferous.
		" /		
		/		
		/ " "	1790	DOLomite - buff color change - coarser xline
		" /		turbid deposition -
		/ " "		breccia + globes of buff dol
		" /		in anhy. blue gy matrix.
		/ " "		
		/		primarily gy / blue gy.
		/		dappled + mottled. as above
		" /		formerly. -
		/ +		
		/		
		/ " "		
		/		
		/ +	1800	

Well name HOUSTON ET AL COMEALTY PROJ. (STH) No. 1
 Location 560 401 900 551
 K.B. elev. 260±
 Geologist J. FRANK BLUE
 Sheet No. 33
 J.F. BLUE P. Geol.

DRILLING TIME
20 10 0
DST. Ø
CORE

DEPTH

LITHOLOGY



1850
1860
1870
1880
1890
1900

rythmatic & cyclic succession
of incipient biostronal growth.
sporadic fos.

LIMESTONE - born fos. in pl. frag.
amphipera type mottling
relic + remnants

Silicified infilling as blebs
and fossil replacement -
fracture fill -
chert / flint - milky qz to dk brn.

Gradational into wavy
mottled - broadly banded
warpled - wuggy - fos -
bioclastic lms.

variant shades of lt brn
to buff - fragmental -
micro / medium xline -
dappled - wavy bedding -
Large isolated fos. relics.
bielastic + uniform

Relatively even textured
competent, compact + dense
massive beds -

Sheet No. 35

K.B. elev. 260+
Geologist J. FRANK BLUE
P. GEO.

Well name HOUSTON ET AL. COMEAU I. PROV. (SIH) No. 1
Location 560 401 900 551

DRILLING TIME		DST. OF CORE	DEPTH	LITHOLOGY
70	10			
			1900	all as above - thorn + even textured. sl. fragmental + bioelastic
			1910	Broadly banded dappled & wavy
			1920	Massive uniformly dappled wavy - rippled warped. blotchy - sparsely fos.
			1930	Sl. oblique resegmented fissures & fractures. microcline
			1940	in pt. frag. with bioelastic phases.
			1950	

Well name HOUSTON ET AL COMEAULT PROV. (STH) No. 1
 Location 560 401 900 551
 K.B. elev. 260 ±
 Geologist J. FRANK BLUE
 Sheet No. 36

DRILLING TIME		DST. Ø. CORE	DEPTH	LITHOLOGY
20	10			
			1950	uniform even textured dense massive odd large fos. remnant.
			1960	
			1970	
			1980	uniform massive - even textured.
			1990	
			2000	

Sheet No. 37

K.B. elev. 2601
Geologist W. FRANK BLUE

Well name HOUSTON-ET-AL-COMEAULT-PROV. (STH) No. 1
Location 560 401 900 551

DRILLING TIME		DST. Ø. CORE	DEPTH	LITHOLOGY
20	10			
			2000	LMS - continued as above
			2010	
				<u>BASAL DETRITUS 2016/-1756</u>
				SHALE - partly tan - friable with embedded clear glassy well water rounded Qtz grains - indurated - as above ben dolomitic -
			2020	SANDSTONE - dk muddy col - unconsolidated - friable LMY SLTST/SS - dk greenish gy -
				<u>PRECAMBRIAN 2022/-1762</u>
				SCHIST - dk green - chloritized 'Greenstone' schistose meta sediments specked - sil. + Qtz blebs.
				GNEISS + schists - chloritized ultra basic dk green meta sediments in pt dioritic paragneiss -
			2030	Pyrite disseminations and as minute venets. - Qtz filled venets + fractures -
			2040	
			2050	GRANITOID -

Well name: HOUSTON ET AL COMEAULT PROV. (STH) No. 1
 Location: 560 401 900 551
 K.B. elev. 2600 ft
 Geologist: J.F. BLUE
 Sheet No. 38

DRILLING TIME		DET-φ	DEPTH	LITHOLOGY			
20	15	10	5	0	CODE		
			2050	Granitized metasediments & granodioritic paragneisses.			
				GRANITE - Red/rosy - feldspathic (or thoclase)			
			2060	obliquely intensively fractured.			
				SCHISTS - metasediments			
			2070	dk green granite intruded veinlets + dykelets.			
				dk green - chloritized dioritic paragneisses + schists			
			2080				
				Granite - Rose-red.			
			2090	highly fractured + extensively broken.			
			2100				

Sheet No 39

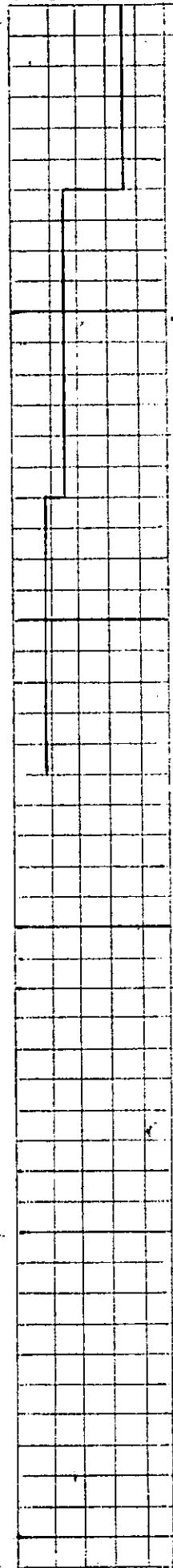
260
J. FRANK BLUE
P. GEOL
Geologist

HOUSTON ET AL COME AULI PROV. (STH) No. 1
560 401 880 551

DRILLING TIME 25 20 15 10 5 0
 DST. Ø
 CORE

DEPTH

LITHOLOGY



✓ 1 1
 1 1 1
 1 1 1
 ✓ 1 1
 1 1 1
 ✓ 1 1
 1 1
 1 1 1
 [Wavy lines]
 [Wavy lines]
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2100

Granite as above

2110

meta granites +

dioritic + basaltic

meta sediments

2120

2125/-1865
 FINAL TOTAL DEPTH

2130

Sheet No. 40

KB Elev
 Geologist
 FRANK BLUE
 P. GEOL

WELL NAME HOUSTON ET AL COMEAULT PROV. (SIH) No. 1
 LOCATION 560 401 900 551

ABANDONMENT PROGRAM

Continuous cement plug run from T. D. to Surface in four stages.

Mixed 23 sx Portland cement & 5 sx Luminite & 25 sx Bentonite to give 20% excess volume or 61 cu. ft. cement.

Slurry required 15.35 gals. water per sx = 353 Gals. and using in excess of 50% bentonite increase of water required = 90%.

$$\therefore 353 + 316 = 669 \text{ Gals. or } 15 \text{ bbls } H_2O.$$

Plugs dropped in 4 Stages:

Stage #1	2125 - 1550
Stage #2	1550 - 1050
Stage #3	1050 - 400
Stage #4	400 - Surface

2 sx Portland cement set atop casing borehead.

CONCLUSIONS ON THE COREHOLE

Houston et al Comeault Prov. (STH) No. 1
 Lat. $56^{\circ} 40'$ Long. $90^{\circ} 55'$

This hole totally cored a normal section and thickness of Silurian and Ordovician Strata of the Central Hudson Bay Lowlands.

Cores exhibited the existence of some well developed reefal zones with excellent reservoir characteristics and potential.

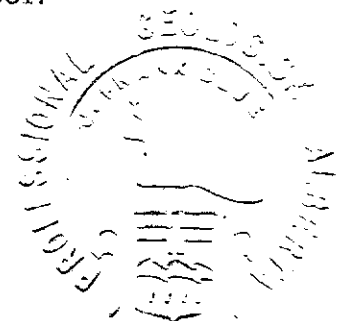
All zones were found to be barren and devoid of residual hydrocarbons; possibly due to the extensively shattered, fractured and disturbed nature of the bedrock onlap upon the oldest plateau and prothesis of landmass in existence.

Weather conditions and seasonal variability affected the logistics of operational time by greater than 65%.

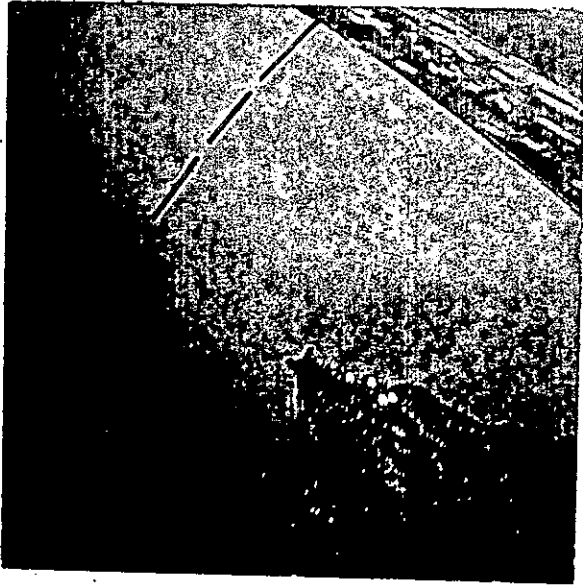
Penetration rates obtained were good and comparable to rotary equipment; by adaptations made of the use of diamond coring full recovery mining methods. Further modifications and minor mechanical adaptations could make this method a light weight, mobile useful exploratory tool in remote areas.

Respectfully submitted

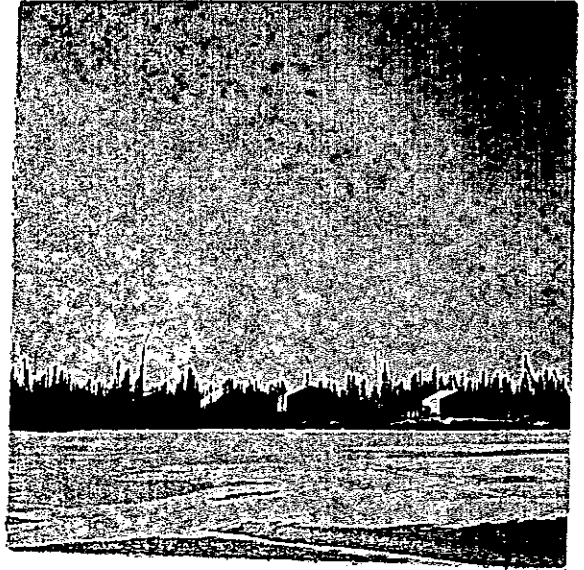

 J. Frank Blue, P. Geol.



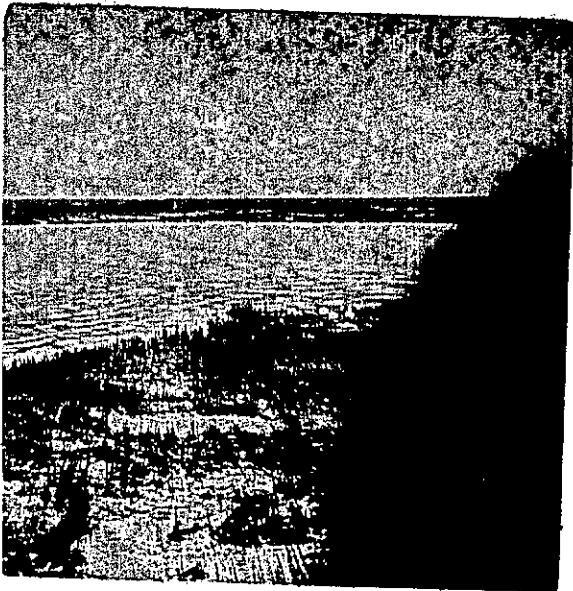
GENERAL TERRAIN



Aerial view of relation
of Rig & Camp
(looking NUE)



Camp view from ice
of Comeault Lake
(looking South)



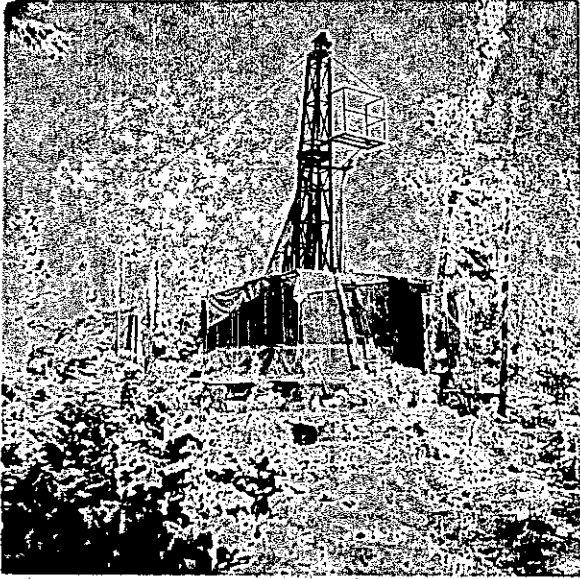
Rig & Camp & Axis
(looking East)



General situation of Rig
(looking West)

----- = indicates axis of Residual Gravity Anomaly.

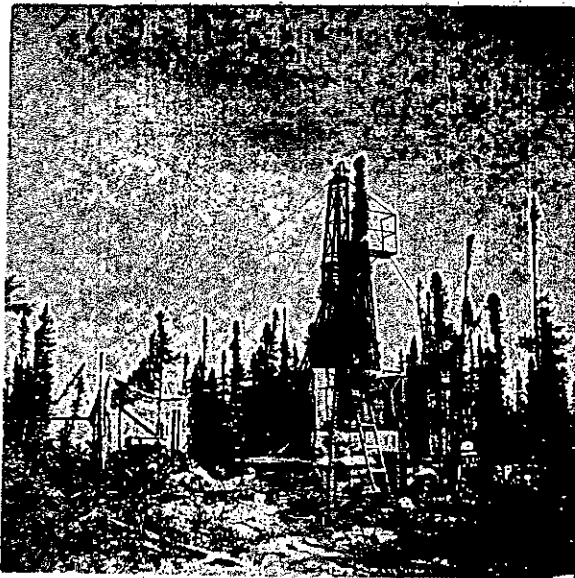
THE RIG



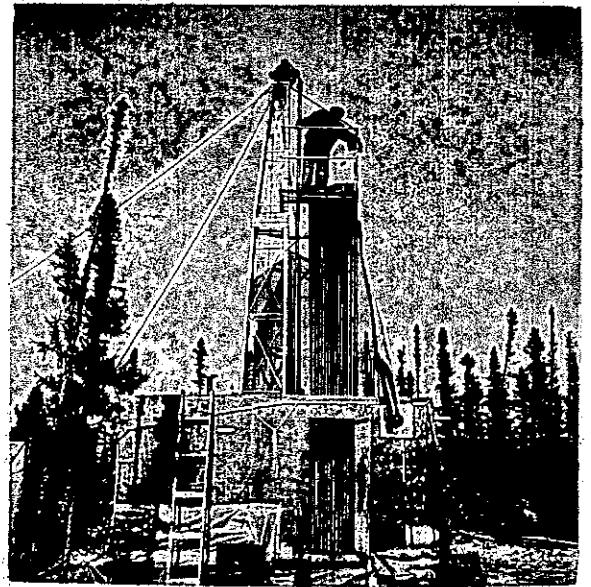
Winter conditions - note
windbreak - substructure
protection



Horizontal view of borehole
above Comeault Lake
level - $\pm 5'$

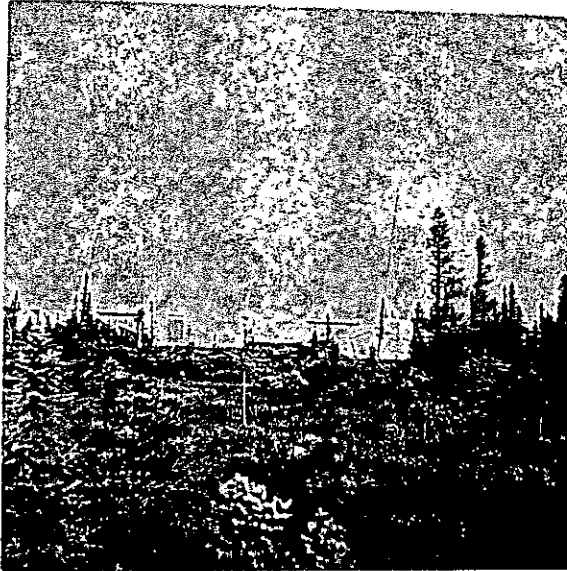


Showing Herman-Nelson
Aircraft type heating
facility



Pulling BQ Rods

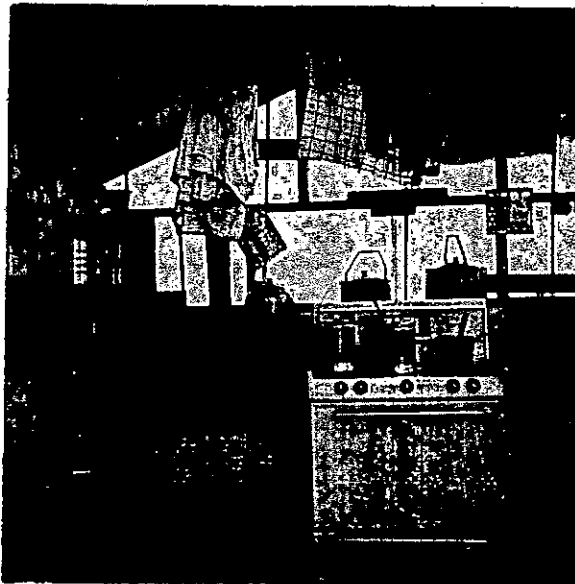
FLY CAMP FACILITIES



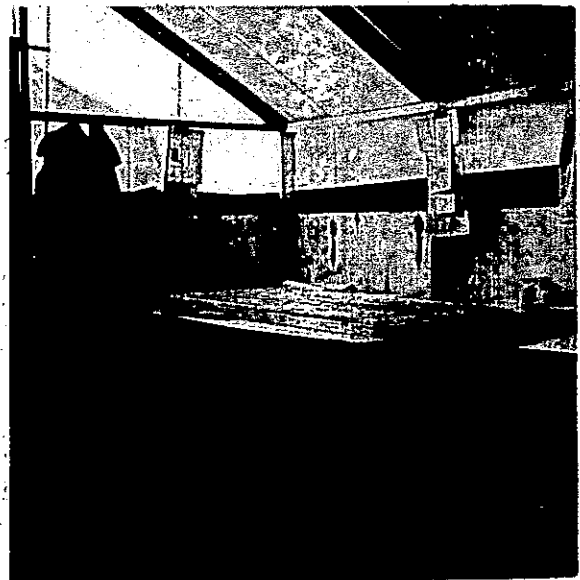
GENERAL VIEW

Fall muskeg conditions
(looking north) showing
30' Aerial height ineffective

Frozen Terrain (-30°)
looking SSE
- showing essential aerial height 60'



Kitchen
Propane type of
Utility heating



Fly Tent Interior
Core handling
facilities

MANITOBA

56° 30' N. LAT. 90° 55' W. LONG
PETROLEUM INFORMATION EXCHANGE LTD.LIC. APP. SEPT 24/68
MX DEL. JAN 24/72

HOUSTON OILS LTD		STD.	2125' PRECAMB	CO-ORD.	K.B. 250
HOUSTON ET AL ORZABAIT PROV		PSTD.		COVS	GR. 250
(STH) #1		LP.		0-2125'	
SPUD. OCT 12/68	44-156-				
X/R NOV 25/68	34-250-			PERFS.	
COMP.	2 7/8-246-				
STATUS	D & A			NET PAY	
FORMATION	TOP	SUBSEA	TOP	PROD. Z.	

CORE TOPS		
U KENOGAMI	201	+ 59
L KENOGAMI	278	- 16
ATTANAPISKAT	414	- 154
EKWAN	585	- 325
SEVERN R	775	- 515
PORT NELSON	1080	- 800
REDHEAD RFDS	1351	-1091
CHURCHILL R	1504	-1244
CAUTION CK	1737	-1477
BAD CACHE	1811	-1551
PRECAMB	2022	-1732
T. D.	2125	-1965

NO DRILL STEM TESTS RUN.

WELL COMPLETED.

LOGS S.P. & RES SLIM HOLE
EST. T.D.— CURVE.CONTRACTOR MIDWEST DRLG.
RIGHTS—

LOGGED BY, J. FRANK BLUE DATE, 4/12/68
P. GEOL.

WELL NAME HOUSTON ET AL COMEAULT PROV. (STH) NO. 1

LSD SEC 560 T. 401 R. 900 M. 551

PROVINCE HUDSON'S BAY LOWLANDS MANITOBA

OPERATOR HOUSTON CILS LIMITED.

CASING - SURF H/158-N/204 PROD.

DATE COMMENCED 13 OCT 1968

DATE COMPLETED 19 NOV 1968

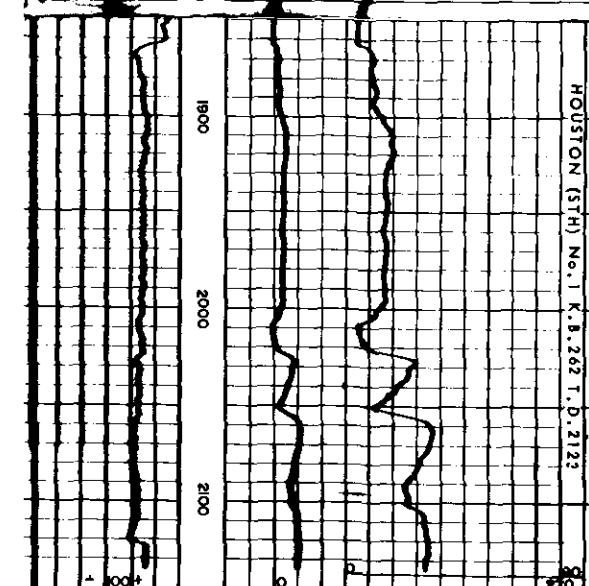
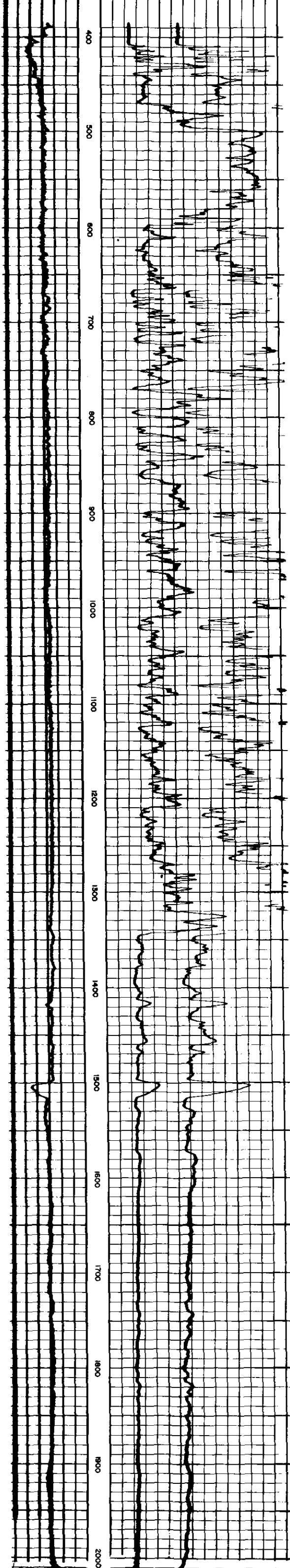
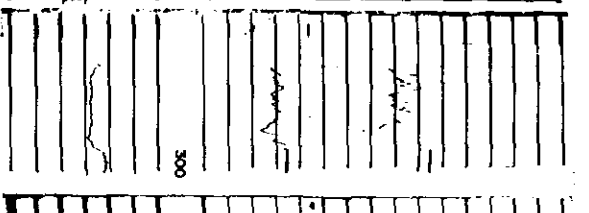
REMARKS DIAMOND DRILL BBS-35A

EL. FLOOR LEVEL 260±

PROD. DRY & ABANDONED.

100	Glacial Drift.
	TILL
	Gravels.
	Glacial till - QUARTZITE - gravels + pebbles
	TILL
200	MIDDLE KENOGAMI 201/460
	SLTST/SH - non calc. - argill. -
	qu. arg. - cavity - micropores
	kaolinitic
	calcareous -
	N. CSE. PT.
	lentic - laminar - S.L.
	limonitic (UPPER EXWAN)
	LOWER KENOGAMI 201/460
	LMS - calcilutite
300	CALCILUTITE
	CALCARENITE -
	MARL - CALCIRUDITE -
	(MIDDLE EXWAN) -
400	LMS - ATTAWAPISKAT 401/464
	REEFS - lentic microlite
	REEF LMS - CALCIRUDITE - MARL -
	SLTST/SHALE - kaolinitic - distorted
	laminated
	LMS - dns - crypto -
	REEFAL brecciated
	LMS - lithographic - ex - mx - dns.
500	CALCARENITE
	LMS - calcilutitic - crypto -
	qu. dns - cmpt - massive
	mottled.
	BRACHS -
	uniform textured -
	COALS - CRD -
600	KASKATTANA FM 505/525
	bio + frag -
	SHALY LMS -
	CALCARENITE - breccia - frag + bio φ.
	Reefal -
	chert - frags -
	LMS - calcilutite - dns.
	CALCIRUDITE - coarse lime breccia -
	bio - frag - chert - cavity φ -
	DOLOMITIC SHALE
	LMS - shaly - laminated + stratified.
	CALCARENITE - bio - frag - breccia reef.
	DOLOMITIC SHALE - stratified
	REEF - CALCIRUDITE - debris φ - Ex
	LMS - breccia - ex -
	REEFAL -
	LMS - EXWAN 775/515
	SLTST/SHALE
	LMS - ex - brcc - strat -
	DOLOMITIC - massive - cm buff
	frag + bio -
	LMS - MX - laminated.
	DOLOMITIC -
	LMS - mottled - wavy - Crs Xline -
	calate xls -
	frag -
900	DOLOMITIC - blue - dns -
	LMS - reefal in pt. -
	DOLOMITIC -
	LMS - as above -
	LMS + DOL - intbd. - as above -
	laminated
	broadly banded.
	narrow biotremal bds 3"
	dns + massive -
	LMSHALE - speckled - fs + qu. arg. -
	soft - frag. bio -
	DOLOMITIC - stratified - dns - massive
	laminated
	LMS - stratified - massive - laminated
	multifac. - breccia -
	DOLOMITIC - laminated + stratified
	laminated massive -
	TORT NELSON 1060/900
	LMS - mottled - marbled -
	buff - massive -
	DOL - as above - dns crypto
	brecciated -
	reciprocal reefal
	buff / 1/4y.
	crypto / fine Xline -
	sporadic calcite lined vugs -
	breccia zones 8" - calc. dns -
1200	LMS + DOL - qu / quarg / buff - ex
	shaly massive - distorted zones
	minor reefal biotremal
	breaks -
	gen. stratified + laminated.
	bioclastic zones -
1300	LMS - dolomitic int bds. dns -
	broad brecciation
	DOLOMITIC - finely med. Xline -
	highly fractured + brecciated.
	REDHEAD RAPIDS 1351/1091
	finely Xline - crypto -
	REEFAL lattice relic
	buff - massive compact
	uniform - litho / crypto.
	ben frag. + bio -
	SHALY DOL - argillaceous - stratified.
	ANHYDRITE - dk brn - mottled -
	DOLOMITIC - strat - uniform massive.
	LMS bands -
	Amphipora - frag. + bio.
	LMS - mottled - wavy -
	ab. fos.
	DOLOMITIC - strat. + massive.
	ANHYDRITE - dk brn. -
	LMS -
1500	CHERRY CR 1501/1244
	ANHYDRITE - brn - vena - massive
	speckled + qup. xls -
	DOL - strat - ex - massive - buff -
	LMS - mass - cmpt - dns - strat.
	DOL - rippled - clappled - coarse + broad
	brecciated - mass - ex / mx
	warpled - nobly - wavy -
	turbid bd. - fos.
	LMS - dns + col. - as above
	nobbly - warpled. - fos -
	ben less warpled + nobly -
	ex / mx
	dns cmpt.
	sl. brecciated - stratified
	fos + frag. buff / qu -
	fine Xline / micro.
1700	LMS - massive stratified - fos - cmpt. dns.
	clappled - warpled - nobly.
	massive - dns - dol. intbd.
	brecciated - large chert fos -
	LMS - dns - stratified - an
	beds - nobly wavy - wavy - turbid -
	DOL - shaly laminated - qu. brn - yellow
	ferrous - hematitic - sl. brcc.
	Ben mottled - anhydrous -
	lithified - massive + cmpt.
	sporadic fos.
	buff - turbid bd. qu / bluey.
	CAUTION CR 1737/1477
	inc. in wavy - clappings -
	DOL - banded - streaked buff.
	stratified - lime in pt.
	LMS - stony buff - luma. - flat bd. -
	mottled + clappled.
	bio - fine sur. - saline - φ -
	LMS - brn / buff - dooped - bio -
	ferrous - cyclic bio.
	LMS - litho / buff - frag. / bio in pt.
	dooped - wavy -
	uniform textured
	rippled - warpled.
	bio. - nobly.
	oblique fractures.
2000	DOLOMITIC 2022/1762
	SHALE - pur. brn - cubed ss - indurated.
	NEPHELINITES - 'Green Stone'
	pyritic - chloritic - shistose.
	dip. para. gneiss
	with. brn. - 1225
	granitoid para. ss
	GRANITE - Red / rasy - feldspathic
	schists / gneiss -
	Barbas - gneiss -
	para. orientated + gneiss
	GRANITE -
	highly fractured +
	shattered.
	Gneiss + granitic intrusions.
2100	THUNDER BOLT 2095/1465

ELECTRONIC <i>Logging Velocity</i> Co. Ltd. CALGARY, ALBERTA	
STRUCTURE TEST HOLE SURVEY	
Location	COMPANY <u>HOUSTON OIL LTD.</u>
	<u>HOUSTON ET AL COMEAULT PROV.</u>
56° 40' LAT 90° 55' LONG	WELL (STH) No. <u>1</u> FILE <input checked="" type="checkbox"/>
	FIELD <u>WILDCAT</u>
	PROVINCE <u>MAN.</u> LSD
	Sec. _____ Twp. _____ Rge. _____ W
Log Measured From _____	K. B. _____ Elevation \pm <u>262'</u> G. L. \pm <u>250'</u>
Run No. <u>1.2.3.</u>	
Date <u>NOV. 23, 24 1968</u>	
Footage Logged _____	
Total Depth, Logged <u>2123'</u>	
Total Depth, Driller <u>2125'</u>	
Csg Shoe, Logged <u>250' - PIPE 407'</u>	
Csg Shoe, Driller <u>250' - 407'</u>	
Csg Size <u>H-4 1/2", N-3 1/2" - B-2 7/8" - PIPE-2 1/8"</u>	
Bit Size <u>2 3/8"</u>	
Mud Kind <u>WATER</u>	COPYRIGHT © 1961 SILEY'S DATABASE INTERNATIONAL LTD. SCALED BY <u>C-13</u> DATE <u>11/13/69</u> FILMED BY <u>H-2</u> DATE <u>11/16/69</u> MOTIVATED
Treatment _____	
Weight _____	
Viscosity _____	
Ph. _____	
Resist. Ohms m2m _____ @ _____ °F @ _____ °F	
Loss ml/30 min _____	
Max Temp _____	
Recorded By <u>C. GUNHOLD</u>	
Witnessed By <u>F. BLUE</u>	
REMARKS OR OTHER DATA <u>PIPE IN HOLE TO STOP CAVING FROM B-CSG. TO 407'</u>	
POTENTIAL \pm 100+	RESISTANCE \pm 100



HOUSTON (STH) No. 1 K.B. 262 T.D. 2123

ELECTRONIC

Logging Velocity

CALGARY, ALBERTA

Co. Ltd.

STRUCTURE TEST HOLE SURVEY

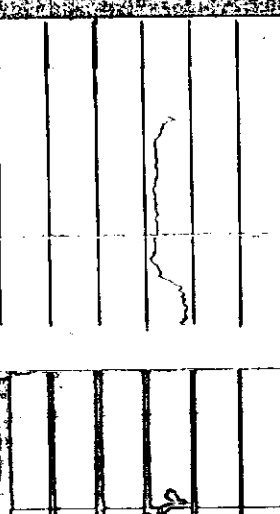
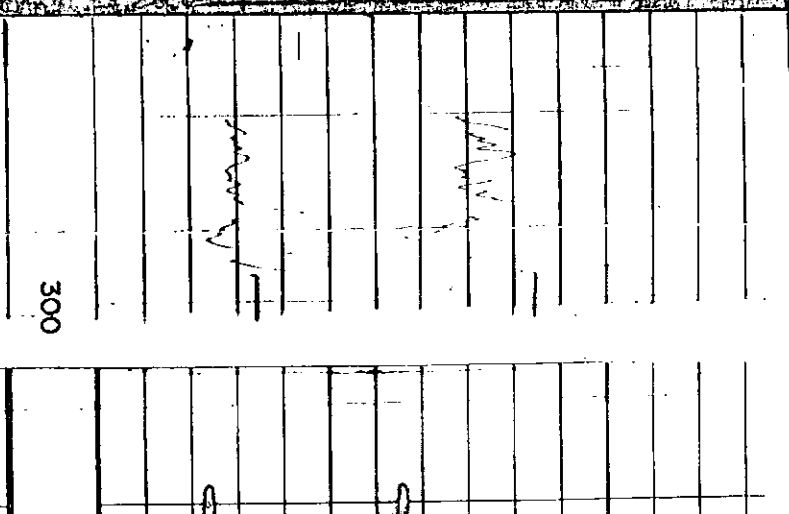
Location	COMPANY <u>HOUSTON OIL LTD</u>	
	<u>HOUSTON ET AL COMEAULT PROV.</u>	
<i>Lat.</i> 56° 40' LONG.	WELL <u>(STH) No. 1</u>	FILE _____
	FIELD <u>WILDCAT</u>	
<i>LONG.</i> 90° 55' LAT.	PROVINCE <u>MAN.</u>	LSD _____
	Sec. _____	Twp. _____ Rge. _____ W _____

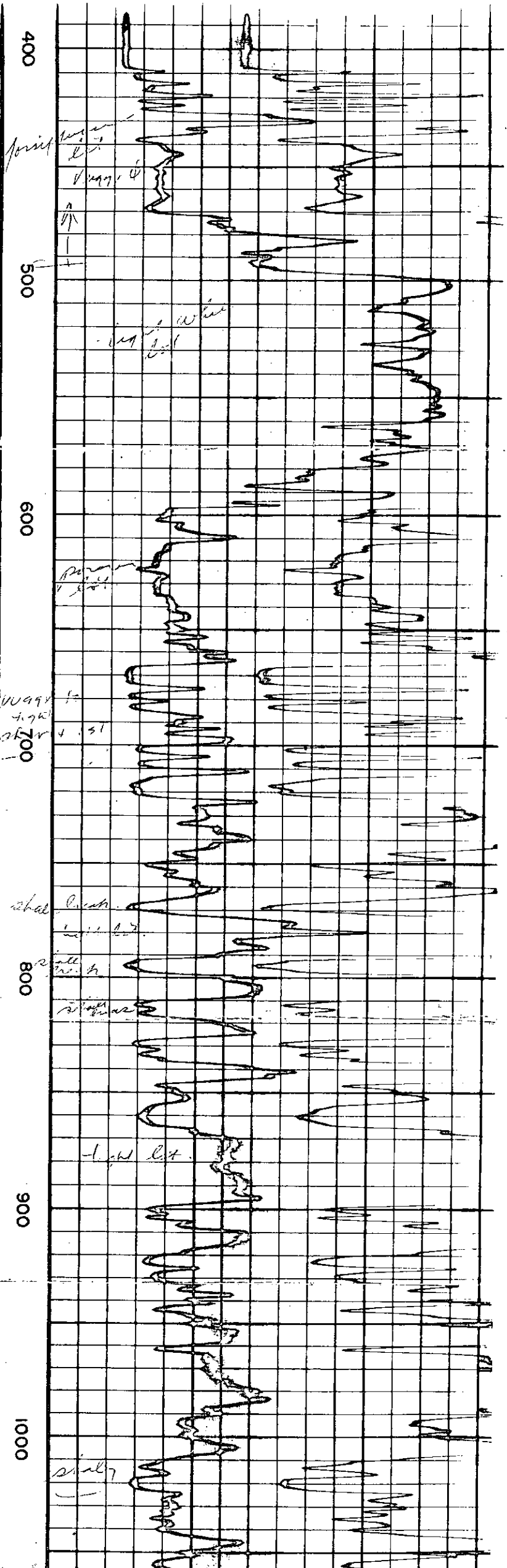
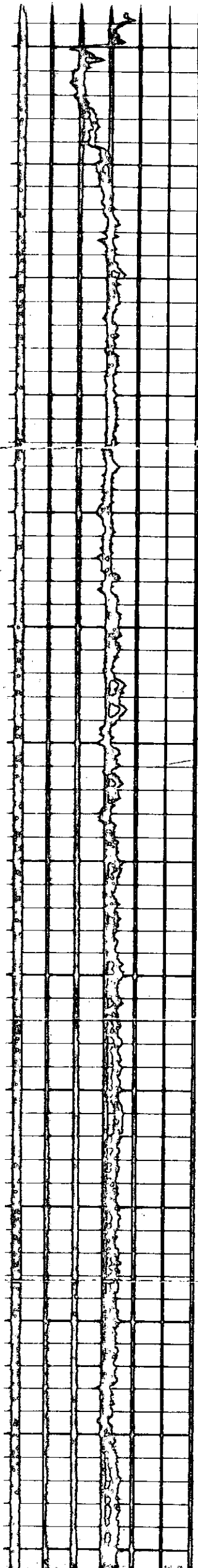
Log Measured From K.B. Elevation \pm 262'
GL \pm 260'

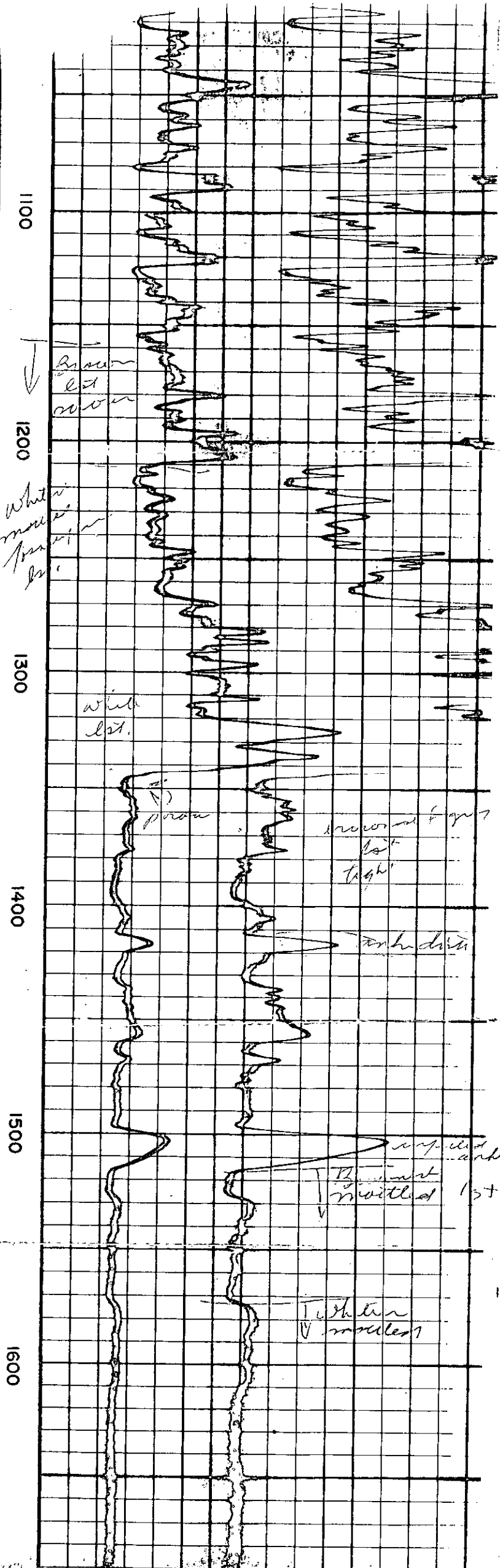
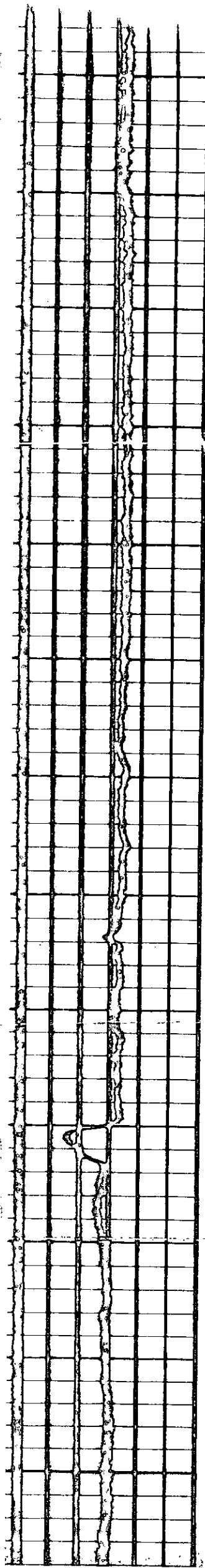
Run No. 123
Date NOV. 23, 24 1968.
Footage Logged _____
Total Depth, Logged 2123'
Total Depth, Driller 2125'
Csg Shoe, Logged 250' - PIPE 407'
Csg Shoe, Driller 250' 407'
Csg Size H-4 1/2", N-3 1/2", -B-2 7/8" - PIPE - 2 1/8"
Bit Size 2 3/8"

Mud Kind WATER
Treatment _____
Weight _____
Viscosity _____
Ph. _____
Resist. Ohms m2m @ _____ °F @ _____ °F
Loss ml/30 min _____
Max Temp _____
Recorded By C. GUNHOLD
Witnessed By E. BLUE

REMARKS OR OTHER DATA
PIPE IN HOLE TO STOP CAVING FROM B-CSG. TO
407'

POTENTIAL	RESISTANCE
	





1100

1200

1300

1400

1500

1600

Brown
1st
down

White
mudstone

white
1st.

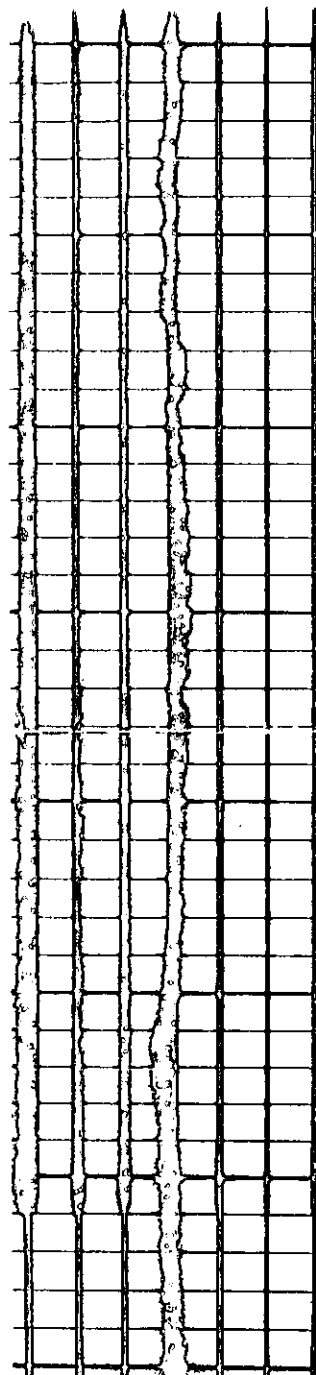
porous

brown 1st
tight

anhydrite

impure with anhydrite
tight 1st.

Tuffaceous
mudstone

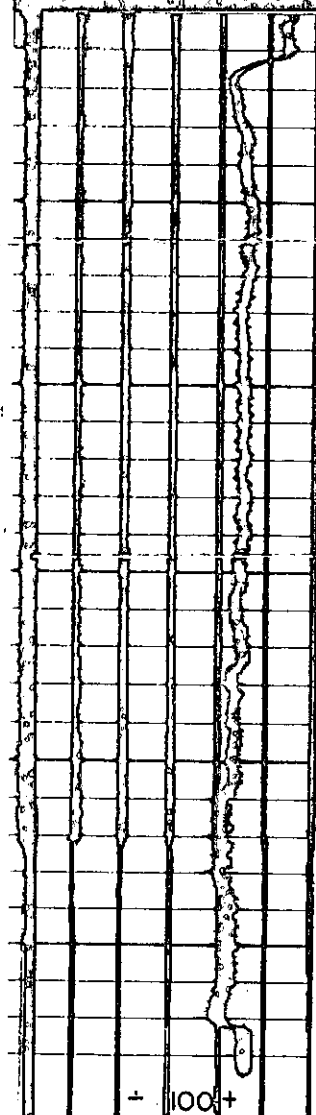
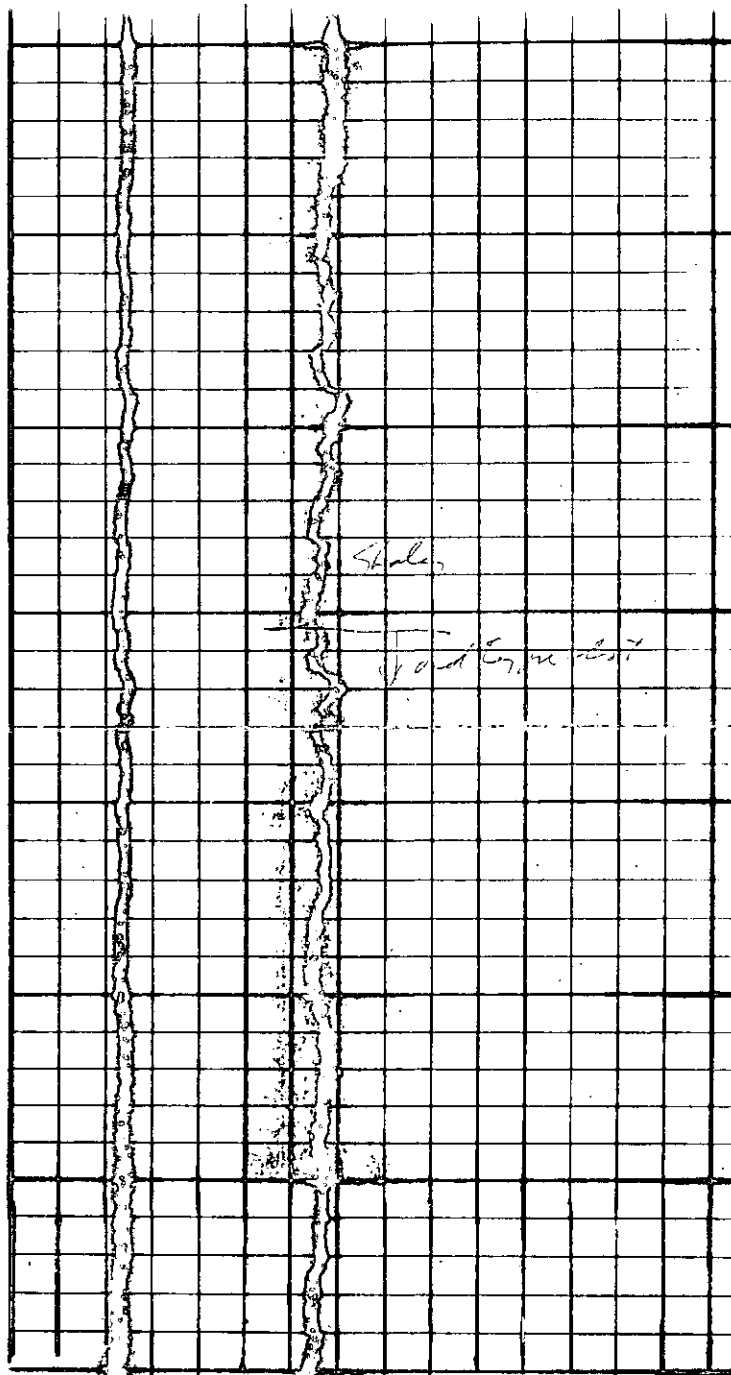


1700

1800

1900

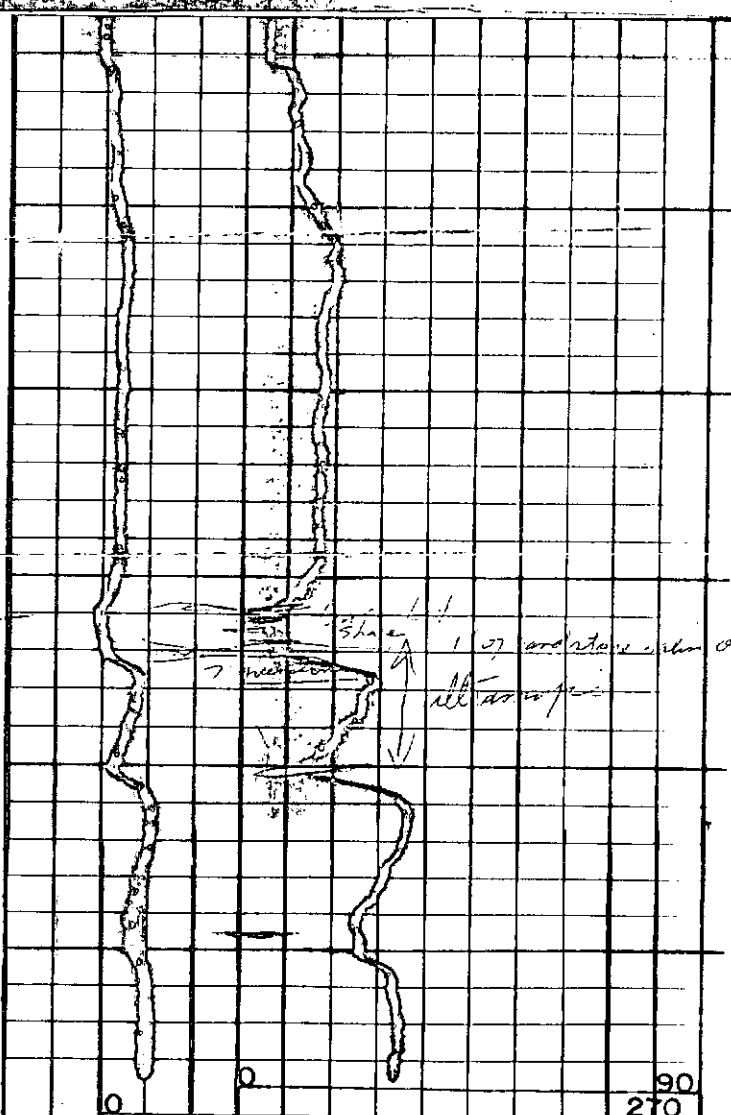
2000



1900

2000

2100



100+

0

90
270

STRUCTURE TEST HOLE SURVEY

Location	COMPANY <u>HOUSTON OIL LTD</u>	
	<u>HOUSTON ET AL COMEAULT PROV.</u>	
	WELL <u>(STH) No.1</u>	FILE _____
56° 40' LAT	FIELD <u>WILDCAT</u>	
90° 55' LONG	PROVINCE <u>MAN.</u>	LSD _____
	Sec. _____	Twp. _____ Rge. _____ W _____

Log Measured From	<u>K.B.</u>	Elevation \pm <u>262'</u> G.L. \pm <u>260'</u>
Run No.	<u>1 2 3</u>	
Date	<u>NOV. 23, 24 1968.</u>	
Footage Logged	_____	
Total Depth, Logged	<u>2123'</u>	
Total Depth, Driller	<u>2125'</u>	
Csg Shoe, Logged	<u>250' - PIPE 407'</u>	
Csg Shoe, Driller	<u>250' 407'</u>	
Csg Size	<u>H-4 1/2" N-3 1/2" - B-2 7/8" - PIPE - 2 1/8"</u>	
Bit Size	<u>2 3/8"</u>	
Mud Kind	<u>WATER</u>	
Treatment	_____	
Weight	_____	
Viscosity	_____	
Ph.	_____	
Resist. Ohms m2m	@ _____ °F	@ _____ °F
Loss ml/30 min	_____	
Max ml/30 min	_____	
Recorded By	<u>C. GUNHOLD</u>	
Witnessed By	<u>F. BLUE</u>	

REMARKS OR OTHER DATA
PIPE IN HOLE TO STOP CAVING FROM B-CSG. TO 407

