

INTERVAL SHEET

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Date 4/9/63

PROP: Paul Crabtree (Ceres #18)

COMP: U. S. Steel

COUNTY: Scott

VDMR WELL NO.: W-800

Sample Interval: from 38.0 to 382

Total Depth 384.8

Oil        Gas        Water        Exploratory X

Cuttings        Core X Other       

From-To	From-To	From-To	From-To	From-To
-	38 - 38.3	160 - 161.6	248.4 - 255.2	336.7 - 336.9
-	38.3 - 42.5	161.6 - 164.6	255.2 - 261	336.9 - 337.5
-	42.5 - 43.4	164.6 - 168.5	261 - 263.5	337.5 - 338
-	43.4 - 50	168.5 - 169.1	263.5 - 266	338 - 340.3
-	50 - 57.4	-	266 - 275	340.3 - 346.6
-	57.4 - 59.5	169.1 - 173.9	275 - 276.9	346.6 - 351.4
-	59.5 - 63	173.9 - 179.7	276.9 - 277.4	351.4 - 354.0
-	63 - 67	179.7 - 182.7	277.4 - 279.3	354.0 - 364.3
-	67 - 72.3	182.7 - 184.5	279.3 - 280.6	364.3 - 365.4
-	72.3 - 77.3	184.5 - 184.8	280.6 - 287.6	365.4 - 367.5
-	77.3 - 82.5	184.8 - 185.2	287.6 - 288.4	367.5 - 369.2
-	82.5 - 86.0	185.2 - 191.5	288.4 - 290.2	369.2 - 372.6
-	93.3 - 93.7	191.5 - 193	290.2 - 291.3	372.6 - 373.3
-	94.2 - 96.1	193 - 196.6	291.3 - 295.3	373.3 - 379.6
-	102.9 - 103.1	196.6 - 203.6	295.3 - 302.5	379.6 - 381.2
-	103.1 - 104.4	203.6 - 208.4	302.5 - 303.1	381.2 - 382.0
-	108.2 - 108.7	208.4 - 211.8	303.1 - 303.4	-
-	108.7 - 109.6	211.8 - 214	303.4 - 307.9	-
-	109.6 - 112.5	214 - 216.5	307.9 - 310.1	-
-	114.5 - 115.3	216.5 - 219.5	310.1 - 311.3	-
-	117.2 - 120.5	219.5 - 222	311.3 - 315.7	-
-	120.5 - 121.2	222 - 222.4	315.7 - 316.2	-
-	121.2 - 126	222.4 - 225.6	316.2 - 320.2	-
-	126 - 132	225.6 - 228.8	320.2 - 323.9	-
-	132 - 137.6	228.8 - 229.5	323.9 - 325.8	-
-	137.6 - 140.6	229.5 - 232.6	325.8 - 326.8	-
-	140.6 - 142.2	232.6 - 235.8	326.8 - 330.8	-
-	142.4 - 147	235.8 - 241	330.8 - 334.0	-
-	147 - 152	241 - 245	334.0 - 335.7	-
-	152 - 157.4	245 - 248.4	335.7 - 336.7	-
-	157.4 - 160			

County: BLAND

VDMR Well No. 800

Well or property: CERES NO. 18

Farm: Paul Crabtree

Driller: J. Bartlett (contractor - Southeastern Drilling Co.)

Location: Garden Mountain quadrangle,

Elevation: 2,640.89 feet

Total depth: 384.85 feet

Started drilling: 9/11/56

Finished drilling: 9/19/56

Sample description by: E. M. Luttrell

Reference: Obtained from U. S. Steel Company

GEOLOGIC SUMMARY

<u>Depth</u>	<u>Thickness</u>	<u>Formation (and remarks)</u>
0.0 - 38.0	38.0	(Overburden)
38.0 - 114.5	76.5	Beekmantown fr., fractured and porous dolomite, two thin limestone-bearing layers.
114.5 - 142.2	27.7	Chepultepec ls.; mainly dol. and limey dol. between two fn. grn., med. gray ls. which mark top and base of fm.
142.2 - 384.8	242.6	Copper Ridge dol., four shows of ZnS mineralization in a predominant dol. succession, thin sandstone layers, several oolitic chert layers.

Well: Ceres #18  
Farm: Paul Crabtree  
Driller: J. Bartlett (Contractor - Southeastern Drilling Co.)  
Location: Garden Mountain quadrangle  
N. - 11,938.95  
E. - 11,260.10  
Elevation: 2640.89  
Angle and Bearing: 58°, N 40° W  
Total depth: 384.85  
Started drilling: 9/11/56 Finished drilling: 9/19/56  
Sample description by E. K. Rader, Virginia Division of Mineral Resources  
References: Core obtained from U.S. Steel Company; log by E. M. Luttrell

GEOLOGIC SUMMARY

Depth	Thickness	Formation (and remarks)
0.0-38.0	38.0	Overburden, no samples
38.0-114.5	76.5	Beekmantown formation: fractured, porous, light to dark gray, fine- to coarse-grained dolomite, two thin limestones
114.5-142.2	27.7	Chepultepec limestone: dolomite and limey dolomite between two cryptocrystalline, gray limestones which mark top and base of formation
142.2-382	239.8	Cooper Ridge dolomite: dolomite and sandy dolomite with several layers of sandstone and oolitic chert; three shows of sphalerite mineralization
382-384.8	2.8	Core not received
Depth	Thickness	Description
0.0'-38.0'	38'	No samples
38'-38.3'	0.3'	Dolomite, light gray, cryptocrystalline, fractured, white calcite in fractures
38.3'-42.5'	4.2	Dolomite, medium gray, fine-grained, bands of light gray dolomite
42.5'-43.4'	0.9	Dolomite, light gray, cryptocrystalline to very fine-grained
43.4'-57.4'	14.0	Dolomite, light to medium gray, fine-grained, bands of lighter gray dolomite, blebs of white chert at 56.8'
57.4'-59.5'	2.1	Dolomite, dark gray, fine-grained, black

Depth	Thickness	Description
		laminations
59.5'-63.0'	3.5	Dolomite, light gray, fine-grained, dark gray and white banded chert at 61', black chert nodule at 62.2', mottled chert at base
63.0'-72.3'	9.3	Dolomite, mottled, medium-grained, sparse fractures, coarser grained and darker gray 66' to 67'
72.3'-82.5'	10.2	Dolomite, medium gray, medium-grained
82.5'-86.0'	3.5	Dolomite, medium gray, fine-grained, minor brecciation along fractures.
86.0'-93.3'	7.3	Opening, no core
93.3'-93.7'	0.4	Dolomite, medium gray, medium-grained, porous, weathered
93.7'-94.2'	0.5	Opening, no core
94.2'-96.1'	1.9	Dolomite, calcareous, medium gray, fine-to medium-grained, faint mottling, weathered
96.1'-102.9'	6.8	Opening, no core
102.9'-103.1'	0.2	Dolomite, tan, fine-grained
103.1'-104.4'	1.3	Limestone, dove gray, cryptocrystalline, with minor white calcite fracture fillings; conglomeratic in upper 0.4'
104.4' 108.2'	3.8	Opening, no core
108.2'-108.7'	0.5	Limestone and dolomitic limestone, dove gray, very fine-grained, core badly broken
108.7'-109.6'	0.9	Dolomite, light gray, fine-grained, many wavy dark laminae
109.6'-112.5'	2.9	Dolomite, recrystalline(?), dark gray, coarse-grained, with white, coarse-grained gangue dolomite
112.5'-114.5'	2.0	Opening, no core
114.5'-115.3'	0.8	Limestone, dove gray, cryptocrystalline, with white calcite fracture fillings

Depth	Thickness	Description
115.3'-117.2'	1.9	Opening, no core
117.2'-120.5'	3.3	Dolomite, light to medium gray, fine-grained, black wavy laminae, black chert at 120'
120.5'-121.2'	0.7	Limestone, dove gray, cryptocrystalline, with minor white calcite fracture fillings, grades into dolomite below
121.2'-132	10.8	Dolomite, light to medium gray, fine-grained, mottled in places, silty at 130.3 to 130.6 and 131.8 to 132; fractured 126 to 127
132'-137.6'	5.6	Dolomite, dark gray to black, fine-grained, calcareous
137.6'-140.6'	3.0	Dolomite, medium gray, fine-grained, calcareous, fractured, white dolomite in fractures
140.6'-142.2'	1.6	Limestone, dove gray, cryptocrystalline
142.2'-147	4.8	Dolomite, light gray, fine-grained, scattered dolomite blebs, shaley at 145' to 146'
147'-157.4'	10.4	Dolomite, dark gray, fine-grained; chert, breccia at 153.3' to 153.4'; scattered blebs of white carbonate
157.4'-160.0'	2.6	Dolomite, medium gray, fine-grained, sand laminae in upper 0.8'
160.0'-161.6	1.6	Dolomite, dark gray, fine-grained
161.6'-168.5'	6.9	Dolomite, medium to light gray, fine-grained; sandstone 164.5-164.6, mottled 164.6-164.9; dolomite filled fractures in lower part.
168.5'-169.1'	0.6	Dolomite, dark gray, fine-grained
169.1'-173.9'	4.8	Dolomite, light gray, cryptocrystalline to fine-grained; sandstone laminar in upper part; dolomite blebs in lower part
173.9'-182.7'	8.8	Dolomite, medium to dark gray, fine-grained; sandy; sandstone laminae in <b>upper</b> foot; brecciated 176.0' to 179.7'; oolitic 177.6' to 178'

Depth	Thickness	Description
182.7'-184.5'	1.8	Dolomite, light gray, fine-grained; sandy upper 0.8'
184.5'-184.8'	0.3	Chert, oolitic, light gray
184.8'-185.2'	0.2	Sandstone, dolomitic, light gray, fine grained
185.2'-191.5'	6.3	Dolomite, medium gray, medium-to coarse-grained; sandy 185.2'-185.9'
191.5'-193'	1.5	Dolomite, medium to dark gray, fine-grained, laminated near bottom
193'-196.6'	3.6	Dolomite, dark gray, fine-to medium-grained; conglomeratic at 195'; black wavy laminae at bottom
196.6'-203.6'	7.0	Dolomite, medium gray, fine-grained; sandy, sandstone stringers to 0.2'; few black shaley partings
203.6'-208.4'	4.8	Dolomite, medium to dark gray, medium-grained; blebs of white quartz and dolomite; quartz crystals in <u>Mineralization:</u> Reddish-brown and yellow sphalerite at 204.8' and 205.3'
208.4'-211.8'	3.4	Dolomite, medium gray, fine-to medium-grained; dark shaley partings and laminae
211.8'-214.0'	2.2	Dolomite, dark gray, medium-grained, oolitic
214'-216.5'	2.5	Dolomite, light to medium gray, fine-grained, blebs of white carbonate
216.5'-219.5'	3.0	Dolomite, light to medium gray, medium-grained
219.5'-222.0'	2.5	Dolomite, light to medium gray, fine-grained
222.0'-222.4'	0.4	Dolomite, mottled, gray to tan, fine-grained
222.4'-225.6'	3.2	Dolomite, dark gray to black, fine-grained; sandy; black stylolites
225.6'-228.8'	3.2	Dolomite, dark gray, fine-grained, purple fluorite in dolomite bleb

Depth	Thickness	Description
228.8'-229.5'	0.7	Sandstone, light gray, fine-grained
229.5'-232.6'	3.1	Dolomite, medium gray, fine-grained, dark banding
232.6'-235.8'	3.2	Dolomite, light gray, fine-grained; sand laminae; sandstone 233.7' to 234.2'
235.8'-241.0'	5.2	Dolomite, medium to dark gray, fine-grained
241.0'-248.4'	7.4	Dolomite, light gray, fine-grained, with black laminae; sandy; sandstone stringers 246' to 247'
		<u>Mineralization:</u> Yellow sphalerite in white quartz and dolomite bleb at 242.4'
248.4'-255.2'	6.8	Dolomite, medium gray, fine-grained, black laminae
255.2'-261.0'	5.8	Dolomite, medium to light gray, fine-grained, black laminae at 259'-260'; sandy; sandstone 257.1' to 257.5'
261.0'-263.5'	2.5	Dolomite, sandy, light gray, fine-grained
263.5'-266'	2.5	Dolomite, light gray, cryptocrystalline, mottled, lower 0.3'
266'-275'	9.0	Dolomite, medium gray to black, fine-grained, sandy; black wavy laminae and banding
275'-276.9'	1.9	Dolomite, light to medium gray, fine-grained, sandy laminae; stylolitic
276.9'-277.4'	0.5	Chert, oolitic, light gray
277.4'-279.3'	1.9	Sandstone, dolomitic, light gray, fine-grained
279.3'-280.6'	1.3	Dolomite, light gray, cryptocrystalline
280.6'-287.6'	7.0	Dolomite, medium to dark gray, fine-grained, sandy, more so at bottom, black shaley laminae

Depth	Thickness	Description
287.6'-288.4'	0.8	Sandstone, light gray, fine-grained
288.4'-290.2'	1.8	Dolomite, light to medium gray, medium-grained, sandy, mottled
290.2'-291.3'	1.1	Dolomite, dark gray to black, fine-grained, sandy at base
291.3'-295.3'	4.0	Dolomite, light gray, cryptocrystalline, sandy, stringers to 0.2'; stylolitic
295.3'-302.5'	7.2	Dolomite, dark gray, fine-to medium-grained, bleb of white dolomite at 300.3'
302.5'-303.1'	0.6	Dolomite, light gray, fine-grained
303.1'-303.4'	0.3	Dolomite, medium gray, fine-to medium gray
303.4'-307.9'	4.5	Dolomite, light to medium gray, fine-grained; black, thin bands; slightly sandy
307.9'-310.1'	2.2	Dolomite, dark gray, fine-to medium-gray, fracture fillings of white dolomite
310.1'-311.3'	1.2	Dolomite, light to medium gray, fine-grained, very small fractures, filled with white carbonate
311.3'-315.7'	4.4	Dolomite, medium to dark gray, fine-to medium-grained, fractured, fractures filled with white carbonate
315.7'-316.2'	0.5	Dolomite, medium to light gray, fine-to medium-grained, with interbedded black shale, some tan dolomite
316.2'-320.2'	4.0	Dolomite, medium to dark gray, fine-grained, minor black shale partings
320.2'-323.9'	3.7	Dolomite, dark gray, fine-to medium-grained
323.9'-325.8'	1.9	Dolomite, light to medium gray, fine-grained
325.8'-326.8'	1.0	Dolomite, light to medium gray, fine-to medium grained, with black shale partings



Depth	Thickness	Description
326.8'-330.8'	4.0	Dolomite, medium to light gray, fine-to medium-grained, with black shale partings in lower 0.4', sandy 329'330
330.8'-334.0'	4.8	Dolomite, dark gray, fine-grained, some black black shale partings
334.0'-335.7'	1.7	Dolomite, medium to dark gray, fine-grained
335.7'-336.7'	1.0	Sandstone, light gray, fine-grained
336.7'-336.9'	0.2	Dolomite, medium gray, medium-grained, black shale partings at top and bottom, brecciated
336.9'-337.5'	0.6	Breccia, fragment angular, medium gray, fine-to medium-grained dolomite in a white carbonate
337.5'-338'	0.5	Dolomite, light gray, very fine-grained, laminated, conglomeratic appearance
338'-340.3'	2.3	Dolomite, dark gray, fine-grained, with black shale partings, sandy in lower 0.3'
340.3'-346.6'	6.3	Dolomite, light gray, fine-grained, abundant sandstone beds, becoming somewhat shaley in lower 1 foot, stylolites throughout
346.6'-351.4'	4.8	Dolomite, medium gray, fine-grained, black banding
351.4-354.0	2.6	Dolomite, medium gray, medium-grained, dark stylolites
354.0'-364.3'	10.3	Dolomite, medium gray, mottled, fine-to medium-grained; sandstone laminae
364.3'-365.4'	1.1	Dolomite, dark gray, very fine-grained
365.4'-367.5'	2.1	Dolomite, medium to dark gray, fine-grained, sandy laminae
367.5'-369.2'	1.7	Sandstone, dolomitic, light gray, fine-grained
369.2'-372.6'	3.4	Dolomite, medium gray, fine-grained, black wavy stylolites lower part; sandy laminae

Depth	Thickness	Description
372.6'-373.3'	0.7	Dolomite, medium to dark gray, fine-grained
373.3'-379.6'	6.3	Dolomite, medium to dark gray, fine-grained, dark banding 376-377; sandy laminae <u>Mineralization:</u> Yellowish-orange crystal at 378 +'
379.6'-381.2'	1.6	Sandstone, dolomitic, light gray, fine-grained, stylolites
381.2'-382'	0.8	Dolomite, light gray, fine-grained

X-RAY VALUES

Depth	Dol	Cal	Qtz	K-feld	Mica
38'	1200		10	↙5	
39'	4300	?	40	5	
42.5'	1200		20		
44'	2200	?	30		
46'	2600	↙5	10		
56'	1500		110	↙5	
57.8'	1550	10	40		
59.5'	1000	5	25	↙5	
62'	95		1250		
63'	130		1400	5	
64'	2100	?	60		
66.5'	1900		15		
68'	2700		5		
95'	1350	70	15		
96'	1300	30	20	5	
102.9'	2800	?	20	5	5
104'	?	700	20	15	?
104.5'		525	40	20	
108.5'	600	500	30	15	10
109'	1600	5	15	10	
110' b	4100	75	15	5	5
110' w	5000	5			
112'	450	450	25	10	5
115'	225	550	25	10	10
118'	550	20	30	?	
119'	1100	35	25	10	
120'	420	120	450	10	
120.5'	30	500	15		
122'	1050	20	25	?	
130'	1350	?	140	30	5
131.8'	130		100	65	30
132.5'	1100		110	10	
138'	1300		20		
146'	1600	25	550		
147'	1010		45	35	25
149'	2000	?	60	25	10
153'	1650	10	450	?	
157'	800	?	60	50	25
158'	750	5	95		
167'	1350		20	?	?
171'	1000		40	?	?
173' g	1150		285	50	?
173' w	4500	40			
176'	3000		15		
178'	1000	5	20		

Depth	Dol	Cal	Qtz	K-feld	Mica
180'	2500	5	20	?	
183.5'	1550		15		
185'	300		1700		
186'	4500		35	5	
191'	3300	5	15		
192'	1100		40	20	5
193'	1800		10	25	
196.6'	750		100	?	
199.5'	65		170		
204'	1350		5		
210'	2300		55	20	
214'	1100		25	25	
217'	1700		25		
220'	3000		30	5	
222'	1250		50	40	10
223'	900		25	5	?
224'	1150		50	10	5
226'	1200		45	15	5
226.5'	1000		1100	20	
230' W	1200	10	80		
230' g	1550	10	20	5	
234.5'	850		60	15	10
236'	1200		15	?	5
241'	2300	10	140	15	?
242'	800		30	15	
246'	950		190	65	15
252'	750		70	40	15
255.5'	1350	5	45	60	5
259'	25		70	70	40
260'	1950		15	10	?
262'	950		70	10	
265'	1250		10	?	
267'	440		135	40	20
270'	45 Ankeritic ?		220	80	40
276'	430		10	5	
277'	850		1050	?	
277.6'	675	10	1950		
280'	1000		30	5	?
281'	630		30	5	?
283'	45		170	90	40
288'	140		1200	5	
290'	700		300	50	15
291'	1400		20	10	5
293'	950		45	35	5
297'	2000		20	?	?
300.3'	7000	50	10		

Depth	Dol	Cal	Qtz	K-feld	Mica
303.2'	1400		10	?	
304'	1700	?	35	15	5
308'	850		15	10	
310.5'	1050		20	5	
312'	1900		40	20	?
315.1'	400	10	150	50	15
315.8'	620		270	50	15
318'	1550	5	50	10	?
321.5'	1150	?	30	15	
324.5'	1550		30		
326'	650	15	50	20	5
327.5'	3150	20	55	5	
331'	520	?	55	15	
335'	670	5	45	10	5
335.8'	370		1550	20	5
336.8'	1440	10	15	5	
337'	850	10	70	5	
337.9'	900	15	20	10	
338.2'	520	15	10	5	
339'	120		170	85	25
340.5'	540	5	60	10	
346'	1550	?	20	10	
348.6'	810		100	40	15
352'	1800		25	15	5
355'	1200	?	5	10	?
360'	1900	20	65	30	5
365'	680		70	20	
366'	960	5	1680	25	
369'	270		450	10	
370'	1575		20	30	
373'	1200		25	15	
375'	1200		15	5	
380'	680		770	250	
381.5'	1500		35	15	

X-RAY VALUES

Depth	Dol	Cal	Qtz	K-feld	Mica
38'	1200		10	5	
39'	4300	?	40	5	
42.5'	1200		20		
44'	2200	?	30		
46'	2600	5	10		
56'	1500		110	5	
57.8'	1550	10	40		
59.5'	1000	5	25	5	
62'	95		1250		
63'	130		1400	5	
64'	2100	?	60		
66.5'	1900		15		
68'	2700		5		
95'	1350	70	15		
96'	1300	30	20	5	
102.9'	2800	?	20	5	5
104'	?	700	20	15	?
104.5'		525	40	20	
108.5'	600	500	30	15	10
109'	1600	5	15	10	
110' b	4100	75	15	5	5
110' w	5000	5			
112'	450	450	25	10	5
115'	225	550	25	10	10
118'	550	20	30	?	
119'	1100	35	25	10	
120'	420	120	450	10	
120.5'	30	500	15		
122'	1050	20	25	?	
130'	1350	?	140	30	5
131.8'	130		100	65	30
132.5'	1100		110	10	
138'	1300		20		
146'	1600	25	550		
147'	1010		45	35	25
149'	2000	?	60	25	10
153'	1650	10	450	?	
157'	800	?	60	50	25
158'	750	5	95		
167'	1350		20	?	?
171'	1000		40	?	?
173' g	1150		285	50	?
173' w	4500	40			
176'	3000		15		
178'	1000	5	20		

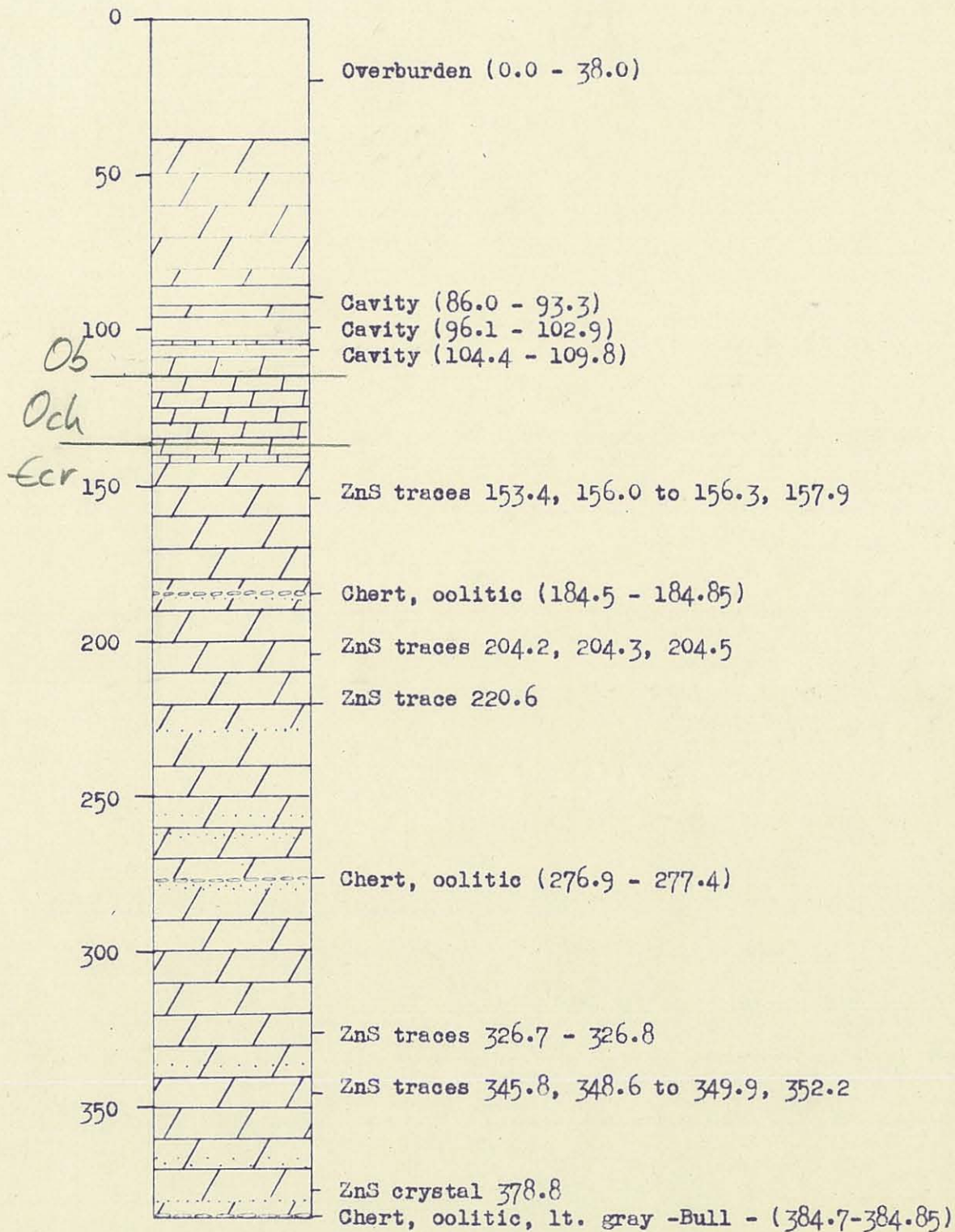
Depth	Dol	Cal	Qtz	K-feld	Mica
180'	2500	5	20	?	
183.5'	1550		15		
185'	300		1700		
186'	4500		35	5	
191'	3300	5	15		
192'	1100		40	20	5
193'	1800		10	25	
196.6'	750		100	?	
199.5'	65		170		
204'	1350		5		
210'	2300		55	20	
214'	1100		25	25	
217'	1700		25		
220'	3000		30	5	
222'	1250		50	40	10
223'	900		25	5	?
224'	1150		50	10	5
226'	1200		45	15	5
226.5'	1000		1100	20	
230' W	1200	10	80		
230' g	1550	10	20	5	
234.5'	850		60	15	10
236'	1200		15	?	5
241'	2300	10	140	15	?
242'	800		30	15	
246'	950		190	65	15
252'	750		70	40	15
255.5'	1350	5	45	60	5
259'	25		70	70	40
260'	1950		15	10	?
262'	950		70	10	
265'	1250		10	?	
267'	440		135	40	20
270'	45 Ankeritic ?		220	80	40
276'	430		10	5	
277'	850		1050	?	
277.6'	675	10	1950		
280'	1000		30	5	?
281'	630		30	5	?
283'	45		170	90	40
288'	140		1200	5	
290'	700		300	50	15
291'	1400		20	10	5
293'	950		45	35	5
297'	2000		20	?	?
300.3'	7000	50	10		

Depth	Dol	Cal	Qtz	K-feld	Mica
303.2'	1400		10	?	
304'	1700	?	35	15	5
308'	850		15	10	
310.5'	1050		20	5	
312'	1900		40	20	?
315.1'	400	10	150	50	15
315.8'	620		270	50	15
318'	1550	5	50	10	?
321.5'	1150	?	30	15	
324.5'	1550		30		
326'	650	15	50	20	5
327.5'	3150	20	55	5	
331'	520	?	55	15	
335'	670	5	45	10	5
335.8'	370		1550	20	5
336.8'	1440	10	15	5	
337'	850	10	70	5	
337.9'	900	15	20	10	
338.2'	520	15	10	5	
339'	120		170	85	25
340.5'	540	5	60	10	
346'	1550	?	20	10	
348.6'	810		100	40	15
352'	1800		25	15	5
355'	1200	?	5	10	?
360'	1900	20	65	30	5
365'	680		70	20	
366'	960	5	1680	25	
369'	270		450	10	
370'	1575		20	30	
373'	1200		25	15	
375'	1200		15	5	
380'	680		770	250	
381.5'	1500		35	15	



GENERALIZED GRAPHIC LOG

CERES NO. 18



DIAMOND DRILL HOLE RECORD

CORES NO. 18

Location: N-11,9<sup>38</sup>~~44~~.95 E-11,260.10  
 Elevation: 2640.89  
 Angle and bearing: N 40 W , 58°  
 Core size: AX  
 Started drilling: 9-11-56  
 Finished drilling: 9-19-56  
 Drill contractor: Southeastern Drilling Co. Driller: J. Bartlett  
 Logged by: E. M. Luttrell  
 Classification: Trace

<u>From</u>	<u>To</u>	<u>Description</u>
✓ 0.0	38.0	Overburden
✓ 38.0	57.5	Dol., fn. grn., mostly lt. gray ; very few nearly vertical fractures ; faint mottling lower part ; .05 ft. white chert w/dk. lam. at 56.8.
✓ 57.5	61.0	Dol., med grn., dk. gray becoming finer grn. lt. gray ; .05 ft. dk. gray and white banded chert at base.
✓ 61.0	63.2	Dol., fn. grn., lt. gray ; trace pyrite in dol. eye; small dk. gray chert nodule at 62.2 ; .1 ft. dk. gray mottled chert at base.
✓ 63.2	72.3	Dol., med. grn., mottled w/lt. gray; very sparse N.V.F.; coarser grn. and darker gray 66.0-67.3.
✓ 72.3	82.5	Dol., fn. to med. gray, med grn., dol. eye at 73.4.
✓ 82.5	86.0	Dol., fn. grn., med. gray ; sparse brecciation along N.V.F. at 82.5-83.0.
✓ 86.0	93.3	Opening, no core.
✓ 93.3	93.7	Dol., med. grn., med. gray ; porous, weathered.
✓ 93.7	94.2	Opening, no core.
✓ 94.2	94.3	Dol., med. grn., med. gray; weathered.
✓ 94.3	96.1	Dol., fn. to med. grn., med. gray, ; faint mottling, weathered.
✓ 96.1	102.9	Opening, no core.
✓ 102.9	103.1	Dol., dense, tan.
✓ 103.1	104.4	Limestone, fn. grn., med. gray ; conglomeratic upper 0.4' .
✓ 104.4	108.2	Opening, no core.

<u>From</u>	<u>To</u>	<u>Description</u>
✓ 108.2	108.7	Limestone and dol. chips ; core badly broken.
✓ 108.7	109.8	Dol., fn. grn., tan-gray w/many wavy dk. lam.
✓ 109.8	112.5	Recrystalline dol., coarse grn., dk. gray w/much gangue type white dol.
✓ 112.5	114.5	Opening, no core.
✓ 114.5	115.3	Limestone, fn. grn., med. gray ; weathered at top.
✓ 115.3	117.2	Opening, no core.
✓ 117.2	120.4	Dol., fn. grn., tan-gray becoming med. gray ; fine dol. filled N.V.F. ; 0.1 ft. black chert at 120.0.
✓ 120.4	121.3	Ls., fn. grn., med. gray - grades into dol. below.
✓ 121.3	128.2	Dol., fn. grn., lt. gray becoming med. gray ; cut by many N.V.F. 126.3 - 127.0.
✓ 128.2	131.9	Dol., fn. grn., med. gray ; mottled w/tan and dk. gray upper part.
✓ 131.9	137.9	Dol., limey, dense, dk. gray.
✓ 137.9	140.6	Dol., limey, fn. grn., med. gray.; fine dol. filled N.V.F.
✓ 140.6	142.2	Ls., fn. grn., med. gray.
✓ 142.2	143.7	Dol., fn. grn., lt. gray.
✓ 143.7	147.4	Dol., fn. grn., lt. gray ; sparse dol. eyes ; few fine dol. filled N.V.F. ; shale parting at 145.4 .
✓ 147.4	157.6	Dol., fn. grn., dk. gray ; lam. upper part, sparse dol. filled N.V.F. lower part: <u>MINERALIZATION</u> : Trace ZnS in small mottled band at 153.4 ; ZnS traces along N.V.F. from 156.0 to 156.3.
✓ 157.6	160.0	Dol., fn. grn., med gray ; sand lam. upper 0.8 ft. <u>MINERALIZATION</u> : ZnS traces in sand lam. at 157.9
✓ 160.0	161.6	Dol., dense, dk. gray ; fine N.V.F.
✓ 161.6	168.5	Dol., fn. grn., med. to lt. gray ; sandstone 164.5-164.6 ; mottled w/dk. gray 164.6-164.9 ; dol. filled N.V.F. lower part.
✓ 168.5	169.1	Dol., dense, dk. gray ; sparse N.V.F.

Beekmantown fm,

Chepa 1 to spec 15.

Copper Ridge dol.



<u>From</u>	<u>To</u>	<u>Description</u>
✓ 169.1	173.9	Dol., fn. grn., med. to lt. gray ; sparse sd. lam. upper part ; dol. eyes lower part ; .05 ft. dk. chert at 171.3 .
✓ 173.9	182.7	Dol., fn. grn., med. to dk. gray ; sdy; lam. upper foot ; shattered and brecciated 176.0-179.7 ; oolitic 177.6 to 178.0.
✓ 182.7	184.5	Dol., fn. grn., lt. gray ; sdy. upper .8 ft.; few chert nodules center part; sparse N.V.F.
✓ 184.5	184.85	Chert, oolitic, sdy., lt. gray.
✓ 184.85	185.2	Sandstone, med. gray.
✓ 185.2	191.5	Dol., med. grn., lt. gray ; sdy. upper .8ft.; few traces pyrite ; sparse dol. filled N.V.F.
✓ 191.5	195.6	Dol., fn. to med. grn., med. gray ; Brn. lam. upper foot ; sparse N.V.F. ; congl. appearance at base.
✓ 195.6	196.6	Dol., fn. grn., med. gray ; dk. wavey lam.
✓ 196.6	200.5	Dol., fn. grn., med. gray ; very sandy - almost sandstone ; center portion ; few dk. shaley partings .
✓ 200.5	203.4	Dol., fn. to med. grn., lt. gray ; stylolitic.
✓ 203.4	208.4	Dol., med. grn., med. to dk. gray., oolitic. <u>MINERALIZATION:</u> ZnS shine at 204.5 ; small orange-brown ZnS masses at 204.2, 205.3. Small pyrite mass at 207.3.
✓ 208.4	211.8	Dol., fn. to med. grn., med. gray ; dk. shaley partings and laminae.
✓ 211.8	213.9	Dol., med. grn., dk. gray ; oolitic ; small pod pyrite at 212.7.
✓ 213.9	220.7	Dol., fn. grn., lt. gray ; sdy. lam. upper one foot ; sparse fine N.V.F. ; mottled w/med. gray lower part. <u>MINERALIZATION:</u> Few specks ZnS at 220.6.
✓ 220.7	223.1	Dol., fn. grn., lt. gray ; stylolitic, sd. lam. and tan mottling at 222.3-223.5.?
✓ 223.1	227.3	Dol., fn. grn., med to dk. gray ; blk. stylolites; sdy. lam. 225.9 to 226.9; lt. gray dol. mottled w/med. gray dol. 226.9 to 227.3 ; dol. eye at 225.7 has crystal fluorite.
✓ 227.3	228.8	Dol., dense, dk. gray. <sup>purple</sup>
✓ 228.8	229.5	Sandstone, med. gray ; few small chert inclusions.

<u>From</u>	<u>To</u>	<u>Description</u>
✓ 229.5	232.6	Dol., fn. grn/ med. gray w/ dk. banding.; few traces pyrite.
✓ 232.6	235.8	Dol., fn. grn., lt. gray; irregular sd. lam. and pods; sandstone 233.7 to 234.2.
✓ 235.8	241.1	Dol., fn. grn., med. gray becoming dk. gray; sparse dol. eyes and N.V.F. ; few traces pyrite.
✓ 241.1	248.9	Dol., fn. grn., lt. gray, stylolitic; sdy. at 246.6 to 247.0 ; sparse dol. eyes and N.V.F.
✓ 248.9	252.6	Dol., fn. grn. med. gray ; w/dk. wavy lam. and stylolites.
✓ 252.6	257.1	Dol., fn. grn., med. gray w/dk. lam. ; dol. filled N.V.F. upper part; sparse dol. eyes.
✓ 257.1	257.5	Sandstone, med. gray.
✓ 257.5	258.8	Dol., fn. grn. to dense, lt. gray ; sparse N.V.F.; trace pyrite.
✓ 258.8	261.5	Dol., fn. grn., med. gray ; stylolitic; many sd. lam.
✓ 261.5	263.2	Sandstone to very sdy. dol. ; med. gray; small dol. inclusions.
✓ 263.2	265.9	Dol., fn. grn., lt. gray; stylolitic; sli. mottling lower part.
✓ 265.9	274.8	Dol., fn. to med. grn. med. gray w/irregular dk. lam. and banding ; some dk. gray mottling ; few traces pyrite ; sparse sand grns.
✓ 274.8	276.9	<del>276.9</del> Dol. fn. grn., lt. gray; stylolitic ; irregular sd. lam.; sparse N.V.F.
✓ 276.9	277.4	Chert, oolitic, sdy., lt. gray; .1 ft dense sdy. dol. parting.
✓ 277.4	279.1	Sandstone and sandy dol. med. gray,; few dol. inclusions.
✓ 279.1	287.3	Dol., dense to fn. grn.,lt. gray becoming med. gray; stylolitic, sdy. lam. lower part; dk. banding middle part.
✓ 287.3	288.5	Sandstone, med. gray ; poorly sorted.
✓ 288.5	290.4	Dol., fn. grn., med. gray ;dk. mottling.
✓ 290.4	291.3	Dol., dense, dk. gray; sdy. lam.,; sdy. at base.
✓ 291.3	295.3	Dol., fn. grn., lt. gray; sd. lam. upper foot; stylolitic w/sparse dol. eyes lower part.

<u>From</u>	<u>To</u>	<u>Description</u>
✓ 295.3	300.5	Dol., fn. grn., med. to dk. gray; w/polka-dot mottling; sparse N.V.F. lower part; few oolites at 299.0; dol. eye at base.
✓ 300.5	302.3	Dol., dense, dk. gray.
✓ 302.3	307.5	Dol, fn. grn., med. gray; faint lt. gray mottling; few med. grn. dol. alm. lower part.
✓ 307.5	309.7	Dol., fn. grn., med. to dk. gray; dol filled N.V.F.; faint mottling lower part.
✓ 309.7	315.8	Dol., fn. grn., lt. gray becoming med. gray; sparse dol. filled N.V.F. center portion.
✓ 315.8	316.4	Dol., dense shaley; med. gray w/dk. bands; lower .1 ft. tan dol.
✓ 316.4	322.0	Dol., fn. grn., med. to dk., gray; sparse N.V.F. upper part.
✓ 322.0	324.0	Dol., med. grn., med. gray; stylolitic.
✓ 324.0	325.8	Dol., med. grn., lt. gray.
✓ 325.8	326.9	Dol., dense, dk. gray at top becoming med. grn., med. gray w/black banding. <u>MINERALIZATION</u> : Few microscopic traces diss. ZnS at 326.7, 326.8.
✓ 326.9	330.5	Dol., med. grn., med. gray; stylolitic; sandy 329.0-329.5
✓ 330.5	335.8	Dol., dense, dk. gray becoming med. gray; few lam. upper part; very sparse sd. lam.; few fine N.V.F.
✓ 335.8	336.7	Sandstone, med. gray; N.V.F. at top offsets lam.
✓ 336.7	337.7	Dol., med. grn., med. gray; brecciated 337.4 to 337.7.
✓ 337.7	338.1	Dol., fn. grn., lt. gray; peculiar laminated and conglomeratic appearance.
✓ 338.1	340.1	Dol., fn. grn., med. gray w/dk. banding; .1 ft. dk. shaley band at 339.0 to 339.1; sparse sd. lam., few med. grn. bands.
✓ 340.1	341.5	Dol., fn. grn., lt. gray w/many sd. lam.; few stylolites.
✓ 341.5	342.3	Dol., fn. grn., med. gray mottled w/lt. gray.
✓ 342.3	346.3	Dol., fn. grn., mostly lt. gray; few stylolites upper part; many wavy stylolites near base.

<u>From</u>	<u>To</u>	<u>Description</u>
✓ 346.3	351.4	Dol., fn. grn., med. gray w/many thick dk. dol. bands; (mineral zone of hole no. 17) <u>MINERALIZATION:</u> Microscopic speck of ZnS at 345.8 ?
✓ 351.4	354.0	Dol., med. grn., med. gray; dk. stylolites; <u>MINERALIZATION:</u> Crystal ZnS at 352.2
✓ 354.0	364.3	Dol., fn. to med. grn.; med. gray mottled w/dk. gray ; sd. lam. at base; two foot of dk. thin banded dol. middle part; N.V.F. offsets sd. lam. at base.
✓ 364.3	365.4	Dol., dense, dk. gray.
✓ 365.4	367.5	Dol., fn. grn., med. to dk. gray ; many sd. lam.
✓ 367.5	369.2	Sandstone, med. gray, dk. stylolites.
✓ 369.2	372.6	Dol., fn. grn., med. gray ; stylolitic w/dk. wavy stylolites lower part; sand lam.
✓ 372.6	373.3	Dol., dense to fn., grn., med. to dk. gray.
✓ 373.3	379.6	Dol., fn. grn., med to dk. gray ; dk. banding 376.1 to 376.6; dol. filled N.V.F. lower part; sparse sd. lam. <u>MINERALIZATION:</u> Orange ZnS crystal in sd. lam. at 378.8
✓ 379.6	381.2	Sandstone, med. gray ; dk. stylolites.
✓ 381.2	384.7	Dol., fn. grn., lt. to med. gray ; swirly dk. lam. middle part ; thick dk. lam. near base; Dol. eyes 382.6 to 382.9 contain several fluorite crystals.
384.7	384.85	Chert, oolitic, lt. gray ; Bull oolite. T.D. 384.85



DIAMOND DRILL HOLE RECORD

CERES NO. 18

Location: N-11,938.95 E-11,260.10  
Elevation: 2640.89  
Angle and bearing: N 40 W, 58°  
Core size: AX  
Started drilling: 9-11-56  
Finished drilling: 9-19-56  
Drill contractor: Southeastern Drilling Co. Driller: J. Bartlett  
Logged by: E. M. Luttrell  
Classification: Trace

<u>Depth</u>	<u>Thickness</u>	<u>Formation</u>
0.0 - 38.0	38.0	(Overburden)
38.0 - 114.5	76.5	Beekmantown fm., fractured and porous dolomite, two thin limestone-bearing layers.
114.5 - 142.2	27.7	Chepultepec ls.; mainly dol. and limey dol. between two fn. grn., med. gray ls. which mark top and base of fm.
142.2 - 384.8	242.6	Copper Ridge dol., four shows of ZnS mineralization in a predominant dol. succession, thin sandstone layers, several oolitic chert layers.