

KIM B. SHOEMAKER

CONSULTING GEOLOGIST

318-584-9709 * WICHITA, KS

GEOLOGIST'S REPORT

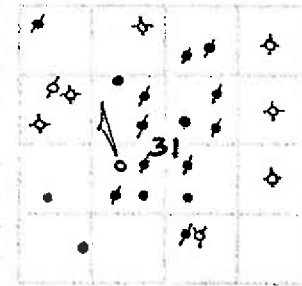
DRILLING TIME AND SAMPLE LOG

COMPANY L. D. DRILLING, INC.
 LEASE # 4-31 DARREL
 FIELD LUNDGREN
 LOCATION 1800' FWL & 2310' FSL
 SEC 31 TWP 19s RGE 29W
 COUNTY GOVE STATE KANSAS
 CONTRACTOR L. D. DRILLING, INC.
 SPUD 10-29-15 DOWP 11-9-15
 RTD 4420 LTD 4424
 MUD UP 3405 TYPE MUD CHEMICAL

ELEVATIONS
 KB 2645
 DT _____
 CL 2640
 Measurements Are All From 2645 KB
 CASING
 SURFACE 8 5/8" @ 314'
 PRODUCTION 5 1/2" @ _____
 ELECTRICAL SURVEYS
 DUAL IND., DENS-N., MICRO

SAMPLES SAVED FROM 3300 TO 4420
 DRILLING TIME KEPT FROM 3200 TO 4420
 SAMPLES EXAMINED FROM 3300 TO 4420
 GEOLOGICAL SUPERVISION FROM 3600 TO 4420
 GEOLOGIST ON WELL KIM B. SHOEMAKER

FORMATION TOPS	LOG	SAMPLES
ANHYDRITE		2044 + 601
BI ANH.		2073 + 572
STOTLER		3276 - 631
HEEBNER		3648 - 1003
LANSING		3684 - 1039
STARK		3934 - 1289
MARMATON		4030 - 1385
FORT SCOTT		4184 - 1539
CHEROKEE		4208 - 1563
MISS. SPERGEN		4319 - 1674



ARI: 15-063-22270

REMARKS
 10-29-15 SPUD
 10-30 @ 317'
 10-31 @ 1625'
 11-1 @ 2745'
 11-2 @ 3285'
 11-3 @ 3725'
 11-4 @ 3785'
 11-5 @ 3955'
 11-6 @ 4180'
 11-7 @ 4270'
 11-8 @ 4357'
 11-9 @ 4420'

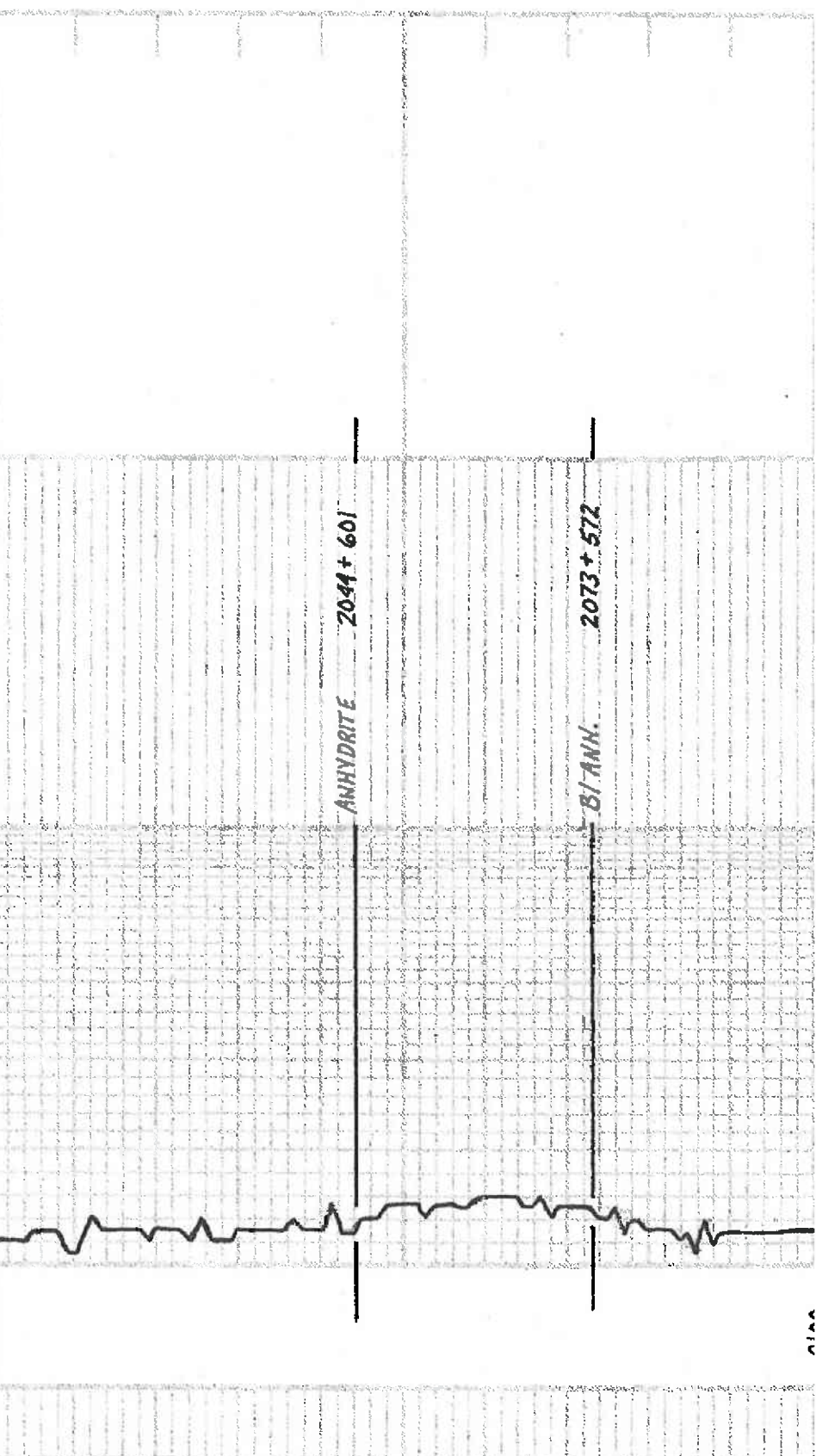
LEGEND

- Anhydrite
- Salt
- Sandstone
- Shale
- Carb in Limestone
- Col. Limestone
- Chert
- Dolomite



DRILLING TIME IN MINUTES PER FOOT
 Rate of Penetration in ft/hr

DEPTH
 0'
 10'
 15'
 20'
 25'



4100

3200

3300

3400

Samples are Lagged

STOTLER 3276-631

NOT LABELED DISPLACED

50. REL. CALY. 15. In. 516. Foss

50. RELY. 15. 107. 1511. Foss. 50. A.

50. RELY. 15. 107. 516. Foss. 15. 107. 516. Foss.

50. RELY. 15. 107. 516. Foss.

50. RELY. 15. 107. 516. Foss. 15. 107. 516. Foss.

SAMPLES TO LABELED

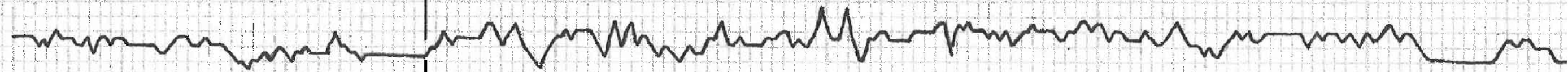
50. G.

15. G. 1511. Foss

15. 107. CALY.

15. 107. Foss. 516. CALY.

15. 107. CALY. Foss. 516. Foss. CALY.



Vis: 68
WT: 87
WL: 68
CML: 2000

3500

SS. wt. 60% Foss. Galathea

SS. Tr. Foss. Sil. Foss.

Sh. Deg. Bk.

LS. Tr. Foss. Sil. Foss.

Sh. Ch. Silly

LS. wt. Foss. VSI. Ch. Lg.

LS. wt. Sil. Foss. Ch. Lg.

LS. Tr. wt. Foss. ool. 4 wt. Lg.

LS. wt. Ch. Lg.

LS. Tr. wt. Foss. VSI. Galathea

LS. wt. Ch. Lg.

LS. wt. Bl. Frash. Sil. Foss. Ch. Lg.

HEEBNER 3618-1003
Sh. Bk. Cong. VSI. Foss.

Sh. Lg. Silly

LS. Tr. wt. Foss. F. VSI. Bl. Sil. Sil. Foss. Dull Floor. No. Ool.

Sh. Lg. Silly

LANSING 3684-1039

LS. wt. Lg. ool. Sil. ool. F. ool. Bl. D.K. Bl. Sil. VSI. Foss. Dull Floor. Fr. Ool.

LS. wt. Tr. Sil. Foss. Sil. Foss.

Sh. Deg.

Sh. Ch.

LS. Tr. wt. F. ool. VSI. Bl. Sil. Sil. Foss. Dull Floor. No. Ool.

LS. wt. Ch. ool. Sil. ool. F. ool. Bl. D.K. Bl. Sil. VSI. Foss. Dull Floor. No. Ool.

LS. Lg. ool. Silly

LS. Tr. Lg. VSI. Bl. Sil. Galathea

Sh. Ch.

LS. Bl. VSI. Foss.

LS. Tr. wt. Sil. Foss. Sil. Foss. Bl. Sil. Sil. Foss. Dull Floor. No. Ool.

LS. Tr. Lg. ool. Silly

LS. Tr. Bl. ool. Sil. ool. F. ool. Bl. D.K. Bl. Sil. VSI. Foss. Dull Floor. No. Ool.

LS. wt. Ch. Lg.

3800



DST (1)

DST (2)

DST (3)

TORONTO

Vis: 57

WT: 80

WL: 80

CML: 2000

Vis: 59

WT: 81

WL: 104

CML: 2000

DST (1) 3618-1003

1st Stop: Blow built to 8" BB: None
2nd Stop: " " 8" BB: "

30-45-45-60

Rec. 2' CO 34.6 sec.

172' W.M. w/ Scum Oil

48' S.M.M. w/ Sp. Oil

(30' w/ 200' H)

(25' w/ 375')

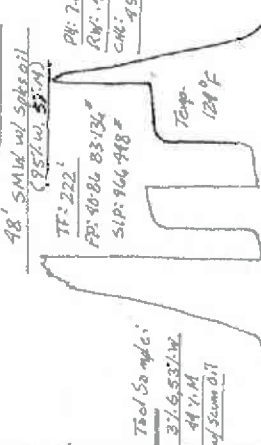
PH: 7.0

RV: 40-86 83-134"

SI: 966-998"

CML: 45000

Tool Sample:
3' 6.58' W
4' 7.1' M
w/ Scum Oil



DST (2) 3705-3725

1st Stop: Blow built to 2"

2nd Stop: " " 1.4"

30-45-45-60

Rec. 8' CO 33.6 sec.

27' S.M.M. (35' w/ 65' H)

w/ Scum Oil

TF: 35'

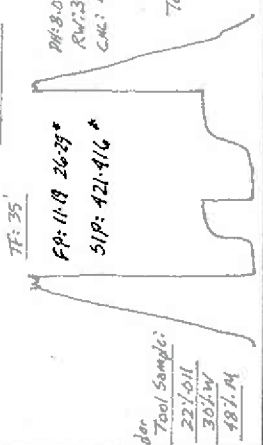
PH: 8.0

RV: 31 @ 880

CML: 16000

Temp. 126°F

Tool Sample:
27' 6.11'
30' 7.4'
48' 7.1' M



DST (3) 3724-3785

1st Stop: Bottom build 2.2 min.

2nd Stop: " " 40"

30-45-45-60

Rec. 300' M.W. w/ Sp. Oil

PH: 7.0

RV: 18 @ 625°F

CML: 41000

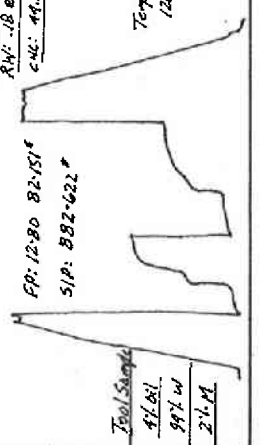
Temp. 126°F

FF: 12-80 82-151"

SI: 882-922"

Temp. 126°F

Tool Sample:
4' 6.1'
8' 7.1' W
2' 7.1' M



LS. L.G. V.S. chly

MUNCIE CREEK 3846-1201

Sh. Blk. Carb.
LS. Blk. Carb. V.S. Foss.
Sh. Silty.
A. white w/ Trade Str. to Fr.
LS. Fossil Sh. Foss. V.S. Foss. F. Fly p
DK. Bl. Sand. Silty. Sand. F.S.P. Pull Floor. F. 660
LS. Fr. V.S. F.A.
Sh. D.E. G.
LS. L.G. Bl. V.S. Foss.
Sh. L.G.

DST (4)

3900

DST (4) 3850-3955

15' OPEN: Bottom bucket 20 min.

2" OPEN: " " 22 "

88: Above

88: Below

30-45-45-60

Rec. 1' Co. Grav. 35.8 @ 60° F

110' 56 W.M. (2 1/2, 307, 687 M)

444' 4506 CMV (2 1/2, 1281, 791 W)

7P: 555'

FP: 22-138 142338

SIP: 538-558 *

Top: 13° F

Total Sample

11.6

21-01

7P: V

201 M

STARK 3934-1281

Sh. Blk. Carb. L. DE. Bl. Silty. Foss.
Sh. L.G.

LS. Bl. Carb. Foss. F. Fly p Bl. Bl. Silty. Sand.
LS. Fly. ool. Silty. chly. SS. Fly. F. 660

LS. Fly. Ool.

HUSHPOCKNEY 3971-1326

Sh. Blk. Carb.
LS. Bl. Fly. V.S. Foss.

LS. L.G. V.S. Foss. V.S. F.A.

LS. Fly. V.S. Foss. Silty. chly.

Sh. L.G.

Dol. w/ Lentic. Silty. V.S. Foss.

B/KC 4008-1363

Sh. L.G.
Sh. Bl. Fly. Silty

MARMATON 4030-1385

LS. w/ Silty. Silty. F. Fly p
Bl. Sand. Silty. V.S. Foss. Pull Floor. F. 660

Sh. L.G.

Sh. Bl. Fly. Silty

LS. Fly. ool. Foss. Silty. chly. Fly. p

LS. L.G. V.S. Foss.

Sh. L.G. Carb.

LS. Fly. Ool. V.S. Foss. Silty.

Sh. L.G.

LS. Fly. Ool. Foss. Fly. p
DK. Bl. Silty. Sand. F.S.P. Pull Floor. F. 660

LS. Fly. Ool.

PANNEE 4124-1419

Sh. Blk. Carb.
LS. Fly. V.S. Foss. Silty.

LS. w/ L.G. Silty. Sand. Fly. p
DK. Bl. Silty. Sand. F.S.P. Pull Floor. F. 660

Sh. Blk. Carb.

DST (5) 4100-4180

15' OPEN: Bottom bucket to 5'

2" OPEN: " " " " "

4100

DST (5)

V. 206

NIS: 50

WV: 9.1

WV: 9.6

CHL: 2000

