

Max R. Lovely

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY **Richie Exploration**

LEASE #1 **Kuhm Unit**

LOCATION **Castle Bluff**

SEC **19** TWP **12** R **28W**

COUNTY **Gove** STATE **KS**

CONTRACTOR **W.W. #8**

SPUD **9-26-14** COMPLETION **10-7-14**

RID **4625** LID **4626**

MUD UP **3374** TYPE **MUD Chem**

FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAME TOP	ELECTRIC LOG TOP	DEPTH	STRUCTURAL POSITION
Anhydrite	2263	2263	499	501
Stark	2304	2304	485	
Stark	3517	3517	755	
Heebner	3816	3816	1118	1110
Lansing	3816	3816	1156	1150
Munroe SH	4052	4054	1292	1289
Stark SH	4141	4140	1378	1377
BKC	4194	4194	1432	1427
Altamont	4238	4241	1479	1473
Pawnee	4314	4318	1556	1551
FE Scott	4395	4400	1631	1631
Cherokee	4428	4428	1666	1658
Mississippian	4500	4498	1734	1735

REFERENCE WELLS FOR STRUCTURE

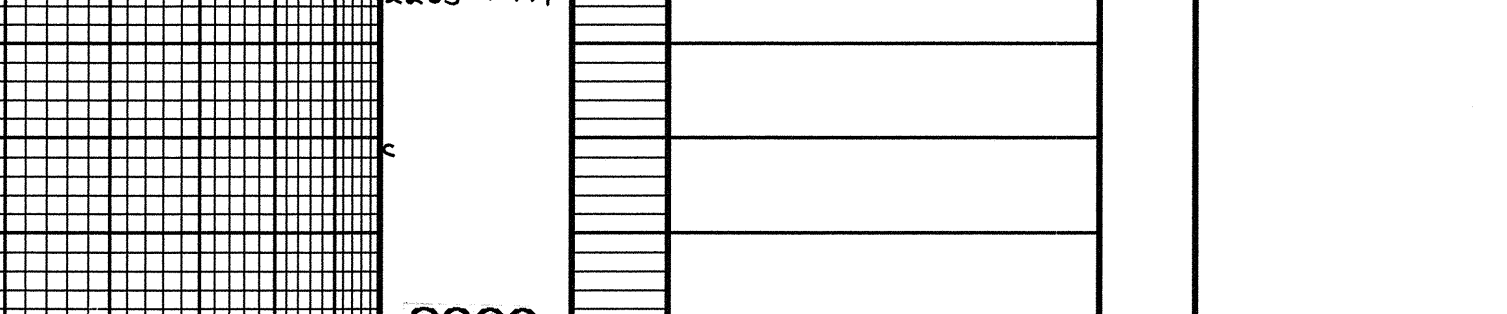
A Hitchie #1 Kuhm 19A E/2 SW NE 19-12-28W

B _____

C _____

REMARKS

LEGEND



DRILLING TIME IN MINUTES PER FOOT

Rate of Penetration Decreases

5" 10" 15" 20" 25"

DEPTH

2300 BASE

2304 +458

3400

3500

STOTLER 3517 -755

3600

3700

3800

HEEBNER 3876 -1114

3900

LANSING 3916 -1154

4000

DEV 34'

MUNICE 4052 -1290

4100

STARK 4141 -1379

HUSHPICKNEY 4170 -1408

4200

ALTAMONT 4238 -1476

4300

PAWNEE 4314 -1552

4400

FE SCOTT 4395 -1633

4400

CHEROKEE 4425 -1663

4500

MISS 4500 -1738

4600

JOHNSON 4463 -1701

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

4500

7AM 10-1-14

DRLG @ 3425'

START SAMPLES

MUD CHECK

VIS: 61 WT: 8.8

CHLOR: 1,500 LCM:1

FILT: 6.4

MUD CHECK

VIS: 53 WT: 9.2

CHLOR: 2,400 LCM:1

FILT: 8.8

7AM 10-2-14

DRLG @ 4001'

35' STD SHORT TRIP

STRAP 4027.16

BOARD 4027.52

SHORT .36

DST #2 4050-4073

TAL: 510' WT: 45.60

IF: 7" 151:48

FF: 7" 51: wk surf, down 35"

REC: 5' OCM - 5% OIL

40' OCM - 5% OIL

120' OCM - 20% OIL

50' OCM CHLOR, 35' API OIL

SP: 52-82, 86-100

HP: 150-1123

7AM 10-3-14

DST #2 @ 4073'

MUD CHECK

VIS: 58 WT: 9.3

CHLOR: 2,400 LCM:1

FILT: 7.2

DST #3 4084-4109

TAL: 510' WT: 45.60

IF: 7" 151:48

FF: 7" 51: wk surf, down 35"

REC: 5' OCM - 10% OIL

FP: 17-20, 19-23

SIP: 78-77

HP: 2013-2023

7AM 10-5-14

COMP OUT @ DST 5 @ 4200'

DST #5 4138-4200

30.45-30.45

IF: 7" 151:48

FF: 7" 51: wk surf, down 35"

REC: 1' OCM - 10% OIL

FP: 18-21, 25-26

SIP: 198-86

7AM 10-6-14

CES @ 4422'

MUD CHECK

VIS: 65 WT: 9.4

CHLOR: 1,900 LCM:1

FILT: 7.2

MUD CHECK

VIS: 48 WT: 9.4

CHLOR: 1,800 LCM:1

FILT: 7.2

10 STDS SHORT TRIP

COND @ 172 HRS