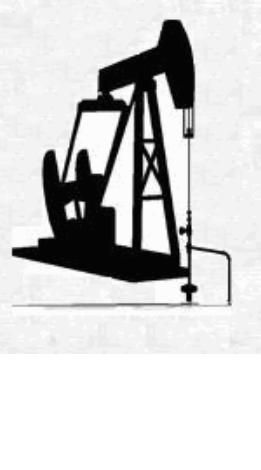
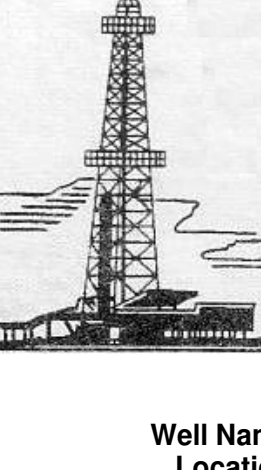


# WELLSITE GEOLOGIST'S REPORT

VERNON C. SCHRAG  
CONSULTANT GEOLOGIST

Scale 1:240 (5"=100') Imperial



Well Name: **JUDY UNIT #1-20**  
 Location: **SW NW NW SW of SEC. 32-18S-27W**  
 Licence Number: **API: 15-101-22532**  
 Spud Date: **August 07, 2014**  
 Surface Coordinates: **2280' FSL & 37' FWL**

Region: **Lane Co., KS**  
 Drilling Completed: **August 18, 2014**

Bottom Hole Coordinates:  
 Ground Elevation (ft): **2697'** K.B. Elevation (ft): **2704'**  
 Logged Interval (ft): **3800'** To: **RTD** Total Depth (ft): **4643'**  
 Formation: **D&A, Mississippi**  
 Type of Drilling Fluid: **Chemical Premix (Displaced)**  
 Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

### OPERATOR:

Company: **Larson Engineering Inc.**  
 Address: **562 West State Road 4  
 Olmitz, KS 67564-8561**

### DRILLING CONTRACTOR:

**H. D. Drilling, LLC, Rig #3 (Co. Tools)**

**DP 4.5" XH (16.6#); DC 6-1/4" x 2-3/8" x 556', Kelly 40.30', Tool Joint 5.5" ; Bit: JZ-HA20Q, 7-7/8" , standard jets 15-15-15; rpm 80, WOB 35k; Kelly Bushing 7' above ground level; LeWayne "Lew" Tresner (tool pusher).**

### CASING:

Set 8-5/8" casing at 262'

### CIRCULATION SYSTEM:

Continental EMSCO D-300, duplex, 6 x 14, 60-62 spm, Chemical, premix, earth pits, Morgan Mud, Inc., Cade Lines.

### OPEN HOLE LOGS:

**DN, DI (SP) (Run-1); ML (Run-2); No Sonic; 5" detail LTD-3600; 2" DI to surface casing; LogTech-Pioneer Wireline Services, Hays, KS, R. Bamhart, Log total depth (4642') was short to rotary total depth (4643').**

### DRILL STEM TEST #1:

**LKC "K-zone": Interval: 4236-4250 (14'); Blow: weak surf IFP, no RB, weak incr 1/4" FFP, no RB; Times: 5-15-15-30; Recovery: 10' mud w/oil spots (100%M); Pressures: HP: 2148-2127, SIP: 496-487; FP: 15-19, 23-28; BHT: 124 F; Trilobite Testing, Inc., Scott City, KS, Sam Esparza.**

### DRILL STEM TEST #2:

**LKC "K-zone": Interval: 4234-4253 (19'); Blow: weak surf incr to 1/2" IFP, no RB, incr to 1" FFP, no RB; Times: 5-15-15-30; Recovery: 15' OCM (15%O, 85%M); Pressures: HP: 2151-2108, SIP: 502-494; FP: 17-18, 22-36; BHT: 117 F; Trilobite Testing, Inc., Scott City, KS, Sam Esparza.**

### DRILL STEM TEST #3:

**LKC "K-zone": Interval: 4232-4258 (26'); Blow: weak surf incr to 1/4" IFP, no RB, incr to 1-1/4" FFP, no RB; Times: 5-15-30-60; Recovery: 15' OCM (15%O, 85%M); Pressures: HP: 2151-2150, SIP: 492-490; FP: 15-18, 22-35; BHT: 115 F; Trilobite Testing, Inc., Scott City, KS, Sam Esparza.**

### DRILL STEM TEST #4:

**LKC (L-zone): Interval: 4266-4290 (24'); Blow: 3-1/2" IFP, no RB, 4-1/2" FFP, no RB; Times: 5-15-15-30; Recovery: 210' MW (80%W, 20%M, Rw 0.118 at 71 F, chlorides 65k); Pressures: HP: 2153-2116, SIP: 487-487, FP: 19-69, 75-112; BHT: 126 F; Trilobite Testing, Inc., Scott City, KS, Sam Esparza.**

### DRILL STEM TEST #5:

**Pleas., Marmaton: Interval: 4311-4410 (99'); Blow: weak surf incr to 1/4" IFP, no RB, no blow 2nd open; Times: 5-15-15-30; Recovery: 10' mud (100%M); Pressures: HP: 2189-2062, SIP: 168-95; FP: 19-22, 23-25; BHT: 121 F; Trilobite Testing, Inc., Scott City, KS, Sam Esparza.**

### DRILL STEM TEST #6:

**Pawnee thru Cherokee: Interval: 4426-4570 (144'); Blow: weak surf incr to 1/4" IFP, no RB, no blow 2nd open; Times: 5-15-15-30; Recovery: 5' mud (100%M); Pressures: HP: 2219-2189, SIP: 78-60; FP: 21-21, 21-23; BHT: 121 F; Trilobite Testing, Inc., Scott City, KS, Sam Esparza.**

### DRILL STEM TEST #7:

**Mississippi Dolomite (Spergen): Interval: 4554-4612 (58'); Blow: weak incr 5" IFP, no RB, incr 9-3/4" FFP, no RB; Times: 5-15-15-30; Recovery: 283' TF, no GIP; Grindouts: 97' SOCM (7%O, 93%M), 62' SOWCM (8%G, 5%O, 3%W, 84%M), 124' SOWCM (7%G, 5%O, 2%W, 86%M); Pressures: HP: 2273-2212; FP: 30-86, 88-149; BHT: 127 F; Trilobite Testing, Inc., Scott City, KS, Will MacLeon.**

### DRILL STEM TEST #8:

**Mississippi Dolomite (Spergen): Straddle Interval: 4578-4605 (27' anchor, 37' tailpipe, log measurements): Blow: weak incr 11" IFP, no RB, BOB 50 min FFP, no RB; Times: 30-45-60-90; Recovery: 402' TF; Grindouts: 15' SMCO (95%O, 5%M, grav 36), 77' OMCW (2%O, 53%W, 45%M); 62' MCW (93%W, 7%M), 248' MCW (96%W, 4%M, Rw 0.343 at 85 F, chlorides 15.1k), Pressures: HP: 2317-2295, SIP: 1204-1177, FP: 20-108, 112-200; BHT: 135 F; Trilobite Testing, Inc., Scott City, KS, Will MacLeon.**

