

STATE CORPORATION COMMISSION OF KANSAS
OIL & GAS CONSERVATION DIVISION
WELL COMPLETION FORM
ACD-1 WELL HISTORY
DESCRIPTION OF WELL AND LEASE

Operator: License # 04782

Name: Ensign Operating Co.

Address P. O. Box 2161

City/State/Zip Liberal, KS. 67905-2161

Purchaser: Enron

Operator Contact Person: Wes Willimon

Phone (316) 626-8131

Contractor: Name: Murfin Drilling Inc.

License: 30606

Wellsite Geologist: Duane Moredock

Designate Type of Completion
 New Well Re-Entry Workover

Oil SWD SIOW Temp. Abd.
 Gas ENHR SIGW
 Dry Other (Core, WSW, Expl., Cathodic, etc)

If Workover/Re-Entry: old well info as follows:

Operator: _____

Well Name: _____

Comp. Date _____ Old Total Depth _____

Deepening Re-perf. Conv. to Inj/SWD
 Plug Back PBTB
 Commingled Docket No. _____
 Dual Completion Docket No. _____
 Other (SWD or Inj?) Docket No. _____

02/08/97 02/20/97 04/09/97
Spud Date Date Reached TD Completion Date

API NO. 15- 175-215910000 ORIGINAL

County Seward *KANSAS RECEIVED*

N/2-S/2-NE - Sec. 25 Rge. 34 E W

1650 Feet from S. (circle one) Line of Section

1320 Feet from EW (circle one) Line of Section

Footages Calculated from Nearest Outside Section Corner:
 NE SE, NW or SW (circle one)

Lease Name Liberal Well # 2-25

Field Name Salley Southwest

Producing Formation Morrow

Elevation: Ground 2883' KB 2892'

Total Depth 6900' PBTB 6449'

Amount of Surface Pipe Set and Cemented at 1598 Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set _____ Feet

Alternate II completion, cement circulated from _____

feet depth to _____ w/ _____ ex cmt.

Drilling Fluid Management Plan Act 1 DPW
(Data must be collected from the Reserve Pit) 7-29-97

Chloride content 1250 ppm Fluid volume 9700 bbls

Dewatering method used Evaporation & Backfill

Location of fluid disposal if hauled offsite: _____

Operator Name RELEASED

Lease Name SEP 16 1998 License No. _____

Quarter Sec. _____ Twp. _____ S Rng. _____ E/W

County FROM CONFIDENTIAL Docket No. _____

INSTRUCTIONS: An original and two copies of this form shall be filed with the Kansas Corporation Commission, 200 Colorado Derby Building, Wichita, Kansas 67202, within 120 days of the spud date, recompletion, workover or conversion of a well. Rule 82-3-130, 82-3-106 and 82-3-107 apply. Information on side two of this form will be held confidential for a period of 12 months if requested in writing and submitted with the form (see rule 82-3-107 for confidentiality in excess of 12 months). One copy of all wireline logs and geologist well report shall be attached with this form. ALL CEMENTING TICKETS MUST BE ATTACHED. Submit CP-4 form with all plugged wells. Submit CP-111 form with all temporarily abandoned wells.

All requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Signature Marion W. Willimon

Title Production Supt. Date 05/29/97

Subscribed and sworn to before me this 29th day of May 19 97.

Notary Public William L. Waldorf

Date Commission Expires Sept. 19, 1998

NOTARY PUBLIC - State of Kansas
WILLIAM L. WALDORF
My Appt. Exp. 9-19-98

K.C.C. OFFICE USE ONLY
F Letter of Confidentiality Attached
C Wireline Log Received
C Geologist Report Received
Distribution
 KCC SWD/Rep NGPA
 KGS Plug Other
(Specify)

Operator Name **Ensign Operating Co.**

Lease Name **Liberal**

Well # **2-25**

Sec. 25 Twp. 34N Rgs. 34

East

County **Seward**

West

INSTRUCTIONS: Show important tops and base of formations penetrated. Detail all cores. Report all drill stem tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface during test. Attach extra sheet if more space is needed. Attach copy of log.

Drill Stem Tests Taken Yes No
(Attach Additional Sheets.)

Samples Sent to Geological Survey Yes No

Cores Taken Yes No

Electric Log Run Yes No
(Submit Copy.)

List All E. Logs Run:

See attached

Log Formation (Top), Depth and Datum Sample

Name Top Datum

See attached

CASING RECORD

New Used

Report all strings set-conductor, surface, intermediate, production, etc.

Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs./Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Surface	12 1/4"	8-5/8"	24#	1598'	Prem Plus Lite Class C	650 150	2% CC & 1/4#/Sx Flocele
Production	7-7/8"	4 1/2"	10.5 & 11.6#	6493'	Scavenger Cmt Class H	25 400	.7% Halad 322, .25% CBL & 3% KCL

ADDITIONAL CEMENTING/SQUEEZE RECORD

Purpose:	Depth Top Bottom	Type of Cement	#Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate				
<input type="checkbox"/> Protect Casing				
<input type="checkbox"/> Plug Back TD				
<input type="checkbox"/> Plug Off Zone				

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record (Amount and Kind of Material Used)	Depth
2 JSPF	6138 - 80'		

TUBING RECORD	Size 2-3/8"	Set At 6181'	Packer At	Liner Run <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
---------------	----------------	-----------------	-----------	---

Date of First, Resumed Production, SWD or Inj. 04/09/97	Producing Method <input checked="" type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other (Explain)
--	--

Estimated Production Per 24 Hours	Oil Bble.	Gas Mcf	Water Bble.	Gas-Oil Ratio	Gravity
	--	1270	1.67		--

Disposition of Gas:

Vented Sold Used on Lease
(If vented, submit ACO-18.)

METHOD OF COMPLETION

Open Hole Perf. Dually Comp. Commingled
 Other (Specify)

Production Interval

6138 - 80'

INVOICE



HALLIBURTON ENERGY SERVICES
A Division of Halliburton Company

REMIT TO:
P.O. BOX 751044
DALLAS, TX 75395-1044
Corporate FIN 73-0271280

INVOICE NO.	DATE
185314	02/09/1997

WELL LEASE NO./PROJECT		WELL/PROJECT LOCATION		STATE	OWNER
MURFIN 20 2-25		SEWARD		KS	SAHE
SERVICE LOCATION	CONTRACTOR	JOB PURPOSE		TICKET DATE	
LIBERAL	MURFIN DRILLING	SHOWN BELOW		02/09/1997	
ACCT. NO.	CUSTOMER AGENT	VENDOR NO.	CUSTOMER P.O. NUMBER	SHIPPED VIA	FILE NO.
273943				COMPANY TRUCK	20243

ORIGINAL

DIRECT CORRESPONDENCE TO:
P O BOX 1598
LIBERAL KS 67901

ENSIGN OPERATING COMPANY
1515 AIR PARK AVENUE
P.O. BOX 2161
LIBERAL, KS 67905-2161

CONFIDENTIAL

REFERENCE NO.	DESCRIPTION	QUANTITY	UM	UNIT PRICE	AMOUNT
PRICING AREA - MID CONTINENT					
JOB PURPOSE - CEMENT SURFACE CASING					
000-117	MILEAGE CEMENTING ROUND TRIP	4	MI	2.99	11.96
	DISCOUNT--(BID)	20.0	%		2.39-
000-119	MILEAGE FOR CREW	4	MI	1.60	6.40
	DISCOUNT--(BID)	20.0	%		1.28-
001-016	CEMENTING CASING	1604	FT	1,360.00	1,360.00
	DISCOUNT--(BID)	20.0	%		272.00-
030-018	CEMENTING PLUG 5W, PLASTIC TOP	8	5/8 IN	130.00	130.00
	DISCOUNT--(BID)	20.0	%		26.00-
16A 830.2171	CASING SHOE - 8 5/8" 8RD THD.	1	EA	233.00	233.00
	DISCOUNT--(BID)	25.0	%		58.25-
24A 815.19302	INSERT FLOAT VALVE - 8 5/8" 8RD	1	EA	221.00	221.00
	DISCOUNT--(BID)	25.0	%		55.25-
27 815.19414	FILL-UP UNIT 7"- 8 5/8" RELEASED	1	EA	64.00	64.00
	DISCOUNT--(BID) SEP 16 1998	25.0	%		16.00-
41 806.61043	CENTRALIZER - 8-5/8 X 12-1/4	3	EA	61.00	183.00

KCC
MAY 29
CONFIDENTIAL

FROM CONFIDENTIAL

***** CONTINUED ON NEXT PAGE *****

TERMS: If Customer does not have an approved open account with Halliburton, all sums due are payable in cash at the time of performance of services or delivery of equipment, products or materials. If customer has an approved open account, invoices are payable on the twentieth day after date of invoice. Customer agrees to pay interest on any unpaid balance from the date payable until paid at the highest lawful contract rate applicable, but never to exceed 18% per annum. In the event Halliburton employs an attorney for collection of any account, Customer agrees to pay attorney fees of 20% of the unpaid account, plus all collection and court costs.

CUSTOMER COPY

INVOICE



HALLIBURTON ENERGY SERVICES
A Division of Halliburton Company

REMIT TO:
P.O. BOX 951046
DALLAS, TX 75395-1046
Corporate FIN 73-0271280

INVOICE NO.	DATE
195314	02/09/1997

WELL LEASE NO./PROJECT MURFIN 20 2-25		WELL/PROJECT LOCATION SEWARD		STATE KS	OWNER SAME
SERVICE LOCATION LIBERAL	CONTRACTOR MURFIN DRILLING	JOB/PURPOSE SHOWN BELOW			TICKET DATE 02/09/1997
ACCT. NO. 273943	CUSTOMER AGENT	VENDOR NO.	CUSTOMER P.O. NUMBER	SHIPPED VIA COMPANY TRUCK	FILE NO. 20243

ORIGINAL

DIRECT CORRESPONDENCE TO:
P O BOX 1598
LIBERAL KS 67901

ENSIIGN OPERATING COMPANY
1515 AIR PARK AVENUE
P.O. BOX 2161
LIBERAL, KS 67905-2161

CONFIDENTIAL

REFERENCE NO.	DESCRIPTION	QUANTITY	UM	UNIT PRICE	AMOUNT
	DISCOUNT--(BID)	25.0 %			45.75-
66 806.72750	CLAMP-LIMIT-8 5/8-FRICT-W/BOSS	1	EA	21.00	21.00 *
	DISCOUNT--(BID)	25.0 %			25-
350 890.10802	HALLIBURTON WELD-A	1	EA	16.75	16.75 *
	DISCOUNT--(BID)	25.0 %			4.18-
504-120	CEMENT - HALL. LIGHT PREM PLUS	650	SK	11.52	7,488.00 *
	DISCOUNT--(BID)	25.0 %			1,872.00-
504-050	CEMENT - PREMIUM PLUS	150	SK	14.01	2,101.50 *
	DISCOUNT--(BID)	25.0 %			525.37-
509-406	ANHYDROUS CALCIUM CHLORIDE	14	SK	40.75	570.50 *
	DISCOUNT--(BID)	25.0 %			142.62-
507-210	FLOCELE	163	LB	1.65	269.95 *
	DISCOUNT--(BID)	25.0 %			67.23-
500-207	BULK SERVICE CHARGE	839	CFT	1.35	1,132.65 *
	DISCOUNT--(BID)	25.0 %			283.16-
500-306	MILEAGE CMTG MAT DEL OR RETURN	1356.07	TMI	1.05	1,423.87 *
	DISCOUNT--(BID)	25.0 %			355.96-

RELEASED
SEP 16 1998
FROM CONFIDENTIAL

INVOICE SUBTOTAL

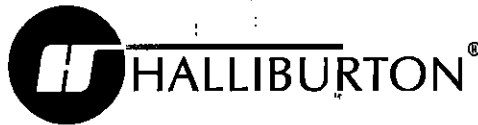
15,232.58

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CUSTOMER COPY

REMIT TO:
P.O. BOX 951044
DALLAS, TX 75395-1044
Corporate FIN 73-0271280



HALLIBURTON ENERGY SERVICES
A Division of Halliburton Company

INVOICE

INVOICE NO.	DATE
105314	02/09/1997

WELL LEASE NO./PROJECT		WELL/PROJECT LOCATION		STATE	OWNER
MURFIN 20 2-25		SEWARD		KS	SAME
SERVICE LOCATION	CONTRACTOR	JOB PURPOSE			TICKET DATE
LIBERAL	MURFIN DRILLING	SHOWN BELOW			02/09/1997
ACCT. NO.	CUSTOMER AGENT	VENDOR NO.	CUSTOMER P.O. NUMBER	SHIPPED VIA	FILE NO.
273943				COMPANY TRUCK	20243

ORIGINAL

DIRECT CORRESPONDENCE TO:

ENSIGN OPERATING COMPANY
1515 AIR PARK AVENUE
P.O. BOX 2161
LIBERAL, KS 67905-2161

P O BOX 1598
LIBERAL KS 67901

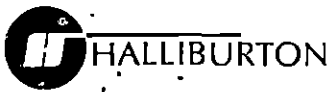
CONFIDENTIAL

REFERENCE NO.	DESCRIPTION	QUANTITY	UM	UNIT PRICE	AMOUNT
	DISCOUNT--(BID)				3,732.49
	INVOICE BID AMOUNT				11,499.89
	*--KANSAS STATE SALES TAX			AL	1,709.47
	*--LIBERAL CITY SALES TAX				103.98
	*--SEWARD COUNTY SALES TAX				155.97
INVOICE TOTAL - PLEASE PAY THIS AMOUNT					\$12,269.31

KCC
MAY 29
CONFIDENTIAL

RELEASED
SEP 16 1998
FROM CONFIDENTIAL

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JOB SUMMARY

HALLIBURTON DIVISION
HALLIBURTON LOCATION

Mid Continent
Liberal KS

BILLED ON TICKET NO. 185314

WELL DATA

FIELD WHEAT SEC 25 TWP. 34S RNG. 39W COUNTY Seward STATE KS

FORMATION NAME _____ TYPE _____
FORMATION THICKNESS _____ FROM _____ TO _____
INITIAL PROD: OIL _____ BPD. WATER _____ BPD. GAS _____ MCFD
PRESENT PROD: OIL _____ BPD. WATER _____ BPD. GAS _____ MCFD
COMPLETION DATE _____ MUD TYPE _____ MUD WT. _____
PACKER TYPE _____ SET AT _____
BOTTOM HOLE TEMP. _____ PRESSURE _____
MISC. DATA _____ TOTAL DEPTH 1598

	NEW USED	WEIGHT	SIZE	FROM	TO	MAXIMUM PSI ALLOWABLE
CASING	N	24	8 1/8	KB	13976045	511
LINER						
TUBING						
OPEN HOLE						
PERFORATIONS						
PERFORATIONS						
PERFORATIONS						

SHOTS/FT. 2.33

JOB DATA

TOOLS AND ACCESSORIES

TYPE AND SIZE	QTY.	MAKE
FLOAT-SOLEN <u>Inscr</u> <u>8 1/8</u>	<u>1</u>	<u>H</u>
FLOAT SHOE		
GUIDE SHOE <u>TX Pat</u> <u>8 1/8</u>	<u>1</u>	<u>O</u>
CENTRALIZERS <u>8 1/8</u>	<u>3</u>	
BOTTOM PLUG		<u>W</u>
TOP PLUG <u>SW</u> <u>8 1/8</u>	<u>1</u>	
HEAD <u>P/C</u> <u>8 1/8</u>	<u>1</u>	<u>C</u>
PACKER		
OTHER <u>Fas End</u> <u>8 1/8</u>	<u>1</u>	<u>O</u>

CALLER OUT	ON LOCATION	JOB STARTED	JOB COMPLETED
DATE <u>2-9-97</u>	DATE <u>2-9-97</u>	DATE <u>2-9-97</u>	DATE <u>2-10-97</u>
TIME <u>1715</u>	TIME <u>1930</u>	TIME <u>2310</u>	TIME <u>0037</u>

PERSONNEL AND SERVICE UNITS

NAME	UNIT NO. & TYPE	LOCATION
<u>D McKane</u>		<u>Liberal</u>
<u>J Woodrow</u>		<u>"</u>
<u>C Howell</u>		<u>Hugoton</u>
<u>B May Seid</u>		<u>"</u>

MATERIALS

TREAT. FLUID _____ DENSITY _____ LB/GAL. API
DISPL. FLUID _____ DENSITY _____ LB/GAL. API
PROP. TYPE _____ SIZE _____ LB.
PROP. TYPE _____ SIZE _____ LB.
ACID TYPE _____ GAL. MAY 2% 9
ACID TYPE _____ GAL. CONFIDENTIAL
ACID TYPE _____ GAL. CONFIDENTIAL
SURFACTANT TYPE _____ GAL. IN
NE AGENT TYPE _____ GAL. IN
FLUID LOSS ADD. TYPE _____ GAL. IN RELEASED
GELLING AGENT TYPE _____ GAL. LB. IN
FRIC. RED. AGENT TYPE _____ GAL. SEP 16 1998
BREAKER TYPE _____ GAL. LB. IN
BLOCKING AGENT TYPE _____ GAL. LB. FROM CONFIDENTIAL
PERFPAC BALLS TYPE _____ QTY. CONFIDENTIAL
OTHER _____
OTHER _____

CONFIDENTIAL

DEPARTMENT Cement
DESCRIPTION OF JOB Cement 8 1/8
JOB DONE THRU: TUBING CASING AN-NULUS TBG/ANN
CUSTOMER REPRESENTATIVE Terry Maxwell
HALLIBURTON OPERATOR D. M. McKane COPIES REQUESTED _____

CEMENT DATA

STAGE	NUMBER OF SACKS	CEMENT	BRAND	BULK SACKED	ADDITIVES	YIELD CU FT./SK.	MIXED LBS/GAL
	<u>650</u>	<u>Prem Plus HLC</u>	<u>South West</u>	<u>B</u>	<u>2% CC 1/4" Sbeck</u>	<u>2.06</u>	<u>12.5</u>
	<u>150</u>	<u>Prem Plus</u>	<u>South West</u>	<u>B</u>	<u>2% CC</u>	<u>1.32</u>	<u>14.8</u>

PRESSURES IN PSI

CIRCULATING _____ DISPLACEMENT _____
BREAKDOWN _____ MAXIMUM _____
AVERAGE _____ FRACTURE GRADIENT _____
SHUT-IN: INSTANT _____ 5-MIN _____ 15-MIN. _____
HYDRAULIC HORSEPOWER _____
ORDERED _____ AVAILABLE _____ USED _____
AVERAGE RATES IN BPM _____
TREATING _____ DISPL. _____ OVERALL _____
CEMENT LEFT IN PIPE _____
FEET 44 REASON Shoe Joint

SUMMARY

VOLUMES

PRESLUSH BB GAL. Seal water Sbt TYPE _____
LOAD & BKDN: BBL. GAL. _____ PAD BBL. GAL. _____
TREATMENT: BBL. GAL. _____ DISPL. BBL. GAL. 99
CEMENT SLURRY BB GAL. HLC 238.5 T.C 35.5
TOTAL VOLUME: BBL. GAL. _____

REMARKS

CUSTOMER Energy
LEASE Martin 20
WELL NO. 2-25
JOB TYPE 8 1/8 Surface
DATE 2-9-97



HALLIBURTON ENERGY SERVICES

HAL-1906-P

CHARGE TO: Ensign
 ADDRESS:
 CITY, STATE, ZIP CODE:

CUSTOMER COPY

TICKET

No.

185314 - 8

PAGE 1 OF 2

SERVICE LOCATIONS 1. <u>25340</u>	WELL/PROJECT NO. <u>2-25</u>	LEASE <u>Martin 20</u>	COUNTY/PARISH <u>Seward</u>	STATE <u>KS</u>	CITY/OFFSHORE LOCATION <u>Lebo</u>	DATE <u>2-9-97</u>	OWNER <u>Same</u>
2. <u>02035</u>	TICKET TYPE <input checked="" type="checkbox"/> SERVICE <input type="checkbox"/> SALES	NITROGEN JOB? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	CONTRACTOR <u>Murphy, D. G. 20</u>	RIG NAME/NO	SHIPPED VIA <u>ET</u>	DELIVERED TO <u>Well Site</u>	ORDER NO
3.	WELL TYPE <u>01</u>	WELL CATEGORY <u>01</u>	JOB PURPOSE <u>010</u>	WELL PERMIT NO <u>175-215910000</u>	WELL LOCATION <u>Land 25 345 34W</u>		
4.	REFERRAL LOCATION	INVOICE INSTRUCTIONS					

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			DESCRIPTION	QTY.		U/M		UNIT PRICE		AMOUNT
		LOC	ACCT	DF								
000-117					MILEAGE	4		mi		RT	2.99	11.96
000-119					crew M. l. eage	4		mi		RT	1.60	6.40
001-013					Pump Charge	1604		ft		HR	1360.00	1360.00
030-018					5W Top Plug	1		EA		8 3/4 in	130.00	130.00
16 A	830.2171				TX #1 G. K. Shoe	1		EA		8 3/4 in	233.00	233.00
24 A	815.19502				insert	1		EA		8 3/4 in	221.00	221.00
27	815.19414				Silt up	1		EA		8 3/4 in	64.00	64.00
41	806.61048				Cent	3		EA		8 3/4 in	61.00	183.00
66	806.72750				Encamp	1		EA		8 3/4 in	21.00	21.00
350	890.10502				Weld A	1		EA		1 lb	16.75	16.75

CONFIDENTIAL
 MAY 29 1998
 FROM CONFIDENTIAL
 SEP 16 1998
 RELEASED

ORIGINAL
 CONFIDENTIAL

LEGAL TERMS: Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, **PAYMENT, RELEASE, INDEMNITY, and LIMITED WARRANTY** provisions.

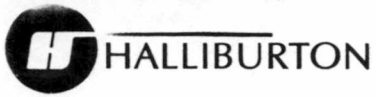
MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS

X Terry Maxwell
 DATE SIGNED: _____ TIME SIGNED: _____
 A.M. P.M.

SUB SURFACE SAFETY VALVE WAS <input type="checkbox"/> PULLED & RETURN <input type="checkbox"/> PULLED <input type="checkbox"/> RUN	SURVEY	AGREE	UN-DECIDED	DIS-AGREE	PAGE TOTAL	2247 11
TYPE LOCK	DEPTH	OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?			FROM CONTINUATION PAGE(S)	12985 48
BEAN SIZE	SPACERS	WE UNDERSTOOD AND MET YOUR NEEDS?				
TYPE OF EQUALIZING SUB.	CASING PRESSURE	OUR SERVICE WAS PERFORMED WITHOUT DELAY?				
TUBING SIZE	TUBING PRESSURE	WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?				18232 59
	WELL DEPTH	ARE YOU SATISFIED WITH OUR SERVICE?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	SUB-TOTAL	
TREE CONNECTION	TYPE VALVE				APPLICABLE TAXES WILL BE ADDED ON INVOICE	
I <input type="checkbox"/> do <input type="checkbox"/> do not require IPC (Instrument Protection). <input type="checkbox"/> Not offered						

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowledges receipt of the materials and services listed on this ticket.

CUSTOMER OR CUSTOMER'S AGENT (PLEASE PRINT) <u>Terry Maxwell</u>	CUSTOMER OR CUSTOMER'S AGENT (SIGNATURE) X <u>Terry Maxwell</u>	HALLIBURTON OPERATOR/ENGINEER <u>Darryl M. Lee</u>	EMP # <u>63601</u>	HALLIBURTON APPROVAL
---	--	---	-----------------------	----------------------



HALLIBURTON ENERGY SERVICES

TICKET CONTINUATION

CUSTOMER COPY

TICKET No. 19324

FORM 1911 R-10

IM

CUSTOMER Ensign	WELL Liberal 2-25	DATE 2-9-97	PAGE OF
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PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			DESCRIPTION	QTY.		U/M		UNIT PRICE	AMOUNT
		LOC	ACCT	DF							
504-120					Halliburton Light Premium Plus	650		sk		11.52	7488.00
504-050	516.00265										
506-105	516.00286										
506-121	516.00259										
504-050	516.00265				Premium Plus Cement	150		sk		14.01	2101.50
504-406	800.50812				Calcium Chloride 2% w/all	14		sk		40.75	570.50
507-210	800.50071				Floccale 1/4# w/650 HLC	163		lbs		1.65	269.95
<p>CONFIDENTIAL</p> <p>ORIGINAL</p> <p>RECEIVED KANSAS CORP COMM 1997 MAY 30 A 12:54</p> <p>RELEASED SEP 16 1998</p> <p>FROM CONFIDENTIAL</p> <p>CONFIDENTIAL</p> <p>MAY 29</p> <p>NCC</p>											
500-207					SERVICE CHARGE						
500-306					MILEAGE CHARGE						
					TOTAL WEIGHT						
					LOADED MILES						
					TON MILES						
					CUBIC FEET						

No. B 385435

CONTINUATION TOTAL 12983.47



REMIT TO:
 P.O. BOX 951046
 DALLAS, TX 75395-1046
 Corporate FIN 73-0271280

INVOICE

HALLIBURTON ENERGY SERVICES
 A Division of Halliburton Company

INVOICE NO.	DATE
185420	02/21/1997

WELL LEASE NO./PROJECT		WELL/PROJECT LOCATION		STATE	OWNER
LIBERAL 2-25		SEWARD		KS	SAME
SERVICE LOCATION	CONTRACTOR	JOB PURPOSE			TICKET DATE
LIBERAL	MURFIN DRILLING	SHOWN BELOW			02/21/1997
ACCT. NO.	CUSTOMER AGENT	VENDOR NO.	CUSTOMER P.O. NUMBER	SHIPPED VIA	FILE NO.
273943	JERRY MAXWELL			COMPANY TRUCK	20778

ENSIGN OPERATING COMPANY
 1515 AIR PARK AVENUE
 P.O. BOX 2161
 LIBERAL, KS 67905-2161

ORIGINAL

DIRECT CORRESPONDENCE TO:
 P O BOX 1598
 LIBERAL KS 67901

CONFIDENTIAL

REFERENCE NO.	DESCRIPTION	QUANTITY	UM	UNIT PRICE	AMOUNT
PRICING AREA - MID CONTINENT					
JOB PURPOSE - CEMENT PRODUCTION CASING					
000-117	MILEAGE CEMENTING ROUND TRIP	5 MI		2.99	14.95
		1 UNIT			
	DISCOUNT-(BID)	20.0 %			2.99-
000-119	MILEAGE FOR CREW	5 MI		1.60	8.00
		1 UNIT			
	DISCOUNT-(BID)	20.0 %			1.60-
001-016	CEMENTING CASING	6493 FT		2,130.00	2,130.00
		1 UNIT			
	DISCOUNT-(BID)	20.0 %			426.00-
50	CENTRALIZR-TURBO-4-1/2 X 7-7/8	10 EA		60.00	600.00 *
806.60104					
	DISCOUNT-(BID)	25.0 %			150.00-
66	CLAMP-LIMIT-4 1/2-FRICT-W/DOGS	1 EA		15.00	15.00 *
806.72720					
	DISCOUNT-(BID)	25.0 %			3.75-
80	FORM PKR SHOE FLAP VLV 5 1/2"	1 EA		2,701.00	2,701.00 *
855.137					
	DISCOUNT-(BID)	15.0 %			405.15-
82	FILL-UP UNIT	1 EA		104.00	104.00 *
855.02545					
	DISCOUNT-(BID)	25.0 %			26.00-
018-303	CLAYFIX II, PER GAL	10 GAL		28.00	280.00
		20.0 %			56.00
	DISCOUNT-(BID)				

KCC
 MAY 29
CONFIDENTIAL

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 SEP 16 1998

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***** CONTINUED ON NEXT PAGE *****

TERMS: If Customer does not have an approved open account with Halliburton, all sums due are payable in cash at the time of performance of services or delivery of equipment, products or materials. If customer has an approved open account, invoices are payable on the twentieth day after date of invoice. Customer agrees to pay interest on any unpaid balance from the date payable until paid at the highest lawful contract rate applicable, but never to exceed 18% per annum. In the event Halliburton employs an attorney for collection of any account, Customer agrees to pay attorney fees of 20% of the unpaid account, plus all collection and court costs.

CUSTOMER COPY



REMIT TO: P.O. BOX 951046 DALLAS, TX 75395-1046 Corporate FIN 73-0271280

INVOICE

HALLIBURTON ENERGY SERVICES A Division of Halliburton Company

Table with columns: INVOICE NO. (185420), DATE (02/21/1997)

Table with columns: WELL LEASE NO./PROJECT, WELL/PROJECT LOCATION, STATE, OWNER, SERVICE LOCATION, CONTRACTOR, JOB PURPOSE, TICKET DATE, ACCT. NO., CUSTOMER AGENT, VENDOR NO., CUSTOMER P.O. NUMBER, SHIPPED VIA, FILE NO.

CONFIDENTIAL

ENSIGN OPERATING COMPANY 1515 AIR PARK AVENUE P.O. BOX 2161 LIBERAL, KS 67905-2161

DIRECT CORRESPONDENCE TO: P O BOX 1598 LIBERAL KS 67901

Main item table with columns: REFERENCE NO., DESCRIPTION, QUANTITY, UM, UNIT PRICE, AMOUNT. Includes items like CEMENT, HALAD-322, SUPER CBL, POTASSIUM CHLORIDE, BULK SERVICE CHARGE, MILEAGE.

ORIGINAL

KCC

MAY 29

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JOB PURPOSE SUBTOTAL 16,881.09

INVOICE SUBTOTAL 16,881.09

DISCOUNT-(BID) 3,828.51-

INVOICE BID AMOUNT 13,052.58

*-KANSAS STATE SALES TAX 544.21

CONTINUED ON NEXT PAGE

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REMIT TO:
P.O. BOX 951046
DALLAS, TX 75395-1046
Corporate FIN 73-0271280

INVOICE

HALLIBURTON ENERGY SERVICES
A Division of Halliburton Company

INVOICE NO.	DATE
185420	02/21/1997

WELL LEASE NO./PROJECT		WELL/PROJECT LOCATION		STATE	OWNER
LIBERAL 2-25		SEWARD		KS	SAME
SERVICE LOCATION	CONTRACTOR	JOB PURPOSE			TICKET DATE
LIBERAL	MURFIN DRILLING	SHOWN BELOW			02/21/1997
ACCT. NO.	CUSTOMER AGENT	VENDOR NO.	CUSTOMER P.O. NUMBER	SHIPPED VIA	FILE NO.
273948	TERRY MAXWELL			COMPANY TRUCK	20778

ENSIGN OPERATING COMPANY
1515 AIR PARK AVENUE
P.O. BOX 2161
LIBERAL, KS 67905-2161

ORIGINAL

DIRECT CORRESPONDENCE TO:
P O BOX 1598
LIBERAL KS 67901

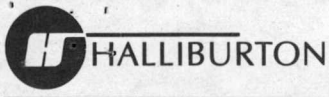
CONFIDENTIAL

REFERENCE NO.	DESCRIPTION	QUANTITY	UM	UNIT PRICE	AMOUNT
	*-LIBERAL CITY SALES TAX				111.06
	*-SEWARD COUNTY SALES TAX				166.60
INVOICE TOTAL - PLEASE PAY THIS AMOUNT					313,874.45

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MAY 2 '9
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TERMS: If Customer does not have an approved open account with Halliburton, all sums due are payable in cash at the time of performance of services or delivery of equipment, products or materials. If customer has an approved open account, invoices are payable on the twentieth day after date of invoice. Customer agrees to pay interest on any unpaid balance from the date payable until paid at the highest lawful contract rate applicable, but never to exceed 18% per annum. In the event Halliburton employs an attorney for collection of any account, Customer agrees to pay attorney fees of 20% of the unpaid account, plus all collection and court costs.



JOB SUMMARY

HALLIBURTON DIVISION MID CONTINENT
HALLIBURTON LOCATION Liberal

BILLED ON TICKET NO. 155420

WELL DATA

FIELD _____ SEC. _____ TWP. _____ RNG. _____ COUNTY Seward STATE Ks

FORMATION NAME _____ TYPE **CONFIDENTIAL**

FORMATION THICKNESS _____ FROM _____ TO _____

INITIAL PROD: OIL _____ BPD. WATER _____ BPD. GAS _____ MCFD

PRESENT PROD: OIL _____ BPD. WATER _____ BPD. GAS _____ MCFD

COMPLETION DATE _____ MUD TYPE _____ MUD WT. _____

PACKER TYPE _____ SEAT _____

BOTTOM HOLE TEMP. _____ PRESSURE _____

MISC. DATA _____ TOTAL DEPTH _____

	NEW USED	WEIGHT	SIZE	FROM	TO	MAXIMUM PSI ALLOWABLE
CASING	4	11.6	4 1/2	4617	5493	
LINER "	4	10.5	4 1/2	41	4617	
TUBING "	4	11.6	4 1/2	KB	41	
OPEN HOLE						SHOTS/FT.
PERFORATIONS						
PERFORATIONS						
PERFORATIONS						

JOB DATA

TOOLS AND ACCESSORIES

TYPE AND SIZE	QTY.	MAKE
FLOAT COLLAR <u>4 1/2</u>		
<u>Latch Down Buffer 1</u>		
FLOAT SHOE		
GUIDE SHOE <u>Formation Packer 1</u>		<u>5 1/2"</u>
CENTRALIZERS <u>Fluid master 10</u>		
BOTTOM PLUG		
TOP PLUG <u>Latch Down 1</u>		
HEAD		
PACKER		
OTHER <u>Pas Grip 1</u>		

CALLER OUT	ON LOCATION	JOB STARTED	JOB COMPLETED
DATE <u>2-21-97</u>	DATE <u>2-21-97</u>	DATE <u>2-22-97</u>	DATE <u>2-21-97</u>
TIME <u>1800</u>	TIME <u>2030</u>	TIME <u>0042</u>	TIME <u>0240</u>

PERSONNEL AND SERVICE UNITS

NAME	UNIT NO. & TYPE	LOCATION
<u>Ron Crist</u>	<u>42045</u>	<u>Liberal</u>
<u>07653</u>		
<u>Tim Broadfoot</u>	<u>75496</u>	<u>11</u>
<u>D4604</u>	<u>52947</u>	
<u>Dennis Carpenter</u>	<u>4037</u>	<u>Hugoton</u>
<u>H2441</u>	<u>6612</u>	
<u>Ben Doucet</u>	<u>50502</u>	<u>11</u>
<u>H166</u>	<u>75505</u>	

MATERIALS

TREAT. FLUID _____ DENSITY _____ LB./GAL. °API

DISPL. FLUID _____ DENSITY _____ LB./GAL. °API

PROP. TYPE _____ SIZE _____ LB.

PROP. TYPE _____ SIZE _____ LB.

ACID TYPE _____ GAL. _____ %

ACID TYPE _____ GAL. _____ %

ACID TYPE _____ GAL. _____ %

SURFACTANT TYPE _____ GAL. _____

NE AGENT TYPE _____ GAL. _____ IN

FLUID LOSS ADD. TYPE _____ GAL.-LB. _____ IN

GELLING AGENT TYPE _____ GAL.-LB. _____ IN

FRIC. RED. AGENT TYPE _____ GAL.-LB. _____ IN

BREAKER TYPE _____ GAL.-LB. _____ IN

BLOCKING AGENT TYPE _____ GAL.-LB. _____

PERFAC BALLS TYPE _____ QTY. _____

OTHER _____

OTHER _____

RELEASED

SEP 16 1998

DEPARTMENT 5001

DESCRIPTION OF JOB 035

JOB DONE THRU: TUBING CASING ANNULUS TBG/ANN.

CUSTOMER REPRESENTATIVE **X** Tom Maxwell

HALLIBURTON OPERATOR Ron Crist COPIES REQUESTED _____

CEMENT DATA

STAGE	NUMBER OF SACKS	CEMENT	BRAND	BULK SACKED	ADDITIVES	YIELD CU.FT./SK.	MIXED LBS./GAL.
	<u>25</u>	<u>CLT WT</u>		<u>B</u>		<u>2.06</u>	<u>12.7</u>
	<u>400</u>	<u>H</u>		<u>B</u>	<u>3% KCl, -7 Haled 322 .25%</u>	<u>1.18</u>	<u>15.6</u>
					<u>Super CAB</u>		

PRESSURES IN PSI

CIRCULATING _____ DISPLACEMENT _____

BREAKDOWN _____ MAXIMUM _____

AVERAGE _____ FRACTURE GRADIENT _____

SHUT-IN: INSTANT _____ 5-MIN _____ 15-MIN _____

HYDRAULIC HORSEPOWER _____

ORDERED _____ AVAILABLE _____ USED _____

AVERAGE RATES IN BPM _____

TREATING _____ DISPL. _____ OVERALL _____

CEMENT LEFT IN PIPE _____

FEET 41.25 REASON Shoe Joint

SUMMARY

VOLUMES

PRESLUSH: BBL.-GAL. _____ TYPE _____

LOAD & BKDN: BBL.-GAL. _____ PAD: BBL.-GAL. _____

TREATMENT: BBL.-GAL. _____ DISPL: BBL.-GAL. 101

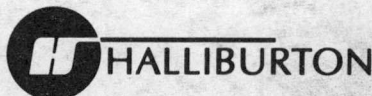
CEMENT SLURRY: BBL.-GAL. 908 LL 8712

TOTAL VOLUME: BBL.-GAL. _____

REMARKS

FIELD OFFICE

CUSTOMER Ensign Oper
LEASE Liberal
WELL NO. 2-25
JOB TYPE 035
DATE 2-21-97


JOB LOG HAL-2013-C

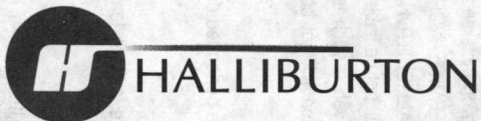
CUSTOMER	WELL NO.	LEASE	JOB TYPE	TICKET NO.
Ensign Oper	2-25	Liberat	035	195420

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1600							Called out
	2030							on location LDDP
	2145							START 4 1/2 CS in Hole
	0042							CS Ran Drop Bolt + Hook
	-							To Circulate
	0052							Circulate To PIT
	0009							Hook To Cement, Dropped
	-							2 1/4" Bull To SET formation Pack
	-							Shoe wait For Bull To Reach
	-							sleeve.
	0143							0 to Pressure up To SET FMS
	-							1250 200 P's at a Time
	0150							FMS SET
	0153							0-250 Start Lead cat
	0155	5	9					250-270 Lead Pumped Start Tail cat
	0209	6	84					Tail cat Pumped Shut Down
	-							Wash Pump & Lines Drop Plug
	0213							0-850 Start Displacement
	0231	5.5	96					850-1000 Slow Rate
	0236	2	5					1000-1500 Bump Plug
								MU
								MAY 29
								CONFIDENTIAL
								Thank you for Calling
								Halliburton Energy Services
								Ron Jim & Crew

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SEP 16 1998

FROM CONFIDENTIAL



HALLIBURTON ENERGY SERVICES

HAL-1906-P

CHARGE TO: Ensign Operating
 ADDRESS:
 CITY, STATE, ZIP CODE:

CUSTOMER COPY

TICKET

No.

185420-4

PAGE OF

1. <u>Liberal</u>	WELL/PROJECT NO. <u>2-25</u>	LEASE <u>Liberal</u>	COUNTY/PARISH <u>Seward</u>	STATE <u>Ks</u>	CITY/OFFSHORE LOCATION	DATE <u>2-25-98</u>	OWNER
2. <u>Hugoton</u>	TICKET TYPE <input type="checkbox"/> SERVICE JOB? <input type="checkbox"/> YES <input type="checkbox"/> SALES <input type="checkbox"/> NO	CONTRACTOR <u>Martin</u>	RIG NAME/NO <u>20</u>	SHIPPED VIA <u>Hes</u>	DELIVERED TO <u>Liberal</u>	ORDER NO.	
3.	WELL TYPE <u>02</u>	WELL CATEGORY <u>01</u>	JOB PURPOSE <u>035</u>	WELL PERMIT NO.	WELL LOCATION		
4.	REFERRAL LOCATION	INVOICE INSTRUCTIONS					

RELEASED SEP 16 1998

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ORIGINAL

KUU MAY 29 CONFIDENTIAL

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			DESCRIPTION	QTY.		U/M		UNIT PRICE	AMOUNT
		LOC	ACCT	DF							
000-117					MILEAGE	5	RT			2.99	14.95
000-119					Crew mileage	5	RT			1.60	8.00
001-016					Pump Charge	6493	FT				2130.00
50	806-60104				Fluid Master Central-2 4/8 in	10	EQ				600.00
66	806-72720				Fas Grip	4 1/2	IN	1	EQ		15.00
80	855-137				Formation Packer	5 1/2	IN	1	EQ		2701.00
82	855-02545				Fill Assy.			1	EQ		104.00
018-303					Clay fix II			10	EQ	28.00	280.00

LEGAL TERMS: Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, **PAYMENT, RELEASE, INDEMNITY, and LIMITED WARRANTY** provisions.

MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS

X Terry Maxwell
 DATE SIGNED _____ TIME SIGNED _____
 A.M.
 P.M.

SUB SURFACE SAFETY VALVE WAS:
 PULLED & RETURN PULLED RUN

TYPE LOCK _____ DEPTH _____
 BEAN SIZE _____ SPACERS _____
 TYPE OF EQUALIZING SUB. _____ CASING PRESSURE _____
 TUBING SIZE _____ TUBING PRESSURE _____ WELL DEPTH _____
 TREE CONNECTION _____ TYPE VALVE _____

SURVEY

OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?	AGREE	UN-DECIDED	DIS-AGREE
WE UNDERSTOOD AND MET YOUR NEEDS?			
OUR SERVICE WAS PERFORMED WITHOUT DELAY?			
WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?			
ARE YOU SATISFIED WITH OUR SERVICE?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	

CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL	5852	95
FROM CONTINUATION PAGE(S)	11027	19
SUB-TOTAL	16880	09
APPLICABLE TAXES WILL BE ADDED ON INVOICE		

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES

The customer hereby acknowledges receipt of the materials and services listed on this ticket.

CUSTOMER OR CUSTOMER'S AGENT (PLEASE PRINT) <u>Terry Maxwell</u>	CUSTOMER OR CUSTOMER'S AGENT (SIGNATURE) X <u>Terry Maxwell</u>	HALLIBURTON OPERATOR/ENGINEER <u>Ron Crist</u>	EMP # <u>07653</u>	HALLIBURTON APPROVAL
---	---	---	-----------------------	----------------------

TERMS AND CONDITIONS

(1295)

For good and valuable consideration received, Customer (as identified on the face of this document) and Halliburton Energy Services, a division of Halliburton Company (hereinafter "Halliburton") agree as follows:

A. **CUSTOMER REPRESENTATION** - Customer warrants that the well is in proper condition to receive the services, equipment, products, and materials to be supplied by Halliburton.

B. **PRICE AND PAYMENT** - The services, equipment, products, and/or materials to be supplied hereunder are priced in accordance with Halliburton's current price list. All prices are exclusive of taxes. If Customer does not have an approved open account with Halliburton, all sums due are payable in cash at the time of performance of services or delivery of equipment, products or materials. If Customer has an approved open account, invoices are payable on the twentieth day after the date of invoice. Customer agrees to pay interest on any unpaid balance from the date payable until paid at the highest lawful contract rate applicable, but never to exceed 18% per annum. In the event Halliburton employs an attorney for collection of any account, Customer agrees to pay attorney fees of 20% of the unpaid account, plus all collection and court costs.

C. **RELEASE AND INDEMNITY** - CUSTOMER AGREES TO RELEASE HALLIBURTON GROUP FROM ANY AND ALL LIABILITY FOR ANY AND ALL DAMAGES WHATSOEVER TO PROPERTY OF ANY KIND OWNED BY, IN THE POSSESSION OF, OR LEASED BY CUSTOMER AND THOSE PERSONS AND ENTITIES CUSTOMER HAS THE ABILITY TO BIND BY CONTRACT. CUSTOMER ALSO AGREES TO DEFEND, INDEMNIFY, AND HOLD HALLIBURTON GROUP HARMLESS FROM AND AGAINST ANY AND ALL LIABILITY, CLAIMS, COSTS, EXPENSES, ATTORNEY FEES AND DAMAGES WHATSOEVER FOR PERSONAL INJURY, ILLNESS, DEATH, PROPERTY DAMAGE AND LOSS RESULTING FROM:

LOSS OF WELL CONTROL; SERVICES TO CONTROL A WILD WELL WHETHER UNDERGROUND OR ABOVE THE SURFACE; RESERVOIR OR UNDERGROUND DAMAGE, INCLUDING LOSS OF OIL, GAS, OTHER MINERAL SUBSTANCES OR WATER; SURFACE DAMAGE ARISING FROM UNDERGROUND DAMAGE; DAMAGE TO OR LOSS OF THE WELL BORE; SUBSURFACE TRESPASS OR ANY ACTION IN THE NATURE THEREOF; FIRE; EXPLOSION; SUBSURFACE PRESSURE; RADIOACTIVITY; AND POLLUTION AND ITS CLEANUP AND CONTROL.

CUSTOMER'S RELEASE, DEFENSE, INDEMNITY AND HOLD HARMLESS OBLIGATIONS WILL APPLY EVEN IF THE LIABILITY AND CLAIMS ARE CAUSED BY THE SOLE, CONCURRENT, ACTIVE OR PASSIVE NEGLIGENCE, FAULT, OR STRICT LIABILITY OF ONE OR MORE MEMBERS OF THE HALLIBURTON GROUP, THE UNSEAWORTHINESS OF ANY VESSEL OR ANY DEFECT IN THE DATA, PRODUCTS, SUPPLIES, MATERIALS OR EQUIPMENT FURNISHED BY HALLIBURTON GROUP WHETHER IN THE DESIGN, MANUFACTURE, MAINTENANCE OR MARKETING THEREOF OR FROM A FAILURE TO WARN OF SUCH DEFECT. "HALLIBURTON GROUP" IS DEFINED AS HALLIBURTON, ITS PARENT, SUBSIDIARY, AND AFFILIATED COMPANIES AND ITS/THEIR OFFICERS, DIRECTORS, EMPLOYEES, AND AGENTS. CUSTOMER'S RELEASE, DEFENSE, INDEMNITY AND HOLD HARMLESS OBLIGATIONS APPLY WHETHER THE PERSONAL INJURY, ILLNESS, DEATH, PROPERTY DAMAGE OR LOSS IS SUFFERED BY ONE OR MORE MEMBERS OF THE HALLIBURTON GROUP, CUSTOMER, OR ANY OTHER PERSON OR ENTITY AND THE CUSTOMER WILL SUPPORT SUCH OBLIGATIONS ASSUMED HEREIN WITH LIABILITY INSURANCE TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW.

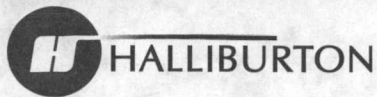
D. **EQUIPMENT LIABILITY** - Customer shall at its risk and expense attempt to recover any Halliburton equipment lost or lodged in the well. If the equipment is not recovered or is irreparable, Customer shall pay the replacement cost, unless such loss is caused by Halliburton's sole negligence. If a radioactive source becomes lost or lodged in the well, this agreement will constitute Customer's written agreement under 10 CFR Sec. 39.15 (a) that Customer shall be responsible for meeting all requirements of 10 CFR Sec. 39.15 and any other applicable laws or regulations concerning retrieval, monitoring, decontamination and abandonment, and Customer shall permit Halliburton to observe the recovery or abandonment efforts, all without risk or expense to Halliburton. Customer shall be responsible for damage to or loss of Halliburton equipment, products, and materials while in transit aboard Customer-supplied transportation, even if such is arranged by Halliburton at Customer's request and during loading and unloading from such transport. Customer will also pay for the repair or replacement of Halliburton equipment damaged by corrosion or abrasion due to well effluents.

E. **LIMITED WARRANTY** - Halliburton warrants only title to the equipment, products, and materials supplied under this agreement and that same are free from defects in workmanship and materials for one year from date of delivery. **CONFIDENTIAL** THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. Halliburton's sole liability and Customer's exclusive remedy in any cause of action (whether in contract, tort, breach of warranty or otherwise) arising out of the sale, lease or use of any equipment, products, or materials is expressly limited to the replacement of such on their return to Halliburton or, at Halliburton's option, to the allowance to Customer of credit for the cost of such items. In no event shall Halliburton be liable for special, incidental, indirect, consequential, or punitive damages. Because of the uncertainty of variable well conditions and the necessity of relying on facts and supporting services furnished by others, HALLIBURTON IS UNABLE TO GUARANTEE THE EFFECTIVENESS OF THE EQUIPMENT, MATERIALS, OR SERVICE, NOR THE ACCURACY OF ANY CHART INTERPRETATION, RESEARCH ANALYSIS, JOB RECOMMENDATION OR OTHER DATA FURNISHED BY HALLIBURTON. Halliburton personnel will use their best efforts in gathering such information and their best judgment in interpreting it, but Customer agrees that Halliburton shall not be liable for and CUSTOMER SHALL INDEMNIFY HALLIBURTON GROUP AGAINST ANY DAMAGES ARISING FROM THE USE OF SUCH INFORMATION, even if such is contributed to by Halliburton's negligence or fault. Halliburton also does not warrant the accuracy of data transmitted by electronic process, and Halliburton will not be responsible for accidental or intentional interception of such data by third parties. **CONFIDENTIAL**

F. **GOVERNING LAW** - The validity, interpretation and construction of this agreement shall be determined by the laws of the jurisdiction where the services are performed or the equipment or materials are delivered.

G. **WAIVER** - Customer agrees to waive the provisions of the Texas Deceptive Trade Practices-Consumer Protection Act or any similar federal or state statute to the extent permitted by law.

H. **MODIFICATIONS** - Customer agrees that Halliburton shall not be bound by any modifications to this agreement, except where such modification is made in writing by a duly authorized executive officer of Halliburton. Requests for modifications should be directed to the Vice President - Legal, 5151 San Felipe, Houston, Texas 77056.



TICKET CONTINUATION

CUSTOMER COPY

TICKET No. 185420

HALLIBURTON ENERGY SERVICES

CUSTOMER New Foreign Operating	WELL Liberal 2-25	DATE 02-21-97	PAGE	OF
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FORM 1911 R-10

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			DESCRIPTION	QTY.		U/M		UNIT PRICE	AMOUNT
		LOC	ACCT	DF							
504-043	516.00272				Premium Cement	400		sk		13 70	5480 00
504-120					Premium PLS Lite Cement	25		sk		11 52	288 00
507-775	516.00144				Halad-322 0.77M/ 400	263		lb		7 00	1841 00
516.00223	507-939				Super CIL 0.25M/ 400	94		lb		21 50	2021 00
508-002	70.15302				Potassium Chloride 3M/ 400	516		lb		27	139 32
<p>CONFIDENTIAL ORIGINAL</p> <p>KOU MAY 29 CONFIDENTIAL</p> <p>RELEASED SEP 16 1998 FROM CONFIDENTIAL</p>											
500-207					SERVICE CHARGE						
500-306					MILEAGE CHARGE	TOTAL WEIGHT	40778	LOADED MILES	32	CUBIC FEET	425
								TON MILES	652.448		1 35
											573 75
											1 05
											685 07

No. B 389035

CONTINUATION TOTAL

11027.17

GENERAL WELL INFORMATION

Operator: Ensign Operating Co.

Well Name: No. 2-25 Liberal API No. 15-175-21591

Prospect: Sally Southwest Prospect

Location: S/2 S/2 NE Sec. 25, T34S, R34W, 1650' FNL, 1320' FEL

County: Seward

State: Kansas

Elevation: G.L. 2883' K.B. 2893'

Spudded: February 8, 1997 @ 10:45 P.M..

Completed Drilling: February 20, 1997 @ 3:00 P.M.

Total Depth: Driller 6900' Logger 6899'

Status: Set Production Casing To Produce Lower Morrow Sandstone.

Drill-Stem Tests: Drill-Stem Test No. 1 6138'-6220' Pennsylvanian Lower Morrow
 Times: 30-60-45-135
 I.O. Strong Blow, Bottom Of Bucket In 15 Seconds, Gas To Surface In
 Two Minutes.
 F.O. Very Strong Blow.

Initial Open Gas Flow:

Time in Minutes	Orifice PSI	Orifice Size	Flow Rate CFD
2	NM	1.5"	GTS
10	38	1.5"	3,036,000
15	45	1.5"	3,454,000
20	47	1.5"	3,573,000
25	50	1.5"	3,752,000
30	50	1.5"	3,752,000

Final Open Gas Flow:

Time in Minutes	Orifice PSI	Orifice Size	Flow Rate CFD
5	38	1.5"	3,036,000
10	40	1.5"	3,155,000
15	55	1.5"	4,051,000
20	58	1.5"	4,230,000
25	58	1.5"	4,230,000
30	58	1.5"	4,230,000
35	58	1.5"	4,230,000
40	58	1.5"	4,230,000
45	58	1.5"	4,230,000

Recovery: 6114' Gas In Drill Pipe.

Sampler: 20.7 Cu Ft Gas @ 850 psi

Hydrostatic Pressures 2962-2841 psi
 Flow Pressures 525-665:665-988 psi
 Shut-in Pressures 994-988 psi
 Bottom Hole Temperature 139° F

Trilobite Testing L.L.C., Tom Horacek, Tester.

Logging Program: HRI/SP/GR 0' - 6900'
 SDL/DSN/GR/Cal 4000' - 6890'
 ML/GR/Cal 4000' - 6895'
 Sonic/GR/Cal 1598' - 6857'

Halliburton Energy Services, Piroutek, Engineer.

Sample Program: Ten foot samples from 4252' - 6900'. Samples were examined and described at the well site. Samples were caught on depth intervals by rig crews. Samples were lagged by geologist. All depths reported herein are lagged depths.

Mud Logging: Holmes Gas Detector Service, Unmanned Unit.

Mud Program: Cimмерon Mud Co. Jim Reed, Engineer.

Lost Circulation: None.

Contractor: Murfin Drilling Co., Inc., Rig No. 20, Rodney Farr, Toolpusher.

Bit Record:

No.	Size	Make	Type	Depth Out	Feet	Hours
1	12.25	Sec	S33S	1598'	1598'	18.25
2	7.875	HTC	GT18	5464'	3866'	122.50
3	7.875	HTC	S88F	6950'	1436'	79.50

Total Rotating Hours 220.25, Average 31.328 Ft/Hr

Deviation Record:

1/2°	@ 852'
1/2°	@ 1165'
3/4°	@ 1598'
1/2°	@ 2161'
1/2°	@ 2661'
1/2°	@ 3381'
1°	@ 4127'
1°	@ 4723'
1/2°	@ 5464'
1/2°	@ 6220'
1/2°	@ 6900'

DAILY DRILLING REPORT

Ensign Operating Co.
No. 2-25 Liberal
S/2 S/2 NE Sec. 25, T34S, R34W
Seward County, Kansas

7:00 A.M. Reports

1	Feb.	8	0' (0') Rig up rotary tools.
2	Sun	9	850' (850') Spud @ 10:45 P.M..
3	Mon	10	1598' (748') Set 8 5/8" @ 1598', Plug Down @ 12:30 A.M.
4	Tue	11	2120' (522') Drill Plug @ 1:30 P.M.
5	Wed	12	2980' (860')
6	Thur	13	3680' (700')
7	Fri	14	4310' (630')
8	Sat	15	4975' (665')
9	Sun	16	5464' (489') Bit Trip @ 5464'
10	Mon	17	5905' (441')
11	Tue	18	6220' (315') DST No. 1 6138'-6220' Lower Morrow Sandstone.
12	Wed	19	6400' (180')
13	Thur	20	6760' (360')
14	Fri	21	6900' (140') Logging
15	Sat	22	6900' (0') Set 4 1/2" Production Casing

FORMATION TOPS

Ensign Operating Company

No. 2-25 Liberal

S/2 S/2 NE/4 Sec. 25, T34S, R34W

Seward County, Kansas

EOC No. 1-31 Liberal

EOC No. 2-25 Liberal

EOC No. 2-25 Liberal

NW SW NE Sec. 31

S/2 S/2 NE Sec. 34,

S/2 S/2 NE Sec. 34,

T34S, R34W

T34S,R34 W

T34S,R34 W

2874 KB

2893 KB

2893 KB

Borehole Geophysical Lo

Drill Time & Samples

Borehole Geophysical Logs

	Depth	Subsea	Interval	Depth	Subsea	Interval	H/L	Depth	Subsea	Interval	H/L
<i>Tertiary</i>	Surface	2862	12	Surface	2883	10	21	Surface	2883	10	21
			689			655				654	
<i>Permian</i>											
<u>Guadalupian</u>											
White Horse	701	2173	215	665	2228	272	55	664	2229	266	56
<u>Leonardian</u>											
Nipewalla Grp.											
Blaine	916	1958	163	937	1956	165	-2	930	1963	170	5
Cedar Hills	1079	1795	141	1102	1791	138	-4	1100	1793	142	-2
Salt Plain	1220	1654	340	1240	1653	335	-1	1242	1651	326	-3
Sumner Grp.											
Stone Corral	1560	1314	66	1575	1318	69	4	1568	1325	74	11
Ninnescah	1626	1248	501	1644	1249	500	1	1642	1251	508	3
Wellington	2127	747	473	2144	749	473	2	2150	743	460	-4
<u>Wolfcampian</u>											
Chase Grp.											
Herington	2600	274	64	2617	276	66	2	2610	283	64	9
Krider	2664	210	56	2683	210	50	0	2674	219	52	9
Winfield	2720	154	60	2733	160	60	6	2726	167	60	13
Towanda	2780	94	58	2793	100	56	6	2786	107	60	13
Fort Riley	2838	36	106	2849	44	100	8	2846	47	98	11
Wreford	2944	-70	119	2949	-56	114	14	2944	-51	116	19
Council Grove Gr	3063	-189	389	3063	-170	373	19	3060	-167	378	22
Admire Grp.	3452	-578	32	3436	-543	40	35	3438	-545	32	33

EOC No. 1-31 Liberal
NW SW NE Sec. 31
T34S, R34W
2874 KB

EOC No. 2-25 Liberal
S/2 S/2 NE Sec. 34,
T34S, R34 W
2893 KB

EOC No. 2-25 Liberal
S/2 S/2 NE Sec. 34,
T34S, R34 W
2893 KB

Borehole Geophysical Lo

Drill Time & Samples

Borehole Geophysical Logs

	Depth	Subsea	Interval	Depth	Subsea	Interval	H/L	Depth	Subsea	Interval	H/L
<i>Pennsylvanian</i>											
<i>Virgilian</i>											
Wabaunsee Grp.	3484	-610	832	3476	-583	854	27	3470	-577	862	33
Douglas Grp.											
Heebner	4316	-1442	18	4330	-1437	20	5	4332	-1439	18	3
Toronto	4334	-1460	80	4350	-1457	90	3	4350	-1457	70	3
<i>Missourian</i>											
Lansing Grp.	4414	-1540	346	4420	-1527	343	16	4420	-1527	340	13
Kansas City Grp	4760	-1886	418	4763	-1870	418	9	4760	-1867	416	19
<i>Desmoinesian</i>											
Marmaton Grp.	5178	-2304	172	5181	-2288	179	16	5176	-2283	182	21
Cherokee Grp.	5350	-2476	124	5360	-2467	115	9	5358	-2465	114	11
<i>Atokian</i>	5474	-2600	373	5475	-2582	396	18	5472	-2579	398	21
<i>Morrowian</i>	5847	-2973	249	5871	-2978	239	-5	5870	-2977	240	-4
Lower Morrow	6096	-3222	37	6110	-3217	29	5	6110	-3217	28	5
Top Pay Sand	6133	-3259	17	6139	-3246	29	13	6138	-3245	46	14
Base Pay Sand	6150	-3276	10	6186	-3293	47	-17	6184	-3291	18	-15
Chester	6160	-3286	326	6204	-3311	209	-25	6202	-3309	208	-23
Orange Marker	6374	-3500	112	6413	-3520	145	-20	6410	-3517	142	-17
<i>Mississippian</i>											
<i>Meramecian</i>											
Ste. Genevieve	6486	-3612	104	6558	-3665	37	-53	6552	-3659	44	-47
St. Louis	6590	-3716	222	6595	-3702	219	14	6596	-3703	216	13
Spergen	6812	-3938	129	6814	-3921	86	17	6812	-3919	87	19
<i>Total Depth</i>	6941	-4067		6900	-4007		41	6899	-4006		42

COMPARATIVE FORMATION TOPS

Ensign Operating Company

No. 2-25 Liberal

S/2 S/2 NE/4 Sec. 25, T34S, R34W

Seward County, Kansas

EOC No. 1-31 Liberal

OXY USA, Inc.

EOC No. 2-25 Liberal

NW SW NE Sec. 31

S/2 N/2 SW Sec. 30

S/2 S/2 NE Sec. 34,

T34S, R34W

T34S, R33W

T34S, R34 W

2874 KB

2907 KB

2893 KB

	Depth	Subsea	Interval	Depth	Subsea	Interval	H/L	Depth	Subsea	Interval	H/L
<i>Tertiary</i>	Surface	2862	12	Surface	2896	11	34	Surface	2883	10	21
			689							654	
<i>Permian</i>											
<u>Guadalupian</u>											
White Horse	701	2173	215	NL				664	2229	266	56
<u>Leonardian</u>											
Nipewalla Grp.											
Blaine	916	1958	163	NL				930	1963	170	5
Cedar Hills	1079	1795	141	NL				1100	1793	142	-2
Salt Plain	1220	1654	340	NL				1242	1651	326	-3
Sumner Grp.											
Stone Corral	1560	1314	66	NL				1568	1325	74	11
Ninnescah	1626	1248	501					1642	1251	508	3
Wellington	2127	747	473	2128	779	480	32	2150	743	460	-4
<u>Wolfcampian</u>											
Chase Grp.											
Herington	2600	274	64	2608	299	58	25	2610	283	64	9
Krider	2664	210	56	2666	241	62	31	2674	219	52	9
Winfield	2720	154	60	2728	179	58	25	2726	167	60	13
Towanda	2780	94	58	2786	121	54	27	2786	107	60	13
Fort Riley	2838	36	106	2840	67	104	31	2846	47	98	11
Wreford	2944	-70	119	2944	-37	114	33	2944	-51	116	19
Council Grove Gr	3063	-189	389	3058	-151	388	38	3060	-167	378	22
Admire Grp.	3452	-578	32	3446	-539	32	39	3438	-545	32	33

EOC No. 1-31 Liberal
 NW SW NE Sec. 31
 T34S, R34W
 2874 KB

OXY USA, Inc.
 S/2 N/2 SW Sec. 30
 T34S, R33W
 2907 KB

EOC No. 2-25 Liberal
 S/2 S/2 NE Sec. 34,
 T34S, R34 W
 2893 KB

Pennsylvanian

Virgilian

Wabaunsee Grp.

Douglas Grp.

Heebner

Toronto

Missourian

Lansing Grp.

Kansas City Grp

Desmoinesian

Marmaton Grp.

Cherokee Grp.

Atokian

Morrowian

Lower Morrow

Top Pay Sand

Base Pay Sand

Chester

Orange Marker

Mississippian

Meramecian

Ste. Genevieve

St. Louis

Spergen

Total Depth

	Depth	Subsea	Interval	Depth	Subsea	Interval	H/L	Depth	Subsea	Interval	H/L
	3484	-610	832	3478	-571	856	39	3470	-577	862	33
	4316	-1442	18	4334	-1427	16	15	4332	-1439	18	3
	4334	-1460	80	4350	-1443	80	17	4350	-1457	70	3
	4414	-1540	346	4430	-1523	340	27	4420	-1527	340	13
	4760	-1886	418	4770	-1863	414	21	4760	-1867	416	19
	5178	-2304	172	5184	-2277	178	27	5176	-2283	182	21
	5350	-2476	124	5362	-2455	116	21	5358	-2465	114	11
	5474	-2600	373	5478	-2571	382	29	5472	-2579	398	21
	5847	-2973	249	5860	-2953	234	20	5870	-2977	240	-4
	6096	-3222	37	6094	-3187	28	35	6110	-3217	28	5
	6133	-3259	17	6122	-3215	28	44	6138	-3245	46	14
	6150	-3276	10	6152	-3245	30	31	6184	-3291	18	-15
	6160	-3286	326	6160	-3253	202	33	6202	-3309	208	-23
	6374	-3500	112	6362	-3455	124	45	6410	-3517	142	-17
	6486	-3612	104	6486	-3579	106	33	6552	-3659	44	-47
	6590	-3716	222	6592	-3685	127	31	6596	-3703	216	13
	6812	-3938	129	ND				6812	-3919	87	19
	6941	-4067		6719	-3812		222	6899	-4006		42

LITHOLOGIC SAMPLE DESCRIPTIONS

Ensign Operating Co.
No. 2-25 Liberal
S/2 S/2 NE Sec. 25, T34S, R34W
Seward County, Kansas

Sample examination commenced at 4252 feet and continued to total depth at 6900 feet. Samples were caught by crews on depth intervals and lagged by geologist. All depths reported herein are lagged depths. A 10 foot sample interval was used from 4252 feet to 6900 feet.

- 4252 - 4290 Shale (50%), black, gray. Limestone (30%), gray, grayish tan, mudstone, wackestone. Dolomite (10%), tan, light grayish brown, fine crystalline. Mud Gas 37 Units, 4260'-4276.
- 4290 - 4300 Shale (70%), black, gray. Limestone (25%), gray, grayish tan, mudstone, wackestone. Dolomite (5%), tan, light grayish brown, fine crystalline.
- 4300 - 4312 Shale (75%), black, gray. Limestone (25%), gray, grayish tan, mudstone, wackestone. Dolomite (trace), tan, light grayish brown, fine crystalline.
- 4312 - 4322 Shale (85%), black, gray. Limestone (15%), gray, grayish tan, wackestone, some packstone. Mud Gas 55 Units, 4316'-4321'.
- 4322 - 4328 Limestone (75%), light gray, grayish tan, wackestone, mudstone. Shale (25%), black, gray.
- Heebner 4330' -1437' Log 4332' -1439'**
- 4328 - 4342 Shale (75%), black, very dark brown. Limestone (15%), gray, grayish brown, mudstone. Limestone (10%), light gray, grayish tan, buff, wackestone. Mud Gas 35 Units, 4333'-4343'.
- 4342 - 4348 Shale (70%), black, very dark brown. Limestone (30%), gray, grayish tan, wackestone, mudstone.
- Toronto 4350' -1457' Log 4350' -1457'**
- 4348 - 4354 Limestone (95%), buff, wackestone, packstone, some oolitic packstone with oomoldic porosity, some crystalline sparry calcite. Shale (5%), black, gray.
- 4354 - 4364 Limestone (95%), buff, wackestone, packstone, some oolitic packstone, some with oomoldic porosity, some vuggy porosity. Shale, (trace-5%), black, gray.
- 4364 - 4378 Limestone (100%), buff, wackestone, packstone, some oolitic packstone, some with oomoldic porosity, vuggy porosity. Shale (trace), black, gray.

- 4378 - 4384 Limestone (95%), grayish tan, gray, wackestone, some packstone. Shale (5%), gray, black.
- 4384 - 4391 Limestone (80%), tan, grayish tan, wackestone, some packstone, mudstone. Shale (20%), gray, black.
- 4391 - 4412 Limestone (75%), tan, grayish tan, packstone, wackestone, some vuggy porosity. Shale (25%), gray, black.
- 4412 - 4418 Limestone (100%), tan, grayish tan, packstone, wackestone, vuggy porosity. Shale (trace), gray, black.
- Lansing 4420'-1527' Log 4420' -1527'**
- 4418 - 4426 Limestone (100%), tan, grayish tan, packstone, wackestone, vuggy porosity. Shale (trace), gray, black.
- 4426 - 4442 Limestone (90%), gray, grayish tan, wackestone. Shale (10%), gray, black.
- 4442 - 4450 Limestone (95%), gray, grayish tan, wackestone, fossiliferous. Shale (5%), gray, black.
- 4450 - 4456 Limestone (95%), gray, grayish tan, wackestone, mudstone, fossiliferous. Shale (5%), gray, black.
- 4456 - 4466 Limestone (95%), gray, grayish tan, tan, wackestone, mudstone, fossiliferous. Shale (5%), gray, black.
- 4466 - 4480 Limestone (80%), tan, gray, grayish tan, wackestone, mudstone, some pelletoidal packstone with dark gray-black pellets. Dolomite (15%), tan, fine crystalline. Shale (5%), black, gray. Chert (trace); white, tan, gray.
- 4480 - 4490 Limestone (90%), gray, mudstone, some wackestone. Shale (10%), gray, black.
- 4490 - 4500 Limestone (90%), gray, light gray, mudstone, wackestone. Shale (10%), gray, black.
- 4500 - 4510 Limestone (90%), gray, light gray, mudstone, wackestone. Shale (10%), gray, black. Chert (trace), light gray, tan.
- 4510 - 4515 Limestone (90%), gray, light gray, mudstone, wackestone. Shale (10%), gray, black. Chert (trace), light gray, tan.
- 4515 - 4524 Dolomite (70%), gray, light gray, fine crystalline calcareous. Limestone (20%), gray, light gray, mudstone, some wackestone. Shale (10%), gray, black.
- 4524 - 4541 Dolomite (70%), gray, light gray, fine crystalline, calcareous. Limestone (20%), gray, light gray, mudstone, some wackestone. Shale (10%), gray, black. Questionable sample.

- 4541 - 4551 Dolomite (70%), gray, light gray, fine crystalline, calcareous. Limestone (20%), gray, light gray, mudstone, some wackestone. Shale (10%), gray, black. Questionable sample caught at 2:00 A.M.
- 4551 - 4561 Limestone (70%), gray, light gray, mudstone, some wackestone. Shale (15%), gray, black. Dolomite (15%), gray, light gray, fine crystalline, calcareous.
- 4561 - 4571 Limestone (60%), gray, light gray, mudstone, some wackestone. Shale (25%), gray, black. Dolomite (15%), gray, light gray, fine crystalline.
- 4571 - 4576 Shale (55%), black, gray. Limestone (40%), gray, grayish tan, mudstone, some wackestone, some dark brown lime mudstone. Dolomite (5%), gray, light gray, fine crystalline.
- 4576 - 4584 Shale (50%), black, gray. Limestone (50%), gray, grayish tan, mudstone, some wackestone. Chert (trace), dark brown.
- 4584 - 4590 Limestone (65%), gray, grayish tan, mudstone wackestone, trace vuggy porosity. Shale (35%), black, gray. Chert (trace), dark brown.
- 4590 - 4609 Limestone (80%), tan, grayish tan, wackestone, packstone, some mudstone, trace vuggy porosity. Shale (20%), gray, black.
- 4609 - 4622 Limestone (80%), tan, grayish tan, wackestone, some packstone, mudstone, trace vuggy porosity. Shale (20%), gray, black.
- 4622 - 4627 Limestone (95%), light grayish tan, mudstone, wackestone. Shale (5%), gray, black.
- 4627 - 4632 Limestone (100%), light gray, light grayish tan, wackestone, mudstone. Shale (trace), gray, black.
- 4632 - 4638 Limestone (100%), light gray, light grayish tan, wackestone, mudstone. Shale (trace), gray, black.
- 4638 - 4644 Limestone (95%), light gray, light grayish tan, wackestone, mudstone. Shale (5%), black, gray. Sample does match drill time.
- 4644 - 4664 Limestone (95%), light gray, light grayish tan, wackestone, mudstone. Shale (5%), black, gray. Questionable sample.
- 4664 - 4676 Limestone (100%), light gray, light grayish tan, wackestone, mudstone. Shale (trace), gray, black.
- 4676 - 4696 Limestone (95%), tan, light grayish tan, wackestone, packstone, some mudstone. Shale (5%), gray, black.
- 4696 - 4704 Limestone (90%), tan, grayish tan, gray, wackestone, mudstone. Shale (10%), gray, black. Chert (trace), gray, brown.
- 4704 - 4714 Limestone (75%), tan, grayish tan, gray, wackestone, mudstone. Shale (25%), gray, black. Chert (trace), gray, tan.

- 4714 - 4725 Limestone (55%), tan, grayish tan, packstone, wackestone, good vuggy porosity. Dolomite (40%), tan, fine crystalline, good vuggy porosity. Chert (trace-5%), gray, brown, tan, Shale (trace-5%), black, gray.
- 4725 - 4732 Limestone (90%), buff, tan, wackestone, packstone. Shale (10%), gray, black. Very small amount of cuttings in sample sack which consists mostly of lost circulation material. This is the first sample after a bore hole deviation survey and rig repairs. Questionable sample.
- 4732 - 4740 No Sample.
- 4740 - 4746 Limestone (95%), buff, tan, wackestone, some packstone, some vuggy porosity. Shale (5%), gray, black, green.
- 4746 - 4748 Limestone (85%), buff, tan, wackestone, some packstone, some vuggy porosity. Shale (15%), black, gray, green.
- 4748 - 4754 Limestone (80%), tan, grayish tan, wackestone, packstone, trace oolitic packstone with oomoldic porosity. Shale (20%), gray, black, green. Sample is 10% red shale cavings.
- Kansas City 4763' -1870' Log 4760' -1867'**
- 4754 - 4766 Limestone (95%), tan, grayish tan, oolitic packstone with oomoldic porosity, packstone, wackestone. Shale (5%), gray, black.
- 4766 - 4790 Limestone (90%), tan, grayish tan, wackestone, packstone, some oolitic packstone with oomoldic porosity. Shale (10%), gray, black.
- 4790 - 4798 Limestone (90%), buff, tan, wackestone, packstone, some oolitic packstone with oomoldic porosity, some vuggy porosity. Shale (10%), gray, black.
- 4798 - 4808 Limestone (95%), buff, tan, wackestone, packstone, some vuggy porosity. Shale (5%), gray, black.
- 4808 - 4820 Limestone (85%), tan, buff, light brown, wackestone, mudstone, some vuggy porosity. Shale (5%), gray, black. Dolomite (10%), tan, fine crystalline.
- 4820 - 4836 Limestone (80%), tan, buff, light grayish tan, wackestone, mudstone. Shale (5%), gray, black. Dolomite (15%), tan, gray, fine crystalline.
- 4836 - 4844 Limestone (95%), grayish tan, gray, tan, mudstone, wackestone. Shale (5%), gray, black.
- 4844 - 4851 Limestone (90%), grayish tan, gray, tan, mudstone, wackestone. Shale (10%), gray, black.
- 4851 - 4858 Limestone (90%), buff, tan, grayish tan, mudstone, wackestone. Shale (10%), gray, black.
- 4858 - 4864 Limestone buff, tan, grayish tan, mudstone, wackestone, some oolitic packstone. Shale (15%), gray, black, dark green. Chert (trace), gray.

- 4864 - 4872 Limestone (90%), buff, tan, grayish tan, wackestone, mudstone. Shale (10%), gray, black. Dolomite (trace), tan, fine crystalline.
- 4872 - 4880 Limestone (90%), buff, tan, wackestone, mudstone, some vuggy porosity. Shale (10%), gray, black. Dolomite (trace), tan, fine crystalline.
- 4880 - 4888 Limestone (100%), very light gray, wackestone, packstone, some vuggy and pin point porosity. Shale (trace), gray, black.
- 4888 - 4899 Limestone (100%), very light gray, wackestone, packstone, some vuggy and pin point porosity. Shale (trace), gray, black. Questionable 4:00 A.M. sample.
- 4899 - 4910 Limestone (100%), very light gray, wackestone, packstone, some vuggy and pin point porosity. Shale (trace), gray, black. Questionable sample.
- 4910 - 4926 Limestone (100%), very light gray, wackestone, trace oolitic packstone, some vuggy and oomoldic porosity. Shale (trace), gray.
- 4926 - 4942 Limestone (100%), very light gray, wackestone, mudstone. Shale (trace), gray, black.
- 4942 - 4951 Limestone (95%), light gray, grayish tan, mudstone, some wackestone. Shale (5%), black, gray.
- 4951 - 4957 Limestone (90%), gray, light gray, grayish tan, mudstone, some wackestone. Shale (10%), gray, black.
- 4957 - 4961 Limestone (90%), gray, light gray, grayish tan, mudstone, wackestone. Shale (10%), gray, black.
- 4961 - 4975 Limestone (100%), tan, grayish tan, wackestone, packstone, fair vuggy porosity. Shale (trace), gray, black.
- 4975 - 4985 Limestone (100%) light grayish tan, tan, light gray, wackestone, some packstone, trace vuggy porosity. Shale (trace), gray, black.
- 4985 - 4994 Limestone (100%), light grayish tan, tan, light gray, wackestone, some packstone, trace vuggy porosity. Shale (trace), gray, black.
- 4994 - 5004 Limestone (100%), light tan, grayish tan, wackestone, some packstone, mudstone, some vuggy porosity. Shale (trace), gray.
- 5004 - 5014 Limestone (100%), tan, light grayish tan, packstone, wackestone, oolitic packstone with oomoldic porosity. Shale (trace), gray.
- 5014 - 5026 Limestone (100%), tan, light grayish tan, packstone, wackestone, oolitic packstone with oomoldic porosity, trace brown lime mudstone. Shale (trace), gray.
- 5026 - 5036 Limestone (90%), grayish tan, light gray, wackestone, mudstone, trace oolitic packstone. Shale (10%), gray, black.

- 5036 - 5044 Limestone (100%), dark grayish tan, gray, mudstone, wackestone. Shale (trace), gray, black.
- 5044 - 5052 Limestone (100%), dark grayish tan, gray, brown, mudstone, some wackestone. Shale (trace), gray, black.
- 5052 - 5062 Limestone (95%), buff, light gray, wackestone, packstone, mudstone. Shale (5%), gray, black.
- 5062 - 5072 Limestone (100%), light gray, grayish tan, mudstone, wackestone. Shale (trace), gray, black.
- 5072 - 5084 Limestone (100%), light gray, grayish tan, mudstone, wackestone. Shale (trace), gray, black.
- 5084 - 5094 Limestone (90%), light gray, grayish tan, mudstone, wackestone. Shale (10%), gray, black.
- 5094 - 5106 Limestone (90%), light gray, grayish tan, mudstone, wackestone. Shale (10%), gray, black.
- 5106 - 5116 Limestone (80%), light gray, grayish tan, mudstone, wackestone. Shale (20%), gray, black.
- 5116 - 5128 Limestone (65%), gray, grayish tan, mudstone, wackestone. Shale (35%), gray, black.
- 5128 - 5138 Limestone (90%), gray, grayish tan, mudstone, wackestone. Shale (10%), black, gray.
- 5138 - 5148 Limestone (95%), gray, grayish tan, mudstone, wackestone. Shale (5%), gray, black.
- 5148 - 5160 Limestone (95%), gray, grayish tan, mudstone, wackestone. Shale (5%), black, gray.
- 5160 - 5167 Limestone (95%), gray, grayish tan, mudstone, wackestone. Shale (5%), black, gray.
- 5167 - 5176 Limestone (90%), gray, grayish tan, mudstone, wackestone. Shale (10%), gray, black.
- Marmaton 5181' -2288' Log 5176' -2283'**
- 5176 - 5186 Limestone (90%), gray, grayish tan, brown, mudstone, wackestone. Shale (10%), gray, black.

- 5186 - 5196 Limestone (90%), tan, gray, grayish tan, mudstone, wackestone. Shale (10%), gray, black.
- 5196 - 5204 Limestone (100%), light grayish tan, mudstone. Shale (trace), gray, black.
- 5204 - 5209 Limestone (100%), light gray, light grayish tan, mudstone, some wackestone. Shale (trace), black.
- 5209 - 5218 Limestone (100%), light grayish tan, wackestone, mudstone, fossiliferous, trace tan oolitic packstone with oomoldic porosity. Shale (trace), gray.
- 5218 - 5227 Limestone (70%), light gray, grayish tan, wackestone, mudstone, trace tan oolitic packstone with oomoldic porosity. Shale (30%), gray, black.
- 5227 - 5244 Limestone (80%), light gray, grayish tan, wackestone, mudstone, some tan oolitic packstone with oomoldic porosity. Shale (20%), black, gray.
- 5244 - 5256 Limestone (65%), light gray, grayish tan, wackestone, mudstone, trace tan oolitic packstone with oomoldic porosity. Shale (35%), black, gray, green. Chert (trace), white, tan, light gray. Red shale cavings make up 10% of sample.
- 5256 - 5268 Shale (60%), black, gray. Limestone (40%), gray, grayish tan, mudstone, some wackestone.
- 5268 - 5278 Shale (50%), black, gray. Limestone (50%), gray, grayish tan, mudstone, some wackestone. Poor sample quality.
- 5278 - 5286 Limestone (80%), light grayish tan, brown, tan, wackestone, mudstone. Shale (20%), black, gray. Chert (trace), white, tan.
- 5286 - 5298 Limestone (95%), light gray, light grayish tan, packstone, wackestone, vuggy porosity. Shale (5%), black, gray. Chert (trace), gray, white.
- 5298 - 5308 Limestone (90%), light gray, light grayish tan, mudstone, some wackestone, packstone. Shale (10%), black, gray. Chert (trace), gray.
- 5308 - 5318 Limestone (90%), light gray, grayish tan, mudstone, some wackestone. Shale (10%), gray, black. Chert (trace), gray, brown.
- 5318 - 5329 Limestone (90%), light gray, grayish tan, mudstone, some wackestones. Shale (10%), gray, black. Chert (trace), gray, brown.
- 5329 - 5339 Limestone (100%), light gray, light grayish tan, wackestone, coarse grained packstone. Shale (trace), black, gray.
- 5339 - 5348 Limestone (100%), light gray, light grayish tan, wackestone, medium grained packstone. Shale (trace), black.
- 5348 - 5354 Limestone (95%), light gray, light grayish tan, wackestone, mudstone, some packstone. Shale (5%), black.

Cherokee 5360' 2467' Log 5358' -2465'

- 5354 - 5362 Limestone (100%), light gray, light grayish tan, wackestone, mudstone. Shale (trace), black, gray. Chert (trace), gray.
- 5362 - 5376 Limestone (100%), light gray, light grayish tan, wackestone, mudstone. Shale (trace), black, gray. Mud Gas 9 Units, 5370'-5376'.
- 5376-5383 Limestone (95%), light gray, light grayish tan, wackestone, mudstone. Shale (5%), black, gray.
- 5383 - 5392 Limestone (95%), light gray, light grayish tan, wackestone, mudstone. Shale (5%), black, gray.
- 5392 - 5408 Limestone (90%), light gray, light grayish tan, wackestone, mudstone. Shale (10%), black, gray. Mud Gas 28 Units, 5403'-5406'.
- 5408 - 5422 Limestone (70%), light gray, light grayish tan, mudstone, wackestone. Shale (30%), black, gray.
- 5422 - 5438 Limestone (50%), brown, grayish brown, mudstone, some wackestone. Shale (50%), black, gray. Mud Gas 9 Units, 5428'-5430'.
- 5438 - 5448 Shale (60%), black, gray, greenish gray. Limestone (40%), grayish tan, tan, mudstone, wackestone.
- 5448 - 5458 Shale (80%), gray, greenish gray, black. Limestone (20%), tan, buff, light gray, wackestone, mudstone. Sample caught after bit trip.
- 5458 - 5466 Limestone (75%), grayish tan, gray, dark gray, mudstone, wackestone. Shale (25%), gray, black, green. Chert (trace), gray.
- Atoka 5475' -2582' Log 5472' -2579'**
- 5466 - 5476 Limestone (80%), tan, light gray, grayish tan, mudstone, wackestone, trace tan oolitic packstone. Shale (20%), gray, green, black. Mud Gas 25 Units, 5475'-5478'.
- 5476 - 5486 Limestone (90%), gray, grayish tan, mudstone, dolomitic. Shale (10%), gray, black. Mud Gas 7 Units, 5481'-5483'.
- 5486 - 5496 Limestone (100%), gray, grayish brown, dark brown, mudstone, dolomitic. Shale (trace), gray, black.
- 5496 - 5508 Limestone (70%), gray, grayish brown, mudstone, dolomitic. Shale (30%). gray, black.
- 5508 - 5517 Limestone (60%), gray, grayish brown, dark brown, mudstone, dolomitic. Shale (40%), gray, black.
- 5517 - 5527 Limestone (60%), gray, grayish brown, dark brown, dolomitic. Shale (40%), gray, black.

- 5527 - 5536 Limestone (85%), dark gray, dark brown, mudstone, dolomitic. Shale (15%), gray, black.
- 5536 - 5544 Limestone (75%), dark gray, dark brown, mudstone, dolomitic. Shale (25%), gray, black.
- 5544 - 5556 Limestone (80%), dark gray, dark brown, mudstone, dolomitic. Shale (20%), gray, black.
- 5556 - 5561 Shale (65%), gray, black. Limestone (35%), dark gray, dark brown, mudstone, dolomitic.
- 5561 - 5576 Limestone (50%), dark gray, dark brown, brown, some grayish tan, mudstone. Shale (50%), black, gray. Mud Gas 55 Units, 5568'-5580'.
- 5576 - 5586 Shale (65%), black, dark gray. Limestone (35%), dark gray, dark brown, brown, some grayish tan, mudstone.
- 5586 - 5596 Shale (75%), black, gray. Limestone (25%), dark gray, dark brown, mudstone. Mud Gas 23 Units, 5591'-5594'.
- 5596 - 5604 Limestone (50%), dark gray, dark brown, mudstone. Limestone (20%), tan, grayish tan, mudstone. Shale (30%), black, gray, green. Mud Gas 10 Units 5597'-5599'.
- 5604 - 5612 Shale (80%), black, gray, green, greenish gray. Limestone (20%), dark gray, dark brown, mudstone. Limestone (10%), tan, grayish tan, mudstone.
- 5612 - 5622 Shale (80%), black, gray, greenish gray. Limestone (15%), dark gray, dark brown, mudstone. Limestone (5%), tan, grayish tan, mudstone.
- 5622 - 5634 Shale (85%), black, gray. Limestone (15%), dark gray, dark brown, mudstone. Mud Gas 10 Units, 5630'-5632'.
- 5634 - 5644 Shale (60%). black, gray. Limestone (40%). dark brown, dark gray, mudstone.
- 5644 - 5656 Shale (85%), black, gray. Limestone (15%), dark brown, dark gray, mudstone.
- 5656 - 5666 Shale (75%), black, gray. Limestone (25%), dark brown, brown, dark gray, mudstone. Mud Gas 5 Units, 5656'-5658', 7 Units, 5660'-5662'.
- 5666 - 5674 Shale (70%), black, gray. Limestone (30%), dark brown, dark gray, mudstone.
- 5674 - 5684 Shale (65%), black, gray. Limestone (35%), dark brown, dark gray, mudstone.
- 5684 - 5694 Limestone (75%), brown, dark brown, dark gray, wackestone, mudstone. Shale (25%), black, gray. Mud Gas 21 Units, 5687'-5695'.
- 5694 - 5704 Limestone (50%), brown, dark brown, dark gray, wackestone, mudstone. Shale (50%), black, gray. Mud Gas 5 Units, 5696'-5698'.

- 5704 - 5711 Shale (80%), black, gray. Limestone (20%), brown, dark brown, dark gray, mudstone, some wackestone. Mud Gas 7 Units, 5708'-5712'.
- 5711 - 5718 Shale (90%), black, gray. Limestone(10%), dark brown, dark gray, brown, mudstone.
- 5718 - 5728 Limestone (65%), dark brown, brown, dark gray, mudstone. Shale (35%), black, gray. Mud Gas 50 Units, 5720'-5727'.
- 5728 - 5736 Shale (80%), black, gray. Limestone (20%), dark brown, brown, dark gray, mudstone.
- 5736 - 5748 Shale (95%), black, gray. Limestone (5%), dark brown, brown, dark gray, mudstone. Mud Gas 8 Units, 5743'-5746'.
- 5748 - 5758 Shale (50%), black, gray. Limestone (50%), dark brown, brown, dark gray, mudstone. Mud Gas 20 Units, 5753'-5763'.
- 5758 - 5768 Shale (60%), black, gray. Limestone (40%), dark brown, brown, dark gray, mudstone.
- 5768 - 5782 Limestone (70%), brown, dark brown, dark gray, mudstone, some wackestone. Shale (30%), black, gray. Mud Gas 22 Units, 5768'-5774', 45 Units, 5774'-5778', 16 Units, 5778'-5781'.
- 5782 - 5790 Limestone (65%), grayish tan, brown, dark brown, mudstone, some wackestone. Shale (35%), black, gray. Mud Gas 20 Units, 5783'-5785, 15 Units, 5786'-5788'.
- 5790 - 5796 Limestone (75%), dark brown, dark gray, some grayish tan, mudstone. Shale (25%), black, gray.
- 5796 - 5804 Shale (75%), black, gray. Limestone (25%), dark brown, dark gray, mudstone. Mud Gas 18 Units, 5798'-5801', 20 Units, 5802'-5805'.
- 5804 - 5818 Shale (70%), black, gray. Limestone (30%), dark brown, dark gray, mudstone. Mud Gas 22 Units, 5807'-5810', 28 Units, 5811'-5813', 65 Units, 5813'-5818'.
- 5818 - 5832 Shale (50%), black, gray. Limestone (50%), dark brown, dark gray, gray, mudstone, wackestone. Mud Gas 20 Units, 5820'-5823'.
- 5832 - 5842 Limestone (30%), light gray, mudstone, wackestone. Limestone (50%), dark brown, dark gray, mudstone. Shale (20%), black, gray.
- 5842 - 5852 Limestone (80%), gray, dark gray, dark brown, mudstone. Shale (20%), black gray.
- 5852 - 5863 Limestone (80%), gray, dark gray, dark brown, mudstone. Shale (20%), black, gray. Mud Gas 5 Units, 5858'-5860'.
- 5863 - 5870 Limestone (90%), gray, dark gray, dark brown, mudstone. Dolomite (trace), light gray, fine crystalline. Shale (10%), black, gray. Mud Gas 30 Units, 5865'-5870'.

Morrow 5871' -2978' Log 5870' -2977'

- 5870 - 5877 Limestone (90%), gray, dark gray, dark brown, mudstone. Dolomite (trace), light gray, fine crystalline. Shale (10%), black, gray.
- 5877 - 5887 Limestone (70%), gray, dark gray, dark brown, mudstone, some wackestone. Dolomite (10%), light gray, fine crystalline. Shale (20%), black, gray, trace black shale with chlorite blebs. Mud Gas 31 Units, 5880'-5881', 10 Units, 5885'-5887'.
- 5887 - 5898 Shale (90%), black, gray, pyritic. Limestone (10%), gray, mudstone, wackestone.
- 5898 - 5908 Shale (95%), black, gray, pyritic. Limestone (5%), gray, mudstone, wackestone.
- 5908 - 5916 Shale (100%), black, gray, pyritic, trace light grayish tan bentonite. Limestone (trace), gray, mudstone.
- 5916 - 5926 Shale (100%), black, gray, pyritic. Limestone (trace), dark brown, gray, mudstone, wackestone.
- 5926 - 5940 Shale (100%), black, gray, pyritic. Limestone (trace), dark brown, gray, mudstone. Mud Gas 15 Units, 5936'-5940'.
- 5940 - 5954 Shale (100%), black, gray. Limestone (trace), dark brown, gray, mudstone.
- 5954 - 5962 Shale (100%), black, gray, pyritic. Limestone (trace), dark brown, mudstone.
- 5962 - 5972 Shale (100%), black, gray. Bentonite (trace), olive gray.
- 5972 - 5982 Shale (90%), black, gray, pyritic. Bentonite (10%), olive gray. Limestone (trace), dark brown, gray, mudstone. Mud Gas 15 Units, 5972'-5973'.
- 5982 - 5992 Shale (95%), black, gray, pyritic. Limestone (5%), gray, dark brown, wackestone, fossiliferous.
- 5992 - 6003 Shale (100%), black, gray, pyritic. Limestone (trace), gray, dark brown, wackestone, fossiliferous.
- 6003 - 6012 Shale (100%), black, gray, pyritic. Limestone (trace), gray, dark brown, wackestone, fossiliferous. Mud Gas 10 Units, 6006'-6008'.
- 6012 - 6020 Shale (100%), black, gray, pyritic. Limestone (trace), dark brown, wackestone, fossiliferous.
- 6020 - 6028 Shale (100%), black, gray, pyritic. Limestone (trace), dark brown, gray, wackestone, fossiliferous.
- 6028 - 6040 Shale (95%), black, gray, pyritic. Limestone (5%), dark brown, mudstone. Mud Gas 5 Units, 6032'-6035'.
- 6040 - 6056 Shale (100%), black, gray. Limestone (trace), dark gray, dark brown, mudstone.
- 6056 - 6068 Shale (100%), black, gray. Limestone (trace), dark gray, dark brown, mudstone.

- 6068 - 6078 Shale (100%), black, gray. Limestone (trace). dark gray, dark brown, mudstone.
- 6078 - 6084 Shale (100%), black, gray. Limestone (trace), dark brown, mudstone.
- 6084 - 6094 Shale (95%), black, gray. Limestone (5%), tan, brown, packstone, wackestone, mudstone.
- 6094 - 6108 Shale (75%), black, gray. Limestone (25%), tan, grayish brown, coarse grained packstone, trace sandy limestone, fossiliferous. Mud Gas 8 Units, 6097'-6099'.
- Lower Morrow 6110' -3217' Log 6110' -3217'**
- 6108 - 6118 Limestone (50%), tan, grayish tan, packstone, wackestone, fossiliferous, some glauconitic limestone. Shale (50%), black, gray. Sandstone (trace), white, light gray, fine-medium grained, chloritic, glauconitic. No oil show.
- 6118 - 6126 Limestone (35%), tan, grayish tan, packstone, wackestone, fossiliferous. Sandstone (15%), white, light gray, gray, fine-medium grained, chloritic, glauconitic. Shale (50%), black, gray.
- 6126 - 6134 Sandstone (30%), white, light gray, gray, fine grained, some medium grained, chloritic, glauconitic, some floating rounded quartz granules. No oil show. Limestone (20%), tan, grayish tan, packstone, wackestone, fossiliferous. Shale (50%), black, gray. Mud Gas 18 Units, 6127'-6130'.
- Lower Morrow Gas Sand 6139' -3246' Log 6138' -3245'**
- 6134 - 6142 Sandstone (80%), white, light gray, gray, fine-very fine grained, some rounded floating quartz granules, chloritic, glauconitic, some sandstone with intergranular porosity, dull yellow mineral fluorescence, no cut. Mud Gas 40 Units, 6138'-6142'. Shale (15%), black, gray. Limestone (5%), tan, grayish tan, packstone, wackestone, fossiliferous.
- 6142 - 6152 Sandstone (85%), white, light gray, gray, fine-very fine grained, some rounded floating quartz granules, chloritic, glauconitic, some sandstone with intergranular porosity, dull yellow mineral fluorescence, no cut. Mud Gas 50 Units, 6142'-6146', 38 Units, 6146'-6162'. Shale (15%), black, gray. Limestone (trace), tan, gray, grayish tan, packstone, wackestone, fossiliferous.
- 6152 - 6164 Sandstone (75%), white, light gray, gray, very fine-medium grained, with some floating rounded quartz granules, chloritic, glauconitic, some intergranular porosity, dull yellow mineral fluorescence, no cut. Mud Gas 38 Units, 6146'-6162'. Shale (25%), black, gray.
- 6164 - 6184 Sandstone (80%), white, light gray, very fine-medium grained with floating rounded quartz granules and limestone fossil fragments, chloritic, glauconitic, some intergranular porosity, dull yellow mineral fluorescence, no cut. Mud Gas 42 Units, 6162'-6166', 65 Units 6166'-6177', 75 Units, 6177'-6185'. Shale (20%), black, gray, trace light gray bentonite.

Base Lower Morrow Gas Sand 6186' -3293' Log 6184' -3291'

6184 - 6192 Limestone (80%), tan, grayish tan, coarse grained packstone, wackestone, sandy, fossiliferous. Shale (20%), gray, black. Sandstone (trace), white, light gray, fine-medium grained, glauconitic, chloritic. Mud Gas 75 Units, 6177'-6185'.

Chester 6204' -3311' Log 6202' -3309'

6192 - 6206 Limestone (80%), tan, brown, grayish tan, coarse grained packstone, wackestone, sandy, glauconitic, chloritic. Shale (15%), gray, black. Sandstone (5%), white, light gray, fine-medium grained, glauconitic, chloritic. Mud Gas 30 Units, 6192'-6194', 25 Units, 6195'-6197'.

6206 - 6214 Limestone (90%), tan, brown, grayish tan, coarse grained packstone, wackestone, glauconitic, fossiliferous. Shale (10%), black, gray. Sandstone (trace), white, light gray, fine grained glauconitic, chloritic. Mud Gas 35 Units, 6204'-6208', 20 Units, 6213'-6214'.

6214 - 6220 Limestone (95%), tan, brown, grayish tan, coarse grained packstone, wackestone, glauconitic, fossiliferous, some sandy limestone. Shale (5%), gray, black.

Drill-Stem Test No. 1 6138'-6220' Pennsylvanian Lower Morrow

Times: 30-60-45-135

I.O. Strong Blow, Bottom Of Bucket In 15 Seconds, Gas To Surface In 2 Minutes.

F.O. Very Strong Blow.

Initial Open Gas Flow:

Time in Minutes	Orifice PSI	Orifice Size	Flow Rate CFD
2	NM	1.5"	GTS
10	38	1.5"	3,036,000
15	45	1.5"	3,454,000
20	47	1.5"	3,573,000
25	50	1.5"	3,752,000
30	50	1.5"	3,752,000

Final Open Gas Flow:

Time in Minutes	Orifice PSI	Orifice Size	Flow Rate CFD
5	38	1.5"	3,036,000
10	40	1.5"	3,155,000
15	55	1.5"	4,051,000
20	58	1.5"	4,230,000
25	58	1.5"	4,230,000
30	58	1.5"	4,230,000
35	58	1.5"	4,230,000
40	58	1.5"	4,230,000
45	58	1.5"	4,230,000

Recovery: 6114' Gas In Drill Pipe.

Sampler: 20.7 Cu Ft Gas @ 850 psi

Hydrostatic Pressures 2962-2841 psi

Flow Pressures 525-665:665-988 psi

Shut-in Pressures 994-988 psi

Bottom Hole Temperature 139° F

- 6220 - 6225 Shale (70%) black, gray. Limestone (30%), tan, brown, grayish tan, coarse grained packstone, wackestone, fossiliferous. Trip sample.
- 6225 - 6237 Limestone (80%), tan, brown, grayish tan, coarse grained packstone, wackestone, fossiliferous, mineral fluorescence, no cut. Shale (20%) black, gray. Mud Gas 175 Units, 6230'-6243'. Note: The drilling mud was saturated with gas (600+ Units) after the DST. This gas show may be a recycle of the trip gas from the DST.
- 6237 - 6254 Limestone (70%), tan, brown, grayish tan, coarse grained packstone, wackestone, fossiliferous, mineral fluorescence, no cut. Dolomite (15%), tan, fine crystalline, sucrosic. Shale (15%), black, gray. Mud Gas 175 Units, 6230'-6243', 125 Units, 6243'-6252'. See note above.

- 6254 - 6272 Limestone (65%), tan, brown, grayish tan, coarse grained packstone, wackestone, fossiliferous. Shale (25%), black, gray. Dolomite (15%), tan, fine crystalline, sucrosic.
- 6272 - 6282 Limestone (90%) tan, brown, grayish tan, coarse grained packstone, wackestone, fossiliferous. Shale (10%), black, gray. Dolomite (trace), tan, fine crystalline, sucrosic.
- 6282 - 6290 Limestone (100%), tan, light grayish tan, coarse grained packstone, fossiliferous. Shale (trace), black, gray.
- 6290 - 6304 Limestone (80%), tan, light grayish tan, coarse grained packstone, fossiliferous. Shale (10%), black, gray. Limestone (10%), light gray, mudstone.
- 6304 - 6313 Limestone (80%), tan, light grayish tan, coarse grained packstone, fossiliferous. Shale (15%), black, gray. Limestone (5%), light gray, mudstone.
- 6313 - 6326 Shale (90%), gray, very calcareous, black, gray. Limestone (10%), tan, grayish tan, coarse grained packstone, fossiliferous.
- 6326 - 6332 Shale (80%), gray, very calcareous, some black plant residue, black, gray. Limestone (15%), tan, brown, grayish tan, coarse grained packstone, wackestone, fossiliferous. Limestone (5%), light gray, mudstone.
- 6332 - 6344 Shale (50%), gray, light gray, very calcareous. Shale (30%), black. Limestone (20%), tan, light gray, packstone, wackestone, fossiliferous.
- 6344 - 6352 Shale (65%), gray, light gray, very calcareous, pyritic. Shale (20%), black. Limestone (15%), tan, grayish tan, packstone, wackestone, fossiliferous.
- 6352 - 6364 Shale (60%), gray, light gray, very calcareous. Shale (30%), black. Limestone (10%), gray, tan, packstone, wackestone, fossiliferous.
- 6364 - 6374 Shale (80%), gray, light gray, very calcareous, pyritic. Shale (20%), black.
- 6374 - 6384 Shale (80%), gray, light gray, very calcareous, pyritic. Shale (15%), black. Limestone (5%), tan, grayish tan, wackestone, packstone, fossiliferous. Sandstone (trace), dark gray, fine grained, chloritic, glauconitic.
- 6384 - 6392 Shale (90%), gray, light gray, very calcareous, pyritic. Shale (10%), black.
- 6392 - 6398 Shale (95%), gray, light gray, calcareous, pyritic. Shale (5%), black.
- 6398 - 6408 Shale (70%) gray, light gray, calcareous, pyritic, trace shale with plant fragment impressions. Shale (25%), black. Limestone (5%), tan, grayish tan, packstone, wackestone, fossiliferous.

Orange Marker 6413' -3520' Log 6410' -3517'

- 6408 - 6420 Limestone (60%), buff, tan, mudstone. Dolomite (10%), light gray, fine crystalline. Shale (trace), black. Shale (30%), gray, light gray, calcareous.

- 6420 - 6432 Shale (90%), gray, light gray, calcareous. Limestone (5%), tan, grayish tan, mudstone. Shale (5%), black.
- 6432 - 6442 Shale (85%), gray, light gray, calcareous. Limestone (5%), tan, grayish tan, mudstone. Shale (15%), black.
- 6642 - 6452 Shale (80%), gray, light gray, calcareous, pyritic. Shale (20%), black.
- 6452 - 6462 Shale (90%), gray, light gray, calcareous, pyritic. Shale (10%), black.
- 6462 - 6472 Shale (80%), gray, light gray, calcareous, pyritic. Shale (20%), black.
- 6472 - 6482 Shale (45%), gray, light gray, calcareous. Limestone (50%), light gray, mudstone. Shale (5%), black.
- 6482 - 6490 Shale (50%), gray, light gray, calcareous. Limestone (40%), light gray, mudstone. Shale (10%), black.
- 6490 - 6502 Shale (30%), gray, light gray, calcareous. Limestone (30%), light gray, mudstone. Limestone (30%), gray, grayish tan, mudstone, wackestone. Shale (10%), black.
- 6502 - 6512 Shale (85%), gray, light gray, calcareous. Limestone (10%), light gray, mudstone. Shale (5%), black.
- 6512 - 6524 Shale (95%), gray, light gray, calcareous. Limestone (trace), light gray, mudstone. Shale (5%), black.
- 6524 - 6530 Shale (70%), gray, light gray, calcareous. Limestone (trace), light gray, mudstone. Shale (30%), black.
- 6530 - 6538 Shale (90%), gray, light gray, calcareous. Limestone (trace), light gray, mudstone. Shale (10%), black.
- 6538 - 6550 Shale (80%), gray, light gray, calcareous. Limestone (trace), light gray, mudstone. Shale (20%), black.
- St. Genevieve 6558' -3665' Log 6552' -3659'**
- 6550 - 6566 Limestone (35%), white, fine-very fine grained packstone. Shale (35%), gray, light gray, calcareous. Shale (30%), black.

- 6566 - 6576 Limestone (40%), white, buff, fine-very fine grained packstone. Shale (20%), light gray, calcareous. Shale (40%), black. Sample is 60% black, gray shale cavings.
- 6576 - 6583 Limestone (35%), white, buff, fine-very fine grained packstone. Shale (65%), black, gray. Sample is 65% black, gray shale cavings.
- 6583 - 6590 Limestone (20%), white, buff, fine -very fine grained packstone. Limestone (20%), buff, wackestone, packstone. Chert (5%), orange, white, light gray. Shale (55%), gray, black. Sample is 55% black, gray shale cavings.
- St. Louis 6595' -3702' Log 6596' -3703'**
- 6590 - 6596 Limestone (20%), buff, white, wackestone, packstone. Chert (trace), tan, white. Shale (80%), black. Sample is 80% black shale cavings.
- 6596 - 6605 Limestone (10%), buff, white, wackestone, packstone. Chert (trace), gray, white. Shale (90%), black, gray. Sample is 90% black, gray shale cavings.
- 6605 - 6618 Limestone (15%), buff, tan, wackestone, packstone, trace oolitic packstone. Chert (trace), light gray. Shale (85%), black, gray. Sample is 85% black, gray shale cavings.
- 6618 - 6632 Limestone (10%), buff, tan, wackestone, packstone, oolitic packstone. Chert (trace), light gray. Shale (90%), black, light gray. Sample is 90% black, light gray shale cavings.
- 6632 - 6640 Limestone (5%), buff, tan, wackestone, packstone. Shale (95%), black, gray. Sample is 95% black, gray shale cavings.
- 6640 - 6648 Limestone (10%), buff, tan, wackestone, packstone. Shale (90%), black, gray. Sample is 90% black, gray, shale cavings.
- 6648 - 6656 Limestone (5%), buff, tan, wackestone, packstone, oolitic packstone. Shale (95%), black, gray. Sample is 95% black, gray shale cavings.
- 6656 - 6666 Limestone (trace), buff, tan, wackestone, packstone, oolitic packstone. Shale (100%), black, gray. Sample is 100% black, gray shale cavings.
- 6666 - 6678 Limestone (15%), buff, tan, gray, packstone, oolitic packstone, wackestone. Shale (85%), black, gray. Sample is 85% black, gray shale cavings.

- 6678 - 6690 Limestone (20%), buff, tan, gray, wackestone, packstone. Shale (80%), black, gray. Sample is 80% black, gray shale cavings.
- 6690 - 6700 Limestone (20%), buff, tan, gray, wackestone, packstone, oolitic packstone. Shale (80%), black, gray. Sample is 80% black, gray shale cavings.
- 6700 - 6711 Limestone (30%), buff, tan, wackestone, packstone, some oolitic packstone. Shale (70%), black, gray. Sample is 70% black, gray shale cavings.
- 6711 - 6721 Limestone (20%), buff, tan, wackestone, packstone. Shale (80%), black, gray. Sample is 80% black, gray shale cavings.
- 6721 - 6730 Limestone (30%), buff, tan, wackestone, packstone some oolitic packstone. Shale (70%), black, gray. Sample is 70% black, gray shale cavings.
- 6730 - 6740 Limestone (40%), tan, buff, wackestone, packstone. Shale (60%), black, gray. Sample is 60% black, gray shale cavings.
- 6740 - 6750 Limestone (30%), tan, buff, wackestone, packstone. Shale (70%), black, gray. Sample is 70% black, gray shale cavings.
- 6750 - 6760 Limestone (65%), tan, buff, wackestone, packstone. Chert (5%), white, light gray, tan. Shale (30%), black, gray. Sample is 30% black, gray, shale cavings.
- 6760 - 6768 Limestone (45%), tan, buff, wackestone, packstone. Chert (5%), white, tan, light gray. Shale (50%), black, gray. Sample is 50% black, gray shale cavings.
- 6768 - 6780 Limestone (40%), tan, buff, wackestone, packstone. Chert (trace-5%), white, tan, light gray. Shale (60%), black, gray. Sample is 60% black, gray shale cavings.
- 6780 - 6792 Limestone (90%), tan, buff, wackestone, packstone. Chert (trace-5%), white, gray. Shale (5%), black, gray.
- 6792 - 6799 Limestone (70%), tan, buff, wackestone, packstone. Chert (trace), white, gray, tan. Shale (30%), black, gray. Sample is 30% black, gray shale cavings.
- 6799 - 6808 Limestone (70%), tan, grayish tan, wackestone, packstone. Shale (30%), black, gray. Sample is 30% black, gray shale cavings.

Spergen 6814' -3921' Log 6812' -3919'

- 6808 - 6818 Limestone (60%), tan, grayish tan, wackestone, packstone. Shale (40%), black, gray. Sample is 40% black, gray shale cavings. Mud Gas 10 Units, 6816'-6822'.
- 6818 - 6828 Limestone (60%), tan, grayish tan, wackestone, packstone. Dolomite (20%), tan, fine crystalline. Shale (20%), black, gray. Sample is 20% black, gray shale cavings. Mud Gas 10 Units, 6816'-6822'.
- 6828 - 6834 Limestone (40%), tan, grayish tan, wackestone, packstone. Dolomite (10%), tan, fine crystalline. Shale (50%), black, gray. Sample is 50% black, gray shale cavings.
- 6834 - 6844 Limestone (30%), tan, grayish tan, wackestone, packstone. Dolomite (20%), tan, fine crystalline. Chert (5%), gray, tan, white. Shale (45%), black, gray. Sample is 45% black, gray shale cavings. Mud Gas 7 Units, 6835'-6840'.
- 6844 - 6851 Limestone (35%), tan, grayish tan, wackestone, packstone. Dolomite (35%), tan, fine crystalline. Chert (10%), tan, gray, white. Shale (20%), black, gray. Sample is 20% black, gray shale cavings.
- 6851 - 6862 Limestone (30%), tan, grayish tan, wackestone, packstone. Dolomite (20%), tan, fine crystalline. Chert (trace), tan, white, light gray. Shale (50%), black, gray. Sample is 50% black, gray shale cavings. Mud Gas 10 Units, 6853'-6863'.
- 6862 - 6872 Limestone (10%), tan, grayish tan, wackestone, packstone. Dolomite (30%), tan, fine crystalline, sucrosic. Chert (trace), tan, gray, white. Shale (60%), black, gray. Sample is 60% black, gray shale cavings.
- 6872 - 6884 Dolomite (50%), tan, light brown, fine crystalline, sucrosic, vuggy porosity. Limestone (10%), tan, grayish tan, wackestone, packstone. Chert (trace), tan, white, gray. Shale (40%), black, gray. Sample is 40% black, gray, shale cavings.
- 6884 - 6900 Dolomite (50%), tan, light brown, fine crystalline, sucrosic, vuggy porosity. Limestone (15%), tan, wackestone, packstone, some oolitic packstone with oomoldic porosity, dolomitized. Chert (trace), white, tan. Shale (35%), black, gray. Sample is 35% black, gray shale cavings.

Total Depth Driller 6900' -4006'

Total Depth Logger 6899' -4007'

SUMMARY

The Ensign Operating Co., No. 2-25 Liberal S/2 S/2 NE Sec. 25, T34S, R34W, Seward County, Kansas was a 6900 foot well to evaluate the Sally Southwest Prospect. The main objective of the well was to evaluate the Pennsylvanian Lower Morrow sandstones. The Chester limestones, the Lower Chester sandstones and the Mississippian Ste. Genevieve, St. Louis and Spergen were secondary objectives. Another objective was to evaluate any significant oil and gas shows encountered while drilling to total depth.

The Lower Morrow sandstones were present with subdued mud gas shows. There were no oil shows in the lithologic samples. A drill-stem test of these sandstones recovered 4.320 MMCF/D gas with a bottom hole shut-in pressure of 988 psi. These flow and pressure data indicate that the sandstones are not depleted by near by wells in the Salley Southwest field.

The quality of the lithologic samples was generally good for most of the interval of the well where samples were collected. There were several lapses by the sample catchers where no samples or bagged samples were recorded. The Morrow shale sloughed after being drilled. When the Mississippian limestones were drilled this sloughing resulted in samples that contained mostly black shale cavings. This problem is also present when the Lower Morrow and Chester are being drilled but not as easy to recognize due to the presence of similar looking black shales in these intervals. This problem is common in most wells drilled in this area.

After an evaluation of the lithologic samples, drill-stem test data and bore hole geophysical logs, it was determined that the well was capable of gas production from the Pennsylvanian Lower Morrow sandstones. Pipe was set to further evaluate these sandstones for commercial gas production.

PIPE TALLY												
Ensign Operating Co.												
No. 2-25 Liberal, S/2 S/2 NE Sec. 25 T34S, R34W, Seward Co., Kansas												
	Total	No. of	Length	Total	No. of	Length	Total	No. of	Length	Total	No. of	
	Feet	Stands	Joint	Feet	Stands	Joint	Feet	Stands	Joint	Feet	Stands	
Kelly	38.42		-0.86	851.58	14	31.81	1818.88		31.49	2755.07	45	
Sub	1.85		31.55	883.13		30.23	1849.11	30	31.20	2786.27		
Sub	3.02		31.17	914.30	15	30.76	1879.87		30.45	2816.72	46	
Reamer			31.20	945.50		31.07	1910.94	31	31.60	2848.32		
Drill Collar	43.29		31.93	977.43	16	31.78	1942.72		31.72	2880.04	47	
	29.78		31.32	1008.75		31.09	1973.81	32	31.28	2911.32		
	29.75	102.82	30.72	1039.47	17	31.50	2005.31		31.32	2942.64	48	
	1.84	104.66	31.29	1070.76		31.60	2036.91	33	31.58	2974.22		
	31.25	135.91	31.47	1102.23	18	30.85	2067.76		31.92	3006.14	49	
	31.15	167.06	31.37	1133.60		31.17	2098.93	34	31.52	3037.66		
	30.84	197.90	31.74	1165.34	19	31.36	2130.29		31.09	3068.75	50	
	31.16	229.06	31.45	1196.79		31.51	2161.80	35	31.22	3099.97		
	30.93	259.99	31.81	1228.60	20	31.36	2193.16		31.36	3131.33	51	
	31.24	291.23	30.75	1259.35		-0.13	2193.03	36	31.62	3162.95		
	30.83	322.06	31.38	1290.73	21	30.49	2223.52		30.67	3193.62	52	
	31.28	353.34	31.99	1322.72		31.23	2254.75	37	31.73	3225.35		
	31.25	384.59	30.87	1353.59	22	31.56	2286.31		31.32	3256.67	53	
	31.26	415.85	31.43	1385.02		31.10	2317.41	38	31.81	3288.48		
	31.24	447.09	30.73	1415.75	23	31.57	2348.98		30.45	3318.93	54	
	31.25	478.34	30.52	1446.27		31.71	2380.69	39	31.76	3350.69		
	31.22	509.56	29.77	1476.04	24	31.70	2412.39		30.67	3381.36	55	
	31.26	540.82	30.95	1506.99		31.40	2443.79	40	31.25	3412.61		
	30.12	570.94	30.99	1537.98	25	30.94	2474.73		31.29	3443.90	56	
	31.25	602.19	31.73	1569.71		31.26	2505.99	41	31.18	3475.08		
	31.23	633.42	31.54	1601.25	26	31.18	2537.17		31.70	3506.78	57	
	31.72	665.14	31.53	1632.78		31.62	2568.79	42	31.42	3538.20		
	31.40	696.54	31.61	1664.39	27	30.76	2599.55		30.53	3568.73	58	
	31.19	727.73	30.91	1695.30		30.84	2630.39	43	31.53	3600.26		
	31.37	759.10	30.90	1726.20	28	31.37	2661.76		30.75	3631.01	59	
	30.37	789.47	31.30	1757.50		31.29	2693.05	44	31.97	3662.98		
	31.39	820.86	30.29	1787.79	29	30.53	2723.58					
	31.58	852.44	-0.72	1787.07								

2/20/97

PIPE TALLY

Ensign Operating Co.

No. 2-25 Liberal, S/2 S/2 NE Sec. 25 T34S, R34W, Seward Co., Kansas

Length Joint	Total Feet	No. of Stands	Length Joint	Total Feet	No. of Stands	Length Joint	Total Feet	No. of Stands	Length Joint	Total Feet	No. of Stands
29.96	3692.94	60	30.96	4629.77	75	31.37	5565.96		30.82	6499.97	106
30.65	3723.59		30.89	4660.66		31.12	5597.08	91	30.58	6530.55	
30.95	3754.54	61	31.68	4692.34	76	31.62	5628.70		30.35	6560.90	107
31.56	3786.10		31.30	4723.64		31.20	5659.90	92	31.24	6592.14	
31.84	3817.94	62	30.95	4754.59	77	31.63	5691.53		31.59	6623.73	108
30.04	3847.98		31.06	4785.65		30.89	5722.42	93	31.52	6655.25	
30.54	3878.52	63	31.04	4816.69	78	31.62	5754.04		31.89	6687.14	109
31.99	3910.51		30.41	4847.10		31.64	5785.68	94	32.01	6719.15	
31.45	3941.96	64	31.09	4878.19	79	31.65	5817.33		30.60	6749.75	110
30.81	3972.77		30.99	4909.18		31.37	5848.70	95	31.38	6781.13	
30.11	4002.88	65	31.61	4940.79	80	31.30	5880.00		30.55	6811.68	111
31.20	4034.08		30.39	4971.18		31.65	5911.65	96	31.54	6843.22	
31.57	4065.65	66	30.54	5001.72	81	30.75	5942.40		31.55	6874.77	112
30.33	4095.98		31.25	5032.97		31.80	5974.20	97	31.67	6906.44	
31.77	4127.75	67	31.69	5064.66	82	30.35	6004.55				
31.90	4159.65		31.63	5096.29		30.34	6034.89	98	Total Depth Driller 6900' Logger Total Depth 6899' Difference Logger & Driller 1' Board Tally 6906.13' Geologist Tally 6906.44' Surface Casing Driller 1598' Surface Casing Logger 1598'		
30.35	4190.00	68	30.19	5126.48	83	31.90	6066.79				
31.11	4221.11		31.40	5157.88		31.33	6098.12	99			
31.75	4252.86	69	31.02	5188.90	84	31.42	6129.54				
31.69	4284.55		31.47	5220.37		30.97	6160.51	100			
32.07	4316.62	70	30.95	5251.32	85	30.73	6191.24				
31.98	4348.60		31.56	5282.88		31.09	6222.33	101			
31.54	4380.14	71	30.65	5313.53	86	31.80	6254.13				
31.33	4411.47		31.39	5344.92		31.44	6285.57	102			
31.34	4442.81	72	31.80	5376.72	87	31.45	6317.02				
31.56	4474.37		29.19	5405.91		31.52	6348.54	103			
31.30	4505.67	73	31.42	5437.33	88	30.32	6378.86				
30.49	4536.16		3.69	5441.02		30.45	6409.31	104			
31.36	4567.52	74	31.39	5472.41	89	31.45	6440.76				
31.29	4598.81		30.78	5503.19		-2.95	6437.81	105			
			31.40	5534.59	90	31.34	6469.15				

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