

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

API NO. 15- 129-214510000

ORIGINAL

County Morton

- NE - NW - SW Sec. 1 Twp. 32S Rge. 42 X W

2390 Feet from S/N (circle one) Line of Section

1120 Feet from E/W (circle one) Line of Section

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

Lease Name Russell Well # 5-1

Field Name Richfield West

STORAGE Producing Formation G-2 and Keyes

Elevation: Ground 3465 KB 3478

Total Depth 5200 PBDT 5148

Amount of Surface Pipe Set and Cemented at 1459 Feet

Multiple Stage Cementing Collar Used? X Yes No

If yes, show depth set 3182 Feet

If Alternate II completion, cement circulated from

feet depth to w/ sx cmt.

Drilling Fluid Management Plan ALT 1 4-8-97  
(Data must be collected from the Reserve Pit)

Chloride content 1400 ppm Fluid volume 300 bbls

Dewatering method used Evaporation

Location of fluid disposal if hauled offsite:

Operator Name KCC

Lease Name FEB 12 License No.

Quarter CONFIDENTIAL S Rng. E/W

County Docket No.

Operator: License # 30915

Name: Richfield Gas Storage System

Address Two Warren Place

6120 South Yale, Suite 1200

City/State/Zip Tulsa, OK 74136

Purchaser: N/A

Operator Contact Person: Larry Jenkins

Phone: (713) 627-5684

Contractor: Name: Allen Drilling Company

License: Unknown

Wellsite Geologist: Mark Gredeff

Designate Type of Completion  
X New Well Re-Entry Workover

Oil SWD SLOW Temp. Abd.

Gas ENHR SIGW

Dry X Other (Core, WSW, Expl., Cathodic, etc)

If Workovers: Gas Storage

Operator: RELEASED

Well Name: APR 6 1998

Comp. Date Old Total Depth

Deepening Plug Back Conv. to Inj/SWD PBDT

Commingled Docket No.

Dual Completion Docket No.

Other (SWD or Inj?) Docket No.

10/11/96 10/22/96 12/12/96  
Spud Date Date Reached TD Completion Date

INSTRUCTIONS: An original and two copies of this form shall be filed with the Kansas Corporation Commission, 130 S. Market - Room 2078, 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 Larry J. Jenkins

Title Principal Petroleum Engineer Date 2/13/97

Subscribed and sworn to before me this 13 day of February, 1997.

Notary Public Gloria A. Rivas RECEIVED

Date Commission Expires 8-16-97 KANSAS CORPORATION COMMISSION

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

FEB 14 1997

Form ACO-1 (7-91)

Operator Name Rightfield Gas Storage System Lease Name Russell Well # 5-1

Sec. 1 Twp. 32S Rge. 42  East  West  
 County Morton

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:  
 Array Induction Micro Resistivity/GR  
 Microlog  
 Compensated Neutron litho-density  
 Cement Bond Log

Log Formation (Top), Depth and Datum  Sample

Name Top Datum KB 3478

Morrow Shale	4650 (-1172)	
" G-1	4922 (-1444)	
" G-2 Sand	4966 (-1488)	
" Keyes Sand	5042 (-1564)	

**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 1/2	8-5/8	24	1459	Midcon; Class C 320	+150	3% cc, 1/4# Flocele
Production	7-7/8	5 1/2	15.5	5200	Versaset	150	9/10% Versaset,
					Midcon+C	110+50	3/4% Halad 322, 5% KCl 10# Gilsonite

ADDITIONAL CEMENTING/SQUEEZE RECORD 6/10% Halad 322, 2% cc, 1/4# Flocele

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
8	5004 - 17 G-2	2100 Gals 7 1/2% FE w/25% N2	
8	5042 - 51, 5070 - 78 Keyes	2800 Gals 7 1/2% FE w/25% N2	

**TUBING RECORD** Size 2-7/8 Set At 5038 Packer At 5025 Liner Run  Yes  No

Date of First, Resumed Production, SWD, or Inj. N/A Producing Method  Flowing  Pumping  Gas Lift  Gas Storage  Other (Explain)

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

Disposition of Gas:  Vented  Sold  Used on Lease (If vented, submit ACO-18.)

**METHOD OF COMPLETION**

Open Hole  Perf.  Dually Comp.  Commingled 5004-17

Other (Specify) \_\_\_\_\_ 5042-78

ORIGINAL

ATTACHMENT TO RUSSELL 5-1 - FORM ACO-1

CONFIDENTIAL

15-129-21451

Richfield Gas Storage System  
Russell 5-1  
Morton County, KS Section 1, T32S, R42W

CORE DETAIL

Core #1 -- 4959 - 4989 Cut 30', rec. 21'  
7' SHALE, BL.  
14' SS, F-VFG W/THN ORG. STRKS.

Core #2 -- 4989 - 5050 Cut 61', rec. 61'  
6' SS, VFG, SLTY, VCALC  
5' SH, BL.  
26' SS, FG GRADING TO CG AT BASE, S FOSS, W/THN ORG. STRKS.  
18' SH, BL.  
6' SS, CG, S FOSS.

Core #3 -- 5050 - 5113 Cut 63', rec 63'  
63' SS, MG-CG, SFOSS IN PART, ORG. STRKS IN PART.

RELEASED  
APR 6 1998  
FROM CONFIDENTIAL

KCC  
FEB 12  
CONFIDENTIAL

RECEIVED  
KANSAS CORPORATION COMMISSION

FEB 14 1997

CONSERVATION DIVISION  
WICHITA, KS

ORIGINAL

INVOICE



HALLIBURTON

REMIT TO:  
P O BOX 751046  
DALLAS TX 75275-1046

CONFIDENTIAL

INVOICE NO: 104282  
DATE: 10/12/1996

APPROVED/LEASE NO/PROJECT	APPROVED/LEASE NO/PROJECT	APPROVED/LEASE NO/PROJECT	APPROVED/LEASE NO/PROJECT
RUSSELL 5-1	MORTON	KS	SAME
SERVICE LOCATION	CONTRACTOR	JOB PURPOSE	TICKET DATE
LIBERAL	ALLEN DRILLING	CEMENT SURFACE CASING	10/12/1996
ACCT NO	CUSTOMER AGENT	VENDOR NO	CUSTOMER PO NUMBER
739280	ROGER PEARSON		
			COMPANY TRUCK 15063

DIRECT CORRESPONDENCE TO:

RICHFIELD GAS STORAGE  
P O BOX 976  
LIBERAL, KS 67905

P O BOX 1598  
LIBERAL KS 67901

RECEIVED  
OCT 18 1996

ORIGINAL

REFERENCE NO	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
PRICING AREA - MID CONTINENT					
000-117	MILEAGE CEMENTING ROUND TRIP	120 MI		2.99	358.80
		1 UNT			
000-119	MILEAGE FOR CREW	120 MI		1.60	192.00
		1 UNT			
001-016	CEMENTING CASING	1465 FT		1,180.00	1,180.00
		1 UNT			
030-018	CEMENTING PLUG SW, PLASTIC TOP	8 5/8 IN		130.00	130.00 *
		1 EA			
12A	GUIDE SHOE - 8 5/8" 8RD THD.	1 EA		216.00	216.00 *
825.217					
24A	INSERT FLOAT VALVE - 8 5/8" 8RD	1 EA		221.00	221.00 *
815.19502					
27	FILL-UP UNIT 7"- 8 5/8"	1 EA		64.00	64.00 *
815.19414					
41	CENTRALIZER - 8-5/8 X 12-1/4	5 EA		61.00	305.00 *
806.61048					
66	CLAMP-LIMIT-8 5/8-FRICT-W/DOGS	1 EA		21.00	21.00 *
806.72750					
320	BASKET-CMT-8 5/8 CSG X 21"-SLP	1 EA		124.00	124.00 *
806.71460					
350	HALLIBURTON WELD-A	1 EA		16.75	16.75 *
890.10802					
504-050	CEMENT - PREMIUM PLUS	130 SK		13.12	1,968.00 *
504-282	MIDCON-2 PREMIUM PLUS CEMENT	320 SK		16.74	5,363.20 *
507-210	FLOCELE	118 LB		1.65	194.70 *
509-406	ANHYDROUS CALCIUM CHLORIDE	12 SK		40.75	489.00 *
500-207	BULK SERVICE CHARGE	518 CFT		1.35	699.30 *
500-306	MILEAGE CMTG MAT DEL OR RETURN	696.915 TMI		1.05	731.76 *
INVOICE SUBTOTAL					12,274.51 ✓

\*\*\*\*\* 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.

FORM HAL-1900-F

PAGE: 1

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KANSAS CORPORATION COMMISSION

RELEASED

APR 6 1998

FEB 14 1997

FROM CONFIDENTIAL

CONSERVATION DIVISION  
WICHITA, KS

ORIGINAL

INVOICE



P.O. BOX 951046  
DALLAS, TX 75395-1046

INVOICE NO.	DATE
106282	10/12/1996

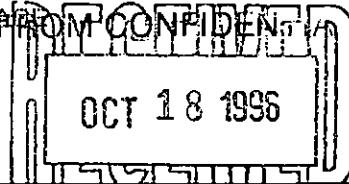
WELL/LEASE NO./PROJECT USSELL 5-1		WELL/PROJECT LOCATION MORTON		STATE KS	OWNER SAME
SERVICE LOCATION IBERAL		CONTRACTOR ALLEN DRILLING	JOB PURPOSE CEMENT SURFACE CASING		TICKET, DATE 10/12/1996
WCT NO. 39280	CUSTOMER AGENT ROGER PEARSON	VENDOR NO. RELEASED	CUSTOMER P.O. NUMBER	SHIPPED VIA COMPANY TRUCK	FILE NO. 15063

APR 6 1998

DIRECT CORRESPONDENCE TO:

RICHFIELD GAS STORAGE  
P O BOX 976  
LIBERAL, KS 67905

P O BOX 1598  
LIBERAL KS 67901



ORIGINAL

REFERENCE NO.	DESCRIPTION	QUANTITY	UM	UNIT PRICE	AMOUNT
000-117	MILEAGE CEMENTING ROUND TRIP	120 MI		2.99	358.80
		1 UNT			
000-119	MILEAGE FOR CREW	120 MI		1.60	192.00
		1 UNT			
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INVOICE SUBTOTAL					12,274.51 ✓

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FEB 14 1997  
CONSERVATION DIVISION  
WICHITA, KS

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

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ORIGINAL



INVOICE

INVOICE NO.	DATE
106282	10/12/1996

WELL/LEASE NO./PROJECT	WELL/PROJECT LOCATION	STATE	OWNER		
JSELL 5-1	MORTON	KS	SAME		
SERVICE LOCATION	CONTRACTOR	JOB PURPOSE	TICKET DATE		
LIBERAL	ALLEN DRILLING	CEMENT SURFACE CASING	10/12/1996		
COI NO.	CUSTOMER AGENT	VENDOR NO.	CUSTOMER P.O. NUMBER	SHIPPED VIA	FILE NO.
39280	ROGER PEARSON			COMPANY TRUCK	15063

RELEASED

DIRECT CORRESPONDENCE TO:

RICHFIELD GAS STORAGE  
P O BOX 976  
LIBERAL, KS 67905

APR 6 1998

P O BOX 1598  
LIBERAL KS 67901

FROM CONFIDENTIAL

ORIGINAL

REFERENCE NO.	DESCRIPTION	QUANTITY	UM	UNIT PRICE	AMOUNT
	DISCOUNT-(BID)				4,296.06 - v
	INVOICE BID AMOUNT				7,978.45 v
	*-KANSAS STATE SALES TAX				335.81
	*-LIBERAL CITY SALES TAX				68.56
	*-SEWARD COUNTY SALES TAX				102.79

charge to 03011 1070 7109100 T2 CAPPB 960157  
Lony Jenkins

Cementing 8 5/8" surface casing on the  
Richfield Storage Russell 5-1 well

new  
FEB 12  
CONFIDENTIAL

PETROLEUM MANAGEMENT COMPANY

DRLG ✓ COMP. \_\_\_\_\_

TANG \_\_\_\_\_ INTANG. \_\_\_\_\_

PROD. OPERATION EXPENSE \_\_\_\_\_

LEASE Russell 5-1

USED FOR ce ment 8 5/8

APPROVED BY [Signature]

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CONSERVATION DIVISION  
WICHITA, KS

INVOICE TOTAL - PLEASE PAY THIS AMOUNT =====> \$8,485.61

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

CUSTOMER: Richfield Gas      WELL NO.: 5-1      CASE: Russell      JOB TYPE: 8 5/8 SURFACE      TICKET NO.: 106282

PART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1900							Time Called
	2230							Time Ready
	2130							Time on Loc
								ORIGINAL
	2400							Start Running Casing
	0120							Casing in Hole
								RELEASED
	0120							Hook up To Circulate Casing
	0130							Circulate Casing w/ Pump
	0132							Circulate Mud To Ground Level
	0150							Hook up To Pump Truck
	0158	6.8						150 Start Mixing Cement
	0225		183.51					150 Start Tail Cement
	0233		35.26					200 Finish Mixing Cement
	0234		218.77					20% Shut Down      Drop Plug
	0235	6						Start Displacement
		3.6	90.6					was. Pumps & Lines
	0300							300/750 Plug Down      Slow Rate Down w/ 120/100
								Flant Held
								Cent 35 <sup>ERR</sup> To the P.I. 60 <sup>SE</sup>
								Thanks For Calling
								Halliburton Energy
								Dennis Coyle
								T Green
								RECEIVED KANSAS CORPORATION COMMISSION
								FEB 14 1997
								CONSERVATION DIVISION WICHITA, KS

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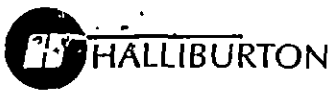
RELEASED

APR 6 1998

FROM CONFIDENTIAL

FEB 12

CONFIDENTIAL



# JOB SUMMARY

HALLIBURTON DIVISION  
HALLIBURTON LOCATION

MidCont  
Liberal Ks

BILLED ON TICKET NO. 106282

## WELL DATA

FIELD \_\_\_\_\_ SEC \_\_\_\_\_ TWP. \_\_\_\_\_ RNG. \_\_\_\_\_ COUNTY Morton STATE Ks

FORMATION NAME \_\_\_\_\_ TYPE \_\_\_\_\_

FORMATION THICKNESS \_\_\_\_\_ FROM \_\_\_\_\_ TO \_\_\_\_\_

INITIAL PROD. OIL \_\_\_\_\_ BPD. WATER \_\_\_\_\_ BPD. GAS \_\_\_\_\_ MCFD

PRESENT PROD. OIL RELEASED BPD. WATER \_\_\_\_\_ BPD. GAS \_\_\_\_\_ MCFD

COMPLETION DATE \_\_\_\_\_ MUD TYPE \_\_\_\_\_ MUD WT. \_\_\_\_\_

PACKER TYPE APP 6 1998 SET AT \_\_\_\_\_

BOTTOM HOLE TEMP. \_\_\_\_\_ PRESSURE \_\_\_\_\_

MISC. DATA FROM CONFIDENTIAL TOTAL DEPTH \_\_\_\_\_

	NEW USED	WEIGHT	SIZE	FROM	TO	MAXIMUM PSI ALLOWABLE
CASING		24	8 5/8	KB	1465	
LINER						
TUBING						
PERFORATIONS				GL	1460	SHOTS/FT.
PERFORATIONS						
PERFORATIONS						

**CONFIDENTIAL**

**ORIGINAL**

## JOB DATA

CALLER OUT	ON LOCATION	JOB STARTED	JOB COMPLETED
DATE 10-12	DATE 10-12	DATE 10-13	DATE 10-13
TIME 1900	TIME 2130	TIME 0115	TIME 0300

## TOOLS AND ACCESSORIES

TYPE AND SIZE	QTY.	MAKE
FLOAT COLLAR <u>Insert Float</u>	1	<u>Houco</u>
FLOAT SHOE <u>Fill Up</u>	1	
GUIDE SHOE <u>1 Reg</u>	1	
CENTRALIZERS	5	
BOTTOM PUMP <u>Fas Grip</u>	1	
TOP PLUG	1	
HEAD	1	
PACKER <u>Basket</u>	1	
OTHER <u>Houco weld</u>	1	

## 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. \_\_\_\_\_ IN

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. \_\_\_\_\_

PERFPAC BALLS TYPE \_\_\_\_\_ QTY. \_\_\_\_\_

OTHER \_\_\_\_\_

OTHER \_\_\_\_\_

## PERSONNEL AND SERVICE UNITS

NAME	UNIT NO. & TYPE	LOCATION
<u>D Gove</u> 59179	429041	Liberal Ks
<u>Lowe</u>	52938	"
<u>S Grant</u> H4639	3732 / 1505	"
<u>B McIntyre</u> H2308	4037 / 6617	Hogtown Ks
	75237	"

DEPARTMENT Cement

DESCRIPTION OF JOB 8 5/8 SURFACE

JOB DONE THRU: TUBING  CASING  ANNULUS  TBG./ANN.

CUSTOMER REPRESENTATIVE X Roger Pearson

HALLIBURTON OPERATOR Dennis Gove COPIES REQUESTED \_\_\_\_\_

## CEMENT DATA

STAGE	NUMBER OF SACKS	CEMENT	BRAND	BULK SACKED	ADDITIVES	YIELD CU.FT./SK.	MIXED LBS./GAL.
	370	MidCont	Prem Plus	3% CC	1/4 # Floccle	FEB 12	3.22
	150	Prem Plus		2% CC	1/4 # Floccle		1.32

**CONFIDENTIAL**

## PRESSURES IN PSI

## SUMMARY

## VOLUMES

CIRCULATING \_\_\_\_\_ DISPLACEMENT \_\_\_\_\_ PRESLUSH: BBL.-GAL. \_\_\_\_\_ TYPE \_\_\_\_\_

BREAKDOWN \_\_\_\_\_ MAXIMUM \_\_\_\_\_ LOAD & BKDN: BBL.-GAL. \_\_\_\_\_ PAD: BBL.-GAL. \_\_\_\_\_

AVERAGE \_\_\_\_\_ FRACTURE GRADIENT \_\_\_\_\_ TREATMENT: BBL.-GAL. \_\_\_\_\_ DISPL: BBL.-GAL. 90.6

SHUT-IN: INSTANT \_\_\_\_\_ 5-MIN \_\_\_\_\_ 15-MIN \_\_\_\_\_ CEMENT SLURRY: BBL.-GAL. 218.11

HYDRAULIC HORSEPOWER \_\_\_\_\_ TOTAL VOLUME: BBL.-GAL. \_\_\_\_\_

ORDERED \_\_\_\_\_ AVAILABLE \_\_\_\_\_ USED \_\_\_\_\_

AVERAGE RATES IN BPM \_\_\_\_\_

TREATING \_\_\_\_\_ DISPL. \_\_\_\_\_ OVERALL \_\_\_\_\_

CEMENT LEFT IN PIPE \_\_\_\_\_

FEET 413 REASON Shoe joint

RECEIVED  
KANSAS CORPORATION COMMISSION  
REMARKS

FEB 14 1997

CONSERVATION DIVISION  
WICHITA, KS

CUSTOMER Richfield Gas Storage East  
WELL NO. S-1  
JOB TYPE 8 5/8 SURFACE  
DATE 10-12-96



ORIGINAL  
INVOICE



HALLIBURTON

P.O. BOX 951046  
DALLAS, TX 75395-1046

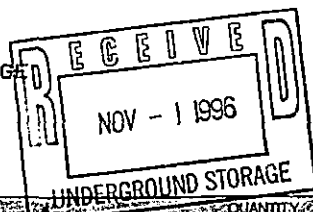
**CONFIDENTIAL**

INVOICE NO. DATE

106288 10/22/1996

WELL/LEASE NO/PROJECT	WELL/PROJECT LOCATION	STATE	OWNER
RUSSELL 1-5	MORTON	KS	SAME
SERVICE LOCATION	CONTRACTOR	JOB PURPOSE	TICKET DATE
LIBERAL	ALLEN DRILLING	CEMENT PRODUCTION CASING	10/22/1996
ACCT. NO.	CUSTOMER AGENCY	VENDOR NO.	CUSTOMER P.O. NUMBER
739280	HAROLD FRAULI		
		COMPANY TRUCK	15564

RICHFIELD GAS STORAGE  
P O BOX 976  
LIBERAL, KS 67905



DIRECT CORRESPONDENCE TO:  
P O BOX 1598  
LIBERAL KS 67901

**ORIGINAL**

REFERENCE NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
PRICING AREA - MID CONTINENT					
000-117	MILEAGE CEMENTING ROUND TRIP	120 MI		2.99	358.80 ✓
	DISCOUNT-(BID)	1 UNT			
		34.0 %			121.99-
000-119	MILEAGE FOR CREW	120 MI		1.60	192.00 ✓
	DISCOUNT-(BID)	1 UNT			
		34.0 %			65.28-
007-013	MULT STAGE CEMENTING-1ST STAGE	5205 FT		1,950.00	1,950.00 ✓
001-016	DISCOUNT-(BID)	1 UNT			
		34.0 %			663.00-
007-161	MULT STAGE CEMENTING-ADD STAGE	1 STG		1,550.00	1,550.00 ✓
	DISCOUNT-(BID)	1 UNT			
		34.0 %			527.00-
5A	FLOAT SHOE - SSII-5-1/2 8RD	1 EA		225.00	225.00 ✓
837.07100	DISCOUNT-(BID)				
		34.0 %			76.50-
40	CENTRALIZER-5-1/2 X 7-7/8	8 EA		60.00	480.00 ✓
806.60022	DISCOUNT-(BID)				
		34.0 %			163.20-
66	CLAMP-LIMIT-5 1/2-FRICT-W/DOGS	1 EA		16.00	16.00 ✓
806.72730	DISCOUNT-(BID)				
		34.0 %			5.44-
71	CEMENTER-TYPE P ES 5-1/2 8RD	1 EA		2,450.00	2,450.00 ✓
813.56325	DISCOUNT-(BID)				
		20.0 %			490.00-

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

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FORM HAL-1900-F

PAGE: 1

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APR 6 1998

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KANSAS CORPORATION COMMISSION

FROM CONFIDENTIAL

FEB 14 1997

CONSERVATION DIVISION  
WICHITA, KS

ORIGINAL



HALLIBURTON  
CONFIDENTIAL

P.O. BOX 951046  
DALLAS, TX 75395-1046

INVOICE

INVOICE NO. DATE

106288 10/22/1996

WELL LEASE NO./PROJECT WELL/PROJECT LOCATION STATE OWNER

JSELL 1-5 MORTON KS SAME

SERVICE LOCATION CONTRACTOR/PRC JOB PURPOSE TICKET/DATE

LIBERAL ALLEN DRILLING CEMENT PRODUCTION CASING 10/22/1996

GOVT NO. CUSTOMER AGENT VENDOR NO. CUSTOMER PO NUMBER SHIPPED VIA FILE NO.

39280 HAROLD FRAULI COMPANY TRUCK 15564

RECEIVED

RICHFIELD GAS STORAGE KANSAS CORPORATION COMMISSION  
P O BOX 976  
LIBERAL, KS 67905

DIRECT CORRESPONDENCE TO:

P O BOX 1598  
LIBERAL KS 67901

FEB 14 1997

ORIGINAL

CONSERVATION DIVISION

REFERENCE NO. DESCRIPTION QUANTITY UNIT UNIT PRICE AMOUNT

75 PLUG SET - FREE FALL - 5-1/2 8 1 EA 840.00 840.00 ✓ \*

813.16511 DISCOUNT-(BID) 20.0 % 168.00-

20 BASKET-CMT-5 1/2 CSG X 17"OD- 1 EA 104.00 104.00 ✓ \*

806.71430 DISCOUNT-(BID) 34.0 % 35.36-

50 HALLIBURTON WELD-A 1 EA 16.75 16.75 ✓ \*

890.10802 DISCOUNT-(BID) 34.0 % 5.69-

04-043 CEMENT - PREMIUM 150 SK 12.03 1,804.50 ✓ \*

DISCOUNT-(BID) 34.0 % 613.53-

04-282 MIDCON-2 PREMIUM PLUS CEMENT 110 SK 16.76 1,843.60 ✓ \*

DISCOUNT-(BID) 34.0 % 626.82-

04-050 CEMENT - PREMIUM PLUS 50 SK 13.12 656.00 ✓ \*

DISCOUNT-(BID) 34.0 % 223.04-

08-095 VERSASET 127 LB 3.90 495.30 ✓

DISCOUNT-(BID) 34.0 % 168.40-

07-775 HALAD-322 134 LB 7.00 938.00 ✓ \*

DISCOUNT-(BID) 34.0 % 318.92-

08-002 POTASSIUM CHLORIDE 432 LB .27 116.64 ✓ \*

DISCOUNT-(BID) 34.0 % 39.65-

07-210 FLOCELE 78 LB 1.65 128.70 ✓ \*

DISCOUNT-(BID) 34.0 % 43.75-

FROM CONFIDENTIAL

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

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# HALLIBURTON CONFIDENTIAL

P.O. BOX 951046  
DALLAS, TX 75395-1046

INVOICE

INVOICE NO:	DATE:
106288	10/22/1996

WELL/LEASE NO./PROJECT:	WELL/PROJECT LOCATION:	STATE:	OWNER:
RUSSELL 1-5	MORTON	KS	SAME
SERVICE LOCATION:	CONTRACTOR:	JOB PURPOSE:	TICKET DATE:
LIBERAL	ALLEN DRILLING	CEMENT PRODUCTION CASING	10/22/1996
COB NO.:	CUSTOMER/AGENT:	VENDOR NO.:	CUSTOMER P.O. NUMBER:
39280	HAROLD FRAULI		
SHIPPED VIA:			FILE NO.:
COMPANY TRUCK			15564

RELEASED

DIRECT CORRESPONDENCE TO:

RICHFIELD GAS STORAGE  
P O BOX 976  
LIBERAL, KS 67905

APR 6 1998

P O BOX 1598  
LIBERAL KS 67901

FROM CONFIDENTIAL

# ORIGINAL

REFERENCE NO	DESCRIPTION	QUANTITY	UM	UNIT PRICE	AMOUNT
509-406	ANHYDROUS CALCIUM CHLORIDE DISCOUNT-(BID)	2 SK 34.0 %		40.75	81.50 ✓ 27.71-
508-291	GILSONITE BULK DISCOUNT-(BID)	1500 LB 34.0 %		.40	600.00 ✓ 204.00-
507-203	MULT STAGE CEMENTING-ADD HRS DISCOUNT-(BID)	2 HR 1 UNT 34.0 %		260.00	520.00 ✓ 176.80-
500-207	BULK SERVICE CHARGE DISCOUNT-(BID)	355 CFT 34.0 %		1.35	479.25 ✓ 162.94-
500-304	MILEAGE CMTG MAT DEL OR RETURN DISCOUNT-(BID)	479.86 TMI 34.0 %		1.05	503.85 ✓ 171.30-
518-317	SUPER FLUSH DISCOUNT-(BID)	10 SK 34.0 %		100.00	1,000.00 340.00-

*RCU*

FEB 12

RECEIVED  
KANSAS CORPORATION COMMISSION

INVOICE SUBTOTAL

17,349.89

DISCOUNT-(BID)

5,438.32-

INVOICE BID AMOUNT

11,911.57

- \*-KANSAS STATE SALES TAX
- \*-LIBERAL CITY SALES TAX
- \*-SEWARD COUNTY SALES TAX

387.48  
79.10  
118.61

*charge to: 03011 1070 7109100 T2 CAPPB 960157  
Larry Jenkins cementing Russell 5-1 production casing*

INVOICE TOTAL - PLEASE PAY THIS AMOUNT =====> \$12,496.76

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# JOB SUMMARY

HALLIBURTON DIVISION

HALLIBURTON LOCATION

Mud Cont  
Lined Ks

BILLED ON TICKET NO. 106288

FIELD \_\_\_\_\_ SEC 1 TWP 32.5 RNG. 42.0 COUNTY Macon 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 DV Tool SET AT 3182  
 BOTTOM HOLE TEMP. \_\_\_\_\_ PRESSURE \_\_\_\_\_  
 MISC. DATA \_\_\_\_\_ TOTAL DEPTH \_\_\_\_\_

	NEW USED	WEIGHT	SIZE	FROM	TO	MAXIMUM PSI ALLOWABLE
CASING			5 1/2	5 1/2	5205	56
LINER						
TUBING						
OPEN HOLE			7 1/4		5200	SHOTS/FT.
PERFORATIONS						
PERFORATIONS						
PERFORATIONS						

**CONFIDENTIAL****ORIGINAL**

### JOB DATA

#### TOOLS AND ACCESSORIES

TYPE AND SIZE	QTY.	MAKE
Float Collar <u>5 1/2 Basket</u>	<u>1</u>	<u>Hobas</u>
Float Shoe <u>Super Seal II</u>	<u>1</u>	
GUIDE SHOE <u>1 EA Greys</u>	<u>1</u>	
CENTRALIZERS	<u>10</u>	
BOTTOM PLUG <u>DV Cementer</u>	<u>1</u>	
TOP PLUG <u>DV Plug Set</u>	<u>1</u>	
HEAD	<u>1</u>	
PACKER <u>Batch Down Plug &amp; Rattle</u>	<u>1</u>	
OTHER <u>Headed wire</u>	<u>1</u>	<u>US</u>

CALLER OUT	ON LOCATION	JOB STARTED	JOB COMPLETED
DATE <u>10-21</u>	DATE <u>10-22</u>	DATE <u>10-22</u>	DATE <u>10-22</u>
TIME <u>2200</u>	TIME <u>0100</u>	TIME <u>0840</u>	TIME <u>1600</u>

#### PERSONNEL AND SERVICE UNITS

NAME	UNIT NO. & TYPE	LOCATION
<u>Dave -59179</u>	<u>420041</u>	<u>Linn Co Ks</u>
<u>Ghove</u>	<u>52937</u>	<u>"</u>
<u>D Carpenter -62728</u>	<u>50757</u>	<u>Horton Ks</u>
<u>B McIntyre #2308</u>	<u>50866</u>	<u>"</u>
<b>RELEASED</b>	<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.	
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.	IN
PERFPAC BALLS TYPE	QTY.	
OTHER		
OTHER		

DEPARTMENT Cement  
 DESCRIPTION OF JOB 5 1/2 DV  
 JOB DONE THRU: TUBING  CASING  ANNULUS  TBG./ANN.   
 HALLIBURTON OPERATOR Dennis Corp  
 COPIES REQUESTED \_\_\_\_\_

### CEMENT DATA

STAGE	NUMBER OF SACKS	CEMENT	BRAND	BULK SACKED	ADDITIVES	YIELD CU.FT./SK.	MIXED LBS./GAL.
<u>1</u>	<u>150</u>	<u>Premium</u>			<u>94% Veraset, 75% Haled 322, 5% KCh, 1/4 # Floccle</u>	<u>1.44</u>	<u>14.5</u>
<u>2</u>	<u>110</u>	<u>Midlow</u>	<u>Prem Plus</u>		<u>29% CC 1/4 # Floccle</u>	<u>3.22</u>	<u>11.1</u>
<u>2</u>	<u>50</u>	<u>Prem Plus</u>			<u>66% Haled 322, 1/4 # Floccle</u>	<u>1.32</u>	<u>14.8</u>

PRESSURES IN PSI \_\_\_\_\_  
 CIRCULATING \_\_\_\_\_ DISPLACEMENT \_\_\_\_\_ PRESLUSH: BBL.-GAL. \_\_\_\_\_ TYPE \_\_\_\_\_  
 BREAKDOWN \_\_\_\_\_ MAXIMUM \_\_\_\_\_ LOAD & BKDN: BBL.-GAL. \_\_\_\_\_ PAD: BBL.-GAL. \_\_\_\_\_  
 AVERAGE \_\_\_\_\_ FRACTURE GRADIENT \_\_\_\_\_ TREATMENT: BBL.-GAL. \_\_\_\_\_ DISPL: BBL.-GAL. \_\_\_\_\_  
 SHUT-IN: INSTANT \_\_\_\_\_ 5-MIN \_\_\_\_\_ 15-MIN. \_\_\_\_\_ CEMENT SLURRY: BBL.-GAL. \_\_\_\_\_  
 HYDRAULIC HORSEPOWER \_\_\_\_\_ TOTAL VOLUME: BBL.-GAL. \_\_\_\_\_  
 ORDERED \_\_\_\_\_ AVAILABLE \_\_\_\_\_ USED \_\_\_\_\_  
 AVERAGE RATES IN BPM \_\_\_\_\_  
 TREATING \_\_\_\_\_ DISPL. \_\_\_\_\_ OVERALL \_\_\_\_\_  
 CEMENT LEFT IN PIPE \_\_\_\_\_  
 FEET 4390 REASON Shoe joint

CUSTOMER Richard Gas Storage Lease  
 RUSSELL  
 WELL NO. 1-S  
 JOB TYPE 5 1/2 DV Pool Storage  
 DATE 10-22-96

STORER Richfield Gas WELL NO. 1-5 EASE Russell JOB TYPE 5 1/2 IN Prod. Stems TICKET NO. 106288

START NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	2000							Time Called
	0200							Time Ready
	0100							Time on loc
	0400							Start Pumping Casing ORIGINAL
	0840							RELEASED
	0840							APR. 6 1998
	0900							Casing in Hole
	/							FROM CONFIDENTIAL
	/							Hook up to Circulate Casing
	/							Circulate 1/2 way w/ Pig Pumps
	/							Circulate Mud to Surface
	1155							1 Stage Hook up to Pump Truck
	/							START water. Spacers - Ahead
	/							START Super. Fluid
	/							START water. Spacers Behind
	1200							450 Start Mixing Cement
	1208	5.5	38.4					300 Finish Mixing Cement
	1209							300 Shut Down Deep Plug
	1210							wash Pump's plines
	1213	4.8	47.11 @ 75.73					75 Start Displacement
	1245		127.8 TOTAL					480 Pig Down
	1250							1000 Deep Boom
	1305							RECEIVED KANSAS CORPORATION COMMISSION
	1310							FEB 14 1997
								CONSERVATION DIVISION WICHITA, KS
	1520							Pig Shut Down Casing Hole
	1523	6						Hook up to Pump Truck Lead Trip Plug
	1535		63.08					100 Start Mixing Cement
	1539		11.75					100 Start Tail Cement
	1540		74.83 TOTAL					150 Finish Mixing Cement
								150 Shut Down Deep Plug
	1545	5.5	75.73					wash Pump's plines
	1600							Start Displacement
								380 Pig Down Press up DV & Shut

Thanks For Casing Halliburton  
Dennis E. Seavers

PanEnergy Corporation  
 Russell No. 1-5  
 Wildcat  
 Morton County, Kansas

**RELEASED**  
**APR 6 1998**  
 FROM CONFIDENTIAL

 FILE NO.: H-2744  
 ANALYST: Monti  
 DATE: 10-23-96  
 CORES: DIAMOND

15-129-21451

**CONVENTIONAL CORE ANALYSIS**

Sample ID	Sample Depth Feet	Air Permeability mD	Helium Porosity %	Grain Density	Core Lithology
1	4965.75	<0.01	2.9	2.72	Ss vfg slty w/calc stks foss no flu
2	4966.50	0.13	6.8	2.76	Ss vfg w/thn org stks vcalc foss no flu
3	4967.30	0.02	5.9	2.70	Ss vfg vcalc foss no
4	4968.65	0.01	6.0	2.70	Ss vfg vcalc foss no flu
5	4969.45	0.77	9.2	2.73	Ss f-vfg sfoss no flu
6	4970.50	7.1	12.3	2.71	Ss fg sfoss no flu
7	4971.50	2.0	13.6	2.69	Ss f-vfg w/ thn org stks sfoss no flu
8	4972.45	<0.01	10.0	2.71	Ss vfg slty w/thn org stks vcalc sfoss no flu
9	4973.65	<0.01	5.8	2.71	Ss vfg slty vcalc sfoss no flu
10	4974.70	0.66	10.1	2.73	Ss f-vfg w/thn org stks sfoss no flu
11	4975.60	3.1	12.5	2.72	Ss f-vfg w/thn org stks sfoss no flu
12	4976.80	0.52	10.6	2.74	Ss f-vfg sfoss no flu
13	4977.65	0.38	11.0	2.73	Ss f-vfg w/thn org stks sfoss no flu
14	4978.20	4.1	13.3	2.71	Ss fg w/thn org stks sfoss no flu
15	4979.70	0.03	7.1	2.71	Ss f-vfg ssly w/thn org stks sfoss no flu
16	4987.45	1.8	12.9	2.71	Ss fg w/thn org stks sfoss no flu
17	4988.40	1.8	12.1	2.71	Ss f-vfg w/thn org stks sfoss no flu
18	4989.55	3.3	11.7	2.70	Ss f-vfg w/thn org stks sfoss no flu
19	4990.50	0.05	5.3	2.71	Ss vfg slty vcalc sfoss no flu
20	4991.45	<0.01	5.9	2.71	Ss vfg slty vcalc sfoss no flu
21	4992.60	<0.01	4.4	2.70	Ss vfg slty vcalc sfoss no flu
22	4993.75	0.07	7.1	2.71	Ss vfg ssly w/thn org stks vcalc sfoss no flu
23	4999.80	0.49	12.1	2.72	Ss fg w/mny org stks sfoss no flu
24	5000.50	0.29	10.6	2.71	Ss fg w/mny org stks sfoss no flu
25	5001.40	0.05	5.8	2.70	Ss f-vfg w/org stks vcalc sfoss no flu
26	5002.40	0.07	6.2	2.73	Ss f-vfg w/org stks vcalc sfoss no flu
27	5003.50	0.03	4.6	2.69	Ss f-cg w/thn org stks vfoss no flu
28	5004.55	0.04	5.2	2.68	Ss f-cg w/thn org stks vfoss no flu
29	5005.65	6.4	10.5	2.67	Ss mg sfoss no flu
30	5006.50	6.3	11.9	2.68	Ss m-cg w/org stks sfoss no flu
31	5007.40	<0.01	4.5	2.69	Ss m-cg vcalc sfoss no flu
32	5008.45	14.	11.3	2.67	Ss cg w/thn org stks sfoss no flu
33	5009.55	11.	12.7	2.69	Ss cg w/thn org stks sfoss no flu
34	5010.50	7.1	15.0	2.70	Ss mg w/thn org stks sfoss no flu
35	5011.45	5.2	12.3	2.82	Ss fg w/vlg pyr lam sfoss no flu

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 FEB 12  
 CONFIDENTIAL

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 KANSAS CORPORATION COMMISSION

 FEB 14 1997  
 CONSERVATION DIVISION  
 WICHITA, KS



Laboratories, Inc.

(713) 462-4800

7200 Langtry Street • Houston, Texas 77040

PanEnergy Corporation  
 Russell No. 1-5  
 Wildcat  
 Morton County, Kansas

RELEASED

APR 6 1998

FROM CONFIDENTIAL

FILE NO.: H-2744  
 ANALYST: Monti  
 DATE: 10-23-96  
 CORES: DIAMOND

CONVENTIONAL CORE ANALYSIS

Sample ID	Sample Depth Feet	Air Permeability mD	Helium Porosity %	Grain Density	Core Lithology
36	5012.55	0.96	10.8	2.69	Ss m-cg w/org stks foss no flu
37	5013.85	1.6	11.3	2.70	Ss m-cg foss no flu
38	5014.55	0.29	7.7	2.70	Ss mg vcalc foss no flu
39	5015.50	1.7	13.8	2.68	Ss m-cg w/org stks foss no flu
40	5016.50	9.1	13.8	2.68	Ss mg foss no flu
41	5017.70	284.	14.4	2.67	Ss cg sfoss no flu
42	5018.65	158.	12.6	2.73	Ss cg spyr sfoss no flu
43	5019.40	43.	12.2	2.69	Ss cg sfoss no flu
44	5020.55	214.	13.9	2.67	Ss cg sfoss no flu
45	5021.60	99.	14.4	2.67	Ss cg sorg sfoss no flu
46	5022.50	40.	11.9	2.66	Ss cg sorg sfoss yl spts flu
47	5023.50	13.	11.5	2.67	Ss cg w/thn org stks sfoss no flu
48	5024.60	0.66	7.0	2.68	Ss m-cg vcalc foss no flu
49	5025.45	1.2	10.6	2.73	Ss f-cg w/sh stk sfoss ft spts flu
50	5043.90	0.58	5.3	2.75	Ss f-cg w/org stk vfoss no flu
51	5044.50	1332.	16.8	2.67	Ss cg sfoss no flu
52	5045.60	2061.	17.7	2.68	Ss cg sfoss no flu
53	5046.40	559.	16.2	2.70	Ss cg sfoss no flu
54	5047.30	2201.	18.6	2.67	Ss cg sfoss no flu
55	5048.30	23.	11.6	2.71	Ss cg sfoss ft spts flu
56	5049.35	1050.	16.8	2.68	Ss cg sfoss no flu
57	5050.25	89.	13.9	2.73	Ss cg sorg sfoss ft spts flu
58	5051.40	2.4	8.6	2.71	Ss f-cg slty sshy w/thn org stks sfoss no flu
59	5052.60	1242.	17.0	2.71	Ss cg foss no flu
60	5053.50	7.5	9.2	2.74	Ss cg sfoss ft spts flu
61	5054.60	152.	13.5	2.69	Ss cg sfoss yl spts flu
62	5055.30	34.	12.3	2.69	Ss cg w/thn org stks sfoss ft spts flu
63	5056.75	82.	13.8	2.70	Ss m-cg sfoss ft spts flu
64	5057.75	5.8	10.4	2.71	Ss m-cg sfoss ft spts flu
65	5058.35	18.	12.0	2.70	Ss cg sfoss yl spts flu
66	5059.45	205.	13.6	2.70	Ss cg sfoss yl spts flu
67	5060.45	1.4	8.9	2.71	Ss m-cg sfoss no flu
68	5061.40	0.87	10.1	2.72	Ss f-cg w/thn org stks foss no flu
69	5062.50	0.53	7.4	2.69	Ss cg slty vcalc sfoss no flu
70	5063.45	0.48	6.7	2.71	Ss f-cg slty sfoss no flu
71	5064.55	0.11	6.1	2.67	Ss vfg slty sfoss no flu

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RECEIVED  
 KANSAS CORPORATION COMMISSION

FEB 14 1997

CONSERVATION DIVISION  
 WICHITA, KS

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RELEASED

(713) 462-4800  
7200 Langtry Street • Houston, Texas 77040

PanEnergy Corporation  
Russell No. 1-5  
Wildcat  
Morton County, Kansas

APR 6 1998

FROM CONFIDENTIAL

FILE NO.: H-2744  
ANALYST: Monti  
DATE: 10-23-96  
CORES: DIAMOND

CONVENTIONAL CORE ANALYSIS

Sample ID	Sample Depth Feet	Air Permeability mD	Helium Porosity %	Grain Density	Core Lithology
72	5065.50	0.55	6.1	2.70	Ss f-vfg slty w/thn org stks sfoss no flu
73	5066.50	3.3	9.1	2.73	Ss mg sslty sfoss yl flu
74	5067.50	269.	14.3	2.67	Ss cg sfoss yl flu
75	5068.60	1.2	9.3	2.73	Ss m-cg w/org stks foss ft stk flu
76	5069.30	41.	10.7	2.70	Ss m-cg sfoss yl flu
77	5070.30	73.	12.7	2.68	Ss cg w/thn org stk sfoss yl flu
78	5071.40	1768.	17.2	2.67	Ss cg sfoss yl flu
79	5072.50	0.71	9.2	2.73	Ss m-cg w/org stks sfoss no flu
80	5073.45	0.37	7.8	2.76	Ss m-cg w/org stks foss no flu
81	5074.50	24.	11.3	2.69	Ss cg sorg sfoss no flu
82	5075.50	109.	14.6	2.67	Ss m-cg sorg sfoss yl flu
83	5076.60	330.	17.9	2.67	Ss cg sfoss yl flu
84	5077.50	181.	16.1	2.67	Ss m-cg sfoss yl flu
85	5078.45	212.	15.6	2.68	Ss m-cg sfoss yl flu
86	5079.50	258.	16.1	2.68	Ss m-cg sfoss yl flu
87	5080.35	18.	13.5	2.68	Ss m-cg sorg sfoss yl flu
88	5081.55	26.	11.9	2.71	Ss cg sfoss yl flu
89	5082.50	107.	13.2	2.70	Ss cg sfoss yl flu
90	5083.60	1.9	9.6	2.67	Ss m-cg slty vcalc sfoss no flu
91	5084.50	0.98	8.7	2.69	Ss m-cg slty vcalc sfoss no flu
92	5085.55	0.76	8.3	2.67	Ss m-cg slty vcalc sfoss no flu
93	5086.55	24.	12.6	2.71	Ss mg sslty sfoss yl flu
94	5087.55	173.	14.6	2.70	Ss cg sfoss yl flu
95	5088.55	851.	17.5	2.68	Ss cg sfoss yl flu
96	5089.25	119.	15.2	2.69	Ss cg sfoss yl flu
97	5090.65	545.	16.3	2.68	Ss cg sfoss yl flu
98	5091.55	522.	15.3	2.69	Ss cg sfoss yl flu
99	5092.15	164.	14.2	2.69	Ss cg sfoss yl flu
100	5093.90	1222.	18.1	2.69	Ss cg sfoss yl flu
101	5094.80	0.06	5.8	2.74	Ss f-vfg slty foss no flu
102	5095.50	59.	10.6	2.73	Ss cg sorg sfoss yl stks flu
103	5096.60	72.	15.4	2.68	Ss m-cg sorg sfoss yl flu
104	5097.50	220.	15.9	2.71	Ss cg sfoss yl spts flu
105	5098.55	8.2	10.5	2.72	Ss m-cg sorg sfoss yl spts flu
106	5099.45	12.	11.1	2.70	Ss cg w/thn org stks foss no flu
107	5100.55	45.	14.9	2.68	Ss m-cg sorg sfoss yl flu

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Russell No. 1-5  
Wildcat  
Morton County, Kansas

APR 6 1998  
FROM CONFIDENTIAL

FILE NO.: H-2744  
ANALYST: Monti  
DATE: 10-23-96  
CORES: DIAMOND

CONVENTIONAL CORE ANALYSIS

Sample ID	Sample Depth Feet	Air Permeability mD	Helium Porosity %	Grain Density	Core Lithology
108	5101.60	125.	14.3	2.72	Ss m-cg sfoss yl flu
109	5102.60	148.	16.3	2.69	Ss mg sorg sfoss yl flu
110	5103.50	4923.	21.1	2.67	Ss cg sfoss yl flu
111	5104.50	1133.	20.4	2.66	Ss cg sfoss yl flu
112	5105.65	930.	17.9	2.68	Ss cg sorg sfoss yl spts flu
113	5106.30	811.	18.3	2.68	Ss cg sfoss yl spts flu
114	5107.65	446.	15.2	2.69	Ss cg sfoss yl spts flu
115	5108.55	644.	15.6	2.68	Ss cg sfoss yl spts flu
116	5109.50	351.	14.4	2.71	Ss cg sfoss ft spts flu
117	5110.40	88.	12.5	2.72	Ss cg sfoss ft spts flu
118	5111.50	37.	12.3	2.72	Ss cg sfoss ft spts flu
119	5112.40	139.	13.0	2.70	Ss cg w/thn org stk sfoss ft spt flu

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