

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

API NO. 15- 071-206910000

County Greeley

NW - NW - NW - 23 Sec. 20S Twp. 42 Rge. X ^E/_W

490 Feet from S (circle one) Line of Section
540 Feet from E (circle one) Line of Section

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

Lease Name Siverson Well # 1-X

Field Name Wildcat

Producing Formation Morrow

Elevation: Ground 3740 KB 3750

Total Depth 5300 PBD

Amount of Surface Pipe Set and Cemented at 508 Feet

Multiple Stage Cementing Collar Used? Yes X No

If yes, show depth set _____ Feet

If Alternate II completion, cement circulated from 2432'

feet depth to Surface w/ 1000 sx cmt.

Drilling Fluid Management Plan AH-2, 9-23-98 U.C.
(Data must be collected from the Reserve Pit)

Chloride content 2200 ppm Fluid volume 2000 bbls

Dewatering method used _____

Location of fluid disposal if hauled offsite: _____

Operator Name Western Operating Company

Lease Name Siverson License No. 32283

NW Quarter Sec. 23 Twp. 20S S Rng. 42 ^E/_W

County Greeley Docket No. _____

Operator: License # 32283

Name: Western Operating Co.

Address 518 17th St., Ste 1680
Denver CO 80202

City/State/Zip _____

Purchaser: N/A

Operator Contact Person: Steven D. James

Phone (303) 893-2438

Contractor: Name: Murfin Drilling Co.

License: 30606

Wellsite Geologist: Peter Debenham

Designate Type of Completion
 New Well Re-Entry Workover

Oil SWD SOW Temp. Abd.
 Gas ENHR ENHR
 Dry Other (Core, Wash, Explosive, Cathodic, etc.)

If Workovers:

Operator: SEP 08 1998

Well Name: _____

Comp. Date CONSERVATION DIVISION
Old Total Depth

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

06/05/98 06/20/98 07/08/98
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 Steven D. James

Title Vice President Date 8/26/98

Subscribed and sworn to before me this 26th day of August, 19 98.

Notary Public Melinda Curtis

Date Commission Expires July 16, 2001

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)

JANICORO

Operator Western Operating Co.

Lease Name Siverson

Well # 1-X

Sec. 23 Twp. 20S Rge. 42

East
 West

County Greeley

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:
Compensated Neutron/Density
Sonic
Array Induction

| Name | Top | Datum | <input checked="" type="checkbox"/> Log | Formation (Top), Depth and Datums | <input type="checkbox"/> Sample |
|---------------|-------|-------|---|-----------------------------------|---------------------------------|
| | | | Base Stone Corral | 2441' | +1309 |
| Admire | 3391' | + 359 | | | |
| Shawnee | 3808' | - 58 | | | |
| Lansing | 4022' | - 272 | | | |
| Marmaton | 4434' | - 684 | | | |
| Morrow | 5040' | -1290 | | | |
| Mississippian | 5148' | -1398 | | | |

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 Csg | 17.5" | 13-3/8" | 48# | 508' | Common | 375 | 3% CC 2% Gel |
| Intermediate | 12 1/2" | 8-5/8" | 23# | 2432' | Thixotrop | 1000 | 3% CC 1/4#/bbl Floseal |
| Production | 7-7/8" | 4-1/2" | 11.6# | 5297' | Type III | 645 | 5% BA-10A 1.5% 00-32 |

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 SPF | 5124'-5134' 20 holes | | |
| | | | |
| | | | |

| | | | | |
|----------------------|--------------------|---------------------|-----------|--|
| TUBING RECORD | Size <u>2-3/8"</u> | Set At <u>5,135</u> | Packer At | Liner Run <input type="checkbox"/> Yes <input type="checkbox"/> No |
|----------------------|--------------------|---------------------|-----------|--|

Date of First, Resumed Production, SMD or Inj. 07/27/98 Producing Method Flowing Pumping Gas Lift Other (Explain)

| | | | | | |
|-----------------------------------|--------------------|---------------------|----------------------|---------------|---------|
| Estimated Production Per 24 Hours | Oil <u>0</u> Bbls. | Gas <u>9200</u> Mcf | Water <u>0</u> 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 Other (Specify)

Production Interval: 5124-5134

ORIGINAL

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

API NO. 15- 071-206910000

County Greeley

NW - NW - NW - Sec. 23 Twp. 20S Rge. 42 X^E_W

490 Feet from S (circle one) Line of Section
540 Feet from E (circle one) Line of Section

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

Lease Name Siverson Well # 1-X

Field Name Wildcat

Producing Formation Morrow

Elevation: Ground 3740 KB 3750

Total Depth 5300 PBDT _____

Amount of Surface Pipe Set and Cemented at 508 Feet

Multiple Stage Cementing Collar Used? _____ Yes X No

If yes, show depth set _____ Feet

If Alternate II completion, cement circulated from 2432'

feet depth to Surface w/ 1,000 sx cmt.

Drilling Fluid Management Plan AH.2, 9-23-98 U.C.
(Data must be collected from the Reserve Pit)

Chloride content 2200 ppm Fluid volume 2000 bbls

Dewatering method used _____

Location of fluid disposal if hauled offsite: _____

Operator Name Western Operating Company

Lease Name Siverson License No. 32283

NW Quarter Sec. 23 Twp. 20S S Rng. 42 E^W

County Greeley Docket No. _____

Operator: License # 32283

Name: Western Operating Co.

Address 518 17th St., Ste 1680

Denver CO 80202

City/State/Zip _____

Purchaser: N/A

Operator Contact Person: Steven D. James

Phone (303) 893-2438

Contractor: Name: Murfin Drilling Co.

License: 30606

Wellsite Geologist: Peter Debenham

Designate Type of Completion

X New Well _____ Re-Entry _____ Workover _____

X Oil _____ SWD _____ SIOW _____ Temp. Abd.
X Gas _____ ENHR _____
_____ Dry _____ Other (Core, SW, Expl., Cathodic, etc)

RECEIVED
KANSAS CORPORATION COMMISSION

If Workovers:

Operator: SEP 08 1998

Well Name: _____

Comp. Date CONSERVATION DIVISION
Old Total Depth

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

06/05/98 06/20/98 07/08/98
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 Steven D. James

Title Vice President Date 8/26/98

Subscribed and sworn to before me this 26th Day of August, 1998.

Notary Public Melinda Arter

Date Commission Expires July 16, 2001

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)

* SKID RIG

FORM C-1 7/91
FORM MUST BE TYPED
FORM MUST BE SIGNED
ALL BLANKS MUST BE FILLED

FOR KCC USES

EFFECTIVE DATE: 6-9-98
DISTRICT # 1
SEAL: YES No

State of Kansas
NOTICE OF INTENTION TO DRILL

Must be approved by the K.C.C. five (5) days prior to commencing well.

Expected Spud Date June 4 1998
month day year

Spot 160'S & 210' E of
NW, NE, SW, SE, Sec 23, Top 20, S, Rn 42, East West

OPERATOR: License # 32283
Name: Western Operating Company
Address: 518 W. 17th St. Suite 1680
City/State/Zip: Denver, CO 80202
Contact Person: STEVEN D. JAMES
Phone: 303/893-2438

490' feet from XXX North line of Section
540' feet from XXX West line of Section
IS SECTION Y REGULAR IRREGULAR
(NOTE: Locate well on the Section Plat on Reverse Side)

CONTRACTOR License # 30606
Name: Murfin Drilling Company

County: Crealey
Lease Name: SIYERSON Well #: 1-X
Field Name: Wildcat

Well Drilled for: Well Class: Type Equipment:
 Oil ... Enh Rec ... Infield Mud Rotary
 Gas ... Storage ... Pool Ext. ... Air Rotary
 OWD ... Disposal Wildcat ... Cable
 Seismic; ... # of Holes ... Other
If OWD: old well information as follows:
Operators
Well Name:
Comp. Date: Old Total Depth

Is this a Prorated/Spaced Field? ... yes no
Target formation(s): MOXION
Nearest lease or unit boundary: 490'

Directional, Deviated or Horizontal wellbore? ... yes no
If yes, true vertical depth:
Bottom Hole Location:

Ground Surface Elevation: 3729.7' feet MSL
Water well within one-quarter mile: ... yes no
Public water supply well within one mile: 180' ... yes no

Depth to bottom of fresh water: 1350'
Depth to bottom of usable water:
Surface Pipe by Alternate: 1 2

Length of Surface Pipe Planned to be set: 500'
Length of Conductor pipe required:
Projected Total Depth: 5200'

Formation at Total Depth: Moxion
Water Source for Drilling Operations:
... well farm pond ... other

Will Cores Be Taken? ... yes no
If yes, proposed zone:

* RIG WAS SKID FROM SIVERSON #1

AFFIDAVIT

440' FNL 440' FEL LOST HOLE.

The undersigned hereby affirms that the drilling, completion and eventual plugging of this well will comply with K.S.A. 55-101, et. seq.
It is agreed that the following minimum requirements will be met:

1. Notify the appropriate district office prior to spudding of well;
2. A copy of the approved notice of intent to drill shall be posted on each drilling rig;
3. The minimum amount of surface pipe as specified below shall be set by circulating cement to the top; in all cases surface pipe shall be set through all unconsolidated materials plus a minimum of 20 feet into the underlying formation;
4. If the well is dry hole, an agreement between the operator and the district office on plug length and placement is necessary prior to plugging;
5. The appropriate district office will be notified before well is either plugged or production casing is cemented in;
6. IF AN ALTERNATE IS COMPLETION, PRODUCTION PIPE SHALL BE CEMENTED FROM BELOW ANY USABLE WATER TO SURFACE WITHIN 120 DAYS OF SPUD DATE. IN ALL CASES, NOTIFY DISTRICT OFFICE PRIOR TO ANY CEMENTING.

I hereby certify that the statements made herein are true and to the best of my knowledge and belief.

Date: June 2, 1998 Signature of Operator or Agent: Steven D. James Title: Vice President

FOR KCC USES
API # 15- 071-206910000
Conductor pipe required NONE feet
Minimum surface pipe required 200 feet per Alt. (2)
Approved by: JK 6-4-98
This authorization expires: 12-4-98
(This authorization void if drilling not started within 6 months of effective date.)
Spud date: _____ Agent: _____

REMEMBER TO:

- file Drill Pit Application (form COP-1) with Intent to Drill;
- File Completion Form ACO-1 within 120 days of spud date;
- File acreage attribution plat according to field prororation orders;
- Notify appropriate district office 48 hours prior to workover or re-entry;
- Submit plugging report (CP-4) after plugging is completed;
- Obtain written approval before disposing or injecting salt water.

Mail to: KCC - Conservation Division, 130 S. Market - Room 2078, Wichita, Kansas 67202.

Operator **Western Operating Co.**

SIDE TWO

15-071-20691-00-00

Lease Name **Siverson** Well # **1-X**

Sec. **23** Twp. **20S** Rge. **42**

East
 West

County **Greeley**

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:
Compensated Neutron/Density
Sonic
Array Induction

Log Formation (Top), Depth and Datums Sample

| Name | Top | Datum |
|-------------------|-------|-------|
| Base Stone Corral | 2441' | +1309 |
| Admire | 3391' | + 359 |
| Shawnee | 3808' | - 58 |
| Lansing | 4022' | - 272 |
| Marmaton | 4434' | - 684 |
| Morrow | 5040' | -1290 |
| Mississippian | 5148' | -1398 |

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 Csg | 17.5" | 13-3/8" | 48# | 506' | Common | 375 | 3% CC 2% Gel |
| Intermediate | 12 1/4" | 8-5/8" | 23# | 2432' | Thixotrop | 1000 | 3% CC 1/4#/bbl Flo seal |
| Production | 7-7/8" | 4-1/2" | 11.6# | 5297' | Type III | 645 | 5% BA-10A 5% 00-32 |

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 SPF | 5124'-5134' 20 holes | | |
| | | | |
| | | | |
| | | | |

| TUBING RECORD | | Size | Set At | Packer At | Liner Run | | | |
|--|-----|---|--------|-----------|--|-------|---------------|---------|
| | | 2-3/8" | 5,135 | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | |
| Date of First, Resumed Production, SUD or Inj. | | Producing Method | | | | | | |
| 07/27/98 | | <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 | Bbls. | Gas | Mcf | Water | Bbls. | Gas-Oil Ratio | Gravity |
| | C | | 9200 | | 0 | | | |

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: 5124-5134'

ALLIED CEMENTING CO., INC.
 P.O. BOX 31
 RUSSELL, KS 67065
 PH (785) 463-3887
 FAX (785) 463-6588

ORIGINAL

INVOICE

Invoice Number: 077752

Invoice Date: 06/18/98

RECEIVED
 KANSAS CORPORATION COMMISSION

SEP 08 1998

CONSERVATION DIVISION
 WICHITA, KS

Sold Western Operating
 To: 518 17th, #1180
 Denver, CO
 80202

Cust I.D.: WestOp
 P.O. Number: Siverson 1-E
 P.O. Date: 06/18/98

Due Date: 07/18/98
 Terms: Net 30

15-071-20691-00-00

| Item I.D./Desc. | Qty. Used | Unit | Price | Net | TX |
|---|-----------|------|-----------|---------|----|
| Common | 600.00 | SKS | 7.5500 | 4530.00 | E |
| Gel | 12.00 | SKS | 9.5000 | 114.00 | E |
| Chloride | 24.00 | SKS | 28.0000 | 672.00 | E |
| FloSeal | 150.00 | LBS | 1.1500 | 172.50 | E |
| ASC | 400.00 | SKS | 9.0500 | 3620.00 | E |
| Handling | 1000.00 | SKS | 1.0500 | 1050.00 | E |
| Mileage (100) 1000 sks @ \$.04 per sk per mi | 100.00 | MILE | 40.0000 | 4000.00 | E |
| Surface | 1.00 | JOB | 1080.0000 | 1080.00 | E |
| Mileage pmp trk | 100.00 | MILE | 2.8500 | 285.00 | E |
| Rubber plug | 1.00 | EACH | 90.0000 | 90.00 | E |
| Guide Shoe | 1.00 | EACH | 238.0000 | 238.00 | E |
| AFU Insert | 1.00 | EACH | 358.0000 | 358.00 | E |
| Centralizers | 2.00 | EACH | 61.0000 | 122.00 | E |
| Cement Basket | 1.00 | EACH | 200.0000 | 200.00 | E |

All Prices Are Net, Payable 30 Days Following Subtotal: 16531.50
 Date of Invoice. 1 1/2% Charged Thereafter. Tax: 0.00
 If Account CURRENT take Discount of \$2479.72 Payments: 0.00
 ONLY if paid within 30 days from Invoice Date Total: 16531.50

5196
 6/19/98
 7/5/98

ALLIED CEMENTING CO., INC.

P.O. BOX 86,
 RUSSELL, KS 67665
 PH (785) 483-3887
 FAX (785) 483-5588

ORIGINAL

.....
INVOICE

Invoice Number: 077683

Invoice Date: 06/10/98

RECEIVED
 KANSAS CORPORATION COMMISSION

SEP 08 1998

Sold Western Operating
 To: 518 17th, #1180
 Denver, CO
 80202

CONSERVATION DIVISION

WICHITA, KS

Cust I.D.....: WestOp
 P.O. Number..: Silverson #1-X
 P.O. Date....: 06/10/98

Due Date.: 07/10/98
 Terms....: Net 30

15-071-20691-00-00

| Item I.D./Desc. | Qty. Used | Unit | Price | Net | TX |
|-------------------------------|-----------|------|----------|---------|----|
| Common | 375.00 | SKS | 7.5500 | 2831.25 | E |
| Gel | 7.00 | SKS | 9.5000 | 66.50 | E |
| Chloride | 11.00 | SKS | 28.0000 | 308.00 | E |
| Handling | 375.00 | SKS | 1.0500 | 393.75 | E |
| Mileage (100) | 100.00 | MILE | 15.0000 | 1500.00 | E |
| 375 sks @ \$.04 per sk per ml | | | | | |
| Surface | 1.00 | JOB | 470.0000 | 470.00 | E |
| Extra Footage | 215.00 | PER | 0.4300 | 92.45 | E |
| Mileage pmp trk | 100.00 | MILE | 2.8500 | 285.00 | E |
| Surface plug | 1.00 | EACH | 210.0000 | 210.00 | E |
| Centralizers | 1.00 | EACH | 95.0000 | 95.00 | E |

All Prices Are Net, Payable 30 Days Following
 Date of Invoice. 1 1/2% Charged Thereafter.
 If Account CURRENT take Discount of \$ 927.79
 ONLY if paid within 30 days from Invoice Date

Subtotal: 6251.95
 Tax.....: 0.00
 Payments: 0.00
 Total....: 6251.95

5/96
 6/98
 7/5/98

BJ Services Company

ORIGINAL 

15-071-20691-00-00

| CUSTOMER (COMPANY NAME) Western Operating Co., Inc. | | | | CREDIT APPROVAL NO. HCJ | | PURCHASE ORDER NO. | | CUSTOMER NUMBER 20094823 - 20094823 | | INVOICE NUMBER | |
|---|--|---------------------------------------|--|----------------------------|---|----------------------------|--------------|---|------------|------------------------------------|--|
| MAIL INVOICE TO: STREET OR BOX NUMBER 518 17th Street #1680 | | | | CITY Denver | | STATE Colorado | | ZIP CODE 80202 | | RECEIVED CORPORATION COMMISSION | |
| DATE WORK COMPLETED: MO. DAY YEAR 06 20 1998 | | BJ SERVICES SUPERVISOR Mika Muckey | | | | WELL TYPE: New Well | | SEP 08 1998 CONSERVATION DIVISION WICHITA, KS | | | |
| BJ SERVICES DISTRICT Wichita | | | | JOB DEPTH (ft) 0 | | WELL CLASS: Oil | | | | | |
| WELL NAME AND NUMBER SILVERSON 1-X | | | | TD WELL DEPTH (ft) | | GAS USED ON JOB: No Gas | | | | | |
| WELL LOCATION: | | LEGAL DESCRIPTION | | COUNTY/PARISH Greeley | | STATE Kansas | | JOB TYPE CODE: Long String | | | |
| PRODUCT CODE | DESCRIPTION | | | UNIT OF MEASURE | QUANTITY | LIST PRICE UNIT | GROSS AMOUNT | PERCENT DISC. | NET AMOUNT | | |
| 121110 | Cement Plug, Rubber, Top 4-1/2 in | | | ea | 1 | 68.000 | 68.00 | 25% | 51.00 | | |
| 489013 | CD-32 | | | lbs | 91 | 5.900 | 536.60 | 33% | 359.72 | | |
| 499695 | BA-10A | | | lbs | 304 | 9.200 | 2,796.80 | 33% | 1,873.86 | | |
| 499703 | Type III Cement | | | sacks | 645 | 11.690 | 7,669.05 | 33% | 5,138.26 | | |
| SUB-TOTAL FOR Product Material | | | | | | | 11,070.75 | 32.95% | 7,422.84 | | |
| J396 | Remote Location Crew Expense/Man | | | day | 5 | 135.000 | 675.00 | 0% | 675.00 | | |
| M100 | Bulk Materials Service Charge | | | cu ft | 656 | 1.600 | 1,049.60 | 33% | 703.23 | | |
| SUB-TOTAL FOR Service Charges | | | | | | | 1,724.60 | 20.08% | 1,378.23 | | |
| J12 | Cement Pump Casing, 5001 - 5500 ft | | | hrs | 1 | 2,815.000 | 2,815.00 | 33% | 1,883.05 | | |
| J390 | Mileage, Heavy Vehicle | | | miles | 80 | 3.600 | 288.00 | 33% | 192.96 | | |
| J391 | Mileage, Auto, Pick-Up or Treating Van | | | miles | 80 | 2.150 | 172.00 | 33% | 115.24 | | |
| SUB-TOTAL FOR Equipment | | | | | | | 3,275.00 | 33% | 2,194.25 | | |
| ARRIVE LOCATION: MO. DAY YEAR TIME | SERVICE ORDER: I AUTHORIZE WORK TO BEGIN PER SERVICE INSTRUCTIONS IN ACCORDANCE WITH THE TERMS AND CONDITIONS PRINTED ON THE LAST PAGE OF THIS FORM AND REPRESENT THAT I HAVE AUTHORITY TO ACCEPT AND SIGN THIS ORDER. | | | | SERVICE RECEIPT: I CERTIFY THAT THE MATERIALS AND SERVICES LISTED WERE RECEIVED AND ALL SERVICES PERFORMED IN A WORKMANLIKE MANNER. | | | | | | |
| CUSTOMER REP. | SEE LAST PAGE FOR GENERAL TERMS AND CONDITIONS | | | | CUSTOMER AUTHORIZED AGENT | | | | | | |
| | | | | | X CUSTOMER AUTHORIZED AGENT | | | | | | |
| | | | | | X BJ SERVICES APPROVED | | | | | | |
| | | | | Voucher # | | 7/98 | | 5198 | | | |
| | | | | Acct. Date | | 7/98 | | | | | |
| | | | | Billing Date | | 7/15/98 | | | | | |

WELL NAME:
COMPANY:
LOCATION:

1-X Silverson
Western Operating Company
23-20S-42W
Greely County, Kansas
6/25/98

DATE:

ORIGINAL

15-071-20691-00-00

TRILOBITE TESTING L.L.C.

ORIGINAL

15-071-20691

OPERATOR : Western Operating Co.
 WELL NAME: 1-X Siverson
 LOCATION : 23-20s-42w Greely co. KS
 INTERVAL : 5024.00 To 5154.00 ft

DATE 6-18-98
 KB 3751.00 ft TICKET NO: 10679 DST #1
 GR 3739.00 ft FORMATION: Morrow
 TD 5154.00 ft TEST TYPE: CONVENTIONAL

RECORDER DATA

| Mins | Field | 1 | 2 | 3 | 4 | TIME DATA----- |
|-------------------|--------|--------|--------|-----|-----|------------------------|
| PF 30 Rec. | 10333 | 10333 | 3026 | | | PF Fr. 1251 to 1321 hr |
| SI 60 Range(Psi) | 4550.0 | 4550.0 | 4995.0 | 0.0 | 0.0 | IS Fr. 1321 to 1421 hr |
| SF 90 Clock(hrs) | 12hr | 12hr | elect | | | SF Fr. 1421 to 1551 hr |
| FS 120 Depth(ft) | 5154.0 | 5154.0 | 5126.0 | 0.0 | 0.0 | FS Fr. 1551 to 1751 hr |

| | Field | 1 | 2 | 3 | 4 | |
|----------------|--------|--------|--------|-----|-----|-------------------------------|
| A. Init Hydro | 2467.0 | 2467.0 | 2399.0 | 0.0 | 0.0 | T STARTED 1025 hr |
| B. First Flow | 0.0 | 0.0 | 1067.0 | 0.0 | 0.0 | T ON BOTM 1249 hr |
| B1. Final Flow | 0.0 | 0.0 | 1067.0 | 0.0 | 0.0 | T OPEN 1251 hr |
| C. In Shut-in | 0.0 | 0.0 | 1106.0 | 0.0 | 0.0 | T PULLED 1751 hr |
| D. Init Flow | 0.0 | 0.0 | 1076.0 | 0.0 | 0.0 | T OUT 2058 hr |
| E. Final Flow | 0.0 | 0.0 | 1071.0 | 0.0 | 0.0 | |
| F. Fl Shut-in | 0.0 | 0.0 | 1106.0 | 0.0 | 0.0 | TOOL DATA----- |
| G. Final Hydro | 2244.0 | 2244.0 | 2316.0 | 0.0 | 0.0 | Tool Wt. 1800.00 lbs |
| Inside/Outside | 0 | 0 | I | | | Wt Set On Packer 24000.00 lbs |
| | | | | | | Wt Pulled Loose 120000.00 lbs |
| | | | | | | Initial Str Wt 84000.00 lbs |
| | | | | | | Unseated Str Wt 88000.00 lbs |
| | | | | | | Bot Choke 0.75 in |
| | | | | | | Hole Size 7.78 in |
| | | | | | | D Col. ID 2.25 in |
| | | | | | | D. Pipe ID 3.38 in |
| | | | | | | D.C. Length 558.00 ft |
| | | | | | | D.P. Length 4480.00 ft |

RECOVERY

Tot Fluid 603.00 ft of 558.00 ft in DC and 45.00 ft in DP
 324.00 ft of mud 100%
 279.00 ft of Gas cut mud 5% gas 95% mud
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 SALINITY 0.00 P.P.M. A.P.I. Gravity 0.00

MUD DATA-----

Mud Type chemical
 Weight 9.00 lb/c;
 Vis. 55.00 S/L
 W.L. 7.20 in³
 F.C. 0.00 in
 Mud Drop Y 40.0 ft
 Amt. of fill 0.00 ft
 Btm. H. Temp. 150.00 F
 Hole Condition good
 % Porosity 0.00
 Packer Size 6.75 in
 No. of Packers 2
 Cushion Amt. 0.00
 Cushion Type
 Reversed Out N
 Tool Chased N
 Tester Scott Bugbee
 Co. Rep. Pete Debenham
 Contr. Murfin
 Rig # 25
 Unit #
 Pump T.

BLOW DESCRIPTION

Initial Flow:
 Strong blow bottom of bucket in 1 min. Gas to surface in 6 mins.
 Gas will burn
 Initial Shut-in:
 Weak surface blow thoughtout
 Final Flow:
 Bottom of bucket as soon as open

SAMPLES: Yes
 SENT TO: Caraway Analytical

Test Successful: Y

ORIGINAL

15-071-20691-00-00

TOOL DIAGRAM *** CONVENTIONAL

WELL NAME: 1-X Siverson

LOCATION : 23-20s-42w

TICKET No. 10679 D.S.T. No. 1 DATE 6-18-98

TOTAL TOOL TO BOTTOM OF TOP PACKERS 30

INTERVAL TOOL

TOTAL PACKERS AND ANCHOR 37

TOTAL TOOL 67

DRILL COLLAR ANCHOR IN INTERVAL

| | | | |
|---|--------|-----------|--------------|
| D.C. ANCHOR STND. | Stands | Single | Total |
| D.P. ANCHOR STND. | Stands | 1 Single | Total 93 |
| TOTAL ASSEMBLY | | | 130 |
| D.C. ABOVE TOOLS. | Stands | 6 Single | Total 558 |
| D.P. ABOVE TOOLS. | Stands | 42 Single | 1 Total 4480 |
| TOTAL DRILL COLLARS DRILL PIPE & TOOLS .. | | | 5168 |
| TOTAL DEPTH | | | 5154 |
| TOTAL DRILL PIPE ABOVE K.B. | | | 14 |

REMARKS:

Sampler Data

1000 Psi

11.7 CFG.

| | |
|----------------------|------|
| P.O. SUB Top of tool | 4994 |
| C.O. SUB 1' DP | 4995 |
| S.I. TOOL 5' | 5000 |
| 3' Sampler | 5003 |
| HMV 5' | 5008 |
| JARS 5' | 5013 |
| SAFETY JOINT 2' | 5015 |
| PACKER 5' | 5020 |
| PACKER 5' | 5024 |
| DEPTH 5024 | |
| STUBB 1' | 5025 |
| ANCHOR | |
| 1' perf | 5026 |
| 1'c/o sub | 5027 |
| 93' D pipe | 5120 |
| 1' c/o sub | 5121 |
| 5' pickup sub | 5126 |
| T.C. | |
| DEPTH | |
| Alpine Rec. | 5126 |
| 23' perf | 5149 |
| AK1 rec | 5154 |
| BULLNOSE | |
| T.D. 5' | 5154 |

GAS RECOVERY

COMPANY: Western Operating Co.

DATE: 6-18-98

WELL NAME: 1-X Silverson

KB Elev: 3751.00 ft TICKET #10679 DST #1

WELL LOCATION: 23-20s-42w

GR Elev: 3739.00 ft FORMATION: Morrow

INTERVAL Fr.: 5024.00 To 5154.00 T.D.: 5154.00 ft TEST TYPE: CONVENTIONAL

GAS RECOVERY MEASURED WITH Merla-side static

***** GAS RATES FOR FLOW #1

| Time (min) | Orifice (in) | Pressure (Psi) | H2O (in) | Rate (cf/d) |
|---------------|-----------------|-------------------|-------------|----------------|
| 10 | 1.00 | 86 | 0 | 5901000.0 |
| 15 | 1.00 | 86 | 0 | 5901000.0 |
| 20 | 1.00 | 96 | 0 | 6498000.0 |
| 25 | 1.00 | 102 | 0 | 6900000.0 |
| 30 | 1.00 | 102 | 0 | 6900000.0 |

***** GAS RATES FOR FLOW #2

| Time (min) | Orifice (in) | Pressure (Psi) | H2O (in) | Rate (cf/d) |
|---------------|-----------------|-------------------|-------------|----------------|
| 10 | 2.00 | 60 | 0 | 13118000.0 |
| 20 | 2.00 | 60 | 0 | 13118000.0 |
| 30 | 2.00 | 50 | 0 | 11366000.0 |
| 40 | 2.00 | 50 | 0 | 11366000.0 |
| 50 | 2.00 | 50 | 0 | 11366000.0 |
| 60 | 2.00 | 40 | 0 | 10468000.0 |
| 70 | 2.00 | 40 | 0 | 10468000.0 |
| 80 | 2.00 | 40 | 0 | 10468000.0 |
| 90 | 2.00 | 40 | 0 | 10468000.0 |

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NATURAL GAS ANALYSIS REPORT

Sampled by:
 Trilobite Testing, L. L. C.
 Hays, Kansas
 Scott City, Kansas
 Phone: 800-728-5369
 Fax: 913-625-5620

Analyzed by:
 Caraway Analytical, Inc
 P. O. Box 2137
 Liberal, Kansas 67905
 Phone: 316-624-5389
 Fax: 316-626-7108

| | | | |
|--------------|---------------------|--------------|----------|
| Lab Number: | 982324 | Analyzed: | 06/19/98 |
| Sample From: | 1-X Silverson DST 1 | Pressure: | |
| Producer: | Western Operating | Temperature: | |
| Date: | | Location: | 23-20-42 |
| Time: | | County: | Greeley |
| Sampler: | | State: | Kansas |
| Source: | | Formation: | Morrow |

| | Mole % | GPM |
|----------------|------------|-------|
| Helium | He: 1.398 | 0.000 |
| Hydrogen | H2: 0.000 | 0.000 |
| Oxygen | O2: 0.000 | 0.000 |
| Nitrogen | N2: 45.313 | 0.000 |
| Carbon Dioxide | CO2: 0.408 | 0.000 |
| Methane | C1: 42.733 | 0.000 |
| Ethane | C2: 5.389 | 1.441 |
| Propane | C3: 2.825 | 0.778 |
| Iso Butane | iC4: 0.346 | 0.113 |
| Normal Butane | nC4: 0.625 | 0.197 |
| Iso Pentane | iC5: 0.186 | 0.068 |
| Normal Pentane | nC5: 0.178 | 0.064 |
| Hexanes Plus | C6+: 0.599 | 0.261 |

TOTAL: 100.000 2.924
 Z Fact: 0.9985
 SP.GR.: 0.8315
 BTU (SAT): 665.8 @ 14.73 psia
 BTU (DRY): 677.6 @ 14.73 psia
 OCTANE RATING: 65.1

COMMENTS:

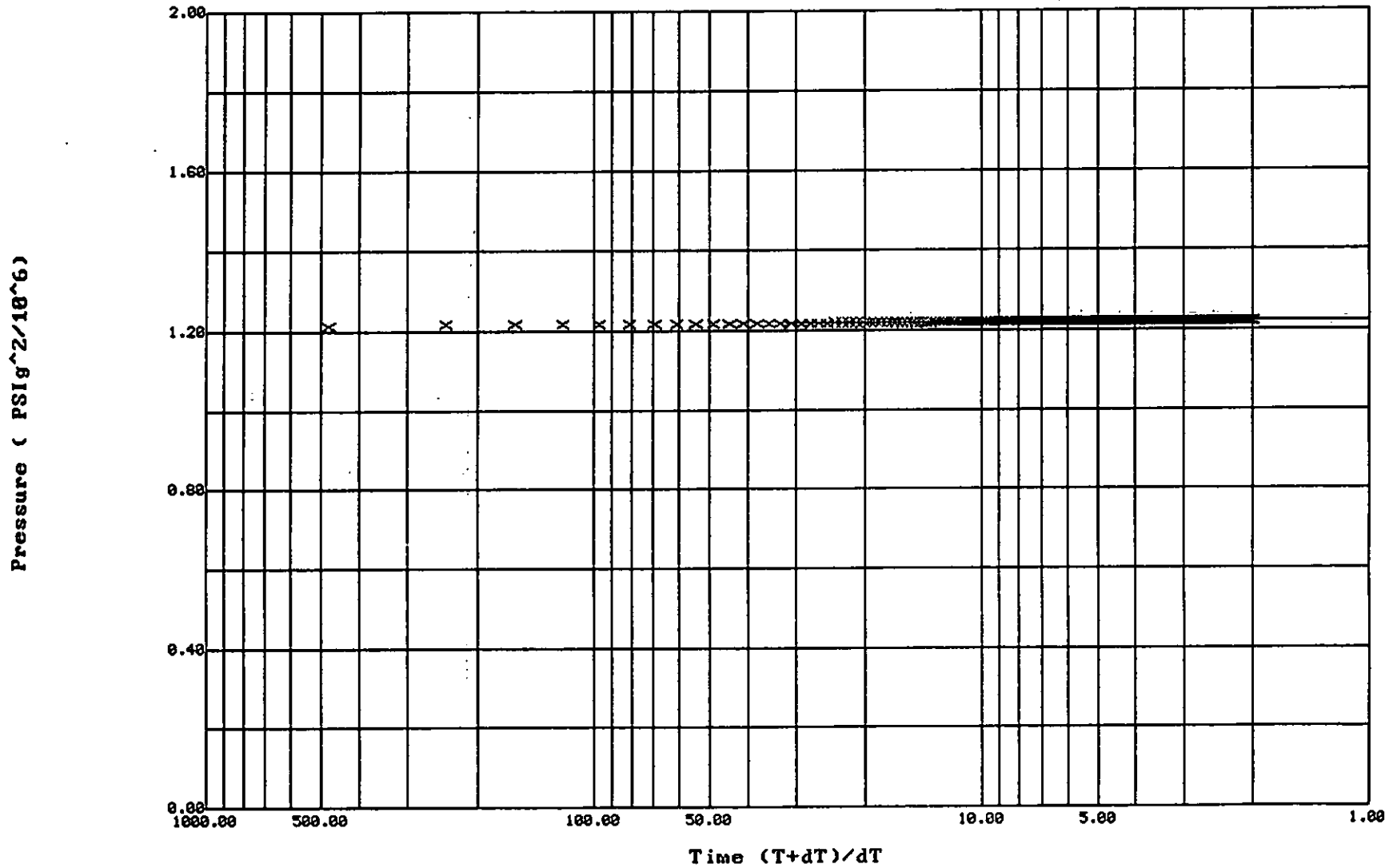
0.000

P² Horner Plot: shut-in #2

10679 Dst#1 Western Operating Co. 1-X Siverson

Slope: 0.0020 PSig²/10⁶/cycle

Ext. Pressure: 1105.8101 PSig



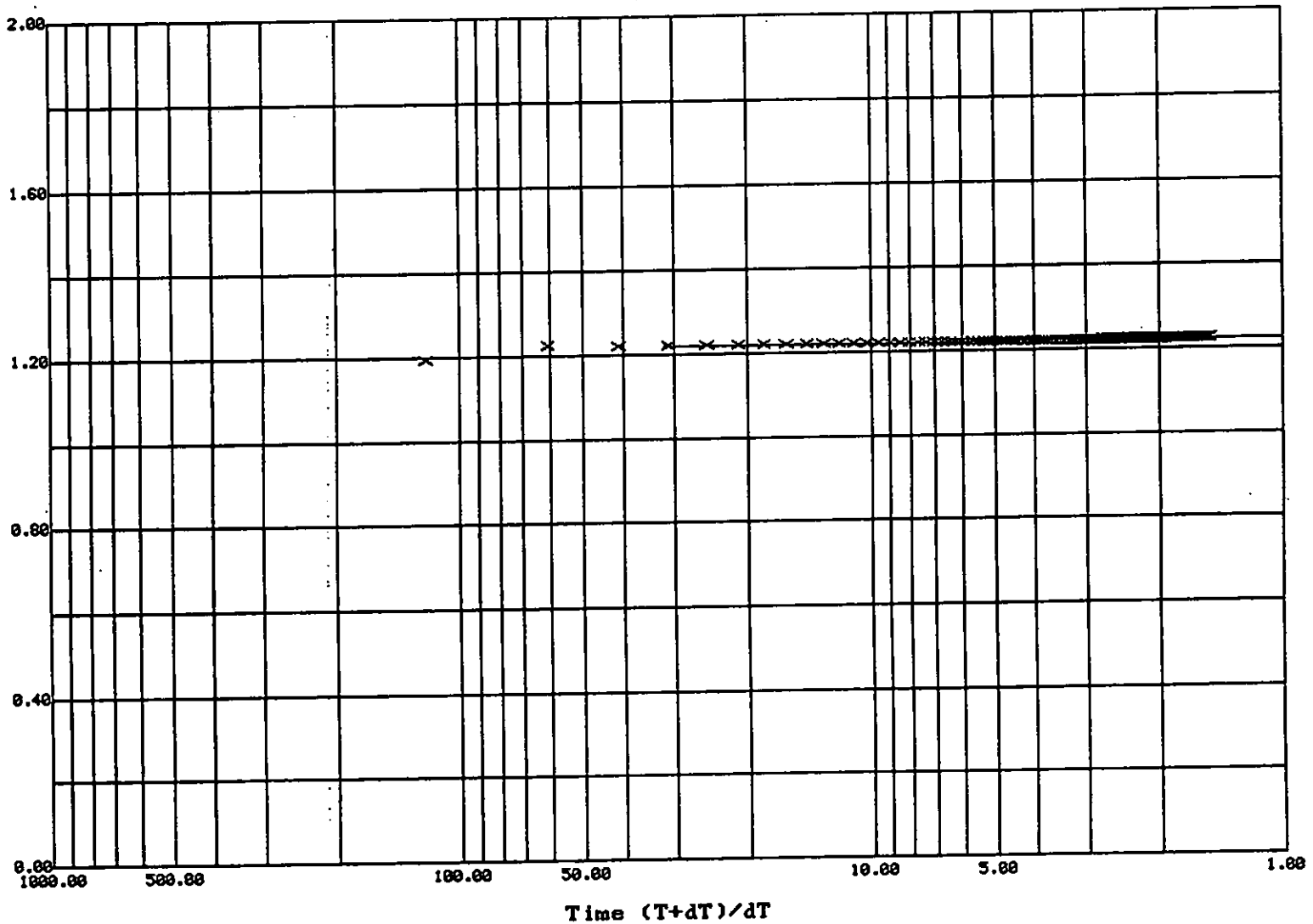
00-00-16902-1195

Pressure (PSI²/10⁶)

P² Horner Plot: shut-in #1

10679 Dst#1 Western Operating Co. 1-X Siverson

Slope: 0.0048 PSI²/10⁶/cycle
Ext. Pressure: 1106.9888 PSI_g



Operator.....: Western Operating Co.
Well Name.....: 1-X Silverton
DST Number.....: 1

Location.: 23-20S-42W Recorder No....: 3026
Test Type: conv Recorder Depth: 5126
Formation: Morrow Test Interval.: 5024-5154

RESERVOIR CALCULATIONS: Gas calculations based on shut-in #2

RESERVOIR PARAMETERS USED:

Net Pay.....: 25.00 ft
Porosity.....: 24.00 %
Bottom Hole Temp.....: 150.00 F
Specific Gravity.....: 0.832
Z factor.....: .9985
Compressibility.....: 0.000970 /psi
Viscosity.....: 0.0136 cp
Total Flowing Time.....: 120.00 min.
Flow Rate.....: 10468.00 mcf
Final Flowing Pressure.....: 1071.00 psi
Horner Slope.....: 0.0020 *10⁶ psi²/cycle
Extrapolated Pressure.....: 1105.81 psi
Assumed Drainage Radius.....: 1500.00 ft
Well Bore Radius.....: 3.94 in

RESULTS:

Effective Permeability.....: 2837.097917 md
Flow Capacity.....: 70927.4479 md.ft
Transmissibility.....: 5215253.5246 md.ft/cp
Skin Factor.....: 38.0435
Pressure Drop Across Skin.....: 30.4357 psi
Radius of Investigation.....: 1227.8180 ft
Damage Ratio.....: 5.7292
Absolute Open Flow.....: 168894.7066 mcf
Absolute Open Flow W/O Damage.: 967634.6562 mcf
Estimated Stabilized AOF.....: 611077.7248 mcf

□

TEST HISTORY

10679 Dst#1 Western Operating Co. 1-X Siverson

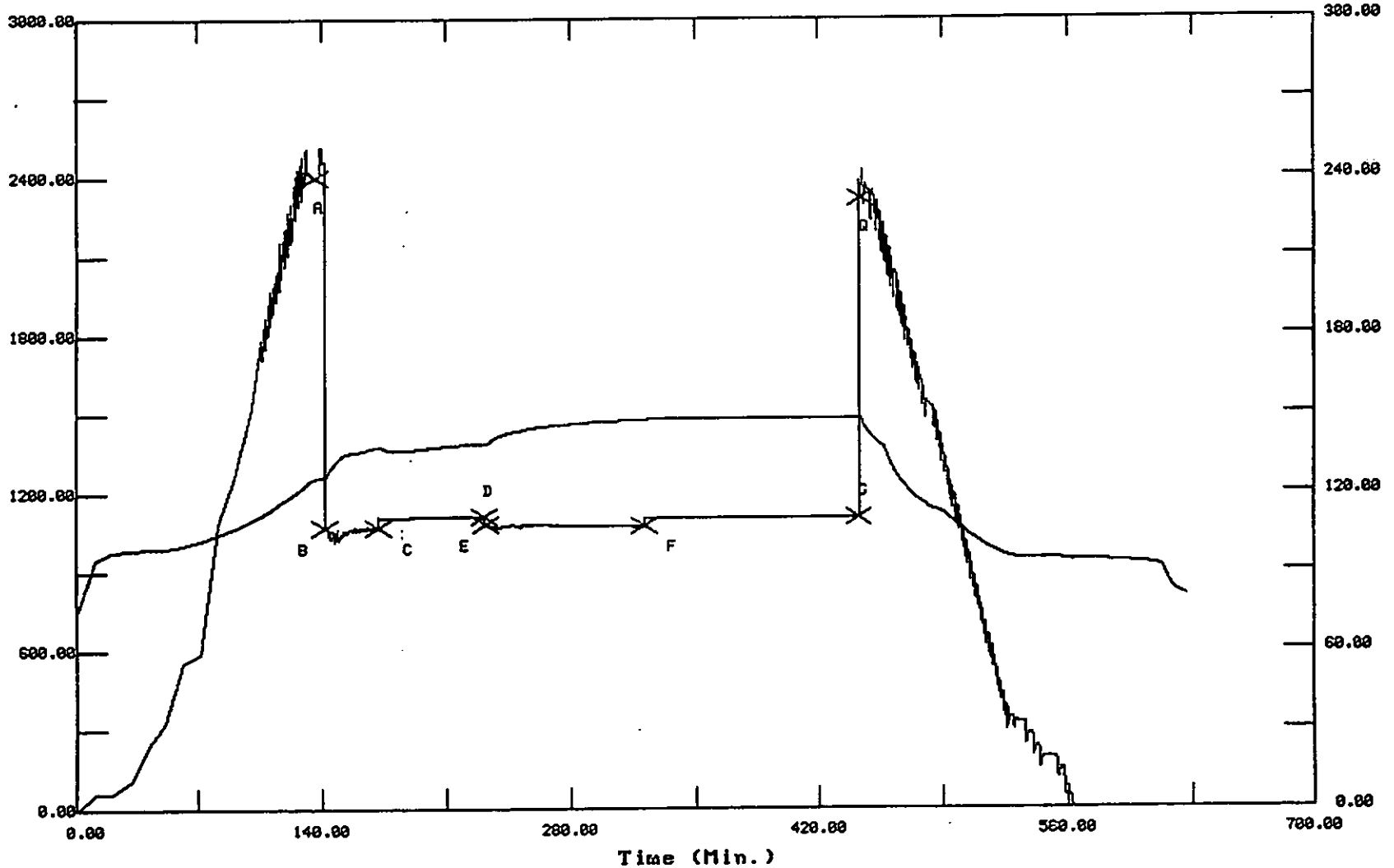
Flag Points

t (Min.) P (PSig)

| | | |
|----|--------|---------|
| R: | 0.00 | 2399.87 |
| B: | 0.00 | 1067.26 |
| C: | 30.00 | 1067.84 |
| D: | 59.75 | 1106.45 |
| E: | 0.00 | 1076.13 |
| F: | 89.75 | 1071.12 |
| G: | 120.75 | 1105.54 |
| Q: | 0.00 | 2316.31 |

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Pressure (PSig)



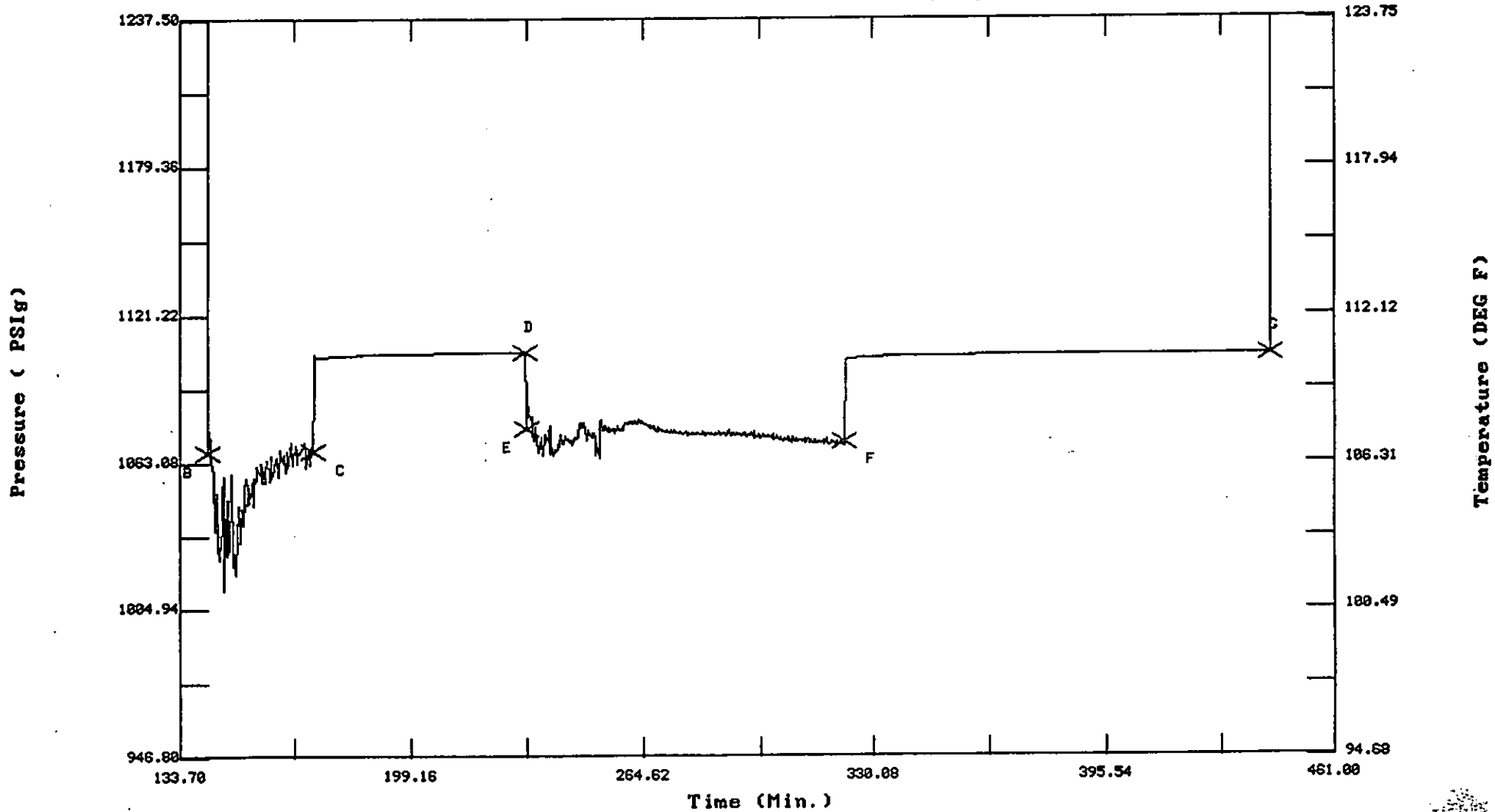
Temperature (DEG F)

TEST HISTORY

10679 Dst#1 Western Operating Co. 1-X Siverson

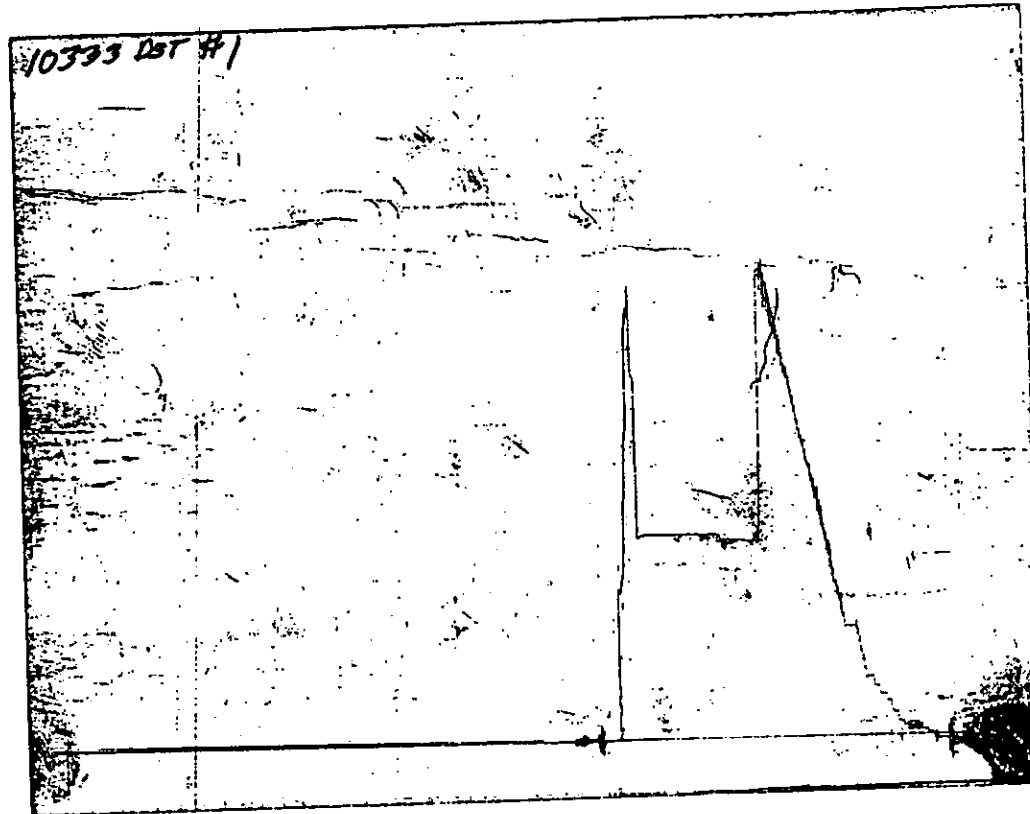
Flag Points

| | t (Min.) | P (PSig) |
|----|----------|----------|
| A: | 0.00 | 2399.87 |
| B: | 0.00 | 1067.26 |
| C: | 30.00 | 1067.84 |
| D: | 59.75 | 1106.45 |
| E: | 0.00 | 1076.13 |
| F: | 89.75 | 1071.12 |
| G: | 120.75 | 1105.54 |
| Q: | 0.00 | 2316.31 |



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CHART PAGE



This is a photocopy of the actual AK-1 recorder chart

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| | Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|----------------------|--------|------------------|-----------------|----------------|-----------|---------------------------------|
| ***** Initial Hydro. | 136.50 | 2399.9 | 0.0 | 125.68 | | |
| ***** Start Flow 1 | 0.00 | 1067.3 | 0.0 | 126.63 | | |
| | 0.25 | 1071.0 | 3.8 | 126.70 | | |
| | 0.50 | 1075.9 | 8.7 | 126.80 | | |
| | 0.75 | 1070.5 | 3.3 | 126.95 | | |
| | 1.00 | 1064.7 | -2.6 | 127.16 | | |
| | 1.25 | 1061.4 | -5.9 | 127.43 | | |
| | 1.50 | 1059.5 | -7.7 | 127.74 | | |
| | 1.75 | 1059.6 | -7.6 | 128.05 | | |
| | 2.00 | 1036.4 | -30.8 | 128.36 | | |
| | 2.25 | 1046.2 | -21.0 | 128.68 | | |
| | 2.50 | 1051.5 | -15.8 | 128.96 | | |
| | 2.75 | 1027.2 | -40.0 | 129.24 | | |
| | 3.00 | 1033.8 | -33.5 | 129.51 | | |
| | 3.25 | 1024.5 | -42.8 | 129.75 | | |
| | 3.50 | 1029.7 | -37.6 | 129.99 | | |
| | 3.75 | 1029.3 | -37.9 | 130.20 | | |
| | 4.00 | 1041.1 | -26.2 | 130.41 | | |
| | 4.25 | 1051.7 | -15.5 | 130.60 | | |
| | 4.50 | 1057.7 | -9.6 | 130.80 | | |
| | 4.75 | 1012.2 | -55.1 | 130.98 | | |
| | 5.00 | 1041.5 | -25.8 | 131.16 | | |
| | 5.25 | 1026.1 | -41.2 | 131.33 | | |
| | 5.50 | 1048.4 | -18.9 | 131.49 | | |
| | 5.75 | 1048.5 | -18.7 | 131.65 | | |
| | 6.00 | 1027.5 | -39.8 | 131.82 | | |
| | 6.25 | 1029.6 | -37.7 | 132.01 | | |
| | 6.50 | 1051.2 | -16.0 | 132.18 | | |
| | 6.75 | 1059.2 | -8.1 | 132.36 | | |
| | 7.00 | 1022.2 | -45.0 | 132.53 | | |
| | 7.25 | 1030.3 | -37.0 | 132.71 | | |
| | 7.50 | 1025.6 | -41.6 | 132.89 | | |
| | 7.75 | 1019.0 | -48.2 | 133.07 | | |
| | 8.00 | 1025.6 | -41.6 | 133.24 | | |
| | 8.25 | 1029.0 | -38.3 | 133.41 | | |
| | 8.50 | 1033.5 | -33.8 | 133.58 | | |
| | 8.75 | 1045.8 | -21.4 | 133.72 | | |
| | 9.00 | 1031.8 | -35.5 | 133.87 | | |
| | 9.25 | 1038.7 | -28.5 | 134.00 | | |
| | 9.50 | 1044.9 | -22.3 | 134.12 | | |
| | 9.75 | 1041.0 | -26.3 | 134.22 | | |
| | 10.00 | 1038.4 | -28.9 | 134.32 | | |
| | 10.25 | 1050.3 | -16.9 | 134.41 | | |
| | 10.50 | 1053.8 | -13.4 | 134.50 | | |
| | 10.75 | 1057.2 | -10.1 | 134.57 | | |
| | 11.00 | 1053.8 | -13.4 | 134.64 | | |
| | 11.25 | 1046.5 | -20.7 | 134.71 | | |
| | 11.50 | 1053.5 | -13.7 | 134.77 | | |
| | 11.75 | 1047.5 | -19.8 | 134.82 | | |
| | 12.00 | 1051.1 | -16.2 | 134.88 | | |
| | 12.25 | 1052.6 | -14.6 | 134.92 | | |

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ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 12.50 | 1055.3 | -11.9 | 134.97 | | |
| 12.75 | 1046.1 | -21.1 | 135.01 | | |
| 13.00 | 1057.2 | -10.1 | 135.04 | | |
| 13.25 | 1055.7 | -11.6 | 135.09 | | |
| 13.50 | 1057.0 | -10.3 | 135.13 | | |
| 13.75 | 1061.8 | -5.5 | 135.17 | | |
| 14.00 | 1060.1 | -7.2 | 135.21 | | |
| 14.25 | 1060.2 | -7.1 | 135.24 | | |
| 14.50 | 1059.7 | -7.6 | 135.28 | | |
| 14.75 | 1058.1 | -9.2 | 135.30 | | |
| 15.00 | 1063.2 | -4.0 | 135.33 | | |
| 15.25 | 1062.0 | -5.2 | 135.36 | | |
| 15.50 | 1055.4 | -11.9 | 135.38 | | |
| 15.75 | 1060.1 | -7.1 | 135.41 | | |
| 16.00 | 1055.2 | -12.0 | 135.43 | | |
| 16.25 | 1060.8 | -6.4 | 135.45 | | |
| 16.50 | 1064.3 | -3.0 | 135.46 | | |
| 16.75 | 1061.8 | -5.4 | 135.49 | | |
| 17.00 | 1061.2 | -6.1 | 135.51 | | |
| 17.25 | 1061.1 | -6.2 | 135.53 | | |
| 17.50 | 1056.0 | -11.2 | 135.56 | | |
| 17.75 | 1065.9 | -1.4 | 135.58 | | |
| 18.00 | 1057.5 | -9.8 | 135.61 | | |
| 18.25 | 1059.5 | -7.7 | 135.64 | | |
| 18.50 | 1060.1 | -7.2 | 135.67 | | |
| 18.75 | 1062.2 | -5.0 | 135.69 | | |
| 19.00 | 1064.7 | -2.6 | 135.74 | | |
| 19.25 | 1062.9 | -4.3 | 135.77 | | |
| 19.50 | 1065.3 | -1.9 | 135.80 | | |
| 19.75 | 1057.7 | -9.5 | 135.84 | | |
| 20.00 | 1062.9 | -4.3 | 135.87 | | |
| 20.25 | 1063.5 | -3.8 | 135.91 | | |
| 20.50 | 1068.1 | 0.8 | 135.95 | | |
| 20.75 | 1065.0 | -2.3 | 135.99 | | |
| 21.00 | 1065.6 | -1.7 | 136.02 | | |
| 21.25 | 1063.7 | -3.5 | 136.06 | | |
| 21.50 | 1064.6 | -2.6 | 136.10 | | |
| 21.75 | 1066.3 | -1 | 136.15 | | |
| 22.00 | 1059.4 | -7.9 | 136.19 | | |
| 22.25 | 1067.9 | 0.7 | 136.24 | | |
| 22.50 | 1061.2 | -6.0 | 136.29 | | |
| 22.75 | 1063.6 | -3.7 | 136.33 | | |
| 23.00 | 1065.0 | -2.3 | 136.38 | | |
| 23.25 | 1068.2 | 1 | 136.43 | | |
| 23.50 | 1071.0 | 3.7 | 136.48 | | |
| 23.75 | 1068.3 | 1.0 | 136.53 | | |
| 24.00 | 1062.4 | -4.9 | 136.58 | | |
| 24.25 | 1067.3 | 0.1 | 136.62 | | |
| 24.50 | 1067.5 | 0.3 | 136.67 | | |
| 24.75 | 1066.4 | -0.8 | 136.71 | | |
| 25.00 | 1069.9 | 2.7 | 136.76 | | |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| | Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|----------------------|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| | 25.25 | 1062.8 | -4.4 | 136.80 | | |
| | 25.50 | 1068.8 | 1.5 | 136.84 | | |
| | 25.75 | 1066.4 | -0.8 | 136.88 | | |
| | 26.00 | 1067.9 | 0.6 | 136.92 | | |
| | 26.25 | 1067.6 | 0.3 | 136.96 | | |
| | 26.50 | 1068.0 | 0.8 | 137.00 | | |
| | 26.75 | 1068.6 | 1.3 | 137.04 | | |
| | 27.00 | 1069.0 | 1.7 | 137.07 | | |
| | 27.25 | 1069.1 | 1.9 | 137.15 | | |
| | 27.50 | 1071.1 | 3.8 | 137.14 | | |
| | 27.75 | 1068.4 | 1.1 | 137.23 | | |
| | 28.00 | 1061.3 | -5.9 | 137.21 | | |
| | 28.25 | 1064.6 | -2.6 | 137.25 | | |
| | 28.50 | 1068.4 | 1.2 | 137.28 | | |
| | 28.75 | 1065.3 | -2.0 | 137.31 | | |
| | 29.00 | 1068.7 | 1.4 | 137.34 | | |
| | 29.25 | 1062.7 | -4.6 | 137.38 | | |
| | 29.50 | 1069.4 | 2.1 | 137.41 | | |
| | 29.75 | 1070.8 | 3.5 | 137.45 | | |
| ***** End Flow 1 | 30.00 | 1067.8 | 0.6 | 137.47 | | |
| ***** Start Shutin 1 | 0.00 | 1067.8 | 0.0 | 137.47 | 0.0000 | 1.140 |
| | 0.25 | 1093.5 | 25.6 | 137.51 | 121.0000 | 1.196 |
| | 0.50 | 1106.4 | 38.5 | 137.55 | 61.0000 | 1.224 |
| | 0.75 | 1105.0 | 37.2 | 137.58 | 41.0000 | 1.221 |
| | 1.00 | 1104.8 | 37.0 | 137.59 | 31.0000 | 1.221 |
| | 1.25 | 1104.9 | 37.0 | 137.57 | 25.0000 | 1.221 |
| | 1.50 | 1104.9 | 37.1 | 137.52 | 21.0000 | 1.221 |
| | 1.75 | 1104.9 | 37.1 | 137.44 | 18.1429 | 1.221 |
| | 2.00 | 1104.9 | 37.1 | 137.35 | 16.0000 | 1.221 |
| | 2.25 | 1105.0 | 37.2 | 137.25 | 14.3333 | 1.221 |
| | 2.50 | 1105.0 | 37.2 | 137.14 | 13.0000 | 1.221 |
| | 2.75 | 1105.0 | 37.2 | 137.03 | 11.9091 | 1.221 |
| | 3.00 | 1105.1 | 37.2 | 136.93 | 11.0000 | 1.221 |
| | 3.25 | 1105.1 | 37.2 | 136.83 | 10.2308 | 1.221 |
| | 3.50 | 1105.1 | 37.3 | 136.73 | 9.5714 | 1.221 |
| | 3.75 | 1105.1 | 37.3 | 136.64 | 9.0000 | 1.221 |
| | 4.00 | 1105.2 | 37.3 | 136.56 | 8.5000 | 1.221 |
| | 4.25 | 1105.2 | 37.4 | 136.49 | 8.0588 | 1.221 |
| | 4.50 | 1105.2 | 37.4 | 136.41 | 7.6667 | 1.222 |
| | 4.75 | 1105.3 | 37.4 | 136.32 | 7.3158 | 1.222 |
| | 5.00 | 1105.3 | 37.4 | 136.29 | 7.0000 | 1.222 |
| | 5.25 | 1105.3 | 37.4 | 136.23 | 6.7143 | 1.222 |
| | 5.50 | 1105.3 | 37.5 | 136.18 | 6.4545 | 1.222 |
| | 5.75 | 1105.4 | 37.5 | 136.14 | 6.2174 | 1.222 |
| | 6.00 | 1105.4 | 37.5 | 136.10 | 6.0000 | 1.222 |
| | 6.25 | 1105.4 | 37.6 | 136.06 | 5.8000 | 1.222 |
| | 6.50 | 1105.4 | 37.6 | 136.04 | 5.6154 | 1.222 |
| | 6.75 | 1105.5 | 37.6 | 136.02 | 5.4444 | 1.222 |
| | 7.00 | 1105.5 | 37.6 | 136.00 | 5.2857 | 1.222 |
| | 7.25 | 1105.5 | 37.7 | 135.98 | 5.1379 | 1.222 |
| | 7.50 | 1105.5 | 37.7 | 135.97 | 5.0000 | 1.222 |

15-071-20691-00-00

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson
DATE: 06/18/98 TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P^2/10^6 |
|-------|------------------|-----------------|----------------|-----------|----------|
| 7.75 | 1105.5 | 37.7 | 135.96 | 4.8710 | 1.222 |
| 8.00 | 1105.5 | 37.7 | 135.95 | 4.7500 | 1.222 |
| 8.25 | 1105.6 | 37.8 | 135.95 | 4.6364 | 1.222 |
| 8.50 | 1105.6 | 37.8 | 135.95 | 4.5294 | 1.222 |
| 8.75 | 1105.6 | 37.8 | 135.95 | 4.4286 | 1.222 |
| 9.00 | 1105.7 | 37.8 | 135.95 | 4.3333 | 1.223 |
| 9.25 | 1105.6 | 37.8 | 135.95 | 4.2432 | 1.222 |
| 9.50 | 1105.7 | 37.8 | 135.96 | 4.1579 | 1.223 |
| 9.75 | 1105.7 | 37.8 | 135.96 | 4.0769 | 1.223 |
| 10.00 | 1105.7 | 37.9 | 135.97 | 4.0000 | 1.223 |
| 10.25 | 1105.7 | 37.9 | 135.97 | 3.9268 | 1.223 |
| 10.50 | 1105.7 | 37.9 | 135.97 | 3.8571 | 1.223 |
| 10.75 | 1105.7 | 37.9 | 135.97 | 3.7907 | 1.223 |
| 11.00 | 1105.7 | 37.9 | 135.98 | 3.7273 | 1.223 |
| 11.25 | 1105.8 | 37.9 | 135.97 | 3.6667 | 1.223 |
| 11.50 | 1105.8 | 37.9 | 135.97 | 3.6087 | 1.223 |
| 11.75 | 1105.8 | 37.9 | 135.97 | 3.5532 | 1.223 |
| 12.00 | 1105.8 | 37.9 | 135.98 | 3.5000 | 1.223 |
| 12.25 | 1105.8 | 38.0 | 135.98 | 3.4490 | 1.223 |
| 12.50 | 1105.8 | 38.0 | 135.98 | 3.4000 | 1.223 |
| 12.75 | 1105.8 | 38.0 | 135.98 | 3.3529 | 1.223 |
| 13.00 | 1105.8 | 38.0 | 135.98 | 3.3077 | 1.223 |
| 13.25 | 1105.8 | 37.9 | 135.98 | 3.2642 | 1.223 |
| 13.50 | 1105.8 | 37.9 | 136.00 | 3.2222 | 1.223 |
| 13.75 | 1105.8 | 38.0 | 136.00 | 3.1818 | 1.223 |
| 14.00 | 1105.8 | 38.0 | 136.01 | 3.1429 | 1.223 |
| 14.25 | 1105.8 | 38.0 | 136.01 | 3.1053 | 1.223 |
| 14.50 | 1105.9 | 38.0 | 136.02 | 3.0690 | 1.223 |
| 14.75 | 1105.9 | 38.1 | 136.02 | 3.0339 | 1.223 |
| 15.00 | 1105.9 | 38.1 | 136.03 | 3.0000 | 1.223 |
| 15.25 | 1105.9 | 38.1 | 136.05 | 2.9672 | 1.223 |
| 15.50 | 1105.9 | 38.1 | 136.06 | 2.9355 | 1.223 |
| 15.75 | 1105.9 | 38.1 | 136.08 | 2.9048 | 1.223 |
| 16.00 | 1105.9 | 38.1 | 136.10 | 2.8750 | 1.223 |
| 16.25 | 1105.9 | 38.1 | 136.11 | 2.8462 | 1.223 |
| 16.50 | 1105.9 | 38.1 | 136.12 | 2.8182 | 1.223 |
| 16.75 | 1106.0 | 38.1 | 136.14 | 2.7910 | 1.223 |
| 17.00 | 1106.0 | 38.2 | 136.16 | 2.7647 | 1.223 |
| 17.25 | 1106.0 | 38.2 | 136.18 | 2.7391 | 1.223 |
| 17.50 | 1106.0 | 38.2 | 136.20 | 2.7143 | 1.223 |
| 17.75 | 1106.0 | 38.2 | 136.21 | 2.6901 | 1.223 |
| 18.00 | 1106.0 | 38.2 | 136.24 | 2.6667 | 1.223 |
| 18.25 | 1106.1 | 38.2 | 136.25 | 2.6438 | 1.223 |
| 18.50 | 1106.1 | 38.2 | 136.25 | 2.6216 | 1.223 |
| 18.75 | 1106.1 | 38.2 | 136.29 | 2.6000 | 1.223 |
| 19.00 | 1106.1 | 38.2 | 136.31 | 2.5789 | 1.223 |
| 19.25 | 1106.1 | 38.2 | 136.33 | 2.5584 | 1.223 |
| 19.50 | 1106.1 | 38.3 | 136.36 | 2.5385 | 1.223 |
| 19.75 | 1106.0 | 38.2 | 136.38 | 2.5190 | 1.223 |
| 20.00 | 1106.0 | 38.2 | 136.40 | 2.5000 | 1.223 |
| 20.25 | 1106.1 | 38.3 | 136.42 | 2.4815 | 1.223 |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSIg | delta P PSIg | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 20.50 | 1106.1 | 38.3 | 136.44 | 2.4634 | 1.224 |
| 20.75 | 1106.1 | 38.3 | 136.46 | 2.4458 | 1.224 |
| 21.00 | 1106.1 | 38.3 | 136.49 | 2.4286 | 1.224 |
| 21.25 | 1106.2 | 38.3 | 136.51 | 2.4118 | 1.224 |
| 21.50 | 1106.2 | 38.3 | 136.53 | 2.3953 | 1.224 |
| 21.75 | 1106.2 | 38.3 | 136.55 | 2.3793 | 1.224 |
| 22.00 | 1106.2 | 38.3 | 136.58 | 2.3636 | 1.224 |
| 22.25 | 1106.2 | 38.3 | 136.60 | 2.3483 | 1.224 |
| 22.50 | 1106.1 | 38.3 | 136.61 | 2.3333 | 1.224 |
| 22.75 | 1106.1 | 38.3 | 136.63 | 2.3187 | 1.224 |
| 23.00 | 1106.1 | 38.3 | 136.65 | 2.3043 | 1.224 |
| 23.25 | 1106.2 | 38.4 | 136.67 | 2.2903 | 1.224 |
| 23.50 | 1106.2 | 38.4 | 136.69 | 2.2766 | 1.224 |
| 23.75 | 1106.2 | 38.4 | 136.72 | 2.2632 | 1.224 |
| 24.00 | 1106.2 | 38.3 | 136.74 | 2.2500 | 1.224 |
| 24.25 | 1106.2 | 38.3 | 136.75 | 2.2371 | 1.224 |
| 24.50 | 1106.2 | 38.3 | 136.77 | 2.2245 | 1.224 |
| 24.75 | 1106.2 | 38.3 | 136.80 | 2.2121 | 1.224 |
| 25.00 | 1106.2 | 38.3 | 136.82 | 2.2000 | 1.224 |
| 25.25 | 1106.2 | 38.3 | 136.84 | 2.1881 | 1.224 |
| 25.50 | 1106.2 | 38.4 | 136.85 | 2.1765 | 1.224 |
| 25.75 | 1106.2 | 38.4 | 136.88 | 2.1650 | 1.224 |
| 26.00 | 1106.2 | 38.4 | 136.89 | 2.1538 | 1.224 |
| 26.25 | 1106.2 | 38.4 | 136.91 | 2.1429 | 1.224 |
| 26.50 | 1106.2 | 38.4 | 136.93 | 2.1321 | 1.224 |
| 26.75 | 1106.2 | 38.4 | 136.95 | 2.1215 | 1.224 |
| 27.00 | 1106.3 | 38.4 | 136.97 | 2.1111 | 1.224 |
| 27.25 | 1106.3 | 38.4 | 136.99 | 2.1009 | 1.224 |
| 27.50 | 1106.3 | 38.4 | 137.01 | 2.0909 | 1.224 |
| 27.75 | 1106.3 | 38.4 | 137.03 | 2.0811 | 1.224 |
| 28.00 | 1106.3 | 38.5 | 137.05 | 2.0714 | 1.224 |
| 28.25 | 1106.3 | 38.4 | 137.06 | 2.0619 | 1.224 |
| 28.50 | 1106.3 | 38.5 | 137.09 | 2.0526 | 1.224 |
| 28.75 | 1106.3 | 38.5 | 137.12 | 2.0435 | 1.224 |
| 29.00 | 1106.3 | 38.5 | 137.11 | 2.0345 | 1.224 |
| 29.25 | 1106.3 | 38.5 | 137.14 | 2.0256 | 1.224 |
| 29.50 | 1106.3 | 38.5 | 137.16 | 2.0169 | 1.224 |
| 29.75 | 1106.3 | 38.5 | 137.18 | 2.0084 | 1.224 |
| 30.00 | 1106.3 | 38.5 | 137.20 | 2.0000 | 1.224 |
| 30.25 | 1106.3 | 38.4 | 137.22 | 1.9917 | 1.224 |
| 30.50 | 1106.2 | 38.4 | 137.24 | 1.9836 | 1.224 |
| 30.75 | 1106.3 | 38.4 | 137.26 | 1.9756 | 1.224 |
| 31.00 | 1106.3 | 38.5 | 137.28 | 1.9677 | 1.224 |
| 31.25 | 1106.3 | 38.5 | 137.30 | 1.9600 | 1.224 |
| 31.50 | 1106.3 | 38.5 | 137.32 | 1.9524 | 1.224 |
| 31.75 | 1106.3 | 38.5 | 137.34 | 1.9449 | 1.224 |
| 32.00 | 1106.3 | 38.5 | 137.36 | 1.9375 | 1.224 |
| 32.25 | 1106.3 | 38.5 | 137.38 | 1.9302 | 1.224 |
| 32.50 | 1106.4 | 38.5 | 137.39 | 1.9231 | 1.224 |
| 32.75 | 1106.4 | 38.5 | 137.41 | 1.9160 | 1.224 |
| 33.00 | 1106.4 | 38.5 | 137.43 | 1.9091 | 1.224 |

15-071-20691-00-00

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 33.25 | 1106.4 | 38.5 | 137.45 | 1.9023 | 1.224 |
| 33.50 | 1106.3 | 38.5 | 137.47 | 1.8955 | 1.224 |
| 33.75 | 1106.3 | 38.5 | 137.47 | 1.8889 | 1.224 |
| 34.00 | 1106.4 | 38.5 | 137.51 | 1.8824 | 1.224 |
| 34.25 | 1106.4 | 38.5 | 137.52 | 1.8759 | 1.224 |
| 34.50 | 1106.4 | 38.6 | 137.54 | 1.8696 | 1.224 |
| 34.75 | 1106.4 | 38.6 | 137.56 | 1.8633 | 1.224 |
| 35.00 | 1106.4 | 38.6 | 137.58 | 1.8571 | 1.224 |
| 35.25 | 1106.4 | 38.5 | 137.60 | 1.8511 | 1.224 |
| 35.50 | 1106.4 | 38.5 | 137.61 | 1.8451 | 1.224 |
| 35.75 | 1106.4 | 38.6 | 137.63 | 1.8392 | 1.224 |
| 36.00 | 1106.4 | 38.6 | 137.65 | 1.8333 | 1.224 |
| 36.25 | 1106.4 | 38.6 | 137.67 | 1.8276 | 1.224 |
| 36.50 | 1106.4 | 38.6 | 137.68 | 1.8219 | 1.224 |
| 36.75 | 1106.5 | 38.6 | 137.71 | 1.8163 | 1.224 |
| 37.00 | 1106.5 | 38.6 | 137.72 | 1.8108 | 1.224 |
| 37.25 | 1106.5 | 38.6 | 137.74 | 1.8054 | 1.224 |
| 37.50 | 1106.4 | 38.6 | 137.76 | 1.8000 | 1.224 |
| 37.75 | 1106.4 | 38.6 | 137.77 | 1.7947 | 1.224 |
| 38.00 | 1106.4 | 38.6 | 137.79 | 1.7895 | 1.224 |
| 38.25 | 1106.5 | 38.6 | 137.81 | 1.7843 | 1.224 |
| 38.50 | 1106.5 | 38.6 | 137.82 | 1.7792 | 1.224 |
| 38.75 | 1106.5 | 38.6 | 137.84 | 1.7742 | 1.224 |
| 39.00 | 1106.5 | 38.7 | 137.85 | 1.7692 | 1.224 |
| 39.25 | 1106.5 | 38.6 | 137.87 | 1.7643 | 1.224 |
| 39.50 | 1106.5 | 38.6 | 137.88 | 1.7595 | 1.224 |
| 39.75 | 1106.4 | 38.6 | 137.91 | 1.7547 | 1.224 |
| 40.00 | 1106.5 | 38.7 | 137.93 | 1.7500 | 1.224 |
| 40.25 | 1106.5 | 38.7 | 137.94 | 1.7453 | 1.224 |
| 40.50 | 1106.5 | 38.7 | 137.94 | 1.7407 | 1.224 |
| 40.75 | 1106.5 | 38.7 | 137.95 | 1.7362 | 1.224 |
| 41.00 | 1106.5 | 38.7 | 137.97 | 1.7317 | 1.224 |
| 41.25 | 1106.5 | 38.7 | 137.99 | 1.7273 | 1.224 |
| 41.50 | 1106.5 | 38.7 | 138.00 | 1.7229 | 1.224 |
| 41.75 | 1106.5 | 38.7 | 138.02 | 1.7186 | 1.224 |
| 42.00 | 1106.5 | 38.7 | 138.03 | 1.7143 | 1.224 |
| 42.25 | 1106.5 | 38.7 | 138.05 | 1.7101 | 1.224 |
| 42.50 | 1106.5 | 38.7 | 138.06 | 1.7059 | 1.224 |
| 42.75 | 1106.6 | 38.7 | 138.08 | 1.7018 | 1.224 |
| 43.00 | 1106.6 | 38.7 | 138.09 | 1.6977 | 1.224 |
| 43.25 | 1106.6 | 38.7 | 138.10 | 1.6936 | 1.224 |
| 43.50 | 1106.5 | 38.7 | 138.12 | 1.6897 | 1.224 |
| 43.75 | 1106.5 | 38.7 | 138.13 | 1.6857 | 1.224 |
| 44.00 | 1106.5 | 38.7 | 138.15 | 1.6818 | 1.224 |
| 44.25 | 1106.6 | 38.7 | 138.16 | 1.6780 | 1.224 |
| 44.50 | 1106.6 | 38.8 | 138.18 | 1.6742 | 1.225 |
| 44.75 | 1106.6 | 38.8 | 138.19 | 1.6704 | 1.225 |
| 45.00 | 1106.7 | 38.8 | 138.20 | 1.6667 | 1.225 |
| 45.25 | 1106.7 | 38.8 | 138.21 | 1.6630 | 1.225 |
| 45.50 | 1106.7 | 38.8 | 138.22 | 1.6593 | 1.225 |
| 45.75 | 1106.7 | 38.8 | 138.24 | 1.6557 | 1.225 |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSIg | delta P PSIg | P DEG F | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|------------|----------------|-----------|---------------------------------|
| 46.00 | 1106.7 | 38.8 | 138.25 | 1.6522 | 1.225 | |
| 46.25 | 1106.7 | 38.8 | 138.26 | 1.6486 | 1.225 | |
| 46.50 | 1106.7 | 38.8 | 138.27 | 1.6452 | 1.225 | |
| 46.75 | 1106.7 | 38.8 | 138.28 | 1.6417 | 1.225 | |
| 47.00 | 1106.7 | 38.8 | 138.29 | 1.6383 | 1.225 | |
| 47.25 | 1106.7 | 38.9 | 138.30 | 1.6349 | 1.225 | |
| 47.50 | 1106.7 | 38.9 | 138.32 | 1.6316 | 1.225 | |
| 47.75 | 1106.7 | 38.9 | 138.32 | 1.6283 | 1.225 | |
| 48.00 | 1106.7 | 38.8 | 138.33 | 1.6250 | 1.225 | |
| 48.25 | 1106.7 | 38.8 | 138.33 | 1.6218 | 1.225 | |
| 48.50 | 1106.6 | 38.8 | 138.34 | 1.6186 | 1.225 | |
| 48.75 | 1106.6 | 38.8 | 138.34 | 1.6154 | 1.225 | |
| 49.00 | 1106.6 | 38.8 | 138.34 | 1.6122 | 1.225 | |
| 49.25 | 1106.6 | 38.8 | 138.34 | 1.6091 | 1.225 | |
| 49.50 | 1106.6 | 38.8 | 138.35 | 1.6061 | 1.225 | |
| 49.75 | 1106.6 | 38.8 | 138.36 | 1.6030 | 1.225 | |
| 50.00 | 1106.6 | 38.8 | 138.35 | 1.6000 | 1.225 | |
| 50.25 | 1106.6 | 38.8 | 138.36 | 1.5970 | 1.225 | |
| 50.50 | 1106.6 | 38.8 | 138.36 | 1.5941 | 1.225 | |
| 50.75 | 1106.6 | 38.8 | 138.36 | 1.5911 | 1.225 | |
| 51.00 | 1106.6 | 38.8 | 138.36 | 1.5882 | 1.225 | |
| 51.25 | 1106.6 | 38.8 | 138.36 | 1.5854 | 1.225 | |
| 51.50 | 1106.6 | 38.8 | 138.36 | 1.5825 | 1.225 | |
| 51.75 | 1106.6 | 38.8 | 138.36 | 1.5797 | 1.225 | |
| 52.00 | 1106.6 | 38.8 | 138.36 | 1.5769 | 1.225 | |
| 52.25 | 1106.6 | 38.8 | 138.36 | 1.5742 | 1.225 | |
| 52.50 | 1106.6 | 38.8 | 138.36 | 1.5714 | 1.225 | |
| 52.75 | 1106.6 | 38.8 | 138.36 | 1.5687 | 1.225 | |
| 53.00 | 1106.6 | 38.8 | 138.36 | 1.5660 | 1.225 | |
| 53.25 | 1106.6 | 38.8 | 138.36 | 1.5634 | 1.225 | |
| 53.50 | 1106.6 | 38.8 | 138.35 | 1.5607 | 1.225 | |
| 53.75 | 1106.6 | 38.8 | 138.35 | 1.5581 | 1.225 | |
| 54.00 | 1106.6 | 38.7 | 138.35 | 1.5556 | 1.224 | |
| 54.25 | 1106.6 | 38.7 | 138.35 | 1.5530 | 1.224 | |
| 54.50 | 1106.6 | 38.7 | 138.35 | 1.5505 | 1.225 | |
| 54.75 | 1106.5 | 38.7 | 138.34 | 1.5479 | 1.224 | |
| 55.00 | 1106.5 | 38.7 | 138.34 | 1.5455 | 1.224 | |
| 55.25 | 1106.5 | 38.7 | 138.34 | 1.5430 | 1.224 | |
| 55.50 | 1106.5 | 38.7 | 138.35 | 1.5405 | 1.224 | |
| 55.75 | 1106.5 | 38.7 | 138.34 | 1.5381 | 1.224 | |
| 56.00 | 1106.5 | 38.7 | 138.34 | 1.5357 | 1.224 | |
| 56.25 | 1106.5 | 38.7 | 138.34 | 1.5333 | 1.224 | |
| 56.50 | 1106.5 | 38.7 | 138.34 | 1.5310 | 1.224 | |
| 56.75 | 1106.5 | 38.7 | 138.34 | 1.5286 | 1.224 | |
| 57.00 | 1106.5 | 38.7 | 138.35 | 1.5263 | 1.224 | |
| 57.25 | 1106.5 | 38.7 | 138.34 | 1.5240 | 1.224 | |
| 57.50 | 1106.5 | 38.6 | 138.34 | 1.5217 | 1.224 | |
| 57.75 | 1106.5 | 38.7 | 138.34 | 1.5195 | 1.224 | |
| 58.00 | 1106.5 | 38.7 | 138.34 | 1.5172 | 1.224 | |
| 58.25 | 1106.5 | 38.7 | 138.34 | 1.5150 | 1.224 | |
| 58.50 | 1106.5 | 38.6 | 138.34 | 1.5128 | 1.224 | |

15-071-20691-00-00

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| | Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P^2/10^6 |
|---------------------|-------|------------------|-----------------|----------------|-----------|----------|
| | 58.75 | 1106.5 | 38.7 | 138.34 | 1.5106 | 1.224 |
| | 59.00 | 1106.5 | 38.7 | 138.34 | 1.5085 | 1.224 |
| | 59.25 | 1106.5 | 38.7 | 138.34 | 1.5063 | 1.224 |
| | 59.50 | 1106.5 | 38.6 | 138.35 | 1.5042 | 1.224 |
| ***** End Shut-in 1 | 59.75 | 1106.4 | 38.6 | 138.35 | 1.5021 | 1.224 |
| ***** Start Flow 2 | 0.00 | 1076.1 | 0.0 | 138.36 | | |
| | 0.25 | 1085.3 | 9.2 | 138.38 | | |
| | 0.50 | 1081.8 | 5.7 | 138.43 | | |
| | 0.75 | 1081.4 | 5.3 | 138.50 | | |
| | 1.00 | 1080.8 | 4.6 | 138.58 | | |
| | 1.25 | 1080.1 | 4.0 | 138.69 | | |
| | 1.50 | 1081.3 | 5.2 | 138.82 | | |
| | 1.75 | 1075.4 | -0.7 | 138.96 | | |
| | 2.00 | 1071.8 | -4.3 | 139.10 | | |
| | 2.25 | 1077.1 | 5.3 | 139.24 | | |
| | 2.50 | 1074.7 | -1.5 | 139.38 | | |
| | 2.75 | 1070.9 | -5.2 | 139.52 | | |
| | 3.00 | 1072.6 | -3.5 | 139.66 | | |
| | 3.25 | 1067.0 | -9.2 | 139.79 | | |
| | 3.50 | 1070.6 | -5.5 | 139.91 | | |
| | 3.75 | 1069.7 | -6.4 | 140.04 | | |
| | 4.00 | 1072.9 | -3.2 | 140.15 | | |
| | 4.25 | 1071.5 | -4.7 | 140.26 | | |
| | 4.50 | 1065.8 | -10.4 | 140.36 | | |
| | 4.75 | 1073.8 | -2.3 | 140.47 | | |
| | 5.00 | 1073.5 | -2.6 | 140.56 | | |
| | 5.25 | 1073.8 | -2.3 | 140.65 | | |
| | 5.50 | 1071.2 | -4.9 | 140.74 | | |
| | 5.75 | 1072.6 | -3.5 | 140.83 | | |
| | 6.00 | 1071.1 | -5.0 | 140.92 | | |
| | 6.25 | 1074.4 | -1.7 | 141.01 | | |
| | 6.50 | 1077.3 | 1.2 | 141.10 | | |
| | 6.75 | 1066.5 | -9.7 | 141.19 | | |
| | 7.00 | 1068.6 | -7.5 | 141.27 | | |
| | 7.25 | 1066.2 | -10 | 141.35 | | |
| | 7.50 | 1066.3 | -9.8 | 141.42 | | |
| | 7.75 | 1067.9 | -8.2 | 141.48 | | |
| | 8.00 | 1068.2 | -7.9 | 141.54 | | |
| | 8.25 | 1067.8 | -8.3 | 141.62 | | |
| | 8.50 | 1068.1 | -8.0 | 141.68 | | |
| | 8.75 | 1070.2 | -5.9 | 141.74 | | |
| | 9.00 | 1069.2 | -6.9 | 141.81 | | |
| | 9.25 | 1070.8 | -5.3 | 141.88 | | |
| | 9.50 | 1074.3 | -1.8 | 141.94 | | |
| | 9.75 | 1070.5 | -5.6 | 142.00 | | |
| | 10.00 | 1071.6 | -4.5 | 142.06 | | |
| | 10.25 | 1070.6 | -5.5 | 142.13 | | |
| | 10.50 | 1071.3 | -4.8 | 142.19 | | |
| | 10.75 | 1073.7 | -2.4 | 142.24 | | |
| | 11.00 | 1072.5 | -3.6 | 142.30 | | |
| | 11.25 | 1072.2 | -3.9 | 142.35 | | |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 11.50 | 1072.0 | -4.1 | 142.41 | | |
| 11.75 | 1071.0 | -5.1 | 142.47 | | |
| 12.00 | 1072.0 | -4.2 | 142.52 | | |
| 12.25 | 1071.4 | -4.7 | 142.57 | | |
| 12.50 | 1071.6 | -4.6 | 142.62 | | |
| 12.75 | 1070.1 | -6.0 | 142.68 | | |
| 13.00 | 1071.9 | -4.3 | 142.72 | | |
| 13.25 | 1072.5 | -3.7 | 142.77 | | |
| 13.50 | 1072.6 | -3.5 | 142.81 | | |
| 13.75 | 1072.9 | -3.2 | 142.86 | | |
| 14.00 | 1072.4 | -3.7 | 142.91 | | |
| 14.25 | 1073.2 | -2.9 | 142.95 | | |
| 14.50 | 1076.0 | -0.1 | 142.98 | | |
| 14.75 | 1076.8 | 0.7 | 143.02 | | |
| 15.00 | 1078.3 | 2.1 | 143.04 | | |
| 15.25 | 1078.5 | 2.4 | 143.06 | | |
| 15.50 | 1077.1 | 1 | 143.06 | | |
| 15.75 | 1078.0 | 1.9 | 143.07 | | |
| 16.00 | 1078.7 | 2.6 | 143.08 | | |
| 16.25 | 1077.4 | 1.3 | 143.08 | | |
| 16.50 | 1076.9 | 0.8 | 143.09 | | |
| 16.75 | 1072.0 | -4.1 | 143.10 | | |
| 17.00 | 1073.1 | -3.0 | 143.13 | | |
| 17.25 | 1075.5 | -0.6 | 143.15 | | |
| 17.50 | 1074.3 | -1.8 | 143.18 | | |
| 17.75 | 1074.8 | -1.3 | 143.22 | | |
| 18.00 | 1073.4 | -2.8 | 143.25 | | |
| 18.25 | 1073.4 | -2.8 | 143.29 | | |
| 18.50 | 1074.4 | -1.7 | 143.33 | | |
| 18.75 | 1072.7 | -3.4 | 143.37 | | |
| 19.00 | 1074.5 | -1.6 | 143.40 | | |
| 19.25 | 1073.7 | -2.5 | 143.45 | | |
| 19.50 | 1066.1 | -10.1 | 143.50 | | |
| 19.75 | 1069.7 | -6.4 | 143.52 | | |
| 20.00 | 1070.7 | -5.4 | 143.56 | | |
| 20.25 | 1067.6 | -8.5 | 143.60 | | |
| 20.50 | 1064.9 | -11.2 | 143.63 | | |
| 20.75 | 1079.1 | 3.0 | 143.67 | | |
| 21.00 | 1080.1 | 3.9 | 143.70 | | |
| 21.25 | 1079.0 | 2.9 | 143.75 | | |
| 21.50 | 1075.5 | -0.6 | 143.78 | | |
| 21.75 | 1076.0 | -0.1 | 143.83 | | |
| 22.00 | 1077.5 | 1.4 | 143.87 | | |
| 22.25 | 1077.8 | 1.7 | 143.93 | | |
| 22.50 | 1076.9 | 0.8 | 143.98 | | |
| 22.75 | 1076.6 | 0.4 | 144.04 | | |
| 23.00 | 1075.5 | -0.6 | 144.09 | | |
| 23.25 | 1076.8 | 0.7 | 144.14 | | |
| 23.50 | 1076.2 | 0.1 | 144.19 | | |
| 23.75 | 1075.4 | -0.7 | 144.24 | | |
| 24.00 | 1075.8 | -0.4 | 144.29 | | |

15-071-20691-00-00

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 24.25 | 1076.4 | 0.3 | 144.33 | | |
| 24.50 | 1076.6 | 0.5 | 144.37 | | |
| 24.75 | 1074.8 | -1.3 | 144.42 | | |
| 25.00 | 1076.2 | 0.1 | 144.45 | | |
| 25.25 | 1075.6 | -0.5 | 144.49 | | |
| 25.50 | 1076.1 | 0.0 | 144.52 | | |
| 25.75 | 1077.4 | 1.3 | 144.55 | | |
| 26.00 | 1076.1 | -0.0 | 144.59 | | |
| 26.25 | 1076.3 | 0.2 | 144.62 | | |
| 26.50 | 1075.6 | -0.5 | 144.65 | | |
| 26.75 | 1075.9 | -0.2 | 144.68 | | |
| 27.00 | 1077.1 | 1.0 | 144.71 | | |
| 27.25 | 1075.8 | -0.3 | 144.74 | | |
| 27.50 | 1077.8 | 1.7 | 144.77 | | |
| 27.75 | 1078.5 | 2.3 | 144.79 | | |
| 28.00 | 1078.6 | 2.4 | 144.82 | | |
| 28.25 | 1078.7 | 2.6 | 144.85 | | |
| 28.50 | 1078.9 | 2.7 | 144.87 | | |
| 28.75 | 1078.3 | 2.2 | 144.90 | | |
| 29.00 | 1079.1 | 3.0 | 144.93 | | |
| 29.25 | 1079.1 | 2.9 | 144.95 | | |
| 29.50 | 1078.9 | 2.8 | 144.97 | | |
| 29.75 | 1078.8 | 2.6 | 145.00 | | |
| 30.00 | 1078.0 | 1.9 | 145.02 | | |
| 30.25 | 1079.2 | 3.1 | 145.04 | | |
| 30.50 | 1078.9 | 2.8 | 145.06 | | |
| 30.75 | 1079.1 | 3.0 | 145.09 | | |
| 31.00 | 1078.1 | 1.9 | 145.10 | | |
| 31.25 | 1078.9 | 2.8 | 145.13 | | |
| 31.50 | 1079.7 | 3.6 | 145.15 | | |
| 31.75 | 1079.0 | 2.9 | 145.16 | | |
| 32.00 | 1079.5 | 3.4 | 145.18 | | |
| 32.25 | 1078.5 | 2.4 | 145.20 | | |
| 32.50 | 1079.1 | 2.9 | 145.22 | | |
| 32.75 | 1078.6 | 2.5 | 145.24 | | |
| 33.00 | 1078.2 | 2.0 | 145.27 | | |
| 33.25 | 1078.1 | 2.0 | 145.28 | | |
| 33.50 | 1078.2 | 2.0 | 145.30 | | |
| 33.75 | 1078.0 | 1.9 | 145.32 | | |
| 34.00 | 1077.5 | 1.4 | 145.33 | | |
| 34.25 | 1077.8 | 1.6 | 145.35 | | |
| 34.50 | 1076.7 | 0.6 | 145.36 | | |
| 34.75 | 1076.3 | 0.2 | 145.38 | | |
| 35.00 | 1077.4 | 1.3 | 145.39 | | |
| 35.25 | 1077.1 | 1.0 | 145.41 | | |
| 35.50 | 1076.3 | 0.2 | 145.42 | | |
| 35.75 | 1077.8 | 1.6 | 145.44 | | |
| 36.00 | 1076.9 | 0.7 | 145.44 | | |
| 36.25 | 1075.7 | -0.4 | 145.46 | | |
| 36.50 | 1075.1 | -1.0 | 145.47 | | |
| 36.75 | 1077.1 | 1 | 145.49 | | |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 37.00 | 1075.1 | -1.0 | 145.50 | | |
| 37.25 | 1076.4 | 0.3 | 145.51 | | |
| 37.50 | 1076.3 | 0.1 | 145.52 | | |
| 37.75 | 1076.0 | -0.1 | 145.54 | | |
| 38.00 | 1076.0 | -0.1 | 145.56 | | |
| 38.25 | 1075.4 | -0.7 | 145.56 | | |
| 38.50 | 1075.3 | -0.8 | 145.58 | | |
| 38.75 | 1075.4 | -0.7 | 145.60 | | |
| 39.00 | 1075.5 | -0.6 | 145.61 | | |
| 39.25 | 1075.5 | -0.6 | 145.62 | | |
| 39.50 | 1075.2 | -1 | 145.63 | | |
| 39.75 | 1075.3 | -0.8 | 145.65 | | |
| 40.00 | 1075.5 | -0.7 | 145.66 | | |
| 40.25 | 1074.9 | -1.3 | 145.67 | | |
| 40.50 | 1076.1 | -0.0 | 145.69 | | |
| 40.75 | 1075.8 | -0.3 | 145.71 | | |
| 41.00 | 1074.9 | -1.2 | 145.72 | | |
| 41.25 | 1076.1 | -0.1 | 145.73 | | |
| 41.50 | 1075.7 | -0.4 | 145.75 | | |
| 41.75 | 1074.6 | -1.5 | 145.76 | | |
| 42.00 | 1075.4 | -0.7 | 145.78 | | |
| 42.25 | 1074.9 | -1.2 | 145.78 | | |
| 42.50 | 1074.4 | -1.8 | 145.80 | | |
| 42.75 | 1074.5 | -1.6 | 145.81 | | |
| 43.00 | 1074.4 | -1.7 | 145.82 | | |
| 43.25 | 1075.4 | -0.7 | 145.84 | | |
| 43.50 | 1074.5 | -1.6 | 145.85 | | |
| 43.75 | 1074.3 | -1.8 | 145.87 | | |
| 44.00 | 1074.3 | -1.8 | 145.89 | | |
| 44.25 | 1074.5 | -1.6 | 145.93 | | |
| 44.50 | 1074.5 | -1.6 | 145.91 | | |
| 44.75 | 1075.3 | -0.8 | 145.91 | | |
| 45.00 | 1073.6 | -2.5 | 145.94 | | |
| 45.25 | 1074.6 | -1.5 | 145.95 | | |
| 45.50 | 1074.6 | -1.6 | 145.95 | | |
| 45.75 | 1074.0 | -2.2 | 145.98 | | |
| 46.00 | 1074.3 | -1.9 | 145.98 | | |
| 46.25 | 1074.4 | -1.7 | 145.99 | | |
| 46.50 | 1074.1 | -2.1 | 146.00 | | |
| 46.75 | 1074.4 | -1.7 | 146.02 | | |
| 47.00 | 1074.1 | -2.0 | 146.03 | | |
| 47.25 | 1074.0 | -2.2 | 146.05 | | |
| 47.50 | 1074.5 | -1.6 | 146.07 | | |
| 47.75 | 1073.8 | -2.3 | 146.08 | | |
| 48.00 | 1074.7 | -1.4 | 146.10 | | |
| 48.25 | 1074.5 | -1.6 | 146.11 | | |
| 48.50 | 1074.1 | -2.0 | 146.13 | | |
| 48.75 | 1074.1 | -2.0 | 146.14 | | |
| 49.00 | 1074.1 | -2.0 | 146.15 | | |
| 49.25 | 1074.9 | -1.2 | 146.17 | | |
| 49.50 | 1074.2 | -1.9 | 146.18 | | |

15-071-20691-00-00

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSIg | delta P PSIg | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 49.75 | 1074.5 | -1.6 | 146.20 | | |
| 50.00 | 1073.7 | -2.4 | 146.21 | | |
| 50.25 | 1074.7 | -1.4 | 146.23 | | |
| 50.50 | 1074.0 | -2.1 | 146.24 | | |
| 50.75 | 1074.1 | -2.0 | 146.25 | | |
| 51.00 | 1074.8 | -1.3 | 146.27 | | |
| 51.25 | 1073.9 | -2.2 | 146.28 | | |
| 51.50 | 1073.8 | -2.3 | 146.29 | | |
| 51.75 | 1074.7 | -1.4 | 146.31 | | |
| 52.00 | 1074.0 | -2.2 | 146.32 | | |
| 52.25 | 1074.2 | -1.9 | 146.33 | | |
| 52.50 | 1073.6 | -2.5 | 146.34 | | |
| 52.75 | 1074.0 | -2.2 | 146.35 | | |
| 53.00 | 1074.4 | -1.7 | 146.37 | | |
| 53.25 | 1074.0 | -2.1 | 146.38 | | |
| 53.50 | 1074.3 | -1.8 | 146.39 | | |
| 53.75 | 1074.8 | -1.3 | 146.40 | | |
| 54.00 | 1075.2 | -0.9 | 146.42 | | |
| 54.25 | 1073.5 | -2.7 | 146.43 | | |
| 54.50 | 1074.5 | -1.6 | 146.44 | | |
| 54.75 | 1074.2 | -1.9 | 146.46 | | |
| 55.00 | 1074.5 | -1.6 | 146.46 | | |
| 55.25 | 1074.5 | -1.6 | 146.48 | | |
| 55.50 | 1074.0 | -2.1 | 146.49 | | |
| 55.75 | 1074.4 | -1.7 | 146.50 | | |
| 56.00 | 1073.7 | -2.4 | 146.52 | | |
| 56.25 | 1074.9 | -1.2 | 146.52 | | |
| 56.50 | 1074.3 | -1.8 | 146.54 | | |
| 56.75 | 1075.2 | -1 | 146.55 | | |
| 57.00 | 1075.5 | -0.6 | 146.56 | | |
| 57.25 | 1073.2 | -2.9 | 146.58 | | |
| 57.50 | 1073.6 | -2.5 | 146.58 | | |
| 57.75 | 1074.8 | -1.3 | 146.60 | | |
| 58.00 | 1074.6 | -1.5 | 146.61 | | |
| 58.25 | 1074.5 | -1.6 | 146.63 | | |
| 58.50 | 1073.7 | -2.5 | 146.63 | | |
| 58.75 | 1074.2 | -1.9 | 146.64 | | |
| 59.00 | 1074.9 | -1.2 | 146.65 | | |
| 59.25 | 1074.3 | -1.9 | 146.66 | | |
| 59.50 | 1074.3 | -1.8 | 146.68 | | |
| 59.75 | 1074.2 | -1.9 | 146.69 | | |
| 60.00 | 1074.2 | -1.9 | 146.70 | | |
| 60.25 | 1073.4 | -2.7 | 146.70 | | |
| 60.50 | 1074.3 | -1.8 | 146.71 | | |
| 60.75 | 1073.6 | -2.5 | 146.72 | | |
| 61.00 | 1074.4 | -1.7 | 146.73 | | |
| 61.25 | 1073.8 | -2.4 | 146.74 | | |
| 61.50 | 1074.5 | -1.6 | 146.75 | | |
| 61.75 | 1072.8 | -3.3 | 146.76 | | |
| 62.00 | 1073.3 | -2.8 | 146.77 | | |
| 62.25 | 1073.8 | -2.3 | 146.78 | | |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 62.50 | 1074.1 | -2.0 | 146.79 | | |
| 62.75 | 1073.5 | -2.6 | 146.80 | | |
| 63.00 | 1074.2 | -2.0 | 146.81 | | |
| 63.25 | 1074.5 | -1.6 | 146.82 | | |
| 63.50 | 1073.8 | -2.4 | 146.83 | | |
| 63.75 | 1075.2 | -0.9 | 146.84 | | |
| 64.00 | 1072.2 | -3.9 | 146.85 | | |
| 64.25 | 1073.7 | -2.4 | 146.86 | | |
| 64.50 | 1072.8 | -3.3 | 146.88 | | |
| 64.75 | 1073.2 | -2.9 | 146.88 | | |
| 65.00 | 1073.0 | -3.1 | 146.89 | | |
| 65.25 | 1074.1 | -2.1 | 146.90 | | |
| 65.50 | 1072.4 | -3.7 | 146.91 | | |
| 65.75 | 1073.7 | -2.5 | 146.92 | | |
| 66.00 | 1073.0 | -3.1 | 146.92 | | |
| 66.25 | 1073.3 | -2.8 | 146.94 | | |
| 66.50 | 1074.2 | -1.9 | 146.95 | | |
| 66.75 | 1073.4 | -2.7 | 146.96 | | |
| 67.00 | 1073.0 | -3.2 | 146.97 | | |
| 67.25 | 1073.1 | -3.0 | 146.98 | | |
| 67.50 | 1073.5 | -2.6 | 146.99 | | |
| 67.75 | 1072.7 | -3.4 | 147.00 | | |
| 68.00 | 1073.5 | -2.6 | 147.01 | | |
| 68.25 | 1072.9 | -3.3 | 147.02 | | |
| 68.50 | 1073.0 | -3.1 | 147.02 | | |
| 68.75 | 1073.3 | -2.8 | 147.03 | | |
| 69.00 | 1072.2 | -3.9 | 147.04 | | |
| 69.25 | 1073.9 | -2.2 | 147.05 | | |
| 69.50 | 1072.0 | -4.1 | 147.05 | | |
| 69.75 | 1072.6 | -3.6 | 147.06 | | |
| 70.00 | 1073.3 | -2.9 | 147.08 | | |
| 70.25 | 1072.5 | -3.6 | 147.08 | | |
| 70.50 | 1072.4 | -3.7 | 147.09 | | |
| 70.75 | 1072.8 | -3.4 | 147.11 | | |
| 71.00 | 1072.0 | -4.1 | 147.11 | | |
| 71.25 | 1073.1 | -3.1 | 147.12 | | |
| 71.50 | 1071.7 | -4.4 | 147.13 | | |
| 71.75 | 1071.9 | -4.2 | 147.13 | | |
| 72.00 | 1071.0 | -5.1 | 147.14 | | |
| 72.25 | 1071.6 | -4.5 | 147.14 | | |
| 72.50 | 1072.0 | -4.1 | 147.15 | | |
| 72.75 | 1072.3 | -3.9 | 147.17 | | |
| 73.00 | 1071.7 | -4.4 | 147.17 | | |
| 73.25 | 1072.0 | -4.1 | 147.18 | | |
| 73.50 | 1072.9 | -3.2 | 147.19 | | |
| 73.75 | 1071.1 | -5.0 | 147.20 | | |
| 74.00 | 1073.1 | -3.0 | 147.20 | | |
| 74.25 | 1071.4 | -4.7 | 147.22 | | |
| 74.50 | 1070.5 | -5.7 | 147.22 | | |
| 74.75 | 1072.7 | -3.5 | 147.23 | | |
| 75.00 | 1071.8 | -4.3 | 147.24 | | |

15-071-20691-00-00

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSIg | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 75.25 | 1072.8 | -3.3 | 147.25 | | |
| 75.50 | 1071.1 | -5.0 | 147.26 | | |
| 75.75 | 1071.4 | -4.7 | 147.27 | | |
| 76.00 | 1072.4 | -3.8 | 147.27 | | |
| 76.25 | 1071.3 | -4.9 | 147.28 | | |
| 76.50 | 1071.7 | -4.4 | 147.29 | | |
| 76.75 | 1071.5 | -4.6 | 147.30 | | |
| 77.00 | 1071.5 | -4.6 | 147.31 | | |
| 77.25 | 1071.7 | -4.4 | 147.31 | | |
| 77.50 | 1071.6 | -4.5 | 147.31 | | |
| 77.75 | 1071.4 | -4.7 | 147.32 | | |
| 78.00 | 1071.5 | -4.7 | 147.33 | | |
| 78.25 | 1072.1 | -4.0 | 147.34 | | |
| 78.50 | 1070.3 | -5.8 | 147.35 | | |
| 78.75 | 1071.7 | -4.4 | 147.36 | | |
| 79.00 | 1071.6 | -4.5 | 147.37 | | |
| 79.25 | 1072.1 | -4.0 | 147.38 | | |
| 79.50 | 1071.9 | -4.3 | 147.38 | | |
| 79.75 | 1070.8 | -5.3 | 147.39 | | |
| 80.00 | 1071.0 | -5.1 | 147.40 | | |
| 80.25 | 1071.8 | -4.3 | 147.41 | | |
| 80.50 | 1070.3 | -5.8 | 147.41 | | |
| 80.75 | 1070.8 | -5.3 | 147.42 | | |
| 81.00 | 1071.6 | -4.5 | 147.43 | | |
| 81.25 | 1071.8 | -4.3 | 147.44 | | |
| 81.50 | 1070.6 | -5.5 | 147.45 | | |
| 81.75 | 1070.8 | -5.3 | 147.45 | | |
| 82.00 | 1070.4 | -5.7 | 147.46 | | |
| 82.25 | 1071.4 | -4.7 | 147.47 | | |
| 82.50 | 1071.0 | -5.1 | 147.48 | | |
| 82.75 | 1071.3 | -4.8 | 147.49 | | |
| 83.00 | 1070.5 | -5.6 | 147.49 | | |
| 83.25 | 1071.2 | -5.0 | 147.50 | | |
| 83.50 | 1071.2 | -4.9 | 147.51 | | |
| 83.75 | 1071.9 | -4.2 | 147.51 | | |
| 84.00 | 1069.8 | -6.3 | 147.52 | | |
| 84.25 | 1072.0 | -4.1 | 147.53 | | |
| 84.50 | 1070.5 | -5.7 | 147.54 | | |
| 84.75 | 1072.1 | -4.1 | 147.54 | | |
| 85.00 | 1069.9 | -6.3 | 147.56 | | |
| 85.25 | 1070.7 | -5.4 | 147.57 | | |
| 85.50 | 1069.8 | -6.3 | 147.57 | | |
| 85.75 | 1071.2 | -4.9 | 147.57 | | |
| 86.00 | 1070.8 | -5.3 | 147.58 | | |
| 86.25 | 1070.5 | -5.6 | 147.60 | | |
| 86.50 | 1071.4 | -4.7 | 147.59 | | |
| 86.75 | 1070.5 | -5.7 | 147.60 | | |
| 87.00 | 1070.4 | -5.7 | 147.61 | | |
| 87.25 | 1069.6 | -6.5 | 147.61 | | |
| 87.50 | 1070.7 | -5.4 | 147.62 | | |
| 87.75 | 1071.1 | -5.0 | 147.63 | | |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| | Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P^2/10^6 |
|-------|----------------|------------------|-----------------|----------------|-----------|----------|
| | 88.00 | 1070.2 | -6.0 | 147.63 | | |
| | 88.25 | 1070.0 | -6.1 | 147.64 | | |
| | 88.50 | 1070.9 | -5.2 | 147.65 | | |
| | 88.75 | 1070.1 | -6.0 | 147.66 | | |
| | 89.00 | 1070.9 | -5.2 | 147.67 | | |
| | 89.25 | 1070.4 | -5.7 | 147.68 | | |
| | 89.50 | 1069.4 | -6.7 | 147.69 | | |
| ***** | End Flow 2 | 89.75 | 1071.1 | -5.0 | 147.69 | |
| ***** | Start Shutin 2 | 0.00 | 1071.1 | 0.0 | 147.69 | 0.0000 |
| | 0.25 | 1102.5 | 31.3 | 147.70 | 480.0000 | 1.215 |
| | 0.50 | 1103.2 | 32.1 | 147.72 | 240.5000 | 1.217 |
| | 0.75 | 1103.5 | 32.4 | 147.73 | 160.6667 | 1.218 |
| | 1.00 | 1103.5 | 32.4 | 147.75 | 120.7500 | 1.218 |
| | 1.25 | 1103.6 | 32.5 | 147.78 | 96.8000 | 1.218 |
| | 1.50 | 1103.7 | 32.6 | 147.80 | 80.8333 | 1.218 |
| | 1.75 | 1103.8 | 32.7 | 147.84 | 69.4286 | 1.218 |
| | 2.00 | 1103.8 | 32.7 | 147.86 | 60.8750 | 1.218 |
| | 2.25 | 1103.9 | 32.8 | 147.88 | 54.2222 | 1.219 |
| | 2.50 | 1103.9 | 32.8 | 147.90 | 48.9000 | 1.219 |
| | 2.75 | 1104.0 | 32.9 | 147.92 | 44.5455 | 1.219 |
| | 3.00 | 1104.0 | 32.9 | 147.94 | 40.9167 | 1.219 |
| | 3.25 | 1104.0 | 32.9 | 147.96 | 37.8462 | 1.219 |
| | 3.50 | 1104.1 | 33.0 | 147.97 | 35.2143 | 1.219 |
| | 3.75 | 1104.1 | 33.0 | 147.99 | 32.9333 | 1.219 |
| | 4.00 | 1104.2 | 33.1 | 148.00 | 30.9375 | 1.219 |
| | 4.25 | 1104.2 | 33.1 | 148.02 | 29.1765 | 1.219 |
| | 4.50 | 1104.2 | 33.1 | 148.03 | 27.6111 | 1.219 |
| | 4.75 | 1104.3 | 33.1 | 148.03 | 26.2105 | 1.219 |
| | 5.00 | 1104.3 | 33.1 | 148.05 | 24.9500 | 1.219 |
| | 5.25 | 1104.3 | 33.2 | 148.05 | 23.8095 | 1.219 |
| | 5.50 | 1104.3 | 33.2 | 148.06 | 22.7727 | 1.219 |
| | 5.75 | 1104.3 | 33.2 | 148.05 | 21.8261 | 1.219 |
| | 6.00 | 1104.3 | 33.2 | 148.05 | 20.9583 | 1.220 |
| | 6.25 | 1104.4 | 33.2 | 148.05 | 20.1600 | 1.220 |
| | 6.50 | 1104.4 | 33.2 | 148.06 | 19.4231 | 1.220 |
| | 6.75 | 1104.4 | 33.2 | 148.07 | 18.7407 | 1.220 |
| | 7.00 | 1104.4 | 33.3 | 148.07 | 18.1071 | 1.220 |
| | 7.25 | 1104.4 | 33.2 | 148.07 | 17.5172 | 1.220 |
| | 7.50 | 1104.4 | 33.3 | 148.08 | 16.9667 | 1.220 |
| | 7.75 | 1104.4 | 33.3 | 148.08 | 16.4516 | 1.220 |
| | 8.00 | 1104.5 | 33.3 | 148.08 | 15.9688 | 1.220 |
| | 8.25 | 1104.5 | 33.3 | 148.09 | 15.5152 | 1.220 |
| | 8.50 | 1104.5 | 33.4 | 148.09 | 15.0882 | 1.220 |
| | 8.75 | 1104.5 | 33.4 | 148.09 | 14.6857 | 1.220 |
| | 9.00 | 1104.5 | 33.4 | 148.09 | 14.3056 | 1.220 |
| | 9.25 | 1104.5 | 33.4 | 148.09 | 13.9459 | 1.220 |
| | 9.50 | 1104.5 | 33.4 | 148.10 | 13.6053 | 1.220 |
| | 9.75 | 1104.6 | 33.4 | 148.10 | 13.2821 | 1.220 |
| | 10.00 | 1104.6 | 33.4 | 148.10 | 12.9750 | 1.220 |
| | 10.25 | 1104.5 | 33.4 | 148.10 | 12.6829 | 1.220 |
| | 10.50 | 1104.5 | 33.4 | 148.10 | 12.4048 | 1.220 |

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ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 10.75 | 1104.6 | 33.5 | 148.10 | 12.1395 | 1.220 |
| 11.00 | 1104.6 | 33.5 | 148.10 | 11.8864 | 1.220 |
| 11.25 | 1104.6 | 33.5 | 148.11 | 11.6444 | 1.220 |
| 11.50 | 1104.6 | 33.5 | 148.10 | 11.4130 | 1.220 |
| 11.75 | 1104.6 | 33.5 | 148.11 | 11.1915 | 1.220 |
| 12.00 | 1104.6 | 33.5 | 148.11 | 10.9792 | 1.220 |
| 12.25 | 1104.6 | 33.5 | 148.11 | 10.7755 | 1.220 |
| 12.50 | 1104.6 | 33.5 | 148.10 | 10.5800 | 1.220 |
| 12.75 | 1104.7 | 33.6 | 148.11 | 10.3922 | 1.220 |
| 13.00 | 1104.7 | 33.6 | 148.11 | 10.2115 | 1.220 |
| 13.25 | 1104.7 | 33.6 | 148.11 | 10.0377 | 1.220 |
| 13.50 | 1104.7 | 33.6 | 148.11 | 9.8704 | 1.220 |
| 13.75 | 1104.7 | 33.6 | 148.12 | 9.7091 | 1.220 |
| 14.00 | 1104.7 | 33.6 | 148.11 | 9.5536 | 1.220 |
| 14.25 | 1104.7 | 33.6 | 148.12 | 9.4035 | 1.220 |
| 14.50 | 1104.8 | 33.6 | 148.12 | 9.2586 | 1.221 |
| 14.75 | 1104.8 | 33.6 | 148.12 | 9.1186 | 1.221 |
| 15.00 | 1104.8 | 33.6 | 148.12 | 8.9833 | 1.221 |
| 15.25 | 1104.8 | 33.7 | 148.11 | 8.8525 | 1.221 |
| 15.50 | 1104.7 | 33.6 | 148.13 | 8.7258 | 1.220 |
| 15.75 | 1104.7 | 33.6 | 148.12 | 8.6032 | 1.220 |
| 16.00 | 1104.8 | 33.6 | 148.12 | 8.4844 | 1.221 |
| 16.25 | 1104.8 | 33.7 | 148.12 | 8.3692 | 1.221 |
| 16.50 | 1104.8 | 33.7 | 148.13 | 8.2576 | 1.221 |
| 16.75 | 1104.8 | 33.7 | 148.12 | 8.1493 | 1.221 |
| 17.00 | 1104.8 | 33.7 | 148.12 | 8.0441 | 1.221 |
| 17.25 | 1104.8 | 33.7 | 148.12 | 7.9420 | 1.221 |
| 17.50 | 1104.8 | 33.7 | 148.13 | 7.8429 | 1.221 |
| 17.75 | 1104.9 | 33.8 | 148.13 | 7.7465 | 1.221 |
| 18.00 | 1104.8 | 33.7 | 148.12 | 7.6528 | 1.221 |
| 18.25 | 1104.8 | 33.7 | 148.13 | 7.5616 | 1.221 |
| 18.50 | 1104.8 | 33.7 | 148.13 | 7.4730 | 1.221 |
| 18.75 | 1104.8 | 33.7 | 148.13 | 7.3867 | 1.221 |
| 19.00 | 1104.9 | 33.7 | 148.12 | 7.3026 | 1.221 |
| 19.25 | 1104.9 | 33.7 | 148.13 | 7.2208 | 1.221 |
| 19.50 | 1104.9 | 33.7 | 148.13 | 7.1410 | 1.221 |
| 19.75 | 1104.9 | 33.8 | 148.13 | 7.0633 | 1.221 |
| 20.00 | 1104.9 | 33.8 | 148.13 | 6.9875 | 1.221 |
| 20.25 | 1104.9 | 33.8 | 148.13 | 6.9136 | 1.221 |
| 20.50 | 1104.9 | 33.8 | 148.13 | 6.8415 | 1.221 |
| 20.75 | 1104.9 | 33.8 | 148.13 | 6.7711 | 1.221 |
| 21.00 | 1104.9 | 33.8 | 148.13 | 6.7024 | 1.221 |
| 21.25 | 1105.0 | 33.8 | 148.13 | 6.6353 | 1.221 |
| 21.50 | 1105.0 | 33.8 | 148.13 | 6.5698 | 1.221 |
| 21.75 | 1105.0 | 33.8 | 148.13 | 6.5057 | 1.221 |
| 22.00 | 1104.9 | 33.8 | 148.13 | 6.4432 | 1.221 |
| 22.25 | 1104.9 | 33.8 | 148.13 | 6.3820 | 1.221 |
| 22.50 | 1105.0 | 33.8 | 148.13 | 6.3222 | 1.221 |
| 22.75 | 1105.0 | 33.8 | 148.13 | 6.2637 | 1.221 |
| 23.00 | 1104.9 | 33.8 | 148.12 | 6.2065 | 1.221 |
| 23.25 | 1105.0 | 33.9 | 148.13 | 6.1505 | 1.221 |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 23.50 | 1105.0 | 33.9 | 148.13 | 6.0957 | 1.221 |
| 23.75 | 1105.0 | 33.9 | 148.13 | 6.0421 | 1.221 |
| 24.00 | 1105.0 | 33.9 | 148.13 | 5.9896 | 1.221 |
| 24.25 | 1105.0 | 33.9 | 148.13 | 5.9381 | 1.221 |
| 24.50 | 1105.0 | 33.9 | 148.13 | 5.8878 | 1.221 |
| 24.75 | 1105.0 | 33.8 | 148.13 | 5.8384 | 1.221 |
| 25.00 | 1105.0 | 33.8 | 148.13 | 5.7900 | 1.221 |
| 25.25 | 1105.0 | 33.9 | 148.14 | 5.7426 | 1.221 |
| 25.50 | 1105.0 | 33.9 | 148.14 | 5.6961 | 1.221 |
| 25.75 | 1105.0 | 33.9 | 148.13 | 5.6505 | 1.221 |
| 26.00 | 1105.0 | 33.9 | 148.13 | 5.6058 | 1.221 |
| 26.25 | 1105.0 | 33.9 | 148.13 | 5.5619 | 1.221 |
| 26.50 | 1105.0 | 33.9 | 148.13 | 5.5189 | 1.221 |
| 26.75 | 1105.0 | 33.9 | 148.13 | 5.4766 | 1.221 |
| 27.00 | 1105.0 | 33.9 | 148.13 | 5.4352 | 1.221 |
| 27.25 | 1105.0 | 33.9 | 148.13 | 5.3945 | 1.221 |
| 27.50 | 1105.0 | 33.9 | 148.13 | 5.3545 | 1.221 |
| 27.75 | 1105.1 | 33.9 | 148.13 | 5.3153 | 1.221 |
| 28.00 | 1105.1 | 33.9 | 148.13 | 5.2768 | 1.221 |
| 28.25 | 1105.1 | 33.9 | 148.13 | 5.2389 | 1.221 |
| 28.50 | 1105.1 | 34.0 | 148.13 | 5.2018 | 1.221 |
| 28.75 | 1105.1 | 34.0 | 148.13 | 5.1652 | 1.221 |
| 29.00 | 1105.2 | 34.0 | 148.13 | 5.1293 | 1.221 |
| 29.25 | 1105.1 | 34.0 | 148.13 | 5.0940 | 1.221 |
| 29.50 | 1105.1 | 34.0 | 148.13 | 5.0593 | 1.221 |
| 29.75 | 1105.1 | 34.0 | 148.13 | 5.0252 | 1.221 |
| 30.00 | 1105.1 | 34.0 | 148.14 | 4.9917 | 1.221 |
| 30.25 | 1105.1 | 34.0 | 148.13 | 4.9587 | 1.221 |
| 30.50 | 1105.1 | 33.9 | 148.14 | 4.9262 | 1.221 |
| 30.75 | 1105.1 | 33.9 | 148.13 | 4.8943 | 1.221 |
| 31.00 | 1105.1 | 33.9 | 148.14 | 4.8629 | 1.221 |
| 31.25 | 1105.1 | 34.0 | 148.13 | 4.8320 | 1.221 |
| 31.50 | 1105.1 | 34.0 | 148.13 | 4.8016 | 1.221 |
| 31.75 | 1105.1 | 34.0 | 148.13 | 4.7717 | 1.221 |
| 32.00 | 1105.1 | 34.0 | 148.13 | 4.7422 | 1.221 |
| 32.25 | 1105.1 | 34.0 | 148.13 | 4.7132 | 1.221 |
| 32.50 | 1105.1 | 33.9 | 148.14 | 4.6846 | 1.221 |
| 32.75 | 1105.1 | 34.0 | 148.13 | 4.6565 | 1.221 |
| 33.00 | 1105.1 | 34.0 | 148.13 | 4.6288 | 1.221 |
| 33.25 | 1105.1 | 34.0 | 148.13 | 4.6015 | 1.221 |
| 33.50 | 1105.1 | 34.0 | 148.13 | 4.5746 | 1.221 |
| 33.75 | 1105.2 | 34.0 | 148.13 | 4.5481 | 1.221 |
| 34.00 | 1105.2 | 34.0 | 148.13 | 4.5221 | 1.221 |
| 34.25 | 1105.2 | 34.0 | 148.13 | 4.4964 | 1.221 |
| 34.50 | 1105.2 | 34.0 | 148.13 | 4.4710 | 1.221 |
| 34.75 | 1105.2 | 34.0 | 148.13 | 4.4460 | 1.221 |
| 35.00 | 1105.2 | 34.1 | 148.13 | 4.4214 | 1.221 |
| 35.25 | 1105.2 | 34.1 | 148.13 | 4.3972 | 1.221 |
| 35.50 | 1105.2 | 34.1 | 148.13 | 4.3732 | 1.222 |
| 35.75 | 1105.2 | 34.1 | 148.13 | 4.3497 | 1.221 |
| 36.00 | 1105.2 | 34.1 | 148.13 | 4.3264 | 1.221 |

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ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSIg | delta P PSIg | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 36.25 | 1105.2 | 34.1 | 148.13 | 4.3034 | 1.222 |
| 36.50 | 1105.2 | 34.1 | 148.13 | 4.2808 | 1.221 |
| 36.75 | 1105.2 | 34.1 | 148.13 | 4.2585 | 1.221 |
| 37.00 | 1105.2 | 34.1 | 148.13 | 4.2365 | 1.221 |
| 37.25 | 1105.2 | 34.1 | 148.13 | 4.2148 | 1.221 |
| 37.50 | 1105.2 | 34.1 | 148.13 | 4.1933 | 1.222 |
| 37.75 | 1105.2 | 34.1 | 148.13 | 4.1722 | 1.222 |
| 38.00 | 1105.2 | 34.1 | 148.13 | 4.1513 | 1.222 |
| 38.25 | 1105.2 | 34.1 | 148.13 | 4.1307 | 1.222 |
| 38.50 | 1105.2 | 34.1 | 148.13 | 4.1104 | 1.222 |
| 38.75 | 1105.2 | 34.1 | 148.13 | 4.0903 | 1.222 |
| 39.00 | 1105.3 | 34.1 | 148.13 | 4.0705 | 1.222 |
| 39.25 | 1105.3 | 34.1 | 148.14 | 4.0510 | 1.222 |
| 39.50 | 1105.3 | 34.1 | 148.13 | 4.0316 | 1.222 |
| 39.75 | 1105.3 | 34.1 | 148.14 | 4.0126 | 1.222 |
| 40.00 | 1105.3 | 34.1 | 148.14 | 3.9937 | 1.222 |
| 40.25 | 1105.2 | 34.1 | 148.13 | 3.9752 | 1.222 |
| 40.50 | 1105.2 | 34.1 | 148.14 | 3.9568 | 1.222 |
| 40.75 | 1105.3 | 34.2 | 148.13 | 3.9387 | 1.222 |
| 41.00 | 1105.3 | 34.1 | 148.13 | 3.9207 | 1.222 |
| 41.25 | 1105.3 | 34.1 | 148.14 | 3.9030 | 1.222 |
| 41.50 | 1105.2 | 34.1 | 148.14 | 3.8855 | 1.222 |
| 41.75 | 1105.2 | 34.1 | 148.14 | 3.8683 | 1.222 |
| 42.00 | 1105.3 | 34.1 | 148.14 | 3.8512 | 1.222 |
| 42.25 | 1105.3 | 34.2 | 148.14 | 3.8343 | 1.222 |
| 42.50 | 1105.3 | 34.2 | 148.14 | 3.8176 | 1.222 |
| 42.75 | 1105.3 | 34.2 | 148.14 | 3.8012 | 1.222 |
| 43.00 | 1105.2 | 34.1 | 148.14 | 3.7849 | 1.222 |
| 43.25 | 1105.2 | 34.1 | 148.14 | 3.7688 | 1.222 |
| 43.50 | 1105.2 | 34.1 | 148.14 | 3.7529 | 1.222 |
| 43.75 | 1105.3 | 34.1 | 148.14 | 3.7371 | 1.222 |
| 44.00 | 1105.3 | 34.1 | 148.15 | 3.7216 | 1.222 |
| 44.25 | 1105.3 | 34.1 | 148.15 | 3.7062 | 1.222 |
| 44.50 | 1105.3 | 34.2 | 148.15 | 3.6910 | 1.222 |
| 44.75 | 1105.2 | 34.1 | 148.15 | 3.6760 | 1.222 |
| 45.00 | 1105.2 | 34.1 | 148.15 | 3.6611 | 1.222 |
| 45.25 | 1105.2 | 34.1 | 148.14 | 3.6464 | 1.222 |
| 45.50 | 1105.3 | 34.1 | 148.15 | 3.6319 | 1.222 |
| 45.75 | 1105.3 | 34.2 | 148.14 | 3.6175 | 1.222 |
| 46.00 | 1105.3 | 34.2 | 148.15 | 3.6033 | 1.222 |
| 46.25 | 1105.3 | 34.2 | 148.14 | 3.5892 | 1.222 |
| 46.50 | 1105.3 | 34.2 | 148.14 | 3.5753 | 1.222 |
| 46.75 | 1105.3 | 34.2 | 148.14 | 3.5615 | 1.222 |
| 47.00 | 1105.3 | 34.2 | 148.15 | 3.5479 | 1.222 |
| 47.25 | 1105.3 | 34.2 | 148.15 | 3.5344 | 1.222 |
| 47.50 | 1105.3 | 34.1 | 148.15 | 3.5211 | 1.222 |
| 47.75 | 1105.3 | 34.1 | 148.15 | 3.5079 | 1.222 |
| 48.00 | 1105.3 | 34.2 | 148.15 | 3.4948 | 1.222 |
| 48.25 | 1105.3 | 34.2 | 148.14 | 3.4819 | 1.222 |
| 48.50 | 1105.3 | 34.2 | 148.15 | 3.4691 | 1.222 |
| 48.75 | 1105.3 | 34.2 | 148.14 | 3.4564 | 1.222 |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSIg | delta P PSIg | P DEG F | Temp. | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|------------|--------|-----------|---------------------------------|
| 49.00 | 1105.3 | 34.2 | 148.14 | 3.4439 | 1.222 | |
| 49.25 | 1105.3 | 34.2 | 148.14 | 3.4315 | 1.222 | |
| 49.50 | 1105.3 | 34.2 | 148.14 | 3.4192 | 1.222 | |
| 49.75 | 1105.3 | 34.2 | 148.14 | 3.4070 | 1.222 | |
| 50.00 | 1105.3 | 34.2 | 148.14 | 3.3950 | 1.222 | |
| 50.25 | 1105.3 | 34.1 | 148.14 | 3.3831 | 1.222 | |
| 50.50 | 1105.3 | 34.1 | 148.15 | 3.3713 | 1.222 | |
| 50.75 | 1105.3 | 34.1 | 148.15 | 3.3596 | 1.222 | |
| 51.00 | 1105.3 | 34.2 | 148.15 | 3.3480 | 1.222 | |
| 51.25 | 1105.3 | 34.2 | 148.14 | 3.3366 | 1.222 | |
| 51.50 | 1105.3 | 34.2 | 148.15 | 3.3252 | 1.222 | |
| 51.75 | 1105.3 | 34.2 | 148.14 | 3.3140 | 1.222 | |
| 52.00 | 1105.3 | 34.2 | 148.14 | 3.3029 | 1.222 | |
| 52.25 | 1105.3 | 34.2 | 148.15 | 3.2919 | 1.222 | |
| 52.50 | 1105.3 | 34.2 | 148.15 | 3.2810 | 1.222 | |
| 52.75 | 1105.3 | 34.2 | 148.14 | 3.2701 | 1.222 | |
| 53.00 | 1105.3 | 34.2 | 148.15 | 3.2594 | 1.222 | |
| 53.25 | 1105.3 | 34.2 | 148.14 | 3.2488 | 1.222 | |
| 53.50 | 1105.3 | 34.2 | 148.15 | 3.2383 | 1.222 | |
| 53.75 | 1105.4 | 34.2 | 148.14 | 3.2279 | 1.222 | |
| 54.00 | 1105.4 | 34.2 | 148.15 | 3.2176 | 1.222 | |
| 54.25 | 1105.4 | 34.2 | 148.14 | 3.2074 | 1.222 | |
| 54.50 | 1105.4 | 34.2 | 148.15 | 3.1972 | 1.222 | |
| 54.75 | 1105.4 | 34.2 | 148.14 | 3.1872 | 1.222 | |
| 55.00 | 1105.3 | 34.2 | 148.14 | 3.1773 | 1.222 | |
| 55.25 | 1105.3 | 34.2 | 148.15 | 3.1674 | 1.222 | |
| 55.50 | 1105.3 | 34.2 | 148.15 | 3.1577 | 1.222 | |
| 55.75 | 1105.4 | 34.2 | 148.15 | 3.1480 | 1.222 | |
| 56.00 | 1105.4 | 34.3 | 148.14 | 3.1384 | 1.222 | |
| 56.25 | 1105.4 | 34.3 | 148.14 | 3.1289 | 1.222 | |
| 56.50 | 1105.4 | 34.3 | 148.14 | 3.1195 | 1.222 | |
| 56.75 | 1105.4 | 34.3 | 148.14 | 3.1101 | 1.222 | |
| 57.00 | 1105.4 | 34.3 | 148.15 | 3.1009 | 1.222 | |
| 57.25 | 1105.4 | 34.3 | 148.15 | 3.0917 | 1.222 | |
| 57.50 | 1105.4 | 34.3 | 148.15 | 3.0826 | 1.222 | |
| 57.75 | 1105.4 | 34.3 | 148.15 | 3.0736 | 1.222 | |
| 58.00 | 1105.4 | 34.2 | 148.14 | 3.0647 | 1.222 | |
| 58.25 | 1105.4 | 34.3 | 148.14 | 3.0558 | 1.222 | |
| 58.50 | 1105.4 | 34.3 | 148.14 | 3.0470 | 1.222 | |
| 58.75 | 1105.4 | 34.3 | 148.14 | 3.0383 | 1.222 | |
| 59.00 | 1105.3 | 34.2 | 148.15 | 3.0297 | 1.222 | |
| 59.25 | 1105.4 | 34.3 | 148.14 | 3.0211 | 1.222 | |
| 59.50 | 1105.4 | 34.3 | 148.15 | 3.0126 | 1.222 | |
| 59.75 | 1105.4 | 34.3 | 148.14 | 3.0042 | 1.222 | |
| 60.00 | 1105.4 | 34.3 | 148.15 | 2.9958 | 1.222 | |
| 60.25 | 1105.4 | 34.2 | 148.15 | 2.9876 | 1.222 | |
| 60.50 | 1105.4 | 34.2 | 148.15 | 2.9793 | 1.222 | |
| 60.75 | 1105.4 | 34.3 | 148.15 | 2.9712 | 1.222 | |
| 61.00 | 1105.4 | 34.3 | 148.15 | 2.9631 | 1.222 | |
| 61.25 | 1105.4 | 34.3 | 148.15 | 2.9551 | 1.222 | |
| 61.50 | 1105.4 | 34.3 | 148.15 | 2.9472 | 1.222 | |

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ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 61.75 | 1105.4 | 34.2 | 148.15 | 2.9393 | 1.222 |
| 62.00 | 1105.4 | 34.3 | 148.15 | 2.9315 | 1.222 |
| 62.25 | 1105.4 | 34.3 | 148.15 | 2.9237 | 1.222 |
| 62.50 | 1105.4 | 34.3 | 148.15 | 2.9160 | 1.222 |
| 62.75 | 1105.4 | 34.3 | 148.15 | 2.9084 | 1.222 |
| 63.00 | 1105.4 | 34.3 | 148.15 | 2.9008 | 1.222 |
| 63.25 | 1105.4 | 34.3 | 148.15 | 2.8933 | 1.222 |
| 63.50 | 1105.4 | 34.3 | 148.15 | 2.8858 | 1.222 |
| 63.75 | 1105.4 | 34.3 | 148.15 | 2.8784 | 1.222 |
| 64.00 | 1105.4 | 34.3 | 148.15 | 2.8711 | 1.222 |
| 64.25 | 1105.4 | 34.3 | 148.15 | 2.8638 | 1.222 |
| 64.50 | 1105.4 | 34.3 | 148.15 | 2.8566 | 1.222 |
| 64.75 | 1105.4 | 34.3 | 148.15 | 2.8494 | 1.222 |
| 65.00 | 1105.4 | 34.3 | 148.15 | 2.8423 | 1.222 |
| 65.25 | 1105.5 | 34.3 | 148.15 | 2.8352 | 1.222 |
| 65.50 | 1105.5 | 34.4 | 148.15 | 2.8282 | 1.222 |
| 65.75 | 1105.5 | 34.4 | 148.15 | 2.8213 | 1.222 |
| 66.00 | 1105.5 | 34.3 | 148.14 | 2.8144 | 1.222 |
| 66.25 | 1105.4 | 34.3 | 148.15 | 2.8075 | 1.222 |
| 66.50 | 1105.4 | 34.3 | 148.15 | 2.8008 | 1.222 |
| 66.75 | 1105.4 | 34.3 | 148.15 | 2.7940 | 1.222 |
| 67.00 | 1105.4 | 34.3 | 148.15 | 2.7873 | 1.222 |
| 67.25 | 1105.4 | 34.3 | 148.15 | 2.7807 | 1.222 |
| 67.50 | 1105.4 | 34.3 | 148.15 | 2.7741 | 1.222 |
| 67.75 | 1105.5 | 34.3 | 148.14 | 2.7675 | 1.222 |
| 68.00 | 1105.5 | 34.4 | 148.15 | 2.7610 | 1.222 |
| 68.25 | 1105.4 | 34.3 | 148.14 | 2.7546 | 1.222 |
| 68.50 | 1105.5 | 34.3 | 148.15 | 2.7482 | 1.222 |
| 68.75 | 1105.4 | 34.3 | 148.15 | 2.7418 | 1.222 |
| 69.00 | 1105.4 | 34.3 | 148.15 | 2.7355 | 1.222 |
| 69.25 | 1105.4 | 34.3 | 148.15 | 2.7292 | 1.222 |
| 69.50 | 1105.4 | 34.3 | 148.15 | 2.7230 | 1.222 |
| 69.75 | 1105.4 | 34.3 | 148.15 | 2.7168 | 1.222 |
| 70.00 | 1105.4 | 34.3 | 148.15 | 2.7107 | 1.222 |
| 70.25 | 1105.4 | 34.3 | 148.15 | 2.7046 | 1.222 |
| 70.50 | 1105.4 | 34.3 | 148.15 | 2.6986 | 1.222 |
| 70.75 | 1105.4 | 34.3 | 148.15 | 2.6926 | 1.222 |
| 71.00 | 1105.4 | 34.3 | 148.15 | 2.6866 | 1.222 |
| 71.25 | 1105.4 | 34.3 | 148.15 | 2.6807 | 1.222 |
| 71.50 | 1105.4 | 34.3 | 148.15 | 2.6748 | 1.222 |
| 71.75 | 1105.5 | 34.3 | 148.15 | 2.6690 | 1.222 |
| 72.00 | 1105.4 | 34.3 | 148.15 | 2.6632 | 1.222 |
| 72.25 | 1105.4 | 34.3 | 148.15 | 2.6574 | 1.222 |
| 72.50 | 1105.4 | 34.3 | 148.15 | 2.6517 | 1.222 |
| 72.75 | 1105.4 | 34.3 | 148.15 | 2.6460 | 1.222 |
| 73.00 | 1105.4 | 34.3 | 148.14 | 2.6404 | 1.222 |
| 73.25 | 1105.4 | 34.3 | 148.15 | 2.6348 | 1.222 |
| 73.50 | 1105.4 | 34.3 | 148.15 | 2.6293 | 1.222 |
| 73.75 | 1105.4 | 34.3 | 148.15 | 2.6237 | 1.222 |
| 74.00 | 1105.5 | 34.4 | 148.15 | 2.6182 | 1.222 |
| 74.25 | 1105.4 | 34.3 | 148.15 | 2.6128 | 1.222 |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 74.50 | 1105.4 | 34.3 | 148.15 | 2.6074 | 1.222 |
| 74.75 | 1105.5 | 34.3 | 148.15 | 2.6020 | 1.222 |
| 75.00 | 1105.5 | 34.3 | 148.15 | 2.5967 | 1.222 |
| 75.25 | 1105.5 | 34.3 | 148.15 | 2.5914 | 1.222 |
| 75.50 | 1105.5 | 34.4 | 148.15 | 2.5861 | 1.222 |
| 75.75 | 1105.5 | 34.4 | 148.15 | 2.5809 | 1.222 |
| 76.00 | 1105.5 | 34.4 | 148.15 | 2.5757 | 1.222 |
| 76.25 | 1105.4 | 34.3 | 148.15 | 2.5705 | 1.222 |
| 76.50 | 1105.5 | 34.4 | 148.15 | 2.5654 | 1.222 |
| 76.75 | 1105.4 | 34.3 | 148.15 | 2.5603 | 1.222 |
| 77.00 | 1105.4 | 34.3 | 148.15 | 2.5552 | 1.222 |
| 77.25 | 1105.4 | 34.3 | 148.15 | 2.5502 | 1.222 |
| 77.50 | 1105.5 | 34.3 | 148.15 | 2.5452 | 1.222 |
| 77.75 | 1105.5 | 34.4 | 148.15 | 2.5402 | 1.222 |
| 78.00 | 1105.5 | 34.4 | 148.15 | 2.5353 | 1.222 |
| 78.25 | 1105.5 | 34.3 | 148.15 | 2.5304 | 1.222 |
| 78.50 | 1105.4 | 34.3 | 148.15 | 2.5255 | 1.222 |
| 78.75 | 1105.5 | 34.4 | 148.14 | 2.5206 | 1.222 |
| 79.00 | 1105.5 | 34.4 | 148.15 | 2.5158 | 1.222 |
| 79.25 | 1105.5 | 34.3 | 148.15 | 2.5110 | 1.222 |
| 79.50 | 1105.4 | 34.3 | 148.15 | 2.5063 | 1.222 |
| 79.75 | 1105.4 | 34.3 | 148.15 | 2.5016 | 1.222 |
| 80.00 | 1105.4 | 34.3 | 148.15 | 2.4969 | 1.222 |
| 80.25 | 1105.4 | 34.3 | 148.15 | 2.4922 | 1.222 |
| 80.50 | 1105.4 | 34.3 | 148.15 | 2.4876 | 1.222 |
| 80.75 | 1105.5 | 34.3 | 148.15 | 2.4830 | 1.222 |
| 81.00 | 1105.5 | 34.3 | 148.15 | 2.4784 | 1.222 |
| 81.25 | 1105.5 | 34.3 | 148.15 | 2.4738 | 1.222 |
| 81.50 | 1105.5 | 34.3 | 148.15 | 2.4693 | 1.222 |
| 81.75 | 1105.5 | 34.3 | 148.15 | 2.4648 | 1.222 |
| 82.00 | 1105.5 | 34.3 | 148.15 | 2.4604 | 1.222 |
| 82.25 | 1105.5 | 34.4 | 148.15 | 2.4559 | 1.222 |
| 82.50 | 1105.5 | 34.3 | 148.15 | 2.4515 | 1.222 |
| 82.75 | 1105.5 | 34.4 | 148.15 | 2.4471 | 1.222 |
| 83.00 | 1105.4 | 34.3 | 148.15 | 2.4428 | 1.222 |
| 83.25 | 1105.4 | 34.3 | 148.15 | 2.4384 | 1.222 |
| 83.50 | 1105.4 | 34.3 | 148.14 | 2.4341 | 1.222 |
| 83.75 | 1105.5 | 34.3 | 148.14 | 2.4299 | 1.222 |
| 84.00 | 1105.5 | 34.3 | 148.14 | 2.4256 | 1.222 |
| 84.25 | 1105.5 | 34.3 | 148.14 | 2.4214 | 1.222 |
| 84.50 | 1105.5 | 34.3 | 148.14 | 2.4172 | 1.222 |
| 84.75 | 1105.5 | 34.3 | 148.15 | 2.4130 | 1.222 |
| 85.00 | 1105.5 | 34.4 | 148.14 | 2.4088 | 1.222 |
| 85.25 | 1105.5 | 34.3 | 148.14 | 2.4047 | 1.222 |
| 85.50 | 1105.5 | 34.4 | 148.14 | 2.4006 | 1.222 |
| 85.75 | 1105.5 | 34.4 | 148.14 | 2.3965 | 1.222 |
| 86.00 | 1105.5 | 34.3 | 148.14 | 2.3924 | 1.222 |
| 86.25 | 1105.5 | 34.3 | 148.15 | 2.3884 | 1.222 |
| 86.50 | 1105.5 | 34.3 | 148.15 | 2.3844 | 1.222 |
| 86.75 | 1105.5 | 34.3 | 148.15 | 2.3804 | 1.222 |
| 87.00 | 1105.5 | 34.3 | 148.14 | 2.3764 | 1.222 |

15-071-20691-00-00

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 87.25 | 1105.5 | 34.3 | 148.15 | 2.3725 | 1.222 |
| 87.50 | 1105.5 | 34.3 | 148.14 | 2.3686 | 1.222 |
| 87.75 | 1105.5 | 34.3 | 148.15 | 2.3647 | 1.222 |
| 88.00 | 1105.5 | 34.3 | 148.14 | 2.3608 | 1.222 |
| 88.25 | 1105.5 | 34.4 | 148.15 | 2.3569 | 1.222 |
| 88.50 | 1105.5 | 34.4 | 148.15 | 2.3531 | 1.222 |
| 88.75 | 1105.5 | 34.4 | 148.15 | 2.3493 | 1.222 |
| 89.00 | 1105.5 | 34.4 | 148.15 | 2.3455 | 1.222 |
| 89.25 | 1105.5 | 34.4 | 148.15 | 2.3417 | 1.222 |
| 89.50 | 1105.5 | 34.4 | 148.15 | 2.3380 | 1.222 |
| 89.75 | 1105.5 | 34.4 | 148.15 | 2.3343 | 1.222 |
| 90.00 | 1105.5 | 34.4 | 148.15 | 2.3306 | 1.222 |
| 90.25 | 1105.5 | 34.4 | 148.15 | 2.3269 | 1.222 |
| 90.50 | 1105.5 | 34.4 | 148.15 | 2.3232 | 1.222 |
| 90.75 | 1105.5 | 34.4 | 148.15 | 2.3196 | 1.222 |
| 91.00 | 1105.5 | 34.4 | 148.15 | 2.3159 | 1.222 |
| 91.25 | 1105.5 | 34.4 | 148.15 | 2.3123 | 1.222 |
| 91.50 | 1105.5 | 34.4 | 148.15 | 2.3087 | 1.222 |
| 91.75 | 1105.5 | 34.4 | 148.15 | 2.3052 | 1.222 |
| 92.00 | 1105.5 | 34.4 | 148.15 | 2.3016 | 1.222 |
| 92.25 | 1105.5 | 34.4 | 148.15 | 2.2981 | 1.222 |
| 92.50 | 1105.5 | 34.4 | 148.15 | 2.2946 | 1.222 |
| 92.75 | 1105.5 | 34.4 | 148.15 | 2.2911 | 1.222 |
| 93.00 | 1105.5 | 34.4 | 148.15 | 2.2876 | 1.222 |
| 93.25 | 1105.5 | 34.4 | 148.16 | 2.2842 | 1.222 |
| 93.50 | 1105.5 | 34.4 | 148.15 | 2.2807 | 1.222 |
| 93.75 | 1105.5 | 34.4 | 148.15 | 2.2773 | 1.222 |
| 94.00 | 1105.5 | 34.4 | 148.15 | 2.2739 | 1.222 |
| 94.25 | 1105.5 | 34.4 | 148.16 | 2.2706 | 1.222 |
| 94.50 | 1105.5 | 34.4 | 148.16 | 2.2672 | 1.222 |
| 94.75 | 1105.5 | 34.4 | 148.16 | 2.2639 | 1.222 |
| 95.00 | 1105.5 | 34.4 | 148.16 | 2.2605 | 1.222 |
| 95.25 | 1105.5 | 34.4 | 148.16 | 2.2572 | 1.222 |
| 95.50 | 1105.5 | 34.4 | 148.16 | 2.2539 | 1.222 |
| 95.75 | 1105.5 | 34.4 | 148.16 | 2.2507 | 1.222 |
| 96.00 | 1105.5 | 34.4 | 148.16 | 2.2474 | 1.222 |
| 96.25 | 1105.5 | 34.4 | 148.16 | 2.2442 | 1.222 |
| 96.50 | 1105.5 | 34.4 | 148.16 | 2.2409 | 1.222 |
| 96.75 | 1105.5 | 34.4 | 148.16 | 2.2377 | 1.222 |
| 97.00 | 1105.5 | 34.4 | 148.16 | 2.2345 | 1.222 |
| 97.25 | 1105.5 | 34.4 | 148.16 | 2.2314 | 1.222 |
| 97.50 | 1105.5 | 34.4 | 148.16 | 2.2282 | 1.222 |
| 97.75 | 1105.5 | 34.4 | 148.16 | 2.2251 | 1.222 |
| 98.00 | 1105.5 | 34.4 | 148.17 | 2.2219 | 1.222 |
| 98.25 | 1105.5 | 34.4 | 148.17 | 2.2188 | 1.222 |
| 98.50 | 1105.5 | 34.4 | 148.16 | 2.2157 | 1.222 |
| 98.75 | 1105.5 | 34.4 | 148.17 | 2.2127 | 1.222 |
| 99.00 | 1105.5 | 34.4 | 148.16 | 2.2096 | 1.222 |
| 99.25 | 1105.5 | 34.4 | 148.17 | 2.2065 | 1.222 |
| 99.50 | 1105.4 | 34.3 | 148.17 | 2.2035 | 1.222 |
| 99.75 | 1105.5 | 34.4 | 148.16 | 2.2005 | 1.222 |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98

TIME: 10:27:25

| Time | Pressure PSig | delta P PSig | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|--------|------------------|-----------------|----------------|-----------|---------------------------------|
| 100.00 | 1105.5 | 34.4 | 148.17 | 2.1975 | 1.222 |
| 100.25 | 1105.5 | 34.3 | 148.17 | 2.1945 | 1.222 |
| 100.50 | 1105.4 | 34.3 | 148.17 | 2.1915 | 1.222 |
| 100.75 | 1105.5 | 34.3 | 148.17 | 2.1886 | 1.222 |
| 101.00 | 1105.5 | 34.3 | 148.17 | 2.1856 | 1.222 |
| 101.25 | 1105.5 | 34.3 | 148.17 | 2.1827 | 1.222 |
| 101.50 | 1105.5 | 34.3 | 148.18 | 2.1798 | 1.222 |
| 101.75 | 1105.5 | 34.3 | 148.17 | 2.1769 | 1.222 |
| 102.00 | 1105.5 | 34.3 | 148.17 | 2.1740 | 1.222 |
| 102.25 | 1105.5 | 34.3 | 148.18 | 2.1711 | 1.222 |
| 102.50 | 1105.5 | 34.3 | 148.18 | 2.1683 | 1.222 |
| 102.75 | 1105.4 | 34.3 | 148.18 | 2.1655 | 1.222 |
| 103.00 | 1105.4 | 34.3 | 148.18 | 2.1626 | 1.222 |
| 103.25 | 1105.4 | 34.3 | 148.18 | 2.1598 | 1.222 |
| 103.50 | 1105.4 | 34.3 | 148.19 | 2.1570 | 1.222 |
| 103.75 | 1105.4 | 34.3 | 148.19 | 2.1542 | 1.222 |
| 104.00 | 1105.5 | 34.3 | 148.19 | 2.1514 | 1.222 |
| 104.25 | 1105.5 | 34.3 | 148.19 | 2.1487 | 1.222 |
| 104.50 | 1105.5 | 34.4 | 148.19 | 2.1459 | 1.222 |
| 104.75 | 1105.5 | 34.4 | 148.19 | 2.1432 | 1.222 |
| 105.00 | 1105.5 | 34.3 | 148.19 | 2.1405 | 1.222 |
| 105.25 | 1105.5 | 34.3 | 148.20 | 2.1378 | 1.222 |
| 105.50 | 1105.5 | 34.3 | 148.20 | 2.1351 | 1.222 |
| 105.75 | 1105.5 | 34.3 | 148.20 | 2.1324 | 1.222 |
| 106.00 | 1105.5 | 34.3 | 148.19 | 2.1297 | 1.222 |
| 106.25 | 1105.4 | 34.3 | 148.19 | 2.1271 | 1.222 |
| 106.50 | 1105.5 | 34.4 | 148.19 | 2.1244 | 1.222 |
| 106.75 | 1105.5 | 34.4 | 148.20 | 2.1218 | 1.222 |
| 107.00 | 1105.5 | 34.4 | 148.21 | 2.1192 | 1.222 |
| 107.25 | 1105.5 | 34.4 | 148.20 | 2.1166 | 1.222 |
| 107.50 | 1105.5 | 34.4 | 148.20 | 2.1140 | 1.222 |
| 107.75 | 1105.5 | 34.4 | 148.21 | 2.1114 | 1.222 |
| 108.00 | 1105.5 | 34.4 | 148.20 | 2.1088 | 1.222 |
| 108.25 | 1105.5 | 34.4 | 148.21 | 2.1062 | 1.222 |
| 108.50 | 1105.5 | 34.4 | 148.21 | 2.1037 | 1.222 |
| 108.75 | 1105.5 | 34.4 | 148.21 | 2.1011 | 1.222 |
| 109.00 | 1105.5 | 34.4 | 148.20 | 2.0986 | 1.222 |
| 109.25 | 1105.5 | 34.4 | 148.20 | 2.0961 | 1.222 |
| 109.50 | 1105.5 | 34.4 | 148.21 | 2.0936 | 1.222 |
| 109.75 | 1105.5 | 34.4 | 148.20 | 2.0911 | 1.222 |
| 110.00 | 1105.5 | 34.3 | 148.21 | 2.0886 | 1.222 |
| 110.25 | 1105.5 | 34.3 | 148.21 | 2.0862 | 1.222 |
| 110.50 | 1105.5 | 34.4 | 148.21 | 2.0837 | 1.222 |
| 110.75 | 1105.5 | 34.4 | 148.21 | 2.0813 | 1.222 |
| 111.00 | 1105.5 | 34.4 | 148.21 | 2.0788 | 1.222 |
| 111.25 | 1105.5 | 34.4 | 148.21 | 2.0764 | 1.222 |
| 111.50 | 1105.5 | 34.4 | 148.21 | 2.0740 | 1.222 |
| 111.75 | 1105.5 | 34.4 | 148.20 | 2.0716 | 1.222 |
| 112.00 | 1105.5 | 34.4 | 148.20 | 2.0692 | 1.222 |
| 112.25 | 1105.5 | 34.4 | 148.21 | 2.0668 | 1.222 |
| 112.50 | 1105.5 | 34.4 | 148.20 | 2.0644 | 1.222 |

15-071-20691-00-00

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 10679 Dst#1 Western Operating Co. 1-X Siverson

DATE: 06/18/98 TIME: 10:27:25

| Time | Pressure PSIg | delta P PSIg | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|---------------------|------------------|-----------------|----------------|-----------|---------------------------------|
| 112.75 | 1105.5 | 34.4 | 148.21 | 2.0621 | 1.222 |
| 113.00 | 1105.5 | 34.4 | 148.21 | 2.0597 | 1.222 |
| 113.25 | 1105.5 | 34.4 | 148.21 | 2.0574 | 1.222 |
| 113.50 | 1105.5 | 34.4 | 148.21 | 2.0551 | 1.222 |
| 113.75 | 1105.5 | 34.4 | 148.20 | 2.0527 | 1.222 |
| 114.00 | 1105.5 | 34.4 | 148.20 | 2.0504 | 1.222 |
| 114.25 | 1105.5 | 34.4 | 148.21 | 2.0481 | 1.222 |
| 114.50 | 1105.5 | 34.4 | 148.21 | 2.0459 | 1.222 |
| 114.75 | 1105.5 | 34.4 | 148.21 | 2.0436 | 1.222 |
| 115.00 | 1105.5 | 34.4 | 148.20 | 2.0413 | 1.222 |
| 115.25 | 1105.5 | 34.4 | 148.21 | 2.0390 | 1.222 |
| 115.50 | 1105.5 | 34.4 | 148.20 | 2.0368 | 1.222 |
| 115.75 | 1105.5 | 34.4 | 148.21 | 2.0346 | 1.222 |
| 116.00 | 1105.6 | 34.4 | 148.21 | 2.0323 | 1.222 |
| 116.25 | 1105.5 | 34.4 | 148.20 | 2.0301 | 1.222 |
| 116.50 | 1105.6 | 34.4 | 148.20 | 2.0279 | 1.222 |
| 116.75 | 1105.6 | 34.4 | 148.21 | 2.0257 | 1.222 |
| 117.00 | 1105.6 | 34.4 | 148.21 | 2.0235 | 1.222 |
| 117.25 | 1105.5 | 34.4 | 148.21 | 2.0213 | 1.222 |
| 117.50 | 1105.5 | 34.4 | 148.20 | 2.0191 | 1.222 |
| 117.75 | 1105.6 | 34.4 | 148.21 | 2.0170 | 1.222 |
| 118.00 | 1105.6 | 34.4 | 148.21 | 2.0148 | 1.222 |
| 118.25 | 1105.5 | 34.4 | 148.21 | 2.0127 | 1.222 |
| 118.50 | 1105.5 | 34.4 | 148.21 | 2.0105 | 1.222 |
| 118.75 | 1105.5 | 34.4 | 148.21 | 2.0084 | 1.222 |
| 119.00 | 1105.6 | 34.4 | 148.22 | 2.0063 | 1.222 |
| 119.25 | 1105.6 | 34.4 | 148.21 | 2.0042 | 1.222 |
| 119.50 | 1105.6 | 34.4 | 148.22 | 2.0021 | 1.222 |
| 119.75 | 1105.5 | 34.4 | 148.22 | 2.0000 | 1.222 |
| 120.00 | 1105.5 | 34.4 | 148.22 | 1.9979 | 1.222 |
| 120.25 | 1105.5 | 34.4 | 148.21 | 1.9958 | 1.222 |
| 120.50 | 1105.5 | 34.4 | 148.22 | 1.9938 | 1.222 |
| 120.75 | 1105.5 | 34.4 | 148.22 | 1.9917 | 1.222 |
| ***** End Shut-in 2 | | | | | |
| ***** Final Hydro. | 443.75 | 2316.3 | 0.0 | 147.76 | |

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 10679

Well Name & No. 1-X Silverson Test No. 1 Date 6-18-98
 Company Western Operating Company Zone Tested MORROW
 Address 518-17th st suite 1680 Oyster Colo. 80202 Elevation 3750 KB 3739 GL
 Co. Rep / Geo. Pete Debenham Cont. Murfin Rq #25 Est. Ft. of Pay _____ Por. _____ %
 Location: Sec. 23 Twp. 20S Rge. 42W Co. Greeley State Ks
 No. of Copies _____ Distribution Sheet (Y, N) _____ Turnkey (Y, N) _____ Evaluation (Y, N) _____

Interval Tested 5024 - 5154 Initial Str Wt/Lbs. 84,000 Unseated Str Wt/Lbs. 88,000
 Anchor Length 130' Wt. Set Lbs. 24,000 Wt. Pulled Loose/Lbs. 120,000
 Top Packer Depth 5019 Tool Weight 1800
 Bottom Packer Depth 5024 Hole Size — 7 7/8" ✓ Rubber Size — 6 3/4" ✓
 Total Depth 5154 Wt. Pipe Run _____ Drill Collar Run 538 ⁶⁵⁰⁰
 Mud Wt. 9.0 LCM 8 Vis. SSWL 7.2 Drill Pipe Size 4 1/2 XH Ft. Run 4980 ^{48 studs + 1}
 Blow Description P.F. Strong flow B.O.B. 1 min. GTS in 6 min. Gas will burn
Weak surface blow back throughout shut in
2nd open B.O.B. as soon as open

| Recovery — Total Feet | GIP | Ft. in DC | Ft. in DP |
|--|---------------|------------|-------------------------|
| <u>603</u> | <u>GTS</u> | <u>558</u> | <u>45</u> |
| Rec. <u>324</u> Feet Of <u>mud</u> | %gas | %oil | %water <u>100%</u> %mud |
| Rec. <u>279</u> Feet Of <u>Gas cut mud</u> | <u>5</u> %gas | %oil | %water <u>95%</u> %mud |
| Rec. _____ Feet Of _____ | %gas | %oil | %water _____ %mud |
| Rec. _____ Feet Of _____ | %gas | %oil | %water _____ %mud |
| Rec. _____ Feet Of _____ | %gas | %oil | %water _____ %mud |

BHT 150 °F Gravity _____ °API D@ _____ °F Corrected Gravity _____ °API

| RW | @ | °F Chlorides | ppm Recovery | Chlorides | ppm System |
|----------------------------------|-------------|---------------|-------------------------------|-----------------------------|------------|
| (A) Initial Hydrostatic Mud | <u>2467</u> | <u>2399</u> | PSI Recorder No. <u>3026</u> | T-Started <u>10:25 A.M.</u> | |
| (B) First Initial Flow Pressure | | <u>1059</u> | PSI (depth) <u>5126</u> | T-Open <u>12:51 P.M.</u> | |
| (C) First Final Flow Pressure | | <u>1070</u> | PSI Recorder No. <u>10333</u> | T-Pulled <u>5:51 P.M.</u> | |
| (D) Initial Shut-in Pressure | | <u>1106</u> | PSI (depth) <u>5154</u> | T-Out _____ | |
| (E) Second Initial Flow Pressure | | <u>1080</u> | PSI Recorder No. _____ | | |
| (F) Second Final Flow Pressure | | <u>1070</u> | PSI (depth) _____ | | |
| (G) Final Shut-in Pressure | | <u>1105</u> | PSI Initial Opening <u>30</u> | Test <u>✓</u> | |
| (H) Final Hydrostatic Mud | <u>2244</u> | <u>2316</u> | PSI Initial Shut-In <u>60</u> | Jars <u>✓</u> | |
| | <u>PKI</u> | <u>Alpine</u> | Final Flow <u>90</u> | Safety Joint <u>✓</u> | |
| | | | Final Shut-In <u>120</u> | Straddle _____ | |

TRILOBITE TESTING L.L.C. SHALL NOT BE LIABLE FOR DAMAGE OF ANY KIND OF THE PROPERTY OR PERSONNEL OF THE ONE FOR WHOM A TEST IS MADE, OR FOR ANY LOSS SUFFERED OR SUSTAINED, DIRECTLY OR INDIRECTLY, THROUGH THE USE OF ITS EQUIPMENT, OR ITS STATEMENTS OR OPINION CONCERNING THE RESULTS OF ANY TEST. TOOLS LOST OR DAMAGED IN THE HOLE SHALL BE PAID FOR AT COST BY THE PARTY FOR WHOM THE TEST IS MADE.

Approved By [Signature]
 Our Representative Scott Buskirk
 Circ. Sub ✓
 Sampler ✓
 Extra Packer _____
 Elect. Rec. ✓
 Other _____
 TOTAL PRICE \$ _____

ORIGINAL

15-071-20691-00-00

**WESTERN OPERATING COMPANY
SIVERSON NO.1-X, NO MAN'S PROSPECT
NW, NW, SECTION 23, T20S, R42W
GREELEY COUNTY, KANSAS
MAY/JUNE, 1998**

Wellsite Geologist:

**Peter Debenham
330 Hideaway Circle
Evergreen, CO 80439
303/674-0633**

**RECEIVED
KANSAS CORPORATION COMMISSION**

SEP 08 1998

**CONSERVATION DIVISION
MONTICELLO, KS**

ORIGINAL

WELL DATA

15-071-20691-³⁷⁵ 10

OPERATOR: Western Operating Company - Denver, Colorado

COMPANY MAN: Dale Hart - Lamar, Colorado

WELL NAME: Siverson No. 1-X - skidded from Siverson No.1, No Man's Prospect

LOCATION: 490' FNL & 540' FWL, Section 23, T20S, R42W, Greeley County, Kansas - 15Miles SW of Tribune, Kansas

API NO.: 15 - 071 - 206910000

ELEVATION: Ground LEVEL 3740', KELLY BUSHING 3750'

SPUD DATE: 6/5/98

TOTAL DEPTH: 6/19/98, Mississippian St Louis Formation
Driller 5300', Logger 5300'

CONTRACTOR: Murfin Drilling Company rig No. 25, Type: Double jackknife, tripple stand, Toolpusher Gus Schwartz/Matt Finnesy

SURFACE CASING: 12 joints of 13 3/8", 48lbs/ft, set at 508' with ³⁷⁵300 sacks common(3%cc), 58 joints of 8 5/8", 23lbs/ft, set at 2432'(Stone Corral) with 400 sacks Thixotropic and 600 sacks Common(3% cc, 1/4 lb/bbl floseal). Cement did circulate. Services by Allied.

PRODUCTION CONSULTANT: Eugene W. Ohlemeier, EWO Consultants, Inc. - Lakewood, CO

WELLSITE GEOLOGIST: Peter Debenham with mudlogging trailer... 330 Hideaway Circle Road, Evergreen, CO 80439 303/674-0633. Call depth 2400'.

SAMPLES: 30' samples from surface, 20' samples from 2440' and 10' from 3600'. One set dry cut stored with KGS Sample Log Library and one set with Western Operating Company.

MUD PROGRAM: Service Mud company, Engineers Tony Maestas and Reid Atkins, Type: Chemical/Gel, premix Barite - displaced at 3850'.

15-071-20691-00-00

Weighted control mud from 2025' to 2444'(14.2 #/gal) through the Cedar Hills Nitrogen zone.

ELECTRIC LOGS: BPB Logging - Liberal, Kansas, Engineer C.K. Tai, 1) Array Induction 2) Compensated Neutron/Density 3) Borehole Compensated Sonic/Transit Time

STATUS: 4 1/2" production casing run 6/20/98 for Morrow "V-7" Sandstone gas production(5122' - 5146').

WELL SUMMARY

The Siverson No. 1-X was drilled as a wildcat based on 2d seismic interpretation to a total depth of 5300' in the Mississippian St. Louis Formation. The original prospect location was stacked as the Siverson No. 1 at 440' FNL and 440' FWL, Section 23. This well was spudded on 5/27/98 and had a Nitrogen gas blowout at 2194'. After containing the well with 14lbs/gal control mud, the decision was made to drill ahead and run 7" intermediate casing set in the Stone Corral. Lost circulation and a second blowout occurred after drilling to the Stone Corral and tripping out for intermediate string. A bridge and tight spot occurred at 600' and possibly due to parted surface casing. The well was contained a second time with 16.2 lbs/gal mud and the decision was made to plug and abandon and skid the rig to drill the Siverson No. 1-X.

The Siverson No. 1 was plugged and abandoned on 6/2/98 and the rig skidded 112' to the SE to drill the Siverson No. 1-X(490' FNL & 540' FWL). A 17 1/2" hole was drilled to 515' and 13 3/8" casing was set at 508'. 8 5/8" intermediate casing was set at 2432' in the Stone Corral and sealing off the Nitrogen gas zone. This interval was drilled with weighted barite control mud of 14.0 lbs/gal and no Nitrogen gas was noted while drilling. A 7 7/8" hole was drilled to TD with no unusual problems. 100 bbls of lost circulation occurred at 3928' and was remedied with a 6 lbs/bbl LCM mud system.

The nearest well control was the AMOCO Production Company, Harold W. Burns No. 1 - 1 1/4 mile to the East. Formation tops on the Siverson No. 1-X from the Base of the Stone Corral to the Lower Morrow ran consistently 18' to 26' high relative to this offset. Thinning occurred in the Lower Morrow and the Mississippi came in 51' high.

Several interesting gas increases occurred in the Chase Formation between 2820' and 2860'. Gas increases of up to 36 Units occurred on the hotwire. This interval consists of a Siltstone to very fine Sandstone - Light brown, tan, very fine, well sorted grains, friable, clay and calcareous cement, clean to argillaceous, trace intergranular porosity, no fluorescence, no stain or cut, interbedded with Dolomite(8% sample) - Light brown, gray, tan, microcrystalline, microcrystalline in part, brittle, clean to argillaceous, silty to sandy in part, trace intercrystalline and vuggy porosity, no

fluorescence, no stain or cut. Porosity development with gas crossover is noted on logs.

Minor hydrocarbon shows with gas increases occurred in the Shawnee, Lansing, Marmaton and Cherokee (enclosed striplog). The Marmaton (4548' - 4558') consists of a Limestone - Light mottled brown, oolitic, microcrystalline, very brittle, clean to argillaceous, pyritic, very oolitic and fossiliferous with trace moldic porosity, trace intercrystalline porosity, trace pale blue hydrocarbon fluorescence (2% sample), slow faint cut, no stain, with abundant Chert. A 12 Unit gas increase occurred on the hotwire

Four feet of 13% porosity and with gas effect crossover occurred in the Cherokee from 4781' to 4785'. A 22 Unit gas increase occurred. No sample show was documented

The primary objective Morrow "V-7" Sandstone occurred from 5122' to 5150' and consists of a Sandstone in 12% of the samples - White, clear, occasionally light yellow to orange and varicolored, friable in part, very coarse upper to fine lower, poorly sorted, subangular grains, occasionally very well cemented with calcite cement, clean, slightly arkosic, predominately tight, occasionally poorly consolidated and friable with fair intergranular porosity, no fluorescence, no stain or cut, with unconsolidated Quartz grains in 5% of the samples - Clear, very coarse lower to medium lower, poorly sorted, subangular grains, no show. Small gas increases of 15 to 22 Units occurred on the hotwire. The majority of the Sandstone in samples was noted to be well cemented and tight but with a fair amount of unconsolidated grains. Good Morrow reservoir Sandstones are not readily seen in samples as they are extremely friable and generally lack hydrocarbon shows as they are drilled over balanced and flushed.

Excellent reservoir conditions and with abundant gas crossover is noted on logs.

This interval was drillstem tested (5024' - 5154') and recovered gas to surface in less than 6 minutes and gauged in excess of 13 mmcf/d and with excellent bottom hole and flowing pressures. The flow rate stabilized at 10.5 mmcf/d for the final 40 minutes of the final flow period. No fluid recovery occurred.

4 1/2" production casing was run on the Siverson No. 1-X on 6/20/98 for Morrow "V-7" Sandstone gas production.

The Chase should be closely watched on future wells in the area and possibly drillstem tested. The shows documented from the Shawnee to the Morrow should also be closely watched.

Appreciation goes to Murfin Rig No. 25 rig hands for their efficient manner of operation during the drilling of this test.

Respectfully submitted,



Peter Debenham

WELL CHRONOLOGY

| <u>DATE</u> | <u>MIDNIGHT DEPTH</u> | <u>FOOTAGE</u> | <u>RIG ACTIVITY</u> |
|-------------|---------------------------|----------------|--|
| 5/27 | 410' | 410' | Dig cellar and ditches. Move to Siverson No.1 location and rig up rotary tools. Drill rathole and mousehole. Spud in 12 1/4" surface hole and drill to 410' |
| 5/28' | 1210' | 800' | Drill surface hole to 628' and circulate hole clean. Drop survey(3/4 ^o) and trip for surface casing. Run 14 joints of new 8 5/8" casing set at 628' and cement - cement did circulate to surface. Wait on cement. Nipple up and pressure test BOP to 1000 PSI in 15 minutes. Drill cement and plug and drill new 7 7/8" hole to 1210'. Service mud pump. |
| 5/29 | 2194' | 984' | Run surveys(3/4 ^o). Drill to 2194' and take Nitrogen gas kick. Shut in well and mix mud. Well blowing through 2" choke. Wait on Barite and mix same. |
| 5/30 | 2194' | 0' | Mix control mud weight to 14 lbs/gal with Barite. Lost circulation(app. 375 bbls mud). Mix mud and LCM to 6Lbs/bbl. Hole full but would not circulate. Regain circulation with full returns. Wait on Barite and mix same. |
| 5/31 | 2414' TD | 220' | Mix control mud to 14.4 lbs/gal. Drill with full returns to 2414' and trip out slow. Swabbed in gas and well blew out. Bit plugged. Wait on Peak Wireline and rig up same. Blow jets out of bit. Kelly up and pump through bit. Wait on Barite and mix same. |
| 6/1 | 2414 | 0' | Trip in slow to 597' and try to work through surface pipe at 597' - wont go(casing possibly parted). Pump 14 lb. mud and kill well second time. Circulate and condition mud(14.4 lbs in and 13.9 lbs out). Open BOP and circulate through flowline. Work pipe 30' - gas bubble came up. Close BOP and check for flow - well started flowing. |
| 6/2 | 2414' | 0' | Orders to kill well rather than try to run 7" intermediate. Mix 17 lbs/gal weighted mud. Pump 16.2 lbs mud pill in surface pipe then close choke line. Pumped 20 bbls into |

formation on vacume. Fluid level stabilized. Trip out with plugging orders. Trip in open ended and work past tight spot at 600'. Trip to 1350' and circulate. Hook up Allied Cementing and plug and abandon well with 100 sacks cement at 1350'. Trip to 885' and circulate and work pipe and wait on cement. Trip in and tag plug at 950'. Trip out to 650' and pump plug No. 2(170 sacks cement) and trip out laying down. Rig down and prepare to skid rig 112' SE to the Siverson No. 1-X.

6/3

Rig down and service rig.

BEGIN OPERATION ON THE SIVERSON NO. 1-X

| | | | |
|------|-------|------|--|
| 6/5 | 230' | 230' | Dig cellar and ditches. Skid rig 112' to the SE and rig up. Mix spud mud. Drill rathole and mousehole. Pick up 17 1/2" drill bit and spud in Siverson No. 1-X and drill to 230'. Run survey(1/4 ^o). |
| 6/6 | 515' | 285' | Drill 17 1/2" hole to 515' and circulate. Run wiper trip. Drop survey(1 ^o) and trip out. Rig up and run 13 3/8" casing set at 508'. Wait on cement. Nipple up BOP and service mud pump. |
| 6/7 | 1405' | 890' | Nipple up and pressure test BOP to 800 PSI. Drill plug and cement and drill 12 1/4" hole to 1405'. run surveys(3/4 ^o). |
| 6/8 | 2100' | 695' | Drill to 1850' and circulate. Drop survey(1/2 ^o) and trip out for Bit No. 3. Lay down drill collar and trip in and drill to 2100'. Hook up up frac mud to main pump and build mud weight. |
| 6/9 | 2112' | 12' | 2 1/2" rain. Muddy location and water cut mud weight. Pumped 325 bbls of weighted mud(12.6 lbs/gal) from the Siverson No. 1. Mix Barite mud to 14.0 lbs/gal prior to drilling ahead. |
| 6/10 | 2293' | 181' | Drill with control mud to 2281'. Drop survey(3/4 ^o) and trip slowly for Bit No. 4. Drill to 2293' and trip for plugged bit. Service bit and change jets. Trip in and service mud pump. Ream and circulate to bottom. |
| 6/11 | 2432' | 139' | Drill to 2432'. Drop survey(1/4 ^o) and trip for surface casing. Lay down two joints of drill pipe. Work tight spot |

at 2321'. Rig up casers and run 58 joints of new 8 5/8" surface casing set at 2432'. Cement and wait on cement.

| | | | |
|------|---------|------|--|
| 6/12 | 2432' | 0' | Wait on cement(24 hours). Put flange on BOP and service same. Take top cement head off. Wait on cement. Run bond log and wait on orders. Wait on welder. |
| 6/13 | 2789' | 357' | Wait on welder. Cut off and nipple down on 13 3/8" and nipple up on 8 5/8". Trip in hole and go through main pump. Pressure test BOP to 800 PSI. Tighten bolts on BOP. Drill cement and plug(tagged at 2383) and drill new 7 7/8" hole to 2789'. |
| 6/14 | 3484' | 695' | Run survey's(0° & 1/4°). Service rig and change out washpipe and packing and drill to 3484'. |
| 6/15 | 4090' | 606' | Displace mud system at 3898'. Clean suction and jet pits. Lost circulation at 3925'(100 bbls). Mix mud and LCM. |
| 6/16 | 4638' | 548' | Drill to 4638'. Run survey - bridged out at 300'. Rerun survey(1°). |
| 6/17 | 5110' | 472' | Drill to 5110'. Run survey(1°). Circulate for samples at 5085'. |
| 6/18 | 5162' | 52' | Circulate for samples at 5154'. Short trip 13 stands and circulate. Drop survey(3/4°) and strap out for DST No. 1 (5024'-5154') - no depth correction. Lay down 2 joints of drill pipe. Trip in and run test(30-60-90-120). Gas to surface in 6 minutes & 10' to 12' flare. Trip out and lay down tool. Trip in, break circulation and drill to 5162'. |
| 6/19 | 5300'TD | 138' | Drill to 5300'TD and circulate for samples. Short trip and circulate. Drop survey(3/4°) and trip for logs. Run E-Logs and wait on orders. Trip to bottom and circulate. |
| 6/20 | TD | | Trip out laying down. Run 4 1/2" production string to TD for Morrow "V-7" Sandstone gas production(5113'-5146'). Rig down. |

MUD PROPERTIES

| <u>DATE</u> | <u>DEPTH</u> | <u>WT</u> | <u>VIS</u> | <u>YP</u> | <u>WL</u> | <u>PH</u> | <u>CL/PPM</u> |
|-------------|--------------|-----------|------------|-----------|-----------|-----------|---------------|
| 6/9 | 2100' | 11.3 | 39 | 21 | NC | 7.0 | 840 |
| 6/9 PM | 2100' | 14.2 | 43 | 20 | NC | 7.0 | 89000 |
| 6/11 | 2350' | 14.0 | 50 | 41 | NC | 7.0 | 88000 |
| 6/14 | 3100' | 9.0 | 32 | -- | NC | 7.0 | 31000 |
| 6/15 | 3850' | 8.6 | 41 | 13 | 11.2 | 11.0 | 2000 |
| 6/16 | 4298' | 8.8` | 42 | 15 | 8.8 | 10.0 | 1800 |
| 6/17 | 4820' | 9.0 | 46 | 19 | 7.2 | 10.0 | 1500 |
| 6/18 | 5154' | 9.1 | 55 | 20 | 7.2 | 10.0 | 2000 |
| 6/19 | 5300' | 9.1 | 52 | 20 | 8.0 | 9.5 | 2200 |

Note: 2 - 5 #/bbl LCM run from mud up to 4800', 6 - 8 #/bbl LCM from 4800' to TD.

BIT RECORD

| <u>NO.</u> | <u>MAKE</u> | <u>TYPE</u> | <u>SIZE</u> | <u>OUT</u> | <u>FOOTAGE</u> | <u>HOUR</u> |
|---------------------|-------------|-------------|-------------|------------|----------------|-------------|
| 1 | | DSJ | 17 1/2" | 515' | 515' | 9 1/2 |
| 2 | Varel | | 12 1/4" | 1850' | 1335' | 25 1/2 |
| 3 | RR Varel | | 12 1/4" | 2281' | 431' | 15 1/2 |
| 4 | RR Varel | | 12 1/4" | 2432' | 151' | 9 |
| 5 | HTC | GT20-C | 7 7/8" | 5300' | 2868' | 111 |
| Total Rotary hours: | | | | | | 170 1/2 |
| Average: | | | | | | 31.1 ft/hr |

DEVIATION RECORD

135' 1/4°, 515' 1°, 786' 3/4°, 1066' 3/4°, 1350' MR, 1599' 3/4°, 1850' 1/2°,
2281' 3/4°, 2432' 1/4°, 2946' 1/4°, 3447' 0°, 4355' 1°, 4890' 1°, 5154' 3/4°,
5300' 3/4°

TRILOBITE TESTING L.L.C.

OPERATOR : Western Operating Co.
 WELL NAME: 1-X Silverson
 LOCATION : 23-20s-42w
 INTERVAL : 5024.00 To 5154.00 ft

DATE 6-18-98
 KB 3751.00 ft
 GR 3739.00 ft
 TD 5154.00 ft
 TICKET NO: 10679
 FORMATION: Morrow
 DST #1
 TEST TYPE: CONVENTIONAL

RECORDER DATA

| Mins | Field | 1 | 2 | 3 | 4 | TIME DATA----- |
|------------------|--------|--------|--------|-----|-----|------------------------|
| PF 30 Rec. | 10333 | 10333 | 3026 | | | PF Fr. 1251 to 1321 hr |
| SI 60 Range(Psi) | 4550.0 | 4550.0 | 4995.0 | 0.0 | 0.0 | IS Fr. 1321 to 1421 hr |
| SF 90 Clock(hrs) | 12hr | 12hr | elect | | | SF Fr. 1421 to 1551 hr |
| FS 120 Depth(ft) | 5154.0 | 5154.0 | 5126.0 | 0.0 | 0.0 | FS Fr. 1551 to 1751 hr |

| | Field | 1 | 2 | 3 | 4 | |
|----------------|--------|--------|--------|-----|-----|-------------------|
| A. Init Hydro | 2467.0 | 2467.0 | 2399.0 | 0.0 | 0.0 | T STARTED 1025 hr |
| B. First Flow | 0.0 | 0.0 | 1059.0 | 0.0 | 0.0 | T ON BOTM 1249 hr |
| Bl. Final Flow | 0.0 | 0.0 | 1070.0 | 0.0 | 0.0 | T OPEN 1251 hr |
| C. In Shut-in | 0.0 | 0.0 | 1106.0 | 0.0 | 0.0 | T PULLED 1751 hr |
| D. Init Flow | 0.0 | 0.0 | 1080.0 | 0.0 | 0.0 | T OUT 2058 hr |
| E. Final Flow | 0.0 | 0.0 | 1070.0 | 0.0 | 0.0 | |
| F. FI Shut-in | 0.0 | 0.0 | 1105.0 | 0.0 | 0.0 | |
| G. Final Hydro | 2244.0 | 2244.0 | 2316.0 | 0.0 | 0.0 | |
| Inside/Outside | 0 | 0 | I | | | |

TOOL DATA-----

| | |
|------------------|-----------|
| Tool Wt. | 1800.00 |
| Wt Set On Packer | 24000.00 |
| Wt Pulled Loose | 120000.00 |
| Initial Str Wt | 84000.00 |
| Unseated Str Wt | 88000.00 |
| Bot Choke | 0.75 |
| Hole Size | 7.78 |
| D Col. ID | 2.25 |
| D. Pipe ID | 3.38 |
| D.C. Length | 558.00 |
| D.P. Length | 4480.00 |

RECOVERY

Tot Fluid 603.00 ft of 558.00 ft in DC and 45.00 ft in DP
 324.00 ft of mud 100%
 279.00 ft of Gas cut mud 5% gas 95% mud
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 0.00 ft of
 SALINITY 0.00 P.P.M. A.P.I. Gravity 0.00

MUD DATA-----

| | |
|------------|----------|
| Mud Type | chemical |
| Weight | 9.00 |
| Vis. | 55.00 |
| W.L. | 7.20 |
| F.C. | 0.00 |
| Mud Drop Y | 40.0 ft |

BLOW DESCRIPTION

1st open strong blow B.O.B. GTS in 6min.
 Gas will burn
 I.S. Bled 2" weak blow back throughout
 shut in
 2nd open B.O.B. as soon as open

| | |
|----------------|---------------|
| Amt. of fill | 0.00 |
| Btm. H. Temp. | 150.00 |
| Hole Condition | good |
| % Porosity | 0.00 |
| Packer Size | 6.75 |
| No. of Packers | 2 |
| Cushion Amt. | 0.00 |
| Cushion Type | |
| Reversed Out N | |
| Tool Chased N | |
| Tester | Scott Bugbee |
| Co. Rep. | Pete Debenham |
| Contr. | Murfin |
| Rig # | 25 |
| Unit # | |
| Pump T. | |

SAMPLES: Yes
 SENT TO: Caraway Analytical

Test Successful: Y

*** TOOL DIAGRAM *** CONVENTIONAL

WELL NAME: 1-X Silverson

LOCATION : 23-20s-42w

TICKET No. 10679 D.S.T. No. 1 DATE 6-18-98

TOTAL TOOL TO BOTTOM OF TOP PACKERS 30

INTERVAL TOOL

BOTTOM PACKERS AND ANCHOR 37

TOTAL TOOL 67

DRILL COLLAR ANCHOR IN INTERVAL

D.C. ANCHOR STND.Stands Single Total

D.P. ANCHOR STND.Stands 1 Single Total 93

TOTAL ASSEMBLY 130

D.C. ABOVE TOOLS.Stands6 Single Total 558

D.P. ABOVE TOOLS.Stands42 Single 1 Total 4480

TOTAL DRILL COLLARS DRILL PIPE & TOOLS .. 5168

TOTAL DEPTH 5154

TOTAL DRILL PIPE ABOVE K.B. 14

REMARKS:

Sampler Data

1000 Psi

11.7 CFG.

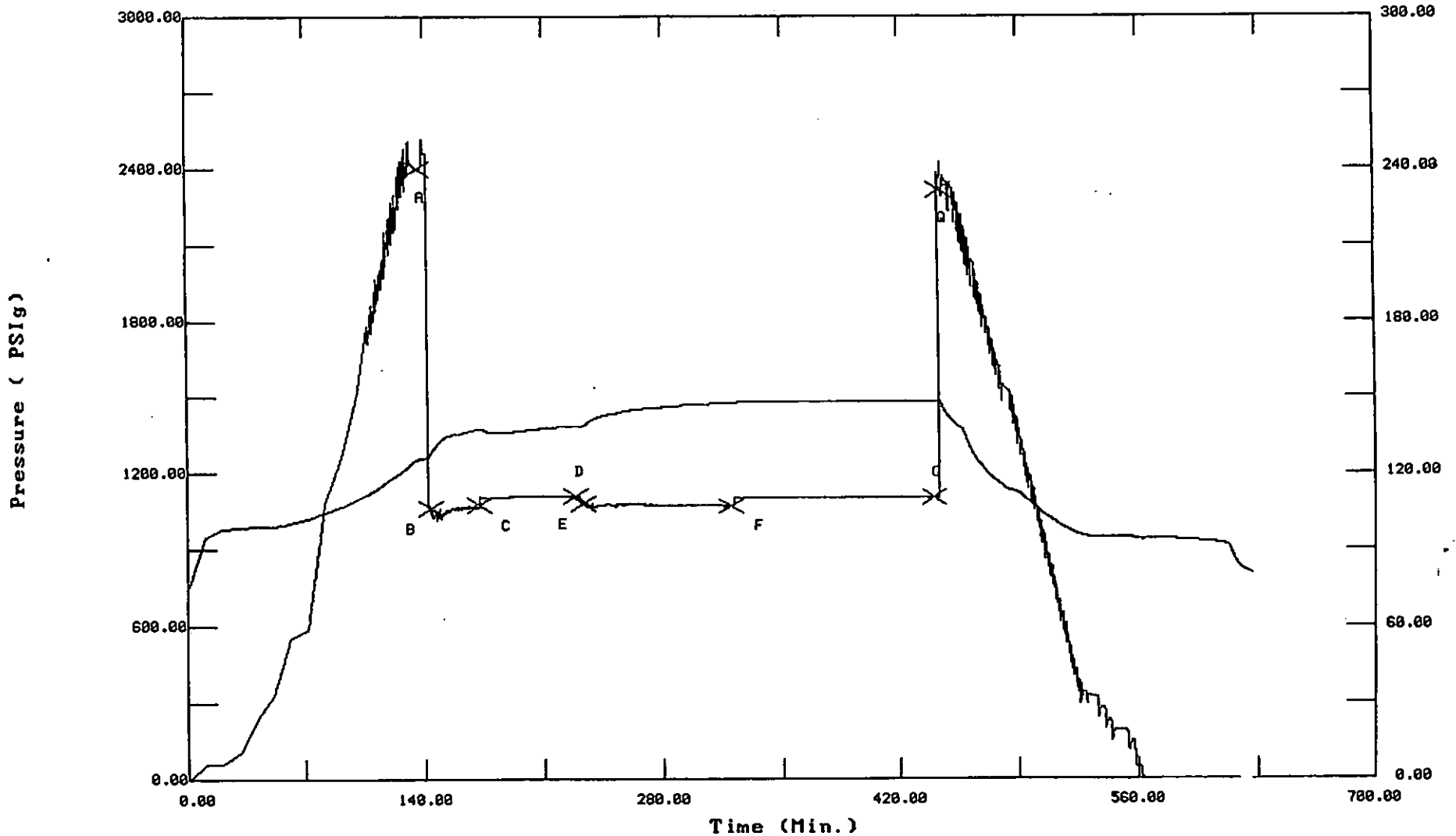
| | |
|----------------------|------|
| P.O. SUB Top of tool | 4994 |
| C.O. SUB 1' DP | 4995 |
| S.I. TOOL 5' | 5000 |
| 3' Sampler | 5003 |
| HMV 5' | 5008 |
| JARS 5' | 5013 |
| SAFETY JOINT 2' | 5015 |
| PACKER 5' | 5020 |
| PACKER 5' | 5024 |
| DEPTH 5024 | |
| STUBB 1' | 5025 |
| ANCHOR | |
| 1' perf | 5026 |
| 1'c/o sub | 5027 |
| 93' D pipe | 5120 |
| 1' c/o sub | 5121 |
| T.C. | |
| DEPTH | |
| Alpine Rec. | 5126 |
| PACKER 5' PU sub | 5126 |
| 23' perf | 5149 |
| AK1 rec | 5154 |
| BULLNOSE | |
| T.D. 5' | 5154 |

TEST HISTORY

10679 Dst#1 Western Operating Co. 1-X Silverson

Flag Points

| t (Min.) | P (PSig) |
|----------|----------------|
| R: | 0.00 2399.87 |
| B: | 0.00 1059.65 |
| C: | 28.00 1070.78 |
| D: | 57.50 1106.52 |
| E: | 0.00 1080.13 |
| F: | 87.00 1070.04 |
| G: | 119.50 1105.57 |
| Q: | 0.00 2316.31 |



GAS RECOVERY

COMPANY: Western Operating Co.

DATE: 6-18-98

WELL NAME: 1-X Silverson

KB Elev: 3751.00 ft TICKET #10679 DST #

WELL LOCATION: 23-208-42w

GR Elev: 3739.00 ft FORMATION: Morrow

INTERVAL Fr.: 5024.00 To 5154.00 T.D.: 5154.00 ft TEST TYPE: CONVENTIONAL

GAS RECOVERY MEASURED WITH Merla-side static

***** GAS RATES FOR FLOW #1

| Time (min) | Orifice (in) | Pressure (Psi) | H2O (in) | Rate (cf/d) |
|------------|--------------|----------------|----------|-------------|
| 10 | 1.00 | 86 | 0 | 5901000.0 |
| 15 | 1.00 | 86 | 0 | 5901000.0 |
| 20 | 1.00 | 96 | 0 | 6498000.0 |
| 25 | 1.00 | 102 | 0 | 6900000.0 |
| 30 | 1.00 | 102 | 0 | 6900000.0 |

***** GAS RATES FOR FLOW #2

| Time (min) | Orifice (in) | Pressure (Psi) | H2O (in) | Rate (cf/d) |
|------------|--------------|----------------|----------|-------------|
| 10 | 2.00 | 60 | 0 | 13118000.0 |
| 20 | 2.00 | 60 | 0 | 13118000.0 |
| 30 | 2.00 | 50 | 0 | 11366000.0 |
| 40 | 2.00 | 50 | 0 | 11366000.0 |
| 50 | 2.00 | 50 | 0 | 11366000.0 |
| 60 | 2.00 | 40 | 0 | 10468000.0 |
| 70 | 2.00 | 40 | 0 | 10468000.0 |
| 80 | 2.00 | 40 | 0 | 10468000.0 |
| 90 | 2.00 | 40 | 0 | 10468000.0 |

DRILLSTEM TEST DATA

DST No.1 (5024' - 5154'), Morrow "V-7" Sandstone

Type: Conventional Bottom Hole, Times 30 - 60 - 90 - 120

| <u>Period</u> | <u>PSI</u> |
|---------------|-------------|
| IH | 2399 |
| IF | 1059 - 1070 |
| ISI | 1106 |
| FF | 1080 - 1070 |
| FSI | 1105 |
| FH | 2316 |

BHT 150°F

Blows: IF - Off bottom of bucket in 1 minute, Gas to surface in less than 6 minutes.
Gauged at 6.9 mmcf/d
FF - Strong throughout. Gauged 13.1 mmcf/d for 20 minutes, 11.4 mmcf/d through 50 minutes and stabilised at 10.5 mmcf/d for 50 minutes. 12' flare.
ISI & FSI - No blowback.

Recovery: Gas to surface in 6 minutes. 324' mud and 279' gas cut mud(5% gas).

Sample Chamber: 1000 PSI, 11.7 cfg - no fluids

Comments: No problems occurred during test. Packers set and pulled loose properly and no fluid was lost downhole. Charts were clean.

ELECTRIC LOG FORMATION TOPS - KB Elev. 3750'

| <u>FORMATION</u> | <u>DEPTH</u> | <u>DATUM</u> |
|-------------------|--------------|--------------|
| Base Stone Corral | 2441' | +1309' |
| Chase | 2632' | +1118' |
| Council Grove | 2895' | +855' |
| Neva | 3194' | +556' |
| Foraker | 3338' | +412' |
| Admire | 3391' | +359' |
| Penn. Virgil | 3452' | +298' |
| Shawnee | 3808' | -58' |
| Heebner | 3936' | -186' |
| Lansing | 4022' | -272' |
| Marmaton | 4434' | -684' |
| Cherokee | 4682' | -932' |
| Atoka | 4881' | -1131' |
| Morrow | 5040' | -1290' |
| Morrow "V-7" SS | 5122' | -1372' |
| Mississippi | 5148' | -1398' |

STRUCTURAL CONSIDERATION - Datum Depths

| <u>FORMATION</u> | <u>Siverson NO. 1-X</u> | <u>*Harold Burns No.1</u> | <u>POSITION</u> |
|------------------|-------------------------|---------------------------|-----------------|
| Base Sone Corral | +1309' | +1291' | +18' |
| Chase | +1118' | +1097' | +21' |
| Council Grove | +855' | +829' | +26' |
| Neva | +556' | +533' | +23' |
| Foraker | +412' | +391' | +21' |
| Admire | +359' | +337' | +22' |
| Virgil | +298' | +273' | +25' |
| Heebner | -186' | -203' | +17' |
| Lansing | -272' | -290' | +18' |
| Marmaton | -684' | -713' | +29' |
| Cherokee | -932' | -953' | +21' |
| Atoka | -1131' | -1153' | +22' |
| Morrow | -1290' | -1312' | +22' |
| Lower Morrow | -1398' | -1423' | +25' |
| Mississippi | -1512' | -1563' | +51' |

*AMOCO Production Company, Harold W. Burns No. 1, 1900' FWL & 330' FNL, Section 24, T20S, R42W, Greeley County, Kansas, KB Elevation 3725' - 6640' to the East.

LITHOLOGY DESCRIPTION

SAMPLES ARE LAGGED

*INDICATES HYDROCARBON SHOW
CORRECTED E-LOG FORMATION TOPS

STONE CORRAL

2415 - 1438' Anhydrite - White, light gray to tan, firm, crystalline

BASE STONE CORRAL/RED CAVE 2441'

2438 - 2490' Siltstone to very fine Sandstone - Red to orange, very fine, well sorted, unconsolidated grains, no fluorescence, no stain or cut, poorly consolidated in part with clay cement, poor visible porosity, no show, with abundant unconsolidated grains, interbedded with Shale - Medium redbrown to brown, orange, earthy, blocky, silty, calcareous, anhydritic in part, with trace Anhydrite

2490 - 2525' Shale - Medium to dark redbrown to brown, hard, blocky, calcareous, silty, trace Anhydrite, with interbedded Siltstone - Red to orangebrown, firm, clay and calcareous cement, poor visible porosity - abundant clay infill, no show

2525 - 2582' Shale - Medium to dark red to orangebrown, hard, blocky, earthy, calcareous, very silty and occasionally grading to Siltstone - Clay cement, poor visible porosity - clay infill, no show

2582 - 2606' Shale - Red to orangebrown, earthy, blocky, calcareous, silty

2606 - 2654' Shale - As above, occasionally graygreen and waxy, interbedded with Siltstone to very fine Sandstone - Light brown to gray, tan, white, redbrown, firm, friable, clay cement, calcareous, clean in part, poor visible porosity, no show, trace Anhydrite

CHASE 2632'

2654 - 2692' Shale - Dark redbrown, orange, occasionally graygreen to green, waxy in part, blocky, calcareous, earthy, silty, occasionally interbedded with Siltstone - Light gray, tan, redbrown, firm, slightly friable, clay cement, calcareous, anhydritic in part, poor visible porosity, no show

2692 - 2710' Siltstone to very fine Sandstone - White, light brown, friable, very fine, well sorted grains, clay and calcareous cement, clean to argillaceous, anhydritic in part, trace intergranular porosity - abundant clay infill, no show, trace Dolomite - Light brown, pink, orange, cryptocrystalline, hard, dense, anhydritic, no show, with Shale - As above

2710 - 2752' Shale - Medium red to orangebrown, firm, earthy, fissile, waxy, calcareous, silty in part and occasionally grading to Siltstone - As above, trace Dolomite - Light brown to light graygreen, hard, finely crystalline, silty, anhydritic, poor visible porosity, no show

2752 - 2815' Shale - As above, occasionally interbedded with Siltstone to very fine Sandstone - Light brown to redbrown, tan, white, clay cement, calcareous, anhydritic in part, tight, no show, with trace Dolomite - As above

2815 - 2854' *35 Units Gas, Dolomite - Light brown to gray, tan, white, occasionally red to orange, microcrystalline, microsiliceous in part, clean to argillaceous, brittle, silty to sandy in part, fossiliferous, poor visible porosity, no fluorescence, no stain or cut, interbedded with Siltstone - Light brown, white, friable, clean, trace intergranular porosity, no show, interbedded with Shale - As above

2854 - 2888' Shale - Medium red to orangebrown, fissile to blocky, waxy in part, earthy, calcareous, silty, occasionally grading to and interbedded with Siltstone - Light gray, graygreen, white, brown, firm, slightly friable, calcite and clay cement, trace intergranular porosity - abundant clay infill, no fluorescence, no stain or cut

2888 - 2984' Limestone - Light brown, tan, white, micrite, cryptocrystalline, fossiliferous, sandy, tight, no show, interbedded with Shale - Medium redbrown, orangebrown, blocky, earthy, calcareous, silty, interbedded with Siltstone - Light gray, graygreen, hard, dense, slightly friable, calcite and clay cement, clean to argillaceous, poor visible porosity, no fluorescence, no stain or cut

COUNCIL GROVE 2895'

2984 - 2995' Limestone - Light to medium brown, redbrown to red, tan, micrite, cryptocrystalline, hard, dense, siliceous in part, clean to argillaceous, silty, anhydritic, tight, no show, trace Chert - Mottled red to brown, hard, crystalline

2995 - 3020' Shale - Medium redbrown to orangebrown, occasionally graygreen, hard, blocky, calcareous, silty to sandy in part and occasionally grading to Siltstone - poor visible porosity, no show

3020 - 3030' Siltstone to very fine Sandstone - Light gray to graygreen, redbrown, hard, slightly friable, clay cement, calcareous, poor visible porosity, no show

3030 - 3104' Shale - As above, grading to and interbedded with Siltstone to very fine Sandstone - As above, clay cement, calcareous, poor visible porosity - abundant clay infill, no fluorescence, no stain or cut

3104 - 3190' Shale - Medium red to orangebrown, graygreen, hard, blocky, earthy, calcareous, silty and grading to Siltstone/very fine Sandstone - Medium redbrown, light gray to graygreen, tan, hard, slightly friable, very fine, well sorted grains, clay cement, calcareous, poor visible porosity - abundant infill, no show

NEVA 3194'

3190 - 3203' Limestone - Mottled redbrown, light to medium brown, buff, orange, varicolored in part, micrite, cryptocrystalline, dense, clean to argillaceous in part, poor visible porosity, no fluorescence, no stain or cut, poor sample quality - cavings

3203 - 3280' Shale - Medium to dark redbrown to brown, green to graygreen, hard, blocky, earthy, calcareous, silty to sandy, interbedded with Limestone - As above, mottled red to brown, orange, buff, poor visible porosity, no show

3280 - 3302' Limestone - Light brown, buff, white, microcrystalline, microsucrosic, subchalky in part, clean, brittle, fossiliferous, oolitic, trace intercrystalline porosity, no fluorescence, no stain or cut

3302 - 3340' Shale - Medium gray to graygreen, maroon, redbrown, blocky, earthy, calcareous, silty, interbedded with Limestone - Brown to gray, white, finely crystalline, dense, clean, fossiliferous, tight, no show, trace Chert

FORAKER 3338'

3340 - 3365' Limestone - Medium mottled brown to gray, biomicrite, microcrystalline, dense, clean to argillaceous, fossiliferous, trace intercrystalline and moldic porosity, no fluorescence, no stain or cut, interbedded with Shale - As above, trace Chert

3365 - 3380' Shale - Red to orangebrown, graygreen, ottled, hard, blocky, calcareous, silty

3380 - 3392' Limestone - Medium brown to gray, oomicrite, finely crystalline, brittle, clean to argillaceous, trace intercrystalline and oomoldic porosity, no show

ADMIRE SHALE 3391'

3392 - 3426' Shale - Brick red to orangebrown, graygreen, medium brown, hard, blocky, earthy, calcareous, silty, interbedded with Limestone - As above, no fluorescence, no stain or cut

3426 - 3454' Limestone - Light brown, buff, microcrystalline, microsucrosic, brittle, clean to argillaceous, fossiliferous, trace intercrystalline porosity, no fluorescence, no stain or cut

VIRGIL 3452'

3454 - 3490' Shale - Brick redbrown, graygreen, mottled in part, hard, blocky, calcareous, silty, interbedded with Limestone - Medium to light brown, white, micrite, finely crystalline, dene, clean, sndy, fossiliferous, tight, no show

3490 - 3560' Shale - Medium to dark redbrown to brown, graygreen, hard, blocky, earthy, calcareous, silty, interbedded with Limestone - Light to medium brown, gray, micrite, finely crystalline, dense, clean to argillaceous, sandy, poor visible porosity, no fluorescence, no stain or cut

3560 - 3584' Shale with interbedded Limestone - As above, poor visible porosity, no show

3584 - 3636' Limestone - Light to medium brown to gray, occasionally mottled green, maroon, redbrown, varicolored in part, micrite, crypto to microcrystalline, dense, clean to marly in part, subchalky in part, occasionally siliceous and tight, poor visible porosity, no show, interbedded with Shale - Brick red, graygreen, maroon, violet, varicolored in part, hard, blocky, calcareous, silty, trace Chert - Gray, milky

3636 - 3680' Limestone - Light to medium brown to gray, buff, mottled red, micrite, finely crystalline, dense, fossiliferous, siliceous, carbonaceous, poor visible porosity, no show, interbedded with Shale - As above

3680 - 3700' Shale - Medium graygreen to gray, redbrown, hard, blocky, calcareous, silty, interbedded with Limestone - Mottled brown to gray, white, micrite, finely crystalline, oolitic, fossiliferous, carbonaceous, poor visible porosity, no show

3700 - 3726' Limestone - Mottled brown to gray, biomicrite, finely crystalline, dense, fossiliferous, carbonaceous, argillaceous to clean, poor visible porosity, no fluorescence, no stain or cut, interbedded with Shale - As above

3726 - 3766' *Limestone - Light brown, white, microcrystalline, microsugrosic, brittle, clean, subchalky, oolitic, fossiliferous, trace intercrystalline porosity, trace(2% sample) pale blue to light mottled yellow hydrocarbon fluorescence, slow faint streaming cut, no stain, weak show, interbedded with Shale - Light to medium brown, gray to graygreen, black, soft, brittle, calcareous, silty

3766 - 3784' Limestone - Light brown, buff, white, microcrystalline, microsugrosic to sugrosic in part, clean, brittle, subchalky, fossiliferous, fair intercrystalline and occasional moldic porosity, no fluorescence, no stain or cut

3784 - 3806' Shale - Dark gray, black, graygreen, redbrown, hard, blocky, calcareous, silty

SHAWNEE 3808'

3806 - 3826' *Limestone - Light brown to gray, white, biomicrite, microcrystalline, microsugrosic, brittle, clean, very fossiliferous with occasional moldic porosity, fair intercrystalline porosity, trace(1% sample) light yellow hydrocarbon fluorescence with faint cut, no stain, weak show, interbedded with Limestone - Brown to gray, micrite, cryptocrystalline, dense, fossiliferous, argillaceous, tight, no show

3826 - 3855' Shale - Gray to black, graygreen, fissile, firm, calcareous, carbonaceous, silty in part, interbedded with Limestone - Brown to gray, mottled, biomicrite, finely crystalline, dense, clean to argillaceous, fossiliferous, oolitic, tight to trace moldic and intercrystalline porosity, no fluorescence, no stain or cut

3855 - 3902' Limestone - White, light brown, sucrosic to granular in part, brittle, clean, very fossiliferous with excellent interparticle porosity, fair intercrystalline and moldic porosity, orange mineral fluorescence, no stain or cut, interbedded with Shale - As above

3902 - 3928' Shale - Dark gray to brown, black, hard, blocky, calcareous, silty, interbedded with Limestone - Mottled brown to gray, biomicrite, cryptocrystalline, hard, dense, clean to argillaceous, oolitic, siliceous, tight, no show

3928 - 3938' Limestone - Brown to gray, micrite, finely crystalline, dense to trace intercrystalline porosity, argillaceous to marly in part, pyritic, no show

HEEBNER 3936'

3938 - 3942' Shale - Black, hard, fissile, carbonaceous, calcareous, silty

3942 - 3998' Limestone - Medium to dark mottled brown to gray, biomicrite, cryptocrystalline, hard, dense, argillaceous to marly in part, tight, no show, interbedded with Shale - Black, hard, subfissile to blocky, carbonaceous, silty

3998 - 4025' Limestone - Dark to medium mottled brown, biomicrite, cryptocrystalline to microcrystalline, dense, argillaceous to marly, pyritic, carbonaceous, stylonitic, fossiliferous, tight, no show, interbedded with Shale - Black, subfissile, carbonaceous

LANSING 4022'

4025 - 4050' Shale - Dark gray to brown, black, hard, subfissile to blocky, carbonaceous, calcareous, fossiliferous, pyritic, interbedded with Limestone - Dark brown to gray, finely crystalline, marly, tight, no show

4050 - 4070' Limestone - Light to medium brown to gray, micrite, cryptocrystalline, hard, dense, siliceous, clean to argillaceous, fossiliferous, tight, no show, with Chert - Gray, milky white, hard, crystalline

4070 - 4102' Limestone - As above, with Chert Nodules, interbedded with Shale - Dark gray, brown, mottled, hard, blocky, calcareous, carbonaceous, fossiliferous, pyritic, abundant Chert

4102 - 4124' Limestone - Light gray to brown, micrite, microcrystalline, firm, brittle, subchalky, clean to argillaceous, fossiliferous, trace intercrystalline porosity, no fluorescence, no stain or cut, with Chert - Milky gray to white, hard, crystalline

4124 - 4160' Limestone - Medium brown, micrite, cryptocrystalline, hard, dense, clean, siliceous, fossiliferous, tight, no show

4160 - 4174' Limestone - Gray to brown, mottled, microcrystalline, silty, argillaceous to marly, carbonaceous, tight, no show

4174 - 4190' Limestone - Medium mottled brown to gray, micrite, cryptocrystalline, hard, dense, clean to argillaceous, fossiliferous, carbonaceous, pyritic, tight, no show, with Chert

4190 - 4230' Shale - Medium to dark gray, brown, black, blocky, calcareous, carbonaceous, silty, pyritic, interbedded with Limestone - Medium to dark mottled brown, gray, biomicrite, cryptocrystalline, hard, dense, fossiliferous, pyritic, argillaceous to marly in part, tight, no show

4230 - 4242' Limestone - Medium mottled brown, biomicrite, microcrystalline, pyritic, brittle, clean to argillaceous, very fossiliferous with trace moldic and intercrystalline porosity, no fluorescence, no stain or cut

4242 - 4262' Limestone - Medium to dark mottled brown to gray, biomicrite, cryptocrystalline, hard, dense, siliceous, argillaceous, fossiliferous, carbonaceous, poor visible porosity, no fluorescence, no stain or cut, interbedded with Shale - Dark gray, hard, blocky, calcareous, trace Chert

4262 - 4274' Limestone - Light to medium mottled brown, oomicrite, microcrystalline, brittle, clean, sandy, very oolitic with excellent oomoldic porosity, trace intercrystalline porosity, no fluorescence, no stain or cut, trace chert

4274 - 4300' Limestone - Mottled brown to gray, biomicrite, finely crystalline, hard, dense, clean to argillaceous, carbonaceous, tight, no fluorescence, no stain or cut, interbedded with Shale - Black, dark gray, hard, subfissile to blocky, calcareous, silty, carbonaceous

4300 - 4336' Limestone - Light to medium brown to gray, biomicrite, cryptocrystalline, hard, dense, clean to argillaceous, poor visible porosity, no show, interbedded with Shale - Dark gray, black, subfissile, carbonaceous, silty

4336 - 4350' Shale - Dark gray, black, firm, subfissile to blocky, carbonaceous, calcareous, silty

4350 - 4380' Limestone - Dark to medium brown to gray, oobiomicrite, cryptocrystalline, hard, dense, argillaceous to marly in part, fossiliferous,

carbonaceous, tight, no fluorescence, no stain or cut, interbedded with Shale - As above

4380 - 4390' Shale - Black, dark gray, subfissile, hard, carbonaceous, silty, interbedded with Limestone - Light brown, gray, microcrystalline, subchalky, clean, oolitic, fossiliferous, poor visible porosity, no fluorescence, no stain or cut

4390 - 4414' *Dolomite - Medium mottled brown to gray, microcrystalline, microsugrosic, brittle, argillaceous, pyritic, trace intercrystalline porosity, trace fine vuggy porosity, light mottled pale blue hydrocarbon fluorescence in 1% of the samples, slow faint streaming cut, trace medium brown matrix oil stain, interbedded with Shale - As above

4414 - 4440' Limestone - Medium brown to gray, mottled, micrite, micro to cryptocrystalline, dense, siliceous, clean to argillaceous, fossiliferous, pyritic, poor visible porosity, no fluorescence, no stain or cut, occasionally interbedded with Shale - Black, dark gray, fissile, firm, carbonaceous, trace Chert - Milky gray

MARMATON 4434'

4440 - 4449' Shale - Dark gray, hard, blocky, calcareous, pyritic

4449 - 4486' Limestone - Medium mottled brown, biomicrite, cryptocrystalline, hard, dense, siliceous, fossiliferous, oolitic, pyritic, clean to argillaceous, tight, no show, trace Chert

4486 - 4492' Limestone - Light to dark mottled brown, buff, microcrystalline, microsugrosic, brittle, clean to argillaceous, subchalky, pyritic, fossiliferous with trace moldic porosity, trace intercrystalline porosity, no fluorescence, no stain or cut

4492 - 4512' Limestone - Medium to dark mottled brown to gray, biomicrite, cryptocrystalline, hard, dense, siliceous, argillaceous to marly in part, fossiliferous, carbonaceous, pyritic, tight, no show, trace Chert - Dark milky gray, occasionally interbedded with Shale - Dark gray, hard, blocky

4512 - 4530' Limestone - Medium gray, finely crystalline, dense, very sandy with very fine well sorted Quartz grains, fossiliferous, tight, no show, interbedded with Limestone - Medium brown, oomicrite, microcrystalline, brittle, very oolitic and fossiliferous, trace moldic porosity, no fluorescence, no stain or cut

4530 - 4546' Shale - Dark gray to brown, graygreen, black, hard, blocky, calcareous, silty, carbonaceous

4546 - 4556' *Abundant Chert - Milky gray to brown, white, hard, crystalline, Limestone - Light mottled brown, oobiomicrocrystalline, brittle, clean to argillaceous, pyritic, very oolitic and fossiliferous with trace moldic porosity, trace intercrystalline porosity, trace pale blue hydrocarbon fluorescence(1% sample), slow weak cut, no stain

4556 - 4584' Shale - Dark gray, black, subfissile to blocky, hard, calcareous, fossiliferous, silty, interbedded with Limestone - Medium mottled brown, as above, very oolitic with trace moldic and interpartical porosity, no show, trace Chert

5584 - 5598' Limestone - Medium brown to gray, micrite, cryptocrystalline, hard, dense, siliceous, argillaceous to marly, pyritic, fossiliferous, carbonaceous, tight, no show, interbedded with Shale - Dark brown, black, hard, blocky, calcareous, carbonaceous

5598 - 4646' Limestone - Medium to dark mottled brown, biomicrite, finely crystalline, hard, dense, fossiliferous, carbonaceous, pyritic, poor visible porosity, no fluorescence, no stain or cut with Shale - Dark brown, black, subfissile to blocky, hard, calcareous, carbonaceous

4646 - 4670' Limestone - Light mottled gray, finely crystalline, dense, siliceous, light gray Chert nodules, clean, fossiliferous, trace intercrystalline porosity, light mottled bluegold hydrocarbon fluorescence in 2% of the samples, slow faint streaming cut, no stain, interbedded with Limestone - Medium mottled brown, oomicrite, cryptocrystalline, hard, dense, carbonaceous, pyritic, tight, no show, trace Chert

4670 - 4698' Limestone - Mottled brown to gray, oomicrite, cryptocrystalline, dense, argillaceous, fossiliferous, oolitic, pyritic, tight, no show, trace Chert - Black, dark gray

CHEROKEE 4682'

4698 - 4722' Shale - Black, dark gray, fissile to blocky, hard, carbonaceous, calcareous, silty, interbedded with Limestone - Medium to dark mottled brown, biomicrite, cryptocrystalline, hard, dense, clean to marly, oolitic, pyritic, tight, occasional trace pale blue hydrocarbon fluorescence, faint cut, no stain, weak show

4722 - 4752' Shale - Black, dark gray, hard, blocky, calcareous, carbonaceous, silty, pyritic, interbedded with Limestone - Mottled brown to gray, biomicrite, finely crystalline, dense, fossiliferous, carbonaceous, pyritic, tight, no show, trace Chert

4752 - 4805' Shale - Black, dark gray, subfissile to blocky, hard, carbonaceous, calcareous, silty, interbedded with Limestone - Medium to dark brown, biomicrite, finely crystalline, dense, clean to argillaceous, fossiliferous, tight, no show

4805 - 4845' Limestone - Medium mottled brown, dark brown, occasionally black, hard, biomicrite, cryptocrystalline, dense, argillaceous to marly, silty, tight, no fluorescence, no stain or cut, interbedded with Shale - Black, dark brown to gray, hard, blocky, calcareous, carbonaceous, silty, Chert - Gray, black, hard, crystalline

ATOKA 4881'

4845 - 4900' Shale - Black, dark gray, fissile to blocky, hard, carbonaceous, interbedded with Limestone - Dark brown to gray, black, cryptocrystalline, hard, dense, argillaceous to marly, silty, fossiliferous, pyritic, tight, no show

4900 - 4940' Shale - Dark gray, black, hard, subfissile to blocky, carbonaceous, calcareous, silty, interbedded with Limestone - Medium to dark brown to gray, occasionally black, mottled, micrite, cryptocrystalline, hard, dense, fossiliferous, argillaceous to marly, tight, no show, trace Chert - Dark brown, black, hard, crystalline, pyritic

4940 - 4950' Limestone - Dark brown to gray, mottled, black, biomicrite, cryptocrystalline, hard, dense, argillaceous to marly, fossiliferous, pyritic, tight, no show

4950 - 5010' Limestone - Dark brown to gray, black, micrite, cryptocrystalline, dense, argillaceous to marly, pyritic, carbonaceous, tight, no show, interbedded with Shale - As above

5010 - 5026' Limestone - Dark brown, black, micrite, cryptocrystalline, hard, dense, siliceous, marly, tight, no show

5026 - 5038' Limestone - Dark gray to brown, black, biomicrite, cryptocrystalline, hard, dense, marly, very pyritic in part, fossiliferous, tight, no fluorescence, no stain or cut, interbedded with Shale - Black, dark gray, hard, subfissile to blocky, carbonaceous, calcareous, trace Chert - Black

MORROW 5040'

5038 - 5048' Shale - Black, firm, fissile, carbonaceous, calcareous

5048 - 5071' Shale - Black, dark gray, hard, blocky to subfissile, carbonaceous, calcareous, with Limestone - Medium brown to gray, micrite, finely crystalline, dense, argillaceous to marly, fossiliferous, tight, no fluorescence, no stain or cut, trace Chert - Brown, white

5071 - 5186' Shale - Black, fissile, firm, carbonaceous, calcareous, silty

5086 - 5111' Shale - Black, dark gray, hard, blocky, calcareous, carbonaceous, fossiliferous

5111 - 5133' Shale - Dark gray, black, subfissile, firm, waxy, calcareous, carbonaceous, trace Limestone inclusions, trace unconsolidated Quartz grains(1% sample) - White, clear, medium upper to fine lower, poorly sorted, subangular grains, no fluorescence, no stain or cut

MORROW "V-7" SANDSTONE 5122'

5133 - 5148' Sandstone(12% sample) - White, clear, occasionally light yellow to orange and varicolored, very friable in part, predominately hard and dense, very coarse upper to fine lower, poorly sorted, subangular grains, occasionally medium upper to fine lower and moderately sorted, very well cemented in part with calcite cement, clean, slightly arkosic, occasionally poorly consolidated and very friable with fair intergranular porosity, no fluorescence, no stain or cut, with unconsolidated Quartz grains(5% Spl) - Clear, white, very coarse lower to medium lower, poorly sorted, subangular grains, no fluorescence, no stain or cut

LOWER MORROW 5148'

5148 - 5190' Limestone(grainstone) -Mottled brown to graygreen, speckled green, dark brown, biomicrite, finely crystalline, dense, clean to argillaceous, oolitic, sandy and glauconitic in part, poor visible porosity, dark mottled orange mineral fluorescence, no stain or cut, interbedded with Shale - Medium to dark gray, graygreen, black, hard, subfissile, carbonaceous, calcareous, waxy, sandy and glauconitic in part

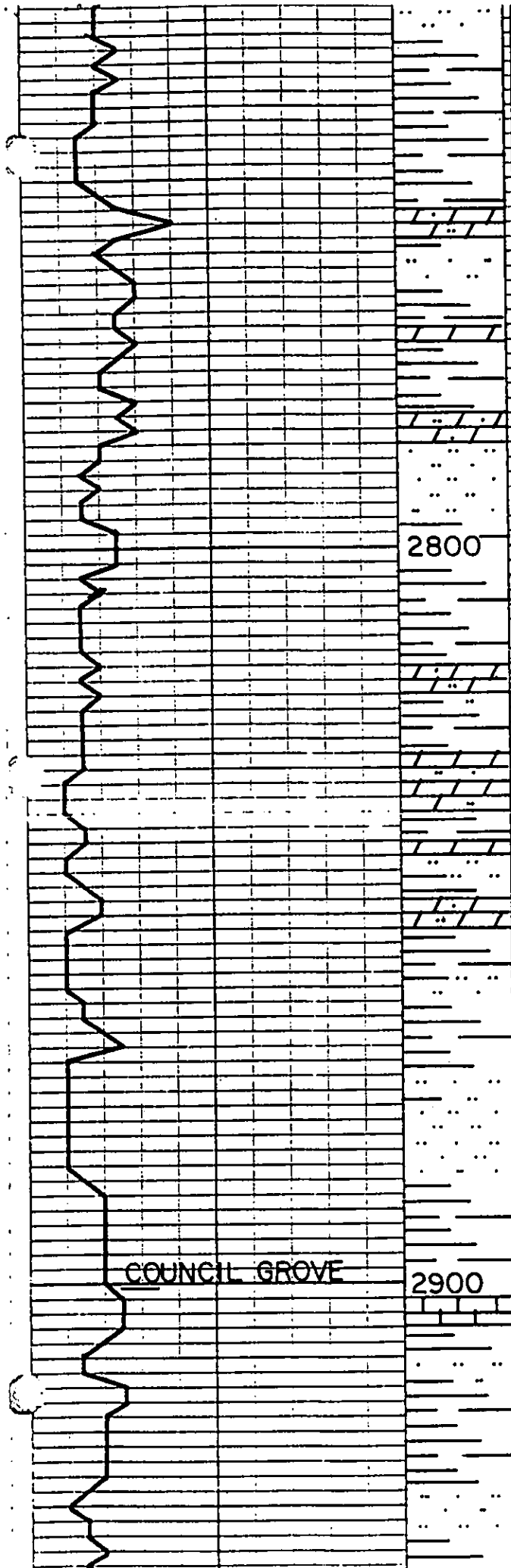
5190 - 5214' Shale - Dark gray, black, dark brown, occasionally graygreen, blocky to subfissile, carbonaceous, calcareous, interbedded with Limestone - As above, no show, trace Chert

5214 - 5226' Limestone - Medium to dark mottled brown, gray, occasionally black, biomicrite, cryptocrystalline, dense, hard, siliceous, argillaceous to marly, fossiliferous, carbonaceous, tight, no show

5226 - 5266' Trace Sandstone(2% Spl) - Light graygreen, salt and pepper, speckled green, hard, dense, slightly friable, fine lower, well sorted, subround grains, calcite cement, glauconitic, clean, poor visible porosity, no fluorescence, no stain or cut, interbedded with Limestone - Medium to dark mottled brown, biomicrite, cryptocrystalline, dense, clean to argillaceous, sandy and glauconitic in part, poor visible porosity, no fluorescence, no stain or cut

MISSISSIPPI 5262'

5266 - 5300'TD Limestone(Grainstone) - Light brown, buff, microcrystalline, microsugrosic, subchalky, clean, brittle, very oolitic and sandy, pyritic, poor visible porosity, no fluorescence, no stain or cut



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 ARC W/SN CLAY INVELL NO G
 SH - RED TO GRN BRN E WY
 FRM WXY SLTY/SNDY IP CALC

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 BLKY SLTY IP CALC

SH - M RED TO BRN/BRN FIS
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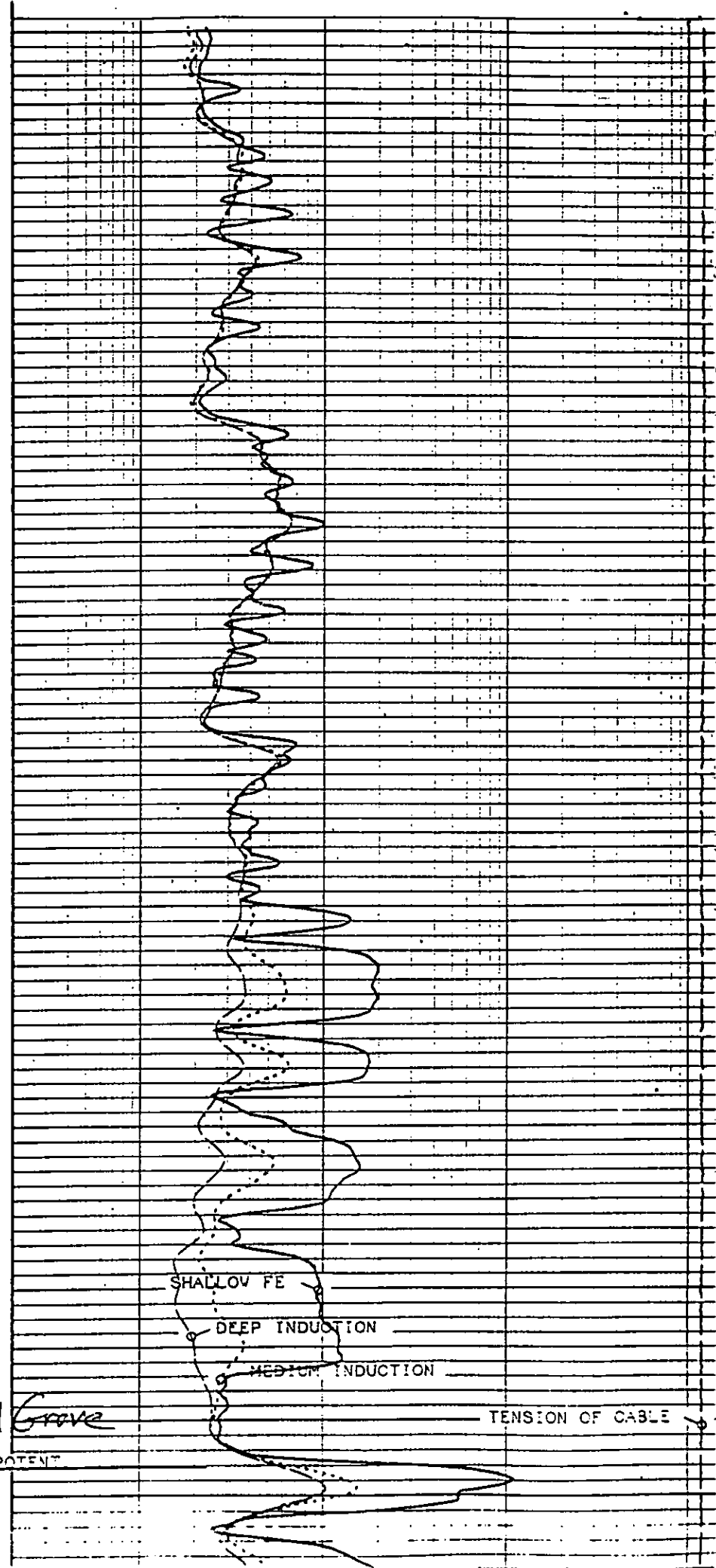
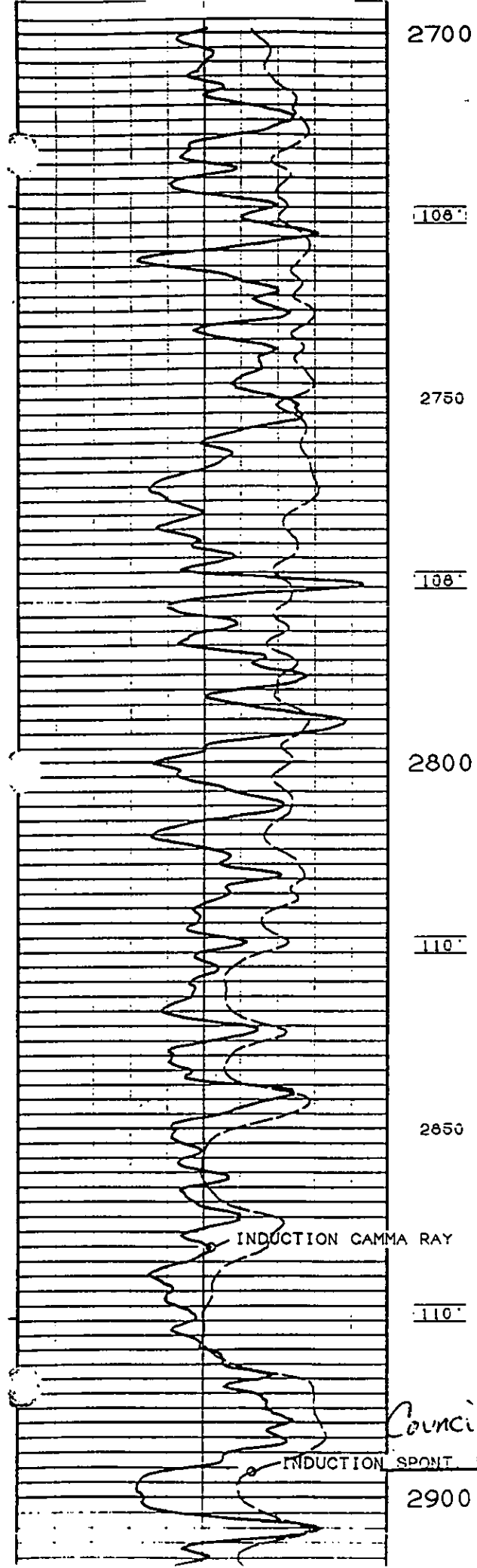
COUNCIL GROVE

2900

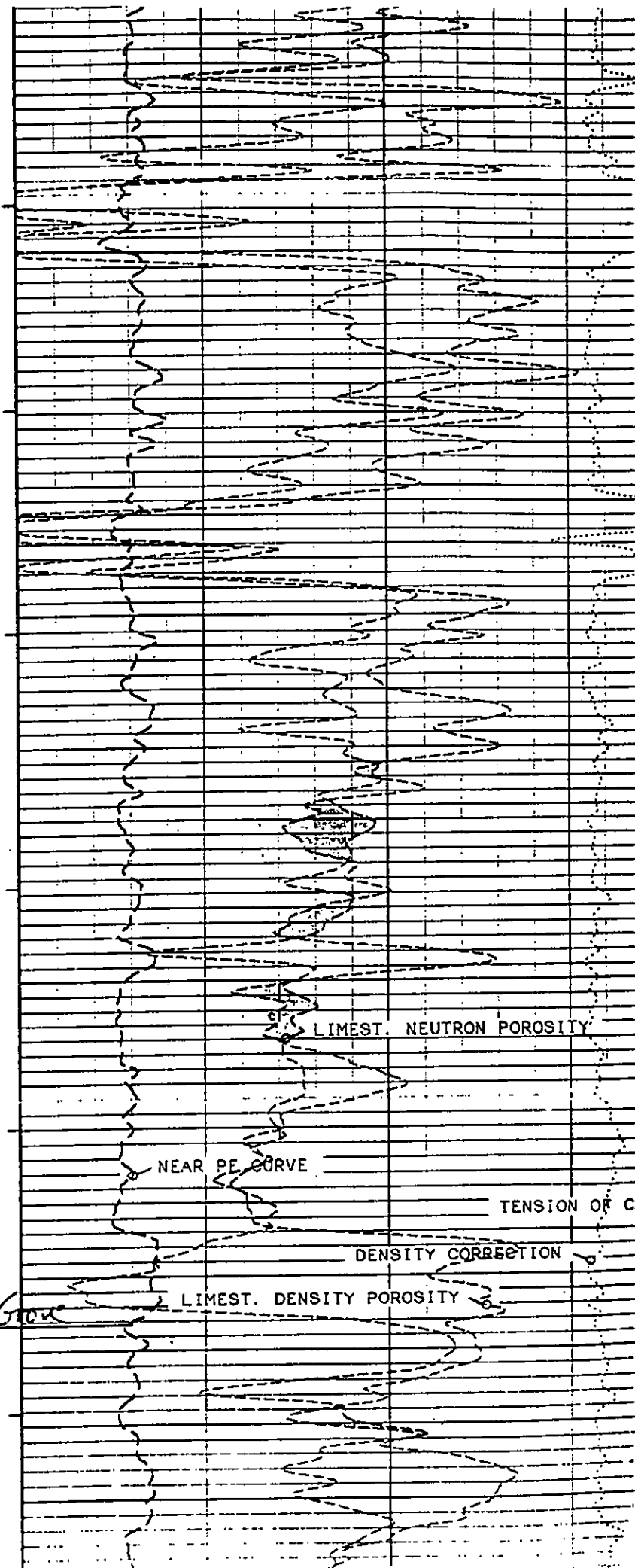
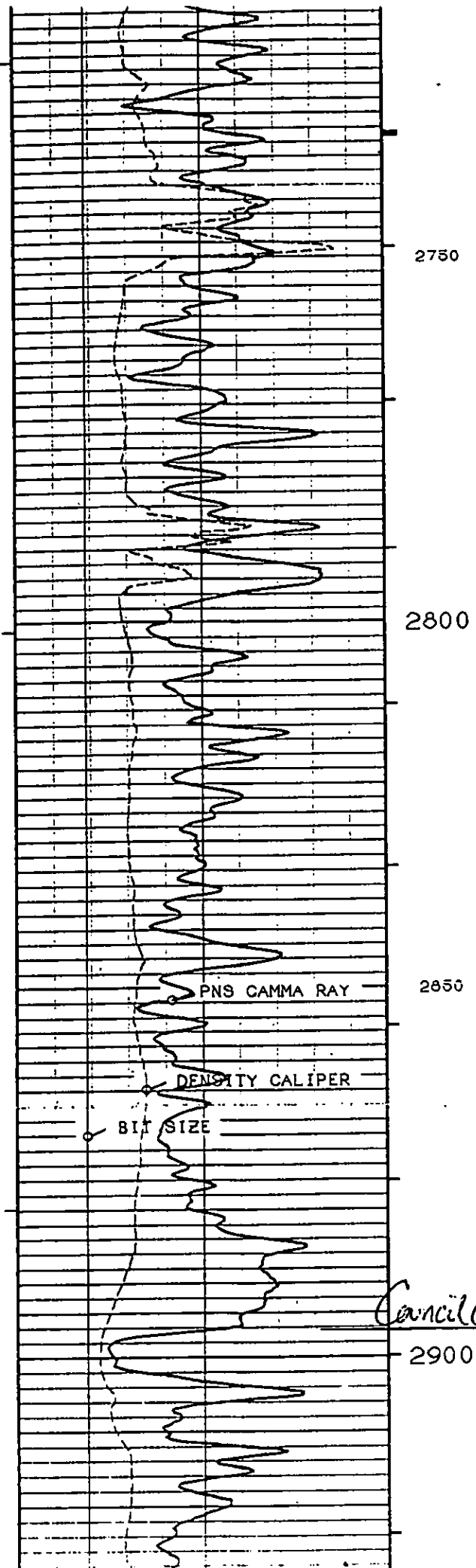
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Council Grove



Cancel Box

5000

LSI - DK BRN BLK MICR CROYL
DNS SIL ARG/MRLY TT NO SH

MORROW

LSI - DK GY GY BLK BIONICR
DNS MRLY V: PIR TP POSS IT
SHOW INTBD W/
SH - BLK DK GY HD SBPIS TT

DST #1

SH - BLK FRM FIS CARB CALC
TR CHRT - DK BRN MLKY WH

DOWN GAS

TR LSI - M BRN TO GY MICR
SBCHKY TP ARG TO MRLY TP
TT NO FLOR NO STN OR CUT
TR CHRT - WH BRN

CO

SH - BLK FIS FRM CARB CALC
POSS: TP

5100

SH - BLK DK GY HD BLKY CARB

"V 7" SS

SH - DK GY BLK SBPIS FRN
CALC CARB TP LS INCL
TR UNCONSL 0.2% GR5 (1% SPL)
CLR FU/FL P SRTD SBANG CR
FLOR NO STN OR CUT

LOWER MORROW

GR5 (2% SPL) - HI CLR GSS L
YEL TO ORNG VARIO TP FRET
& DNS VCU/PL P SKIN SBANG
GR5 VW CMT W/CA CNFLC L S
AERIC FREDD TO OCC P GR5
PRI W/PR INTORAN 0 NO P
STN OR CUT

CO

750 TG

UNCONSL 0.1% GR5 (2% SPL) -
VCL/HI P SRTD SBANG GR5 N
SLOW

WT 9.1
VIS 55
YP 20
WL 7.2
PH 10.0
CL 2000
LCM 8#

SH - M TO DK GY GYCN BLK NO
SBPIS TO BLKY CALC INTBD W/
GLAUC TP INTBD W/

LS (CRNST) - MOT TRG GYCN ST
DK BRN BIONICR F IN LAY CL
ARC OOL ENDY S GLAUC
W MPT ORNG MPT FLOK
CUT
TR CHRT

5200

SH - DK GY BLK DK BRN LCC
BLKY TO SBPIS CARB CALC IN
LS - AA-SNDY P SBANG

CG

150 225 300
 DENSITY CALIPER
 INCHES
 6 11 16

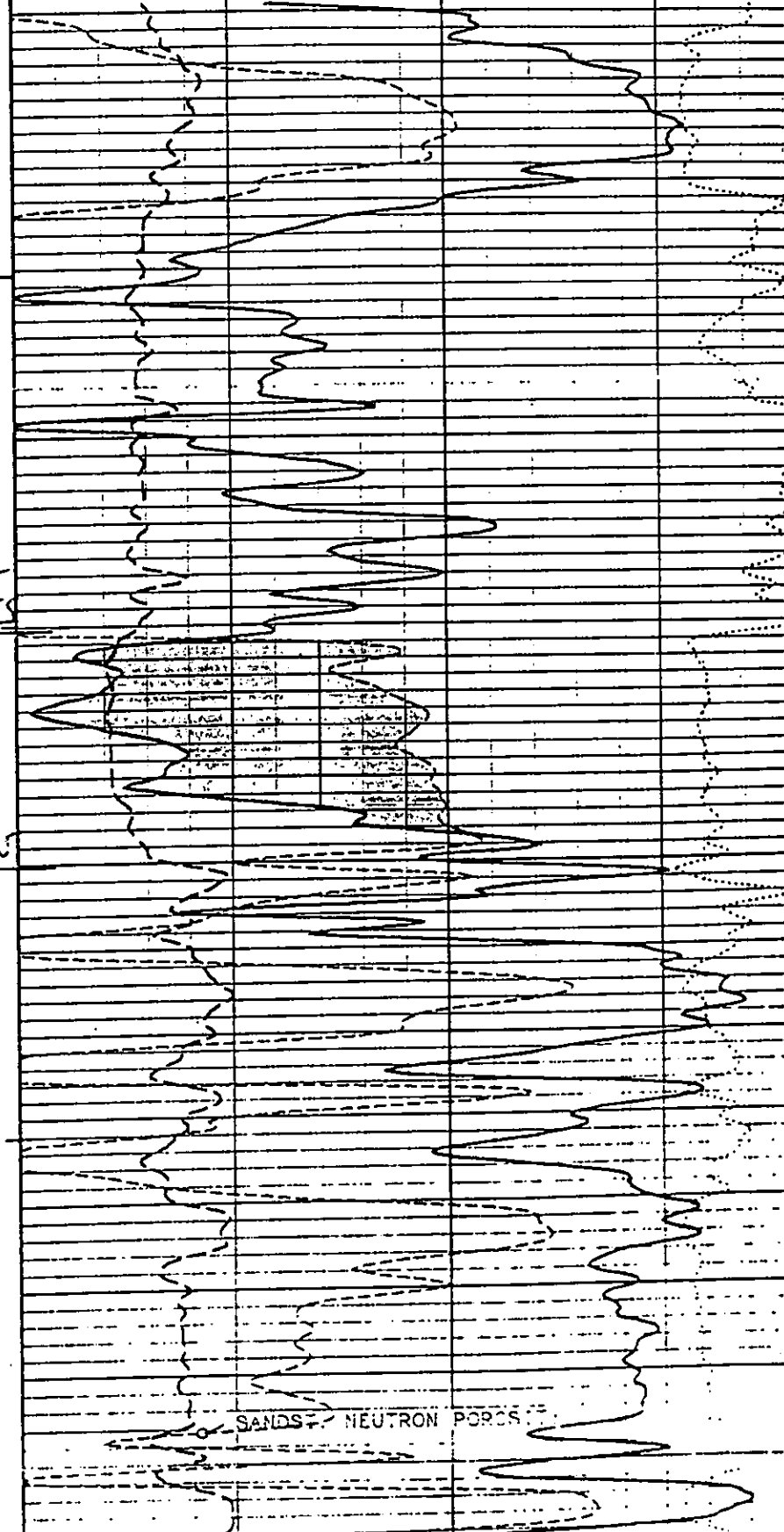
TIMING
 MARKS
 ON LHS
 ANNULAR
 INTEGRAL
 EVERY
 10 CU FT
 →

GRAMS PER CC
 -0.25 0

NEAR PE CURVE
 B/E

TENSION OF CABLE
 POUNDS
 5000 10000

3050
 5100
 Narrow
 "V-7" SS
 Lower
 Marrow
 5200



PNS GAMMA RAY

DENS: CALIPER

SANDS NEUTRON POROS

5000

121'

Morrow

5050

121'

5100

Morrow
11V-7" SS

121'

Lower
Morrow

121'

5200

