

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1
September 1999
Form Must Be Typed

CONFIDENTIAL

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

ORIGINAL

Operator: License # 32424
Name: HRF Exploration & Production, Inc.
Address: 990 South Wisconsin Avenue
City/State/Zip: Gaylord, MI 49735
Purchaser: Farmland
Operator Contact Person: Donald R. Day
Phone: (517) 732-6950
Contractor: Name: Cruzen Drilling, Inc.
License: 32589

Wellsite Geologist: James Dilts
Designate Type of Completion:
 New Well Re-Entry Workover
 Oil SWD SIOW Temp. Abd.
 Gas ENHR SIGW
 Dry Other (Core, WSW, Expl., Cathodic, etc.)

If Workover/Re-entry: Old Well Info as follows:
Operator: _____
Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____
 Deepening Re-perf. Conv. to Enhr./SWD
 Plug Back Plug Back Total Depth
 Commingled Docket No. _____
 Dual Completion Docket No. _____
 Other (SWD or Enhr.?) Docket No. _____

4/29/2000 5/9/2000 6/16/2000
Spud Date or Date Reached TD Completion Date or Recompletion Date

API No. 15 - 191-22347-0000
County: Sumner
E 1/2 SE SE Sec. 8 Twp. 35 S. R. 1 East West
615 feet from S ~~XXX~~ (circle one) Line of Section

150 feet from E ~~XW~~ (circle one) Line of Section
Stages Calculated from Nearest Outside Section Corner:
(circle one) NE SE NW SW

Name: Stucky Well #: 1
Name: Wildcat

Producing Formation: Simpson
Elevation: Ground: 1102.4 Kelly Bushing: 1119
Total Depth: 4677 Plug Back Total Depth: 4614'

Amount of Surface Pipe Set and Cemented at 350 Feet
Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set _____ Feet
If Alternate II completion, cement circulated from _____
feet depth to _____ w/ _____ sx cmt.

Drilling Fluid Management Plan Act 1 4/12/01 JB
(Data must be collected from the Reserve Pit)

Chloride content 1,000 ppm Fluid volume 2,500 bbls
Dewatering method used Evaporation

Location of fluid disposal if hauled offsite:
Operator Name: _____

Lease Name: **RELEASED** License No.: _____
Quarter SE S. R. East West
County: _____ Docket No.: _____

FROM CONFIDENTIAL

AUG - 9 2000
KANSAS CORPORATION COMMISSION
Wichita Kansas

KCC
JUN 23 2000
CONFIDENTIAL

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 of 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: Donald R. Day
Title: Production Manager Date: 6/30/2000
Subscribed and sworn to before me this 13th day of July 2000
Notary Public: Daniel G. Agee
Date Commission Expires: July 23, 2004
Notary Public in Otsego County, Michigan.

KCC Office Use ONLY
 Letter of Confidentiality Attached
 If Denied, Yes Date: _____
 Wireline Log Received
 Geologist Report Received
 UIC Distribution
KCC

X

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Side Two

ORIGINAL

Operator Name: HRF Exploration & Production, Inc. Lease Name: Stucky Well #: 1
Sec. 8 Twp. 35 S. R. 1 East West County: Sumner

INSTRUCTIONS: Show important tops and base of formations penetrated. Detail all cores. Report all final copies of drill stems 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 test, along with final chart(s). Attach extra sheet if more space is needed. Attach copy of all Electric Wireline Logs surveyed. Attach final geological well site report.

Drill Stem Tests Taken <i>(Attach Additional Sheets)</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Log	Formation (Top), Depth and Datum	<input type="checkbox"/> Sample
Samples Sent to Geological Survey	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Name	Top	Datum
Cores Taken	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Topeka	2,104	-985
Electric Log Run <i>(Submit Copy)</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Stalnaker	2,939	-1,820
List All E. Logs Run: <u>Array Induction Imager,</u>		Layton	3,312	-2,193
<u>LDT/CNL, Dipole Sonic, Microlog,</u>		Cherokee	3,804	-2,685
<u>Directional Survey & FMI as Dipmeter</u>		Mississippian Lime	4,063	-2,944
		Simpson Sand	4,406	-3,297
		Arbuckle	4,542	-3,423

CASING RECORD <input checked="" type="checkbox"/> New <input checked="" type="checkbox"/> 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	# Sacs Used	Type and Percent Additives
Surface	12-1/4"	8-5/8" (new)	24#	350'	Class C	185	3%CaCl2+3%Gel
Production	7-7/8"	5-1/2" (used)	15.5#	4,677'	ASC	140	5#/sk kolseal

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				RELEASED
				JUN 23 2001

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	FROM CONFIDENTIAL	
		Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i>	Depth
6	Simpson 4,406-4,410' KCC	RECEIVED STATE CORPORATION COMMISSION	
	JUN 23 2000	AUG - 9 2000	
	CONFIDENTIAL	CONSERVATION DIVISION Wichita, Kansas	

TUBING RECORD	Size 2-7/8"	Set At 4,531'	Packer At	Liner Run <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Date of First, Resumed Production, SWD or Enhr. 6/16/2000	Producing Method <input type="checkbox"/> Flowing <input checked="" type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other (Explain)			
Estimated Production Per 24 Hours	Oil Bbls. 140	Gas Mcf 14 est.	Water Bbls. 60	Gas-Oil Ratio 100 scf/bbl Gravity 40:1

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

METHOD OF COMPLETION: Open Hole Perf. Dually Comp. Commingled

Production Interval: Other (Specify) _____

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HRF Exploration and Production Company

#1 Stucky

615 FSL 150 FEL

8-35S-1W

Sumner County, Kansas

API # 15-191-22347

RELEASED

JUN 23 2001

FROM CONFIDENTIAL

RECEIVED
STATE CORPORATION COMMISSION

AUG - 9 2000

CONSERVATION DIVISION
Wichita, Kansas

James Dilts
Consulting Geologist
209 W. Smith
Hesston, Kansas 67062

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ORIGINAL

James Dilts
Consulting Geologist
209 W. Smith
Hesston, Kansas 67062
316-327-4316

KCC
JUN 23 2000
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HRF Exploration and Production Company
990 S. Wisconsin Ave.
Gaylord, Michigan 49735
Att: Donald Day

#1 Stucky
615 FSL 150 FEL
8-35S-1W
Sumner County, Kansas
API # 15-191-22347

RELEASED

JUN 23 2001

Gentlemen:

FROM CONFIDENTIAL:

Submitted herewith is the geological report concerning the above captioned test. Data pertinent to the operations are tabulated below.

Spud: April 29, 2000	Rotary Complete: May 10, 2000
Contractor: Cruzen Drilling Rig #5	
Drill Time: 2700 to RTD	Samples: 2700 to RTD
Surface Pipe: 8 5/8 at 350	
Production Casing: 5 1/2 at 4670	
DST's: 2 Trilobite Testing	Cores: None
Mud: Mudco. Mud Up: 2700 Type: Chemical	
Log: Schlumberger	
Gas Detector: Technical Drilling Services	

Geological formation tops as picked from samples and corrected to the open-hole survey follow. All measurements are taken from rotary bushing elevation.

Elevations: 1119 KB. 1118 DF. 1102 GL.

E-log Tops

Wellington Anhydrite	460	659
Chase	676	443
Neva	1208	- 89
Admire	1394	- 275
Topeka	2104	- 985
Heebner	2512	-1393
Iatan	2854	-1735
Stalnaker	2939	-1820
Layton	3312	-2193
Kansas City	3485	-2366
Base Kansas City	3542	-2423
Marmaton	3662	-2543
Cherokee	3804	-2685
Mississippian Chert	4038	-2919

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Mississippian Lime	4063	-2944
Osage Porosity	4144	-3025
Kinderhook Shale	4326	-3207
Chattanooga Shale	4368	-3249
Simpson Sand	4406	-3297
Arbuckle	4542	-3423
RTD	4677	-3558
LTD	4677	-3558

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Zones of interest were encountered at the following depths and evaluated as indicated. Depths have been corrected to E-Log depths

2939 to 2960 Stalnaker Sand

Sandstone, White, Clear, very fine grained, friable, fair to well sorted, sub-angular, with a few pellets and shell fragments, fair to good porosity, no show of oil or gas.

RELEASED

3312 to 3338 Layton Sand

Sandstone, white, clear, fine to very fine grained, well-sorted, friable, sub-angular, micaceous in part, limy in part, with a few glauconite pellets, good intergranular porosity, no show of oil or gas.

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3496 to 3506 Kansas City Lime

Limestone, tan, fine crystalline, fossiliferous, oolitic, with fair to good intergranular and oolitic porosity. There were no shows of oil or gas from this zone.

3605 to 3620 Cleveland Zone

Shale is grey to dark grey, silty, micaceous. The typical Cleveland Sand is not developed at this location.

4038 to 4063 Mississippian Chert

Chert, white, fresh, fossiliferous, vitreous, translucent to opaque, sharp, with dolomite, tan, fine crystalline, dense. Scattered edge and filled fracture porosity were observed. No show of oil or gas was observed.

4144 to 4172 Mississippian Osage Porosity

Chert and cherty dolomite, white to tan, with chert white to tan, vitreous, fossiliferous, to weathered, with fair light tan edge stain, scattered show of clear free oil, good odor, good fluorescence, with some decrease in stain and show to base of this interval. This interval gave an 80-unit kick on the gas detector. DST # 1 evaluated this interval. This interval should be reviewed for perforation prior to abandonment and evaluated where present on future wells in the area.

DST # 1 4140 to 4175 Mississippian Osage Zone

Open 15 min. Shut in 30min. Open 60 min. Shut in 120 min.

Fair blow build to bottom of bucket in 6 minutes.

Recovered: 1090 feet total fluid

30 feet oil, watery mud

15%oil 45% water 40% mud

120 feet muddy water

70% water 20 % mud

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940 feet gas cut water 2 % gas 98% water
Chlorides 80,000 ppm

IFF: 169 psi to 192 psi FFP: 305 psi to 508 psi
ISIP: 1717 psi FSIP: 1728 psi
IHP: 2068 psi FHP: 1977 psi
BHT: 130° F.

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4406 to 4415 Simpson Sand

Sandstone, White, clear, fine-grained, well-sorted, well rounded most free sand grains. The few clusters have good fluorescence, very slight show of free oil, oil is clear, fair cut, no odor. Gas detector indicated a 60-unit increase in this interval. DST #2 evaluated this interval.

It is recommended that this zone be perforated to further evaluate it's potential. A suggested interval is from 4406 to 4410. This interval should produce oil on the basis of low gas volumes and no water on DST #2. Additional perforations may have merit depending on E-Log evaluation. This zone should respond with minimal treatment after cleanup.

DST #2 4405 to 4415 Simpson Sand

Open 15 min Shut in 30 min. Open 60 min Shut in 120 min.
Strong blow, GTS 6 minutes, oil to surface, 1 hour into final shut in.
Recovered: 4375 fluid

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4255 feet gassy oil
120 feet gassy oil cut mud
Fluid reversed out.

FROM CONFIDENTIAL

Gas gauges:	First open	Time	Orifice	In/H2O	Rate
		1	.5	68	51.7 Mcf/d
		3	.5	60	48.6 Mcf/d
		5	.5	38	38.6 Mcf/d
	Second Open				
		1	.5	60	48.6 Mcf/d
		5	.5	30	34.3 Mcf/d
		10	.5	12	21.9 Mcf/d
		15	.5	4	12.5 Mcf/d
		20	.38	100	35.6 Mcf/d
		25	.38	58	27.1 Mcf/d
		30	.38	12	12.4 Mcf/d
		35	.38	2	5.05 Mcf/d
		40	.25	16	6.72 Mcf/d
		45	.25	18	7.12 Mcf/d
		50	.25	16	6.72 Mcf/d
		55	.25	14	6.33 Mcf/d
		60	.25	14	6.33 Mcf/d

IFF: 196 psi to 286 psi FFP: 301 psi to 797 psi
ISIP: 1733 psi FSIP: 1738 psi
IHP: 2204 psi FFP: 2197 psi
BHT: 130° F.

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4415 to 4444 Simpson Sand

Sandstone, white, clear, fine grained, well sorted, well rounded to euhedral, frosted in part, most are free sand grains. Clusters are friable, with good intergranular porosity, scattered show of free oil, good fluorescence. The gas detector was saturated by hydrocarbons in the mud during the drilling of this zone. Careful E-Log evaluation of this interval is recommended. There is likely some oil column in this interval.

4484 to 4504 Lower Simpson Sand

Sandstone, White, clear, fine to very fine grained, well rounded, frosted in part, with much free sand. Clusters have scattered good fluorescence, and scattered show of free oil. This interval should be evaluated from E-Log, and considered for perforation prior to abandonment. Gas detector was still reading very high background values from DST #2

4522 to 4546 Arbuckle Unconformity Sand

Sandstone, white, clear, fine to medium grained, frosted in part, dolomitic in part. There was an increase in clusters, increase in free sand, and dolomite, tan, fine crystalline, sandy in part, with fair intercrystalline porosity, no show of oil, and no identifiable response on the gas detector.

4542 to 4564 Arbuckle Dolomite

Dolomite, tan, fine crystalline, sucrosic in part, with poor intercrystalline porosity, no show of oil or gas. Dolomite has a dull yellow mineral fluorescence, with no cut.

Recommendations

It was decided to run 5 1/2-inch casing to further evaluate the shows encountered in the Simpson Sand and the Mississippian. It is recommended that the interval from 4406 to 4410 be perforated to further evaluate the shows encountered in the Simpson Sand. DST results would suggest oil and solution gas production based on no water recovery and low gas volumes. Additionally lower Simpson Sand and Mississippian zones should be reviewed prior to abandonment.

On additional wells in the area the Mississippian zone and the Lower Simpson zones should be considered for DST evaluation if favorable structural position and hole conditions warrant.

Respectfully Submitted,

James Dilts

RELEASED

JUN 23 2001

FROM CONFIDENTIAL

ALLIED CEMENTING CO., INC.

CONFIDENTIAL

Federal Tax I.D.# 48-0727860

1144 ORIGINAL

REMIT TO P.O. BOX 31
RUSSELL, KANSAS 67665

SERVICE POINT:
MEDICINE LODGE

DATE <u>4-29-00</u>	SEC. <u>8</u>	TWP. <u>35s</u>	RANGE <u>1W</u>	CALLED OUT <u>3:00 AM</u>	ON LOCATION <u>6:00 AM</u>	JOB START <u>12:15 PM</u>	JOB FINISH <u>12:45 PM</u>
LEASE <u>Stucky</u>	WELL # <u>1</u>	LOCATION <u>SOUTH HAVEN 2W, 29 1/2</u>			COUNTY <u>SUMNER</u>	STATE <u>KANSAS</u>	
OLD OR <u>NEW</u> (Circle one)							

CONTRACTOR CRUZEN DRILLING

TYPE OF JOB SURFACE

HOLE SIZE 12 1/4" T.D. 350'

CASING SIZE 8 5/8" DEPTH 350'

TUBING SIZE _____ DEPTH _____

DRILL PIPE _____ DEPTH _____

TOOL _____ DEPTH _____

PRES. MAX 500# MINIMUM _____

MEAS. LINE _____ SHOE JOINT 42.39'

CEMENT LEFT IN CSG. _____

PERFS. _____

DISPLACEMENT 19 3/4" BBK. FRESH WATER

OWNER HRF EXPLOR. & PROD. INC.

CEMENT AMOUNT ORDERED
185cy CLASS A + 3% CMT + 2% BEL

EQUIPMENT

PUMP TRUCK CEMENTER KEVIN BRUNBARDT

343 HELPER MARK BRUNBARDT

BULK TRUCK DRIVER DAVID FELTO

301 DRIVER _____

COMMON A	<u>185</u>	@	<u>6.35</u>	<u>1174.75</u>
POZMIX		@	<u>3.25</u>	
GEL	<u>3</u>	@	<u>9.50</u>	<u>28.50</u>
CHLORIDE	<u>7</u>	@	<u>28.00</u>	<u>196.00</u>
<u>KCC</u>		@		
		@		
		@		
		@		
HANDLING	<u>185</u>	@	<u>1.05</u>	<u>194.25</u>
MILEAGE	<u>185 x 70</u>		<u>.04</u>	<u>518.00</u>

TOTAL \$ 2111.50

REMARKS: FROM CONFIDENTIAL SERVICE

RUN 8 5/8" CSG. + BREAK CIRCULATION
PUMP 3 BBK. FRESH H₂O
MIX 185cy CLASS A + 3% CMT + 2% BEL
DISPLACE PLUG WITH 19 3/4" BBK. H₂O
CEMENT DED CIRCULATE

DEPTH OF JOB	<u>350'</u>		
PUMP TRUCK CHARGE	<u>0-300'</u>		<u>410.00</u>
EXTRA FOOTAGE	<u>50'</u>	@	<u>.43</u> <u>21.50</u>
MILEAGE	<u>70</u>	@	<u>3.00</u> <u>210.00</u>
PLUG	<u>8 5/8" TRP</u>	@	<u>105.00</u> <u>105.00</u>

TOTAL \$ 806.50

CHARGE TO: HRF EXPLOR. & PROD., INC.

STREET 990 S. WISCONSIN AVE.

CITY CAYLORD STATE MICH. ZIP 49713S

FLOAT EQUIPMENT

1 - SAWTOOTH SHOES	@	<u>300.00</u>	<u>300.00</u>
1 - AFU INSERT	@	<u>325.00</u>	<u>325.00</u>
4 - CENTRALIZERS	@	<u>55.00</u>	<u>220.00</u>

TOTAL \$ 845.00

To Allied Cementing Co., Inc.
You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read & understand the "TERMS AND CONDITIONS" listed on the reverse side.

TAX _____

TOTAL CHARGE 3763.00

DISCOUNT 376.30 IF PAID IN 30 DAYS

3386.70

SIGNATURE Eugene Saloga

Eugene Saloga
PRINTED NAME

CONFIDENTIAL ALLIED CEMENTING CO., INC.

ORIGINAL

4376

Federal Tax I.D.# 48-0727860 KCC

REMIT TO P.O. BOX 31
RUSSELL, KANSAS 67665

JUN 23 2000 SERVICE POINT:
MEDICINE LODGE

CONFIDENTIAL

DATE <u>5-10-00</u>	SEC <u>8</u>	TWP. <u>35S</u>	RANGE <u>1W</u>	CALLED OUT <u>7:00 AM</u>	ON LOCATION <u>2:00 PM</u>	JOB START <u>6:50 AM</u>	JOB FINISH <u>3:00 PM</u>
LEASE <u>Stucky</u>		WELL # <u>1</u>	LOCATION <u>CADWELL 9E, 2S, W1S</u>			COUNTY <u>SUMNER</u>	STATE <u>KANSAS</u>
OLD OR NEW (Circle one)							

CONTRACTOR CRUZEN DRILG

TYPE OF JOB PROD. CSG

HOLE SIZE 7 7/8" T.D. 4677'

CASING SIZE 5 1/2" x 15.5# DEPTH 4661'

TUBING SIZE _____ DEPTH _____

DRILL PIPE _____ DEPTH _____

TOOL _____ DEPTH _____

PRES. MAX 1300# MINIMUM 100#

MEAS. LINE _____ SHOE JOINT 41.9'

CEMENT LEFT IN CSG. _____

PERFS. _____

DISPLACEMENT 111 BBL. FRESH WATER

EQUIPMENT

PUMP TRUCK CEMENTER KEVIN BUNGAARDT

343 HELPER JUSTIN HART

BULK TRUCK

301 DRIVER DAVID WEST

BULK TRUCK

_____ DRIVER _____

OWNER HRF EXPLD. & PROD.

CEMENT

AMOUNT ORDERED 500 BALS. MUD CLEAN

25SX 60:40:4

140 SX ASC + 5# KOL-SEAL/SACK

COMMON <u>A 9</u>	@ <u>6.35</u>	<u>57.15</u>
POZMIX <u>6</u>	@ <u>3.25</u>	<u>19.50</u>
GEL <u>1</u>	@ <u>9.50</u>	<u>9.50</u>
CHLORIDE _____	@ _____	_____
<u>ASC 140</u>	@ <u>8.20</u>	<u>1148.00</u>
<u>KOL-SEAL 700#</u>	@ <u>.38</u>	<u>266.00</u>
<u>MUD CLEAN 500 BALS.</u>	@ <u>.75</u>	<u>375.00</u>
_____	@ _____	_____
_____	@ _____	_____
HANDLING <u>165</u>	@ <u>1.05</u>	<u>173.25</u>
MILEAGE <u>165 x 70</u>	<u>.04</u>	<u>462.00</u>

RELEASED TOTAL \$ 2510.40

JUN 23 2001

REMARKS:

FROM CONFIDENTIAL

SERVICE

RUN 5/2" CSG. & BREAK CIRCULATION

PUMP 500 BALS. MUD CLEAN FRESH

PUMP 140SX ASC + 5# KOL-SEAL/SACK

WASH PUMP & LINES

DISPLACE PLUG TO 4619' WITH 111 BBL.

FRESH WATER - FLOAT DTD AHEAD.

PLUG RAT/MOUSE BLOBS/ 25X 60:40:4

DEPTH OF JOB <u>4661'</u>		
PUMP TRUCK CHARGE _____		<u>1214.00</u>
EXTRA FOOTAGE _____ @ _____		_____
MILEAGE <u>70</u> @ <u>3.00</u>		<u>210.00</u>
PLUG <u>5 1/2" TRP</u> @ <u>50.00</u>		<u>50.00</u>
_____ @ _____		_____
_____ @ _____		_____

TOTAL \$ 1474.00

CHARGE TO: HRF EXPLD. & PROD. INC

STREET 990 S. Wisconsin Ave

CITY Baylors STATE MICH. ZIP 49735

FLOAT EQUIPMENT

<u>1 - GUIDE SHOE</u>	@ <u>150.00</u>	<u>150.00</u>
<u>1 - A-F-U INSERT</u>	@ <u>235.00</u>	<u>235.00</u>
<u>8 - CENTRALIZERS</u>	@ <u>50.00</u>	<u>400.00</u>
_____	@ _____	_____
_____	@ _____	_____

TOTAL \$ 885.00
785.00

To Allied Cementing Co., Inc.
You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read & understand the "TERMS AND CONDITIONS" listed on the reverse side.

TAX _____

TOTAL CHARGE \$ 1474.00

DISCOUNT 489.00 IF PAID IN 30 DAYS

NET \$ 985.00

SIGNATURE Donald R. Day PRINTED NAME DONALD R. DAY

CONFIDENTIAL

WELL NAME:
COMPANY:
LOCATION:

Stuckey #1
HRF Exploration & Production, Inc.
8-35s-1w

ORIGINAL
KCC

DATE:

Summer co. KS
5/12/00

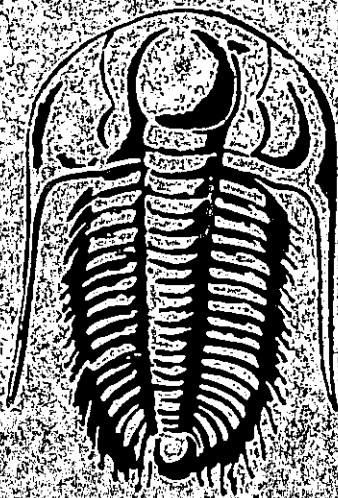
RELEASED

JUN 23 2000

JUN 23 2001

CONFIDENTIAL

FROM CONFIDENTIAL



TRILOBITE TESTING, L.L.C.

RECEIVED
STATE GOVERNMENT PRINTING OFFICE

AUG - 9 2000

TEST REPORT

(Includes All DST's)

OPERATOR : HRF Exploration... DATE 5-6-00
 WELL NAME: Stuckey #1 KB 0.00 ft TICKET NO: 12583 DST #1
 LOCATION : 8-35s-1w Sumner co KS GR 0.00 ft FORMATION: Mississippian
 INTERVAL : 4140.00 To 4175.00 ft TD 4175.00 ft TEST TYPE: CONVENTIONAL

RECORDER DATA

Mins		Field	1	2	3	4	TIME DATA-----
PF 15	Rec.	11019	11019				PF Fr. 1302 to 1317 hr
SI 30	Range(Psi)	4500.0	4500.0	0.0	0.0	0.0	IS Fr. 1317 to 1347 hr
SF 60	Clock(hrs)	12	12				SF Fr. 1347 to 1447 hr
FS 120	Depth(ft)	4175.0	4175.0	0.0	0.0	0.0	FS Fr. 1447 to 1647 hr

	Field	1	2	3	4	
A. Init Hydro	2068.0	2056.0	0.0	0.0	0.0	T STARTED 1030 hr
B. First Flow	169.0	178.0	0.0	0.0	0.0	T ON BOTM 1257 hr
Bl. Final Flow	192.0	210.0	0.0	0.0	0.0	T OPEN 1302 hr
C. In Shut-in	1717.0	1719.0	0.0	0.0	0.0	T PULLED 1647 hr
D. Init Flow	305.0	302.0	0.0	0.0	0.0	T OUT 2000 hr
E. Final Flow	508.0	511.0	0.0	0.0	0.0	
F. Fl Shut-in	1728.0	1742.0	0.0	0.0	0.0	TOOL DATA-----
G. Final Hydro	1977.0	2039.0	0.0	0.0	0.0	Tool Wt. 1800.00 lbs
Inside/Outside	0	0				Wt Set On Packer 30000.00 lbs

RECOVERY

Tot Fluid 1090.00 ft of 355.00 ft in DC and 735.00 ft in DP
 120.00 ft of Gas in pipe
 30.00 ft of Oily watery mud
 0.00 ft of 15% oil 45% water 40% mud
 120.00 ft of Muddy water
 0.00 ft of 70% water 30% mud
 940.00 ft of Gas cut water
 0.00 ft of 2% gas 98% water
 0.00 ft of
 SALINITY 80000.00 P.P.M. A.P.I. Gravity 0.00

Initial Str Wt	82000.00 lbs
Unseated Str Wt	90000.00 lbs
Bot Choke	0.75 in
Hole Size	7.78 in
D Col. ID	2.25 in
D. Pipe ID	3.80 in
D.C. Length	355.00 ft
D.P. Length	3767.00 ft

BLOW DESCRIPTION

Initial Flow:
 Weak blow built to bottom of bucket
 in 7 minutes.
 Initial Shut-In:
 Bled 2" line. Had 3/4" blow back.
 Final Flow:
 Weak blow built to fair blow. Bottom
 of bucket in 6 minutes.
 Final Shut-In:
 Bled 2" line. 1 1/4" blow back.

KCC
JUN 23 2000
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RELEASED

JUN 23 2001

SAMPLES:
 SENT TO:

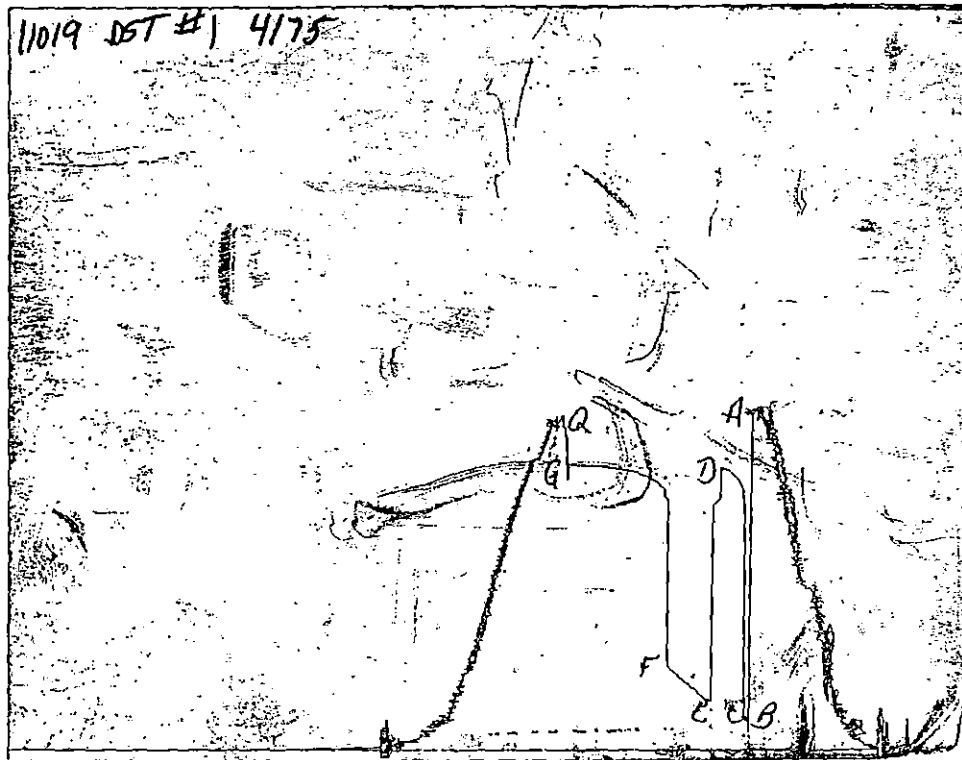
FROM CONFIDENTIAL

Test Successful: Y

MUD DATA-----

Mud Type	Chemical
Weight	9.30 lb/c:
Vis.	55.00 S/L
W.L.	10.40 in ³
F.C.	0.00 in
Mud Drop	
Amt. of fill	0.00 ft
Btm. H. Temp.	0.00 F
Hole Condition	
% Porosity	0.00
Packer Size	6.75 in
No. of Packers	2
Cushion Amt.	0.00
Cushion Type	
Reversed Out	
Tool Chased	
Tester	Scott Bugbee
Co. Rep.	Donald Day
Contr.	Cruzen Drilling
Rig #	5
Unit #	
Pump T.	

CHART PAGE



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

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 12583

Well Name & No. <u>Stuckey #1</u>		Test No. <u>#1</u>	Date <u>1-6-00</u>
Company <u>H R F Exploration + Prod. Inc.</u>		Zone Tested <u>Mississippian</u>	
Address <u>990 S. Wisconsin Ave. Gaylord ME. 49735</u>		Elevation _____	KB _____ GL _____
Co. Rep / Geo. <u>Dan Day</u>	Cont. <u>Cruzen Drilling Rig 5</u>	Est. Ft. of Pay _____	Por. _____ %
Location: Sec. <u>9</u>	Twp. <u>35S</u>	Rge. <u>1W</u>	Co. <u>Summer</u> State <u>KS.</u>
No. of Copies _____	Distribution Sheet (Y, N) _____	Turnkey (Y, N) _____	Evaluation (Y, N) _____

Interval Tested <u>4140 - 4175</u>	Initial Str Wt./Lbs. <u>42,000</u>	Unseated Str Wt./Lbs. <u>90,000</u>
Anchor Length <u>35'</u>	Wt. Set Lbs. <u>30,000</u>	Wt. Pulled Loose/Lbs. <u>95,000</u>
Top Packer Depth <u>4135</u>	Tool Weight <u>1900</u>	
Bottom Packer Depth <u>4140</u>	Hole Size — 7 7/8" <input checked="" type="checkbox"/>	Rubber Size — 6 3/4" <input checked="" type="checkbox"/>
Total Depth <u>4175</u>	Wt. Pipe Run _____	Drill Collar Run <u>355</u> ^{with}
Mud Wt. <u>9.3</u> LCM <u>—</u> Vis. <u>55</u> WL <u>10.4</u>	Drill Pipe Size <u>4 1/2 XH</u>	Ft. Run <u>3767</u>

Blow Description 1st open weak blow built to B.D.B. in 7 min.
Bled 2" line had 1 1/2" Blow back
2nd open weak blow built to fair blow B.D.B. in 6 min.
Bled 2" line had 1 1/4" Blow back

Recovery — Total Feet <u>1090</u>	GIP <u>120'</u>	Ft. in DC <u>355'</u>	Ft. in DP <u>735</u>
Rec. <u>30'</u>	Feet Of <u>oily, watery mud</u>	%gas <u>15%</u> oil <u>45%</u> water <u>48%</u> mud	
Rec. <u>120'</u>	Feet Of <u>muddy water</u>	%gas _____ oil <u>70%</u> water <u>30%</u> mud	
Rec. <u>940</u>	Feet Of <u>Gas cut water</u>	2% gas _____ oil <u>98%</u> water _____ mud	
Rec. _____	Feet Of _____	%gas _____ oil _____ water _____ mud	
Rec. _____	Feet Of _____	%gas _____ oil _____ water _____ mud	

BHT _____ °F Gravity _____ °API D@ _____ °F Corrected Gravity _____ °API
 RW 10 @ 69 °F Chlorides 90,000 ppm Recovery Chlorides _____ ppm System

	AK-1 Alpine		
(A) Initial Hydrostatic Mud <u>2068</u>	PSI	Recorder No. <u>3026</u>	T-On Location <u>7:45 A.M.</u>
(B) First Initial Flow Pressure <u>169</u>	PSI	(depth) <u>4147</u>	T-Started <u>10:30 A.M.</u>
(C) First Final Flow Pressure <u>192</u>	PSI	Recorder No. <u>11019</u>	T-Open <u>1:02 P.M.</u>
(D) Initial Shut-In Pressure <u>1717</u>	PSI	(depth) <u>4175</u>	T-Pulled <u>4:47 P.M.</u>
(E) Second Initial Flow Pressure <u>305</u>	PSI	Recorder No. _____	T-Out <u>8:00 P.M.</u>
(F) Second Final Flow Pressure <u>508</u>	PSI	(depth) _____	T-Off Location _____
(G) Final Shut-in Pressure <u>1728</u>	PSI	Initial Opening <u>15</u>	Test <input checked="" type="checkbox"/> <u>700⁰⁵</u>
(Q) Final Hydrostatic Mud <u>1977</u>	PSI	Initial Shut-in <u>30</u>	Jars <input checked="" type="checkbox"/> <u>200⁰⁵</u>
		Final Flow <u>60</u>	Safety Joint <input checked="" type="checkbox"/> <u>60⁰⁵</u>
		Final Shut-in <u>120</u>	Straddle _____
			Circ. Sub <input checked="" type="checkbox"/>
			Sampler <input checked="" type="checkbox"/> <u>200⁰⁵</u>
			Extra Packer _____
			Elec. Rec. <input checked="" type="checkbox"/> <u>150⁰⁵</u>
			Mileage _____
			Other <u>shale Packer 150⁰⁵</u>
			TOTAL PRICE \$ <u>1450⁰⁵</u>

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 Donald Day
 Our Representative Scott Bugbee

TRILOBITE TESTING L.L.C.

OPERATOR : HRF Exploration DATE 5-8-00
 WELL NAME: Stucky #1 KB 0.00 ft TICKET NO: 12584 DST #2
 LOCATION : 8-35s-1w Sumner co KS GR 0.00 ft FORMATION: Simpson
 INTERVAL : 4405.00 To 4415.00 ft TD 4415.00 ft TEST TYPE: CONVENTIONAL

RECORDER DATA

Mins	Field	1	2	3	4	TIME DATA-----
PF 15 Rec.	3026	3026				PF Fr. 0512 to 0527 hr
SI 30 Range (Psi)	4995.0	4995.0	0.0	0.0	0.0	IS Fr. 0527 to 0557 hr
SF 60 Clock (hrs)	elect	elect				SF Fr. 0557 to 0657 hr
FS 120 Depth (ft)	4413.0	4413.0	0.0	0.0	0.0	FS Fr. 0657 to 0857 hr

	Field	1	2	3	4	
A. Init Hydro	2204.0	0.0	0.0	0.0	0.0	T STARTED 0200 hr
B. First Flow	196.0	0.0	0.0	0.0	0.0	T ON BOTM 0511 hr
B1. Final Flow	286.0	0.0	0.0	0.0	0.0	T OPEN 0512 hr
C. In Shut-in	1733.0	0.0	0.0	0.0	0.0	T PULLED 0857 hr
D. Init Flow	301.0	0.0	0.0	0.0	0.0	T OUT 1300 hr
E. Final Flow	797.0	0.0	0.0	0.0	0.0	
F. Fl Shut-in	1738.0	0.0	0.0	0.0	0.0	TOOL DATA-----
G. Final Hydro	2197.0	0.0	0.0	0.0	0.0	Tool Wt. 1800.00 lbs
Inside/Outside	I I					Wt Set On Packer 30000.00 lbs

RECOVERY

Tot Fluid 4375.00 ft of 355.00 ft in DC and 4054.00 ft in DP
 4255.00 ft of Gassy oil
 0.00 ft of 10% gas 90% oil
 120.00 ft of Gassy oil cut mud
 0.00 ft of 15% gas 5% oil 80% mud
 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 40.00

Wt Pulled Loose 95000.00 lbs
 Initial Str Wt 86000.00 lbs
 Unseated Str Wt 86000.00 lbs
 Bot Choke 0.78 in
 Hole Size 7.78 in
 D Col. ID 2.25 in
 D. Pipe ID 3.38 in
 D.C. Length 355.00 ft
 D.P. Length 4054.00 ft

BLOW DESCRIPTION

Initial Flow:
 Strong blow. Bottom of bucket in 15 seconds. Gas to surface in 6 minutes. Gas will burn.

Initial Shut-In:
 Bled 2" Blow never Died.

Final Flow:
 Bottom of bucket as soon as tool opened.

Final Shut-In:
 Blow never died. Oil to surface 1 hour into shut-in.

MUD DATA-----
 Mud Type Chemical
 Weight 8.90 lb/c
 Vis. 45.00 S/L
 W.L. 7.20 in3
 F.C. 0.00 in
 Mud Drop

Amt. of fill 0.00 ft
 Btm. H. Temp. 130.00 F
 Hole Condition good
 % Porosity 0.00
 Packer Size 6.75 in
 No. of Packers 2
 Cushion Amt. 0.00
 Cushion Type
 Reversed Out Y
 Tool Chased
 Tester Scott Bugbee
 Co. Rep. Don Day
 Contr. Cruzen
 Rig # 5
 Unit #
 Pump T.

SAMPLES:
 SENT TO:

Test Successful: Y

*** TOOL DIAGRAM *** CONVENTIONAL

WELL NAME: Stucky #1

LOCATION : 8-35s-1w Sumner co KS

TICKET No. 12584 D.S.T. No. 2 DATE 5-8-00

TOTAL TOOL TO BOTTOM OF TOP PACKERS 30

INTERVAL TOOL

BOTTOM PACKERS AND ANCHOR 10

TOTAL TOOL 40

DRILL COLLAR ANCHOR IN INTERVAL

D.C. ANCHOR STND.Stands Single Total

D.P. ANCHOR STND.Stands Single Total

TOTAL ASSEMBLY

D.C. ABOVE TOOLS.Stands6 Single Total 355

D.P. ABOVE TOOLS.Stands63 Single 1 Total 4054

TOTAL DRILL COLLARS DRILL PIPE & TOOLS .. 4449

TOTAL DEPTH 4415

TOTAL DRILL PIPE ABOVE K.B. 34

REMARKS:

 Sampler Data

200 PSI all gas

2.3 CGF

Large pieces of shale in top of tool

P.O. SUB top of tool	4375
C.O. SUB 1'	4376
S.I. TOOL 5'	4381
3' sampler	4384
HMV 5'	4389
JARS 5'	4394
SAFETY JOINT 2'	4396
PACKER 5'	4401
PACKER 5'	4405
DEPTH 4405 1'	4406
ANCHOR	
2' perf	4408
Alpine Rec.	4413
5' PU sub	4413
BULLNOSE T.D. 2'	4415

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: 20002667 Analyzed: 05/19/00

Sample From: Stucky #1 DST 2 Pressure:
 Producer: HRF Exploration Temperature:

Date Location: 8-35-12

Time: County: Sumner
 Sampler: State: Kansas
 Source: Formation: Simpson

	Mole %	GPM
Helium	He: 0.136	0.000
Hydrogen	H2: 0.003	0.000
Oxygen	O2: 0.000	0.000
Nitrogen	N2: 12.907	0.000
Carbon Dioxide	CO2: 0.026	0.000
Methane	C1: 49.853	0.000
Ethane	C2: 11.875	3.176
Propane	C3: 10.424	2.872
Iso Butane	iC4: 1.332	0.436
Normal Butane	nC4: 4.826	1.522
Iso Pentane	iC5: 1.493	0.546
Normal Pentane	nC5: 2.443	0.885
Hexanes Plus	C6+: 4.682	2.043

TOTAL: 100.000 11.479

Z Fact: 0.9932

SP.GR.: 1.0635

BTU (SAT): 1561.3 @ 14.73 psia

BTU (DRY): 1588.9 @ 14.73 psia

OCTANE RATING: 96.3

COMMENTS:

0.000

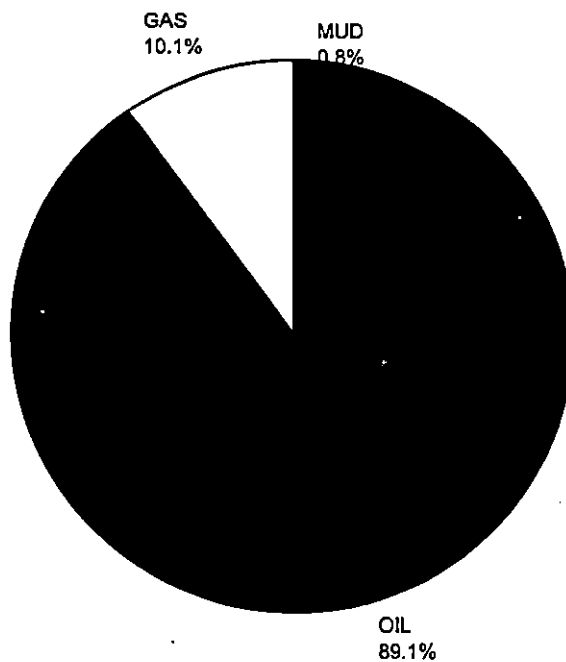
CALCULATED RECOVERY ANALYSIS

DST 2

TICKET 12584

SAMPLE #	TOTAL		GAS		OIL		WATER		MUD	
	FEET	%	FEET	%	FEET	%	FEET	%	FEET	
DRILL	1	4020	10	402	90	3618	0	0	0	0
PIPE	2	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0
WEIGHT	1	0	0	0	0	0	0	0	0	0
PIPE	2	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0	0
DRILL	1	235	10	23.5	90	211.5	0	0	0	0
COLLARS	2	120	15	18	5	0	0	0	80	96
	3	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0	0
TOTAL		4375	0	443.5	0	3829.5	0	0	0	96

BBL OIL= 52.482195 * HRS OPEN 1.25 = BBL/DAY 1007.6581
 BBL WATER= 0 * = 0
 BBL MUD= 0.46944
 BBL GAS = 5.919375



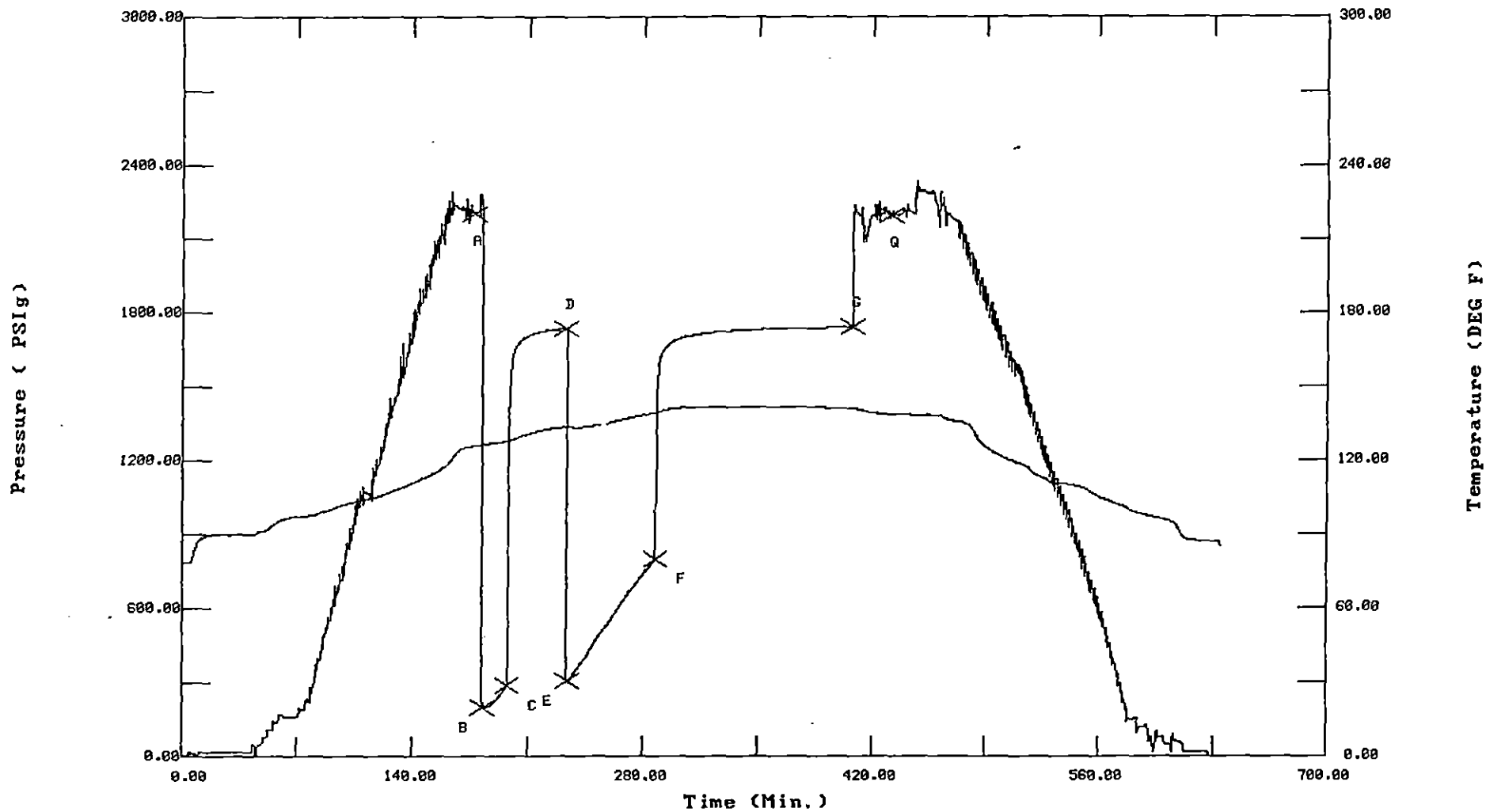
TEST HISTORY

12584 DST#2 Stuckey #1 HRF Exploration

Flag Points

t (Min.) P (PSig)

R:	0.00	2284.64
B:	0.00	196.23
C:	14.50	286.31
D:	35.25	1733.24
E:	0.00	301.73
F:	53.50	797.33
G:	119.50	1738.19
Q:	0.00	2197.51



TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 12584

Well Name & No. <u>Stuckey #1</u>	Test No. <u>#2</u>	Date <u>3-8-00</u>
Company <u>HRF Exploration 49735</u>	Zone Tested <u>Simpson</u>	
Address <u>Gaylord MI.</u>	Elevation _____	KB _____
Co. Rep / Geo. <u>Dan Day</u>	Cont. <u>Cruzen Rq 5</u>	Est. Ft. of Pay _____
Location: Sec. <u>8</u>	Twp. <u>355</u>	Rge. <u>1W</u> Co. <u>Summer</u> State <u>Ks.</u>
No. of Copies _____	Distribution Sheet (Y, N) _____	Turnkey (Y, N) _____
		Evaluation (Y, N) _____

Interval Tested 4405-4415 Initial Str Wt./Lbs. 86,000 Unseated Str Wt./Lbs. 86,000
Anchor Length 10' Wt. Set Lbs. 30,000 Wt. Pulled Loose/Lbs. 98,000
Top Packer Depth 4400 Tool Weight 1800
Bottom Packer Depth 4405 Hole Size — 7 7/8" ✓ Rubber Size — 6 3/4" ✓
Total Depth 4415 Wt. Pipe Run _____ Drill Collar Run 355 ^{6 studs}
Mud Wt. 8.9 LCM 4 Vis. 45 WL 7.2 Drill Pipe Size 4 1/2 XH Ft. Run 4054 ^{63'}
Blow Description 1st open strong blow B.O.B. in 15 sec.
Bled 2" blow never died
2nd open B.O.B. as soon as tool opened
Blow never died Oil to surface 1^{hr} into final shut in

Recovery — Total Feet 435 GIP GTS Ft. in DC 355 Ft. in DP 4054
Rec. 4255 Feet Of Gassy Oil 10% gas 90% oil %water %mud
Rec. 120 Feet Of Gassy oil and Mud 15% gas 5% oil %water 90% mud
Rec. _____ Feet Of _____ %gas %oil %water %mud
Rec. _____ Feet Of _____ %gas %oil %water %mud
Rec. _____ Feet Of _____ %gas %oil %water %mud
BHT _____ °F Gravity 42 °API D @ 80 °F Corrected Gravity 40 °API
RW _____ @ _____ °F Chlorides _____ ppm Recovery Chlorides _____ ppm System

	AK-1	Alpine	PSI	Recorder No.	T-On Location
(A) Initial Hydrostatic Mud		<u>2204</u>		<u>3026</u>	<u>12:30 A.M.</u>
(B) First Initial Flow Pressure		<u>196</u>		(depth) <u>4413</u>	T-Started <u>2:00 A.M.</u>
(C) First Final Flow Pressure		<u>286</u>		Recorder No. _____	T-Open <u>5:12 A.M.</u>
(D) Initial Shut-In Pressure		<u>1737</u>		(depth) _____	T-Pulled <u>8:57 A.M.</u>
(E) Second Initial Flow Pressure		<u>301</u>		Recorder No. _____	T-Out <u>1:00 P.M.</u>
(F) Second Final Flow Pressure		<u>297</u>		(depth) _____	T-Off Location _____
(G) Final Shut-in Pressure		<u>1738</u>		Initial Opening <u>15</u>	Test <u>700</u> ^{ps}
(Q) Final Hydrostatic Mud		<u>2197</u>		Initial Shut-in <u>30</u>	Jars <u>200</u> ^{ps}

Final Flow 66 Safety Joint 50 ^{ps}
Final Shut-in 120 Straddle _____
Circ. Sub 355 ^{ps}
Sampler 200 ^{ps}
Extra Packer _____
Elec. Rec. 150 ^{ps}
Mileage _____
Other shale packer 150 ^{ps}
TOTAL PRICE \$ 1485 ^{ps}

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Approved By [Signature]
Our Representative Scott Bugbee

CONFIDENTIAL

DIRECTIONAL SURVEY

Stucky No. 1

KCC

JUN 23 2000

CONFIDENTIAL

General Information:

Company Name: HRF Exploration & Production, Inc.
 Field: South Haven
 Well: Stucky No. 1
 County: Sumner
 State: Kansas
 Field Location: 150' FEL & 615' FSL
 API Number: 15191223470000
 Logging Engineer: Tim Marsh
 Processed By: Tina Wells
 Service Order Number:
 Job Number: 432956
 Date Logged: 9-MAY-2000
 Date Processed: 14-MAY-2000

RELEASED

JUN 23 2001

FROM CONFIDENTIAL.

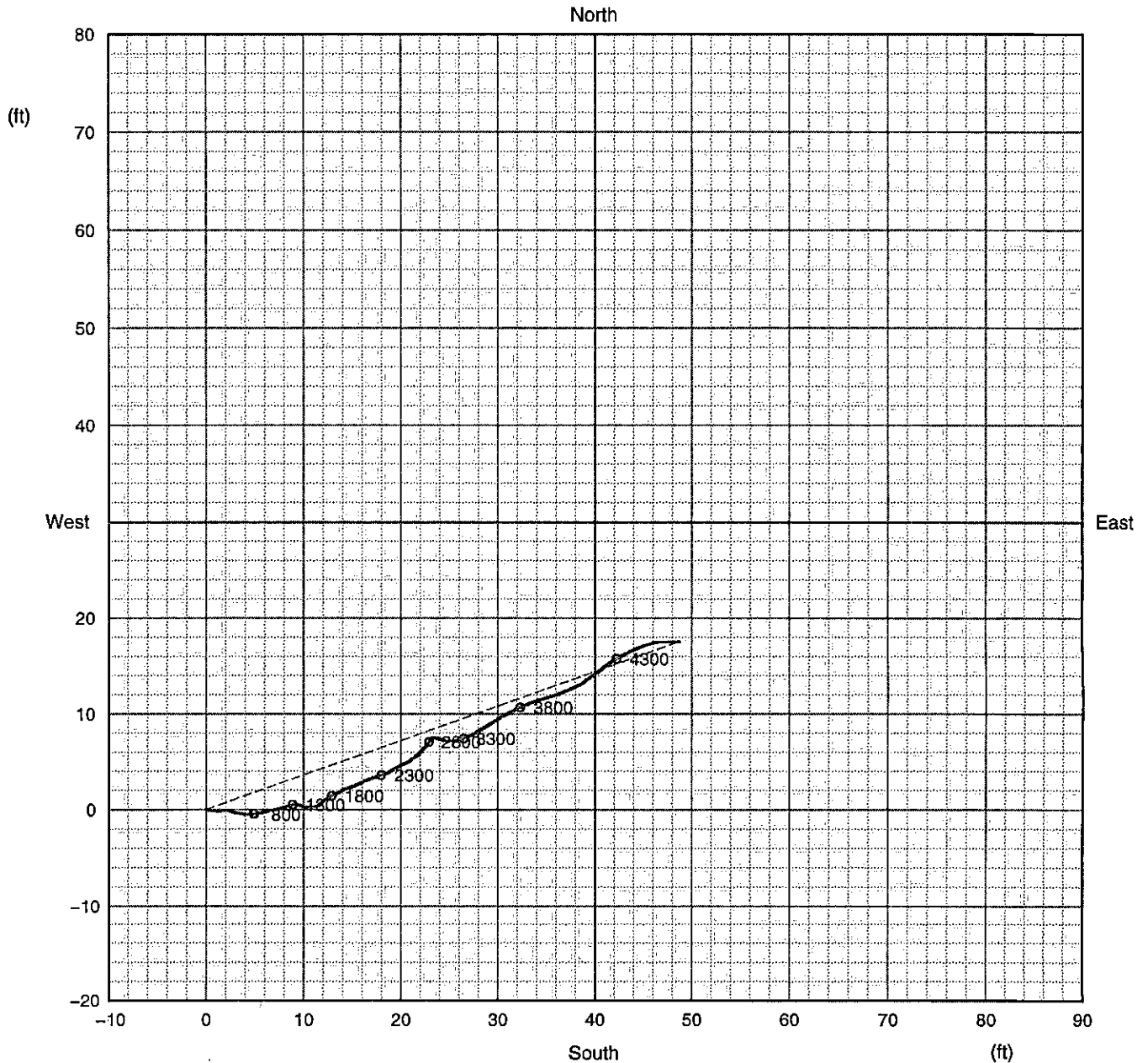
RECEIVED
STATE CORPORATION COMMISSION

AUG - 9 2000

CONSERVATION DIVISION
Wichita, Kansas

Bottom Hole Location:

Measured Depth ft	True Vertical Depth ft	+North -South Drift ft	+East -West Drift ft	Course Length ft	Course Azimuth Degrees
4640.0	4639.6	17.5	48.8	51.9	70.2



RELEASED

JUN 23 2001

FROM CONFIDENTIAL

Projection on Horizontal Plane

Horizontal scale 1 in : 16 ft

KCC (ft)

JUN 23 2000

CONFIDENTIAL

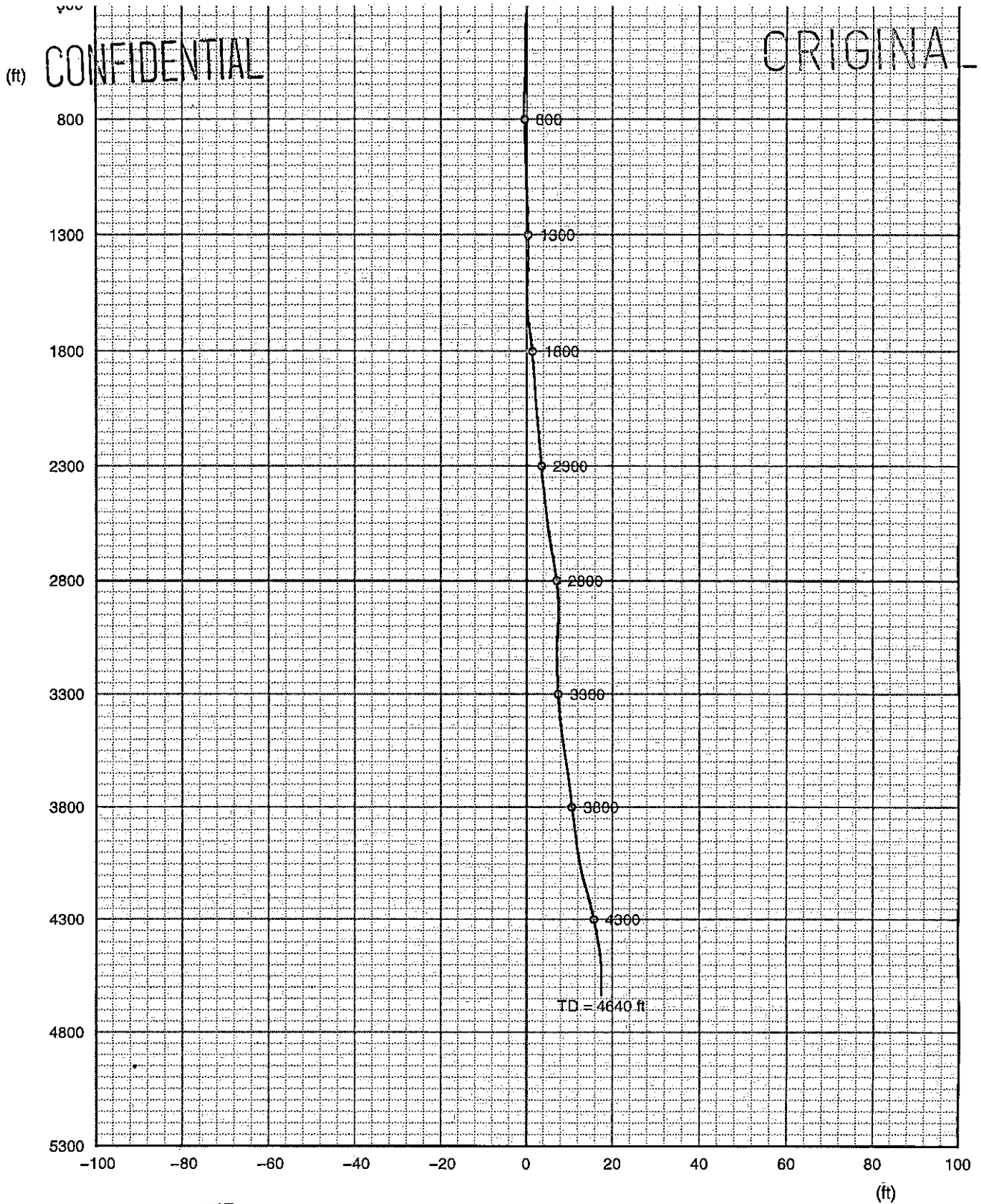
Minimum Curvature Method Method

Tie In Location

Measured Depth	340.00	ft
True Vertical Depth	340.00	ft
Distance North	0.00	ft
Distance East	0.00	ft

Bottom Hole Location

Measured Depth	4640.00	ft
True Vertical Depth	4639.60	ft
Distance North	17.55	ft
Distance East	48.81	ft
Course Length	51.87	ft
Course Azimuth	70.22	deg



RELEASED

JUN 23 2001

FROM CONFIDENTIAL

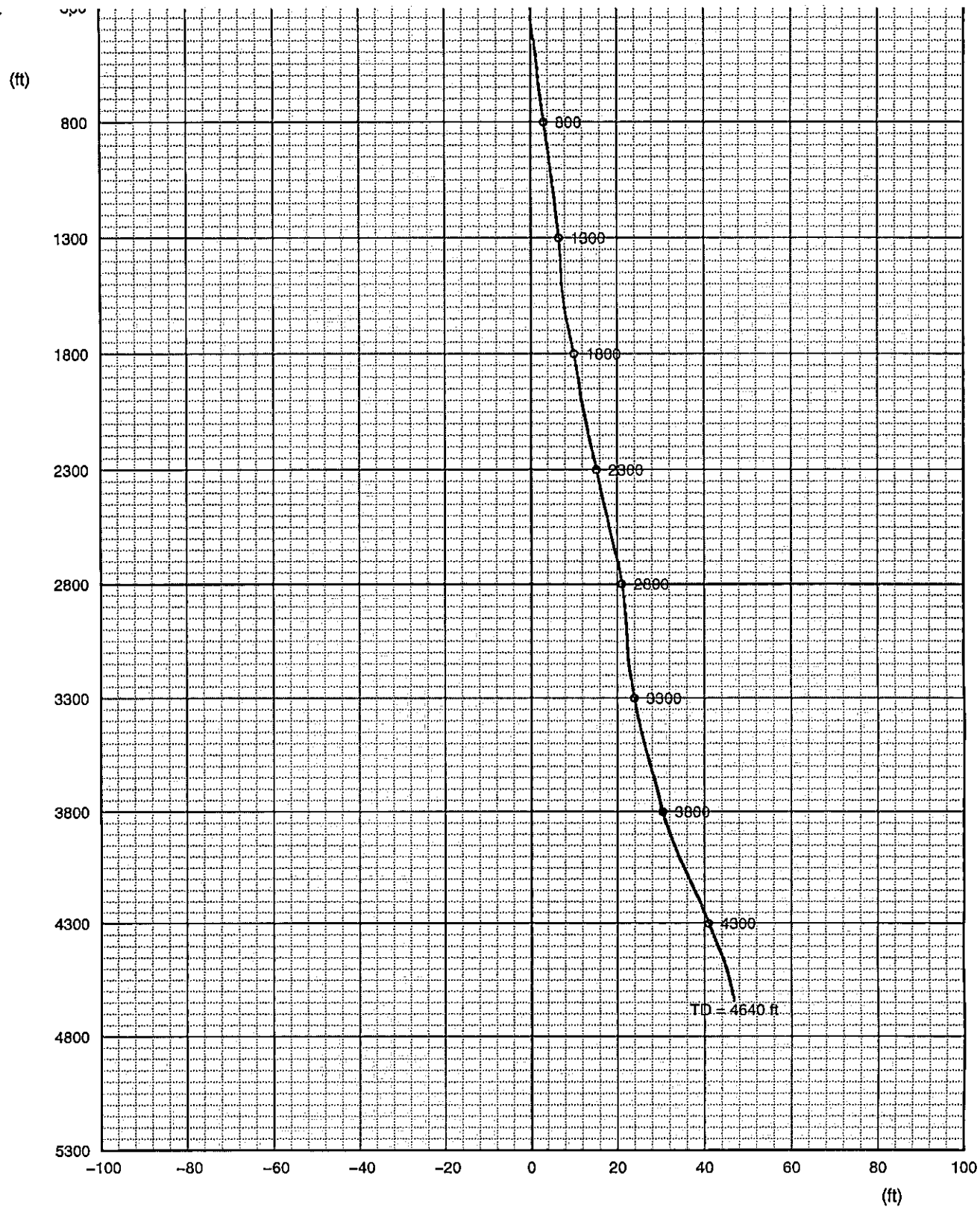
Projection on Vertical Plane

Vertical scale 1 in : 625 , Horizontal scale 1 in : 33 ft

KCC

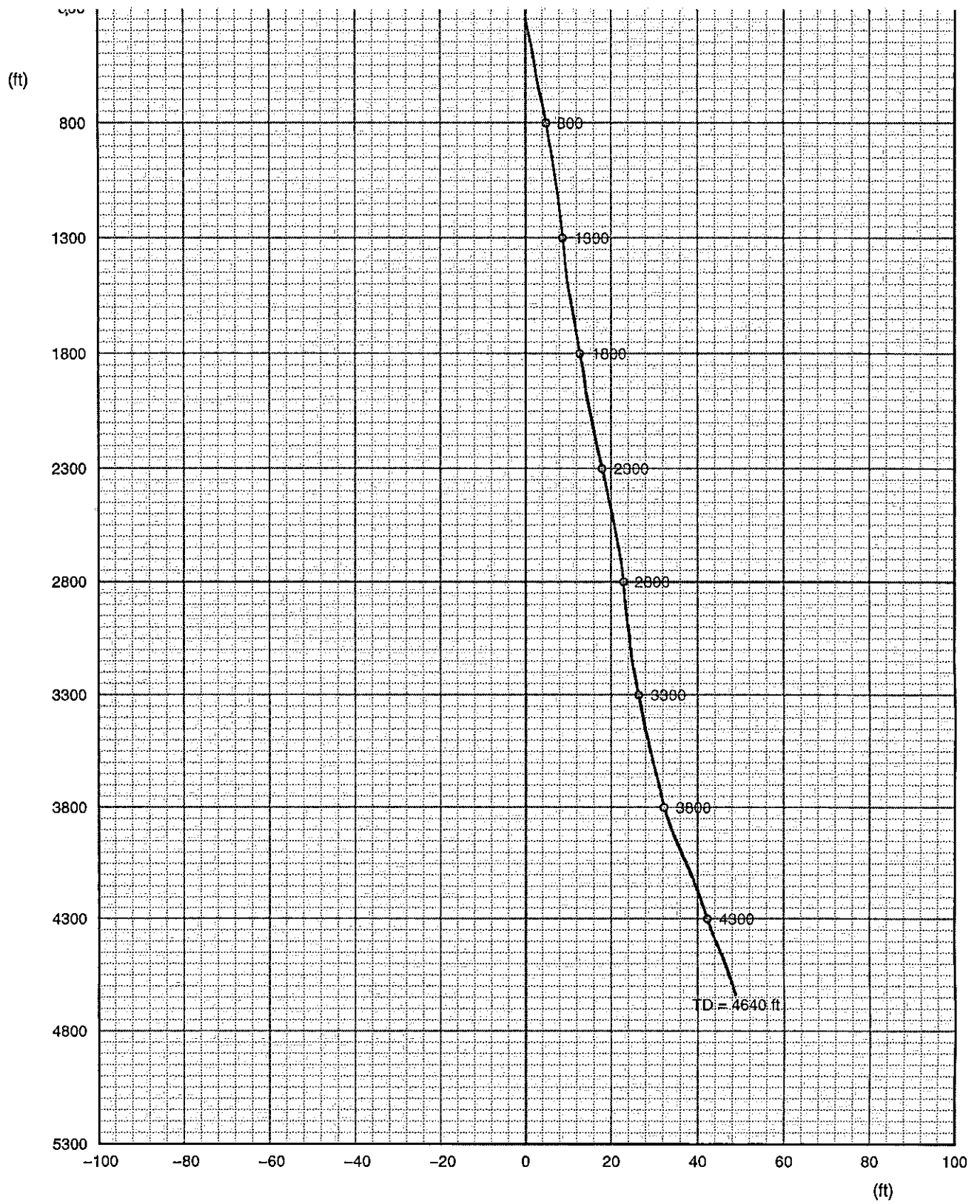
JUN 23 2000

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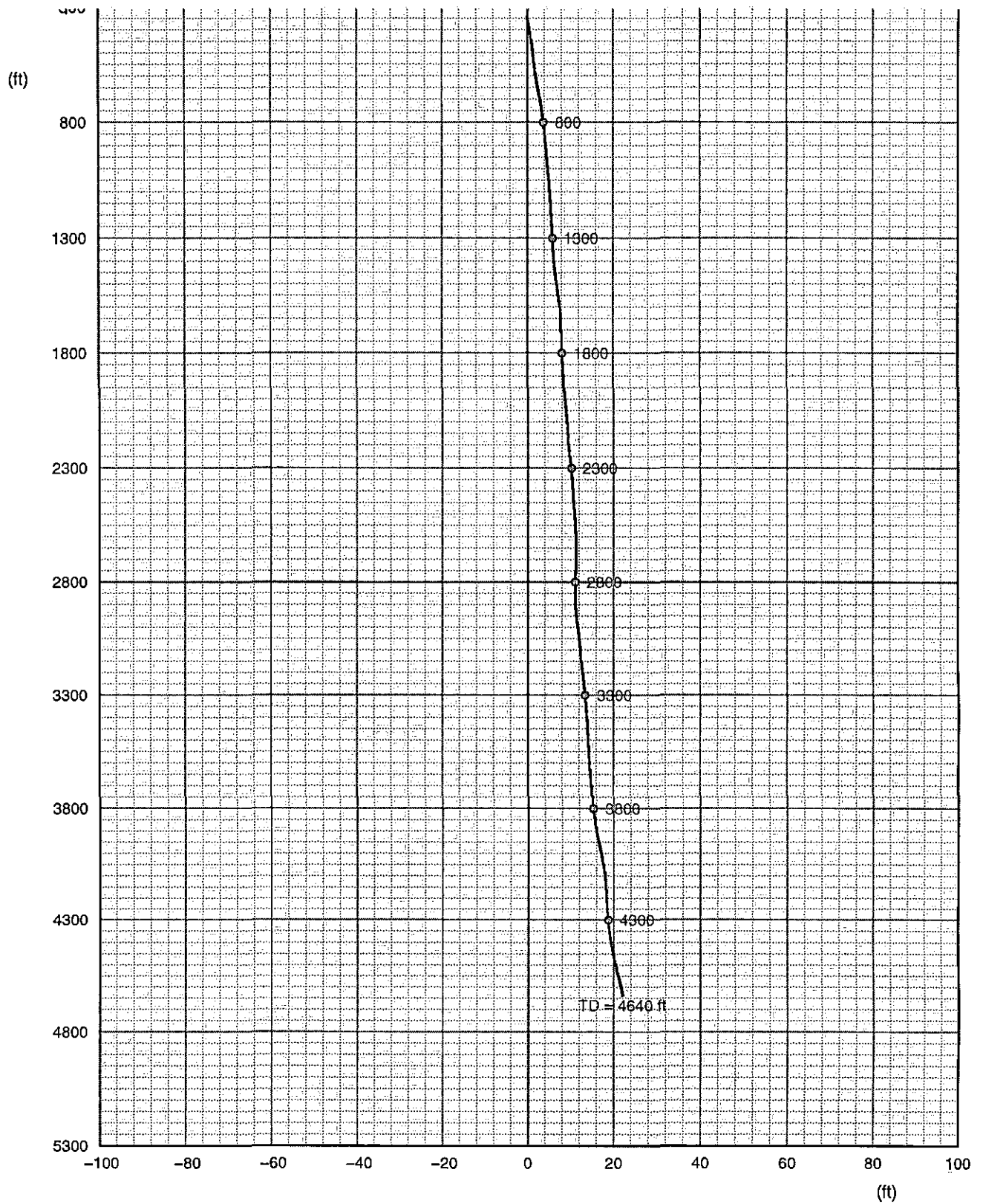
Projection on Vertical Plane

Vertical scale 1 in : 625 , Horizontal scale 1 in : 33 ft



Projection on Vertical Plane

Vertical scale 1 in : 625 , Horizontal scale 1 in : 33 ft



Projection on Vertical Plane

Vertical scale 1 in : 625 , Horizontal scale 1 in : 33 ft

Tie Point Parameters for Directional Survey

Measured Depth	True Vertical Depth	+East -West Well Departure	+North -South Well Departure	Deviation	Azimuth
340.0	340.0	0.0	0.0	0.000	0.0

Coordinates

Measured Depth (ft)	True Vertical Depth (ft)	+North -South (ft)	+East -West (ft)	Course Length (ft)	Wellbore Deviation (deg)	Wellbore Azimuth (deg)
350.0	350.0	-0.0	0.1	0.1	0.5	100.7
375.0	375.0	-0.1	0.3	0.3	0.6	100.3
400.0	400.0	-0.1	0.6	0.6	0.7	98.2
425.0	425.0	-0.1	0.9	0.9	0.6	92.8
450.0	450.0	-0.1	1.2	1.2	0.8	88.7
475.0	475.0	-0.1	1.5	1.5	0.6	86.2
500.0	500.0	-0.1	1.8	1.8	0.6	85.1
525.0	525.0	-0.1	2.0	2.0	0.5	87.5
550.0	550.0	-0.1	2.2	2.2	0.5	95.3
575.0	575.0	-0.1	2.4	2.4	0.5	100.8
600.0	600.0	-0.2	2.6	2.6	0.5	103.6
625.0	625.0	-0.3	2.9	2.9	0.6	105.8
650.0	650.0	-0.3	3.2	3.2	0.7	101.4
675.0	675.0	-0.4	3.5	3.5	0.8	100.2
700.0	700.0	-0.4	3.8	3.8	0.8	95.7
725.0	725.0	-0.5	4.1	4.1	0.7	92.1
750.0	750.0	-0.5	4.4	4.4	0.6	89.1
775.0	775.0	-0.5	4.6	4.7	0.6	86.9
800.0	800.0	-0.4	4.9	4.9	0.6	81.1
825.0	825.0	-0.4	5.1	5.2	0.6	76.5
850.0	850.0	-0.4	5.4	5.4	0.5	84.8
875.0	875.0	-0.3	5.6	5.6	0.6	80.0
900.0	900.0	-0.3	5.9	5.9	0.7	74.5
925.0	925.0	-0.2	6.1	6.1	0.5	76.9
950.0	950.0	-0.1	6.3	6.3	0.4	74.3

Coordinates

Measured Depth (ft)	True Vertical Depth (ft)	+North -South (ft)	+East -West (ft)	Course Length (ft)	Wellbore Deviation (deg)	Wellbore Azimuth (deg)
975.0	975.0	-0.1	6.5	6.5	0.5	82.6
1000.0	1000.0	-0.1	6.7	6.7	0.4	82.5
1025.0	1025.0	-0.1	6.9	6.9	0.5	84.7
1050.0	1050.0	-0.0	7.1	7.1	0.5	79.3
1075.0	1075.0	0.0	7.3	7.3	0.5	72.8
1100.0	1100.0	0.1	7.5	7.5	0.5	70.7
1125.0	1125.0	0.2	7.7	7.7	0.4	75.7
1150.0	1150.0	0.2	7.9	7.9	0.3	80.0
1175.0	1175.0	0.2	8.0	8.0	0.4	66.7
1200.0	1200.0	0.3	8.2	8.2	0.4	79.0
1225.0	1225.0	0.3	8.4	8.4	0.4	72.0
1250.0	1250.0	0.4	8.5	8.6	0.4	69.7
1275.0	1275.0	0.5	8.7	8.7	0.4	68.7
1300.0	1300.0	0.5	8.9	8.9	0.4	73.5
1325.0	1325.0	0.5	9.0	9.0	0.3	82.5
1350.0	1350.0	0.5	9.1	9.1	0.3	92.3
1375.0	1375.0	0.5	9.2	9.3	0.3	94.1
1400.0	1399.9	0.5	9.4	9.4	0.3	101.1
1425.0	1424.9	0.5	9.5	9.5	0.4	109.8
1450.0	1449.9	0.4	9.6	9.6	0.4	113.4
1475.0	1474.9	0.3	9.8	9.8	0.4	113.4
1500.0	1499.9	0.3	10.0	10.0	0.5	107.3
1525.0	1524.9	0.2	10.2	10.2	0.6	98.0
1550.0	1549.9	0.2	10.4	10.4	0.5	88.6
1575.0	1574.9	0.2	10.7	10.7	0.6	86.1
1600.0	1599.9	0.2	10.9	10.9	0.6	89.4
1625.0	1624.9	0.3	11.2	11.2	0.6	76.3
1650.0	1649.9	0.4	11.4	11.5	0.7	62.8
1675.0	1674.9	0.5	11.7	11.7	0.6	51.0
1700.0	1699.9	0.7	11.9	11.9	0.7	48.7
1725.0	1724.9	0.9	12.1	12.2	0.8	54.6
1750.0	1749.9	1.1	12.4	12.4	0.6	49.7
1775.0	1774.9	1.3	12.6	12.6	0.7	54.9

Coordinates

Measured Depth (ft)	True Vertical Depth (ft)	+North -South (ft)	+East -West (ft)	Course Length (ft)	Wellbore Deviation (deg)	Wellbore Azimuth (deg)
1800.0	1799.9	1.4	12.9	13.0	0.7	62.3
1825.0	1824.9	1.5	13.1	13.2	0.6	69.0
1850.0	1849.9	1.6	13.3	13.4	0.6	63.7
1875.0	1874.9	1.7	13.6	13.7	0.5	59.3
1900.0	1899.9	1.9	13.8	13.9	0.5	60.4
1925.0	1924.9	2.0	13.9	14.1	0.4	63.1
1950.0	1949.9	2.0	14.1	14.3	0.4	63.1
1975.0	1974.9	2.1	14.3	14.4	0.5	72.1
2000.0	1999.9	2.2	14.5	14.7	0.7	71.7
2025.0	2024.9	2.3	14.8	15.0	0.7	70.4
2050.0	2049.9	2.4	15.1	15.3	0.6	66.5
2075.0	2074.9	2.5	15.4	15.6	0.7	70.0
2100.0	2099.9	2.6	15.7	15.9	0.6	67.1
2125.0	2124.9	2.8	16.0	16.2	0.7	59.2
2150.0	2149.9	2.9	16.2	16.5	0.6	62.8
2175.0	2174.9	3.0	16.4	16.7	0.6	66.3
2200.0	2199.9	3.1	16.7	17.0	0.8	68.5
2225.0	2224.9	3.3	17.0	17.3	0.8	68.9
2250.0	2249.9	3.4	17.4	17.7	0.8	72.8
2275.0	2274.9	3.5	17.7	18.1	0.7	73.9
2300.0	2299.9	3.6	18.0	18.4	0.7	70.3
2325.0	2324.9	3.7	18.3	18.7	0.7	68.8
2350.0	2349.9	3.8	18.6	19.0	0.7	62.9
2375.0	2374.9	4.0	18.9	19.3	0.7	57.3
2400.0	2399.9	4.1	19.1	19.6	0.7	58.7
2425.0	2424.9	4.3	19.4	19.8	0.6	57.8
2450.0	2449.9	4.4	19.6	20.1	0.7	66.6
2475.0	2474.9	4.6	20.0	20.5	0.9	63.0
2500.0	2499.9	4.7	20.3	20.8	0.7	62.3
2525.0	2524.9	4.8	20.5	21.1	0.6	63.2
2550.0	2549.9	5.0	20.8	21.4	0.6	62.4
2575.0	2574.9	5.1	21.0	21.6	0.8	54.1
2600.0	2599.9	5.4	21.3	21.9	0.8	46.1

Coordinates

Measured Depth (ft)	True Vertical Depth (ft)	+North -South (ft)	+East -West (ft)	Course Length (ft)	Wellbore Deviation (deg)	Wellbore Azimuth (deg)
2625.0	2624.9	5.6	21.5	22.2	0.6	53.5
2650.0	2649.9	5.8	21.8	22.5	0.8	48.0
2675.0	2674.9	6.0	22.0	22.8	0.9	43.5
2700.0	2699.9	6.3	22.3	23.1	0.8	39.3
2725.0	2724.9	6.5	22.5	23.4	0.7	41.8
2750.0	2749.9	6.7	22.6	23.6	0.6	36.8
2775.0	2774.9	6.9	22.8	23.8	0.5	35.5
2800.0	2799.9	7.1	22.9	24.0	0.5	40.4
2825.0	2824.9	7.2	23.0	24.1	0.4	41.1
2850.0	2849.9	7.3	23.1	24.3	0.3	49.3
2875.0	2874.9	7.4	23.2	24.4	0.3	45.8
2900.0	2899.9	7.5	23.3	24.5	0.3	66.5
2925.0	2924.9	7.5	23.5	24.6	0.4	89.8
2950.0	2949.9	7.5	23.6	24.8	0.3	100.8
2975.0	2974.9	7.4	23.8	24.9	0.4	104.2
3000.0	2999.9	7.4	24.0	25.1	0.5	106.8
3025.0	3024.9	7.3	24.2	25.3	0.5	113.1
3050.0	3049.9	7.3	24.3	25.4	0.3	109.9
3075.0	3074.9	7.2	24.5	25.5	0.3	100.4
3100.0	3099.9	7.2	24.6	25.6	0.3	97.7
3125.0	3124.9	7.2	24.7	25.7	0.4	98.6
3150.0	3149.9	7.2	24.9	25.9	0.5	86.8
3175.0	3174.9	7.2	25.2	26.2	0.6	82.7
3200.0	3199.9	7.2	25.4	26.4	0.6	83.1
3225.0	3224.9	7.3	25.7	26.7	0.6	79.0
3250.0	3249.9	7.3	25.9	26.9	0.6	75.7
3275.0	3274.9	7.4	26.2	27.2	0.7	76.2
3300.0	3299.9	7.5	26.5	27.5	0.7	70.2
3325.0	3324.9	7.5	26.7	27.7	0.6	75.1
3350.0	3349.8	7.6	27.0	28.0	0.7	67.2
3375.0	3374.8	7.7	27.2	28.3	0.7	69.7
3400.0	3399.8	7.9	27.5	28.6	0.7	67.9
3425.0	3424.8	8.0	27.7	28.9	0.7	58.6

Coordinates

Measured Depth (ft)	True Vertical Depth (ft)	+North -South (ft)	+East -West (ft)	Course Length (ft)	Wellbore Deviation (deg)	Wellbore Azimuth (deg)
3450.0	3449.8	8.1	28.0	29.1	0.7	54.0
3475.0	3474.8	8.4	28.3	29.5	0.9	58.1
3500.0	3499.8	8.5	28.6	29.8	0.9	56.3
3525.0	3524.8	8.7	28.9	30.2	0.8	57.9
3550.0	3549.8	8.9	29.2	30.5	0.9	58.3
3575.0	3574.8	9.1	29.5	30.9	0.8	56.7
3600.0	3599.8	9.3	29.8	31.2	0.8	56.7
3625.0	3624.8	9.5	30.1	31.6	1.0	59.2
3650.0	3649.8	9.7	30.5	32.0	1.0	63.5
3675.0	3674.8	9.9	30.8	32.4	0.8	62.9
3700.0	3699.8	10.1	31.1	32.7	0.8	61.5
3725.0	3724.8	10.2	31.4	33.1	0.7	60.8
3750.0	3749.8	10.4	31.7	33.4	0.8	59.9
3775.0	3774.8	10.5	32.0	33.7	0.8	64.8
3800.0	3799.8	10.7	32.3	34.1	0.9	64.7
3825.0	3824.8	10.9	32.7	34.5	1.0	68.0
3850.0	3849.8	11.0	33.1	34.9	1.0	66.3
3875.0	3874.8	11.2	33.6	35.4	1.2	68.8
3900.0	3899.8	11.4	34.1	35.9	1.2	73.5
3925.0	3924.8	11.5	34.6	36.5	1.3	73.8
3950.0	3949.8	11.7	35.1	37.0	1.3	75.1
3975.0	3974.8	11.9	35.7	37.6	1.4	72.2
4000.0	3999.8	12.1	36.3	38.2	1.3	68.3
4025.0	4024.8	12.3	36.8	38.8	1.6	67.2
4050.0	4049.7	12.6	37.5	39.5	1.5	67.4
4075.0	4074.7	12.8	38.0	40.1	1.4	66.0
4100.0	4099.7	13.1	38.6	40.7	1.3	56.0
4125.0	4124.7	13.5	39.1	41.3	1.5	53.3
4150.0	4149.7	13.9	39.6	41.9	1.4	54.5
4175.0	4174.7	14.2	40.1	42.6	1.5	52.9
4200.0	4199.7	14.6	40.6	43.1	1.2	49.2
4225.0	4224.7	14.9	41.0	43.6	1.1	52.0
4250.0	4249.7	15.2	41.4	44.1	1.1	54.7

Coordinates

Measured Depth (ft)	True Vertical Depth (ft)	+North -South (ft)	+East -West (ft)	Course Length (ft)	Wellbore Deviation (deg)	Wellbore Azimuth (deg)
4275.0	4274.7	15.5	41.8	44.6	1.2	57.6
4300.0	4299.7	15.7	42.3	45.1	1.2	60.8
4325.0	4324.7	16.0	42.7	45.6	1.2	59.8
4350.0	4349.7	16.3	43.2	46.2	1.2	62.6
4375.0	4374.7	16.5	43.7	46.7	1.3	65.9
4400.0	4399.6	16.8	44.2	47.3	1.4	67.9
4425.0	4424.6	17.0	44.8	47.9	1.4	68.1
4450.0	4449.6	17.2	45.4	48.5	1.4	72.5
4475.0	4474.6	17.4	45.9	49.1	1.2	76.5
4500.0	4499.6	17.4	46.4	49.5	1.1	81.3
4525.0	4524.6	17.5	46.8	50.0	1.1	83.0
4550.0	4549.6	17.5	47.3	50.4	1.0	92.5
4575.0	4574.6	17.5	47.7	50.8	1.0	95.3
4600.0	4599.6	17.5	48.1	51.2	0.8	89.2
4625.0	4624.6	17.5	48.5	51.6	1.0	83.0