

TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name HAYS TRUST Test No. 1 Date 5/6/93
Company CHARTER PRODUCTION COMPANY Zone TORONTO
Address 224 EAST DOUGLAS #400 WICHITA KS 67202 Elevation 2742
Co. Rep./Geo. CHUCK SCHMALTZ Cont. ZENITH RIG #6 Est. Ft. of Pay 8
Location: Sec. 19 Twp. 34S Rge. 31W Co. SEWARD State KS

Interval Tested 4393-4433 Drill Pipe Size 4.5" XH
Anchor Length 40 Wt. Pipe I.D. - 2.7 Ft. Run _____
Top Packer Depth 4388 Drill Collar - 2.25 Ft. Run 580
Bottom Packer Depth 4393 Mud Wt. _____ 8.8 lb/Gal.
Total Depth 4433 Viscosity 42 Filtrate 11.6

Tool Open @ 10:10 PM Initial Blow STRONG BLOW - BOTTOM OF BUCKET IN 1 MINUTE
GAS TO SURFACE IN 20 MINUTES - STRONG BLOW BACK DURING SHUTIN
Final Blow STRONG BLOW - GAS TO SURFACE THROUGHOUT
STRONG BLOW BACK

Recovery - Total Feet 920 Flush Tool? NO

Rec. 3450 Feet of GAS IN PIPE
Rec. 150 Feet of CLEAN GASSY OIL 50%GAS/50%OIL
Rec. 770 Feet of SLIGHTLY MUD CUT GASSY OIL 45%GAS/50%OIL/5%MUD
Rec. _____ Feet of _____
Rec. _____ Feet of _____

BHT 122 °F Gravity 41 °API @ 64 °F Corrected Gravity 40.7 °API
RW _____ @ _____ °F Chlorides _____ ppm Recovery Chlorides 13000 ppm System

(A) Initial Hydrostatic Mud 1988.4 PSI AK1 Recorder No. 13337 Range 3975

(B) First Initial Flow Pressure 79.1 PSI @ (depth) 4400 w / Clock No. 25813

(C) First Final Flow Pressure 131.4 PSI AK1 Recorder No. 10333 Range 4075

(D) Initial Shut-in Pressure 1232.4 PSI @ (depth) 4430 w / Clock No. 31152

(E) Second Initial Flow Pressure 150.1 PSI AK1 Recorder No. _____ Range _____

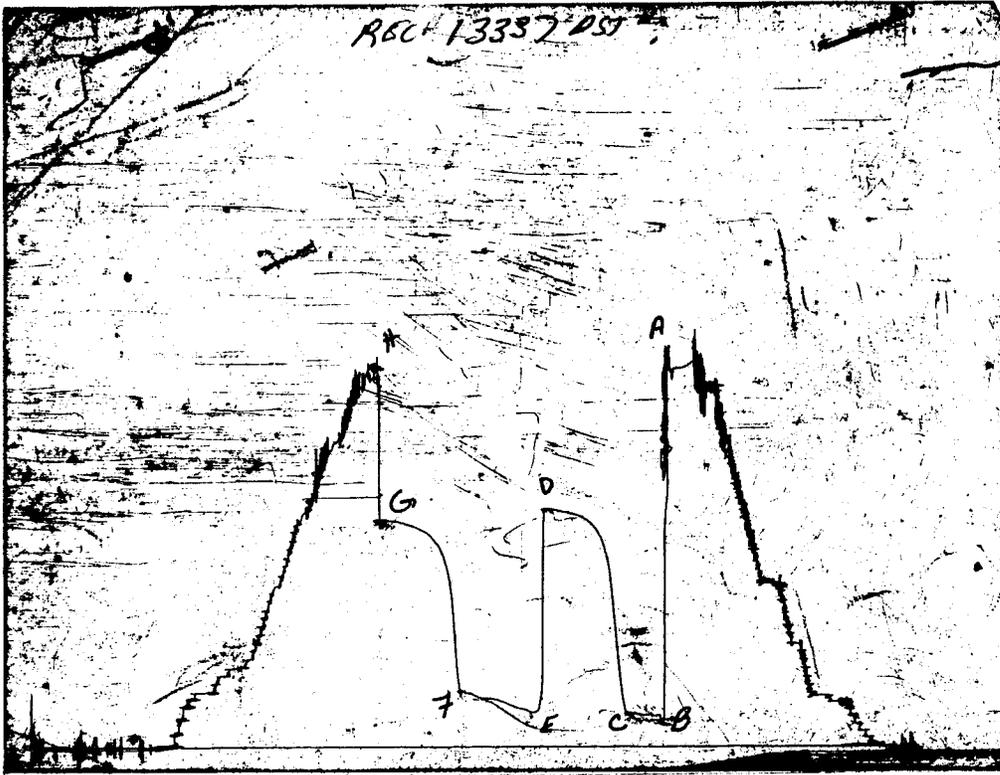
(F) Second Final Flow Pressure 267.7 PSI @ (depth) _____ w / Clock No. _____

(G) Final Shut-in Pressure 1174.6 PSI Initial Opening 30 Final Flow 60

(H) Final Hydrostatic Mud 1954.6 PSI Initial Shut-in 60 Final Shut-in 60

Our Representative JOHN RIEDL

CHART PAGE



This is an actual photograph of recorder chart

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	1953	1988.4
(B) FIRST INITIAL FLOW PRESSURE	123	79.1
(C) FIRST FINAL FLOW PRESSURE	168	131.4
(D) INITIAL CLOSED-IN PRESSURE	1234	1232.4
(E) SECOND INITIAL FLOW PRESSURE	168	150.1
(F) SECOND FINAL FLOW PRESSURE	290	267.7
(G) FINAL CLOSED-IN PRESSURE	1174	1174.6
(H) FINAL HYDROSTATIC MUD	1926	1954.6

COMPUTER OIL EVALUATION BY TRILOBITE TESTING, L.L.C.

CHARTER PRODUCTION COMPANY

HAYS TRUST

DST 1

19

34S

31W

SEWARD KS

ELEVATION:	2742	KB	EST. PAY	8	FT
DATUM:	-1659		ZONE TESTED:	TORONTO	
TEST INTERVAL:	4393-4433		TIME INTERVALS:	30-60-60-60	
RECORDER DEPTH:	4400		VISCOSITY:	4.81	CP
BOTTOM HOLE TEMP:	122		HOLE SIZE:	7.875	IN

CUBIC FEET OF GAS IN PIPE:	12				
TOTAL FEET OF RECOVERY:	770.00		CORRECTED PIPE FILLUP:	749.860	
TOTAL BARRELS OF RECOVERY:	5.54		CORR. BARRELS OF RECOVERY:	5.254	BBL
BARRELS IN DRILL PIPE:	2.70		API GRAVITY:	41	
BARRELS IN WEIGHT PIPE:	0.00		FLUID GRADIENT:	0.357	
BARRELS IN DRILL COLLARS:	2.84				
GAS OIL RATIO:	2.16		CU.FT/BBL		
BUBBLE POINT PRESSURE:	20				
UNCORRECTED INITIAL PRODUCTION:				88.61	BBL
INITIAL PRODUCTION CORRECTED TO FINAL FLOW PRESSURE:				84.06	BBL/DAY
INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:				54.132	

INITIAL SLOPE	428.63	PSI/CYCL	FINAL SLOPE	296.55	PSI/CYCLE
INITIAL P*	1307.88	PSI	FINAL P*	1292.61	PSI

TRANSMISSIBILITY	46.09	(MD.-FT./CP.)
PERMEABILITY	27.72	(MD.)
INDICATED FLOW CAPACITY	221.74	(MD.FT)
PRODUCTIVITY INDEX	0.05	(BARREL/DAY/PSI)
DAMAGE RATIO	0.63	
RADIUS OF INVESTIGATION	49.95	(FT,)
POTENTIOMETRIC SURFACE	1339.56	(FT.)
DRAWDOWN FACTOR	1.167	(%)
THEORETICAL POTENTIAL FROM FINAL FLOW PRESSURE	0.00	
THEORETICAL POTENTIAL FROM PSEUDO STEADY FLOW STATE	0.00	

INITIAL FLOW

RECORDER # 13337 DST # 1

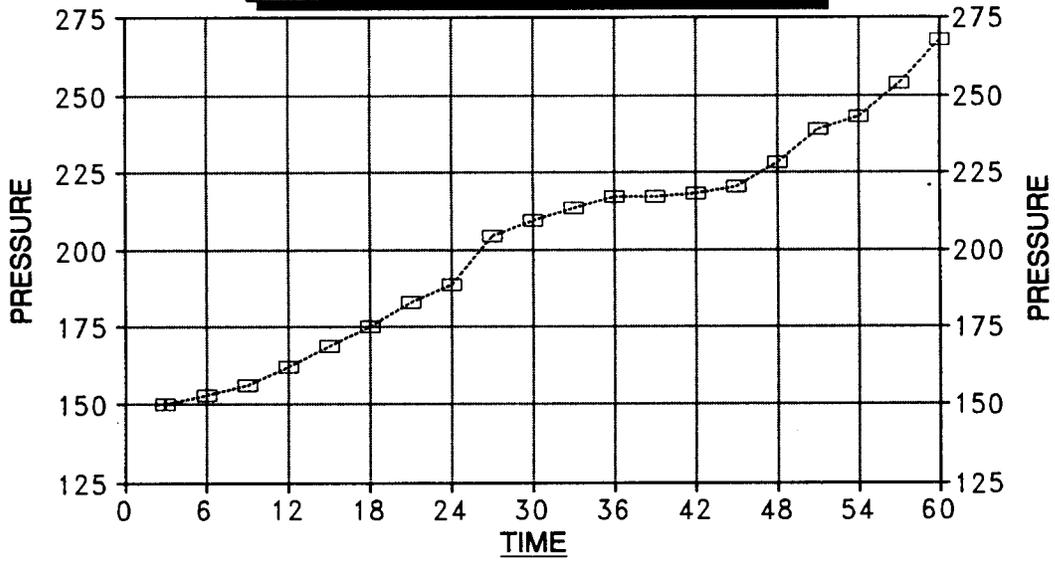
TIME(MIN)	PRESSURE	<>PRESSURE
3	79.1	79.1
6	79.1	0
9	98.8	19.7
12	119.5	20.7
15	121.5	2
18	122.5	1
21	123.5	1
24	124.4	0.9
27	125.4	1
30	128.4	3
33	131.4	3

RECORDER # 13337 DST # 1

	PRESSURE	<> PRESSURE
3	150.1	150.1
6	153.1	3
9	156.1	3
12	162.1	6
15	168.9	6.8
18	174.8	5.9
21	182.7	7.9
24	188.7	6
27	204.5	15.8
30	209.4	4.9
33	213.4	4
36	217.3	3.9
39	217.3	0
42	218.3	1
45	220.3	2
48	228.2	7.9
51	239.1	10.9
54	243.1	4
57	253.9	10.8
60	267.7	13.8

DELTA T DELTA P

FINAL FLOW / DST #1



---□--- HAYS TRUST

INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:

54.132

HAYS TRUST
INITIAL

DST #1
SHUTIN
30 INITIAL FLOW TIME

SLOPE 428.6 PSI/CYCLE
P* 1307.88 PSI

TIME(MIN)	Pws (psi)	Log <>		
		Horn T	PRESSURE	Horn T
3	340.8	1.041	340.8	11
6	503.9	0.778	163.1	6
9	713.1	0.637	209.2	4
12	904.6	0.544	191.5	4
15	1000.2	0.477	95.6	3
18	1056.9	0.426	56.7	3
21	1104.7	0.385	47.8	2
24	1134.6	0.352	29.9	2
27	1158.6	0.325	24.0	2
30	1174.6	0.301	16.0	2
33	1188.5	0.281	13.9	2
36	1198.5	0.263	10.0	2
39	1204.5	0.248	6.0	2
42	1209.5	0.234	5.0	2
45	1214.5	0.222	5.0	2
X 48	1217.5	0.211	3.0	2
51	1222.5	0.201	5.0	2
54	1228.4	0.192	5.9	2
57	1230.4	0.184	2.0	2
X 60	1232.4	0.176	2.0	2

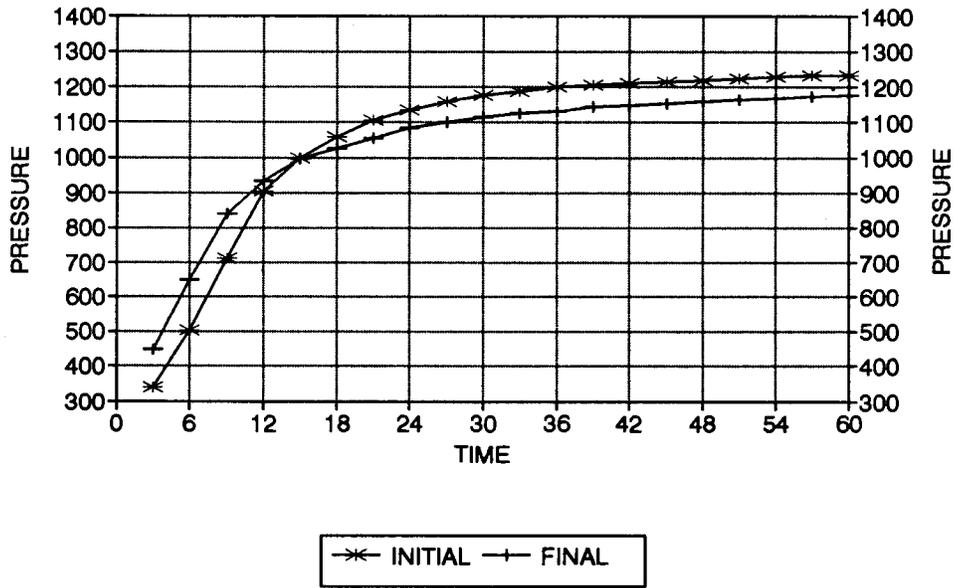
HAYS TRUST
FINAL

DST #1
SHUTIN
90 TOTAL FLOW TIME

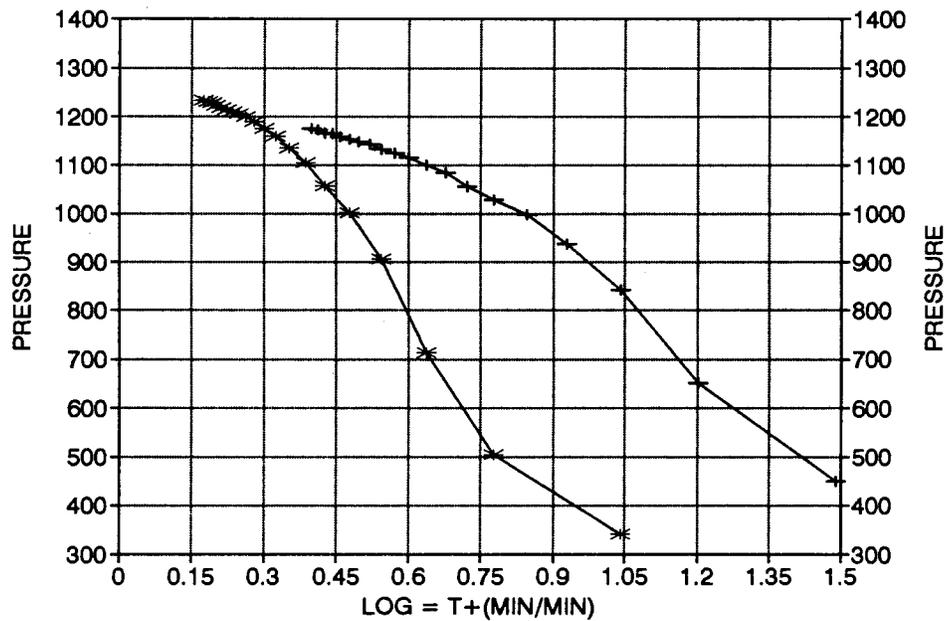
SLOPE 296.6 PSI/CYCLE
P* 1292.6 PSI

TIME(MIN)	Pws (psi)	Log <>		
		Horn T	PRESSURE	Horn T
3	449.6	1.491	449.6	31
6	651.2	1.204	201.6	16
9	839.8	1.041	188.6	11
12	936.1	0.929	96.3	9
15	997.2	0.845	61.1	7
18	1027.1	0.778	29.9	6
21	1054.9	0.723	27.8	5
24	1084.8	0.677	29.9	5
27	1099.7	0.637	14.9	4
30	1114.7	0.602	15.0	4
33	1124.6	0.571	9.9	4
36	1131.6	0.544	7.0	4
39	1142.6	0.520	11.0	3
42	1147.6	0.497	5.0	3
45	1153.6	0.477	6.0	3
X 48	1156.6	0.459	3.0	3
51	1162.6	0.442	6.0	3
54	1166.6	0.426	4.0	3
57	1171.6	0.411	5.0	3
X 60	1174.6	0.398	3.0	3

HAYS TRUST / DST #1 DELTA T DELTA P



HORNER PLOT



CALCULATED RECOVERY ANALYSIS

DST

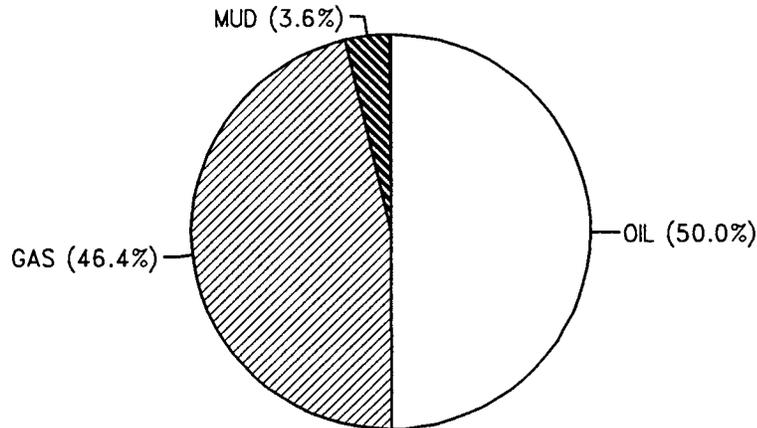
1

TICKET #

5380

SAMPLE #	TOTAL FEET	GAS		OIL		WATER		MUD	
		%	FEET	%	FEET	%	FEET	%	FEET
DRILL 1	150	50	75	50	75	0			0
PIPE 2	190	45	85.5	50	95	0	5		9.5
3			0		0	0			0
4			0		0	0			0
5			0		0	0			0
6			0		0	0			0
WEIGHT 1			0		0	0			0
PIPE 2			0		0	0			0
3			0		0	0			0
4			0		0	0			0
DRILL 1	580	45	261	50	290	0	5		29
COLLAR 2			0		0	0			0
3			0		0	0			0
4			0		0	0			0
5			0		0	0			0
TOTAL	920		421.5		460	0			38.5

			HRS OPEN	BBL/DAY
BBL OIL=	3.8355	*	1.5	61.368
BBL WATER=	0	*		0
BBL MUD=	0.2769			
BBL GAS =	3.5586			



GAS VOLUME REPORT

CHARTER PRODUCTION COMPANY

HAYS TRUST

DST # 1

MIN	INCHES OF WTR	ORIFICE	MCF/D	MIN	PSIG	ORIFICE	MCF/D
20	16	0.5	25.1	10	36	0.5	37.6
30	10	0.5	19.9	20	20	0.5	28.9
				30	10	0.5	19.9
				40	6	0.5	15.4
				50	4	0.5	12.5
				60	3	0.5	10.9

Remarks: GAS TO SURFACE IN 20 MINUTES 1ST FLOW - GAS BURNED

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 5380

Well Name & No.	XXXXXXXXXX HAYS TRUST	Test No.	1	Date	5-6-93				
Company	CHARTER PRODUCTION CO	Zone Tested	TORONTO						
Address	224 E DOUGLAS, SUITE 400 W. KS 67601		Elevation	2742 K.B.					
Co. Rep./Geo.	CHUCK SCHMALTZ	Cont.	ZENITH R16 G	Est. Ft. of Pay	8				
Location: Sec.	19	Twp.	34S	Rge.	31W	Co.	SEWARD	State	KS
No. of Copies		Distribution Sheet	<input checked="" type="checkbox"/> Yes	No Turnkey		Yes	<input checked="" type="checkbox"/> No	Yes	<input checked="" type="checkbox"/> Evaluation

Interval Tested	4393 - 4433	Drill Pipe Size	4 1/2 XH	
Anchor Length	40 FT	Top Choke - 1"	Bottom Choke - 3/4"	
Top Packer Depth	4388	Hole Size - 7 7/8"	Rubber Size - 6 3/4"	
Bottom Packer Depth	4393	Wt. Pipe I.D. - 2.7 Ft. Run	0	
Total Depth	4433	Drill Collar - 2.25 Ft. Run	580	
Mud Wt.	8.8	lb/gal.	Viscosity 42	Filtrate 11.6

Tool Open @ 10:10 P.M. Initial Blow STRONG BLOW (B.O.B 1 MINUTE - GAS TO SURFACE IN 20 MINUTES (STRONG BLOWBACK DURING SHUT-IN))

Final Blow STRONG BLOW GAS TO SURFACE THROUGHOUT (STRONG BLOWBACK)

Recovery - Total Feet	920	Feet of Gas In Pipe	3450	Flush Tool?	NO
Rec. 150	Feet Of ^{CLEAN} GASSY OIL	50% gas	50% oil	% water	% mud
Rec. 770	Feet Of SL MUD CUT GASSY OIL	45% gas	50% oil	% water	5% mud
Rec.	Feet Of	% gas	% oil	% water	% mud
Rec.	Feet Of	% gas	% oil	% water	% mud
Rec.	Feet Of	% gas	% oil	% water	% mud

BHT 128 °F Gravity 41 °API @ 64 °F Corrected Gravity 40.7 °API

RW @ °F Chlorides ppm Recovery Chlorides 13,000 ppm System

(A) Initial Hydrostatic Mud	1953	PSI	AK1 Recorder No.	13337	Range	3975
(B) First Initial Flow Pressure	123	PSI	@ (depth)	4400	w/Clock No.	25813
(C) First Final Flow Pressure	168	PSI	AK1 Recorder No.	10333	Range	4075
(D) Initial Shut-In Pressure	1234	PSI	@ (depth)	4430	w/Clock No.	31152
(E) Second Initial Flow Pressure	168	PSI	AK1 Recorder No.	—	Range	—
(F) Second Final Flow Pressure	290	PSI	@ (depth)	—	w/Clock No.	—
(G) Final Shut-In Pressure	1174	PSI	Initial Opening	30	Test	X 600
(H) Final Hydrostatic Mud	1926	PSI	Initial Shut-In	60	Jars	X 200

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		Final Flow	60	Safety Joint	X 50
Our Representative		Final Shut-In	60	Straddle	
				Circ. Sub	
				Sampler	
				Extra Packer	
				Other eval	50
				TOTAL PRICE \$	900

TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name HAYS TRUST Test No. 2 Date 5/7/93
Company CHARTER PRODUCTION COMPANY Zone LKC
Address 224 EAST DOUGLAS #400 WICHITA KS 67202 Elevation 2742
Rep./Geo. CHUCK SCHMALTZ Cont. ZENITH RIG #6 Est. Ft. of Pay _____
Location: Sec. 19 Twp. 34S Rge. 31W Co. SEWARD State KS

Interval Tested	<u>4544-4554</u>	Drill Pipe Size	<u>4.5" XH</u>
Anchor Length	<u>10</u>	Wt. Pipe I.D. - 2.7 Ft. Run	_____
Top Packer Depth	<u>4539</u>	Drill Collar - 2.25 Ft. Run	<u>580</u>
Bottom Packer Depth	<u>4544</u>	Mud Wt.	<u>8.7</u> lb/Gal.
Total Depth	<u>4554</u>	Viscosity	<u>54</u>
		Filtrate	<u>9.5</u>

Time of Open @ 10:20 PM Initial Blow WEAK BLOW 1" DECREASING TO 1/4"
SLID TOOL SLOWLY 5' TO BOTTOM AS TOOL OPENED
Final Blow NO BLOW - FLUSHED TOOL & RECEIVED SHORT SURGE & THEN DIED
BOTTOM RECORDER ENGULFED IN CUTTINGS

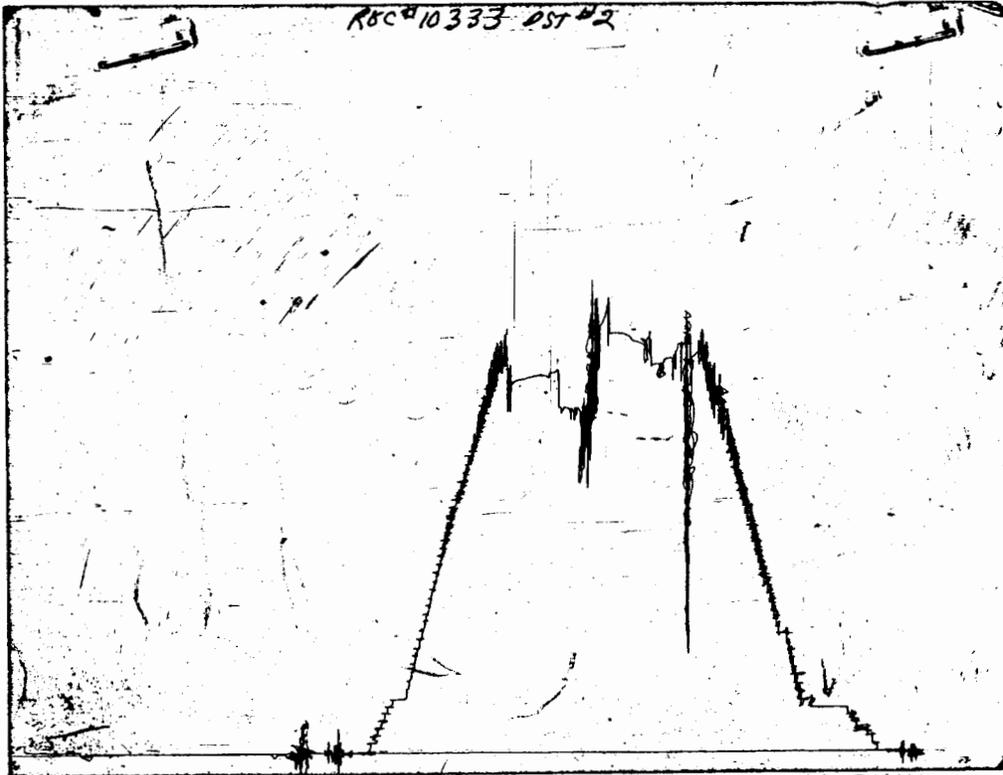
Recovery - Total Feet 50 Flush Tool? YES
Rec. 50 Feet of HEAVY DRILLING MUD 100%MUD
Rec. _____ Feet of _____
Rec. _____ Feet of _____
Rec. _____ Feet of _____
Rec. _____ Feet of _____

Temp 116 °F Gravity _____ °API @ _____ °F Corrected Gravity _____ °API
pH _____ @ _____ °F Chlorides _____ ppm Recovery Chlorides 16000 ppm System

(A) Initial Hydrostatic Mud 2089.6 PSI AK1 Recorder No. 13337 Range 3975
(B) First Initial Flow Pressure 55.1 PSI @ (depth) 4546 w / Clock No. 25813
(C) First Final Flow Pressure 66.2 PSI AK1 Recorder No. 10333 Range 4075
(D) Initial Shut-in Pressure 1056.3 PSI @ (depth) 4551 w / Clock No. 31152
(E) Second Initial Flow Pressure 68.4 PSI AK1 Recorder No. _____ Range _____
(F) Second Final Flow Pressure 76.3 PSI @ (depth) _____ w / Clock No. _____
(G) Final Shut-in Pressure 179.2 PSI Initial Opening 30 Final Flow 30
(H) Final Hydrostatic Mud 2059.7 PSI Initial Shut-in 30 Final Shut-in 30

Dr Representative JOHN RIEDL

CHART PAGE



This is an actual photograph of recorder chart

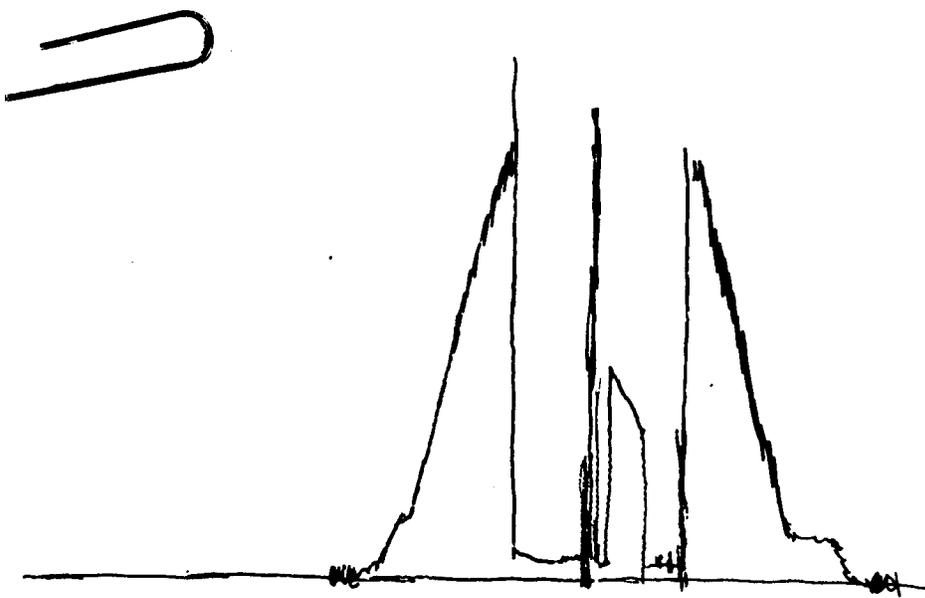
OUTSIDE RECORDER - ANCHOR PARTIALLY PLUGGED

FIELD
READING

OFFICE
READING

- (A) INITIAL HYDROSTATIC MUD
- (B) FIRST INITIAL FLOW PRESSURE
- (C) FIRST FINAL FLOW PRESSURE
- (D) INITIAL CLOSED-IN PRESSURE
- (E) SECOND INITIAL FLOW PRESSURE
- (F) SECOND FINAL FLOW PRESSURE
- (G) FINAL CLOSED-IN PRESSURE
- (H) FINAL HYDROSTATIC MUD

CHART PAGE



This is an actual photograph of recorder chart

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	2081	2089.6
(B) FIRST INITIAL FLOW PRESSURE	50	55.1
(C) FIRST FINAL FLOW PRESSURE	60	66.2
(D) INITIAL CLOSED-IN PRESSURE	1048	1056.3
(E) SECOND INITIAL FLOW PRESSURE	60	68.4
(F) SECOND FINAL FLOW PRESSURE	68	76.3
(G) FINAL CLOSED-IN PRESSURE	168	179.2
(H) FINAL HYDROSTATIC MUD	2054	2059.7

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 5381

Well Name & No. HAYS TRUST #1 Test No. 2 Date 5/7/93
 Company CHARTER PRODUCTION CO. Zone Tested L/KC
 Address 224 E DOUGLAS, SUITE 400 W. KS 67202 Elevation 2742 K.B.
 Co. Rep./Geo. CHUCK SCHMALTZ cont. ZENITH DRILL RIG 6 Est. Ft. of Pay _____
 Location: Sec. 19 Twp. 34S Rge. 31W Co. SEWARD State KS
 No. of Copies _____ Distribution Sheet Yes No Turnkey _____ Yes No NE Evaluation

Interval Tested 4544-4554 Drill Pipe Size 4 1/2 x 11
 Anchor Length 10 FT Top Choke — 1" _____ Bottom Choke — 3/4" _____
 Top Packer Depth 4539 Hole Size — 7 7/8" _____ Rubber Size — 6 3/4" _____
 Bottom Packer Depth 4544 Wt. Pipe I.D. — 2.7 Ft. Run 0
 Total Depth 4554 Drill Collar — 2.25 Ft. Run 580
 Mud Wt. 8.7 lb/gal. Viscosity 54 Filtrate 9.5

Tool Open @ 10:20 P.M. Initial Blow WEAK BLOW 1" DECREASED TO 1/4"
REMARKS - SLID TOOL SLOWLY 5 FT TO BIT AS TOOL OPENED
 Final Blow NO BLOW - FLUSHED TOOL & RECEIVED SHORT SURGE & THEN DEAD
REMARKS - BIT RECORDER ENDED IN CUTTINGS -

Recovery — Total Feet 50 Feet of Gas In Pipe _____ Flush Tool? YES

Rec.	Feet Of	%gas	%oil	%water	%mud
<u>50</u>	<u>HEAVY DRILLING MUD</u>			<u>100</u>	
_____	_____				
_____	_____				
_____	_____				

BHT 116 °F Gravity _____ °API @ _____ °F Corrected Gravity _____ °API
 RW _____ @ _____ °F Chlorides _____ ppm Recovery Chlorides 16,000 ppm System

(A) Initial Hydrostatic Mud 2081 PSI AK1 Recorder No. 13337 ¹²⁰⁰ Range 3975
 (B) First Initial Flow Pressure 50 PSI @ (depth) 4546 w/Clock No. 25213
 (C) First Final Flow Pressure 60 PSI AK1 Recorder No. 10333 Range 407.5
 (D) Initial Shut-in Pressure 1048 PSI @ (depth) 4551 w/Clock No. 31152
 (E) Second Initial Flow Pressure 60 PSI AK1 Recorder No. _____ Range _____
 (F) Second Final Flow Pressure 68 PSI @ (depth) _____ w/Clock No. _____
 (G) Final Shut-in Pressure 168 PSI Initial Opening 30 Test V 6.00
 (H) Final Hydrostatic Mud 2054 PSI Initial Shut-in 30 Jars V 2.00

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Final Flow 30 Safety Joint V 50
 Final Shut-in 30 Straddle _____
 Circ. Sub _____
 Sampler _____
 Extra Packer _____
 Other _____

Approved By [Signature]
 Our Representative [Signature]

TOTAL PRICE \$ 850

TRILOBITE TESTING, L.L.C.

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Well Name HAYS TRUST Test No. 3 Date 5/9/93
Company CHARTER PRODUCTION COMPANY Zone LKC
Address 224 EAST DOUGLAS #400 WICHITA KS 67202 Elevation 2742
Rep./Geo. CHUCK SCHMALTZ Cont. ZENITH RIG #6 Est. Ft. of Pay 8
Location: Sec. 19 Twp. 34S Rge. 31W Co. SEWARD State KS

Interval Tested 4833-4851 Drill Pipe Size 4.5" XH
Anchor Length 18 Wt. Pipe I.D. - 2.7 Ft. Run _____
Top Packer Depth 4828 Drill Collar - 2.25 Ft. Run 580
Bottom Packer Depth 4833 Mud Wt. _____ 8.8 lb/Gal.
Total Depth 4851 Viscosity 40 Filtrate 9.2

Time of Open @ 6:10 AM Initial Blow STRONG BLOW - BOTTOM OF BUCKET IN 1 MINUTE
WEAK BLOW BACK 2"

Final Blow STRONG BLOW - BOTTOM OF BUCKET IN 4 MINUTES
WEAK BLOW BACK 2"

Recovery - Total Feet 400 Flush Tool? NO

Rec. 2400 Feet of GAS IN PIPE
C. 40 Feet of CLEAN GASSY OIL 20%GAS/80%OIL
Rec. 180 Feet of GAS & MUD CUT OIL 25%GAS/40%OIL/35%MUD
C. 180 Feet of VERY SLIGHTLY OIL CUT GASSY WATER 20%GAS/1%OIL/79%H2O
C. _____ Feet of _____

API 119 °F Gravity 39 °API @ 60 °F Corrected Gravity 39 °API
API 0.14 @ 64 °F Chlorides 62000 ppm Recovery Chlorides 8200 ppm System

(A) Initial Hydrostatic Mud 2376.3 PSI AK1 Recorder No. 13337 Range 3975

(B) First Initial Flow Pressure 155.1 PSI @ (depth) 4836 w / Clock No. 25813

(C) First Final Flow Pressure 166.0 PSI AK1 Recorder No. 10333 Range 4075

(D) Initial Shut-in Pressure 1495.8 PSI @ (depth) 4848 w / Clock No. 31152

(E) Second Initial Flow Pressure 205.5 PSI AK1 Recorder No. _____ Range _____

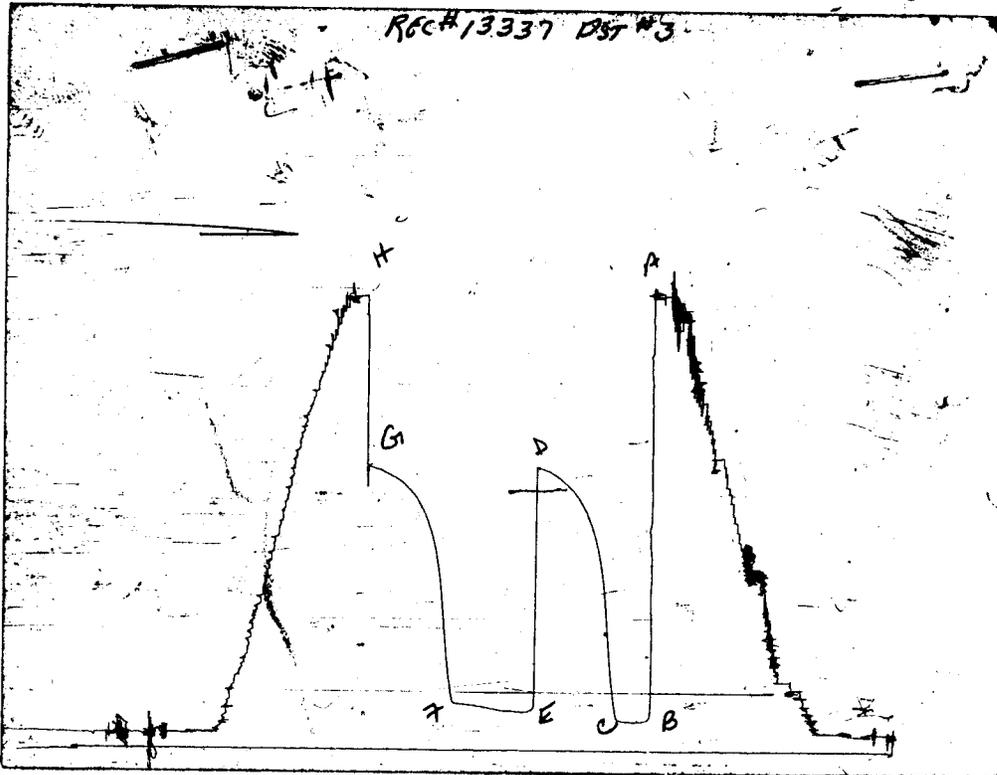
(F) Second Final Flow Pressure 249.0 PSI @ (depth) _____ w / Clock No. _____

(G) Final Shut-in Pressure 1498.7 PSI Initial Opening 30 Final Flow 60

(H) Final Hydrostatic Mud 2349.1 PSI Initial Shut-in 60 Final Shut-in 60

Sur Representative JOHN RIEDL

CHART PAGE



This is an actual photograph of recorder chart

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	2367	2376.3
(B) FIRST INITIAL FLOW PRESSURE	150	155.1
(C) FIRST FINAL FLOW PRESSURE	160	166
(D) INITIAL CLOSED-IN PRESSURE	1487	1495.8
(E) SECOND INITIAL FLOW PRESSURE	198	205.5
(F) SECOND FINAL FLOW PRESSURE	250	249
(G) FINAL CLOSED-IN PRESSURE	1488	1498.7
(H) FINAL HYDROSTATIC MUD	2342	2349.1

COMPUTER OIL EVALUATION BY TRILOBITE TESTING, L.L.C.

CHARTER PRODUCTION COMPANY

HAYS TRUST

DST 3

19 34S 31W

SEWARD KS

ELEVATION:	2742	KB	EST. PAY	8	FT
DATUM:	-2095		ZONE TESTED:	LKC	
TEST INTERVAL:	4833-4851		TIME INTERVALS:	30-60-60-60	
RECORDER DEPTH:	4836		VISCOSITY:	2.56	CP
BOTTOM HOLE TEMP:	119		HOLE SIZE:	7.875	IN

CUBIC FEET OF GAS IN PIPE:	192				
TOTAL FEET OF RECOVERY:	400.00		CORRECTED PIPE FILLUP:	693.593	
TOTAL BARRELS OF RECOVERY:	1.96		CORR. BARRELS OF RECOVERY:	4.443	BBL
BARRELS IN DRILL PIPE:	0.00		API GRAVITY:	39	
BARRELS IN WEIGHT PIPE:	0.00		FLUID GRADIENT:	0.359	
BARRELS IN DRILL COLLARS:	1.96				
GAS OIL RATIO:	97.96		CU.FT/BBL		
BUBBLE POINT PRESSURE:	525				
UNCORRECTED INITIAL PRODUCTION:				31.30	BBL
INITIAL PRODUCTION CORRECTED TO FINAL FLOW PRESSURE:				71.09	BBL/DAY
INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:				22.609	

INITIAL SLOPE	1277.7256	PSI/CYCL	FINAL SLOPE	566.643	PSI/CYCLE
INITIAL P*	1711.88	PSI	FINAL P*	1710.394	PSI

TRANSMISSIBILITY	20.40	(MD.-FT./CP.)
PERMEABILITY	6.54	(MD.)
INDICATED FLOW CAPACITY	52.31	(MD.FT)
PRODUCTIVITY INDEX	0.02	(BARREL/DAY/PSI)
DAMAGE RATIO	0.47	
RADIUS OF INVESTIGATION	24.26	(FT,)
POTENTIOMETRIC SURFACE	1872.40	(FT.)
DRAWDOWN FACTOR	0.087	(%)

INITIAL FLOW

RECORDER # 13337 DST # 3

TIME(MIN)	PRESSURE	<>PRESSURE
3	192.7	192.7
6	161.0	-31.6
9	156.1	-4.9
12	155.1	-1.0
15	153.1	-2.0
18	153.1	0.0
21	155.1	2.0
24	158.1	3.0
27	160.1	2.0
30	163.0	3.0
33	166.0	3.0

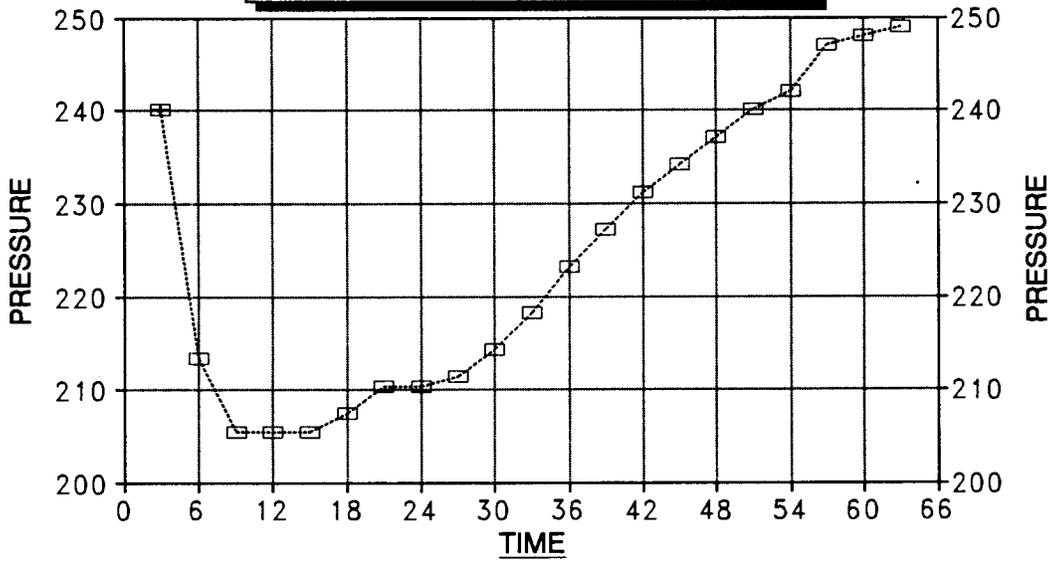
FINAL FLOW

RECORDER # 24174 DST # 2

TIME(MIN)	PRESSURE	<> PRESSURE
3	240.1	240.08
6	213.4	-26.68
9	205.5	-7.90
12	205.5	0.00
15	205.5	0.00
18	207.5	1.98
21	210.4	2.96
24	210.4	0.00
27	211.4	0.99
30	214.4	2.96
33	218.3	3.95
36	223.3	4.94
39	227.2	3.95
42	231.2	3.95
45	234.2	2.96
48	237.1	2.96
51	240.1	2.96
54	242.1	1.98
57	247.0	4.94
60	248.0	0.99
63	249.0	0.99

DELTA T DELTA P

FINAL FLOW / DST #3



---□--- HAYS TRUST #1

INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:

22.609

HAYS TRUST
INITIAL

DST #3
SHUTIN
30 INITIAL FLOW TIME

SLOPE 1277.7 PSI/CYCLE
P* 1711.88 PSI

	TIME(MIN)	Pws (psi)	Log Horn T	<> PRESSURE	Horn T
	3	323.1	1.041	323.1	11
	6	767.2	0.778	444.1	6
	9	826.1	0.637	58.9	4
	12	995.2	0.544	169.1	4
	15	1094.8	0.477	99.5	3
	18	1162.6	0.426	67.9	3
X	21	1219.5	0.385	56.9	2
	24	1268.4	0.352	48.9	2
	27	1304.3	0.325	35.9	2
	30	1336.3	0.301	31.9	2
	33	1364.2	0.281	28.0	2
	36	1384.2	0.263	20.0	2
	39	1404.2	0.248	20.0	2
	42	1422.1	0.234	18.0	2
	45	1438.1	0.222	16.0	2
	48	1454.0	0.211	16.0	2
	51	1464.0	0.201	10.0	2
	54	1475.0	0.192	11.0	2
	57	1482.0	0.184	7.0	2
	60	1488.9	0.176	6.9	2
X	63	1495.8	0.169	6.9	1

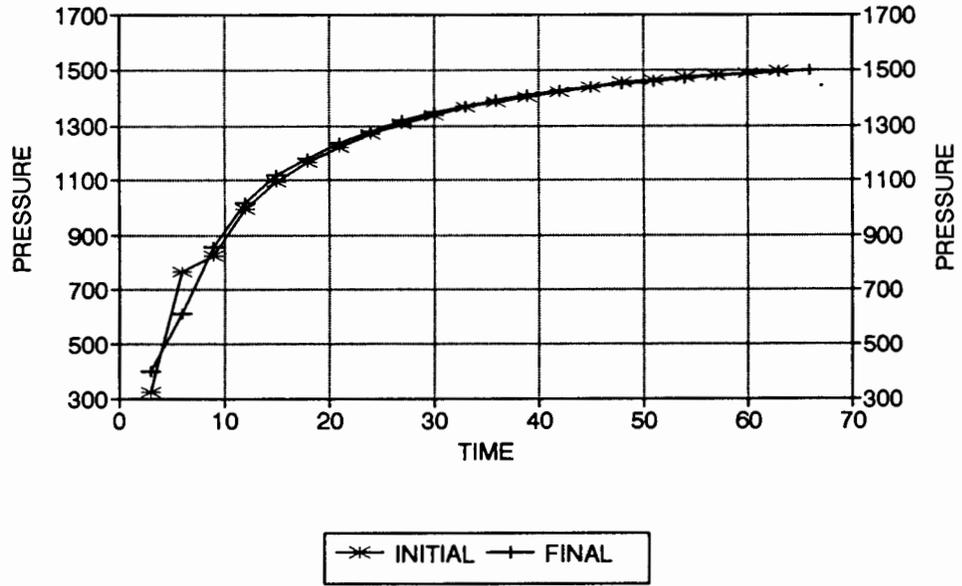
HAYS TRUST
FINAL

DST #3
SHUTIN
90 TOTAL FLOW TIME

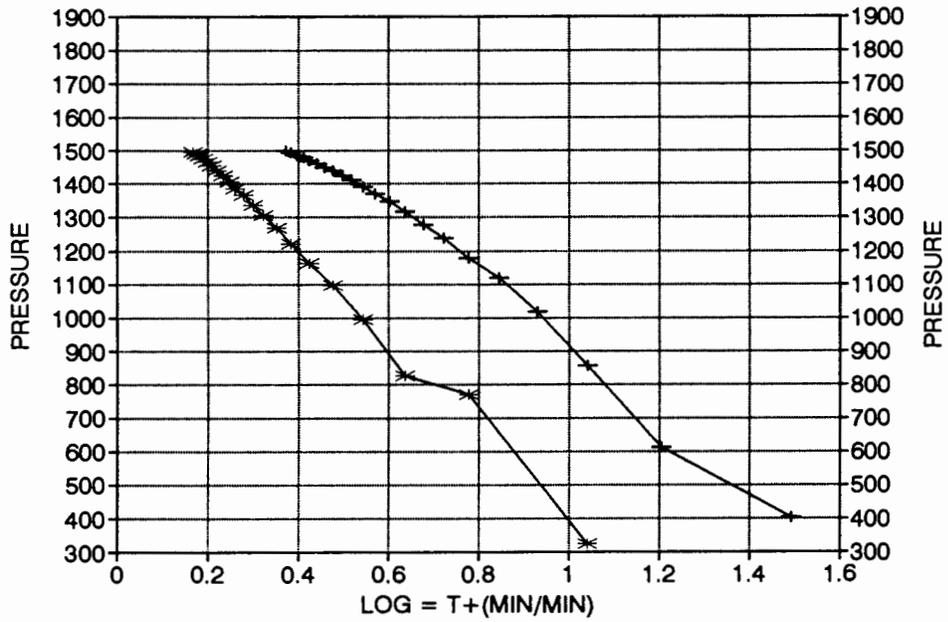
SLOPE 566.6 PSI/CYCLE
P* 1710.4 PSI

	Pws (psi)	Log Horn T	<> PRESSURE	Horn T	
	3	400.2	1.491	400.2	31
	6	612.0	1.204	211.7	16
	9	857.5	1.041	245.6	11
	12	1018.1	0.929	160.6	9
	15	1118.7	0.845	100.6	7
	18	1178.6	0.778	59.9	6
	21	1236.5	0.723	57.9	5
	24	1277.4	0.677	40.9	5
	27	1316.3	0.637	38.9	4
	30	1347.3	0.602	30.9	4
	33	1368.2	0.571	21.0	4
	36	1390.2	0.544	22.0	4
	39	1410.1	0.520	20.0	3
	42	1424.1	0.497	14.0	3
	45	1438.1	0.477	14.0	3
	48	1448.1	0.459	10.0	3
	51	1459.0	0.442	11.0	3
X	54	1469.0	0.426	10.0	3
	57	1477.0	0.411	8.0	3
	60	1484.0	0.398	7.0	3
	63	1491.8	0.385	7.8	2
X	66	1498.7	0.374	6.9	2

HAYS TRUST / DST #3 DELTA T DELTA P



HORNER PLOT

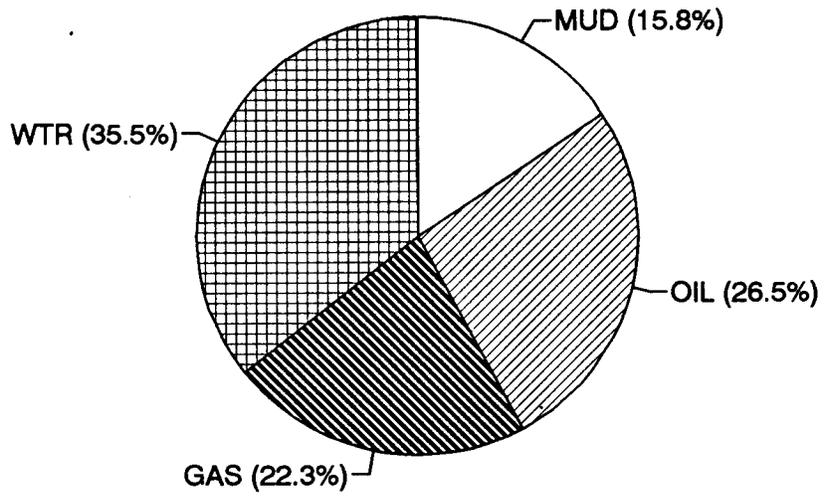


DST # 3 TICKET 5382

SAMPLE #	TOTAL FEET	GAS		OIL		WATER		MUD	
		%	FEET	%	FEET	%	FEET	%	FEET
1	40	20	8	80	32	0	0	0	0
2	180	25	45	40	72		0	35	63
3	180	20	36	1	1.8	79	142.2		0
4			0		0		0		0
5			0		0		0		0
TOTAL	400	22.25	89	26.45	105.8	35.55	142.2	.15.75	63

		HRS OP	BBL/DAY
BBL OIL=	0.517362	*	1.5 8.277792
BBL WATER=	0.695358	*	11.125728
BBL MUD=	0.30807		
BBL GAS=	0.43521		

MUD
OIL
GAS
WTR



TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 5382

Well Name & No.	<u>HAYS TRUST #1</u>	Test No.	<u>3</u>	Date	<u>5/9/93</u>				
Company	<u>CHARTER PROD CO.</u>	Zone Tested	<u>L/KS</u>						
Address	<u>224 E DOUGLAS, SUITE 40 W. KS 67202</u>	Elevation	<u>2742 K.B.</u>						
Co. Rep./Geo.	<u>CHUCK SCHMALTZ</u>	cont.	<u>ZENITH DRILLING R/L</u>	Est. Ft. of Pay	<u>8</u>				
Location: Sec.	<u>19</u>	Twp.	<u>34S</u>	Rge.	<u>31W</u>	Co.	<u>SEWARD</u>	State	<u>KS</u>
No. of Copies		Distribution Sheet	<input checked="" type="checkbox"/>	No Turnkey		Yes	<input checked="" type="checkbox"/>	YES	Evaluation

Interval Tested	<u>4833-4851</u>	Drill Pipe Size	<u>4 1/2 X 11</u>	
Anchor Length	<u>18 FT</u>	Top Choke — 1"	Bottom Choke — 1/4"	
Top Packer Depth	<u>4828</u>	Hole Size — 7 7/8"	Rubber Size — 6 3/4"	
Bottom Packer Depth	<u>4833</u>	Wt. Pipe I.D. — 2.7 Ft. Run	<u>0</u>	
Total Depth	<u>4851</u>	Drill Collar — 2.25 Ft. Run	<u>580</u>	
Mud Wt.	<u>8.8</u>	lb/gal.	Viscosity <u>40</u>	Filtrate <u>9.2</u>
Tool Open @	<u>6:10 A.M.</u>	Initial Blow	<u>STRONG BLOW - BTM BUCKET IN 1 MINUTE</u> <u>WEAK BLOWBACK 2"</u>	
Final Blow	<u>STRONG BLOW - BTM BUCKET IN 4 MINUTES - WEAK BLOWBACK 2"</u>			

Recovery — Total Feet	<u>400</u>	Feet of Gas In Pipe	<u>2400</u>	Flush Tool?	<u>NO</u>		
Rec.	<u>40</u>	Feet Of	<u>CLEAN GASSY OIL</u>	<u>20% gas</u>	<u>80% oil</u>	% water	% mud
Rec.	<u>180</u>	Feet Of	<u>GAS + MUD CUT OIL</u>	<u>25% gas</u>	<u>40% oil</u>	% water	<u>35% mud</u>
Rec.	<u>180</u>	Feet Of	<u>VS OIL CUT GASSY WATER</u>	<u>40% gas</u>	<u>1% oil</u>	<u>79% water</u>	% mud
Rec.		Feet Of		% gas	% oil	% water	% mud
Rec.		Feet Of		% gas	% oil	% water	% mud

BHT	<u>119</u>	°F Gravity	<u>39</u>	°API @	<u>60</u>	°F Corrected Gravity	<u>39</u>	°API	
RW	<u>.14</u>	@	<u>64</u>	°F Chlorides	<u>62,000</u>	ppm Recovery	Chlorides	<u>8200</u>	ppm System
(A) Initial Hydrostatic Mud	<u>2367</u>	PSI	AK1 Recorder No.	<u>13337</u>	Range	<u>3925</u>			
(B) First Initial Flow Pressure	<u>150</u>	PSI	@ (depth)	<u>4836</u>	w/Clock No.	<u>28813</u>			
(C) First Final Flow Pressure	<u>160</u>	PSI	AK1 Recorder No.	<u>10333</u>	Range	<u>4075</u>			
(D) Initial Shut-In Pressure	<u>1487</u>	PSI	@ (depth)	<u>4848</u>	w/Clock No.	<u>31152</u>			
(E) Second Initial Flow Pressure	<u>198</u>	PSI	AK1 Recorder No.	<u>—</u>	Range	<u>—</u>			
(F) Second Final Flow Pressure	<u>250</u>	PSI	@ (depth)	<u>—</u>	w/Clock No.	<u>—</u>			
(G) Final Shut-In Pressure	<u>1488</u>	PSI	Initial Opening	<u>30</u>	Test	<u>Y 600</u>			
(H) Final Hydrostatic Mud	<u>2342</u>	PSI	Initial Shut-In	<u>60</u>	Jars	<u>✓ 200</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	<u>Chuck Schmaltz</u>	Final Flow	<u>60</u>	Safety Joint	<u>✓ 50</u>
Our Representative	<u>John Neal</u>	Final Shut-In	<u>60</u>	Straddle	
				Circ. Sub	
				Sampler	
				Extra Packer	
				Other	<u>200 50</u>
				TOTAL PRICE \$	<u>900</u>

TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name HAYS TRUST Test No. 4 Date 5/10/93
Company CHARTER PRODUCTION COMPANY Zone LKC
Address 224 EAST DOUGLAS #400 WICHITA KS 67202 Elevation 2742
Co. Rep./Geo. CHUCK SCHMALTZ Cont. ZENITH RIG #6 Est. Ft. of Pay _____
Location: Sec. 19 Twp. 34S Rge. 31W Co. SEWARD State KS

Interval Tested 4876-4898 Drill Pipe Size 4.5" XH
Anchor Length 22 Wt. Pipe I.D. - 2.7 Ft. Run _____
Top Packer Depth 4871 Drill Collar - 2.25 Ft. Run 580
Bottom Packer Depth 4876 Mud Wt. 8.5 lb/Gal.
Total Depth 4898 Viscosity 60 Filtrate 6.8

Tool Open @ 1:50 AM Initial Blow STRONG BLOW - SLOW BUILD TO 9"
NO BLOW BACK

Final Blow STRONG BLOW - BOTTOM OF BUCKET IN 40 MINUTES - NO BLOW BACK
HIT BRIDGE APPROX. 300' OFF BOTTOM GOING IN HOLE

Recovery - Total Feet 730 Flush Tool? NO

Rec. 60 Feet of MUD
Rec. 670 Feet of SLIGHTLY MUD CUT WATER
Rec. _____ Feet of _____
Rec. _____ Feet of _____
Rec. _____ Feet of _____

BHT 124 °F Gravity _____ °API @ _____ °F Corrected Gravity _____ °API
RW 0.14 @ 50 °F Chlorides 80000 ppm Recovery Chlorides 6200 ppm System

(A) Initial Hydrostatic Mud 2326.3 PSI AK1 Recorder No. 13337 Range 3975

(B) First Initial Flow Pressure 106.5 PSI @ (depth) 4879 w / Clock No. 25813

(C) First Final Flow Pressure 193.4 PSI AK1 Recorder No. 10333 Range 4075

(D) Initial Shut-in Pressure 1426.9 PSI @ (depth) 4895 w / Clock No. 31152

(E) Second Initial Flow Pressure 256.3 PSI AK1 Recorder No. _____ Range _____

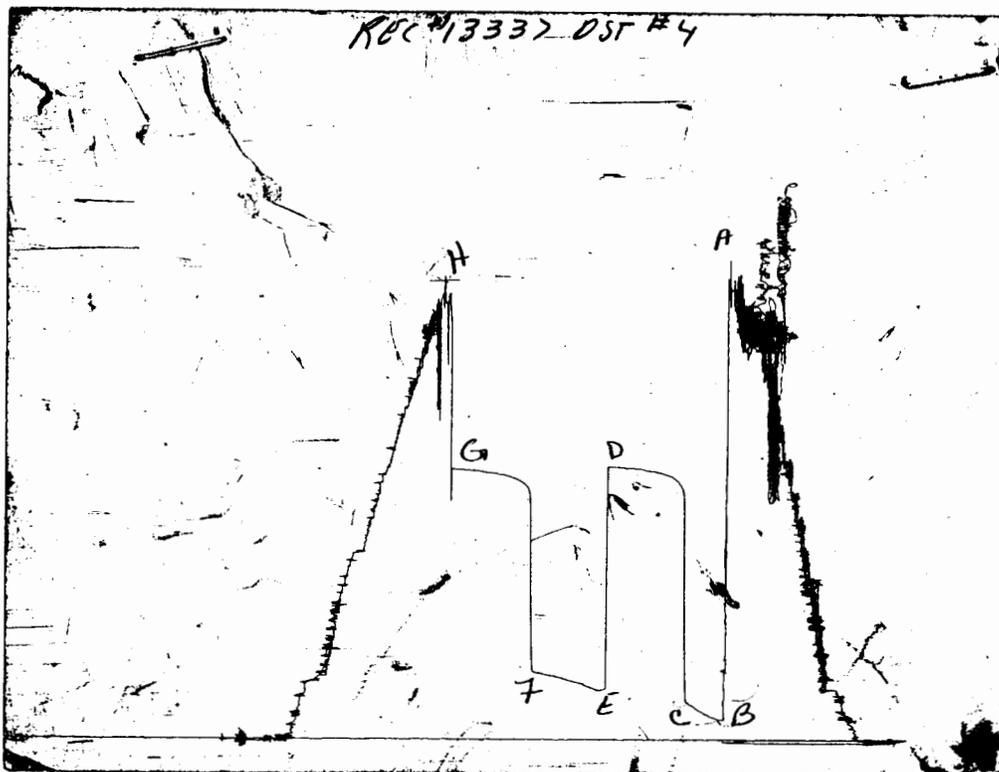
(F) Second Final Flow Pressure 351.9 PSI @ (depth) _____ w / Clock No. _____

(G) Final Shut-in Pressure 1423.7 PSI Initial Opening 30 Final Flow 60

(H) Final Hydrostatic Mud 2281.9 PSI Initial Shut-in 60 Final Shut-in 60

Our Representative JOHN RIEDL

CHART PAGE



This is an actual photograph of recorder chart

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	2318	2326.3
(B) FIRST INITIAL FLOW PRESSURE	98	106.5
(C) FIRST FINAL FLOW PRESSURE	187	193.4
(D) INITIAL CLOSED-IN PRESSURE	1420	1426.9
(E) SECOND INITIAL FLOW PRESSURE	247	256.3
(F) SECOND FINAL FLOW PRESSURE	346	351.9
(G) FINAL CLOSED-IN PRESSURE	1417	1423.7
(H) FINAL HYDROSTATIC MUD	2275	2281.9

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 5383

Well Name & No. HAYS TRUST #1 Test No. 4 Date 5/10/93
Company CHARTER PRODUCTION CO Zone Tested L/KC
Address 224 E DOUGLAS SUITE 40 W, KS 67202 Elevation 2742 K.B.
Co. Rep./Geo. TYLER SANDERS Cont. ZENITH DRILLING #6 Est. Ft. of Pay _____
Location: Sec. 19 Twp. 34S Rge. 31W Co. SEWARD State KS
No. of Copies _____ Distribution Sheet Yes No Turnkey _____ Yes No Evaluation

Interval Tested 4876 - 4898 Drill Pipe Size 4 1/2 X 11
Anchor Length 22 FT Top Choke — 1" _____ Bottom Choke — 3/4" _____
Top Packer Depth 4821 Hole Size — 7 7/8" _____ Rubber Size — 6 3/4" _____
Bottom Packer Depth 4876 Wt. Pipe I.D. — 2.7 Ft. Run 0
Total Depth 4898 Drill Collar — 2.25 Ft. Run 580
Mud Wt. 8.5 lb/gal. Viscosity 60 Filtrate 6.8
Tool Open @ 1:50 AM Initial Blow STRONG BLOW - SLOW BUILD TO 9"
NO BLOWBACK

Final Blow STRONG BLOW - BTM BUCKET IN 40 MINUTES NO BLOWBACK
REMARKS HIT BRIDGE APPROX 300' OFF BTM GOING IN HOLE

Recovery — Total Feet 730 Feet of Gas In Pipe _____ Flush Tool? NO

Rec.	Feet Of	%gas	%oil	%water	%mud
<u>60</u>	<u>MUD</u>				
<u>670</u>	<u>SL MUD CUT WATER</u>				

BHT 124° °F Gravity _____ °API @ _____ °F Corrected Gravity _____ °API
RW .14 @ 50 °F Chlorides 80,000 ppm Recovery Chlorides 6200 ppm System

(A) Initial Hydrostatic Mud 2318 PSI AK1 Recorder No. 13337 ^{READ} Range 3925
(B) First Initial Flow Pressure 98 PSI @ (depth) 4879 w/Clock No. 25813
(C) First Final Flow Pressure 187 PSI AK1 Recorder No. 10333 Range 4025
(D) Initial Shut-In Pressure 1420 PSI @ (depth) 4895 w/Clock No. 31152
(E) Second Initial Flow Pressure 247 PSI AK1 Recorder No. _____ Range _____
(F) Second Final Flow Pressure 346 PSI @ (depth) _____ w/Clock No. _____
(G) Final Shut-In Pressure 1417 PSI Initial Opening 30 Test ✓ 600
(H) Final Hydrostatic Mud 2275 PSI Initial Shut-In 60 Jars ✓ 200

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Final Flow 60 Safety Joint ✓ 50
Final Shut-In 60 Straddle _____
Circ. Sub _____
Sampler _____

Approved By Tyler H. Sanders

Our Representative John Reed

Extra Packer _____
Other _____
TOTAL PRICE \$ 850

TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name HAYS TRUST Test No. 5 Date 5/11/93
Company CHARTER PRODUCTION COMPANY Zone MARMATON
Address 224 EAST DOUGLAS #400 WICHITA KS 67202 Elevation 2742
Pro. Rep./Geo. CHUCK SCHMALTZ Cont. ZENITH RIG #6 Est. Ft. of Pay 5
Location: Sec. 19 Twp. 34S Rge. 31W Co. SEWARD State KS

Interval Tested 5150-5246 Drill Pipe Size 4.5" XH
Anchor Length 96 Wt. Pipe I.D. - 2.7 Ft. Run _____
Top Packer Depth 5145 Drill Collar - 2.25 Ft. Run 580
Bottom Packer Depth 5150 Mud Wt. 8.9 lb/Gal.
Total Depth 5246 Viscosity 54 Filtrate 6.8

Tool Open @ 4:11 PM Initial Blow STRONG BLOW - BOTTOM OF BUCKET IN 30 SECONDS
GAS TO SURFACE IN 3 MINUTES GAUGED @ 3274 MCF/DAY
Initial Blow STRONG BLOW - GAS TO SURFACE AS TOOL OPENED
GAUGED @ 2441 MCF/DAY

Recovery - Total Feet 200 Flush Tool? NO

Sec. 4925 Feet of GAS IN PIPE
Sec. 200 Feet of MUD 100%MUD
Rec. _____ Feet of _____
Sec. _____ Feet of _____
Sec. _____ Feet of _____

HT 125 °F Gravity _____ °API @ _____ °F Corrected Gravity _____ °API
MW _____ @ _____ °F Chlorides _____ ppm Recovery Chlorides 3300 ppm System

(A) Initial Hydrostatic Mud 2481.2 PSI AK1 Recorder No. 13337 Range 3975

(B) First Initial Flow Pressure 791.7 PSI @ (depth) 5152 w / Clock No. 27566

(C) First Final Flow Pressure 656.2 PSI AK1 Recorder No. 10333 Range 4075

(D) Initial Shut-in Pressure 1558.5 PSI @ (depth) 5243 w / Clock No. 31152

(E) Second Initial Flow Pressure 792.7 PSI AK1 Recorder No. _____ Range _____

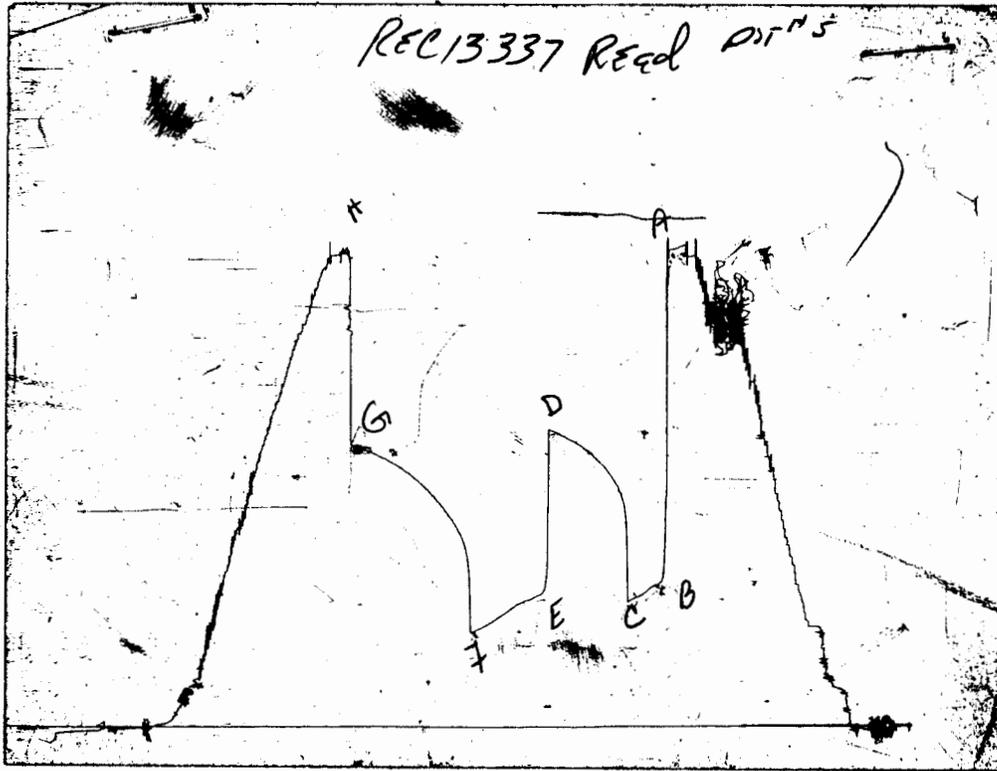
(F) Second Final Flow Pressure 500.0 PSI @ (depth) _____ w / Clock No. _____

(G) Final Shut-in Pressure 1474.0 PSI Initial Opening 30 Final Flow 60

(H) Final Hydrostatic Mud 2456.3 PSI Initial Shut-in 60 Final Shut-in 90

Our Representative JOHN RIEDL

CHART PAGE



This is an actual photograph of recorder chart

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	2476	2481.2
(B) FIRST INITIAL FLOW PRESSURE	759	791.7
(C) FIRST FINAL FLOW PRESSURE	661	656.2
(D) INITIAL CLOSED-IN PRESSURE	1562	1558.5
(E) SECOND INITIAL FLOW PRESSURE	700	792.7
(F) SECOND FINAL FLOW PRESSURE	504	500
(G) FINAL CLOSED-IN PRESSURE	1484	1474
(H) FINAL HYDROSTATIC MUD	2447	2456.3

INITIAL FLOW

RECORDER # 13337 DST # 5

TIME(MIN)	PRESSURE	<>PRESSURE
3	791.7	791.7
6	753.5	-38.3
9	744.6	-8.8
12	735.8	-8.8
15	718.1	-17.7
18	700.4	-17.7
21	688.6	-11.8
24	680.8	-7.9
27	670.9	-9.8
30	663.1	-7.9
33	656.2	-6.9

FINAL FLOW

RECORDER # 24174 DST # 2

TIME(MIN)	PRESSURE	<> PRESSURE
3	792.7	792.73
6	706.3	-86.41
9	690.6	-15.72
12	681.8	-8.84
15	670.9	-10.81
18	663.1	-7.86
21	656.2	-6.88
24	647.4	-8.85
27	636.5	-10.81
30	621.8	-14.75
33	606.1	-15.73
36	592.3	-13.77
39	579.5	-12.75
42	564.8	-14.72
45	553.0	-11.78
48	539.3	-13.75
51	528.5	-10.80
54	518.7	-9.82
57	509.8	-8.84
60	500.0	-9.83

HAYS TRUST
INITIAL

DST #5
SHUTIN
30 INITIAL FLOW TIME

SLOPE 658818.3 PSI/CYCLE
P* 1757.19 PSI

TIME(MIN)	Pws (psi)	Log <>		Horn T
		Horn T	PRESSURE	
3	1122.7	1.041	1122.7	11
6	1214.5	0.778	91.8	6
9	1266.4	0.637	51.9	4
12	1299.4	0.544	32.9	4
15	1329.3	0.477	29.9	3
18	1357.2	0.426	27.9	3
21	1378.2	0.385	21.0	2
24	1397.2	0.352	19.0	2
27	1416.1	0.325	19.0	2
30	1439.1	0.301	23.0	2
33	1454.0	0.281	15.0	2
36	1467.0	0.263	13.0	2
39	1480.0	0.248	13.0	2
42	1491.8	0.234	11.8	2
45	1501.6	0.222	9.8	2
X 48	1509.5	0.211	7.8	2
51	1523.2	0.201	13.7	2
54	1533.0	0.192	9.8	2
57	1542.8	0.184	9.8	2
60	1552.6	0.176	9.8	2
X 63	1558.5	0.169	5.9	1

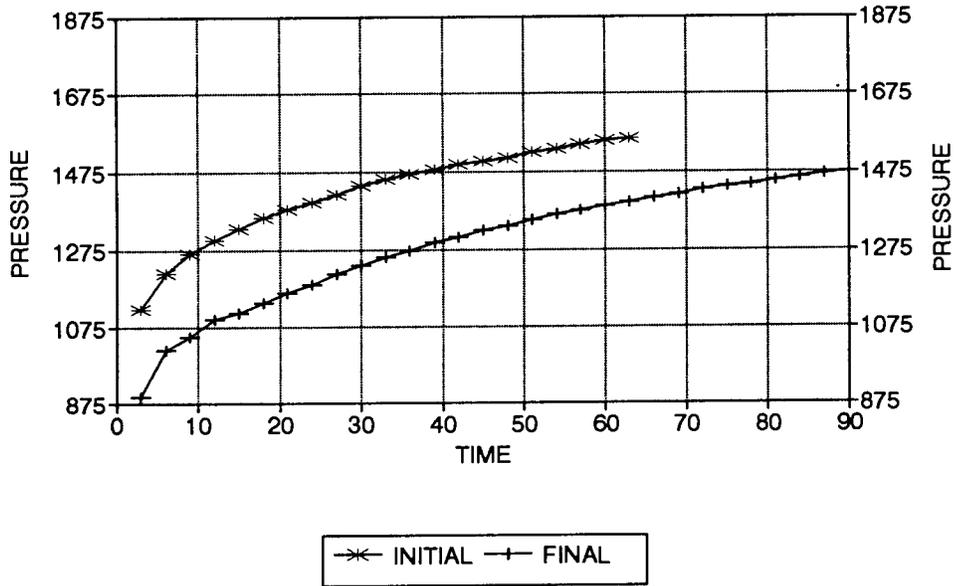
HAYS TRUST
FINAL

DST #5
SHUTIN
90 TOTAL FLOW TIME

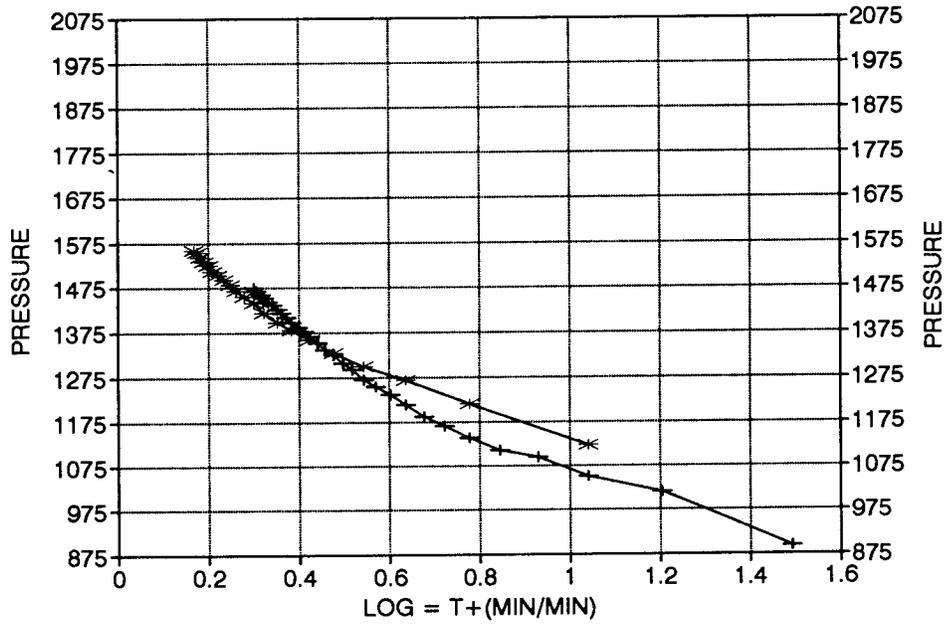
SLOPE 1574641.7 PSI/CYCLE
P* 1751.5 PSI

	Pws (psi)	Log Horn T	<> PRESSURE	Horn T	
	3	892.9	1.491	892.9	31
	6	1015.1	1.204	122.2	16
	9	1051.0	1.041	35.8	11
	12	1094.8	0.929	43.8	9
	15	1110.7	0.845	16.0	7
	18	1137.7	0.778	26.9	6
	21	1164.6	0.723	27.0	5
	24	1184.6	0.677	20.0	5
	27	1211.5	0.637	26.9	4
	30	1234.5	0.602	22.9	4
	33	1254.4	0.571	20.0	4
	36	1270.4	0.544	16.0	4
	39	1291.4	0.520	21.0	3
	42	1306.3	0.497	15.0	3
	45	1324.3	0.477	18.0	3
	48	1334.3	0.459	10.0	3
	51	1351.3	0.442	17.0	3
	54	1364.2	0.426	13.0	3
	57	1376.2	0.411	12.0	3
	60	1386.2	0.398	10.0	3
	63	1397.2	0.385	11.0	2
X	66	1407.1	0.374	10.0	2
	69	1416.1	0.363	9.0	2
	72	1427.1	0.352	11.0	2
	75	1435.1	0.342	8.0	2
	78	1442.1	0.333	7.0	2
	81	1452.1	0.325	10.0	2
	84	1459.0	0.316	7.0	2
	87	1468.0	0.308	9.0	2
X	90	1474.0	0.301	6.0	2

HAYS TRUST / DST #5 DELTA T DELTA P



HORNER PLOT



GAS VOLUME REPORT

CHARTER PRODUCTION COMPANY

HAYS TRUST

DST # 5

MIN	PSIG	ORIFICE	MCF/D	MIN	PSIG	ORIFICE	MCF/D
5	20	1.5	1949	10	40	1.5	3155
10	35	1.5	2858	20	38	1.5	3036
15	39	1.5	3095	30	35	1.5	2858
20	40	1.5	3155	40	30	1.5	2558
25	42	1.5	3274	50	29	1.5	2503
30	42	1.5	3274	60	28	1.5	2441

Remarks: GAS TO SURFACE IN 3 MINUTES - GAS WILL BURN

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 5384

Well Name & No. <u>Hays Trust # 1</u>	Test No. <u>5</u>	Date <u>5-11-93</u>
Company <u>Charter Production Co</u>	Zone Tested <u>Marathon</u>	
Address <u>224 E Douglas Suite 400 Wks 67202</u>	Elevation <u>2742 KB</u>	
Co. Rep./Geo. <u>Tyler Sanders</u>	Cont. <u>ZENITH DRILLING</u>	Est. Ft. of Pay _____
Location: Sec. <u>19</u>	Twp. <u>34S</u>	Rge. <u>31W</u>
Co. <u>Seward</u>	State <u>KS</u>	
No. of Copies _____	Distribution Sheet _____	Yes _____ No _____ Turnkey _____
Yes _____	No _____	Yes _____ <input checked="" type="checkbox"/> Evaluation

Interval Tested <u>5150-5246</u>	Drill Pipe Size <u>4 1/2 x 1</u>
Anchor Length <u>96</u>	Top Choke — 1" _____ Bottom Choke — 3/4" _____
Top Packer Depth <u>5145</u>	Hole Size — 7 7/8" _____ Rubber Size — 6 3/4" _____
Bottom Packer Depth <u>5145 5150</u>	Wt. Pipe I.D. — 2.7 Ft. Run _____ <u>D</u>
Total Depth <u>5246</u>	Drill Collar — 2.25 Ft. Run <u>580 H90</u>
Mud Wt. <u>8.9</u> lb/gal.	Viscosity <u>54</u> Filtrate <u>6.8</u>
Tool Open @ <u>4:11 PM</u>	Initial Blow <u>Strong Blow bottom bucket in 30 sec</u>
	<u>gas to surf, in 3 min EPSIG @ 42 MCF 32743</u>
Final Blow <u>Strong Blow gas to surf as tool opened (EPSIG 28 MCF 2443)</u>	

Recovery — Total Feet <u>200</u>	Feet of Gas in Pipe <u>4925</u>	Flush Tool? <u>NO</u>
Rec. <u>200</u> Feet Of <u>Mud</u>	% gas _____ % oil _____	% water <u>100</u> % mud _____
Rec. _____ Feet Of _____	% gas _____ % oil _____	% water _____ % mud _____
Rec. _____ Feet Of _____	% gas _____ % oil _____	% water _____ % mud _____
Rec. _____ Feet Of _____	% gas _____ % oil _____	% water _____ % mud _____
Rec. _____ Feet Of _____	% gas _____ % oil _____	% water _____ % mud _____

BHT <u>125</u> °F Gravity _____	°API @ _____	°F Corrected Gravity _____	°API _____
RW _____ @ _____	°F Chlorides _____	ppm Recovery _____	Chlorides <u>33.00</u> ppm System _____
(A) Initial Hydrostatic Mud <u>2476</u>	PSI AK1 Recorder No. <u>13337</u> ^{Roto}	Range <u>3925</u>	
(B) First Initial Flow Pressure <u>759 759</u>	PSI @ (depth) <u>5252</u>	w/Clock No. <u>27566</u>	
(C) First Final Flow Pressure <u>661 661</u>	PSI AK1 Recorder No. <u>10333</u>	Range <u>4075</u>	
(D) Initial Shut-in Pressure <u>1562 1562</u>	PSI @ (depth) <u>5243</u>	w/Clock No. <u>31152</u>	
(E) Second Initial Flow Pressure <u>700 700</u>	PSI AK1 Recorder No. _____	Range _____	
(F) Second Final Flow Pressure <u>504 504</u>	PSI @ (depth) _____	w/Clock No. _____	
(G) Final Shut-in Pressure <u>1484 1484</u>	PSI Initial Opening <u>30</u>	Test <input checked="" type="checkbox"/> <u>760</u>	
(H) Final Hydrostatic Mud <u>2447</u>	PSI Initial Shut-in <u>60</u>	Jars <input checked="" type="checkbox"/> <u>200</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.

Final Flow <u>60</u>	Safety Joint <input checked="" type="checkbox"/> <u>50</u>
Final Shut-in <u>90</u>	Straddle _____
	Circ. Sub <input checked="" type="checkbox"/> <u>N/C</u>
	Sampler _____
	Extra Packer _____
	Other <u>WAL 50</u>
	TOTAL PRICE \$ <u>1000</u>

Approved By Tyler H. Sanders

Our Representative John Reed

WELL NAME HAYS TRUST DST # 5 RECORDER # 13337

INIT. HYD. MUD. 2504 2470 PSI FINAL HYD. MUD 2419 2452 PSI

INITIAL FLOW
MINUTES 3
INTERVAL 30

INITIAL SHUTIN
MINUTES 3
INTERVAL 63

FINAL FLOW
MINUTES 3
INTERVAL 60

FINAL SHUTIN
MINUTES 3
INTERVAL 90

INITIAL FLOW MINUTES	INITIAL FLOW	INITIAL SHUTIN MINUTES	INITIAL SHUTIN	FINAL FLOW MINUTES	FINAL FLOW	FINAL SHUTIN MINUTES	FINAL SHUTIN
0	803	0	665	1	804	0	500
3	764	3	1138	2	716	3	906
6	755	6	1230	3	700	6	1030
9	746	9	1282	4	691	9	1066
12	728	12	1315	5	680	12	1100
15	710	15	1345	6	672	15	1126
18	698	18	1373	7	665	18	1153
21	690	21	1394	8	656	21	1180
24	680	24	1413	9	645	24	1200
27	672	27	1432	10	630	27	1227
30	665	30	1455	11	614	30	1250
		33	1470	12	600	33	1270
		36	1483	13	587	36	1286
		39	1496	14	572	39	1307
		42	1508	15	560	42	1322
		45	1518	16	546	45	1340
		48	1526	17	535	48	1350
		51	1540	18	525	51	1367
		54	1550	19	516	54	1380
		57	1560	20	506	57	1392
		60	1570	21	500	60	1402
		63	1576	22		63	1413
				23		66	1423
				24		69	1432
				25		72	1443
				26		75	1451
				27		78	1458

TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name HAYS TRUST Test No. 6 Date 5/15/93
Company CHARTER PRODUCTION COMPANY Zone ST LOUIS
Address 224 EAST DOUGLAS #400 WICHITA KS 67202 Elevation 2742
Op. Rep./Geo. CHUCK SCHMALTZ Cont. ZENITH RIG #6 Est. Ft. of Pay _____
Location: Sec. 19 Twp. 34S Rge. 31W Co. SEWARD State KS

Interval Tested 6405-6420 Drill Pipe Size 4.5" XH
Anchor Length 15 Wt. Pipe I.D. - 2.7 Ft. Run _____
Trip Packer Depth 6400 Drill Collar - 2.25 Ft. Run 581
Bottom Packer Depth 6405 Mud Wt. 8.9 lb/Gal.
Total Depth 6420 Viscosity 53 Filtrate 6.4

Well Open @ 7:05 PM Initial Blow SURFACE BLOW - BUILT TO 2 1/2"

Well Blow SURFACE BLOW THROUGHOUT

Recovery - Total Feet 20 Flush Tool? NO

0c. 20 Feet of DRILLING MUD WITH SPOTS OF OIL

1c. _____ Feet of _____

2c. _____ Feet of _____

3c. _____ Feet of _____

4c. _____ Feet of _____

WT 140 °F Gravity _____ °API @ _____ °F Corrected Gravity _____ °API

KW _____ @ _____ °F Chlorides _____ ppm Recovery Chlorides 1800 ppm System

(A) Initial Hydrostatic Mud 3161.8 PSI AK1 Recorder No. 13277 Range 4125

(B) First Initial Flow Pressure 39.2 PSI @ (depth) 6407 w / Clock No. 25813

(C) First Final Flow Pressure 39.2 PSI AK1 Recorder No. 5495 Range 4200

(D) Initial Shut-in Pressure 1105.9 PSI @ (depth) 6417 w / Clock No. 27894

(E) Second Initial Flow Pressure 53.6 PSI AK1 Recorder No. _____ Range _____

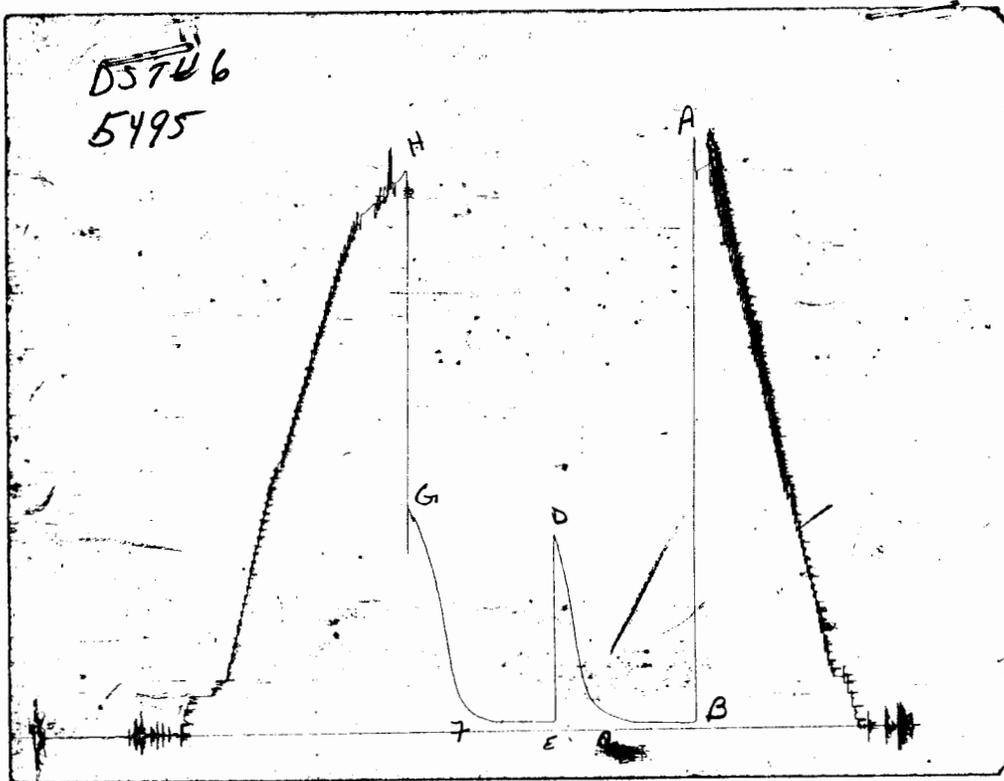
(F) Second Final Flow Pressure 53.6 PSI @ (depth) _____ w / Clock No. _____

(G) Final Shut-in Pressure 1267.5 PSI Initial Opening 45 Final Flow 45

(H) Final Hydrostatic Mud 3108.1 PSI Initial Shut-in 60 Final Shut-in 60

Sur Representative TOM HORACEK

CHART PAGE



This is an actual photograph of recorder chart

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	3158	3161.8
(B) FIRST INITIAL FLOW PRESSURE	33	39.2
(C) FIRST FINAL FLOW PRESSURE	33	39.2
(D) INITIAL CLOSED-IN PRESSURE	1098	1105.9
(E) SECOND INITIAL FLOW PRESSURE	45	53.6
(F) SECOND FINAL FLOW PRESSURE	45	53.6
(G) FINAL CLOSED-IN PRESSURE	1256	1267.5
(H) FINAL HYDROSTATIC MUD	3096	3108.1

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 5505

Well Name & No. <u>Hays Trust #1</u>	Test No. <u>#6</u>	Date <u>5-15-93</u>
Company <u>Charter Production Company</u>	Zone Tested <u>St Louis</u>	
Address <u>224 E. Douglas, Suite 400 Wichita, Ks 67202</u>	Elevation <u>2742 KB</u>	
Co. Rep./Geo. <u>Chuck Schmalz</u>	cont. <u>Zenith Drllg #6</u>	Est. Ft. of Pay _____
Location: Sec. <u>19</u>	Twp. <u>34</u>	Rge. <u>31</u> Co. <u>Seward</u> State <u>Ks.</u>
No. of Copies _____	Distribution Sheet _____	Yes _____ No _____ Turnkey _____ Yes _____ No _____ Evaluation _____

Interval Tested <u>6405-6420</u>	Drill Pipe Size <u>4.5 X-Hole</u>
Anchor Length <u>15'</u>	Top Choke — 1" _____ Bottom Choke — 3/4" _____
Top Packer Depth <u>6400</u>	Hole Size — 77/8" _____ Rubber Size — 63/4" _____
Bottom Packer Depth <u>6405</u>	Wt. Pipe I.D. — 2.7 Ft. Run _____
Total Depth <u>6420</u>	Drill Collar — 2.25 Ft. Run <u>581'</u>
Mud Wt. <u>8.9</u> lb/gal.	Viscosity <u>53</u> Filtrate <u>6.4</u>
Tool Open @ <u>7:05 pm</u>	Initial Blow <u>surface blow - built to 2 1/2 in.</u>

Final Blow surface blow through out.

Recovery — Total Feet <u>20'</u>	Feet of Gas In Pipe _____	Flush Tool? <u>NO</u>
Rec. _____ Feet Of _____	%gas _____ %oil _____ %water _____ %mud _____	
Rec. _____ Feet Of _____	%gas _____ %oil _____ %water _____ %mud _____	
Rec. <u>20'</u> Feet Of <u>Drllg mud w/spots oil</u>	%gas _____ %oil _____ %water _____ %mud _____	
Rec. _____ Feet Of _____	%gas _____ %oil _____ %water _____ %mud _____	
Rec. _____ Feet Of _____	%gas _____ %oil _____ %water _____ %mud _____	

BHT 140 °F Gravity _____ °API @ _____ °F Corrected Gravity _____ °API

RW _____ @ _____ °F Chlorides _____ ppm Recovery Chlorides 1800 ppm System

(A) Initial Hydrostatic Mud 3158 PSI Ak1 Recorder No. 13277 Range 4125

(B) First Initial Flow Pressure 33 PSI @ (depth) 6407 w/Clock No. 25813

(C) First Final Flow Pressure 33 PSI AK1 Recorder No. 5495 Range 4200

(D) Initial Shut-In Pressure 1098 PSI @ (depth) 6417 w/Clock No. 27894

(E) Second Initial Flow Pressure 45 PSI AK1 Recorder No. _____ Range _____

(F) Second Final Flow Pressure 45 PSI @ (depth) _____ w/Clock No. _____

(G) Final Shut-In Pressure 1256 PSI Initial Opening 45 Test X 800

(H) Final Hydrostatic Mud 3096 PSI Initial Shut-In 60 Jars X 200

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.

Final Flow 45 Safety Joint X 50

Final Shut-In 60 Straddle _____

Approved By Tom Horacek

Our Representative Tom Horacek

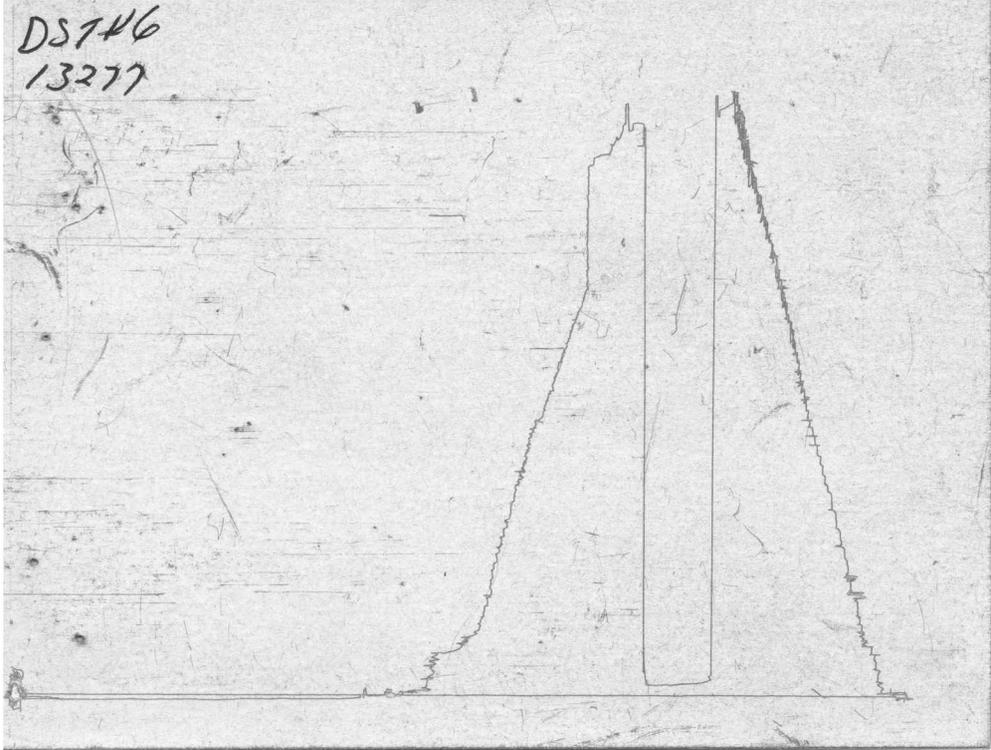
Circ. Sub _____

Sampler _____

Extra Packer _____

Other _____

DST#6
13277



TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name HAYS TRUST Test No. 7 Date 5/17/93
Company CHARTER PRODUCTION COMPANY Zone CHESTER
Address 224 EAST DOUGLAS #400 WICHITA KS 67202 Elevation 2742
Op. Rep./Geo. CHUCK SCHMALTZ Cont. ZENITH RIG #6 Est. Ft. of Pay _____
Location: Sec. 19 Twp. 34S Rge. 31W Co. SEWARD State KS

Interval Tested 5934-5980 Drill Pipe Size 4.5" XH
Anchor Length 46 Wt. Pipe I.D. - 2.7 Ft. Run _____
Top Packer Depth 5929-5934 Drill Collar - 2.25 Ft. Run 494
Bottom Packer Depth 5980 Mud Wt. 9.0 lb/Gal.
Total Depth 6450 Viscosity 60 Filtrate 6.0

Tool Open @ 1:15 AM Initial Blow STRONG BLOW - BOTTOM OF BUCKET IN 30 SECONDS
ISI: BLED OFF BLOW - WEAK BLOW - BOTTOM OF BUCKET IN 55 MINUTES
Initial Blow BOTTOM OF BUCKET AS TOOL OPENED
FSI: BLED OFF BLOW - WEAK BLOW - BUILT TO 3"

Recovery - Total Feet 60 Flush Tool? NO

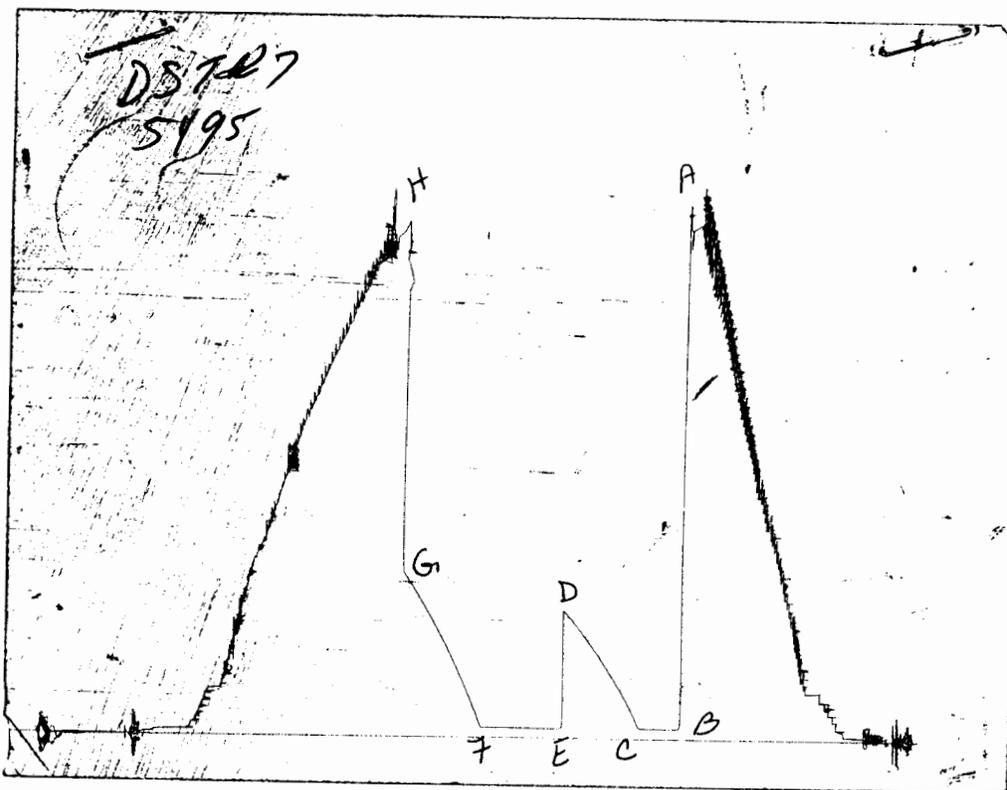
Sec. 390 Feet of GAS IN PIPE
Sec. 60 Feet of GASSY DRILLING MUD
Rec. _____ Feet of _____
Sec. _____ Feet of _____
Sec. _____ Feet of _____

HT 134 °F Gravity _____ °API @ _____ °F Corrected Gravity _____ °API
pH _____ @ _____ °F Chlorides _____ ppm Recovery Chlorides 1800 ppm System

A) Initial Hydrostatic Mud 2910.8 PSI AK1 Recorder No. 13277 Range 4125
B) First Initial Flow Pressure 65.3 PSI @ (depth) 5939 w / Clock No. 27894
C) First Final Flow Pressure 65.3 PSI AK1 Recorder No. 5495 Range 4200
D) Initial Shut-in Pressure 736.4 PSI @ (depth) 5971 w / Clock No. 25813
E) Second Initial Flow Pressure 65.3 PSI AK1 Recorder No. 11038 Range 4400
F) Second Final Flow Pressure 65.3 PSI @ (depth) 6447 w / Clock No. 3942
G) Final Shut-in Pressure 946.8 PSI Initial Opening 30 Final Flow 60
H) Final Hydrostatic Mud 2831.8 PSI Initial Shut-in 60 Final Shut-in 60

Our Representative TOM HORACEK

CHART PAGE



This is an actual photograph of recorder chart

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	2898	2910.8
(B) FIRST INITIAL FLOW PRESSURE	56	65.3
(C) FIRST FINAL FLOW PRESSURE	56	65.3
(D) INITIAL CLOSED-IN PRESSURE	727	736.4
(E) SECOND INITIAL FLOW PRESSURE	56	65.3
(F) SECOND FINAL FLOW PRESSURE	56	65.3
(G) FINAL CLOSED-IN PRESSURE	939	946.8
(H) FINAL HYDROSTATIC MUD	2824	2831.8

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 5506

Well Name & No. <u>Hays Trust #1</u>	Test No. <u>#7</u>	Date <u>5-17-93</u>
Company <u>Charter Production Company</u>	Zone Tested <u>Chester</u>	
Address <u>224 E. Douglas, Suite 400 Wichita, KS 67202</u>	Elevation <u>2742 KB</u>	
Co. Rep./Geo. <u>Chuck Schmalte cont. Zenith Drils #6</u>	Est. Ft. of Pay _____	
Location: Sec. <u>19</u>	Twp. <u>34</u>	Rge. <u>31</u> Co. <u>Seward</u> State <u>KS</u>
No. of Copies _____	Distribution Sheet _____	Yes _____ No _____ Turnkey _____ Yes _____ No _____ Evaluation _____

Interval Tested <u>5934-5980</u>	Drill Pipe Size <u>4.5 x-Hole</u>
Anchor Length <u>46'</u>	Top Choke — 1" _____ Bottom Choke — 3/4" _____
Top Packer Depth <u>5929 - 5934</u>	Hole Size — 77/8" _____ Rubber Size — 63/4" _____
Bottom Packer Depth <u>5980</u>	Wt. Pipe I.D. — 2.7 Ft. Run _____
Total Depth <u>6450</u>	Drill Collar — 2.25 Ft. Run <u>494'</u>
Mud Wt. <u>9.0</u> lb/gal.	Viscosity <u>60</u> Filtrate <u>6.0</u>

Tool Open @ 1:15 AM Initial Blow Strong blow - BOB in 30 sec.
FSI - Bled off blow - weak blow - BOB in 55 min.

Final Blow BOB as tool opened
FSI - Bled off blow - weak blow - built to 3 in.

Recovery — Total Feet 60' Feet of Gas in Pipe 390' Flush Tool? NO

Rec.	Feet Of	% gas	% oil	% water	% mud
Rec.	Feet Of	% gas	% oil	% water	% mud
Rec. <u>60'</u>	Feet Of <u>Cassy Drls mud</u>	% gas	% oil	% water	% mud
Rec.	Feet Of	% gas	% oil	% water	% mud
Rec.	Feet Of	% gas	% oil	% water	% mud

BHT 134 °F Gravity _____ °API @ _____ °F Corrected Gravity _____ °API

RW _____ @ _____ °F Chlorides _____ ppm Recovery Chlorides 1800 ppm System

- (A) Initial Hydrostatic Mud 2898 PSI Ak1 Recorder No. 13277 Range 4125
- (B) First Initial Flow Pressure 56 PSI @ (depth) 5939 w/Clock No. 27894
- (C) First Final Flow Pressure 56 PSI AK1 Recorder No. 5495 Range 4200
- (D) Initial Shut-In Pressure 727 PSI @ (depth) 5971 w/Clock No. 25813
- (E) Second Initial Flow Pressure 56 PSI AK1 Recorder No. 11038 Range 4400
- (F) Second Final Flow Pressure 56 PSI @ (depth) 6447 w/Clock No. 3942
- (G) Final Shut-In Pressure 939 PSI Initial Opening 30 Test X 600
- (H) Final Hydrostatic Mud 2824 PSI Initial Shut-In 60 Jars X 200

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.

Final Flow 60 Safety Joint X 50
Final Shut-in 60 Straddle X 250
Circ. Sub _____
Sampler _____

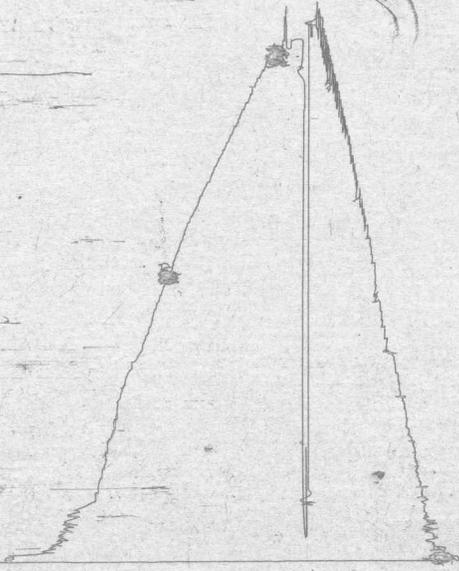
Approved By Chuck Schmalte

Our Representative Tom Harbeck

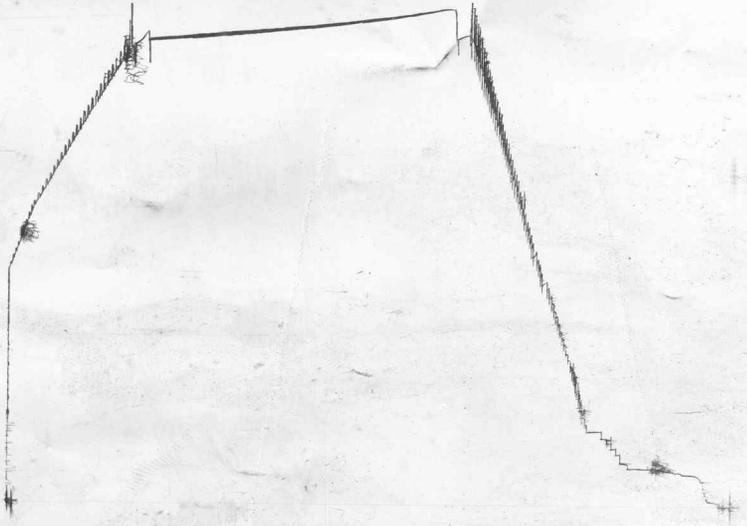
Extra Packer X 150
Other _____

TOTAL PRICE \$ 1250

DS147
13279



DS147
11038



CP X10248 #3

Tic #
5437