

TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

COPY

Drill-Stem Test Data

Well Name WITT "A" #2 Test No. 1 Date 6/26/93
 Company HGB OIL COMPANY Zone MORROW
 Address 1616 GLENARM PLACE #1804 DENVER CO 80202 Elevation 3905
 Co. Rep./Geo. RICHARD HALL Cont. EMPHASIS RIG #10 Est. Ft. of Pay 6
 Location: Sec. 2 Twp. 18S Rge. 43W Co. GREELEY State KS

Interval Tested 5018-5175 Drill Pipe Size 4.5" XH
 Anchor Length 157 Wt. Pipe I.D. - 2.7 Ft. Run _____
 Top Packer Depth 5013 Drill Collar - 2.25 Ft. Run 120
 Bottom Packer Depth 5018 Mud Wt. 9.4 lb/Gal.
 Total Depth 5175 Viscosity 58 Filtrate 11.4

Tool Open @ 10:15 Initial Blow STRONG BLOW OFF BOTTOM IN 1 1/2 MINUTES
GAS TO SURFACE @ 6.5 MIN ON 1" ORIFICE/ISI: BLED OFF BLOW-STRONG OFF BTM
 Final Blow STRONG RETURN OFF BOTTOM IN 30 SECONDS-GAUGED 1/2" ON
3/4" ORIFICE = 56000 MCF/DAY @ FINAL

Recovery - Total Feet 1200 Flush Tool? NO

Rec. 3975 Feet of GAS IN PIPE
 Rec. 850 Feet of CLEAN GASSY OIL-40%GAS/60%OIL
 Rec. 350 Feet of GSY OIL CUT MUD-25%GAS/25%OIL/50%MUD
 Rec. _____ Feet of _____
 Rec. _____ Feet of _____

BHT 122 °F Gravity 37 °API @ 92 °F Corrected Gravity 34 °API
 RW _____ °F Chlorides _____ ppm Recovery Chlorides 7000 ppm System

(A) Initial Hydrostatic Mud 2575.2 PSI AK1 Recorder No. 13309 Range 4700

(B) First Initial Flow Pressure 386.7 PSI @ (depth) 5045 w / Clock No. 27573

(C) First Final Flow Pressure 357.6 PSI AK1 Recorder No. 13339 Range 4025

(D) Initial Shut-in Pressure 400.2 PSI @ (depth) 5170 w / Clock No. 17640

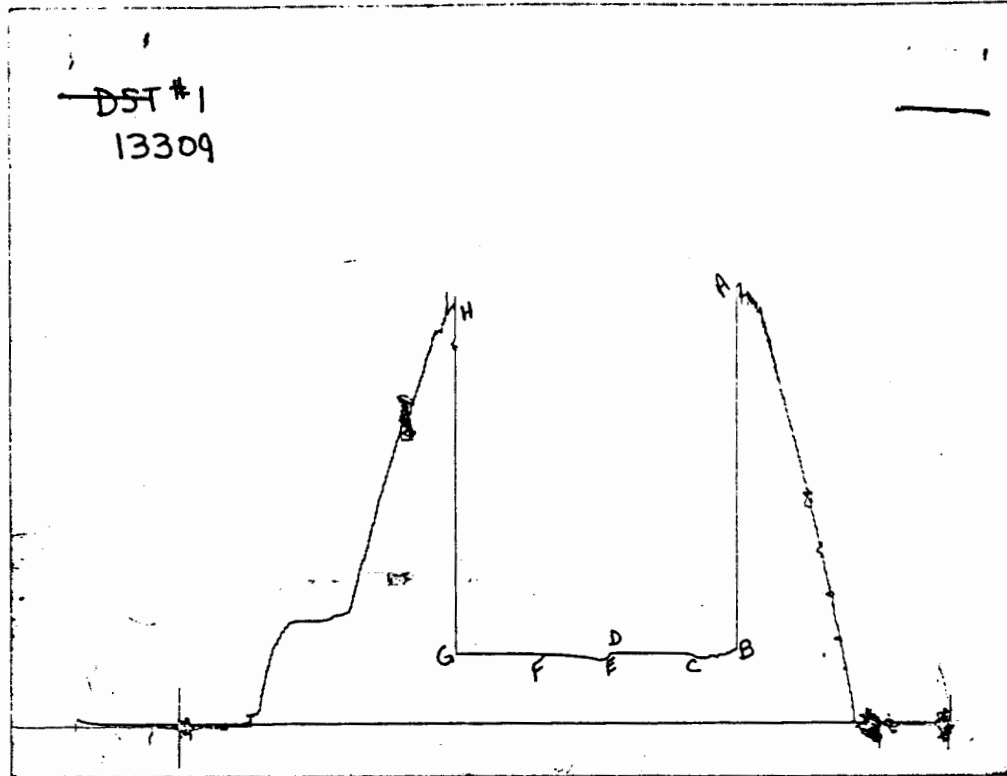
(E) Second Initial Flow Pressure 337.8 PSI AK1 Recorder No. _____ Range _____

(F) Second Final Flow Pressure 397.1 PSI @ (depth) _____ w / Clock No. _____

(G) Final Shut-in Pressure 403.3 PSI Initial Opening 30 Final Flow 60

(H) Final Hydrostatic Mud 2511.8 PSI Initial Shut-in 60 Final Shut-in 60

Our Representative ROD STEINBRINK



This is an actual photograph of recorder chart

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	2543	2575.2
(B) FIRST INITIAL FLOW PRESSURE	374	386.7
(C) FIRST FINAL FLOW PRESSURE	332	357.6
(D) INITIAL CLOSED-IN PRESSURE	395	400.2
(E) SECOND INITIAL FLOW PRESSURE	343	337.8
(F) SECOND FINAL FLOW PRESSURE	395	397.1
(G) FINAL CLOSED-IN PRESSURE	395	403.3
(H) FINAL HYDROSTATIC MUD	2503	2511.8

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

WITT "A" #2 DST 1

2 18S 43W GREELEY KS

ELEVATION:	3905	KB	EST. PAY	6	FT
DATUM:	-1266		ZONE TESTED:	MORROW	
TEST INTERVAL:	5018-5175		TIME INTERVALS:	30-60-60-60	
RECORDER DEPTH:	5170		VISCOSITY:	3.77	CP
BOTTOM HOLE TEMP:	122		HOLE SIZE:	7.875	IN

CUBIC FEET OF GAS IN PIPE:	3625				
TOTAL FEET OF RECOVERY:	1200.00	CORRECTED PIPE FILLUP:	1073.243		
TOTAL BARRELS OF RECOVERY:	15.94	CORR. BARRELS OF RECOVERY:	14.138	BBL	
BARRELS IN DRILL PIPE:	15.36	API GRAVITY:	34		
BARRELS IN WEIGHT PIPE:	0.00	FLUID GRADIENT:	0.370		
BARRELS IN DRILL COLLARS:	0.59				
GAS OIL RATIO:	227.35	CU.FT/BBL			
BUBBLE POINT PRESSURE:	405				
UNCORRECTED INITIAL PRODUCTION:			255.11	BBL	
INITIAL PRODUCTION CORRECTED TO FINAL FLOW PRESSURE:			226.22	BBL/DAY	
INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:			30.923		

INITIAL SLOPE	14.20	PSI/CYCL	FINAL SLOPE	3.95	PSI/CYCLE
INITIAL P*	403.81	PSI	FINAL P*	404.87	PSI

TRANSMISSIBILITY	9309.14	(MD.-FT./CP.)
PERMEABILITY	5852.19	(MD.)
INDICATED FLOW CAPACITY	35113.15	(MD.FT)
PRODUCTIVITY INDEX	10.52	(BARREL/DAY/PSI)
DAMAGE RATIO	0.36	
RADIUS OF INVESTIGATION	725.74	(FT,)
POTENTIOMETRIC SURFACE	-326.10	(FT.)
DRAWDOWN FACTOR	-0.264	(%)

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CALCULATED RECOVERY ANALYSIS

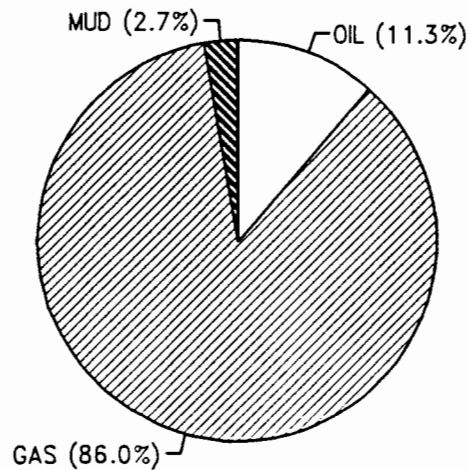
DST

TICKET #

5945

SAMPLE #	TOTAL FEET	GAS		OIL		WATER		MUD	
		%	FEET	%	FEET	%	FEET	%	FEET
DRILL 1	3975	100	3975		0		0		0
PIPE 2	850	40	340	60	510		0		0
3	230	25	57.5	25	57.5		0	50	115
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	120	25	30	25	30		0	50	60
COLLAR 2			0		0		0		0
3			0		0		0		0
4			0		0		0		0
5			0		0		0		0
TOTAL	5175		4402.5		597.5		0		175

	BBL OIL=	BBL WATER=	BBL MUD=	BBL GAS =	HRS OPEN	BBL/DAY
	8.21655	0	1.9287	62.32365	1.5	131.4648



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INITIAL FLOW

RECORDER 13339

DST # 1

TIME(MIN)	PRESSURE	<>PRESSURE
0	386.7	386.7
3	363.8	-22.9
6	363.8	0.0
9	363.8	0.0
12	363.8	0.0
15	360.7	-3.1
18	365.9	5.2
21	346.1	-19.8
24	350.3	4.2
27	353.4	3.1
30	357.6	4.2

FINAL FLOW

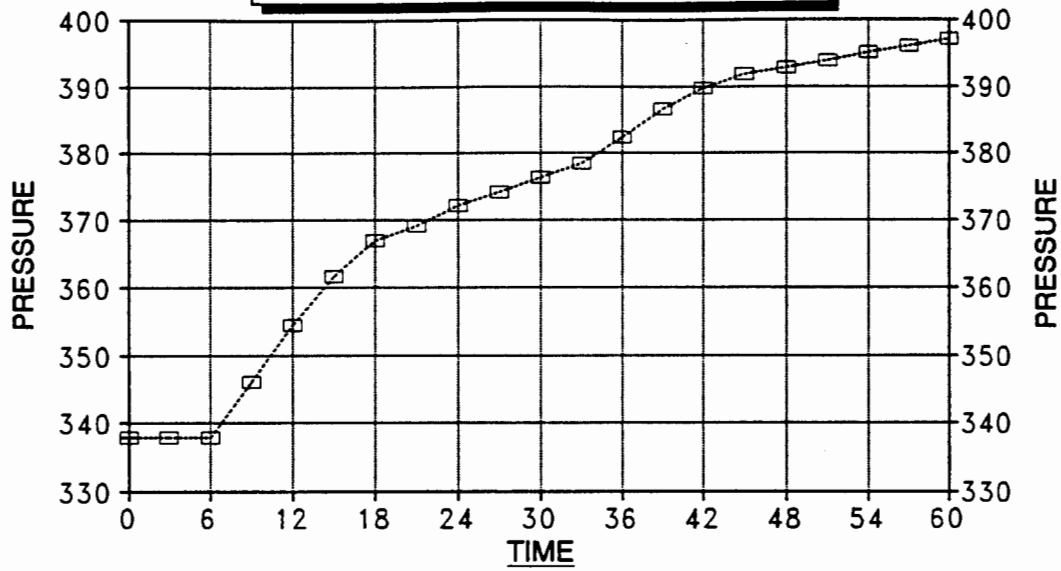
RECORDER 13339

DST # 1

TIME(MIN)	PRESSURE	<> PRESSURE
0	337.8	337.8
3	337.8	0.0
6	337.8	0.0
9	346.1	8.3
12	354.4	8.3
15	361.7	7.3
18	366.9	5.2
21	369.1	2.2
24	372.1	3.0
27	374.2	2.1
30	376.3	2.1
33	378.4	2.1
36	382.5	4.1
39	386.7	4.2
42	389.8	3.1
45	391.9	2.1
48	392.9	1.0
51	393.9	1.0
54	395.1	1.2
57	396.1	1.0
60	397.1	1.0

COPY

DELTA T DELTA P
FINAL FLOW / DST #1



—□— WITT "A" #2

INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:

61.629

WITT "A" #2
INITIAL

DST #1
SHUTIN
30 INITIAL FLOW TIME

SLOPE 14.2 PSI/CYCLE
P* 403.81 PSI

COPY

	TIME(MIN)	Pws (psi)	Log Horn T	<> PRESSURE	Horn T
	-----	-----	-----	-----	-----
	3	373.1	1.041	373.1	11
	6	381.5	0.778	8.4	6
	9	6.8	0.637	-374.7	4
	12	388.9	0.544	382.1	4
	15	391.9	0.477	3.0	3
	18	395.1	0.426	3.2	3
	21	397.1	0.385	2.0	2
	24	398.1	0.352	1.0	2
X	27	399.2	0.325	1.1	2
	30	400.2	0.301	1.0	2
	33	400.2	0.281	0.0	2
	36	400.2	0.263	0.0	2
	39	400.2	0.248	0.0	2
	42	400.2	0.234	0.0	2
	45	400.2	0.222	0.0	2
	48	400.2	0.211	0.0	2
	51	400.2	0.201	0.0	2
	54	400.2	0.192	0.0	2
X	57	400.2	0.184	0.0	2

WITT "A" #2
FINAL

DST #1
SHUTIN
90 TOTAL FLOW TIME

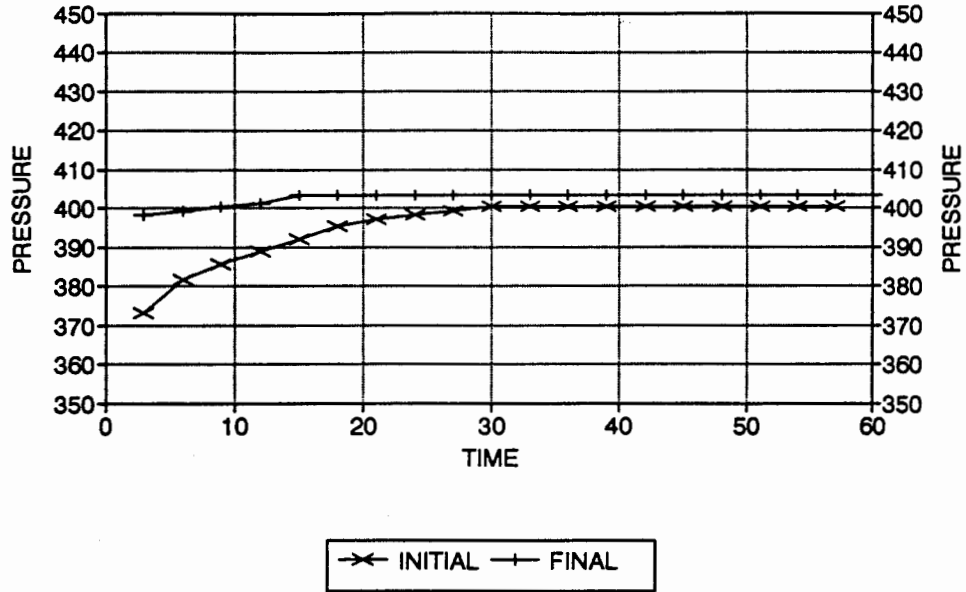
SLOPE 4.0 PSI/CYCLE
P* 404.9 PSI

COPY

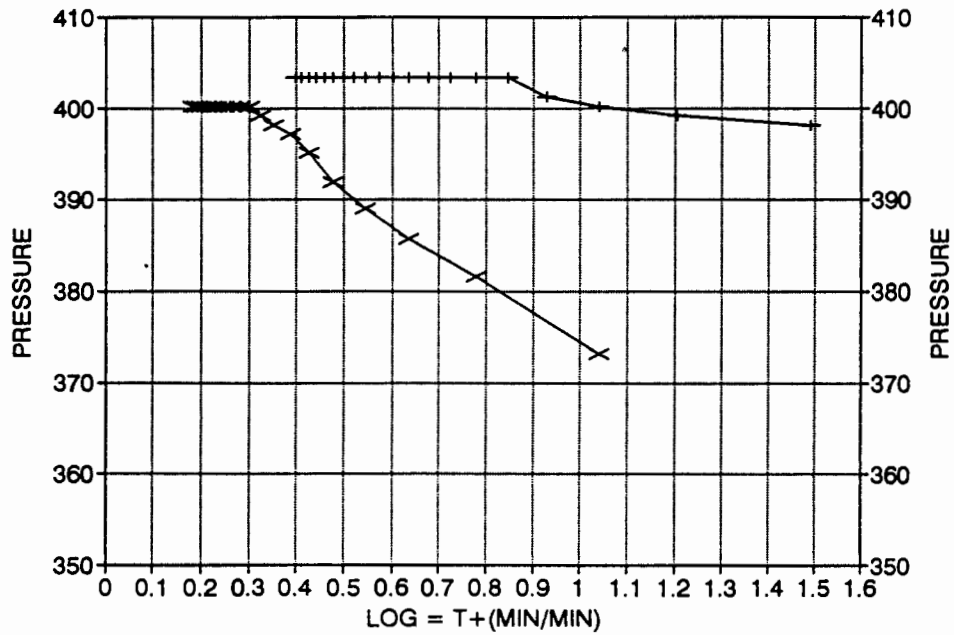
		Log	<>		
	Pws (psi)	Horn T	PRESSURE	Horn T	
	-----	-----	-----	-----	
	3	398.1	1.491	398.1	31
	6	399.2	1.204	1.1	16
	9	400.2	1.041	1.0	11
X	12	401.2	0.929	1.0	9
	15	403.3	0.845	2.1	7
	18	403.3	0.778	0.0	6
	21	403.3	0.723	0.0	5
	24	403.3	0.677	0.0	5
	27	403.3	0.637	0.0	4
	30	403.3	0.602	0.0	4
	33	403.3	0.571	0.0	4
	36	403.3	0.544	0.0	4
	39	403.3	0.520	0.0	3
	42	403.3	0.497	0.0	3
	45	403.3	0.477	0.0	3
	48	403.3	0.459	0.0	3
	51	403.3	0.442	0.0	3
	54	403.3	0.426	0.0	3
	57	403.3	0.411	0.0	3
X	60	403.3	0.398	0.0	3

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WITT "A" #2 / DST #1 DELTA T DELTA P



HORNER PLOT



GAS VOLUME REPORT

COPY

HGB OIL COMPANY

WITT "A" #2

DST # 1

MIN	PSIG	ORIFICE	MCF/D	MIN	PSIG	ORIFICE	MCF/D
1.5	BOTTOM OF BUCKET			0.5	BOTTOM OF BUCKET		
6.5	GTS	1"		5	10"	0.75"	44.8
10	4	1"	283	10	5	0.75"	175
15	5	1"	319	15	5	0.75"	175
20	4	1"	283	20	6	0.75"	194
25	3	1"	242	25	4	0.75"	156
30	2.5	1"	220	30	4	0.75"	156
				35	3	0.75"	133
				40	2	0.75"	108
				45	1.5	0.75"	93
				50	1	0.75"	76
				55	1	0.75"	76
				60	0.5	0.75"	58

Remarks: GAS IS FLAMMABLE AS LONG AS FLAME IS HELD TO IT

FLUID SAMPLER DATA

COPY

Ticket No.: 5945 Date: 6/26/93
 Company: HGB OIL COMPANY
 Lease: WITT "A" #2 Test No.: 1
 County: GREELEY Sec.: 2 Twp.: 18S Rng.: 43W

SAMPLER RECOVERY

Gas 3800
 Oil 100
 Mud 100
 Water
 Other 4 CU FT
 Pressure 475
 TOTAL 4000

PIT MUD ANALYSIS

Chlorides 7000
 Resistivity 0.85 ohms@ 70 F
 Viscosity 58
 Mud Wt. 9.4
 Filtrate 11.4
 Other

SAMPLER ANALYSIS

Resistivity ohms@ F
 Chlorides ppm.
 Gravity 34 corrected @60F

PIPE RECOVERY

TOP

Resistivity ohms@ F
 Chlorides ppm

MIDDLE

Resistivity ohms@ F
 Chlorides ppm

BOTTOM

Resistivity 0.85 ohms@ 70 F
 Chlorides 7000 ppm

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

COPY

Test Ticket

5945

Well Name & No. With 'A' #2 Test No. 1 Date 6-26-93
 Company HGB Oil Company Zone Tested Morrow
 Address 1616 Glenarm Place #1804 Denver, CO. 80202 Elevation 3905 (KB)
 Co. Rep./Geo. Richard Hall Cont. Emphasis #10 Est. Ft. of Pay 6'
 Location: Sec. 2 Twp. 18 S Rge. 43 W Co. Greeley State KS.
 No. of Copies 31 Distribution Sheet X Yes No Turnkey Yes X No YES Evaluation

Interval Tested 5018 - 5175 Drill Pipe Size 4 1/2" XH
 Anchor Length 157' Top Choke — 1" Bottom Choke — 3/4"
 Top Packer Depth 5013 Hole Size — 7 7/8" Rubber Size — 6 3/4"
 Bottom Packer Depth 5018 Wt. Pipe I.D. — 2.7 Ft. Run
 Total Depth 5175 Drill Collar — 2.25 Ft. Run 120'
 Mud Wt. 9.4 lb/gal. Viscosity 58 Filtrate 11.4

Tool Open @ 10:15 am (CDT) Initial Blow Strong blow off bottom in 1 1/2 mins.
GTS @ 6 1/2 mins on 1" orifice ISI: Bled off blow. Fair to strong off btm. 30 secs.
 Final Blow Strong return off bottom in 30 secs. gauged 1/2" on 3/4" orifice =
56,000 mcf/day @ Final

Recovery — Total Feet 1200' Feet of Gas in Pipe GTS Flush Tool? No

Rec.	Feet Of	%gas	%oil	%water	%mud
Rec. <u>850'</u>	Feet Of <u>CGO</u>	<u>40</u> %gas	<u>60</u> %oil	<u>—</u> %water	<u>—</u> %mud
Rec. <u>350'</u>	Feet Of <u>GOCM</u>	<u>25</u> %gas	<u>25</u> %oil	<u>—</u> %water	<u>50</u> %mud

BHT 122° °F Gravity 37 °API @ 92° °F Corrected Gravity 33.8 °API

RW @ °F Chlorides ppm Recovery Chlorides 7,000 ppm System

(A) Initial Hydrostatic Mud 2543 PSI AK1 Recorder No. 13309 Range 4700
 (B) First Initial Flow Pressure 374 PSI @ (depth) 5045 w/Clock No. 27573
 (C) First Final Flow Pressure 332 PSI AK1 Recorder No. 13339 Range 4025
 (D) Initial Shut-In Pressure 395 PSI @ (depth) 5170 w/Clock No. 17640
 (E) Second Initial Flow Pressure 343 PSI AK1 Recorder No. Range
 (F) Second Final Flow Pressure 395 PSI @ (depth) w/Clock No.
 (G) Final Shut-In Pressure 395 PSI Initial Opening 30 Test
 (H) Final Hydrostatic Mud 2503 PSI Initial Shut-In 60 Jars

Final Flow 60 Safety Joint X
 Final Shut-In 60 Straddle
 Circ. Sub X 35.00
 Sampler X

Approved By Rod Steinbrink
 Our Representative Rod Steinbrink
 Extra Packer
 Other Eval. X