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GEOLOGICAL WELL REPORT

TEXAS OIL & GAS CORPORATION

KIOWA STATE NO. 1

ne ne sec. 20 - T19S - R47W

Kiowa Co., Colorado

4102' K. B.

NEE NOSHE
Field

DVR	<input checked="" type="checkbox"/>
FJP	<input type="checkbox"/>
HMM	<input checked="" type="checkbox"/>
JAM	<input checked="" type="checkbox"/>
RCC	<input checked="" type="checkbox"/>
LAR	<input checked="" type="checkbox"/>
CCM	<input type="checkbox"/>

Date: April 1, 1983

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APR 20 1983

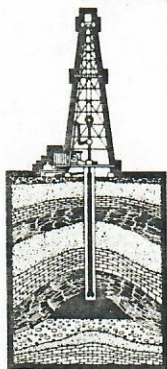
TEXAS OIL & GAS CORPORATION
KIOWA STATE NO. 1

TABLE OF CONTENTS

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Page No.

Title Page-----	1
Table of Contents-----	2
Geological Summary-----	4 - 6
Well Recommendation - TXO-----	7
Geological Data - TXO-----	8
Structure Map - Morrow Sh. - TXO-----	9
Isopach - Morrow Sd. - TXO-----	10
Production and DST Data - TXO-----	11
Dual Induction - B-H No. State - TXO-----	12
Type Log - Celsius No. 1 - 20 - TXO-----	13
Directions to Well-----	14
Well Data-----	15
Daily Well Chronology-----	16
Comparative Formation Tops-----	17
Bit Record & Deviation Survey-----	18
Brief Sample Description-----	19 - 24
One Foot Drilling Time-----	25 - 29
Sample Log-----	In Back



BILL T. WOMACK

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March 30, 1983

Texas Oil & Gas Corporation
1800 Lincoln Center Building
1600 Lincoln Street
Denver, Colorado 80264

Attn: Ms. Emily Hundley-Goff

Re: TXO Kiowa State No. 1
ne ne 20 - 19S - 47W
Kiowa Co., Colorado
4102' K. B.

Dear Ms. Hundley-Goff,

Samples were examined from 3400' to 4981'. A sample log at five inches per hundred feet scale was plotted, with brief sample descriptions, and one foot drilling time.

A Dual Induction Laterolog and compensated Density-Neutron Electric Log were run after Total Depth was reached. Sample Tops and Elog Tops were correlated with the Burton-Hawks No. 1-16 well, a Morrow sandstone gas well completed in July of 1982. The Burton-Hawks well is located approximately $\frac{1}{4}$ of a mile to the Northeast. Refer to the "Comparative Formation Tops" chart for structural and Isopachous comparisons.

The base of the Stone Corral Anhydrite was 3 feet high to the Burton-Hawks well.

There was no middle Morrow sand present in the well.

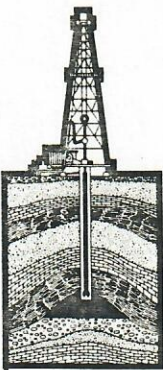
At the Top of the Mississippian, the Kiowa State No. 1 well was 44 feet low to the Burton-Hawks well.

OBSERVATIONS- ZONES OF INTEREST:

Topeka - 3326' - (+695')- 7' high to the Burton-Hawks well. No well developed porous zones occurred through the Topeka.

Topeka "C" - 3414' (+607')- 27' high to the Burton-Hawks well. Sample Top was placed at 3438'. No limestone was recovered in the samples until this point, and then only traces of white and tan, crypto-X-lm, dense limestone, with no shows.

At the Top of the Topeka "C", 3 feet of an average 14% porosity is recorded, with a calculated Sw of 29%. No neutron crossover is present.



This interval is interpreted as being water wet. The Sw calculations through the Topeka and Lansing intervals need to be in the 10% range to be meaningful. A four foot porous break occurs from 3579' to 3583'. Average porosity is 12% with an Sw calculation of 26%. Sample recovery was a tan to white, dense, sandy limestone with no shows. This zone is interpreted as being water wet.

An eleven foot porous zone is recorded from 3613' to 3624'. Maximum porosity is 13%, with Sw calculations of 45%. The correlative interval while drilling occurred from 3615' to 3626'. Drilling Time broke from 5 to a minimum of 1 minute per foot. Sample recovery was a white to light tan, crypto to sucrosic, sandy limestone with no shows. This zone is interpreted as being water wet.

The limestones through this interval exhibit fair light yellow mineral fluorescence, with no cut.

A four foot porous break occurs from 3642' to 3646'. Average porosity is 13%, with an Sw calculation of 100%. A correlative drilling break is from 3645' to 3649'. Drilling Time broke from 5 to 2 minutes per foot. Sample recovery was a white to tan, crypto-X-ln, smooth to sucrosic textured sandy limestone with no shows. This zone is interpreted to be water wet.

Lansing - 3715 (+305') - The upper 200' of this interval is interbedded tan, white, light gray, dense limestones, and brick red to maroon shales.

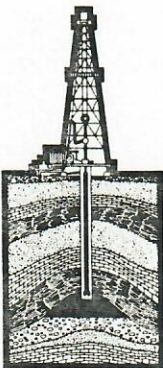
Two feet of 10% porosity is recorded from 3934' to 3936'. Slight Neutron crossover is present. Sw calculation for the interval is 48%. No definitive drilling break occurred through this interval. The zone is interpreted as water wet.

Four feet of 12% porosity is present from 3952' to 3956'. One division of Neutron Crossover is present, with an Sw calculation of 22%. Sample recovery was a light gray, white and tan, crypto-x-ln, chalky to hard, smooth, dense limestone, with no visible porosity and no shows. The conclusion is this is predominately water wet, with minor amount of oil present.

Thirteen feet of maximum 13% porosity occurs from 4018' to 4031'. Sw calculation is a 52%. Correlative interval while drilling occurred from 4043' to 4050'. Recovery was a dense limestone, with no shows.

Four feet of 15% porosity is present from 4049' to 4053'. Slight neutron crossover is present. Sw calculation is 15%. No definitive drilling break occurred through this interval, and no shows were observed in the samples. The Sw is suspiciously low. The probability exists this zone carries a definite, but non-commercial, amount of oil.

The Marmaton and Ft. Scott intervals, from 4087' to 4173', consist of light gray and white, crypto-X-ln, dense, clean to shaly limestones, with no shows.



Cherokee - 4224' (-203)- 5' low to the Burton-Hawks well. The interval is tan, lite gray, white, crypto-X-ln, clean, soft to hard limestones, with interbeds of gray and black shales. Seven feet of maximum 14% porosity occurs from 4398' to 4405'. Neutron crossover is present, with maximum 5 divisions of separation. Sw calculation is 41%, the correlative section on the sample log is from 4429' to 4440'. Sample recovery was a tan, white & lite gray, crypto-X-ln, flaky, clean, hard to chalky limestone, with no shows. The conclusion is this section was either sandy, or carries a minor amount of hydrocarbons.

Atoka - 4406' (-385') - 6' low to the Burton-Hawks well, and 10' low to the prognosis. The interval is comprised of thin interbeds of tan and lite gray, dense limestones, and dark gray and black shales. No shows were observed in the samples.

Morrow-4670' (-649')- This is the interval of primary interest. The well was 13' low to the Burton-Hawks well, and 24' low to the prognosis. The sample top was picked at 4610', with the appearance in the samples of typical Morrow shales, which migrate into the Atoka section in various areas.

Dark gray, black, and blue-green splintery, pyritic shales, with a few thin interbeds of tan and brown, dense, siliceous limestones were drilled from the Top of the Morrow, to 4863'. No Morrow sands were recovered. The targeted area occurred from 4770' to 4802'. Recovery was black, splintery, pyritic shales, and thin interbeds of tan and lite brown, dense, shaly limestones, with no shows.

Mississippian - 4921 (-900') - 44' low to the Burton-Hawks well, and 17' high to the prognosis. Sample Top was picked at 4931'. The interval is tite, with no porous zones. Sample recovery was tan, finely X-ln, fossiliferous, cherty, dense limestones, with no shows.

CONCLUSION:

Sample and Electric Log Data outlined no zones of probable commercial production.

The Well was Plugged and Abandoned.



Bill T. Womack

BTW/fmw

**TXO PRODUCTION CORP.**DENVER DISTRICT
INTER-OFFICE MEMORANDUMDate: February 10, 1983To: Steve TillmanFrom: Emily M. Hundley-GoffKiowa State #1-20Re: Nee Noshe FieldSection 20-T19S-R47W NE NEKiowa County, Colorado

The Kiowa State #1-20 is a proposed 5300' development well at Nee Noshe Field. The proposed location is a 1/4 mile southwest offset to the Burton-Hawks 1-16 State. The objective is a Middle Morrow fluvial sand which is stratigraphically equivalent to the McClave Sand. The 1-16 State was drilled in 7/82, and tested the Middle Morrow objective sand on DST for 3.3 MMCFGPD. The proposed well should be on strike with the Burton-Hawks well and penetrate 20' of gross Middle Morrow Sand. The Celsius State #1-20, 1/4 mile south of the proposed location, penetrated 6' of tight Middle Morrow Sand and was on the periphery of the point bar penetrated in the Burton Hawks well.

Geology recommends that the Kiowa State #1-20 be drilled as a 5300' development well of the Middle Morrow Sand at Nee Noshe Field.

The following plats are included:

1. Geological Data Sheet
2. Structure - Top Morrow Shale
3. Middle Morrow Gross Sand Isopach
4. DST Map
5. Type Log

EMHG/cjd
Attachments
Emily M. Hundley-GoffWAG
2-11-83

GEOLOGICAL DATA FOR PROPOSED WELL

Denver District
Texas Oil & Gas Corp.

Well Name & No.	Kiowa State #1-20
Operator	Celsius
S - T - R & Spot	Section 20-T19S-R47W NE NE
County - State	Kiowa County, Colorado
Field or Prospect	Nee Noshe Field
Spacing	Not spaced
Well Classification	Development
Depth Planned	5300'
Formation at T.D.	Mississippian
Penetration	350'
Elevation, estimated	4021 KB

<u>Objective Reservoirs:</u>	<u>Primary</u>	<u>Secondary</u>	<u>Secondary</u>
Formation	<u>Morrow</u>	<u> </u>	<u> </u>
Zone	<u>Middle</u>	<u> </u>	<u> </u>
Lithology	<u>Sandstone</u>	<u> </u>	<u> </u>
Hydrocarbon expected	<u>Gas</u>	<u> </u>	<u> </u>
Pay at Borehole, est.	<u>15'</u>	<u> </u>	<u> </u>
Pay over Prod. Area, est.	<u>12'</u>	<u> </u>	<u> </u>
Productive Area, est.	<u>160 acres</u>	<u> </u>	<u> </u>
Pay Depth	<u>4750'</u>	<u> </u>	<u> </u>

Comments:

Prepared by: Emily M. Hundley-Goff Date: 2-10-83

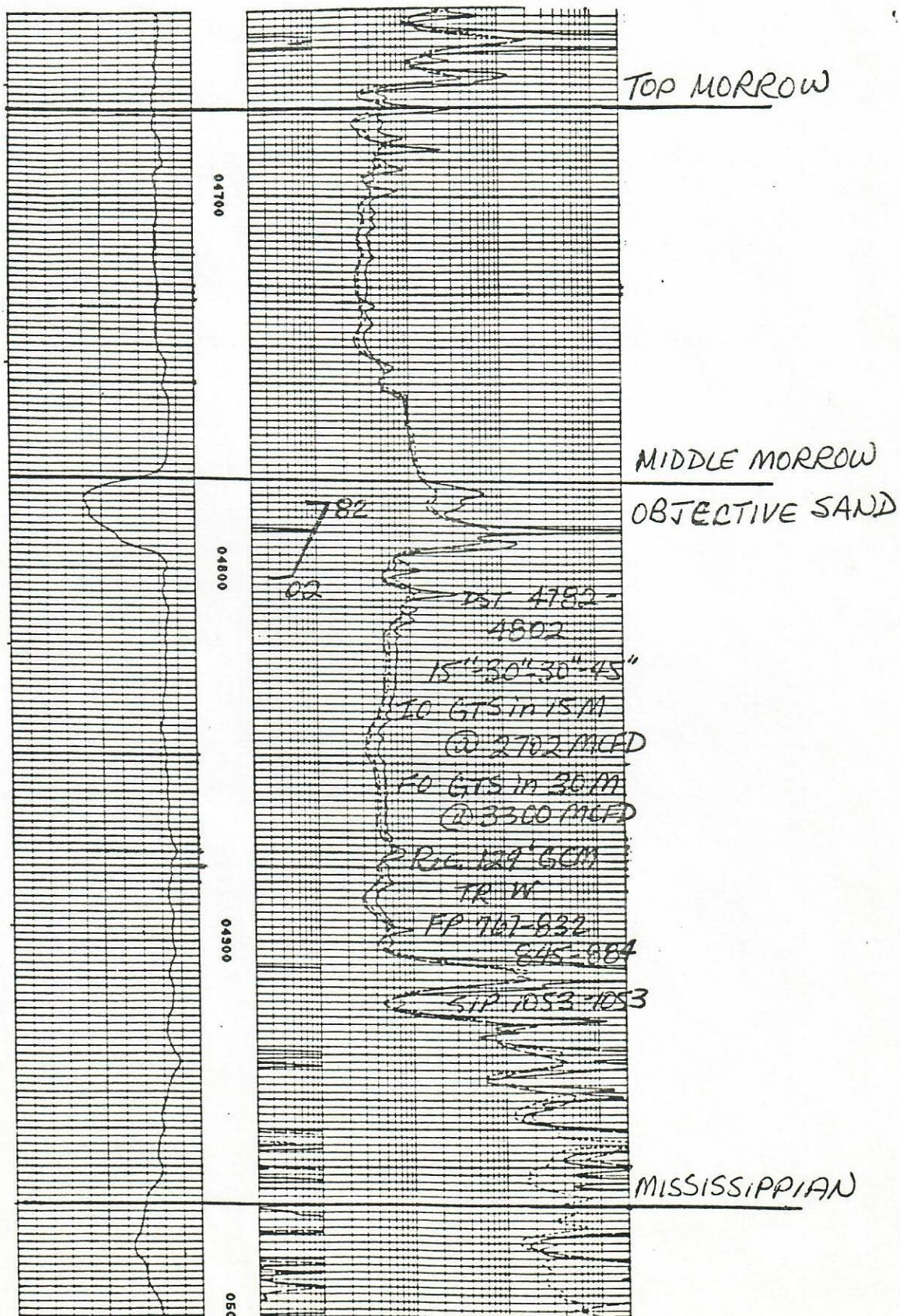
K

8A

#1 State

Section 16, T19S - R47W

Dual Induction



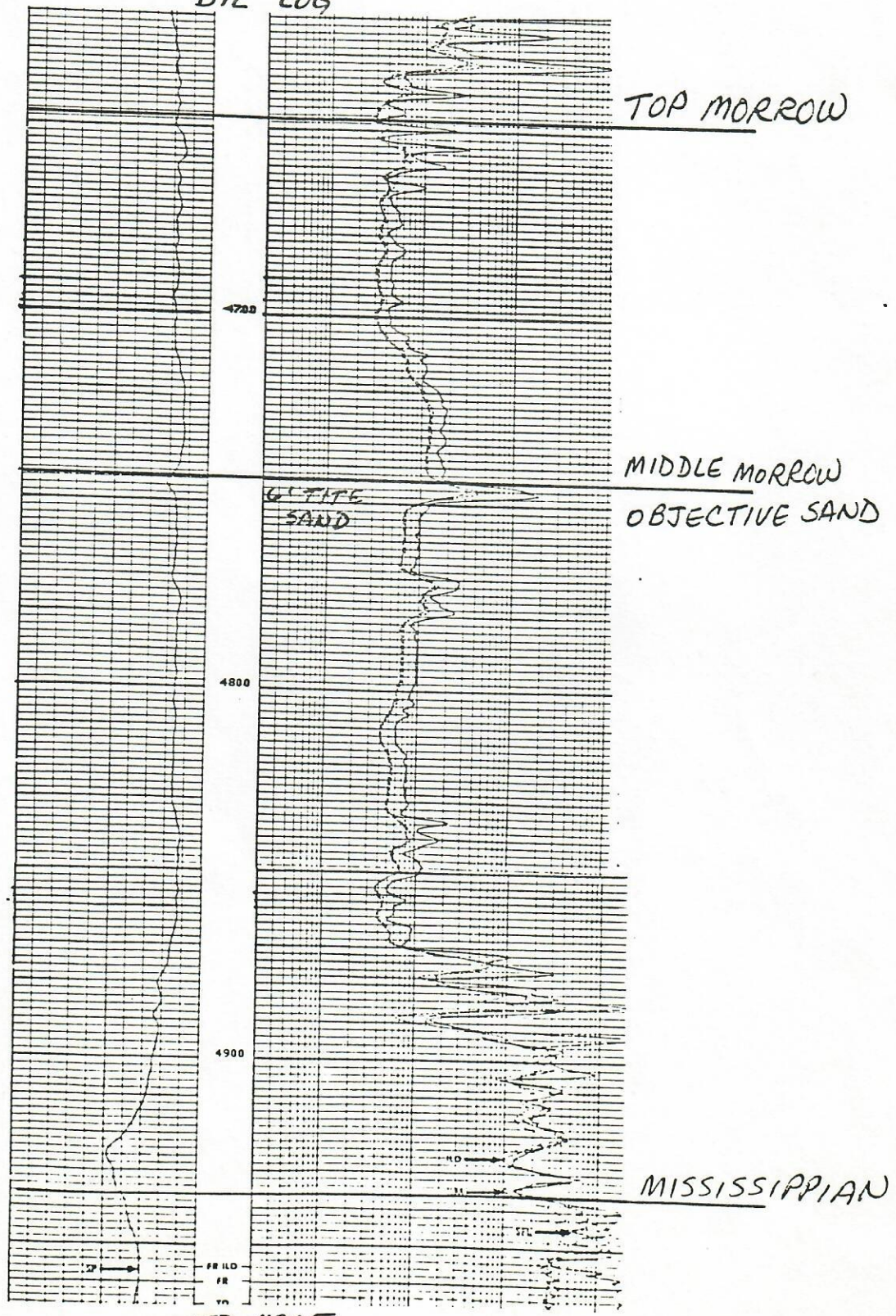
TD 5,280'

KB 4,048'

TYPE LOG

Celsius State #1-20
SE-NE 20-19S-47W
Kiowa Co., Colorado

DIL LOG



TD 4965
KB 4008

DIRECTIONS TO WELL

TEXAS OIL & GAS CORPORATION
KIOWA STATE NO. 1
ne ne sec. 20 - T19S - R47W
Kiowa Co., Colorado
4120' K. B.

From Country Manor Motel, on East Side of Eads, Colorado, go East & South on Highway 287 8.5 miles. Go East through wire gate onto a newly bladed road on South side of fence. Go 1.1 mile, go through a wire gate, continue East along North Side of wire fence for .5 mile. Go through a wire gate, and continue East for .5 mile. Turn South through a wire gate, and go SW .25 mile to location. Total Distance: 10.85 miles.

WELL DATA

OPERATOR: Texas Oil & Gas Corporation

WELL NAME: Kiowa State No. 1

LOCATION: ne ne sec. 20 - T19S - R47W

COUNTY: Kiowa

STATE: Colorado

ELEVATION: 4011' G. L.; 4021' K. B.

DRILLERS: -

CONTRACTOR: Kissinger, Inc. Rig #3

TOOLPUSHER: Arnie Pierce - 1-303-798-2518, Denver, Colorado

DRAW WORKS: Trailer mounted - Challenger

DERRICK: Double - Challenger

MOTORS: Caterpillar - #3408

PUMPS: Great American - Caterpillar - #3408

MUD COMPANY: Service Mud Co., Lamar, Colorado

MUD TYPE: Chemical

MUD LOGGING: -

CASING: 8 5/8" - 24# - 8 jts - 334.78' K. B.

CEMENTERS: Halliburton

HOLE SIZE: 12 1/4" - 0 - 340'; 7 7/8" - 340' - 4981'

SAMPLES: 3400' - 4981'

COMMENCED: 11:00 A.M., 2/27/83

DATE TOTAL DEPTH: 11:00 A.M., 3/9/83

STATUS: Running elogs

TOTAL DEPTH: Drllrs' - 4981; Elog - 5006'
SLM: 4981' = 5005'

DAILY WELL CHRONOLOGY

<u>DATE</u>	<u>DEPTH</u> 7:00 A.M.	<u>DAILY</u> <u>FOOTAGE</u>	<u>REMARKS</u>
2/28/83	896'	896'	(Drlg.) SPUD: 11:00 A.M., 2/27/83. Drill to 336'. Run 8 jts-8 5/8" csg. to 334.78' K.B. Cmt'd csg., plug down 1:15 P.M. 2/27/83. Drill under surf. w/ 7 7/8' bit @ 12:45 A.M., 2/28/83. Drill to 896' @ 7 A.M.
3/1/83	1950'	1054'	(Drlg.) Made .T. @ 1623' for new bit. Resume drlg. at 12 midnite. Reamed 30' to bottom.
3/2/83	2375'	425'	(Drlg.)
3/3/83	2915'	540'	(Drlg.) R.T. @ 2915' for new bit.
3/4/83	3055'	140'	(Drlg.)
3/5/83	3496'	441'	(Lost circu. @ 3496') (Lost circu. @ 6:30 A.M., Lost 50 bbls. mud.)
3/6/83	3842'	346'	(Drlg.) Pull 8 stds., mix mud, regain circulation, resume drlg. 9 A.M., 3/5/83.
3/7/83	4225'	383'	(Drlg.) Lost 50 BM @ 3893'.
3/8/83	4610'	385'	(Drlg.)
3/9/83	4956'	346'	(Drlg.)
3/10/83	4981'	25'	(W.O.O.) Drld. to T.D. - 4981' @ 11:00 A.M., 3/9/83. Circu. spls., conditioned hole for elogs. Circulated 2 hrs., made 10 std. short trip; ut of hole at 5:00 P.M. to run elogs.

TEXAS OIL & GAS CORPORATION
KIOWA STATE NO. 1

COMPARATIVE FORMATION TOPS

TEXAS OIL & GAS CORPORATION
KIOWA STATE NO. 1
ne ne sec. 20 - T19S - R47W
Kiowa Co., Colorado
4102' K. B.

BURTON-HAWKS, INC.
#1 - 16
sw sw sec. 16
T19S - R47W
4048' K. B.

TEXAS OIL & GAS CORPORATION
KIOWA STATE NO. 1
ne ne sec. 20 - T19S - R47W
Kiowa Co., Colorado
4102' K. B.

FORMATION	ELOG		PROGNOSIS		SAMPLE		ELOG	
	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM
Stone Corral	2202	+1846	-	-	2143	+1878	2172	+1849
B/Stn. Corral	2248	+1800	-	-	2193	+1828	2208	+1813
Topeka	3346	+ 702	-	-	-	-	3326	+ 695
Topeka "C"	3498	+ 580	-	-	3438	+ 583	3414	+ 607
Lansing	-	-	-	-	-	-	3715	+ 305
Marmaton	4110	- 62	4078	- 57	4043	- 22	4087	- 66
Ft. Scott	4198	- 150	-	-	4103	- 82	4173	- 152
Cherokee	4247	- 199	-	-	4153	- 132	4224	- 203
Atoka	4427	- 379	4396	- 375	4355	- 334	4406	- 385
Morrow	4684	- 636	4646	- 625	4610	- 589	4670	- 649
M. Morrow sd.	4776	- 728	4746	- 725	4786	- 765	4770	- 749
Miss.	4904	- 856	4938	- 917	4931	- 910	4921	- 900
T. D.	5275	-1227	4988	- 967	4981	- 960	5006	- 985

BIT RECORD

Well: Texas Oil & Gas - Kiowa State #1 - 16

State: Kiowa Co., Colorado

Bit No.	Size	Make	Type	Jets	Depth Cut	Footage	Hours
1	12 $\frac{1}{4}$	HTC	OSC-rr	14-14-14	336'	336'	-
2	7 7/8	W.M.	WMO 3J	14-13-14	1086'	750'	8 $\frac{1}{2}$
3	"	STC	DTJ	14-13-14	1623'	537'	9 3/4
4	"	Sec	S84F	14-13-14	2915'	1295'	35 $\frac{1}{4}$
5	"	HTC	J33	14-14-14	4981'	2066'	124 3/4

DEVIATION SURVEY

<u>DEPTH</u>	<u>DEVIATION</u>	<u>KIND</u>
100'	1/8°	Sure Shot
220'	1/4°	" "
336'	1/2°	" "
1623'	2°	" "

BRIEF SAMPLE DESCRIPTION

TEXAS OIL & GAS CORPORATION
 KIOWA STATE NO. 1
 ne ne sec. 20 - T19S - R47W
 Kiowa Co., Colorado
 4102' K. B.

DRILLED TO 3400' @ 1:35 A.M., 3/5/83. Samples lagged by wellsite
geologist.

- 3380-3390: Shale-100%- predominately dk. gray, minor light gray, maroon, flaky, fnly slty, Traces wh, & pale grn bentonite.
- 3390-3430: Shale-90%- desc. abv.
Bentonite-10%- white, pale forest & greenish-blue, purple, smooth, slick,
 Trace - variegated li. gry & purple shale.
- 3430-3470: Sh-20%- desc. abv.
Bentonite-30%- desc. abv.
 Tr-wh, tan, crypto-X-ln, dnse ls; N.S.
- 3470-3480: Sh-60%- desc. abv.
Bentonite-30%- desc. abv.
Ss-10%- white, vfg, prly cmtd., well srted, friable, N.S.
- 3480-3510: Sh-70%- predominately bri. brick red, flky, smooth, dull, sft, sli. lty, minor li. gry & pale grn.
Ls-30%- tan, li. gry, crypto-X-ln, blk, smooth, clean, no vis. ϕ , li. yel. solid mineral fluor., no cut.
- 3510-3520: Sh-70%- bri. brick red, minor pale sea green, li. gry & purple, slty, dull, in pt. mottled red & green.
Ls-30%- tan, wh, crypto-X-ln, smooth, clean, subrounded fragments, minor fossiliferous fragments. No vis. ϕ ; N.S.
- 3520-3540: Sh-60%- desc. abv.
Ls-40%- desc. abv.
 Tr- loose pyrite
- 3540-4560: Ls-60%- tan, white, li. gray, crypto-X-ln, flky, blk, clean, smooth, no vis. ϕ ; N.S., fair li. yel. mineral fluor.
Sh-40%- desc. abv.
- 3560-3600: Ls-70%- tan, wh, crypto-X-ln, blk & rdd. fragments, trcs. fossiliferous, no vis. ϕ ; N.S., dull li. yel. mineral fluor., no cut.
Sh-30%- bri. brick red, pale blue-grn, li. gry, slty to clyy, dull, chunky, Trcs. maroon.

- 3600-3620: Sh-60%- desc. abv.
Ls-40%- desc. abv. N.S.
- 3620-3630: Ls-70%- wh, li. tan, crypto-X-ln, smooth to sucrosic texture, sdy, no vis. ϕ , N.S., fair li. yel. mineral fluor. No cut.
Sh-30%- desc. abv.
- 3630-3640: Sh-70%- desc. abv.
Ls-30%- desc. abv. N.S.
- 3640-3670: Ls-50%- desc. abv. N.S., w/trcs oolitic
Sh-50%- desc. abc.
- 3670-3680: Sh-90%- desc. abv.
Ls-10%- desc. abv. N.S.
Tr-wh, li. gry, mg, well cmtd ss, - N.S.
- 3680-3690: Sh-70%- bright brick red, li. gry, dull brick red, maroon, slty, flky, dull, micro-micaceous.
Ls-30%- tan, wh, li. gry, grn, crypto-X-ln, hd, flky & blk, smooth,
Tr-oolitic, clean, no vis, ϕ ; N.S.
- 3690-3710: Sh-90%- desc. abv.
Ls-10%- desc. abv. N.S.
- 3710-3720: Ls-90%- tan, wh, li. gry, crypto-X-ln, smooth to sucrosic, flky & blk, in pt. mottled tan & wh, no vis. ϕ ; N.S.
Sh-20%- desc. abv.
- 3720-3730: Sh-90%- desc. abv.
Ls-10%- desc. abv. N.S.
- 3730-3740: Ls-80%- desc. abv. N.S.
Sh-20%- desc. abv.
- 3740-3760: Sh-80%- desc. abv.
Ls-20%- desc. abv. N.S.
- 3760-3770: Sh-70%- variegated, bri. brick red, li. to dk. gry, purple, pale forest green, clyy to slty, micro-micaceous, flky, & blk, dull, red sh. anhydritic,
Ls-30%- tan, wh, crypto-X-ln, flky, smooth, in pt. fossiliferous, clean, no vis. ϕ ; N.S.
- 3770-3780: Ls-70%- desc. abv. N.S.
Sh-30%- desc. abv.
- 3780-3820: Sh-70%- desc. abv.
Ls-30%- desc. abv. N.S.

- 3820-3830: Ls-80%- wh, tan, crypto-X-ln, med. hd, flky, fossiliferous, smooth to sucrosic, clean, no vis. ϕ ; N.S.
Sh-20%- bri. red to dull rusty red, pale blue green, slty to clyy, dull, blkly,
- 3830-3860: Ls-90%- li. to med. gry, tan, wh, crypto-X-ln, smooth to sucrosic, flky, fossiliferous, no vis. ϕ ; N.S.; fair li. yel. mineral fluor., NO CUT.
Sh-10%- desc. abv.
- 3860-3870: Ls-70%- desc. abv. N.S.
Sh-30%- desc. abv.
- 3870-3890: Sh-70%- desc. abv.
Ls-30%- desc. abv. N.S.
- 3890-3900: Ls-90%- wh, li. tan, crypto-X-ln, med. hd, blkly, clean, sdy, no vis. ϕ ; N.S.
Sh-10%- variegated, bri. to dull brick red, li. to med. gry, pale blue-grn, purple, sft, slty, dull Tr-pyrite.
- 3900-3910: Sh-70%- desc. abv.
Ls-30%- desc. abv. N.S.
- 3910-3930: Ls-80%- wh, li. gry, tan, crypto-X-ln, med. hd., flky & blkly, clean, fossiliferous, no vis. ϕ ; N.S.
Sh-20%- desc. abv.
- 3930-3950: Ls-90%- desc. abv. N.S.
Sh-10%- desc. abv.
- 3950-4030: Ls-60%- desc. abv. N.S.
Sh-40%- desc. abv.
- 4030-3040: Ls-80%- li. gry, wh, tan, crypto-X-ln, med. sft. to med. hd., flky, smooth,
Trcs. sdy, no vis. ϕ ; N.S.
Sh-20%- desc. abv.
- 4040-4050: Sh-60%- desc. abv.
Ls-40%- desc. abv. N.S.
- 4050-4070: Ls-90%- li. gry, wh, crypto-X-ln, flky & blkly, smooth, clean, no vis. ϕ ; N.S.
Sh-10%- desc. abv.
- 4070-4090: Sh-60%- desc. abv.
Ls-40%- desc. abv. N.S.

- 4090-4100: Ls-90%- pale li. gry, wh, mottled gry & wh, crypto-X-ln, med. hd., flky, smooth to sucrosic, in pt. shly, no vis. ϕ N.S.
Sh-10%- variegated, bri. to dull brick red, li. to med. gry, gryish-grn, sft, slty, dull, flky,
- 4110-4130: Ls-80%- desc. abv. N.S.
Sh-20%- desc. abv.
- 4130-4150: Ls-90%- li. brn-gry, li. brn, tan, crypto-X-ln, sucrosic texture, sft to med. hd, clean, no vis. ϕ ; N.S.
Sh-10%- desc. abv.
- 4150-4160: Sh-60%- li. to dk. gry, blk, dull brick red, dull, carbonaceous, slty,
Ls-40%- desc. abv. N.S.
- 4160-4290: Ls-80%- li. to med. gry, wh, tan, crypto-X-ln, flky, med. sft, clean, smooth, no vis. ϕ ; N.S.
Sh-20%- desc. abv.
- 4290-4340: Ls-90%- li. gry, wh, tan, crypto-X-ln, med. sft, clean, non-descript, no vis. ϕ , N.S.
Sh-10%- med. to dk. gry, blk, flky, slty, carbonaceous, micro-micaceous,
- 4343-4360: Sh-20%- dk. gry, blk, dull rusty red, flky, blk, micro-micaceous, dull,
Ls-80%- tan, li. gry, wh, brn, crypto-X-ln, sucrosic, fossiliferous, shly, no vis. ϕ ; N.S.
- 4360-4410: Sh-80%- desc. abv.
Ls-20%- desc. abv. N.S. Trcs-oolitic.
- 4410-4430: Sh-90%- dk. gry, blk, li. gry, dk. brn, flky & plty, micro-micaceous, dull,
Ls-10%- tan, wh, li. gry, crypto-X-ln, flky, med. hd. to sft, clean, no vis. ϕ ; N.S.
- 4430-4440: Sh-60%- desc. abv.
Ls-40%- desc. abv. N.S.
- 4440-4490: Sh-90%- desc. abv.
Ls-10%- desc. abv.
- 4490-4500: Ls-20%- tan, wh, li. brn, crypto-X-ln, sucrosic, shly, no vis. ϕ ; N.S.
Sh-80%- dk. gry to blk, flky, platy in pt., splintery, dull, micro-micaceous.

- 4500-4510: Sh-90%- desc. abv.
Ls-10%- desc. abv. N.S.
- 4510-4520: Sh-70%- desc. abv.
Ls-30%- desc. abv. N.S.
- 4520-4530: Sh-90%- desc. abv.
Ls-10%- desc. abv. N.S.
- 4530-4560: Sh-70%- desc. abv.
Ls-30%- desc. abv. N.S.
- 4560-4590: Sh-90%- dk. gry to blk, plty & flky, Trcs. splintery, dull,
micro-micaceous.
Tr. pyritic
Ls-10%- brn, mottled brn & wh, crypto-X-ln, smooth, no vis.
ø; N.S.
- 4590-4610: Sh-70%- desc. abv.
Ls-30%- desc. abv. N.S.
- 4610-4620: Ls-70%- wh, li. gry, crypto-X-ln, sucrosic, shly, no vis. ø;
No show.
Sh-30%- dk. gry, blk, splintery to plty, micro-pyritic, micro-
micaceous,
- 4620-4670: Sh-90%- desc. abv.
Ls-10%- desc. abv., N.S.
- 4670-4680: Sh-100%- desc. abv.
Tr. Ls - desc. abv. N.S.
- 4680-4690: Sh-90%- desc. abv.
Ls-10%- tan, li. brn, crypto-X-ln, hd, blk, dense, shly,
no vis. ø; N.S.
- 4690-4750: Sh-100%- dk. gry, blk, li. blue-grn, splintery & plty, micro-
micaceous, Tr-pyrite, dull, silky luster- Tr-tan, li. brn,
dnse, blk ls.
- 4750-4820: Sh-100%- dk. gry. to blk, li. gry, plty & splintery, dull,
micro-micaceous & pyritic
Tr- li. brn, wh, blk, dnse ls; N.S.
Tr- wh, vf/fg, friable ss - N.S.
- 4820-4840: Sh-90%- desc. abv.
Ls-10%- tan, li. brn, crypto-X-ln, smooth to sucrosic, flky,
shly, in pt. fossiliferous, no vis. ø; N.S.
- 4840-4870: Sh-100%- desc. abv.
Tr- tan, crypto-X-ln, fossiliferous, dnse, ls - N.S.

4870-4910: Sh-70%- desc. abv.
Ls-30%- tan, gryish-tan, crypto-X-ln, sucrosic, flky, shly,
 no vis. ϕ ; N.S.

4910-4940: Ls-60%- tan, fnly X-ln, flky, sucrosic, fossiliferous,
 rough, dull, clean, no vis. ϕ
Sh-40%- blk, plty & splintery, dull, micro-micaceous.

4940-4960: Ls-90%- tan, fnly X-ln, sucrosic, fossiliferous, rough,
 flky, no vis. ϕ ; N.S.
Sh-10%- desc. abv.

NOTE: T.D. - 4981' @ 10:55 A.M., 3/9/83, CIRCULATED,
CONDITIONED HOLE FOR ELOGS.

4960-4981: (30 & 60 minute circu. spls.)
Ls-90%- tan, fnly X-ln, sucrosic, flky, fossiliferous, rough,
 cherty, no vis. ϕ ; N.S.
Sh-10%- blk, splintery, micro-micaceous, & pyritic.

ONE FOOT DRILLING TIME

TEXAS OIL & GAS CORPORATION
 KIOWA STATE NO. 1
 ne ne sec. 20 - T19S - R47W
 Kiowa Co., Colorado
 4102' K. B.

DRILLED TO 3400' @ 1:35 A.M., 3/5/83. Samples lagged by wellsite

geologist.

3400-3410: 2,2,2,2,2,3,3,2,3,2,
 20: 2,2,1,2,2,2,2,3,4,3,
 30: 4,2,3,3,3,2,2,3,3,2,
 40: 3,3,3,3,2,3,3,2,4,5,
 50: 3,4,3,3,4,3,3,3,3,3,
 60: 4,4,5,3,4,2,3,3,2,2,
 70: 2,3,2,3,4,3,3,2,3,4,
 80: 3,4,4,4,2,4,3,3,3,3,
 90: 3,3,3,3,2,4,3,2,4,2,
 3490-3500: 3,3,3,3,2,3,4,3,3,5,

 3500-3510: 4,4,4,4,3,4,2,4,4,5,
 20: 5,4,3,3,2,3,3,4,3,3,
 30: 3,3,3,3,3,4,3,3,3,5,
 40: 3,4,4,4,5,4,4,3,4,3,
 50: 3,3,2,4,3,3,3,2,2,3,
 60: 5,4,4,4,3,3,3,2,2,1,
 70: 2,1,2,1,2,2,1,2,2,2,
 80: 3,2,3,4,5,3,4,4,4,6,
 90: 5,6,3,5,4,3,3,3,4,4,
 3590-3600: 3,2,3,4,4,4,3,3,3,2,

 3600-3610: 3,3,4,3,3,4,3,3,3,4,
 20: 3,4,5,4,5,2,2,3,2,1,
 30: 2,2,1,2,2,2,6,4,3,4,
 40: 3,4,6,5,5,5,4,4,4,5,
 50: 5,6,5,4,3,2,2,3,2,4,
 60: 4,3,4,4,4,4,3,4,4,3,
 70: 4,5,4,4,3,3,3,3,3,4,
 80: 4,4,4,4,4,5,4,5,4,3,
 90: 2,3,4,4,5,4,5,5,4,4,
 3690-3700: 4,5,5,5,4,5,5,5,5,5,

3700-3710: 5,5,5,4,4,4,6,5,6,4,
 20: 5,1,1,2,2,4,4,4,5,5,
 30: 5,5,3,3,1,2,3,4,2,4,
 40: 3,4,4,3,4,4,3,4,4,7,
 50: 2,3,3,3,4,3,3,3,3,4,
 60: 3,4,4,3,5,4,4,4,4,4,
 70: 3,3,4,3,4,3,4,4,4,5,
 80: 5,4,2,5,4,4,2,2,3,2,
 90: 1,1,1,2,3,4,3,3,3,3,
 3790-3800: 4,3,3,3,3,4,3,3,3,3,

 3800-3810: 5,4,3,4,4,4,3,3,3,4,
 20: 4,4,3,4,4,4,4,4,5,3,
 30: 3,3,2,3,3,4,4,2,3,3,
 40: 4,3,4,4,4,5,4,5,4,3,
 50: 5,3,4,3,4,4,3,3,4,5,
 60: 5,3,5,3,4,4,4,4,4,4,
 70: 5,
 80: - clock stopped working from 3872' - 3885'.
 90: 8:00 A.M. - 9:40 A.M. (1 hr. 40 min.,
 3/16/83.
 3890-3900: 4,3,4,3,4,
 3,4,3,5,5,4,3,5,4,3,

 3900-3910: 3,5,4,3,3,5,5,4,4,3,
 20: 4,5,3,4,4,4,5,5,3,5,
 30: 5,4,5,4,5,3,6,5,5,3,
 40: 2,4,3,1,1,2,3,1,2,1,
 50: 3,3,2,4,3,5,4,5,4,4,
 60: 4,5,5,4,4,2,5,5,5,6,
 70: 4,4,4,4,3,2,3,4,5,4,
 80: 3,4,4,5,3,5,2,3,5,3,
 90: 4,4,4,4,4,4,4,3,4,2,
 3990-4000: 2,4,3,3,2,2,1,1,2,2,

 4000-4010: 2,1,2,2,2,2,2,6,4,3, - Add 5,000 W.O.B. @ 4007'.
 20: 4,3,3,4,2,3,4,3,3,2, Total - 35,000 W.O.B.
 30: 2,4,2,4,3,2,2,2,2,4,
 40: 3,3,4,4,4,3,4,4,5,5,
 50: 4,3,4,2,4,3,2,3,2,4,
 60: 7,5,8,2,3,3,3,3,4,4, - @ 4053' inc. 5,000# W.O.B.
 70: 4,4,3,3,3,3,3,3,4,4, Total - 40,000# WOB
 80: 5,3,4,5,3,4,4,4,4,3,
 90: 4,4,4,5,5,4,5,5,2,4,
 4090-4100: 1,2,3,4,3,3,2,4,4,4,

4100-4110: 4,4,5,3,3,4,4,3,4,4,
 20: 3,3,4,3,3,4,4,3,4,4,
 30: 3,3,3,3,4,3,4,3,4,4,
 40: 4,3,4,5,4,3,4,3,3,4,
 50: 4,3,4,4,3,4,3,3,2,6,
 60: 4,5,5,2,2,3,2,2,2,3,
 70: 3,2,3,3,3,2,2,3,3,3,
 80: 4,3,3,3,4,3,4,3,3,5,
 90: 3,3,4,5,5,3,3,3,2,4,
 4190-4200: 3,3,3,4,3,3,5,3,4,4,

 4200-4210: 2,3,2,2,2,2,3,2,2,2,
 20: 5,4,4,3,4,4,4,3,4,4,
 30: 4,4,4,5,3,2,3,3,3,2,
 40: 2,3,3,3,4,3,5,5,3,3,
 50: 4,3, , , , ,4,4,4,4,
 60: 4,3,2,4,3,8,6,2,4,4,
 70: 4,5,4,4,4,4,4,4,2,3,
 80: 3,4,4,5,5,5,5,4,2,4,
 90: 4,3,3,5,4,3,5,3,5,4,
 4290-4300: 4,4,1,4,5,3,3,5,4,3,

 4300-4310: 3,3,2,4,4,4,4,5,5,3,
 20: 3,4,5,4,5,4,5,4,4,2,
 30: 6,5,3,4,4,3,4,3,2,2,
 40: 5,3,3,4,3,6,4,3,4,3,
 50: 4,3,3,3,3,3,3,3,2,2,
 60: 1,1,2,3,3,4,3,3,3,4,
 70: 3,4,4,3,5,3,4,3,3,4,
 80: 5,4,4,4,4,4,5,4,3,4,
 90: 3,4,4,4,3,3,3,2,3,3,
 4390-4400: 2,3,4,3,3,3,2,2,2,3,

 4400-4410: 4,5,5,5,4,6,5,5,2,3,
 20: 4,3,3,3,3,4,3,3,4,5,
 30: 5,2,2,2,2,4,4,3,4,2,
 40: 3,3,2,3,3,3,2,3,3,3,
 50: 4,4,4,4,5,5,4,5,5,4,
 60: 4,2,3,3,5,5,4,4,4,4,
 70: 4,3,4,4,4,4,5,6,6,4,
 80: 3,3,3,3,3,3,4,2,2,2,
 90: 4,4,4,3,3,4,3,3,3,3,
 4490-4500: 4,2,4,2,2,2,3,4,3,3,

4500-4510: 3,5,3,3,3,3,2,3,3,2,
 20: 3,2,5,3,2,2,2,2,3,4,
 30: 3,2,2,1,2,4,3,4,2,2,
 40: 2,2,2,3,2,3,2,1,2,4,
 50: 3,3,3,2,4,2,3,3,3,3,
 60: 4,3,3,2,3,2,2,2,4,5,
 70: 4,3,1,3,3,4,3,3,3,3,
 80: 3,3,4,4,2,5,4,4,4,3,
 90: 4,4,4,3,4,4,3,3,3,4,
 4590-4600: 4,4,4,4,3,5,5,4,4,4,

 4600-4610: 4,3,3,5,4,4,3,4,3,6,
 20: 2,3,3,3,4,3,4,2,4,4,
 30: 3,2,3,2,4,3,3,3,2,3,
 40: 3,2,2,3,2,2,2,2,2,3,
 50: 4,2,2,2,3,2,2,4,4,4,
 60: 4,3,4,4,3,3,2,5,5,5,
 70: 5,3,2,3,3,3,5,3,3,4,
 80: 4,3,2,3,4,4,4,2,4,3,
 90: 5,2,3,3,3,4,4,3,4,4,
 4690-4700: 5,4,7,4,3,4,4,3,4,3,

 4700-4710: 4,4,5,5,2,4,4,4,4,4,
 20: 5,5,3,4,3,5,4,4,4,5,
 30: 6,4,6,5,3,5,4,5,4,4,
 40: 4,3,5,3,2,5,4,4,3,4,
 50: 3,4,3,4,3,3,3,3,3,5,
 60: 3,3,4,4,3,2,4,4,4,4,
 70: 4,4,3,3,4,4,4,4,5,5,
 80: 4,4,4,4,4,4,3,4,5,3,
 90: 5,5,6,5,6,5,3,3,3,4,
 4790-4800: 4,3,3,3,5,4,4,5,5,5,

 4800-4810: 5,2,3,4,4,3,4,4,3,4,
 20: 3,4,5,5,4,3,4,3,2,3,
 30: 4,5,5,4,4,5,4,5,5,6,
 40: 4,4,5,4,4,4,4,5,4,4,
 50: 4,3,4,4,5,5,4,4,4,3,
 60: 3,4,3,4,4,3,5,3,5,5,
 70: 3,7,3,2,2,3,4,3,3,3,
 80: 4,4,3,3,3,4,5,6,4,4,
 90: 4,3,4,4,4,4,4,3,5,4,
 4890-4900: 4,5,6,6,5,4,4,4,4,5,

4900-4910: 5,5,4,5,4,5,8,7,5,5,
20: 4,5,5,3,5,4,4,4,5,4,
30: 4,5,4,5,4,5,4,4,5,4,
40: 3,6,5,5,5,5,4,4,7,5,
50: 5,3,3,7,4,5,5,5,5,5,
60: 5,6,6,7,6,11,9,6,9,6,
70: 7,7,7,7,10,10,7,7,11,17
80: 13,13,12,13,12,10,9,9,13,11,
90: 9,

T.D. 4981', 10:55 A.M., 3/9/83