Statement on behalf of the Humble Oil & Refg Co.

Case 274-75

We desire to call to the Oil Conservation Commissions attention that there are approximately 92 producing well in the Bronson field and 31 producing wells in the Vare field. Both these fields have been developed by drilling single well completions. Many of the 40 acre tracts in these fields have twin wells. The operators have made this investment in twin wells in good faith and in accordance with good completion practise. In justice to these operators we feel that the few remaining wells to be drilled should conform to the established practice of drilling twin wells on 40 acre units where such units overlying both the McKee and Edwards formations.

We feel that there are very definite physical limitations to the amount of fluid which can be produced through a duely completed oil well and that there is not sufficient flexibility in the equipment to permit of changing production rates to meet changing reservoir conditions. These limitations often lead to the premature abandonment of this permanently or temporily of one producing horizon. We do not subscribe to the suggestion offered in testimony that oil be commingled underground. We believe that conservation is best served by keeping oil reservoirs entirely separate and in such condition that some form of secondary recovery can be effected in the most efficient and least costly manner. There are numerous instances where as much or more oil has been recovered in secondary operations as was recovered in primary production to so called depletion.

Our experience in working over twin wells in the Bronson field leads us to believe that many of the wells will require workovers. Such workovers can be accomplished at the proper time at less cost and more effectively in single completions than in dual oil well completions. The working over

of a singly completed well will not adversely effect the productive capacity of a twin well. Such is not always the case in dually completed oil wells where it is necessary to mud off both producing horizons in the dually completed well to work on one of them. The mechanical equipment required in a dual completion ~~prevents~~ may prevent the producing of a muddied off horizon at a sufficient rate to substantially clearing the injected mud fluid to the well bore. *

As dually completed oil wells are produced it may be anticipated that the differential pressure across the packing elements separating the two productive formations will increase. As the differential pressure across a packing element increases, the hazard of leakage is also increased, and the greater the amount of fluid which can leak past the packing element where failure exists. Packing elements fail through wear, deterioration and defective material. Out of seven dually completed wells, we have noted two mechanical failures which have occasioned migration of fluid from one reservoir to another with damage to the invaded reservoir. We know of no effective way to determine leakage soon after its occurrence. It is very possible for it to go undetected for a protracted period of time. After leakage has been determined it is difficult and costly to determine whether the source of leakage is due to a cement job, casing leak, or in the dual completion equipment.

The matter of taking periodic bottom hole pressures is complicated and often precluded in dually completed wells.

We do not concur in applicants contention that dually completed oil wells tend to prevent waste, increase the ultimate recovery, and protect correlative rights.

As we believe that oil is an irreplaceable asset to both the State and the Nation, every effort should be made to protect and conserve this asset. As we do not believe that dually completed oil wells in New Mexico best serve the interests of conservation, we ~~respectfully~~ request that Oil Conservation Commission deny the applicants request to dually complete ~~the~~ wells in the Bennett and Hare fields x

If the Oil Conservation Commission finds that the Cities Service State S-4 well is producing oil or is capable of producing oil from below the oil string from both the Connell and the Ellenburger formations, request is made that the Oil Conservation Commission order the well to be so recompleted as to ~~exclude~~ the production of oil from the Connell and the possibility of the underground commingling of oil from the seperate reservoirs x

CITIES SERVICE OIL COMPANY

PRODUCERS-REFINERS-MARKETERS OF PETROLEUM PRODUCTS

BARTLESVILLE
OKLAHOMA

April 17, 1951

Oil Conservation Commission
State of New Mexico
P. O. Box 871
Santa Fe, New Mexico

Attention: Mr. R. R. Spurrier
Secretary and Director

Dear Mr. Spurrier:

Pursuant to Order No. R-64 in Case No. 261 issued under date of March 21, 1951, Cities Service Oil Company herewith submits four copies of its amended application requesting authorization to dual complete its State "S" Nos. 3 and 4 Wells located in the Brunson-Hare Fields in the McKee Sand and Ellenberger Lime reservoirs, or an alternative request to transfer the allowables between these wells so as to permit production on the basis of 80 acre units from each of the respective reservoirs. You will recall that action on this matter was deferred at the March hearing as the State "S" No. 4 well was then drilling, and had not at that time tested either the McKee or Ellenberger. Drill stem tests have subsequently established its productiveness in these two zones.

It will be greatly appreciated if this case is docketed and set for hearing as soon as your rules and regulations governing such matters permit. I assume that this will be at the time of the statewide hearing in May.

With kindest personal regards, I am,

Sincerely yours,

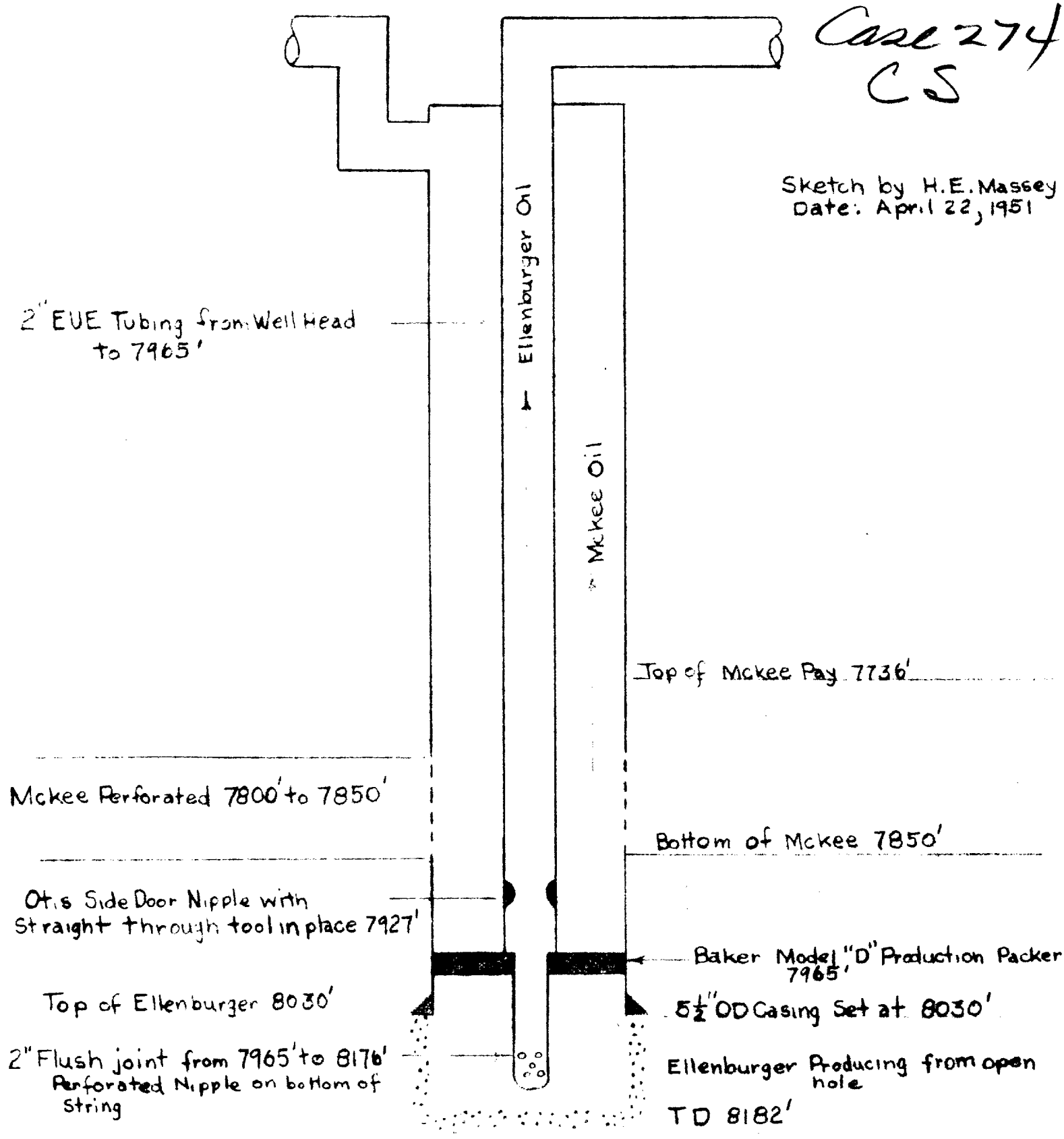
R. E. Adams
Proration Engineer

REA/mc

DIAGRAMMATIC SKETCH SHOWING DUAL COMPLETION INSTALLATION
CITIES SERVICE OIL COMPANY STATE "S" No. 4
ELLENBURGER AND McKEE
BRUNSON POOL, LEA COUNTY, NEW MEXICO

Ex. # 3
Case 274
CS

Sketch by H.E. Massey
Date: April 22, 1951



Ex # 4
Case 274
CS

PACKER LEAKAGE TEST

CITIES SERVICE OIL COMPANY

STATE "S" NO. 4 (Ellenburger & McKee Formations)

BRUNSON AND HALE POOLS - LEA CO., NEW MEXICO

Using a Bristol 2000# - 2000# two pin pressure recording gauge a packer leakage test was run on this well in the following manner to determine if there was any leakage or communication between the Ellenburger and McKee formations.

On April 26, 1951 the well was shut in to allow the zones to build up and reach maximum shut in static conditions. By May 1, 1951 the tubing pressure (Ellenburger) was 650 psig and the casing pressure (McKee) was 1020 psig. Twenty-four hours later on May 2, 1951 the pressures were the same.

The two pin pressure recorder was hooked up with one side to record the tubing or Ellenburger pressure and the other side to record the casing or McKee pressure. The casing (McKee) was flowed for 24 hours on a 14/64" choke while the tubing (Ellenburger) was left shut in. The shut in tubing (Ellenburger) pressure remained at 650 psig and no drop in pressure was observed. Production from the McKee was 470 barrels of pipe line oil with a GOR of 908 cu. ft. per barrel. Oil gravity was 42.8 degrees API at 60° F.

The casing (McKee) was then shut in to allow it to build back to maximum shut in conditions. At the end of 24 hours the pressure had built up to 1000 psig.

Next the tubing (Ellenburger) was flowed for 24 hours on a 22/64" choke while the casing (McKee) was left shut in. The shut in casing (McKee) pressure remained at 1000 psig and no drop in pressure was observed. Production from the Ellenburger was 607 barrels of pipe line oil with a GOR of 933 cu. ft. per barrel. Oil gravity was 40.6° API at 60° F.

Results of the tests show no communication between the Ellenburger and and McKee formation.

Attached please find the details of the test along with the pressure charts made by the Bristol recording pressure gauge.

Tests conducted by Mr. H. L. Massey
District Engineer for Cities Service Oil Company

DETAILS OF PACKER LEAKAGE TEST

Test No. 1

Date Shut-in: 4-26-51 Length of time shut-in prior to test 144-3/4 hours.

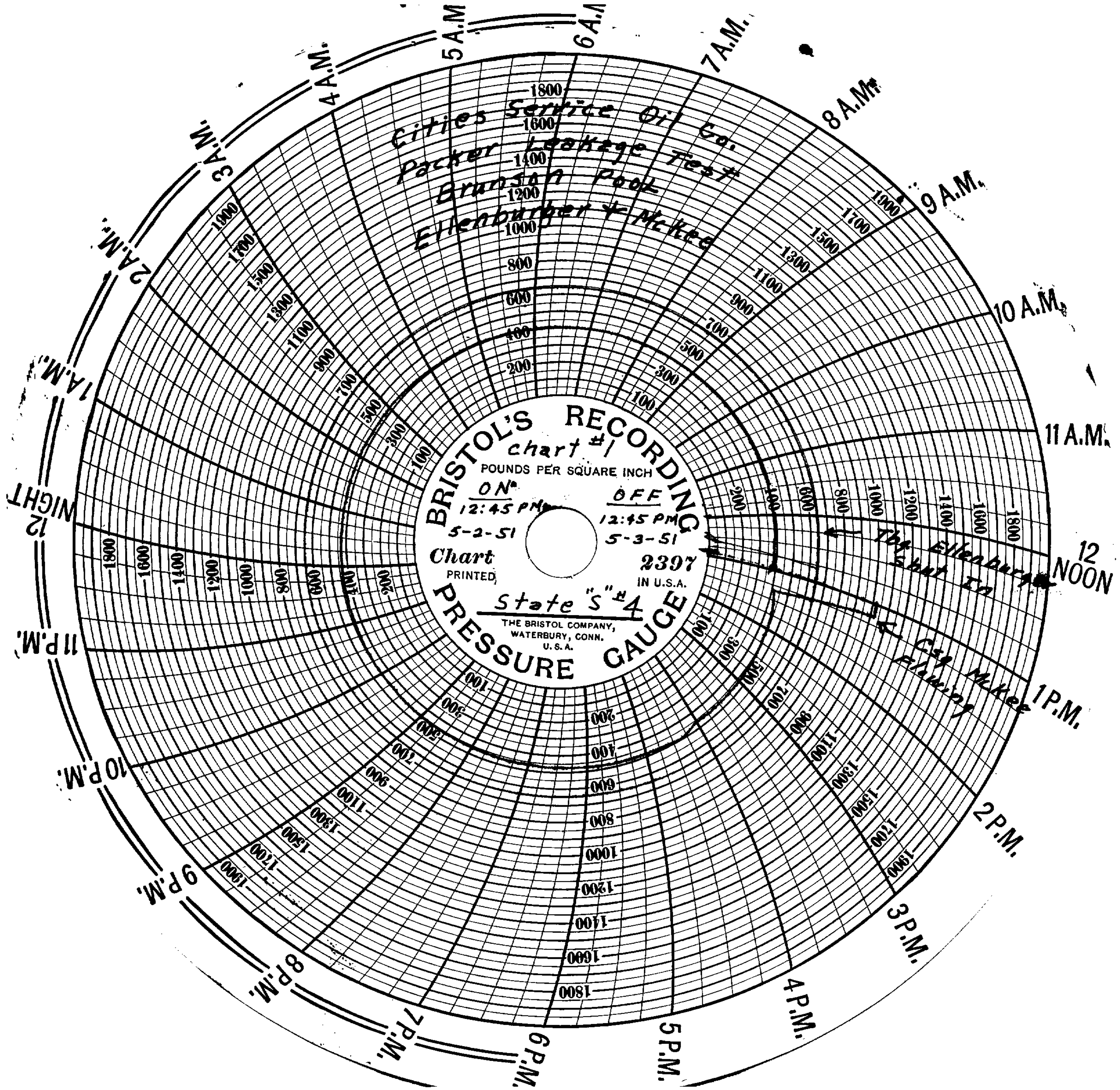
DATA ON PRODUCING COMPLETION
Completion producing: Casing Reservoir: McKee Choke Size: 14/64 inches.
Twenty-four-hour shut-in pressure prior to test: 1020 psi.
Stabilized flowing pressure during test 400 psi.
Length of time for stablized flowing pressure: 15 hours
Shut-in pressure at the end of the test: 400 psi.
Length of time in obtaining this shut-in pressure 0 hours.
DATA ON SHUT-IN COMPLETION:
Completion shut-in Tubing Reservoir Ellenburger
Twenty-four-hour shut-in pressure prior to test 650 psi.
Minimum shut-in pressure during test: 650 psi. Maximum 650 psi
Shut-in pressure at the end of the test: 650 psi.
Length of time required for pressure at the end of the test: 0 hours.
Maximum pressure change of shut-in completion during test 0 psi.

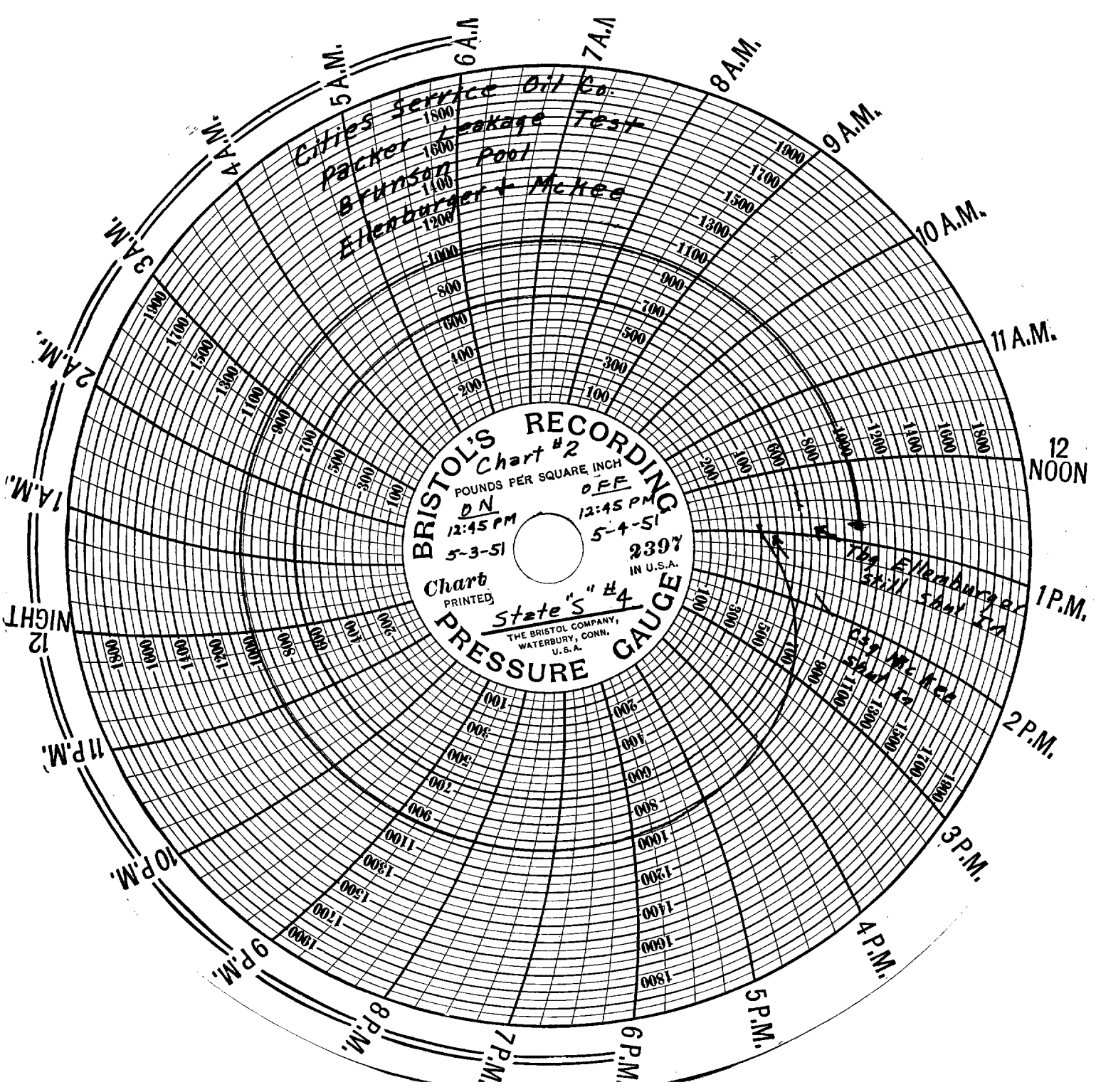
Test No. 2

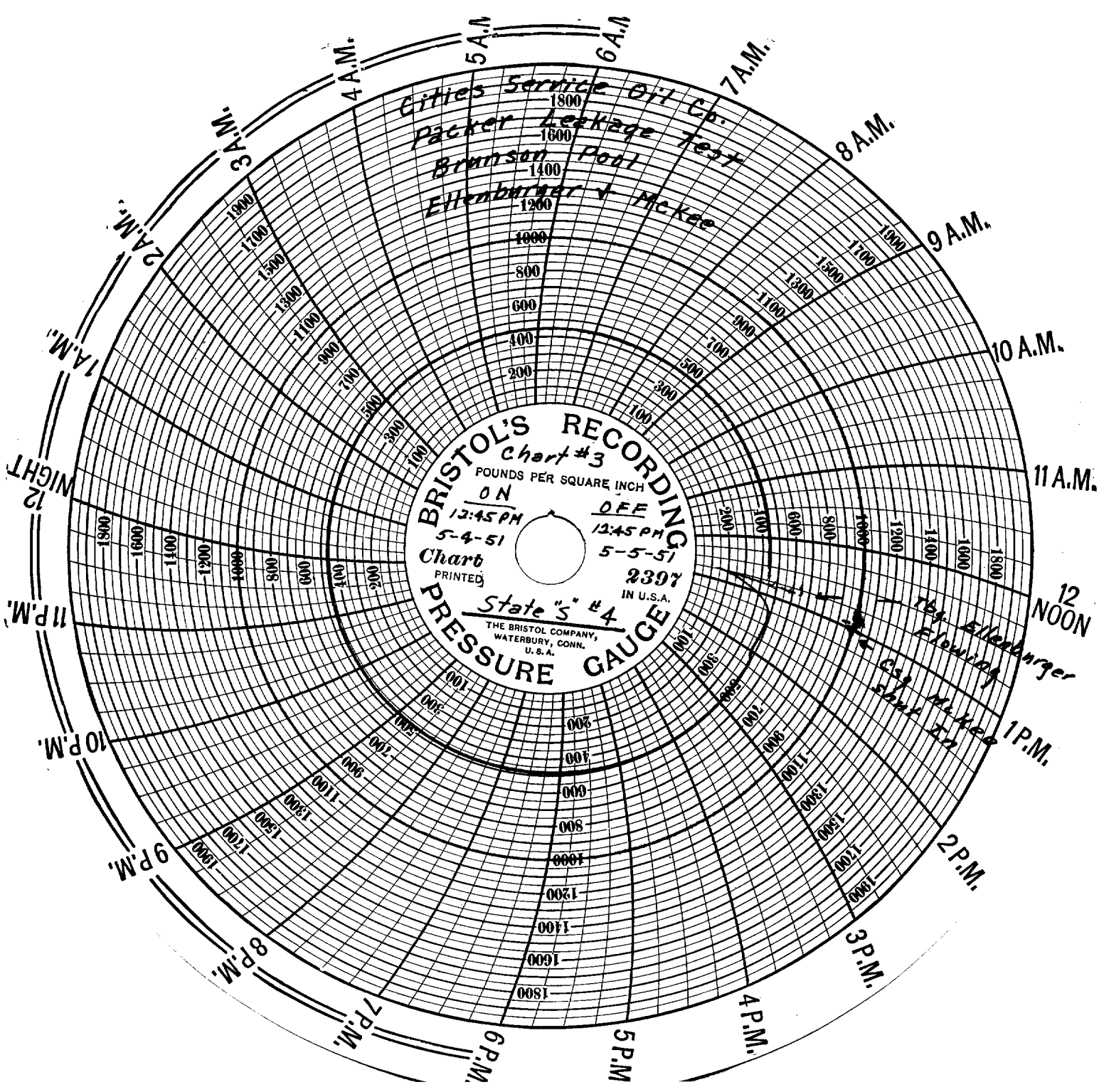
Same well bore as in Test No. 1, but with Ellenburger completion, producing and McKee completion shut-in.

Date shut-in: 5-3-51 Length of time shut-in prior to test: 24 hours.
DATA ON PRODUCING COMPLETION:
Completion producing Tubing Reservoir Ellenburger Choke Size 22/64 inches.
Twenty-four hour shut-in pressure prior to test: 650 psi.
Stablized flowing pressure during test: 440 psi.
Length of time for stablized flowing pressure: 14 hours.
Shut-in pressure at the end of the test 440 psi.
Length of time in obtaining this shut-in pressure 0 hours.
DATA ON SHUT-IN COMPLETION:
Completion Shut-in Casing Reservoir McKee.
Twenty-four hour shut-in pressure prior to test 1000 psi.
Minimum shut-in pressure during test 1000 psi; Maximum 1000 psi.
Shut-in pressure at the end of the test: 1000 psi.
Length of time required for pressure at the end of the test 0 hours.
Maximum pressure change of shut-in completion during test 0 psi.
Classification of completion testing, whether oil well or gas well: Tubing Oil
Casing Oil

Remarks: 24 hour test on McKee-Produced 470 bbls oil, no water, GOR 908.
24 hour test on Ellenburger-Produced 607 bbls. oil, no water, GOR 933.


Cities Service Oil Co.
Packer Leakage Test
Brunson Pool
Ellenburger + McKee
BRISTOL'S RECORDING
chart #1
POUNDS PER SQUARE INCH
ON
12:45 PM
5-2-51
OFF
12:45 PM
5-3-51
Chart
PRINTED
2397
IN U.S.A.
State "S" #4
THE BRISTOL COMPANY, WATERBURY, CONN. U.S.A.
PRESSURE GAUGE
The Ellenburger shut In
Csg McKee Flowing
12 NIGHT
1 A.M.
2 A.M.
3 A.M.
4 A.M.
5 A.M.
6 A.M.
7 A.M.
8 A.M.
9 A.M.
10 A.M.
11 A.M.
12 NOON
1 P.M.
2 P.M.
3 P.M.
4 P.M.
5 P.M.
6 P.M.
7 P.M.
8 P.M.
9 P.M.
10 P.M.
11 P.M.


Cities Service Oil Co.
Packer Leakage Test
Brunson Pool
Ellenburger & McKee
BRISTOL'S RECORDING
Chart #2
POUNDS PER SQUARE INCH
ON 12:45 PM 5-3-51
OFF 12:45 PM 5-4-51
2397
IN U.S.A.
Chart PRINTED
State "S" #4
THE BRISTOL COMPANY, WATERBURY, CONN. U.S.A.
PRESSURE GAUGE
Tbg. Ellenburger
Csg. McKee
6 A.M.
7 A.M.
8 A.M.
9 A.M.
10 A.M.
11 A.M.
12 NOON
1 P.M.
2 P.M.
3 P.M.
4 P.M.
5 P.M.
6 P.M.
7 P.M.
8 P.M.
9 P.M.
10 P.M.
11 P.M.
12 MIGHT
1 A.M.
2 A.M.
3 A.M.
4 A.M.
5 A.M.


Cities Service Oil Co.
Packer Leakage Test
Brunson Pool
Ellenburger & McKee
BRISTOL'S RECORDING
Chart #3
POUNDS PER SQUARE INCH
ON
12:45 PM
5-4-51
OFF
12:45 PM
5-5-51
Chart
PRINTED
2397
IN U.S.A.
State "S" #4
THE BRISTOL COMPANY,
WATERBURY, CONN.
U.S.A.
PRESSURE GAUGE
Tbg. Ellenburger Flowing
Csg. Shut In
12 NOON
1 P.M.
2 P.M.
3 P.M.
4 P.M.
5 P.M.
6 P.M.
7 P.M.
8 P.M.
9 P.M.
10 P.M.
11 P.M.
12 MIGHT
1 A.M.
2 A.M.
3 A.M.
4 A.M.
5 A.M.
6 A.M.
7 A.M.
8 A.M.
9 A.M.
10 A.M.
11 A.M.

EX 5
Case 274
C5

PACKER SETTING AFFIDAVIT

I, W. M. Dickey, being of lawful age
Name of Party Making Affidavit
and having full knowledge of the facts hereinbelow set out do state:

That I am employed by Cities Service Oil Company in the capacity of Production Foreman, that on 4-21, 1951, Date I personally supervised the setting of a Baker Model-D Prod. Packer Make and Type of Packer in Cities Service Oil Co, Operator of Well State "S" Lease Name Well No. 4 located in the Brunson Pool, Lea County, New Mexico at a subsurface depth of 7965 feet, said depth measurement having been furnished me by Lane Wells Co; that the purpose of setting this packer was to effect a seal in the annular space between the two strings of pipe where the packer was set so as to prevent the commingling, in the bore of this well, of fluids produced from a stratum below the packer with fluids produced from a stratum above the packer; that this packer was properly set and that it did, when set, effectively and absolutely seal off the annular space between the two strings of pipe where it was set in such manner as that it prevented any movement of fluids across the packer.

STATE OF NEW MEXICO
COUNTY OF Lea

Before me, the undersigned authority on this day personally appeared W. M. Dickey, known to me to be the person whose name is subscribed to this instrument, who after being by me duly sworn on oath, states that he has knowledge of all the facts stated above and that the same is a true and correct statement of the facts therein recited.

W. M. Dickey

Subscribed and sworn to before me on this the 22 day of May, 1951.

Fred Lawson
Notary Public in and for Lea County, New Mexico

My Commission Expires Feb. 8, 1954

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE AMENDED APPLICATION)
OF THE CITIES SERVICE OIL COMPANY TO DUAL)
COMPLETE AND PRODUCE ITS STATE "S" NO. 3)
AND NO. 4 WELLS LOCATED IN THE S/2 NW/4)
SECTION 15, T-21-S, R-37-E, BRUNSON-HARE)
FIELDS, LEA COUNTY, NEW MEXICO, IN THE)
McKEE SAND AND ELLENBERGER LIME COMMON)
SOURCES OF SUPPLY, OR, IN THE ALTERNATIVE,)
TO AUTHORIZE THE TRANSFER OF ALLOWABLES)
BETWEEN SAID WELLS IN SAID COMMON SOURCES)
OF SUPPLY.)

A M E N D E D A P P L I C A T I O N

Comes now the Cities Service Oil Company, a Corporation, and respectfully shows to the Commission as follows:

1. That applicant is the owner of an oil and gas lease described as the S/2 NW/4 Section 15, T-21-S, R-37-E, Brunson-Hare Fields, Lea County, New Mexico.

2. That applicant's State "S" Well No. 3 located 75 feet North and 75 feet East of the Center of the SE/4 NW/4 of Section 21 has been drilled to a total depth of 8034 feet in the Ellenberger Lime, top of which was encountered at 7725 feet and has been completed as an oil well in that reservoir through perforations from 7860-7900 feet and 7960-8000 feet. That said well was completed on February 11, 1951, and produced flowing through a 36/64" choke 321.75 barrels of oil in 5 hours for a rated 24 hour potential of 1540 barrels with a gas-oil ratio of 915 cu. ft. per barrel.

3. That in the drilling of said State "S" No. 3 well the McKee Sand of the Simpson Zone was found from 7467-7575 feet. That on a drill stem test from 7454-7530 feet in the McKee Sand the well flowed at the rate of 99 barrels of oil per hour with a gas-oil ratio of 968 cu. ft. per barrel. That said test demonstrated the McKee Sand to be commercially productive of oil in said well. That the McKee Sand and Ellenberger Lime are separate common sources of supply separated by impermeable shale and lime in excess of 150 feet in thickness.

4. That applicant's State "S" Well No. 4 is located 100 feet East of the Center of the SW/4 NW/4 of Section 21, on the same lease as said State "S" Well No. 3, and on an adjacent 40 acre drilling unit. That said Well No. 4 has been drilled to a total depth of 8182 feet in the Ellenberger Lime, top of which was encountered at 8030 feet, and is now in the process of completion in that formation. That on a drill stem test from 8015-8182 feet in the Ellenberger Lime the well flowed at the rate of 70 barrels of oil per hour with a gas oil ratio of 658 cu. ft. per barrel. That said initial test has demonstrated the Ellenberger Lime to be commercially productive of oil in said well.

5. That in the drilling of said State "S" No. 4 Well the McKee Sand of the Simpson Zone was encountered at 7720 feet. That on a drill stem test from 7720-7852 feet the well flowed at the rate of 67 barrels of oil per hour with a gas-oil ratio of 910 cu. ft. per barrel. That said test demonstrated the McKee Sand to be commercially productive of oil in said well. That the McKee Sand and Ellenberger Lime are separate common sources of supply separated by impermeable shale and lime in excess of 150 feet in thickness.

6. That applicant proposes to install a packer, of approved mechanical design, in the interval between the base of the McKee Sand and the top of the Ellenberger Lime, in each of said State "S" Wells Nos. 3 and 4, so as to produce the Ellenberger Lime reservoir through the tubing, and the McKee Sand reservoir through the annulus between the tubing and casing. That said two common sources of supply can be separately produced through the same well bore, simultaneously or intermittently, by the use of such approved mechanical devices which will prevent any commingling of fluids therefrom or migration thereof between

the reservoirs.

7. That the production of these two reservoirs by this means and in this manner will tend to prevent waste; increase the ultimate recovery of the respective reservoirs; protect correlative rights; prevent the drilling of unnecessary wells; is in compliance with the four point program to conserve tubular goods as announced by the Petroleum Administration for Defense, and will utilize to the fullest extent materials made critical by the demand of additional wells for the defense effort, and other war production projects, all to the benefit of your applicant, other producers, royalty owners and the State of New Mexico.

8. That and in the event this Commission finds that the dual completion of applicant's State "S" No. 3 and No. 4 Wells is impractical and/or infeasible as herein proposed, it is respectfully requested that a transfer of allowables be authorized so that one well may produce from the McKee Sand with an allowable commensurate to that of two 40 acre units, and that the other well be produced from the Ellenberger with an allowable also commensurate to that of two 40 acre units. That before such allowable transfer be authorized the productive ability of each of said reservoirs in each of said wells be tested to the satisfaction of this Commission. That the Commission shall designate the respective common source of supply from which to produce each of said wells.

9. That applicant believes and so represents to this Commission that preferably the dual completion of wells in the McKee Sand and Ellenberger Lime reservoirs, in the Brunson-Hare Fields, or in the alternative the transfer of allowables between said wells in said reservoirs would not result in reservoir waste or impair correlative rights, but would establish additional, immediately producible reserves of oil with a minimum expenditure of critical material, and is in the best interests of the nation's preparedness program.

10. That a plat is attached hereto marked as Exhibit "A" showing the location of all wells on applicant's lease, and the location and ownership of all wells on offsetting leases.

11. That this amended application is submitted pursuant to Order No. R-64 issued in Case No. 261 under date of March 21, 1951.

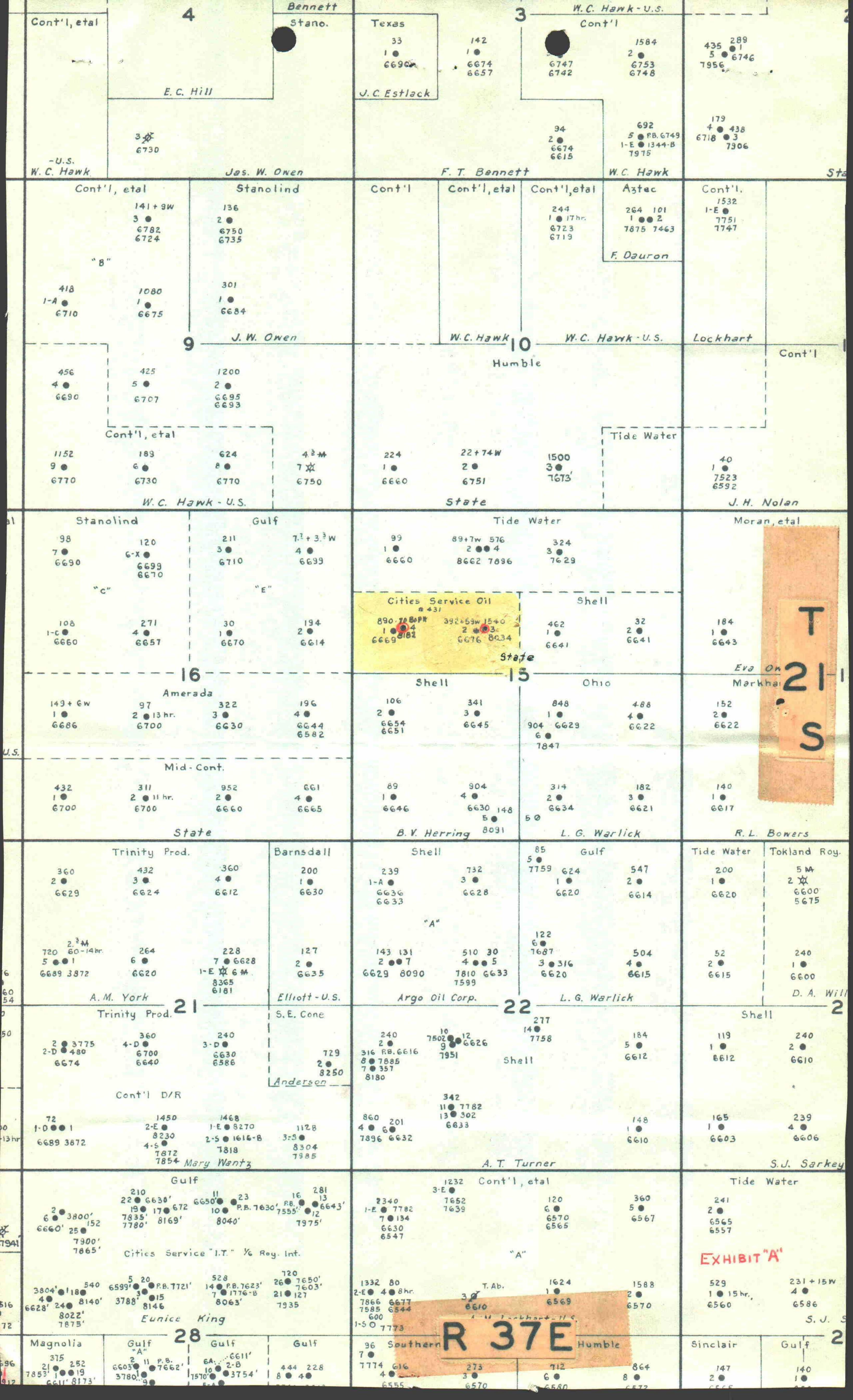
WHEREFORE, Applicant prays that this cause be docketed and set for hearing, that notice thereof be given as required by law, and that upon such hearing an order be promulgated authorizing the dual completion of the States "S" No. 3 and No. 4 wells of applicant so as to produce the McKee Sand of the Simpson Zone and the Ellenberger Lime common sources of supply through the same well bore, or, in the alternative, a transfer of allowables be authorized so as to produce one well from the McKee Sand and the other well from the Ellenberger Lime each being situated on 80 acre units with allowables commensurate to the unit size.

Dated: April 17, 1951.

CITIES SERVICE OIL COMPANY

By R. E. Adams

R. E. Adams
Proration Engineer



T 21 S
R 37E
EXHIBIT "A"
4
3
9
10
15
16
21
22
28
Bennett
Stano.
Texas
W. C. Hawk - U.S.
Cont'l
Cont'l, etal
E. C. Hill
J. C. Estlack
Jas. W. Owen
F. T. Bennett
W. C. Hawk
Stanolind
Aztec
F. Dauron
J. W. Owen
W. C. Hawk - U.S.
Lockhart
Humble
Tide Water
W. C. Hawk - U.S.
State
J. H. Nolan
Gulf
Moran, etal
Cities Service Oil
Shell
Amerada
Ohio
Eva Owen
Markham
Mid-Cont.
B. V. Herring
L. G. Warlick
R. L. Bowers
Trinity Prod.
Barnsdall
Tokland Roy.
A. M. York
Elliott - U.S.
Argo Oil Corp.
D. A. Will
S. E. Cone
Anderson
Cont'l D/R
Mary Wantz
A. T. Turner
S. J. Sarkey
Cities Service "I.T." 1/6 Roy. Int.
Eunice King
Magnolia
Southern
Sinclair

LARGE FORMAT EXHIBIT HAS BEEN REMOVED AND IS LOCATED IN THE NEXT FILE

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

Electrical Log

COUNTY Lea
FIELD or LOCATION Eunice
WELL State S-#4
COMPANY Cities Serv. Oil Co.

COMPANY CITIES SERVICE OIL COMPANY
WELL STATE S #4
FIELD EUNICE
LOCATION SEC. 15-21S-37E
COUNTY LEA
STATE NEW MEXICO

Location of Well
3390' fr S/L
4520' fr E/L
Sec. 15-21S-37E

Ex. # 2
Case 274
CS

Elevation: D.F.: 3463'
K.B.:
or G.L.:

FILING No.

RUN No.	1				
Date	4-15-51				
First Reading	8177				
Last Reading	2820				
Feet Measured	5357				
Csg. Schlum.	2818				
Csg. Driller	2819				
Depth Reached	8180				
Bottom Driller	8182				
Depth Datum	KB - 13' abv. G.L.				
Mud Nat.	Caustic Obr.				
" Density	9.3				
" Viscosity	50				
" Resist.	3.74@65 °F	@ °F	@ °F	@ °F	@ °F
" Res. BHT	1.80@122°F	@ °F	@ °F	@ °F	@ °F
" pH	10.5@ °F	@ °F	@ °F	@ °F	@ °F
" Wtr. Loss	9 CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.
Max. Temp. °F	122				
Bit Size	6 3/4"				
Spcgs.—AM	10'				
AO	32"LS				
AO	19'		CITI		
Opr. Rig Time	5½ hrs.				
Truck No.	504-Hobbs		EXHIBIT No.		
Recorded By	Crues				
Witness By	Walker				

REFERENCE No. W 1868 - C

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

Electrical Log

COUNTY Lea
FIELD or LOCATION Hare
WELL L.G. Warlick C-#7
COMPANY The Ohio Oil Co.

COMPANY THE OHIO OIL CO.
WELL L.G. WARLICK C-#7
FIELD HARE
LOCATION SEC. 15-21S-37E
COUNTY LEA
STATE NEW MEXICO

Location of Well
405' fr S/L
2310' fr E/L
Sec. 15-21S-37E

Elevation: D.F. 3428'
K.B.:
or G.L.:

FILING No.

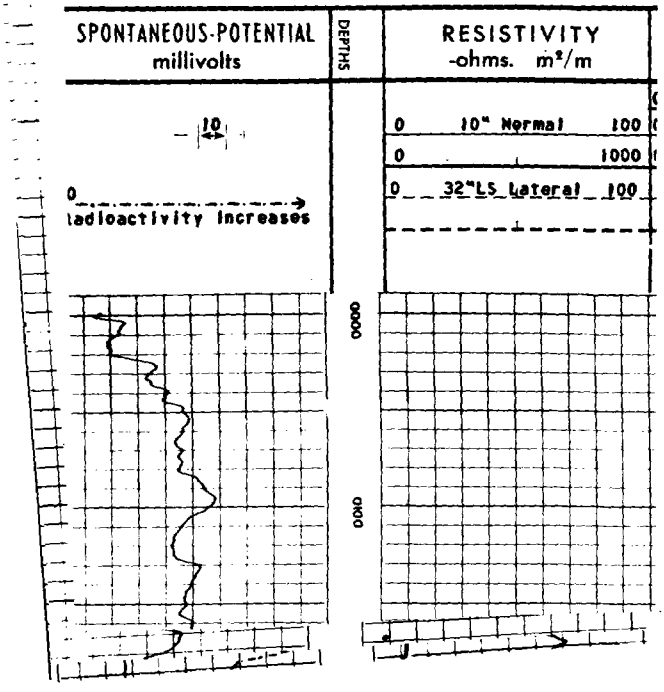
RUN No.	1				
Date	4-6-51				
First Reading	7682				
Last Reading	2802				
Feet Measured	4880				
Csg. Schlum.	2802				
Csg. Driller	2802				
Depth Reached	7685				
Bottom Driller	7690				
Depth Datum	3' abv. RT or 12' abv. G.L.				
Mud Nat.	Aquagel				
" Density	9.2				
" Viscosity	43				
" Resist.	.95 @ 65 °F	@ °F	@ °F	@ °F	@ °F
" Res. BHT	.58 @ 112 °F	@ °F	@ °F	@ °F	@ °F
" pH	10.5 @ °F	@ °F	@ °F	@ °F	@ °F
" Wtr. Loss	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.
Max. Temp. °F	112				
Bit Size	7 7/8"				
Spegs.—AM	10"				
A 0	32"-LS				
AO	19'				
Opr. Rig Time	3½ hrs.				
Truck No.	570-Hobbs				
Recorded By	Scott				
Witness By	Steele				

FOLD HERE

REMARKS

Mud sample from mud pit.

THIS IS NOT A COMPLETE REPRODUCTION OF THE ORIGINAL THREE-TRACK SCHLUMBERGER LOG.



Reproduced By

West Texas Electrical Log Service

1305 Commerce Street
Dallas 1, Texas

REFERENCE No. W 1889 - C Exhibit #2

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

Electrical Log

COUNTY Lea
FIELD or LOCATION Eunice
WELL State S-#4
COMPANY Cities Serv. Oil Co.

COMPANY CITIES SERVICE OIL COMPANY
WELL STATE S #4
FIELD EUNICE
LOCATION SEC. 15-21S-37E
COUNTY LEA
STATE NEW MEXICO

Location of Well
3390' fr S/L
4520' fr E/L
Sec. 15-21S-37E

Elevation: D.F. 3463'
K.B.:
or G.L.:

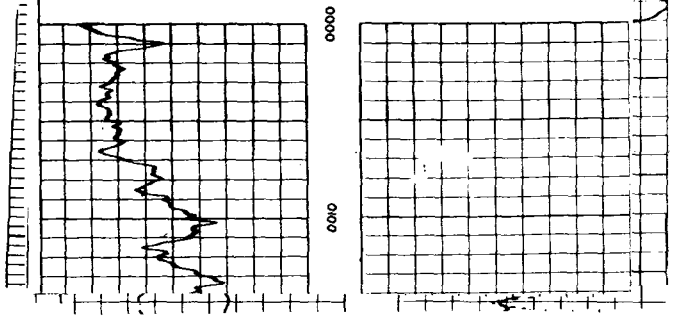
FILING No.

RUN No.	1				
Date	4-15-51				
First Reading	8177				
Last Reading	2820				
Feet Measured	5357				
Csg. Schlum.	2818				
Csg. Driller	2819				
Depth Reached	8180				
Bottom Driller	8182				
Depth Datum	KB - 13' abv. G.L.				
Mud Nat.	Caustic Qbr.				
" Density	9.3				
" Viscosity	50				
" Resist.	1.7@65 °F	@ °F	@ °F	@ °F	@ °F
" Res. BHT	1.80@122°F	@ °F	@ °F	@ °F	@ °F
" pH	10.5@ °F	@ °F	@ °F	@ °F	@ °F
" Wtr. Loss	9 CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.
Max. Temp. °F	122				
Bit Size	6 3/4"				
Spcgs.—AM	10'				
AO	32"LS				
AO	19'				
Opr. Rig Time	5½ hrs.				
Truck No.	504-Hobbs				
Recorded By	Crues				
Witness By	Walker				

REMARKS

THIS IS NOT A COMPLETE REPRODUCTION OF THE ORIGINAL THREE-TRACK SCHLUMBERGER LOG.

SPONTANEOUS-POTENTIAL millivolts	DEPTHS	RESISTIVITY -ohms. m²/m
− 20 +		0 10" Normal 150
		0 1500
0 Radioactivity Increases →		0 32"LS Lateral 150



Ef # 6 Case 274 C-2

TWO ZONE PRODUCTION METHOD USING A BAKER MODEL "D" RETAINER PRODUCTION PACKER, A TUBING SEAL NIPPLE LOCATOR SUB WITH EXTENSION AND AND ONE MULTI-V TUBING SEAL NIPPLE.

DWG NO. 121/117

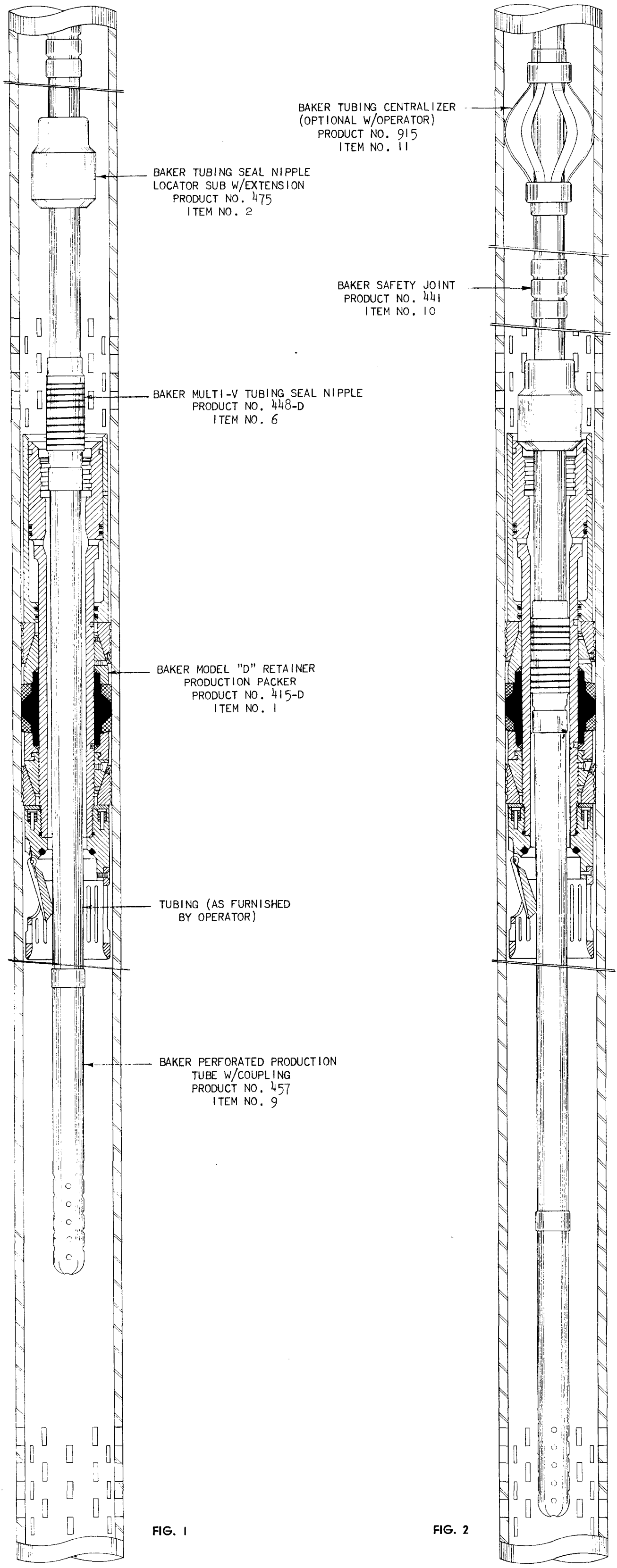


FIG. 1

FIG. 2

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

Electrical Log

COUNTY Lea
FIELD or LOCATION Eunice
WELL State S-#4
COMPANY Cities Serv. Oil Co.

COMPANY CITIES SERVICE OIL COMPANY
WELL STATE S #4
FIELD EUNICE
LOCATION SEC. 15-21S-37E
COUNTY LEA
STATE NEW MEXICO

Location of Well
3390' fr S/L
4520' fr E/L
Sec. 15-21S-37E

Elevation: D.F.: 3463'
K.B.:
or G.L.:

FILING No.

FOLD HERE

REMARKS

RESISTIVITY | RESISTIVITY | DEP | SPONTANEOUS-POTENTIAL

RUN No.	1				
Date	4-15-51				
First Reading	8177				
Last Reading	2820				
Feet Measured	5357				
Csg. Schlum.	2818				
Csg. Driller	2819				
Depth Reached	8180				
Bottom Driller	8182				
Depth Datum	KB - 13' abv. G.L.				
Mud Nat.	Caustic Obr.				
" Density	9.3				
" Viscosity	50				
" Resist.	3.74@65 °F	@ °F	@ °F	@ °F	@ °F
" Res. BHT	1.80@122°F	@ °F	@ °F	@ °F	@ °F
" pH	10.5@ °F	@ °F	@ °F	@ °F	@ °F
" Wtr. Loss	9 CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.
Max. Temp. °F	122				
Bit Size	6 3/4"				
Spcgs.—AM	10'				
AO	32"LS				
AO	19'				
Opr. Rig Time	5½ hrs.				
Truck No.	504-Hobbs				
Recorded By	Crues				
Witness By	Walker				

SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON, TEXAS

Electrical Log

COMPANY Cities Service Oil Company
WELL No. Brunson State S-3
FIELD or LOCATION
COUNTY Lea

COMPANY CITIES SERVICE OIL COMPANY
WELL STATE S-3
FIELD NO. BRUNSON
LOCATION SEC. 15-21S-37E
COUNTY LEA
STATE NEW MEXICO

Location of Well
3375' fr S/L
3225' fr E/L
Sec. 15-21S-37E

Elevation: D.F.: 3447'
K.B.:
or G.L.:

FILING No.

FOLD HERE

REMARKS Mud sample from mud pit.

RUN No.	1				
Date	2-4-51				
First Reading	8027				
Last Reading	2806				
Feet Measured	5221				
Csg. Schlum.	2806				
Csg. Driller	2800				
Depth Reached	8030				
Bottom Driller	8034				
Depth Datum	RT - 13.1' abv. G.L.				
Mud Nat.	Caustic Obr.				
" Density	10.2				
" Viscosity	44				
" Resist.	1.02 @ 65 °F	@ °F	@ °F	@ °F	@ °F
" Res. BHT	.48 @ 110 °F	@ °F	@ °F	@ °F	@ °F
" pH	10.5 @ °F	@ °F	@ °F	@ °F	@ °F
" Wtr. Loss	6 CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.
Max. Temp. °F	110				
Bit Size	6 3/4"				
Spcgs.—AM	10"				
AO	32" LS				
AO	19'				
Opr. Rig Time	4½ hrs.				
Truck No.	504-Hobbs				
Recorded By	Young				
Witness By					

RESISTIVITY

RESISTIVITY ohms

DEPTH

SPONTANEOUS-POTENTIAL millivolts

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

Electrical Log

COUNTY Lea
FIELD or LOCATION Brunson
WELL State #3
COMPANY Shell Oil Co.

COMPANY SHELL OIL CO.

WELL STATE #3

FIELD BRUNSON

LOCATION SEC. 15-21S-37E

COUNTY LEA

STATE NEW MEXICO

Location of Well
2210' fr N/L
2310' fr E/L
Sec. 15-21S-37E

Elevation: D.F.: 3439'
K.B.:
or G.L.:

FILING No.

FOLD HERE

RUN No.	1	11			
Date	2-10-51	2-18-51			
First Reading	7643	7792			
Last Reading	2920	7643			
Feet Measured	4723	149			
Csg. Schlum.	2920	7633			
Csg. Driller	2925	7635			
Depth Reached	7646	7795			
Bottom Driller	7645	7798			
Depth Datum	1' abv. RT or 12.1' abv. G.L.				
Mud Nat.	Gel-Caustic Obr.-Caustic Obr.				
" Density	9.4	8.9			
" Viscosity	40	95			
" Resist.	* @ °F	* @ °F	@ °F	@ °F	@ °F
" Res. BHT	@ °F	@ °F	@ °F	@ °F	@ °F
" pH 10.0	@ °F	@ °F	@ °F	@ °F	@ °F
" Wtr. Loss 9.0	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.
Max. Temp. °F	110	152			
Bit Size	7 7/8-7625	4 3/4", 4 3/4"			
Spcgs.—AM	10"	10"			
AO	32" LS	32" LS			
AO	19'	19'			
Opr. Rig Time	5½ hrs.	4 hrs.			
Truck No.	504-Hobbs	570-Hobbs			
Recorded By	Young	Scott			
Witness By	Nestor	Nestor			

REMARKS
Run 1: * Pit Mud: 2.10 @ 82° or 1.6 @ 110°
Flow Line Mud: .96 @ 80° or .72 @ 110°

Run 2: * Circulating Mud Sample: Res. 1.56 @ 68°; Rm @ BHT - .76°, Ph - 1
Fresh Mud spotted on bottom: 2.30 @ 68°; Rm @ BHT - .89°, Ph - 7

Exhibit 5-3
Case 274

SPONTANEOUS-POTENTIAL | DE | RESISTIVITY | RESISTIVITY

SCHLUMBERGER

WELL SURVEYING CORPORATION

Location of Well

980' FSL & 990 FEL
EC. 28 21S-37E

Elevation: D.F.: 3435'
K.B.
or G.L.:

COMPANY: GULF OIL CORPORATION

WELL: CARSON C #8

FIELD: BRUNSON

LOCATION: SEC. 28 21S-37E

COUNTY: LEA

STATE: NEW MEXICO

FILING No.

COMPANY: GULF OIL CORPORATION

WELL: CARSON C #8,

FIELD OR LOCATION: BRUNSON

COUNTY: LEA

RUN NO.	I	II			
Date	7-8-49	7-23-49			
First Reading	7364	7740			
Last Reading	2798	7376			
Footage Measured	4566	364			
Csg Shoe Schlum	2798	7376			
Csg Shoe Driller	2800	7374			
Max. Depth Reached	7367	7743			
Bottom Driller	7375	7743			
Depth Datum	R. T.	R. T.			
Mud Nature	Aquagel	Aquagel			
" Density	9.5	9.5			
" Viscosity	38	53			
" Resistivity	.58 @ 76 °F	.62 @ 75 °F	@ °F	@ °F	@ °F
" Resistivity BHT	@ °F	@ °F	@ °F	@ °F	@ °F
" pH	@ °F	@ °F	@ °F	@ °F	@ °F
" Water Loss	CC 30 Min	CC 30 Min	CC 30 Min.	CC 30 Min.	CC 30 Min
Maximum Temp. F					
Bit Size	8 3/4	6 1/8"			
Spacings AM	10"	10"			
A					
AO	32"	32"			
E.S. Rig Time	12½	2½ hours			
Truck No.	252	279			
Recorded By	Scott	Scott			
Witnessed By					

REMARKS

Spontaneous-Potential millivolts	DEPTHS	Resistivity -ohms. m^2 m.