BOTTOM HOLE PRESSURE TESTS

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON ELLENBERGER [illegible]

TIDE WATER STATE "[illegible]" A

2-22-51 [illegible]

60

SUBSURFACE ENGINEERING COMPANY

production engineering services

[illegible] OKLAHOMA OKLAHOMA CITY, OKLAHOMA [illegible], OKLA[illegible]

[illegible] SNYDER, TEXAS MIDLAND, TEXAS [illegible], TEXAS

HOUSTON, TEXAS

SUBSURFACE ENGINEERING COMPANY • production engineering services
701 S. 33rd WEST AVE. TULSA TELEPHONE 54-5819
1307 Bell Avenue Houston

February 24, 1951
B237-51

Tide Water Associated Oil Company
McClintic Building
Midland, Texas

Attention: Mr. E. E. Tucker

Gentlemen:

Enclosed please find report showing results of P. I. Test run on Tide Water State "B" #4 in the Brunson Allenberger Field, 2-22-51 through 2-24-51.

Thank you very much for permitting us to serve you.

Yours very truly,

SUBSURFACE ENGINEERING COMPANY

Louis A. Picard

Louis A. Picard

LAP/ev

Encl. 4 copies report

STATE "S" #4 - BRUNSON FIELD

DRILL STEM TESTS

DST #	#1	#2	#3	#4
	Simpson			
Formation Tested	McKee	Connell	Ellenberger	Ellenberger
Total Depth	7520'	7646'	7896'	7896'
Packer Set At	7398'	7556'	7739'	In 5½ Csg. @ 7672'
Total No. Feet Tested	122'	90'	57'	Perf. 7706-32'
Size Hole	6 3/4	No	6 3/4	
Size Drill Pipe	3 1/2 Med.	Test	3 1/2	2 EUE
Choke Size:				
(1) Top	1"		1"	1"
(2) Bottom	5/8"		5/8"	5/8"
Blanket	None		None	None
Total Time Tool Open	1 Hr. 18 Min.		1 Hr. 18 Min.	1 Hr.
Gas to Surface (Time)	3 Min.		5 Min.	Slight Blow
Mud to Surface (Time)	11 1/2 Min.		40 Min.	-
Oil to Surface (Time)	12 1/2 Min.		48 Min.	-
Flowing Data:				Did Not
(1) Total Time Flowed	1 Hr. 6 Min.		30 Min.	Flow
(2) Rate of Flow	50 BPH		56.6 BPH	-
(3) % Oil	100		100	-
(4) % Water	-		-	-
(5) Flowing Surf. Pressure	?		-	-
(6) Total Bbls. Flowed	55		28.29	-
Recovered (When Pulled):				
(1) Oil	180'		900'	-
(2) Water	-		-	-
(3) Mud	-		-	730' Drlg.
Flowing (Final) BHP	1366#		1160#	350#
Length of Time Tool Closed	15 Min.		15 Min.	15 Min.
Static BHP	2730#		2845#	-
Initial Hydrostatic Mud Wt.	3995#		3550#	3455#
Final Hydrostatic Mud Wt.	3995#		3405#	3455#
Mud Wt., #/Gal.	9.3#		9.2#	9.0#
Date Tested	1-4-51	1-6-51	1-12-51	1-16-51

Failed to test this zone when drilled - Geol. reported no staining - Test varified same.

E ✓ C

BEFORE THE

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

- - - - - -

PROCEEDINGS

The following matters came on for consideration before the Oil Conservation Commission of the State of New Mexico pursuant to legal notice at a hearing held on March 20, 1951, at 10:00 a.m., at Santa Fe, New Mexico:

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and the Rules and Regulations of said Commission promulgated thereunder, of the following public hearing to be held March 20, 1951, beginning at 10:00 o'clock a.m. on that day in the City of Santa Fe, New Mexico, in the Council Chamber of the City Hall.

STATE OF NEW MEXICO TO:

All named parties in the following cases and notice to the public:

Case 260:

In the matter of the application of the Tide Water Associated Oil Company for authority to dually complete State S No. 4, located

in the NE/4 NW/4 section 15, T.21 S, R. 37 E, Lea County, New Mexico, for the Ellenburger and McKee Formations; or in the alternative to authorize transfer of allowable of State S No. 4 to State S No. 3 for Ellenburger production.

Case 261:

In the matter of the application of Cities Service Oil Company for authority to dually complete State S No. 3, located in the SE/4 NW/4 section 15, T.21 S, R. 37 E, Lea County, New Mexico, in the Ellenburger and McKee formations.

Case 262:

In the matter of the application of Byrd-Frost, Inc. for designation and spacing rules for a Mesa Verde gas pool to be known as Largo Mesa Verde gas pool, comprising:

T. 29 N, R.8 W
Sections 1 to 36, inclusive

T. 28 N, R.8 W
Sections 7 to 18, 20 to 28, and 34 to 36

T. 27 N, R.8 W
Sections 1 to 4, and 9 to 12

T. 29 N, R.7 W
Sections 17 to 20, and 28 to 34

T.28 N, R.7 W
Sections 7 to 10, 15 to 22, and 26 to 35

Case 263:

In the matter of hearing to be held by the Oil Conservation Commission, upon its own motion, for the designation, extension, or deletion of the various pools listed and described, as follows:

Extend the House pool:

T. 20 S. R.38 E
S/2 Section 11
NE/4 and S/2 section 12
N/2 section 13
N/2 section 14

T. 20 S. R.39 E

W/2 section 7
NW/4 Section 18

Extend the Bough Pool:

T.9 S, R.36 E

S/2 section 7
All section 18

Extend the Vacuum pool:
T.18 S. R. 34 E
All section 5

Extend the Bagley Siluro-Devonian pool:

T. 11 S, R. 33 E

SE/4 section 33
SW/4 section 34

T. 12 S. R.33 E

W/2 section 3
E/2 section 4

Create the following pools:

Twin Lakes pool
T.8 S, R. 28 E
SE/4 section 35
S/2 section 36

T.9 s, R.28 E
All section 1
E/2 section 2

Fowler-Blinebry pool

T.24 S, R. 37 E
W/2 section 15
All section 16
N/2 section 21
NW/4 section 22

Gladiola-Abo pool

T. 12 S, R. 37 E
All section 13
E/2 section 14
NE/4 section 23
N/2 section 24

Levick pool
T. 8 S, R. 27 E
SW/4 section 5
S/2 section 6
all section 7
W/2 section 8

Keohane pool
T. 9 S, R. 29 E
SE/4 section 1
E/2 section 12
T.9 S, R. 30 E
S/2 section 6
All section 7

GIVEN under the seal of the Oil Conservation Commission of New Mexico, at Santa Fe, New Mexico, on February 21, 1951.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION
s/ R. R. Spurrier
R. R. SPURRIER
SEAL Secretary.

BEFORE:

Hon. Guy Shepard, Member and Acting Chairman
Hon. R. R. Spurrier, Member and Secretary

REGISTER:

G. T. Hanners
U. D. Sawyer
Lovington, New Mexico

John Major
Oil Development of Texas
Amarillo, Texas

E. A. Paschal
Oil Development of Texas
Amarillo, Texas

Charles E. Shaver
Humble Oil and Refining Company
Houston, Texas

J. R. Puckett
Magnolia Petroleum Company
Kermit, Texas

L. J. Gude
Oil Development Company of Texas
Amarillo, Texas

Frank Purdum
Subsurface Engineering Company
Tulsa, Oklahoma

Bernerd A. Ray
Consulting Geologist
Midland, Texas

M. B. Penn
Mid-Continent
Tulsa, Oklahoma

E. J. Pierce
Mid-Continent
Midland, Texas

J. H. Crocker
Mid-Continent
Tulsa, Oklahoma

E. P. Keeler
Magnolia Petroleum Company
Dallas, Texas

Foster Morrell
U. S. Geological Survey
Roswell, New Mexico

Robert E. Murphy
Magnolia Petroleum Company
Roswell, New Mexico

E. E. Kinney
New Mexico Bureau of Mines
Artesia, New Mexico

Hiram M. Dow
Roswell

Wm. Ed McKellar, Jr.
Magnolia Petroleum Company
Dallas, Texas

E. C. Iden
Oil Development Company of Texas
Albuquerque, New Mexico

Mrs. U. D. Sawyer
Crossroads
New Mexico

Don G. McCormick
Carlsbad, New Mexico

George Hirschfeld
New Mexico Oil & G. E. C.
Hobbs, New Mexico

Elvis A. Utz
Oil Conservation Commission
Santa Fe, New Mexico

H. A. Nedom
Amerada
Tulsa, Oklahoma

C. V. Millikan
Amerada
Tulsa, Oklahoma

R. U. Fitting, Jr.
U. D. Sawyer
Midland, Texas

George Graham
Oil Conservation Commission
Santa Fe, New Mexico

- - - - - - -

CHAIRMAN SHEPARD: The meeting will come to order. The first case to be taken up is No. 1, the allowable. Mr. McCormick, will you proceed?

MR. McCORMICK: I would like to have Mr. Utz and Mr. Kinney sworn, please.

(Mr. Utz and Mr. Kinney sworn.)

ELVIS A. UTZ,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. McCORMICK:

Q Go ahead and state your name.

A Elvis A. Utz, engineer for the Oil Conservation Commission.

Q I will ask you if you have made a study of the market demand for oil for the State of New Mexico for April 1951?

A Yes, I have.

Q You have an estimate of the market demand made by the United States Bureau of Mines?

A No, I do not have it, this month, it didn't arrive.

Q Have you received and compiled the nominations of purchasers?

A Yes, I have.

Q What do the nominations total?

A The total nominations are 142,480 for the state; 141,620 for the southeast.

Q How does that compare with the nominations for the preceding month?

A The state nominations are 370 barrels up,or 3 per cent; the nominations for the southeast are 270 barrels increase.

Q I will ask you if you have an opinion as to what the reasonable market demand for oil per day for the state will be during the month of April?

A Yes I have an opinion as to the estimate, and it is 152,204 barrels per day for the state. For the southeast - I am sorry - correction. 152,204 for the southeast and 154,054 for the state.

Q In your opinion how much of that would be allocated to San Juan County?

A 850 barrels.

Q In your opinion can the balance of the market demand be met by the allocated pools of southeastern New Mexico?

A According to all documentary evidence we have, at hand, they can, yes.

Q Is the potential producing capacity of all wells in the southeastern New Mexico greater than the figure you have given?

A I believe they are.

Q To prevent waste, in your opinion, is it necessary to pro rate and allocate production in southeastern New Mexico?

A In my opinion, it is.

Q In your opinion, can the pools of southeastern New Mexico produce 152,204 barrels per day without permitting waste?

A Yes, they can.

Q What do you recommend as the daily allowable production then for southeastern New Mexico?

A 52 barrels normal unit allowable the same as last month.

Q And how should production be distributed?

A According the present rules and regulations of the Oil Conservation Commission.

Q Do you have any other statement to make?

A No, I don't believe I do at this time.

Mr. Mc CORMICK: Any questions of Mr. Utz?

(Witness excused.)

E. E. Kinney,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. McCORMICK:

Q Go ahead and state your name and official position.

A Ed Kinney, petroleum engineer, New Mexico Bureau of Mines.

Q Are you making a continuing study of market demand for oil in the State of New Mexico?

A I am.

Q How long have you been making this study?

A About 16 months.

Q Please state in your own words the market conditions for oil in New Mexico at this time.

A For the last four weeks the indicated movement of oil in New Mexico has been a net to storage, a very slight amount, but to storage instead of from storage as in the past.

Q How is the market, is it firm?

A The market demand is strong. The latest Bureau of Mines figures on accrued stocks is just slight over 246 million dollars. However, production stocks; gasoline, kerosene, and gas - oil - are increasing slightly.

Q Do you have any other statement to make at this time?

A It would be my recommendation that the unit allowable be not increased above last months allowable.

Q Remain at 52 barrels?

A Remain at 52 barrels, and try to bring up storage a little bit more.

MR. McCORMICK: Any questions of Mr. Kinney? That will be all.

(Witness excused.)

CHAIRMAN SHEPARD: Does anyone have any statement to make regarding the allowable. If not, we will take up the next case.

Case 149 by agreement of counsel will be continued until nine o'clock in the morning.

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STATE OF NEW MEXICO)
SS.
COUNTY OF BERNALILLO)

I hereby certify that the foregoing transcript of the allowable hearing before the Oil Conservation Commission on March 20, 1951, in the Council Chambers, City Hall, Santa Fe, New Mexico, is a true record of the same to the best of my knowledge, skill and ability.

Dated at Albuquerque, New Mexico, March 27, 1951.

E. E. Greer

My Commission expires August 4, 1952.

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON ELLENBERGER FIELD

TIDE WATER STATE "S" #4

2-22-51 2-24-51

PRODUCTION DATA

Status	Drop In BHP PSIG	BHP PSIG	Bbls/Day	MCF/Day	GOR	P.I.
Static		2706				
Flowing 12/64" ck	87	2619	195	199	1021	2.241
Flowing 10/64" ck	69	2637	137	145	1058	1.985
Flowing 8/64" ck	47	2659	81	94	1160	1.723

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON ELLENBERGER FIELD

TIDE WATER STATE "S" #4

2-22-51 2-24-51

G.O.R. & P. I.

12/64" ck - Oil Production - ~~199,000~~ 195 bbls./day

Gas Production - 199,000 cu.ft./day

Drop in BHP 87#

GOR = $\frac{199,000}{195}$ = 1021 cu.ft./bbl.

P.I.= $\frac{195}{87}$ = 2.241 bbls./day/# drop BHP

10/64" ck - Oil Production - 137 bbls./day

Gas Production - 145,000 cu.ft./day

Drop in BHP 69#

GOR = $\frac{145,000}{137}$ = 1058 cu.ft./bbl.

P.I.= $\frac{137}{69}$ = 1.986 bbls./day/# drop BHP

8/64" ck - Oil Production - 81 bbls/day

Gas Production - 94,000 cu.ft./day

Drop in BHP 47#

GOR - $\frac{94000}{81}$ = 1160 cu.ft./bbl.

P.I.= $\frac{81}{47}$ = 1.723 bbls/day/# drop BHP

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON ELLENBERGER FIELD

TIDE WATER STATE "B" #4

2-22-51 2-24-51

GAS CALCULATIONS

2" CWT 3/8" Plate 13.2 psia = Atm. Press.

$Q = C \times P_f \times F_{tf} \times F_g$

12/64" ck P = 60#, T = 60°, Sp. Gr. .8

Q = 3.142 x 73.2 x 1.000 x .866

Q = 199 MCF/day

10/64" ck P = 40#, T = 60°, Sp. Gr. = .8

Q = 3.142 x 53.2 x 1.000 x .866

Q = 145 MCF/day

8/64" ck P= 21.5#, T = 60°, Sp. Gr. = .8

Q = 3.142 x 34.7 x 1.000 x .866

Q = 94 MCF/day

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON ELLENBERGER FIELD

TIDE WATER STATE "S" #4

1" 5.41 Bbls.

Date	Time	Elaps. Time	Gages	Oil/in.	Oil Bbls/per.	Oil Bbls/hr.	Oil Bbls/day	Ck Size
2-22-51	19:35							12/64"
	21:00		12' 1 3/8	1 3/8	7.44	7.44	178.56	
	22:00	1	12' 2 3/4	1 3/8	7.44	7.44	178.56	
	23:00	1	12' 4 1/8	1 3/8	7.44	7.44	178.56	
	24:00	1	12' 5 1/2	1 3/8	7.44	7.44	178.56	
2-23-51	01:00	1	12' 6 7/8	1 3/8	7.44	7.44	178.56	
	02:00	1	12' 8 5/8	1 3/4	9.47	9.47	227.28	
	03:00	1	12'10 3/8	1 3/4	9.47	9.47	227.28	
	04:00	1	13' 1/8	1 3/4	9.47	9.47	227.28	
	05:00	1	13' 1 5/8	1 1/2	8.115	8.115	194.76	
	06:00	1	13' 3 1/8	1 1/2	8.115	8.115	194.76	
	07:00	1	13' 4 5/8	1 1/2	8.115	8.115	194.76	

Average last 3 hrs production 195 bbls./day

		TP	CP
2-22-51	21:10	773	0
	22:10	754	0
	23:10	766	0
	24:10	764	0
2-23-51	01:10	760	0
	02:10	755	0
	03:10	760	0
	04:10	755	0
	05:10	770	0
	06:10	755	0

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON ELLENBERGER FIELD

TIDE WATER STATE "C" #4

Date	Time	Elaps. Time	Gages	Oil/in.	Oil Bbls/per.	Oil Bbls/hr.	Oil Bbls/day	Ck Size
2-23-51	07:55							10/64"
	08:00		13' 6 1/4					
	09:00	1	13' 6 1/2	1/4	1.36	1.36	32.41	
	10:00	1	13' 8 1/2					
	11:00	1	13' 9					
	12:00	1	13' 10	1	5.41	5.41	129.84	
	13:00	1	13' 11 1/8	1 1/8	6.09	6.09	146.16	
	14:00	1	14' 0 1/8	1	5.41	5.41	129.84	
	15:00	1	14' 1 1/4	1 1/8	6.09	6.09	146.16	
	16:00	1	14' 2 1/4	1	5.41	5.41	129.84	
	17:00	1	14' 3 3/8	1 1/8	6.09	6.09	146.16	
	18:00	1	14' 4 3/8	1	5.41	5.41	129.84	
			Avefage last seven hrs.				137 Bbls./day	

		TP	CB
2-23-51	08:00	760	0
	09:10	7 8 5	0
	11:10	720	0
	12:10	720	0
	13:10	725	0
	14:10	720	0
	15:10	720	0
	16:10	740	0
	17:10	755	0

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON ELLENBERGER FIELD

TIDE WATER STATE "S" #4

OIL GAGES

Date	Time	Elaps. Tm.	Gages	Oil/in.	Oil Bls/per.	Oil Bbls./hr.	Oil Bbls./day	Ok Size
2-23-51	18:25							
	18:30		14' 5 1/2					
	20:30	2	14' 6 1/2	1"	5.41	2.70	64.80	
	21:30	1	14' 7	1/2	2.70	2.70	64.80	
	23:30	2	14' 8 1/4	1 1/4	6.76	3.38	81.12	
2-24-51	00:30	1	14' 8 1/8	5/8	3.38	3.38	81.12	
	01:30	1	14' 9 1/2	5/8	3.38	3.38	81.12	
	02:30	1	14'10 1/8	5/8	3.38	3.38	81.12	
	03:30	1	14'10 3/4	5/8	3.38	3.38	81.12	

Average Production last 6 hrs. 81.12 bbls/day

		TP	CP
2-23-51	18:40	740	0
	20:40	775	0
	21:40	760	0
	22:40	710	0
	23:40	695	0
2-24-51	00:40	690	0
	01:40	690	0
	02:40	690	0

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON ELLENBERGER FIELD

TIDE WATER STATE "S" #4

Date	Status	Serv. Time	Elapse. Tm. Hrs.	Min.	Heise TP	CP	BHP 7859	PSIG @ -4300
2-20-51	Shut in	16:15	0	00				
2-22-51	1st static	17:39	49	24	890	Packer	2730	2699
2-22-51	2nd static	19:21	51	06	883	"	2736	2706
2-22-51	Opened 12/64"ck	19:35	0	00				
	Flowing 12/64"ck	Drawdown see detail sheet Page 9						
	1st flow 12/64ck	04:16	8	41	710	Packer	2656	2626
	2nd flow 12/64ck	07:37	12	20	755	"	2649	2619
	Opened 10/64" ck	07:55	0	00				
	Flowing 10/64"ck	Buildup see detail sheet Page 12						
	1st flow 10/64"ck	15:15	7	20	740	Packer	2672	2642
	2nd flow 10/64"ck	18:05	10	10	755	"	2667	2637
	Opened 8/64" ck	18:25	0	00				
	Flowing 8/64" ck	Buildup see detail sheet Page 15						
	1st Flow 8/64"ck	02:45	8	20	690	Packer	2689	2659

OKLAHOMA CITY
512 Leonhardt Bldg.
Phone 58-4915

SUBSURFACE ENGINEERING COMPANY

production engineering services

Post Office Box 1827 TULSA Phone 54-5819

PREMONT, TEXAS Phone 3101 MIDLAND, TEXAS Phone 3599

SNYDER, TEXAS Phone 1457

HOUSTON
1307 Bell
Phone P-2429

Field Brunson Ellenberger Invoice No. M-2-223

Company Tide Water Associated Oil Company

Lease Tide Water State "B" Well No. 4

Date 2-22-51 Time 17:39 Status of Well 1st static test

Pay Ellenberger Top 7683 Bottom T.D. 7895 Datum -4300

Tubing 2 3/8" OD Depth 7870 B.H.C. Plug or Pin Packer

Casing 5 1/2" Depth 7895 Perforations 7800-25 Liner Tree Top 2" EUE

Depth Feet	Pressure lbs. sq. in.	Pressure Δ	Gradient lbs./ft.
24	890		
2004	959	69	.035
4004	1585	626	.313
6004	2190	605	.302
7459	2606	416	.286
7659	2668	62	.310
7859	2730	62	.310
- 34	- 11		
7825	2719	Bottom of perf	.310
- 66	- 20		
7759	2699	Datum	.300
-4300	2699	"	.300

Casing Press.	Packer
Tubing Press.	890 DWT
Oil Level	2004
Water Level	none
Hours—Shut In	49:20 Flowing
Temp. @	7859' 116°
Elevation—D.F.	3459 Ground 3449
Last Test Date	First Test
Press. Last Test	
B.H.P. Change	
Loss/Day	
Choke Size	12/64"
Oil Bbls./day	
Water Bbls./day	
Total Bbls./day	
Orifice and Line	
Static and Differential	
Gas Sp. Gr.	Tf
Cu. ft./day	
GOR	
GFR	

PRODUCTIVITY INDEX—BBLS./DAY/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 5404 B Recovery Factor Bbls./pound Loss

Run By Tefteller Calibration No. M-55 B Calculated By L. Picard

Calculations and Remarks: Assumed reservoir gradient .300

OKLAHOMA CITY
512 Leonhardt Bldg.
Phone 58-4915

SUBSURFACE ENGINEERING COMPANY

production engineering services

Post Office Box 1827 TULSA Phone 54-5819

PREMONT, TEXAS Phone 3101 MIDLAND, TEXAS Phone 3599

SNYDER, TEXAS Phone 1457

HOUSTON
1307 Bell
Phone P-2429

Field Brunson Ellenberger Invoice No. M-2-223

Company Tide Water Associated Oil Company

Lease Tide Water State "B" Well No. 4

Date 2-22-51 Time 19:21 Status of Well 2nd Static

Pay Ellenberger Top 7683 Bottom 78 T.D. 7895 Datum -4300

Tubing 2 3/8" OD Depth 7870 B.H.C. Plug or Pin Packer

Casing 5 1/2" Depth 7895 Perforations 7800-25 Liner Tree Top 2" EUE

Depth Feet	Pressure lbs. sq. in.	Pressure Δ	Gradient lbs./ft.
24	883		
2004	976	93	.047
4004	1604	628	.314
6004	2191	587	.293
7459	2616	425	.292
7659	2676	60	.300
7859	2736	60	.300
-100	- 30		
7759	2706	Datum	.300
-4300	2706	"	.300

Casing Press.	Packer
Tubing Press.	883 DWT
Oil Level	1887
Water Level	none
Hours—Shut In	51:20 Flowing
Temp. @	7859' 116°
Elevation—D.F.	3459 Ground 3449
Last Test Date	1-22-51
Press. Last Test	2699#
B.H.P. Change	8# gain
Loss/Day	
Choke Size	
Oil Bbls./day	
Water Bbls./day	
Total Bbls./day	
Orifice and Line	
Static and Differential	
Gas Sp. Gr.	Tf
Cu. ft./day	
GOR	
GFR	

PRODUCTIVITY INDEX—BBLS./DAY/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests

Instrument Amerada Number 5404 B Recovery Factor Bbls./pound Loss

Run By Teftoller Calibration No. M-55 B Calculated By L. Picard

Calculations and Remarks:

FORM R.S. 1 75M 1-51

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON ELLENBERGER FIELD

TIDE WATER STATE "S" #4

Date	Status	Serv. Time	Elapsed Time Hrs.	Min.	DWT TP	DWT CP Packer	BHP 7659	PSIG @ -4300
2-22-51	2nd Static	19:21			875		2736	2706
	Opened on 12/64ck	19:35	0	0				
	Flowing 12/64"ck	21:10	1	35	773		2683	2645
		22:10	2	35	754		2675	2645
		23:10	3	35	766		2668	2638
		24:10	4	35	764		2665	2635
2-23-51		01:10	5	35	760		2664	2634
		02:10	6	35	755		2662	2632
		03:10	7	35	760		2658	2628
		04:10	8	35	755		2656	2626
	1st flow 12/64"ck	04:15	8	40	770		2656	2626

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PREMONT, TEXAS Phone 3101 MIDLAND, TEXAS Phone 3599

SNYDER, TEXAS Phone 1457

Field Brunson Ellenberger Invoice No. M-2-223

Company Tide Water Associated Oil Company

Lease Tide Water State "S" Well No. 4

Date 2-23-51 Time 04:16 Status of Well 1st flow - 12/64" ck

Pay Ellenberger Top 7683 Bottom T.D. 7895 Datum -4300

Tubing 2 3/8" OD Depth 7870 B.H.C. Plug or Pin Packer

Casing 5 1/2" Depth 7895 Perforations 7800-25 Liner Tree Top 2" EUE

Depth Feet	Pressure lbs. sq. in.	Pressure Δ	Gradient lbs./ft.
24	770		
2004	1146	376	.190
4004	1609	463	.231
6004	2121	512	.256
7459	2536	415	.285
7659	2596	60	.300
7859	2656	60	.300
-100	- 30		
7759	2626	Datum	.300
-4300	2626	"	.300

Casing Press. Packer
Tubing Press. 770 DWT
Oil Level flowing
Water Level flowing
Hours—Shut In Flowing
Temp. @ 7859' 116°
Elevation—D.F. 3459 Ground
Last Test Date
Press. Last Test
B.H.P. Change
Loss/Day
Choke Size 12/64"
Oil Bbls./day
Water Bbls./day
Total Bbls./day
Orifice and Line
Static and Differential
Gas Sp. Gr. Tf
Cu. ft./day
GOR
GFR

PRODUCTIVITY INDEX—BBLS./DAY/LBS. DROP

Last Cumulative Production | Present Cumulative Production | Production Between Tests

Instrument Amerada Number 5404 B Recovery Factor Bbls./pound Loss

Run By Tefteller Calibration No. M 55 B Calculated By L. Picard

Calculations and Remarks:

Form P.S. 1 75M 1-51

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Field Brunson Ellenberger Invoice No. M-2-223

Company Tide Water Associated Oil Company

Lease Tide Water State "S" Well No. 4

Date 2-23-51 Time 07:37 Status of Well 2nd flow 12/64" ck

Pay Ellenberger Top 7683 Bottom T.D. 7895 Datum -4300

Tubing 2 3/8" Depth 7870 B.H.C. Plug or Pin Packer

Casing 5½" Depth 7895 Perforations 7800-25 Liner Tree Top 2" Bur

Depth Feet	Pressure lbs. sq. in.	Pressure Δ	Gradient lbs./ft.
24	755		
2004	1117	362	.181
4004	1590	473	.236
6004	2125	535	.267
7459	2529	404	.278
7659	2589	60	.300
7859	2649	60	.300
-100	- 30		
7759	2619	Datum	.300
-4300	2619	"	.300

Casing Press.	Packer
Tubing Press.	755 DWT
Oil Level	flowing
Water Level	flowing
Hours—Shut In / Flowing	12:20
Temp. @ 7859'	116°
Elevation—D.F. / Ground	3459
Last Test Date	2-2[illegible]-51 (static)
Press. Last Test	2706#
B.H.P. Change	87# drop
Loss/Day	
Choke Size	12/64"
Oil Bbls./day	195
Water Bbls./day	0
Total Bbls./day	195
Orifice and Line	
Static and Differential	
Gas Sp. Gr. / Tf	.800 / 60
Cu. ft./day	199,000
GOR	1021
GFR	

PRODUCTIVITY INDEX—BBLS./DAY/LBS. DROP $\frac{195}{87}$ 2.241

Last Cumulative Production	Present Cumulative Production	Production Between Tests

Instrument Amerada Number 5404 B Recovery Factor Bbls./pound Loss

Run By Tefteller Calibration No. M-55 Calculated By L. Picard

Calculations and Remarks:

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON ELLENBERGER FIELD

TIDE WATER STATE "S" #4

1st Flow Test 10/64" ok - Buildup

Date	Status	Serv. Time	Elapsed Tm. Hrs.	Min.	DWT TP	DWT CP Packer	BHP 7859	PSIG @ -4300
2-23-51	2nd flow 12/64"ok	07:45			755		2649	2619
	Opened on 10/64"ok	07:55	0	0				
	1st flow 10/64" ok	08:00	0	5	760		2617	2587
		09:10	1	15	785		2671	2641
		10:10	2	15			2677	2647
		11:10	3	15	720		2671	2641
		12:10	4	15	720		2673	2643
		13:10	5	15	725		2675	2645
		14:10	6	15	720		2673	2643
		15:10	7	15	720		2672	2642
	1st flow 10/64"ok	15:15	7	20	740		2672	2642

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Field Brunson Ellenberger Invoice No. M-2-223

Company Tide Water Associated Oil Company

Lease Tide Water State "B" Well No. 4

Date 2-23-51 Time 15:15 Status of Well 2nd Flow Test - 10/64" ck

Pay Ellenberger Top 7683 Bottom T.D. 7895 Datum -4300

Tubing 2 3/8" OD Depth 7870 B.H.C. Plug or Pin Packer

Casing 5 1/2" Depth 7895 Perforations 7800-25 Liner Tree Top 2" EUE

Depth Feet	Pressure lbs. sq. in.	Pressure Δ	Gradient lbs./ft.
24	740		
2004	1136	396	.200
4004	1610	474	.237
6004	2136	526	.263
7459	2550	414	.285
7659	2611	61	.305
7859	2672	61	.305
- 34	- 10		
7825	2662	Bottom of perf.	.305
- 66	- 20		
7759	2642	Datum	.300
-4300	2642	"	.300

Casing Press.	Packer
Tubing Press.	740
Oil Level	flowing
Water Level	flowing
Hours—Shut In	Flowing
Temp. @ 7859'	116°
Elevation—D.F. 3459	Ground 3449
Last Test Date	2-23-51
Press. Last Test	
B.H.P. Change	
Loss/Day	
Choke Size	
Oil Bbls./day	
Water Bbls./day	
Total Bbls./day	
Orifice and Line	
Static and Differential	
Gas Sp. Gr.	Tf
Cu. ft./day	
GOR	
GFR	

PRODUCTIVITY INDEX—BBLS./DAY/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls./pound Loss

Instrument Amerada Number 5404 B

Run By Teftteller Calibration No. M 55 B Calculated By L. Picard

Calculations and Remarks:

* Assumed reservoir gradient .300

FORM R.S. 1 75M 1-51

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Field Brunson Ellenberger Invoice No. M-2-223

Company Tide Water Associated Oil Company

Lease Tide Water State "S" Well No. 4

Date 2-23-51 Time 18:05 Status of Well 2nd flow 10/64" ck

Pay Ellenberger Top 7683 Bottom T.D. 7895 Datum -4300

Tubing 2 3/8" OD Depth 7870 B.H.C. Plug or Pin Packer

Casing 5 1/2" Depth 7895 Perforations 7800-25 Liner Tree Top 2" EUE

Depth Feet	Pressure lbs. sq. in.	Pressure Δ	Gradient lbs./ft.
24	755		
2004	1140	385	.194
4004	1590	450	.225
6004	2140	550	.275
7459	2545	405	.278
7659	2606	61	.305
7859	2667	61	.305
- 34	- 10		
7825	2657	Bottom of perf.	.305
- 66	- 20		
7759	2637	Datum	.300
-4300	2637	"	.300

Casing Press.	Packer
Tubing Press.	755 DWT
Oil Level	flowing
Water Level	flowing
Hours—Shut In	Flowing 10:10
Temp. @ 7859'	116
Elevation—D.F. 3459	Ground 3449
Last Test Date	2-22-51 (static)
Press. Last Test	2706#
B.H.P. Change	69# drop
Loss/Day	
Choke Size	10/64
Oil Bbls./day	137
Water Bbls./day	0
Total Bbls./day	137
Orifice and Line	
Static and Differential	
Gas Sp. Gr. .800	Tf 60°
Cu. ft./day	145,000
GOR	1058
GFR	

PRODUCTIVITY INDEX—BBLS./DAY/LBS. DROP 137/69 = 1.986

Last Cumulative Production	Present Cumulative Production	Production Between Tests

Instrument Amerada Number 5404 B Recovery Factor Bbls./pound Loss

Run By Tefteller Calibration No. M 55 B Calculated By L. Picard

Calculations and Remarks:

Assumed reservoir gradient .300

FORM R.S. 1 75M 1-51

TIDE WATER ASSOCIATED OIL COMPANY

BRUNSON KLEINBERGER FIELD

TIDE WATER STATE "S" #4

Flowing 8/64" ck - Buildup

Date	Status	Serv. Time	Elapsed Tm. Hrs.	Min.	Noise TP	CP Packer	BHP @ 7859	PSIG -4300
2-23-51	3rd Flow 10/64" ck	18:13			755		2667	2637
		18:25	0	0				
		18:40	0	15	740		2677	2647
		19:40	1	15				
		20:40	2	15	775		2681	2651
		21:40	3	15	760		2681	2651
		22:40	4	15	710		2681	2651
		23:40	5	15	695		2683	2653
2-24-51		00:40	6	15	690		2685	2655
		01:40	7	15	690		2687	2657
		02:40	8	15	690		2689	2659
	last flow 8/64" ck	02:45	8	20	690		2689	2659

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Field Brunson Ellenberger Invoice No. M-2-223

Company Tide Water Associated Oil Company

Lease Tide Water State "S" Well No. 4

Date 2-24-51 Time 02:45 Status of Well 1st Flow 8/64" ck

Pay Ellenberger Top 7683 Bottom T.D. 7895 Datum -4300

Tubing 2 3/8" OD Depth 7870 B.H.C. Plug or Pin Packer

Casing 5 1/2" Depth 7895 Perforations 7800-25 Liner Tree Top 2" SUE

Depth Feet	Pressure lbs. sq. in.	Pressure Δ	Gradient lbs./ft.
24	690		
2004	1109	419	.212
4004	1606	497	.248
6004	2152	546	.273
7459	2570	418	.287
7659	2629	59	.295
7859	2689	60	.300
-100	- 30		
7759	2659	Datum	.300
-4300	2659	"	.300

Casing Press.	Packer
Tubing Press.	690 DWT
Oil Level	flowing
Water Level	flowing
Hours—Shut In	Flowing
Temp. @ 7859'	116°
Elevation—D.F. 3459	Ground 3449
Last Test Date	2-22-51 (static)
Press. Last Test	2706 #
B.H.P. Change	47 # drop
Loss/Day	
Choke Size	8/64"
Oil Bbls./day	81
Water Bbls./day	0
Total Bbls./day	81
Orifice and Line	
Static and Differential	
Gas Sp. Gr. .800	Tf 60°F
Cu. ft./day	94,000
GOR	1160
GFR	

PRODUCTIVITY INDEX—BBLS./DAY/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests

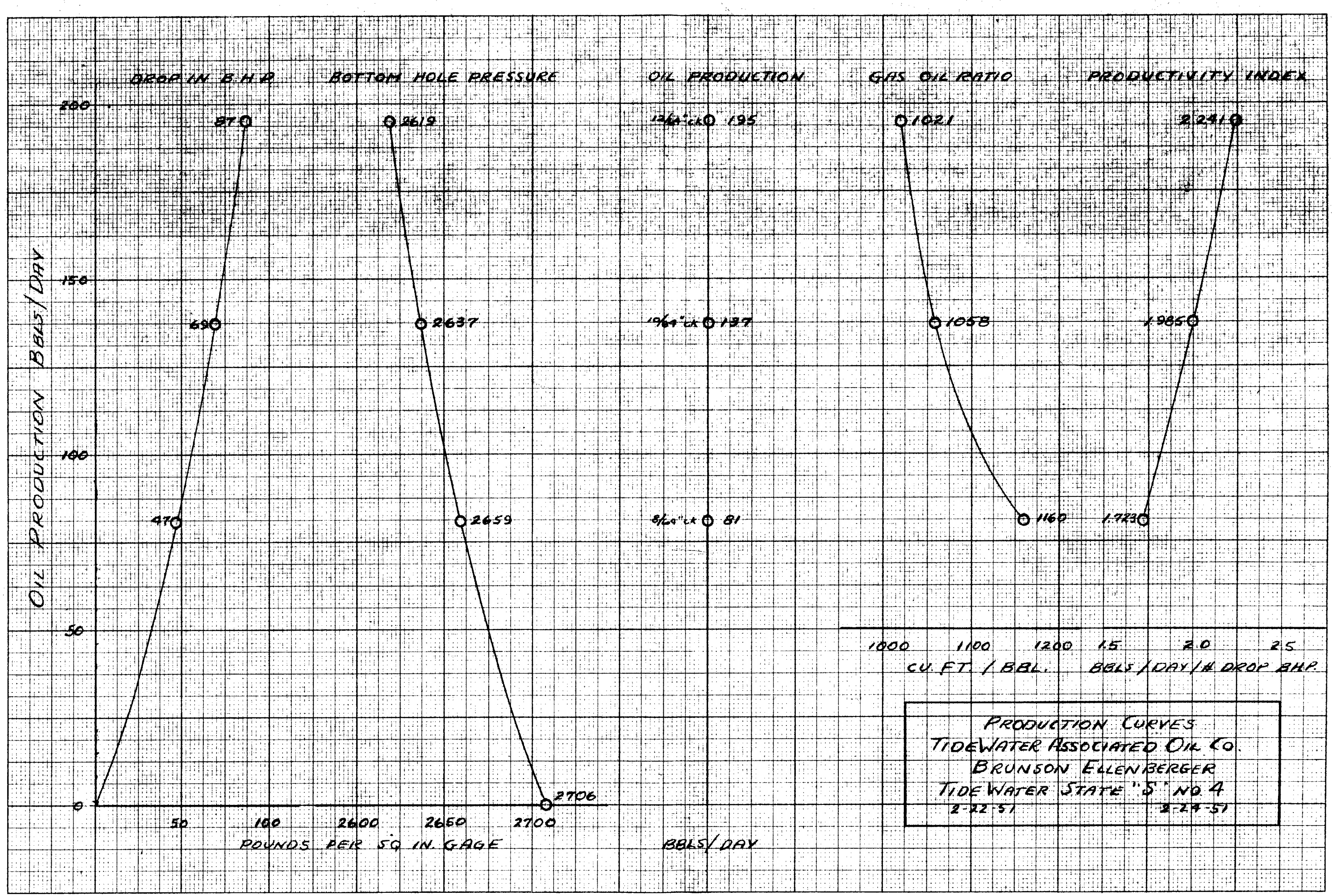
Instrument Amerada Number 5404 B Recovery Factor Bbls./pound Loss

Run By Tefteller Calibration No. M 55 B Calculated By L. Picard

Calculations and Remarks:

EUGENE DIETZGEN CO.
MADE IN U.S.A.

NO. 3400-20 DIETZGEN GRAPH PAPER
20 X 20 PER INCH



PRODUCTION CURVES
TIDEWATER ASSOCIATED OIL CO.
BRUNSON ELLENBERGER
TIDEWATER STATE "5" NO. 4
2-22-51 2-24-51

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

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