

BEFORE THE
OIL CONSERVATION COMMISSION
NMOCC CASE NO. 9954
OCTOBER 25, 1990

UNORTHODOX GAS WELL LOCATION
SECTION 9 T21S R23E
EDDY COUNTY, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
 Santa Fe, New Mexico

Case No. 9954 Exhibit No. 1

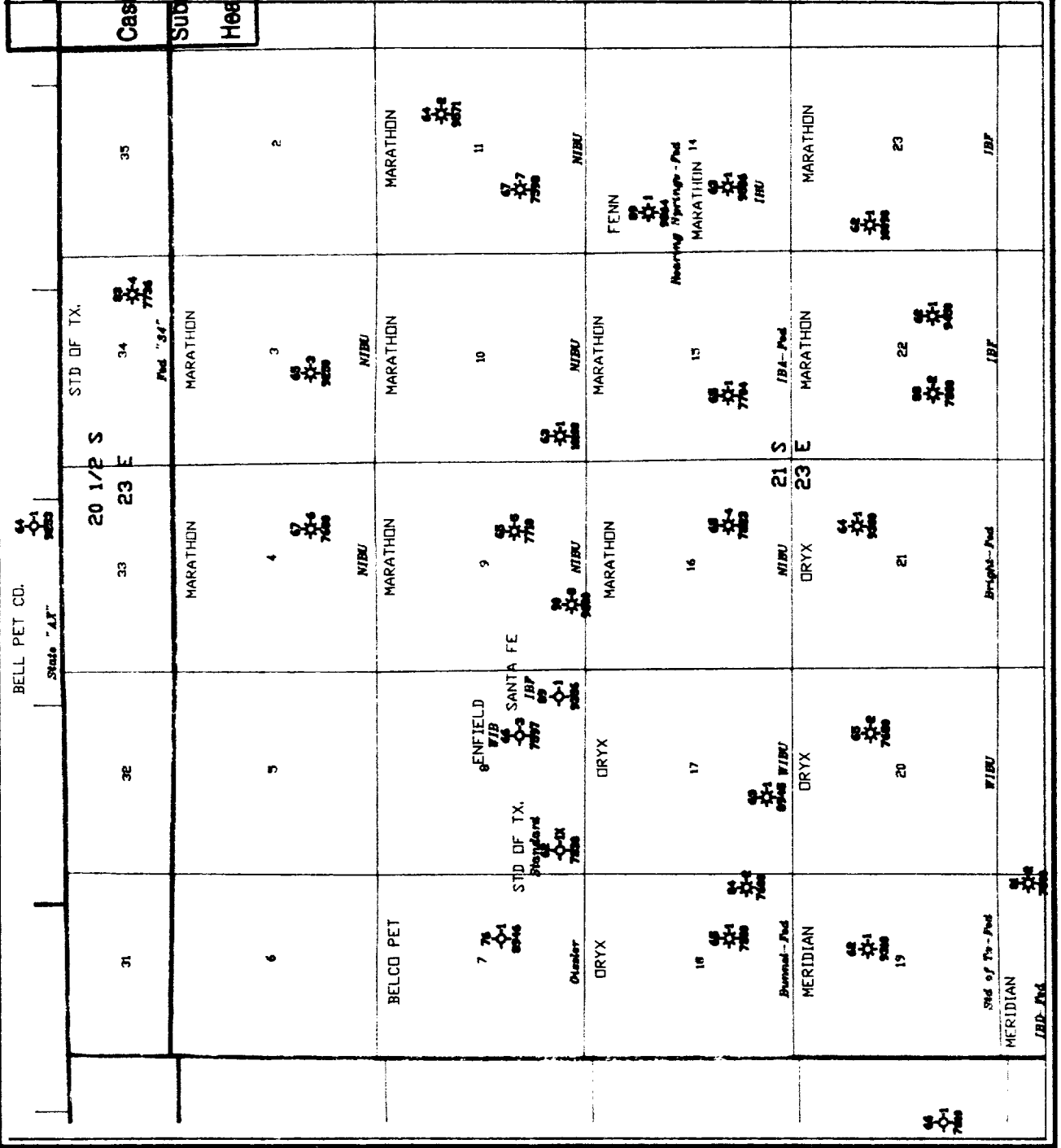
Submitted by ORIX ENERGY

Hearing Date OCTOBER 25, 1990

Completion
 Date

Well #
 TD

	Orix Energy Company
INDIAN BASIN FIELD	
EDDY CO. NEW MEXICO	
Produced by	DAVID ROJAS
Scale	1" = 4000'
Survey	5/90
Processed by	AUTOCAD
Drawn by	SOUTHWESTERN
Checked by	MARRINGA.DVG



INDIAN BASIN FIELD
MORROW COMPLETIONS

WELL NAME	LOCATION	GAS CUM (MMCF)	INITIAL RATE (MCFPD)	INITIAL PRESSURE (PSIA)	NET PAY (FT)
ARROYO FEDERAL	24C21S22E	90	300	2162	28
INDIAN BASIN	23E21S24E	330	150	3406	36
NORTH INDIAN	10M21S23E	269	30	3383	18
INDIAN HILLS	20N21S24E	77	450	1747	23
MAJORES FED	23I21S22E	425	800	3220	14
INDIAN BASIN	22J21S23E	228	NA	605	19
INDIAN HILLS	21M21S24E	8	80	NA	14
IB 32 STATE	32M21S24E	105	500	NA	NA
AVERAGE		192			
LOWE STATE G	36F21S23E	1016	450	3694	49
INDIAN HILLS	16F21S24E	2865	900	3622	60
INDIAN FEDERAL	19G21S24E	3799	1500	3503	68
SKELLY FEDERAL	9M21S24E	1349	1280	3718	16
INDIAN HILLS	17J21S24E	3665	1150	3699	32
MARTHA CREEK	30J21S24E	7974	1140	3742	53
WINSTON GAS	31K21S24E	3485	472	3716	20
INDIAN BASIN	14K21S23E	5727	1050	3594	18
MARTHA CREEK	30H21S24E	2653	1800	2947	50
HILLIARD BF	14H21S22E	2623	2500	3159	6
HILLIARD LE	14C21S22E	1026	2800	1112	20
AVERAGE		3289			
AVERAGE OF ALL WELLS		1985			



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Oryx Energy Company

OIL CONSERVATION COMMISSION

NMOCDCASE NO. 9954

OCTOBER 25, 1990

EXHIBIT NO. 2

BEFORE THE

OIL CONSERVATION COMMISSION
 Santa Fe, New Mexico

BELL PET CO
 State "A.X"

Case No. 9954 Exhibit No. 3

Submitted by ORYX ENERGY

Hearing Date OCT 25 1990

- 84 PRODUCTIVE ACRES
520 ACRE FEET
- 436 PRODUCTIVE ACRES
5242 ACRE FEET
- 527 PRODUCTIVE ACRES
2121 ACRE FEET
- 204 PRODUCTIVE ACRES
398 ACRE FEET
- 288 PRODUCTIVE ACRES
2009 ACRE FEET

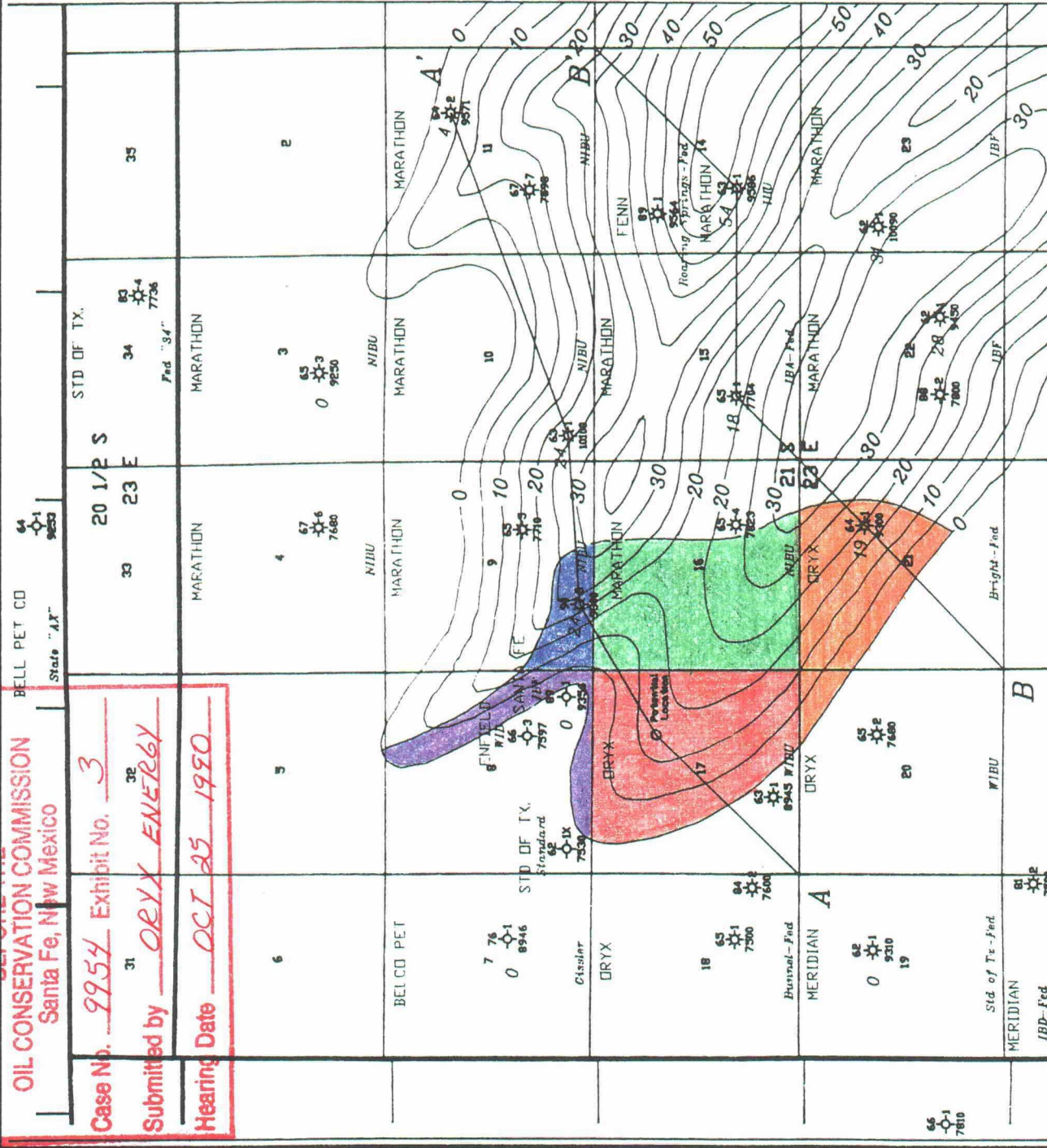


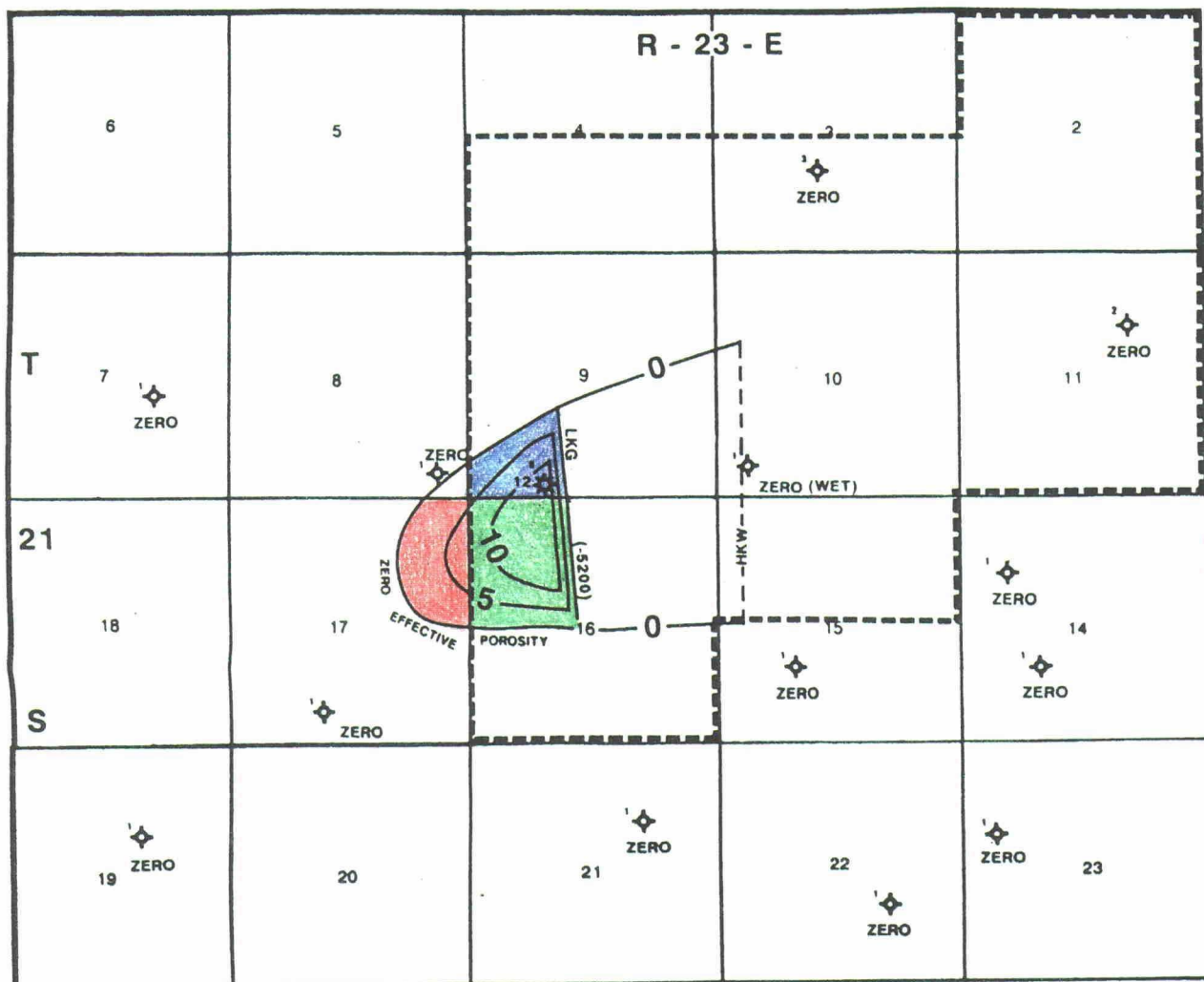
Completion Date
 Clean GR Thickness Well # TD

ORYX Energy Company

INDIAN BASIN FIELD
EDDY CO. NEW MEXICO

Marathon GR API-60 ISOPACH OF 2nd MEMBER L. MORROW
 Interpretation by DAVID ROJAS Date 5/90
 Scale 1" = 4000' Plotting by AUTOCAD
 Region SOUTHWESTERN File MARHNG4.DWG
 Cross-Sections represented by brown lines.





ONLY MORROW PENETRATIONS SHOWN

----- NIBU UNIT BOUNDARY



59 PRODUCTIVE ACRES
334 ACRE FEET



146 PRODUCTIVE ACRES
1233 ACRE FEET



88 PRODUCTIVE ACRES
299 ACRE FEET

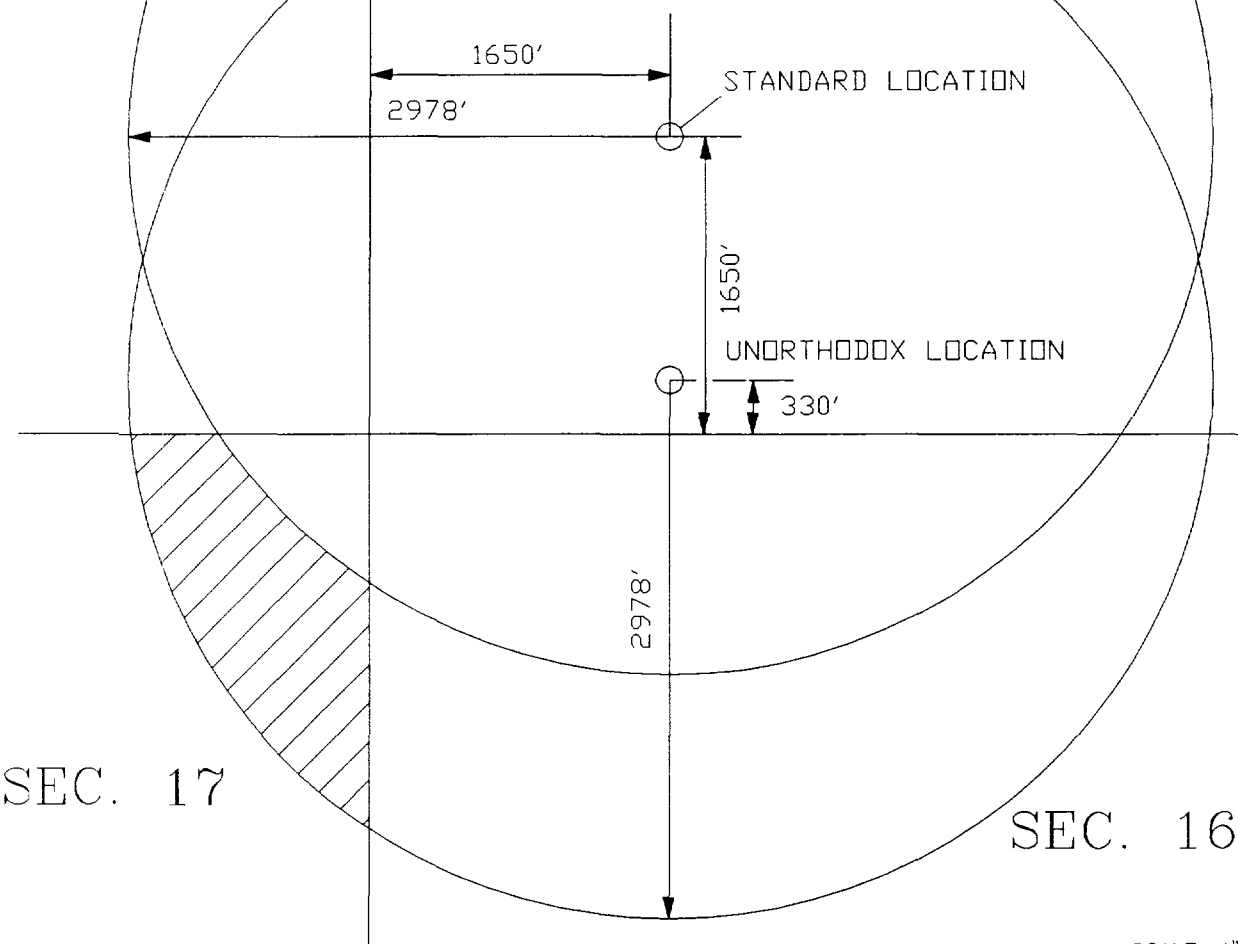
 MARATHON OIL COMPANY MID-CONTINENT REGION	
INDIAN BASIN FIELD EDDY COUNTY, NEW MEXICO MORROW BASAL "A" SAND: PROVEN & PROBABLE GAS	
PAY IN NIBU #8, SEC. 9, T-21-S, R-23-E	
C.L.: 5 	5/80 E.D. CARLSON

BEFORE THE OIL CONSERVATION COMMISSION Santa Fe, New Mexico	
Case No. <u>9954</u>	Exhibit No. <u>4</u>
Submitted by <u>DRYX ENERGY</u>	
Hearing Date <u>OCT. 25, 1990</u>	

SEC. 8

SEC. 9

640 ACRE DRAINAGE AREAS



SEC. 17

SEC. 16

SCALE: 1"=1250'



AREA IN SECTION 17 THAT WOULD
BE DRAINED BY MOVING FROM A
STANDARD LOCATION TO THE
UNORTHODOX LOCATION WITH NO
PENALTY



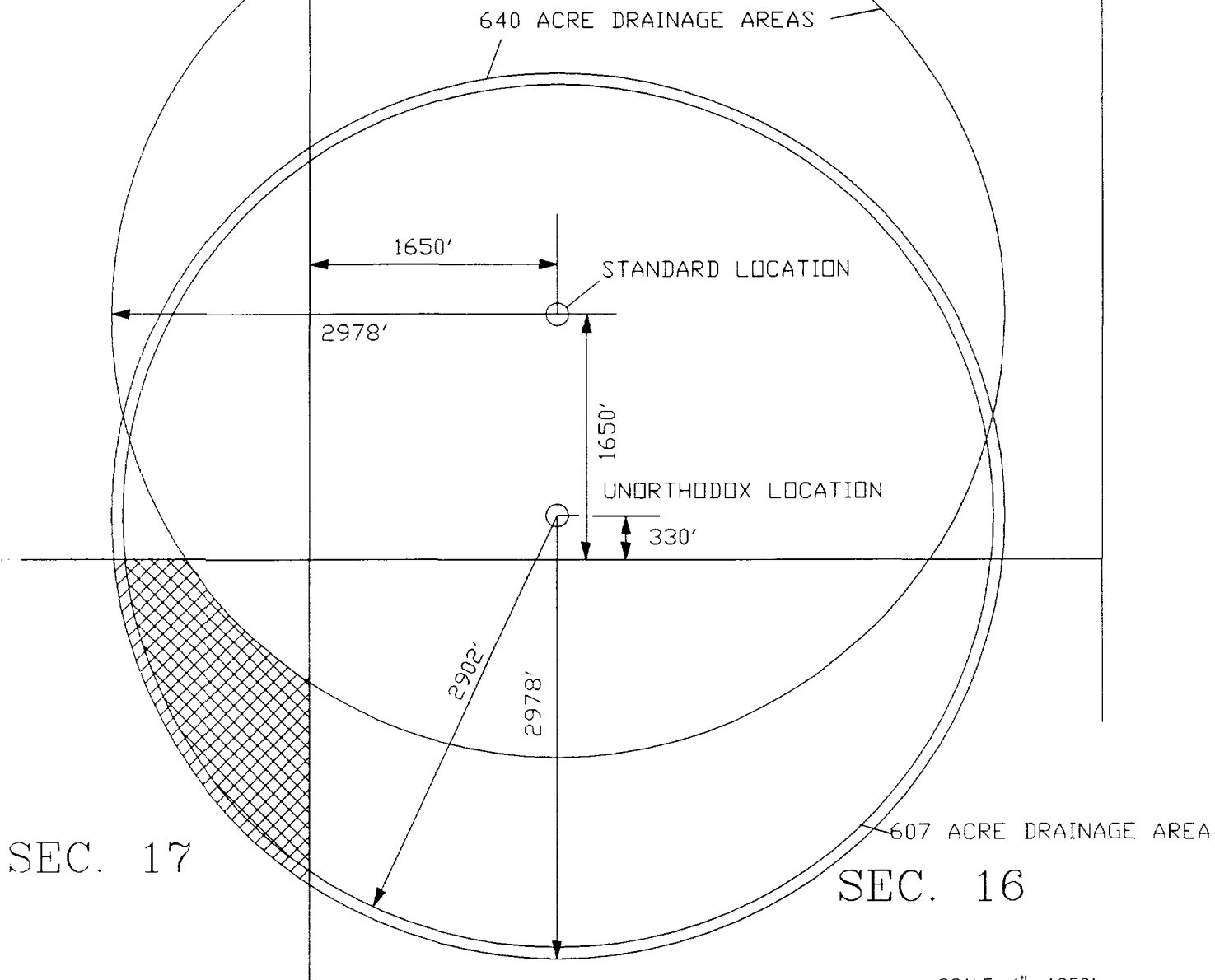
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OIL CONSERVATION COMMISSION
NMOCD CASE NO. 9954
OCTOBER 25, 1990
EXHIBIT NO. 5

SEC. 8

SEC. 9



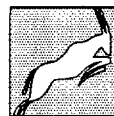
SCALE: 1"=1250'



AREA IN SECTION 17 THAT WOULD BE DRAINED BY MOVING FROM A STANDARD LOCATION TO THE UNORTHODOX LOCATION WITH NO PENALTY



AREA IN SECTION 17 THAT WOULD BE DRAINED BY MOVING FROM A STANDARD LOCATION TO THE UNORTHODOX LOCATION WITH A **5% PENALTY**



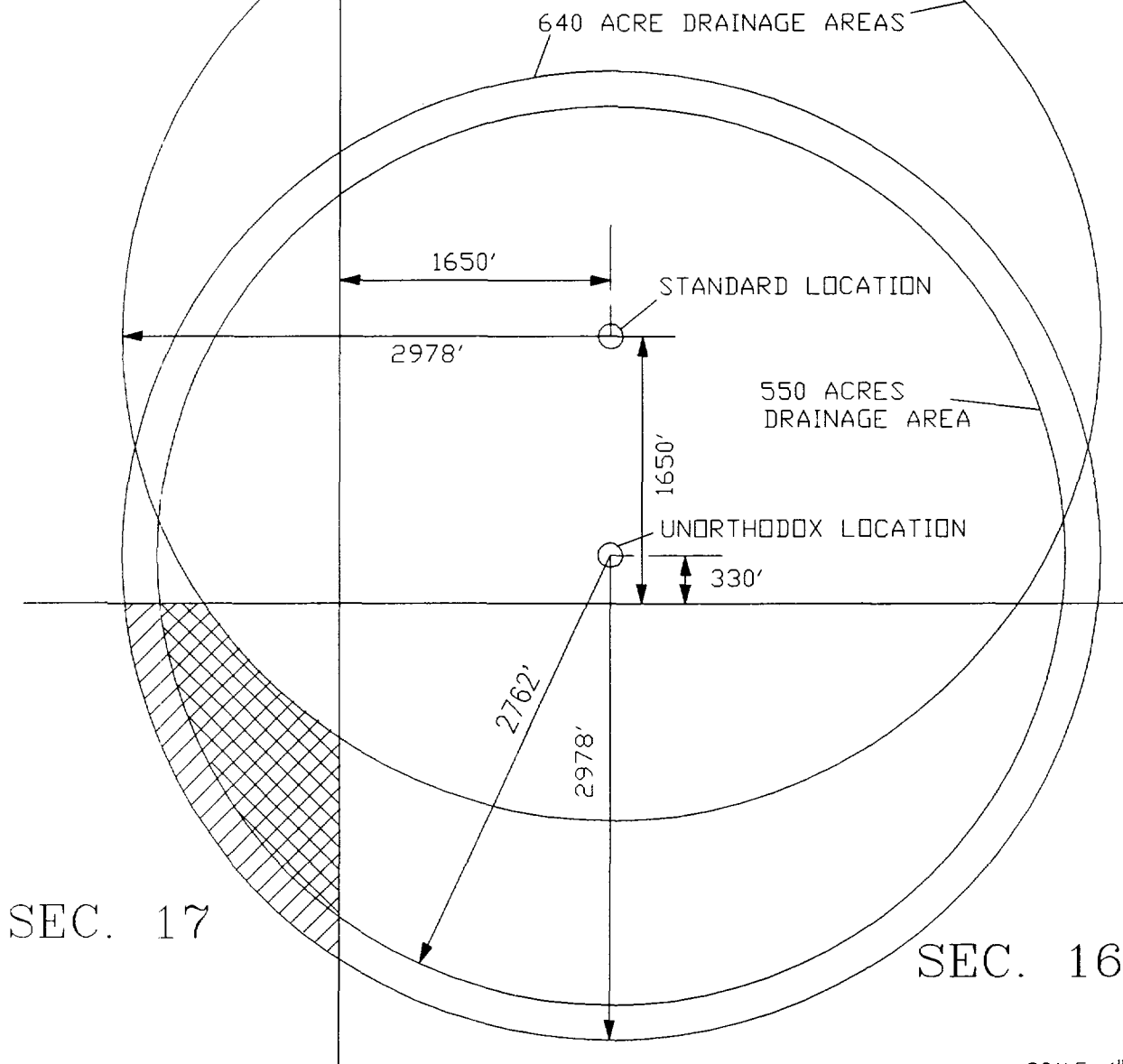
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OIL CONSERVATION COMMISSION
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 OCTOBER 25, 1990
 EXHIBIT NO. 6

SEC. 8

SEC. 9



SCALE: 1"=1250'



AREA IN SECTION 17 THAT WOULD BE DRAINED BY MOVING FROM A STANDARD LOCATION TO THE UNORTHODOX LOCATION WITH NO PENALTY



AREA IN SECTION 17 THAT WOULD BE DRAINED BY MOVING FROM A STANDARD LOCATION TO THE UNORTHODOX LOCATION WITH A **14% PENALTY**



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 EXHIBIT NO. 7

SEC. 8

SEC. 9

640 ACRE DRAINAGE AREA

349 ACRE DRAINAGE AREA

1650'

STANDARD LOCATION

2978'

1650'

UNORTHODOX LOCATION

330'

2200'

SEC. 17

SEC. 16

SCALE: 1"=1250'



AREA IN SECTION 17 DRAINED BY
A STANDARD LOCATION WITH
A FULL ALLOWABLE



AREA IN SECTION 17 DRAINED BY
THE UNORTHODOX LOCATION WITH A
45% PENALTY



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EXHIBIT NO. 8

VOLUMETRIC CALCULATIONS FOR A PRORATED GAS RESERVOIR

$$A = \pi r^2 / 43560$$

$$\text{ULTIMATE RECOVERY} = QL = 43560 \phi (1-SW) (B_{gi}-B_{ga}) HA$$

$$\frac{Q_1 L = 43560 \phi (1-SW) (B_{gi}-B_{ga}) HA_1}{Q_2 L = 43560 \phi (1-SW) (B_{gi}-B_{ga}) HA_2}$$

$$\frac{Q_1}{Q_2} = \frac{A_1}{A_2} = \frac{\pi r_1^2}{\pi r_2^2} = \frac{r_1^2}{r_2^2}$$

$$Q_2 = Q_1 \frac{r_2^2}{r_1^2}$$

$$Q_2 = \frac{(2200)^2 Q_1}{(2978)^2}$$

$$Q_2 = .55 Q_1$$

WHERE: A = DRAINAGE AREA (ACRES)
 r = DRAINAGE RADIUS (FT.)
 Q = PRODUCTION RATE (MCFPD)
 L = LIFE (DAYS)
 ϕ = POROSITY
 SW = WATER SATURATION
 B_{gi} = INITIAL GAS VOLUME FACTOR (SCF/CF)
 B_{ga} = GAS VOLUME FACTOR AT ABANDONMENT (SCF/CF)
 H = FORMATION THICKNESS (FT)



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EXHIBIT NO. 9

RECOMMENDED PENALTY

BASIS: EQUAL DRAINAGE OF OFFSETTING LEASE

$$1 - \frac{(2200)^2}{(2978)^2} = .45$$

PENALTY = 45%



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EXHIBIT NO. 10

[illegible]

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OIL CONSERVATION COMMISSION

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OCTOBER 25, 1990

EXHIBIT NO. 11

PENALTY FORMULA
ESTABLISHED BY OCD ORDER NO. R-7636
FOR THE BUNNEL FEDERAL GAS COM #2

PRODUCTION SHOULD BE LIMITED BASED ON THE AVERAGE OF

- 1) THE VARIATION FROM A STANDARD LOCATION
- 2) THE REMAINING RESERVES UNDER THE TRACT
- 3) THE PRODUCTIVE ACRES

<u>GEOLOGIC INTERPRETATION</u>	<u>PRODUCTIVE ACRE FACTOR</u>	<u>REMAINING RESERVE FACTOR</u>	<u>LOCATION VARIATION FACTOR</u>	<u>ALLOWABLE FACTOR</u>	<u>PENALTY (%)</u>
MARATHON	.09	1.0	.72	.60	40%
ORYX	.13	1.0	.72	.62	38%
			AVERAGE	.61	39%



ORYX

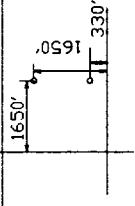
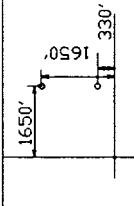
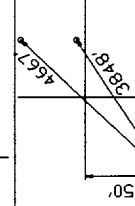
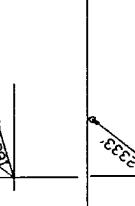
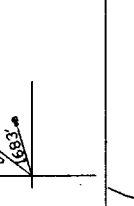
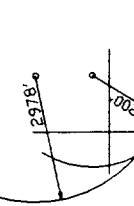
Oryx Energy Company

OIL CONSERVATION COMMISSION

NMOCD CASE NO. 9954

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EXHIBIT NO. 12

GEOMETRIC CONFIGURATION	BASIS FOR PENALTY METHOD	CALCULATION	PENALTY	COMMENTS	REFERENCE
1. 	VARIANCE FROM STANDARD SETBACKS	$\frac{1650 - 330}{1650} = .80$	80%	STRAIGHTFORWARD AND UNIVERSALLY APPLICABLE	PENALTY IN OGD ORDERS R-8913 AND R-9050
2. 	VARIANCE FROM STANDARD SETBACK	$\frac{(1650 - 330) + (1650 - 0)}{1650 + 1650} = .40$	40%	STRAIGHTFORWARD AND UNIVERSALLY APPLICABLE	VARIATION OF OF PENALTY IN OGD ORDER NO. R-8913
3. 	WELL-TO-WELL DISTANCE	$1 - \frac{3848}{4667} = .175$	17.5%	INVALID BOUNDARY CONDITIONS - WELL DRILLED AT INTERSECTION OF LEASE LINES WOULD SUFFER ONLY A 50% PENALTY	
4. 	LEASE-TO-WELL DISTANCE	$1/2 \left(1 - \frac{1683}{2333} \right) = .14$	14%	INCLUDES ADJUSTMENT FACTOR FOR DIAGONAL OFFSET	PENALTY IN OGD ORDER R-9050-A
5. 	LEASE-TO-WELL DISTANCE	$1 - \frac{1683}{2333} = .279$	27.9%	ALREADY ADDRESSES DIAGONAL OFFSET WITHOUT NECESSITATING FURTHER ADJUSTMENT	PENALTY IN OGD ORDER R-9050-B
6. 	EQUAL DRAINAGE OF OFFSETTING LEASE	$1 - \frac{(2200)^2}{(2978)^2} = .45$	45%	GEOMETRICALLY MOST ACCURATE	VARIATION OF PENALTY IN OGD ORDER NO. R-8951
7. 	AVERAGE OF (1) VARIANCE FROM STANDARD SETBACKS (2) REMAINING RESERVES UNDER THE TRACT (3) PRODUCTIVE ACRES	$\frac{.09 + 1.0 + .72}{3} = .60$	40%	DEPENDENT ON GEOLOGIC INTERPRETATION (NOTE: FORMULA CALCULATES ALLOWABLE FACTOR. THE PENALTY IS 1-.60=.40)	VARIATION OF PENALTY IN OGD ORDER R-7636



Oryx Energy Company

OIL CONSERVATION COMMISSION
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 OCTOBER 25, 1990
 EXHIBIT NO. 13

INDIAN BASIN FIELD
MORROW ECONOMIC ANALYSIS

DRILLING, COMPLETION AND EQUIPMENT COSTS -

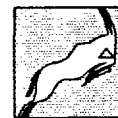
MORROW	\$646,200
UPPER PENN	\$548,700
DUAL MORROW & UPPER PENN	\$746,700

OPERATING EXPENSE	\$1500/MONTH
MAINTENANCE CAPITAL	\$ 183/MONTH

WORKING INTEREST	1.0
INCOME INTEREST	0.875

GAS PRICE	\$1.50/MCF
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	ORYX NEW WELL	MARATHON NORTH INDIAN BASIN NO. 8	MARATHON NORTH INDIAN BASIN NO. 8 WITH PENALTY
TYPE ANALYSIS	FULL	INCREMENTAL	INCREMENTAL
PENALTY	0%	0%	45%
GROSS RESERVES (BCF)	1.5	1.3	0.7
NET RESERVES (BCF)	1.3	1.1	0.6
DEVELOPMENT COST (\$)	646,200	198,000	198,000
DEV COST PER MCF (\$/MCF)	0.50	0.17	0.32
PAYOUT (YEARS)	1.9	0.4	0.8
ROR%	37	241	113



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OIL CONSERVATION COMMISSION
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EXHIBIT NO. 14

INDIAN BASIN FIELD
MORROW COMPLETIONS
DRAINAGE CALCULATIONS

WELL NAME	LOCATION	GAS CUM (MMCF)	REM RESERVES (MMCF)	ULTIMATE RECOVERY (MMCF)	INITIAL PRESSURE (PSIA)	Z FACTOR	INIT BG	NET PAY (FT)	PHI	SW	DRAINAGE VOLUME (AC-FT)	DRAINAGE AREA (ACRES)	DRAINAGE RADIUS (FT)
ARROYO FEDERAL	24C21822E	90	0	90	2162	0.86	141	28	0.095	0.18	336	12	408
INDIAN BASIN	23E21823E	330	0	330	3406	0.88	217	36	0.120	0.34	616	17	487
NORTH INDIAN	10N21823E	269	0	269	3383	0.88	216	18	0.135	0.20	372	21	535
INDIAN HILLS	20N21824E	77	0	77	1747	0.87	113	23	0.080	0.15	513	22	556
AVERAGE											459	18	497
MAJORES FED	23I21822E	425	0	425	3220	0.87	208	14	0.100	0.25	893	64	941
LOWE STATE B	36F21823E	1016	0	1016	3694	0.90	230	49	0.065	0.48	4100	84	1077
INDIAN HILLS	16F21824E	2865	0	2865	3622	0.89	228	60	0.100	0.25	5272	88	1104
INDIAN FEDERAL	19621824E	3799	0	3799	3503	0.89	221	68	0.110	0.21	6318	93	1135
SKELLY FEDERAL	9M21824E	1349	0	1349	3718	0.90	232	16	0.110	0.25	2211	138	1385
INDIAN HILLS	17J21824E	3665	0	3665	3699	0.90	231	32	0.110	0.25	6049	189	1619
MARTHA CREEK	30J21824E	7974	0	7974	3742	0.90	233	53	0.085	0.42	21678	409	2382
WINSTON GAS	31K21824E	3465	575	4360	3716	0.90	232	20	0.105	0.43	9857	493	2615
INDIAN BASIN	14K21823E	5727	0	5727	3594	0.89	227	18	0.130	0.34	9311	517	2679
AVERAGE											7299	231	1660
MARTHA CREEK	30H21824E	2653	5543	8196	2947	1.03	161	50	0.085	0.42	38733	775	3276
HILLIARD BF	14H21822E	2623	0	2623	3159	0.87	204	6	0.130	0.47	5166	1028	3776
HILLIARD LE	14C21822E	1026	0	1026	1112	0.91	69	20	0.130	0.38	44527	2226	5557
AVERAGE											29809	1343	4204
INDIAN BASIN	22J21823E	228	0	228	605	0.95	36	19	0.130	0.20			
INDIAN HILLS	21M21824E	8	0	8	NA			14	0.110	0.25			
LB 32 STATE	32M21824E	105	346	451	NA								

BEFORE THE	
OIL CONSERVATION COMMISSION	
Santa Fe, New Mexico	
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Submitted by	ORyx
Hearing Date	OCT 25 1990