EXHIBIT"9"

SUPPLEMENTAL WATER FLOOD SURVEY
MURPHY OPERATING CORPORATION
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
AS OF SEPTEMBER 1, 1983

PETROLEUM ENGINEERS
STEPHENS ENGINEERING

WATER FLOODING VALUATIONS RESERVOIR STUDIES

TELEPHONE - 817-723-2166

PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS

POST OFFICE BOX-2249

WICHITA FALLS, TEXAS
76307

December 22, 1983

Murphy Operating Corporation
P. O. Drawer 2648
Roswell, New Mexico 88201

Attn: Miss A. J. Murphy

Re: Supplemental Water Flood Survey
Bluitt (San Andres) Field
Roosevelt County, New Mexico
As of September 1, 1983

Dear Miss Murphy:

In accordance with the instructions received in a recent Operator's Committee meeting, we have reviewed the original Preliminary Water Flood Survey prepared on the various leases in the vicinity of the Murphy Operating Corporation, Bluitt Federal lease for the purpose of updating the anticipated water flood program and the feasibility of installing a flood to improve the oil recovery from this vicinity of the Bluitt (San Andres) Field, Roosevelt County, New Mexico. As in the original analysis, this update indicates that although somewhat hazardous the San Andres reservoir in this vicinity should respond favorably to a water flood program. As indicated in the Operator's Committee meeting, however, it should be pointed out that due to the fractured nature of this reservoir, it is highly recommended that a pilot program be initiated in the vicinity of the Murphy Operating Corporation, Baetz and Bluitt leases prior to the installation of a full stage program on the other properties. It is felt that through the use of a pilot flood performance analysis, a more definite picture as to the floodability of the San Andres interval can be obtained before any large expenditures of money are necessary. The pilot program would therefore reduce the amount of economic exposure to the working interest owners.

Our analysis in general indicates that by projecting existing oil production decline trends, the future primary oil available

from the ten leases analyzed in the proposed unit area should be approximately 6,780 barrels as of September 1, 1983. Further the ultimate primary recovery from these leases should be 1,492,047 barrels.

Water flood recovery estimates which will be detailed later in this report indicate a potential water flood recovery of 1,699,181 barrels if the pilot program proves the floodability of the San Andres interval.

Cost data indicates an ultimate expense of $7,987,900 with a potential profit of $27,355,065. This profit estimate assumes the installation of a full scale water flood program upon completion of a satisfactory pilot program; and 80 percent working interest ownership throughout the field; and a continual price throughout the flood life of $26.00 per barrel as is presently being received in this vicinity. It should be pointed out that the cost estimate reflects all expenditures anticipated during the complete program, including operational expense and the additional drilling requirements necessary for the installation of the program as set out herein.

I. History and Development

The original discovery well completed in the Bluitt (San Andres) Field was completed by Nearburg and Ingram on the Kirkpatrick Federal Well No. 1. This well was completed as a gas well on November 6, 1963 and after several years of production turned to an oil producing well which led to the further development of the oil reservoir on the downdip portion of the structure. This further development was initiated with a drilling program in 1968 and 1969 which led to the ultimate development of the oil reservoir southeast of the discovery well. At the present time the area proposed for utilization in this program has some 22 producing wells, several of which are presently temporarily abandoned and/or have been recompleted into the San Andres P-1 interval above the zone of interest, which is referred to as the P-2 zone. Oil recovery as of September 1, 1983 has totaled 1,485,267 barrels and the future oil recovery is estimated at 6,780 barrels. This data would indicate that the ultimate primary recovery of oil from the general area of interest is 1,492,047 barrels.

II. Geological and Reservoir Data

The producing interval in the Bluitt (San Andres) Field is described as being the P-2 zone of the San Andres interval. This zone is a highly fractured interval which responded favorably to the normal 6,000 gallon acid treatments utilized upon completion of the various producing wells in the field. Core and log information indicate an average porosity of 8.5 percent; an average water saturation of 23 percent; a formation volume factor of 1.20; and a normal primary recovery of 15 percent. Based on this infor-

mation we are of the opinion that the ultimate primary recovery will be approximately 63.5 barrels per acre-foot of the 423 barrels per acre-foot originally in place.

Gas production information, which is also included herein, indicates a total gas recovery to January 1, 1983 of 3,627,507 MCF. It should be pointed out, however, that a considerable amount of the gas recovered to date is from the structurally higher leases in the reservoir and are therefore producing primarily from the gas cap which exists in the northwest portion of the oil reservoir. It is also believed that a portion of the gas contributed to this reservoir actually was obtained from the P-1 reservoir rather than the P-2 interval. To emphasize this structural position, records indicate that the Murphy Operating Corporation, McCaw lease will have an ultimate primary oil recovery of 78,463 barrels. Gas production from the McCaw lease todate has been 80,070 MCF. This would indicate a gas/oil ratio of 1,020 cubic feet per barrel. Further up structure from the McCaw lease is the Murphy Operating Corporation, Baetz KGS lease. This lease has recovered approximately 27,011 barrels of primary oil and approximately 184,183 MCF of gas. Based on this information, the overall gas-oil ratio of the KGS lease was 6,819 cubic feet per barrel. It is therefore apparent that as the structure becomes higher, gas-oil ratios increase and that possibly a portion of the gas obtained from the higher structure wells comes from the gas cap section of the oil reservoir.

It should also be noted that several wells have been recompleted in the P-1 reservoir and are presently producing therefrom. This is strongly supported by the gas production presently being obtained from the Tom Ingram, Federal "E" lease, which is averaging approximately 3,000 MCF per month while the normal P-2 reservoir is producing little or no gas production.

Also contained herein is a gross interval isopach map which indicates a total reservoir volume of 31,618 acre-feet. This isopach map was prepared from the log information available which is believed to be slightly optimistic when measuring the gross pay interval. It was necessary to correct the gross pay calculations through the use of a gross to net correction factor. This factor was determined to be 0.74315. This information was obtained based on the previously discussed primary oil recovery of 63.5 barrels per acre-foot and the ultimate primary recovery from the field of 1,492,047 barrels. Utilizing this information it is apparent that the net productive acre-feet in the reservoir would be 23,497 net acre-feet. As previously mentioned the isopach map reflects a gross volume of 31,618 acre-feet. In order to correct the gross isopach volume to a net isopach volume it is necessary to utilize the correction factor of 0.74315.

III. Estimate of Recoverable Oil

The ultimate primary recovery from the reservoir is estimated to be 1,492,047 barrels. This information is primarily the result of analayzing the production to September 1, 1983 and projecting the existing decline trends on one lease which is believed to contain additional future primary oil recovery. Of the ten leases analyzed, one lease is believed to contain additional future primary oil and the recovery estimate from this lease is contained within the exhibits attached hereto.

Secondary oil recovery was obtained in the usual manner by reducing the original oil in place of 423 barrels per acre-foot by the 63.5 barrels per acre-foot believed obtainable by primary producing means and futher reducing the remaining oil in place by a residual oil estimate of 25 percent of the pore space or 165 barrels per acre-foot. This would result in a potential secondary reserve of 195 barrels per acre-foot which should be corrected for flood efficiency. Our estimates indicate that 97.5 barrels per acre-foot should be recoverable provided a good sweep efficiency and control of the fracture trend can be achieved. Based on this estimate and the corrected floodable volume of 17,427.5 acre-feet, an ultimate water flood recovery was determined as being 1,699,181 barrels.

IV. Recommended Water Injection Program

As indicated in our original report concerning this property, we are of the opinion that the data obtained from core analysis and the excellent reservoir drainage proven by the drilling of the Murphy Operating Corporation, Bluitt Federal well No. 3 in late 1977 dictate the necessity for a pilot program to be installed prior to any large development expenditure in order to fully evaluate a water flood in this reservoir. We continue to recommend that the Murphy Operating Corporation, Baetz wells No. 1 and 2 and the Murphy Operating Corporation, Bluitt Federal wells No. 1 and 3 be utilized for water injection purposes. Through the utilization of these wells and the anticipated major response at the Murphy Operating Corporation, Bluitt Federal well No. 2, as well as other offsetting wells to the injection points, considerable additional information can be gained which could alter the final water flood program design as indicated herein.

We are of the opinion that this pilot program will require unitization of all leases shown on the proposed unit area map contained herein will require obtaining an initial water supply for the pilot program of approximately 1,200 barrels of water per day which should be distributed equally among the four wells used for injection purposes initially; and should be watched very closely in order to determine the response anticipated.

Once response has been indicated to the pilot program, and the program has been fully analayzed and proven successful, im-

mediate expansion of the water injection program will be necessary. This expansion will require the drilling of six producing wells and five water injection wells. It further will ultimately require the conversion of an additional seven producing wells to injection status and the potential reequipping at a later date of the majority of the remaining eight producing wells. Ultimately, it is anticipated that an injection rate of approximately 4,800 barrels of water per day will be necessary in this area and that there will be an ultimate 30 total wells being used, 14 of which will be producing wells and 16 of which will be water injection wells. The pattern selected and line layout for the injection facilities has been presented on a map included herein for your review.

V. Organization

Included within this report is a tabulation indicating the proposed unitization factors. We are of the opinion that the area analyzed should be unitized and since reliable data as to reservoir thickness, etc. are not available, that the most reliable information should be utilized in the unitization factors. The factors selected by the Operating Committee to date include a 20 percent weighing of usable wells and an 80 percent weighing of ultimate primary oil recovery. These factors appear to establish equity within the proposed Bluitt San Andres Unit, especially in view of the rather small amount of oil recovery remaining to be obtained. We strongly recommend these factors to the owners of the project even though instances of possible drainage across lease lines undoubtedly has occurred within the field during the primary production phase of the Bluitt (San Andres) Field.

VI. Cost Estimate

The cost of the program to be installed in the Bluitt Area has also been reanalyzed within this report and updated since the original Preliminary Water Flood Survey. The cost of the pilot program has been determined to be approximately $824,000 including operational expense; water plant, water supply and other installations. It is anticipated that this program will last approximately two years before expansion will become feasible. Ultimately, a total installation, operation and equipment cost of approximately $7,987,900 is anticipated. This expenditure includes an operational expense estimate of approximately $4,500,000 during the complete life of the program. Following is a general summation of the money requirement for the major items contained in the final water flood program:

A.	Water Supply	$ 554,900
B.	Water Plant	$ 200,000
C.	Water Distribution System	$ 180,000

D.	Injection Well Expense (includes drilling of five water injection wells and conversion of eleven wells to injection service)	$ 925,000
E.	Producing well expense (includes the drilling of six new producing wells and equipping eight remaining producing wells as necessary)	$1,478,000
F.	Producing facility changes	$ 150,000
G.	Operational expense (assumes a period of three years with 20 wells operational at $15,000 per well per year, and a period of eight years with 30 wells active at $15,000 per well per year)	$4,500,000
H.	Total Expense	$7,987,900

As indicated previously, a pilot program can be installed for an expenditure of approximately $824,000. Should this program prove successful, an immediate expansion of the injection and producing facilities will be mandatory and will be strongly recommended.

VII. Economic Analysis

As indicated previously, an oil production recovery of 1,699,181 barrels of water flood oil appears feasible from the Bluitt (San Andres) Field. Assuming a working interest ownership of 80 percent and an after tax net oil price of $26.00 per barrel, it is anticipated that the gross income from a water flood program would be $35,342,965. Reducing this amount by the total anticipated expense previously discussed under the cost estimate section of this report of $7,987,900, a profit of $27,355,065 is indicated. It should be pointed out, however, that the actual risk investment is considerably below the $7,987,900 figure indicated in the cost estimate section. Our estimate of the risk capitol for the installation and operation of the pilot program is $824,000. With a successful pilot program, it is virtually assured that an ultimate profit of $27,355,065 should result.

VII. General Summary

As discussed within this analysis, the San Andres reservoir in the Bluitt (San Andres) Field appears to have excellent water flood potentiality. In order to be assured of these potentialities, it will be necessary for the installation of a pilot program to be accomplished within the area under study in the immediate future.

This can only be accomplished following unitization. Unitization is believed to be more equitable to all concerned parties by utilizing a 20 percent weight towards usable wells and an 80 percent weight of ultimate primary oil recovery anticipated to be obtained from the field. Once unitization has been achieved and an adquate water supply obtained, the installation of a small 1,200 barrel per day pilot plant should be undertaken. It is anticipated that this program will require approximately two years for a full analysis and upon its completion, an immediate expansion of the program must be accomplished. With the full program carried to its completion, it is anticipated that an excellent profit potential is available for the working interest ownership within the area under study.

Should there be any questions concerning the information or recommendations contained herein, please do not hesitate to contact us.

Yours very truly,

STEPHENS ENGINEERING

Joe L. Johnson, Jr.

SUPPLEMENTAL WATER FLOOD SURVEY
MURPHY OPERATING CORPORATION
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
As of September 1, 1983

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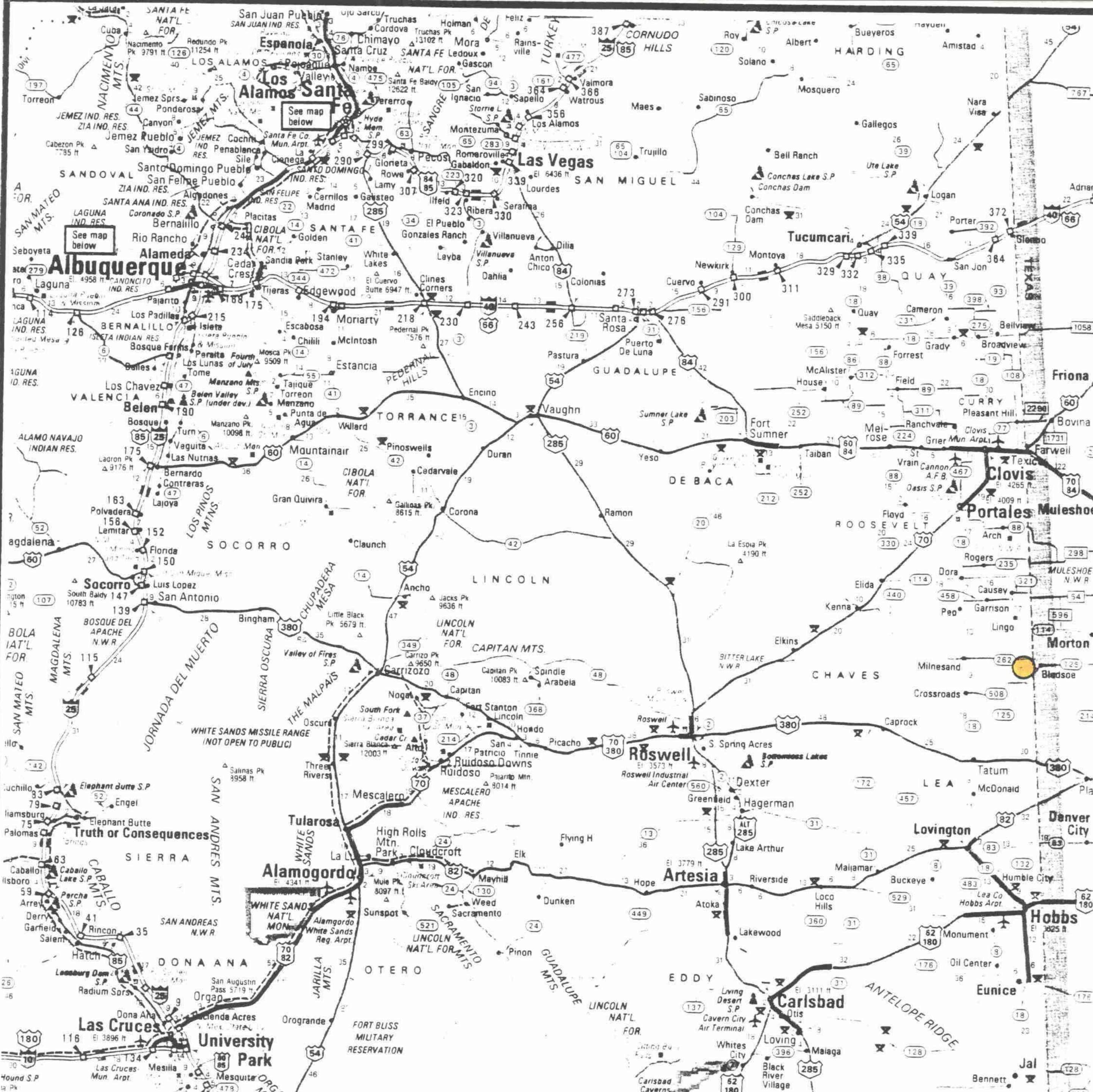
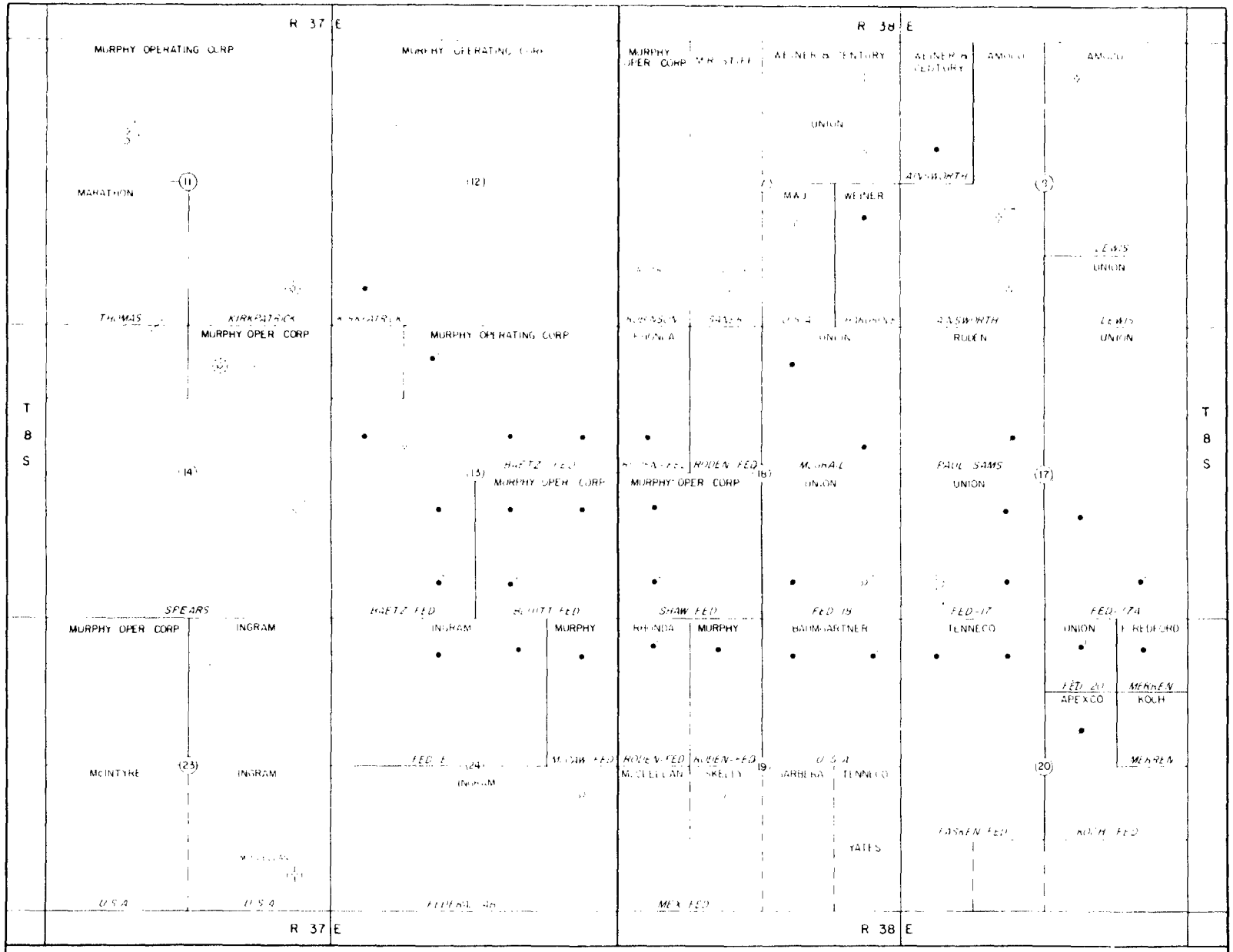


GENERAL LOCATION MAP
SUPPLEMENTAL WATER FLOOD SURVEY
MURPHY OPERATING CORPORATION
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO

SCALE
0 30
Miles

PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS



LEGEND

- PRODUCING WELL
- PLUGGED & ABANDONED
- GAS WELL
- OIL WELL (DEEP)
- OIL WELL (SHALLOW)
- DRY HOLE
- PROPOSED PRODUCING WELL LOCATION (AFTER FLOOD)
- PROPOSED WATER INJECTION WELL LOCATION (AFTER FLOOD)
- PRESENT WATER INJECTION WELL
- PRESENT WATER INJECTION WELL (PLUGGED)

SUPPLEMENTAL WATER FLOOD SURVEY

MURPHY OPERATING CORPORATION

BLUITT (SAN ANDRES) FIELD

ROOSEVELT COUNTY, NEW MEXICO

FIELD MAP

SCALE

FEET

STEPHENS ENGINEERING

SUPPLEMENTAL WATER FLOOD SURVEY
MURPHY OPERATING CORPORATION
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO

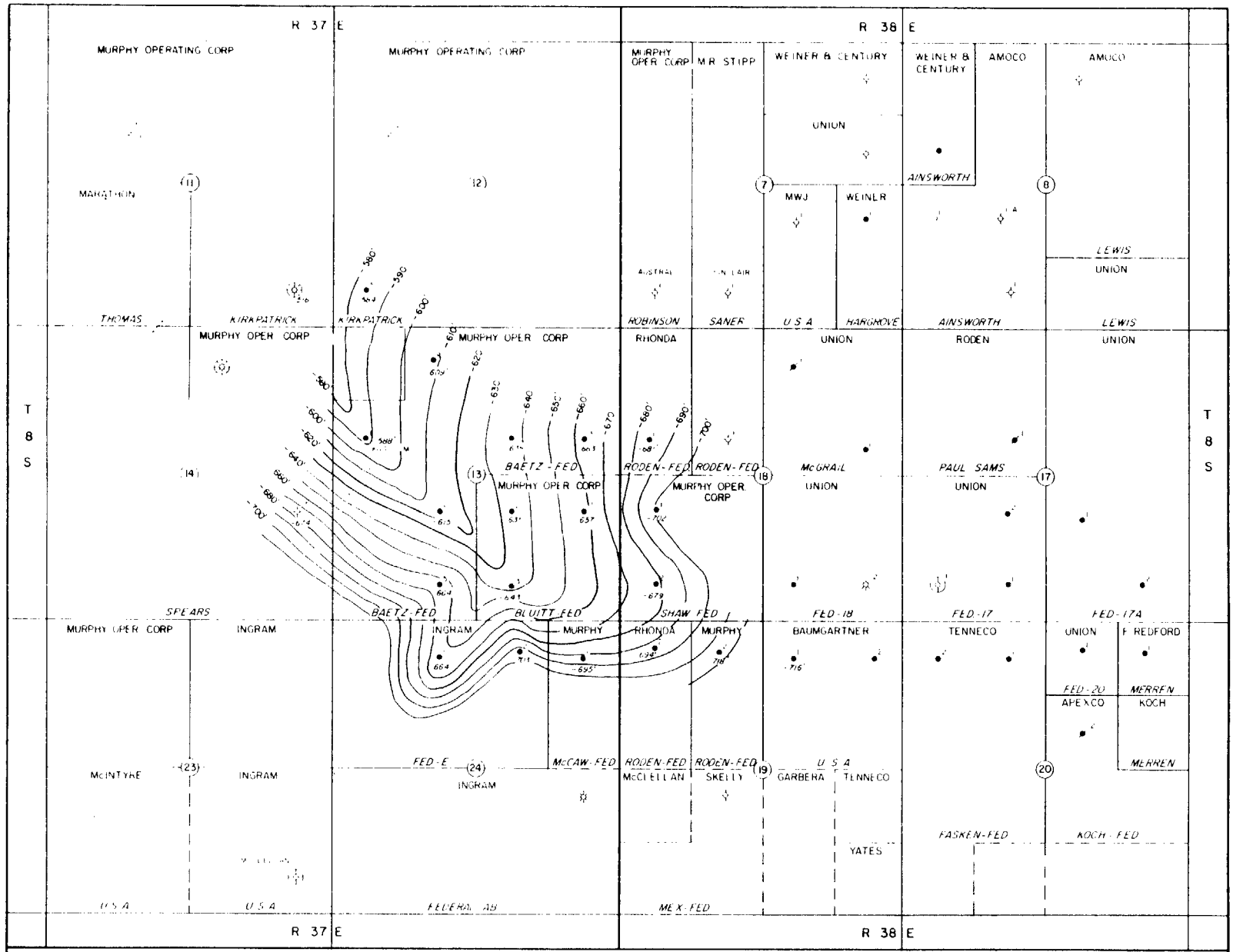
WELL RECORDS

Operator / Lease	Well No.	Compl. Date	Datum Elev. Feet	Total Depth Feet	Casing Record Size Inches	Casing Record Depth Feet	Completion Interval Feet	Initial Treatment	Initial BOPD	Potential BWPD	Remarks
Baumgartner Oil Co.											
U.S.A.	1	8-5-69	4014	4775	5 1/2	4775	4654-4705	5,000 Acid	280	0	
							4734-4762	5,000 Acid			
Tom L. Ingram											
Federal "E"	1	6-15-69	4003	4830	4 1/2	4830	4668-4691	8,500 Acid	8	0	Recomp. to P-1
	2	4-21-69	3997	4750	4 1/2	4750	4703-4729	3,000 Acid	240	0	
Murphy Operating Corp.											
Baetz Federal	1	12-26-68	4009	5050	4 1/2	4793	4649-4679	6,000 Acid	171	0	
	2	2-26-69	4007	4800	4 1/2	4787	4623-4652	6,000 Acid	330	0	
	3	2-26-69	4005	4780	4 1/2	4767	4670-4698	6,000 Acid	225	0	
	4	7-15-69	4021	4760	4 1/2	4751	4633-4662	6,000 Acid	480	0	
	5	7-23-69	4002	4733	4 1/2	4733	4669-4698	6,000 Acid	160	0	
Baetz KGS	1	7-16-69	4016	4740	5 1/2	4730	4608-4636	6,000 Acid	240	0	
Bluitt Federal	1	10-17-68	4003	4756	5 1/2	4756	4661-4680	3,000 Acid	150	0	
	2	12-22-68	4003	4756	5 1/2	4694	4645-4669	9,000 Acid	165	0	
	3	11-11-77	3997	4750	4 1/2	4740	4630-4660	16,000 Acid	34	1	
Kirkpatrick Federal	1	11-6-63	4020	4622	4 1/2	4622	4536-4600	7,000 Acid	1,675 MCF		Gas Well
	2	11-19-63	4042	-	4 1/2	4628	4528-4592	7,000 Acid	790 MCF		Gas Well
	5	3-1-70	4029	4675	5 1/2	4665	4613-4638	6,000 Acid	63	0	
	7	Not Compl.	4026	4800	5 1/2	4788	4611-4679	13,000 Acid	-	-	
McCaw Federal	1	3-8-69	4007	4748	5 1/2	4748	4702-4732	3,500 Acid	136	0	
Roden Federal	2	5-2-69	4002	4765	5 1/2	4765	4724-4747	3,000 Acid	140	0	
Shaw Federal	1	12-11-68	3984	4740	5 1/2	4740	4688-4704	3,000 Acid	150	0	
	2	2-16-69	4009	4733	5 1/2	4733	4690-4712	3,500 Acid	135	0	
Rhonda Operating Co.											
Roden Bluitt Federal	1	2-24-69	4014	4738	5 1/2	4738	4697-4717	3,500 Acid	52	23	
	2	4-18-69	4020	4770	5 1/2	4770	4717-4737	1,000 Acid	240	0	

SUPPLEMENTAL WATER FLOOD SURVEY
MURPHY OPERATING CORPORATION
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO

GEOLOGICAL DATA

Operator / Lease	Well No.	Elev. Feet	San Andres Subsurf. Feet	San Andres Subsea Feet	San Andres Est. Gross Thickness Feet	Remarks
Baumgartner Oil Co.						
U.S.A.	1	4014	4730	-716	40	Also open in Upper
Tom L. Ingram						
Federal "E"	1	4003	4667	-664	28	Upper Zone?
	2	3997	4700	-703	27	
Murphy Operating Corp.						
Baetz Federal	1	4009	4647	-638	35	
	2	4007	4622	-615	34	
	3	4005	4668	-663	32	
	4	4021	4630	-609	33	
	5	4002	4666	-664	32	
Baetz KGS	1	4016	4604	-588	36	
Bluitt Federal	1	4003	4660	-657	34	
	2	4009	4644	-635	34	
	3	3997	4640	-643	36	Perfs. high
Kirkpatrick	1	4020	4536	-516	Gas	
	2	4042	NA	NA	Gas	
	5	4029	4613	-584	27	
	7	4026	4700	-674	36	
McCaw Federal	1	4007	4702	-695	36	
Roden Federal	2	4002	4720	-718	30	
Shaw Federal	1	3984	4686	-702	30	
	2	4009	4688	-679	27	
Rhonda Operating Co.						
Roden Bluitt	1	4014	4695	-681	18	
	2	4020	4714	-694	31	



LEGEND

SUPPLEMENTAL WATER FLOOD SURVEY

MURPHY OPERATING CORPORATION

BLUITT (SAN ANDRES) FIELD

ROOSEVELT COUNTY, NEW MEXICO

GEOLOGICAL STRUCTURE MAP

CONTOURED ON TOP OF SAN ANDRES (P-2) FORMATION

CONTOUR INTERVAL — 10 FEET

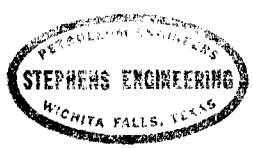
SCALE

FEET

SUPPLEMENTAL WATER FLOOD SURVEY
MURPHY OPERATING CORPORATION
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO

OIL PRODUCTION HISTORY

Operator / Lease		Baumgartner U.S.A.		Tom Ingram Federal "E"		Murphy Operating Corporation							
						Baetz		Baetz KGS		Bluitt		Kirkpatrick	
Year	Mo.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.
Cum. to 1-1-69										511	6,136	1,627	19,521
1969		1,454(2mo)	2,909	3,869(9mo)	34,823	13,891	166,687	1,951(6mo)	11,703	7,431	89,170	794	9,527
1970		723	8,674	2,340	28,083	15,674	188,087	907	10,888	7,959	95,507	1,012	12,145
1971		355	4,260	643	7,721	6,213	74,552	317	3,805	3,385	40,625	676	8,114
1972		177	2,119	218	2,615	2,860	34,321	50	605	1,312	15,742	200	2,403
1973		156	1,877	56	674	1,599	19,188	1	10	736	8,835	61	729
1974		115	1,375	54	645	1,128	13,537	0	0	484	5,803	7	80
1975		93	1,115	135	1,615	878	10,536	0	0	406	4,873	8	90
1976		113	1,355	59	702	680	8,157	0	0	423	5,079	0	0
1977		107	1,284	65	785	535	6,414	0	0	272	3,259	0	0
1978		107	1,281	48	571	407	4,881	0	0	350	4,202	0	0
1979		101	1,207	49	591	273	3,284	0	0	229	2,750	0	5
1980		75	905	42	503	254	3,051	0	0	157	1,889	0	0
1981		75	901	15	180	242	2,905	0	0	108	1,293	0	0
1982		63	761	10	121	206	2,482	0	0	98	1,181	0	0
1983	Jan	0		13		198		0		73		0	
	Feb	56		21		156		0		58		0	
	Mar	62		17		215		0		113		0	
	Apr	63		13		196		0		115		0	
	May	69		12		194		0		157		0	
	Jun	10		3		187		0		99		0	
	Jul	80		8		200		0		110		0	
	Aug	23		20		193		0		232		0	
Sub-Total		45	363	13	107	192	1,539	0	0	120	957	0	0
Total			30,386		79,736		539,621		27,011		287,301		52,614



OIL PRODUCTION HISTORY (Cont'd)

Operator / Lease		Murphy Operating Corporation								Rhonda Operating Co.			
		McCaw		Roden		Shaw		Total Murphy		Roden Bluitt		Total Leases	
Year	Mo.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.	Avg. Mo. Oil Prod. Bbls.	Tot. Yrly Oil Prod. Bbls.
Cum. to 1-1-69									25,657				25,657
1969		3,542(10mo)	35,423	3,191(8mo)	25,526	8,055(6mo)	48,331	32,197	386,367	5,155(6mo)	30,927	37,919	455,026
1970		2,212	26,549	1,714	20,571	7,436	89,231	36,915	442,978	2,189	26,267	42,167	506,002
1971		904	10,843	851	10,208	3,151	37,813	15,497	185,960	753	9,037	17,248	206,978
1972		212	2,544	194	2,331	1,342	16,098	6,170	74,044	486	5,832	7,051	84,610
1973		66	795	100	1,205	827	9,918	3,390	40,680	267	3,200	3,869	46,431
1974		41	491	65	779	577	6,923	2,301	27,613	179	2,146	2,648	31,779
1975		17	199	44	522	538	6,457	1,890	22,677	112	1,348	2,230	26,755
1976		36	431	112	1,341	493	5,914	1,744	20,922	74	887	1,988	23,866
1977		45	537	109	1,305	310	3,716	1,269	15,231	58	701	1,500	18,001
1978		30	356	56	667	371	4,449	1,213	14,555	65	775	1,432	17,182
1979		7	84	41	491	175	2,103	726	8,717	94	1,124	970	11,639
1980		4	45	49	584	217	2,601	681	8,170	83	991	881	10,569
1981		5	61	45	544	183	2,197	583	7,000	43	511	716	8,592
1982		5	58	45	541	183	2,190	538	6,452	14	166	625	7,500
1983	Jan	5		30		155		461		10		484	
	Feb	5		23		169		411		11		499	
	Mar	9		20		187		544		22		645	
	Apr	8		30		178		527		11		614	
	May	5		17		179		552		16		649	
	Jun	5		31		168		490		0		503	
	Jul	5		22		186		523		5		616	
	Aug	5		20		171		621		6		670	
Sub-Total		6	47	24	193	174	1,393	511	4,129	10	81	580	4,680
Total			78,463		66,808		239,334		1,291,152		83,993		1,485,267

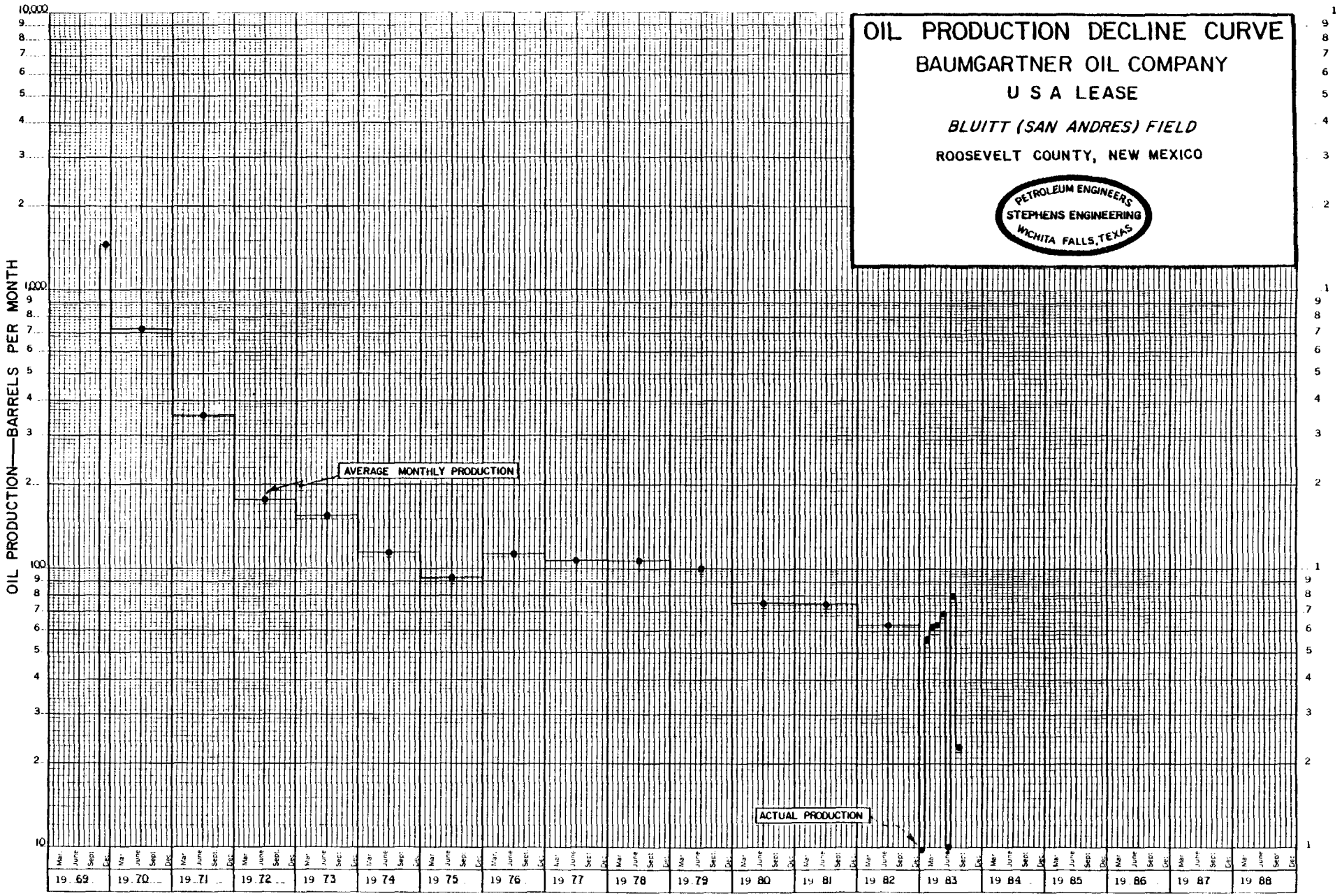
SUPPLEMENTAL WATER FLOOD SURVEY
MURPHY OPERATING CORPORATION
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO

GAS PRODUCTION HISTORY

Operator		Baumgartner		Tom Ingram		Murphy Operating Corporation							
Lease		U.S.A.		Federal "E"		Baetz		Baetz KGS		Bluitt		Kirkpatrick	
Year	Mo.	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF
1968										780(3mo)	2,640		
1969		546(2mo)	1,091	6,099(9mo)	54,894	10,344	124,129	3,123(6mo)	18,736	1,993	23,910	4,997	59,959
1970		411	4,930	7,612	91,340	29,503	354,037	7,189	86,270	12,681	152,170	9,435	113,217
1971		599	7,187	3,361	40,337	21,735	260,816	4,362	52,341	15,624	187,487	6,464	77,570
1972		437	5,243	3,101	37,213	15,161	181,927	1,558	18,693	8,325	99,894	4,516	54,190
1973		315	3,774	643	7,711	10,462	125,541	399	4,782	5,400	64,797	2,103	25,235
1974		192	2,304	437	5,247	6,407	76,886	186	2,232	2,419	29,028	1,591	19,090
1975		188	2,261	1,711	20,527	4,768	57,211	71	857	1,012	12,138	956	11,477
1976		565	6,785	200	2,405	3,578	42,937	0	0	368(7mo)	2,577	735	8,822
1977		2,169	26,032	72	865	5,738	68,851	9	104	580	6,962	356	4,275
1978		1,882	22,589	242	2,906	4,301	51,615	14	168	3,554	42,653	192	2,305
1979		1,507	18,087	940	11,277	2,227	26,727	0	0	1,487	17,848	138	1,660
1980		1,834	22,007	6,238	74,861	2,102	25,221	0	0	0	0	99	1,184
1981		1,752	21,025	3,761	45,131	1,967	23,601	0	0	0	0	200	2,400
1982		1,564	18,773	3,252	39,021	2,036	24,426	0	0	0	0	363	4,362
1983	Jan	0		3,267		1,818		0		0		181	
	Feb	1,543		3,061		2,101		0		0		182	
	Mar	1,411		2,516		1,907		0		0		159	
	Apr	1,513		2,682		2,054		0		0		208	
	May	1,505		3,077		2,267		0		0		191	
	Jun	1,536		2,991		2,285		0		0		136	
	Jul	1,638		3,078		2,354		0		0		124	
	Aug	1,564		2,944		2,369		0		0		141	
Sub-Total		1,339	10,710	2,952	23,616	2,144	17,155	0	0	0	0	165	1,322
Total			172,798		457,351		1,461,080		184,183		642,104		387,068

GAS PRODUCTION HISTORY (Cont'd)

Operator		Murphy Operating Corporation								Rhonda Operating Co.			
Lease		McCaw		Roden		Shaw		Total Murphy		Roden Bluitt		Total Leases	
Year	Mo.	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF	Avg. Mo. Gas Prod. MCF	Tot. Yrly Gas Prod. MCF
1968								220	2,640			220	2,640
1969		898(10mo)	8,981	815(8mo)	6,517	568(6mo)	3,407	20,470	245,639	2,957(6mo)	17,739	26,614	319,363
1970		2,344	28,122	303	3,631	2,426	29,102	63,879	766,549	2,089	25,063	79,990	887,882
1971		2,499	29,991	763	9,156	2,879	34,549	54,326	651,910	1,968	23,614	60,254	723,048
1972		459	5,506	131	1,577	1,660	19,922	31,809	381,709	933	11,198	36,280	435,363
1973		160	1,916	0	0	1,505	18,058	20,027	240,329	413	4,950	21,397	256,764
1974		123	1,477	0	0	600	7,196	11,326	135,909	67	801	12,022	144,261
1975		78	933	0	0	177	2,129	7,062	84,745	15	181	8,976	107,714
1976		131(11mo)	1,446	0	0	292	3,503	4,940	59,285	144	1,731	5,851	70,206
1977		139	1,672	0	0	102	1,221	6,924	83,085	68	821	9,234	110,803
1978		2	26	0	0	1,007	12,078	9,070	108,845	2	22	11,197	134,362
1979		0	0	0	0	346	4,152	4,199	50,387	2	24	6,648	79,775
1980		0	0	0	0	0	0	2,200	26,405	2	24	10,275	123,297
1981		0	0	0	0	0	0	2,167	26,001	2	23	7,682	92,180
1982		0	0	0	0	0	0	2,399	28,788	37	448	7,252	87,030
1983	Jan	0		0		0		1,999		2		5,268	
	Feb	0		0		0		2,283		2		6,889	
	Mar	0		0		0		2,066		2		5,995	
	Apr	0		0		0		2,262		2		6,459	
	May	0		0		0		2,458		2		7,042	
	Jun	0		0		0		2,421		2		7,049	
	Jul	0		0		0		2,478		2		7,196	
	Aug	0		0		0		2,510		2		7,020	
Sub-Total		0	0	0	0	0	0	2,309	18,477	2	16	6,602	52,819
Total			80,070		20,881		135,317		2,910,703		86,655		3,627,507


OIL PRODUCTION DECLINE CURVE
BAUMGARTNER OIL COMPANY
U S A LEASE
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
OIL PRODUCTION—BARRELS PER MONTH
AVERAGE MONTHLY PRODUCTION
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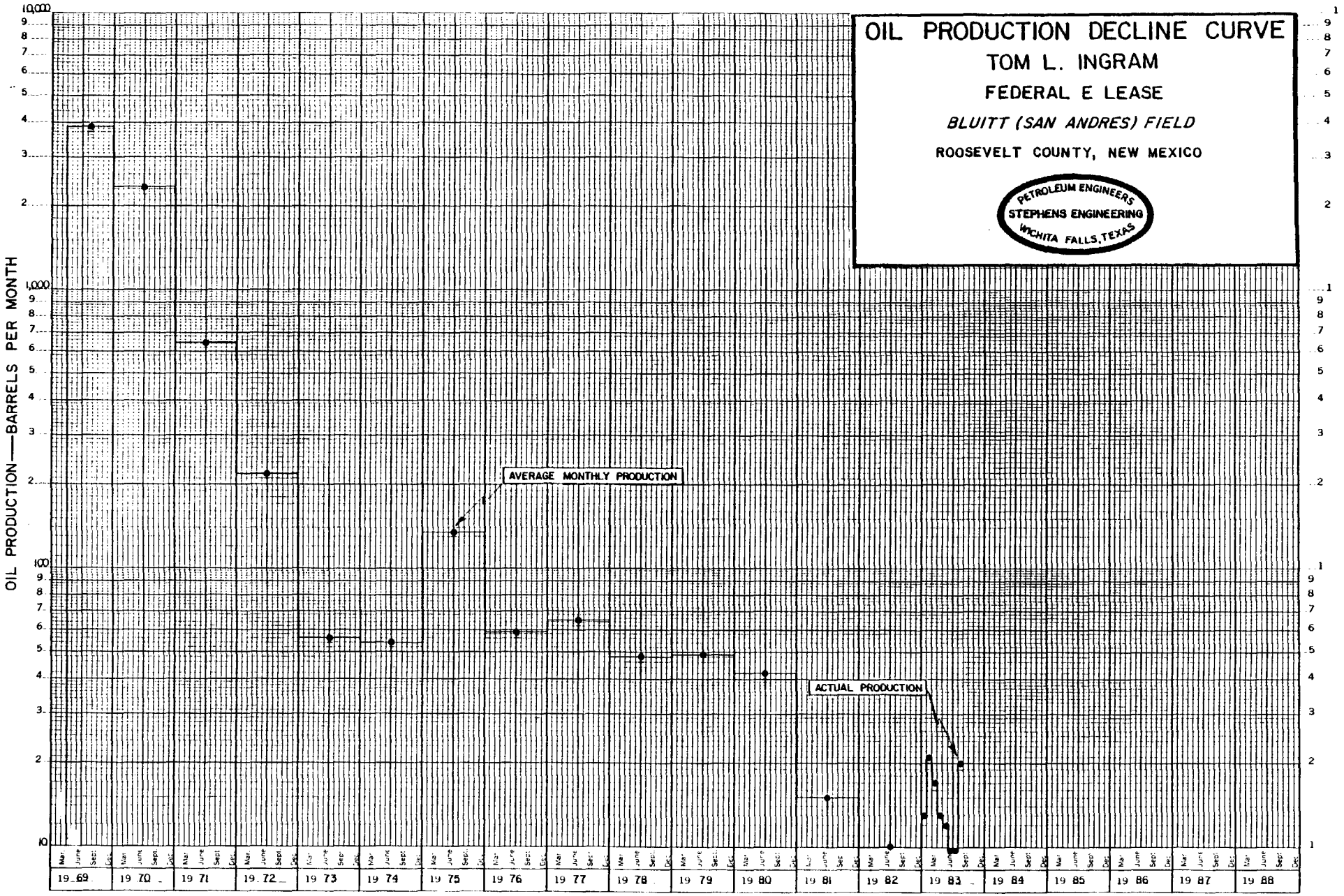
OIL PRODUCTION DECLINE CURVE
TOM L. INGRAM
FEDERAL E LEASE
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
OIL PRODUCTION—BARRELS PER MONTH
AVERAGE MONTHLY PRODUCTION
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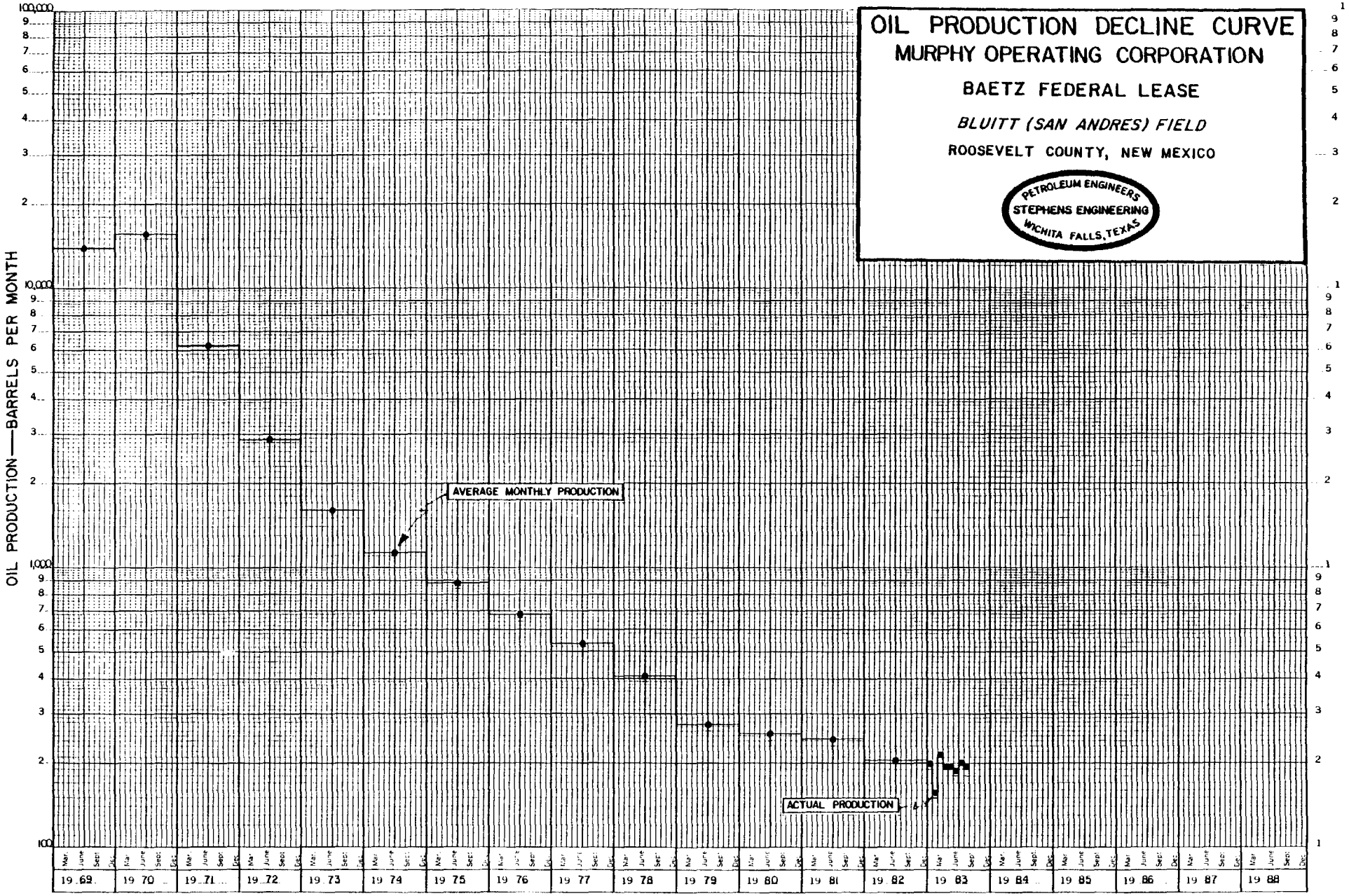
OIL PRODUCTION DECLINE CURVE
MURPHY OPERATING CORPORATION
BAETZ FEDERAL LEASE
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
OIL PRODUCTION—BARRELS PER MONTH
AVERAGE MONTHLY PRODUCTION
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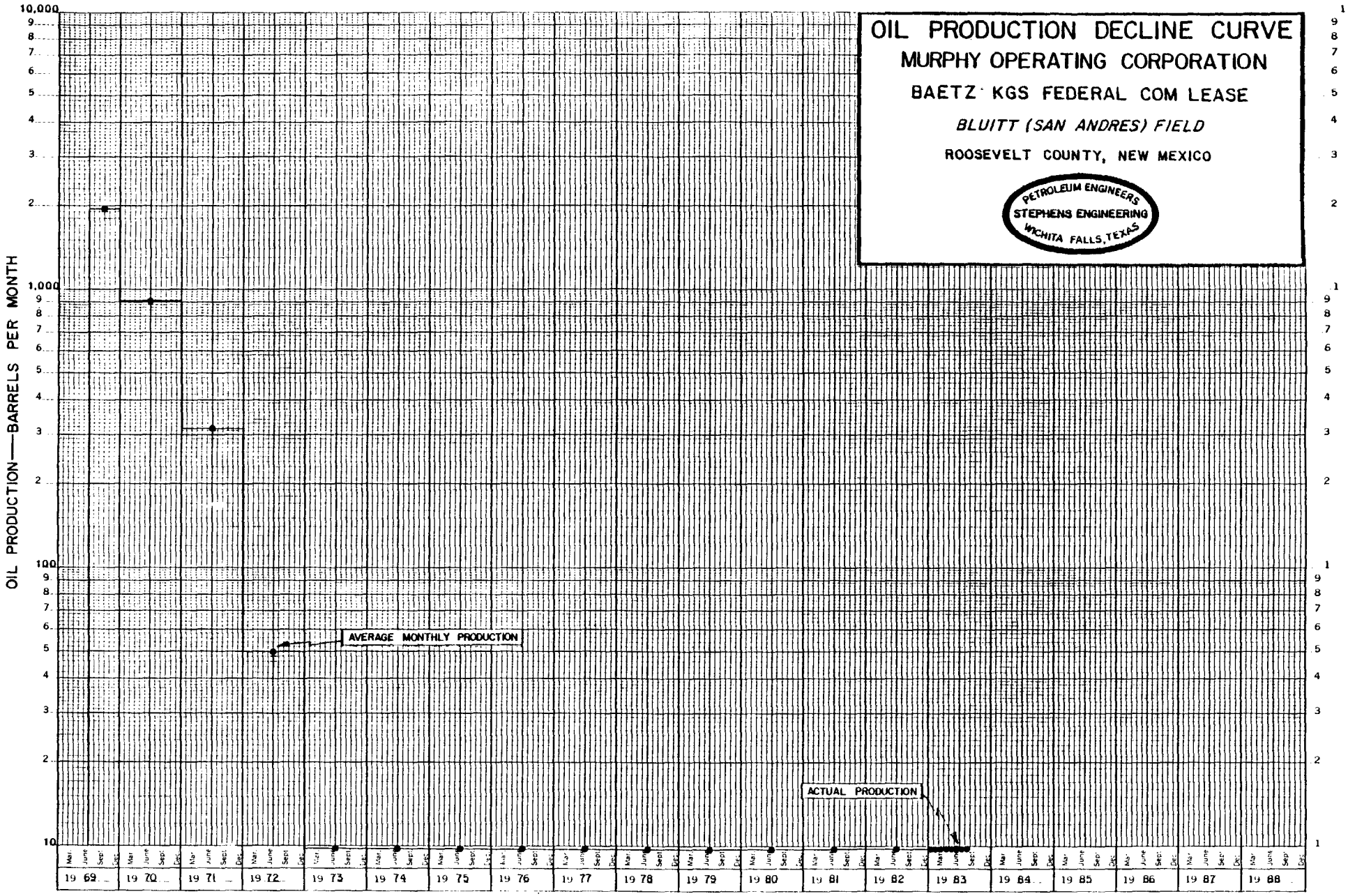
OIL PRODUCTION DECLINE CURVE
MURPHY OPERATING CORPORATION
BAETZ KGS FEDERAL COM LEASE
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
OIL PRODUCTION—BARRELS PER MONTH
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AVERAGE MONTHLY PRODUCTION
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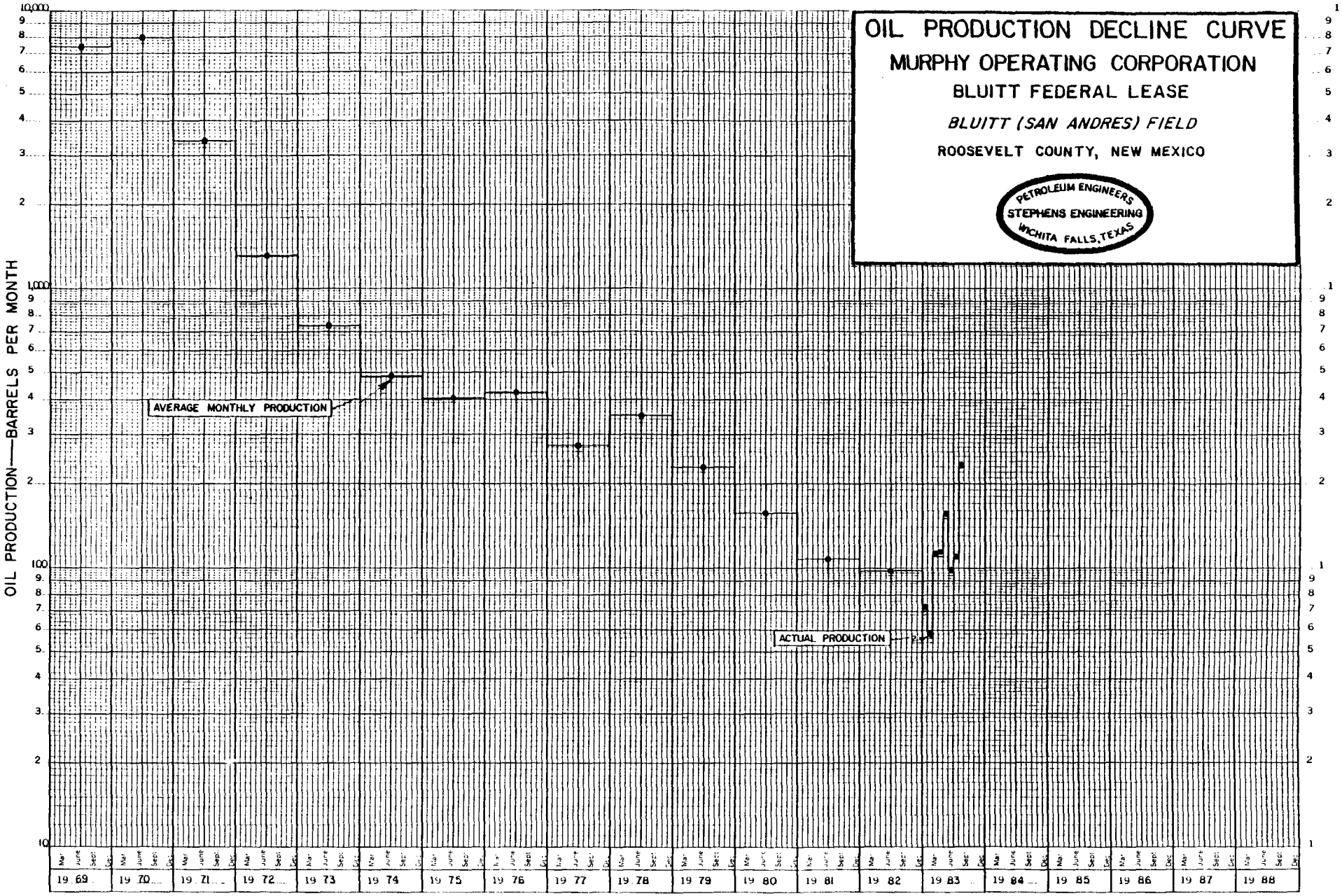
OIL PRODUCTION DECLINE CURVE
MURPHY OPERATING CORPORATION
BLUITT FEDERAL LEASE
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
OIL PRODUCTION—BARRELS PER MONTH
AVERAGE MONTHLY PRODUCTION
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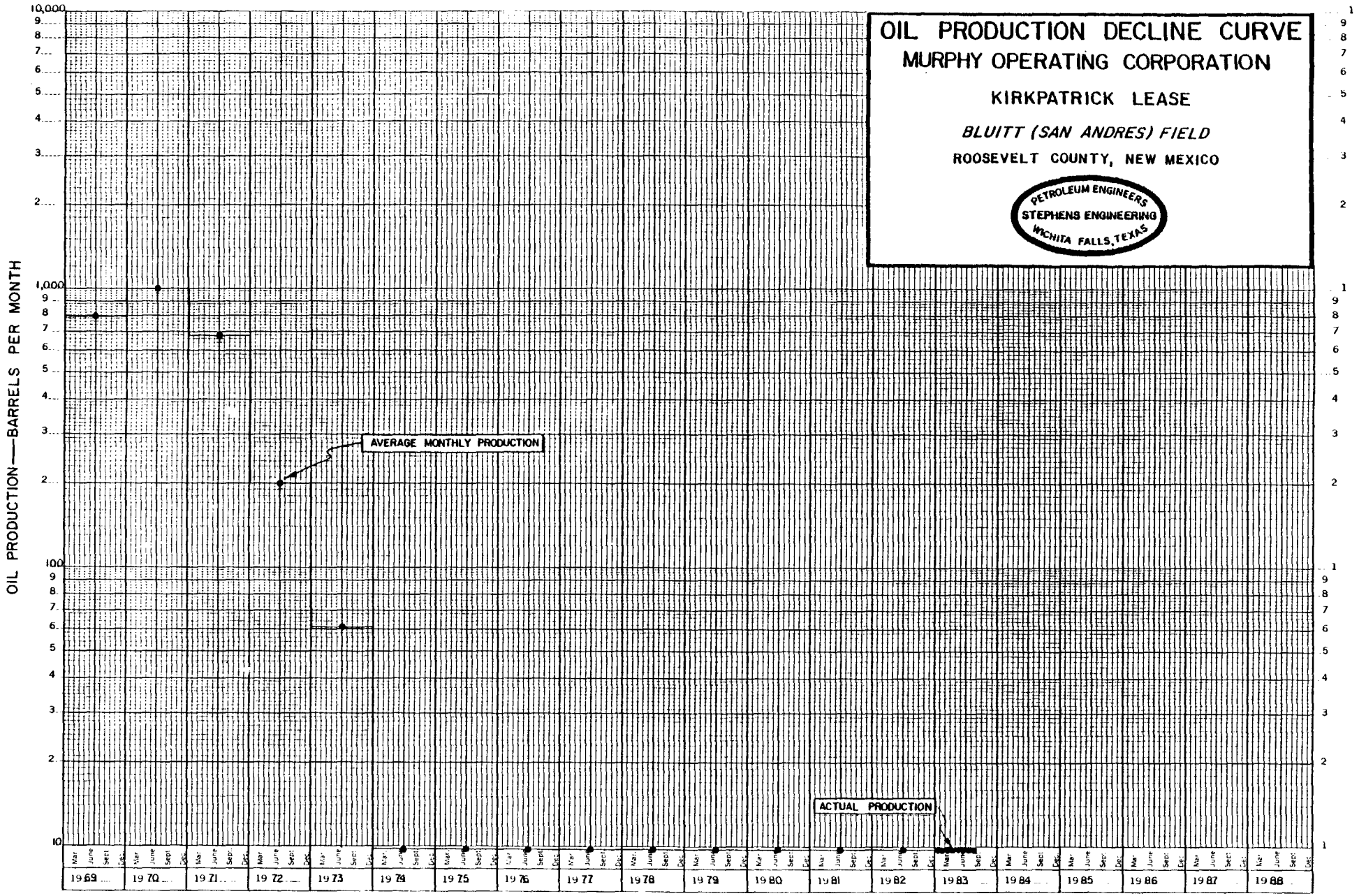
OIL PRODUCTION DECLINE CURVE
MURPHY OPERATING CORPORATION
KIRKPATRICK LEASE
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
OIL PRODUCTION—BARRELS PER MONTH
AVERAGE MONTHLY PRODUCTION
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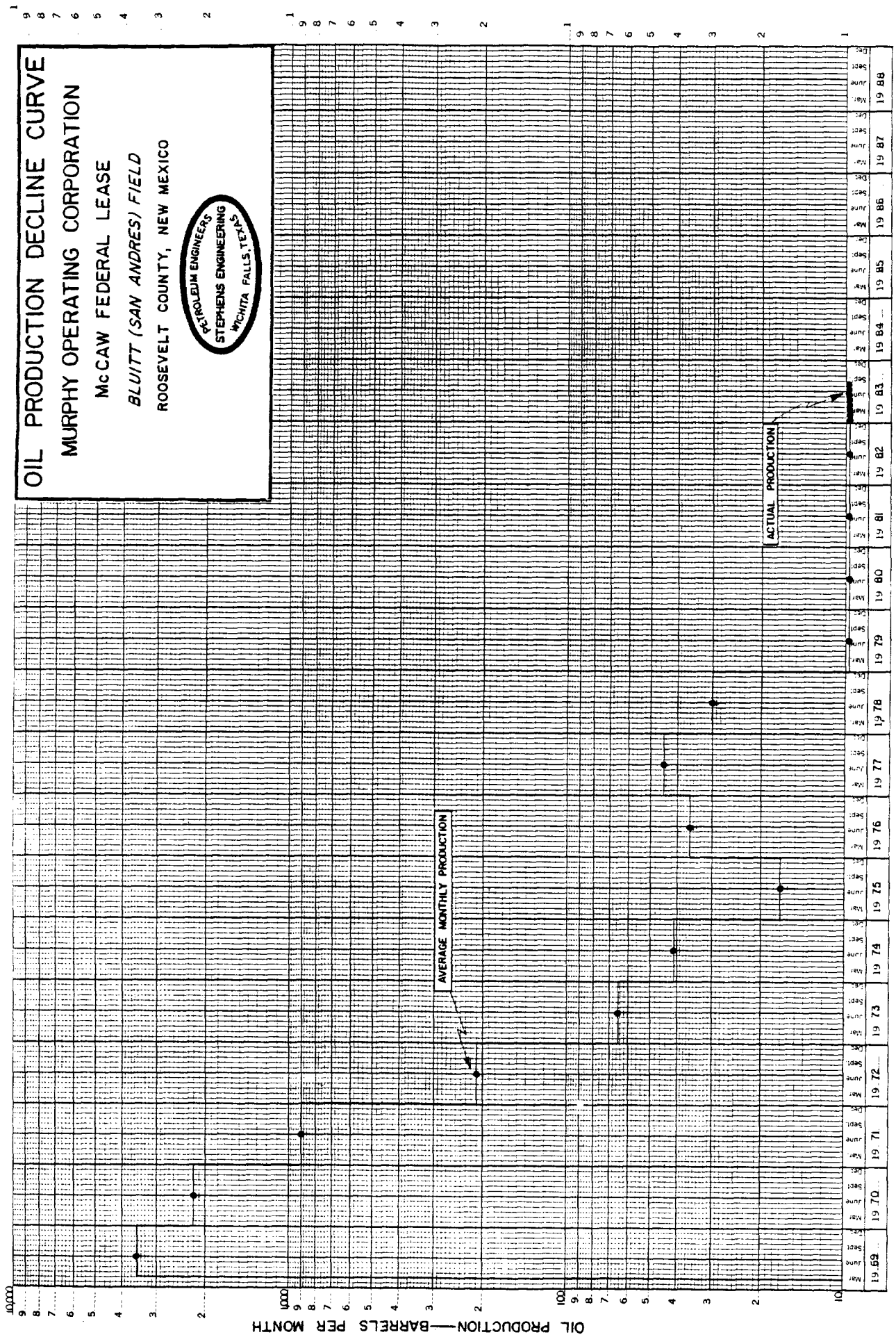
OIL PRODUCTION DECLINE CURVE
MURPHY OPERATING CORPORATION
McCAW FEDERAL LEASE
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
AVERAGE MONTHLY PRODUCTION
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OIL PRODUCTION—BARRELS PER MONTH
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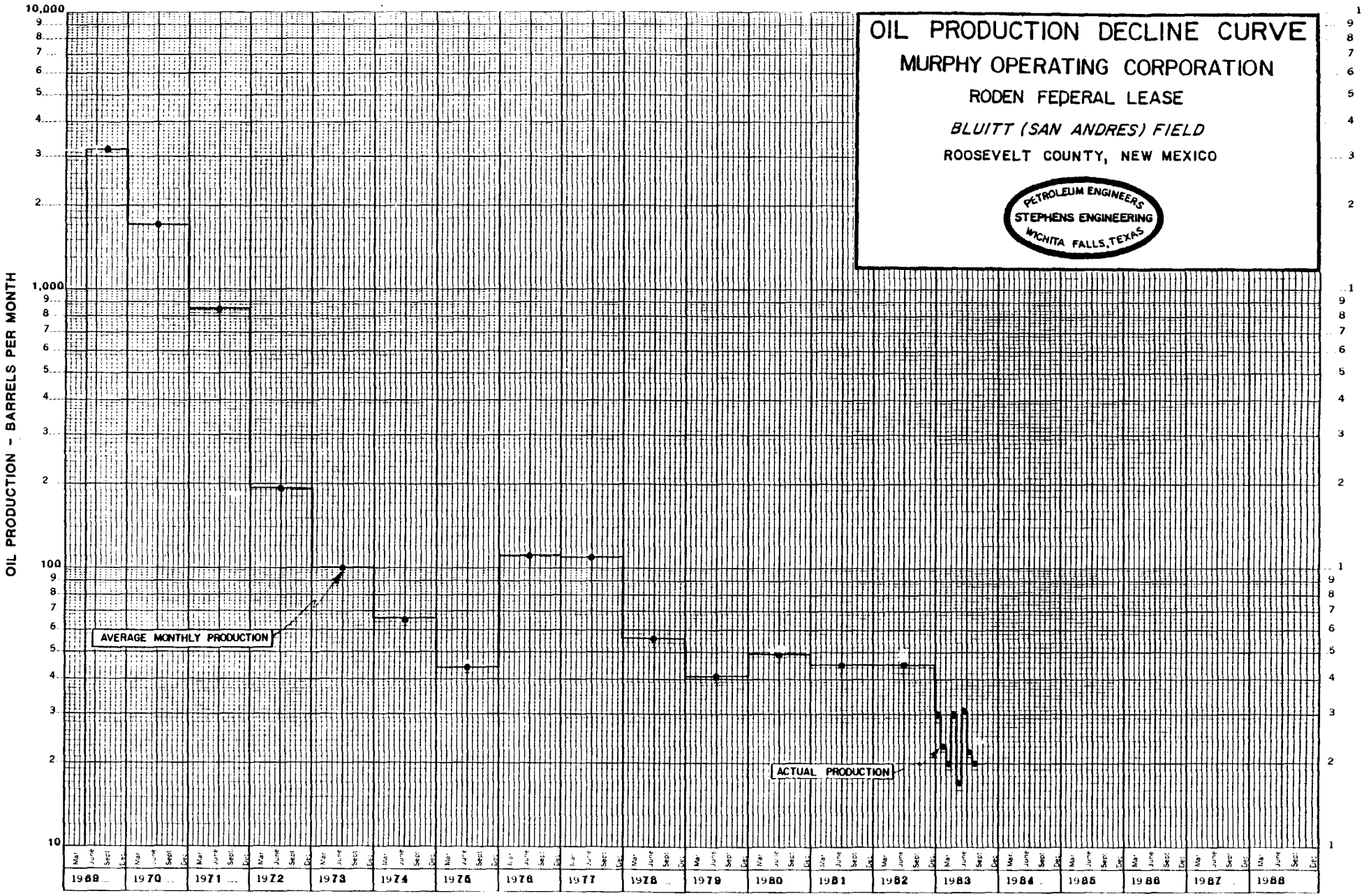
OIL PRODUCTION DECLINE CURVE
MURPHY OPERATING CORPORATION
RODEN FEDERAL LEASE
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
OIL PRODUCTION - BARRELS PER MONTH
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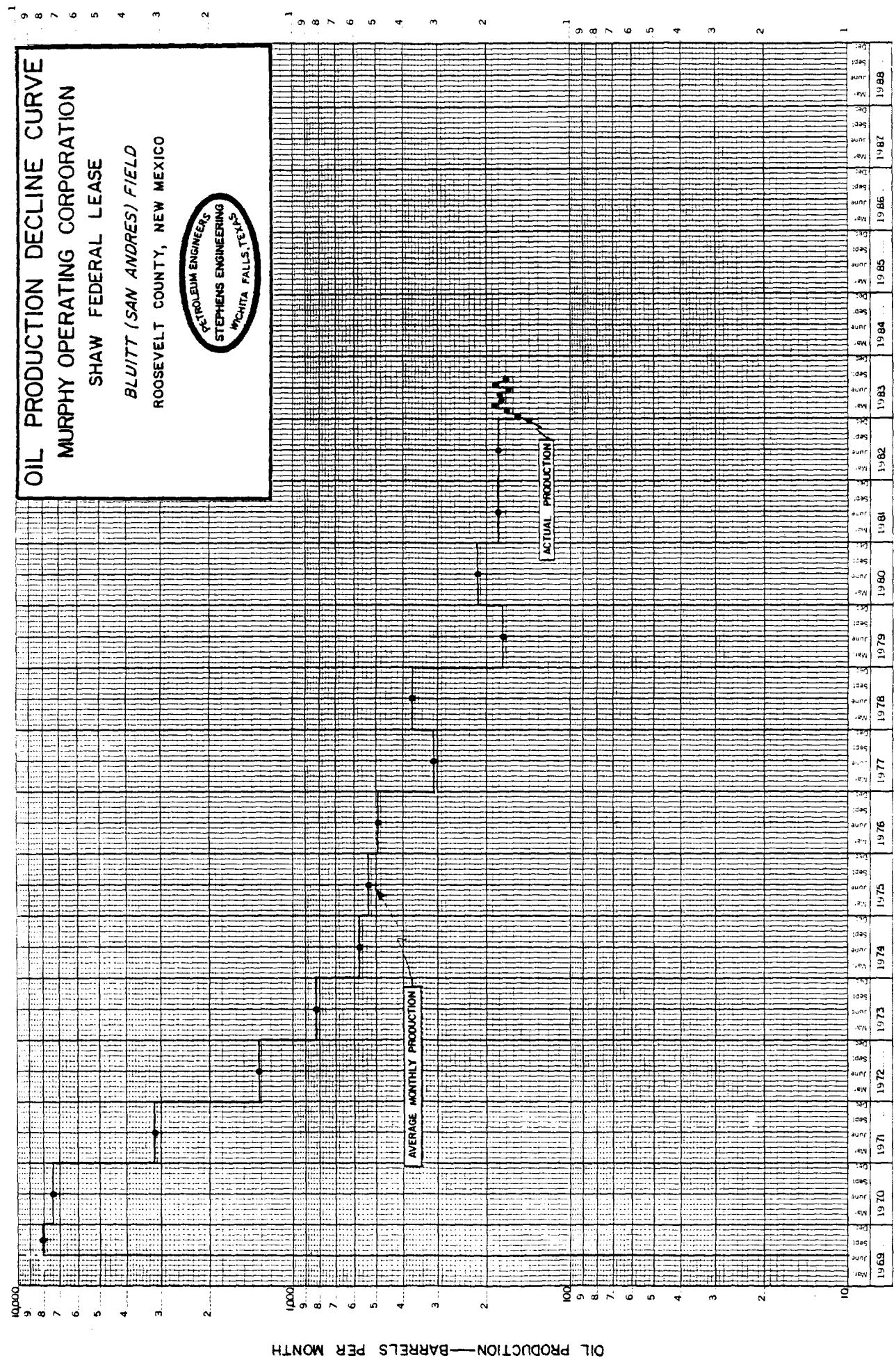
OIL PRODUCTION DECLINE CURVE
MURPHY OPERATING CORPORATION
SHAW FEDERAL LEASE
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
AVERAGE MONTHLY PRODUCTION
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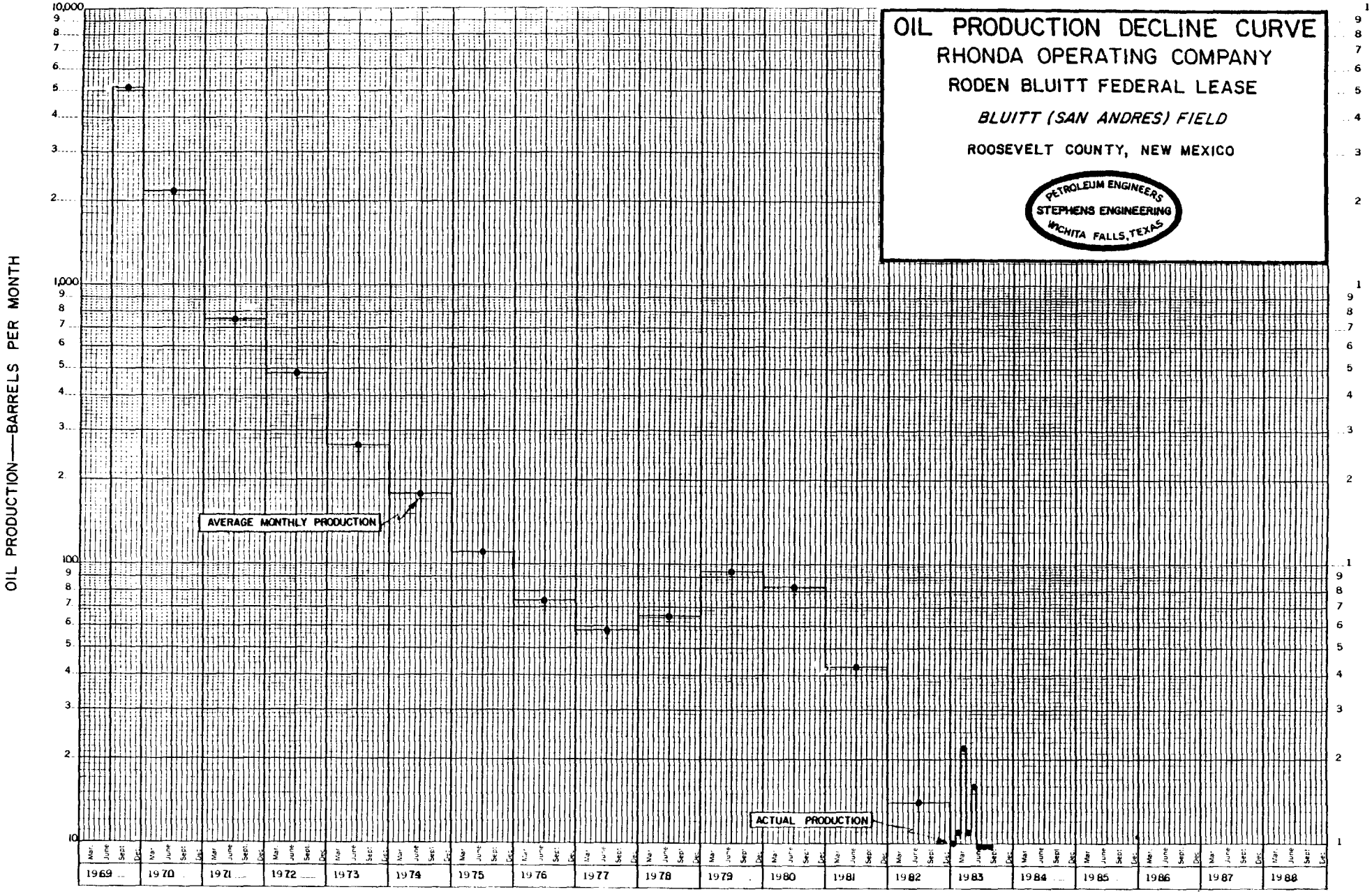
OIL PRODUCTION DECLINE CURVE
RHONDA OPERATING COMPANY
RODEN BLUITT FEDERAL LEASE
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
OIL PRODUCTION—BARRELS PER MONTH
AVERAGE MONTHLY PRODUCTION
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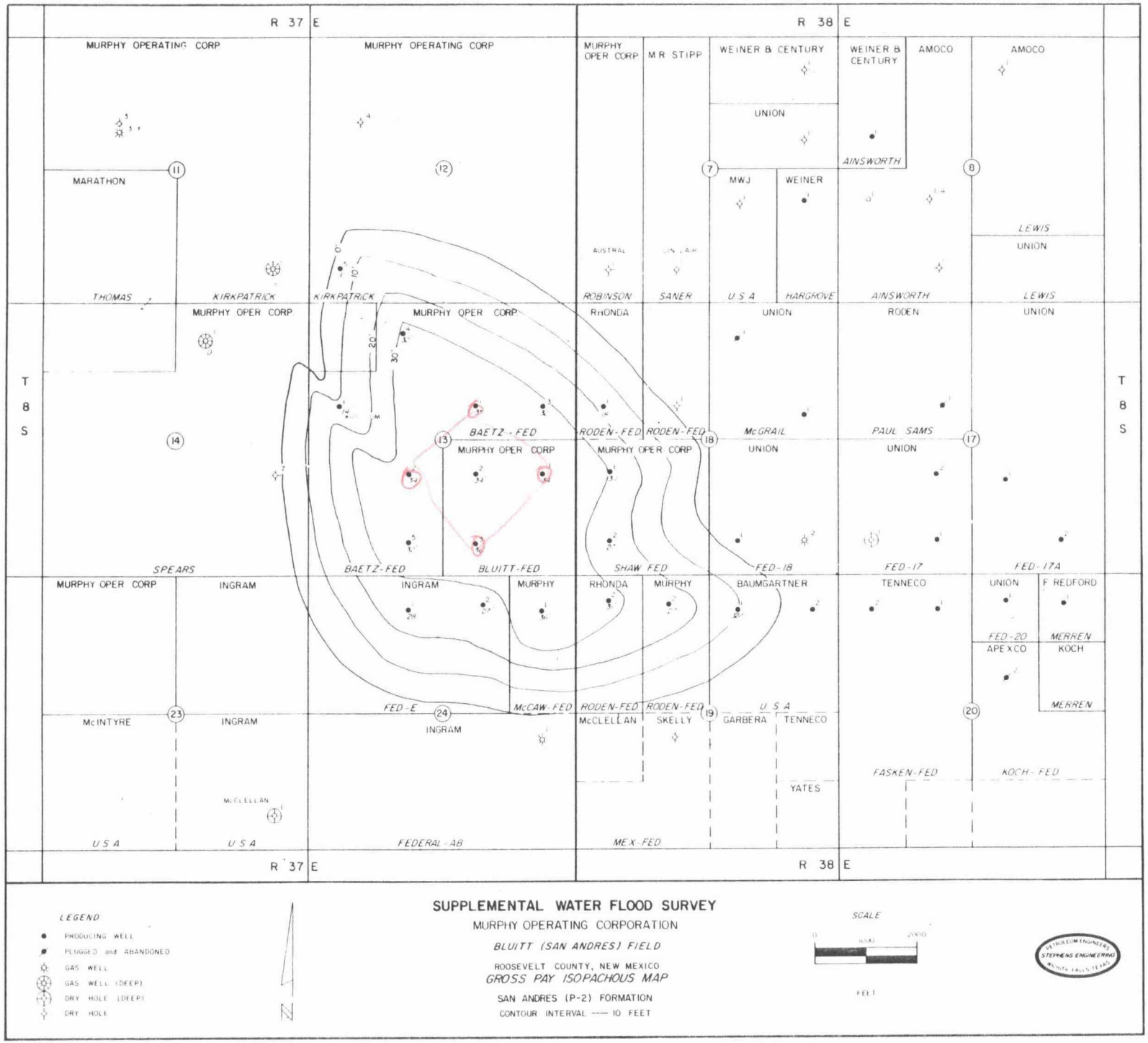
SUPPLEMENTAL WATER FLOOD SURVEY
MURPHY OPERATING CORPORATION
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO

TOTAL PRIMARY OIL RECOVERY

Operator Lease	Total Oil Recovery to 9-1-83 Bbls.	Future Primary Oil Recovery Bbls.	Total Ult. Oil Recovery Bbls.
Baumgartner Oil Co.			
U.S.A.	30,386	0	30,386
Tom L. Ingram			
Federal "E"	79,736	0	79,736
Murphy Operating Corporation			
Baetz	539,621	0	539,621
Baetz KGS	27,011	0	27,011
Bluitt	287,301	0	287,301
Kirkpatrick	52,614	0	52,614
McCaw	78,463	0	78,463
Roden	66,808	0	66,808
Shaw	239,334	6,780	246,114
Spears	0	0	0
Sub-Total	1,291,152	6,780	1,297,932
Rhonda Operating Co.			
Roden Bluitt	83,993	0	83,993
Total	1,485,267	6,780	1,492,047

PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS



LEGEND

- PRODUCING WELL
- PLUGGED and ABANDONED
- GAS WELL
- GAS WELL (DEEP)
- DRY HOLE (DEEP)
- DRY HOLE

N

SUPPLEMENTAL WATER FLOOD SURVEY

MURPHY OPERATING CORPORATION

BLUITT (SAN ANDRES) FIELD

ROOSEVELT COUNTY, NEW MEXICO

GROSS PAY ISOPACHOUS MAP

SAN ANDRES (P-2) FORMATION

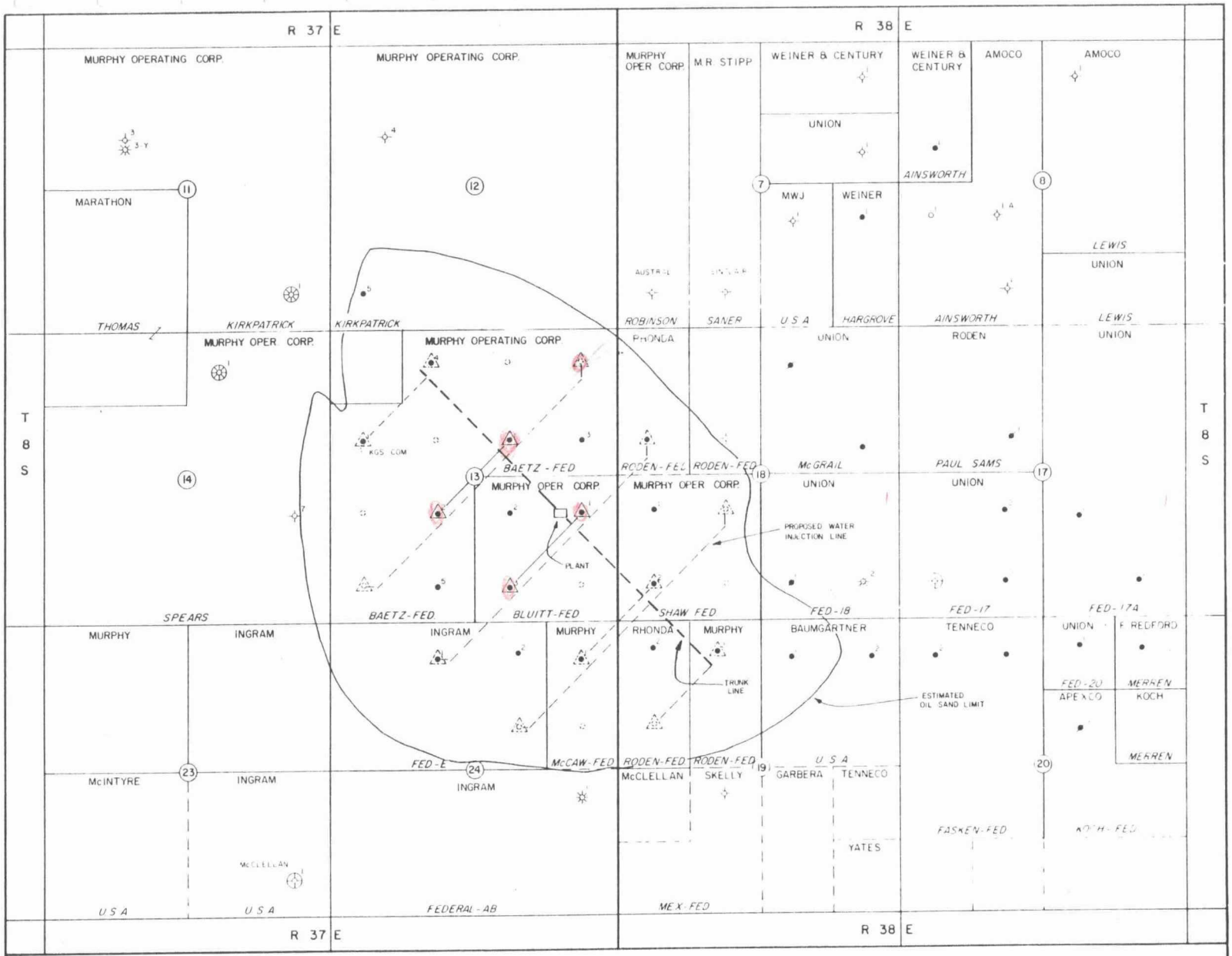
CONTOUR INTERVAL — 10 FEET

SCALE

0 1000 2000

FEET

PETROLEUM ENGINEERS STEPHENS ENGINEERING WICHITA FALLS, TEXAS



LEGEND

- PRODUCING WELL
- PLUGGED & ABANDONED
- GAS WELL
- GAS WELL (DEEP)
- DRY HOLE (DEEP)
- DRY HOLE
- PROPOSED PRODUCING WELL LOCATION (AFTER PILOT)
- PROPOSED WATER INJECTION WELL LOCATION (AFTER PILOT)
- PROPOSED WATER INJECTION WELL (AFTER PILOT)
- PROPOSED WATER INJECTION WELL (PILOT)

N

SUPPLEMENTAL WATER FLOOD SURVEY

MURPHY OPERATING CORPORATION

BLUITT (SAN ANDRES) FIELD

ROOSEVELT COUNTY, NEW MEXICO

FIELD MAP

INDICATING PROPOSED INJECTION FACILITIES

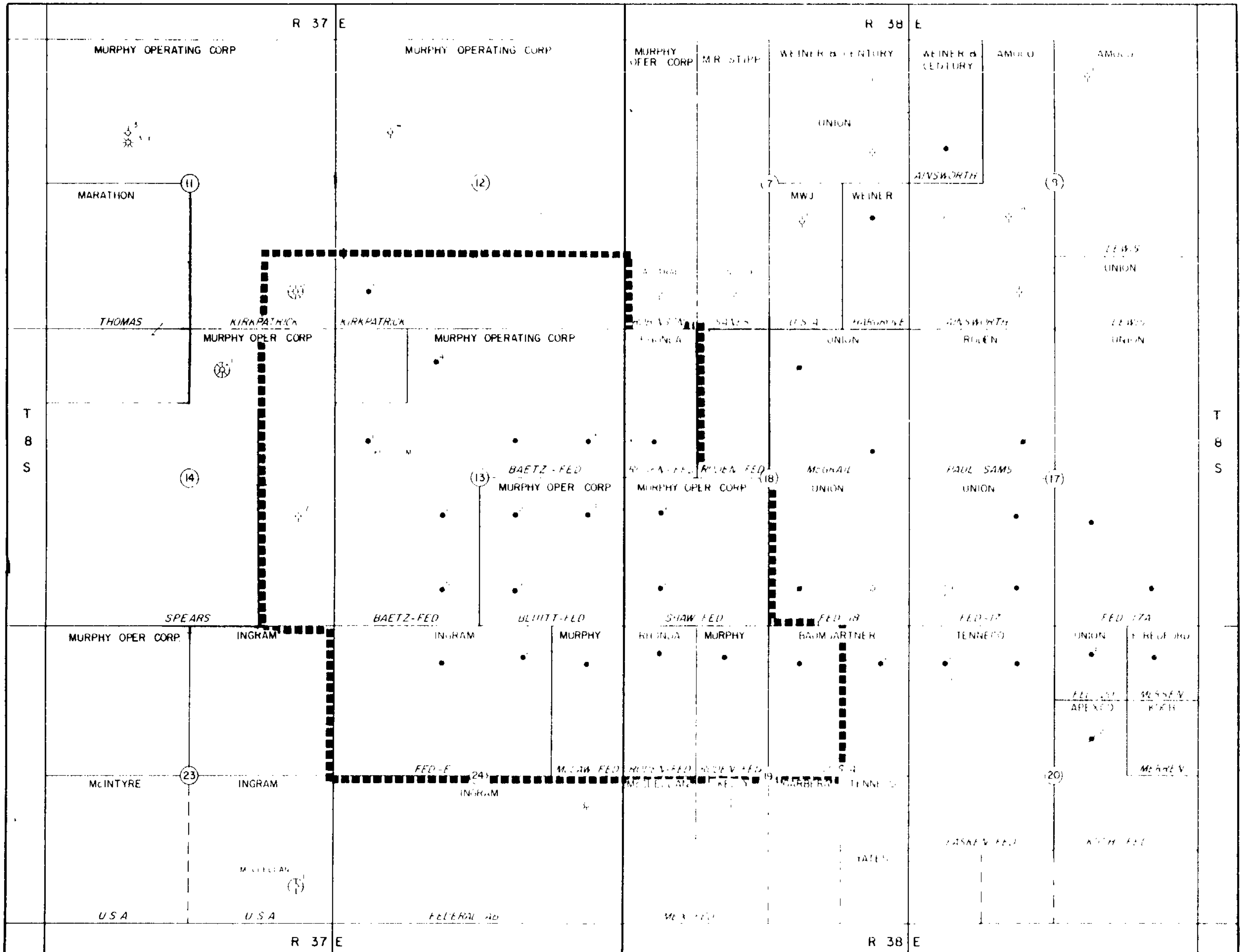
SCALE

SUPPLEMENTAL WATER FLOOD SURVEY
MURPHY OPERATING CORPORATION
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO

PROPOSED UNIT PARTICIPATION FACTORS

Operator Lease	No. of Usable Wells	Percent Usable Wells	Ultimate Primary Oil Bbls.	Percent Ultimate Primary Oil	Proposed Unit Participation Factor*
Bumgartner Oil Co.					
U.S.A.	1	4.5455	30,386	2.0365	2.5383
Tom L. Ingram					
Federal "E"	2	9.0909	79,736	5.3441	6.0935
Murphy Operating Corp.					
Baetz	5	22.7272	539,621	36.1665	33.4786
Baetz KGS	1	4.5455	27,011	1.8103	2.3573
Bluitt	3	13.6363	287,301	19.2555	18.1317
Kirkpatrick	2	9.0909	52,614	3.5263	4.6392
McCaw	1	4.5455	78,463	5.2587	5.1161
Roden	1	4.5455	66,808	4.4776	4.4912
Shaw	2	9.0909	246,114	16.4951	15.0142
Spears	2	9.0909	0	0.0000	1.8182
Sub-Total	17	77.2727	1,297,932	86.9900	85.0465
Rhonda Operating Co.					
Roden Bluitt	2	9.0909	83,993	5.6294	6.3217
Total	22	100.0000	1,492,047	100.0000	100.0000

*Formula based on 20% Usable Wells % and 80% Ultimate Primary Oil %.



LEGEND

- • PRODUCING WELL
- PLUGGED & ABANDONED
- GAS WELL
- GAS WELL (DEEP)
- DRY HOLE (DEEP)
- DRY HOLE
- PROPOSED PRODUCING WELL LOCATION (AFTER PILOT)
- PROPOSED WATER INJECTION WELL LOCATION (AFTER PILOT)
- PROPOSED WATER INJECTION WELL (AFTER PILOT)
- PROPOSED WATER INJECTION WELL (PILOT)

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SUPPLEMENTAL WATER FLOOD SURVEY

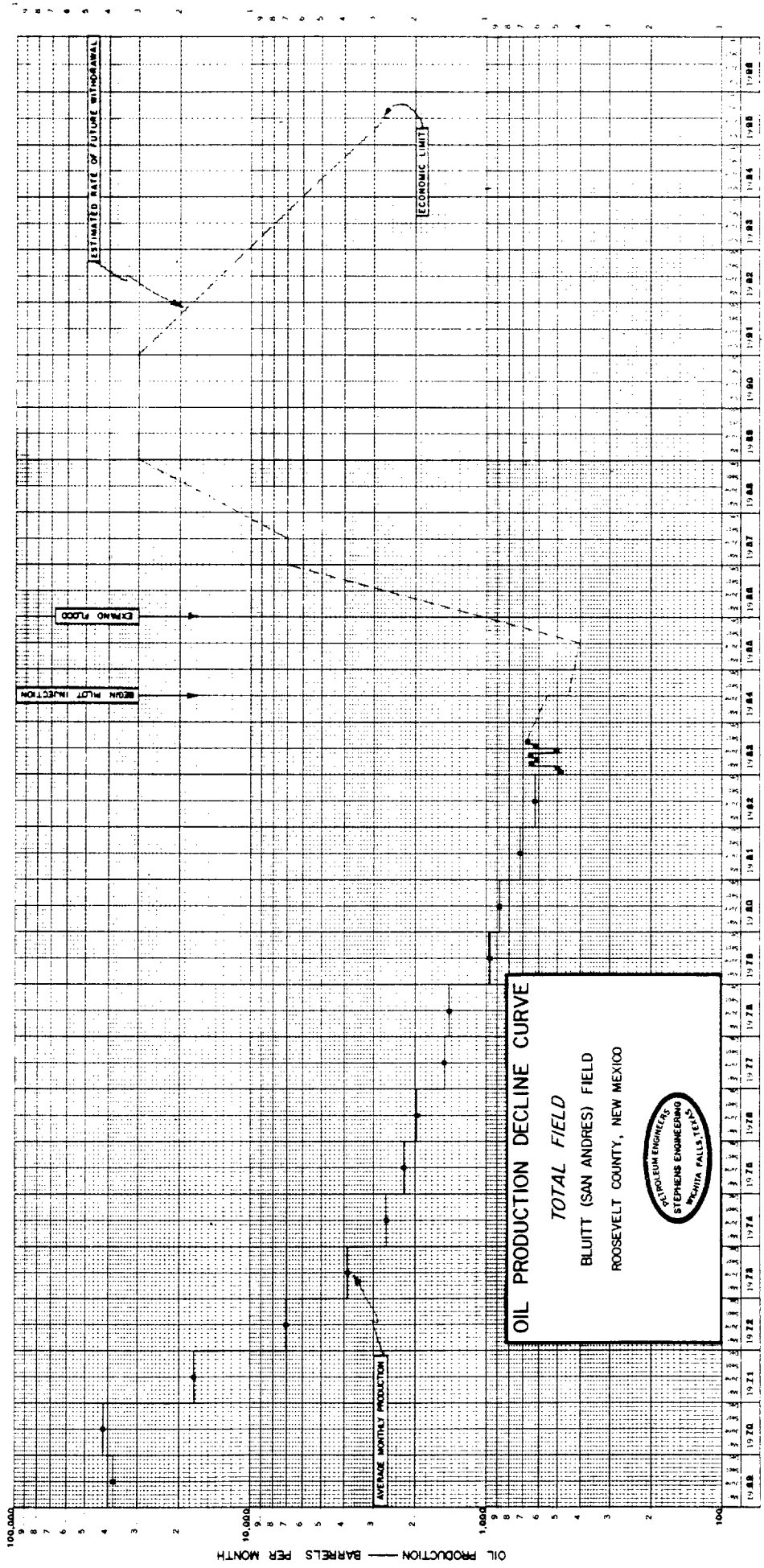
MURPHY OPERATING CORPORATION

BLUITT (SAN ANDRES) FIELD

ROOSEVELT COUNTY, NEW MEXICO

PROPOSED UNIT AREA MAP

SCALE


OIL PRODUCTION DECLINE CURVE
TOTAL FIELD
BLUITT (SAN ANDRES) FIELD
ROOSEVELT COUNTY, NEW MEXICO
PETROLEUM ENGINEERS
STEPHENS ENGINEERING
WICHITA FALLS, TEXAS
ESTIMATED RATE OF FUTURE WITHDRAWAL
ECONOMIC LIMIT
DEMAND FLOOD
BEGIN PILOT INJECTION
AVERAGE MONTHLY PRODUCTION
OIL PRODUCTION —— BARRELS PER MONTH