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Open File Report No. 44

Florida's Oil and Gas Reserves for 1991

By

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FLORIDA'S OIL AND GAS RESERVES FOR 1991

By

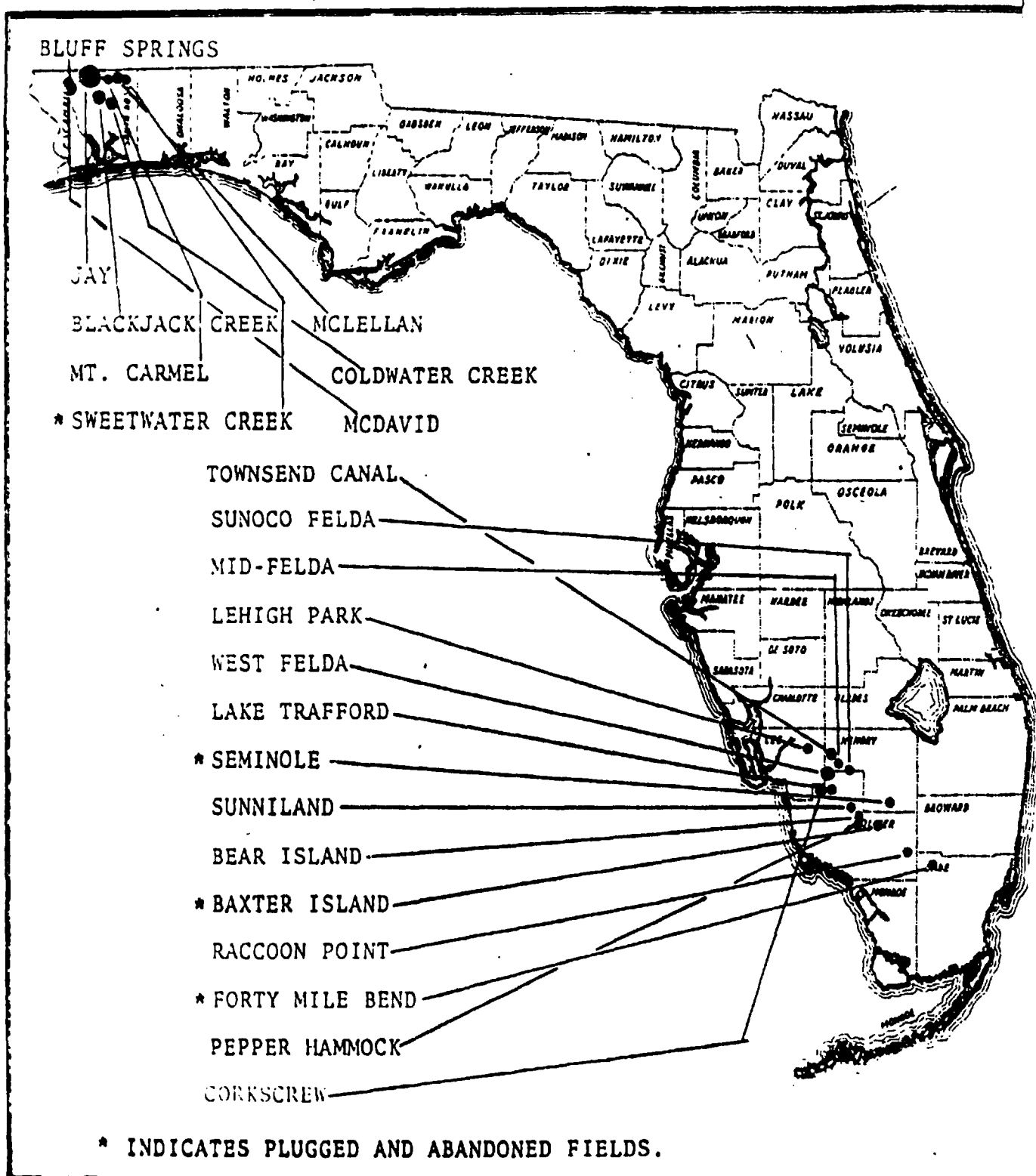
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Oil was discovered in Florida on September 22, 1943, with the completion of the Gulf Coast Realties Corporation Well No. 1 (Permit 42) in the southeast quarter of Section 29, Township 48 South, Range 30 East in Collier County. This well was drilled to a total depth of 11,626 feet, and it was completed with an open hole from 11,602 feet to 11,626 feet in the carbonate, Sunniland Formation of Lower Cretaceous Age. This well discovered the Sunniland Oil Field with 37,685,118 barrels of oil originally in place. The original recoverable oil in place was 18,842,559 barrels, and 18,444,812 barrels of oil had been produced from this field as of January 1, 1991. Original recoverable gas in place was 1,884,256 MCF, and 1,824,628 MCF of gas had been produced from this field as of January 1, 1991.

Twenty-one additional oil fields, which are shown in Figure 1, have been discovered in Florida, as of January 1, 1991. The original oil in place was 1,203,618,403 barrels, and the original recoverable oil in place was 634,111,643 barrels. As of January 1, 1991, a total of 524,790,066 barrels of oil and 539,313,256 MCF of gas have been produced from Florida's twenty-two oil fields. This leaves 109,321,577 barrels of oil and 118,289,689 MCF of gas which can be produced with today's technology and economic conditions. There is a paucity of oil reserve data for Florida. The author's reconnaissance oil reserve survey, which was typed in March, 1978, but not published, because of economic conditions, was the first and only oil reserve data for Florida, other than the

Figure 1



Operator's Data, which was considered to be highly proprietary. This Open File Report No. 44 is an up-date to the March, 1978, Oil Reserve Survey, and the "Information Circular No. 107".

Archie's equation was used to estimate the oil saturations in two feet increments. The formation water resistivities used were 0.018 ohm-meters for the Smackover and 0.022 ohm-meters for the Sunniland. Formation temperatures were estimated with the formulae $SST = 76 + \text{Depth}/80$ for the panhandle, and by $SST = 76 + \text{Depth}/100$ for Peninsula Florida. SST is the sub-surface formation temperature in degrees Fahrenheit, and the depth is the distance in feet below the ground's surface.

The volumetric calculation procedure was utilized to estimate the reserves for all of the oil fields except the Sunniland, Sunoco Felda, and West Felda Fields. Decline curve analysis was utilized to estimate the reserves for these three oil fields, because they are rather old fields, and they are well into the decline part of their production curves, which gives more creditable results, than in the case of younger fields. Few porosity logs were available for these three oil fields, and most of the wells were drilled with water, which made the resistivity logs yield anomalous values; so, decline curve analysis was utilized for the Sunniland, Sunoco Felda, and West Felda Field Reserves, which are listed in Tables 3 and 4. Discovery well data are listed in Tables 1 and 2, and annual production data for Florida's Oil and Gas are shown in Figure 2. The Forty Mile Bend, Seminole, Sweetwater Creek, and Baxter Island Fields have been plugged and abandoned, but they have been included for complete coverage and information.

FLORIDA OIL FIELD DISCOVERY WELL DATA

Table 1

PERMIT NO.	FIELD	COUNTY	PERFORATIONS OR OPEN HOLE	TOTAL DEPTH	PRODUCING FORMATION	STATUS	OIL GRAVITY A.P.I.	DISCOVERY DATE
42	Sunniland	Collier	11,602-11,626	11,626	Sunniland	Pumping	26	9-26-43
167	Forty Mile Bend	Dade	11,322-11,339	11,557	Sunniland	Pumping	21	2-01-54
315	Sunoco Felda	Hendry	11,472-11,485	11,485	Sunniland	Pumping	25	7-22-64
371	West Felda	Hendry	11,486-11,489	11,675	Sunniland	Pumping	26	8-02-66
401	Lake Trafford	Collier	11,870-11,892	11,987	Sunniland	Pumping	26	3-30-69
417	Jay	Santa Rosa	15,470-15,524	15,984	Smackover	Flowing	51	6-15-70
504	Mt. Carmel	Santa Rosa	15,260-15,280	15,399	Smkovr & Norp.	Flowing	42	12-19-71
523	Blackjack Crk.	Santa Rosa	15,790-15,900	16,235	Smkovr & Norp.	Flowing	51	2-14-72
563	Bear Island	Collier	11,589-11,595	11,817	Sunniland	Pumping	26	12-05-72
662	Seminole	Hendry	11,415-11,420	11,651	Sunniland	Pumping	25	11-14-73
712	Lehigh Park	Lee	11,389-11,394	11,630	Sunniland	Pumping	28	07-30-74
881	Sweetwater Crk.	Santa Rosa	14,299-14,340	14,611	Smackover	Pumping	45	04-22-77
865	Baxter Island	Collier	11,512-11,515	11,823	Sunniland	Pumping	22	08-11-77
904	Mid-Felda	Hendry	11,492-11,496	11,686	Sunniland	Pumping	26	10-13-77
829	Raccoon Point	Collier	11,410-11,414	11,658	Sunniland	Pumping	23	06-20-78
897	Pepper Hammock	Collier	11,629-11,633	11,897	Sunniland	Pumping	27	09-28-78
1070	Townsend Canal	Hendry	11,416-11,421	11,462	Sunniland	Pumping	28	06-27-82
1125	Bluff Springs	Escambia	16,332-16,339	11,800	Smackover	Pumping	54.5	03-25-84
1170	Corkscrew	Collier	11,550-11,560	11,565	Sunniland	Pumping	26	11-10-85
1194	McLellan	Santa Rosa	14,072-14,090	14,475	Smackover	Flowing	41	02-19-86
1220	Coldwater Creek	Santa Rosa	15,150-15,170	15,400	Smackover	Flowing	46.5	05-24-87
1230	McDavid	Escambia	16,346-16,360	16,800	Smackover	Flowing	53.8	05-30-88

TABLE 2. FIRST TESTS FOR DISCOVERY WELLS

PERMIT	FIELD	WELL NAME	OIL (Bbls)	GAS (MCF)	SALTWATER (Bbls)
42	Sunniland	Gulf Coast Realities Corp. No. 1	140	14	260
167	Forty Mile Bend	Wiseheart-State Board of Ed. No.1	76	6	96
315	Sunoco Felda	Red Cattle Company, No. 2	427	53	11
371	West Felda	Red Cattle Company, No. B-1	51	5	148
401	Lake Trafford	Barron Collier, Jr. No. 1	118	0	78
417	Jay	St. Regis Paper Company, No. 1	1,588	2,199	21
504	Mt. Carmel	Finley Heirs No. 39-3	1,440	1,195	2
523	Blackjack Creek	St. Regis Paper Co. No. 13-3 Norph.	893	210	245
523	Blackjack Creek	St. Regis Paper Co. No. 13-3 Smack.	1,379	1183	24
563	Bear Island	Gulf Coast Realities Corp. No.24	592	0	23
662	Seminole	Oleum Corp. No. 1	26	0	8
712	Lehigh Park	Consol. - Tomoka Land Co. No. 22-4	21	0	10
881	Sweetwater Creek	W. M. Stokes No. 15-2	624	180	2
865	Baxter Island	Gerry Brothers No. 31-3	35	0	220
904	Mid-Felda	Red Cattle No. No. 27-4	281	15	54
829	Raccoon Point	Oleum Corp. No. 33-4	103	0	240
897	Pepper Hammock	Collier Company No. 23-1	20	0	206
1070	Townsend Canal	Duda No. 2-3	160	0	42
1125	Bluff Springs	St. Regis Paper Company No. 29-4	477	344	170
1170	Corkscrew	Rex Properties No. 33-2	435	0	0
1194	McLellan	State of Florida No. 33-1	152	204	0
1220	Coldwater Creek	Pittman Estate No. 26-2A	152	9	99
1230	McDavid	Walker-Boley No. 34-2	235	86	0

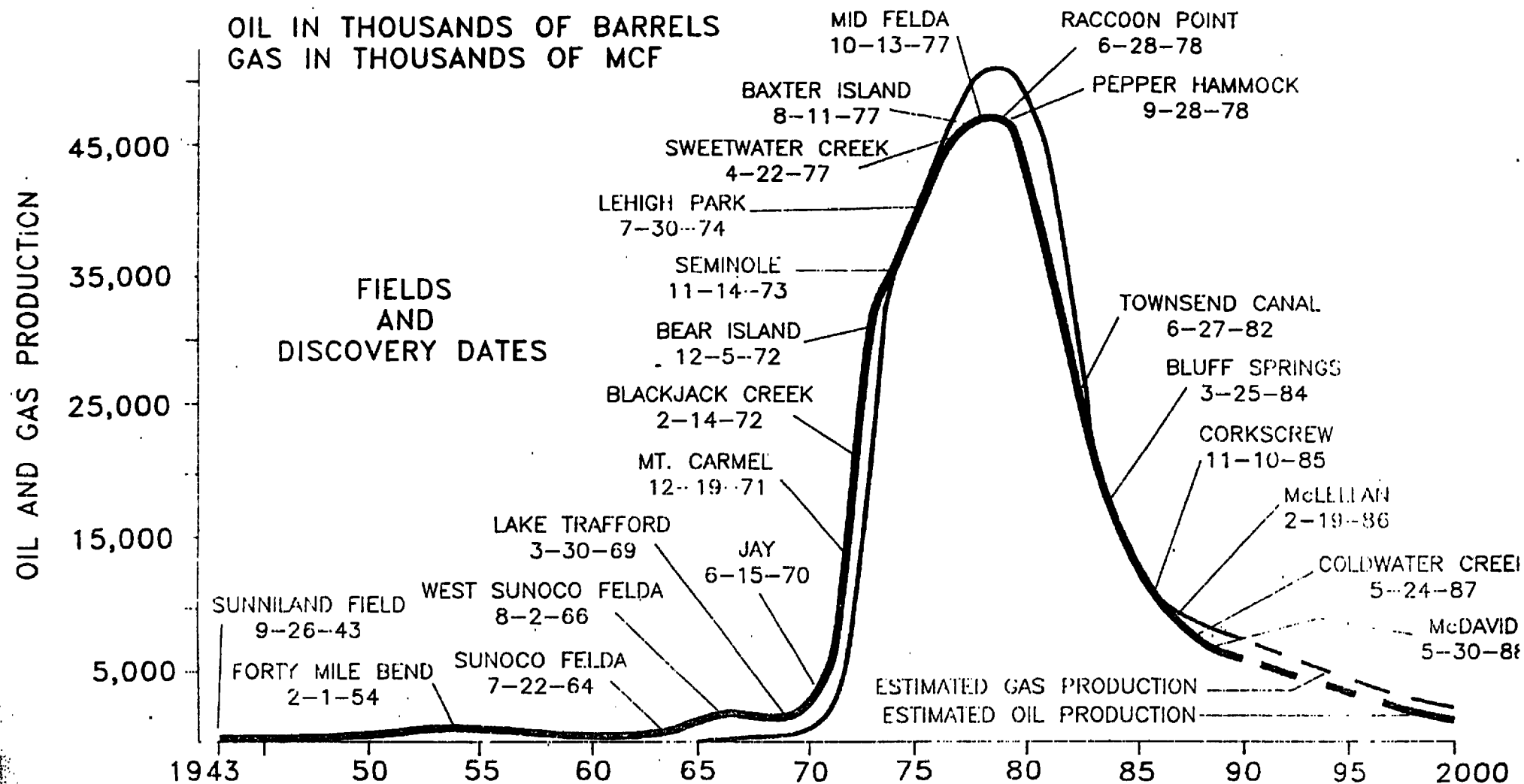
TABLE 3. FLORIDA'S OIL RESERVES FOR 1991

FIELD	OIL GRAVITY (API)	AVERAGE POROSITY (PERCENT)	PRODUCTIVE (ACRES)	ORIGINAL OIL IN Place (Bbls.)	ESTIMATED RECOVERY FACTOR (FRACTION)	ORIGINAL RECOVERABLE OIL IN PLACE (Bbls.)	OIL PRODUCED THRU 1-1-91 (Bbls.)	REMAINING RECOVERABLE OIL RESERVES AS OF 1-1-91 (Bbls.)
<u>SOUTH FLORIDA</u>								
Sunniland	26	15.0	2,080.00	37,685,118	0.50	18,842,559	18,444,812	397,747
Forty Mile Bend	21	10.0	320.00	1,112,701	0.07	77,889	32,888	45,001
Sunoco Felda	25	15.0	3,840.00	28,946,578	0.40	11,578,631	11,556,825	21,806
West Felda	26	15.0	7,500.00	125,802,366	0.35	44,030,828	41,605,583	2,425,245
Lake Trafford	26	7.9	160.00	7,690,293	0.04	307,612	277,884	29,728
Bear Island	26	11.9	2,880.00	42,811,959	0.35	14,984,184	10,762,385	4,221,799
Seminole	25	14.1	480.00	2,366,565	0.10	236,657	84,755	151,902
Lehigh Park	28	17.7	800.00	8,211,707	0.65	5,337,609	5,220,600	117,009
Baxter Island	22	19.6	160.00	1,276,617	0.10	127,662	1,859	125,803
Mid-Felda	26	11.9	480.00	5,090,419	0.30	1,527,126	1,309,225	217,901
Raccoon Point	23	13.9	2,400.00	42,437,790	0.25	10,609,448	5,020,835	5,588,613
Pepper Hammock	27	15.3	160.00	976,713	0.10	97,671	323	97,348
Townsend Canal	28	13.7	640.00	4,504,699	0.20	900,940	442,018	458,922
Corkscrew	26	6.9	<u>480.00</u>	<u>1,667,806</u>	0.40	<u>667,122</u>	<u>616,908</u>	<u>50,214</u>
SUBTOTAL			22,380.00	310,581,331		109,325,938	95,376,900	13,949,038
<u>NORTHWEST FLORIDA</u>								
(JAY (FL & AL))	(51)	(14.0)	(14,414.50)	(820,569,503)	(0.60)	(492,341,702)	(399,324,471)	(93,017,231)
JAY (FL ONLY)	51	14.0	13,021.14	763,129,638	0.60	457,877,783	369,124,259	88,753,524
Mt. Carmel	42	9.1	481.28	17,500,000	0.29	5,075,000	4,685,986	389,014
Blackjack Creek	51	16.5	5,719.98	100,500,000	0.60	60,300,000	54,982,356	5,317,644
Sweetwater Creek	45	11.0	160.00	624,000	0.10	62,400	13,695	48,705
Bluff Springs	54.5	19.6	160.00	1,300,440	0.19	247,084	233,326	13,758
McLellan	41	9.0	480.00	2,915,540	0.14	412,686	202,034	210,652
Coldwater Creek	46.5	12.1	160.00	2,080,107	0.15	312,016	26,575	285,441
McDavid	53.8	12.8	<u>160.00</u>	<u>4,987,347</u>	0.10	<u>498,736</u>	<u>144,935</u>	<u>353,801</u>
SUBTOTAL			20,342.40	893,037,072		524,785,705	429,413,166	95,372,539
STATEWIDE TOTAL			42,722.40	1,203,618,403		634,111,643	524,790,066	109,321,577

TABLE 4. FLORIDA'S GAS RESERVES FOR 1991

FIELD	PRODUCTIVE (ACRES)	AVERAGE GAS-OIL RATIO (SCF/STB)	ORIGINAL RECOVERABLE GAS IN PLACE (MCF)	GAS PRODUCED THRU 1-1-91 (MCF)	REMAINING RECOVERABLE GAS RESERVES AS OF 1-1-91	DISCOVERY DATE
<u>SOUTH FLORIDA</u>						
Sunniland	2,080.00	100	1,884,256	1,824,628	59,628	9-26-43
Forty Mile Bend	320.00	50	3,894	1,656	2,238	2-01-54
Sunoco Felda	3,840.00	85	984,184	981,507	2,677	7-22-64
West Felda	7,500.00	80	3,522,466	3,247,882	274,584	8-02-66
Lake Trafford	160.00	0	0	0	0	3-30-69
Bear Island	2,880.00	80	1,198,735	850,198	348,537	12-05-72
Seminole	480.00	0	0	0	0	11-14-73
Lehigh Park	800.00	100	533,761	525,719	8,042	7-30-74
Baxter Island	160.00	0	0	0	0	8-11-77
Mid-Felda	480.00	10	12,726	10,094	2,632	10-13-77
Raccoon Point	2,400.00	120	1,273,134	595,171	677,963	6-20-78
Pepper Hammock	160.00	0	0	0	0	9-28-78
Townsend Canal	640.00	0	0	0	0	6-27-82
Corkscrew	480.00	0	0	0	0	11-10-85
SUBTOTAL	22,380.00		9,413,156	8,036,855	1,376,301	
<u>NORTHWEST FLORIDA</u>						
(JAY (FL & AL))	(14,414.50)	(1,277)	(628,720,354)	(512,233,834)	(116,486,520)	6-15-70
Jay (FL ONLY)	13,021.14	1,277	584,709,929	473,067,526	111,642,403	6-15-70
Mt. Carmel	481.28	1,028	5,218,140	4,797,292	420,848	12-19-71
Blackjack Creek	5,719.98	954	57,526,200	53,116,047	4,410,153	2-14-72
Sweetwater Creek	160.00	1,070	66,768	14,655	52,113	4-22-77
Bluff Springs	160.00	550	135,795	125,722	10,073	3-25-84
McLellan	480.00	430	177,455	86,144	91,311	2-19-86
Coldwater Creek	160.00	500	156,008	9,039	146,969	5-24-87
McDavid	160.00	400	199,494	59,976	139,518	5-30-88
SUBTOTAL	20,342.40		648,189,789	531,276,401	116,913,388	
STATEWIDE TOTAL	42,722.40		657,602,945	539,313,256	118,289,689	

FLORIDA OIL AND GAS PRODUCTION





FLORIDA GEOLOGICAL SURVEY

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