TABLE 5.— MICHIGAN OIL FIELDS - 1964, Continued (Sheet 5 of 7)

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE				DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL WELLS					OIL PRODUCTION IN BARRELS		DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION BBLS./DAY		
				DEPTH IN FEET	THICKNESS AND LITHOLOGY		OIL GRAVITY A.P.I.			TO END 1964	COMP. IN 1964	ABAND. IN 1964	PRODUCING AT END 1964	SHUT IN OR SHUT DOWN	PRODUCED IN 1964	CUMULATIVE THROUGH 1964			DISPOSAL		TOTAL PRODUCTION
																			SUBSURFACE	SURFACE	
MONTEREY	ALLEGAN	1938	TRAVERSE	1618	3	L	37.6	CINCINNATIAN	3266	99	0	1	11	0	3,378	990,877	1,030	962	0	10	10
MT. CLEMENS	MACOMB	1961	SALINA	2590	18	D		CAMBRIAN ?	4695	1	0	0	1	1	0	65	10	6	-	-	-
MT. FOREST	BAY	1947	DUNDEE	3025	9	D		RICHFIELD	4305	37	0	0	26	5			960		0	6	6
		1952	TRAVERSE	2124 2224	2 3	L L	36.2			4	0	0	2	0	10,902	782,310	80	752	7	0	7
MT. PLEASANT	ISABELLA	1928	DUNDEE	3545	15	L	41.8	SYLVANIA	4821	485	0	3	144	4	111,340	26,890,253	5,710	4,709	787	39	826
													THE 144 WELLS INCLUDE 139 DUNDEE, 1 TRAVERSE, AND 4 DUNDEE & TRAVERSE.								
MUSKEGON	MUSKEGON	1928	TRAVERSE	1700	3.5	L	37.4	ST. PETER	4754	-	0	0	19	0	7,403	6,981,753	3,170	2,202	20	1,160	1,180
NELLSVILLE	ROSCOMMON	1956	RICHFIELD	4932	17			DETROIT RIVER	4165	1	0	0	1	1			40				
		1957	DUNDEE	3710	6					1	0	0	1	1	157	25,415	10	508			
NORTHVILLE	WASHTENAW-WAYNE-OAKLAND	1954	TRENTON-BLACK RIVER	4395	2+	D		CAMBRO-ORDOVICIAN	5850	20	4	0	16	6					0	182	182
													THE 16 WELLS DOES NOT INCLUDE GAS WELLS PRODUCING SOME OIL.								
		1960	NIAGARAN	3515	25	D	42.5			1	0	0	1	0	48,166	820,516	2,825	290		4	4
OTISVILLE	GENESEE	1941	TRAVERSE	(REFER TO ABANDONED FIELDS)																	
		1944	DUNDEE	2450	3	L	37.0	DUNDEE	2674	5	0	0	2	0			40		1	0	1
		1945	BEREA	1500	3	S				9	0	0	5	1	3,966	96,817	110	645	2	1	3
OTTO, SEC. 32	OCEANA	1950	"BEREA"	1445	1	L		TRAVERSE	1895	1	0	0	1	0	99	3,940	10	394	0	0	0
OVERISEL	ALLEGAN	1938	TRAVERSE	1478	3	L	42.1	TRENTON	4060	164	0	0	30	0	11,598	2,867,989	1,770	1,620	45	252	297
OXBOW	MASON	1958	TRAVERSE	1652	1	L		TRAVERSE	1660	3	0	0	3	0	4,748	72,351	30	2,411	39	0	39
PARIS	MECOSTA	1949	TRAVERSE	2890	10	D	43.6	REED CITY	3545	22	0	0	17	0	17,258	1,145,507	440	2,603	1,034	1	1,035
PAW PAW	VAN BUREN	1963	TRAVERSE	1096	2	L	41.4	TRAVERSE	1098	7	0	2	5	2	5,896	15,971	140	114	11	0	11
PAW PAW, SEC. 33	VAN BUREN	1964	TRAVERSE	1028	1	L	38.0	TRAVERSE	1032	1	1	0	1	1	0	0	10		-	-	-
PENTWATER	OCEANA	1948	DUNDEE	2088	10	D	43.1	PRAIRIE DU CHIEN	5383								2,000				
		1948	TRAVERSE	1585	8	L	40.4			143	0	0	92	39	53,654	6,370,964	1,400	1,874	1,182	1	1,183
													THE 92 WELLS INCLUDE 34 TRAVERSE, 22 DUNDEE, AND 36 TRAVERSE & DUNDEE.								
PETERS	ST. CLAIR	1957	SALINA-NIAGARAN	2615	2+	D	39.0	CLINTON	2862	85	2	1	80	6	394,890	2,670,679	1,700		565	8	573
PETERS, EAST	ST. CLAIR	1961	SALINA-NIAGARAN	2590	17	D		CLINTON	2134	9	0	1	8	0			360	1,296	60	1	61
PINCONNING	BAY	1944	DUNDEE	2898	7	D	36.2	DETROIT RIVER	3790	12	0	0	2	0	9,361	835,393	100	8,354	200	1	201
		1958	TRAVERSE	(REFER TO ABANDONED FIELDS)																	
PIPESTONE	BERRIEN	1962	TRAVERSE	822	2	L	22.4	NIAGARAN	1353	2	0	0	2	1	0	0	20	-	0	1	1
POLKTON	OTTAWA	1942	TRAVERSE	1878	2	L		DUNDEE	2351	12	2	0	5	0	17,240	59,613	150	397	0	2	2
PORTER	MIDLAND	1933	DUNDEE	3415	12	L	40.6	BLACK RIVER	9519	529	0	9	156	12	176,617	48,264,492	6,690	7,214	8,526	21	8,547
													THE 156 WELLS INCLUDE 148 DUNDEE, 2 TRAVERSE, AND 6 DUNDEE & TRAVERSE.								
PROSPER	MISSAUKEE	1942	DUNDEE	3837	4	L	43.2	RICHFIELD	5254	13	0	0	8	1	17,447	1,648,896	520	3,171	2,925	0	2,925
		1954	RICHFIELD	(REFER TO ABANDONED FIELDS)																	
PULLMAN, EAST	ALLEGAN	1949	TRAVERSE	1131	2	L	39.0	TRENTON	3020	25	0	0	13	0	5,556	353,733	250	1,415	156	3	159
PUTTYGUT	ST. CLAIR	1960	SALINA-NIAGARAN	(REFER TO GAS FIELDS - OIL PRODUCTION COMBINED WITH ADAIR)																	
RAVENNA	MUSKEGON	1952	TRAVERSE	1842	15	L		DETROIT RIVER	2601	37	0	2	8	0	647	451,268	730	618	23	2	25
RAY	MACOMB	1963	SALINA-NIAGARAN	(GAS FIELD PRODUCING SMALL QUANTITY OF OIL)											570	968	-	-			
REED CITY OR	LAKE-OSCEOLA	1940	DUNDEE	3490	3	L	46.3	ST. PETER Ss.	8917												
		1941	REED CITY	3585	7	D				208	0	0	115	87			5,320		3,462	0	3,462
		1941	TRAVERSE	2925	5	L							12	3					1,489	0	1,489
				CONVERTING TO GAS STORAGE RESERVOIR AND SECONDARY RECOVERY IN REED CITY ZONE IN 1964.																	
		1954	RICHFIELD	4633	12	SL	45.8								THE 42 WELLS INCLUDE 10 RICHFIELD, 29 SOUR ZONE, AND 3 RICHFIELD & SOUR ZONE.						
		1955	DETROIT RIVER SZ	4184	73	DL	48.2			45	0	3	42	3	172,852	43,651,790	1,800	6,131	11	7	18

TABLE 5.— MICHIGAN OIL FIELDS - 1964, Continued (Sheet 6 of 7)

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE				DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL WELLS					OIL PRODUCTION IN BARRELS		DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION BBLS./DAY		
				DEPTH IN FEET	THICKNESS AND LITHOLOGY		OIL GRAVITY A.P.I.			TO END 1964	COMP. IN 1964	ABAND. IN 1964	PRODUCING AT END 1964	SHUT IN OR SHUT DOWN	PRODUCED IN 1964	CUMULATIVE THROUGH 1964			DISPOSAL		TOTAL PRODUCTION
																			SUBSURFACE	SURFACE	
REED CITY, EAST	OSCEOLA	1947	TRAVERSE	3106	1	L		DETROIT RIVER	3840	8	0	0	4	1	11,528	332,775	80	4,160	750	0	750
REEMAN	NEWAYGO	1958	TRAVERSE	2099	1	L		TRAVERSE	2100	3	0	0	1	1	702	44,778	30	1,493	-	-	-
REYNOLDS	MONTCALM	1954	REED CITY	3342	2	D	44.3	BASS ISLAND	4300	53	0	1	34	3			2,100		2,794	3	2,797
		1955	TRAVERSE	2787	4	D				16	1	0	12	0	163,892	3,959,683	110	1,792	1,343	70	1,413
RICH	LAPEER	1962	DETROIT RIVER SZ	3028	5		33.9	SYLVANIA	3267	7	1	0	7	0	35,189	60,071	280	214	0	17	17
RIVERSIDE	MISSAUKEE	1942	DUNDEE	3944	3	L	44.5	DUNDEE	3953	3	0	0	3	0	8,688	97,128	100	971	160	0	160
		1961	TRAVERSE	3220	2	L				1	0	0	1	0	999	5,573	10	557	0	2	2
RIVERTON	MASON	1957	TRAVERSE	1650	6	L		DUNDEE	2317	19	0	2	3	0	2,580	231,729	190	1,220	80	0	80
RIVERTON, SEC. 21	MASON	1964	TRAVERSE	1683	4	L	38.2	DUNDEE	2290	1	1	0	1	0	164	164	10	16	0	2	2
ROBINSON, SEC. 3	OTTAWA	1956	DUNDEE	2107	7	L		DUNDEE	2210	2	0	0	1	0	1,156	7,277	20	364	0	1	1
ROCKFORD	KENT	1945	TRAVERSE	2204	3	L	44.0	DETROIT RIVER	2850	22	0	0	5	0	9,085	495,615	210	2,360	495	0	495
ROSEBUSH	ISABELLA	1933	DUNDEE	3690	6	L	42.0	DETROIT RIVER	4322	40	0	1	35	3	30,184	1,937,367	900	2,153	327	16	343
ROSE CITY	OGEMAW	1942	RICHFIELD	4125	9	D	41.2	CAMBRIAN	12,906	126	1	21	97	21	137,389	4,789,312	4,920	973	0	33	33
ROSE LAKE	OSCEOLA	1943	TRAVERSE	3140	5	L	45.5	DETROIT RIVER	3990	18	0	0	7	1	27,877	1,637,109	720	2,274	485	3	488
SAGINAW	SAGINAW	1925	BEREA	1825	16	S	46.1	SYLVANIA	3920	-	0	0	16	1	5,915	1,636,223	1,500	1,091	0	16	16
SALEM	ALLEGAN	1937	TRAVERSE	1583	8	L	38.3	TRENTON	4347	337	0	0	101	0	51,266	8,809,464	3,390	2,599	274	32	306
			SALINA	REFER TO GAS STORAGE RESERVOIRS - PRODUCES SMALL AMOUNT OF OIL - INCLUDED AS MISCELLANEOUS PRODUCTION IN ABANDONED TOTALS.																	
SANFORD	MIDLAND	1951	DUNDEE	3755	3	L	42.6	DETROIT RIVER	4811												
		1959	TRAVERSE	3125	2	L				13	0	0	13	0	9,210	153,078	260	589	0	3	3
													THE 13 WELLS INCLUDE 9 DUNDEE, 2 TRAVERSE AND 2 DUNDEE & TRAVERSE.								
SAUBLE	LAKE	1942	TRAVERSE	2111	2	L	35.6	TRAVERSE	2156	5	0	0	2	0	0	143,020	200	715	1,000	0	1,000
SCOTTVILLE	MASON	1961	TRAVERSE	1646	3	L	34.6														
		1962	REED CITY	2319	3	L		CINCINNATIAN	5129	17	0	2	14	0	87,528	296,375	360	823	2,404	0	2,404
													THE 14 WELLS INCLUDE 13 TRAVERSE AND 1 TRAVERSE & REED CITY.								
SHELBY	OCEANA	1951	TRAVERSE	1743	3	L	43.0	DUNDEE	2234	20	0	0	6	1	4,938	217,671	350	622	12	0	12
SHERMAN	ISABELLA	1936	DUNDEE	3650	4	D	42.0	SYLVANIA	4994	88	0	0	5	0	6,425	4,689,030	1,020	4,597	370	0	370
SKEELS	CLARE-GLADWIN	1950	DUNDEE	3840	7	D	39.6	SYLVANIA	6016	5	0	0	4	1			50		120	0	120
		1955	TRAVERSE	3102	6	L	38.4			4	0	0	2	0			40		0	5	5
		1942	DETROIT RIVER SZ	4844	4	D	47.4														
		1953	RICHFIELD	5080	17	D	44.8			31	0	0	26	0	53,299	1,909,793	1,240	1,436	0	16	16
													THE 26 WELLS INCLUDE 17 RICHFIELD, 4 SOUR ZONE, AND 5 RICHFIELD & SOUR ZONE.								
SPRINGPORT	JACKSON	1960	TRENTON-BLACK RIVER	4696	12+	D		PRAIRIE DU CHIEN	5250	1	0	0	1	1	161	649	40	16			
ST. CHARLES	SAGINAW	1957	TRAVERSE	2305	3	L		TRAVERSE	2308	1	0	0	1	0	211	12,789	10	1,278	0	0	0
ST. HELEN UNIT	ROSCOMMON	1941	RICHFIELD	4180	11	D	43.3	SALINA	5440	99	0	0	66	1	85,184	3,574,151	3,960	902	0	24	24
STANDISH	ARENAC	1948	RICHFIELD	4108	3	D	35.4	RICHFIELD	4210	9	0	0	8	2	4,576	145,005	360	403	0	0	0
STANTON	MONTCALM	1951	TRAVERSE	2916	7	DL		DUNDEE	3492	16	0	0	10	0	21,971	827,629	320	2,586	412	0	412
STERLING	ARENAC	1947	DUNDEE	2872	17	L	33.6	RICHFIELD	4285	20	0	0	19	1			200		0	10	10
		1948	TRAVERSE	1970	5	L	36.2			22	0	0	16	0			220		4	7	11
		1950	RICHFIELD	5153	8	D	37.6														
		1952	DETROIT RIVER SZ	3918	5	D	41.1			41	1	0	35	1	97,350	1,779,687	1,600	881	0	3	3
													THE 35 WELLS INCLUDE 12 RICHFIELD, 13 SOUR ZONE, AND 10 RICHFIELD & SOUR ZONE.								
STONY LAKE	OCEANA	1946	TRAVERSE	1630	19	L	44.9	NIAGARAN	3837	78	0	0	50	16			1,540		6,361	1	6,362
													THE 50 WELLS INCLUDE 49 TRAVERSE AND 1 TRAVERSE & BEREA.								
		1949	BEREA	930	1	SL	48.0			2	0	0	1	0	31,927	7,442,105	20	4,770	0	0	0
SUMMERFIELD	MONROE	1958	TRENTON-BLACK RIVER	1940	10	DL		TRENTON-BLACK RIVER	2382	2	0	1	0	ABANDONED 1964	94	2,142	20	107	-	-	-

TABLE 5.– MICHIGAN OIL FIELDS – 1964, Continued (Sheet 7 of 7)

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY		PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL WELLS: TO END 1964	COMP. IN 1964	ABAND. IN 1964	PRODUCING AT END 1964	SHUT IN OR SHUT DOWN	OIL PRODUCTION IN BARRELS: PRODUCED IN 1964	CUMULATIVE THROUGH 1964	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION BBLS./DAY: DISPOSAL SUBSURFACE	DISPOSAL SURFACE	TOTAL PRODUCTION
SUMNER	GRATIOT	1953	TRAVERSE	2853	1	L	44.5	DUNDEE	3366	35	0	0	28	3	67,045	926,844	350	2,648	1,074	0	1,074
SYLVAN	OSCEOLA	1948	DUNDEE	3925	13.7	D	48.0	DUNDEE	4100	11	0	0	2	1	3,330	1,171,564	440	2,663	760	0	760
TRENT	MUSKEGON	1949	TRAVERSE	2039	1	L		TRAVERSE	2118	2	0	0	1	0	384	29,407	40	735	0	1	1
TROWBRIDGE	ALLEGAN	1937	TRAVERSE	1358	2	L	41.2	CINCINNATIAN	2952	162	0	1	14	4	5,168	492,139	1,840	267	135	12	147
VERNON	ISABELLA	1930	DUNDEE	3755	3	DL		BOIS BLANC	5118	78	0	1	5	0	9,602	5,001,481	890	5,620	3,850	0	3,850
WALKER	KENT-OTTAWA	1938	TRAVERSE	1872	8	L	36.0	ST. PETER Ss.	5222								8,560				
		1940	"BEREA"	1121	21	SL															
		1957	DETROIT RIVER	2132	12	D				783	3	7	473	0	230,282	15,496,395	10	1,808	20	97	117
													THE 473 WELLS INCLUDE 466 TRAVERSE, 6 BEREA, AND 1 DETROIT RIVER.								
WAYLAND	ALLEGAN	1944	TRAVERSE	1799	6	L	36.0	TRENTON-BLACK RIVER	4400	54	0	0	4	0	2,254	248,148	530	468	0	1	1
		1960	SALINA	3132	12	D	28.0			15	5	0	15	0	129,361	428,730	600	715	0	0	0
WAYLAND, NORTH	ALLEGAN	1957	TRAVERSE	1696	7	L		TRAVERSE	1712	15	0	1	6	0	2,055	97,618	150	651	0	6	6
WEARE	OCEANA	1961	TRAVERSE	1681	2	L		TRAVERSE	1737	3	0	1	0	ABANDONED 1964	388	6,919	30	231	-	-	-
WEST BRANCH	OGEMAW	1933	TRAVERSE	(REFER TO ABANDONED FIELDS)																	
		1933	DUNDEE	2650	20	L	36.8	CAMBRO-ORDOVICIAN	11,012	275	0	0	176	5	88,429	8,260,344	2,750	3,004	130	39	169
		1951	DETROIT RIVER SZ	3585	9	D	38.9														
		1952	RICHFIELD	4127						63	0	0	62	1	108,000	2,181,371	2,520	866	0	3	3
													THE 62 WELLS INCLUDE 30 RICHFIELD, 27 SOUR ZONE, AND 5 RICHFIELD AND SOUR ZONE.								
WHITE CLOUD	NEWAYGO	1963	TRAVERSE	2537	1	L		TRAVERSE	2540	1	0	1	0	ABANDONED 1964	203	1,295	40	32	-	-	-
WILEY	MASON	1962	TRAVERSE	1663	5	L	39.9	ST. PETER Ss.	5890	17	2	0	16	2	108,583	228,549	360	635	298	0	298
WINFIELD	MONTCALM	1936	DUNDEE-REED CITY	3340	1	L	43.2	REED CITY	3430	8	0	0	2	0	3,228	102,781	120	857	0	17	17
WINTERFIELD	CLARE	1940	TRAVERSE	3105	1	L		SYLVANIA	5273	8	0	0	6	0			200		3	0	3
		1940	DUNDEE	3794	3	L	44.2			37	0	1	6	1			740		1,400	0	1,400
		1942	RICHFIELD	5015	15	D				2	0	0	1	0	32,349	4,989,150	80	4,891	0	2	2
WISE	ISABELLA	1938	DUNDEE	3700	11	L	45.2	SYLVANIA	5202												
		1953	TRAVERSE	3090	31	L				79	0	0	24	1	42,674	3,806,442	1,640		2,061	0	2,061
													THE 24 WELLS INCLUDE 19 DUNDEE, 4 DUNDEE & TRAVERSE, AND 1 STRAY.								
		1955	DETROIT RIVER SZ	4415	48	DL	42.6			2	0	0	1	0			80	2,213	14	0	14
WOODVILLE	NEWAYGO	1943	TRAVERSE	2820	5	L	43.5	DETROIT RIVER	3534	10	0	0	10	0	9,761	497,347	350	1,421	81	16	97
WRIGHT	OTTAWA	1953	TRAVERSE	1920	1	L		DETROIT RIVER	2337	7	0	0	3	0			70		0	3	3
		1954	"BEREA"	1170	3	L				5	1	0	5	2	1,682	53,363	40	485	55	0	55
WYOMING PARK	KENT	1939	TRAVERSE	1870	6	L	39.0	DETROIT RIVER	2255	21	0	0	1	0	219	156,040	300	520	0	0	0
ZEELAND	OTTAWA	1942	TRAVERSE	1514	3	L	41.9	NIAGARAN	3052	21	1	0	1	0	0	310,085	400	775	0	1	1
		1958	SALINA	(REFER TO ABANDONED FIELDS)																	
								INCOMPLETE RECORD		89	115	4,588	436					143,831	5,141	148,972

184 ACTIVE FIELDS AT THE END OF 1964

TOTAL OF 89 NEW COMPLETIONS IN 1964 INCLUDES 7 WELLS REOPENED, REWORKED OR DEEPENED TO NEW PAY ZONES AS COMPARED TO A TOTAL OF 82 AS SHOWN IN OTHER TABLES.

TOTAL OF 115 ABANDONMENTS IN 1964 INCLUDES PAY ZONES WHERE WELLS WERE DEEPENED, RE-COMPLETED IN NEW PAY ZONES, AND CONVERTED TO INJECTION WELLS.

TOTAL OF 4588 PRODUCIBLE WELLS DOES NOT INCLUDE GAS WELLS WHICH PRODUCED SOME OIL OR INJECTION WELLS.
TOTAL OF 4588 PRODUCIBLE WELLS INCLUDES 436 SHUT-DOWN AND SHUT-IN WELLS.

TOTAL NUMBER OF PRODUCING WELLS IS 4,151

TOTAL OF 436 INCLUDES WELLS TO BE CONVERTED FOR STORAGE AND SECONDARY RECOVERY, WELLS TO BE PLUGGED, AND WELLS WHICH WILL BE RETURNED TO PRODUCING STATUS.

BRINE FOR COMMERCIAL USES, LEASE PURPOSES, COUNTY ROADS, ETC. . . 4,245
BRINE TO SURFACE PITS. 896
TOTAL 5,141

505,120,178 BARRELS OIL, CUMULATIVE PRODUCTION FROM ACTIVE FIELDS
4,153,593 BARRELS OIL, CUMULATIVE PRODUCTION FROM ABANDONED FIELDS
509,273,771 BARRELS OIL, TOTAL CUMULATIVE PRODUCTION

15,601,577 BARRELS OIL FROM FIELDS ACTIVE IN 1964
127 BARRELS OIL FROM MISCELLANEOUS WELLS IN 1964
15,601,704 BARRELS OIL, TOTAL PRODUCTION IN 1964

TABLE 6.– ABANDONED OIL FIELDS (Sheet 1 of 3)

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY		PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL WELLS: TO END 1964	COMP. IN 1964	ABAND. IN 1964	PRODUCING AT END 1964	SHUT IN OR SHUT DOWN	OIL PRODUCTION IN BARRELS: YEAR OF ABANDONMENT	CUMULATIVE PRODUCTION	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION BBLS./DAY: DISPOSAL SUBSURFACE	DISPOSAL SURFACE	TOTAL PRODUCTION
ALAMO	KALAMAZOO	1949	TRAVERSE	1310	2	L		TRAVERSE	1420	16					1962	27,545	160	172			
ALLEGAN	ALLEGAN	1937	TRAVERSE	1563	2	L	38.0	CINCINNATIAN	2987	18					1961	15,577	180	87			
ASHLAND, SEC. 8	NEWAYGO	1959	TRAVERSE	2238	1	L		TRAVERSE	2239	1					1962	267	10	27			
BANGOR	VAN BUREN	1939	TRAVERSE	1002	2	L	29.5	TRENTON	2552	65					1959	933,965	610	1,531			
BARTON	NEWAYGO	1947	TRAVERSE	3097	1	L	30.0	DETROIT RIVER	3745	3					1963	20,227	50	405			
BEAVER, SEC. 31	BAY	1954	BEREA	2413	16	SL		SYLVANIA	4754	1					1961	926	10	93			
BENONA, SEC. 13	OCEANA	1949	TRAVERSE	1640	3	L		DETROIT RIVER	2276	2					1956	4,951	20	248			
BIRCH RUN	SAGINAW	1934	BEREA	1530	5	S	43.3	DUNDEE	2646	26					1951	215,876	250	864			
BISHOP	NEWAYGO	1950	TRAVERSE	2226	3	L		TRAVERSE	2238	7					1952	33,327	110	303			
BLOOMER, SEC. 18	MONTCALM	1936	TRAVERSE	2717	6	L		DUNDEE	3138	1					1936	814	10	81			
BREEDSVILLE	VAN BUREN	1943	TRAVERSE	1061	2	L	33.0	DETROIT RIVER	1445	32					1961	285,584	300	952			
BUCKEYE, SOUTH	GLADWIN	1956	TRAVERSE	2891	3	D	42.0	DETROIT RIVER	4509	7						PRODUCTION COMBINED WITH BUCKEYE, SOUTH, DUNDEE					
BUSHNELL	MONTCALM	1935	DUNDEE	3105	2	L	33.9	DUNDEE	3125	1					1939	4,035	10	403			
BUTMAN	GLADWIN	1950	TRAVERSE	2789	2	L		SYLVANIA	5027	1					1953	PRODUCTION COMBINED WITH BUTMAN RICHFIELD					
		1949	DUNDEE	3596	6	L	41.4			1					1963	PRODUCTION COMBINED WITH BUTMAN RICHFIELD					
CASCO	ALLEGAN	1940	TRAVERSE	1095	1.5	L	38.6	TRAVERSE	1115	9					1959	17,382	50	348			
CEDAR CREEK, SEC. 23	MUSKEGON	1949	TRAVERSE	1951	2	L		DUNDEE	2453	1					1951	1,223	10	120			
CHERRY GROVE	WEXFORD	1952	TRAVERSE	3145	4	D		DUNDEE	3998	1					1953	4,814	10	481			
CHESHIRE	ALLEGAN	1947	TRAVERSE	1289	2	L	35	TRAVERSE	1348	3					1958	9,290	30	310			
CHESTER, SEC. 15	OTSEGO	1951	SALINA	6610	5	D	41.0	NIAGARAN	6870	1					1956	2,752	40	69			
CLEAR LAKE	VAN BUREN	1950	TRAVERSE	1380	1	L		TRAVERSE	1399	14					1953	17,490	140	125			
CLINTON	WASHTENAW	1953	TRAVERSE	986	2	D		TRENTON	3606	2					1962	2,093	20	105			
COFFEE LAKE	VAN BUREN	1946	TRAVERSE	1128	1	L		TRAVERSE	1130	11					1954	34,649	110	315			
COLDWATER, SOUTH	ISABELLA	1951	DUNDEE	3739	4	D		DUNDEE	3743	1					1959	10,941	20	547			
COMSTOCK, SEC. 5	KALAMAZOO	1949	TRAVERSE	1430	3	L		TRAVERSE	1480	2					1952	974	20	49			
CONCORD	JACKSON	1953	TRAVERSE	1627	1	L		SALINA	2417	5					1958	6,437	50	129			
CRANBERRY LAKE	CLARE	1953	DETROIT RIVER	4801	16		48.8	RICHFIELD	5223						1962	PRODUCTION COMBINED WITH CRANBERRY LAKE DUNDEE, TRAVERSE, AND RICHFIELD					
CROOKED LAKE	ALLEGAN	1949	TRAVERSE	1278	1	L		TRAVERSE	1312	2					1956	115,452	40	2,886			
CROTON	NEWAYGO	1951	TRAVERSE	2543	2	L		SALINA	3993	10					1958	91,678	200	458			
CRUMP	BAY	1950	DUNDEE	3294	7	L		DUNDEE	3354	1					1951	1,043	10	104			
DALLAS	CLINTON	1942	TRAVERSE	2482	2	L		DETROIT RIVER	2934	3					1948	3,085	40	770			
DAY	MONTCALM	1946	DUNDEE	3337	2	L		DUNDEE	3387	2					1954	16,239	20	812			
DOUGLASS, SEC. 3	MONTCALM	1954	TRAVERSE	3025	8	L		DUNDEE	3666	1					1956	3,155	20	158			
EAST NORWICH	MISSAUKEE	1942	DUNDEE	3082	4	L	44.2	SYLVANIA	4632	1					1947	PRODUCTION COMBINED WITH EAST NORWICH RICHFIELD					
		1944	TRAVERSE	2410	1	L									1944	PRODUCTION COMBINED WITH EAST NORWICH RICHFIELD					
EDWARDS	OGEMAW	1951	DUNDEE	3362	10	L		SYLVANIA-BOIS BLANC	5260	1					1954	4,941	10	494			
ELBA	GRATIOT	1927	TRAVERSE	2440	2	L	47.0	DUNDEE	3044	8					1962	42,925	90	477			
ELKLAND	TUSCOLA	1946	DUNDEE	2653	14	L		SYLVANIA	3735	2					1947	1,546	20	77			
ENSLEY	NEWAYGO	1954	TRAVERSE	2439	2	L		DETROIT RIVER	3018	6					1959	70,415	120	587			
FREEDOM	WASHTENAW	1954	TRENTON	3963	20	D	43.5	CAMBRO-ORDOVICIAN	4691	1					1956	7,217	40	180			
FREMONT, SEC. 27	ISABELLA	1962	DUNDEE												1962 (?)	488					
FREMONT	ISABELLA	1938	DUNDEE	3696	4	D		DUNDEE	3700	2					1956	3,045	30	102			
FREMONT, SEC. 32	ISABELLA	1957	TRAVERSE	3058	2			DUNDEE	3619	1					1958	892	10	89			
FREMONT	SAGINAW	1946	DUNDEE	3125	1	L		DUNDEE	3150	2					1947	2,000	20	100			

TABLE 6.— ABANDONED OIL FIELDS, Continued (Sheet 2 of 3)

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE: DEPTH IN FEET	PAY ZONE: THICKNESS AND LITHOLOGY		PAY ZONE: OIL GRAVITY A.P.I.	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF OIL WELLS: TO END 1964	COMP. IN 1964	ABAND. IN 1964	PRODUCING AT END 1964	SHUT IN OR SHUT DOWN	OIL PRODUCTION IN BARRELS: YEAR OF ABANDONMENT	CUMULATIVE THROUGH	DRILLED ACRES	RECOVERY PER ACRE DRILLED (BBLS.)	BRINE PRODUCTION BBLS./DAY: DISPOSAL SUBSURFACE	DISPOSAL SURFACE	TOTAL PRODUCTION
FREEPORT	BARRY	1949	TRAVERSE	2031	3	L		DETROIT RIVER	2430	1					1951	19,229	10	1,923			
GARFIELD	CLARE	1946	DUNDEE	5013	10	S		SYLVANIA	5307	1					1948	13,769	40	344			
GENEVA	MIDLAND	1935	DUNDEE	3678	2	L	42.7	DUNDEE	3690	7					1960	62,684	70	895			
GIBSON	BAY	1950	DUNDEE	2942	4	L		DETROIT RIVER	4343	1					1952	PRODUCTION COMBINED WITH GIBSON TRAVERSE					
		1935	TRAVERSE	2036	4	L				12					1957	51,892	130	399			
GREENWOOD, SEC. 11	CLARE	1952	DUNDEE	4054	10	L		RICHFIELD	5432	1					1953	1,324	10	132			
GROUT	GLADWIN	1940	DUNDEE	3825	4	L		DETROIT RIVER	5228	5					1957	PRODUCTION COMBINED WITH GROUT RICHFIELD					
		1958	DETROIT RIVER SZ	4801	12	D									1963	PRODUCTION COMBINED WITH GROUT RICHFIELD					
HAMILTON	CLARE	1940	DUNDEE	4041	10	L	41.8	RICHFIELD	5395	3					1959	PRODUCTION COMBINED WITH HAMILTON RICHFIELD					
HAMLIN	MASON	1952	NIAGARAN	4224	20	D	46.2	CAMBRIAN	6622	1					1958	60,532	40	1,513			
HART	OCEANA	1933	TRAVERSE	1911	4	D	34.0	ST. PETER Ss.	5531	17					1936	116,275	150	775			
HATTON	CLARE	1941	DUNDEE	3945	2	L		DUNDEE	4000	4					1948	139,272	160	870			
HAWKHEAD	ALLEGAN	1946	TRAVERSE	1103	1	L	36.0	DETROIT RIVER	1385	16					1960	68,292	160	427			
HEATH, SEC. 35	ALLEGAN	1945	TRAVERSE	1468	2	L		TRAVERSE	1470	1					1946	559	10	56			
HILLIARDS	ALLEGAN	1944	TRAVERSE	1576	1.2	L		NIAGARAN	3157	17					1961	124,401	300	415			
HOLTON	MUSKEGON	1948	TRAVERSE	1993	1	L	37.3	DUNDEE	2554	3					1963	95,911	60	1,598			
HOPKINS	ALLEGAN	1939	TRAVERSE	1633	4	L	41.5	DETROIT RIVER	1965	10					1956	145,513	110	1,323			
HOPKINS, WEST	ALLEGAN	1941	TRAVERSE	1371	2	L	41.5	SALINA	3140	31					1951	388,777	370	1,051			
		1956	SALINA	2755	7	D	17.9	CLINTON	3140	1					1963	1,849	10	185			
HUBBARDSTON	IONIA	1947	DUNDEE	3028	5	L		DUNDEE	3072	5					1959	48,479	50	970			
LACOTA	VAN BUREN	1946	TRAVERSE	1110	2	L		TRAVERSE	1208	11					1955	51,904	120	433			
LARKIN	MIDLAND	1935	BEREA	2473	4	S	39.0	DUNDEE	3829	2					1945	7,070	20	353			
LEBANON	CLINTON	1948	TRAVERSE	2548	1	L		TRAVERSE	2570	1					1950	1,036	10	104			
LEE	ALLEGAN	1941	TRAVERSE	1170	1	L		TRAVERSE	1207	6					1952	3,030	60	51			
LEE, SOUTH	ALLEGAN	1949	TRAVERSE	1171	1	L		TRENTON	2960	12					1953	91,117	120	759			
MARNE	OTTAWA	1940	"BEREA"	1170	3	L		TRAVERSE	1904	2					1946	6,253	20	313			
MARTIN	ALLEGAN	1948	TRAVERSE	1617	1	L	36.0	ST. PETER Ss.	4290	2					1960	2,188	20	109			
MEARS	OCEANA	1949	DUNDEE	2210	3	L	32.2	REED CITY	2347	3					1959						
		1951	TRAVERSE	1745	2.5	DL	36.1			11					1959	105,807	110	622			
MOFFATT, SEC. 34	ARENAC	1953	DUNDEE	2984	4	L		DUNDEE	3027	1					1956	8,392	10	839			
MT. HALEY	MIDLAND	1934	DUNDEE	3477	3	D	39.6	DUNDEE	3500	1					1947	36,069	10	3,607			
MT. FOREST, SEC. 1	BAY	1946	DUNDEE	2960	2	L		DUNDEE	3057	1					1946	1,906	10	191			
NEW BOSTON	WAYNE	1943	TRENTON	2635	4	L		TRENTON	2983	2					1949	2,349	10	117			
NILES	BERRIEN	1940	TRAVERSE	602	7	L	21.5	TRENTON	2089	7					1958	29,672	70	424			
NORTH PORTER	CASS	1930	TRAVERSE	660	2	L	37.0	TRENTON	2382	2					1953	1,424	20	71			
OTISVILLE	GENESEE	1941	TRAVERSE	1895	2	L		DUNDEE	2674	1					1946	PRODUCTION COMBINED WITH OTISVILLE DUNDEE AND BEREA					
OTSEGO	ALLEGAN	1938	TRAVERSE	1532	1	L		TRAVERSE	1600	6					1962	2,290	100	23			
OTSEGO, SEC. 9	ALLEGAN	1950	TRAVERSE	1456	1	L		TRAVERSE	1457	4					1958	681	40	17			
OTTO, SEC. 30	OCEANA	1955	TRAVERSE	REFER TO ACTIVE FIELDS												COMBINED WITH OTTO, SEC. 32					
		1958	"BEREA"	1428	9			TRAVERSE	1860	2					1960	COMBINED WITH SEC. 32					
OVERISEL, SEC. 11	ALLEGAN	1940	TRAVERSE	1553	4	L		TRAVERSE	1578	1					1944	6,370	10	637			
PINCONNING	BAY	1958	TRAVERSE	2151	1	L		DETROIT RIVER	3790	1					1960	PRODUCTION COMBINED WITH PINCONNING DUNDEE					
PINE	MONTCALM	1938	TRAVERSE	2836	1	L	45.0	DUNDEE	3308	2					1963	105,506	20	5,275			
PINE RIVER	GRATIOT	1942	DUNDEE	3280	2	L		DUNDEE	3285	2					1956	13,285	90	148			

TABLE 6.— ABANDONED OIL FIELDS, Continued (Sheet 3 of 3)

PINE RIVER	GRATIOT	1956	TRAVERSE	2890	5	L				1					1958	760	10	76			
PORT HURON	ST. CLAIR	1886	DUNDEE	575	20	L		CAMBRIAN	4948	21					NO RECORD						
PROSPER	MISSAUKEE	1934	RICHFIELD	5128	21	D			5254	1					1957	7,088	40	177			
PULLMAN	ALLEGAN	1949	TRAVERSE	1185	1	L		BASS ISLAND	1942	9					1951	26,840	90	298			
RABBIT RIVER	ALLEGAN	1950	TRAVERSE	1655	3	L		TRAVERSE	1678	8					1959	12,745	80	159			
RICHLAND	SAGINAW	1936	TRAVERSE	2739	10	L	46.0	DUNDEE	3264	1					1936	1,871	10	187			
RIDGEWAY, SEC. 1	LENAWEE	1954	TRENTON	2415	4	D		TRENTON	2491	1					1962	47	10	5			
SECORD	GLADWIN	1937	DUNDEE	3437	5	L	38.0	DUNDEE	3500	2					1941	12,024	20	601			
SHERIDAN, SEC. 25	NEWAYGO	1951	TRAVERSE	2204	1	L		TRAVERSE	2205	1					1955	628	10	63			
SHERMAN, SEC. 18	ISABELLA	1939	TRAVERSE	3217	4	L		DUNDEE	3833	3					1947	1,364	20	68			
TEKONSHA	CALHOUN	1959	TRENTON	3553	?	DL		PRAIRIE DU CHIEN	4147	1					1963	2,698	10	269			
THORNAPPLE, SEC. 4	BARRY	1952	TRAVERSE	1951	2	L		TRAVERSE	1973	2					1961	2,716	20	136			
TYRONE	KENT	1952	TRAVERSE	2379	2	L		DETROIT RIVER	2900	7					1956	31,449	140	225			
UNION	ISABELLA	1950	TRAVERSE	3191	2	L		DETROIT RIVER	4096	1					1963	58,263	20	2,913			
VICTORY, SEC. 10	MASON	1957	TRAVERSE	1603	9	L	36.0	TRAVERSE	1616	1					1958	580	10	58			
WEARE, SEC. 14	OCEANA	1952	TRAVERSE	1674	1	L	41.4	DUNDEE	2217	1					1954	1,096	10	110			
WEST BRANCH	OGEMAW	1933	TRAVERSE	1796	2	L		CAMBRO-ORDOVICIAN	11,012	1					1956	PRODUCTION COMBINED WITH WEST BRANCH DUNDEE					
WHEATLAND	MECOSTA	1945	DUNDEE	3690	2	L	43.0	DETROIT RIVER	3849	6					1960	141,631	100	1,416			
WHITE RIVER	MUSKEGON	1950	DUNDEE	2053	2	L	28.0	DUNDEE	2055	1					1951	7,061	20	353			
ZEELAND	OTTAWA	1958	SALINA	2792	5	D	20.5	NIAGARAN	3052	1					1962	1,606	10	161			
ZEELAND, SEC. 28	OTTAWA	1954	TRAVERSE	1491	1	L		DETROIT RIVER	2215	3					1956	4,437	30	148			
																4,145,271					

CUMULATIVE PRODUCTION FROM ABANDONED FIELDS 4,145,271

MISCELLANEOUS PRODUCTION FROM DRY HOLES AND ABANDONED POOLS WITH MINOR ACCUMULATIONS 8,322

TOTAL CUMULATIVE FROM ABANDONED FIELDS AND POOLS 4,153,593

TABLE 7. — FLUID INJECTION INTO PRODUCING FORMATIONS IN OIL FIELDS IN 1964 (Sheet 1 of 2)

FIELD AND COUNTY		OPERATOR OR COMPANY	TYPE OF PROJECT	YEAR PROJECT STARTED	PAY ZONE			DRILLED ACRES	INJECTION FLUIDS	SOURCE OF INJECTION FLUID	VOLUME OF INJECTED FLUID - 1964			CUMULATIVE VOLUME OF INJECTED FLUID		PRODUCTION - 1964				CUMULATIVE PRODUCTION	
					FORM.	THICK.	DEPTH				MCF GAS	BARRELS WATER	INJ. WELLS	MCF GAS	BARRELS WATER	BARRELS OIL	SALES MCF GAS	WATER PRODUCED	NO. WELLS	BARRELS OIL	SALES MCF GAS
ADAMS	ARENAC		B.D. & P.M.		DD.	15	2,958	310	BRINE	PROD. BRINES		3,650	1			11,419		6,789	17	818,290	
ADAMS, NORTH	ARENAC		B.D. & P.M.		DD.		2,905	470	BRINE	PROD. BRINES		154,715	1			27,137		1,042,440	16	9,065,626	
BARD	GLADWIN		B.D. & P.M.		DD.	6	3,933	170	BRINE	PROD. BRINES		32,850				8,150		60,590	8	551,506	
BEAVER CREEK	CRAWFORD-KALKASKA	PURE OIL CO.	UNIT WTR.FLOOD		RICH.	20	4,160	3,960	FRESH WTR.	GLACIAL DRIFT		1,941,254	39		1,941,254	102,233	439,738	46,720	59	6,005,602	14,745,466
BEAVERTON, SOUTH	GLADWIN	SUN OIL CO.	UNIT,PILOT WTR.	1959	DD.	12	3,845	700	FRESH WTR.	GLACIAL DRIFT		220,037	4		845,178	23,241		64,240	19	1,498,652	
BELLY ACHERS	MONTCALM	MOBIL OIL CO.	B.D. & P.M.		DD.	2	3,470	220	BRINE	PROD. BRINES		53,500	1			1,589		53,500	3	331,844	
BEVENS LAKE	MECOSTA		B.D. & P.M.		TRAV.		2,297	30	BRINE	PROD. BRINES		36,500	1			1,652		36,500	1	84,159	
BLOOMINGDALE	VAN BUREN		B.D. & P.M.		TRAV.	4	1,244	4,020	BRINE	PROD. BRINES		321,200	7			13,576		471,215	27	9,938,273	
BUCKEYE, NORTH	GLADWIN	SUN OIL CO.	COOP. WTR. FLOOD	1948	DD.	14	3,615	3,020	FRESH WTR. & BRINE	GLACIAL DRIFT PROD. BRINES		123,075	3		1,761,332	143,080		771,975	44	18,461,361	9,834
BURDELL	OSCEOLA		B.D. & P.M.		DD.-RC		3,678	120	BRINE	PROD. BRINES		110,960	1		233,265	11,366		110,960	4	126,112	
CATO	MONTCALM		B.D. & P.M.		DD.-RC		3,542	590	BRINE	PROD. BRINES		365,000	1			18,873		584,000	7	859,508	
CLAYTON	ARENAC		B.D. & P.M.		DD.	12	2,465	1,290	BRINE	PROD. BRINES		673,060	6			50,627		679,995	45	5,926,956	
COLDWATER	ISABELLA	SOHIO PETR. CO.	B.D. & P.M.		DD.	25	3,692	3,200	BRINE	PROD. BRINES		11,318,285	6			202,783	0	11,436,910	37	21,057,309	6,311,307
CRYSTAL	MONTCALM		B.D. & P.M.		DD.	4	3,187	2,000	BRINE	PROD. BRINES		574,875	2			8,908		574,875	8	7,675,778	
DEEP RIVER	ARENAC		B.D. & P.M.		DD.	145	2,795	1,060	BRINE	PROD. BRINES		2,763,050	11			123,352		2,763,050	31	25,865,280	
DENNISON	OTTAWA		B.D. & P.M.		TRAV.	4	1,874	280	BRINE	PROD. BRINES		42,705	5			124,747		42,705	14	173,912	
DIAMOND SPRINGS	ALLEGAN		B.D. & P.M.		TRAV.	3	1,461	420	BRINE	PROD. BRINES		65,700	2			5,045		66,065	8	986,807	
EAST NORWICH	MISSAUKEE	SUN OIL CO.	P.M.,GAS & WTR. UNIT	1947	RICH.	13	4,390	4,360	GAS & FRESH WTR.	PROD. GAS GLACIAL DRIFT		1,057,528	30	11,699,478	3,057,175	134,678	638,651	16,790	74	7,033,543	3,680,315
EDMORE	MONTCALM	FARMERS COOP.	COOP., P.M. & B.D.	1960	TRAV.	4	3,102	500	BRINE & FRESH WTR.	PROD. BRINES GLACIAL DRIFT		408,280	2		1,265,150	34,482	82,404	429,605	27	1,256,746	1,057,235
ELBRIDGE	OCEANA		B.D. & P.M.		TRAV.	2	2,160	360	BRINE	PROD. BRINES		746,790	4		1,307,373	70,418		746,790	15	370,284	
ENTERPRISE	MISSAUKEE	SUN OIL CO.	P.M.,GAS & WTR. UNIT	1953	RICH.	15	4,405	1,280	GAS & FRESH WTR.	PROD. GAS GLACIAL DRIFT	DISCONTINUED	351,604	5	1,419,641	996,072	59,212	107,773	24,820	28	1,890,840	413,729
EVART	OSCEOLA		B.D. & P.M.		DD.	6	3,755	1,100	BRINE	PROD. BRINES		991,705	3			11,981		991,705	8	3,776,600	
FERRY	OCEANA		B.D. & P.M.		TRAV.	2	1,949	280	BRINE	PROD. BRINES		251,850	3		1,315,011	6,127		251,850	6	163,053	
FILLMORE	ALLEGAN		B.D. & P.M.		TRAV.	3	1,516	770	BRINE	PROD. BRINES		24,090	2			5,414		26,280	11	944,776	
FORK	MECOSTA		B.D. & P.M.		DD.	8	3,845	2,700	BRINE	PROD. BRINES		903,375	1			4,913		903,375	4	7,730,128	
FREEMAN-REDDING	CLARE		B.D. & P.M.		DD.	19	3,885	2,800	BRINE	PROD. BRINES		1,859,675	8			35,598		2,443,675	20	26,396,531	1,956,056
GENEVA	VAN BUREN		B.D. & P.M.		TRAV.	2	1,042	750	BRINE	PROD. BRINES		127,750	1			1,743		127,750	1	492,836	
GILMORE	ISABELLA		B.D. & P.M.		DD.	3	3,803	120	BRINE	PROD. BRINES		638,750	2			19,684		638,750	8	334,480	
GROUT	GLADWIN	SUN OIL CO.	UNIT,WTR.FLOOD	1960	RICH.	10	5,039	680	FRESH WTR.	GLACIAL DRIFT		247,192	3		918,372	137,487		15,695	12	897,299	
HAMILTON	CLARE	SUN OIL CO.	UNIT,WTR.FLOOD	1958	RICH.	12	5,145	1,800	FRESH WTR.	GLACIAL DRIFT		963,824	17		3,838,399	344,927	192,886	100,375	28	3,070,521	2,458,862
HEADQUARTERS	CLARE-ROSCOMMON		B.D. & P.M.		TRAV.	5	3,356	1,400	BRINE	PROD. BRINES		338,203	4			7,349		338,933	6	7,412,636	
HUBER	NEWAYGO	(REACTIVATED)	B.D. & P.M.		TRAV.	2	2,109	260	BRINE	PROD. BRINES		129,850				5,372		129,850	6	533,729	
JEFFERSON	CASS		B.D. & P.M.		TRAV.	3	710	280	BRINE	PROD. BRINES		164,250	3		412,450	9,247		164,250	7	86,141	
JEROME	MIDLAND	CITIES SERVICE	COOP., PILOT WTR. FLOOD	1957	DD.	10	3,743	260	FRESH WTR. & BRINE	GLACIAL DRIFT		6,115	1		73,514	3,525		1,460	3	217,729	
KAWKAWLIN	BAY	GULF OIL	UNIT,WTR.FLOOD	1953	DD.	45	2,830	6,400	FRESH WTR. & BRINE	GLACIAL DRIFT PROD. BRINES		579,439	20		2,447,043	246,398		284,335	277	12,312,295	
LAKE GEORGE	CLARE		B.D. & P.M.		DD.		3,968	100	BRINE	PROD. BRINES		262,800	2			9,167		262,800	5	322,332	
MCBAIN	MISSAUKEE		B.D. & P.M.		DD.	15	3,969	920	BRINE	PROD. BRINES		1,834,125	2		4,566,875	239,801		1,834,125	24	1,933,605	
MT. PLEASANT	ISABELLA-		B.D. & P.M., FRESH WTR.PILOT		DD.	15	3,545	5,710	BRINE-FRESH WTR.	PROD. BRINES GLACIAL DRIFT		14,965 117,473.	1		 117,473	109,515	8,027	301,490	144	26,763,368	7,796,389
MUSKEGON	MUSKEGON		B.D. & P.M.		TRAV.-DD.		1,700	3,160	BRINE	PROD. BRINES		7,300	1			7,403		430,700	19	6,981,753	7,237,438
OVERISEL	ALLEGAN		B.D. & P.M.		TRAV.	3	1,478	1,770	BRINE	PROD. BRINES		16,425	1			11,598		108,405	30	2,867,989	
OXBOW	MASON		B.D. & P.M.		TRAV.		1,652	30	BRINE	PROD. BRINES		14,235	1			4,748		14,235	3	72,351	

TABLE 7. — FLUID INJECTION INTO PRODUCING FORMATIONS IN OIL FIELDS IN 1964, Continued (Sheet 2 of 2)

PENTWATER	MASON-OCEANA	HUMBLE OIL	UNIT,WTR.FLOOD	1960	U.TRAV.	8	1,585	1,400	BRINE	PROD. BRINES		239,415	5								
PENTWATER	MASON-OCEANA	HUMBLE OIL	UNIT,WTR.FLOOD	1960	DD.	10	2,088	2,000	BRINE	PROD. BRINES		0	0		 2,461,469	53,654		702,625	24	4,824,953	1,010,763
PINCONNING	BAY		B.D. & P.M.		DD.		2,898	100	BRINE	PROD. BRINES		73,000	1			9,361		73,365	2	835,393	
PORTER	MIDLAND		B.D. & P.M., FRESH WTR.PILOT		DD.	12	3,415	6,650	BRINE & FRESH WTR.	PROD. BRINES GLACIAL DRIFT		2,407,540 306,438.	17		 306,438	168,587		3,114,910	156	47,887,757	4,992,995
PROSPER	MISSAUKEE		B.D. & P.M.		DD.		3,837	520	BRINE	PROD. BRINES		1,008,495	1			17,447		1,008,495	7	1,648,896	
PULLMAN, EAST	ALLEGAN		B.D. & P.M.		TRAV.	2	1,131	250	BRINE	PROD. BRINES		56,940	4			5,556		58,035	13	353,733	
REED CITY	OSCEOLA	MICH. CONS.	UNIT,GAS INJ.IN OIL RESERVOIR	1963	DD.-RC	10	3,585	5,320	BRINE GAS	M. C. SYSTEM PROD. BRINES	4,503,501	2,068,455	9	5,208,770		103,711		2,068,455	46	38,565,339	16,257,876
REYNOLDS	MONTCALM		B.D. & P.M., COOP.	1956	DD.-RC		3,343	7,100	BRINE	PROD. BRINES		1,489,930	8			139,308		1,555,630	31	3,657,518	408,555
RIVERSIDE	MISSAUKEE		B.D. & P.M.		DD.		3,950	60	BRINE	PROD. BRINES		58,400	1		109,500	8,688		58,400	3	97,128	
RIVERTON	MASON		B.D. & P.M.		TRAV.	6	1,650	190	BRINE	PROD. BRINES		29,200	1			2,580		29,200	3	231,729	
ROCKFORD	KENT		B.D. & P.M.		TRAV.	3	2,204	210	BRINE	PROD. BRINES		27,375	1			9,085		27,375	5	495,615	
ROSE CITY	OGEMAW	MUSKEGON DEV. CO.	UNIT,WTR.FLOOD	1955	RICH.	9	4,125	4,520	FRESH WTR.	GLACIAL DRIFT		104,262	22		373,760	137,389		12,045	52	4,789,312	5,180,615
ROSE LAKE	OSCEOLA		B.D. & P.M.		TRAV.	5	3,140	720	BRINE	PROD. BRINES		98,550	1			27,877		178,120	6		
SALEM	ALLEGAN		B.D. & P.M.		TRAV.	8	1,583	3,390	BRINE	PROD. BRINES		48,910	8			51,266		111,690	101	8,809,464	
SCOTTVILLE	MASON		B.D. & P.M.		TRAV.	3	1,650	320	BRINE	PROD. BRINES		751,535	2		1,339,185	87,528		751,535	14	296,375	
SHERMAN	ISABELLA	PURE OIL CO.	B.D. & P.M.		DD.		3,650	1,020	BRINE	PROD. BRINES		100,740	2			6,425		113,515	5	4,689,030	641,217
SKEELS	CLARE-GLADWIN		B.D. & P.M.		DD.		3,840	50	BRINE	PROD. BRINES		43,800	1			14,649		43,800	3	919,174	
ST. HELEN	ROSCOMMON	SUN OIL CO.	UNIT,WTR.FLOOD	1958	RICH.	11	4,180	3,960	FRESH WTR.	GLACIAL DRIFT	DISCONTINUED	534,546	21	3,151,610	2,087,032	85,184		8,760	65	3,574,151	6,617,934
STONY LAKE	OCEANA	HUMBLE OIL	B.D. & P.M.		TRAV.	19	1,630	1,540	BRINE	PROD. BRINES		2,321,765	2			31,654		2,322,130	35	7,424,860	
SUMNER	GRATIOT		B.D. & P.M.		TRAV.	1	3,366	350	BRINE	PROD. BRINES		96,725	1		193,450	67,045		333,975	26	926,844	
SYLVAN	OSCEOLA	GULF OIL	B.D. & P.M.		DD.	14	3,925	440	BRINE	PROD. BRINES		277,400	1			3,330		277,400	1	1,171,564	
VERNON	ISABELLA		B.D. & P.M.		DD.		3,755	890	BRINE	PROD. BRINES		1,236,255	2			9,602		1,236,255	5	5,001,481	
WILEY	MASON		B.D. & P.M.		TRAV.	5	1,660	300	BRINE	PROD. BRINES		85,045	3			108,583		85,045	14	228,549	
WINTERFIELD	CLARE		B.D. & P.M.		DD.	3	3,794	740	BRINE	PROD. BRINES		319,375	2			20,024		561,370	5	4,635,735	
WISE	ISABELLA	CITIES SERVICE	UNIT,WTR.FLOOD	1960	DD.	11	3,700	1,640	FRESH WTR. & BRINE	GLACIAL DRIFT PROD. BRINES		653,140	3		3,354,020	38,193		643,130	22	3,740,548	

TYPE OF PROJECT

B.D. & P.M.	BRINE DISPOSAL AND PRESSURE MAINTENANCE
COOP.	COOPERATIVE OPERATION OR ORGANIZATION
UNIT.	UNITIZED OPERATION OR ORGANIZATION
PILOT	PILOT PROJECT
WTR.	WATER.
WTR. FLOOD	WATER FLOOD

SOURCE OF INJECTION FLUID

M. C. SYSTEM	MICHIGAN CONSOLIDATED GAS CO.
PROD. BRINES	PRODUCED BRINES
PROD. GAS	PRODUCED GAS

TABLE 8.— MICHIGAN GAS FIELDS - 1964 (Sheet 1 of 3)

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE			DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF GAS WELLS				GAS PRODUCTION IN M C F		DRILLED ACRES	REMARKS
				DEPTH IN FEET	THICKNESS AND LITHOLOGY				TO END 1964	COMP. IN 1964	ABAND. IN 1964	PROD. AT END 1964	PRODUCED IN 1964	CUMULATIVE THROUGH 1964		
ADAMS, SEC. 8	HILLSDALE	1962	TRAVERSE	1420	4	L	PRAIRIE DU CHIEN	4169	1	0	0	1	1,263	18,919	20	
ALPINE	ST. CLAIR	1963	NIAGARAN	3151	25	D	CLINTON	3470	1	0	0	1	-	0	80	SHUT IN
ASHTON	OSCEOLA	1946	MICHIGAN STRAY	1215	2	S	REED CITY	3779	3	0	0	1	-	205,680	400	SHUT IN
ASHTON, EAST	OSCEOLA	1962	MICHIGAN STRAY	1297	5	S	REED CITY	3750	1	0	0	1	-	0	160	SHUT IN
BELLE RIVER MILLS	ST. CLAIR	1961	SALINA-NIAGARAN	2215	305	D	CLINTON	2694	26	3	0	26	5,211,273	14,557,852	800	6 WELLS SHUT IN
BEVENS LAKE	MECOSTA	1951	DUNDEE	3536	11	L	REED CITY	3771	2	0	0	1	22,954	656,269	320	
		1952	MICHIGAN STRAY	1244	6	S			3	1	0	1	13,250	491,031		
BIG RAPIDS	MECOSTA	1943	MICHIGAN STRAY	1145	7	S	REED CITY	3595	9	0	0	1	8,933	2,365,817	1,440	
BLISSFIELD	LENAWEE	1963	TRENTON-BLACK RIVER	2686	9	D	GLENWOOD	3251	1	0	0	1	-	0	40	SHUT IN
BOYD	ST. CLAIR	1952	SALINA-NIAGARAN													COMBINED WITH OIL FIELD DATA - REFER TO OIL WELL GAS PRODUCTION
CAL-LEE	CALHOUN	1962	NIAGARAN	3036	8	D	PRAIRIE DU CHIEN	4912	4	2	0	4	-	0	280	SHUT IN FOR MARKET
CAPAC	ST. CLAIR	1961	NIAGARAN	4505	6	D	MT. SIMON Ss.	6337	29	10	1	28	598,812	731,440	3,680	25 WELLS SHUT IN FOR MARKET
CEDAR	OSCEOLA	1945	MICHIGAN STRAY	1490	7	S	SYLVANIA	5160	5	0	0	4	13,650	1,381,715	800	1 WELL DOMESTIC USE
CHERRY GROVE, SEC. 13	WEXFORD	1957	MICHIGAN STRAY	1326	35	S	DUNDEE	4080	5	2+1 PW	0	5	-	0	640	SHUT IN FOR MARKET
CHESTERFIELD	MACOMB	1959	NIAGARAN	2504	14	D	CLINTON	2707								COMBINED WITH OIL FIELD DATA - REFER TO OIL WELL GAS PRODUCTION
CHINA BELLE	ST. CLAIR	1963	NIAGARAN	2365	15	D	NIAGARAN	2451	3	1	0	3	-	0	120	SHUT IN FOR MARKET
CHINA, SOUTH	ST. CLAIR	1961	SALINA-NIAGARAN	2324	14	D	CLINTON	2743	11	0	3	8	181,434	311,758	440	5 WELLS SHUT IN
CLARE CITY	CLARE-ISABELLA	1937	MICHIGAN STRAY	1290	5	S	DUNDEE	3865	8	0	0	1	-	2,294,990	720	DOMESTIC USE
CLAYTON	ARENAC	1936	BEREA	1180	10	S	SYLVANIA	4163	31	0	0	17	-	5,111,048	1,560	DOMESTIC USE
COLFAX	MECOSTA	1945	MICHIGAN STRAY	1240	8	S	DETROIT RIVER	4043	4	0	0	1	-	485,844	640	DOMESTIC USE
		1957	DUNDEE-REED CITY	3474	9	D			1	0	0	1	0	5,121	160	DOMESTIC USE
COLUMBUS	ST. CLAIR	1964	SALINA-NIAGARAN	2738	190	D	CLINTON	3232	6	6	0	6	-	0	240	SHUT IN FOR MARKET
COON CREEK	MACOMB	1963	NIAGARAN	3034	20	D	NIAGARAN	3093	2	0	0	2	-	0	80	SHUT IN FOR MARKET
COTTRELLVILLE	ST. CLAIR	1959	SALINA-NIAGARAN	2293	37	D	CLINTON	2511	2	0	0	2				REFER TO OIL WELL GAS PRODUCTION
CRYSTAL VALLEY	OCEANA	1946	DUNDEE	2400	7	L	TRENTON-BLACK RIVER	5985	4	0	0	1	0	-	160	SHUT IN
		1961	SALINA	4102	10	D			1	0	0	1	0	162,079	40	SHUT IN
DEEP RIVER	ARENAC	1936	BEREA	1490	10	S	SYLVANIA	4311	12	0	0	3	-	1,609,812	1,520	DOMESTIC USE
DORR	ALLEGAN	1957	DETROIT RIVER	1918	1	D	NIAGARAN	3319	1	0	0	1	4,710	4,710	160	
DORR, SEC. 17	ALLEGAN	1951	"BEREA"	953	8	D	TRAVERSE	1642	1	0	0	1	-	0	40	DOMESTIC USE
DORR, SEC. 21	ALLEGAN	1940	"BEREA"	957	1	D	TRAVERSE	1687	1	0	0	1	-	0	40	DOMESTIC USE
EDEN	MASON	1958	TRAVERSE	1960	7	L	CAMBRIAN	7249	1	0	0	1	-	0	160	SHUT IN
EDENVILLE, SEC. 5	MIDLAND	1957	SAGINAW FM.	382	12	S	DUNDEE	4028	3	0	0	2	-	0	160	SHUT IN FOR MARKET
EGELSTON	MUSKEGON	1951	"BEREA"	1120	5	D	DUNDEE	2282	7	0	0	1	8,617	284,869	1,120	
ENSLEY	NEWAYGO	1958	MARSHALL	826	5	S	DETROIT RIVER	3018	8	0	0	8	50,612	905,663	1,280	6 WELLS SHUT IN
ENTERPRISE, SEC. 32	MISSAUKEE	1953	MICHIGAN STRAY	1986	5	S	DETROIT RIVER	4200	2	0	0	2	0	0	320	DOMESTIC USE
FALMOUTH	MISSAUKEE	1962	MICHIGAN STRAY	1279	3	S	REED CITY	4035	8	0	0	8	274,544	336,986	1,280	3 WELLS SHUT IN
FERRY, SEC. 25	OCEANA	1961	"BEREA"	1310	5	D	TRAVERSE	2120	1	0	0	1	0	0	40	DOMESTIC USE
FILLMORE	ALLEGAN-OTTAWA	1959	SALINA A-2 CARB.	2632	16	D	NIAGARAN	3045							1,500	
		1959	SALINA A-1 CARB.	2792	16	D			11	0	0	11	290,917	541,197	1,600	PRODUCTION COMINGLED
FORK, NORTH	OSCEOLA	1956	MICHIGAN STRAY	1433	19	S	REED CITY	3823	1	0	0	1	-	60,178	160	DOMESTIC USE
FORK, WEST	MECOSTA	1943	MICHIGAN STRAY	1490	5	S	SYLVANIA	5198	17	0	0	2	7,826	2,386,070	2,880	1 WELL DOMESTIC USE
FORWARD	MISSAUKEE	1961	MICHIGAN STRAY	1393	7	S	DETROIT RIVER	5225	6	0	0	6	139,691	168,349	960	
FOWLERVILLE	LIVINGSTON	1961	SALINA-NIAGARAN	3880	45	D	PRAIRIE DU CHIEN	5685	2	0	0	2	-	0	320	SHUT IN
FREMONT, SEC. 32	ISABELLA	1958	MICHIGAN STRAY	1264	6	S	DUNDEE	3619	1	0	0	1	0	15,532	160	SHUT IN

TABLE 8.— MICHIGAN GAS FIELDS - 1964, Continued (Sheet 2 of 3)

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE DEPTH IN FEET	PAY ZONE THICKNESS AND LITHOLOGY		DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF GAS WELLS TO END	COMP. IN	ABAND. IN	PROD. AT END	GAS PRODUCTION IN MCF PRODUCED IN	CUMULATIVE THROUGH	DRILLED ACRES	REMARKS
HEADQUARTERS	ROSCOMMON	1945	MICHIGAN STRAY	1340	6	S	SYLVANIA	5929	12	0	0	2	338	1,725,892	1,760	1 WELL SHUT IN
HEATH, SEC. 21	ALLEGAN	1960	SALINA	2492	19	D	SALINA	2789	1	0	0	1	4,786	63,430	160	
HILLIARDS	ALLEGAN	1958	SALINA A-1 CARB.	2938	30	D	NIAGARAN	3157	6	0	0	6	228,932	1,730,767	960	3 WELLS SHUT IN
ITHACA	GRATIOT	1943	MICHIGAN STRAY	900	16	S	DUNDEE	3419	5	0	0	1	0	1,520,995	800	SHUT IN
LENOX	MACOMB	1960	SALINA-NIAGARAN	2734	46	D	CLINTON	3018	8	0	0	8	366,012	2,160,361	300	2 WELLS SHUT IN
LEONARD	OAKLAND	1963	NIAGARAN	4245	21	D	CLINTON	4450	1	0	0	1	-	0	40	SHUT IN
LOGAN	MASON	1941	RICHFIELD	3260	5	S	RICHFIELD	3330	2	0	0	2	13,289	13,289	80	
LOGAN	OGEMAW	1944	BEREA	1420	6	S	RICHFIELD	4537	15	2	1	13	0	0	2,080	SHUT IN FOR MARKET
			WEIR Ss.	1230	11	S										
LYNDON	WASHTENAW	1958	TRAVERSE	1311	6	D	TRENTON	4702							960	
		1959	DETROIT RIVER	1733	11	D			6	1	0	6	48,647	64,243		
MAPLE VALLEY, SEC. 16	MONTCALM	1958	MICHIGAN STRAY	1120	5	S	REED CITY	3365	1	0	0	1	-	0	160	DOMESTIC USE
McKAY	CLARE	1929	MICHIGAN STRAY	1400	3	S	DETROIT RIVER	4055	9	0	0	2	-	712,626	360	DOMESTIC USE
MARINE CITY, SOUTH	ST. CLAIR	1962	SALINA A-1 CARB.	2100	4	O	NIAGARAN	2251								COMBINED WITH OIL FIELD DATA - REFER TO OIL WELL GAS PRODUCTION
MARTINY	MECOSTA	1934	MICHIGAN STRAY	1370	2	S	DETROIT RIVER	3807	5	0	0	4	56,681	1,051,888	680	
MIDDLE BRANCH	OSCEOLA	1964	MICHIGAN STRAY	1630	10	S	DETROIT RIVER	4283	4	4	0	4	-	0	640	SHUT IN FOR MARKET
MONTAGUE	MUSKEGON	1953	SALINA-NIAGARAN	37347	80	D	TRENTON	4517	3	0	0	2	-	41,482	480	SHUT IN
MORTON	MECOSTA	1946	MICHIGAN STRAY	1279	2	S	DUNDEE	3691	2	0	0	1	-	118,377	320	DOMESTIC USE
MUSKEGON	MUSKEGON	1927	TRAVERSE-DUNDEE-DETROIT RIVER	1640 2025	6	L	ST. PETER	4754	-	0	0	2	-	7,237,438	1,520	DOMESTIC USE & LEASE FUEL
NEWARK	GRATIOT	1948	MICHIGAN STRAY	979	5	S	DUNDEE	3255	6	0	0	4	0	441,757	960	SHUT IN
NORTH MORENCI	LENAWEE	1962	TRAVERSE	638	2	D	PRAIRIE DU CHIEN	3284	49	2	0	49	-	0	2,000	SHUT IN FOR MARKET
NORTH STAR	GRATIOT	1940	MICHIGAN STRAY	870	7	S	DUNDEE	3100	1	0	0	1	7,551	542,176	40	
NORTHVILLE	WAYNE-WASHTENAW	1937	SALINA-NIAGARAN	2905	2	D	CAMBRO-ORDOVICIAN	5850	8	0	0	7	75,015	3,407,722	1,200	5 WELLS SHUT IN
		1954	TRENTON	4395	70	D			25	0	0	25	478,786	11,925,905	2,320	17 WELLS SHUT IN - PREPARING TO CONVERT TO STORAGE
OTSEGO	OTSEGO	1940	ANTRIM	1385	4	SH	DUNDEE	3944	7	0	0	4	26,673	313,462	680	
PARIS	MECOSTA	1949	DUNDEE													REFER TO ABANDONED FIELDS
		1951	MICHIGAN STRAY	1217	5	S	REED CITY	3545	2	0	0	1	973	346,163	160	
PARTELLO	CALHOUN	1959	SALINA A-1 CARB.	3192	30	D	TRENTON-BLACK RIVER	4905	2	0	0	2			160	SHUT IN FOR MARKET
PETERS	ST. CLAIR	1955	SALINA-NIAGARAN	2386	47	D	CLINTON	2842								COMBINED WITH OIL FIELD DATA - REFER TO OIL WELL GAS PRODUCTION
PINE, SECS. 9 & 17	MONTCALM	1951	MICHIGAN STRAY	1251	1	S	DUNDEE	3469	2	0	0	2	0	37,272	80	DOMESTIC USE
PIONEER	MISSAUKEE	1931	TRAVERSE	3025	5	L	DUNDEE	3583	1	0	0	1	-	0	40	SHUT IN
PROSPER	MISSAUKEE	1948	MICHIGAN STRAY	1269	6	S	RICHFIELD	5254	3	0	0	2	-	152,882	480	USED FOR LEASE FUEL
PULLMAN, EAST	ALLEGAN	1961	SALINA A-2 CARB.	1645	7	D	TRENTON	3020	3	0	0	3	-	0	480	SHUT IN FOR MARKET
PUTTYGUT	ST. CLAIR	1960	SALINA-NIAGARAN	2423	60	D	NIAGARAN	2774	11	0	0	11	1,811,035	7,136,975	440	2 WELLS SHUT IN
RAVENNA	MUSKEGON	1936	"BEREA"	1205	10	D	DUNDEE	2306	30	0	0	4	-	1,432,593	4,480	DOMESTIC USE
RAVENNA, SEC. 27	MUSKEGON	1953	"BEREA"	1182	6	D	DUNDEE	2500	3	0	0	2	-	32,243	480	DOMESTIC USE
RAY	MACOMB	1961	SALINA-NIAGARAN	2945	101	D	NIAGARAN	3273	20	9	0	20	4,936,317	5,766,151	640	3 WELLS SHUT IN
REDDING	CLARE	1940	MICHIGAN STRAY	1475	3	S	SYLVANIA	5462	-	0	0	5	-	32,692	160	USED FOR LEASE FUEL
REEDER	MISSAUKEE	1964	MICHIGAN STRAY	1385	4	S	DUNDEE	4002	3	3	0	3	-	0	320	SHUT IN FOR MARKET
RICHLAND, SEC. 27	MONTCALM	1963	MICHIGAN STRAY	1247	1	S	DUNDEE	3530	1	0	1	0		0	160	ABANDONED 1964
ROMULUS	WAYNE	1955	SALINA A-1 CARB.	1980	20	D	NIAGARAN	2259	2	0	0	1		45,043	320	SHUT IN
SALEM	ALLEGAN	1937	SALINA A-2 CARB.	2725	2	D	TRENTON	4347								REFER TO DEVELOPED GAS STORAGE RESERVOIRS
		1958	DETROIT RIVER	1969	6	D			3	0	0	3	7,724	44,273	320	

[redacted]

TABLE 8.— MICHIGAN GAS FIELDS - 1964, Continued (Sheet 3 of 3)

SEARS	OSCEOLA	1964	MICHIGAN STRAY	1492	12	S	DUNDEE	3988	1	1	0	1	-	0	160	SHUT IN FOR MARKET
SHERIDAN	MECOSTA	1935	MICHIGAN STRAY	1375	2	S	DUNDEE	3904	5	0	0	1	-	271,374	480	DOMESTIC USE
SURREY	CLARE	1945	MICHIGAN STRAY	1460	3	S	DUNDEE	4000	-	1	0	2	-	12,667	320	DOMESTIC USE
TAYMOUTH	SAGINAW	1957	TRAVERSE	2085	6	L	TRAVERSE	2135	1	0	0	1	-	0	160	DOMESTIC USE
TURK LAKE	MONTCALM	1947	MICHIGAN STRAY	1081	4	S	DETROIT RIVER	3413	4	0	0	2		217,584	640	DOMESTIC USE
WALKER	KENT-OTTAWA	1939	"BEREA"	1150	8	D	ST. PETER	5222							220	
		1940	DETROIT RIVER	2250	2	D									160	
		1958	TRAVERSE						14	0	0	9	20,054	1,177,383	40	7 WELLS DOMESTIC USE & LEASE FUEL
WHEATLAND	MECOSTA	1947	MICHIGAN STRAY	1399	3	S	DUNDEE	3740	4	0	0	3	11,278	494,392	160	
WISE	ISABELLA	1940	MICHIGAN STRAY	1250	5	S	SYLVANIA	5205	-	0	1	5	3,995	1,697,594	1,280	4 WELLS DOMESTIC USE & LEASE FUEL
YANKEE	ST. CLAIR	1963	NIAGARAN	2620	20	D	CLINTON	2829	2	0	0	2	-	0	80	SHUT IN FOR MARKET
ZEELAND	OTTAWA	1946	"BEREA"	945	9	D	NIAGARAN	3388	7	0	0	2	-	0	280	DOMESTIC USE
										48+1 INC	7	404	14,926,572	87,062,022		

83 PRODUCIBLE FIELDS AT END OF 1964
32 FIELDS PRODUCING COMMERCIALLY

INCOMPLETE

14,926,572 MCF GAS PRODUCTION 1964

TOTAL OF 404 WELLS INCLUDE 134 SHUT IN FOR MARKET
71 DOMESTIC USE AND LEASE FUEL, 63 NONCOMMERCIAL,
AND 136 PRODUCING

CUMULATIVE GAS FROM ACTIVE FIELDS 87,062,022
CUMULATIVE GAS FROM ABANDONED FIELDS. 7,342,965
CUMULATIVE GAS FROM DEVELOPED GAS STORAGE RESERVOIRS. . 206,030,609
CUMULATIVE GAS FROM UNDEVELOPED GAS STORAGE RESERVOIRS. 34,242,651
CUMULATIVE GAS FROM OIL WELL GAS. 142,371,960
UNASSIGNED GAS FROM EARLY RECORDS 3,050,143
CUMULATIVE TOTAL. . . . . 480,100,350 MCF

GAS PRODUCED IN 1964
ACTIVE GAS FIELDS. 14,926,572
DEVELOPED GAS STORAGE RESERVOIRS . . 708,482
UNDEVELOPED GAS STORAGE RESERVOIRS . 6,227
OIL WELL GAS 16,974,405
TOTAL GAS PRODUCTION IN 1964 . . . . 32,615,686 MCF

TABLE 9.— DEVELOPED GAS STORAGE RESERVOIRS

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE DEPTH IN FEET	PAY ZONE THICKNESS AND LITHOLOGY		DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF GAS WELLS TO END 1964	NUMBER OF GAS WELLS COMP. IN 1964	NUMBER OF GAS WELLS ABAND. IN 1964	NUMBER OF GAS WELLS PROD. AT END 1964	GAS PRODUCTION IN MCF PRODUCED IN 1964	GAS PRODUCTION IN MCF CUMULATIVE THROUGH 1964	DRILLED ACRES	REMARKS
AUSTIN	MECOSTA	1933	MICHIGAN STRAY	1380	14	S	DETROIT RIVER	4043		15+1 RW	12	86		6,109,033	3,970	
CRANBERRY LAKE	CLARE-MISSAUKEE	1943	MICHIGAN STRAY	1321	10	S	RICHFIELD	5201		2+2 RW	0	170		7,537,451	7,000	
CROTON	NEWAYGO	1951	MARSHALL	917	4	S	SALINA	3993		0	0	7		1,320,835	860	
FREEMAN-LINCOLN	CLARE	1938	MICHIGAN STRAY	1500	10	S	DETROIT RIVER	3957		2	2	80		18,099,490	6,600	
GOODWELL	NEWAYGO	1943	MICHIGAN STRAY	1142	20	S	DETROIT RIVER	3562		1	1	62		5,875,670	3,020	
HAMILTON, NORTH	CLARE	1952	MICHIGAN STRAY-MARSHALL	1487	8	S	RICHFIELD	5395		0	0	33		5,450,065	3,040	
HOWELL	LIVINGSTON	1935	SALINA	3920	9	D	ST. PETER Ss.	5958		0	0	29		23,678,120	2,400	
IRA	ST. CLAIR	1953	SALINA-NIAGARAN	2276	33	D	CLINTON	2632		1+1 RW	0	9	708,482	3,498,666	680	1964 PRODUCTION IS ORIGINAL CUSHION GAS
MARION (WINTERFIELD)	CLARE-OSCEOLA	1940	MICHIGAN STRAY	1344	15	S	SYLVANIA	5100		3	0	272		20,084,934	10,720	
ORIENT	OSCEOLA	1945	MICHIGAN STRAY	1508	11	S	SYLVANIA	5307		0	0	47		5,350,856	2,600	
OVERISEL	ALLEGAN	1956	SALINA	2650	12	D	TRENTON	4060		0	0	187		14,645,048	6,660	
REED CITY	OSCEOLA-LAKE	1940	MICHIGAN STRAY	1217	13	S	ST. PETER Ss.	8960		0	0	80		7,642,246	4,880	
RIVERSIDE	MISSAUKEE	1940	MICHIGAN STRAY	1435	7	S	DUNDEE	3953		6	0	95		5,188,481	3,680	
SALEM	ALLEGAN	1937	SALINA	2725	2	D	TRENTON	3792		10	0	83		11,310,698	4,960	
SHAVER (SUMNER-NEW HAVEN)	GRATIOT-MONTCALM	1935	MICHIGAN STRAY	1020	11	S	DUNDEE	3536		0	0	49		11,114,906	3,920	
SIX LAKES	MECOSTA-MONTCALM	1934	MICHIGAN STRAY	1270	25	S	DETROIT RIVER	3790		68	12	292		51,604,719	11,480	
WINFIELD	MONTCALM	1935	MICHIGAN STRAY	1125	8	S	DETROIT RIVER	3405		0	0	10		4,836,132	3,240	CONVERTED TO ACTIVE STORAGE IN 1964
WOODVILLE (NORWICH)	NEWAYGO	1943	MICHIGAN STRAY	1185	13	S	DETROIT RIVER	3405		0	0	41		2,683,259	2,240	
										108+ 4 RW	27	1,632	708,482	206,030,609		

18 GAS STORAGE RESERVOIRS

INCLUDES OBSERVATION WELLS

206,030,069 MCF CUMULATIVE PRODUCTION FROM FIELDS PRIOR TO CONVERSION TO GAS STORAGE

TABLE 10.— UNDEVELOPED GAS STORAGE RESERVOIRS

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE DEPTH IN FEET	PAY ZONE THICKNESS AND LITHOLOGY		DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF GAS WELLS TO END 1964	NUMBER OF GAS WELLS COMP. IN 1964	NUMBER OF GAS WELLS ABAND. IN 1964	NUMBER OF GAS WELLS PROD. AT END 1964	GAS PRODUCTION IN MCF PRODUCED IN 1964	GAS PRODUCTION IN MCF CUMULATIVE THROUGH 1964	DRILLED ACRES	REMARKS
BROOMFIELD-DEERFIELD	ISABELLA	1930	MICHIGAN STRAY	1355	5	S	SYLVANIA	4994				21	49	13,068,861	8,080	
COLDWATER	ISABELLA	1945	MICHIGAN STRAY	1390	10	S	SYLVANIA	5090				12	0	7,352,605	2,400	
EDMORE-RICHLAND	MONTCALM	1936	MICHIGAN STRAY	1300	8	S	DUNDEE	3700				13	6,178	8,925,463	6,800	
EVART	OSCEOLA	1941	MICHIGAN STRAY	1410	7	S	DETROIT RIVER	4457				12	0	4,895,722	5,120	
NORTHVILLE	WAYNE-WASHTENAW	1954	TRENTON	4395	70	D	CAMBRO-ORDOVICIAN	5850		13						REFER TO ACTIVE GAS FIELDS - PREPARING FOR GAS STORAGE IN 1965
REED CITY	OSCEOLA	1941	REED CITY	3585	7	D	ST. PETER	8917								REFER TO ACTIVE OIL FIELDS - GAS INJECTED IN 1964
										13			6,227	34,242,651		

6 UNDEVELOPED GAS STORAGE RESERVOIRS

FACILITY WELLS

INCOMPLETE

34,242,651 MCF CUMULATIVE PRODUCTION FROM UNDEVELOPED GAS STORAGE RESERVOIRS

TABLE 11 - - PRIMARY SUPPLY LOCATIONS AND STORAGE FACILITIES FOR LIQUEFIED PETROLEUM GAS

Company	Plant Location: County	Plant Location: Locality	Type of Facility	Facility Capacity Gallons of LPG
Bay Refining Company	Bay	Bay City	Refinery Storage	--
Leonard Refineries, Inc.	Gratiot	Alma	Refinery Storage	120,000
Marathon Oil Company	Hillsdale	Mosherville	Natural Gas Processing Plant	300,000
Cities Service Oil Company	Kent	Lowell	Underground Storage	25,000,000
Skelly Oil Company	Kent	Alto	Underground Storage	13,000,000
Consumers Power Company	Macomb	New Baltimore	Natural Gas Processing Plant	150,000
Marathon Oil Company	Muskegon	Muskegon	Refinery Storage	90,000
Naph-Sol Refining Company	Muskegon	Muskegon	Refinery Storage	0
Michigan Consolidated Gas Company	St. Clair	St. Clair	Natural Gas Processing Plant	450,000
Michigan Consolidated Gas Company	Washtenaw	Ypsilanti	Natural Gas Processing Plant	450,000
Mobil Oil Company	Wayne	Trenton	Underground Storage	3,000,000
Sun Oil Company	Wayne	Wayne	Underground Storage	11,000,000
Marathon Oil Company	Wayne	Wayne	Underground Storage	7,500,000
Phillips Petroleum Company	Wayne	Wyandotte	Underground Storage	8,000,000

TOTAL PRIMARY STORAGE BY COUNTY, GALLONS LPG	
Gratiot	120,000
Hillsdale	300,000
Kent	38,000,000
Macomb	150,000
Muskegon	90,000
St. Clair	450,000
Washtenaw	450,000
Wayne	29,500,000
Combined Primary Storage	69,060,000

TOTAL PRIMARY STORAGE, GALLONS LPG	
Refinery Storage	210,000
Gas Plant Storage	1,350,000
Underground Storage	67,500,000
Combined Primary Storage	69,060,000

LPG underground storage reservoirs are in man-made caverns dissolved from Salina Group (Silurian) salt beds. The depth to storage reservoir salt beds varies with locality within the state.

TABLE 12.— OIL WELL GAS - 1964 (Sheet 1 of 2)

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE DEPTH IN FEET	PAY ZONE THICKNESS AND LITHOLOGY	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET	NUMBER OF GAS WELLS TO END	COMP. IN	ABAND. IN	PROD. AT END	GAS PRODUCTION IN MCF PRODUCED IN 1964	CUMULATIVE THROUGH 1964	DRILLED ACRES	REMARKS
ADAIR	ST. CLAIR	1961	SALINA-NIAGARAN									75,860	374,193		
ALBION-SCIPIO TREND	CALHOUN-JACKSON-HILLSDALE	1957	TRENTON-BLK. RIVER									9,857,394	39,948,659		
BEAVER CREEK	CRAWFORD-KALKASKA	1947	RICHFIELD									439,738	14,745,466		
BOYD	ST. CLAIR	1952	SALINA-NIAGARAN									1,330,037	6,494,808		
BUCKEYE	GLADWIN	1939	DUNDEE									-	9,834		
CHESTERFIELD	MACOMB	1959	NIAGARAN									-	124,698		
COLDWATER	ISABELLA	1944	DUNDEE									-	6,311,307		
COTTRELLVILLE	ST. CLAIR	1959	SALINA									305,892	849,313		
DORR	ALLEGAN	1956	SALINA									71,752	862,320		
EAST NORWICH	MISSAUKEE-ROSCOMMON	1942	RICHFIELD									638,651	3,680,315		
EDEN	MASON	1948	DUNDEE									-	275,801		
EDMORE	MONTCALM	1958	TRAVERSE									82,404	1,057,235		
ENTERPRISE	MISSAUKEE	1943	RICHFIELD									107,773	413,729		
ESSEXVILLE	BAY	1944	DUNDEE									-	3,267		
FORK, WEST	MECOSTA	1945	RICHFIELD									7,202	842,127		
HAMILTON, NORTH	CLARE	1952	RICHFIELD									192,886	2,458,862		
HANOVER	JACKSON	1959	TRENTON-BLK. RIVER									-	189,548		
HEADQUARTERS	CLARE-ROSCOMMON	1942	DETROIT RIVER									32,550	2,178,599		
ISABELLA	ISABELLA	1948	DUNDEE									-	138,559		
KAWKAWLIN	BAY	1938	DUNDEE									-	4,590		
KIMBALL LAKE	NEWAYGO	1947	TRAVERSE									-	2,123,116		
MARINE CITY	ST. CLAIR	1955	SALINA-NIAGARAN									466,471	1,466,600		
MARINE CITY, SOUTH	ST. CLAIR	1962	SALINA									23,668	23,668		
MT. PLEASANT	MIDLAND-ISABELLA	1928	DUNDEE									8,027	7,796,389		

TABLE 12.— OIL WELL GAS - 1964, Continued (Sheet 2 of 2)

PENTWATER	MASON-OCEANA	1948	TRAVERSE-DUNDEE									-	1,010,713		
PETERS	ST. CLAIR	1955	SALINA-NIAGARAN									1,544,944	5,873,055		
PORTER	MIDLAND	1933	DUNDEE									-	4,992,995		
REDDING	CLARE	1938	DUNDEE									-	1,956,056		
REED CITY	OSCEOLA	1940	TRAVERSE									2,912	386,600		
			DUNDEE									-	16,257,876		
			DETROIT RIVER									202,341	2,866,873		
REED CITY, EAST	OSCEOLA	1947	TRAVERSE									-	18,569		
REYNOLDS	MONTCALM	1954	DUNDEE									-	408,555		
ROSE CITY	OGEMAW	1942	RICHFIELD									634,881	5,180,618		
SHERMAN	ISABELLA	1936	DUNDEE									-	641,217		
ST. HELEN	ROSCOMMON	1941	RICHFIELD									938,504	6,617,934		
UNION	ISABELLA	1950	TRAVERSE									-	55,354		
WALKER	KENT-OTTAWA	1938	TRAVERSE									-	3,678,731		
WEST BRANCH	OGEMAW	1933	DUNDEE-DETROIT RIVER									10,518	53,811		
												16,974,405	142,371,960		

21 Fields producing oil well gas.

Cumulative oil well gas production through 1964 . . . . . 142,371,960 MCF

Oil well gas (casinghead gas) accounted for over 50 percent of Michigan's annual gas production. The gathering and processing of gas produced incidental to oil production is good conservation practice. LPG production from casinghead gas is shown on Table 13, next page.

Oil well gas production in 1964. . 16,974,405 MCF
Active gas field production. . . . 14,926,572 MCF
Developed gas storage reservoirs . 708,482 MCF
Undeveloped gas storage reservoirs 6,227 MCF
Total gas production in 1964 . . . 32,615,686 MCF

TABLE 13 -- CASINGHEAD GAS PLANT OPERATIONS BY PLANT OR FIELD - 1964

Plant or Field	Input Totals	Plant Fuel	Lease Fuel	Recycled Gas Lift	Storage and Repressuring	Line Loss and Shrinkage	Vented	Extraction Loss	Market Sales	LPG Recovery (Gallons)
Albion-Scipio	10,138,351	954,260	0	0	0	0	0	1,028,058	8,156,033	30,851,432
Beaver Creek	626,971	51,144	94,325	0	0	0	0	66,052	415,450	447,438
Belle River Mills	5,298,808	96,007	0	0	0	0	0	237,408	4,965,393	7,021,308
Belle River Mills processes dry gas.										
Boyd	12,372,518	194,227	0	0	3,743,036	46,103	0	453,777	7,935,375	14,269,454
Gas deliveries to the Boyd plant consist of approximately 30% casinghead and 70% dry.										
Enterprise	156,805	16,488	28,823	0	0	3,721	0	0	107,773	0
Hamilton	279,123	12,145	49,748	0	0	0	0	24,344	192,886	604,443
Headquarters	55,798	5,760	2,900	0	0	0	2,900	-	44,238	3,024
Mt. Pleasant	8,547	444	0	0	0	0	0	72	8,031	26,756
Norwich, East	778,589	50,314	80,641	0	0	5,646	0	3,706	638,282	92,599
Rose City	634,883	8,520	12,209	0	0	0	0	0	614,154	0
St. Helen	997,836	46,514	59,332	0	0	31,377	0	12,387	848,226	309,634
Willow Run	88,334,919	388,351	0	0	0	0	0	409,252	87,537,316	12,561,089
Willow Run extracts residual liquids from gas delivered via interstate pipeline.										
Totals	119,683,148	1,824,174	327,978	0	3,743,036	86,847	2,900	2,235,056	111,463,157	66,187,177

TABLE 14 -- CASINGHEAD GAS PLANT OPERATIONS BY MONTH - 1964

Month	Input Totals	Plant Fuel	Lease Fuel	Recycled Gas Lift	Storage and Repressuring	Line Loss and Shrinkage	Vented	Extraction Loss	Market Sales	LPG Recovery (Gallons)
January	7,325,289	155,920	33,236	0	0	2,126	0	217,954	6,916,053	6,430,112
February	14,346,349	178,502	29,027	0	0	3,741	0	227,687	13,907,392	6,828,028
March	8,543,874	142,376	30,910	0	0	7,902	0	156,025	8,206,661	4,658,714
April	6,654,547	133,242	27,693	0	315,192	745	0	146,352	6,031,323	4,212,872
May	6,075,784	133,042	26,596	0	767,394	2,825	0	153,554	4,992,373	4,446,233
June	7,590,880	140,715	24,680	0	671,478	7,916	0	159,959	6,586,132	4,634,931
July	2,209,276	120,186	23,678	0	662,273	2,750	0	144,913	1,255,476	4,221,774
August	6,462,004	142,410	24,969	0	661,470	28,281	0	152,718	5,452,156	4,510,602
September	8,389,400	140,361	23,439	0	395,729	5,635	0	154,668	7,669,568	4,662,602
October	16,207,613	173,708	25,825	0	269,500	11,879	0	218,655	15,508,046	6,535,344
November	16,958,738	179,356	27,248	0	0	821	1,500	228,173	16,521,640	6,799,320
December	18,919,394	184,356	30,677	0	0	12,226	1,400	274,398	18,416,337	8,246,645
Totals	119,683,148	1,824,174	327,978	0	3,743,036	86,847	2,900	2,235,056	111,463,157	66,187,177

TABLE 15.— MISCELLANEOUS AND ABANDONED GAS FIELDS

FIELD NAME	COUNTY	YEAR OF DISC.	PRODUCING FORMATION OR POOL	PAY ZONE DEPTH IN FEET	PAY ZONE THICKNESS	PAY ZONE LITHOLOGY	DEEPEST FORMATION OR POOL TESTED	DEPTH IN FEET 1964	NUMBER OF GAS WELLS TO END 1964	NUMBER OF GAS WELLS COMP. IN 1964	NUMBER OF GAS WELLS ABAND. IN 1964	NUMBER OF GAS WELLS PROD. AT END 1964	GAS PRODUCTION IN MCF YEAR OF ABANDONMENT	GAS PRODUCTION IN MCF CUMULATIVE PRODUCTION	DRILLED ACRES	REMARKS
ADAMS, NORTH	ARENAC	1942	BEREA	1605	1	S	DUNDEE	3101	1				1948	1,280	40	
ALBION	CALHOUN	1941	TRAVERSE	1610	7	L	ST. PETER Ss.	4510	4				1948	6,114	120	
ALGONAC	ST. CLAIR	1947	ANTRIM	302	6	SH	CABOT HEAD	2504	2				1951	7,830	80	
BIG PRAIRIE	NEWAYGO	1944	MICHIGAN STRAY	1030	5	S	REED CITY	3322	1				1961	152,864	160	
BIG PRAIRIE, SEC. 33	NEWAYGO	1947	DUNDEE	2896	2	L	DUNDEE	2900	1				1952	62,324	40	
CANNON CREEK	MISSAUKEE-KALKASKA	1950	TRAVERSE	2695	11	L	RICHFIELD	4810	21				1956	851,369	3,360	
CEDAR CREEK	MUSKEGON	1940	"BEREA"	1125	7	D	DUNDEE	2252	7				1960	624,528	1,120	
COOPERSVILLE	OTTAWA	1939	"BEREA"	1240	5	D	TRAVERSE	1900	3				1959	108,839	240	
DAY	MONTCALM	1934	MICHIGAN STRAY	1352	4	S	MARSHALL	1395	2				1944	8,494	80	
DIAMOND CRYSTAL SALT	ST. CLAIR	1927	NIAGARAN	2483	17	D	NIAGARAN	2500	1				1931	136,445	40	
DOUGLASS	MONTCALM	1943	MICHIGAN STRAY	1190	5	S	DUNDEE	3423	4				1951	184,806	640	
ELBA	GRATIOT	1928	MICHIGAN STRAY	670	10	S	DUNDEE	3700	10				1957	246,058	520	
FORK, EAST	MECOSTA	1942	MICHIGAN STRAY	1480	5	S	DUNDEE	3865	4				1946	102,708	640	
FREMONT	ISABELLA	1941	MICHIGAN STRAY	1235	5	S	DUNDEE	3556	5				1956	381,330	800	
GARFIELD	CLARE	1946	DETROIT RIVER	5013	8	S	SYLVANIA	5307	1				1948	535,811	40	
GILMORE	ISABELLA	1945	MICHIGAN STRAY	1560	3	S	DUNDEE	4091	6				1952	203,312	520	
GOODWELL, EAST	NEWAYGO	1945	MICHIGAN STRAY	1190	4	S	DETROIT RIVER	3498	2				1950	7,504	200	
GRANT	MASON	1929	GLACIAL DRIFT	632	1	S	DUNDEE	2385	3				1955	8,020	120	
GREEN	MECOSTA	1946	MICHIGAN STRAY	1250	3	S	REED CITY	3710	2				1951	73,368	320	
HAMILTON	CLARE	1940	MICHIGAN STRAY	1270	3	S	DUNDEE	3897	4				1954	275,606	440	
HAMLIN	MASON	1952	SALINA-NIAGARAN	3950	?	D	CAMBRIAN	6620	1				1962	0	160	
HARRISON	CLARE	1945	MICHIGAN STRAY	1675	3	S	SYLVANIA	5633	7				1962	600,635	760	
ISABELLA	ISABELLA	1949	MICHIGAN STRAY	1454	7	S	DETROIT RIVER	3993	6				1956	335,791	240	
KAWKAWLIN	BAY	1941	SALINA	7760	16	D	ST. PETER Ss.	10477	1				1946	No Record		
LEATON	ISABELLA	1935	MICHIGAN STRAY	1240	2	S	DUNDEE	3710	5				1940	185,609	400	
MANISTEE	MANISTEE	1959	SALINA	3616	94	D	NIAGARAN	4165	1				1961	0	160	
MECOSTA LAKE	MECOSTA	1953	MICHIGAN STRAY	1314	12	S	DUNDEE	3690	2				1956	84,071	320	
MINERAL SPRINGS	OSCEOLA	1952	MICHIGAN STRAY	1397	8	S	DETROIT RIVER	3963	4				1960	228,762	480	
NORTHVILLE	WAYNE-WASHTENAW	1948	DUNDEE	788	2	L	CAMBRO-ORDOVICIAN	5850	4				1961	0	640	
PARIS	MECOSTA	1949	DUNDEE	3404	5	L	REED CITY	3545	2				1959	268,667	560	
ST. CLAIR, SEC. 18	ST. CLAIR	1953	SALINA-NIAGARAN	3567	2	D	CINCINNATIAN	3240	1				1961	16,101	160	
SYLVAN	OSCEOLA	1941	MICHIGAN STRAY	1525	10	S	DETROIT RIVER	4034	1				1953	80,714	40	
VERNON	ISABELLA	1939	MICHIGAN STRAY	1300	2	S	DETROIT RIVER	3907	25				1956	1,464,249	920	
WOLF LAKE	MUSKEGON	1949	"BEREA"	1050	7	D	DETROIT RIVER	2250	2				1956	99,756	320	

34 ABANDONED GAS FIELDS

7,342,965 MCF CUMULATIVE GAS PRODUCTION FROM ABANDONED GAS FIELDS

PART 3, CUMULATIVE RECORDS
(EXPLANATION)

Part 3 contains cumulative statistics principally of oil and gas production, well completions, and oil field brine production and disposal from 1925 through the most recent year-end compilations.

OIL AND GAS PRODUCTION TABLES. Oil and gas production figures for individual years prior to 1955 can be found in issues of the "Summary of Operations", Oil and Gas Fields" for 1962, and prior years. The tables show the year of the first recorded production from a particular formation, and the yearly and cumulative production totals from 1925 through the most recent year-end compilations.

WELL COMPLETIONS AND PRODUCTION BY COUNTY. These tables show the classifications of completed wells on a county basis, and the cumulative amount of oil and gas produced in individual counties. Tables also indicate the total number of dry holes, oil wells, gas wells, etc., that have been drilled under an oil and gas drilling permit in an individual county.

DRILLING PERMITS, WELL COMPLETIONS, FIELDS DISCOVERED. These tables show the number of drilling permits issued by year from 1927 through the most recent year-end compilations. Classification of well completions by year, the number of new fields or pools discovered, and the number of producible oil or gas wells on a yearly basis, are all shown on the same table.

BRINE PRODUCTION AND DISPOSAL. Oil field brine production records prior to 1937 are incomplete. This table shows the reported amount of produced brine and the method of disposal from 1937 to present. Most oil field brine is now returned to subsurface formations. Small quantities are used for dust control or ice and snow removal on county roads in local areas. A small amount of brine is also disposed in burning pits. Brine production and disposal figures should not be considered entirely accurate.

SERVICE WELLS. Service wells as listed in this publication are those wells which were drilled to serve some purpose other than the initial production of oil or gas. Oil or gas wells are sometimes converted to salt water disposal, observation, or facility wells in gas storage or pressure maintenance projects. There are several types of service wells:

LPG Wells. These are wells drilled for underground storage of liquified petroleum gas. In Michigan, these storage reservoirs are in man-made cavities in salt beds. The cavities have been made by dissolving the salt with water and then pumping out the brine.

Gas Storage Wells. These are wells drilled in gas storage reservoirs. They are frequently referred to as facility wells, and are generally used to inject gas into, or extract gas from the reservoir. Certain facility wells may sometime in the history of the field be used as salt water disposal wells, or observation wells.

Observation Wells. Most observation wells are related to gas storage projects. They are used to observe underground movement of gas, brines, and other fluids, or to observe pressures.

Brine Disposal Wells. These wells, also called disposal wells, are used in the disposal of oil and gas field brines back into some suitable subsurface formation. Brine disposal well permits are issued for these wells.

Injection and Pressure Maintenance Wells. These are wells used in secondary recovery, or pressure maintenance projects. They may be new wells drilled specifically for injection or pressure maintenance, or they may be converted oil or gas wells; their status can change from time to time.

Oil or gas wells are sometimes converted to salt water disposal, observation, or facility wells in gas storage reservoirs, or water injection wells used in secondary recovery or pressure maintenance projects. The types of service wells listed under "Classification of Well Completions" does not include oil or gas wells converted to service wells.

TABLE 16 -- PERMITS, DISCOVERIES, WELL COMPLETIONS, WELLS AT END OF YEAR, 1964 AND PRIOR YEARS (Sheet 1 of 2)

Year	Permits Issued	Classification of Well Completions						Fields or Pools Discovered		Wells at End of Year				
		Oil Wells	Gas Wells	Service Wells OBS-GS	Service Wells LPG	Dry Holes	Total Completions	Oil	Gas	Oil Wells	Gas Wells	GS OBS	Inj.-* P.M.	LPG*
1925	0	3					3	1		Incomplete records from 1925				
1926	0	89				16	105		1	through 1930				
1927	16	218	3			46	267	1	1	*See Table 7 for Inj.-P.M. wells				
1928	283	79	30			49	158	1		*LPG injection and extraction wells				
1929	576	324	22			137	483			in LPG storage facilities.				
1930	257	154	19			158	331	2	3					
1931	111	59	17			52	128		1	634	64			
1932	184	109	10			64	183	1		645	72			
1933	429	223	10			85	318	3	1	831	70			
1934	444	272	47			150	469	3	2	977	117			
1935	700	319	101			221	641	1	5	1,167	212			
1936	777	333	206			268	807	6	5	1,360	402			
1937	973	622	66			267	955	6	1	1,778	442			
1938	996	580	27			411	1,018	17	2	2,141	448			
1939	1,465	845	56			578	1,479	8	2	2,684	485			
1940	1,121	557	59			565	1,181	8	13	2,928	510			
1941	1,044	441	97			413	951	7	8	3,158	577	13		
1942	570	297	74			311	682	14	4	3,324	631	13		
1943	627	233	47			355	635	12	8	3,386	639	13		
1944	741	246	64			400	710	10	2	3,433	651	13		

TABLE 16 -- PERMITS, DISCOVERIES, WELL COMPLETIONS, WELLS AT END OF YEAR, 1964 AND PRIOR YEARS Continued (Sheet 2 of 2)

Year	Permits Issued	Classification of Well Completions						Fields or Pools Discovered		Wells at End of Year				
		Oil Wells	Gas Wells	Service Wells OBS-GS	Service Wells LPG	Dry Holes	Total Completions	Oil	Gas	Oil Wells	Gas Wells	GS OBS	Inj.-* P.M.	LPG*
1945	755	271	57	6		467	801	11	11	3,536	663	19		
1946	822	223	53	86		461	823	19	10	3,520	547	226		
1947	886	318	43	148		387	896	10	4	3,532	534	409		
1948	918	371	32	77		437	917	10	5	3,554	502	482		
1949	999	439	22	73		473	1,007	21	2	3,818	471	554		
1950	901	336	28	47		473	884	18	4	3,954	471	610		
1951	744	227	20	43	1	466	757	16	6	3,911	417	673		1
1952	694	261	30	51	2	370	714	14	5	3,979	388	732		3
1953	824	258	18	110	1	360	747	11	6	4,089	313	901		4
1954	573	214	15	2	2	338	571	18		4,167	316	903		6
1955	484	204	13	1	1	291	510	12	2	4,223	321	904		7
1956	476	196	12	28		227	463	12	2	4,191	310	932		7
1957	461	176	40	35	3	207	461	12	5	4,233	335	977		10
1958	481	166	20	36	4	227	453	10	7	4,201	345	1,025		14
1959	727	257	47	72	4	272	652	8	7	4,327	323	1,094		18
1960	904	372	19	79	1	441	912	7	4	4,555	249	1,337	242	19
1961	849	207	57	74	3	476	817	13	10	4,619	292	1,420	260	22
1962	711	148	62	53	4	474	741	5	7	4,603	300	1,531	287	26
1963	704	135	72	57	2	384	650	7		4,598	367	1,601	287	28
1964	583	82	48	126**		376	632	6	4	4,588	404	1,632	288	
Totals	25,810	10,864	1,663	1,204	28	12,153	25,912	341*	160*					

*The figures for Fields or Pools Discovered for the period 1950 through 1963, were revised in 1964.
**Includes 3 BDW, 1 Water Injection Well, and 1 Geological Information Test. See Tables 2 and 3.

TABLE 17 -- OIL PRODUCTION BY FORMATIONS - 1964 AND PRIOR YEARS

These data include estimates for multiple pay wells and leases when an accurate breakdown was not available

Year	Marshall	Berea	Traverse	Dundee-Reed City	Detroit River	Salina-Niagaran	Trenton-Black River	Total Barrels Oil All Formations
	First Year of Recorded Oil Production by Formation							
	1938	1925	1927	1927	1939	1952	1935	
1925 Through 1929		876,559	873,777	4,017,451				5,767,787
1930 Through 1934		318,171	995,439	31,870,671				33,184,281
1935 Through 1939	7,411	310,313	13,814,816	72,339,293	14,000		43,565	86,521,987
1940 Through 1944	22,040	229,262	27,856,377	67,939,211	727,418		348,477	97,122,785
1945 Through 1949	17,283	166,687	16,914,771	62,438,443	4,302,309		106,510	83,946,003
1950 Through 1954	9,068	125,089	16,974,863	38,058,703	11,878,669	43,091	225,180	67,314,663
1955	1,662	26,193	2,048,256	5,959,338	3,101,121	11,258	118,004	11,265,832
1956	1,678	24,356	1,974,389	5,635,689	2,993,166	8,262	102,157	10,739,697
1957	1,830	19,926	1,805,959	5,342,961	2,811,865	24,082	161,979	10,168,602
1958	1,583	19,462	1,448,231	4,525,729	2,573,017	131,956	608,040	9,308,018
1959	1,430	20,702	1,511,950	4,155,217	2,238,621	392,527	2,118,161	10,438,608
1960	1,270	19,149	1,501,307	3,987,425	2,005,871	379,806	8,004,378	15,899,206
1961	1,268	16,945	1,380,081	3,539,682	1,748,644	916,157	11,298,171	18,900,948
1962	1,215	16,186	1,335,105	3,200,061	1,456,054	1,110,937	9,994,745	17,114,303
1963	1,223	15,899	1,329,268	2,583,882	1,580,589	1,067,729	9,393,157	15,971,747
1964	1,114	16,043	1,232,092	2,414,907	1,568,246	1,037,726	9,331,576	15,601,704

TABLE 18 -- CUMULATIVE OIL PRODUCTION BY FORMATIONS - 1964 AND PRIOR YEARS

These data include estimates for multiple-pay wells and leases when an accurate breakdown was not available

Year	Marshall	Berea	Traverse	Dundee-Reed City	Detroit River	Salina-Niagaran	Trenton-Black River	Total Barrels Oil All Formations
	First Year of Recorded Oil Production by Formation							
	1938	1925	1927	1927	1939	1952	1935	
1925 Through 1929		876,559	873,777	4,017,451				5,767,787
1930 Through 1934		1,194,730	1,869,216	35,888,122				38,952,068
1935 Through 1939	7,411	1,505,043	15,684,032	108,227,415	14,000		43,565	125,481,466
1940 Through 1944	29,451	1,734,305	43,540,409	176,166,626	741,418		392,042	222,604,251
1945 Through 1949	46,734	1,900,992	60,455,180	238,605,069	5,043,727		498,552	306,550,254
1950 Through 1954	55,802	2,026,081	77,430,043	276,663,772	16,922,396	43,091	723,732	373,864,917
1955	57,464	2,052,274	79,478,299	282,623,110	20,023,517	54,349	841,736	385,130,749
1956	59,142	2,076,630	81,452,688	288,258,799	23,016,683	62,611	943,893	395,870,446
1957	60,972	2,096,556	83,258,647	293,601,760	25,828,548	86,693	1,105,872	406,039,048
1958	62,555	2,116,018	84,706,878	298,127,489	28,401,565	218,649	1,713,912	415,347,066
1959	63,985	2,136,720	86,218,828	302,282,706	30,640,186	611,176	3,832,073	425,785,674
1960	65,255	2,155,869	87,720,135	306,270,131	32,646,057	990,982	11,836,451	441,687,880
1961	66,523	2,172,814	89,100,216	309,809,813	34,394,701	1,907,139	23,134,622	460,585,828
1962	67,738	2,189,000	90,435,321	313,009,874	35,850,755	3,018,076	33,129,367	477,700,131
1963	68,961	2,204,899	91,764,589	315,593,756	37,431,344	4,085,805	42,522,524	493,671,878
1964	70,075	2,220,942	92,996,681	318,008,663	38,999,590	5,123,531	51,854,100	509,273,582

TABLE 19 -- GAS PRODUCTION BY FORMATIONS - 1964 AND PRIOR YEARS

Year	Glacial Drift	Stray-Marshall	Berea	Antrim Shale	Traverse	Dundee-Reed City	Detroit River	Salina Niagaran	Trenton-Black River	Total MCF Gas All Formations
	First Year of Recorded Gas Production by Formation									
	1949	1931	1936	1947	1934	1929	1946	1929	1954	
1925 Through 1929						1,887,732		74,867		1,962,599
1930 Through 1934		3,001,963			3,744	6,034,206		61,578		9,101,491
1935 Through 1939		30,769,471	1,391,076		69,894	8,862,165		6,331		41,098,937
1940 Through 1944		70,498,989	5,860,831		3,716,132	7,647,510		79,983		87,803,445
1945 Through 1949	8,020	80,217,680	1,467,460	52,495	1,414,004	15,710,636	793,763	7,393,744		107,057,802
1950 Through 1954		18,033,449	916,202	55,626	1,913,497	5,361,578	6,997,257	11,316,082	10,725	44,604,416
1955		2,378,082	54,582	8,289	31,671	623,664	1,432,635	1,202,718	1,056,056	6,787,697
1956		1,913,078	39,493	11,084	13,376	540,718	1,525,523	2,713,634	2,084,027	8,840,933
1957		1,031,520	26,294	11,094	13,062	444,272	2,326,744	1,617,909	1,168,918	6,639,813
1958		837,548	19,684	11,307	73,297	335,147	3,604,884	4,863,216	1,219,295	10,964,378
1959		674,191	8,032	14,912	135,217	343,265	3,649,466	9,720,047	1,081,097	15,626,227
1960		855,169	8,800	37,258	164,509	504,474	3,979,849	9,877,820	3,812,289	19,240,168
1961		616,710	7,357	25,573	208,967	348,084	4,054,480	9,955,240	9,828,375	25,044,786
1962		451,113	6,620	23,768	206,613	117,606	4,148,707	11,926,493	10,885,208	27,766,128
1963		356,283	10,626	43,213	161,041	85,347	3,849,049	16,808,200	10,581,942	31,895,701
1964		595,549	8,617	26,673	135,226	61,553	3,220,249	18,231,639	10,336,180	32,615,686

TABLE 20 -- CUMULATIVE GAS PRODUCTION BY FORMATIONS - 1964 AND PRIOR YEARS

Year	Glacial Drift	Stray-Marshall	Berea	Antrim Shale	Traverse	Dundee-Reed City	Detroit River	Salina-Niagaran	Trenton-Black River	Cumulative MCF All Formations
	First Year of Recorded Gas Production by Formation									
	1949	1931	1936	1947	1934	1929	1946	1929	1954	
1925 Through 1929						1,887,732		74,867		1,962,599
1930 Through 1934		3,001,963			3,744	7,921,938		136,445		11,064,090
1935 Through 1939		33,771,434	1,391,076		73,638	16,784,103		142,776		52,163,027
1940 Through 1944		104,270,423	7,251,907		3,789,770	24,431,613		222,759		139,966,472
1945 Through 1949	8,020	184,488,103	8,719,367	52,495	5,203,774	40,142,249	793,763	7,616,503		247,024,274
1950 Through 1954	8,020	202,521,552	9,635,569	108,121	7,117,271	45,503,827	7,791,020	18,932,585	10,725	291,628,690
1955	8,020	204,899,634	9,690,151	116,410	7,148,942	46,127,491	9,223,655	20,135,303	1,066,781	298,416,387
1956	8,020	206,812,712	9,729,644	127,494	7,162,318	46,668,209	10,749,178	22,848,927	3,150,808	307,257,320
1957	8,020	207,844,232	9,755,938	138,588	7,175,380	47,112,481	13,075,922	24,466,846	4,319,726	313,897,133
1958	8,020	208,681,780	9,775,622	149,895	7,248,677	47,447,628	16,680,806	29,330,062	5,539,021	324,861,511
1959	8,020	209,355,971	9,783,654	164,807	7,383,894	47,790,893	20,330,272	39,050,109	6,620,118	340,487,738
1960	8,020	210,211,140	9,792,454	202,065	7,548,403	48,295,367	24,310,121	48,927,929	10,432,407	359,727,906
1961	8,020	210,827,850	9,799,811	227,638	7,757,370	48,643,451	28,364,601	58,883,169	20,260,782	384,772,692
1962	8,020	211,278,963	9,806,431	251,406	7,963,983	48,761,057	32,513,308	70,809,662	31,145,990	412,538,820
1963	8,020	211,635,246	9,817,057	294,619	8,125,024	48,846,404	36,362,357	87,617,862	41,727,932	444,434,521
1964	8,020	212,230,795	9,825,674	321,292	8,260,250	48,907,957	39,582,606	105,849,501	52,064,112	477,050,207

TABLE 21 -- CUMULATIVE WELL COMPLETIONS BY COUNTY THROUGH 1964 (Sheet 1 of 2)

County	Area of County (including inland water)		Classification of Completed Wells (does not include reworked wells)						Approximate Well Density (All Classes)	
	Square Miles	Acres	Oil Wells	Gas Wells	Service Wells GS - OBS - SWD - LPG		Dry Holes	Total Completions	Wells:	Sq. Miles
Alcona	694	444,160					19	19	1:37	Square Miles
Allegan	837	535,680	1,286	89	169		1,654	3,198	4:1	Square Mile
Alpena	590	377,600					10	10	1:59	Square Miles
Antrim	520	332,800		1			27	28	1:19	Square Miles
Arenac	369	236,160	406	44			389	839	2:1	Square Mile
Barry	571	365,440	74				125	199	1:3	Square Miles
Bay	451	288,640	458	1			209	668	1:1	Square Mile
Benzie	342	218,880					2	2	1:171	Square Miles
Berrien	584	373,760	9				69	78	1:8	Square Miles
Branch	517	330,880					38	38	1:14	Square Miles
Calhoun	716	458,240	192	10			190	392	1:2	Square Miles
Cass	505	323,200	30				121	151	1:3	Square Miles
Charlevoix	451	288,640					11	11	1:41	Square Miles
Cheboygan	798	510,720					15	15	1:53	Square Miles
Chippewa	1,651	1,056,640	Northern Peninsula County				4	4	1:413	Square Miles
Clare	577	369,280	381	171	369		353	1,274	2:1	Square Mile
Clinton	573	366,720	4				76	80	1:7	Square Miles
Crawford	566	362,240	79		1		21	101	1:6	Square Miles
Delta	1,202	769,280	Northern Peninsula County				1	1	1:120	Square Miles
Eaton	572	366,080					21	21	1:27	Square Miles
Emmet	477	305,280					3	3	1:159	Square Miles
Genesee	649	415,360	11				40	51	1:13	Square Miles
Gladwin	512	327,680	734				257	991	2:1	Square Mile
Grand Traverse	490	313,600					7	7	1:70	Square Miles
Gratiot	566	362,240	46	74	19		252	391	2:1	Square Mile
Hillsdale	604	386,560	223	1			349	573	1:1	Square Mile
Huron	824	527,360	5				74	79	1:10	Square Miles
Ingham	560	358,400					17	17	1:33	Square Miles
Ionia	578	369,920	9				74	83	1:7	Square Miles
Iosco	563	360,320					23	23	1:25	Square Miles
Isabella	573	366,720	649	159			457	1,265	2:1	Square Mile
Jackson	717	458,880	126	2			200	328	1:2	Square Miles
Kalamazoo	580	371,200	18				103	121	1:5	Square Miles
Kalkaska	573	366,720	22	7			43	72	1:8	Square Miles
Kent	868	555,520	460	6	1	8	334	809	1:1	Square Mile
Lake	577	369,280	18	1			106	125	1:5	Square Miles
Lapeer	662	423,680	12				57	69	1:10	Square Miles

TABLE 21 -- CUMULATIVE WELL COMPLETIONS BY COUNTY THROUGH 1964 Continued (Sheet 2 of 2)

Lapeer	662	423,680	12				57	69	1:10	Square Miles
Leelanau	374	239,360					9	9	1:42	Square Miles
Lenawee	760	486,400	3	49			86	138	1:6	Square Miles
Livingston	583	373,120		19	15		72	106	1:6	Square Miles
Luce	929	594,560	Northern Peninsula County				2	2	1:465	Square Miles
Mackinac	1,081	691,840	Northern Peninsula County				2	2	1:541	Square Miles
Macomb	481	307,840	3	34			149	186	1:3	Square Miles
Manistee	568	363,520		1			24	25	1:23	Square Miles
Mason	505	323,200	112	6			231	349	1:1	Square Mile
Mecosta	570	364,800	101	194	164		361	820	1:1	Square Mile
Midland	523	334,720	898	2		2	267	1,169	2:1	Square Mile
Missaukee	572	366,080	169	62	101		187	519	1:1	Square Mile
Monroe	564	360,960	45				110	155	1:4	Square Miles
Montcalm	720	460,800	375	221	164		543	1,303	2:1	Square Mile
Montmorency	567	362,880	3	1			17	21	1:27	Square Miles
Muskegon	519	332,160	430	119			348	897	2:1	Square Mile
Newaygo	867	554,880	195	46	69		340	650	1:1	Square Mile
Oakland	899	575,360	5	3			57	65	1:14	Square Miles
Oceana	541	346,240	326	7			451	784	1:1	Square Mile
Ogemaw	580	371,200	495	20			161	676	1:1	Square Mile
Osceola	585	374,400	332	113	109		320	874	1:1	Square Mile
Oscoda	568	363,520	2				10	12	1:47	Square Miles
Otsego	538	344,320	1	8			28	37	1:15	Square Miles
Ottawa	572	366,080	471	19	2		470	962	2:1	Square Mile
Presque Isle	678	433,920					6	6	1:113	Square Miles
Roscommon	573	366,720	180	14			100	294	1:2	Square Miles
Saginaw	814	520,960	378	2			170	550	1:1	Square Mile
Sanilac	961	615,040					48	48	1:20	Square Miles
Schoolcraft	1,229	786,560	Northern Peninsula County				2	2	1:615	Square Miles
Shiawassee	540	345,600					52	53	1:10	Square Miles
St. Clair	751	480,640	199	114	6		500	817	1:1	Square Mile
St. Joseph	518	331,520					15	15	1:35	Square Miles
Tuscola	820	524,800	145	1			100	246	1:3	Square Miles
Van Buren	615	393,600	721				979	1,700	3:1	Square Mile
Washtenaw	723	462,720	9	18	4		91	122	1:6	Square Miles
Wayne	625	400,000	12	20	11	18	45	106	1:6	Square Miles
Wexford	570	364,800	1	4			49	54	1:11	Square Miles
73 Counties		Totals:	10,864	1,663	1,204	28	12,153	25,912		

TABLE 22 -- CUMULATIVE OIL AND GAS PRODUCTION BY COUNTY THROUGH 1964

County	Oil Wells	Gas Wells	Cumulative Production	
			Barrels Oil	MCF Gas
Allegan	1,286	89	18,167,049	28,894,359
Arenac	406	44	44,146,396	6,722,136
Barry	74	0	591,908	0
Bay	458	1	17,675,154	7,857
Berrien	9	0	29,672	0
Calhoun	192	10	15,211,057	15,461,020
Cass	30	0	87,934	0
Clare	381	171	31,665,388	55,726,783
Clinton	4	0	4,121	0
Crawford	79	0	4,888,380	12,795,827
Genesee	11	0	90,692	0
Gladwin	734	0	31,170,426	9,834
Gratiot	46	74	983,813	12,919,063
Hillsdale	223	1	23,235,504	24,943,845
Huron	5	0	46,465	0
Ionia	9	0	381,269	0
Isabella	649	159	51,351,434	32,973,623
Jackson	126	2	11,917,307	9,429,486
Kalamazoo	18	0	28,868	0
Kalkaska	22	7	1,126,181	2,133,910
Kent	460	6	9,180,722	3,659,004
Lake	18	1	2,155,367	182,438
Lapeer	12	0	60,260	0
Lenawee	3	49	5,027	0
Livingston	0	19	109	23,689,839
Macomb	3	34	14,561	8,051,210
Mason	112	6	4,150,056	297,116
Mecosta	101	194	9,177,819	30,508,242
Midland	898	2	65,297,321	12,431,982
Missaukee	169	62	11,926,097	11,175,296
Monroe	45	0	683,496	0
Montcalm	375	221	16,950,385	52,507,225
Montmorency	3	1	7,688	0
Muskegon	430	119	7,671,772	9,752,921
Newaygo	195	46	8,603,774	13,131,230
Oakland	5	3	28,259	13,737
Oceana	326	7	14,610,559	1,172,788
Ogemaw	495	20	15,349,097	5,244,827
Osceola	332	113	50,504,364	44,162,727
Oscoda	2	0	26,541	0
Otsego	1	8	2,990	313,462
Ottawa	471	19	8,091,583	1,614,003
Roscommon	180	14	10,396,745	10,228,254
Saginaw	378	2	2,318,606	0
Shiawassee	1	0	236	0
St. Clair	199	114	4,394,463	41,480,745
Tuscola	145	0	2,082,172	0
Van Buren	721	0	11,974,453	0
Washtenaw	9	18	663,281	6,853,203
Wayne	12	20	141,502	8,564,257
Wexford	1	4	4,814	0
51 Counties			509,273,117	477,050,207

TABLE 23 -- OIL AND GAS FIELD BRINE PRODUCTION AND DISPOSAL - 1964 AND PRIOR YEARS

Year	Method of Disposal or Use (Barrels per Day) Records Prior to 1937 are Incomplete				
	Pits	Roads	Chemical Co.	Subsurface	Total
1937	8,342	-	10,375	21,849	40,206
1938	6,748	-	8,920	31,211	46,879
1939	4,901	-	7,466	48,579	60,946
1940	5,206	-	6,726	68,822	74,754
1941	3,540	-	8,452	78,484	90,476
1942	4,725	-	8,082	83,722	96,529
1943	4,963	-	8,170	89,207	102,340
1944	3,964	-	8,778	102,090	114,832
1945	2,352	-	8,992	107,973	119,317
1946	2,307	-	9,151	121,385	132,843
1947	1,883	-	8,579	132,844	143,346
1948	1,495	-	8,430	148,497	158,422
1949	1,541	-	8,568	162,172	172,781
1950	1,212	-	6,949	180,018	188,179
1951	1,623	-	7,630	190,074	199,327
1952	1,425	147	1,500	204,216	207,288
1953	1,233	175	460	188,949	190,817
1954	1,374	120	614	191,970	194,078
1955	1,560	161	609	200,031	202,361
1956	1,389	697	2	194,475	196,563
1957	1,245	1,162	0	193,223	195,630
1958	1,368	1,089	0	176,774	179,231
1959	1,038	944	0	170,623	172,605
1960	1,019	1,512	0	168,466	170,997
1961	910	1,060	0	155,855	157,855
1962	982	657	0	147,789	149,428
1963	866	3,130	0	145,700	149,696
1964	896	4,245	0	143,831	148,972

Michigan oil well owners and operators returned 143,831 barrels of brine per day to approved subsurface formations. This is 96.5 per cent of the total brine produced. Of the remaining 3.5 per cent or 5,141 barrels per day, 4,245 barrels were used for county road maintenance and lease purposes and 896 barrels were disposed of in surface pits in small widely scattered amounts. Brine production and disposal formations are shown in Table 4.

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STRATIGRAPHIC SUCCESSION IN MICHIGAN

PALEOZOIC THROUGH RECENT

MICHIGAN DEPARTMENT OF CONSERVATION

Ralph A. MacMullan, Director

GEOLOGICAL SURVEY

Gerald E. Eddy, State Geologist

ACKNOWLEDGEMENT: Compiled with the counsel of colleagues in this department, the U. S. Geological Survey, Michigan's universities, other state Geological Surveys, and geologists within Michigan's oil and gas industry. Dr. Aureal T. Cross, Department of Geology, Michigan State University, identified rocks of Mesozoic age and suggested provisional age assignments.

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PLEISTOCENE NOMENCLATURE

ERA	SYSTEM	SERIES	STAGE	
CENOZOIC	QUATERNARY	RECENT		
		PLEISTOCENE	Wisconsin Glaciation	Valders Stade
				Two Creeks Interstade
				Mankato Stade (Pt. Huron?)
				Cary Stade
				Tazewell Stade
			Sangamon Interglaciation:	
			Illinoian Glaciation	

OUTCROP NOMENCLATURE

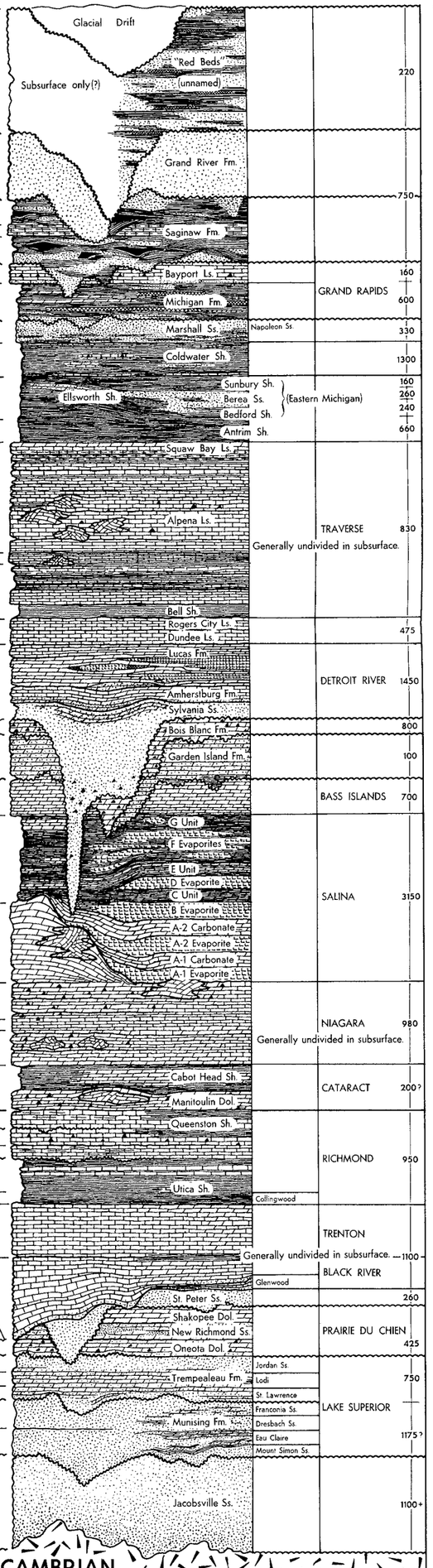
GEOLOGIC TIME			TIME-STRATIGRAPHIC	ROCK-STRATIGRAPHIC		
ERA	PERIOD	EPOCH	SYSTEM	SERIES	GROUP	FORMATION	MEMBER
MESOZOIC	JURASSIC	LATE	JURASSIC	KIMERIDGIAN			
PALEOZOIC	PENNSYLVANIAN	LATE	PENNSYLVANIAN	CONEMAUGH		Grand River Fm.	Ionia, Eaton, and Woodville Sandstones
		EARLY		POTTSVILLE		Saginaw Fm.	Verne Ls.
	MISSISSIPPIAN	LATE	MISSISSIPPIAN	MERAMECIAN	GRAND RAPIDS	Bayport Ls.	
						Michigan Fm.	
		EARLY		OSAGIAN		Marshall Ss.	Napoleon Ss.
				KINDERHOOKIAN		Coldwater Sh.	
	MISSISSIPPIAN-DEVONIAN			Unassigned		Ellsworth Sh. (Western Michigan)	
	DEVONIAN	LATE		CHAUTAUQUAN		Antrim Sh.	
				SENECAN		Squaw Bay Ls.	
		MIDDLE	DEVONIAN	ERIAN	TRAVERSE	Thunder Bay Ls.	
						Potter Farm Fm.	
						Norway Point Fm.	
						Four Mile Dam Fm.	
						Alpena Ls.	
						Newton Creek Ls.	
						Genshaw Fm.	Killians
						Ferron Point Fm.	
						Rockport Quarry Ls.	
						Bell Sh.	
						Rogers City Ls.	
						Dundee Ls.	
		EARLY		ULSTERIAN	DETROIT RIVER	Anderdon Fm.	
						Lucas Fm.	
						Amherstburg Fm.	
						Sylvania Ss.	
						Bois Blanc Fm.	
					MACKINAC BRECCIA	Garden Island Fm.	
	SILURIAN	LATE	SILURIAN	CAYUGAN	BASS ISLANDS	Raisin River Dol.	
						Put-in-Bay Dol.	
						St. Ignace Dol. (Northern Peninsula)	
					SALINA	Pte. aux Chenes Sh.	
		MIDDLE		NIAGARAN		Engadine Dol.	
					MANISTIQUE	Cordell Dol.	
						Schoolcraft Dol.	
					BURNT BLUFF	Hendricks Dol.	Fiborn Ls.
						Byron Dol.	
						Lime Island Dol.	
		EARLY		ALEXANDRIAN	CATARACT	Cabot Head Sh.	
						Manitoulin Dol.	
	ORDOVICIAN	LATE	ORDOVICIAN	CINCINNATIAN	RICHMOND	Big Hill Fm.	
						Stonington Fm.	Ogontz
							Bay de Noc
						Bill's Creek Sh.	
							Collingwood
		MIDDLE		MOHAWKIAN	TRENTON	Groos Quarry Fm.	
						Chandler Falls Fm.	
					BLACK RIVER	Bony Falls Fm.	
		EARLY		CHAZYAN			
				CANADIAN	PRAIRIE DU CHIEN	Oneota Dol.	
	CAMBRIAN	LATE	CAMBRIAN	ST. CROIXAN	LAKE SUPERIOR	Trempealeau Fm.	Jordan Ss.
							Lodi
							St. Lawrence
						Munising Fm.	Miner's Castle Ss.
							Chapel Rock Ss.
		MIDDLE				Jacobsville Ss.	
		EARLY					
PRECAMBRIAN							

SUBSURFACE NOMENCLATURE

ROCK-STRATIGRAPHIC		
FORMATION	MEMBER	GROUP

Approximate maximum thickness, in feet, of rock units in the subsurface. NO SCALE

DOMINANT LITHOLOGY

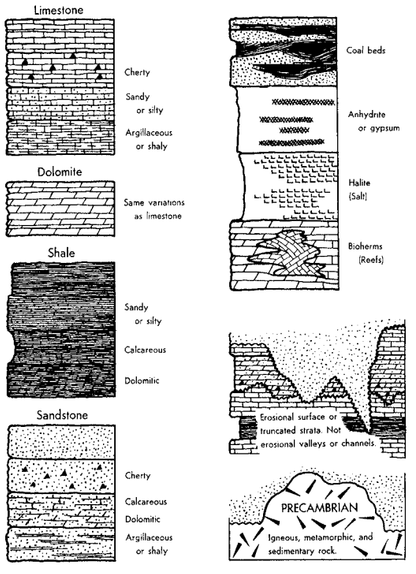


INFORMAL TERMS

Principal oil and gas pays, and informal terms used in petroleum exploration and applied to parts of formations or groups in the subsurface.

STRATIGRAPHIC POSITION	INFORMAL TERMS	PAYS
Basal sandstones of Saginaw Fm.	Parma sandstone	
In lower part of Michigan	triple gyp brown lime stray-stray ss. stray dol. stray ss.	Gas Gas & Oil
Marshall Ss.		Gas & Oil
Coldwater Sh.	Coldwater lime Weir sand Coldwater red-rock	Gas
In upper part of Ellsworth Sh.	"Berea" (Western Michigan)	Oil & Gas
Berea Ss.	Berea sand (Eastern Michigan)	Oil & Gas
Squaw Bay Ls.	Squaw Bay	Oil & Gas
Upper part of Traverse Group in Western Michigan	Traverse formation Traverse lime Stoney Lake zone	Oil & Gas Oil & Gas
Rogers City Ls.		Oil & Gas
Dundee Ls.		Oil & Gas
Dundee Ls. (?), Upper part of Lucas Fm. (?)	Reed City zone	Oil & Gas
In Lucas Fm.	massive salt big salt sour zone massive anhydrite big anhydrite Richfield zone	Oil & Gas Oil & Gas
Amherstburg Fm.	black lime	
Part of Salina Group E Unit	E zone (or Kintigh zone)	Oil
Divisions of A-2 Carbonate in Western Michigan	A-2 dolomite A-2 lime	Gas
A-1 Carbonate	A-1 dolomite	Oil & Gas
Upper part of Niagaran Series	brown Niagaran gray Niagaran white Niagaran	Oil & Gas
Part of Niagaran Series	Clinton shale (Eastern Michigan)	
Trenton Group		Oil & Gas
Black River Group	Black River formation Black River shale Van Wert zone	Oil & Gas
Oneota Dol.		Oil

EXPLANATION



GEOLOGIC NAMES COMPILATIONS: Harry O. Sorensen, Cambrian and Ordovician; Robert W. Kelley, Early and Middle Silurian; Garland D. Ells, Late Silurian through Detroit River Group of Devonian age; Harry J. Hardenberg, Dundee Limestone through Traverse Group of Devonian age; L. David Johnson, Antrim Shale through the Pennsylvanian System; F. Wells Terwilliger, glacial geology of the Cenozoic.

CHART 1

1964

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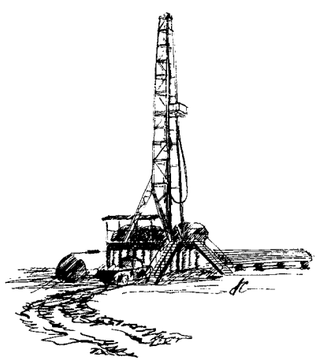
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