U. S. DEPARTMENT OF THE INTERIOR

U. S. GEOLOGICAL SURVEY

Estimates of ultimate recovery of oil from California's giant fields (> 100 million barrels), 1923-1995

by

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INTRODUCTION

In 1995, an assessment of the petroleum resources of the United States, including both discovered and undiscovered oil and gas as well as unconventional resources, was completed by the U. S. Geological Survey (Gautier and others, 1995; U. S. Geological Survey National Oil and Gas Resource Assessment Team, 1995). On the basis of observed growth patterns in estimated sizes of oil and gas fields in the Nation, compiled by the Energy Information Administration for the period 1977 to 1991, the assessment team concluded that growth of reserves in already-discovered oil accumulations would account for far more future production than would petroleum in fields yet to be discovered.

The volume of oil and gas that a newly discovered field is estimated to contain is often significantly smaller than the amount the field actually produces after it has been fully developed and secondary recovery techniques have been applied. A widely assumed model holds that a field grows rapidly in the first decade or two after discovery and then grows at a generally decreasing rate, eventually reaching an "ultimate" volume. When cumulative production equals or nearly equals the ultimate size, the field is presumed to be approaching depletion. Exceptions to this pattern are common, however, especially in California, where in some cases fields that are as much as a century old are still growing significantly and none of the larger old fields has yet been totally depleted to the point of abandonment. For example, the estimated reserves of the Midway-Sunset oil field, discovered in 1894, were revised upward by 500 million barrels (MMbbl) in 1991, for unspecified reasons, by the California Division of Oil and Gas (1992). Factors governing such appreciation in reserves undoubtedly include development of improved recovery methods during the life of a field, rising oil prices that stimulate new drilling in and near developed fields, changes in land status, and so forth. One can speculate that certain kinds of accumulations might be more likely to grow significantly than others, such as "stacked" reservoirs, very large fields with many sub-accumulations, lower gravity accumulations where development of enhanced recovery methods significantly changes the recovery factor, or even accumulations that

might be undergoing recharge by active oil migration. Few data have been assembled to evaluate the relative importance of these possibilities, partly because ultimate recovery estimates are not readily available for many fields, particularly before the 1950's.

This report assembles available data bearing on reserve appreciation in the giant oil fields of California, those with an estimated ultimate recovery greater than 100 MMbbl. Tables were compiled for each field, comprising year-by-year cumulative production, estimated remaining reserves, estimated ultimate recovery, and number of producing wells. In addition, the years when new areas or pools were discovered or abandoned and when various enhanced recovery techniques were applied or discontinued were noted in the tables. A plot is included for each field, showing cumulative production, estimated ultimate recovery, and number of producing wells plotted against year.

DATA SOURCES

The California Division of Oil, Gas, and Geothermal Resources (originally the Department of Petroleum and Gas of the California State Mining Bureau, later the California Division of Oil and Gas of the Department of Conservation) has maintained production totals and data on numbers of various categories of wells since the early 1900's. In 1977 the Division began to publish annual reserve estimates by field (California Division of Oil and Gas, 1977, and subsequent years to 1992; California Division of Oil, Gas, and Geothermal Resources, 1993 and subsequent years to 1996). The Division also publishes maps and tables summarizing the geology, exploration and development history, and reservoir characteristics of each field, including data on enhanced recovery methods applied to each field (California Division of Oil and Gas, 1973, 1991b). They were used as sources for discovery dates and dates when various types of enhanced recovery methods were started or discontinued in each field.

For the years from 1945 to 1976, production and reserves data were taken from annual tables published in the Oil and Gas Journal (Oil and Gas Journal, 1946, and

subsequent years). Sources for the sparse data prior to 1945 are Collum and Barnes (1924), Wilhelm (1932, 1936, 1937, 1938, 1939), Wilhelm and Miller (1933, 1934), and Stockman (1943).

TABLES AND CHARTS

The following pages consist of data tables for each field, along with a graph showing cumulative production, estimated reserves, and number of producing wells plotted against time. They are arranged as follows:

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ACKNOWLEDGEMENT

Susan Hodgeson of the California Division of Oil, Gas, and Geothermal Resources generously furnished prepublication copies of revised data for San Joaquin Basin fields.

Field	discovered						
Beta Offshore	1976						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	Number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
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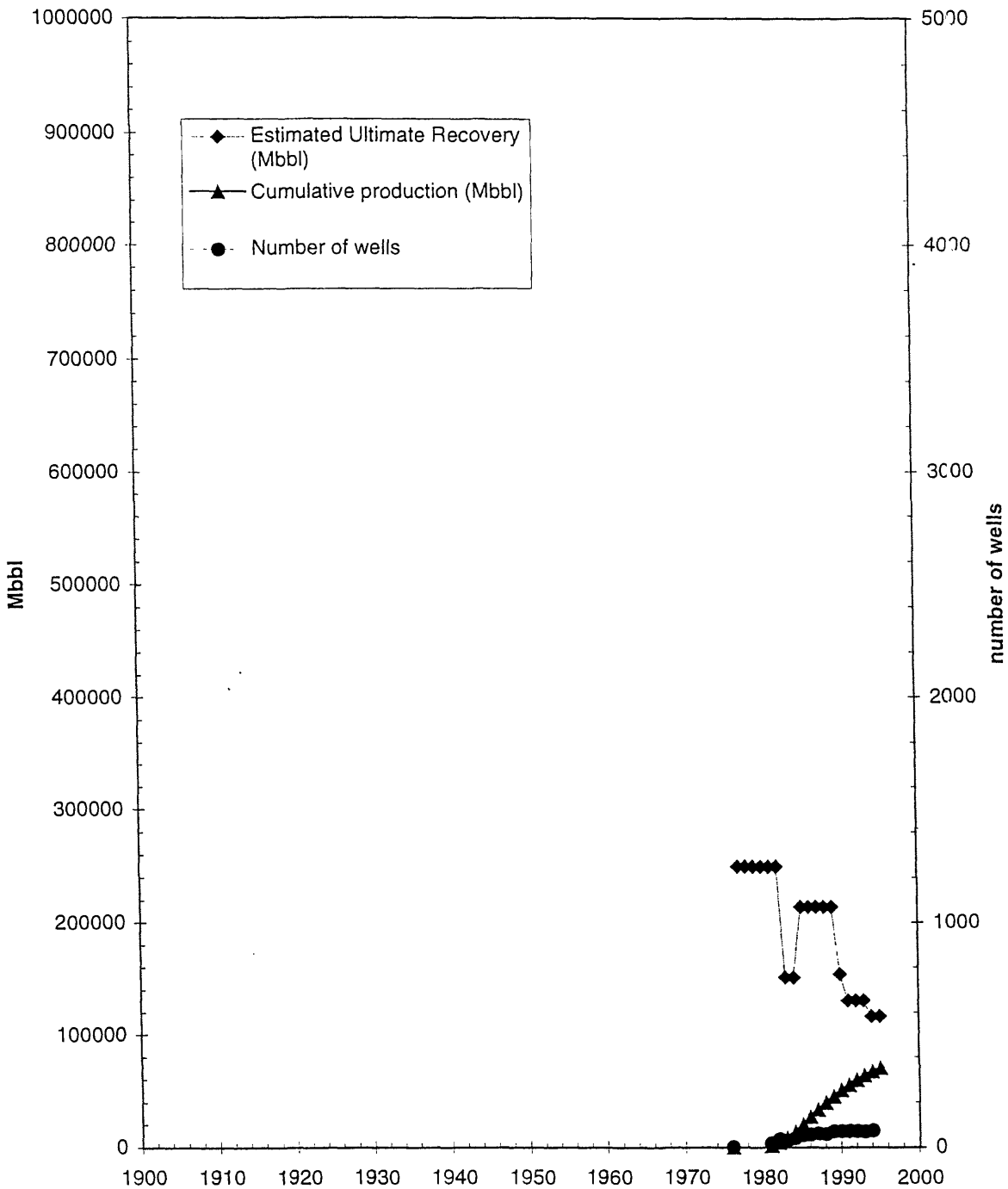
1971							
1972							
1973							
1974							
1975							
1976	0		250000	0			
1977			250000				
1978			250000				
1979			250000				
1980			250000				
1981	1431		250000	17			
1982	4617	146814	151431	35			
1983	8510	142921	151431	29			waterflood
1984	13690	200600	214290	42			
1985	20014	194258	214272	55			
1986	27054	187218	214272	56			
1987	33704	180568	214272	61			
1988	39703	174568	214271	60			
1989	45333	108939	154272	72			
1990	50640	80131	130771	72			
1991	55215	75556	130771	71			
1992	59591	71180	130771	71			
1993	63418	53082	116500	69			
1994	66786	49714	116500	73			
1995	69865	46635	116500	66			

Beta Offshore Oil Field Estimated Ultimate Recovery



Field	discovered						
Beverly Hills	1900						
Year	Cumulative production (MMbbl)	reserves (MMbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900	0				West	Wolfskill/West	
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
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1943							
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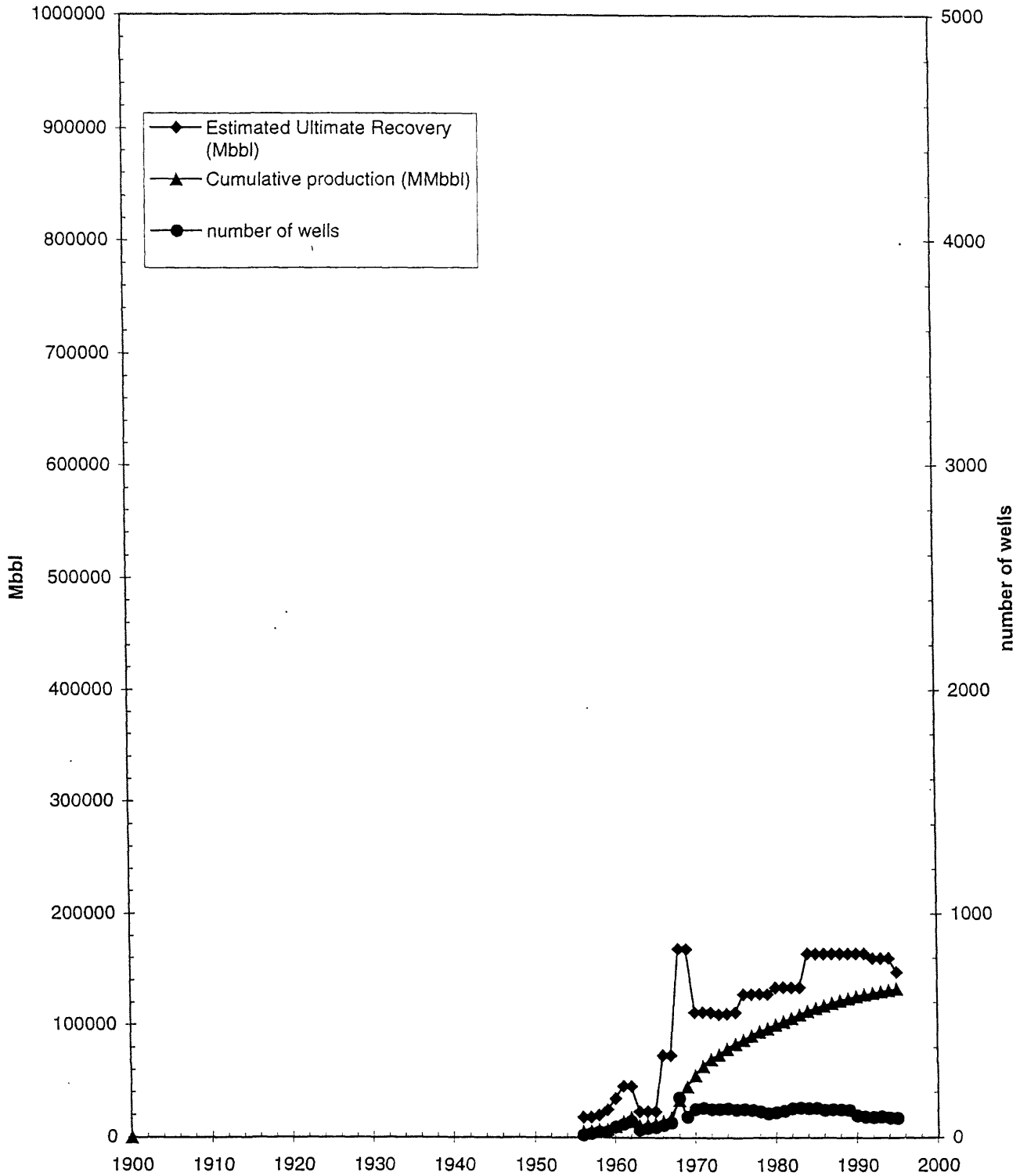
1945							
1946							
1947							
1948							
1949							
1950							
1951							
1952							
1953							
1954						Main (Hauser)/West	
1955							
1956	5459	12541	18000	11			
1957	6262	11738	18000	17			

Field	discovered						
Beverly Hills	1900						
Year	Cumulative production (MMbbl)	reserves (MMbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1958	7063	12937	20000	25			
1959	7893	17107	25000	27			
1960	9954	24794	34748	47			
1961	14194	31470	45664	58			
1962	18148	27482	45630	73			
1963	10815	12391	23206	34			
1964	11701	11513	23214	41			
1965	12716	10484	23200	44			
1966	14245	58982	73227	55	East	Main (Hauser)/East, Repetto Sands/East, D/M Sands /East, Deep (Ogden)/East	
1967	17700	55581	73281	65			
1968	33425	134952	166377	176			waterflood- Main, D/M Sands/East
1969	45556	122591	168147	93			
1970	55295	56352	111647	127			waterflood- Repetto Sands/East
1971	63588	47952	111540	131			
1972	69783	41659	111442	126			
1973	73811	36040	109851	127			
1974	78634	31384	110218	128			
1975	83293	28000	111293	124			
1976	86880.132	41000	127880.132	126			
1977	90817	37000	127817	122			
1978	94197	33683	127880	114			
1979	97120	30760	127880	105			
1980	100074	33714	133788	110			
1981	102759	31030	133789	118			
1982	105919	27870	133789	128			
1983	109397	24392	133789	130			
1984	112437	51694	164131	129			
1985	115182	48969	164131	131			
1986	117497	46633	164130	121			
1987	119710	44420	164130	123			
1988	121676	42454	164130	123			
1989	123579	40534	164113	122			
1990	125430	38701	164131	98			
1991	127090	37041	164131	93			
1992	128587	31413	160000	90			
1993	130084	29917	160001	93			
1994	131459	28540	159999	87			
1995	132784	14817	147601	85			

Beverly Hills Oil Field Estimated Ultimate Recovery



Field	discovered						
Brea-Olinda	1880						
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated ultimate recovery	Number of wells	Area discovered	Pool discovered	Enhanced recovery
1900						1st, 2nd, 3rd Pliocene (1897)	
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
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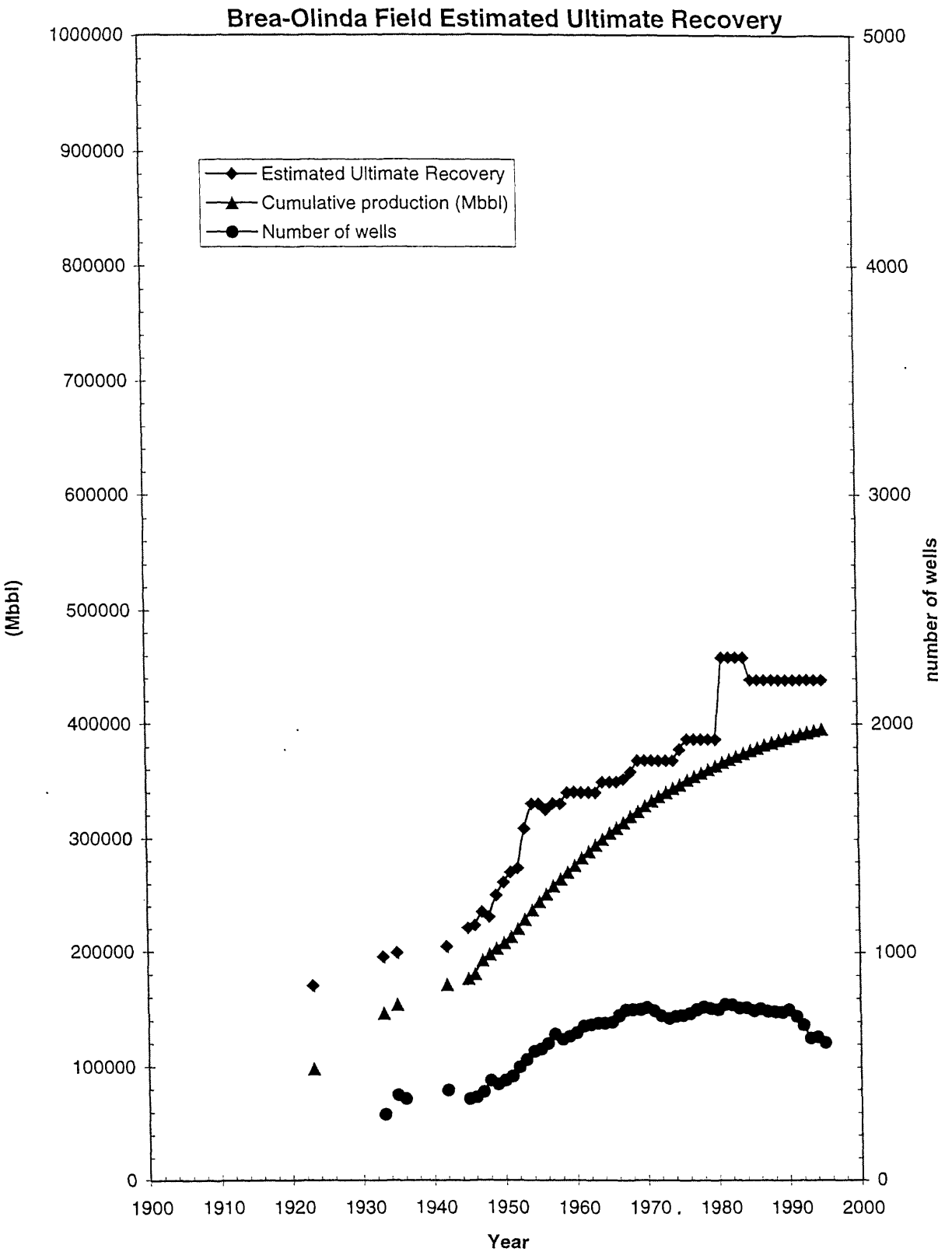
1913							
1914							
1915							
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923	98513	72487	171000				
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							
1932							
1933	146841.489	48700	195541.489	292			
1934							
1935	154197.831	45000	199197.831	375			
1936				360			
1937							
1938							
1939							
1940							
1941							
1942	171608	33392	205000	397			
1943							
1944							
1945	176858	44135	220993	361			
1946	180806	42667	223493	367			
1947	192703	42297	235000	391			
1948	198014	32645	230659	439			
1949	203291	46986	250277	425			
1950	207727	53709	261436	442			
1951	213116	57273	270389	459			
1952	220042	53884	273926	498			
1953	228667	79958	308625	532			
1954	237078	92922	330000	566	D-1, D-2		

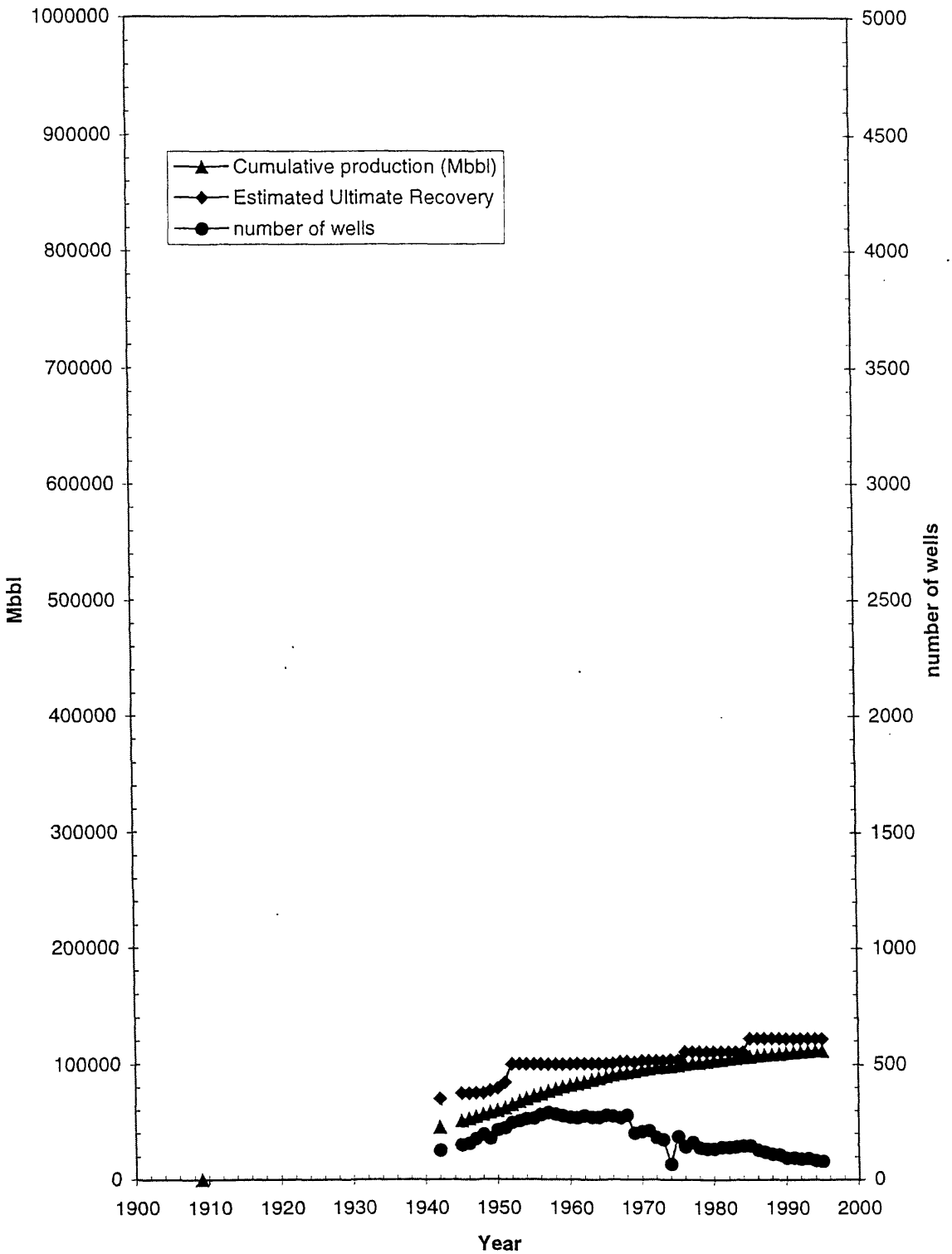
Field	discovered						
Brea-Olinda	1880						
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated ultimate recovery	Number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	244176	85824	330000	577			
1956	251064	73936	325000	602			
1957	257918	72082	330000	642			
1958	264281	65719	330000	620			
1959	270128	69872	340000	632			
1960	276119	63922	340041	648			
1961	282420	57292	339712	678			
1962	288416	51294	339710	684			
1963	294105	45621	339726	691			
1964	299440	49637	349077	690			cyclic steam- 1st, 2nd, 3rd Miocene; steamflood- 1st, 2nd, 3rd Miocene; waterflood- 1st, 2nd, 3rd Miocene
1965	304493	44654	349147	695			
1966	309180	39946	349126	723			
1967	314051	37578	351629	747			
1968	318915	38880	357795	750			
1969	323708	44093	367801	750			
1970	328341	39459	367800	759			
1971	332566	35231	367797	746			
1972	336524	31285	367809	723			fireflood- 1st 2nd, 3rd Miocene
1973	340212	27600	367812	711			steamflood- 1st, 2nd, 3rd Pliocene
1974	343585	24212	367797	721			
1975	346765	31000	377765	725			
1976	351346.88	35000	386346.88	734			
1977	354423	31900	386323	751			
1978	357520	28827	386347	763			
1979	360617	25730	386347	755			
1980	363560	22787	386347	752			
1981	366491	92000	458491	773			
1982	369301	89180	458481	772			
1983	371946	86545	458491	758			
1984	374555	83936	458491	761			
1985	377042	61649	438691	747			
1986	379481	59211	438692	757			
1987	381801	56890	438691	746			
1988	383941	54750	438691	742			
1989	385887	52804	438691	741			
1990	387777	50914	438691	752			
1991	389491	49200	438691	724			
1992	391176	47515	438691	685			
1993	392646	46045	438691	629			
1994	394145	44546	438691	632			
1995	395552	43139	438691	608			


Brea-Olinda Field Estimated Ultimate Recovery
Estimated Ultimate Recovery
Cumulative production (Mbbl)
Number of wells
(Mbbl)
number of wells
Year
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
5000
4000
3000
2000
1000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

Field	discovered							
Coyote, East	1909							
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1900								
1901								
1902								
1903								
1904								
1905								
1906								
1907								
1908								
1909	0					Hualde, 1st Anaheim		
1910								
1911								
1912								
1913						2nd Anaheim		
1914								
1915								
1916								
1917								
1918								
1919								
1920								
1921								
1922								
1923								
1924								
1925								
1926								
1927						Division "A" sands		
1928								
1929								
1930						3rd Anaheim		
1931								
1932								
1933								
1934								
1935								
1936								
1937								
1938								
1939						Stern		
1940								
1941								
1942	45682	24338	70000	127				
1943								
1944								
1945	51488	23515	75003	151				
1946	53243	21760	75003	158				
1947	54984	20516	75500	178				
1948	56779	18221	75000	196				
1949	58445	18555	77000	177				
1950	60168	18832	79000	214				
1951	62384	21616	84000	225				
1952	65118	34882	100000	247				
1953	67788	32212	100000	255				
1954	70189	29811	100000	264				
1955	72307	27693	100000	266				
1956	74455	25545	100000	282				
1957	76658	23342	100000	291				
1958	78513	21487	100000	283				
1959	80226	19774	100000	276				

Field	discovered							
Coyote, East	1909							
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1960	81814	18173	99987	270				
1961	83281	16798	100079	269				
1962	84710	15369	100079	277				
1963	86146	13935	100081	271				
1964	87697	12386	100083	271				
1965	89196	10883	100079	280				
1966	90528	9555	100083	274				
1967	91708	9872	101580	268				
1968	92865	9256	102121	279			waterflood- Stern	
1969	93965	7156	101121	201			waterflood- 1st Anaheim	
1970	95157	7313	102470	209				
1971	96026	6449	102475	213				
1972	96775	5695	102470	183				
1973	97454	5015	102469	173				
1974	98135	5300	103435	67				
1975	98781	4700	103481	188			waterflood- Hualde	
1976	100328.65	10000	110328.65	144				
1977	101072	9300	110372	161				
1978	101797	8532	110329	138				
1979	102567	7762	110329	134				
1980	103369	6959	110328	135				
1981	104110	6219	110329	141				
1982	104829	5500	110329	141				
1983	105493	4836	110329	144			WAG-CO2- Hualde, 1st Anaheim, Stern	
1984	106169	4159	110328	147				
1985	106836	14992	121828	147				
1986	107451	14377	121828	130				
1987	108076	13753	121829	120				
1988	108656	13172	121828	110				
1989	109178	12651	121829	108				
1990	109738	12090	121828	94				
1991	110277	11552	121829	94				
1992	110822	11006	121828	91				
1993	111292	10537	121829	92				
1994	111668	10180	121828	82				
1995	111945	9884	121829	81				

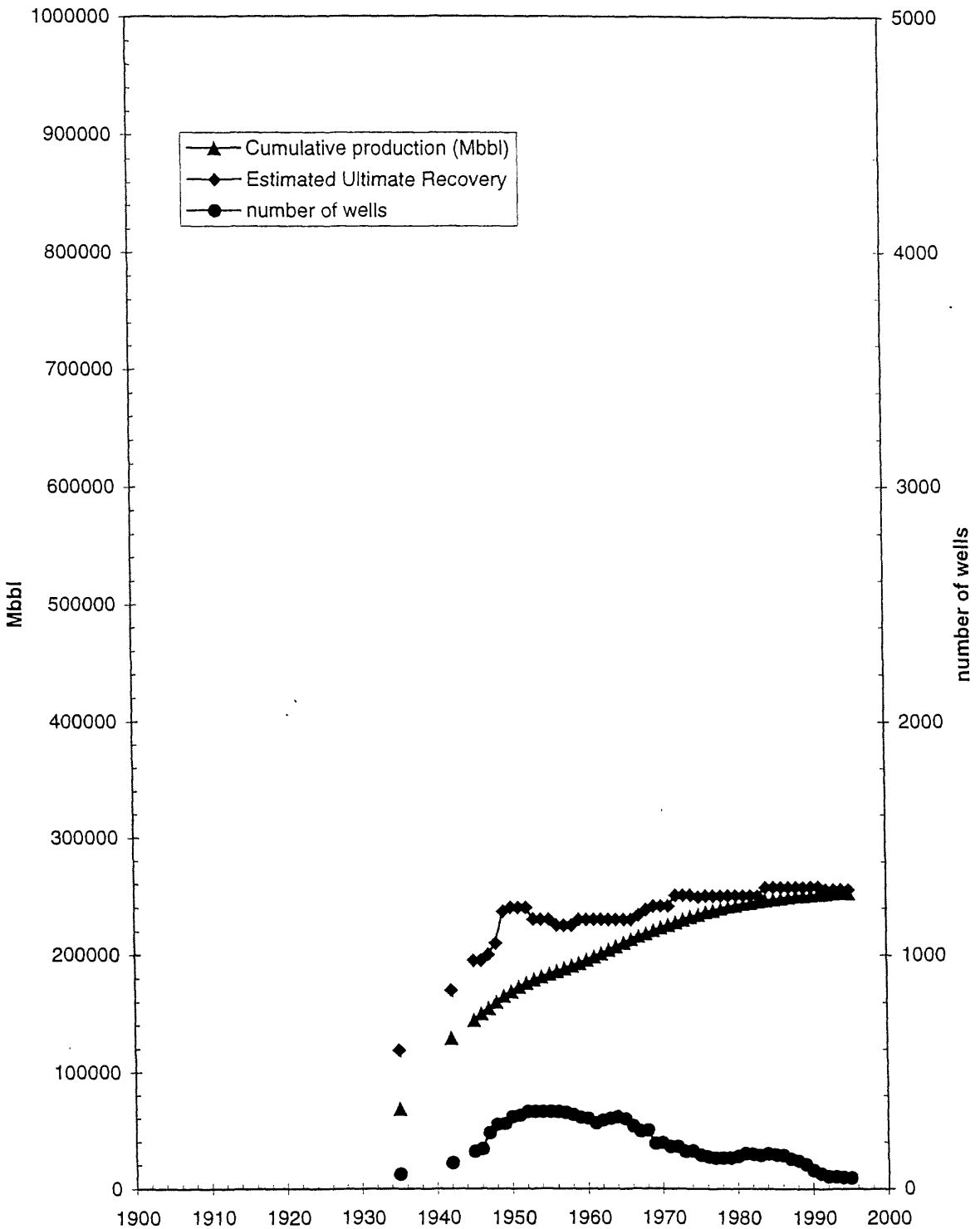
East Coyote Oil Field Estimated Ultimate Recovery



Field	discovered						
Coyote, West	1909						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909						Main	
1910							
1911							
1912							
1913							
1914							
1915							
1916							
1917							
1918						Top	
1919							
1920							
1921							
1922							
1923							
1924						Upper 99	
1925							
1926							
1927							
1928							
1929							
1930						Emery	
1931							
1932							
1933							
1934							
1935	68771.255	50000	118771.255	61			
1936							
1937							
1938							
1939							
1940							
1941							
1942	129232	40768	170000	110			
1943							
1944							
1945	144413	50587	195000	159			
1946	149988	45012	195000	170			
1947	154436	45564	200000	239		Lower 99, 138	
1948	160038	49962	210000	275			
1949	164857	72143	237000	278			gas injection- Emery
1950	168800	71200	240000	306			
1951	172483	67517	240000	313			
1952	175822	64178	240000	329			waterflood- Main, Lower 99
1953	178806	51194	230000	330			
1954	181474	48526	230000	330			

Field	discovered						
Coyote, West	1909						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	183862	46138	230000	330			
1956	186201	38799	225000	330			
1957	188498	36502	225000	326			
1958	190586	34414	225000	316			
1959	192916	37084	230000	304			
1960	195608	34404	230012	299			
1961	198286	31731	230017	280			
1962	201251	28784	230035	294			gas injection discontinued- Upper 99
1963	204392	25652	230044	301			
1964	207243	22590	229833	308			
1965	210139	19696	229835	297			waterflood- 138
1966	212904	16932	229836	267			
1967	215531	18307	233838	244			gas injection discontinued- Emery
1968	218068	20216	238284	249			
1969	220672	20800	241472	192			
1970	223154	18312	241466	195			
1971	225604	15876	241480	179			
1972	227858	22626	250484	179			
1973	229979	20504	250483	159			
1974	232141	18361	250502	161			
1975	234164	15000	249164	141			
1976	236220.829	13800	250020.829	136			
1977	237955	12100	250055	131			
1978	239459	10562	250021	131			
1979	240857	9165	250022	131			
1980	242092	7930	250022	138			
1981	243227	6795	250022	148			
1982	244325	5697	250022	146			
1983	245393	4629	250022	142			
1984	246459	11063	257522	150			
1985	247469	10054	257523	144			
1986	248375	9147	257522	142			
1987	249205	8317	257522	126			
1988	249988	7535	257523	118			
1989	250689	6834	257523	104			
1990	251255	6457	257712	79			
1991	251700	6012	257712	63			
1992	252119	3393	255512	52			
1993	252498	3014	255512	50			
1994	252849	2663	255512	47			
1995	252960	2552	255512	46			

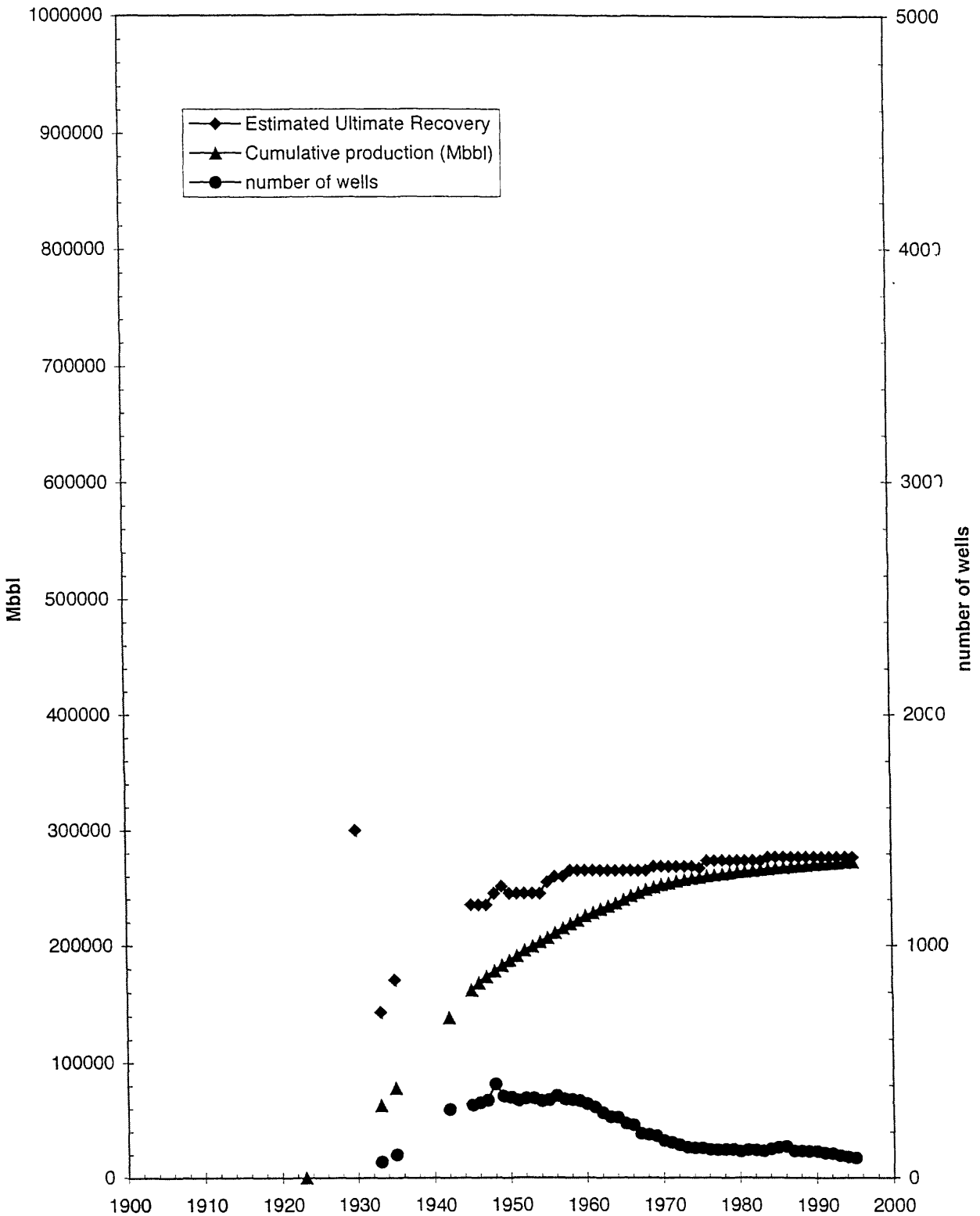
West Coyote Oil Field Estimated Ultimate Recovery



Field	discovered							
Dominguez	1923							
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1900								
1901								
1902								
1903								
1904								
1905								
1906								
1907								
1908								
1909								
1910								
1911								
1912								
1913								
1914								
1915								
1916								
1917								
1918								
1919								
1920								
1921								
1922								
1923	0					1st Callender		
1924						2nd Callender		
1925						3rd Callender		
1926								
1927						4th Callender		
1928								
1929								
1930			300000					
1931						5th Callender		
1932								
1933	63188.447	80000	143188.447	70		6th, 7th Callender		
1934								
1935	77759.762	93000	170759.762	100			gas injection- 1st, 2nd, 3rd, 4th, 5th Callender	
1936						8th Callender		
1937							gas injection begun, discontinued- 7th Callender	
1938								
1939								
1940								
1941							gas injection discontinued- 3rd, 4th, 5th Callender	
1942	138178	73882		295			gas injection discontinued- 1st, 2nd Callender	
1943								
1944								
1945	162007	72992	234999	316				
1946	167883	67166	235049	326			waterflood- 3rd Callender	
1947	173208	61792	235000	338				
1948	178113	66887	245000	406			waterflood- 1st Callender	
1949	182865	68135	251000	355				
1950	187066	57934	245000	351				
1951	191239	53761	245000	337				
1952	195631	49369	245000	345				
1953	199301	45699	245000	346				
1954	203184	41816	245000	334				
1955	206630	48370	255000	339				
1956	210990	49010	260000	356				
1957	214960	45040	260000	342			waterflood- 2nd Callender	
1958	218726	46274	265000	340			waterflood- 5th Callender	
1959	222148	42852	265000	334			waterflood- 4th Callender	

Field	discovered							
Dominguez	1923							
	Cumulative *production* (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1960	225721	39250	264971	323			waterflood- 6th, 7th Callender	
1961	228667	36217	264884	307			waterflood- 8th Callender	
1962	231352	33518	264870	282				
1963	234036	30837	264875	265				
1964	236921	27957	264878	264				
1965	239938	24972	264910	238				
1966	243140	21955	265095	230				
1967	245904	19190	265094	194				
1968	248490	16601	265091	190				
1969	250700	17808	268508	182				
1970	252633	15864	268497	164				
1971	254350	14147	268497	154				
1972	255834	12660	268494	143				
1973	257165	11272	268437	133				
1974	258272	10162	268434	131				
1975	259278	8000	267278	131				
1976	260546.31	13000	273546.31	124				
1977	261512	12000	273512	122				
1978	262450	11096	273546	125				
1979	263229	10317	273546	123				
1980	263969	9577	273546	115				
1981	264667	8879	273546	121				
1982	265400	8146	273546	121				
1983	266116	7430	273546	118				
1984	266838	10009	276847	126				
1985	267545	9301	276846	133				
1986	268187	8659	276846	136				
1987	268794	8052	276846	117				
1968	269400	7447	276847	118				
1989	269967	6860	276847	116				
1990	270558	6288	276846	115				
1991	271101	5746	276847	108				
1992	271605	5241	276846	107				
1993	272082	4764	276846	97				
1994	272535	4311	276846	92				
1995	272951	3895	276846	86				

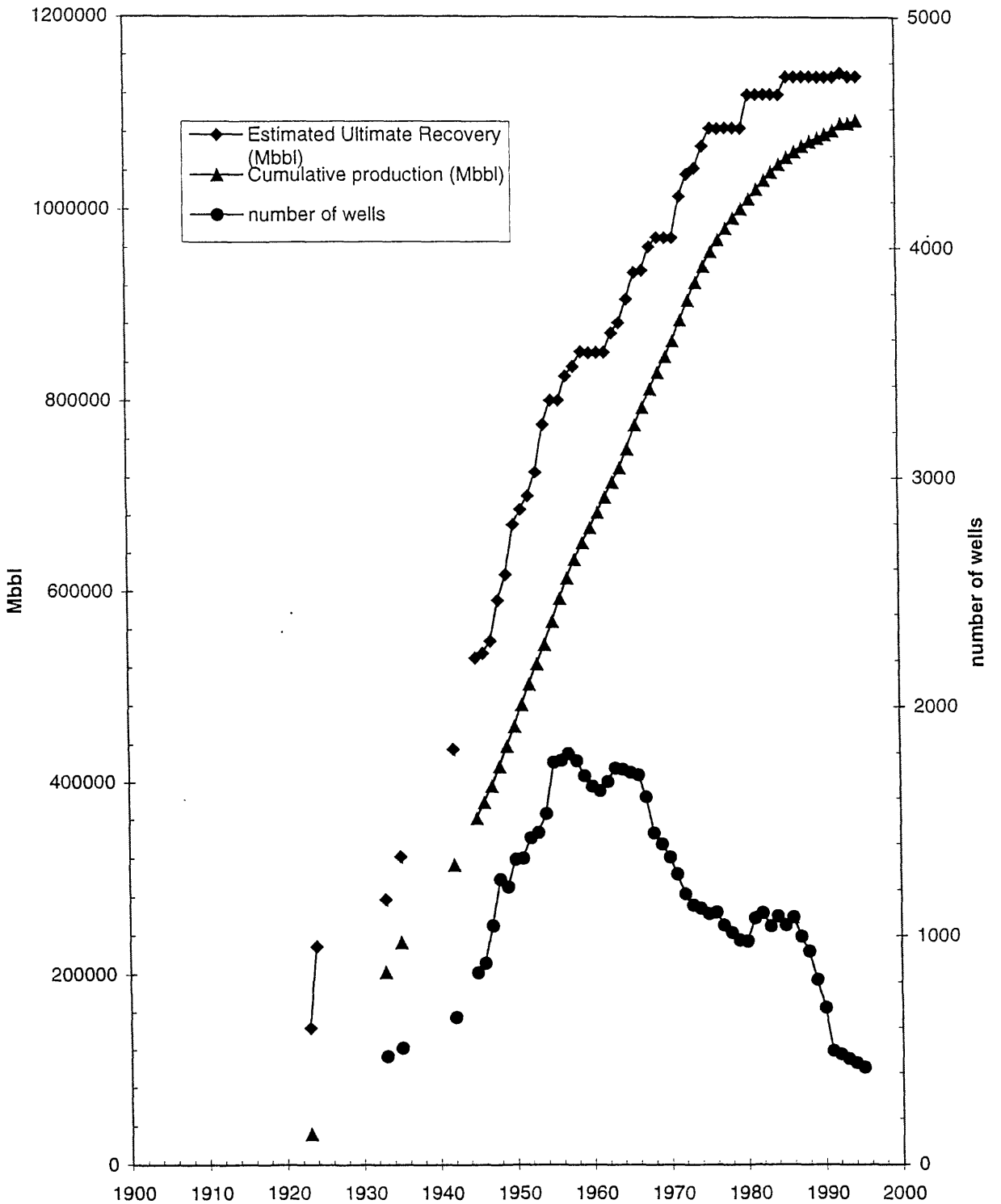
Dominguez Oil Field Estimated Ultimate Recovery



Field	discovered							
Huntington Beach	1920							
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1900								
1901								
1902								
1903								
1904								
1905								
1906								
1907								
1908								
1909								
1910								
1911								
1912								
1913								
1914								
1915								
1916								
1917								
1918								
1919								
1920					Onshore	Upper Ashton, Lower Bolsa/Onshore		
1921								
1922								
1923	32012	111496	143508					
1924			228500					
1925								
1926						Upper Jones, Main/Onshore		
1927						Intermediate Ashton, Upper Bolsa/Onshore		
1928								
1929								
1930								
1931								
1932								
1933	202556.445	75000	277556.445	474	Offshore Area	Upper Jones/Offshore		
1934								
1935	232796.006	89000	321796.006	510				
1936								
1937								
1938								
1939								
1940								
1941								
1942	313119	121881	435000	645				
1943								
1944								
1945	381588	168409	529997	839				
1946	378732	156265	534997	880				
1947	396333	151167	547500	1041				
1948	417153	172847	590000	1242				
1949	438269	178731	617000	1210				
1950	458728	211280	670008	1328				
1951	481231	204769	686000	1332				
1952	502748	197254	700000	1420				
1953	523913	201087	725000	1446		"C" (Hamilton)/Onshore		
1954	543864	231136	775000	1527				
1955	568231	231769	800000	1755				
1956	592016	207984	800000	1765				
1957	613461	211539	825000	1791				
1958	632910	202090	835000	1782				

Field	discovered							
Huntington Beach	1920							
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1959	651057	198943	850000	1697				
1960	666737	182323	849060	1851				
1961	683439	166383	849822	1630				
1962	698876	150895	849771	1671			waterflood- Upper Bolsa/Onshore	
1963	714627	155154	869781	1730			waterflood- Lower Jones/Onshore	
1984	730318	150284	880602	1726		AA, TM/Offshore	waterflood- Upper Bolsa/Onshore; steamflood Middle and Lower Bolsa/Onshore; waterflood Main/Onshore	
1965	749981	155931	905912	1713				
1966	775076	158824	933900	1700			waterflood- Upper Jones/Onshore	
1967	792802	143113	935915	1603			waterflood- Upper Jones/Offshore	
1968	812145	148113	960258	1443				
1969	829715	140515	970230	1396				
1970	846068	124129	970197	1340				
1971	862321	107880	970201	1267			waterflood- Upper Ashton/Onshore	
1972	684156	129428	1013584	1181				
1973	904585	131792	1036377	1132				
1974	923800	118800	1042600	1118				
1975	941025	125000	1066025	1097				
1976	956159.852	128000	1084159.852	1103			waterflood- Lower, Middle Bolsa/Onshore	
1977	968863	115000	1063863	1047				
1978	980055	104105	1084160	1013				
1979	990736	93424	1084160	983				
1980	1000986	83174	1084160	978				
1981	1011035	108000	1119035	1077			steamflood- TM/Offshore	
1982	1021197	97837	1119034	1101				
1983	1030274	88760	1119034	1044				
1984	1038946	80088	1119034	1087				
1985	1047023	72011	1119034	1049				
1986	1054129	83905	1138034	1082				
1987	1060187	77874	1138061	998				
1988	1065741	72293	1138034	934				
1989	1070532	67502	1138034	812				
1990	1074368	63666	1138034	689				
1991	1078215	59819	1138034	497				
1992	1081872	56162	1138034	481				
1993	1089370	52379	1141749	462				
1994	1089370	48664	1138034	443				
1995	1092413	45742	1138155	424				

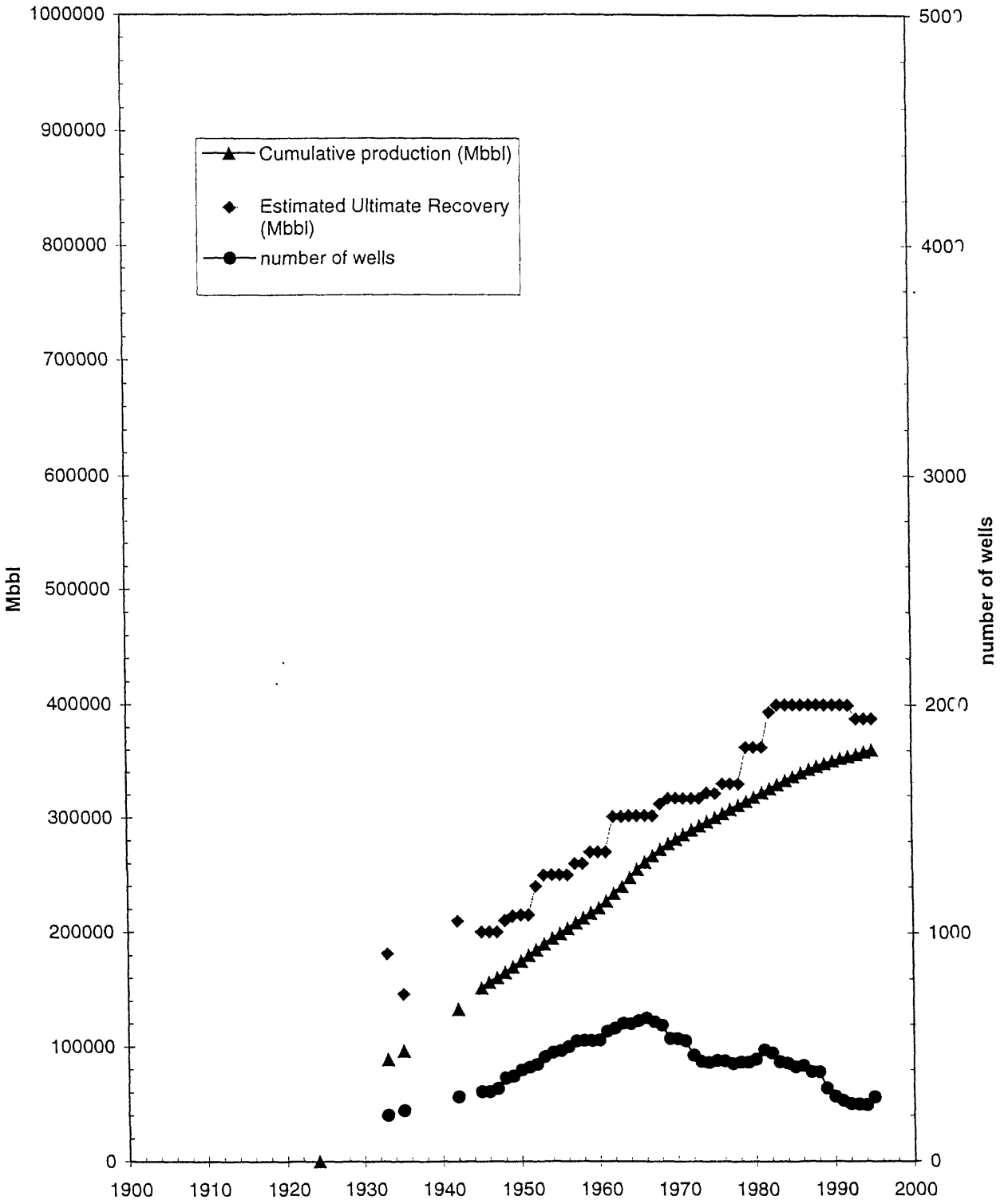
Huntington Beach Oil Field Estimated Ultimate Recovery



Field	discovered						
Inglewood	1924						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912							
1913							
1914							
1915							
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923							
1924	0					Vickers, Investment	
1925						Rindge	
1926							
1927							
1928							
1929							
1930							
1931							
1932						Meynier	
1933	88679.063	93000	181679.063	201			
1934						Rubel	
1935	96352.653	50000	146352.653	220			
1936							
1937							
1938							
1939							
1940						Sentous	
1941							
1942	132443	77557	210000	281			
1943							
1944							
1945	151589	48401	199990	304			
1946	156307	43683	199990	304			
1947	160476	39524	200000	317			
1948	164893	45107	210000	363		Upper Investment	
1949	169994	44006	214000	372			
1950	174843	40157	215000	398			
1951	179789	35211	215000	410			
1952	184755	55245	240000	423			
1953	189704	60296	250000	457			waterflood- Vickers
1954	194478	55522	250000	474			

Field	discovered						
Inglewood	1924						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	198884	51116	250000	480			
1956	203346	46654	250000	500			
1957	208013	51987	260000	523		Bradna	
1958	212404	47596	260000	525			
1959	216700	53300	270000	527			waterflood-Rubel
1960	221226	49009	270235	529		City of Inglewood	
1961	227015	43249	270264	567			
1962	233742	67060	300802	580			
1963	240060	60725	300785	602			
1964	247941	53552	301493	600			cyclic steam- Vickers
1965	254869	46649	301518	614			
1966	261453	40058	301511	625			waterflood- Moynier
1967	267128	34360	301488	610			
1968	272467	39360	311827	594			waterflood- Rindge
1969	277367	39451	316818	535			
1970	281616	35187	316803	536			cyclic steam discontinued- Vickers
1971	285594	31195	316789	525			
1972	289500	27287	316787	463			
1973	293055	23735	316790	437			
1974	296656	25100	321756	432			
1975	300185	21500	321685	441			
1976	304148.553	26000	330148.553	439			
1977	307771	22400	330171	428			
1978	311173	18976	330149	434			
1979	314736	48300	363036	433			
1980	318512	44523	363035	448			
1981	322373	40662	363035	488			
1982	326091	67883	393974	474			
1983	329648	70400	400048	437			
1984	333242	66806	400048	429			
1985	336673	63375	400048	414			
1986	339928	60120	400048	419			
1987	343006	57042	400048	392			
1988	345879	54169	400048	391			
1989	348378	51670	400048	320			
1990	350694	49354	400048	284			
1991	352758	47290	400048	266			
1992	354692	45256	399948	251			
1993	356641	31407	388048	249			
1994	358640	29408	388048	247			
1995	360806	27242	388048	280			

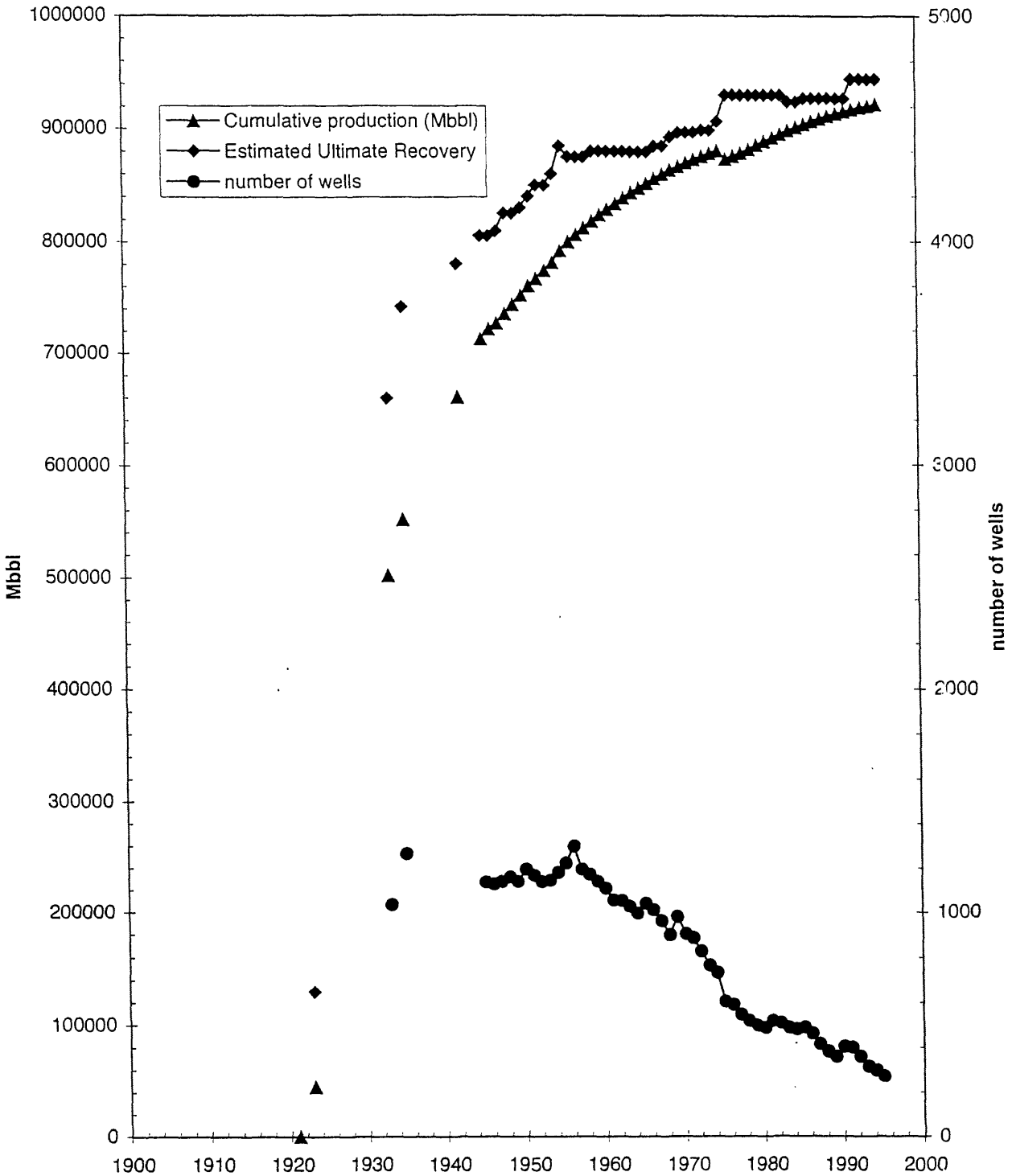
Inglewood Oil Field Estimated Ultimate Recovery



Field	discovered						
Long Beach	1921						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912							
1913							
1914							
1915							
1916							
1917							
1918							
1919							
1920							
1921	0				Old	Lower Wilbur, Alamitos/ Old	
1922						Brown/Old	
1923	45544	84456	130000				
1924							
1925							
1926						Deep/Old	
1927							
1928							
1929							
1930							
1931							
1932							
1933	502178.122	158000	660178.122	1035			
1934							
1935	551807.995	190000	741807.995	1269			
1936							
1937							
1938						DeSoto, Upper Wilbur/Old	
1939							
1940							
1941							
1942	660302	119698	780000				
1943							
1944							
1945	712419	92585	805004	1137			
1946	721526	83478	805004	1129			
1947	726425	82872	809297	1140			
1948	734684	90316	825000	1161			
1949	743040	81960	825000	1141			
1950	751373	78827	830000	1197			
1951	759884	80116	840000	1187		Deep (Wardlow)/Old	
1952	766343	83657	850000	1140	Recreation Park	McGrath/Recreation Park	
1953	773777	76223	850000	1148			
1954	781431	78569	860000	1182			

Field	discovered						
Long Beach	1921						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	791453	93547	885000	1225			
1956	799182	75818	875000	1300			
1957	805929	69071	875000	1196			
1958	812114	62886	875000	1173			
1959	617954	62046	880000	1140			
1960	623536	56437	879973	1111			
1961	628771	51186	879957	1057			
1962	833835	46185	880020	1055		Upper Wasem/Recreation Park	
1963	838761	41185	879946	1029			
1964	843306	36602	679906	998			waterflood- Brown/Old
1965	847653	32250	879903	1043			
1966	851882	28019	879901	1013			
1967	655973	28924	884897	964			
1968	659824	25061	884885	900			
1969	863462	29438	892900	982			
1970	866821	30000	896821	905			
1971	670002	26817	896819	667			
1972	872901	23908	896809	830			
1973	875609	23203	898812	766			waterflood- Alamitos, Deep/Old
1974	878213	20605	898818	733			
1975	880627	26000	906827	605			waterflood- Deep (Wardlow)/Old
1976	873206.977	57000	930206.977	593			
1977	875798	54400	930198	547			
1978	878945	51262	930207	520			
1979	882237	47970	930207	499			
1980	885535	44672	930207	489			
1981	889065	41142	930207	520			
1982	692462	37745	930207	512			
1983	895668	34539	930207	490			
1984	898759	25520	924279	483			
1985	901725	22553	924278	490			
1986	904532	22896	927426	462			
1987	907115	20313	927428	415			
1988	909534	17895	927429	383			
1989	911751	15677	927428	360			
1990	913920	13589	927509	404			
1991	915926	11583	927509	400			
1992	917726	26989	944715	359			
1993	919422	25291	944713	316			
1994	921009	23549	944558	297			
1995	922615	21943	944556	271			

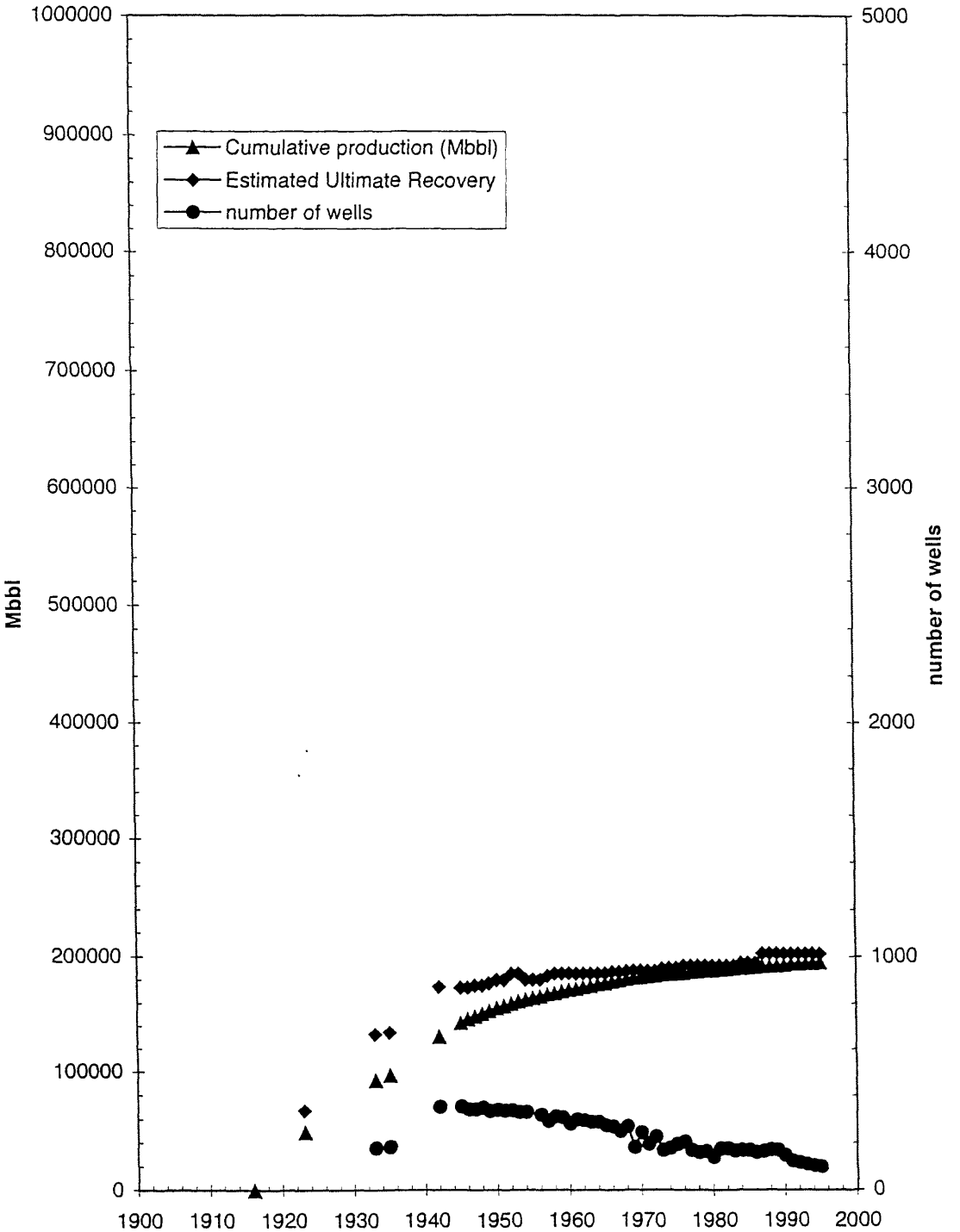
Long Beach Oil Field Estimated Ultimate Recovery



Field	discovered						
Montebello	1917						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912							
1913							
1914							
1915							
1916	0						
1917						1st, 2nd, 3rd	
1918							
1919							
1920							
1921							
1922							
1923	48749	18867	67616				
1924							
1925							
1926							
1927						4th	
1928							
1929							
1930							
1931							
1932							
1933	93056.913	40000	133056.913	179		Cruz	
1934							
1935	97325.24	37000	134325.24	183			
1936							
1937						6th	
1938						5th, 7th	
1939						8th	
1940							
1941							
1942	131204	42796	174000	353			
1943							
1944							
1945	142940	30265	173205	354			
1948	146073	27132	173205	342			
1947	148517	26483	175000	342			
1948	150986	24014	175000	348			
1949	153345	23655	177000	335			
1950	155515	24485	180000	340			
1951	157533	22467	180000	337			
1952	159458	25542	185000	336			
1953	161224	23776	185000	330			
1954	162794	17206	180000	329			

Field	discovered						
Montebello	1917						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	164339	15661	180000				
1956	165843	14157	180000	318			
1957	167310	15690	183000	293			
1958	168663	16337	185000	312			
1959	169974	15026	185000	307			
1960	171239	13799	185038	280		waterflood- 1st	
1961	172509	12521	185030	298			
1962	173667	11354	185021	295		waterflood- 2nd	
1963	174840	10192	185032	288			
1964	176006	9050	185056	286			
1965	177182	7904	185086	273			
1966	178291	8299	186590	267			
1967	179357	7228	186585	248			
1968	180282	6822	187084	267			
1969	181076	6529	187605	181			
1970	181905	5702	187607	241			
1971	182632	4962	187594	194			
1972	183304	4290	187594	225			
1973	183927	5678	189605	168			
1974	184500	5120	189620	178			
1975	185114	4500	189614	194			
1976	165675.457	6000	191675.457	205			
1977	186305	5400	191705	168			
1978	186901	4804	191705	160			
1979	187453	4251	191704	164			
1980	187963	3741	191704	141			
1981	188450	3234	191684	175			
1982	188933	2770	191703	175			
1983	189394	2309	191703	167			
1984	189833	4270	194103	169			
1985	190228	3876	194104	169			
1986	190681	3423	194104	159			
1987	191197	10807	202004	184			
1988	191735	10269	202004	170			
1989	192358	9645	202003	168			
1990	192908	9095	202003	148			
1991	193412	8591	202003	124			
1992	193866	8137	202003	117			
1993	194283	7721	202004	108			
1994	194675	7328	202003	105			
1995	195039	8964	202003	99			

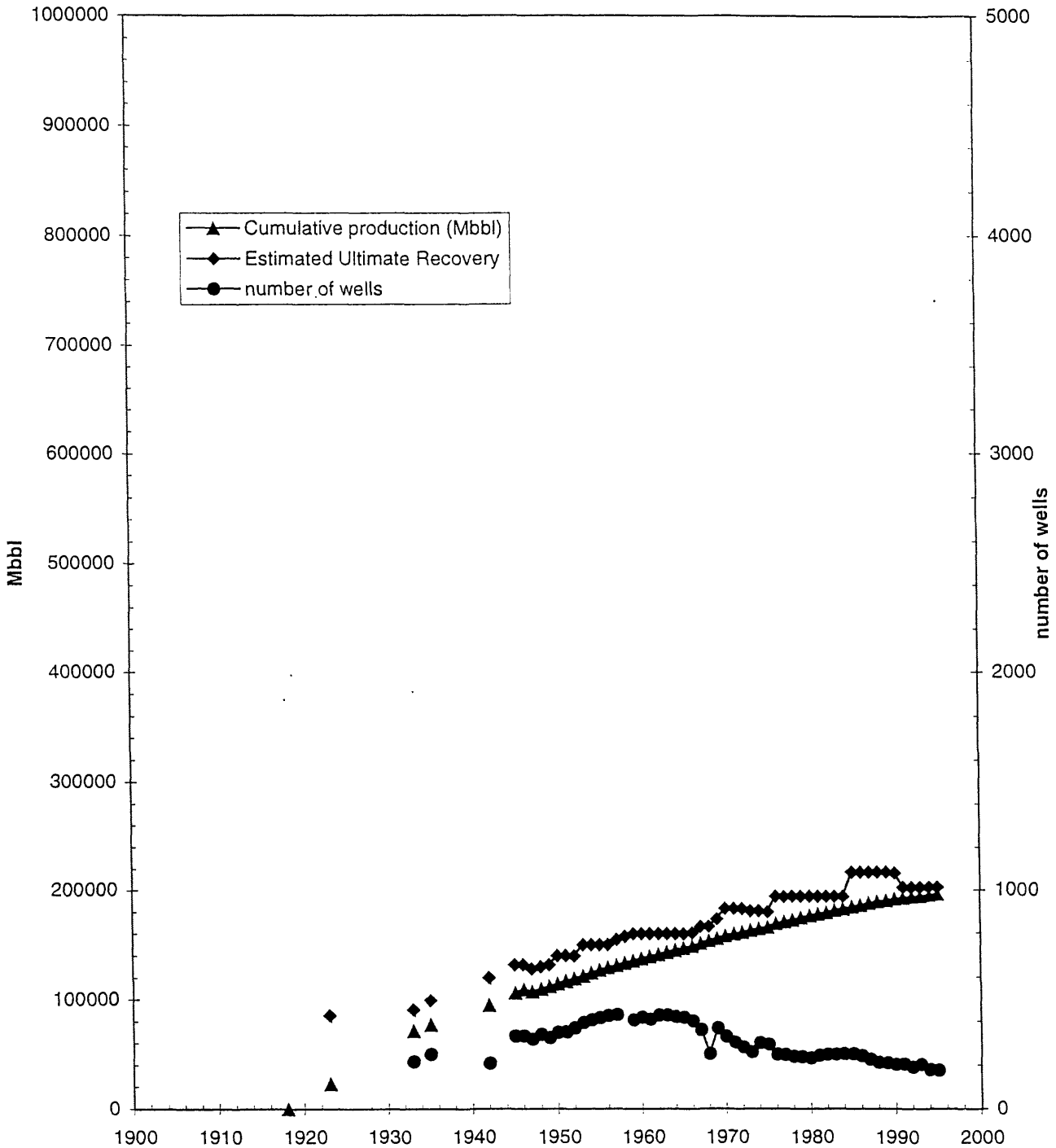
Montebello Oil Field Estimated Ultimate Recovery



Field	discovered						
Richfield	1919						
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912							
1913							
1914							
1915							
1916							
1917							
1918	0						
1919						Chapman	
1920						Kraemer	
1921							
1922							
1923	23299	62296	85595				
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							
1932							
1933	71791.339	19000	90791.339	216		Breen	
1934							
1935	77520.043	22000	99520.043	249			
1936							
1937							
1938							
1939							
1940							
1941							
1942	95014	24896	119910	207			
1943							
1944							waterflood- Chapman (first in CA)
1945	106404	25593	131997	334			
1948	109114	22883	131997	334			
1947	107345	20655	128000	321			
1948	109619	20381	130000	341			
1949	111973	20027	132000	327			
1950	114331	25669	140000	351			
1951	116754	23246	140000	354			
1952	119167	20833	140000	373			
1953	121772	28228	150000	398			
1954	124503	25497	150000	409			

Field	discovered						
Richfield	1919						
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	127042	22958	150000	418			
1956	129323	20677	150000	427		Dowling	
1957	131439	23561	155000	433		Tar Sand	
1958	133571	24429	158000				
1959	135645	24355	160000	410			
1960	137625	22375	160000	420			
1961	139422	20565	159987	412			
1962	141243	18759	160002	430			
1963	143175	16831	160006	431			
1964	145099	14838	159937	424			cyclic steam- Chapman
1965	147234	12782	160016	420			cyclic steam discontinued- Chapman
1966	149334	11734	161068	403			
1967	151563	15509	167072	364			
1968	153808	13269	167077	253			
1969	156029	17728	173757	371			
1970	158217	25000	183217	333			
1971	160124	23090	183214	305			
1972	161821	21395	183216	284			
1973	163370	17848	181218	263			waterflood- Kraemer
1974	164852	16372	181224	304			
1975	166488	14000	180488	295			
1976	169640.455	25000	194640.455	250			
1977	171096	23000	194096	248			
1978	173208	21432	194640	240			
1979	175135	19525	194660	239			
1980	176856	17785	194641	233			
1981	178532	16108	194640	246			
1982	180132	14509	194641	250			
1983	181757	12884	194641	249			
1984	183323	11317	194640	252			
1965	185029	32311	217340	252			
1986	186758	30583	217341	242			
1987	188369	28971	217340	227			
1988	189852	27488	217340	212			
1989	191172	26169	217341	209			
1990	192348	24292	216640	202			
1991	193406	9535	202941	204			
1992	194251	8689	202940	189			
1993	195044	7896	202940	202			
1994	195819	7122	202941	177			
1995	196551	6390	202941	175			

Richfield Oil Field Estimated Ultimate Recovery

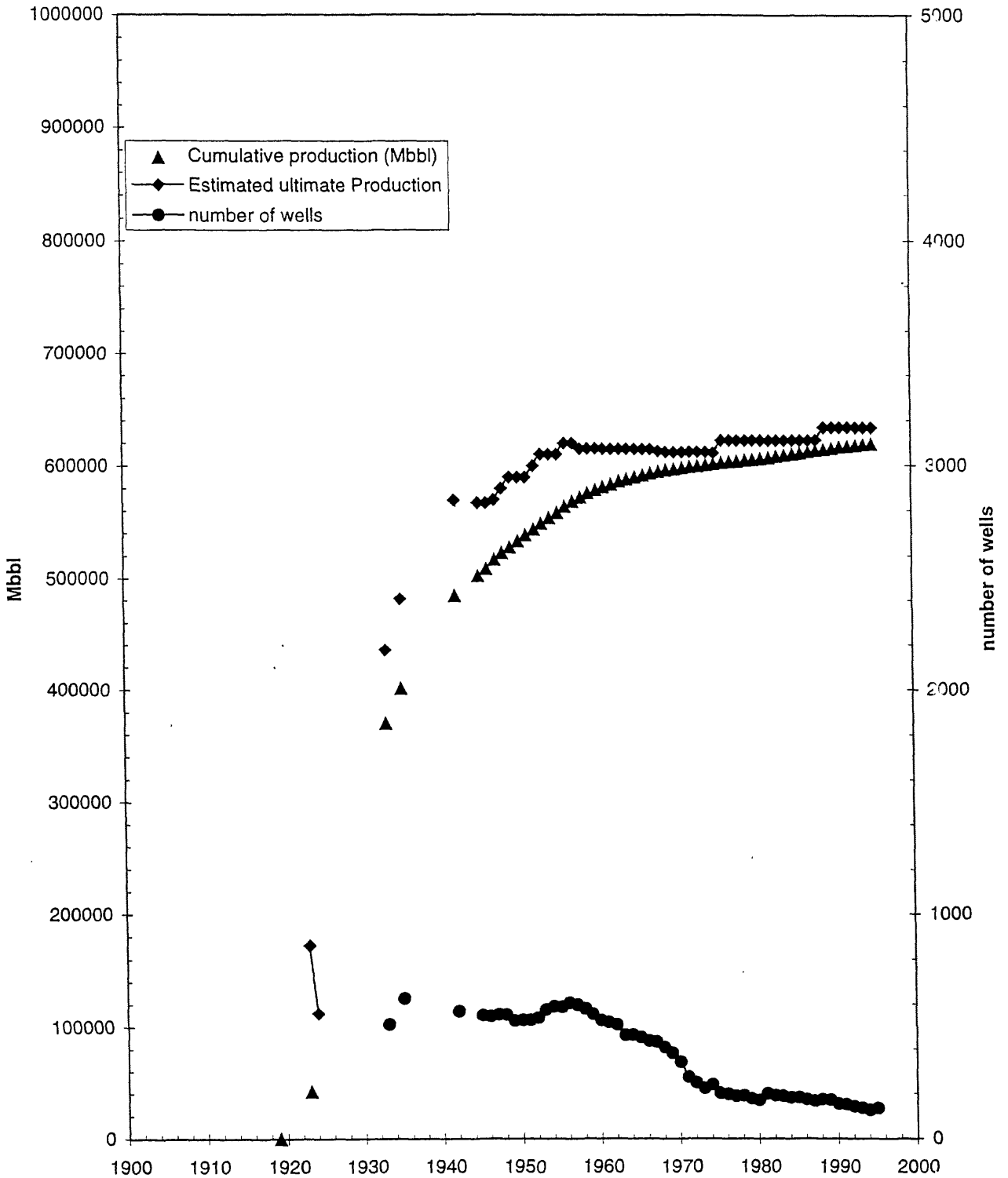


Field	discovered						
Santa Fe Springs	1919						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated ultimate Production	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912							
1913							
1914							
1915							
1916							
1917							
1918							
1919	0					Meyer	
1920							
1921						Bell	
1922						Foix, Gas Zone	
1923	42394	130356	172750				
1924			112500				
1925							
1926							
1927							
1928						Nordstrom, Buckbee	
1929						O'Connell,Clark-Hathaway	
1930							
1931							
1932							
1933	370897.21	65000	435897.21	515			
1934							
1935	401778.269	80000	481778.269	631			
1936							
1937							
1938						Bell 100	
1939							
1940							
1941							
1942	484938	85062	570000	573			
1943							
1944							
1945	502820	64680	567500	558			
1946	508933	58567	567500	551			
1947	517355	52645	570000	558			
1948	522886	57114	580000	558			
1949	528226	61774	590000	530			
1950	533500	56500	590000	534			
1951	538646	51354	590000	532			
1952	543844	56156	600000	545			
1953	549181	60819	610000	581			
1954	554366	55634	610000	594			

Field	discovered						
Santa Fe Springs	1919						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated ultimate Production	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	558840	51160	610000	592			
1956	564052	55948	620000	610		Santa Fe	
1957	568476	51524	620000	600			
1958	572375	42625	615000	582			
1959	575739	39261	615000	557			
1960	578591	36384	614975	531			
1961	581298	33642	614940	522			waterflood- Santa Fe
1962	583760	31177	614937	510			
1963*	586350	28593	614943	462			
1964	587996	26929	614925	466			
1965	589884	25040	614924	453			
1966	591671	23256	614927	439			
1967	593302	21624	614926	434			
1968	594780	18150	612930	408			
1969	596113	15817	611930	385			
1970	597286	14642	611928	344			
1971	598237	13689	611926	275			waterflood- Meyer
1972	599137	12794	611931	251			
1973	599958	11971	611929	226			waterflood- Clark-Hathaway
1974	600697	11218	611915	242			
1975	601406	9500	610906	204			
1976	602465.249	20000	622465.249	199			
1977	603245	19000	622245	189			
1978	603951	18303	622254	193			
1979	604709	17545	622254	179			waterflood discontinued-Santa Fe
1980	605463	16791	622254	171			
1981	606284	15970	622254	201			
1982	607223	15031	622254	192			
1983	608181	14073	622254	190			
1984	609168	13086	622254	182			
1985	610235	12019	622254	183			
1986	611265	10989	622254	173			
1987	612295	9959	622254	166			
1988	613290	8964	622254	173			
1989	614363	19391	633754	171			
1990	615378	18376	633754	153			
1991	616315	17439	633754	152			
1992	617195	16559	633754	142			
1993	617856	15898	633754	135			
1994	618592	15162	633754	127			
1995	619395	14359	633754	135			

*cumulative production taken from CA Div. Oil and Gas data because of presumed typographical error in Oil and Gas Journal data.

Santa Fe Springs Oil Field Estimated Ultimate Recovery



Field	discovered						
Seal Beach	1924						
Year	Cumulative production (Mbbl)	reserves (MMbbl)	Estimated ultimate Production	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
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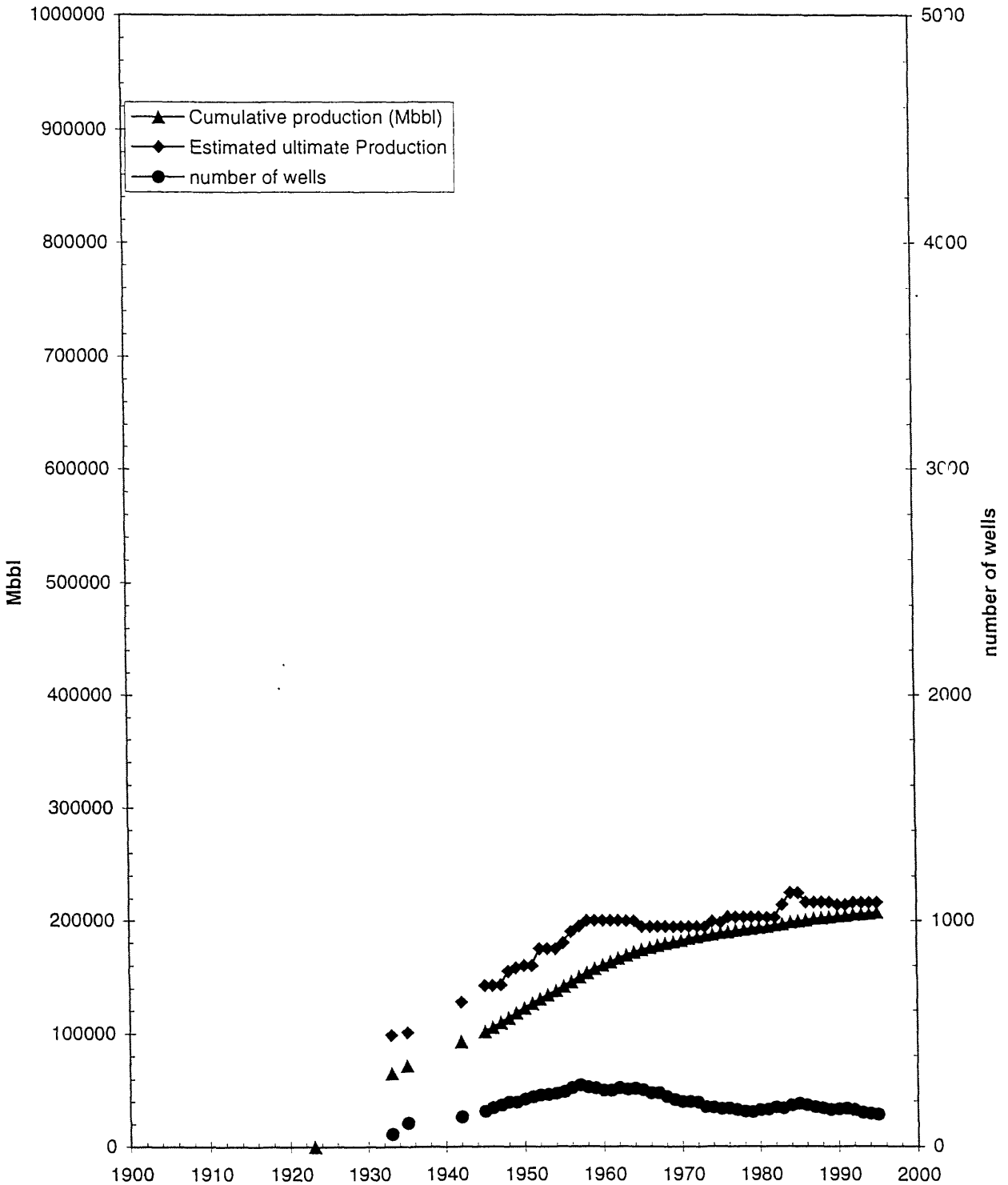
1913							
1914							
1915							
1918							
1917							
1918							
1919							
1920							
1921							
1922							
1923	0						
1924					North Block	San Gabriel/North Block	
1925							
1926					South Block	Bixby,Selover/South Block	
1927					Alamitos	Selover, Wasem/ Alamitos; Bixby, Selover, Wasem/NorthBloc	
1928						McGrath/South Block	
1929						McGrath/Alamitos; Wasem/South Block	
1930							
1931							
1932							
1933	65290.013	34000	99290.013	57			
1934							
1935	72185.996	29000	101185.996	107			
1936							
1937							
1938							
1939							
1940							
1941							
1942	92866	35134	128000	133			
1943							
1944						McGrath/North Block	
1945	102046	40454	142500	158			
1946	105741	36759	142500	173			
1947	109698	33302	143000	185			
1948	113858	41142	155000	199			
1949	118248	39752	158000	198			
1950	122500	37500	160000	212			
1951	126632	33368	160000	222			
1952	130722	44278	175000	230		Lane/South Block	
1953	134578	40422	175000	234			
1954	138112	36888	175000	237	North Block East Extension Area	McGrath/North Block E. Extension	

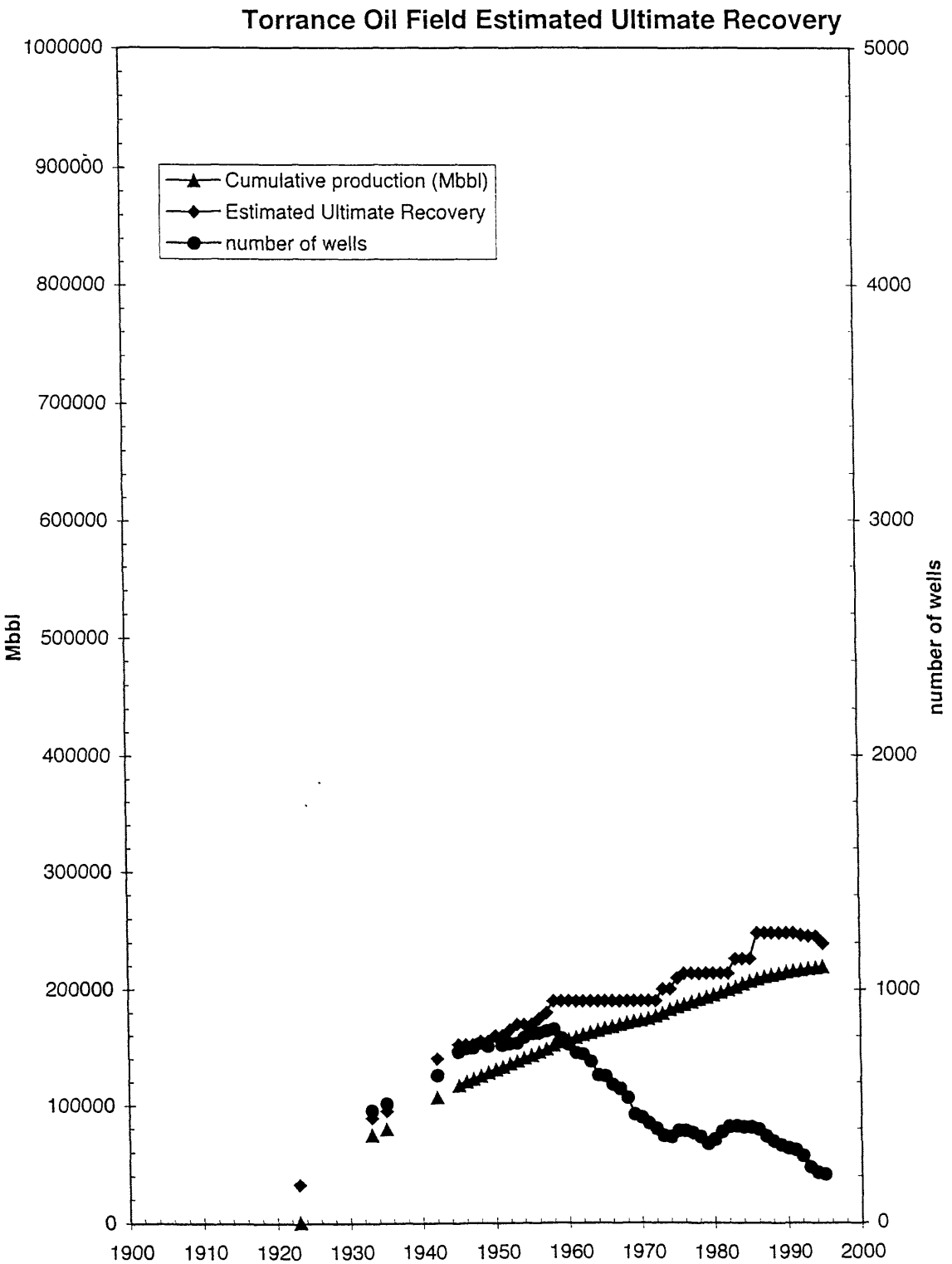
Field	discovered						
Seal Beach	1924						
Year	Cumulative production (Mbbl)	reserves (MMbbl)	Estimated ultimate Production	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	141730	38270	180000	245			
1956	145675	44325	190000	263		Wasem/North Block E. Extension	
1957	149726	45274	195000	275			
1958	153608	46392	200000	265			
1959	157005	42995	200000	261			
1960	160280	39722	200002	252			
1961	163326	36662	199988	252			waterflood-McGrath/North Block
1962	166403	33580	199983	263			
1963	169105	30742	199847	257			
1964	171667	28190	199857	260			
1965	173970	20879	194849	254			
1966	175937	18884	194821	241			
1967	177712	17106	194818	239			
1968	179390	15427	194817	224			
1969	180963	13863	194826	210		B gas pool/North Block	
1970	182493	12333	194826	200			
1971	183964	10865	194829	200			
1972	185406	9425	194831	198			
1973	186743	8086	194829	179			
1974	187989	11900	199889	176			
1975	189166	9000	198166	168			waterflood- Wasem/North Block
1976	190302.598	13000	203302.598	171			waterflood- McGra'h/N. Block E. Ext.
1977	191338	12000	203338	165			waterflood- Lane, Wasem, McGrath/South Block
1978	192306	11033	203339	158			
1979	193274	10064	203338	156	Marine Area	Wasem, Lower McGrath/Marine	
1980	194230	9108	203338	164			
1981	195225	8113	203338	166		Lane/Marine	
1982	196334	7004	203338	177			
1983	197636	17400	215036	172			
1984	199069	26067	225136	185			
1985	200270	24866	225136	192			
1986	201296	15940	217236	186			
1987	202242	14994	217236	176			
1988	203063	14173	217236	171			
1989	203862	13374	217236	165			
1990	204601	10095	214896	168			
1991	205351	9345	214696	168			
1992	206025	10461	216486	163			
1993	206656	9830	216486	150			
1994	207253	9233	216486	147			
1995	207812	8674	216486	141			

Seal Beach Oil Field Estimated Ultimate Recovery



Field	discovered							
Torrance	1922							
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1900								
1901								
1902								
1903								
1904								
1905								
1906								
1907								
1908								
1909								
1910								
1911								
1912								
1913								
1914								
1915								
1916								
1917								
1918								
1919								
1920								
1921								
1922					Onshore Area	Tar, Ranger/Onshore		
1923	796	31994	32790					
1924								
1925								
1926								
1927								
1928								
1929								
1930								
1931								
1932								
1933	75188.443	14000	89188.443	479				
1934								
1935	80212.875	15000	95212.875	506				
1936						Del Amo/Onshore		
1937								
1938								
1939								
1940								
1941								
1942	107280	32720	140000	828				
1943								
1944								
1945	117097	35395	152492	731				
1946	120239	32253	152492	746				
1947	122528	29972	152500	749				
1948	125385	29615	155000	768				
1949	128177	26823	155000	755				
1950	130766	29234	160000					
1951	133283	26717	160000	759				
1952	135789	29211	165000	767				
1953	138350	31650	170000	768				
1954	140871	29129	170000	795				
1955	143451	26549	170000	810				
1956	146069	28931	175000	813	Offshore Area	Main, Del Amo/Offshore		
1957	148770	31230	180000	821				
1958	151869	38131	190000	829			Waterflood- Tar, Ranger, Main/Onshore	
1959	154507	35493	190000	790				

Field	discovered							
Torrance	1922							
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1960	156730	33249	189979	762				
1961	158829	31137	189966	728				
1962	160941	29025	189966	721				
1963	162892	27061	189953	688				
1964	164713	25232	189945	630				
1965	166394	23552	189946	625				
1966	168011	21933	189944	588				
1967	169598	20348	189946	569				
1968	171134	18812	189946	530				
1969	172407	17522	189929	460				
1970	173551	16358	189909	447				
1971	174911	15020	189931	420				
1972	176965	12984	189949	398				
1973	179632	20336	199970	368				
1974	182632	17591	200223	364				
1975	185091	24000	209091	389				
1976	186746.592	26700	213446.592	390				
1977	189153	24300	213453	379				
1978	191273	22180	213453	363				
1979	193202	20251	213453	334				
1980	195086	18367	213453	353				
1981	197109	16344	213453	385				
1982	199538	13915	213453	408				
1983	202031	23650	225681	410				
1984	204517	21164	225681	404				
1985	206851	18830	225681	408				
1986	208876	38885	247561	395				
1987	210358	37204	247562	366				
1988	211968	35593	247561	345				
1989	213345	34216	247561	330				
1990	214604	32957	247561	315				
1991	215709	31852	247561	309				
1992	216688	28890	245578	283				
1993	217598	27410	245008	236				
1994	218429	26579	245008	213				
1995	219250	19658	238908	206				


Torrance Oil Field Estimated Ultimate Recovery
Cumulative production (Mbbl)
Estimated Ultimate Recovery
number of wells
Mbbl
number of wells
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
5000
4000
3000
2000
1000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

Field		discovered					
Wilmington		1932					
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
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1914							
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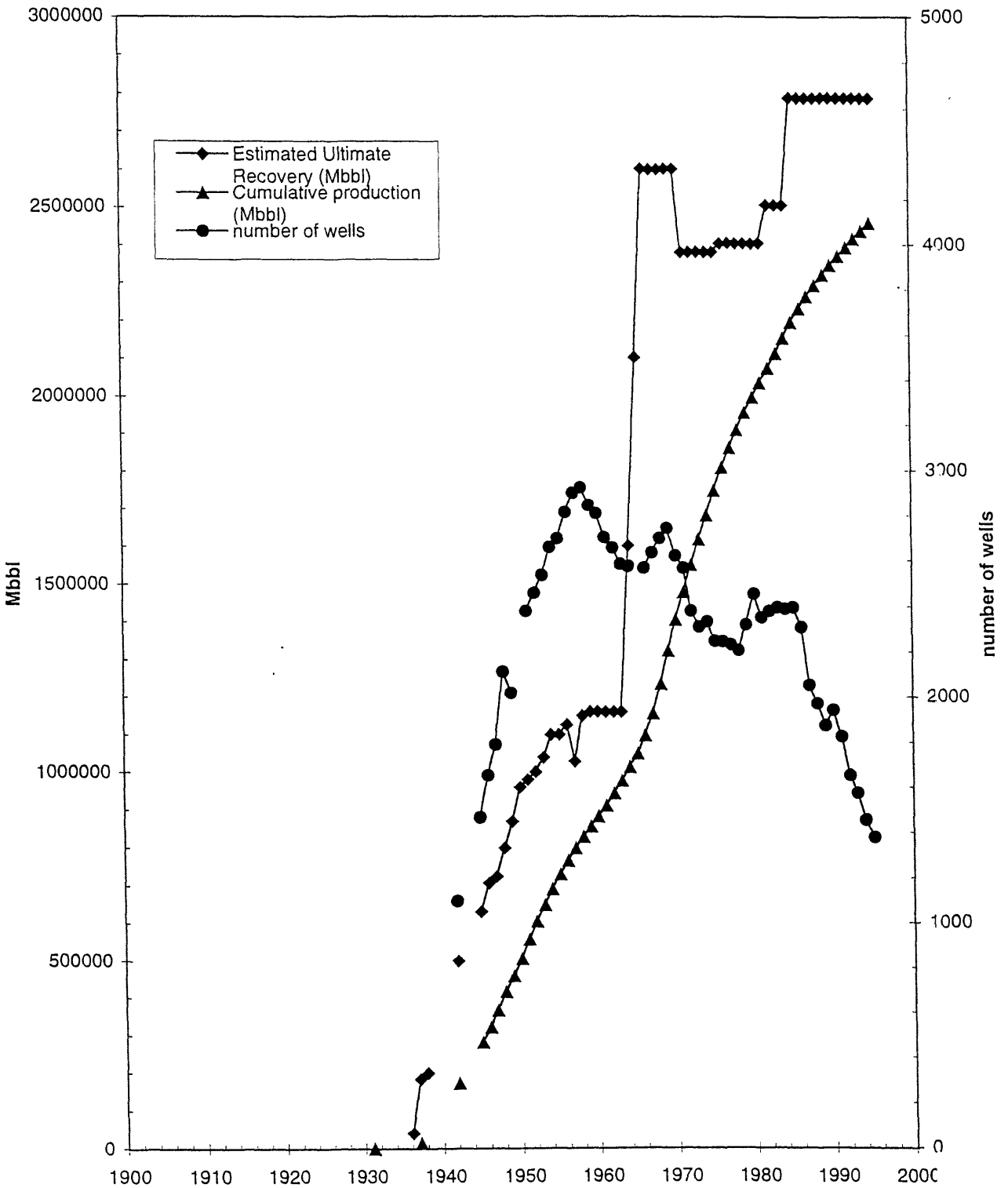
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923							
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931	0						
1932					Onshore Area	Ranger/Onshore	
1933							
1934							
1935							
1936		40000	40000			Upper Terminal/Onshore	
1937	14262.377	170000	184262.377			Ford, Tar/Onshore	
1938		200000	200000			Lower Terminal/Onshore	
1939					Offshore Area	Ranger, Upper Terminal/Offshore	
1940							
1941							
1942	173717	326283	500000	1102		Union Pacific/Onshore	
1943						Tar/Offshore	
1944							
1945	281478	350730	632208	1468		237, Schist/ Onshore; 237, Schist, Ford/Offshore	
1946	321722	385486	707208	1653			
1947	368608	356392	725000	1791		Union Pacific/Offshore	
1948	417225	382775	800000	2113			
1949	460880	409120	870000	2019			
1950	506882	453178	960060				
1951	557879	422121	980000	2382			
1952	605952	394048	1000000	2460			
1953	650286	389714	1040000	2539			waterflood- Upper Terminal/Onshore
1954	691731	408269	1100000	2682			waterflood- Tar/Onshore
1955	730568	369432	1100000	2700			

Field		discovered					
Wilmington		1932					
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1956	767430	357570	1125000	2816			waterflood- Ranger, lower Terminal/Onshore; Lower Terminal/Offshore
1957	799725	228275	1028000	2900			
1958	829475	320525	1150000	2926			waterflood- Ford, Union Pacific/Onshore; Tar, Ranger, Upper Terminal, Union Pacific, Ford/Offshore
1959	856408	303592	1160000	2847			
1960	883953	276022	1159975	2811			waterflood- 237/Onshore; 237/Offshore
1961	911873	248074	1159947	2703			
1962	943629	216249	1159878	2659			
1963	978258	181602	1159860	2588			
1964	1013578	586422	1600000	2576			
1965	1050539	1049371	2099910				
1966	1098767	1502255	2601022	2570			
1967	1156485	1443603	2600088	2636			steamflood- Ranger/Onshore
1968	1235029	1365350	2600379	2699			
1969	1324553	1276297	2600850	2745			polymer flood- Ranger/Onshore
1970	1406358	1194455	2600813	2623			
1971	1479185	900500	2379685	2569			
1972	1549450	830383	2379833	2381			polymer flood discontinued- Ranger/Onshore; waterflood discontinued- 237/Offshore
1973	1616516	763317	2379833	2311			
1974	1681810	697935	2379745	2335			
1975	1747359	632000	2379359	2249			
1976	1807476.068	595000	2402476.068	2247			
1977	1860211	542000	2402211	2233			
1978	1908614	493597	2402211	2210			
1979	1953382	448800	2402182	2320		Shallow gas sand/onshore	Polymer-micellar flood- Upper Terminal/Onshore and Offshore
1980	1994304	407304	2401608	2456			
1981	2033770	368440	2402210	2352			CO2 waterflood- Tar/Onshore; polymer-micellar flood discontinued- Upper Terminal/Onshore and Offshore; waterflood discontinued- Ford/Offshore; steamflood- Tar/Offshore
1982	2072472	431686	2504158	2382			steamflood- Tar/Onshore; CO2 WAG flood- Tar/Offshore
1983	2110968	393190	2504158	2396			
1984	2151603	352555	2504158	2390			
1985	2192795	595363	2788158	2396			
1986	2229363	558795	2788158	2309			
1987	2261472	526686	2788158	2055			
1988	2290857	497301	2788158	1971			
1989	2318108	470050	2788158	1876			CO2-WAG flood discontinued- Tar/Offshore
1990	2344012	444146	2788158	1943			
1991	2368792	419366	2788158	1827			
1992	2392036	396122	2788158	1655			
1993	2414196	373960	2788158	1576			
1994	2436452	351706	2788158	1456			
1995	2457573	330585	2788158	1381			

Wilmington Oil Field Estimated Ultimate Recovery



Field	discovered						
Yorba Linda	1930						
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	Number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
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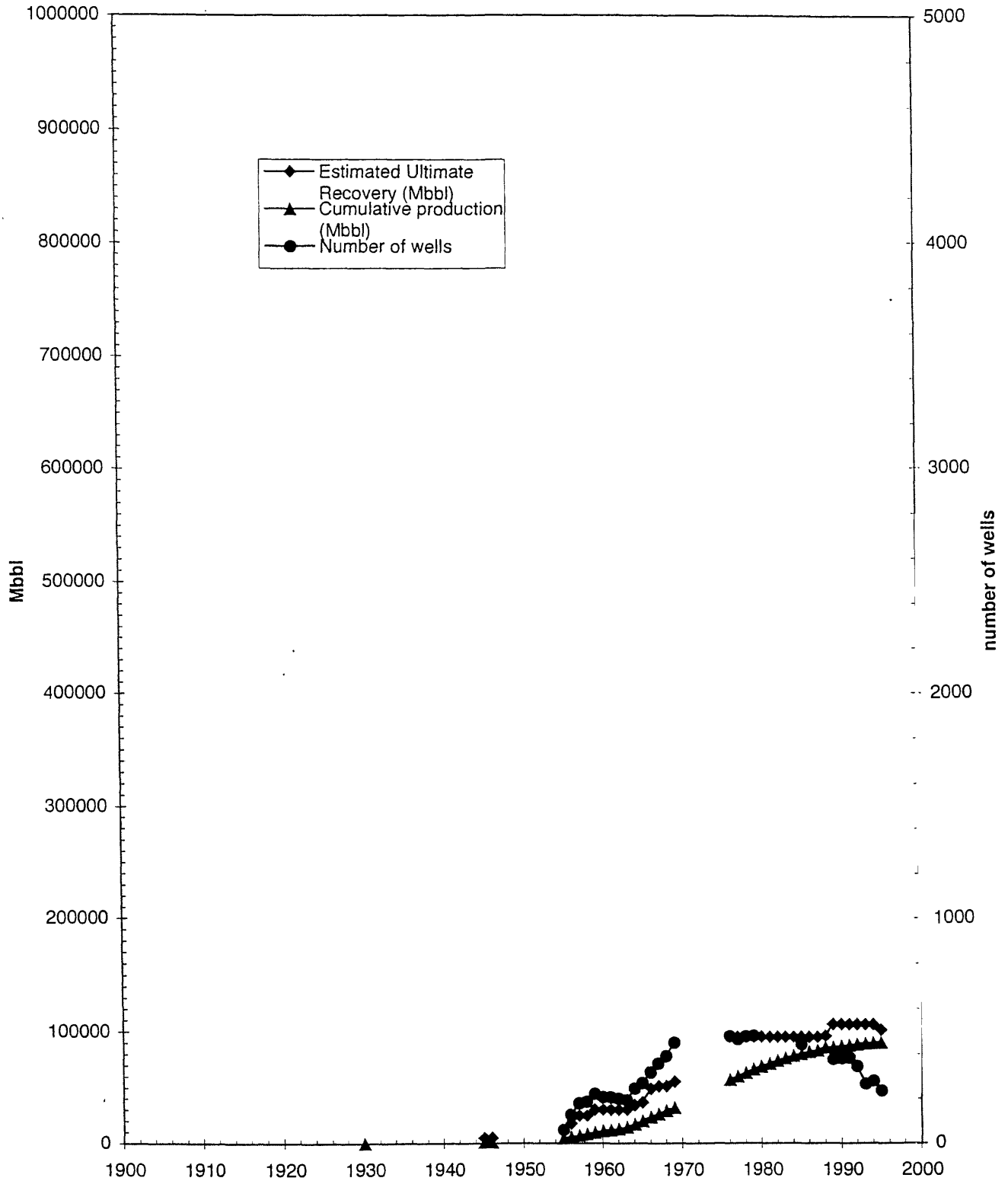
1922							
1923							
1924							
1925							
1926							
1927							
1928							
1929							
1930	0					Main (Signet Sand) Pool	
1931							
1932							
1933							
1934							
1935							
1936							
1937						Shell (F Sands) Pool	
1938							
1939							
1940							
1941							
1942							
1943							
1944							
1945	757	4240	4997				
1946	759	4238	4997				
1947							
1948							
1949							
1950							

Field	discovered						
Yorba Linda	1930						
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	Number of wells	Area discovered	Pool discovered	Enhanced recovery
1951							
1952							
1953							
1954						Shallow (Conglomerate) Pool	
1955	4194	5806	10000	59			
1956	5238	12762	18000	127			
1957	6870	18130	25000	180			
1958	8160	16840	25000	185			
1959	9604	20396	30000	220			
1960	10835	19148	29983	206			cyclic steam-Shallow
1961	11896	18123	30019	205		Miocene Contact Pool	
1962	12851	17160	30011	198			
1963	14586	15433	30019	193			cyclic steam- Main
1964	16957	17070	34027	244			steamflood- Shallow, Shell
1965	20161	16678	36839	268			cyclic steam- Shell
1966	23416	25474	48890	316			
1967	26394	24939	51333	357			
1968	29199	22133	51332	390			
1969	31714	23520	55234	447			hot waterflood- Shell
1970							
1971							steam flood- Main
1972							
1973							
1974							
1975							
1976	56822.608	38000	94822.608	476			
1977	59968	34900	94868	463			
1978	63063	31760	94823	477			
1979	65872	28910	94782	478			hot waterflood- Main
1980	68688	26094	94782				
1981	71375	23406	94781				
1982	73855	20926	94781				
1983	76040	18741	94781				
1984	76055	16726	94781				
1985	79945	14836	94781	442			
1986	81620	13161	94781				
1987	83163	11618	94781				
1986	85509	10272	95781				
1989	85647	20634	106261	375			
1990	86558	19723	106281	380			
1991	87504	18782	106286	382			
1992	88305	17982	106267	345			
1993	88973	17313	106286	266			
1994	89551	16665	106216	279			
1995	90119	11177	101296	235			

Yorba Linda Oil Field Estimated Ultimate Recovery



Field	discovered						
Carpinteria Offshore (total)	1966						
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated ultimate recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
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1946							
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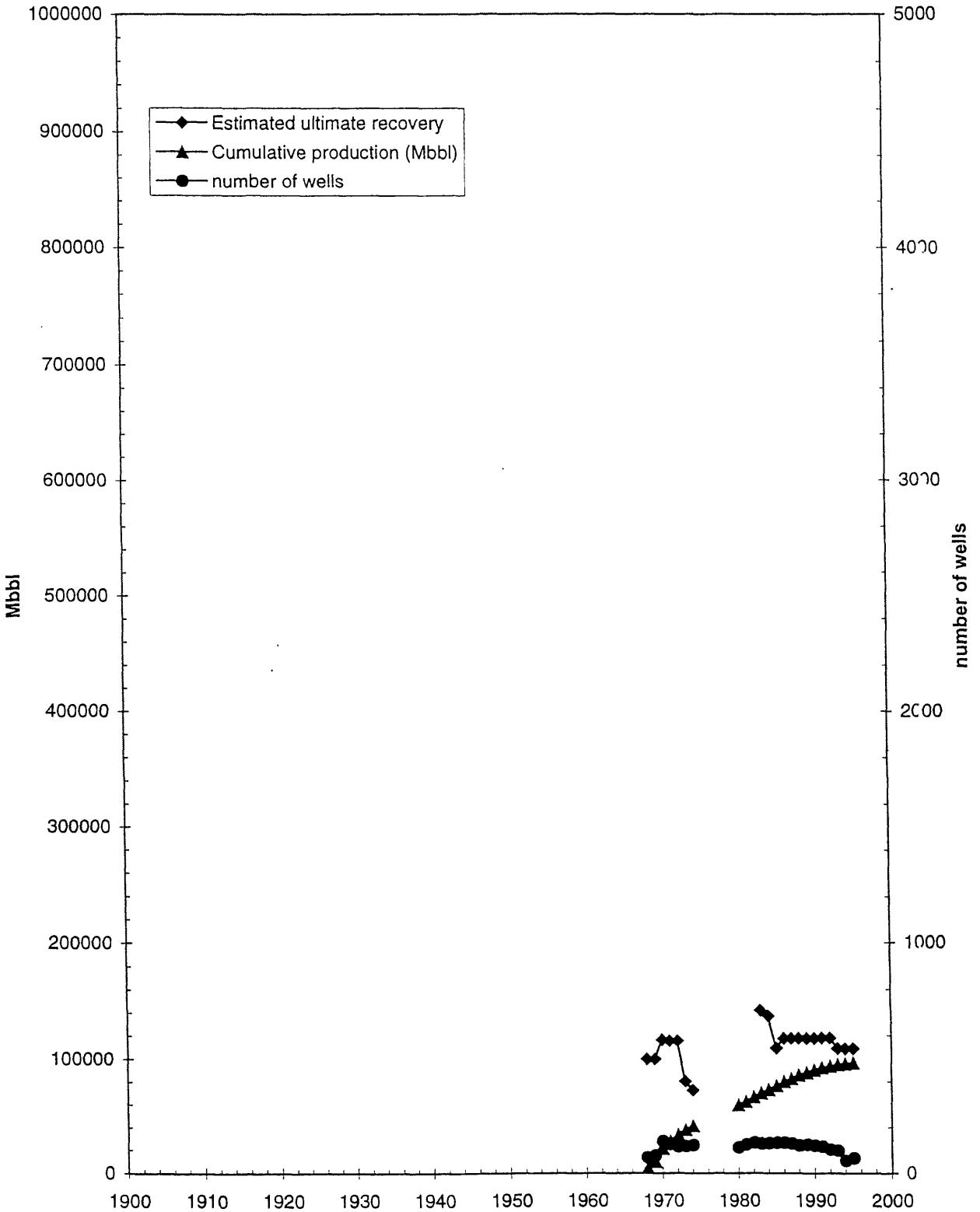
1948							
1949							
1950							
1951							
1952							
1953							
1954							

Field	discovered						
Carpinteria Offshore (total)	1966						
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated ultimate recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955							
1956							
1957							
1958							
1959							
1960							
1961							
1962							
1963							
1964						Pico pool	
1965							
1966							
1967	4658	95342	100000	68		Subthrust Pico pool	
1968	10032	89850	99882	76		First production from Federal leases	
1969	21213	95000	116213	138			
1970	27993	87366	115359	127			
1971	33300	82071	115371	116			
1972	37656	42838	80494	117			
1973	41456	31055	72511	122			
1974							
1975							
1976							
1977							
1978							
1979	59324			111			
1980	62431			124			
1981	66461			132			
1982	70015	71818	141833	129			
1983	72963	64011	136974	131			
1984	76605	32330	108935	133			
1985	79938	37443	117381	133			gas reinjection for pressure maintenance started-- unsuccessful
1986	82716	34665	117381	128			
1987	85411	31979	117390	119			
1988	87936	29454	117390	123			
1989	90064	27328	117392	119			
1990	91886	25957	117843	116			
1991	93464	24379	117843	102			
1992	94688	14109	108797	97			
1993	95705	13093	108798	55			
1994	96557	12108	108665	66			
1995	97412	11253	108665	47			

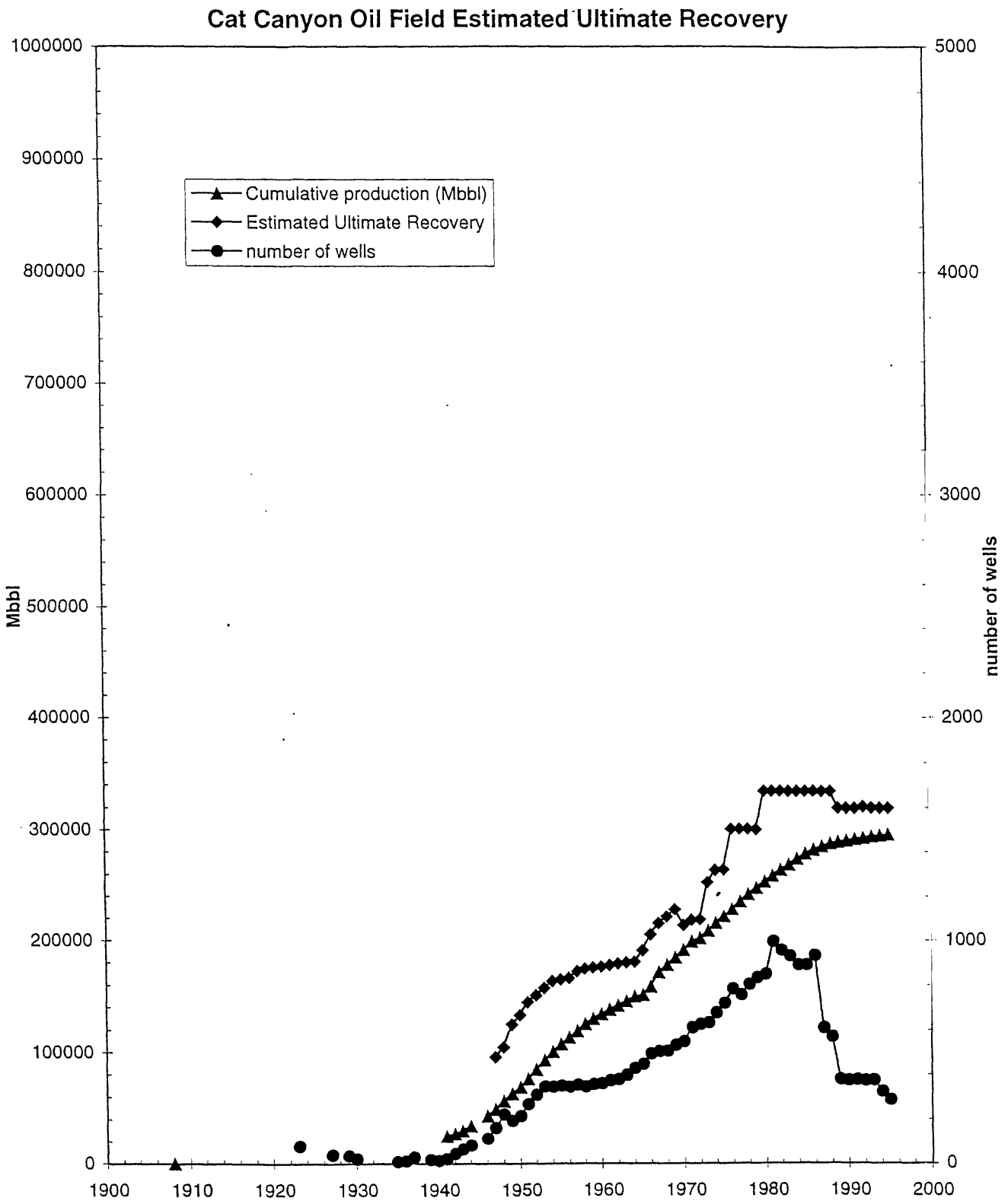
Carpinteria Offshore Oil Field Estimated Ultimate Recovery



Field	discovered						
Cat Canyon	1908						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907	0						
1908					West	Sisquoc/West	
1909						Brooks/West	
1910							
1911							
1912							
1913							
1914							
1915					Gato Ridge	Monterey/Gato Ridge	
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923				79			
1924							
1925							
1926							
1927				40			
1928							
1929				36			
1930				21			
1931							
1932							
1933							
1934							
1935				8			
1936				14			
1937				28		Sisquoc/Gato Ridge	
1938						Los Flores/West	
1939				17			
1940				13			
1941	25051.364			23			
1942	27311.519			47			
1943	30175.63			66			
1944	34497.831			84	Olivera Canyon, Sisquoc Areas discovered	Monterey/Olivera Canyon; Sisquoc, Monterey/Sisquoc	
1945					Tinaquaic Area discovered	Monterey/Tinaquaic	
1946	43484.352			114			
1947	49285.757	46767	96052.757	164	Four Deer Area discovered		gas injection- Los Flores/West
1948	56945.273	48088	105033.273	224			
1949	63627.488	61654	125281.488	197			
1950	69304.872	64051	133355.872	217			
1951	76866.829	67911	144777.829	270			
1952	84996.738	66302	151298.736	313			
1953	93420.223	64331	157751.223	351	East Area discovered	Alexander/West; Monterey/East	
1954	100825.863	63199	164024.863	348		Thomas/Sisquoc	waterflood- Sisquoc/West

Field	discovered						
Cat Canyon	1908						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	107431.963	57851	165282.963	352			gas injection discontinued- Los Flores/West
1956	113592.659	52965	166557.659	347	Central Area discovered	Sisquoc/Central	
1957	119191.834	53583	172774.834	356			
1958	125385.235	49650	175035.235	349			
1959	129955.246	45889	175844.246	358			
1960	134203.057	42667	176870.057	364		S6-S6A Gas/West	
1961	138138.611	39845	177983.611	376			
1962	142053.634	37045	179098.634	380			
1963	145917.557	34414	180331.557	401			Sisquoc/Central; cyclic steam- Sisquoc/Sisquoc
1964	150288.801	30764	181052.801	432			cyclic steam- Sisquoc, Brooks/East; Sisquoc/West
1965	151538.251	39556	191094.251	450			waterflood- Sisquoc/Central
1966	159177.758	45912	205089.758	495			
1967	171804.344	43811	215615.344	506			
1968	178518.798	43240	221758.798	509	Clark Area discovered		steamflood- Sisquoc/Central
1969	184869.57	43373	228242.57	535			
1970	191643.888	22037	213680.888	550			waterflood-Sisquoc/Sisquoc
1971	199120.529	19332	218452.529	612	Bradley Canyon Area discovered and merged with Sisquoc Area		waterflood discontinued Sisquoc/Sisquoc
1972	202067.807	16930	218997.807	627	Clark Area transferred to Santa Maria Valley field; Four Deer made field		waterflood-Los Flores/West
1973	208900.427	44120	253020.427	634			fireflood-Sisquoc/Sisquoc
1974	215653.428	48100	263753.428	678			waterflood discontinued Los Flores/West
1975	222100.491	42000	264100.491	722			
1976	228852.985	72100	300952.985	786			
1977	235528	65400	300928	759			
1978	242494	58459	300953	806			fireflood discontinued- Sisquoc/Sisquoc
1979	247953	52446	300399	838			
1980	253725	81274	334999	852		Foxen/Sisquoc	cyclic steam- Foxen/Sisquoc
1981	259036	75963	334999	998			
1982	264171	70828	334999	959			
1983	269297	65702	334999	935			
1984	274292	60707	334999	894			
1985	279036	55963	334999	895			
1986	282570	52430	335000	937			Sisquoc/Central; steamflood discontinued- Sisquoc/Sisquoc
1987	285509	49490	334999	612			
1988	287945	47054	334999	573			
1989	289464	30535	319999	380			
1990	290733	29226	319959	376			
1991	292022	27977	319999	379			
1992	293077	27922	320999	374			
1993	294281	25718	319999	377			
1994	295352	24648	320000	327			
1995	296234	23765	319999	288			

Cumulative production and number of wells from California Division of Oil and Gas and Conservation Committee of California Oil Producers (1991).


Cat Canyon Oil Field Estimated Ultimate Recovery
Cumulative production (Mbbl)
Estimated Ultimate Recovery
number of wells
Mbbl
number of wells
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
5000
4000
3000
2000
1000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

Field		discovered					
Dos Cuadros Offshore		1968					
Year	Cumulative production (MMbbl)	reserves (MMbbl)	Estimated ultimate Production	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
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1947							
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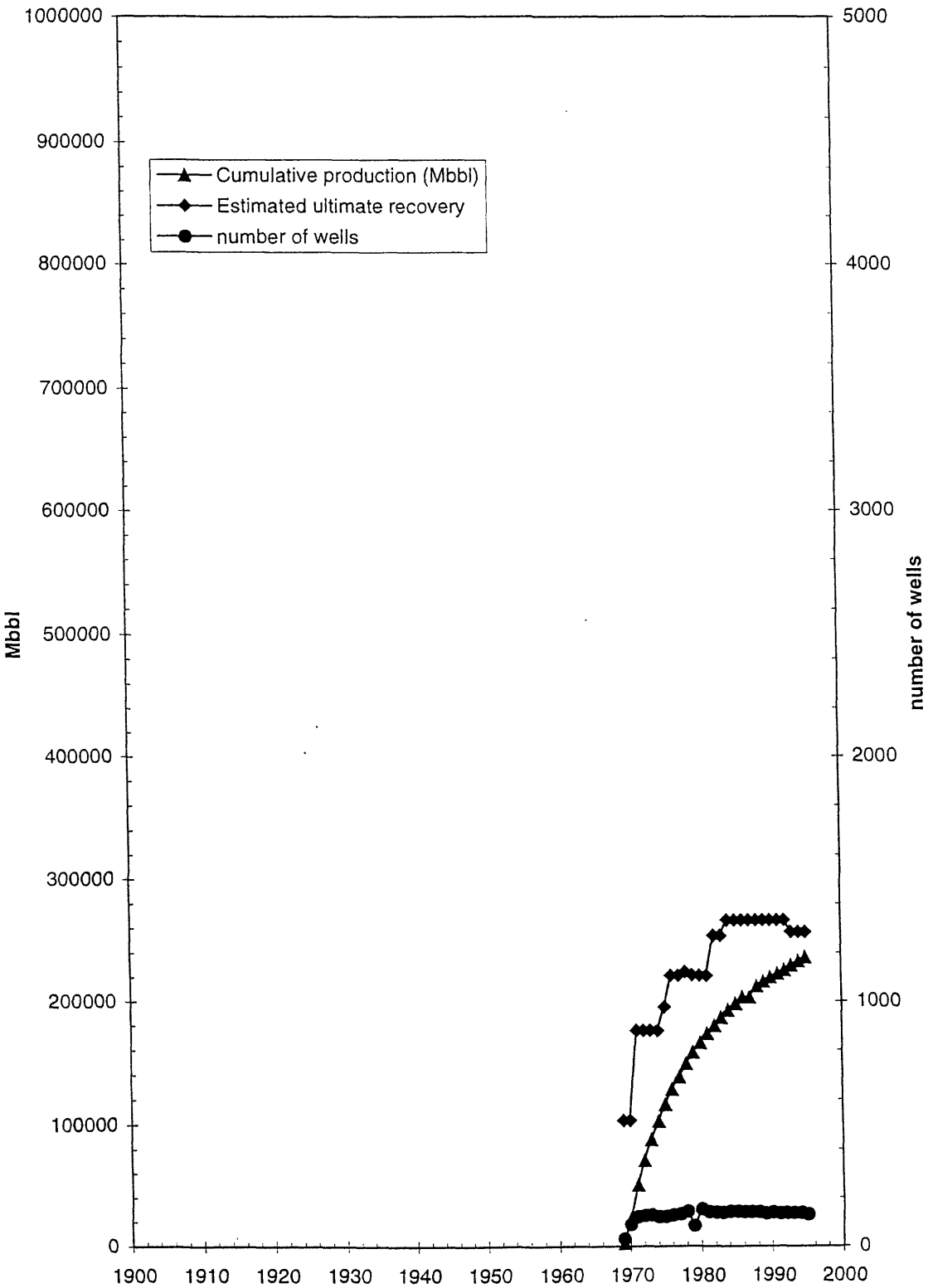
1949							
1950							
1951							
1952							
1953							
1954							

Field		discovered					
Dos Cuadros Offshore		1968					
Year	Cumulative production (MMbbl)	reserves (MMbbl)	Estimated ultimate Production	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955							
1956							
1957							
1958							
1959							
1960							
1961							
1962							
1963							
1964							
1965							
1966							
1967							
1968							
1969	2827	100000	102827	30		Repetto pool	
1970	22955	80217	103172	90			waterflood- Repetto
1971	50738	125000	175738	123		Monterey pool	
1972	70770	104982	175752	127			
1973	87498	88237	175735	129			
1974	102488	73247	175735	123			
1975	115940	79000	194940	123			
1976	128205	93000	221205	128			
1977	138462	82700	221162	134			
1978	149211	75200	224411	143			
1979	158467	63000	221467	85			
1980	166416	55000	221416	152			
1981	173434	47982	221416	142			
1982	180337	73697	254034	139			
1983	186686	67348	254034	139			
1984	192677	73900	266577	143			
1985	198140	68416	266556	143			
1986	203204	63352	266556	141			polymer flood
1987	203204	63352	266556	141			
1988	212390	54166	266556	141			
1989	216284	50272	266556	136			
1990	219747	46836	266583	139			
1991	222874	43710	266584	135			
1992	226184	40399	266583	138			
1993	229856	26944	256800	137			
1994	233298	23497	258795	137			
1995	236325	20470	256795	130			

Dos Cuadros Oil Field Estimated Ultimate Recovery



Field	discovered						
Elwood	1928						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912							
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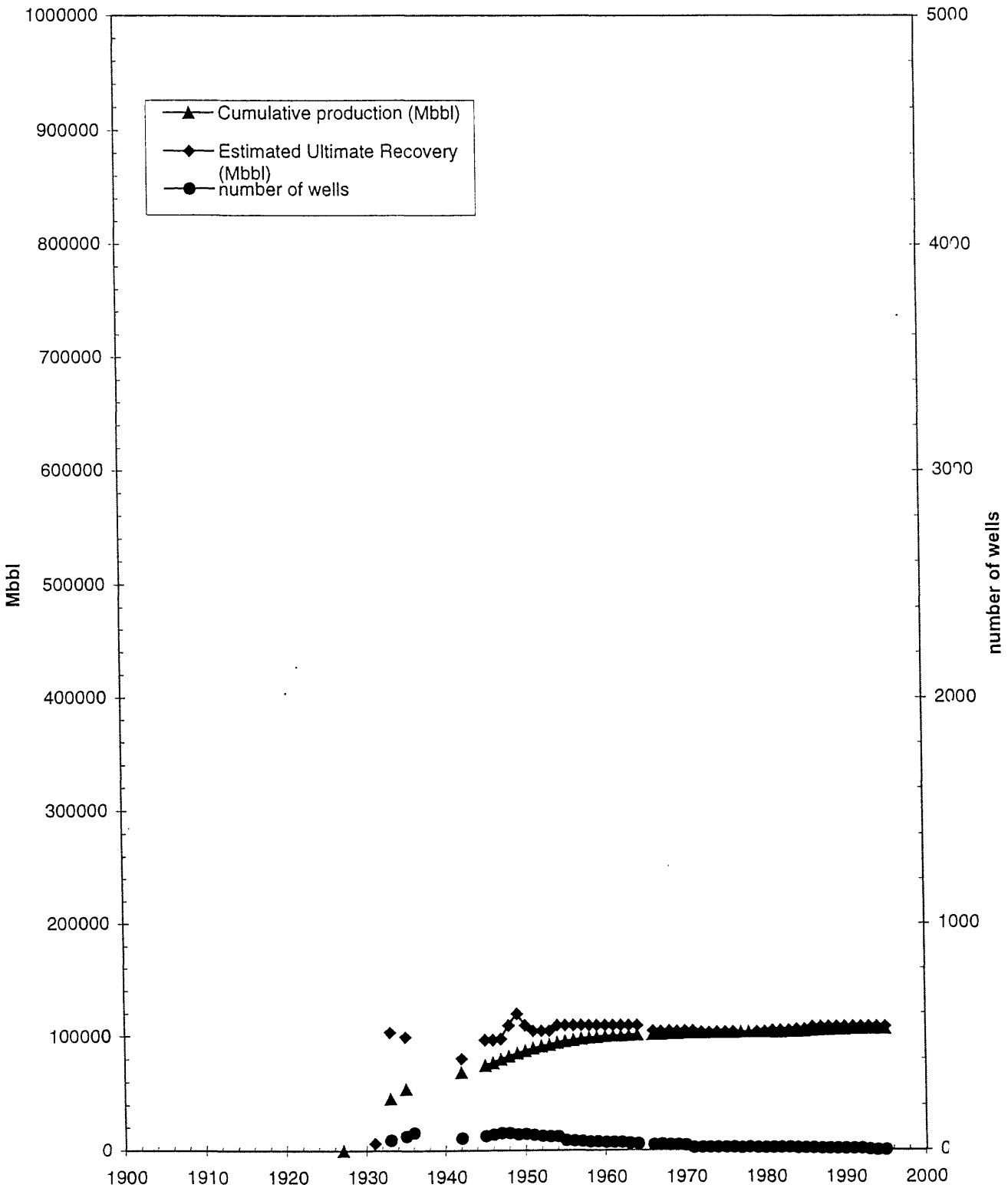
1915							
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923							
1924							
1925							
1926							
1927	0						
1928					Onshore Area	Vaqueros pool	
1929					Offshore Area	Vaqueros pool	
1930							
1931			6000			Rincon, Bell 14/Onshore	
1932							
1933	45853.988	58000	103853.988	47			
1934						Bell 14/Offshore	
1935	54527.22	45000	99527.22	64		Upper Sespe/Onshore and Offshore	
1936				78		Sespe Gas, Lower Sespe/Onshore and Offshore	
1937							
1938						Rincon/Offshore	
1939							
1940							
1941							
1942	69293	11707	81000	54			
1943							
1944							
1945	75163	21837	97000	63			
1946	77614	19386	97000	70			
1947	80314	17668	97982	77			gas injection- Vaqueros Pool/Offshore
1948	83008	26992	110000	76			
1949	85689	34311	120000	69			
1950	87978	22022	110000	72			
1951	89900	15100	105000	67			
1952	91685	13315	105000	64			
1953	93252	11748	105000	62			
1954	94752	15248	110000	61			

Field	discovered						
Elwood	1928						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	96038	13962	110000	43			
1956	97245	12755	110000	42			
1957	98240	11760	110000	40			
1958	99225	10775	110000	38			
1959	99951	10049	110000	38			
1960	100425	9431	109856	36			
1961	101013	8984	109997	36			
1962	101227	8631	109858	35			
1963	101632	8328	109960	31			
1964	101863	8098	109961	28			
1965							
1966	102258	2617	104875	25			
1967	102387	2356	104743	27			
1968	102793	2090	104883	24			
1969	102849	1892	104741	23			gas injection discontinued-Vaqueros/Offshore
1970	103135	1744	104879	21			
1971	103245	1636	104881	12			
1972	103307	573	103880	10	Onshore Area abandoned		
1973	103221	219	103440	12			
1974	103266	479	103745	12			
1975	103309	400	103709	11			
1976	103401.322	120	103521.322	12			
1977	103466			9			
1978	103525			10			
1979	103578	300	103878	8			
1980	103637	241	103878	9			
1981	103725	1160	104885	12			
1982	103870	1014	104884	11			
1983	104011	873	104884	10			
1984	104210	1675	105885	9			
1985	104562	1323	105885	9			
1986	104911	2973	107884	9			
1987	105276	2608	107884	7			
1988	105604	2281	107885	7			
1989	105866	2019	107885	7			
1990	106069	1815	107884	7			
1991	106218	1666	107884	7			
1992	106318	1567	107885	6			
1993	106372	1513	107885	3			
1994	106372	1513	107885	0			
1995	106372	1513	107885	0			

Elwood Field Oil Estimated Ultimate Recovery



Field	discovered						
Hondo Offshore	1969						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
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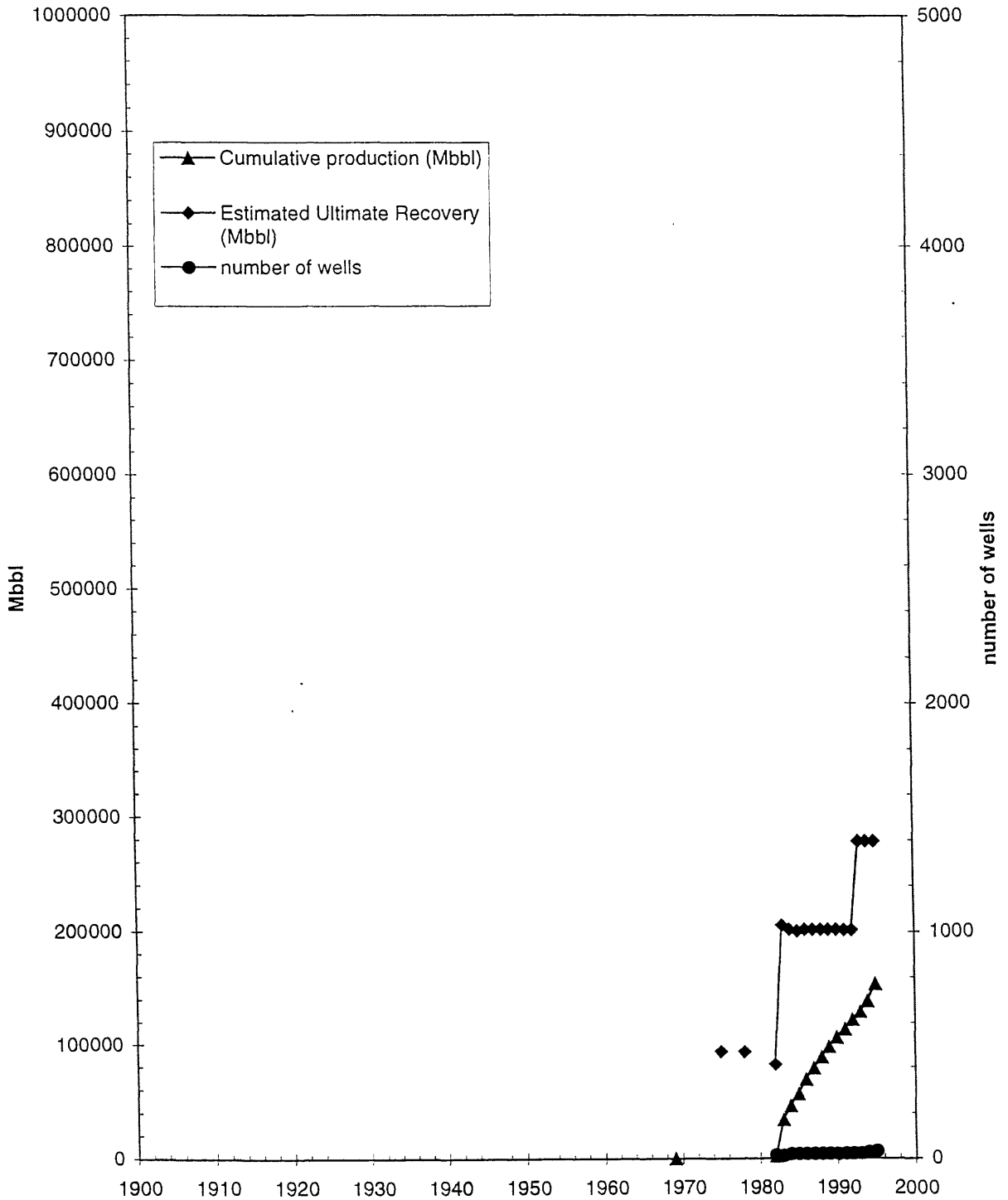
1950							
1951							
1952							
1953							
1954							

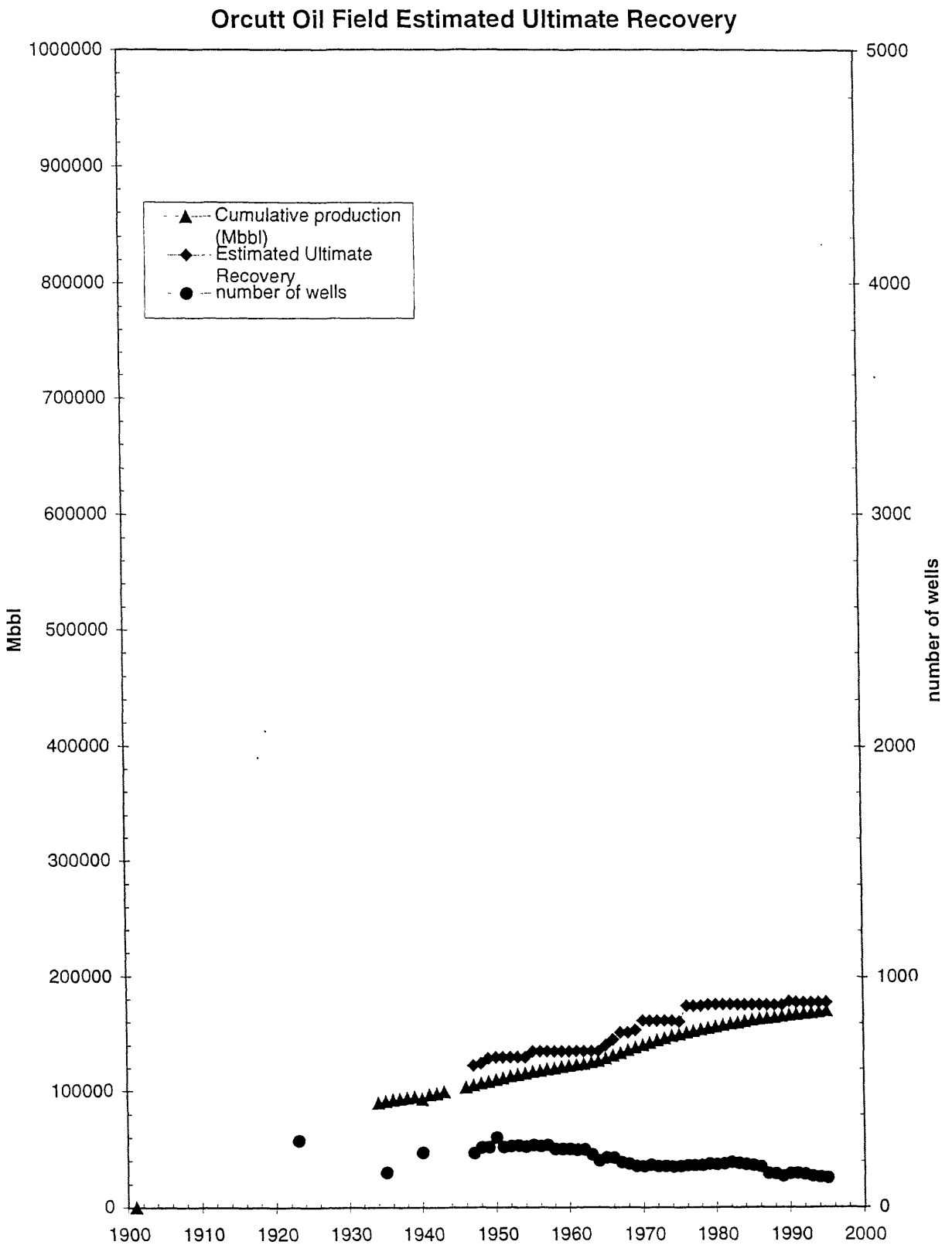
Field	discovered						
Hondo Offshore	1969						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955							
1956							
1957							
1958							
1959							
1960							
1961							
1962							
1963							
1964							
1965							
1966							
1967							
1968							
1969	0					Monterey pool	
1970							
1971							
1972							
1973							
1974							
1975		94000	94000				
1976							
1977							
1978		94000	94000				
1979							
1980							
1981							
1982	2189	80527	82716	16			
1983	34453	171000	205453	14			
1984	46700	155200	201900	21			
1985	56890	143210	200100	20			
1986	69791	132109	201900	22			
1987	79378	122522	201900	21			waterflooding started
1988	89267	112632	201899	22			
1989	98786	103113	201899	21			
1990	106998	94901	201899	22			
1991	114709	87190	201899	24			
1992	122864	79035	201899	24			
1993	130244	148656	278900	24			
1994	139368	139538	278906	28			
1995	154264	124642	278906	32			

Hondo Oil Field Estimated Ultimate Recovery



Field	discovered							
Orcutt	1901							
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1900								
1901	0				Main	Monterey		
1902								
1903								
1904								
1905						Point Sal		
1906								
1907								
1908								
1909								
1910								
1911								
1912								
1913								
1914								
1915								
1916								
1917								
1918								
1919								
1920								
1921								
1922								
1923				289				
1924								
1925								
1926								
1927								
1928								
1929								
1930								
1931								
1932								
1933								
1934	90186.89							
1935	91657.913			151				
1936	92611.586							
1937	93800.291				Careaga	Monterey		
1938	94662							
1939	95513.772							
1940	93622.355			237				
1941	97459.671							
1942	98626.927							
1943	100098.028							
1944								
1945								
1946	104196							
1947	105840	17160	123000	236				
1948	107398	17602	125000	260				
1949	108970	20030	129000	261				
1950	110567	19433	130000	302				
1951	112046	17954	130000	262			waterflood- Monterey/Main	
1952	113461	16539	130000	265				
1953	114821	15179	130000	268				
1954	116086	13914	130000	264	Careaga Area abandoned			
1955	117315	17685	135000	270				
1956	118470	16530	135000	268				
1957	119571	15429	135000	270				
1958	120621	14379	135000	252				
1959	121596	13404	135000	252				

Field	discovered							
Orcutt	1901							
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1960	122518	12478	134996	253				
1961	123412	11586	134998	248				
1962	124450	10555	135005	251				
1963	125492	9511	135003	228			waterflood- Point Sal/Main	
1964	127103	7918	135021	203				
1965	129203	11234	140437	216				
1966	131539	13897	145436	215				
1967	134021	17420	151441	196				
1968	136388	15047	151435	190				
1969	138658	15000	153658	180				
1970	140802	21000	161802	179				
1971	142981	18827	161808	185				
1972	145038	16776	161812	179				
1973	147009	14811	161820	179				
1974	148789	13035	161824	176				
1975	150393	10500	160893	179				
1976	152015.596	23000	175015.596	184				
1977	153407	21600	175007	183				
1978	154727	20274	175001	184				
1979	155990	20118	176108	189		Diatomite/Main		
1980	157213	18910	176123	187				
1981	158398	17724	178122	191		Monterey Deep/Main	alkaline flood- Point Sal/Main	
1982	159588	16535	176123	196	Careaga Area reactivated			
1983	160750	15373	176123	192				
1984	161909	14214	178123	187			alkaline flood discontinued- Point Sal/Main	
1985	163038	13085	178123	184		Lospe, Point Sal/Careaga	waterflood discon tinued- Monterey/Main	
1986	163993	12130	176123	178				
1987	164968	11154	176122	148				
1988	165854	10268	178122	147				
1989	166699	9424	176123	136				
1990	167557	11515	179072	147				
1991	168368	9845	178213	149				
1992	169142	9071	178213	144				
1993	169885	8328	178213	135				
1994	170587	7626	178213	132				
1995	171242	6971	178213	128				


Orcutt Oil Field Estimated Ultimate Recovery
Cumulative production (Mbbl)
Estimated Ultimate Recovery
number of wells
Mbbl
number of wells
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
5000
4000
3000
2000
1000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

Field	discovered						
Pescado Offshore	1970						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
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Field	discovered						
Pescado Offshore	1970						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955							
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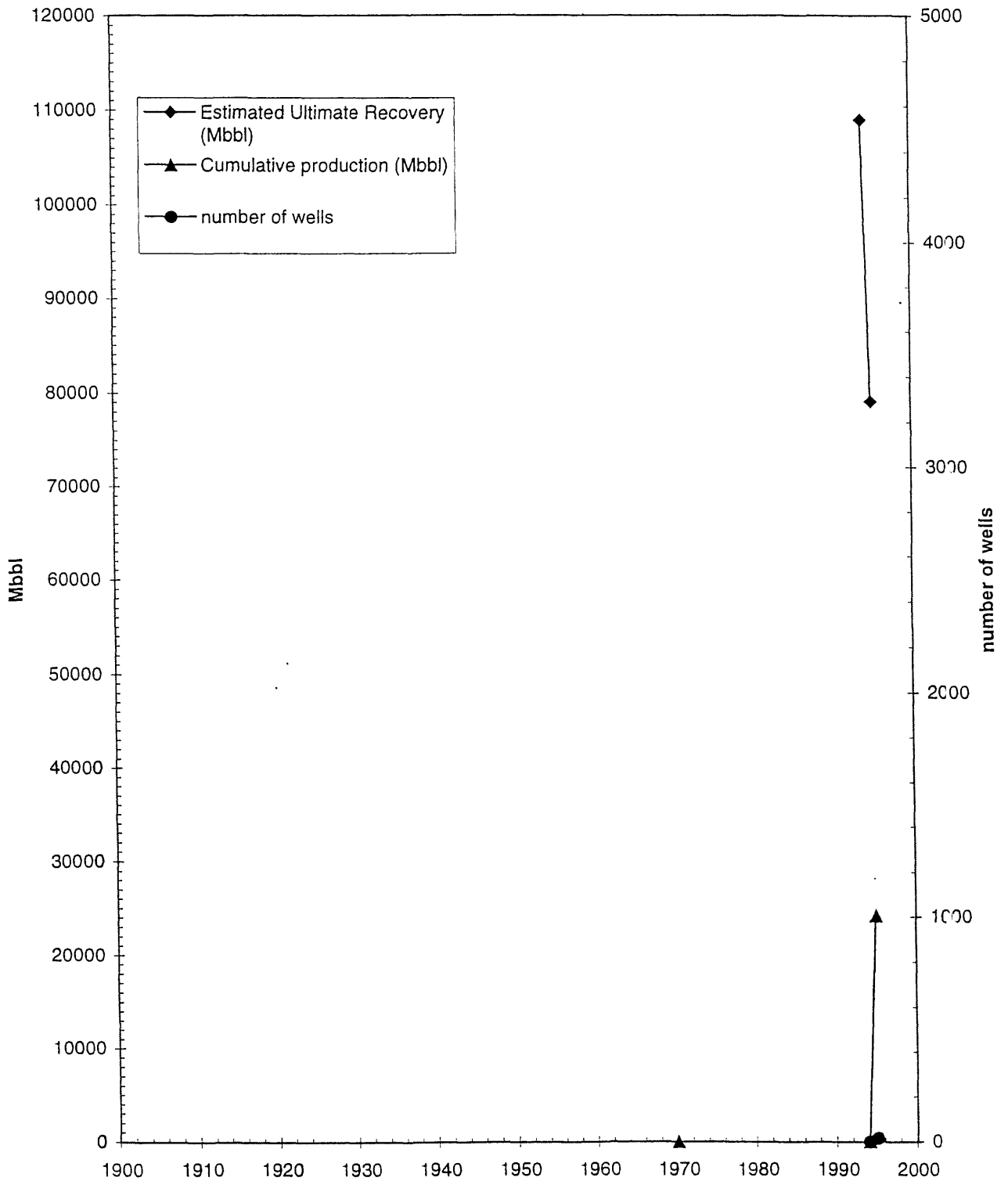
1994	36	108975	109011	1			
1995	24187	54824	79011	15			

Pescado Oil Field Estimated Ultimate Recovery



Field	discovered						
Point Arguello Offshore	1981						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
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Field	discovered						
Point Arguello Offshore	1981						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955							
1956							
1957							
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1980							
1981	0						
1982							
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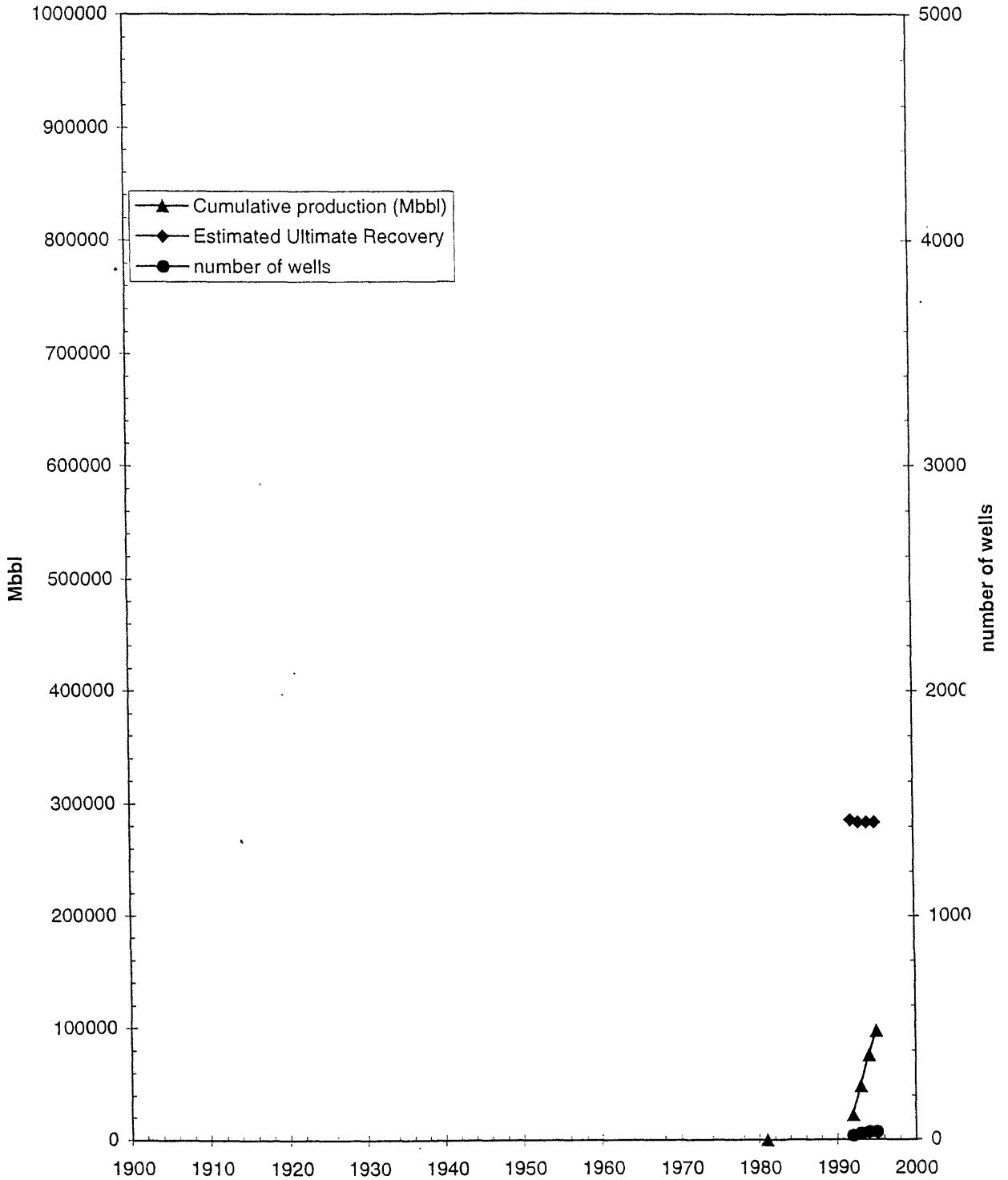
1990							
1991							
1992	22643	262889	285532	19			
1993	48738	235140	283878	27			
1994	76320	207586	283906	34			
1995	97997	185909	283906	34			

Point Arguello Oil Field Estimated Ultimate Recovery



Field	discovered							
Rincon	1927							
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1900								
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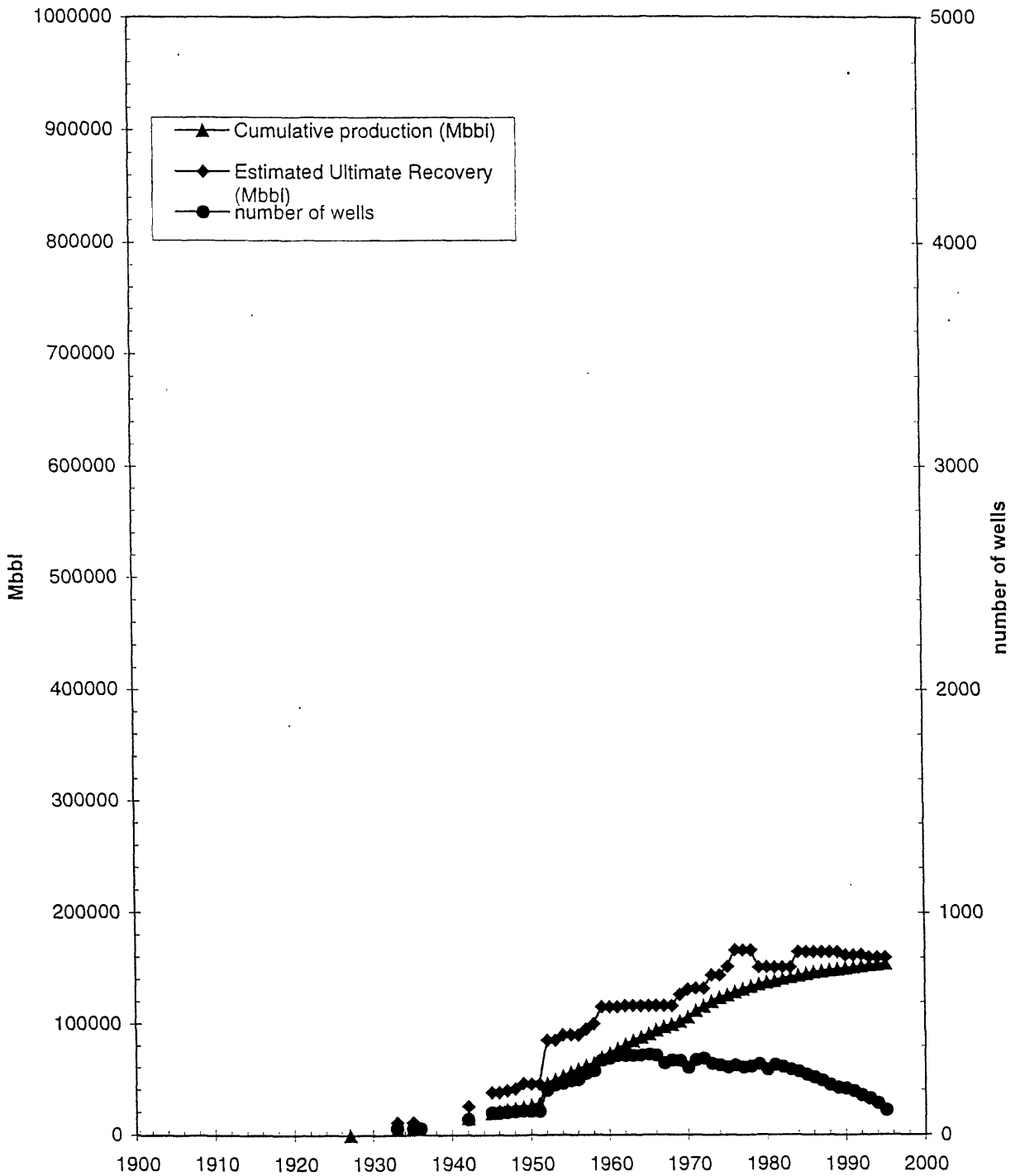
1927	0				Main	Top, Shallow/Main		
1928						Miley/Main		
1929						Upper Deep, Deep/Main		
1930						Intermediate/Main		
1931					Oak Grove Area	Shallow, Padre, Miley/Oak Grove		
1932								
1933	5302.927	5700	11002.927	28				
1934								
1935	6513.639	5000	11513.639	29				
1936				29	Padre Canyon Area	Shallow, Padre, Miley/Padre Canyon		
1937								
1938								
1939								
1940								
1941								
1942	15094	10106	25200	69				
1943								
1944								
1945	19490	18259	37749	99		Wood/Oak Grove		
1946	21119	16630	37749	98				
1947	22458	17042	39500	103				
1948	23625	17375	41000	105				
1949	24886	21114	46000	107				
1950	26192	18808	45000	105				
1951	27509	17491	45000	105				
1952	46077	38923	85000	198				
1953	49262	35738	85000	222		Deep/Padre Canyon		
1954	52502	37498	90000	229				
1955	55699	34301	90000	240				
1956	58799	31201	90000	246				
1957	61980	33020	95000	275				
1958	64484	35516	100000	287				

Field	discovered							
Rincon	1927							
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1959	69381	45619	115000	335				
1960	73443	41596	115039	344				
1961	77438	37602	115040	355		1st Grubb/Oak Grove	waterflood- Shallow/Main	
1962	81171	34864	116035	355				
1963	84650	31379	116029	356			waterflood- Top, Intermediate, Miley/Main	
1964	87951	28082	116033	359				
1965	90939	25028	115967	360				
1966	94078	21882	115958	356			waterflood- Padre/Oak Grove	
1967	96928	19019	115947	321				
1968	99493	16451	115944	334				
1969	102402	23542	125944	333		2nd,3rd Grubb/Oak Grove		
1970	106059	25000	131059	301				
1971	111585	20420	132005	337				
1972	116259	15774	132033	344				
1973	120256	23528	143784	321				
1974	123549	20209	143758	312				
1975	126275	25000	151275	304				
1976	128807.148	37400	166207.148	312			waterflood discontinued- top/Main	
1977	131390	34800	166190	303				
1978	133523	32685	166208	307				
1979	135633	15502	151135	318				
1980	137421	13714	151135	294				
1981	139156	11979	151135	314				
1982	140738	10398	151136	305				
1983	142305	8830	151135	294				
1984	143801	20934	164735	283				
1985	145201	19534	164735	269				
1986	146461	18274	164735	257				
1987	147625	17110	164735	244				
1988	148684	16051	164735	224				
1989	149660	15075	164735	213				
1990	150590	11246	161836	207				
1991	151493	10342	161835	196				
1992	152404	9801	162205	177				
1993	153270	6719	159989	162				
1994	153960	6029	159989	142				
1995	154598	5391	159989	109				

Rincon Oil Field Estimated Ultimate Recovery



Field	discovered						
San Ardo	1947						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
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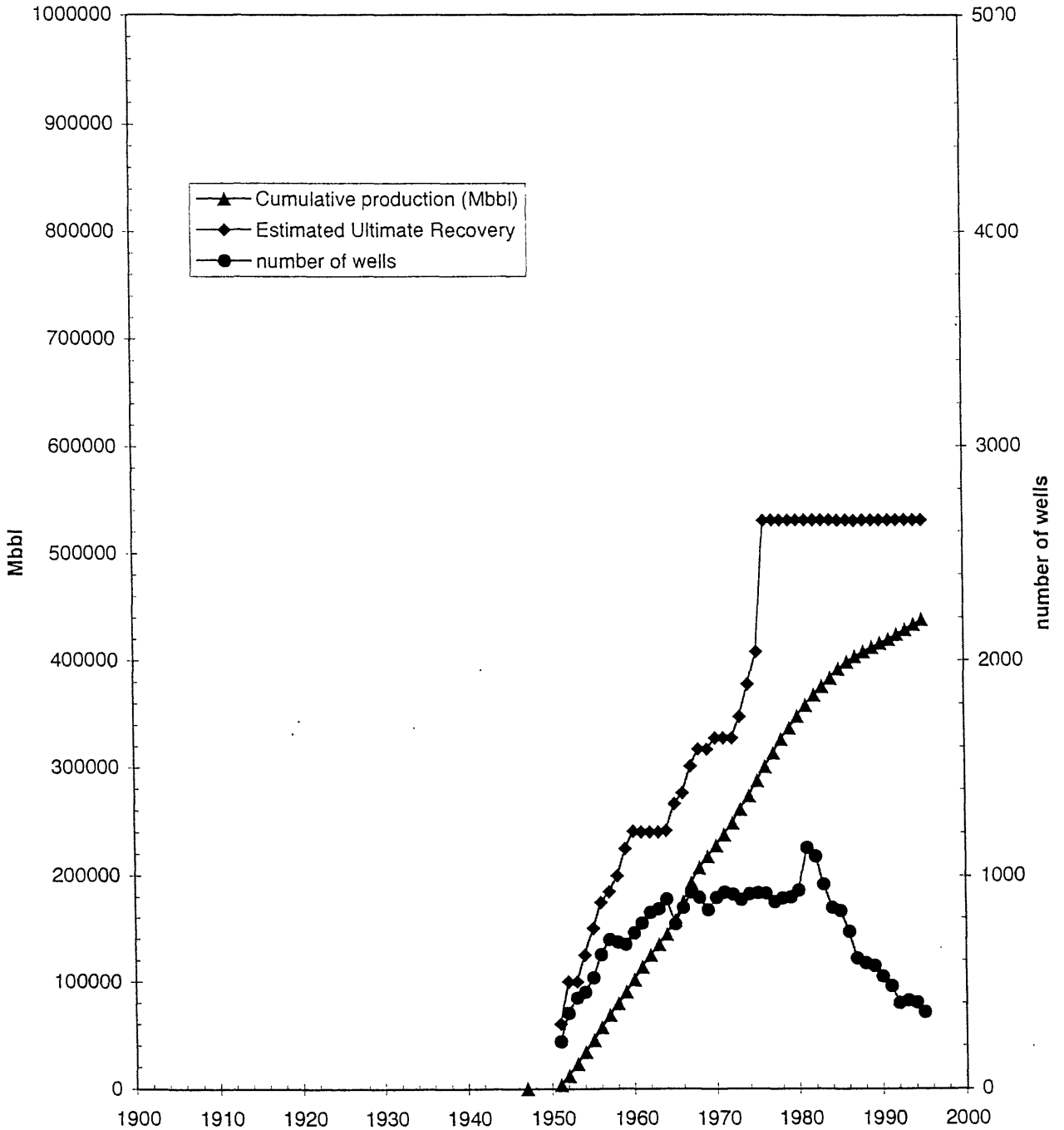
1947	0				North	Lombardi/North	
1948					Main	Lombardi, Lombardi Gas, Aurignac/Main	
1949							
1950							
1951	3506	56494	60000	218			
1952	11781	88219	100000	352			
1953	22940	77060	100000	425			
1954	34268	90732	125000	453			

Field	discovered						
San Ardo	1947						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	45202	104798	150000	520			gas injection started and discontinued- Lombardi/Main
1956	56974	118026	175000	628			
1957	68836	116164	185000	698			
1958	79694	120306	200000	686			
1959	90704	134296	225000	675			fireflood- Aurignac/Main
1960	102213	138406	240619	728			
1961	113939	126663	240602	776			
1962	125090	115511	240601	825			
1963	135006	105543	240549	845			fireflood- Lombardi/Main· cyclic steam- Aurignac/Main
1964	144626	97205	241831	890			cyclic steam- Lombardi/Main
1965	157511	108984	266495	772			
1966	175099	101365	276464	850			steamflood- Aurignac/Main
1967	193220	108036	301256	922			steamflood- Lombardi/Main
1968	207303	110036	317339	897			
1969	217743	99515	317258	839			
1970	228014	100000	328014	896			
1971	237885	90061	327946	922			
1972	248708	79245	327953	912			
1973	261332	86636	347968	887			
1974	274160	103800	377960	913			
1975	288088	120000	408088	920			
1976	300917.697	229000	529917.697	917			fireflood discontinued- Lombardi/Main
1977	314047	216000	530047	877			
1978	326986	203391	530377	893			
1979	337553	192494	530047	899			
1980	348343	181704	530047	932			
1981	358571	171475	530046	1129			
1982	367960	162086	530046	1090			
1983	376014	154032	530046	960			
1984	383719	146327	530046	849			waterflood- Aurignac/Main; fireflood discontinued- Aurignac/Main
1985	391857	138188	530045	835			
1986	398750	131296	530046	736	North Area abandoned	Lombardi/North abandoned	
1987	403692	126353	530045	610			
1988	408298	121748	530046	589			
1989	412056	117990	530046	577			
1990	416161	113885	530046	527			
1991	419866	110180	530046	480			
1992	424145	105901	530046	401			
1993	428828	101218	530046	412			
1994	433733	96313	530046	402			
1995	438034	92012	530046	359			

San Ardo Oil Field Estimated Ultimate Recovery



Field	discovered						
San Miguelito	1931						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated ultimate recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
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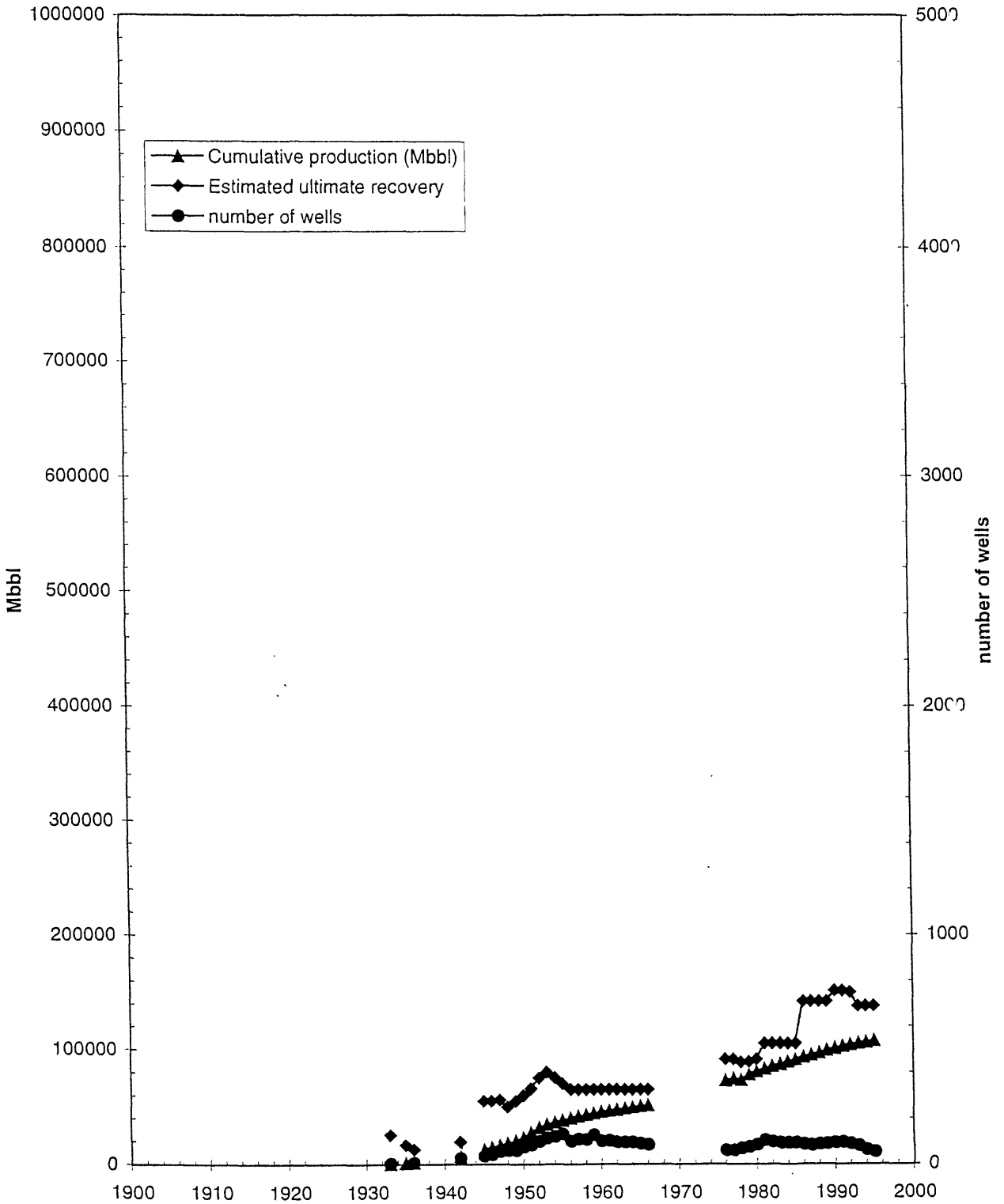
1931	0					1st Grubb	
1932		20000					
1933	667.005	24800	25467.005	3			
1934							
1935	1231.984	15512	18743.984				
1936	1812.154	11000	12812.154	6			
1937							
1938							
1939							
1940							
1941							
1942	7104	12646	19750	27			
1943							
1944						2nd Grubb	
1945	12911	42091	55002	38			
1946	14756	40246	55002	43			
1947	16405	39545	55950	55			
1948	18126	31874	50000	59			
1949	20488	34512	55000	81			
1950	23196	36804	60000	76		3rd Grubb	
1951	27694	38306	66000	85			
1952	31954	43046	75000	100			
1953	34676	45324	80000	114			
1954	36617	38383	75000	121			

Field	discovered						
San Miguelito	1931						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated ultimate recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	38447	31553	70000	131			waterflood- 3rd Grubb
1956	40099	24901	65000	101			
1957	41666	23334	65000	109			
1958	43169	21831	65000	107			
1959	44514	20486	65000	126			
1960	45666	19327	64993	100			
1961	46752	18250	65002	102			waterflood- 2nd Grubb
1962	47804	17184	64988	96			
1963	48847	16124	64971	95			
1964	49906	15067	64973	96			
1965	50775	14079	64854	88			
1966	51572	13278	64850	85			
1967							
1968							waterflood- 1st Grubb
1969							
1970						4th Grubb	
1971							
1972							
1973							
1974							
1975							
1976	73056.923	18300	91356.923	60			
1977	74617	16700	91317	59			
1978	73615	15000	88615	69			
1979	78514	10454	88968	75		5th Grubb	
1980	80861	10454	91315	85			
1981	83107	21731	104838	104			
1982	85188	19650	104838	97			
1983	87156	17682	104838	93			
1984	89264	15574	104838	94			
1985	91338	13500	104838	94			
1986	93263	48575	141838	87			
1987	95208	46630	141838	83			
1988	97179	44659	141838	87			
1989	99100	42738	141838	90			
1990	101015	50323	151338	93			
1991	102630	48708	151338	95			
1992	104001	46127	150128	90			
1993	105330	32637	137967	80			
1994	106375	31592	137967	63			
1995	107516	30451	137967	54			

San Miguelito Oil Field Estimated Ultimate Recovery



Field	discovered						
Santa Maria Valley	1934						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
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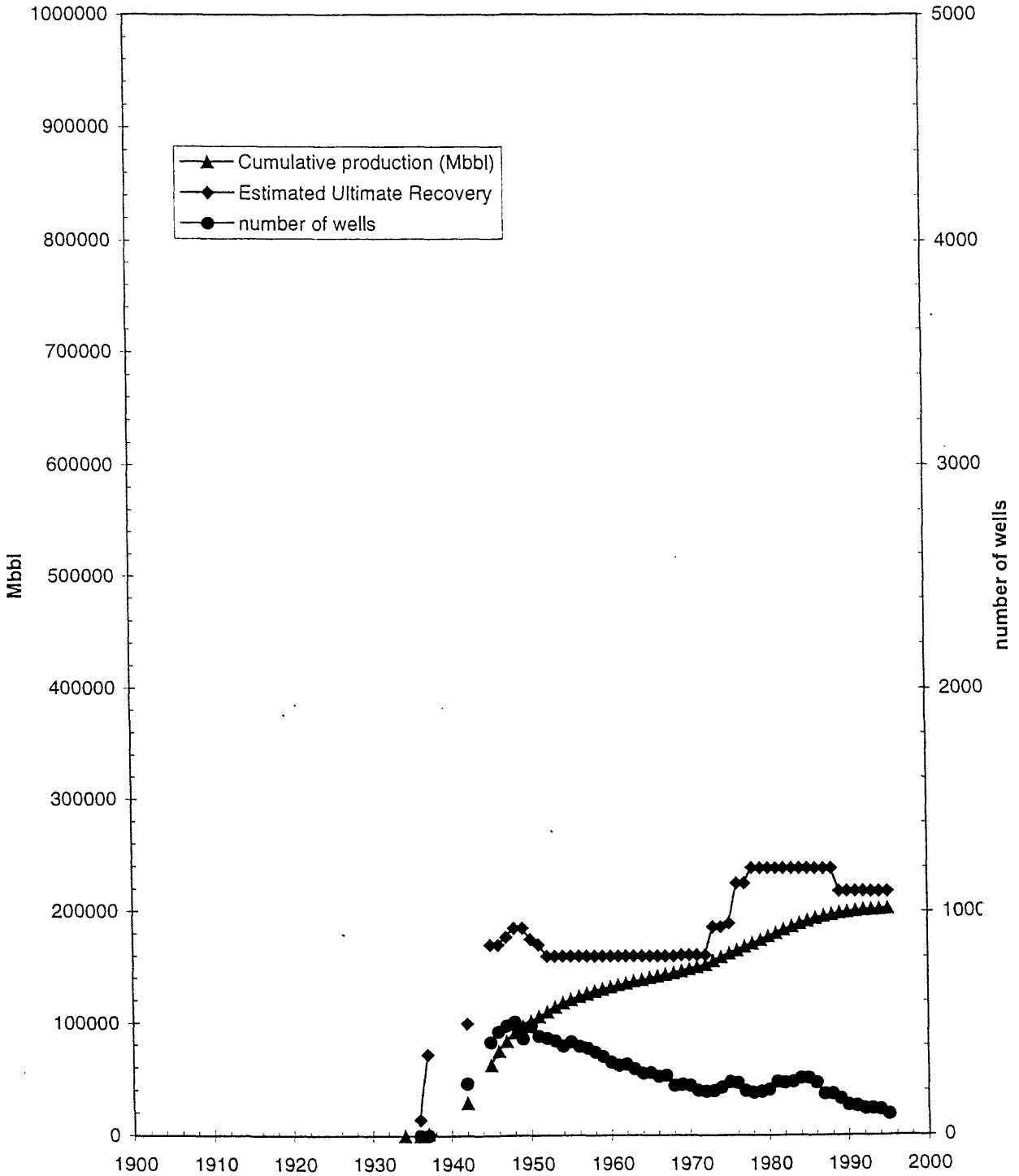
1933							
1934	0				Main Area	Foxen, Sisquoc, Monterey/Main	
1935							
1936	61.621	14000	14061.621	1		Point Sal/Main	
1937	1683.734	70000	71683.734	1			
1938							
1939							
1940							
1941					Southeast Area	Basal Sisquoc/Southeast	
1942	29701	70299	100000	229			
1943							
1944							
1945	63034	107043	170077	414			
1946	74978	95099	170077	461			
1947	84153	92847	177000	488			
1948	91519	93481	185000	503			
1949	97212	87788	185000	430			
1950	101575	73425	175000	486			
1951	106067	63933	170000	440			waterflood- Monterey/Main
1952	110076	49922	160000	432		Houk/Southeast	
1953	114270	45730	160000	420	West Area	Foxen, Sisquoc, Monterey, Franciscan/West	
1954	117998	42002	160000	397			

Field	discovered						
Santa Maria Valley	1934						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	121016	38984	160000	415			
1956	123732	36268	160000	393		Monterey/Southeast	waterflood- Point Sal/Main
1957	126264	33736	160000	387			
1958	128477	31523	160000	369			
1959	130431	29569	160000	350			
1960	132358	27644	160002	324			
1961	134022	25971	159993	309			
1962	135697	24291	159988	313			waterflood- Basal Sisquoc/Southeast
1963	137415	22588	160003	292			
1964	138984	21008	159992	275			fireflood- Point Sal/Main; cyclic steam- West Area
1965	140544	19446	159990	276	North Area	Foxen/North	cyclic steam started and discontinued- Foxen/North
1966	142085	17896	159981	261	North Area abandoned	Foxen/North abandoned	steamflood- Foxen/Main; fireflood discontinued- Point Sal/Main; waterflood- Monterey/West; cyclic steam discontinued- Monterey/West
1967	143627	16354	159981	265			
1968	145097	14869	159966	221	Clark Area (originally included in Cat Canyon Field)	Monterey/Clark	
1969	146711	14244	160955	225			
1970	148596	12377	160973	220		Basal Sisquoc/Clark	steamflood discontinued- Foxen/Main
1971	150551	10411	160962	199			
1972	152311	8645	160956	194	Bradley Area	Basal Sisquoc, Monterey/Bradley	waterflood- Monterey/Southeast
1973	155791	30170	185961	197			
1974	159363	26612	185975	214		Foxen/Clark	
1975	162506	27000	189506	237		Foxen/Clark shut in	
1976	165312.376	59700	225012.376	233			waterflood- Basal Sisquoc/Bradley; waterflood discontinued- Monterey/Southeast
1977	168556	56500	225056	198		Foxen/Southeast	
1978	171728	66733	238481	190			
1979	174949	63502	238451	194			
1980	178124	60327	238451	203			
1981	181121	57329	238450	239			
1982	184162	54289	238451	235			
1983	187160	51291	238451	238			waterflood discontinued- Monterey/ Main
1984	189783	48668	238451	255			
1985	192182	46268	238450	255			
1986	194400	44050	238450	235			
1987	196302	42148	238450	185			
1988	197984	40467	238451	186			
1989	199205	19246	218451	165			
1990	200224	18227	218451	136			waterflood discontinued- Basal Sisquoc/Southeast
1991	201111	17340	218451	131			
1992	201830	16620	218450	120			
1993	202498	15952	218450	120			
1994	203067	15383	218450	116			
1995	203462	15179	218641	93			

Santa Maria Valley Oil Field Estimated Ultimate Recovery



Field	discovered							
South Cuyama	1949							
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1900								
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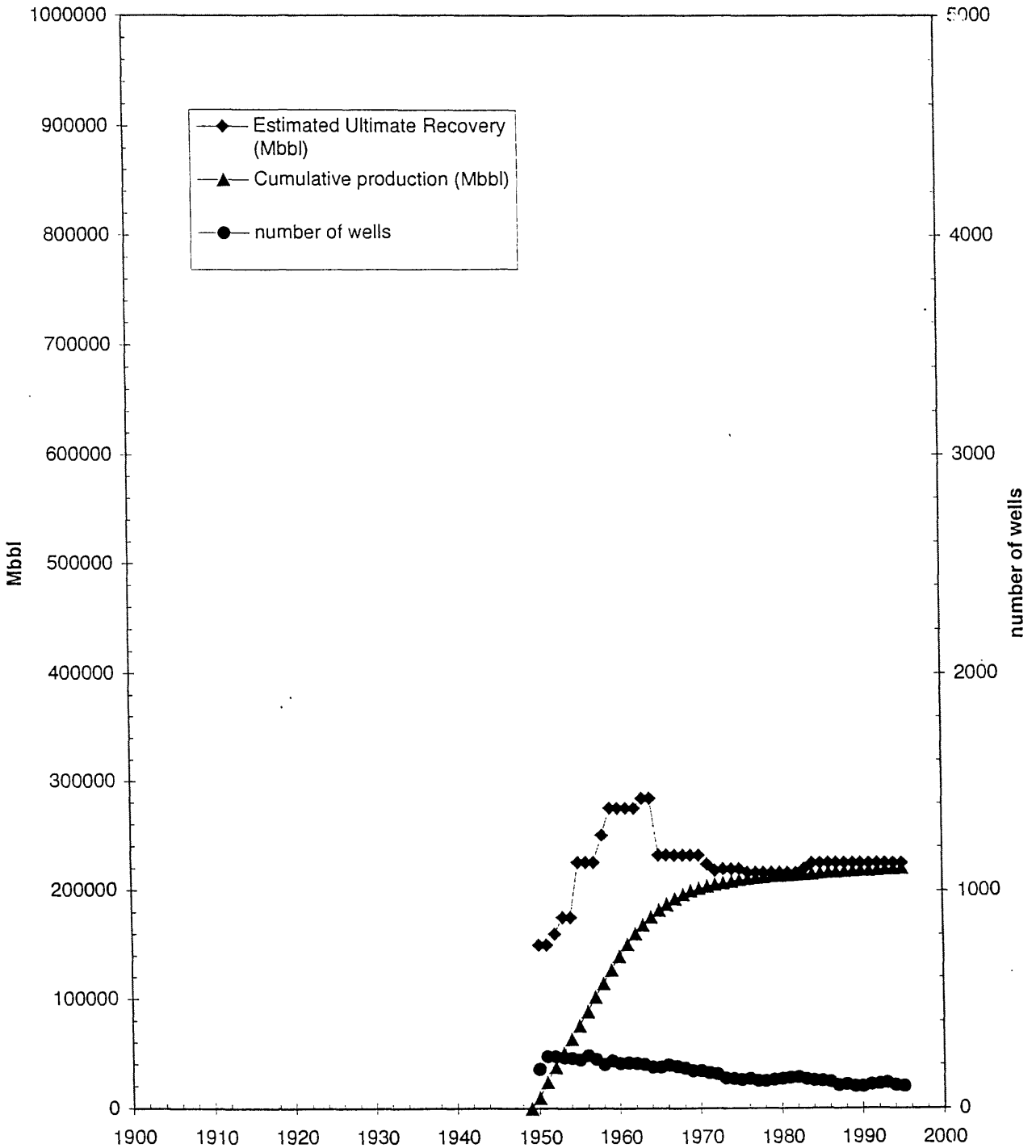
1949	0				Main Area	Dibblee/Main		
1950	9653	140347	150000	179		Colgrove/Main		
1951	23759	126241	150000	235	Southeast Area	Colgrove/Southeast		
1952	37748	122252	160000	236				
1953	50518	124482	175000	232		52-1 Gas/Main		
1954	63369	111631	175000	229				
1955	76059	148941	225000	221			waterflood- Dibblee/Main	
1956	88859	136141	225000	241			waterflood- Colgrove/Main	
1957	102023	122977	225000	224				
1958	114508	135492	250000	200				

Field	discovered							
South Cuyama	1949							
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery	
1959	127127	147873	275000	217				
1960	139309	135638	274947	206				
1961	150463	124484	274947	208				
1962	160367	114633	275000	206				
1963	168510	115405	283915	200				
1964	175560	108332	283892	188			gas injection- Dibblee/Main	
1965	181893	50068	231961	189				
1966	187045	44851	231896	197				
1967	192279	39783	232062	190				
1968	196148	35887	232035	183				
1969	199296	32738	232034	172				
1970	201790	30224	232014	172				
1971	203801	20190	223991	163				
1972	205513	12473	217986	157				
1973	207130	12473	219603	138			waterflood discontinued- Colgrove/Main	
1974	208617	11002	219619	135				
1975	209809	9700	219509	132	East Area	Dibblee/East		
1976	210780.765	5200	215980.765	136				
1977	211644	4300	215944	127				
1978	212407	3574	215981	127	East Area abandoned	Dibblee/East abandoned		
1979	213044	2937	215981	131				
1980	213527	2543	216070	137		Santa Margarita Gas/Southeast		
1981	214119	1862	215981	141				
1982	214710	1270	215980	142				
1983	215292	4700	219992	134				
1984	215884	9108	224992	130				
1985	216482	8510	224992	127				
1986	217047	7945	224992	122				
1987	217567	7424	224991	105				
1988	218035	6957	224992	110				
1989	218432	6560	224992	100				
1990	218788	6204	224992	99				
1991	219185	5807	224992	109				
1992	219586	5407	224993	112				
1993	220012	4980	224992	118				
1994	220435	4557	224992	104				
1995	220842	4151	224993	101				

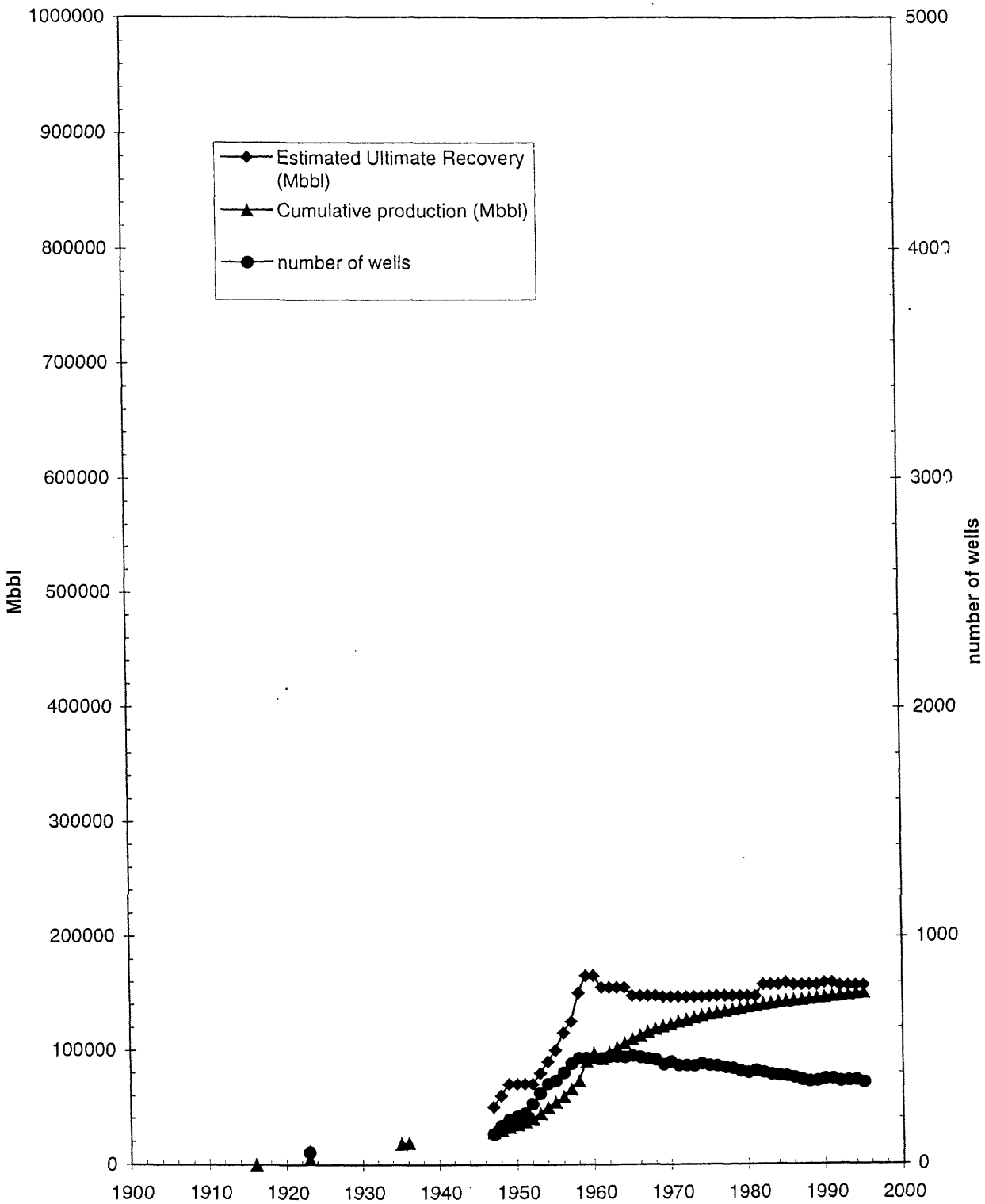
South Cuyama Oil Field Estimated Ultimate Recovery



Field	discovered						
South Mountain	1916						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912							
1913							
1914							
1915							
1916	0					Sespe pool	
1917							
1918							
1919							
1920							
1921							
1922							
1923	5439	6359	11818	54			
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							
1932							
1933							
1934							
1935	18421.263						
1936	19106.513						
1937							
1938							
1939							
1940							
1941							
1942							
1943							
1944							
1945							
1946							
1947	28249	21751	50000	132			
1948	30102	29898	60000	168			
1949	32583	37417	70000	194			
1950	34946	35054	70000	208			
1951	37155	32845	70000	220			
1952	39990	30010	70000	263			
1953	44575	35425	80000	310			
1954	49854	40146	90000	353			

Field	discovered						
South Mountain	1916						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	54549	45451	100000	367		Bridge pool	
1956	59533	55467	115000	402			Steam injection- Sespe pool
1957	66110	58890	125000	442			
1958	73092	76908	150000	464			
1959	90440	74560	165000	464			
1960	97132	67877	165009	467			
1961	92919	62043	154962	465			
1962	98138	56815	154953	474			
1963	102858	52080	154938	474			Steam injection- Bridge pool
1964	106737	48180	154917	472			
1965	110134	37751	147885	477			
1966	113459	34507	147966	470			
1967	116450	31514	147964	465			
1968	119102	28845	147947	459			
1969	121252	25500	146752	440			
1970	123342	23416	146758	451			
1971	125303	21454	146757	435			
1972	127187	19566	146753	436			
1973	128973	17782	146755	432			
1974	130617	16142	146759	441			
1975	132176	15000	147176	435			
1976	133673.693	14100	147773.693	432			
1977	135028	12700	147728	427			
1978	136304	11469	147773	421			
1979	137567	10207	147774	411			
1980	138740	9034	147774	405			
1981	139838	7936	147774	413			
1982	140874	17163	158037	404			
1983	141843	16194	158037	396			
1984	142784	15253	158037	391			
1985	143687	16350	160037	388			
1986	144475	13563	158038	382			
1987	145216	12821	158037	371			
1988	145940	12098	158038	363			
1989	146665	11362	158027	366			
1990	147383	12255	159638	375			
1991	148092	11546	159638	376			
1992	148795	8210	157005	364			
1993	149504	7501	157005	367			
1994	150278	6727	157005	369			
1995	150978	6027	157005	357			

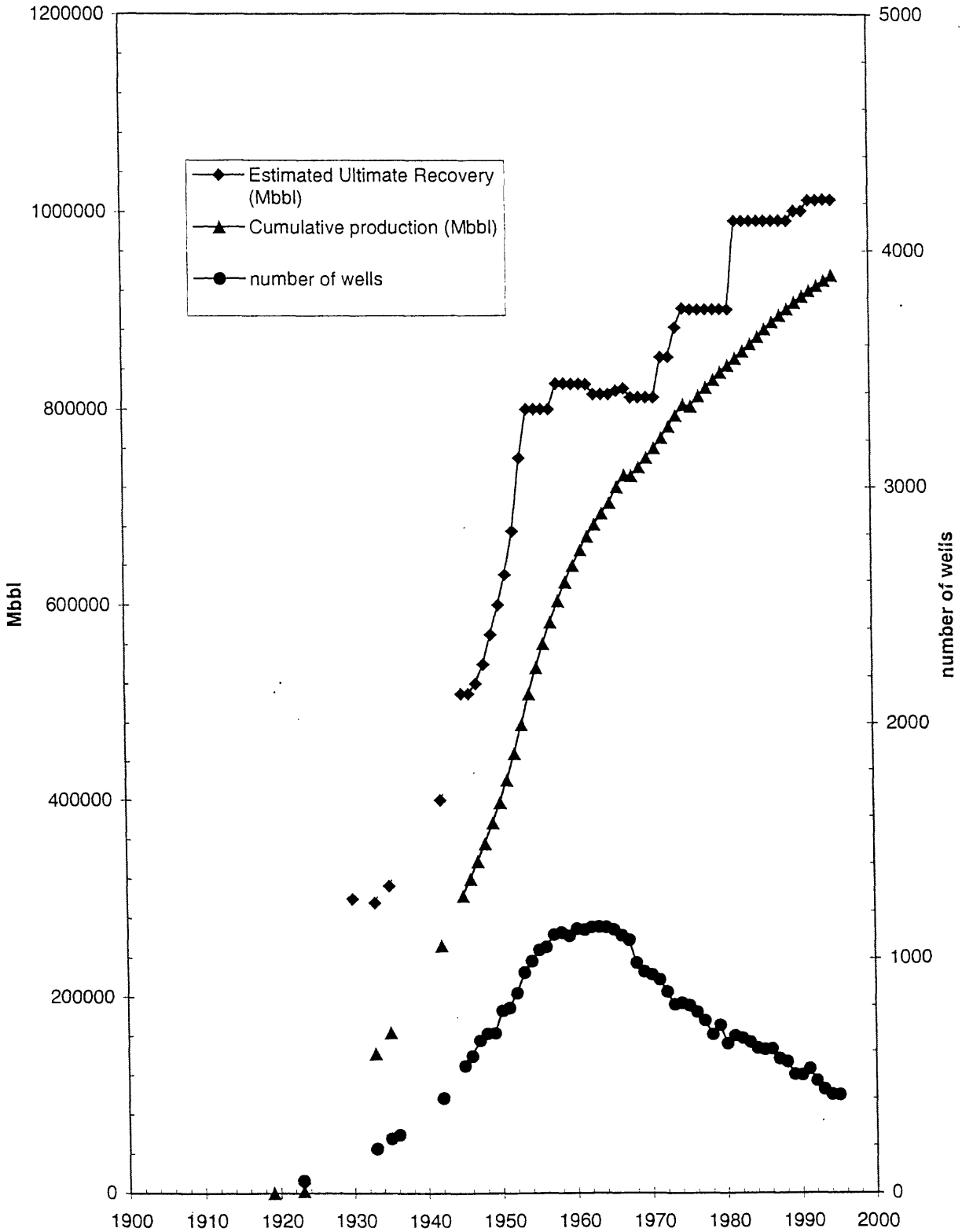
South Mountain Oil Field Estimated Ultimate Recovery



Field	discovered						
Ventura	1919						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912							
1913							
1914							
1915							
1916							
1917							
1918							
1919	0					2nd pool	
1920							
1921							
1922						1st pool	
1923	1888	7920	9808	51			
1924						3rd pool	
1925						4th pool	
1926							
1927							
1928							
1929						5th pool	
1930			300000				
1931							
1932							
1933	142361.394	154000	296361.394	187			
1934							
1935	163223.458	150000	313223.458	232			
1936				245			
1937						7th pool	
1938							
1939							
1940							
1941							
1942	252309	147691	400000	402			
1943							
1944							
1945	303113	206884	509997	539			
1946	320012	189985	509997	579			
1947	337827	182173	520000	647			
1948	355654	184346	540000	676			
1949	376787	193213	570000	678		6th pool	
1950	397591	202409	600000	775			
1951	420893	209107	630000	788			
1952	448110	226890	675000	850		8th pool	
1953	478475	271525	750000	939			
1954	509767	290233	800000	986			

Field	discovered						
Ventura	1919						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	536655	263345	800000	1035			
1956	560992	239008	800000	1047			waterflood- 2nd pool
1957	582930	217070	800000	1098			
1958	604018	220982	825000	1108			
1959	622835	202165	825000	1095			
1960	639951	185044	824995	1125			
1961	656143	168811	824954	1120			
1962	669900	155002	824902	1131			
1963	682351	132532	814883	1134			
1964	693920	120956	814876	1132			
1965	704790	110164	814954	1121			
1966	720979	96949	817928	1096			waterflood- 6th, 5th pool
1967	732695	87926	820621	1078			
1968	732088	79521	811609	980			waterflood- 3rd pool
1969	740673	70946	811619	943			waterflood- 4th pool
1970	750563	61041	811604	931			
1971	760716	50853	811569	910			
1972	771108	80968	852076	858			
1973	782054	69946	852000	804			
1974	793393	88500	881893	809			
1975	804644	97000	901644	799			
1976	803042.391	97500	900542.391	771			
1977	813060	87500	900560	734			
1978	821800	78760	900560	674			
1979	829522	71037	900559	715			waterflood- 7th pool
1980	836654	63905	900559	635			
1981	843625	56934	900559	669			
1982	850816	140209	991025	659			
1983	858122	132904	991026	643			
1984	865512	125514	991026	617			
1985	872947	118078	991025	609			
1986	880379	110646	991025	612			
1987	887658	103367	991025	570			
1988	894685	96340	991025	559			
1989	901167	89858	991025	504			
1990	907672	93153	1000825	501			
1991	913906	86920	1000826	528			
1992	919753	92292	1012045	477			
1993	925102	86943	1012045	440			
1994	930252	81973	1012225	419			
1995	935173	76872	1012045	416			

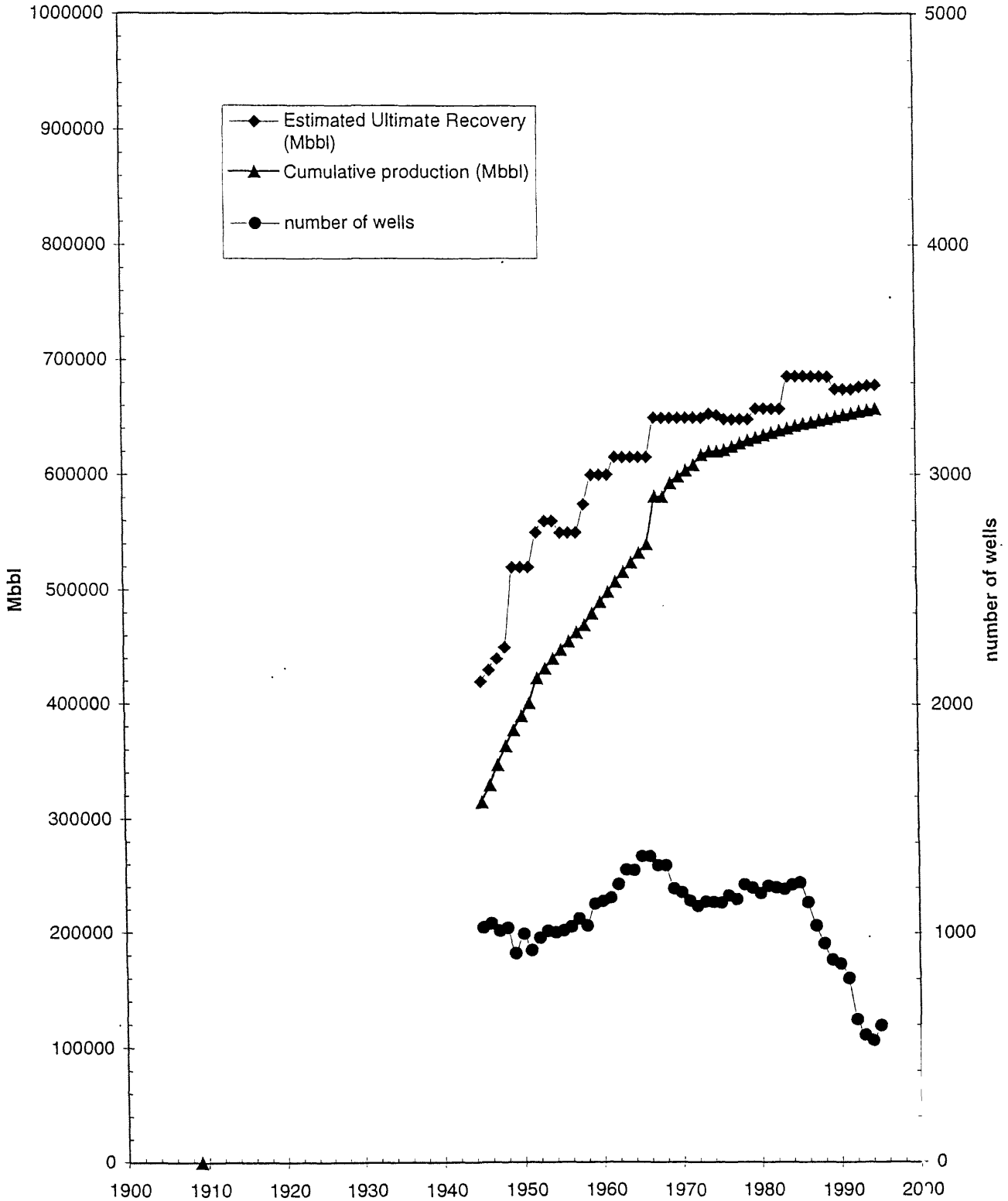
Ventura Oil Field Estimated Ultimate Recovery



Field	discovered						
Buena Vista	1909						
	Cumulative production	reserves (Mbbl)	Estimated Ultimate	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909					Buena Vista Hills	Mya Gas Zone/Buena Vista Hills	
1910						Top Oil/Buena Vista Hills	
1911							
1912					Buena Vista Front Area	AS, SS1, SS2/ Buena Vista Front	
1913							
1914							
1915							
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923							
1924							
1925							
1926							
1927							Gas injection-pressure maintenance- Buena Vista Hills (Mya, Top Oil)
1928							Gas injection-pressure maintenance- Buena Vista Front
1929							
1930							
1931							Gas injection discontinued- Buena Vista Front
1932							
1933							
1934							
1935							
1936							
1937							
1938							
1939							
1940							
1941							
1942							
1943							
1944						27-8/ Buena Vista Hills	
1945	315373	104826	419999	1027			
1946	330135	99864	429999	1043			
1947	347397	92613	440010	1011			
1948	364014	85986	450000	1025			
1949	377976	142024	520000	912		99-9O Zone/Buena Vista Hills	gas injection- Buena Vista Hills 27-8

Field	discovered						
Buena Vista	1909						
	Cumulative production	reserves (Mbbl)	Estimated Ultimate	number of wells	Area discovered	Pool discovered	Enhanced recovery
1950	389940	130060	520000	997			gas injection discontinued- B. V. Hills (Mya)
1951	401114	118886	520000	926			
1952	422861	127139	550000	980		Antelope Shale/Buena Vista Hills	
1953	431714	128286	560000	1010			
1954	440404	119596	560000	1004			waterflood- B.V. Hills (Top Oil, Gusher, Wilhem, Caltroleum)
1955	448088	101912	550000	1014			
1956	455844	94156	550000	1030			waterflood discontinued- B. V. Hills (Top Oil)
1957	463264	86736	550000	1065		555 Stevens/Buena Vista Hills	
1958	470176	104824	575000	1035			gas injection discontinued- B. V. Hills (27-B)
1959	480155	119845	600000	1131			gas injection started- B.V. Hills (555 Stevens)
1960	489964	110087	600051	1142			
1961	498799	101247	600046	1156			waterflood started- B. V. Hills (27-B)
1962	507306	107736	615042	1218			waterflood- Buena Vista Front (SS1, SS2); B. V. Hills (Antelope Shale)
1963	515969	99067	615036	1280			waterflood started- B. V. Hills (99-9O)
1964	524231	90785	615016	1279			
1965	532451	82625	615076	1340			
1966	539986	75088	615074	1340		Calido n Gas Zone/Buena Vista Hills	waterflood discontinued- Buena Vista Front, B. V. Hills (27-B)
1967	581122	68538	649660	1300			waterflood started B. V. Hills (27-B); waterflood discontinued- B. V. Hills (Antelope Shale)
1968	581122	68538	649660	1300			waterflood dicontinued- B. V. Hills (99-9O, 27-B)
1969	592927	58725	649652	1198			waterflood discontinued B. V. Hills (Wilhelm, Caltroleum, Gusher)
1970	598868	50991	649659	1180			
1971	604110	45562	649672	1144			
1972	608851	40819	649670	1119			
1973	617240	32427	649667	1139			
1974	620631	32427	653058	1137			
1975	620631	31000	651631	1134			
1976	621800.988	26400	648200.988	1168			
1977	624747	23400	648147	1149			
1978	627411	20739	648150	1216			
1979	629890	18262	648152	1201			waterflood started- B. V. Hills (Wilhelm)
1980	632197	25169	657366	1176			waterflood discontinued- B.V. Hills (Wilhelm)
1981	634420	22946	657366	1208			
1982	636533	20813	657346	1203			
1983	638609	18757	657366	1195			
1984	640602	45060	685662	1215			
1985	642562	43100	685662	1225			
1986	644207	41455	685662	1138			
1987	645722	39939	685661	1035			
1988	647298	38366	685664	956			
1989	648821	36346	685167	884			
1990	650413	23764	674177	868			
1991	651964	22220	674184	805			
1992	653574	20704	674278	825			
1993	655051	21407	676458	556			
1994	656290	21002	677292	533			
1995	657390	20353	677743	597			

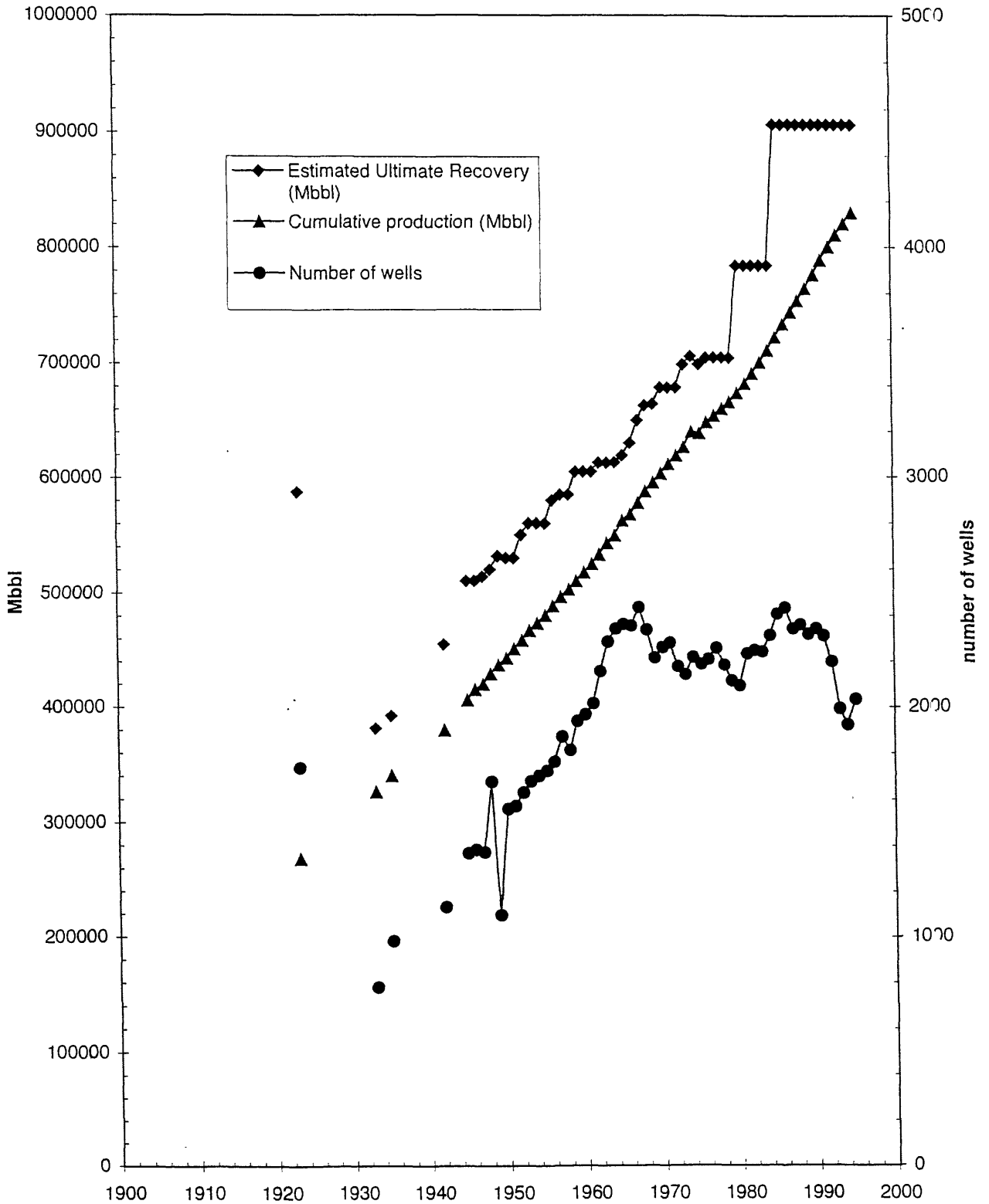
Buena Vista Oil Field Estimated Ultimate Recovery



Field	discovered												
Coalinga	1890				East area			Total field					
Year	Cumulative production	reserves (Mbbl)	Estimated Ultimate	number of wells	Cumulative production	reserves (Mbbl)	number of wells	Cumulative production	Reserves (Mbbl)	Estimated Ultimate	Number of wells	Pool Discovered	Enhanced Recovery
1900												Etchegoin, Temblor	
1901													
1902													
1903													
1904													
1905													
1906													
1907													
1908													
1909													
1910													
1911													
1912												Eocene	
1913													
1914													
1915													
1916													
1917													
1918													
1919													
1920													
1921													
1922													
1923	268949	318600	587549	1736				268949	318600	587549	1736		
1924													
1925													
1926													
1927													
1928													
1929													
1930													
1931													
1932													
1933	326701.077	55000	381701.08	783				326701.08	55000	381701.1	783		
1934													
1935	340545.444	51850	392395.44	982				340545.44	51850	392395.4	982		
1936													
1937													
1938													
1939													
1940													
1941													
1942	153501	21499		670	226654	53436	460	380155	74935	455090	1130		
1943													
1944													
1945	158235	28765		776	249824	75184	590	408059	103950	510009	1366		
1946	158758	26243		779	256077	68931	604	414835	95174	510009	1383		
1947	160658	24142		750	258930	70077	621	419588	94219	514007	1371		
1948	163438	26562		827	265856	64344	848	429094	90906	520000	1675		
1949	165382	26618		570	271272	68728	526	436654	95346	532000	1096		

Field	discovered												
Coalinga	1890				East area			Total field					
Year	Cumulative production	reserves (Mbbl)	Estimated Ultimate	number of wells	Cumulative production	reserves (Mbbl)	number of wells	Cumulative production	Reserves (Mbbl)	Estimated Ultimate	Number of wells	Pool Discovered	Enhanced Recovery
1950	167349	22651		773	275711	84289	784	443060	86940	530000	1557		
1951	169846	20154		786	281418	58582	785	451264	78736	530000	1571		
1952	171211	28789		792	287124	62876	837	458335	91665	550000	1629		waterflood started- Temblor
1953	173761	26239		810	292801	67199	867	466562	93438	560000	1677		
1954	175658	24342		820	297505	62495	882	473163	86837	560000	1702		
1955	178087	21913		832	302270	57730	891	480357	79643	560000	1723		
1956	180517	29483		838	307847	62153	924	488364	91636	580000	1762		
1957	182931	27069		891	313283	61717	981	496214	88786	585000	1872		
1958	185165	24835		891	317499	57501	922	502664	82336	585000	1813		waterflood started- Temblor
1959	187882	32318		934	322581	62419	1005	510283	94737	605000	1939		
1960	190105	29887		942	327655	57337	1024	517760	87224	604984	1966		
1961	192342	27836		941	332787	52207	1074	525129	79843	604972	2015		steamflood-Etchegoin, Temblor; waterflood discontinued-
1962	195129	27605		1064	338106	52106	1092	533235	79711	612946	2156		cyclic steam- Etchegoin, Temblor; hot waterflood-
1963	199980	22743		1127	343456	48748	1159	543436	69491	612927	2286		
1964	200772	19955		1122	349180	43354	1220	549952	63309	613261	2342		waterflood and fireflood started- Etchegoin, Temblor
1965	203944	22775		1192	358686	33834	1171	562630	56609	619239	2363		steamflood started- Temblor
1966	208025	28689		1211	359977	33450	1144	568002	62139	630141	2355		hot waterflood, fireflood discont'd.- Etchegoin, Temblor
1967	577849	72244		2435				577849	72244	650093	2435		waterflood discontinued- Etchegoin, Temblor
1968	587910	75096		2339				587910	75096	663006	2339		
1969	595693	68600		2217				595693	68600	664293	2217		
1970	603863	75000		2261				603863	75000	678863	2261		steamflood discontinued- Temblor
1971	611732	67134		2281				611732	67134	678866	2281		
1972	619436	59432		2177				619436	59432	678868	2177		
1973	626495	72370		2143				628495	72370	698865	2143		
1974	639959	65687		2219				639959	65687	705846	2219		
1975	638931	60000		2188				638931	60000	698931	2188		
1976	648494.779	55900		2210				648494.78	55900	704394.8	2210		waterflood discontinued- Temblor
1977	654246	50100		2258				654246	50100	704348	2258		
1978	660155	44240		2183				660155	44240	704395	2183		polymer flood started and discontinued- Temblor
1979	666211	38184		2115				666211	38184	704395	2115		
1980	673838	110557		2093				673838	110557	784395	2093		
1981	682203	102092		2234				682203	102092	784295	2234		
1982	691123	93272		2249				691123	93272	784395	2249		
1983	700707	83688		2242				700707	83688	784395	2242		
1984	710782	73613		2314				710782	73613	784395	2314		
1985	722168	184227		2408				722168	184227	906395	2408		
1986	733613	172782		2433				733613	172782	906395	2433		
1987	743996	162399		2343				743996	162399	906395	2343		
1988	754012	152383		2360				754012	152383	906395	2360		hot waterflood, waterflood started- Etchegoin, Temblor
1989	764665	141730		2319				764665	141730	906395	2319		
1990	776220	130175		2342				776220	130175	906395	2342		
1991	788617	117778		2313				788617	117778	906395	2313		waterflood started- Temblor
1992	800134	106261		2200				800134	106261	906395	2200		waterflood discontinued- Temblor
1993	810469	95926		1993				810469	95926	906395	1993		
1994	820223	86172		1922				820223	86172	906395	1922		
1995	829899	76496		2033				829899	76496	906395	2033		

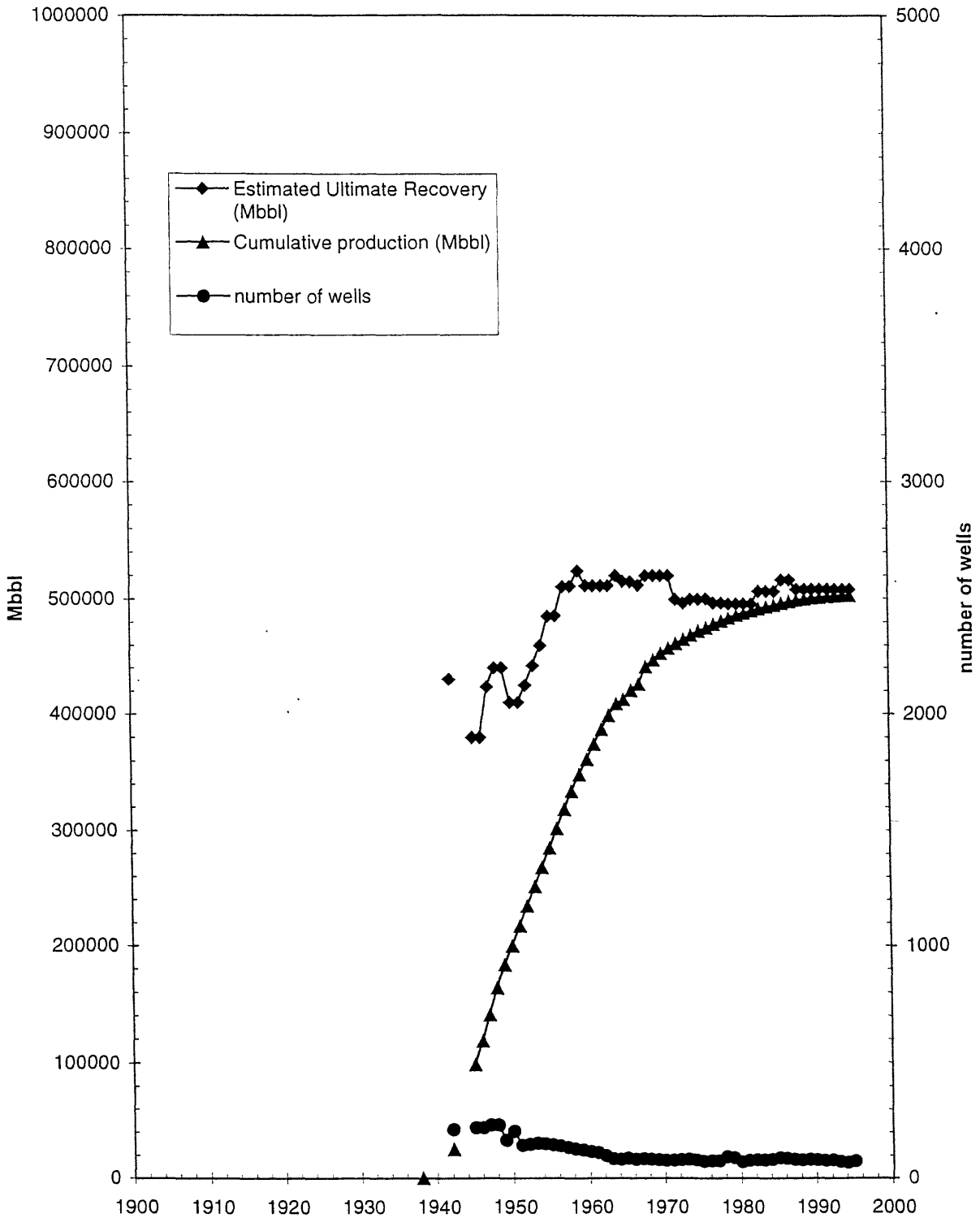
Coalinga Oil Field Estimated Ultimate Recovery



Field	discovered				Area/Pool discovered or abandoned	Enhanced recovery
Coalinga , East Extension	1938					
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells		
1900						
1901						
1902						
1903						
1904						
1905						
1906						
1907						
1908						
1909						
1910						
1911						
1912						
1913						
1914						
1915						
1916						
1917						
1918						
1919						
1920						
1921						
1922						
1923						
1924						
1925						
1926						
1927						
1928						
1929						
1930						
1931						
1932						
1933						
1934						
1935						
1936						
1937						
1938					Coalinga Nose/ Gatchell pool disc.	
1939					Northeast Area/ Gatchell pool disc.	
1940						
1941						
1942	25183	404862	430045	213		
1943						
1944						
1945	98255	281743	379998	218		
1946	118677	261321	379998	219		
1947	140973	282352	423325	231		
1948	164002	275998	440000	231		
1949	183564	256436	440000	164		
1950	200041	209959	410000	204		pressure maintenance begun- Gatchell
1951	217254	192746	410000	142		
1952	234696	190304	425000	147	Coalinga Nose/ Vaqueros pool disc.	
1953	251639	190361	442000	151		
1954	268326.192	191394	459720.192	150		
1955	284991.363	199993	484984.363	145		
1956	301692.885	183496	485188.885	140		
1957	318283.015	192089	510372.015	133		waterflood started-Coalinga Nose (Gatchell)
1958	333821.446	176834	510655.446	126		
1959	347923.273	162842	523861.921	121		
1960	361019.921	149916	510935.921	115		

Field	discovered				Area/Pool discovered or abandoned	Enhanced recovery
Coalinga , East Extension	1938					
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells		
1961	374407.414	136584	510991.414	111		
1962	386961.668	124063	511024.668	98	Vaqueros pool abd.	
1963	398445.333	112553	510998.333	83		waterflood started- Northeast
1964	408541.173	111016	519557.173	82		
1965	412408.23	102045	514453.23	85		waterflood discontinued- Coalinga Nose (Gatchell)
1966	420437.21	93783	506191.23	81		
1967	425813.841	85703	511516.841	84		
1968	440909.905	78618	519527.905	81		waterflood discontinued- Northeast
1969	446980.698	72547	519527.698	78		
1970	452698.58	66818	519516.58	76		
1971	457447.406	62066	519513.406	76		
1972	461454.045	38046	499500.045	78	Northeast Area abd.	
1973	465039.389	30959		81		
1974	468560.124	30959	499519.124	80		
1975	472018.405	27500	499518.405	73		
1976	475040.704	24700	499740.704	75		
1977	477924	18400	496324	74		
1978	480878	15446	496324	93		
1979	483407	11984	495391	88		
1980	485717	9760	495477	71		
1981	487718	7758	495476	77		micellar polymer flood - C. Nose (Gatchell)
1982	489567	5910	495477	78		
1983	491307	14700	506007	78		
1984	492816	13191	506007	81		
1985	494469	11538	506007	89		
1986	496098	20009	516107	85		
1987	497452	18655	516107	82		micellar polymer flood discontinued (Gatchell)
1988	498676	9429	508105	80		
1989	499714	8393	508107	81		pressure mainenance discontinued- Gatchell
1990	500561	7546	508107	79		
1991	501244	6863	508107	77		
1992	501816	6291	508107	79		
1993	502291	5816	508107	73		
1994	502728	5379	508107	68		
1995	503097	5010	508107	75		

Coalinga East Extension Oil Field Estimated Ultimate Recovery



Field	discovered						
Coles Levee, North	1938						
Year	Cumulative production	reserves (Mbbl)	Estimated Ultimate	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
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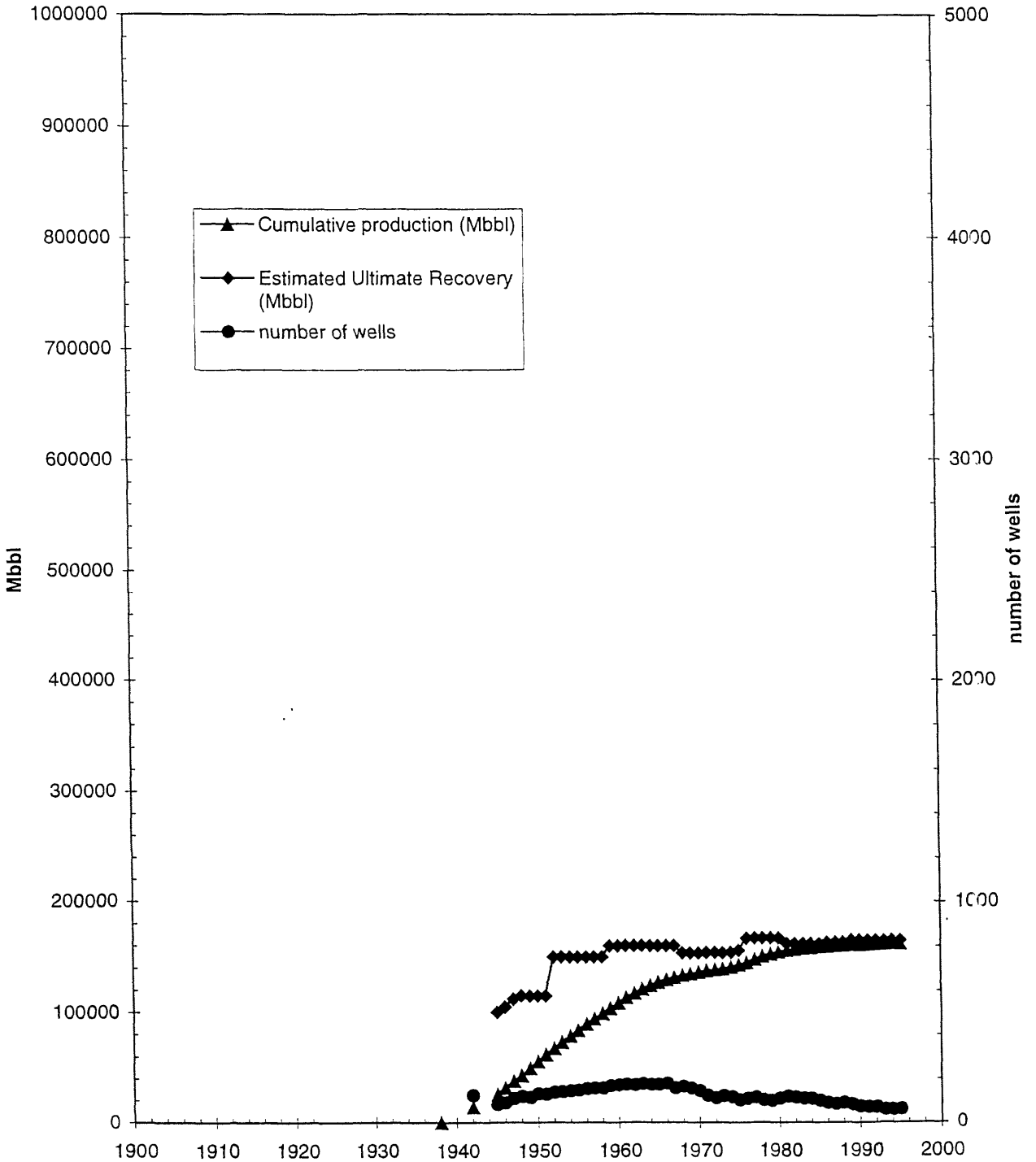
1926							
1927							
1928							
1929							
1930							
1931							
1932							
1933							
1934							
1935							
1936							
1937							
1938						Stevens	
1939							
1940							
1941						Gas Zone	
1942	14271	55729		123			pressure maintenance started (Stevens)
1943							
1944							
1945	25550	74453	100003	83			
1946	31227	73776	105003	90			
1947	37441	74559	112000	110			
1948	42938	72062	115000	119			
1949	49202	65798	115000	115			

Field	discovered						
Coles Levee, North	1938						
Year	Cumulative production	reserves (Mbbl)	Estimated Ultimate	number of wells	Area discovered	Pool discovered	Enhanced recovery
1950	55385	59615	115000	130			
1961	61511	53489	115000	129			
1952	67445	82555	150000	138			
1953	73072	76928	150000	140		Point of Rocks	
1954	78563	71437	150000	145			waterflood (Stevens)
1955	84183	65817	150000	146			
1956	89500	60500	150000	154			
1957	94536	55464	150000	156			
1958	99120	50880	150000	156			
1959	103947	56053	160000	168			
1960	108865	51144	160009	170			
1961	113444	46557	160001	173			
1962	117439	42559	159998	171			
1963	121032	38967	159999	176			
1964	124284	35715	159999	173			
1965	127270	32715	159985	174			
1966	129785	30200	159985	179			
1967	131682	28292	159974	157			
1968	133345	19956	153301	164			
1969	134923	18374	153297	157			*pressure maintenance discontinued* (Stevens)
1970	136437	16850	153287	144			
1971	137745	15854	153599	124			
1972	138622	14978	153600	112			
1973	139274	13984	153258	120			
1974	140848	12766	153614	116			
1975	142864	13000	155864	102			
1976	144965.195	21600	166565.195	108			
1977	147813	18800	166613	114			
1978	150244	16289	166533	102			
1979	152401	14132	166533	100			
1980	154149	12402	166551	110			
1981	155528	5667	161195	119			CO2 flood started (Stevens)
1982	156600	4595	161195	115			
1983	157495	3700	161195	108			
1984	158225	2969	161194	110			
1985	158810	2384	161194	99			
1986	159337	3658	162995	90			
1987	159800	3194	162994	86			
1988	160262	2733	162995	89			
1989	160727	3767	164494	82			
1990	161108	3387	164495	73			
1991	161446	3048	164494	71			
1992	161721	2773	164494	71			
1993	161792	2523	164315	59			CO2 flood discontinued (Stevens)
1994	162219	2276	164495	59			
1995	162445	2049	164494	61			

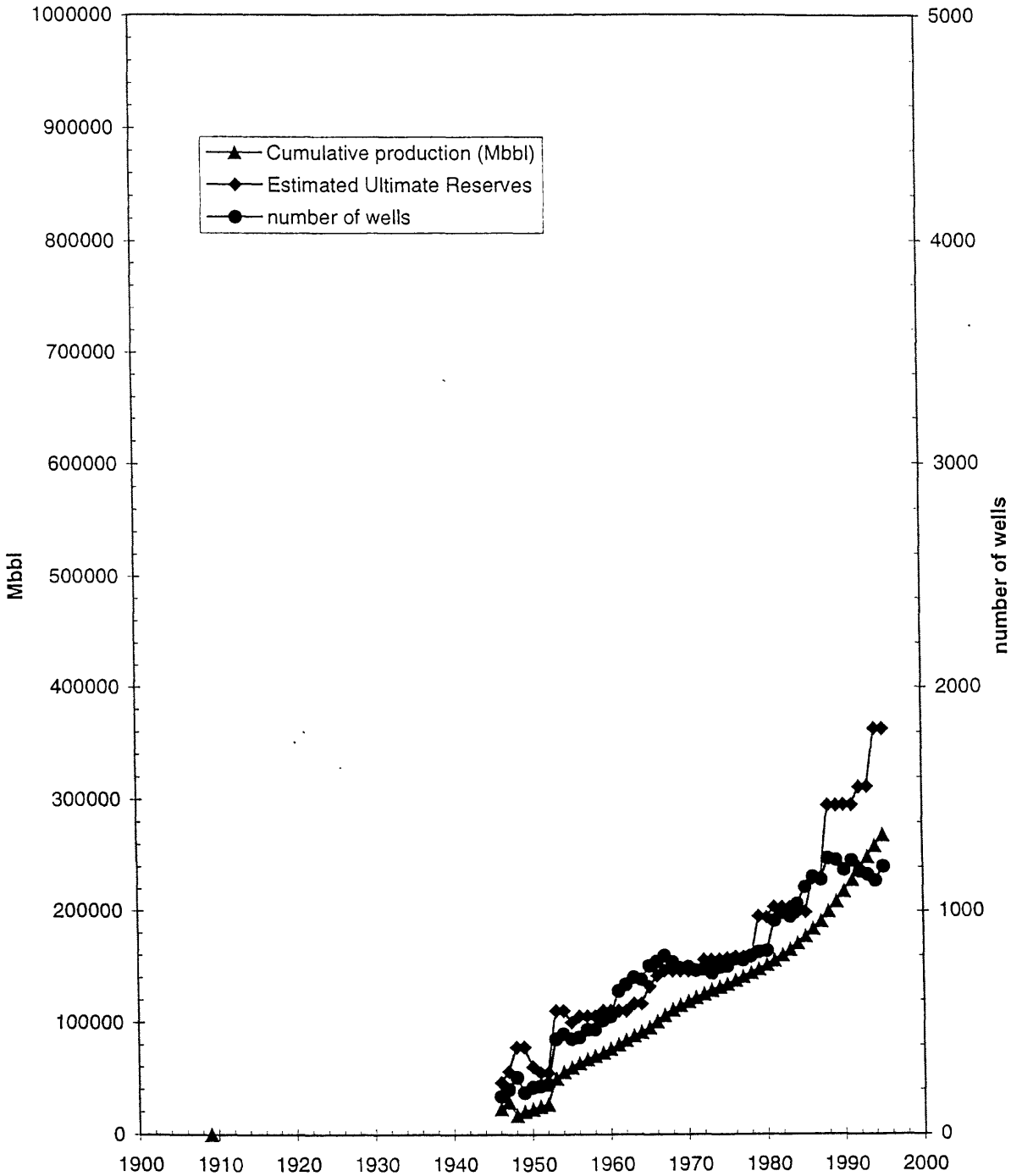
North Coles Levee Oil Field Estimated Ultimate Recovery



Field	discovered						
Cymric	1909						
Year	Cumulative production	reserves (Mbbl)	Estimated Ultimate	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909					McKittrick Front--now Welport Area	Tulare/Welport	
1910							
1911							
1912							
1913							
1914							
1915							
1916							
1917						Olig/Welport	
1918							
1919							
1920							
1921							
1922							
1923							
1924							
1925							
1926							
1927							
1928							
1929					Sheep Springs	Etchegoin (54-21)	
1930							
1931							
1932							
1933							
1934							
1935							
1936							
1937							
1938							
1939					1-Y Area	1st McKittrick/1-Y (Welport)	
1940							
1941							
1942					Salt Creek Main Area	Etchgoin, Cameros/Salt Creek Main	
1943							
1944							gas injection- Salt Creek Main
1945						Phacoides/Salt Creek Main; Cameros/Sheep Springs; Point of Rocks, Etchegoin, Cameros/ Welport	
1946	23111	22951	46062	170		Oceanic/Welport	
1947*	28683	27122	55805	201	Salt Creek West Area	Phacoides/Salt Creek West; Oceanic/Sheep Springs	
1948	17182	60838	78000	255		Tulare/Sheep Springs	pressure maintenance started- Salt Creek Main (Cameros)
1949	20401	57599	78000	185			
1950	22666	37334	60000	210			
1951	24836	30164	55000	215			

Field	discovered						
Cymric	1909						
Year	Cumulative production	reserves (Mbbl)	Estimated Ultimate	number of wells	Area discovered	Pool discovered	Enhanced recovery
1952	26850	28150	55000	223		Phacoides/Sheep Springs	
1953	50108	59892	110000	425		2nd McKittrick/1-Y (Welport)	
1954	55821	54179	110000	448			
1955	59721	40279	100000	427			
1956	63489	41511	105000	432		Agua (Santos)/Welport	
1957	66911	38089	105000	467			
1958	70032	34968	105000	467			
1959	72977	37023	110000	508			
1960	76431	33603	110034	525			
1961	80320	29712	110032	639			
1962	84364	25636	110000	869			air injection started- Welport (Tulare)
1963	88003	28628	116631	899			Cyclic steam- Welport (Tulare)
1964	91417	25152	116569	690			
1965	95363	36207	131570	751		Cameros, Phacoides, Oceanic/Welport	
1966	101035	40577	141612	770			waterflood started- Welport (Tulare); Cyclic steam started- Sheep Springs (Tulare)
1967	108156	39469	145625	799	Cymric Flank Area	Phacoides/Cymric Flank; Cameros/Cymric Flank	cyclic steam-1-Y
1968	111028	34615	145643	768			waterflood discontinued and steamflood started- Welport (Tulare)
1969	114856	30861	145717	741			
1970	118455	27401	145856	746			
1971	121612	24056	145868	732			
1972	125293	30603	155896	737			
1973	126573	27324	155897	719			
1974	131500	24505	156005	746			
1975	134335	23000	157335	752			
1976	137621.75	21200	156821.75	782			
1977	141113	17700	158813	778			
1978	144358	14432	158790	797			
1979	147742	47436	195178	816			
1980	151571	42578	194149	821			cyclic steam started- Sheep Springs (Tulare)
1981	155864	47783	203647	956			
1982	160416	43231	203647	994			Pressure maintenance discontinued- Salt Creek Main (Cameros
1983	165470	38228	203698	978			
1984	171129	27941	199070	1033		Monterey/ Sheep Springs; San Joaquin/ Welport	
1985	177472	21601	199073	1108			
1986	184507	45204	229711	1156		McDonald- Devilwater/ Welport; Sheep Springs (Monterey pool) shut in	
1987**	191494	38454	229948	1144	Welport area extended to include McKittrick Front, 1-Y, part of Sheep Springs		
1988	200288	95032	295320	1239			waterflood started- Salt Creek Main (Cameros)
1989	209146	86237	295383	1232			
1990	218152	77341	295493	1186			
1991	228625	67087	295612	1229			
1992	239235	72240	311475	1180			
1993	249102	62823	311925	1165			
1994	258689	104121	362810	1139			waterflood discontinued- Salt Creek Main (Cameros)
1995	268603	94106	362799	1202			
*Cymric Oil Field was separated from McKittrick Oil Field in 1947.		** Salt Creek Main Area was extended to include part of Sheep Springs Area in 1987					

Cymric Oil Field Estimated Ultimate Recovery



Field	discovered						
Edison	1928						
Year	Cumulative production	reserves (Mbbl)	Estimated Ultimate	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
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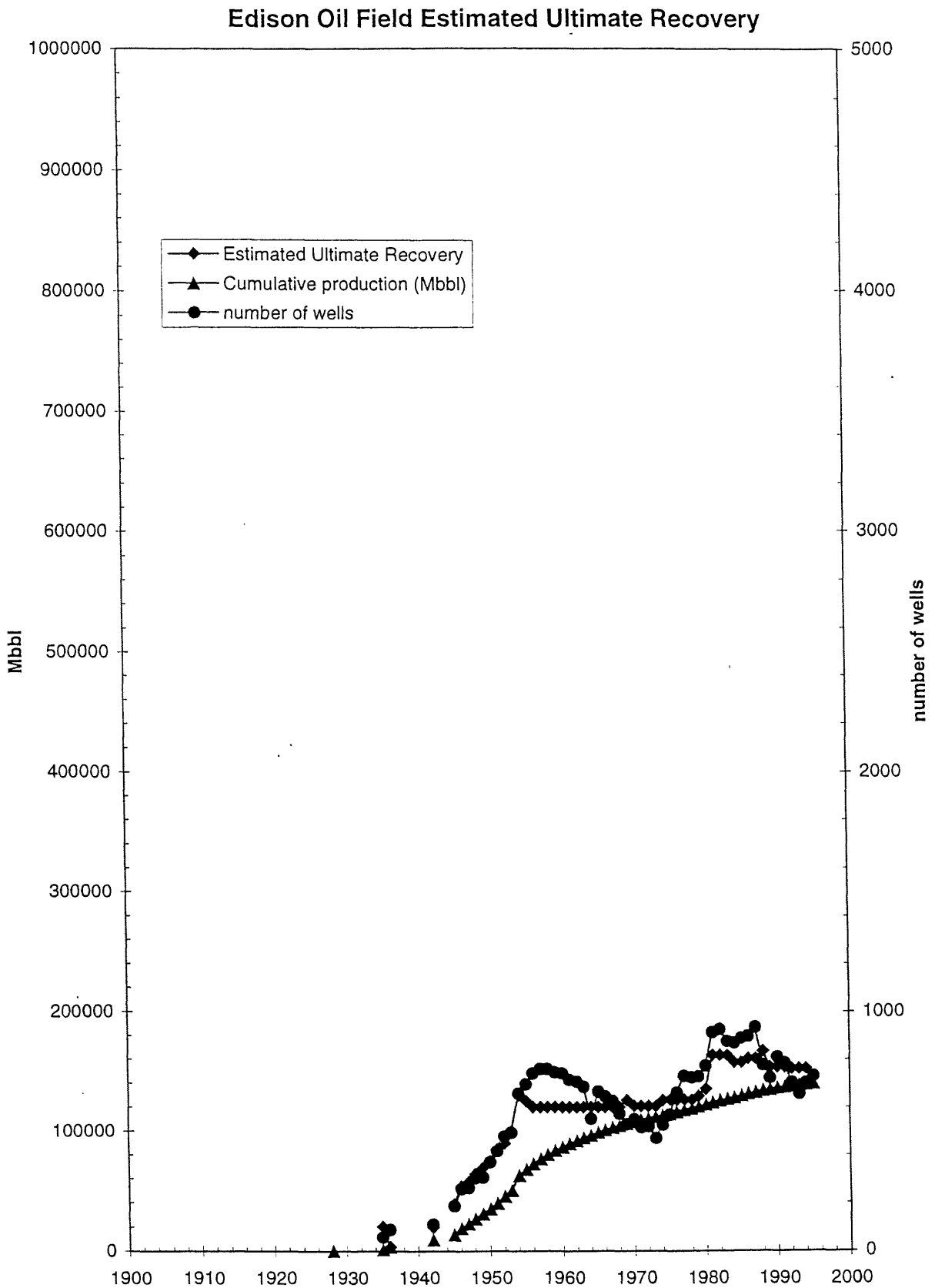
1923							
1924							
1925							
1926							
1927							
1928					Portals-Fairfax Area	Frustvale and Nozu Zone	
1929							
1930							
1931					Main Area	Kern River-Chanac/Main	
1932							
1933							
1934						Nozu, Freeman-Jewett, Walker/Main, Wicker/Portals-Fairfax	
1935	1115.061	19000	20115.061	57	Northeast Area	Chanac, Nozu/ West; Chanac/Northeast	
1936	3138.512		3138.512	89		Santa Margarita/Main	
1937						Santa Margarita/West	
1938							
1939							
1940							
1941							
1942	9339	10661	20000	112			
1943							
1944					Race Track Hill Area	Jewett, Pyramid Hill, Vedder/Race Track Hill	
1945	13643	25360	39003	188		Wicker,Schist/Main	
1946	18948	35055	54003	259			
1947	22878	34622	57500	282		Nozu/Race Track Hill	
1948	26974	37026	64000	304	Jeppi Area	Jeppi, Santa Margarita/Jeppi	
1949	31121	37879	69000	307			

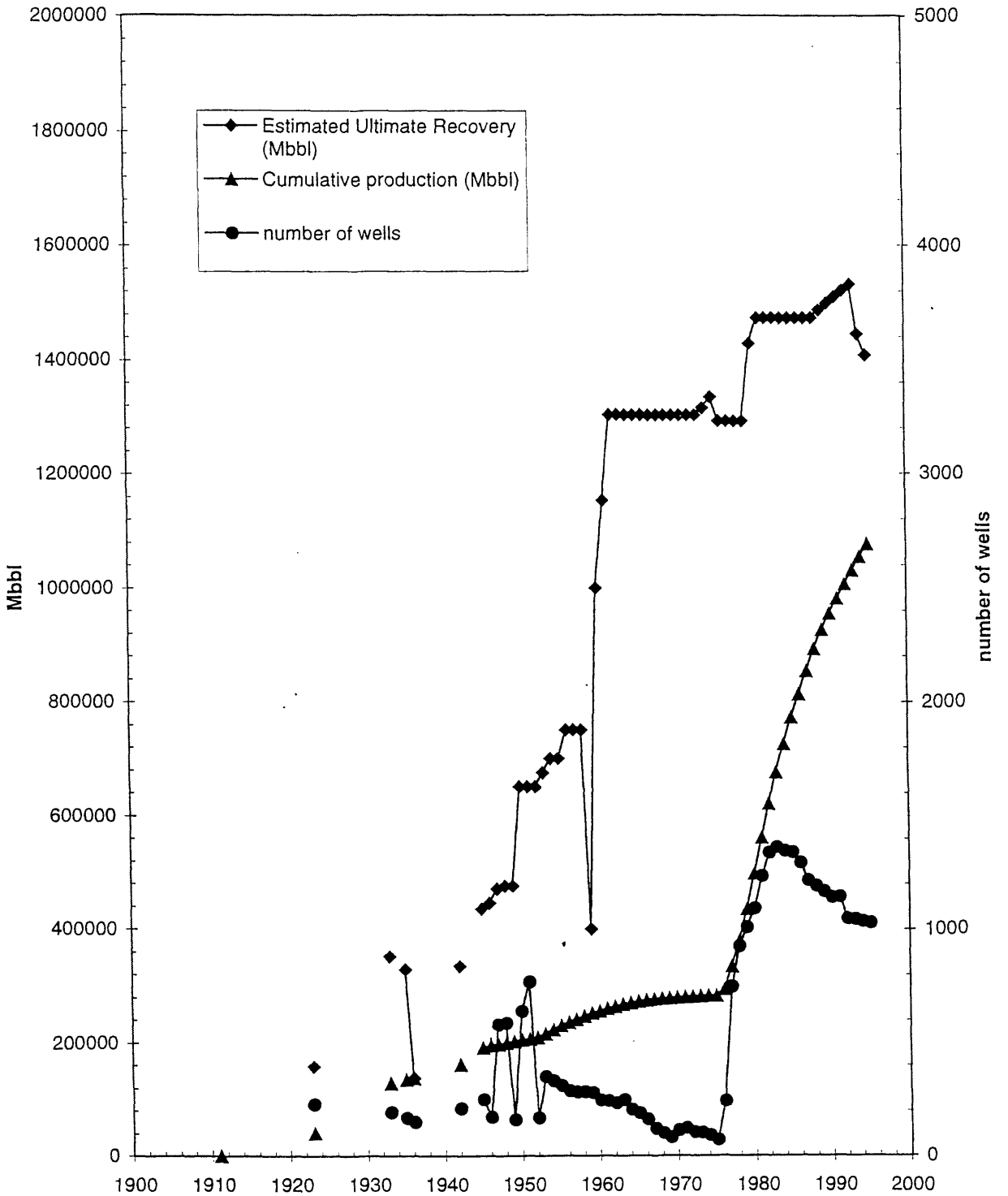
Field	discovered						
Edison	1928						
Year	Cumulative production	reserves (Mbbl)	Estimated Ultimate	number of wells	Area discovered	Pool discovered	Enhanced recovery
1950	35040	39960	75000	371	Edison Groves Area	Olcese/Edison Groves	
1951	39902	45098	85000	417		Porter/West	
1952	45373	44627	90000	479		Jewett, Pyramid Hill, Vedder/Jeppi, Wicker/ Race Track Hill	
1953	50467	49533	100000	495		Chanac/Edison Groves,Santa Margarita/Race Track Hill	
1954	62715	67285	130000	657		Chanac/Race Track Hill	
1955	67706	57294	125000	695			
1956	72238	47762	120000	740			
1957	76396	43604	120000	760		Freeman-Jewett/West	
1958	80193	39807	120000	760			
1959	83763	36237	120000	745			
1960	86694	33262	119956	740			
1961	89389	30550	119939	713			
1962	91917	28017	119934	706			
1963	94370	25587	119957	684			waterflood started- Portals/Fairfax (Wicker); Race Track Hill (Pyramid Hill)
1964	96644	23317	119961	552			Cyclic steam- Edison Groves, Main (Kern R.-Chanac, Schist), Race Track Hill (Kern R.-Chanac, Santa Margarita)
1965	98726	21225	119951	665			waterflood discontinued- Race Track Hill (Pyramid Hill)
1966	100877	19079	119956	644			
1967	102909	17037	119946	626			
1968	104682	15251	119933	574			
1969	106331	19500	125831	530		Pyramid Hill, Vedder/West	waterflood discontinued- Main (Freeman-Jewett)
1970	108236	12649	120885	551			
1971	109933	11232	120865	518			
1972	110973	9888	120861	522			waterflood started- Main (Schist)
1973	112128	8728	120856	472			
1974	113339	12500	125839	527			
1975	114657	11400	126057	570			
1976	116435.814	10000	126435.814	660			waterflood discontinued- Main (Schist)
1977	117845	8600	126445	730			
1978	119352	7042	126394	724			
1979	120816	8854	129670	728			steamflood started - Race Track Hill (Kern River-Chanac)
1980	122440	13102	135542	774			
1981	124121	39464	163585	912			
1982	125672	37912	163584	925			steamflood started- Main (Kern R.-Chanac)
1983	127107	36477	163584	876			steamflood discontinued- Main (Kern R.-Chanac); waterflood started- Main (Kern R.-Chanac)
1984	128382	29156	157538	869			
1985	129929	27610	157539	890			
1986	131432	29646	161078	899			waterflood discontinued- Main (Kern R.- Chanac; waterflood started - Race Track Hill (Kern R.-Chanac)
1987	132961	28117	161078	936			waterflood discontinued- Portals-Fairfax (Wicker)
1988	134367	32711	167078	779			
1989	135447	18364	153811	724			
1990	136386	17392	153778	811			waterflood discontinued- Race Track Hill (Kern R. Chanac)
1991	137417	16361	153778	787			steamflood discontinued- Race Track Hill (Kern R.-Chanac)
1992	138243	14686	152929	705			
1993	138911	13622	152533	659			
1994	139523	13010	152533	705			
1995	140231	6148	146379	732			


Edison Oil Field Estimated Ultimate Recovery
Estimated Ultimate Recovery
Cumulative production (Mbbl)
number of wells
Mbbl
number of wells
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
5000
4000
3000
2000
1000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

Field	discovered					
Elk Hills	1911					
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Pool discovered	Enhanced recovery
1900						
1901						
1902						
1903						
1904						
1905						
1906						
1907						
1908						
1909						
1910						
1911					Upper	
1912						
1913						
1914						
1915						
1916						
1917						
1918						
1919					Mya Gas	
1920						
1921						
1922						
1923	41606	116140	157746	229		
1924						
1925						
1926						
1927						
1928						
1929						
1930						
1931						
1932						
1933	128617.928	222700	351317.928	192		
1934						
1935	135180.018	193553	328733.018	167		
1936	138374.463		138374.463	151		
1937						
1938						
1939						
1940						
1941					Stevens	
1942	162099	172901	335000	211		
1943						
1944						
1945	191064	243936	435000	250		
1946	194732	250268	445000	173		
1947	196982	273018	470000	580		
1948	199218	275782	475000	587		
1949	202139	272861	475000	160		
1950	204634	445166	650000	638		
1951	207284	442716	650000	766		

Field	discovered					
Elk Hills	1911					
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Pool discovered	Enhanced recovery
1952	210112	439888	650000	170	Carneros	
1953	216114	458886	675000	352		
1954	223763	476237	700000	333		
1955	230535	469465	700000	313		
1956	236428	513572	750000	290		
1957	242089	507911	750000	284		waterflood started- Upper Pool (Scalez Zone)
1958	247429	502571	750000	284		
1959	252570	147430	400000	280		
1960	256853	743118	999971	249		
1961	260945	891710	1152655	246		
1962	264820	1037816	1302636	237		
1963	268496	1034121	1302617	251		
1964	271481	1031108	1302589	208		
1965	274019	1028560	1302579	191		waterflood started- Stevens Pool
1966	276095	1026454	1302549	163		
1967	277661	1024853	1302514	121		waterflood started- Stevens Pool
1968	278818	1023663	1302481	102		
1969	279731	1022725	1302456	83		
1970	280489	1021943	1302432	114		
1971	281455	1020992	1302447	123		
1972	282223	1020218	1302441	106		
1973	283022	1019421	1302443	104	Northwest Stevens (formerly Tule Elk Oil Field)	
1974	283788	1031000	1314788	93		
1975	284485	1050000	1334485	72	Tulare	cyclic steam started and discontinued- Tulare Pool
1976	295630.735	996000	1291630.735	247		pressure maintenance started- Stevens Pool
1977	335625	956000	1291625	750	Aqua	
1978	380483	910782	1291265	926		
1979	435899	855788	1291687	1009		
1980	498619	929756	1428375	1093		
1981	561789	911231	1473020	1234		
1982	621576	851444	1473020	1339		
1983	677106	795950	1473056	1364		
1984	726697	746434	1473131	1348		
1985	773486	699649	1473135	1341		
1986	813575	659571	1473146	1295		
1987	854146	618999	1473145	1217		
1988	892436	580739	1473175	1194		
1989	926615	560192	1466807	1167		steamflood started- Upper Pool (Scalez); waterflood started- Stevens Pool
1990	955476	543298	1498774	1143		
1991	981931	527909	1509840	1145		steamflood discontinued and pressure maintenance started- Upper Pool (Scalez)
1992	1006975	514354	1521329	1048		pressure maintenance started- NW Stevens Pool
1993	1030632	500850	1531482	1045		
1994	1054609	389687	1444296	1037		
1995	1077148	330759	1407907	1030		waterflood started- Stevens Pool

Elk Hills Oil Field Estimated Ultimate Recovery



Field	discovered						
Fruitvale	1928						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
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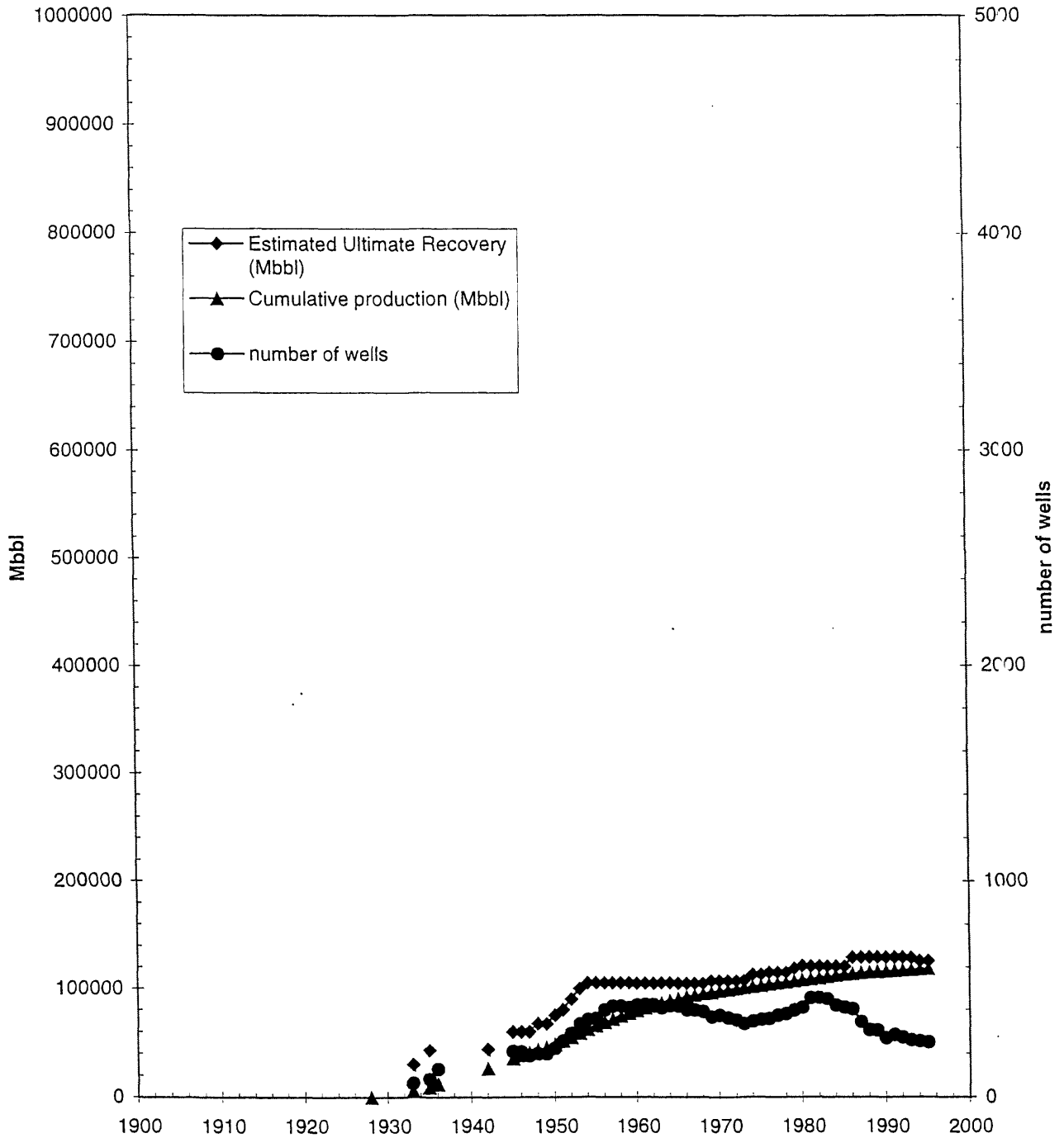
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923							
1924							
1925							
1926							
1927							
1928					Main Area	Kemco, Mason-Parker, and Martin	
1929						Santa Margarita/Main	
1930							
1931							
1932							
1933	5772.593	24200	29972.593	64			
1934							
1935	8962.845	34200	43162.845	82			
1936	11865.465			128		Fairhaven/Main	
1937							
1938							
1939							
1940							
1941							
1942	26651	17350	44001				
1943							
1944							
1945	35746	24242	59988	209			
1946	38480	21508	59988	207			
1947	40370	19630	60000	189			
1948	42755	24245	67000	201			
1949	45467	21533	67000	201			
1950	48316	26684	75000	225			
1951	51645	28355	80000	256			
1952	55015	34985	90000	292			
1953	58583	41417	100000	337	Greenacres Area	Lerdo/Greenacres	
1954	62145	42855	105000	356		Chanac/Greenacres	

Field	discovered						
Fruitvale	1928						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	65520	39480	105000	360			
1956	68765	36235	105000	400			
1957	71724	33276	105000	418	Calloway Area	40-7 , 42-0 Pools/Calloway Area	
1958	74466	30534	105000	418			
1959	76989	28011	105000	411			
1960	79373	25584	104957	422			
1961	81874	23086	104960	425			
1962	84172	20783	104955	426			Waterflood- Main Area (Kemco)
1963	86373	18621	104994	411			
1964	88451	16862	105313	419			cyclic steam started- Main Area (Kemco)
1965	90397	14584	104981	418			cyclic steam discontinued- Main Area (Kemco)
1966	92189	12790	104979	399			
1967	93717	11254	104971	399			
1968	95112	9856	104968	393			
1969	96422	10612	107034	368	Greenacres Area abandoned		
1970	97663	9372	107035	375			
1971	98770	8263	107033	364			
1972	99814	7215	107029	354			waterflood started- Main Area (Martin)
1973	100794	6234	107028	335			waterflood discontinued- Main (Martin)
1974	101817	11400	113217	349			
1975	102769	10500	113269	356			waterflood discontinued- Main (Kemco)
1976	104233.852	11000	115233.852	360			cyclic steam started - Main (Kemco, Fairhaven, Mason-Parker and Martin)
1977	105262	10000	115262	376			
1978	106298	8941	115239	382			
1979	107304	11754	119058	399			
1980	108308	13079	121387	412			fireflood started- Main (Kemco)
1981	109366	11749	121115	456			
1982	110422	10693	121115	458			
1983	111460	9655	121115	452			
1984	112498	8617	121115	422			
1985	113464	7651	121115	413			
1986	114262	14952	129214	404			
1987	114932	14283	129215	346			
1988	115502	13713	129215	310			
1989	116050	13165	129215	306			
1990	116527	12688	129215	272			
1991	117088	12127	129215	287			
1992	117637	11578	129215	275			
1993	118202	10822	129024	262			
1994	118716	7309	126025	258			
1995	119203	6822	126025	252			

Fruitvale Oil Field Estimated Ultimate Recovery



Field	discovered						
Greeley	1936						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
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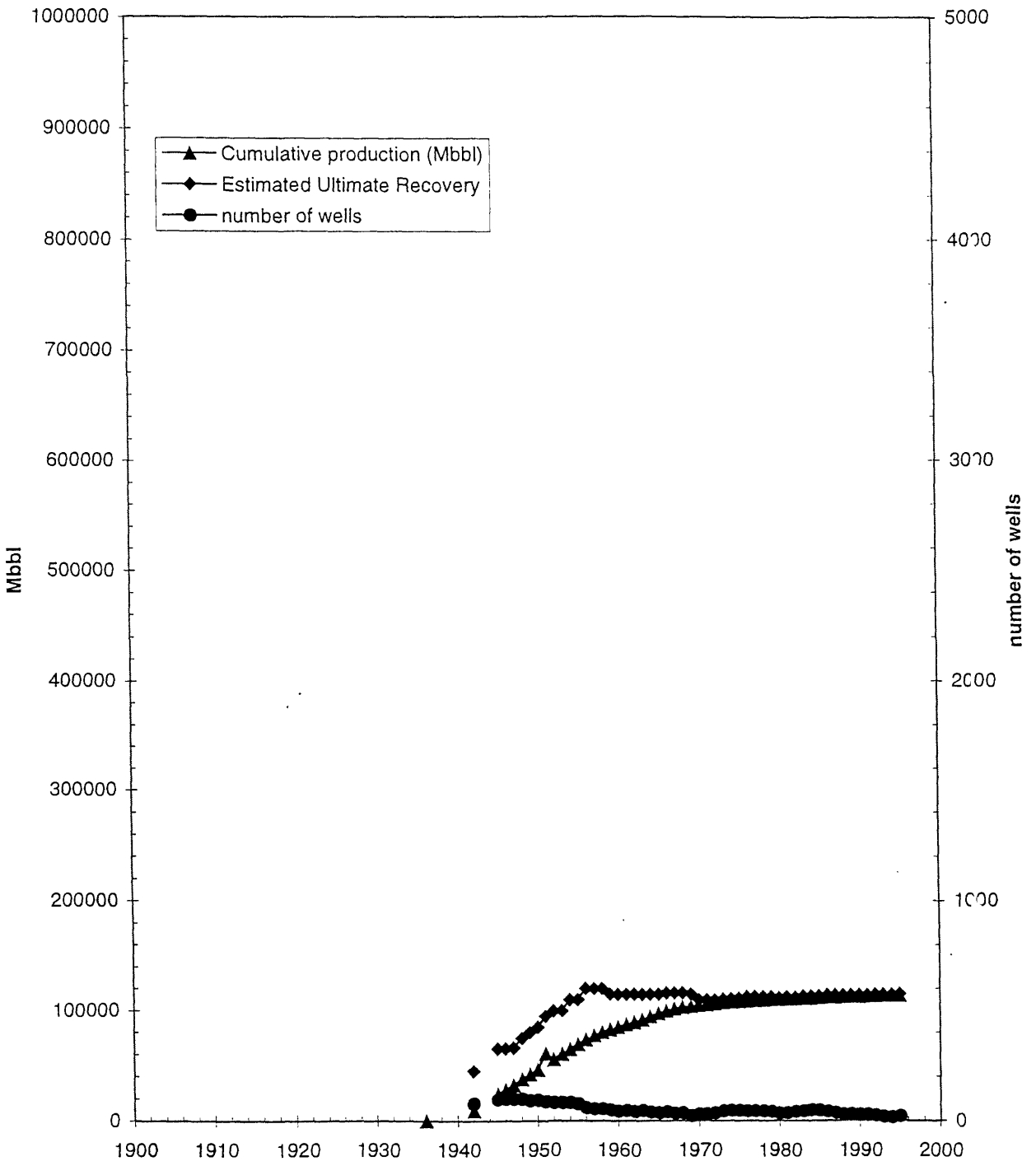
1932							
1933							
1934							
1935							
1936						Stevens	
1937							
1938						Rio Bravo- Vedder	
1939							
1940							
1941							
1942	9026	35974	45000	78			
1943							waterflood started- Stevens
1944							
1945	24145	40854	64999	97			
1946	28039	36960	64999	99			
1947	32300	33700	66000	100			
1948	37431	37569	75000	99			gas injection for pressure maintenance started- Rio Bravo-Vedder
1949	42188	37812	80000	92		Olcese 12-21	
1950	46205	38795	85000	95			
1951	60827	34173	95000	86			
1952	55568	44432	100000	83			waterflood started- Rio Bravo-Vedder
1953	60339	39661	100000	83			
1954	64873	45127	110000	81			

Field	discovered						
Greeley	1936						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	69220	40780	110000	74			
1956	73497	46503	120000	57			
1957	77004	42996	120000	53			
1958	79991	40009	120000	53			
1959	82632	32368	115000	48			
1960	85101	29906	115007	43			
1961	87316	27684	115000	47			
1962	89106	25884	114990	42			
1963	91676	23314	114990	46			
1964	94368	20570	114938	39			presure maintenance started- Olcese 12-21
1965	97358	17556	114914	35			
1966	99965	16248	116213	40			
1967	101914	14285	116199	34			gas injection discontinued- Rio Bravo-Vedder; waterflood discontinued- Stevens
1968	103239	12946	116185	35			
1969	104233	10904	115137	24			
1970	105032	5052	110084	31			
1971	105794	4291	110085	32			
1972	106573	3514	110087	36			
1973	107472	2794	110266	43			
1974	107973	3100	111073	47			
1975	108537	3000	111537	46			
1976	109208.425	3600	112808.425	43			
1977	109631	3100	112731	44			pressure maintenance discontinued- Olcese 12-21
1978	110040	2731	112771	43			
1979	110358	2411	112769	42			
1980	110645	1349	111994	34			
1981	110899	1798	112697	37			
1982	111154	1243	112397	42			
1983	111380	1947	113327	44			waterflood discontinued- Rio Bravo-Vedder
1984	111643	1885	113528	49			
1985	111911	1616	113527	45			
1986	112220	2257	114477	41			
1987	112476	2001	114477	35			
1988	112700	1777	114477	30			
1989	112912	1565	114477	29			
1990	113121	1356	114477	29			
1991	113353	1124	114477	29			
1992	113503	1545	115048	23			
1993	113706	1341	115047	19			
1994	113886	1161	115047	17			
1995	114061	1120	115181	21			

Greeley Oil Field Estimated Ultimate Recovery



Field	discovered						
Kern Front	1912						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912						Etchegoin-Chanac	
1913							
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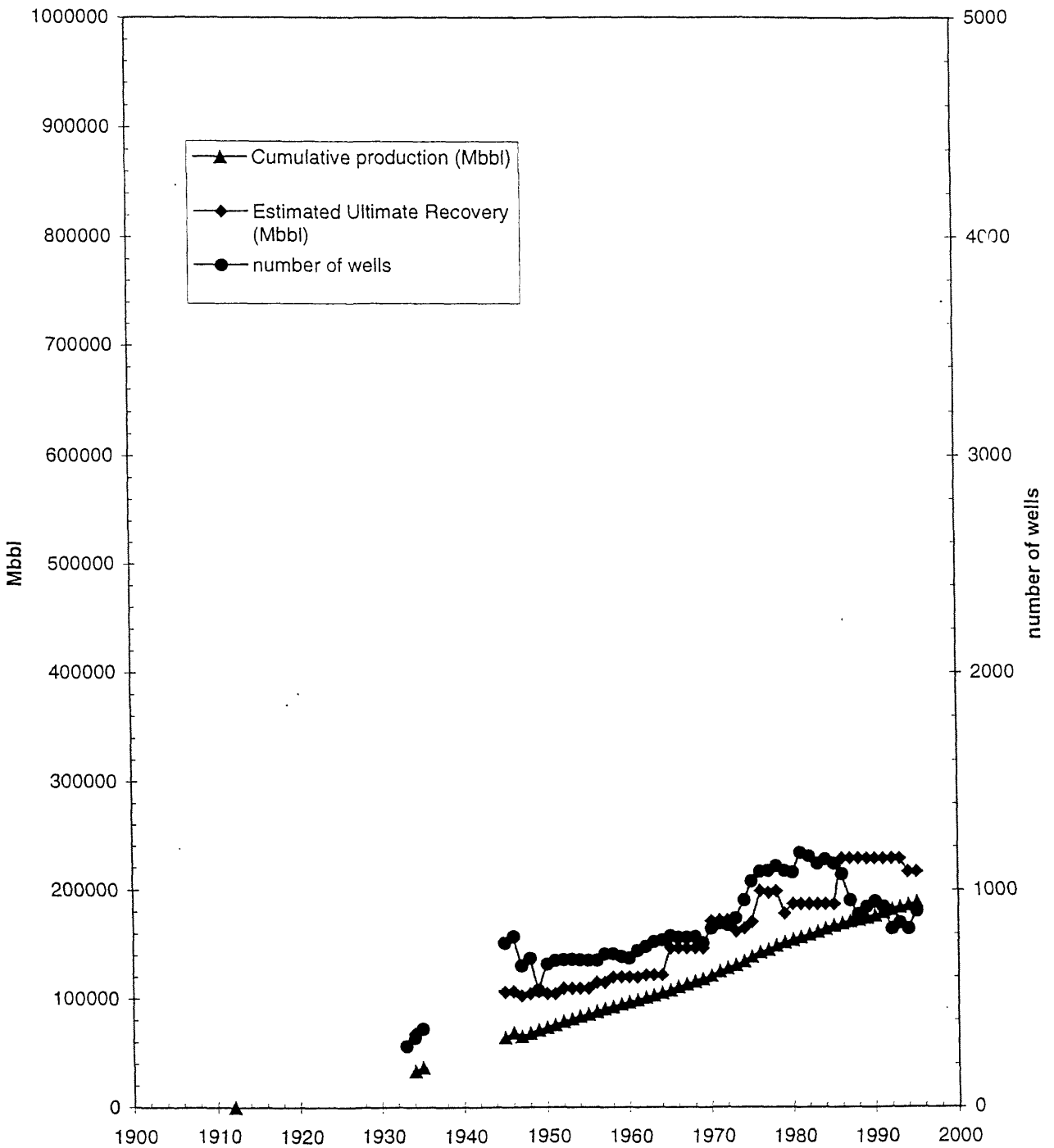
1927							
1928							
1929							
1930							
1931							
1932							
1933		34200		283			
1934	33470.491	34725	68195.491	322			
1935	36988.035			362			
1936							
1937							
1938							
1939							
1940							
1941							
1942							
1943							
1944							
1945	64473	42104	106577	758			
1946	69023	37804	106827	788			
1947	65426	37574	103000	653			
1948	68730	36270	105000	687			
1949	71272	35728	107000	539			
1950	73680	31320	105000	661			
1951	76458	28542	105000	678			
1952	79206	30794	110000	681			
1953	81893	28107	110000	684			
1954	84127	25873	110000	681			

Field	discovered						
Kern Front	1912						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	86289	23711	110000	679			
1956	88600	26400	115000	678			
1957	90899	24101	115000	707			
1958	93095	26905	120000	707			
1959	95284	24716	120000	695			
1960	97339	22662	120001	687			
1961	99306	20693	119999	721			
1962	101483	20521	122004	741			
1963	103627	18382	122009	763			
1964	105958	16082	122040	771			cyclic steam
1965	108306	38443	146749	791			
1966	111117	35883	147000	782			
1967	113547	33443	146990	783			
1968	116009	30977	146986	785			
1969	118745	28236	146981	759			
1970	121745	50058	171803	824			
1971	125377	46618	171995	845			
1972	128522	43467	171989	839			
1973	131456	30530	161986	871			
1974	134691	30300	164991	952			
1975	138801	32000	170801	1039			
1976	142973.585	56000	198973.585	1081			
1977	145479	52000	197479	1087			
1978	149315	49424	198739	1108			
1979	151947	26680	178627	1086			steamflood started
1980	154443	32500	186943	1079			
1981	156984	29959	186943	1170			
1982	159503	27440	186943	1154			
1983	162035	24908	186943	1120			
1984	164858	22086	186944	1139			
1985	167677	19266	186943	1121			
1986	169872	59071	228943	1071			
1987	171574	57369	228943	953			
1988	173107	55863	228970	890			
1989	174816	54127	228943	923			
1990	177148	51795	228943	947			
1991	179825	49118	228943	923			
1992	182413	46530	228943	823			
1993	184743	44200	228943	851			
1994	186906	30037	216943	824			
1995	189104	27839	216943	905			

Kern Front Oil Field Estimated Ultimate Recovery



Field	discovered						
Kern River	1899						
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900						Kern River (1899)	
1901							
1902							
1903							
1904							
1905							
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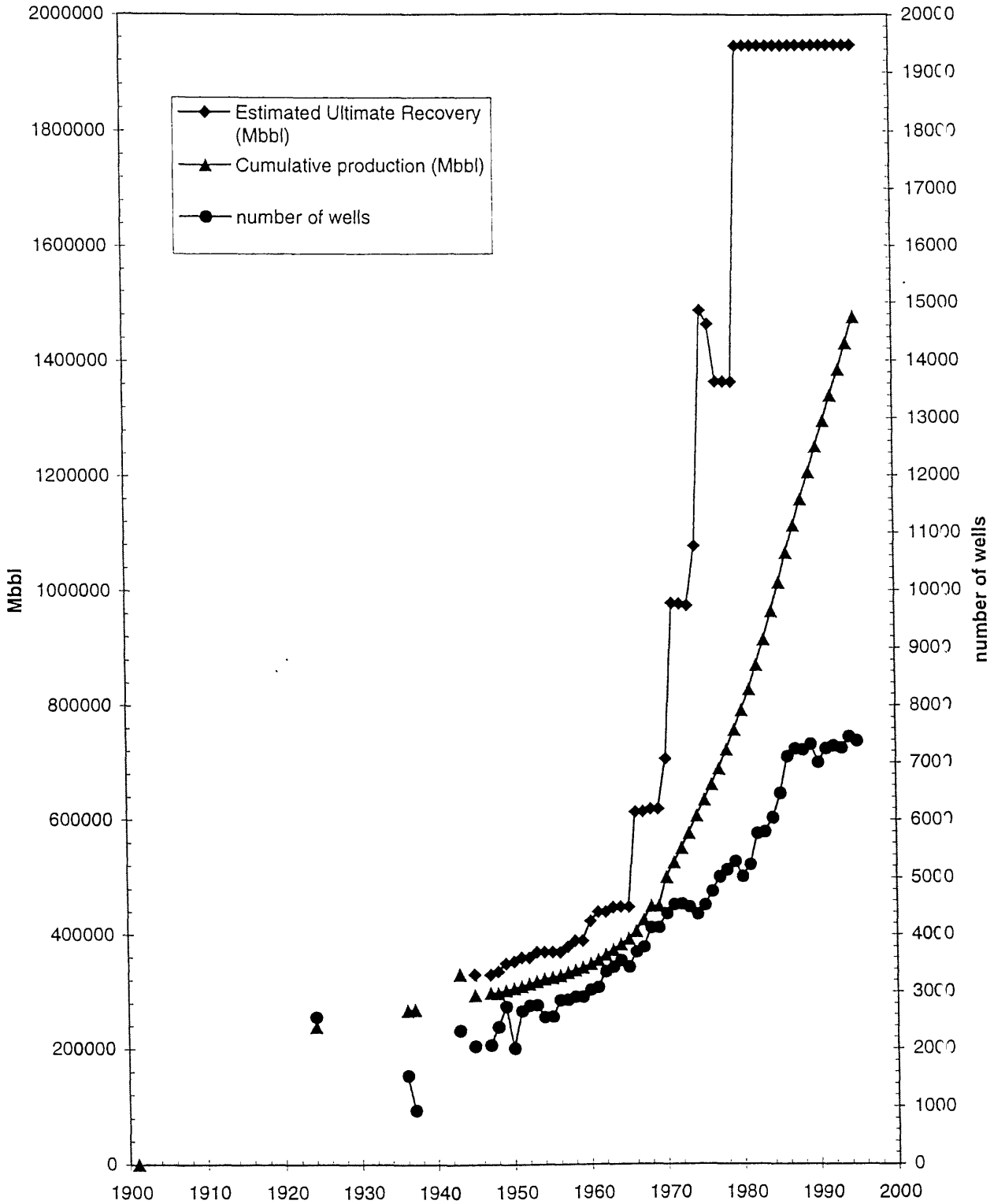
1918							
1919							
1920							
1921							
1922							
1923	239317	175996		2558			
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							
1932							
1933							
1934							
1935	267284.897	20000		1536			
1936	268930.077			938			
1937							
1938							
1939							
1940							
1941							
1942	330985	54015		2323			
1943							
1944	294282	35721	330003	2044			
1945							
1946	297882	32121	330003	2062			
1947	297784	37216	335000	2382		China Grade sand zone of Kern River Pool	
1948	302337	47663	350000	2745			
1949	305935	47065	353000	2012			
1950	309351	50649	360000	2665			
1951	314054	45946	360000	2758			
1952	318702	51298	370000	2770			
1953	323152	46848	370000	2556			
1954	326039	43961	370000	2562			

Field	discovered						
Kern River	1899						
	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	329298	40711	370009	2858			
1956	334119	45881	380000	2866			
1957	339116	50884	390000	2919			
1958	343524	46476	390000	2919			
1959	349719	75281	425000	3048			
1960	356726	84126	440852	3090			
1961	365417	75480	440897	3366			cyclic steam started- Kern River Pool
1962	374365	74044	448409	3442			steam flood started- Kern River Pool
1963	383655	65863	449518	3558			
1964	393438	56091	449529	3445			
1965	407513	207057	614570	3710			
1966	427303	187432	614735	3794			
1967	450948	168755	619703	4137			
1968	450948	168755	619703	4137			fireflood started- Kern River Pool
1969	501777	204900	706677	4380			
1970	526994	450900	977894	4540			
1971	552534	424458	976992	4551			
1972	577458	397261	974719	4494			
1973	607784	469288	1077072	4370			
1974	635757	850000	1485757	4531			
1975	662232	800000	1462232	4770			
1976	689699.569	673000	1362699.569	5018			hot waterflood started- Kern River Pool
1977	722916	640000	1362916	5144			
1978	757323	605593	1362916	5285			
1979	791935	1154417	1946352	5028			
1980	828760	1117817	1946577	5227			
1981	870500	1076077	1946577	5769		Vedder	
1982	915319	1031297	1946816	5796			
1983	963576	983040	1946616	6032			
1984	1012935	933681	1946616	6459			
1985	1064597	882019	1946616	7108		Jewett	
1986	1112375	835341	1947716	7239			
1987	1158042	789674	1947716	7220		Jewett Pool abandoned	
1988	1205297	742419	1947716	7321			
1989	1250503	697213	1947716	7001			
1990	1294586	653130	1947716	7237			
1991	1339287	608429	1947716	7293			
1992	1384228	563488	1947716	7256			
1993	1429474	518242	1947716	7454			
1994	1474280	473437	1947717	7381			
1995	1520393	427324	1947717	7542			

Kern River Oil Field Estimated Ultimate Recovery



Field	discovered						
Kettleman North Dome	1928						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
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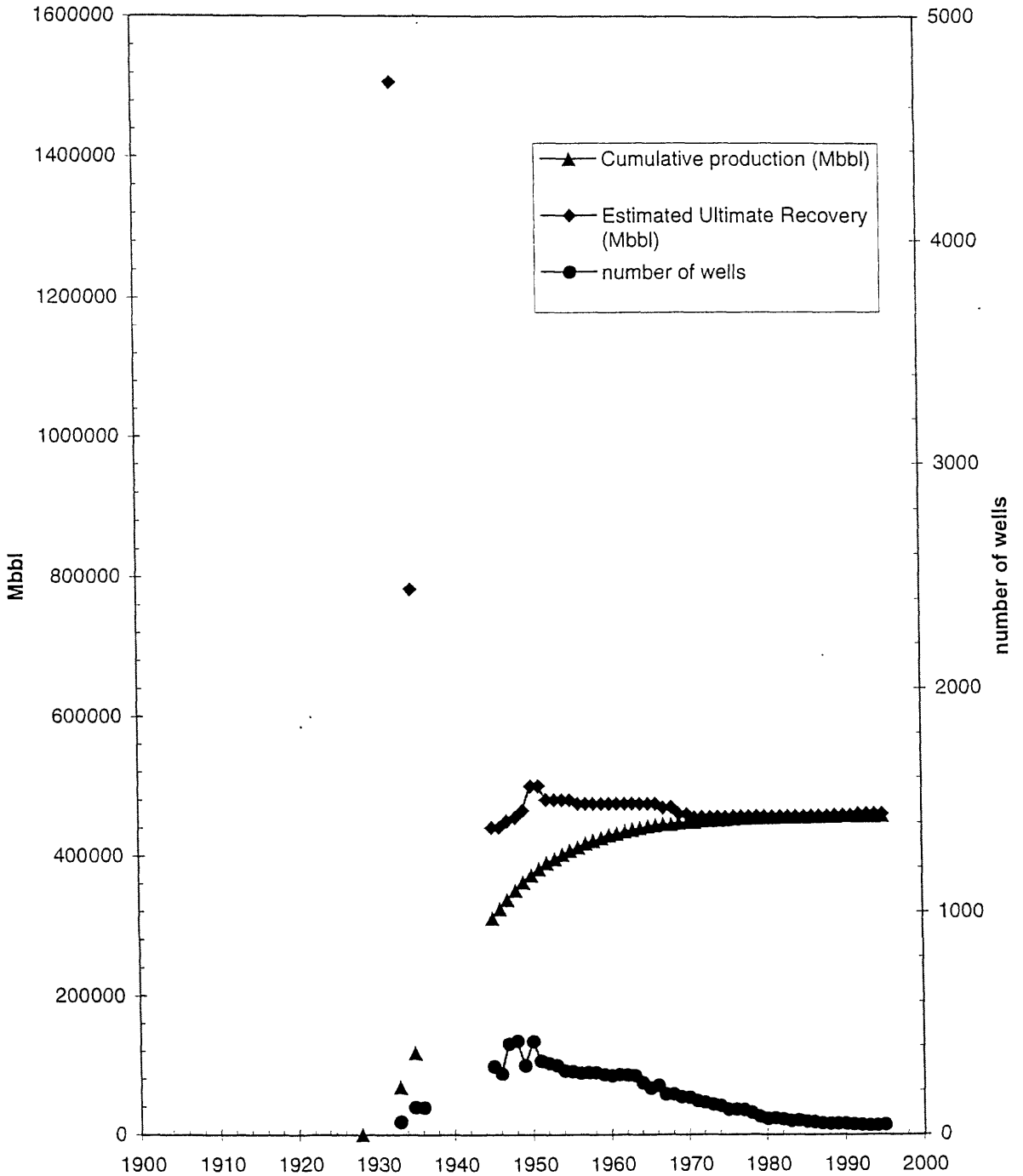
1923							
1924							
1925							
1926							
1927							
1928						Temblor	
1929							
1930							
1931							
1932							
1933	68326.779	1439000	1507326.779	58			
1934							
1935	118160.965	664198	782358.965	122			
1936				122			
1937							
1938						Vaqueros, Upper McAdams	
1939							
1940						Lower McAdams	
1941							
1942							
1943							
1944							
1945	310052	130454	440506	306			
1946	323919	116587	440506	275			
1947	337316	112684	450000	409			
1948	350208	104792	455000	423			
1949	361948	103052	465000	313			
1950	372373	127627	500000	419			
1951	381473	118527	500000	331			
1952	389465	90535	480000	322			
1953	396122	83878	480000	311			
1954	402199	77801	480000	288			

Field	discovered						
Kettleman North Dome	1928						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	407642	72358	480000	285			
1956	412808	62192	475000	278			
1957	417706	57294	475000	280		Kreyenhagen	
1958	422206	52794	475000	280			
1959	426049	48951	475000	270			
1960	429498	45513	475011	266			
1961	432498	42510	475008	269			
1962	435202	39795	474997	267			
1963	437887	37106	474993	266			
1964	440401	34624	475025	233			
1965	442556	32453	475009	208			waterflood started- Temblor Pool
1966	444378	30639	475017	221			
1967	445813	23203	469016	182			waterflood started- Vaqueros Pool
1968	445813	24203	470016	182			
1969	448074	12600	460674	170			waterflood discontinued- Vaqueros
1970	449033	10638	459671	168			
1971	449071	6001	455072	153			
1972	450726	5148	455874	144			
1973	451466	4339	455805	136			
1974	452104	3756	455860	129			
1975	452601	3300	455901	113			
1976	453420.508	2800	456220.508	114		Wheply	
1977	453839	2400	456239	111			waterflood discontinued- Temblor
1978	454225	2014	456239	98			
1979	454586	1653	456239	81			
1980	454920	1319	456239	70			
1981	455196	1043	456239	73			
1982	455427	812	456239	68			
1983	455649	591	456240	61			
1984	455870	369	456239	63		Whepley Pool abandoned	
1985	456087	152	456239	58			
1986	456301	1334	457635	57			
1987	456485	1150	457635	51			
1988	456665	970	457635	50		Lower McAdams Gas	
1989	456823	1112	457935	49			
1990	456990	945	457935	48			
1991	457178	777	457955	46			
1992	457342	2943	460285	45			
1993	457506	2779	460285	42			
1994	457663	2624	460287	41			
1995	457790	2498	460288	43			

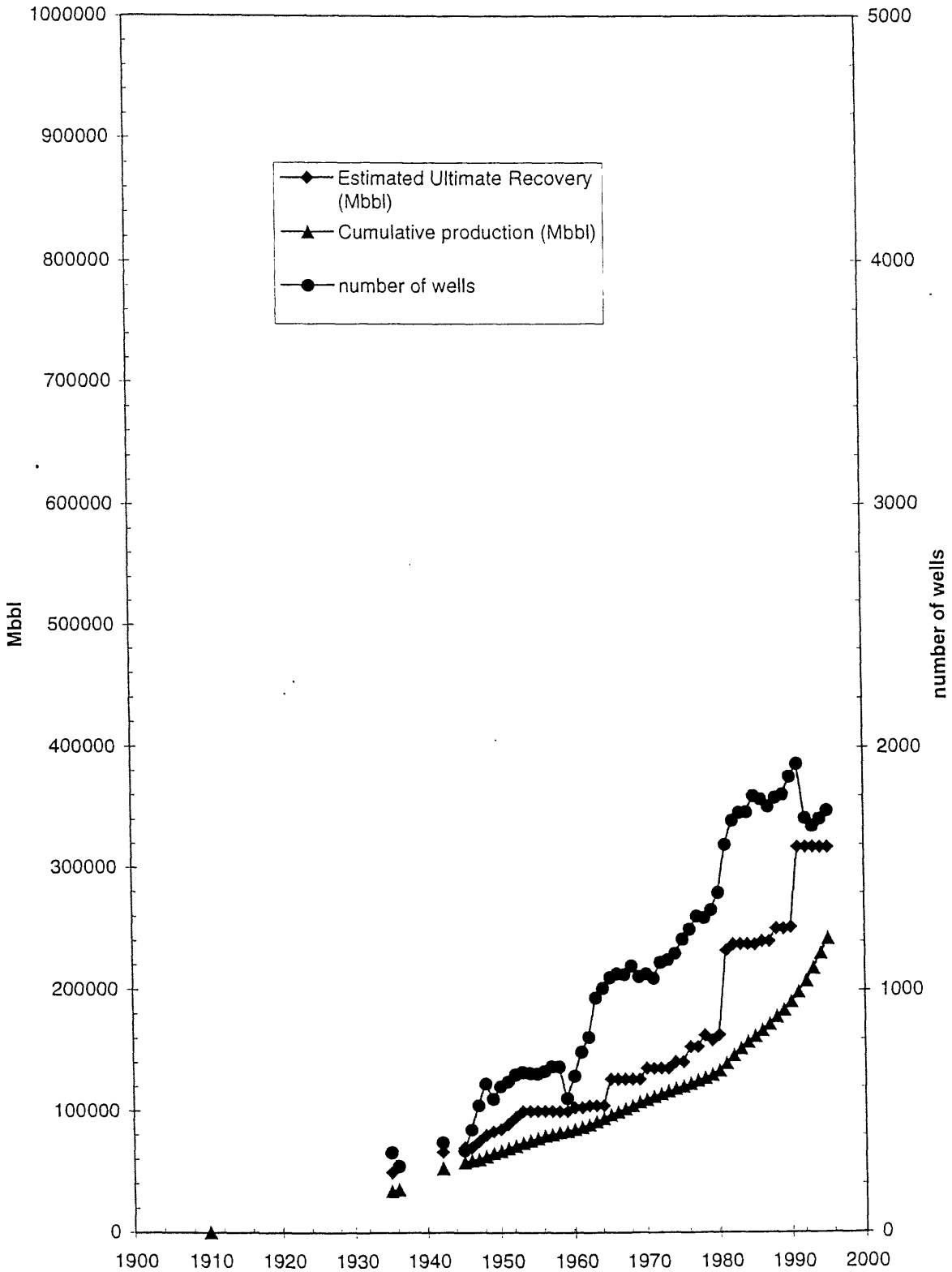
Kettleman North Dome Oil Field Estimated Ultimate Recovery



Field	discovered						
Lost Hills	1910						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910						Etchegoin	
1911							
1912							
1913						Cahn Zone	
1914							
1915						Tulare	
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923							
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							
1932							
1933							
1934							
1935	34144.781	15000	49144.781	327			
1936	35491.538			271			
1937							
1938							
1939							
1940							
1941							
1942	52708	13292	66000	369			
1943							
1944							
1945	57760	12239	69999	336			
1946	59080	10919	69999	423			
1947	59748	15252	75000	523			
1948	62540	17460	80000	615			
1949	64956	18044	83000	552			
1950	66890	18110	85000	603			
1951	68970	20030	89000	623			
1952	71136	23864	95000	651			waterflood started- Etchegoin
1953	73465	26535	100000	661		Carneros	
1954	75456	24544	100000	656			

Field	discovered						
Lost Hills	1910						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	77300	22700	100000	654			
1956	79085	20915	100000	666			
1957	80776	19224	100000	685			
1958	82095	17905	100000	685			
1959	83369	16631	100000	554			
1960	84879	18077	102956	647			
1961	86677	16283	102960	745			Air injection for fireflood
1962	88677	15874	104551	805			fireflood started- Tulare
1963	91275	13283	104558	967			
1964	94015	10546	104561	1005			cyclic steam started- Tulare, Etchegoin
1965	96827	30044	126871	1049			
1966	99574	27293	126867	1065		Cameros Pool abandoned	
1967	102065	24702	126767	1061			
1968	104905	21967	126872	1097			steamflood started- Tulare Pool
1969	107523	19355	126878	1054			
1970	109980	25890	135870	1064			
1971	112302	23562	135864	1046			
1972	114683	21191	135874	1111			
1973	116931	18942	135873	1123			
1974	119092	21700	140792	1149			
1975	121251	19500	140751	1207			
1976	123436.72	30100	153536.72	1248			steamflood started- Etchegoin Pool
1977	125595	28000	153595	1302			
1978	127865	35000	162865	1295			
1979	130441	28049	158490	1326			
1980	134025	29149	163174	1399			
1981	140022	92257	232279	1599			waterflood started- Etchegoin Pool
1982	146492	90790	237282	1698			
1983	152271	85043	237314	1729		Devilwater	
1984	157508	79862	237370	1731			
1985	162493	74878	237371	1798			
1986	167255	72565	239820	1786			waterflood started- Tulare
1987	172551	67292	239843	1755			
1988	178176	72267	250443	1793			waterflood started- Etchegoin Pool
1989	184174	66280	250454	1806			steamflood started- Etchegoin Pool
1990	190788	60642	251430	1878			waterflood discontinued- Cahn
1991	198772	119358	318130	1931			waterflood discontinued- Tulare
1992	207707	110424	318131	1709			
1993	217860	100270	318130	1675			steamflood discontinued-Etchegoin
1994	230704	87444	318148	1706			
1995	242679	75469	318148	1740			waterflood started- Reef Ridge; waterflood and steamflood started- Cahn; fireflood discontinued- Tulare; fireflood started- Cahn

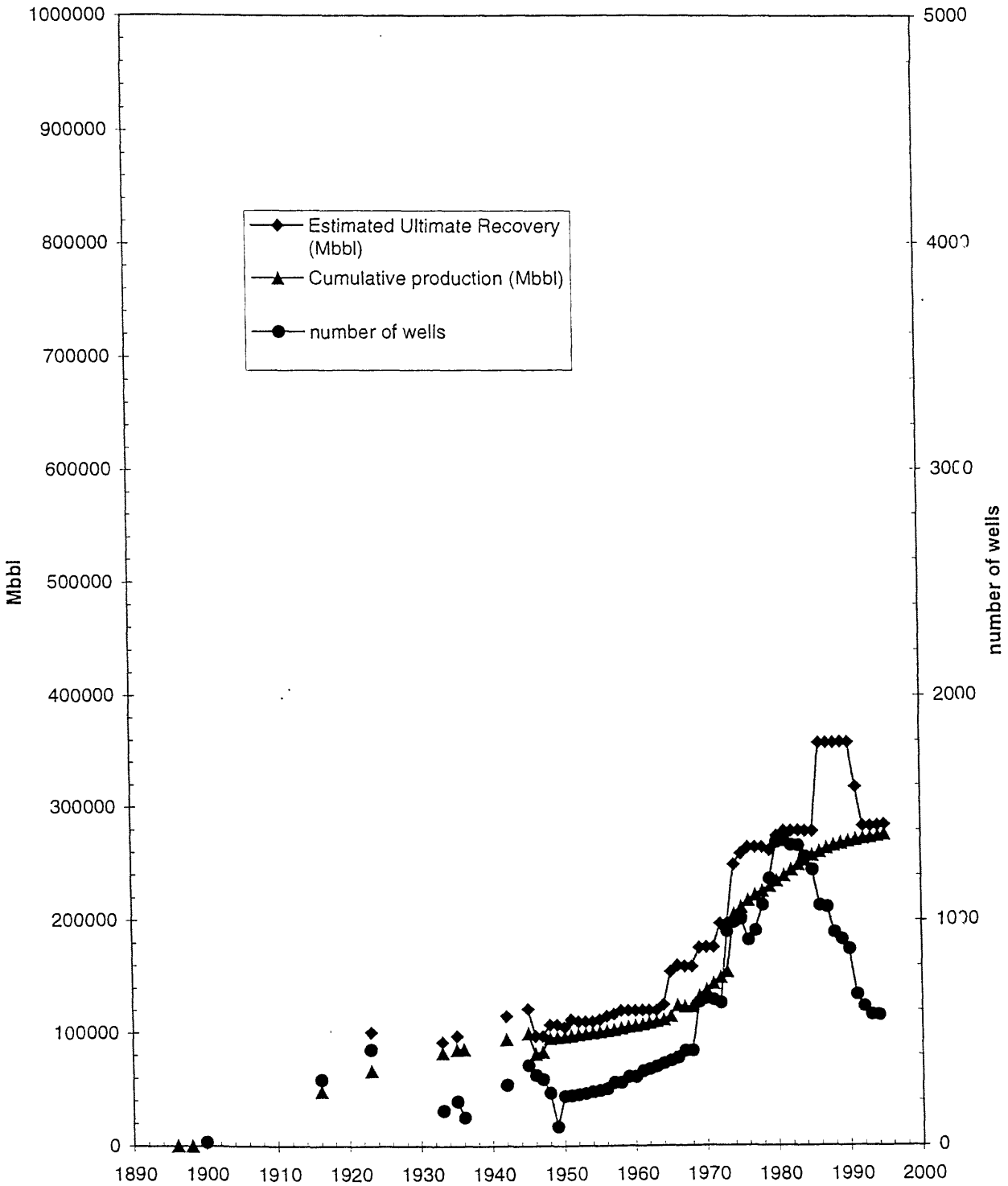
Lost Hills Oil Field Estimated Ultimate Recovery



Field	discovered						
McKittrick	1896						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1896	0				Main Area (1896)	Olig, Tulare-San Joaquin	
1897							
1898	10						
1899							
1900				16			
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912							
1913							
1914							
1915							
1916	48862.217			293			
1917							
1918							
1919							
1920							
1921							
1922							
1923	66144	33992	100136	426			
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							
1932							
1933	82462.421	9200	91662.421	157			
1934							
1935	84962.024	12000	96962.024	199			
1936	85739.44			126	Northeast Area	Basal Reef Ridge/Main; Olig/Northeast	
1937							
1938							
1939							
1940						Tulare/Northeast	
1941							
1942	94157	20843	115000	271			
1943							
1944							
1945	99963	21742	121705	356			
1946	81655	15238	96893	314			
1947	83260	13740	97000	294			
1948	95463	11537	107000	235			
1949	96039	10961	107000	86			
1950	96498	8502	105000	220			
1951	97528	14472	112000	223			

Field	discovered						
McKittrick	1896						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1952	98514	11486	110000	227			
1953	99490	10510	110000	232			
1954	100411	9589	110000	240			cyclic steam started- Main (Tulare-San Joaquin, Olig)
1955	101346	10654	112000	247			
1956	102280	12720	115000	254		Stevens/Main; Antelope, Cameros, Phacoides/Northeast	cyclic steam started- Northeast
1957	103302	13698	117000	280		Oceanic, Point of Rocks/Northeast	steamflood started- Main (Olig)
1958	104421	15579	120000	280		Point of Rocks abandoned	fireflood started- Northeast (Tulare)
1959	105746	14254	120000	307			
1960	106672	13625	120297	306			steamflood started- North east (Tulare)
1961	108301	12311	120612	331			cyclic steam started- Northeast (Tulare)
1962	109605	11026	120631	341			waterflood started- Northeast (Phacoides); fireflood discontinued- Northeast (Tulare)
1963	110866	9763	120629	352			steamflood- Northeast
1964	112456.925	13260	125716.925	367			
1965	115342	39672	155014	378			
1966	124959	35575	160534	392			
1967	123588	36295	159883	421		San Joaquin/ Northeast	cyclic steam started- Northeast (San Joaquin)
1968	123588	36295	159883	421			
1969	133286	43136	176422	639			steamflood started- Main (Tulare-San Joaquin)
1970	139021	37480	176501	655		Antelope Shale/Main	
1971	144365	32132	176497	650			
1972	149853	47770	197623	636			waterflood started- Main (Olig)
1973	155196	42427	197623	952			
1974	206314	43022	249336	993			waterflood discontinued- Northeast (Phacoides)
1975	212125	47000	259125	1008			
1976	217903.212	46600	264503.212	915			
1977	222743	41800	264543	958			
1978	226579	37924	264503	1070			waterflood started- Northeast (Tulare)
1979	230606	31309	261915	1185			
1980	235191	39325	274516	1346			
1981	239911	39117	279028	1354			
1982	244669	34359	279028	1332			
1983	249219	29809	279028	1329			
1984	253398	25630	279028	1282			
1985	257540	21488	279028	1225			
1986	261152	96366	357518	1067			
1987	264032	93485	357517	1061			
1988	266484	91039	357523	948			
1989	268415	89410	357825	919			
1990	270009	87815	357824	874			
1991	271503	46336	317839	672			
1992	272713	10563	283276	618			
1993	273862	9445	283307	583			
1994	275023	8769	283792	579			
1995	276700	8199	284899				

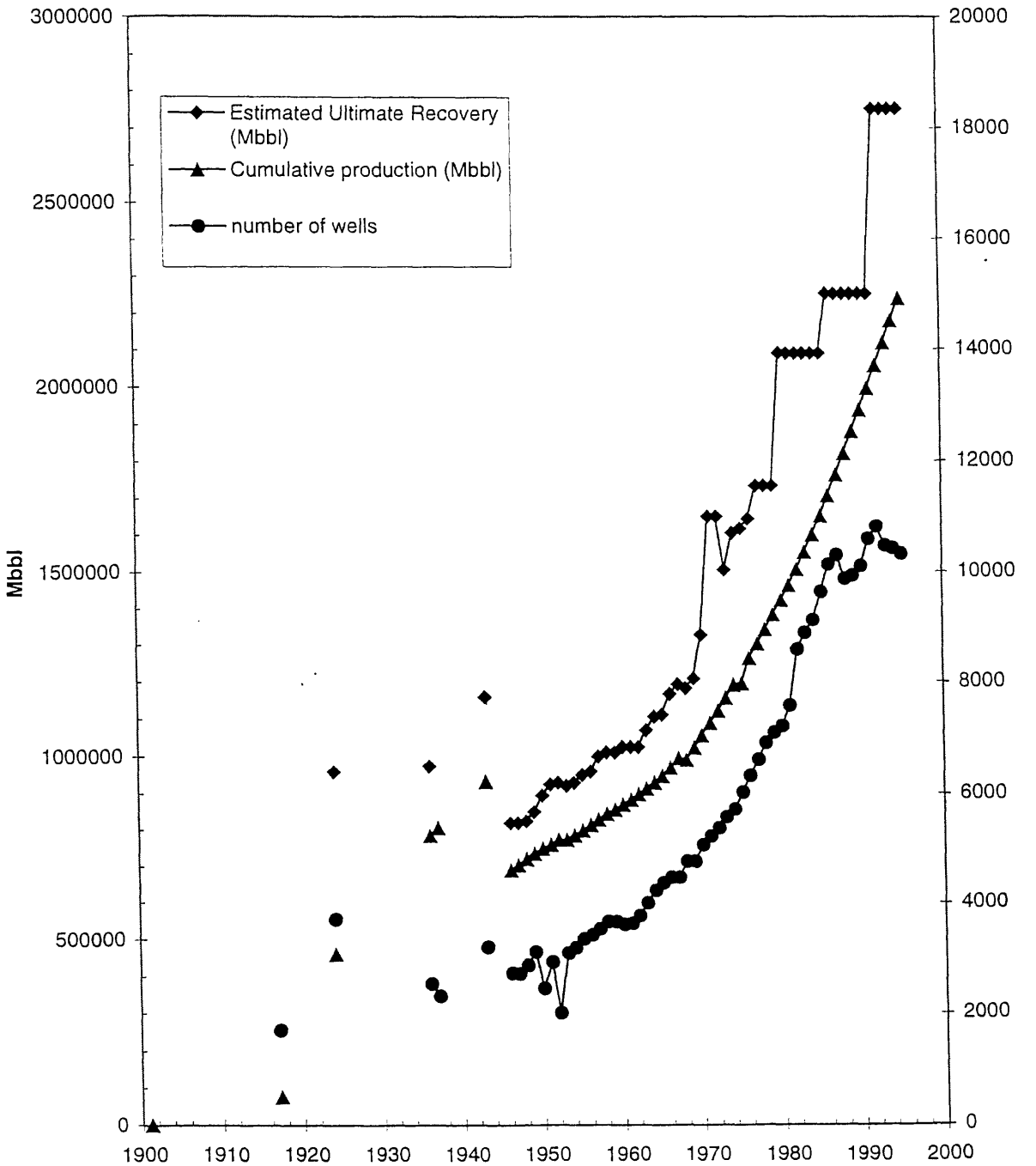
McKittrick Oil Field Estimated Ultimate Recovery



Field	discovered						
Midway-Sunset	~1894						
	Cumulative production (Mbbl)	Reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900	16.735						
1901						Tulare (pre-1894)	
1902							
1903						Monarch (Spellacy)	
1904							
1905							
1906							
1907							
1908							
1909							
1910						Gusher	
1911						Potter, Lakeview	
1912							
1913							
1914						Webster	
1915							
1916	77439.779						
1917				1710			
1918							
1919							
1920							
1921						Mya Tar	
1922							
1923	460856					Calitroleum	
1924		498000	958856	3700			
1925							
1926						Obispo	
1927							
1928							
1929						Republic	
1930							
1931							
1932							
1933							
1934							
1935	784811.302						
1936	806292.923	190000	974811.302	2546			
1937				2318		Sub-Lakeview	
1938							
1939							
1940							
1941							
1942	932872					Marvic	
1943		227128	1160000	3203			
1944							
1945	690338						
1946	703807	129651	819989	2736		Leuthotz (Metson)	
1947	720866	116182	819989	2723			
1948	736026	104134	825000	2872		Pacific	
1949	748775	113974	850000	3112			
1950	760196	146225	895000	2460			
1951	772759	164804	925000	2928			
1952	773036	157241	930000	2022			
1953	785565	146964	920000	3090			
1954	798421	144435	930000	3193		Metson	
		151579	950000	3351			Waterflood started Calitroleum

Field	discovered						
Midway-Sunset	-1894						
	Cumulative production (Mbbl)	Reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	813092	146908	960000	3424			
1956	828178	171822	1000000	3534			
1957	843401	166599	1010000	3668		Moco	waterflood started- Monarch
1958	856430	153570	1010000	3668			
1959	869416	155584	1025000	3615			
1960	883367	141601	1024968	3637			fireflood started- Moco
1961	897877	127036	1024913	3774			fireflood started- Webster, Top Oil
1962	912819	158086	1070905	4004			fireflood started- Webster, Monarch, Tulare; waterflood started- Kinsey
1963	929386	176536	1105922	4230			Steamflood, cyclic steam started- Tulare, Mya Tar, sub-Lakeview, Potter, Marvic, Webster
1964	947614	164566	1112180	4373			waterflood discontinued- Calitroleum
1965	970177	197890	1168067	4474			steamflood started- Webster, Moco; steamflood, cyclic steam started- Monarch; cyclic steam started-Kinsey, Leutholtz; waterflood discontinued- Monarch; cyclic steam discontinued- Kinsey
1966	996210	196898	1193108	4470			steamflood started- Tulare, Kinsey; waterflood started- Top Oil; waterflood discontinued- Kinsey
1967	990899	192640	1183539	4766			
1968	1024188	184439	1208627	4766			steamflood and fireflood started- Potter
1969	1056985	270000	1326985	5070			waterflood started- Potter
1970	1089806	560000	1649806	5222			steamflood started- Leutholtz
1971	1123340	526417	1649757	5377			
1972	1157860	347810	1505670	5577			steamflood started- sub-Lakeview; waterflood discontinued- Top Oil
1973	1192592	413111	1605703	5711			
1974	1197423	420191	1617614	6027			
1975	1264590	380000	1644590	6326		Antelope Shale	fireflood started- Sub-Lakeview
1976	1303051.137	431000	1734051.137	6819			
1977	1342604	391000	1733604	6920		Pioneer	
1978	1382179	351427	1733606	7100			
1979	1422880	667524	2090404	7214		Pulv	cyclic steam started- Top Oil
1980	1464333	626324	2090657	7589		Pulv abandoned (one well)	
1981	1508152	582505	2090657	8593			fireflood discontinued- Top Oil
1982	1553808	536849	2090657	8893		Pioneer abandoned (one well)	cyclic steam disontinued- Top Oil; waterflood started- Calitroleum
1983	1601307	489050	2090357	9120			waterflood discontinued- Calitroleum
1984	1652148	438209	2090357	9640		McDonald Shale	
1985	1707195	545162	2252357	10143			waterflood started- Tulare, Monarch
1986	1763951	488406	2252357	10314			steamflood started- Marvic
1987	1821712	430645	2252357	9875			
1988	1879670	372687	2252357	9938			
1989	1936331	316026	2252357	10109			
1990	1995401	256956	2252357	10598			
1991	2056752	695605	2752357	10820			waterflood started- Sub-Lakeview; waterflood discontinued- Tulare, Monarch
1992	2117956	634461	2752417	10484			
1993	2178881	573602	2752483	10435			
1994	2238723	513852	2752575	10330			steamflood discontinued- Top Oil
1995	2298368	454207	2752575	10387			
cumulative production and number of wells prior to 1923 from California State Council of Defense (1917)							

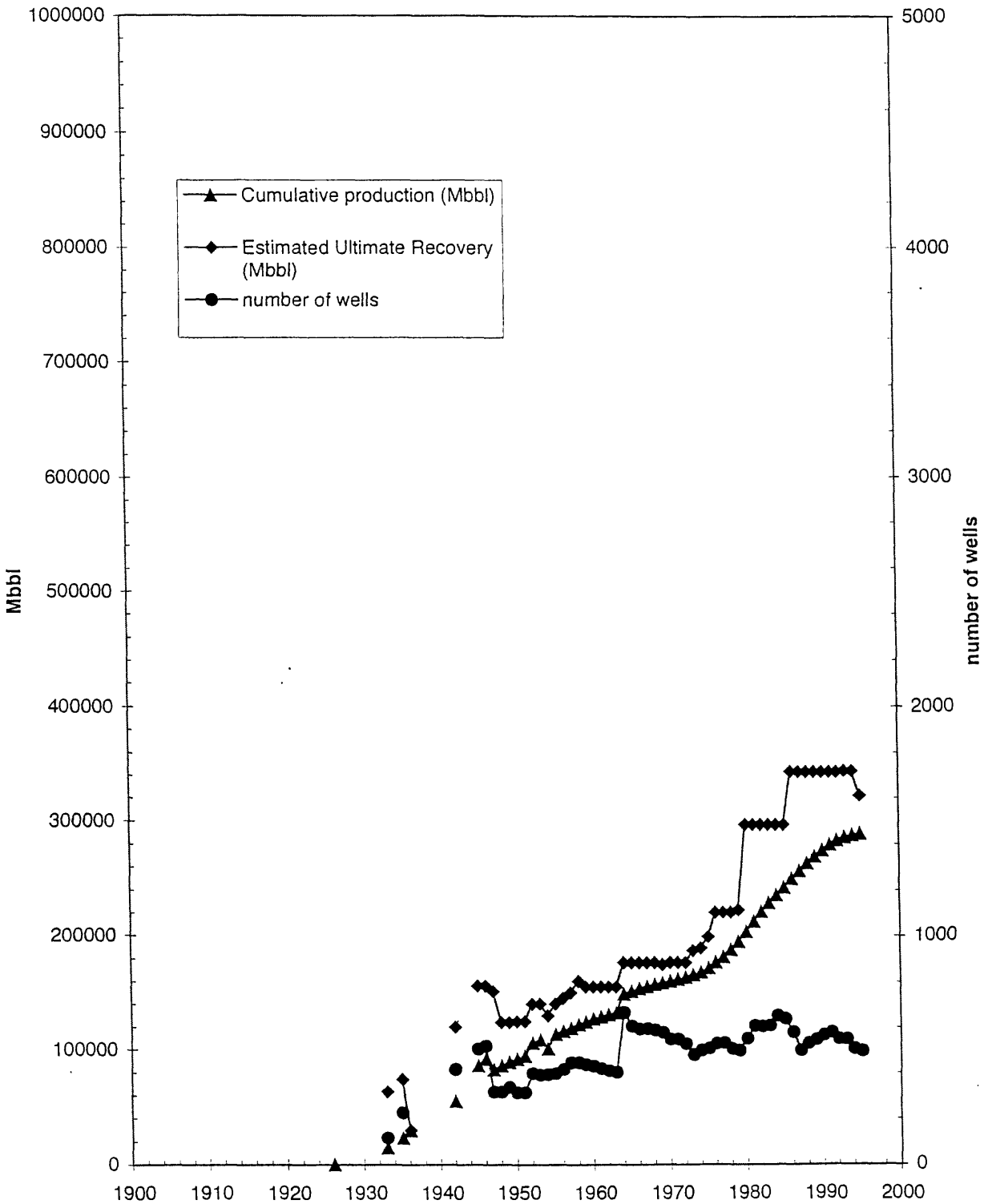
Midway-Sunset Oil Field Estimated Ultimate Recovery



Field	discovered						
Mount Poso	1926						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912							
1913							
1914							
1915							
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923							
1924							
1925							
1926					Main Area	Pyramid Hill and Upper Vedder/Main	
1927							
1928					Dorsey, Dominion Areas	Vedder/Dorsey; Vedder/Dominion	
1929							
1930							
1931							
1932							
1933	14772.273	48500	63272.273	117		Lower Vedder/Main	
1934							
1935	23501.828	50250	73751.828	225	Baker-Grover Area	Upper Vedder/Baker-Grover	
1936	29684		29684		Granite Canyon Area	Upper Vedder/Granite Canyon	
1937							
1938							
1939							
1940							
1941							
1942	54785	65215	120000	413			
1943					West Area	Upper Vedder/West	
1944							
1945	86108	69940	156048	503			
1946	92064	63984	156048	517			
1947	82303	68697	151000	316			
1948	85921	38079	124000	316			
1949	89206	34794	124000	336			
1950	92036	32964	125000	313			
1951	94682	30318	125000	314			
1952	105813	34187	140000	397			waterflood started- Main (Pyramid Hill)
1953	108454	31546	140000	389			waterflood discontinued- Main (Pyramid Hill)
1954	100767	29233	130000	392			

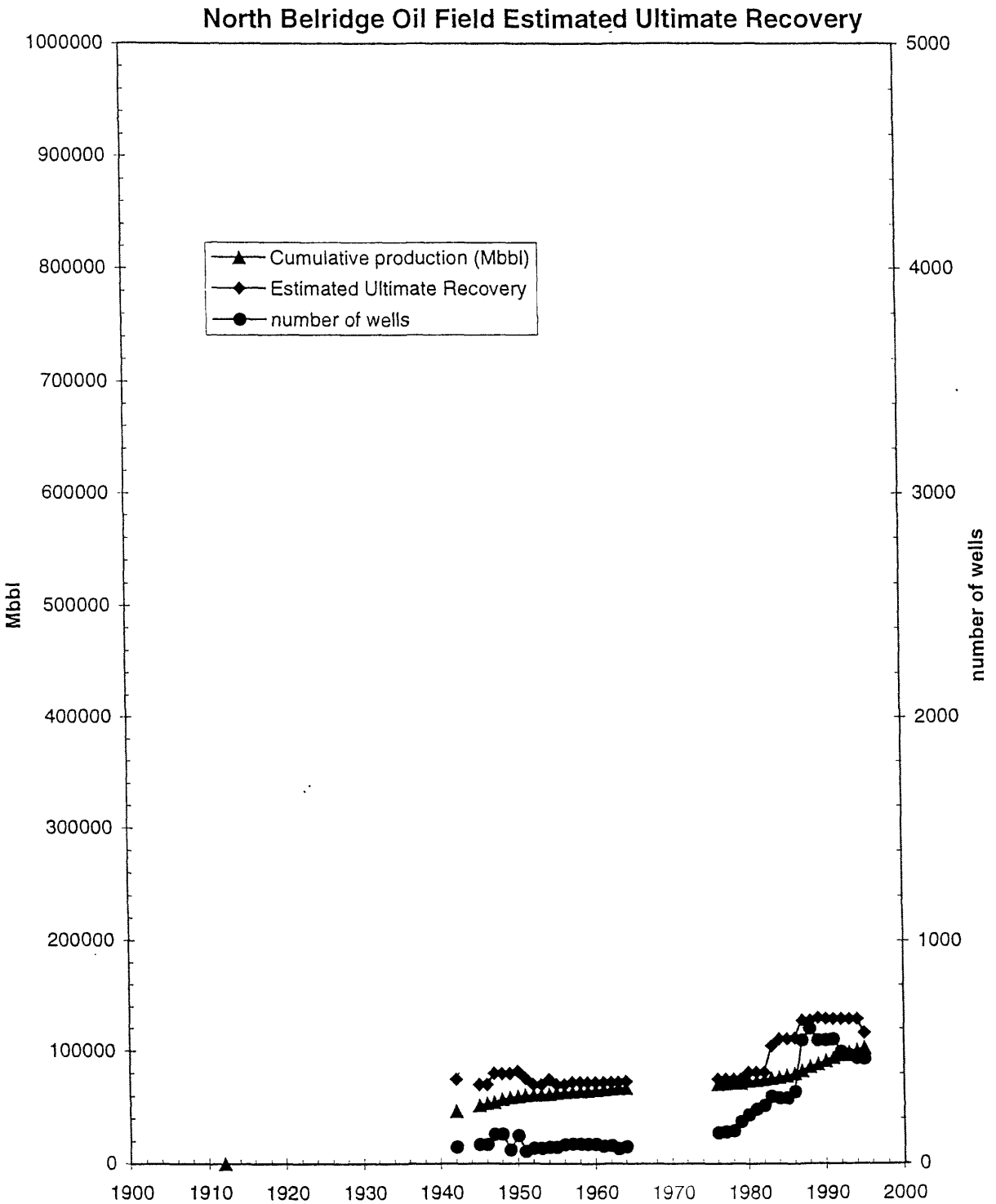
Field	discovered						
Mount Poso	1926						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	113430	26570	140000	397			
1956	116351	28649	145000	415			
1957	119204	30976	150180	443		Fourth Vedder/Main	
1958	122146	37854	160000	443			
1959	124640	30360	155000	435			
1960	127016	27981	154997	429			
1961	129073	25926	154999	417			
1962	130920	24070	154990	409			Cyclic steam started- Main (Pyramid Hill)
1963	132704	22273	154977	402			Cyclic steamflood started- Main (Vedder)
1964	149261	26932	176193	664			Cyclic steam started- Dominion (Vedder)
1965	151500	24896	176396	605			
1966	153565	22912	176477	591			
1967	155466	20998	176464	593			
1968	157182	19260	176442	587			
1969	158756	15693	174449	574			
1970	160279	16180	176459	546			
1971	161654	14802	176456	546			
1972	163471	12982	176453	526			waterflood started- Main (Vedder)
1973	165846	20620	186466	477			steamflood started- Main (Vedder)
1974	168357	20620	188977	498			
1975	171751	27000	198751	508			
1976	176770.347	43100	219870.347	527			
1977	181023	38800	219823	530			
1978	187532	32471	220003	505			
1979	194821	27243	222064	498			
1980	203242	92773	296015	550			
1981	212437	83578	296015	606		Pyramid Hill/ Dominion	
1982	220826	75214	296040	604			
1983	228378	67662	296040	609			
1984	235365	60675	296040	652			
1985	242059	53981	296040	638			
1986	249559	92963	342522	579			
1987	256653	85869	342522	500			
1988	263198	79324	342522	532			
1989	269120	73402	342522	547			
1990	274784	67738	342522	569			
1991	279689	62833	342522	580			
1992	283236	59286	342522	551			
1993	285667	58035	343702	550			
1994	287525	56177	343702	507			
1995	289072	32849	321921	495			

Mount Poso Oil Field Estimated Ultimate Recovery



Field	discovered						
North Belridge	1912						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
1912						Fractured shale	
1913							
1914							
1915							
1916							
1917						Tulare-Etchegoin	
1918							
1919							
1920							
1921							
1922							
1923							
1924							
1925							
1926							
1927							
1928							
1929							
1930						Temblor sand	
1931							
1932						Bloemer, Belridge 64, Gibson	
1933							
1934							
1935							
1936							
1937							
1938							gas injection- Temblor
1939						R sand (Agua)	
1940							
1941							gas injection- Bloemer, Belridge 64, Gibson
1942	46601	28399	75000	73		Y sand	
1943							
1944							
1945	51800	18199	69999	84			
1946	53754	16245	69999	84			
1947	54593	25407	80000	129			
1948	57602	22398	80000	131			
1949	58835	21165	80000	61			gas injection started- Y sand
1950	59775	22205	81980	125			
1951	60643	15357	76000	55			
1952	61269	8731	70000	69			
1953	61806	8194	70000	69			
1954	62409	12591	75000	74			

Field	discovered						
North Belridge	1912						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	62937	7063	70000	73			
1956	63501	6499	70000	84			waterflood started- B oemer, Belridge 64, and Gibson
1957	64123	7877	72000	88			
1958	64619	7381	72000	88			gas injection discontinued- Temblor
1959	65063	6937	72000	88			
1960	65551	6469	72020	88			gas injection discontinued- Y sand
1961	65978	6044	72022	77			gas injection started- Temblor
1962	66419	5713	72132	81			
1963	66855	5280	72135	67			
1964	67259	5624	72883	76			cyclic steam started- Tulare-Etchegoin
1965							
1966						Cameros	
1967							
1968							
1969							
1970							
1971							
1972							
1973							
1974							
1975							steamflood started- Tulare-Etchegoin; gas injection discontinued- Temblor
1976	70566.882	4500	75066.882	136			
1977	71086	4000	75086	141			
1978	71630	3457	75087	147		Diatomite (artificially fractured)	
1979	71850	3214	75064	187			
1980	73321	7524	80845	216			
1981	74108	6748	80856	242			
1982	74957	5898	80855	259			
1983	75939	28693	104632	299			
1984	77016	33776	110792	292			
1985	78277	32516	110793	292			gas injection discontinued- Bloemer, bleridge 64, and Gibson
1986	80056	31487	111543	321			
1987	82485	45458	127943	550			
1988	86112	41831	127943	600			waterflood started- Diatomite, Tulare-Etchegoin
1989	88703	41241	129944	549			
1990	91521	37782	129303	550			waterflood discontinued- Bloemer, Belridge 64, and Gibson
1991	94240	35063	129303	553			
1992	96731	32617	129348	497			
1993	98911	30342	129253	484			
1994	100978	28250	129228	468			
1995	102986	13542	116528	466			


North Belridge Oil Field Estimated Ultimate Recovery
Cumulative production (Mbbl)
Estimated Ultimate Recovery
number of wells
Mbbl
number of wells
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
5000
4000
3000
2000
1000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

Field	discovered						
Rio Bravo	1937						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911							
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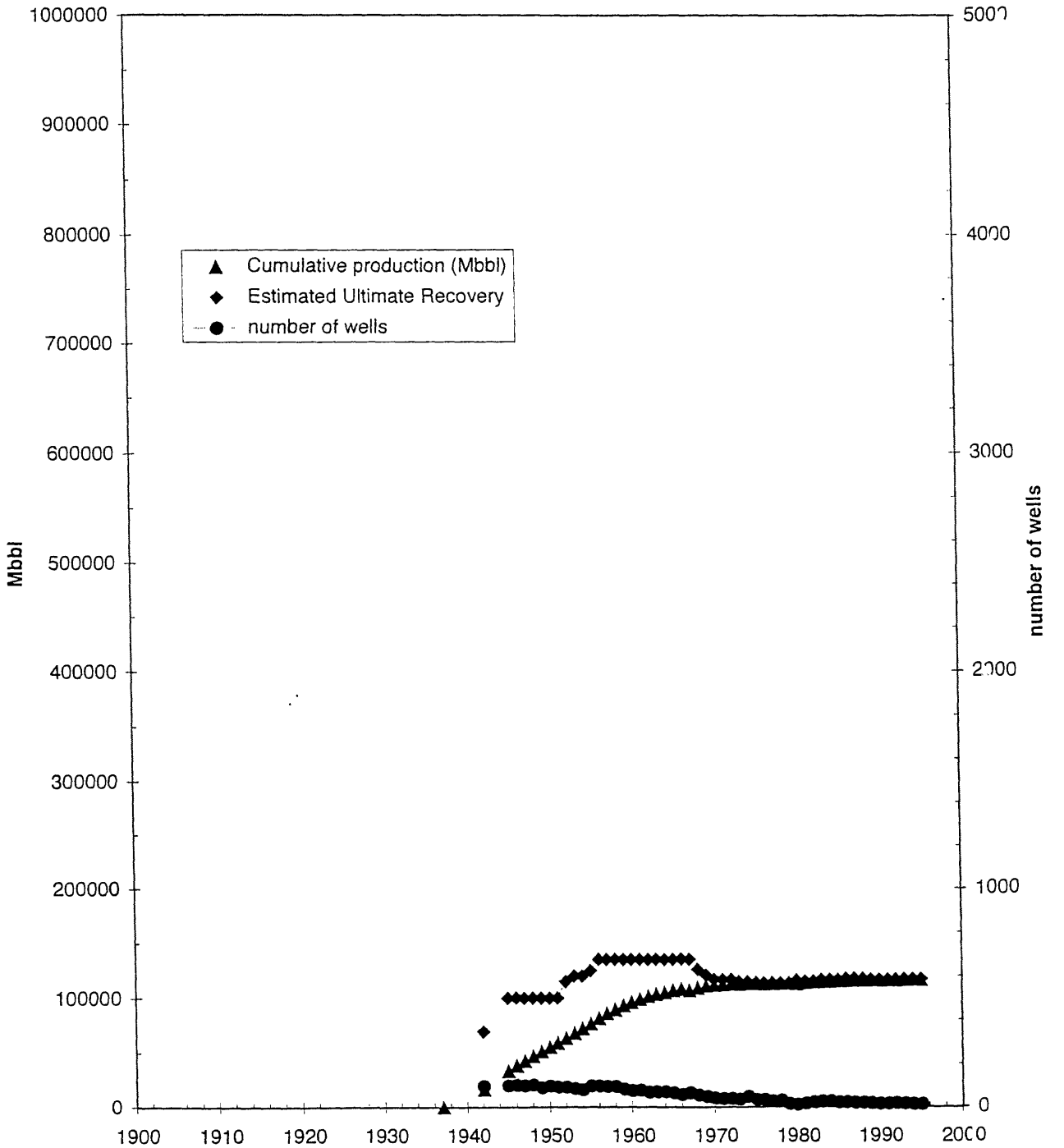
1914							
1915							
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923							
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							
1932							
1933							
1934							
1935							
1936							
1937						Rio Bravo-Vedder-Osburn	
1938							
1939							
1940							
1941							
1942	16295	53705	70000	96			
1943							
1944							
1945	33462	66538	100000	100			
1946	38317	61683	100000	101			Gas injection for pressure maintenance started- Rio Bravo-Vedder- Osburn
1947	42891	57109	100000	100			
1948	47341	52659	100000	101			
1949	51303	48697	100000	90			waterflood started- Rio Bravo-Vedder-Osburn
1950	55326	44674	100000	97			
1951	59412	40588	100000	93			
1952	63755	51245	115000	93			
1953	68180	51820	120000	85		Heibling	

Field	discovered						
Rio Bravo	1937						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery	number of wells	Area discovered	Pool discovered	Enhanced recovery
1954	72431	47569	120000	81			
1955	76998	48001	124999	97			
1956	81699	53301	135000	98		Etchegoin Gas	
1957	85955	49045	135000	95			
1958	89590	45410	135000	95			LPG-miscible flood started- Rio Bravo-Vedder-Osburn
1959	93056	41944	135000	83			
1960	96325	38676	135001	76			LPG-miscible flood discontinued- Rio Bravo-Vedder-Osburn
1961	99057	36034	135091	77		Olcese	
1962	101393	33701	135094	69			
1963	103409	31683	135092	70			
1964	105100	29992	135092	71			
1965	106663	28425	135088	65			
1966	108230	27436	135666	58			
1967	106663	28425	135088	65			
1968	109481	16175	125656	55			
1969	111238	9412	120650	48			
1970	111883	4882	116765	42			
1971	112307	4457	116764	39			
1972	112696	4072	116768	38			
1973	112968	1901	114869	37			
1974	113139	1731	114870	48			
1975	113229	600	113829	35			gas injection discontinued- Rio Bravo-Vedder- Osburn
1976	113340.225	140	113480.225	33			
1977	113424	400	113824	26			
1978	113469	342	113811	31			
1979	113526	102	113628	15			
1980	113389	2755	116144	12		Upper Olcese	
1981	114238	1147	115385	17			
1982	114621	768	115389	22			
1983	114957	1517	116474	26			
1984	115275	1199	118474	27			
1985	115515	959	118474	22			
1986	115717	1657	117374	22			
1987	115899	1474	117373	20			
1988	116132	1342	117474	19			
1989	116110	564	116674	16			
1990	116151	483	116634	15			
1991	116200	426	116626	14			
1992	116294	480	116774	18			
1993	116376	525	116901	14			
1994	116443	458	116901	11			
1995	116493	408	116901	13			

Rio Bravo Oil Field Estimated Ultimate Recovery



Field	discovered						
Round Mountain	1927						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
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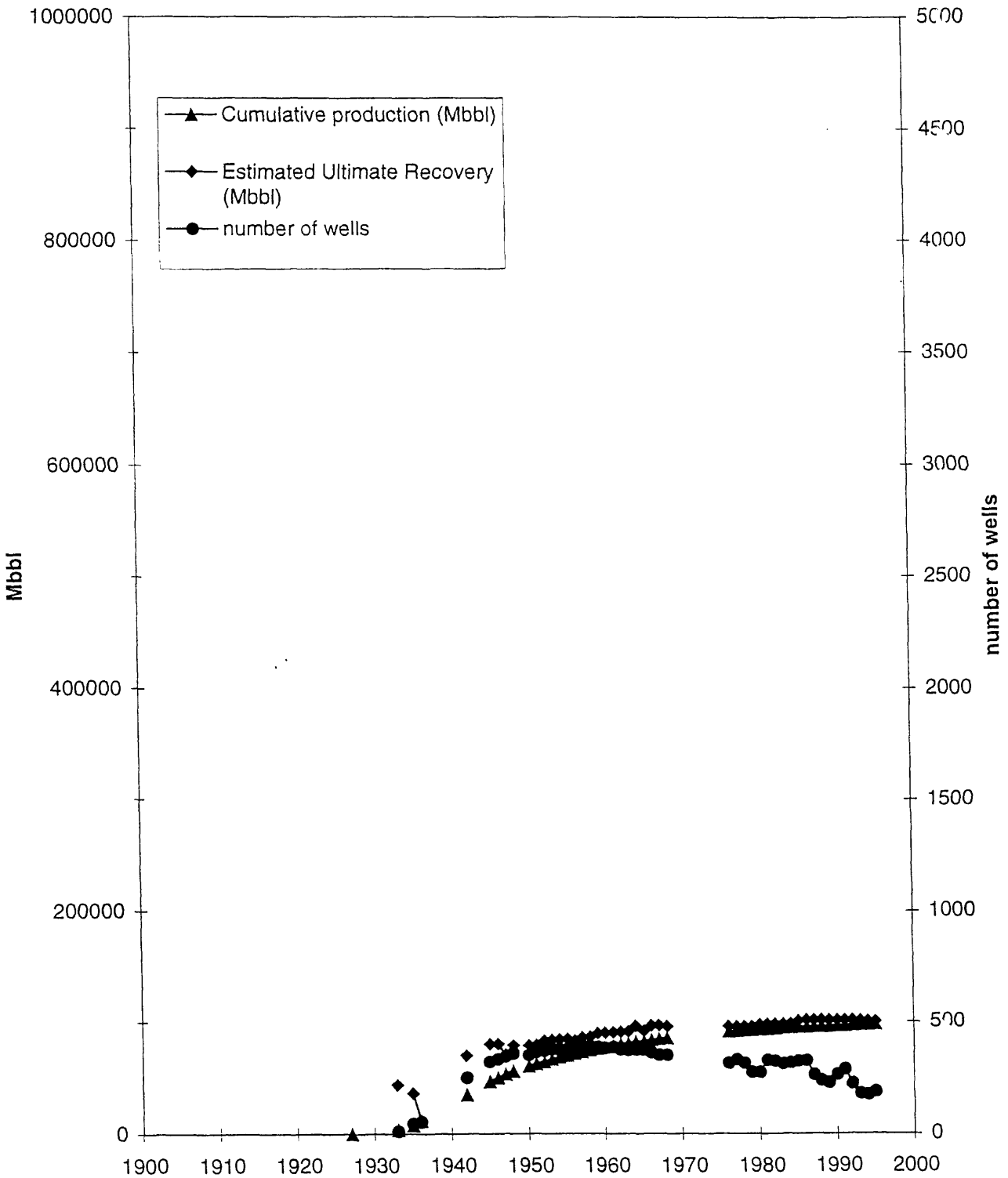
1920							
1921							
1922							
1923							
1924							
1925							
1926							
1927					Main Area	Jewett, Pyramid Hill, Vedder/Coffee Canyon	
1928					Coffee Canyon Area	Pyramid Hill, Vedder/Coffee Canyon	
1929							
1930							
1931							
1932							
1933	3764.874	40000	43764.874	11			
1934							
1935	7900.347	28250	36150.347	46			
1936	11855.726		11855.726	55			
1937					Pyramid Area	Vedder/Pyramid	
1938							
1939							
1940							
1941							
1942	34665	35335	70000	250			
1943					Sharktooth Area	Walker/Pyramid; Vedder/Sharktooth	
1944						Pyramid Hill/Pyramid	
1945	46703	33540	80243	322			
1946	50055	30188	80243	334			
1947	53175.648	17038	70213.648	344	Alma Area	Vedder/Alma	
1948	55873.371	23033	78906.371	359			
1949							
1950	60476.946	18157	78633.946	352			
1951	62535.759	16874	79409.759	364			
1952	64551.535	18630	83181.535	372			
1953	66465.065	17437	83902.065	378			
1954	68258.398	16101	84359.398	375			

Field	discovered						
Round Mountain	1927						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	69940.108	15003	84943.108	379			
1956	71570.591	11930	83500.591	386			
1957	73160.063	12827	85987.063	393			
1958	74657.365	11792	86449.365	390			
1959	76100.554	13736	89836.554	388			
1960	77495.518	12707	90202.518	384			waterflood- Coffee Canyon Area (Pyramid Hill, Vedder pools)
1961	78796.293	11852	90648.293	388			waterflood started- Main (Vedder)
1962	79995.566	10982	90977.566	377			
1963	81159.725	10147	91306.725	374			waterflood discontinued- Main (Vedder)
1964	82285.227	14405	96690.227	377			cyclic steam started - Pyramid (Vedder)
1965	82777	9078	91855	377			cyclic steam started- Coffee Canyon (Vedder)
1966	83750	13416	97166	362			
1967	84658	12504	97162	351			
1968	85533	10500	96033	351			cyclic steam started- Coffee Canyon (Pyramid Hill)
1969							cyclic steam started- Sharktooth (Vedder)
1970							
1971							
1972						Jewett	
1973							waterflood started- Pyramid (Vedder)
1974							waterflood started- Alma (Vedder), Main (Pyramid Hill)
1975							
1976	91530.68	4400	95930.68	316			
1977	92066	3900	95966	330			
1978	92551	3415	95966	315			
1979	92968	3001	95969	273			
1980	93394	4300	97694	273			
1981	93827	4299	98126	328			
1982	94251	3876	98127	325			
1983	94649	3477	98126	313			
1984	95062	3064	98126	317			
1985	95455	5461	100916	325			
1986	95749	6017	101766	326			
1987	96010	5756	101766	263			
1988	96276	5490	101766	238			
1989	96544	5222	101766	229			
1990	96832	4934	101766	264			
1991	97151	4615	101766	288			
1992	97421	4345	101766	225			
1993	97663	3853	101516	178			
1994	97872	3260	101132	175			
1995	98117	2646	100763	187			

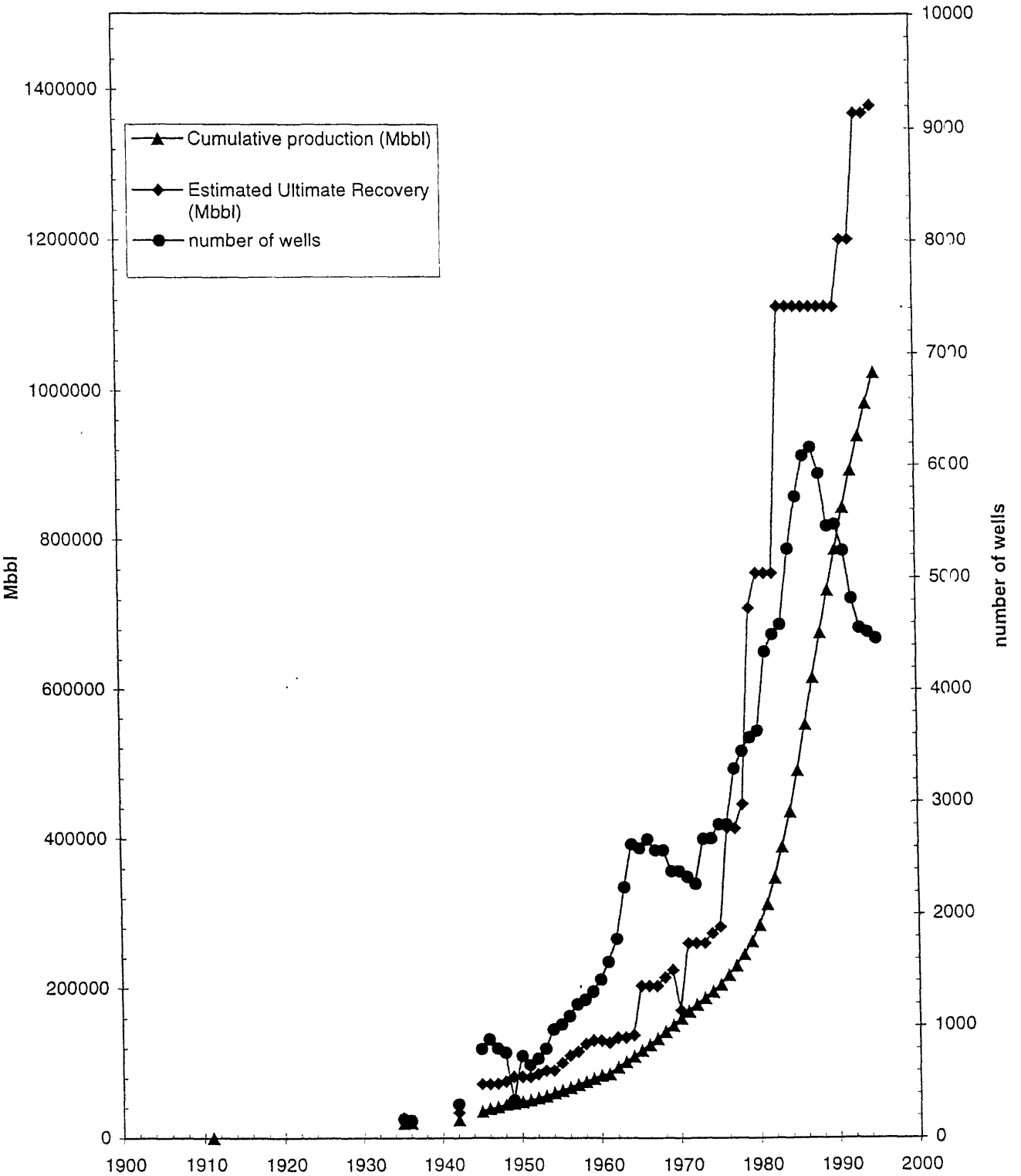
Round Mountain Oil Field Estimated Ultimate Recovery



Field	discovered						
South Belridge	1911						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
1907							
1908							
1909							
1910							
1911						Tulare, Belridge Diatomite	
1912							
1913							
1914						Fractured Shale	
1915							
1916							
1917							
1918							
1919							
1920							
1921							
1922							
1923							
1924							
1925							
1926							
1927							
1928							
1929							
1930							
1931							
1932							
1933							
1934							
1935	19970.805	6580	26550.805	169			
1936	20702.103			156			
1937							
1938							
1939							
1940							
1941							
1942	24601	9139	33740	303			
1943						Etchegoin	
1944							
1945	35173	36818	71991	796			
1946	39076	32915	71991	880			
1947	41506	30994	72500	801			
1948	44326	30674	75000	757			
1949	46194	34906	81100	335			
1950	47873	33127	81000	730			
1951	50543	30457	81000	647			
1952	53187	31813	85000	707			
1953	56219	33781	90000	796			
1954	59649	30351	90000	964			

Field	discovered						
South Belridge	1911						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1955	63212	36788	100000	1007			
1956	66912	43088	110000	1085			fireflood started- Tulare
1957	70933	44067	115000	1184			
1958	75203	49797	125000	1224			
1959	79408	50592	130000	1294			
1960	83965	46016	129981	1402			
1961	85696	41278	126974	1563			
1962	94448	39631	134079	1770			
1963	102049	32097	134146	2232			Steam flood started- Tulare
1964	109430	27412	136842	2613			
1965	117073	84740	201813	2579			
1966	124728	77078	201806	2658			
1967	132707	69008	201715	2560			
1968	141606	71112	212718	2560			
1969	150675	72300	222975	2374			steamflood started- Diatomite; waterflood started- Diatomite
1970	159787	10000	169787	2374			
1971	168971	90789	259760	2324			
1972	177725	82084	259809	2264			waterflood discontinued- Diatomite
1973	186258	73526	259784	2665			
1974	194803	77900	272703	2667			
1975	204178	78000	282178	2790			steamflood discontinued- Diatomite
1976	216870.887	197000	413870.887	2791			
1977	229728	184000	413728	3283			
1978	245079	200000	445079	3442			
1979	263150	445369	708519	3561			
1980	284764	470250	755014	3623		Devilwater-Gould (one well)	
1981	312656	442358	755014	4337			
1982	347986	407028	755014	4492		McDonald	waterflood started- Diatomite, Tulare
1983	389293	721650	1110943	4579		Antelope Shale	
1984	436020	674922	1110942	5247			
1985	491169	619774	1110943	5713			
1986	552438	558505	1110943	6087			
1987	616000	494942	1110942	6161			
1988	676390	434553	1110943	5919			
1989	733185	377758	1110943	5450			
1990	787644	323299	1110943	5470			
1991	842699	358244	1200943	5238			steamflood discontinued- Diatomite
1992	892946	307996	1200942	4818			
1993	939573	431069	1370642	4553			
1994	983345	387297	1370642	4519			
1995	1024872	356012	1380884	4462			waterflood dicontinued- Tulare
							fireflood disontinued- Tulare

South Belridge Oil Field Estimated Ultimate Recovery



Field	discovered						
Yowlumne	1974						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1900							
1901							
1902							
1903							
1904							
1905							
1906							
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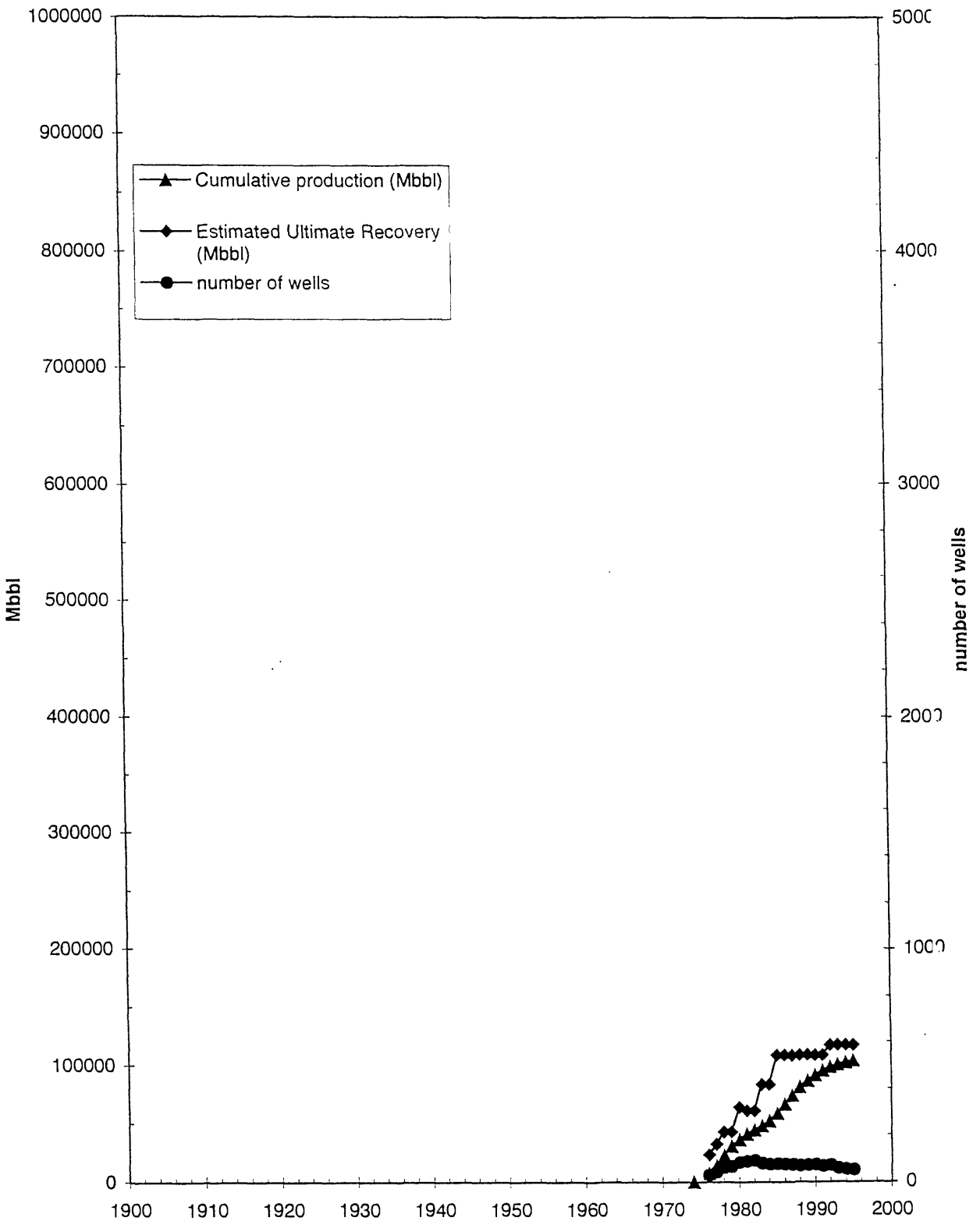
1957							

Field	discovered						
Yowlumne	1974						
Year	Cumulative production (Mbbl)	reserves (Mbbl)	Estimated Ultimate Recovery (Mbbl)	number of wells	Area discovered	Pool discovered	Enhanced recovery
1958							
1959							
1960							
1961							
1962							
1963							
1964							
1965							
1966							
1967							
1968							
1969							
1970							
1971							
1972							
1973							
1974						Yowlumne (Stevens)	
1975						Elchegoin	
1976	7448.754	16100	23548.754	31			waterflood started- Yowlumne
1977	13994	18600	32594	44			
1978	22796	20000	42796	62		10-4 (Stevens)	
1979	30568	12361	42929	68			
1980	36473	27452	63925	84		South Yowlumne (Stevens)	
1981	41189	19597	60786	89			
1982	44706	16081	60787	93			
1983	47931	35440	83371	79			
1984	52411	30960	83371	75			
1985	58698	49773	108471	78			
1986	66776	41695	108471	76			
1987	74121	33750	107871	73			
1988	81285	27186	108471	69			
1989	86550	21921	108471	72			
1990	91203	17268	108471	74			
1991	94965	13506	108471	68			
1992	98099	19172	117271	72			
1993	100346	16965	117311	59			
1994	102110	15200	117310	55			
1995	103645	13527	117172	52			

Yowlumne Oil Field Estimated Ultimate Recovery



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