

Estimated Oil and Gas Reserves Pacific Outer Continental Shelf

(as of December 31, 1994)



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COVER PHOTO: Exxon's Platform Harmony, which is set in 1,200 feet of water in the western Santa Barbara Channel. Wells drilled from this 60-slot platform have been producing oil and gas from the western part of the Hondo Field since December 1993. *Photograph by Ralph Vasquez, Minerals Management Service, Camarillo, CA.*

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by

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Abbreviations

ACT	Actively Drilling	WDW	.	Water Disposal Well
APD	Application for Permit to Drill	WIW	..	Water Injection Well
API	.....	American Petroleum Institute	WSW	.	Water Source Well
°API	.....	Oil Gravity			
bbbl	.....	Barrel of Oil (42 gallons)			
Bcf	.....	Billion Cubic Feet of Gas			
BOE	.....	Barrels of Oil Equivalent			
bpd	.....	Barrels per Day			
cf	.....	Cubic Feet			
CFB	.....	Cubic Feet per Barrel			
CFR	.....	Code of Federal Regulations			
COM	.....	Completion			
cp	.....	Centipoise			
CRPNTR	.	Carpinteria Offshore Field			
DPP	.....	Development and Production Plan			
DSCDRS	.	Dos Cuadras Field			
DSI	.....	Drilling Shut-In			
°F	.....	Degrees Fahrenheit			
GIW	.....	Gas Injection Well			
GLO	.....	Gas Lift Oil Well			
GOR	.....	Gas-Oil Ratio			
GSI	.....	Gas Well Shut-in			
HUENEM		Hueneme Field			
Mbbl	.....	Thousand Barrels of Oil			
Mcf	.....	Thousand Cubic Feet of Gas			
Mcfpd	....	Thousand Cubic Feet of Gas per Day			
md	.....	Millidarcies			
MMbbl	...	Million Barrels of Oil			
MMcf	....	Million Cubic Feet of Gas			
MMS	.....	Minerals Management Service			
OCS	.....	Outer Continental Shelf			
OFR	.....	Open File Report			
OFSHR	..	Offshore			
OSI	.....	Oil Well Shut-in			
OS&T	....	Offshore Storage and Treating Vessel			
PA	.....	Plugged and Abandoned			
PESCDO	.	Pescado Field			
PGW	.....	Producing Gas Well			
PITSPT	.	Pitas Point Field			
POW	.....	Producing Oil Well			
ppm	.....	Parts per Million			
psia	.....	Pounds per Square Inch Absolute			
psig	.....	Pounds per Square Inch Gauge			
PTARGL	.	Point Arguello Field			
PTPDNS	.	Point Pedernales Field			
RB	.....	Reservoir Barrel			
SCF	.....	Standard Cubic Feet			
SNTCLR	.	Santa Clara Field			
SOCKEY	.	Sockeye Field			
SPE	.....	Society of Petroleum Engineers			
ST	.....	Side Track			
STB	.....	Stock Tank Barrel			
TA		Temporarily Abandoned			

**Estimated Oil and Gas Reserves
Pacific Outer Continental Shelf
(as of December 31, 1994)**

By Scott B. Sorensen, Harold E. Syms, and Armen Voskanian

Abstract

Proved reserves of oil¹ and gas² in the Pacific Outer Continental Shelf, offshore California, are estimated to be 733 million barrels and 1,618 billion cubic feet, respectively, as of December 31, 1994. These reserves are attributed to 12 fields. Original recoverable oil and gas reserves for these fields are estimated to be 1,411 million barrels and 2,356 billion cubic feet, respectively. Unproved reserves are estimated to be 643 million barrels of oil and 776 billion cubic feet of gas, in 26 fields.

Reserve estimates for 31 of the 38 Pacific OCS fields were calculated using individual reservoir volumetric studies. Both decline-curve and volumetric analyses were used for the remaining 7 fields.

Approximately two-thirds of the original recoverable oil and gas reserves and three-fourths of the remaining reserves are attributed to reservoirs in the Monterey Formation. One-half of the remaining oil reserves are contained within fields that have not yet been developed.

Eleven of the 38 fields were producing at yearend. Oil production during 1994 exceeded 58 million barrels, setting a new record for the Pacific OCS. Net gas production approached 51 billion cubic feet. To date, 678 million barrels of oil and 738 billion cubic feet of gas have been produced from 11 fields.

¹ *Oil*, as used in this report, includes crude oil and condensate.

² *Gas*, as used in this report, includes associated and nonassociated dry gas.

Introduction

This report, which in part supersedes OCS Report MMS 94-0059 (Sorensen and others, 1994), presents estimates of original recoverable oil and gas reserves, cumulative production through 1994, and estimates of remaining reserves as of December 31, 1994, for the Pacific Outer Continental Shelf (OCS), offshore California. These estimates were completed in June 1995. Detailed reserves estimates are included in the annual update of this report as part of a Minerals Management Service (MMS) continuing program to provide a current inventory of oil and gas reserves for the Pacific OCS.

The estimates presented here were prepared by petroleum engineers, geologists, geophysicists, and other personnel from the MMS Pacific OCS Regional Office, Camarillo, California. Previous reports were used as a basis for parts of this update. Contributions by Catherine Dunkel, James Galloway, Drew Mayerson, Frank Victor, and the members of the Production and Development Section were particularly important, and this report would not have been completed without their assistance.

Definition of Resource and Reserve Terminology

The MMS has standardized its definitions of resources (*Estimates of Undiscovered Conventional Oil and Gas Resources in the United States — A Part of the Nation's Energy Endowment*, U.S. Geological Survey (USGS) and MMS, 1989). The Society of Petroleum Engineers (SPE) has also adopted a standardized set of reserve categories and definitions (1987, p. 577-578). The definitions used within this report conform with both these sources. Figure 1 shows how resource and reserve definitions are related.

- Undiscovered Resources** Resources estimated from broad geologic knowledge or theory and existing outside of known fields or known accumulations are undiscovered resources. Undiscovered resources can exist in untested prospects on unleased acreage, or on undrilled leased acreage, or in known fields. In known fields, undiscovered resources occur in undiscovered pools that are controlled by distinctly separate structural features or stratigraphic conditions (USGS and MMS, 1989). Estimates of undiscovered resources in the Pacific OCS are not included in this report.
- Discovered Resources** Once leased acreage is drilled and is determined to contain oil or gas under Code of Federal Regulations (CFR) Title 30, Part 250, Subpart A, Section 11, Determination of Well Producibility (hereinafter referred to as 30 CFR 250.11), the lease is considered to have discovered resources. Discovered resources are the equivalent of identified resources as reported by Dolton

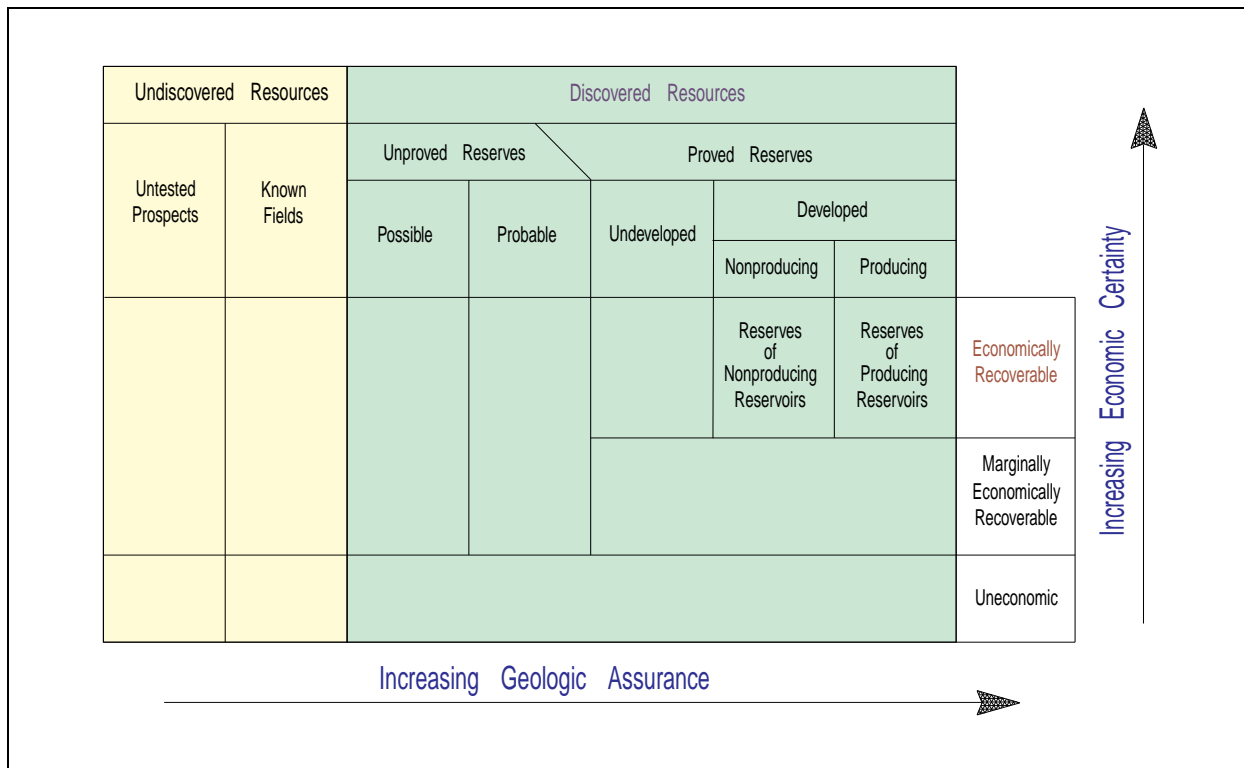


Figure 1. MMS petroleum reserves classification (modified from USGS and MMS, 1989; and SPE, 1987).

and others (1981). Identified resources are resources whose location and quantity are known or are estimated from specific geologic or engineering evidence and include economic, marginally economic, and subeconomic components. Discovered resources can be further characterized as unproved or proved reserves, depending upon evidence of economic and geologic viability. Changing economic conditions and new geologic data and interpretations can result in reclassification of resources. Figure 2 shows the number of Pacific OCS wells determined to be producible in accordance with 30 CFR 250.11.

Unproved Reserves

After a lease qualifies under 30 CFR 250.11, the MMS Field Naming Committee reviews the new producible lease to assign it to an existing field or, if the lease is not associated with an established geologic structure, to a new field. Regardless of where the lease is assigned, the reserves associated with the lease are initially considered to be unproved reserves. Unproved reserves are based on geologic or engineering information similar to that used in estimates of proved reserves, but technical, contractual, economic, or regulatory uncertainties preclude such reserves being classified as proved.

Unproved reserves may be divided into two subclassifications, possible and probable, which are similarly based on the level of uncertainty.

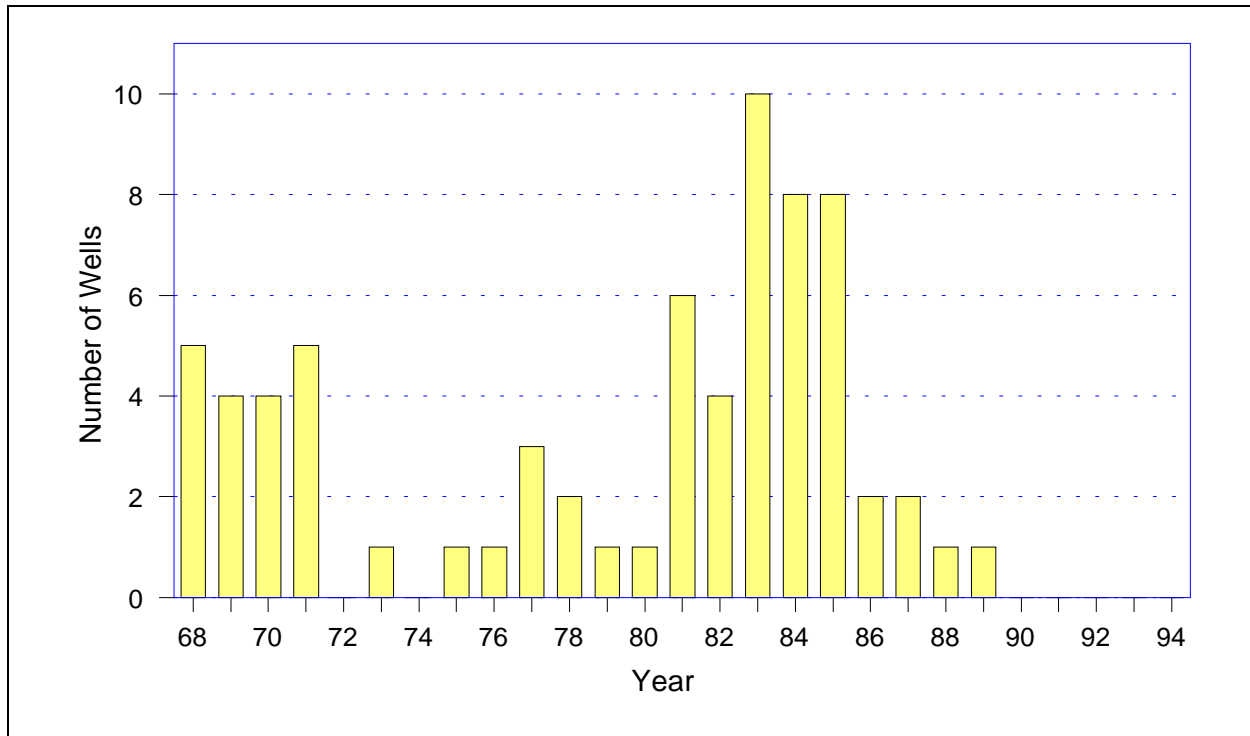


Figure 2. Wells determined to be producible in accordance with 30 CFR 250.11, Pacific OCS.

“Unproved possible reserves are less certain than unproved probable reserves and can be estimated with a low degree of certainty, which is insufficient to indicate whether they are more likely to be recovered than not. Reservoir characteristics are such that a reasonable doubt exists that the project will be commercial” (SPE, 1987). After a lease qualifies under 30 CFR 250.11, the reserves associated with the lease are initially classified as unproved possible.

“Unproved probable reserves are less certain than proved reserves and can be estimated with a degree of certainty sufficient to indicate they are more likely to be recovered than not” (SPE, 1987). Reserves in fields for which a schedule leading to a Development and Production Plan (DPP) has been submitted to the MMS have been classified as unproved probable.

Proved Reserves

“Proved reserves can be estimated with reasonable certainty to be recoverable under current economic conditions, such as prices and costs prevailing at the time of the estimate. Proved reserves must either have facilities that are operational at the time of the estimate to process and transport those reserves to market or a commitment or reasonable expectation to install such facilities in the future” (SPE, 1987). Proved reserves can be subdivided into undeveloped and developed.

Reserves are classified as proved undeveloped reserves when a relatively large expenditure is required to install production/transportation facilities, a commitment by the operator is made, and a timeframe to begin production is established. Proved undeveloped reserves are reserves expected to be recovered from (1) yet undrilled wells, (2) deepening existing wells, or (3) existing wells for which relatively large expenditures are required for recompletion.

“Reserves that are expected to be recovered from existing wells (including reserves behind pipe) are classified as proved developed reserves. Reserves are considered developed only after necessary production and transportation equipment have been installed or when the installation costs are relatively minor. Proved developed reserves are subcategorized as producing or non-producing” (SPE, 1987). This distinction is made at the reservoir level and not at the field level.

Once the first reservoir in a field begins production, the reservoir is considered to contain proved developed producing reserves, and the field is considered on production. If a reservoir had sustained production during the last year, it is considered to contain proved developed producing reserves.

Any developed reservoir in a developed field that has not produced or has not had sustained production during the past year is considered to contain proved developed nonproducing reserves. This category includes reserves contained in nonproducing reservoirs, reserves contained behind-pipe, and reservoirs awaiting well workovers or transportation facilities. The reserves classification procedure is shown in figure 3.

Total reserves are the sum of proved and unproved reserves.

The amount of oil and gas expected to be recovered from the original oil in place or the amount equal to the sum of cumulative production and remaining reserves is considered to be the original recoverable reserves.

The term production data means the measured volumes of gross hydrocarbons reported to the MMS by Federal lessees and operators. Oil and gas volume measurements and reserves are corrected to reference standard conditions of 60 °F and 14.73 psia. Continuously measured volumes from production platforms or leases are allocated to individual wells and reservoirs on the basis of periodic well tests. These procedures introduce approximations in both production and reserves data by reservoirs and by fields.

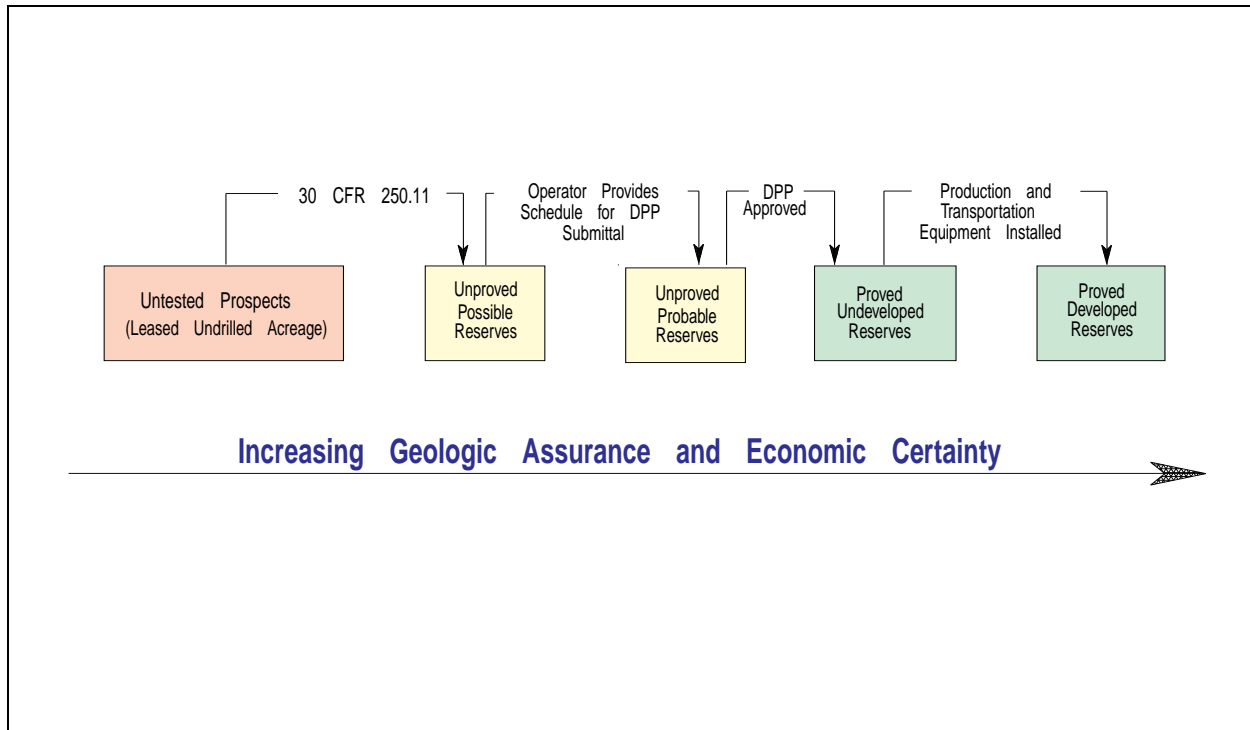


Figure 3. MMS Pacific OCS reserves classification procedure.

Methods Used for Estimating Reserves

Volumetric Calculation

For the volumetric calculation of reserves, the amounts of original oil and gas in place are estimated from the bulk volume of the reservoir as mapped using data from boreholes and seismic profiles. Maps of net oil and gas sand thicknesses are generated with the aid of a computer mapping system, and the results are converted to bulk reservoir volume using the appropriate equations. Rock porosities and the amounts of water, oil, and gas in the pore space are derived from well log interpretations and core analyses. The estimated original amounts of oil and gas in place are converted to standard conditions through analyses of pressure, volume, and temperature relationships and by the use of standard correlations. The amounts of the original oil and gas in place that can be recovered are estimated from information about the reservoir drive mechanism, well spacing, analog field recovery factors, and American Petroleum Institute (API) recovery factor equations (Arps and others, 1967, p. 19-20).

Decline-curve Analysis

In the decline-curve analysis method, future production is estimated by extrapolating plots of production rates and fluid percentages versus time. The ultimate production is determined by adding cumulative past production to predicted future production.

Fields Reported

As of December 31, 1994, there are 38 fields in the Pacific OCS that are recognized as containing reserves under the established criteria. Two of these fields are gas fields, 27 are oil fields, and 9 are combination oil and gas fields (fig. 4).

Twelve fields were determined to have proved reserves of oil/gas. These 12 fields are Point Pedernales, Point Arguello, Pescado, Sacate, Hondo, Dos Cuadras, Pitas Point, Carpinteria Offshore, Santa Clara, Sockeye, Hueneme, and Beta (fig. 4, fields 7, 11, 20, 21, 23, 29, 30, 31, 33, 34, 36, and 38). All of these fields, with the exception of Sacate, were producing at yearend. The remaining 26 fields were determined to have unproved reserves of oil/gas.

Reserve estimates for seven of the producing fields were obtained from volumetric calculations and decline-curve analyses: Hondo, Dos Cuadras, Pitas Point, Carpinteria Offshore, Santa Clara, Hueneme, and Beta (figure 4, fields 23, 29, 30, 31, 33, 36, and 38). Individual reservoirs in each field were grouped for volumetric calculations, while decline-curve analyses were made on lease-by-lease and platform bases. The 31 remaining fields (4 producing and 27 nonproducing) were studied on a reservoir-by-reservoir basis, and the reserve estimates were determined solely by the volumetric calculation method.

Estimated Oil and Gas Reserves

As of December 31, 1994, total original recoverable oil and gas reserves in the Pacific OCS are estimated to be 2,053 million barrels (MMbbl) and 3,132 billion cubic feet (Bcf), respectively. Total remaining reserves are estimated to be 1,376 MMbbl of oil and 2,394 Bcf of gas.

The current aggregated estimates of Pacific OCS oil and gas reserves are shown in table 1, by SPE reserves category, for both original recoverable and remaining reserves. Nonaggregated estimates of the original recoverable and remaining reserves for each of the 11 producing oil and gas fields are presented in figures 5 and 6 and table 2.

These estimates have been updated annually as additional information has become available. Past updates have caused both increases and decreases in estimates of original recoverable and remaining oil and gas reserves. Previous reserves estimates for the Pacific OCS are presented in appendix A.

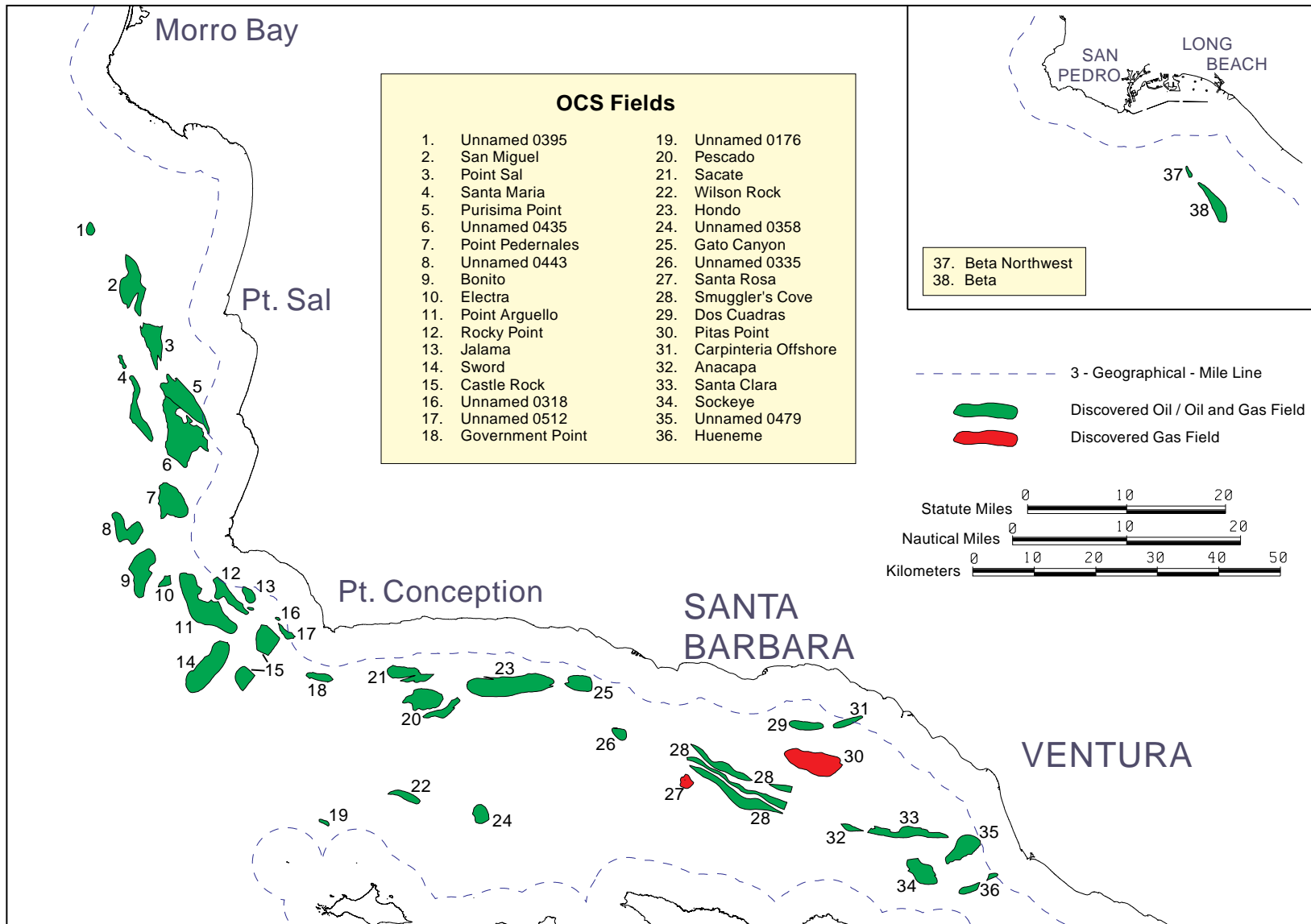


Figure 4. Recognized discoveries of federally controlled oil and gas fields in the Pacific OCS. (Dashed lines indicate 3-geographic mile boundary between State and Federal waters.

The current estimate of original recoverable oil reserves has increased by about 4 MMbbl, as compared with the most recent previous estimate. The estimate of original recoverable gas reserves has also increased slightly. The volumes of oil and gas produced during 1994, however, were greater than the increase in estimated original recoverable reserves, causing a net decrease in remaining oil and gas reserves at yearend (table 3).

Table 1. Estimated reserves of oil and gas by SPE category, Pacific OCS, December 31, 1994.

Reserves Category	Number of Fields	Original Recoverable Reserves		Cumulative Production		Annual Production		Remaining Reserves	
		Oil (MMBBL)	Gas (Bcf)	Oil (MMbbl)	Gas (Bcf)	Oil (MMbbl)	Gas (Bcf)	Oil (MMbbl)	Gas (Bcf)
Proved Developed Reserves	11	1,339	2,149	678	738	58	51	662	1,410
Proved Undeveloped Reserves	1	71	208	0	0	0	0	71	208
Unproved Probable Reserves	9	418	368	0	0	0	0	418	368
Unproved Possible Reserves	17	225	408	0	0	0	0	225	408
Total	38	2,053	3,132	678	738	58	51	1,376	2,394

Table 2. Production and estimated reserves of oil and gas for producing fields, Pacific OCS, December 31, 1994.

Field	Original Recoverable Reserves		Cumulative Production		1994 Annual Production		Remaining Reserves	
	Oil (MMbbl)	Gas (Bcf)	Oil (MMbbl)	Gas (Bcf)	Oil (MMbbl)	Gas (Bcf)	Oil (MMbbl)	Gas (Bcf)
Beta	116.50	32.25	66.79	21.82	3.37	0.87	49.71	10.43
Carpinteria	65.20	55.00	59.82	50.59	0.98	0.81	5.38	4.41
Dos Cuadras	256.80	137.60	233.30	116.77	3.45	3.05	23.50	20.83
Hondo	278.90	834.02	139.37	216.49	9.12	13.96	139.53	617.53
Hueneme	10.57	4.05	8.81	2.82	0.35	0.13	1.76	1.23
Pescado	109.01	218.63	5.49	0.17	5.45	0.16	103.52	218.46
Pitas Point	0.27	239.22	0.18	184.40	0.01	8.41	0.08	54.81
Point Arguello	283.88	336.84	76.32	34.10	27.55	13.09	207.56	302.73
Point Pedernales	77.30	17.00	41.97	9.12	3.61	0.85	35.33	7.88
Santa Clara	70.13	109.37	30.42	57.24	1.54	1.37	39.71	52.13
Sockeye	70.73	164.78	15.11	44.76	2.80	8.16	55.62	120.02
Total	1,339.29	2,148.76	677.57	738.30	58.24	50.88	661.71	1,410.46

Table 3. Changes in reported reserves and production, Pacific OCS, December 31, 1994.

Production and Reserves	Oil (MMbbl)	Gas (Bcf)
Original Recoverable Reserves:		
Estimated as of 12/31/94 (This Report)	2,053	3,132
Estimated as of 12/31/93 (MMS 94-0059)	2,049	3,129
Change	+4	+3
Cumulative Production:		
Through 1994	678	738
Through 1993	619	687
Proved Reserves:		
Estimated as of 12/31/94 (This Report)	733	1,619
Estimated as of 12/31/93 (MMS 94-0059)	860	1,697
Change	-127	-78
Total Reserves:		
Estimated as of 12/31/94 (This Report)	1,376	2,394
Estimated as of 12/31/93 (MMS 94-0059)	1,430	2,442
Change	-54	-48

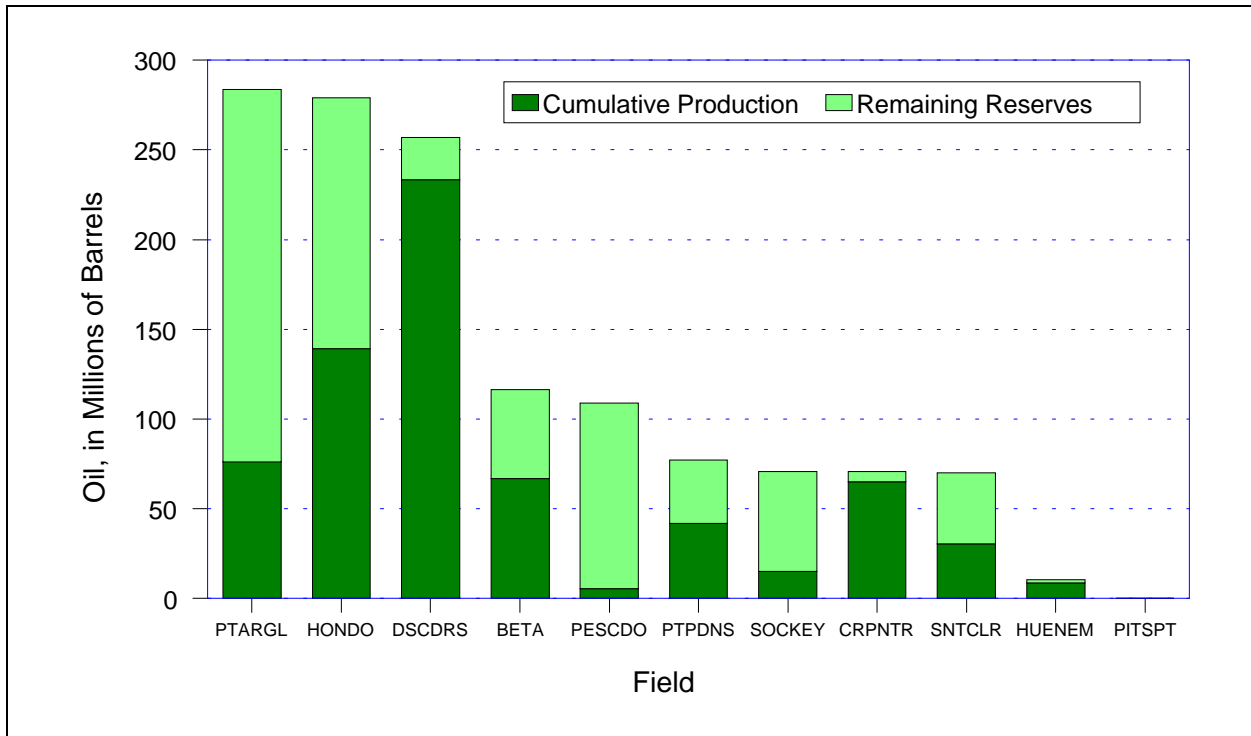


Figure 5. Production and estimated reserves of oil for producing fields, Pacific OCS.

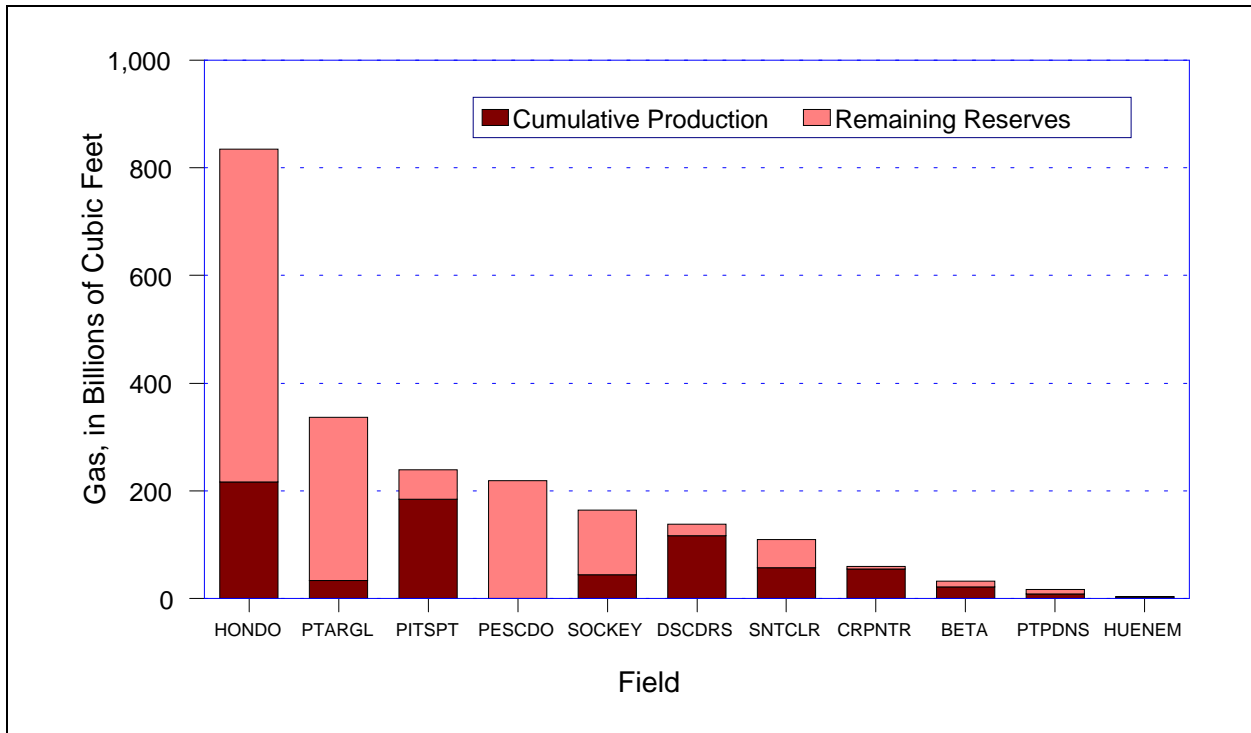


Figure 6. Production and estimated reserves of gas for producing fields, Pacific OCS.

Distribution of Reserves

The field size distribution based on current estimated original recoverable reserves for 27 oil fields, 9 combination oil and gas fields, and 2 gas fields in the Pacific OCS is shown in figure 7. These 38 fields are located in three basins, offshore California. For comparison purposes, gas reserves are expressed in terms of barrels of oil equivalent on the basis of equivalent heating values (5,620 cf of gas has the approximate heating value of 1 bbl of oil), hereinafter referred to as BOE. Producing fields are distinguished from nonproducing fields in this figure.

Approximately two-thirds of the original recoverable oil and gas reserves in the Pacific OCS are attributable to the 11 proved developed fields. These 11 producing fields also contain about one-half of the remaining recoverable reserves.

Gas reserves in the Pacific OCS are located in both oil and gas reservoirs. Less than one-sixth of the original recoverable and remaining gas reserves occurs as nonassociated gas contained in natural gas reservoirs. The remaining gas reserves are associated gas contained within oil reservoirs (fig. 8 and table 4).

Oil and gas reserves in the Pacific OCS are further categorized on the basis of the age of the reservoir rocks in which they exist (table 5). The three age groups of reservoir rocks are (1) Pre-Monterey: rocks older than the Monterey Formation (early Miocene age and older), (2) Monterey: rocks of the Monterey Formation (Miocene age), and (3) Post-Monterey: rocks younger than the Monterey Formation (late Miocene age and younger). The distribution of estimated original recoverable and remaining oil and gas reserves by reservoir age group is illustrated in figures 9 and 10.

Seven of the 11 producing fields in the Pacific OCS have substantial reserves attributed to the Monterey Formation, as do 21 of the 27 nonproducing fields. In 18 of the 27 nonproducing fields, all identified reserves are attributed to this formation. Over two-thirds of the original recoverable oil reserves and over three-fourths of the remaining oil reserves are in Monterey Formation reservoirs. The Monterey Formation also contains approximately two-thirds of all gas reserves in the Pacific OCS.

Status of Field Development

As of December 31, 1994, 11 of the 38 recognized fields in the Pacific OCS were producing: Point Pedernales, Point Arguello, Pescado, Hondo, Dos

Cuadras, Pitas Point, Carpinteria Offshore, Santa Clara, Sockeye, Hueneme, and Beta (fig. 4, fields 7, 11, 20, 23, 29, 30, 31, 33, 34, 36, and 38). Pescado Field became the eleventh producing field in the Pacific OCS when production began from Platform Heritage in December 1993.

Development drilling occurred at 6 of the 11 producing fields during 1994: Point Arguello, Pescado, Hondo, Santa Clara, Sockeye, and Beta (fig. 4, fields 11, 20, 23, 33, 34, and 38). The development of Pescado Field and the western portion of Hondo Field continued in 1994, with the drilling of development wells from Platforms Heritage and Harmony. A summary of Pacific OCS development activities during 1994 is presented in appendix B.

Five producing oil and gas fields in the Pacific OCS are undergoing fluid injection: Hondo, Dos Cuadras, Santa Clara, Hueneme, and Beta (fig. 4, fields 23, 29, 33, 36, and 38). Recovery beyond primary production is occurring or can be anticipated. Two fields, Pescado and Hondo (fig. 4, fields 20 and 23), are undergoing gas injection for reservoir pressure maintenance. Table 6 shows water and gas injection volumes and rates for each of the six fields undergoing injection.

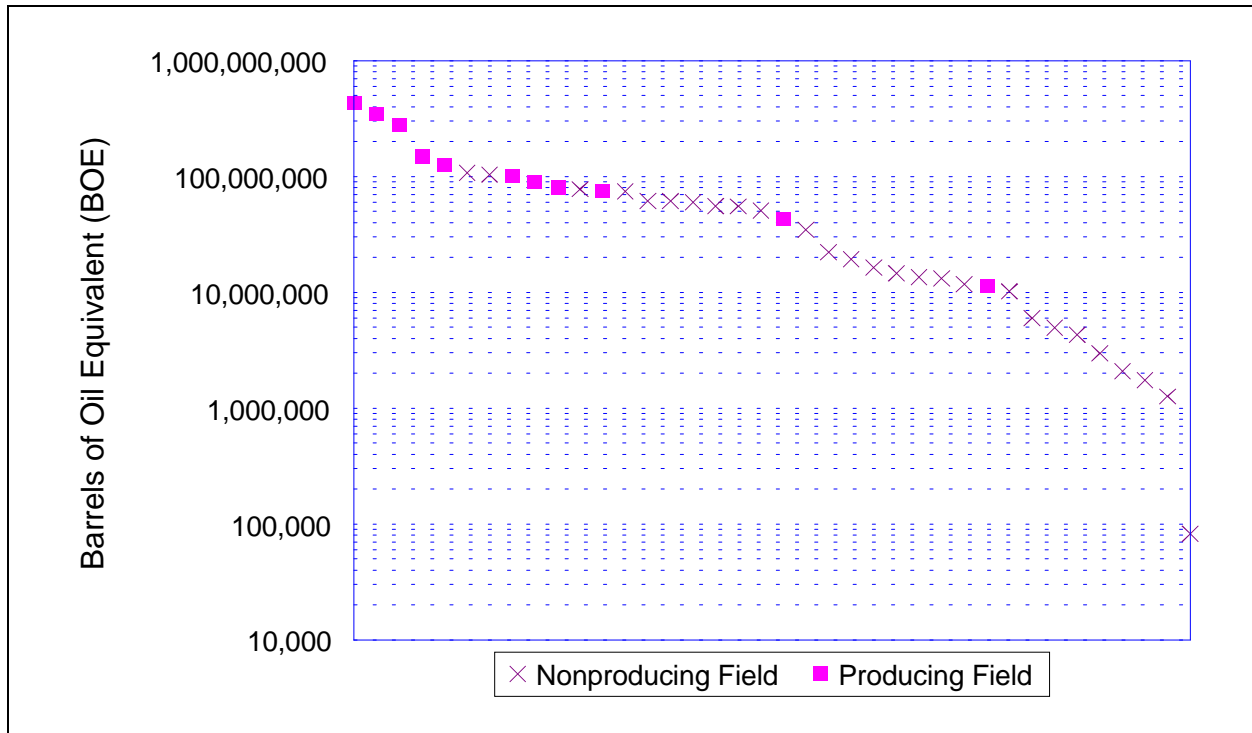


Figure 7. Size distribution of Pacific OCS oil and gas fields.

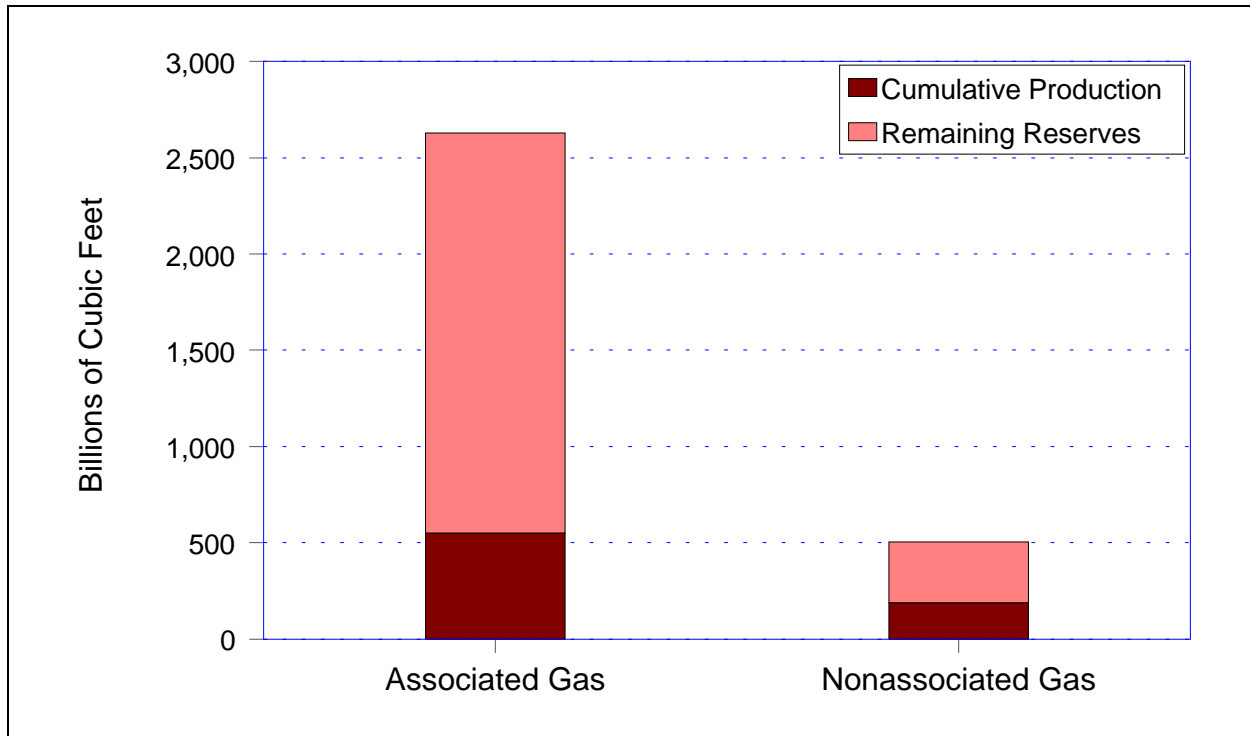


Figure 8. Production and estimated reserves of gas by type of occurrence, Pacific OCS.

Table 4. Production and estimated reserves of gas by type of occurrence, Pacific OCS, December 31, 1994.

Type of Occurrence	Original Recoverable Reserves (Bcf)	Cumulative Production (Bcf)	1994 Annual Production (Bcf)	Remaining Reserves (Bcf)
Associated	2,629	549	43	2,078
Nonassociated	504	189	8	316
Total	3,132	738	51	2,394

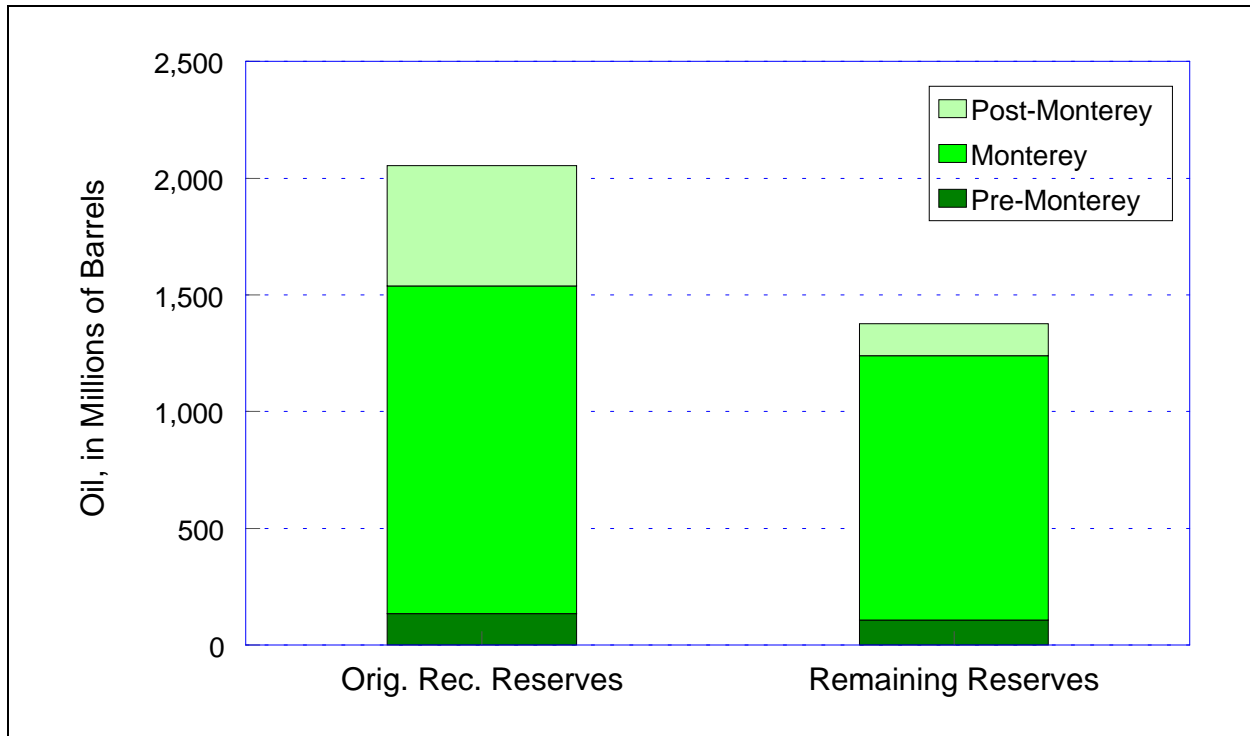


Figure 9. Estimated original recoverable and remaining oil reserves by reservoir age group.

Table 5. Estimated reserves of oil and gas by reservoir age group, Pacific OCS, December 31, 1994.

Reservoir Age Group	Geologic Formations	Original Recoverable Reserves		Remaining Reserves	
		Oil (MMbbl)	Gas (Bcf)	Oil (MMbbl)	Gas (Bcf)
Post-Monterey	Pico, Puente, "Repetto," Santa Margarita, Sisquoc	516	555	136	148
Monterey	Monterey	1,403	1,946	1,134	1,669
Pre-Monterey	Point Sal, Vaqueros, Topanga, Hueneme, Sespe/ Alegria, Gaviota, Matilija, Sacate, Juncal (Camino Cielo), Jalama	135	631	107	577

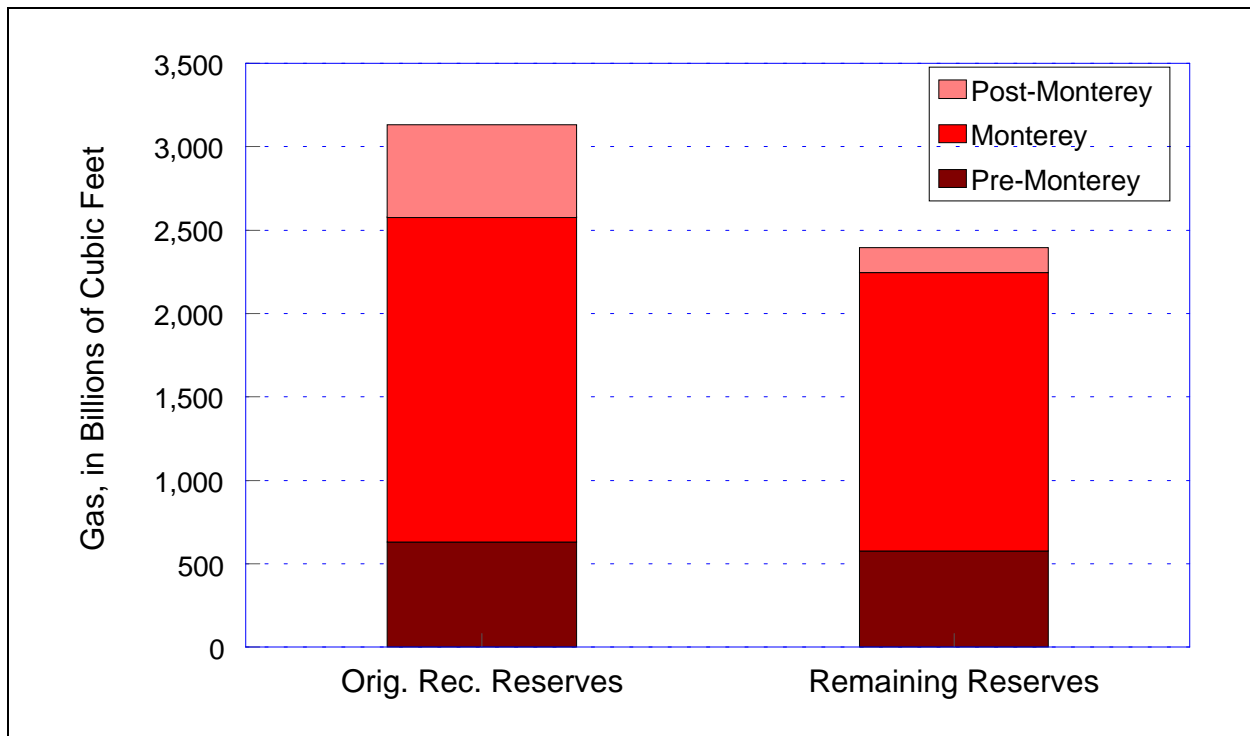


Figure 10. Estimated original recoverable and remaining gas reserves by reservoir age group.

Table 6. Gas and water injection volumes and rates, Pacific OCS, December 31, 1994.

Field	Gas Injection Volume (Mcf)	Average Gas Injection Rate (Mcfpd)	Water Injection Volume (bbl)	Average Water Injection Rate (bpd)
Beta	0	0	7,010,855	19,475
Dos Cuadras	0	0	7,403,032	19,190
Hondo	1,397,089	7,195	112,349	1,189
Hueneme	0	0	760,920	3,700
Pescado	1,370,570	6,220	0	0
Santa Clara	0	0	4,227,210	11,540

Drilling History and Production Rates

There have been 329 exploratory wells and 764 development wells spudded as of December 31, 1994. For the fifth consecutive year, no exploratory wells were drilled in the Pacific OCS. Twenty-six development wells and redrills were drilled during 1994, in six fields. Total footage drilled in these wells exceeded 228,000 feet. Drilled footage by year for all wells in the Pacific OCS is displayed in figure 11. Additional exploratory and delineation wells are anticipated in many of the Pacific OCS fields as the operators seek to define productive limits and optimize oil and gas recovery.

Oil production from the Pacific OCS increased markedly during 1994. Annual production exceeded 58 MMbbl of oil, a record volume for the region. Over three-fourths of the oil was produced from Monterey Formation reservoirs. Most of the other oil production was obtained from reservoirs in rocks younger than the Monterey Formation. The 11 producing oil fields contributed almost one-sixth of the Nation's total OCS oil production. Point Arguello Field alone accounted for almost one-half of the region's oil production, and Point Arguello and Hondo Fields accounted for about one-tenth of the national OCS total.

Although net gas production from the 11 producing fields declined slightly during 1994, the amount produced approached 51 Bcf. Only one gas field was producing at yearend; approximately five-sixths of the gas production was associated gas obtained from oil reservoirs. Almost two-thirds of the gas was produced from Monterey Formation oil reservoirs.

Cumulative production reached approximately 678 MMbbl of oil and 738 Bcf of gas in 1994. Over one-half of the oil and gas production in the Pacific OCS to date has been from Post-Monterey aged reservoirs. This proportion will decline, however, as production from Monterey Formation reservoirs continues to increase. Additional oil and gas production volume and rate data for the Pacific OCS are presented in appendix C.

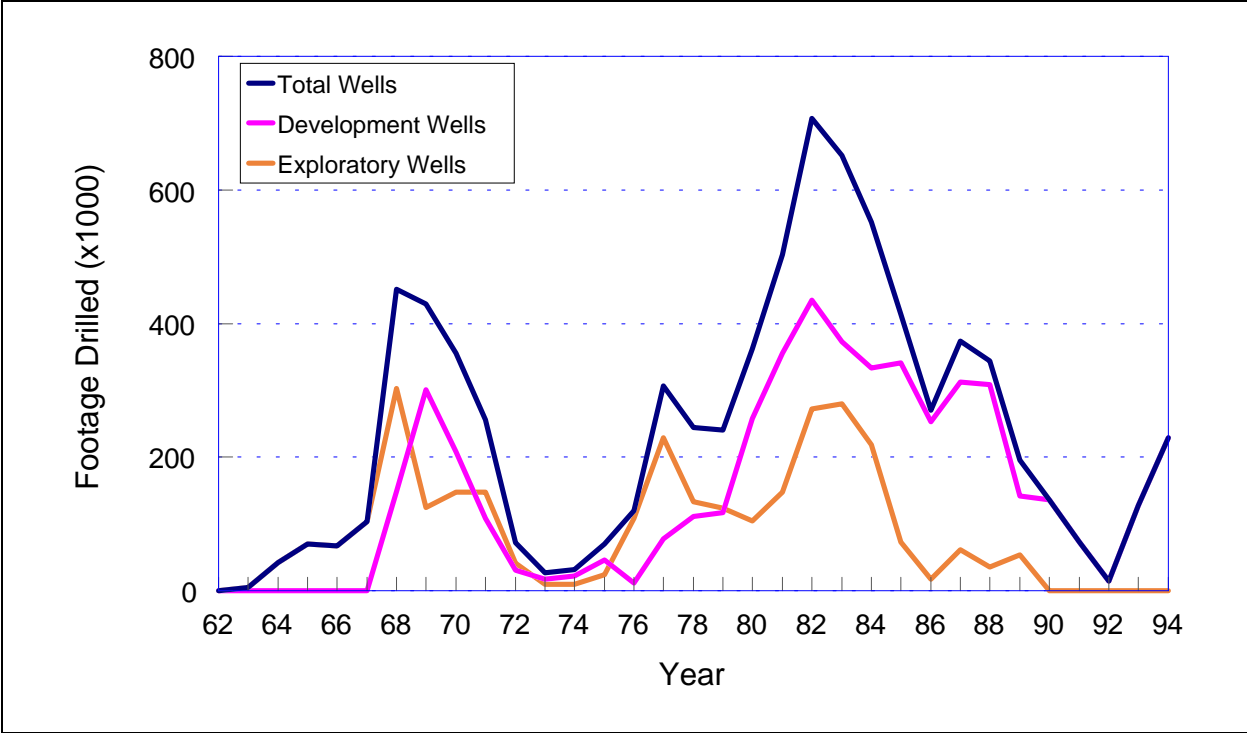


Figure 11. Annual drilled footage for wells in the Pacific OCS.

Oil and Gas Sales Prices, Volumes, and Gravities

During 1994, 11 of the 38 fields in the Pacific OCS produced oil and gas. Sales volumes of oil and gas produced from these fields totaled 57.77 MMbbl and 42.70 Bcf, respectively. The weighted average sales prices of oil and natural gas during 1994 were \$9.58 per barrel and \$2.39 per thousand cubic feet, respectively.

Total sales of crude oil from each field during 1994 are shown in table 7. Point Arguello Field is the largest field in the Pacific OCS in terms of oil sales volumes. Point Arguello and Hondo Fields account for almost two-thirds of all Pacific OCS crude oil sold.

Total sales of natural gas from each field during 1994 are shown in table 8. Differences between sales volumes and produced gas volumes are due primarily to lease use, flaring, and injection. Pitas Point Field is the only producing gas field in the Pacific OCS, but produced less than one-quarter of all Pacific OCS natural gas sold. Hondo Field produces more natural gas than any other single field in the region. Hondo and Point Arguello Fields account for over one-half of all Pacific OCS natural gas sold.

Oil sales gravities range from 12 to 32 °API. Oil produced from some reservoirs also contains substantial quantities of sulfur and metals. These factors have produced average prices for Pacific OCS crudes that are generally lower than the national average (fig. 12).

Table 7. Oil sales volumes, Pacific OCS, 1994.

Field	Oil Sales Volume (MMbbl)	Percent of Total Sales
Point Arguello	27.69	47.93
Hondo	8.32	14.40
Pescado	5.81	10.05
Dos Cuadras	3.47	6.01
Point Pedernales	3.44	5.95
Beta	3.37	5.83
Sockeye	2.80	4.85
Santa Clara	1.54	2.67
Carpinteria Offshore	0.98	1.70
Hueneme	0.35	0.61
Total	57.77	100.00

Table 8. Natural gas sales volumes, Pacific OCS, 1994.

Field	Natural Gas Sales Volume (Bcf)	Percent of Total Sales
Hondo	12.30	28.81
Point Arguello	9.38	21.97
Pitas Point	8.28	19.39
Sockeye	7.15	16.74
Dos Cuadras	2.52	5.90
Santa Clara	1.22	2.86
Point Pedernales	0.83	1.94
Carpinteria Offshore	0.55	1.29
Pescado	0.20	0.47
Beta	0.14	0.33
Hueneme	0.13	0.30
Total	42.70	100.00

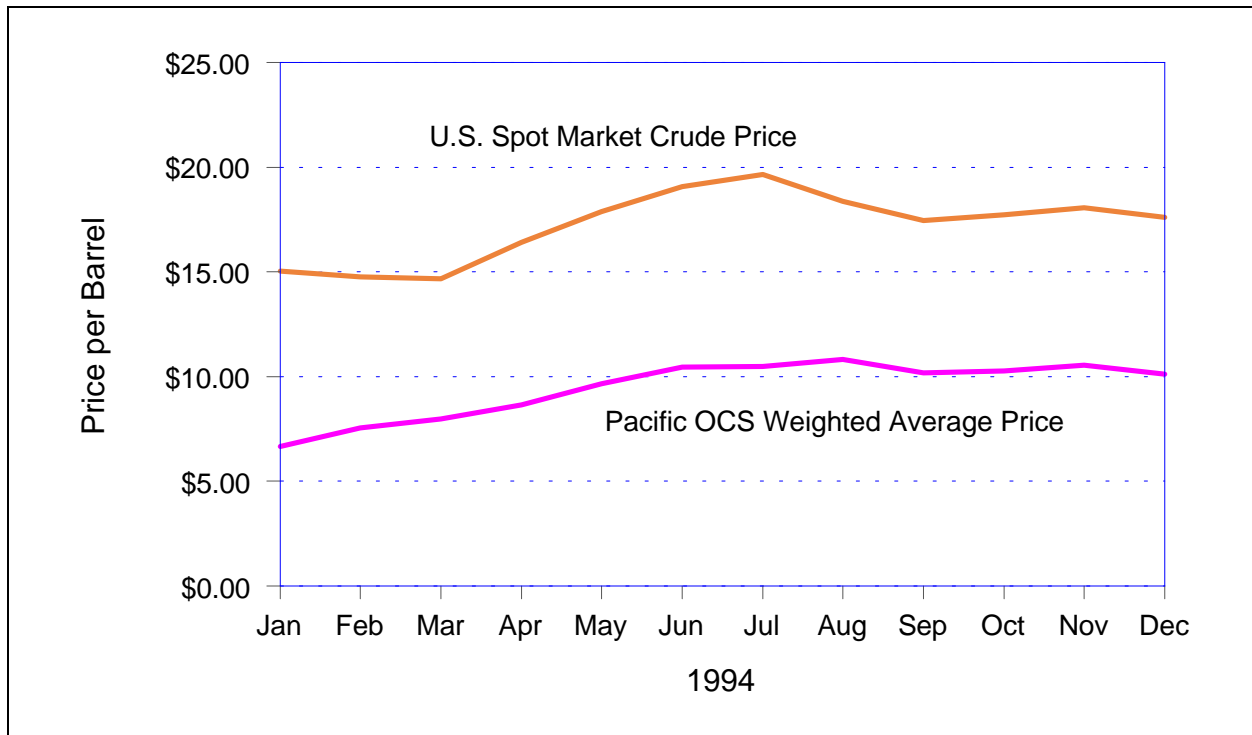


Figure 12. Average monthly crude oil price for Pacific OCS and Standard West Texax Crude (U.S. Spot Market).

Conclusions

As of December 31, 1994, the total original recoverable reserves in 38 fields in the Pacific OCS, offshore California, are estimated to be 2,053 MMbbl of oil and 3,132 Bcf of gas. The remaining proved reserves in 12 oil and gas fields are estimated to be 733 MMbbl of oil and 1,619 Bcf of gas. Unproved reserves in 26 oil and gas fields in the Pacific OCS are estimated to be 643 MMbbl of oil and 776 Bcf of gas. Total remaining reserves have decreased by 54 MMbbl of oil and 48 Bcf of gas, as compared with previously published estimates.

Oil and gas were being produced from 23 platforms in 11 fields at yearend. Original recoverable gas reserves for the single producing gas field are estimated to be 239 Bcf, and remaining reserves are estimated to be 55 Bcf of gas. Estimated original recoverable reserves for the other 10 producing fields total 1,339 MMbbl of oil and 1,909 Bcf of gas. Estimated remaining reserves for these 10 fields are 662 MMbbl of oil and 1,356 Bcf of gas. Almost one-half of the remaining reserves in the Pacific OCS are contained within producing fields, and approximately three-fourths of the remaining oil and gas reserves are attributed to reservoirs in the Monterey Formation.

Pacific OCS oil production reached a new peak during 1994, when approximately 58 MMbbl of oil were produced. Net gas production decreased slightly to 51 Bcf. Over three-fourths of the gas produced during the year was associated gas produced from oil reservoirs. Over one-half of the natural gas produced came from oil reservoirs in the Monterey Formation. Cumulative production from fields in the Pacific OCS has reached 678 MMbbl of oil and 738 Bcf of gas since production began in 1968.

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Appendixes: Reserves, Production, and Development Summaries

The following appendixes provide information on estimated oil and gas reserves, oil and gas production volumes and rates, and annual development activities in the Pacific OCS. This information has been obtained primarily from MMS interpretations of geophysical, geological, and other data provided by lessees. Such interpretations form the basis of MMS oil and gas reserves estimates for each of the fields in the Pacific OCS.

Appendixes

Appendix A	- Annual Estimates of Oil and Gas Reserves	.....	A-1
Appendix B	- Annual Development Activities	.....	B-1
Appendix C	- Annual and Cumulative Oil and Gas Production	.....	C-1

Appendix A - Annual Estimates of Oil and Gas Reserves

The first oil field extending into Federal waters in the Pacific OCS was discovered in 1965. Estimates of original recoverable oil and gas reserves in the region have increased since that time, largely due to the discovery of new oil and gas fields and often due to the reevaluation of known fields. Estimates of remaining reserves have generally increased as well, for the same reasons. The continued production of oil and gas, however, following the cessation of leasing and exploratory drilling, has initiated a downward trend in estimates of remaining reserves.

Estimates of Original Recoverable Reserves

Since the discovery of Carpinteria Offshore Field in 1965, estimates of original recoverable oil and gas reserves in the Pacific OCS have increased substantially (fig. A-1 and table A-1). The primary cause for this increase has been the discovery of additional oil and gas fields, many of which are of significant size. Other factors that can increase estimates of original recoverable reserves are the analysis of new data from known fields and the reevaluation of old data in combination with new technology. Past reevaluations of known fields have caused significant increases in estimates of original recoverable reserves.

It should be noted, however, that such studies may result in decreased reserves estimates as well. Some annual estimates of original recoverable oil and gas reserves in the Pacific OCS have decreased, as compared with estimates published in previous years (fig. A-1). The cessation of leasing and exploratory drilling in the Pacific OCS have made the reevaluation of known fields the only factor that continues to change estimates of original recoverable oil and gas reserves.

Estimates of Remaining Reserves

Five of the 38 known fields in the region have been ranked among the top 100 U.S. oil fields in terms of remaining proved reserves; 4 of the 5 have been ranked among the top 50 fields, and 2 of the 5 are in the top 20. One of these fields is also ranked among the 50 largest U.S. gas fields. These 5 fields contain over one-third of the remaining oil reserves and about one-half of the remaining gas reserves in the region. Other Pacific OCS fields may eventually prove to be sufficiently large to be included in the Nation's top 100.

Historically, the average volumes of oil and gas produced annually in the Pacific OCS have been about 1 percent of current estimated original recoverable oil and gas reserves. Such production rates have not caused extreme annual variations between estimated original recoverable reserves and remaining reserves. As a result, annual estimates of remaining oil and gas reserves have generally increased or decreased in step with the annual estimates of original recoverable reserves (figs. A-1 and A-2). Future reserves estimates may also follow this general trend, although the divergence between original recoverable reserves and remaining reserves will increase if production rates in the Pacific OCS continue to increase.

Table A-1. Annual estimates of original recoverable reserves with source publication numbers.

Original Recoverable Reserves			
Year	Publication	Oil (MMbbl)	Gas (Bcf)
1976	OFR 78-384	829	1,530
1977	OFR 79-345	843	1,546
1978	OFR 80-477	875	1,665
1979	OFR 80-1042	920	1,845
1980	OFR 81-623	988	1,853
1981	OFR 82-37	1,082	1,847
1982	OFR 83-559	1,217	1,983
1983	MMS 84-0024	1,433	2,298
1984	MMS 85-0041	1,515	2,400
1985	MMS 86-0066	1,599	2,334
1986	MMS 87-0045	1,670	2,461
1987	MMS 88-0047	1,727	2,501
1988	MMS 89-0085	1,729	2,467
1989	MMS 90-0086	1,987	2,723
1990	MMS 91-0087	1,988	2,684
1991	MMS 92-0073	1,990	2,762
1992	MMS 94-0008	2,055	3,121
1993	MMS 94-0059	2,050	3,129
1994	MMS 95-0062	2,053	3,132

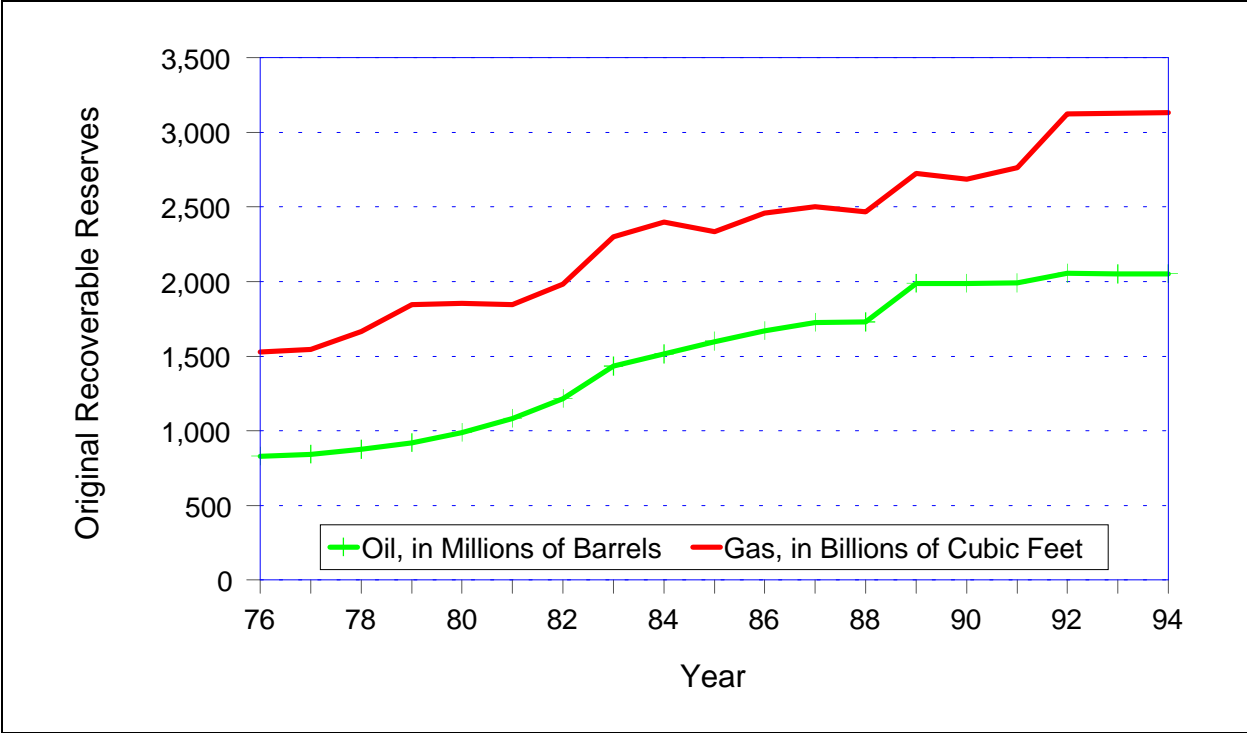


Figure A-1. Annual estimates of original recoverable reserves from known fields

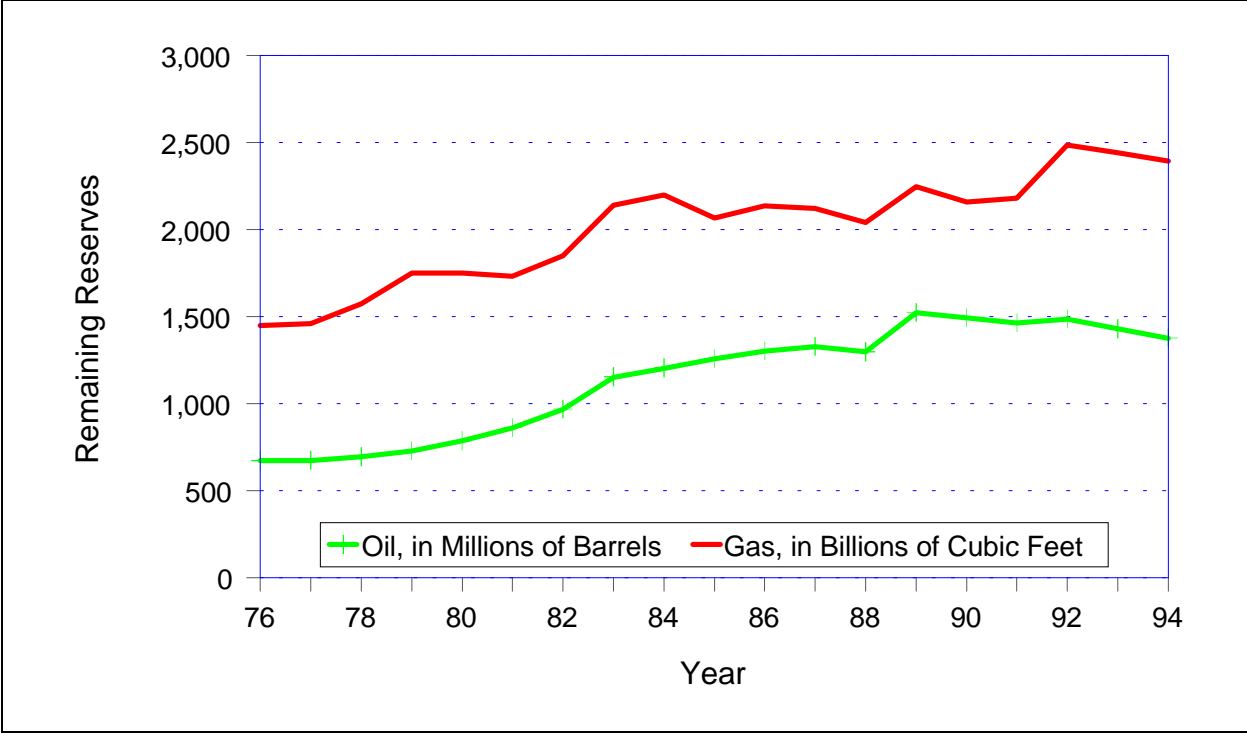


Figure A-2. Annual estimates of remaining recoverable reserves from known fields.

Appendix B - Annual Development Activities

Development activities in the Pacific OCS increased significantly during 1994. Twenty-one new wells and redrills were drilled in the region during 1993; 21 new wells and 5 redrills reached total depth by the end of 1994 (tables B-1 and B-2). The number of wells completed or recompleted by yearend increased markedly, from 28 in 1993 to 44 during 1994. Other work was also completed at each of the 11 producing fields.

Field Activities

- Beta Field** Beta Field is the only producing Pacific OCS field in the Los Angeles Basin. Two new development wells were drilled in the field during 1994, both from Platform Eureka in Lease OCS-P 0301. Other Platform Eureka wells received workovers. One Platform Ellen well in Lease OCS-P 0300 was converted from a gas storage well to a water source well, and a number of other wells received pump conversions. Pumps were also changed or converted in three wells at Platform Edith in Lease OCS-P 0296. Waterflood operations continued in Leases OCS-P 0300 and 0301. Maximum oil production for the year was 9,663 bpd in March; gas production peaked at 2,495 Mcfpd in January.
- Carpinteria Offshore Field** There were no new development wells drilled at Carpinteria Offshore Field during 1994, but five workovers were conducted by yearend. Workovers included changing electric submersible pumps in two wells to progressive cavity pumps, converting one well with a rod pump to electric submersible pump, and two acid stimulations. Oil production for the year peaked at 2,899 bpd in November and gas production reached a high of 2,827 Mcfpd in February. A study of the feasibility of using extended reach drilling to increase productivity and ultimate recovery is continuing.
- Dos Cuadras Field** Technological advances, including the completion of trilateral horizontal wells, have allowed Unocal to temporarily offset the natural production decline at Dos Cuadras Field. Although five wells (including four trilateral wells) were drilled in 1993, no new wells were drilled during 1994. Workovers were performed in a number of wells on each of the four platforms. Pump conversions or changes were performed in 11 wells, 10 received acid stimulations, and 4 wells were converted to water injection. One producing oil well was also recompleted. Although oil production in 1991 averaged only 8,500 bpd, the completion of the trilateral wells had pushed production up to 10,600 bpd by December 1993. Oil production during 1994 peaked at 10,777 bpd in February, but had declined to less than 9,000 bpd by yearend.

Hondo Field	The development of Hondo Field continued in 1994, with the drilling of six additional wells in Leases OCS-P0181 and OCS-P 0190 from recently installed Platform Harmony. A number of workovers were also performed. Three acid jobs were completed, and perforations were added in three other wells. No wells were drilled from Platform Hondo in Lease OCS-P 0188. Annual oil production from Hondo Field approached 13.5 MMbbl in 1982, but subsequently declined to 7.4 MMbbl in 1993. Production from the western portion of the field commenced from Platform Harmony in December 1993, increasing average daily oil production rates to 35,409 bpd by December 1994. Gas production during 1994 reached a maximum of 46,276 Mcfpd in September. Annual oil production from Hondo Field is expected to increase, and may surpass previous record levels within 2 years.
Hueneme Field	No new wells were drilled in Hueneme Field during 1994. Two wells were recompleted, however. Well H-14 was recompleted in the Sespe Formation, and produced oil and gas at relatively low rates, with water cuts exceeding 65 percent. Well H-1 was recompleted to produce gas from a previously untapped reservoir in the Pico Formation. The well was perforated in late December and had produced for only 2 days by yearend. Monthly oil production in 1994 peaked in November at 1,655 bpd, produced through electric submersible pumps in conjunction with the active water drive. Gas production peaked in March at 473 Mcfpd.
Pescado Field	Pescado Field became the eleventh producing field in the Pacific OCS in December 1993. Eight development wells were drilled in Leases OCS-P 0182 and OCS-P 0183 from Platform Heritage during 1994. All utilize gas lift to produce heavy oil from completions in the Monterey Formation. Two workovers were also performed, including one acid job, and the removal of an asphaltene and ice plug from the platform's single gas injection well. Annual oil production totaled 5.5 MMbbl. Most of the 1.5 Bcf of gas produced during 1994 was reinjected, leaving net gas production for the year at just 162,096 Mcf. Oil production rates reached 31,935 bpd in December; gross gas production rates peaked at 9,230 Mcfpd during the same month.
Pitas Point Field	Pitas Point Field is the only producing gas field in the Pacific OCS. No new wells or redrills were drilled in the field during 1994. Three workovers were performed during the year, including one recompletion. Peak gas production for 1994 occurred in February, when daily production averaged 26,115 Mcfpd. Condensate production reached 20 bpd in March.
Point Arguello Field	One redrill and two new development wells were drilled in Point Arguello Field in 1994, all from Platform Hidalgo in Lease OCS-P 0450. One Platform Hidalgo well was also plugged and abandoned. Four wells that had been drilled from Platform Harvest and temporarily abandoned during the 1980's were finally completed. Fourteen workovers were performed on Platform Hidalgo wells, 12 on wells drilled from Platform Hermosa in Lease OCS-P 0316, and 9 more on Platform Harvest. The workovers included acid,

fracture, and perforation jobs, and tubing replacement. Average daily oil production for the year reached a peak of 79,887 bpd in July; peak gas production of 38,837 Mcfpd occurred 3 months later. Over 27.5 MMbbl of oil and almost 13.1 Bcf of gas were produced from the Point Arguello Field during 1994.

Point Pedernales Field No new development wells were drilled in Point Pedernales Field during the year. Seven workovers were performed on a total of seven wells, including a single tubing change, and acid and perforation jobs. A number of these wells also received artificial lift conversions. The operator is modifying facilities in preparation for the planned shutdown of the onshore Battles Gas Plant. Oil and gas production from Point Pedernales Field during 1994 peaked in December at 14,182 bpd and 4,097 Mcfpd, respectively.

Santa Clara Field Four wells were drilled in Santa Clara Field during 1994, all redrills from Platform Gilda in Lease OCS-P 0216. Three were completed in the Upper Repetto, the fourth in the Monterey. Two of the new completions were shut in at year end. One well was abandoned in preparation for a redrill, but mechanical problems prevented the work from being conducted. At Platform Grace in Lease OCS-P 0217, seven producing wells were suspended during 1994. Peak oil production for the year occurred in August, when an average rate of 4,596 bpd was attained. Gas production rates peaked in March at 4,595 Mcfpd.

Sockeye Field Three development wells were drilled from Platform Gail in Sockeye Field during 1994. One of these wells, E-20, was completed in the Juncal Formation, flowing gas from a previously unproduced reservoir. The other two new wells, E-18 and E-19, were completed in the Monterey Formation. Six additional wells were recompleted, including one dual completion. Peak oil and gas production for the year occurred in August, when average daily rates reached 8,947 bpd and 25,709 Mcfpd, respectively.

Table B-1. Summary of development well borehole status at yearend, 1994.

Platform Name	APD	ACT	DSI	COM	PA	ST	TA	Total
A				50		15		65
B				53	1	21		75
C				33			1	34
Edith				18		1	2	21
Ellen				60	4	5		69
Eureka				46	1	1		48
Gail				19	1			20
Gilda				60	3	7	2	72
Gina				12		2		14
Grace				23	2	6	3	34
Habitat				18	1		2	21
Harmony		1	1	7				9
Harvest				15			4	19
Henry				23	1	1		25
Heritage	1	1		10				12
Hermosa				12				12
Hidalgo				11	1			12
Hillhouse				47		4		51
Hogan				36	4	10		50
Hondo				28		9		37
Houchin				32	3	7	1	43
Irene				19	2	3	1	25
Total	1	2	1	632	24	92	16	768

Table B-2. Summary of development well completion status at yearend, 1994.

Platform Name	POW	GLO	PGW	OSI	GSI	GIW	WIW	WDW	WSW	Total
A	36			10			6	1		53
B	38			11			8			57
C	25			2			11			38
Edith	17			1						18
Ellen	24			7	2	1	22	1	3	60
Eureka	29			1			15	1		46
Gail	4	20	2							26
Gilda	35		1	7	3		17			63
Gina	6			1			5			12
Grace		16		3	4		1			24
Habitat			13		7					20
Harmony		6	1							7
Harvest	6	5		4						15
Henry	21			2						23
Heritage		9				1				10
Hermosa	4	8								12
Hidalgo		10		1						11
Hillhouse	14	28		4			1	1		48
Hogan	8	6		17		2		3		36
Hondo	6	16		3		2	1	1		29
Houchin	11	5		16						32
Irene		19								19
Total	284	148	17	90	16	6	87	8	3	659

Appendix C - Annual and Cumulative Oil and Gas Production

Oil and gas production from the Pacific OCS began in June 1968, from Carpinteria Offshore Field. By December 31, 1994, 10 additional fields were producing oil and gas. Peak gas production in the region occurred in 1985, when nearly 64 Bcf of gas were produced. The most oil produced from the Pacific OCS in a single year was just over 58 MMbbl, in 1994. To date, over 677 MMbbl of oil and 738 Bcf of gas have been produced from 11 fields. Cumulative production equals almost one-third of the original recoverable oil reserves and almost one-fourth of the original recoverable gas reserves.

Annual Production

Oil production from the Pacific OCS reached a new peak during 1994, when approximately 58 MMbbl of oil were produced (table C-1, and figs. C-1 and C-2). This amount, produced from only 23 platforms in 11 fields, represents almost one-sixth of the Nation's OCS oil production for the year.

Point Arguello Field produced almost 28 MMbbl of oil during 1994, which amounts to about one-half of the region's oil production. A number of wells in the field produced over 1 MMbbl of oil during 1994; four wells produced over 2 MMbbl of oil and the most prolific well produced over 3 MMbbl. Nine of the 15 most productive oil wells in the Pacific OCS are located in Point Arguello Field; the other 6 are located in Pescado and Hondo Fields, in the Santa Ynez Unit (table C-2). These 15 wells accounted for almost one-half of the oil produced in the region during 1994.

Net gas production from the Pacific OCS had declined slightly by yearend, to approximately 51 Bcf. This decline can be largely attributed to declining gas production from Pitas Point Field, the only producing gas field in the region. The amount of gas produced from Hondo Field also declined during 1994, while gas production from Point Arguello and Sockeye Fields continued to increase. Production from these four fields exceeded 44 Bcf, accounting for three-fourths of the gas produced in the Pacific OCS.

Five of the 12 wells that produced over 1 Bcf of gas during 1994 are located in Hondo Field (table C-3); 3 of the wells are located in Point Arguello Field, and 3 are located in Sockeye Field. Only 1 of the 12 top gas wells is located in the region's single producing gas field. Over one-third of the gas produced in the Pacific OCS during the year can be attributed to these 12 wells.

During 1994, over three-fourths of the oil and over one-half of the gas were produced from reservoirs in the Monterey Formation (fig. C-3). Reservoirs in younger rocks were the source of most of the remaining production. The

proportion of produced oil and gas obtained from Monterey Formation reservoirs will increase as production from Point Arguello, Hondo, and Pescado Fields continues, and as production from the more mature fields in the Pacific OCS declines.

Cumulative Production

Cumulative production exceeded 677 MMbbl of oil and 738 Bcf of gas in 1994 (table C-1 and fig. C-4). The amount of oil produced equals almost one-half of the proved original recoverable reserves and about one-third of the total original recoverable reserves. Cumulative gas production equals almost one-third of the proved original recoverable reserves and almost one-fourth of the total original recoverable reserves.

To date, Dos Cuadras Field has produced more oil than any other field in the Pacific OCS. Over one-third of the region's cumulative oil production can be attributed to Dos Cuadras Field. Over one-half of the cumulative oil production can be attributed to just two fields, Dos Cuadras and Hondo. Dos Cuadras, Hondo, Point Arguello, and Beta Fields have contributed over three-fourths of the oil produced to date.

More gas has been produced from Hondo Field than from any other field in the region. Pitas Point Field, the only producing gas field in the Pacific OCS, currently ranks second in terms of cumulative gas production. The combined total gas production from the two fields amounts to over one-half of the cumulative gas production from the region. Hondo, Pitas Point, and Dos Cuadras Fields have produced over two-thirds of the natural gas obtained from Pacific OCS fields.

Over one-half of the oil and gas produced to date can be attributed to post-Monterey reservoirs (fig. C-5). Production from Monterey Formation reservoirs continues to increase, however, and over one-third of the oil and gas produced by December 31, 1994, has been obtained from reservoirs in the Monterey Formation.

Table C-1. Annual and cumulative production for the Pacific OCS.

Year	Annual Oil (bbl)	Cumulative Oil (bbl)	Annual Gas (Mcf)	Cumulative Gas (Mcf)
1968	2,076,160	2,076,160	1,237,180	1,237,180
1969	9,942,733	12,018,893	6,016,485	7,253,665
1970	25,035,171	37,054,064	13,757,148	21,010,813
1971	31,103,681	68,157,745	17,853,055	38,863,868
1972	22,562,566	90,720,311	12,546,915	51,410,783
1973	18,818,026	109,538,337	9,157,714	60,568,497
1974	16,784,100	126,322,437	7,234,937	67,803,434
1975	15,434,507	141,756,944	5,978,959	73,782,393
1976	13,977,436	155,734,380	5,533,258	79,315,651
1977	12,258,013	167,992,393	5,366,181	84,681,832
1978	11,979,674	179,972,067	5,193,985	89,875,817
1979	10,971,013	190,943,080	5,430,689	95,306,506
1980	10,118,614	201,061,694	5,771,792	101,078,298
1981	19,619,670	220,681,364	12,769,110	113,847,408
1982	28,471,665	249,153,029	17,814,958	131,662,366
1983	30,558,866	279,711,895	23,923,258	155,585,624
1984	30,500,506	310,212,401	45,912,435	201,498,059
1985	29,673,649	339,886,050	63,523,094	265,021,153
1986	28,779,936	368,665,986	57,989,035	323,010,188
1987	31,284,618	399,950,604	54,874,298	377,884,486
1988	31,529,776	431,480,380	49,132,759	427,017,245
1989	33,067,789	464,548,169	50,872,623	477,889,868
1990	29,885,271	494,310,184	49,950,216	527,796,524
1991	31,623,014	525,896,641	52,390,640	580,197,225
1992	42,711,426	568,610,886	55,268,116	635,258,278
1993	50,656,382	619,321,164	51,832,124	687,459,521
1994	58,244,162	677,582,722	50,892,378	738,337,427

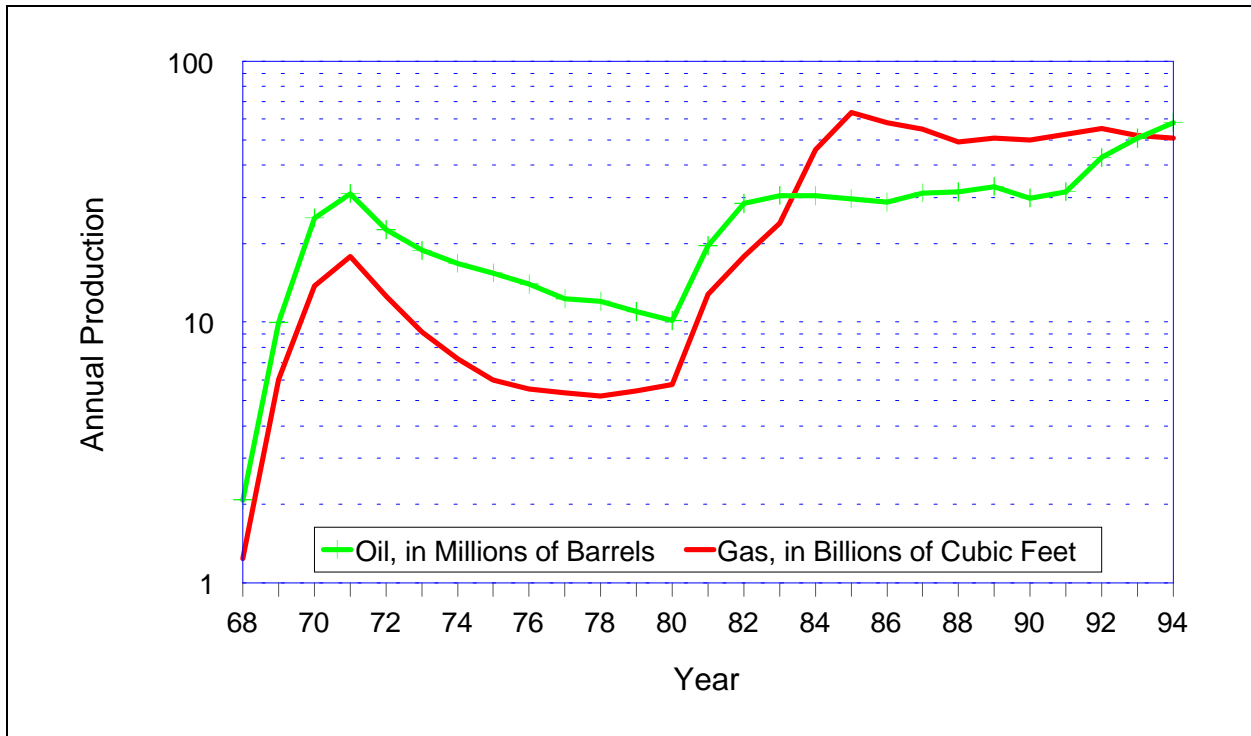


Figure C-1. Annual production for the Pacific OCS.

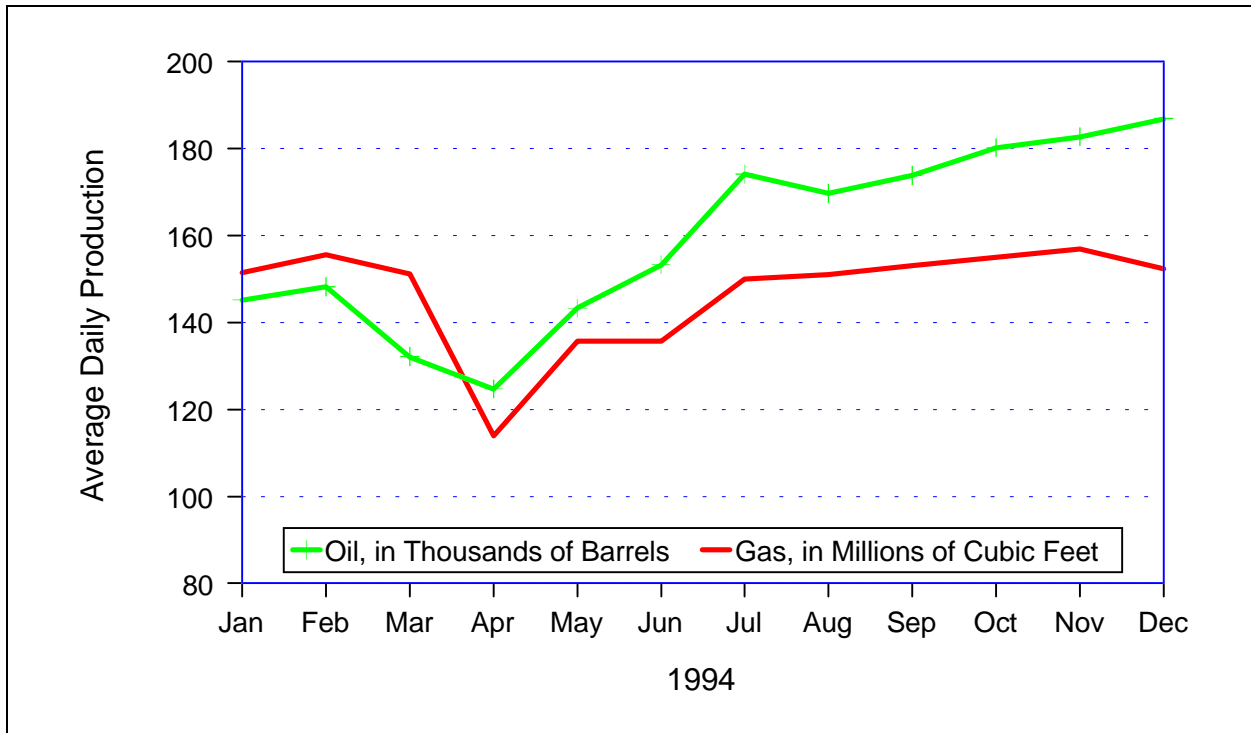


Figure C-2. Average daily production for the Pacific OCS.

Table C-2. Wells producing over 1 MMbbl of oil, Pacific OCS.

1994 Annual Production						
Field	Lease	Well	Oil (bbl)	Gas (Mcf)	Water (bbl)	Days Produced
PTARGL	P 0316	B-2	3,161,962	1,358,113	100,808	356
PTARGL	P 0315	A-3	2,966,316	1,335,074	168,078	359
PTARGL	P 0316	B-6	2,717,354	1,414,630	34,182	356
PTARGL	P 0315	A-13	2,241,759	917,229	199,852	359
PTARGL	P 0316	B-3	2,186,569	991,087	96,235	359
PTARGL	P 0315	A-7	1,683,458	679,822	285,148	361
PTARGL	P 0316	B-11	1,658,125	762,904	225,335	348
HONDO	P 0190	H-3	1,386,395	927,150	78,314	337
HONDO	P 0190	HA-1	1,366,204	415,775	225,707	325
PTARGL	P 0315	A-4	1,359,979	828,064	6,616	343
PESCDO	P 0182	HE-3	1,324,059	410,499	9,978	236
PTARGL	P 0315	A-6	1,238,136	526,120	17,669	360
PESCDO	P 0182	HE-1	1,167,057	309,386	12,651	306
PESCDO	P 0182	HE-5	1,088,874	237,279	8,350	204
PESCDO	P 0182	HE-4	1,078,292	288,645	8,378	212

Table C-3. Wells producing over 1 Bcf of gas, Pacific OCS.

1994 Annual Production						
Field	Lease	Well	Oil (bbl)	Gas (Mcf)	Water (bbl)	Days Produced
HONDO	P 0188	H-23	82,812	3,157,858	52,763	340
PITSPT	P 0234	A-19	948	2,256,552	8,508	365
HONDO	P 0188	H-12	99,882	1,693,542	27,308	343
SOCKEY	P 0205	E-4	212,280	1,491,502	407,422	333
HONDO	P 0188	H-5	83,351	1,490,807	48,655	335
PTARGL	P 0316	B-6	2,717,354	1,414,630	34,182	356
PTARGL	P 0316	B-2	3,161,962	1,358,113	100,808	356
PTARGL	P 0315	A-3	2,966,316	1,335,074	168,078	359
SOCKEY	P 0205	E-17	57	1,318,510	9,129	336
HONDO	P 0188	H-7	244,084	1,194,364	245,108	279
SOCKEY	P 0205	E-1	113,590	1,069,506	71,599	340
HONDO	P 0190	H-29	572,319	1,049,367	144,715	307

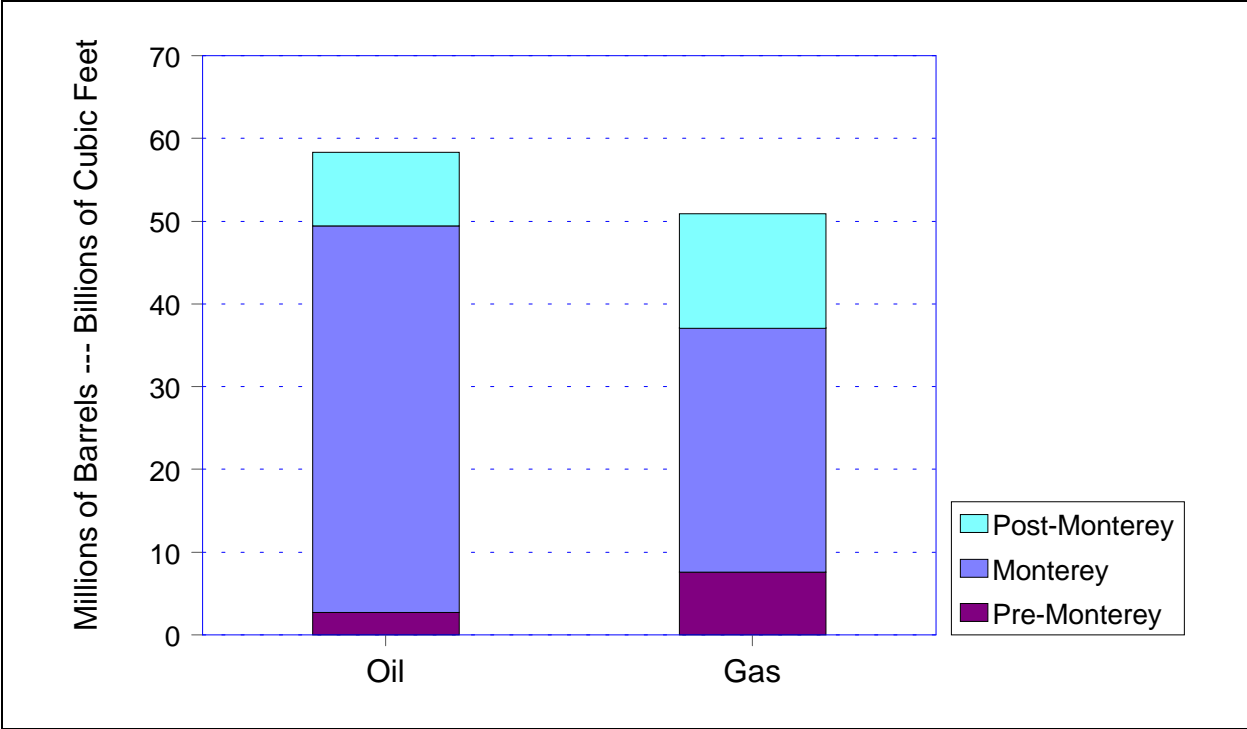


Figure C-3. Annual production of oil and gas by reservoir age group, Pacific OCS, Dec. 31, 1994.

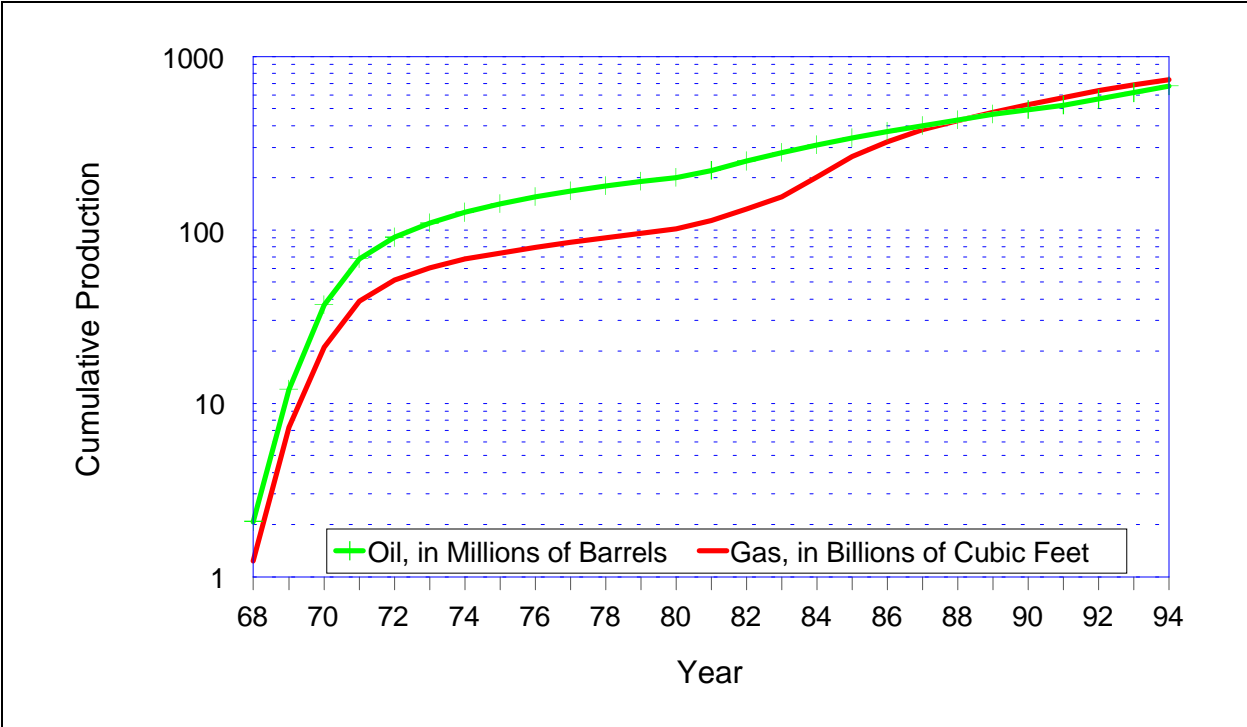


Figure C-4. Cumulative production for the Pacific OCS.

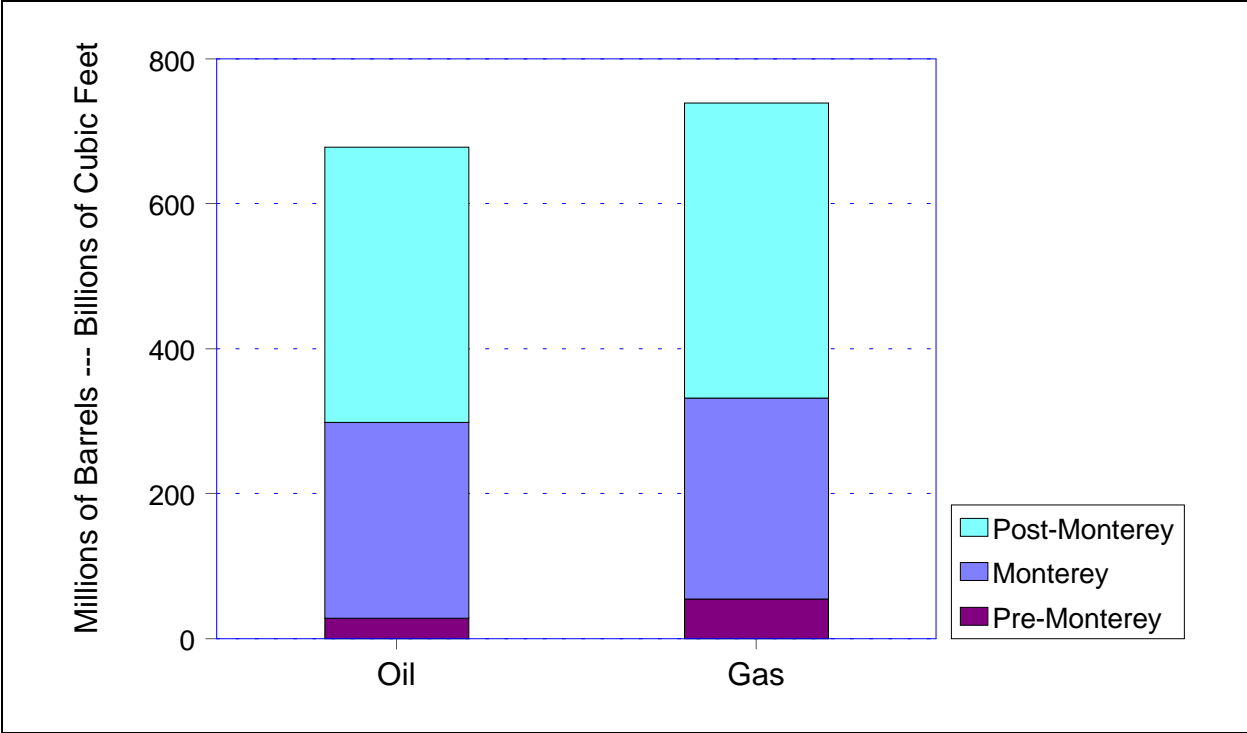


Figure C-5. Cumulative production of oil and gas by reservoir age group, Pacific OCS, Dec. 31, 1994.



The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The **MMS Royalty Management Program** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.