

MINERAL AND PETROLEUM EXPLORATION

AUSTRALIA

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 For further information about these and related statistics, contact Maureen Geer on Darwin 08 8943 2171, or Client Services in any ABS office as shown on the back cover of this publication.

NOTES

FORTHCOMING ISSUES ISSUE (Quarter) RELEASE DATE

December 1999 22 March 2000 March 2000 21 June 2000

CHANGES IN THIS ISSUE

This issue contains results of a supplementary survey, Mineral Exploration, drilling methods by state, 1998 - 99.

The publication title has changed to more accurately reflect the presence of data on both mineral and petroleum exploration expenditure.

W. McLennan

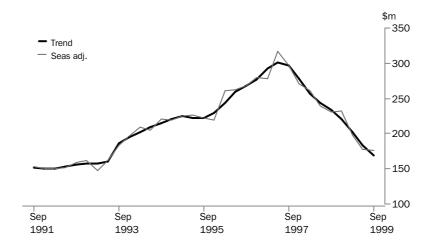
Australian Statistician

MINERAL EXPLORATION EXPENDITURE (OTHER THAN FOR PETROLEUM)

TREND ESTIMATES

The trend estimate for mineral exploration expenditure has declined for the ninth consecutive quarter, and is now at the lowest level in six years.

Between the June quarter and the September quarter 1999, the trend estimate fell \$15m to \$169m. This was 44% lower than the peak of \$302m reached in June quarter 1997.



STATES AND TERRITORIES

With the exception of the Northern Territory, the trend estimate for mineral exploration expenditure declined in all States in the September quarter 1999.

The trend estimate for the Northern Territory rose by 10% (\$2m), while the largest fall, in dollar terms, was in Western Australia where the estimate fell by 12% (\$13m).

METRES DRILLED

The trend estimate for total metres drilled for exploration fell by 9% in the September quarter. This was 31% lower than the September quarter 1998.

SEPTEMBER QUARTER

In seasonally adjusted terms, exploration expenditure for the September quarter 1999 fell 0.3% (\$1m) to \$177m.

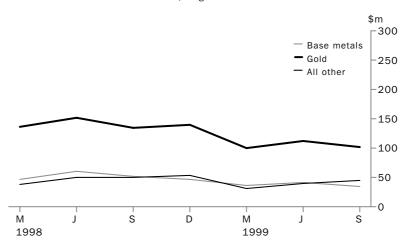
In original terms, mineral exploration expenditure reported for the September quarter was down 8% to \$180m from the June quarter 1999. This was 24% lower than the September quarter 1998. The majority of the decrease for the September quarter 1999 occurred in South Australia (down 49%) and Queensland (down 20%).

In the September quarter, exploration expenditure on production leases rose by 5% to \$44m while expenditure reported on "all other areas" fell 11% to \$136m compared to the June quarter 1999.

Exploration expenditure for gold fell by 10%, one of the contributing factors being the continued decrease in gold prices. The State with the largest decline was Western Australia, where gold exploration expenditure fell 10% to \$68m in the September quarter 1999.

There was also a decrease in the exploration expenditure for base metals (copper, silver-lead-zinc, nickel and cobalt) down 20% to \$34m in the September quarter 1999.

MINERAL EXPLORATION EXPENDITURE, Original Series



METRES DRILLED

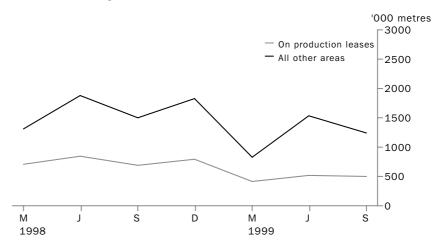
The seasonally adjusted estimate of 1.6 million metres for the September quarter 1999 was 17% lower than for the June quarter 1999 and was 20% lower than the September quarter 1998.

In original terms, the 1.7 million metres drilled reported for the September quarter was down 15% compared to the June quarter 1999 and 20% lower than the September quarter 1998.

Drilling on production leases fell 3% in the September quarter to 0.5 million metres compared to the June quarter, but was 27% lower than the September quarter 1998.

Drilling on "all other areas" was down 19% to 1.2 million metres from the June quarter and was 17% lower than the September quarter 1998.

METRES DRILLED, Original Series



PETROLEUM EXPLORATION EXPENDITURE

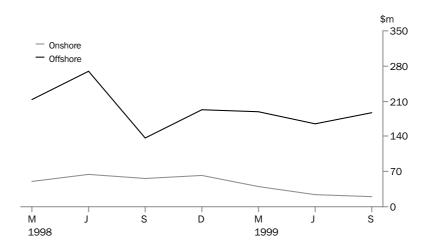
OVERVIEW

Expenditure on petroleum exploration was \$207m in the September quarter 1999, 7% (\$13m) higher than the September quarter 1998.

Total petroleum expenditure rose from the June quarter 1999 as a result of a 12% (\$20m) increase in offshore expenditure. This was 36% (\$49m) higher than the September quarter 1998.

Expenditure rose for exploration on both production leases and "all other areas" between the June and September quarters, up 10% and 8% respectively.

This increase was partly offset by a fall of 19% (\$5m) in onshore exploration expenditure for the September quarter 1999. Onshore exploration expenditure has fallen for three consecutive quarters and was 64% (\$36m) lower than the expenditure for September quarter 1998.



REGIONAL DATA

Regional data for petroleum exploration expenditure was unavailable for New South Wales, Victoria and South Australia, for the September quarter 1999.

The only two published regions to report increases in exploration expenditure were the Zone of Cooperation Area A, up \$18m, and the Northern Territory/Ashmore and Cartier Islands, up \$7m. These increases were partly offset by a fall in Western Australia of \$15m (12%).

ANNUAL SUPPLEMENTARY SURVEY

DRILLING METHOD

The drilling method with the highest reported expenditure in 1998-99 was diamond drilling. This method accounted for 42% of the total \$313m expenditure reported, although it contributed only 15% of the 8.1 million metres drilled.

The most significant drilling method in terms of metres drilled for 1998-99 was reverse circulation, contributing 35% (2.9 million metres) of the total 8.1 million metres drilled. This method accounted for 36% (\$112m) of total drilling expenditure.

Rotary air blast was the second highest method used with 26% (2.1 million metres) of the total metres drilled. However, this method accounted for only 9% of the total exploration expenditure for drilling.

PRIVATE EXPLORATION, Actual and Expected Expenditure

	MINERAL EXPLORATION		PETROLEUM ONSHORE			PETROLEUM OFFSHORE			
	Actual	Expected(a)	Actual as a proportion of expected	Actual	Expected(a)	Actual as a proportion of expected	Actual	Expected(a)	Actual as a proportion of expected
Period	\$m	\$m	%	\$m	\$m	%	\$m	\$m	%
• • • • • • • • • • • • • • • • • • • •	• • • • • •	• • • • • • •	• • • • • • • • • •	• • • • • •	• • • • • • • •	• • • • • • • • •	• • • • •	• • • • • • •	• • • • • • • •
1996-1997	1 148.6	808.9	142.0	251.9	206.2	122.2	601.0	446.6	134.6
1997-1998	1 066.8	901.3	118.4	232.3	145.0	160.2	748.9	773.7	96.8
1998-1999	837.8	602.9	138.9	182.3	144.2	126.4	685.4	540.1	126.9
6 months ended June 1998	483.1	387.6	124.6	115.0	61.7	186.6	483.5	427.9	113.0
6 months ended December 1998	475.5	299.5	158.7	117.5	71.6	164.2	330.7	246.5	134.1
6 months ended June 1999	362.3	303.4	119.4	64.8	72.6	89.2	354.8	293.6	120.8
6 months ended December 1999	n.y.a.	252.8	n.y.a.	n.y.a.	86.0	n.y.a.	n.y.a.	241.8	n.y.a.

n.y.a. not yet available

⁽a) As reported in previous collections. Refer to Explanatory Notes paragraph 13.



EXPENDIT	URE				METRES DRILLED				
On production leases	On all other areas	Total	Seasonally adjusted	Trend estimate	On production leases	On all other areas	Total	Seasonally adjusted	Trend estimate
\$m	\$m	\$m	\$m	\$m	'000 m	'000 m	'000 m	'000 m	'000 m
• • • • • • •			• • • • • • •	• • • • • • • •				• • • • • • •	
306.1 253.2 199.1	842.4 813.6 638.7	1 148.6 1 066.8 837.8	· · · · · · · · · · · · · · · · · · ·		4 453 3 365 2 404	8 378 7 843 5 697	12 831 11 209 8 101		
64.6	217.4	282.0	270.9	278.2	751	2 127	2 878	2 821	2 893
52.0	168.4	220.4	260.6	256.0	699	1 308	2 007	2 494	2 553
53.3	209.3	262.6	239.2	243.5	843	1 885	2 728	2 528	2 392
51.5	184.3	235.9	230.7	234.0	690	1 494	2 183	1 984	2 280
60.0	179.7	239.6	231.5	220.0	786	1 833	2 619	2 582	2 123
46.0 41.7 43.8	121.3 153.3 136.2	167.3 195.0 180.1	197.8 177.1 176.6	202.0 183.9 169.2	412 517 504	835 1 534 1 239	1 247 2 051 1 743	1 549 1 896 1 582	1 928 1 744 1 580
	On production leases \$m 306.1 253.2 199.1 64.6 52.0 53.3 51.5 60.0 46.0 41.7	On On all production other leases areas \$m	On production leases On all other areas Total \$m \$m \$m 306.1 842.4 1 148.6 253.2 813.6 1 066.8 199.1 638.7 837.8 64.6 217.4 282.0 52.0 168.4 220.4 53.3 209.3 262.6 51.5 184.3 235.9 60.0 179.7 239.6 46.0 121.3 167.3 41.7 153.3 195.0	On production production leases On all production other areas Seasonally adjusted \$m \$m \$m 306.1 842.4 1 148.6 253.2 813.6 1 066.8 199.1 638.7 837.8 64.6 217.4 282.0 270.9 52.0 168.4 220.4 260.6 53.3 209.3 262.6 239.2 51.5 184.3 235.9 230.7 60.0 179.7 239.6 231.5 46.0 121.3 167.3 197.8 41.7 153.3 195.0 177.1	production leases other areas Seasonally adjusted Trend estimate \$m \$m \$m \$m \$m 306.1 842.4 1 148.6 253.2 813.6 1 066.8 199.1 638.7 837.8 64.6 217.4 282.0 270.9 278.2 52.0 168.4 220.4 260.6 256.0 53.3 209.3 262.6 239.2 243.5 51.5 184.3 235.9 230.7 234.0 60.0 179.7 239.6 231.5 220.0 46.0 121.3 167.3 197.8 202.0 41.7 153.3 195.0 177.1 183.9	On production production leases On all areas Seasonally adjusted Trend estimate On production production leases \$m \$m \$m \$m \$m 000 m 306.1 842.4 1 148.6 4 453 3 365 253.2 813.6 1 066.8 3 365 199.1 638.7 837.8 2 404 64.6 217.4 282.0 270.9 278.2 751 52.0 168.4 220.4 260.6 256.0 699 53.3 209.3 262.6 239.2 243.5 843 51.5 184.3 235.9 230.7 234.0 690 60.0 179.7 239.6 231.5 220.0 786 46.0 121.3 167.3 197.8 202.0 412 41.7 153.3 195.0 177.1 183.9 517	On production leases On all production other leases Seasonally adjusted Trend estimate On production other leases On all production other areas \$m \$m \$m \$m \$m \$m 000 m 000 m 000 m 306.1 842.4 1 148.6 4 453 8 378 253.2 813.6 1 066.8 3 365 7 843 199.1 638.7 837.8 2 404 5 697 64.6 217.4 282.0 270.9 278.2 751 2 127 52.0 168.4 220.4 260.6 256.0 699 1 308 53.3 209.3 262.6 239.2 243.5 843 1 885 51.5 184.3 235.9 230.7 234.0 690 1 494 60.0 179.7 239.6 231.5 220.0 786 1 833 46.0 121.3 167.3 197.8 202.0 412 <t< td=""><td>On production leases On all other leases Seasonally adjusted estimate Trend estimate On production other leases On other areas Total \$m \$m</td><td>On production production leases On all other areas Total Seasonally adjusted estimate Trend production other leases On other areas Total adjusted adjusted \$m \$m</td></t<>	On production leases On all other leases Seasonally adjusted estimate Trend estimate On production other leases On other areas Total \$m \$m	On production production leases On all other areas Total Seasonally adjusted estimate Trend production other leases On other areas Total adjusted adjusted \$m \$m

	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Northern Territory	Australia
Period	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
• • • • • • • • • •	• • • • • • •	• • • • • • • •	C	RIGINAL	• • • • • • • •	• • • • • • • •	• • • • • • • •	• • • • • • • •
1996-1997	94.1	51.8	160.7	35.1	691.7	26.0	88.9	1 148.6
1997-1998	88.2	43.1	133.2	45.0	660.4	20.7	75.9	1 066.8
1998-1999	65.6	37.0	93.8	41.9	523.1	11.9	64.5	837.8
1997								
December	26.1	13.4	41.7	11.4	162.3	3.8	23.4	282.0
1998								
March	20.8	10.6	21.5	9.2	142.0	3.7	12.6	220.4
June	18.0	9.6	28.2	12.0	173.4	3.5	17.8	262.6
September	14.2	9.0	22.2	12.6	154.1	2.4	21.2	235.9
December	18.4	11.0	25.0	8.9	157.3	3.0	16.0	239.6
1999								
March	15.6	10.3	20.2	7.6	102.3	3.8	7.6	167.3
June	17.4	6.7	26.4	12.8	109.4	2.6	19.6	195.0
September	14.6	8.2	21.0	6.5	107.9	2.7	19.2	180.1
• • • • • • • • • • • •	• • • • • • •	• • • • • • • •	SEASON	ALLY ADJUS	STED	• • • • • • • •	• • • • • • • •	• • • • • • • • •
1997								
December	25.9	11.9	37.3	10.8	159.9	3.8	21.3	270.9
1998								
March	21.9	11.2	27.7	11.3	166.2	3.8	18.5	260.6
June	16.3	9.8	25.4	10.2	157.9	3.1	16.5	239.2
September	15.3	9.6	22.2	13.2	149.1	2.7	18.6	230.7
December	18.2	9.7	22.5	8.5	155.1	3.0	14.5	231.5
1999								
March	16.5	10.9	25.9	9.4	119.9	4.0	11.2	197.8
June	15.7	6.8	23.7	10.8	99.5	2.4	18.2	177.1
September	15.7	8.7	21.1	6.8	104.5	3.0	16.8	176.6
• • • • • • • • • • • • • • • • • • • •	• • • • • • • •	• • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • •	• • • • • • • •	• • • • • • • • •	• • • • • • • •	• • • • • • • • •
400=				TREND				
1997								
December	24.7	11.4	36.0	11.6	168.7	6.1	19.7	278.2
1998	0.1.1	40.0			400.0	o =	40.0	
March	21.1	10.8	29.8	11.1	160.6	3.7	18.9	256.0
June	17.8	10.2	24.7	11.2	158.9	2.7	18.0	243.5
September	16.2	9.9	22.8	10.9	155.0	3.0	16.2	234.0
December	16.5	9.8	23.4	10.3	142.2	3.1	14.7	220.0
1999	40.0	0.4	04.0	0.0	1010	0.0	444	202.5
March	16.6	9.4	24.0	9.6	124.8	3.2	14.4	202.0
June	16.1	8.6	23.6	9.0	108.1	3.0	15.5	183.9
September	15.6	8.0	22.5	8.5	94.8	2.8	17.0	169.2
• • • • • • • • • • •	• • • • • • • •		• • • • • • • • • •	• • • • • • • •	• • • • • • • • •	• • • • • • • •	• • • • • • • •	• • • • • • • • •

MINERAL EXPLORATION (other than for Petroleum), Expenditure by Mineral Sought

	Copper, silver-lead- zinc, nickel and cobalt	Gold	Iron ore	Mineral sands	Tin, tungsten, scheelite and wolfram	Uranium	Coal	Construction materials	Diamonds	Other	Total
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
• • • • • • • • • • • • • • •	• • • • • • • •	• • • • • •	• • • • • • •	• • • • • • •			• • • • • •	• • • • • • • • •	• • • • • • •	• • • • • •	• • • • • • •
SEPTEMBER QUARTER 1999											
New South Wales	5.9	3.6	_	0.7	_	_	4.2	_	_	0.2	14.6
Victoria	n.p.	6.8	_	1.1	_	_	n.p.	_	_	_	8.2
Queensland	8.0	6.7	_	n.p.	_	n.p.	5.2	0.1	_	0.3	21.0
South Australia	2.1	3.2	_	n.p.	_	n.p.	_	_	0.1	0.5	6.5
Western Australia	16.1	67.9	8.8	1.9	_	0.5	_	_	10.6	2.0	107.9
Tasmania	0.9	0.5	_	_	_	_	n.p.	_	_	n.p.	2.7
Northern Territory	n.p.	12.9	_	_	_	3.8	_	_	1.3	n.p.	19.2
Australia	33.7	101.5	8.8	4.5	_	4.8	9.5	0.1	12.2	5.0	180.1
• • • • • • • • • • • • • • •	• • • • • • • •	• • • • • •	• • • • • • •	• • • • • •	AUSTRALIA	• • • • • • •	• • • • •	• • • • • • • • •	• • • • • • •	• • • • • •	• • • • • • •
					AUSTRALIA	ı					
1996-1997	206.8	728.3	25.8	13.9	0.6	13.0	70.5	0.9	59.3	29.4	1 148.6
1997-1998	227.1	648.4	30.0	14.0	0.1	22.2	64.8	1.1	42.8	16.3	1 066.8
1998–1999	176.9	486.1	41.5	19.0	0.2	15.4	39.9	0.7	40.9	17.2	837.8
December 1997	62.7	163.9	6.3	2.9	0.1	6.2	21.3	0.3	13.1	5.3	282.0
March 1998	45.9	136.1	7.1	3.5	n.p.	5.1	12.5	n.p.	7.4	n.p.	220.4
June 1998	60.9	151.7	12.6	4.5	n.p.	6.0	11.9	n.p.	9.9	5.1	262.6
September 1998	52.0	134.3	12.6	3.6	n.p.	7.4	9.6	n.p.	13.1	3.0	235.9
December 1998	46.4	139.8	13.7	5.8	—	3.6	9.4	0.2	15.3	5.5	239.6
March 1999	36.5	99.4	7.2	4.6	n.p.	1.4	9.8	n.p.	3.6	4.7	167.3
June 1999	42.0	112.7	8.1	5.0	n.p.	3.1	11.1	n.p.	9.0	3.9	195.0
September 1999	33.7	101.5	8.8	4.5	п.р.	4.8	9.5	0.1	12.2	5.0	180.1
21,1333. 2000	n.p. not publ		3.5				0.0	0.2		3.3	200.2

PETROLEUM EXPLORATION EXPENDITURE

	ONSHORE			OFFSHO	OFFSHORE			TOTAL EXPENDITURE		
	Drilling	Other	Total	Drilling	Other	Total	On production leases	On all other leases	Total	
Period	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	
• • • • • • • • • • • •	• • • • • • •	• • • • • •	• • • • • • • • •	• • • • • • • •	• • • • • • •	• • • • • • • •	• • • • • • • • • •	• • • • • • •	• • • • • •	
1996-1997	179.6	72.3	251.9	412.0	189.1	601.0	137.7	715.3	853.0	
1997-1998	174.1	58.2	232.3	501.2	247.6	748.9	68.8	912.4	981.2	
1998-1999	111.7	70.5	182.3	428.5	257.0	685.4	105.6	762.1	867.7	
1997										
December	48.0	15.6	63.6	90.1	84.8	174.9	8.2	230.3	238.5	
1998										
March	38.4	11.9	50.3	139.4	74.6	214.0	22.5	241.8	264.3	
June	49.2	15.5	64.8	207.5	62.0	269.5	27.3	306.9	334.2	
September	34.3	21.7	56.0	81.6	55.7	137.3	24.3	169.0	193.3	
December	44.7	16.9	61.6	123.0	70.4	193.3	35.1	219.8	254.9	
1999										
March	20.8	18.9	39.7	127.0	61.8	188.9	24.6	203.9	228.5	
June	12.0	13.1	25.1	96.9	69.0	165.9	21.6	169.4	191.0	
September	10.9	9.5	20.3	113.2	72.9	186.1	23.8	182.6	206.5	



PETROLEUM EXPLORATION, By Region

	New South Wales	Victoria	Queensland	South Australia	Western Australia(a)	Tasmania	Northern Territory/ Ashmore and Cartier Islands	Zone of Cooperation Area A(b)	Total
Period	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
• • • • • • • • • • • •	• • • • • • •	• • • • • • • •	• • • • • • • • •	• • • • • • • •	• • • • • • • • •	• • • • • • •	• • • • • • • • • • • •	• • • • • • • • •	• • • • •
1996-1997	n.p.	45.8	134.5	n.p.	444.1	n.p.	41.5	72.5	853.0
1997-1998	0.2	34.5	107.1	n.p.	464.0	n.p.	n.p.	61.9	981.2
1998-1999	0.1	32.6	65.9	n.p.	530.8	n.p.	132.0	32.3	867.7
1997									
December	n.p.	8.3	29.0	n.p.	106.9	n.p.	28.0	45.7	238.5
1998									
March	0.1	10.4	11.9	n.p.	165.0	n.p.	n.p.	n.p.	264.3
June	n.p.	9.9	19.8	n.p.	145.2	n.p.	n.p.	n.p.	334.2
September	n.p.	4.0	17.2	n.p.	90.9	n.p.	n.p.	n.p.	193.3
December	n.p.	n.p.	19.1	n.p.	148.5	n.p.	36.7	n.p.	254.9
1999									
March	n.p.	15.6	15.3	11.1	164.1	n.p.	17.9	4.3	228.5
June	n.p.	7.2	14.3	n.p.	127.2	n.p.	35.2	8.0	191.0
September	n.p.	n.p.	11.0	n.p.	112.0	0.2	42.4	18.5	206.5

n.p. not available for publication

[—] nil or rounded to zero, including null cells

⁽a) Includes expenditure on Western Australian leases in the Zone of (b) Refer to Explanatory Notes paragraph 14. Cooperation Area B.

${\tt MINERAL\ EXPLORATION,\ Drilling\ Methods\ By\ State,\ 1998-1999}$

Drilling method	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Northern Territory	Australia		
• • • • • • • • • • • • • •	EXPENDITURE (\$ million)									
Diamond	17.5	n.p.	11.4	n.p.	86.4	n.p.	4.8	131.2		
Reverse Circulation	n.p.	n.p.	8.8	2.1	84.3	n.p.	n.p.	111.9		
Percussion	1.8	n.p.	2.8	n.p.	n.p.	n.p.	n.p.	9.0		
Rotary Air Blast	n.p.	n.p.	5.6	1.0	16.9	_	2.7	27.1		
Air Core/Vacuum	n.p.	n.p.	n.p.	n.p.	23.1	_	n.p.	31.1		
Other	n.p.	_	n.p.	n.p.	n.p.	_	n.p.	2.8		
Total	26.2	n.p.	30.2	9.6	216.5	n.p.	16.9	313.0		
• • • • • • • • • • • • • • • • • • • •	• • • • • • •	• • • • • • • •	• • • • • • • • • • • • •	• • • • • • • • • •	• • • • • • • • • • • • •	• • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • •		
			METRE	ES DRILLED ('00	00 m)					
Diamond	162	n.p.	119	38	789	n.p.	51	1 227		
Reverse Circulation	n.p.	n.p.	215	69	2 059	n.p.	n.p.	2 862		
Percussion	n.p.	n.p.	45	n.p.	n.p.	n.p.	n.p.	270		
Rotary Air Blast	61	n.p.	238	90	1 512	_	n.p.	2 137		
Air Core/Vacuum	n.p.	n.p.	n.p.	n.p.	1 236	_	37	1 588		
Other	n.p.	_	n.p.	n.p.	n.p.	_	n.p.	51		
Total	524	n.p.	661	305	5 759	n.p.	544	8 134		

EXPLANATORY NOTES

INTRODUCTION

1 This publication contains annual and quarterly statistics of private sector exploration for minerals (other than oil shale) and petroleum in Australia.

SOURCE

2 Data are collected and compiled from exploration censuses conducted by the Australian Bureau of Statistics (ABS).

SCOPE AND COVERAGE

3 All exploration activity is included, regardless of the main activity of the explorer. Details of exploration are collected from all private enterprises known to be engaged in exploration, in Australia (including Australian waters) and incurring expenditure of more than \$20,000 per year.

SEASONAL ADJUSTMENT

- **4** Seasonal adjustment is a means of removing the estimated effects of normal seasonal variation from the series so that the effects of other influences can be more clearly recognised.
- **5** Seasonal adjustment does not remove from the series the effect of irregular or non-seasonal influences. Particular care should be taken in interpreting quarterly movements in the adjusted figures in this publication.
- **6** Irregular influences that are highly volatile can make it difficult to interpret the series even after adjustment for seasonal variation.
- **7** Seasonal factors are reviewed and revised annually to take account of each additional year's original data. The nature of the seasonal adjustment process is such that the magnitude of some revisions resulting from the re-analysis may be quite significant, especially for data for more recent quarters. For this reason, additional care should be exercised when interpreting movements in seasonally adjusted data for recent quarters.

TREND ESTIMATES

8 The trend estimates are derived by applying a 7-term Henderson moving average to the seasonally adjusted series. The 7-term Henderson average (like all Henderson averages) is symmetric but, as the end of a time series is approached, asymmetric forms of the average are applied. Unlike the weights of the standard 7-term Henderson moving average, the weights employed here have been tailored to suit particular characteristics of the individual series. While the asymmetric weights enable trend estimates for recent quarters to be produced, it does result in revisions to the estimates for the most recent three quarters as additional observations become available. There may also be revisions because of changes in the original data and as a result of the re-estimation of the seasonal factors. For further information, see *Information Paper: A Guide to Interpreting Time Series* —*Monitoring Trends, an Overview* (Cat. no. 1348.0) or contact the Assistant Director, Time Series Analysis on Canberra (02) 6252 6345.

CLASSIFICATIONS

- **9** The following categories are used:
- Production lease/Other, where a production lease is an area on which production or development is actually taking place.
- Onshore/Offshore, where offshore includes all operations in a marine area under the *Petroleum (Submerged Lands) Act 1967* or under any Acts administered by State and Territory Governments.
- Drilling/Other, where *drilling expenditure* includes cost of access (roads, vessel hire, etc.) to the drilling site and site preparation etc., and *other expenditure* includes costs of surveys, report writing, map preparation and all other activities attributable to exploration.

EXPLANATORY NOTES

DEFINITIONS

MINERALS 10 In the broad sense these comprise metallic minerals, construction materials, gemstones, other non-metallic minerals and petroleum (oil or gas).

11 This includes the search for new ore occurrences or undiscovered oil or gas, and/or appraisal intended to delineate or greatly extend the limits of known deposits of minerals or oil or gas reservoirs by geological, geophysical, geochemical, drilling or other methods. This includes construction of shafts and adits primarily for exploration purposes but excludes activity of a developmental or production nature. Exploration for water is excluded.

EXPLORATION EXPENDITURE 12 This covers all expenditure on exploration activity in Australia. It includes expenditure on aerial surveys (including Landsat photographs), general surveys, report writing, map preparation and other activities indirectly attributable to exploration. Cash bids for offshore petroleum exploration permits are also included.

EXPECTED EXPENDITURE 13 This refers to expected expenditure on exploration as reported by private enterprise explorers who were included in the previous census. Events such as new discoveries, unexpected weather conditions, government policy changes and unforeseen changes in economic conditions may cause actual expenditures to differ from those previously expected. The differences between actual and expected expenditure can be seen in table 1.

ZONE OF COOPERATION (ZOC)

14 Is an agreement between Australia and the Republic of Indonesia on an area between the Indonesian Province of East Timor and Northern Australia. The ZOC is divided into three areas: A, B and C. Area A is controlled by a joint authority and all petroleum operations in this area are carried out through production sharing contracts. Area B is controlled by Australian authorities but the Republic of Indonesia must be notified of any changes to tenements in the area and be paid 10% of gross Resource Rent Tax collected by Australia from corporations producing petroleum. Area C is controlled by the Republic of Indonesia but Australia must be notified of any changes to tenements in the area and be paid 10% of Contractors Income Tax collected by the Republic of Indonesia from corporations producing petroleum.

ASHMORE AND CARTIER ISLANDS

15 Tenements in the Ashmore and Cartier Islands are administered by the Northern Territory Department of Mines and Energy. Therefore all petroleum exploration expenditure in this area has been included with Northern Territory data.

DRILLING METHODS 16 A supplementary collection was also conducted during 1998-99 to collect information on exploration drilling for minerals in Australia, by drilling method. Unpublished data is also available, as a special data request, for expenditure and metres drilled by drilling methods used on production leases and other areas, as defined in paragraph 9 of these notes.

EXPLANATORY NOTES

DRILLING METHODS continued 17 Data were collected for the following drilling methods:

Diamond drilling uses rotary action combined with a diamond impregnated drill bit to produce a solid cylindrical sample called drill core.

Reverse Circulation drilling uses a combination of separate percussive and rotational action. Reverse Circulation drilling differs from percussion drilling in that the drill cuttings are removed by compressed air up an inner tube in the drilling rods (instead of outside the rods) to improve sample quality.

Percussion drilling uses a combination of separate percussive and rotational actions. Compressed air is used to remove drill cuttings outside of the drill rods.

Rotary Air Blast (RAB) drilling generally uses rotational action with a blade bit to reach bedrock using compressed air to remove drill cuttings.

Aircore/Vacuum drilling is a rotary system whereby drill cuttings are drawn up through the centre of the drill rod or rods by vacuum or compressed air which is kept within the drill stem itself and does not exit at the face of the bit.

RELATED PUBLICATIONS

- **18** Users may also wish to refer to the following priced publications which are available on request:
- Australian Business Expectations (Cat. no. 5250.0)
- Australian Mining Industry 1996-97 (Cat. no. 8414.0)
- Mining, Electricity and Gas Operations, Australia, Preliminary (Cat. no. 8401.0)
- Mining Operations, Australia 1997-98 (Cat. no. 8415.0)
- Private New Capital Expenditure and Expected Expenditure, Australia (Cat. no. 5625.0)
- **19** Current publications produced by the ABS are listed in the *Catalogue of* Publications and Products (Cat. no. 1101.0). The ABS also issues, on Tuesdays and Fridays, a Release Advice (Cat. no.1105.0) which lists publications to be released in the next few days. The Catalogue and Release Advice are available from any ABS office.
- 20 Publications showing the details of wells and metres drilled in petroleum exploration are available from the Petroleum Resources Program of the Australian Geological Survey Organisation.

EFFECTS OF ROUNDING

21 Where figures have been rounded, discrepancies may occur between the sums of the component items and their totals.

SYMBOLS AND OTHER USAGES

- not available n.a.
- n.p. not available for publication but included in totals where applicable
- n.y.a. not yet available
- figure or series revised since previous issue
- not applicable
- nil or rounded to zero

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