

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPT.BK.NO. 85/43
THE OPAL INDUSTRY IN SOUTH
AUSTRALIA REPORT NO. 7.
THE 1984 SURVEY OF MINING
EQUIPMENT AND CALCULATION OF
VALUE OF OPAL PRODUCED.

GEOLOGICAL SURVEY

by

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THE OPAL INDUSTRY IN SOUTH AUSTRALIA REPORT NO. 7
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OF VALUE OF OPAL PRODUCED

SUMMARY

Following the 1984 surveys of opal mining activity in South Australia, trends in the industry were:

- a decrease in the overall value of production of \$1.56 million from the previous year, representing a fall of 5.0%.
- a marked decline in the value of production from Coober Pedy of \$4.86 million (22.9%) compared to the previous year.
- increases in production over that of 1983 from both Andamooka and Mintabie of \$1.38 million (51.9%) and \$1.92 million (26.5%) respectively.
- a decrease in the overall number of registered PSCs, with Mintabie going against the trend increasing by 37 (27.4%) over 1983.
- an overall decrease in the estimated number of miners, all of which occurred at Coober Pedy as both Andamooka and Mintabie showed increased numbers.
- a marginal decrease in capital investment at Coober Pedy with increases at both Andamooka and Mintabie.

Table I summarises the survey results during 1984 compared with 1983.

Table II lists the major equipment surveyed, as a guide to the level of mining activity.

TABLE I
THE OPAL INDUSTRY IN SOUTH AUSTRALIA
1984 COMPARED WITH 1983

	<u>1984</u>	<u>1983</u>
<u>Registered PSCs (av)</u>		
Coober Pedy	547	669
Andamooka	195	206
Mintabie	172	135
	<u>914</u>	<u>1 010</u>
<u>Capital Investment (av)</u>		
Coober Pedy	\$16.146 m	\$16.236 m
Andamooka	\$ 4.587 m	\$ 3.823 m
Mintabie	\$ 7.213 m	\$ 4.607 m
Stuart Creek	\$ 0.177 m	-
	<u>\$28.123 m</u>	<u>\$24.666 m</u>
<u>Operating Costs (av)</u>		
Coober Pedy	\$ 3.535 m	\$ 3.756 m
Andamooka	\$ 0.996 m	\$ 0.846 m
Mintabie	\$ 1.395 m	\$ 0.927 m
Stuart Creek	\$ 0.014 m	-
	<u>\$ 5.940 m</u>	<u>\$ 5.529 m</u>
<u>Number of Miners (av)</u>		
Coober Pedy	475	650
Andamooka	105	60
Mintabie	163	135
	<u>743</u>	<u>845</u>
<u>Estimated Value of Production (\$ million)</u>		
Coober Pedy	\$16.38	\$21.24
Andamooka	\$ 4.04	\$ 2.66
Mintabie	\$ 9.17	\$ 7.25
	<u>\$29.59</u>	<u>\$31.15</u>

TABLE II
MAJOR EQUIPMENT

	<u>Coober Pedy</u>		<u>Andamooka</u>		<u>Mintabie</u>	
	<u>1984</u>	<u>1983</u>	<u>1984</u>	<u>1983</u>	<u>1984</u>	<u>1983</u>
	<u>Oct</u>	<u>Sept</u>	<u>Oct</u>	<u>Sept</u>	<u>Oct</u>	<u>Sept</u>
Bulldozers						
D8-D9	12	15	6	3	17	9
D7 - Smaller	11	12	14	15	1	3
Blowers	165	175	6	4	17	15
Backhoes	11	16	3	4	1	2
Tunnelling Machines	41	35	-	-	17	-
Noodling Machines	13	13	6	5	-	-
Drills						
Calweld	26	27	2	2	3	2
MK 10	10	25	1	1	11	6
Yorke Hoists	19	25	15	12	25	15
Self Dumpers	4	10	17	17	2	-

INTRODUCTION

Surveys of all mining equipment on opal fields in South Australia began in 1978, and are now conducted annually in an attempt to determine

- value of opal produced
- level of mining activity
- population movements

Previous surveys are reported as follows

- 1978 - Crettenden et al., (1982)
- 1979 - Crettenden and Flintoft, (1980)
- 1980 - Atterton and Barnes, (1981)
- 1981 - Barnes and Atterton, (1982)
- 1982 - Barnes and Wildy, (1982)
- 1983 - Wildy and Barnes, (1985)

PROCEDURE

The following Departmental officers conducted equipment surveys during 1984.

JUNE

COOBER PEDY

P.P. Crettenden (Technical Assistant, Mineral Resources)

ANDAMOOKA - STUART CREEK

J.G. Olliver (Chief Geologist, Mineral Resources)

L.C. Barnes (Principal Geologist, Mineral Resources)

D. Dodson (Commodity Specialist, Bureau of Mineral Resources, Canberra)

I. Kimber (Area Officer)

MINTABIE

J.G. Olliver

L.C. Barnes

D. Dodson

J. Boland (Area Officer)

OCTOBER

COOPER PEDY

R.L. Wildy (Chief Geologist, Mineral Development and Economics)

M.W. Flintoft (Technical Assistant, Mineral Resources)

S. Smart (Inspector of Opal Fields)

ANDAMOOKA

D.C. Scott (Senior Geologist, Mineral Resources)

I.J. Townsend (Senior Geologist, Mineral Resources)

I. Kimber

MINTABIE

S. Sigler (Area Officer)

RESULTS OF THE 1984 SURVEYS

Detailed results of the equipment counts are tabulated in Appendix A.

Capital Investment

Unit costs of mining equipment are shown in Appendix B. Total capital investment in mining equipment at each centre is shown in Table III.

TABLE III
CAPITAL INVESTMENT 1984 (\$ million)

	<u>June</u>	<u>October</u>	<u>Average</u>
Coober Pedy	17.645	14.647	16.146
Andamooka	4.217	4.957	4.587
Mintabie	6.407	8.019	7.213
Stuart Creek	0.150	0.204	0.177
	<u>28.419</u>	<u>27.827</u>	<u>28.123</u>

Average value of investment in equipment is thus \$28.12 million, showing an increase of \$3.46 million over that of 1983.

This was due mainly to increases of \$2.61 million and \$0.76 million at Mintabie and Andamooka respectively which were apparent in the latter part of the year. This was particularly so at Mintabie where 17 tunnelling machines were present during the October survey. It should also be noted that the value of capital investment decreased by some \$3 million at Coober Pedy between June and October which is a reversal of the normal trend. This reflects the relocation of equipment away from Coober Pedy to Mintabie, and to a lesser extent to Andamooka.

Annual Operating Costs

Total annual operating costs of mining equipment are derived by multiplying annual operating cost of each unit (shown in Appendix B) by numbers counted.

These figures are summarised in Table IV.

TABLE IV
ANNUAL OPERATING COSTS 1984 (\$ million)

	<u>June</u>	<u>October</u>	<u>Average</u>
Coober Pedy	3.597	3.472	3.535
Andamooka	0.925	1.067	0.996
Mintabie	1.278	1.512	1.395
Stuart Creek	0.009	0.019	0.014
	<u>5.809</u>	<u>6.070</u>	<u>5.940</u>

The increase from \$5.529 million in 1983 to \$5.940 million is directly related to the increased amount of equipment being used.

Some anomalies have been found in the listed operating costs and these will be reviewed for 1985.

Large Diameter Prospecting Drills

Total for all fields remains at 30, with 26 of them at Coober Pedy and 2 at both Mintabie and Andamooka.

MINING ACTIVITY

During 1984, the total number of registered PSCs averaged over all fields showed a decrease of 96 compared to that of 1983.

Coober Pedy showed a major reduction of 122 while Andamooka had 11 fewer than the previous year.

Mintabie, on the other hand, showed an increase of 37 over that of 1983.

The large reduction at Coober Pedy was reflected in the number of miners estimated to have been active during the year, with 175 fewer than previously. This drop in mining activity was reflected in the considerably reduced value of production from Coober Pedy, compared to the previous year (vide p.8).

The estimated number of active miners for Andamooka and Mintabie however, showed increases of 45 and 28 respectively, reflecting the increased production from these two fields.

Coober Pedy

PSCs were registered on 39 of the main fields including some on fields that have not been worked for many years, for example, "Crater".

- . Southern Cross - remains one of the most active fields at Coober Pedy and was in fact the most active in early 1985. Registered PSCs increased from 54 in June 1984 to 70 in October 1984 with corresponding increases in equipment levels, from 12 to 14 blowers and from 5 to 8 tunnelling machines.

- . Olympic - with a maximum of 93 PSCs recorded during the June survey and 33 blowers reducing to 29 in October, this field has shown a marked reduction in activity compared to 1983.
- . Hans Peak - showed a reduction of from 65 to 60 registered PSCs between the June and October surveys and from 13 to 9 blowers during this time. Represents a marked downturn in activity compared to that of 1983.
- . Browns Folly - once again a fall off in activity compared to the previous year with no equipment being recorded on the field and only 3 registered PSCs remaining in October 1984.
- . Emu Flat - again a fall off in activity with an average of only 18 registered PSCs and 2 blowers active during the year.
- . Greek Gully - with 59 registered PSCs, 17 blowers and 5 tunnelling machines at the time of the June survey this field was showing healthy activity continuing from 1983. However, this had declined dramatically by the October survey with only 41 PSCs, 9 blowers and 1 tunnelling machine remaining
- . Geraghty Hill - similarly this field which declined from 16 to 10 registered PSCs and from 3 to 2 blowers between the 1984 surveys.
- . 14 mile - this field remains one of the more active with an average of 48 registered PSCs, 17 blowers and 3 to 4 tunnelling machines.

- . 17 mile - a similarly active field, but on a smaller scale, with some 18 registered PSCs which showed increased activity between surveys with blowers increasing from 4 to 9 and tunnelling machines from 1 to 3.
- . Lennon - an active field maintaining some 40 plus registered PSCs which showed increased activity between surveys with blowers increasing from 11 to 20 and tunnelling machines from 1 to 5.

Andamooka

The average number of registered PSCs decreased marginally from that of the previous year by 11, from 206 to 195.

Although these claims are spread over 14 fields, most activity was confined to the usual areas including Tea Tree Flat, White Dam, Lunatic Hill, German Gully and Gun Gully.

Stuart Creek

One PSC was registered for a short time while some exploratory work was carried out. However, this was not proceeded with and the two miners returned to Andamooka.

Mintabie

Again this field has exhibited increased activity over that of the previous year with the number of registered PSCs increasing dramatically from an average of 135 in 1983 to 172 in 1984.

This activity is reflected in the increased number of miners and the increased value of production over that of the previous year.

Elsewhere

There was no recorded activity at any of the opal diggings outside the proclaimed Precious Stones Fields.

PRODUCTION

The formula used for calculating opal production is the same as used previously.

ie. Annual Production (\$) = $KX + Y + 0.1 Z$

where X = number of miners

Y = annual operating costs

Z = capital investment

K is a constant based on the cost of living and includes a 'bonanza' factor for each field as follows:

Coober Pedy	24 400
Andamooka	23 900
Mintabie	43 400

Based on the number of miners, and the capital investment and annual operating costs as shown in Appendix B, estimated opal production for 1984 is summarised in Table V.

TABLE V
ESTIMATED VALUE OF PRODUCTION

1984 (\$ million)

SOUTH AUSTRALIAN PRECIOUS STONES FIELDS

	<u>No. of</u>		<u>Production Value (\$)</u>		
	<u>Miners (Av.)</u>		<u>June</u>	<u>October</u>	<u>Average</u>
	<u>June</u>	<u>Oct</u>			
Coober Pedy	500	450	17.562	15.197	16.380
Andamooka*	100	110	3.809	4.278	4.044
Mintabie	150	175	8.429	9.908	9.169
	<u>750</u>	<u>735</u>	<u>29.800</u>	<u>29.383</u>	<u>29.593</u>

Estimated total production from the three opal mining centres during 1984 was thus \$29.59 million.

This represents a decrease of \$1.56 million over 1983 and is well below the record of \$43.9 million as estimated in 1979. A major decrease of \$4.86 million (22.9%) was shown for Coober Pedy while Mintabie again showed an increase in the value of production of \$1.92 million, representing 26.5% more than that of 1983.

*The figures for Andamooka have been adjusted upwards marginally to allow for equipment moved from Andamooka to Stuart Creek at the time of the surveys. No production was recorded from Stuart Creek.

Andamooka's estimated production showed a significant increase over that of 1983 of \$1.38 million representing 51.9%.

COMMENT

While the overall estimates indicate a decline in the value of opal production of \$1.56 million from that of 1983, significant increases occurred at Andamooka and again at Mintabie. In fact, Mintabie is rapidly becoming a major mining centre with its estimated value of opal production approaching that of Coober Pedy. Another interesting factor is the increasing trend at Mintabie for underground mining, away from the purely open cut type of operation. Hence there are an increasing number of blowers and tunnelling machines competing with the more traditional bulldozers on the field.

It is apparent that the increasing costs of bulldozing vast amounts of overburden are having an effect, as miners seek to be more cost effective in their mining methods.

The situation at Coober Pedy is one of declining production and a reluctance on the part of miners to explore new ground.

During 1984 there has been increasing evidence of high prices being obtained for quality opal and it is to be hoped that this trend will continue and act as a stimulus for more activity, particularly at Coober Pedy.

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APPENDIX A

Mining Equipment for all Precious Stones Fields

Surveys : June 1984

October 1984

COOBER PEDY PRECIOUS STONES FIELD 11-6-84

EQUIPMENT	ALLAN RISE	BENITOS FOLLY	BLACK FLAG	BLACK POINT	BROWNS FOLLY	CRATER	COMPANY	DEADMAN DUGOUT	DEADMAN GULLY	DEADHORSE GULLY	DIGGERS GULLY	DINGO	DORA GULLY	EAST PACIFIC
BACKHOE														
BLOWER														1
BOGGER														
BUCKET ELEVATOR														
BULLDOZER														
D9							1							
D8														
D7														
D6														
D4				1										
COMPRESSOR														
100cfm														
180cfm														
350cfm														
DRILLING RIGS														
CALWELD														
INVESTIGATOR														
SMALL AUGER														
ROTARY														
CRANE														
EXCAVATOR														
GENERATOR														
SMALL/MED														
LARGE														1
LOADER-FRONT END														1
NOODLING MACHINE														
SCRAPER														
SELF DUMPER														
TUNNELING MACHINE														1
WINCH-AIR/ELECTRIC														
WINCH-HAND														1
YORKE HOIST														
Nº. OF REGISTERED CLAIMS AT 8-6-84			1	5	5		1	1			5		3	6

COOPER PEDY. cont. 11-6-84

EQUIPMENT	EMU FLAT	FLAT (BIG FLAT)	FOURTEEN MILE	FRANKS FOLLY	GERAGHTY HILL	GERMAN GULLY	GERMAN VALLEY	GREEK GULLY	HANS PEAK	HELLENIC HILL	JASPER GULLY	JOHN DEERE	JUNGLE	KENDA FLAT
BACKHOF								1	2					
BLOWER	2		17		3	1	1	17	13				1	8
BOGGER	1													
BUCKET ELEVATOR			1					1	1					
BULLDOZER														
D9														
D8	2		1			1		1						
D7									3					
D6														
D4	1							1	1					
COMPRESSOR														
100 cfm								1	1					2
180 cfm	2		1		1	1		5	5				1	
350 cfm					1			2	2					
DRILLING RIGS														
CALWELD														
INVESTIGATOR					1									
SMALL AUGER					1									
ROTARY														
CRANE														
EXCAVATOR														
GENERATOR														
SMALL/MED	1		3			1		4	3					1
LARGE			4		1			5	2				1	1
LOADER-FRONT END	2		2		2			2	1					
NOODLING MACHINE	1		2		2			1						
SCRAPER														
SELF DUMPER					1	2								
TUNNELING MACHINE			4		1			5	2				1	
WINCH-AIR/ELECTRIC			1					11	6					2
WINCH-HAND	1		13			1		17	14				1	8
YORKE HOIST					3			4					1	2
Nº. OF REGISTERED CLAIMS AT 8-6-84	17	9	45		16	4	5	59	65				3	20

COOPER PEDY. cont. 11-6-84

EQUIPMENT	KIMBA	LARKINS FOLLY	LENNON	OPAL VALLEY (MT. BRADY)	OLD FOUR MILE	OLYMPIC	ORELOG (TEAL W/HOLE)	PERFETTO	PIPING LANE	POTCH GULLY	PROSPECT	RUSSO FOLLY	RYAN HILL	SADDLE
BACKHOE						1								
BLOWER		1	11			33				1	1		2	
BOGGER						2						1		
BUCKET ELEVATOR						4						1		
BULLDOZER														
D9														
D8														
D7										1				
D6														
D4														
COMPRESSOR														
100cfm						3				1				
180cfm						8				3		1	1	
350cfm														
DRILLING RIGS														
CALWELD														
INVESTIGATOR						1								
SMALL AUGER														
ROTARY														
CRANE														
EXCAVATOR														
GENERATOR														
SMALL/MED			1			8								
LARGE			2			9				1	1			
LOADER-FRONT END			1			5				1				
NOODLING MACHINE			1			3				1			1	
SCRAPER														
SELF DUMPER			1			2								
TUNNELING MACHINE			1			8					1			
WINCH-AIR/ELECTRIC						17							1	
WINCH-HAND		1	13			34							2	
YORKE HOIST			2											
Nº. OF REGISTERED CLAIMS AT 8-6-84	1	9	56	6		93		3		5	3	1		1

COOPER PEDY cont. 11-6-84

EQUIPMENT	SEVENTEEN MILE	SHELL PATCH	SOUTH PACIFIC	SOUTHERN CROSS	TEE VALLEY (MT. BRADY)	TREVOR SWAMP	TURKEY RIDGE	UNKNOWN	VENUS	VINO	WILLOW	ZORBA	TOWNSHIP & HOPEFUL HILLS	TOTAL
BACKHOE										1			(12) 6	(17) 11
BLOWER	4	2		12								6	(74) 37	(211) 174
BOGGER														4
BUCKET ELEVATOR			1	2									(6) 3	(17) 14
BULLDOZER														
D9													(1) 1	(2) 2
D8							1						(5) 3	(11) 9
D7													(6) 3	(10) 7
D6														
D4														4
COMPRESSOR														
100 cfm	1	1										2	(4) 2	(16) 14
180 cfm	2			7								1	(54) 27	(93) 66
350 cfm												1	(10) 5	(16) 11
DRILLING RIGS														
CALWELD													28	28
INVESTIGATOR													14	16
SMALL AUGER													15	16
ROTARY													1	1
CRANE													(6) 3	(6) 3
EXCAVATOR														
GENERATOR														
SMALL/MED		2		2									(9) 5	(35) 31
LARGE				5									(31) 16	(64) 49
LOADER-FRONT END		1		2									(8) 4	(28) 24
NOODLING MACHINE				1									(2) 1	(15) 14
SCRAPER														
SELF DUMPER													(2) 1	(8) 7
TUNNELING MACHINE	1			5									(21) 11	(51) 41
WINCH-AIR/ELECTRIC	2		1	7								2	(11) 6	(61) 56
WINCH-HAND	4			7								6	(10)	(133)
YORKE HOIST	1											1	(5) 3	(19) 17
N° OF REGISTERED CLAIMS AT 8-6-84	18	18	2	54			7					9		555

ANDAMOOKA PRECIOUS STONES FIELD, 5-6-84

EQUIPMENT	BLACKBOY	BLACKBOY EXTENSION	BOUNDARY RIDER	BUZA	CHRISTMAS HILL	FOUR NATIONS	GERMAN GULLY	GUN GULLY	HALFWAY	HALLION HILL	HORSE Paddock	JUBILEE	KOSKAS	LUNATIC HILL
BACKHOE														
BLOWER							1			1				
BOGGER														1
BUCKET ELEVATOR														1
BULLDOZER														
D9														
D8														1
D7								1						1
D6							1							1
D4														
COMPRESSOR														
100cfm							2							3
180cfm							1			1				3
350cfm														
DRILLING RIGS														
CALWELD														
INVESTIGATOR														
SMALL AUGER							1							
ROTARY														
CRANE														
EXCAVATOR														
GENERATOR														
SMALL/MED							2							
LARGE														
LOADER-FRONT END														
NOODLING MACHINE							2							
SCRAPER														
SELF DUMPER		1					2							9
TUNNELING MACHINE														
WINCH-AIR/ELECTRIC								2						
WINCH-HAND		1												2
YORKE HOIST				1	1		2							6
N° OF REGISTERED CLAIMS AT 8-6-84	2	3	4		4		13	13		2			4	32

ANDAMOOKA cont. 5-6-84

MINTABIE PSF | STUART CK. PSF

EQUIPMENT	STANS HILL	STEVENS GULLY	TEA TREE FLAT	TRIANGLE	WHITE DAM	YARLOO	YARLOO EXTENSION	YARLOO SOUTH	YARLOO WEST	TOWNSHIP AREA	TOTAL		MINTABIE	STUART CREEK
BACKHOE			1							(2) 1	(3) 2		1	
BLOWER			2							(1) 1	(5) 5		15	
BOGGER											1			
BUCKET ELEVATOR										(1) 1	(2) 2			
BULLDOZER														
D9										(1) 1	(1) 1		13	
D8										(1) 1	(2) 2		2	
D7			2		1	1				(2) 1	(8) 7		1	
D6										(4) 2	(6) 4			
D4					3					(2) 1	(5) 4			
COMPRESSOR														
100 cfm			1	1	1					(5) 3	(13) 11		4	
180 cfm			1		1					(36) 18	(43) 25		11	
350 cfm										(1) 1	(1) 1		3	
DRILLING RIGS														
CALWELD										1	1		1	1
INVESTIGATOR										1	1		8	
SMALL AUGER										4	5			
ROTARY													1	
CRANE														
EXCAVATOR			1		1					(1) 1	(3) 3			
GENERATOR														
SMALL/MED			1							(2) 1	(5) 4			
LARGE			1								1		1	
LOADER-FRONT END			2								2		1	
NOODLING MACHINE			1							(1) 1	(4) 4		1	
SCRAPER										(3) 2	(3) 2			
SELF DUMPER			1							(8) 4	(21) 17		1	
TUNNELING MACHINE														
WINCH-AIR/ELECTRIC									1		3			
WINCH-HAND			3		1						7			
YORKE HOIST			3	1						(7) 4	(21) 18		17	
Nº OF REGISTERED CLAIMS AT 8-6-84		9	54	3	40	1	1			185			193	

COOPER PEDY PRECIOUS STONES FIELD 3-10-84

EQUIPMENT	ALLAN RISE	BENITOS FOLLY	BLACK FLAG	BLACK POINT	BROWNS FOLLY	CRATER	COMPANY	DEADMAN DUGOUT	DEADMAN GULLY	DEADHORSE GULLY	DIGGERS GULLY	DINGO	DORA GULLY	EAST PACIFIC
BACKHOE														
BLOWER													1	4
BOGGER														
BUCKET ELEVATOR														
BULLDOZER														
D9														
D8														
D7														
D6														
D4				1										
COMPRESSOR														
100cfm														
180cfm														1
350cfm														
DRILLING RIGS														
CALWELD														
INVESTIGATOR														
SMALL AUGER														
ROTARY														
CRANE														
EXCAVATOR														
GENERATOR														
SMALL/MED				3										1
LARGE														
LOADER-FRONT END														
NOODLING MACHINE														
SCRAPER														
SELF DUMPER														1
TUNNELING MACHINE														
WINCH-AIR/ELECTRIC														1
WINCH-HAND														
YORKE HOIST														
Nº. OF REGISTERED CLAIMS AT 9-10-84	1	1	1	5	3	1	1	1			1		3	9

COOPER PEDY. cont. 3-10-84

EQUIPMENT	EMU FLAT	FLAT (BIG FLAT)	FOURTEEN MILE	FRANKS FOLLY	GERAGHTY HILL	GERMAN GULLY	GERMAN VALLEY	GREEK GULLY	HANS PEAK	HELLENIC HILL	JASPER GULLY	JOHN DEERE	JUNGLE	KENDA FLAT
BACKHOE			1						1					
BLOWER	2	3	17		2		1	9	9					4
BOGGER						1		1	1					
BUCKET ELEVATOR	1		1					1	2					
BULLDOZER														
D9									1					
D8	2		2			1								
D7		1												
D6									1					
D4	1							1						
COMPRESSOR														
100cfm								3	1					1
180cfm	1					1		2	3					1
350cfm	1						1							
DRILLING RIGS														
CALWELD														
INVESTIGATOR														
SMALL AUGER													1	
ROTARY														
CRANE														
EXCAVATOR														
GENERATOR														
SMALL/MED	3		1			1	2	1					1	1
LARGE		1	3			2	1	2	1					
LOADER-FRONT END			1					1						2
NOODLING MACHINE			1					1						
SCRAPER														1
SELF DUMPER					1									
TUNNELING MACHINE		1	3			2		1	1					
WINCH-AIR/ELECTRIC	1		2		1		1	5	4					1
WINCH-HAND	1												1	
YORKE HOIST					1			2	2				1	2
Nº. OF REGISTERED CLAIMS AT 9-10-84	19	18	51		10	4	4	41	60				3	19

COOPER PEDY. cont. 3-10-84

EQUIPMENT	KIMBA	LARKINS FOLLY	LENNON	OPAL VALLEY (MT. BRADY)	OLD FOUR MILE	OLYMPIC	ORELOG (TEAL W/HOLE)	PERFETTO	PIPING LANE	POTCH GULLY	PROSPECT	RUSSO FOLLY	RYAN HILL	SADDLE
BACKHOF		1												
BLOWER			20			29				3		3		
BOGGER														
BUCKET ELEVATOR		1				1								
BULLDOZER														
D9				1						1				
D8														
D7														
D6														
D4			2											
COMPRESSOR														
100cfm			1			2								
180cfm						3						1	1	
350cfm						4				1				
DRILLING RIGS														
CALWELD														
INVESTIGATOR			1											
SMALL AUGER														
ROTARY														
CRANE														
EXCAVATOR														
GENERATOR														
SMALL/MED		2	5			5				2			1	
LARGE			8			10				3		1	1	
LOADER-FRONT END		1	1			3							2	
NOODLING MACHINE		1	1			2							2	
SCRAPER														
SELF DUMPER						1								
TUNNELING MACHINE			5			8								
WINCH-AIR/ELECTRIC			5			9						1		
WINCH-HAND			13			13				2				
YORKE HOIST			3			2							1	
Nº OF REGISTERED CLAIMS AT 9-10-84	1	8	40			89		1		8	3	5	1	

COOPER PEDY cont. 3-10-84

EQUIPMENT	SEVENTEEN MILE	SHELL PATCH	SOUTH PACIFIC	SOUTHERN CROSS	TEE VALLEY (MT. BRADY)	TREVOR SWAMP	TURKEY RIDGE	UNKNOWN	VENUS	VINO	WILLOW	ZORBA	TOWNSHIP & HOPEFUL HILLS	TOTAL
BACKHOE													(15) 8 (18)	11
BLOWER	9			14								4	(62) 31 (196)	165
BOGGER			1	2										6
BUCKET ELEVATOR		1	1	2								1	(8) 4 (20)	16
BULLDOZER														
D9														3
D8													(7) 4 (12)	9
D7													(4) 2 (5)	3
D6				1									(2) 1 (4)	3
D4													(1) 1 (6)	5
COMPRESSOR														
100 cfm	1			2									(10) 5 (21)	16
180 cfm	3		1	8								3	(27) 14 (56)	43
350 cfm													(7) 4 (14)	10
DRILLING RIGS														
CALWELD														26
INVESTIGATOR													8 + 1x	10
SMALL AUGER													11	12
ROTARY													1	1
CRANE													(6) 3 (6)	3
EXCAVATOR														
GENERATOR														
SMALL/MED	1			2									(3) 2 (35)	34
LARGE	3	1		8								1	(18) 9 (64)	55
LOADER-FRONT END	3	1		3								2	(7) 4 (23)	20
NOODLING MACHINE				2									(5) 3 (15)	13
SCRAPER														1
SELF DUMPER													(2) 1 (5)	4
TUNNELING MACHINE	3	1		8								2	(12) 6 (47)	41
WINCH-AIR/ELECTRIC	3	1	1	7								3	(4) 2 (50)	48
WINCH-HAND														
YORKE HOIST				2									(4) 2 (21)	19
Nº. OF REGISTERED CLAIMS AT 9-10-84	17	13	2	70	1		5					13		533

x 1 Investigator at Roan Bullock

ANDAMOOKA PRECIOUS STONES FIELD. 16-10-84

EQUIPMENT	BLACKBOY	BLACKBOY EXTENSION	BOUNDARY RIDER	BUZA	CHRISTMAS HILL	FOUR NATIONS	GERMAN GULLY	GUN GULLY	HALFWAY	HALLION HILL	HORSE Paddock	JUBILEE	KOSKAS	LUNATIC HILL
BACKHOF														1
BLOWER							1			1				
BOGGER														1
BUCKET ELEVATOR														1
BULLDOZER														
D9														
D8			1											1
D7								1						
D6			1					2						
D4								1						
COMPRESSOR														
100 cfm														3
180 cfm							1							4
350 cfm														
DRILLING RIGS														
CALWELD														
INVESTIGATOR														
SMALL AUGER														
ROTARY														
CRANE														
EXCAVATOR														1
GENERATOR														
SMALL/MED							2							4
LARGE														
LOADER-FRONT END														
NOODLING MACHINE														
SCRAPER														
SELF DUMPER	1						2	1						6
TUNNELING MACHINE														
WINCH-AIR/ELECTRIC								1						2
WINCH-HAND	1				1									3
YORKE HOIST	1	1					1	1		1				3
Nº OF REGISTERED CLAIMS AT 9-10-84	3	2	3		5		18	13		2			2	36

ANDAMOOKA cont. 16-10-84

MINTABIE PSF | STUART CK. PSF

EQUIPMENT	STANS HILL	STEVENS GULLY	TEA TREE FLAT	TRIANGLE	WHITE DAM	YARLOO	YARLOO EXTENSION	YARLOO SOUTH	YARLOO WEST	TOWNSHIP AREA	TOTAL		MINTABIE	STUART CREEK
BACKHOF					-					(3) 2	(4) 3		1	1
BLOWER		1	1							(3) 2	(7) 6		17	
BOGGER											1			
BUCKET ELEVATOR											1			
BULLDOZER														
D9										(4) 2	(4) 2		14	
D8										(3) 2	(5) 4		3	
D7			1		1					(2) 1	(5) 4		1	
D6			1								4			
D4					4					(1) 1	(6) 6			
COMPRESSOR														
100 cfm			1							(19) 10	(23) 14		19	
180 cfm		1	1							(34) 17	(41) 24		2	1
350 cfm										(5) 3	(5) 3		2	
DRILLING RIGS														
CALWELD										1	1		3	1
INVESTIGATOR										1	1		11	
SMALL AUGER										4	4			
ROTARY										1	1			
CRANE										1	1			
EXCAVATOR					1					1	3			
GENERATOR														
SMALL/MED					1					(12) 6	(19) 13			
LARGE										(1) 1	(1) 1		17	
LOADER-FRONT END					3						3		1	
NOODLING MACHINE			1		3					(3) 2	(7) 6			
SCRAPER										(3) 2	(3) 2		1	
SELF DUMPER										(13) 7	(23) 17		2	
TUNNELING MACHINE													17	
WINCH-AIR/ELECTRIC										(1) 1	(4) 4		10	
WINCH-HAND			4							(19) 10	(28) 19			
YORKE HOIST			1	1						(9) 5	(19) 15		25	
Nº. OF REGISTERED CLAIMS AT 9-10-84		10	38	2	43		1			179			227	

APPENDIX B

Unit Cost, Unit Running Costs, Total Capital
Investment and Total Annual Operating Cost
for all Precious Stones Fields

Surveys : June 1984

October 1984

JUNE 1984			COOBER PEDY			ANDAMOOKA			MINTABIE			STUART CREEK		
EQUIPMENT	UNIT COST \$	OPERATING COST per UNIT per year	UNITS	TOTAL CAPITAL COST	TOTAL RUNNING COST	UNITS	TOTAL CAPITAL COST	TOTAL RUNNING COST	UNITS	TOTAL CAPITAL COST	TOTAL RUNNING COST	UNITS	TOTAL CAPITAL COST	TOTAL RUNNING COST
BACKHOE	30 000	5830	11	330 000	64130	2	60 000	11680	1	30 000	5830			
BLOWER	12 000	9000	174	2088000	1566000	5	60 000	45 000	15	180 000	135000			
BOGGER	4000	200	4	16000	800	1	4000	200						
BUCKET ELEVATOR	8500	500	14	119000	7000	2	17000	1000						
BULLDOZER														
D9	350 000	64 440	2	700 000	68880	1	350 000	64 440	13	4 350 000	837720			
D8	2450 00	48 170	9	2205000	433530	2	490000	98340	2	490000	98340			
D7	160 000	32980	7	1120 000	230860	7	1120000	230860	1	60 000	32980			
D6	100 000	23040				4	400 000	92160						
D4	55000	18720	4	220000	74880	4	220000	74880						
COMPRESSOR														
100 cfm	13000	1420	14	182 000	19880	11	143 000	15620	4	52000	5680			
180 cfm	114 000	2840	66	2904000	187440	25	350000	71000	11	154 000	31240			
350 cfm	24 000	4260	11	264 000	46860	1	24 000	4260	3	72000	12780			
DRILLING RIGS														
CALWELD	150 000	9200	28	4 200 000	257800	1	150 000	9200	1	150 000	9200	1	150 000	9200
INVESTIGATOR	45000	6400	16	720000	102400	1	45000	6400	11	495000	70400			
SMALL AUGER	5000	4400	16	80 000	70400	5	25000	22000	3	15000	13200			
ROTARY	100 000	9000	1	100 000	9000				1	100 000	9000			
CRANE														
EXCAVATOR						3	414 000	98940						
GENERATOR														
SMALL/MED	800	720	31	24800	22320	4	3200	2880						
LARGE	8000	4220	49	392000	206780	1	8000	4220	1	8000	4220			
LOADER-FRONT END	30000	5830	24	720 000	139920	2	60000	11680	1	30000	5830			
NOODLING MACHINE	8000	1000	14	112000	14000	4	32000	4000	1	8000	1000			
SCRAPER	100000	19440				2	200 000	38880						
SELF DUMPER	1500	720	7	10500	5040	17	25500	12240	1	1500	720			
TUNNELING MACHINE	25000	1500	41	1025000	61500									
WINCH-AIR/ELECTRIC	1000		56	56000		3	3000							
WINCH-HAND						7	700							
YORKE HOIST	700	400	17	11900	6800	18	12600	7200	17	11900	6800			
TOTAL				17645200	3597220		4217000	925040		6407400	1277940		150000	9200

OCTOBER 1984			COOPER PEDY			ANDAMOOKA			MINTABIE			STUART CREEK		
EQUIPMENT	UNIT COST \$	OPERATING COST per UNIT per year	UNITS	TOTAL CAPITAL COST	TOTAL RUNNING COST	UNITS	TOTAL CAPITAL COST	TOTAL RUNNING COST	UNITS	TOTAL CAPITAL COST	TOTAL RUNNING COST	UNITS	TOTAL CAPITAL COST	TOTAL RUNNING COST
BACKHOE	30 000	5830	11	330 000	64 130	3	90 000	17 490	1	30 000	5830	1	30 000	5830
BLOWER	12 000	9000	165	1980 000	1485 000	6	72 000	54 000	17	204 000	153 000			
BOGGER	4 000	200	6	24 000	1200	1	4 000	200						
BUCKET ELEVATOR	8500	500	4	34 000	2000	1	8500	500						
BULLDOZER														
D9	350 000	64440	3	1050 000	193320	2	700 000	128880	14	490 000	902160			
D8	245 000	48170	9	2205 000	433530	4	980 000	192680	3	735 000	144510			
D7	160 000	32980	3	480 000	98940	4	64 000	131920	1	160 000	32980			
D6	100 000	23040	3	300 000	69120	4	400 000	92160						
D4	55 000	18720	5	275 000	93600	6	330 000	112320						
COMPRESSOR														
100 cfm	13 000	1420	16	208 000	22720	14	182 000	19880	19	247 000	26980			
180 cfm	14 000	2840	43	602 000	122120	24	336 000	68160	2	28 000	5680			
350 cfm	24 000	4260	10	240 000	42600	3	72 000	12780	2	48 000	8520	1	24 000	4260
DRILLING RIGS														
CALWELD	150 000	9200	26	390 000	239200	1	150 000	9200	3	450 000	27600	1	150 000	9200
INVESTIGATOR	45 000	6400	10	450 000	64 000	1	45 000	6400	11	495 000	70400			
SMALL AUGER	5000	4400	12	60 000	52800	4	20 000	17600						
ROTARY	100 000	9000	1	100 000	9000									
CRANE	15000	400	3	45 000	1200	1	15 000	400						
EXCAVATOR	138 000	32980				3	414 000	98940						
GENERATOR														
SMALL/MED	800	720	34	27200	24480	13	10400	9360						
LARGE	8000	4220	55	440 000	232100	1	8000	4220	17	136 000	71740			
LOADER-FRONT END	30 000	5830	20	600 000	116600	3	90 000	17490	1	30 000	5830			
NOODLING MACHINE	8000	1000	13	104 000	13000	6	48 000	6000						
SCRAPER	100 000	19440	1	100 000	19440	2	200 000	38880	1	100 000	19440			
SELF DUMPER	1500	720	4	6000	2880	17	25500	12240	2	3000	1440			
TUNNELING MACHINE	25 000	1500	41	1025 000	61500				17	425 000	25500			
WINCH-AIR/ELECTRIC	1000		48	48 000		4	4000		10	10 000				
WINCH-HAND	100					19	1900							
YORKE HOIST	700	400	19	13300	7600	15	10500	6000	25	17500	10000			
TOTAL				14646500	3472080		4956800	1066700		8018500	1511610		204000	19290

APPENDIX C

Location of Opal Fields, Graphical Representation of
Registered Precious Stones Claims, Capital Investment,
Number of Miners and Opal Production.

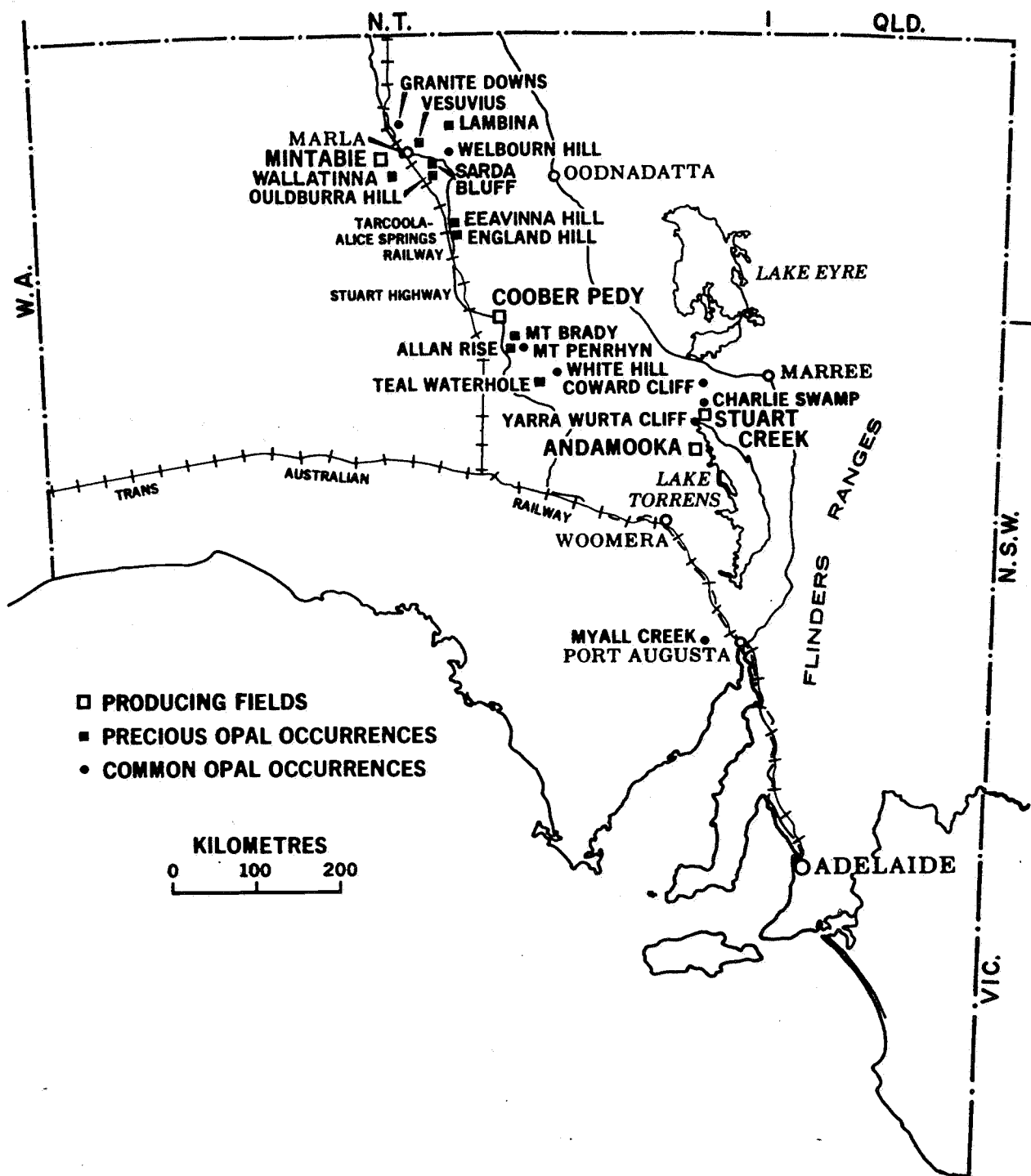



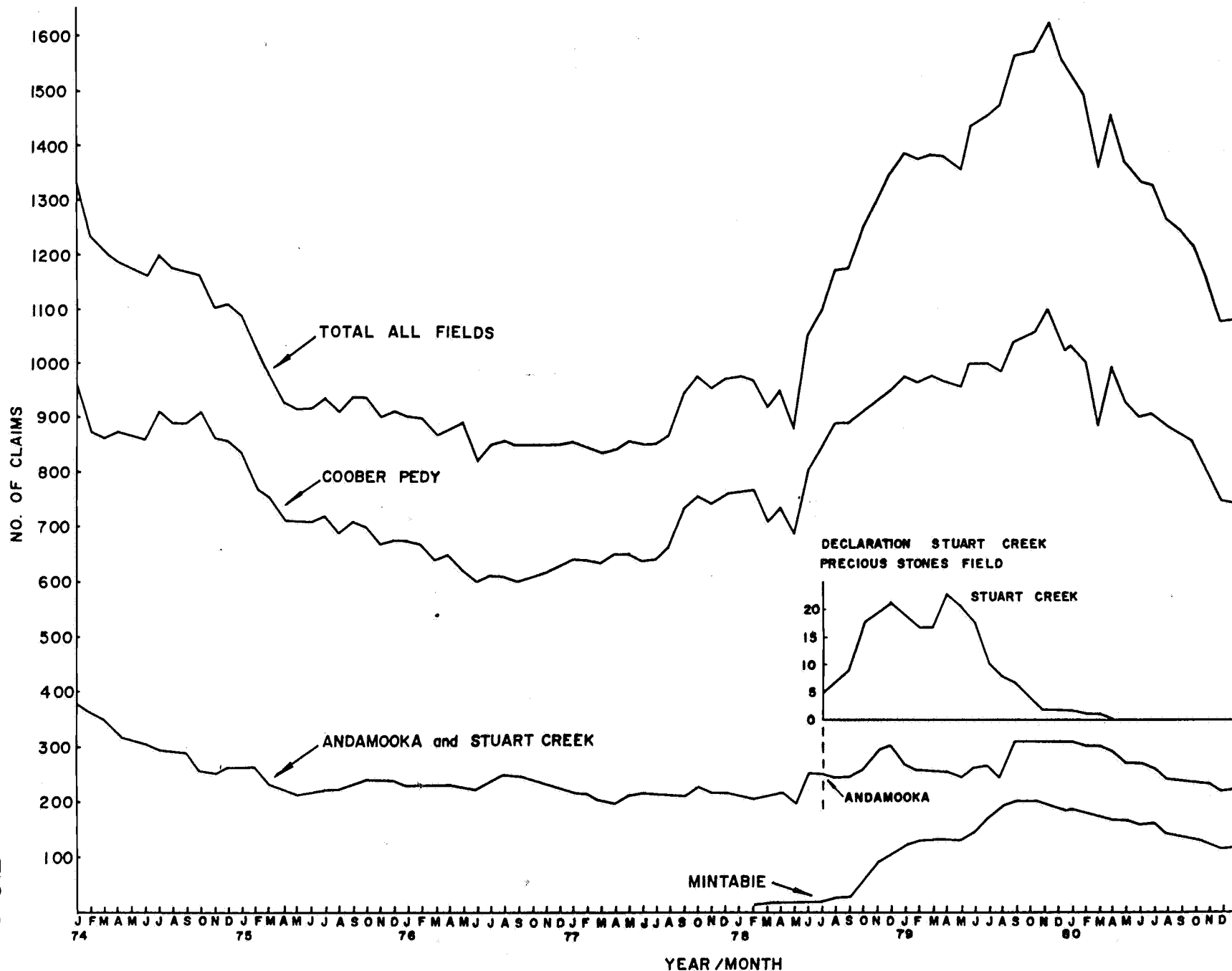
Fig. 1

		DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA		SCALE: 1:7400000	
COMPILED: L.C.B.		OPAL OCCURRENCES IN SOUTH AUSTRALIA		DATE: 12-9-79	
DRN:	CKD:			PLAN NUMBER	
				S14248	

SOUTH AUSTRALIAN PRECIOUS STONES FIELDS
NUMBER OF REGISTERED PRECIOUS STONES CLAIMS 1974-1980



DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA



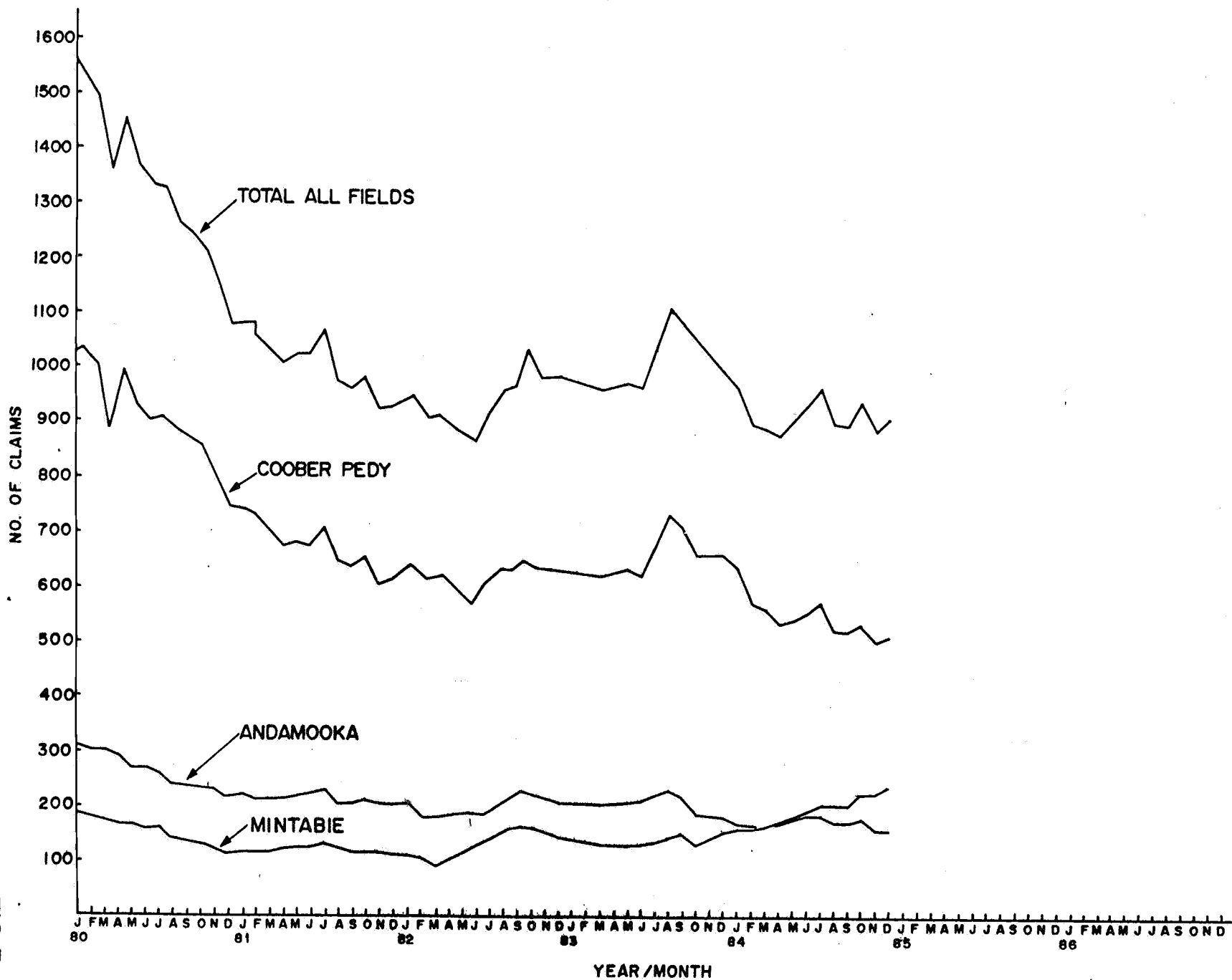
COMPILED B. A.	DRAWN E. W.	DATE 6.4.81	CHECKED
SCALE C.D.O.	PLAN NUMBER S15474	DATE 24.6.81	



DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

SOUTH AUSTRALIAN PRECIOUS STONES FIELDS NUMBER OF REGISTERED PRECIOUS STONES CLAIMS 1980 - 1985

COMPILED M.W.F.	DRAWN L.V.W.	DATE 24-5-85	CHECKED
SCALEs shown C.D.O.	PLAN NUMBER S 18245		



**SOUTH AUSTRALIAN PRECIOUS STONES FIELDS
INVESTMENT, PRODUCTION AND NUMBER OF MINERS
1978 - 1985**

COMPILED L.C.B.	DRAWN D.W.W.	DATE 24.5.85	CHECKED	SCALE As shown	PLAN NUMBER S18246



DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

