DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

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THE OPAL INDUSTRY IN SOUTH AUSTRALIA. REPORT NO. 5. The 1982 survey of mining equipment and calculation of value of opal produced.

GEOLOGICAL SURVEY

by

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DECEMBER, 1982

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FRONTISPIECE - Opal solids from new Southern Cross field, Coober Pedy. February, 1983.

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DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

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THE OPAL INDUSTRY IN SOUTH AUSTRALIA REPORT NO. 5. The 1982 survey of mining equipment and calculation of value of opal produced.

SUMMARY

Following the 1982 surveys of mining activity on all South Australian Precious Stones Fields (PSFs) trends in the opal mining industry are:

- further marked downturn in value of production from $34.21 million in 1981 to $28.76 million in 1982.

- continuing decline in number of registered Precious Stones Claims (PSCs), particularly at Coober Pedy and Andamooka where total PSCs fell by 69 from the previous year.

  Mintabie showed an increase of 5 registered PSCs over the previous year. One PSC was pegged and registered at Sarda Bluff.

- dramatic decrease in number of opal miners with an estimated 795 miners working on all fields in 1982 compared with 1 075 in 1981.

  Mintabie went against this trend with a net increase of 35 miners over the previous year.

- capital investment at Coober Pedy decreased from $18.05 million in 1981 to $14.53 million in 1982. Mintabie showed an increased capital investment of $0.86 million over that of the previous year, reflecting the movement of some machinery from Coober Pedy.

Table 1 summarises the opal industry in South Australia in 1982 compared with 1981. The equipment shown on the table is selected as an 'equipment index' to reflect the level of mining activity.

TABLE 1

THE OPAL INDUSTRY IN SOUTH AUSTRALIA, 1982 COMPARED WITH 1981.

	1981			1982		
	Coober Pedy	Andamooka	Mintabie	Coober Pedy	Andamooka	Mintabie
Registered PSCs (av.)	667	214	120	621	200	128
No. miners (av.)	900	100	75	625	60	110
Production (av.) ($ million)	27.97	3.25	2.99	20.18	2.46	6.12
Total		34.21			28.76	
Capital Investment (av.) ($ million)	18.05	2.62	3.57	14.53	3.14	4.43
Total		24.24			22.10	
Operating Costs (av.) ($ million)	4.20	0.61	0.73	3.47	0.71	0.90
Total		5.54			5.08	
Equipment (June 1982 compared with May 1981)						
Bulldozers						
D8-D9	18	1	7	15	3	9
D7 and smaller	13	10	1	9	10	-
Blowers	175	3	6	175	7	10
Yorke hoists	37	21	24	16	23	19
Backhoes	13	5	1	10	5	1
Tunnelling Machines	30	1	-	40	-	-
Self Dumpers	8	13	1	2	16	1
Noodling Machines	14	1	-	13	5	1
Drills						
Calweld Type	29	1	2	25	1	3
Investigator MK.10	25	-	2	16	-	3

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).

PROCEDURE

The following Department officers conducted equipment surveys during 1982.

APRIL

MINTABIE

I. Kimber (Area Officer)

Mineral Resources Section

I.J. Townsend (Geologist).

JUNE

COOBER PEDY

Mineral Resources Section

R.S. Robertson (Geologist), P.P. Crettenden and M.W. Flintoft (Field Assistants)

Technical Information Section

R.L. Wildy (Supervising Geologist)

ANDAMOOKA

R.W. Betterman (Area Officer)

Mineral Resources Section

D.J. Flint (Geologist), B.W. Atterton (Field Assistant)

OCTOBER

MINTABIE

I. Kimber

Mineral Resources Section

R.S. Robertson

COOBER PEDY

Mineral Resources Section

W.S. McCallum (Geologist), B.W. Atterton,

P.P. Crettenden, R.S. Robertson.

ANDAMOOKA

R.W. Betterman

Mineral Resources Section

W.S. McCallum, B.W. Atterton.

As in previous surveys all equipment considered to be actively engaged in mining opal was itemised, field by field. (see Appendix A).

In 1981, a separate list of large diameter prospecting drills was compiled (Barnes and Atterton, 1982, Appendix C), this being necessary because these drills could not be allocated to a particular field. The same procedure was followed in 1982.

RESULTS OF THE 1982 SURVEYS

Results of the equipment counts comprise 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 on Table II.

TABLE II

CAPITAL INVESTMENT 1982 ($ million)

	April/ June	October	Average
Coober Pedy	15.04	14.02	14.53
Andamooka	3.45	2.83	3.14
Mintabie	4.36	4.50	4.43
Total	22.85	21.35	22.10

Average value of investment in equipment is $22.10 million, a decrease of $2.14 million from 1981.

This reduction resulted from a $3.52 million decrease in capital investment at Coober Pedy because of fewer large bulldozers, and reduced number of blowers in the second half of the year. Andamooka and Mintabie, showed marginal increases of $0.52 million and $0.86 million respectively.

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 III from Appendix B.

TABLE III

ANNUAL OPERATING COSTS 1982 ($ million)

	April/June	October	Average
Coober Pedy	3.61	3.33	3.47
Andamooka	0.77	0.65	0.71
Mintabie	0.86	0.94	0.90
Total	5.24	4.92	5.08

The reduction from $5.54 million in 1981 to $5.08 million in 1982 is a direct result of the decreased amount of equipment working at Coober Pedy during the latter period.

Both Andamooka and Mintabie showed marginal increases during 1982.

Large Diameter Prospecting Drills

Total for all fields dropped from 33 to 30. Two drills, Plessings and Mazzone's have been withdrawn from opal mining, whilst Riley's has broken down beyond repair. Two drills, Butt's and Frazer's were moved from Coober Pedy to work at Mintabie for most of the year.

MINING ACTIVITY

During 1982, total number of registered PSCs has been variable, with an overall increase from 962 in January to 986 at the end of the year, after a low of 889 mid year and a peak of 1 041 during September.

Greatest reduction was again at Coober Pedy where number of registered PSCs declined from 650 in January to 632 in November with a low of 585 during May.

Andamooka showed a slight increase from 204 registered PSCs in January to 209 in November, Mintabie showed a steady increase from 108 at the beginning of the year to 144 in November.

The number of active miners decreased for Coober Pedy and Andamooka, with a moderate increase at Mintabie due mainly to movement from Coober Pedy. The overall number of active miners decreased from an average of 1 075 during 1981 to approximately 800 during 1982.

Coober Pedy

Of the 55 named fields at Coober Pedy, PSCs were registered on 32 but only 26 were active during the surveys, and on several of these activity was minimal.

Trends in activity were as follows:

. Olympic - slightly increased, with registered PSCs rising from 142 on 9 October 1981 to 164 on 13 October 1982, and the number of teams working also increasing slightly. There was a decline in activity in the middle of the year as miners moved to peg claims at the new Southern Cross field. With new finds at the western end of Olympic late in the year, many miners returned.

. Hans Peak - considerably reduced activity with fewer blowers in operation and number of PSCs reducing from 58 to 41 during the year.

- Emu Flat, Big Flat - Although similar number of PSCs in 1982 as in 1981, amount of equipment was much reduced in 1982.

- Greek Gully, Shellpatch, 17-mile - increased activity recorded in these areas with number of blowers increasing from 12 to 24 at Greek Gully and the number of registered PSCs increasing from 32 to 55.

- East Pacific - marked decrease in activity, number of registered PSCs fell from 43 at 9 October 1981 to 11 at 10 October 1982.

- 14 mile - reduced activity with a dramatic reduction in number of blowers operating, and reduction in the number of registered PSCs from 133 at 9 October 1981 to 85 at 13 October 1982.

- Southern Cross - new field which developed from prospecting immediately adjacent to Subsidised Shaft No. 85 sunk during the Government funded subsidised drilling programme in 1981. (Robertson and Scott 1983).

- First PSCs were registered in April-May. By June, 32 PSCs were registered and this number increased to 101 by October following further opal discoveries.
  Southern Cross opal is reported to be similar to good quality Olympic opal (see Frontispiece) and several 'levels' are being worked.
  The rush of activity on this field, and at the western end of Olympic accounted for the decline in activity in other Coober Pedy fields.

Andamooka - Stuart Creek

At the end of the year, number of registered PSCs was comparable to the end of 1981, after a marked decline in the middle of the year. Tea Tree Flat, White Dam, Lunatic and Gun Gully remain the most active fields.

The trend to less expensive mining methods (Barnes and Atterton, 1981) continues with hand mining techniques replacing much of the heavy machinery common in previous years.

Stuart Creek was not being worked and no PSCs were registered during 1982.

Mintabie

Activity increased with increased number of miners, extra blowers and 3 more bulldozers working during 1982 compared to 1981.

This trend was confirmed by increased capital investment in 1982, and in the number of registered PSCs, which increased from 115 at 9 October 1981 to 140 at 13 October 1982.

Several significant parcels of opal were found during the year which encouraged some miners to move from Coober Pedy.

Elsewhere

There was no recorded activity at any of the opal diggings outside the proclaimed precious stones fields. However, one PSC was registered at Sarda Bluff from August to November 1982.

PRODUCTION

The formula used for calculating opal production is the same as for 1981.

i.e. Annual Production ($) = $KX + Y + 0.1Z$

where X = number of miners

Y = annual operating costs

Z = capital investment

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

In 1981, the bonanza factor for Mintabie assumed 1% of miners made a find of $200 000 or more in the year. It is now accepted that many finds at Mintabie are of this value, hence the bonanza factor has been modified to assume 10% of miners make a find of $200 000 or more.

For 1982, the K factor for each field becomes.

Coober Pedy	24 400
Andamooka	23 900
Mintabie	43 400

Based on capital investment and operating costs as shown in Appendix B, estimated opal production for 1982 is summarised in Table IV.

TABLE IV

ESTIMATED VALUE OF PRODUCTION, 1982 ($ million)

SOUTH AUSTRALIAN PRECIOUS STONES FIELDS

	No. Miners (x)	May/June	October	Average
Coober Pedy	650	20.97		20.18
	600		19.38	
Andamooka	60	2.55	2.37	2.46
Mintabie	120	6.51		
	100		5.73	6.12
Total	760-830	30.03	27.48	28.76

Coober Pedy was again by far the largest producer but showed a major drop of almost $8 million in the estimated value of opal production from the previous year. Mintabie again outstripped Andamooka in value and was the only centre to show a healthy increase, even allowing for the alteration in the K factor.

Estimated total production from the three opal mining centres during 1982 was $28.76 million, a decrease of $5.45 million from $34.21 million in 1981 and well below the record estimate of $43.29 million in 1979.

The main reasons for the overall decline in opal production are -

- fewer miners actively engaged in the search for opal with the exception of Mintabie.

  The overall increase in number of PSCs during the year, suggests that even though interest is there, the ability to continue mining in times of rising costs is proving increasingly difficult for some.

- less capital equipment being employed, resulting in a slowing down in the prospecting rate and subsequent opal discovery, the exceptions being at Mintabie and the Southern Cross field at Coober Pedy.
- prices remaining depressed for raw opal due to inadequate marketing arrangements present practice does not encourage competition between buyers.
- prices also lower owing to a general slump in the world economy resulting in a slump in demand for luxury items.

RECOMMENDATIONS

To encourage the return of opal miners to the fields, the following measures are recommended.

- State Government continue discussions with Federal Government regarding the recommendations in the report, 'Australian Gemstone Processing Industry - Potential for Expansion', with particular reference to obtaining tax averaging provisions for opal miners.

recommendations in the Gemstone Industry Working Party Report be pursued to determine the feasibility of establishing a Gemstone Exchange Centre in Adelaide and to expand tourist promotion of the opal industry.

L.C. BARNES

R.L. WILDY

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APPENDIX A

Mining Equipment for all Precious Stones Fields

Surveys April/June 1982

October 1982

COOBER PEDY PRECIOUS STONES FIELD

EQUIPMENT 2·6·82	ALLAN RISE	BENITOS FOLLY	BLACK FLAG	BLACK POINT	BROWNS FOLLY	CRATER	COMPANY	DEADMAN DUGOUT	DEADMAN GULLY	DEADHORSE GULLY	DIGGERS GULLY	DINGO	DORA GULLY
BACKHOE													
BLOWER			2							1			
BOGGER													1
BUCKET ELEVATOR													1
BULLDOZER													
D9							1						1
D8			2		1								
D7													
D6													
D4													
COMPRESSOR													
100cfm													
180cfm													1
350cfm													
DRILLING RIGS													
CALWELD													
INVESTIGATOR			1		1						1		
SMALL AUGER													
ROTARY													
CRANE													
EXCAVATOR													
GENERATOR													
small													
large													
LOADER-FRONT END													1
NOODLING MACHINE													1
SCRAPER													
SELF DUMPER													
TUNNELING MACHINE													
WINCH-AIR/ELECTRIC													1
WINCH-HAND													
YORKE HOIST													
NO OF REGISTERED CLAIMS AT 10·6·82		5	22	7	6		1		1		1		3

EQUIPMENT 2·6·82	EAST PACIFIC	EMU FLAT	FLAT (BIG FLAT)	FOURTEEN MILE	FRANKS FOLLY	GERAGHTY HILL	GERMAN GULLY	GERMAN VALLEY	GREEK GULLY	HANS PEAK	HELLENIC HILL	HOPEFUL HILL	JASPER GULLY
BACKHOE													
BLOWER	1	2		19		4		1	24	6			
BOGGER						1			2				
BUCKET ELEVATOR				1		1			2	1			
BULLDOZER													
D9													
D8				5									
D7													
D6													
D4				1									
COMPRESSOR													
100cfm		1				1		1	1				
180cfm		1		4		3			9	2			
350cfm				1					1				
DRILLING RIGS													
CALWELD													
INVESTIGATOR		3				1							
SMALL AUGER													
ROTARY													
CRANE													
EXCAVATOR													
GENERATOR													
small		1				3			1				
large	1			8		2			4	1			
LOADER-FRONT END		1		1		3			3				
NOODLING MACHINE		1				4			2				
SCRAPER													
SELF DUMPER						1				1			
TUNNELING MACHINE	1			8					4	1			
WINCH-AIR/ELECTRIC				4		1		1	6	2			
WINCH-HAND													
YORKE HOIST						2			4	1			
NO OF REGISTERED CLAIMS AT 10·6·82	32	26	10	100		18	1	2	55	41		1	

INCLUDES OPENCUTS

EQUIPMENT 2·6·82	JOHN DEERE	JUNGLE	KENDA FLAT	KIMBA	LARKINS FOLLY	LENNON	OPAL VALLEY (MT. BRADY)	OLD FOUR MILE	OLYMPIC	ORELOG (TEAL W/HOLE)	PERFETTO	PIPING LANE	POTCH GULLY
BACKHOE													
BLOWER			6		3	1			42				3
BOGGER									2				
BUCKET ELEVATOR									4				
BULLDOZER													
D9													
D8			2										1
D7													
D6													2
D4									1				
COMPRESSOR													
100cfm									4				
180cfm			1		1				7				3
350cfm													
DRILLING RIGS													
CALWELD													
INVESTIGATOR													1
SMALL AUGER													
ROTARY													
CRANE													
EXCAVATOR													
GENERATOR													
small			2						4				
large			2						8				1
LOADER-FRONT END									5				
NOODLING MACHINE									2				
SCRAPER													
SELF DUMPER													
TUNNELING MACHINE			2						8				1
WINCH-AIR/ELECTRIC			1		1				13				
WINCH-HAND													
YORKE HOIST			3						4				
NO. OF REGISTERED CLAIMS AT 10·6·82	1	1	26		9	12	2		117		1		15

COOBER PEDY cont'd

EQUIPMENT 2·6·82	PROSPECT	RUSSO FOLLY	RYAN HILL	SADDLE	SEVENTEEN MILE	SHELL PATCH	SOUTH PACIFIC	SOUTHERN CROSS	TEE VALLEY (MT. BRADY)	TREVOR SWAMP	TURKEY RIDGE	UNKNOWN	VENUS
BACKHOE						1							
BLOWER		2			13	2		4					5
BOGGER													
BUCKET ELEVATOR													
BULLDOZER													
D9													
D8													
D7													
D6													
D4						1							
COMPRESSOR													
100cfm													
180cfm					2	1		1					
350cfm													
DRILLING RIGS													
CALWELD													
INVESTIGATOR								2					1
SMALL AUGER						1							
ROTARY													
CRANE													
EXCAVATOR													
GENERATOR													
small					1	1							
large		1			4			2					
LOADER-FRONT END					1								
NOODLING MACHINE					1								
SCRAPER													
SELF DUMPER													
TUNNELING MACHINE		1			4			2					
WINCH-AIR/ELECTRIC						2		2					1
WINCH-HAND													
YORKE HOIST							1						
NO. OF REGISTERED CLAIMS AT 10·6·82	5	7	4		26	4	4	32					Included with East Pacific

EQUIPMENT 2·6·82	VINO	WILLOW	ZORBA	TOWNSHIP AREA	TOTAL		BLACKBOY	BLACKBOY EXTENSION	BOUNDARY RIDER	BUZA	CHRISTMAS HILL	FOUR NATIONS	GERMAN GULLY
BACKHOE				(17) 9	(18) 10								
BLOWER			2	(63) 32	(206) 175			1					
BOGGER					6								
BUCKET ELEVATOR				(4) 2	(14) 12								1
BULLDOZER													
D9				(2) 1	(4) 3								
D8				(2) 1	(13) 12								
D7				(4) 2	(4) 2								
D6				(2) 1	(4) 3								
D4	1			(1) 1	(5) 5								
COMPRESSOR													
100cfm	1		1	(19) 10	(29) 20			1	1				1
180cfm			1	(14) 7	(51) 44								1
350cfm				(7) 4	(9) 6								1
DRILLING RIGS													
CALWELD					27 —	2 at Mintabie 2 Missing							
INVESTIGATOR				5	16								
SMALL AUGER				14	15								
ROTARY													
CRANE													
EXCAVATOR													
GENERATOR													
small	1			(3) 2	(17) 16			1					1
large				(21) 11	(55) 45								1
LOADER-FRONT END				(6) 3	(21) 18								1
NOODLING MACHINE	1			(2) 1	(14) 13								2
SCRAPER													
SELF DUMPER				(1) 1	(3) 2			1					
TUNNELING MACHINE				(16) 8	(48) 40								
WINCH-AIR/ELECTRIC	1			(1) 1	(37) 37								
WINCH-HAND							1	1	1				
YORKE HOIST			1		(16) 16		1		1				1
NO. OF REGISTERED CLAIMS AT 10·6·82	1		6		605		3	4	2		8	1	10

EQUIPMENT 8·6·82	GUN GULLY	HALFWAY	HALLION HILL	HORSE PADDOCK	JUBILEE	KOSKAS	LUNATIC HILL	STAN HILL	STEVENS GULLY	TEA TREE FLAT	TRIANGLE	WHITE DAM	YARLOO
BACKHOE												1	
BLOWER			2							3			
BOGGER													
BUCKET ELEVATOR													
BULLDOZER													
D9									1				
D8										1			
D7	1								1			1	
D6									1				
D4									1				
COMPRESSOR													
100cfm	1				1		2		2		1	4	
180cfm	1		1				1			4			
350cfm							1						
DRILLING RIGS													
CALWELD													
INVESTIGATOR													
SMALL AUGER							1					1	
ROTARY													
CRANE													
EXCAVATOR			1										
GENERATOR													
small							4		1			4	
large	2						1			1			
LOADER-FRONT END													
NOODLING MACHINE									1	1			
SCRAPER									1				
SELF DUMPER	1						5		3				
TUNNELING MACHINE													
WINCH-AIR/ELECTRIC							2						
WINCH-HAND	1				1		3				1		
YORKE HOIST	3		1		1		7		1	2	2	1	
NO. OF REGISTERED CLAIMS AT 10·6·82	15		2	1		1	19		12	45	4	34	

EQUIPMENT 8·6·82	ANDAMOOKA cont'd YARLOO EXTENSION	YARLOO SOUTH	YARLOO WEST	TOWNSHIP AREA	TOTAL		MINTABIE PRECIOUS STONES FIELD MINTABIE 27·4·82			STUART CREEK PRECIOUS STONES FIELD STUART CREEK			
BACKHOE				(8) 4	(9) 5		1						
BLOWER				(2) 1	(8) 7		10						
BOGGER							1						
BUCKET ELEVATOR					1								
BULLDOZER					1								
D9					1		6						
D8				(1) 1	(2) 2		3						
D7				(1) 1	(4) 4								
D6				(4) 2	(5) 3								
D4				(3) 2	(4) 3								
COMPRESSOR													
100cfm				(14) 7	(28) 21		19						
180cfm				(15) 8	(23) 16		8						
350cfm				(2) 1	(4) 3		2						
DRILLING RIGS													
CALWELD				1			3						
INVESTIGATOR							3						
SMALL AUGER				4	6		3						
ROTARY							2						
CRANE													
EXCAVATOR					1								
GENERATOR													
small				(5) 3	(16) 14		61						
large				(1) 1	(6) 6		11						
LOADER-FRONT END					1								
NOODLING MACHINE				(1) 1	(5) 5		1						
SCRAPER				(2) 1	(3) 2								
SELF DUMPER				(11) 6	(21) 16		1						
TUNNELING MACHINE													
WINCH-AIR/ELECTRIC				(1) 1	(3) 3		3						
WINCH-HAND				(20) 10	(29) 20								
YORKE HOIST				(4) 2	(25) 23		19						
NO. OF REGISTERED CLAIMS AT 10·6·82	1				182		111 — at — 10·5·82						

COOBER PEDY PRECIOUS STONES FIELD

EQUIPMENT 6/7·10·82	ALLAN RISE	BENITOS FOLLY	BLACK FLAG	BLACK POINT	BROWNS FOLLY	CRATER	COMPANY	DEADMAN DUGOUT	DEADMAN GULLY	DEADHORSE GULLY	DIGGERS GULLY	DINGO	DORA GULLY
BACKHOE													
BLOWER			1										1
BOGGER													
BUCKET ELEVATOR			1										
BULLDOZER													
D9													
D8													
D7													
D6			1										
D4													
COMPRESSOR													
100cfm			1										
180cfm													
350cfm													
DRILLING RIGS													
CALWELD													
INVESTIGATOR		1											
SMALL AUGER													1
ROTARY													
CRANE													
EXCAVATOR													
GENERATOR													
small													
large			1		1								1
LOADER-FRONT END			1		1								
NOODLING MACHINE			1		1								1
SCRAPER													
SELF DUMPER													
TUNNELING MACHINE			1										
WINCH-AIR/ELECTRIC													
WINCH-HAND													
YORKE HOIST			1										
NO. OF REGISTERED CLAIMS AT 13·10·82		4	10		5					1			2

EQUIPMENT 6/7-10-82	EAST PACIFIC	EMU FLAT	FLAT (BIG FLAT)	FOURTEEN MILE	FRANKS FOLLY	GERAGHTY HILL	GERMAN GULLY	GERMAN VALLEY	GREEK GULLY	HANS PEAK	HELLENIC HILL	HOPEFUL HILL	JASPER GULLY
BACKHOE						2							
BLOWER	1	1		15				3	13	12			
BOGGER													
BUCKET ELEVATOR			1			1	1		2				
BULLDOZER													
D9				1				1					
D8													
D7				1									
D6													
D4							1						
COMPRESSOR													
100cfm				2			1	1		2			
180cfm				1		1		1	2	3			
350cfm									2				
DRILLING RIGS													
CALWELD													
INVESTIGATOR		1						2		1	1		
SMALL AUGER						2							
ROTARY													
CRANE													
EXCAVATOR													
GENERATOR													
small		1		3				1	2	4			
large	1			3		1			4	2			
LOADER-FRONT END						4	1		1	3			
NOODLING MACHINE						2							
SCRAPER													
SELF DUMPER			1			1	1						
TUNNELING MACHINE	1			1					4	2			
WINCH-AIR/ELECTRIC				4		1		2	6	4			
WINCH-HAND													
YORKE HOIST						2				1			
NO OF REGISTERED CLAIMS AT 13-10-82	11	26	8	85			3	4	38			1	

EQUIPMENT 6/7·10·82	JOHN DEERE	JUNGLE	KENDA FLAT	KIMBA	LARKINS FOLLY	LENNON	OPAL VALLEY (MT. BRADY)	OLD FOUR MILE	OLYMPIC	ORELOG (TEAL W/HOLE)	PERFETTO	PIPING LANE	POTCH GULLY
BACKHOE						1		1	1				
BLOWER		1	3		2	1			48				1
BOGGER									1				
BUCKET ELEVATOR									5				
BULLDOZER													
D9													
D8						1							
D7													
D6													1
D4									1				
COMPRESSOR													
100cfm			1						4				
180cfm	1								12				
350cfm									1				
DRILLING RIGS													
CALWELD													
INVESTIGATOR													
SMALL AUGER													
ROTARY													
CRANE			1										
EXCAVATOR													
GENERATOR													
small									6				
large			1						5				1
LOADER-FRONT END									3				1
NOODLING MACHINE									2				
SCRAPER													
SELF DUMPER													
TUNNELING MACHINE			1						9				1
WINCH-AIR/ELECTRIC			2						17				
WINCH-HAND													
YORKE HOIST			1			1			7				
NO. OF REGISTERED CLAIMS AT 13·10·82	1		15		7	8			164				15

EQUIPMENT 6/7·10·82	PROSPECT	RUSSO FOLLY	RYAN HILL	SADDLE	SEVENTEEN MILE	SHELL PATCH	SOUTH PACIFIC	SOUTHERN CROSS	TEE VALLEY (MT. BRADY)	TREVOR SWAMP	TURKEY RIDGE	UNKNOWN	VENUS
BACKHOE						1							
BLOWER	1				4	1	1	17			1		1
BOGGER													
BUCKET ELEVATOR								2					
BULLDOZER													
D9	1												
D8						1							
D7													
D6													
D4						1							
COMPRESSOR													
100cfm								1					
180 cfm						1		6					
350cfm								1					
DRILLING RIGS													
CALWELD													
INVESTIGATOR								2					
SMALL AUGER						1							
ROTARY													
CRANE													
EXCAVATOR													
GENERATOR													
small	1				1		1	3			1		
large		1			2		1	3					
LOADER-FRONT END	1							2					
NOODLING MACHINE		1						1					
SCRAPER													
SELF DUMPER								1					
TUNNELING MACHINE					2		1	7					
WINCH-AIR/ELECTRIC								7					
WINCH-HAND													
YORKE HOIST					1			1					
NO. OF REGISTERED CLAIMS AT 13·10·82	4	1	2		23	4		101	4				Included in EAST PACIFIC

EQUIPMENT 6/7-10-82	VINO	WILLOW	ZORBA	TOWNSHIP AREA	TOTAL		BLACKBOY	BLACKBOY EXTENSION	BOUNDARY RIDER	BUZA	CHRISTMAS HILL	FOUR NATIONS	GERMAN GULLY
BACKHOE				(9) 5	(15)	11							1
BLOWER				(85) 43	(214)	172							1
BOGGER				(4) 2	(5)	3							
BUCKET ELEVATOR				(8) 4	(21)	17							
BULLDOZER													
D9				(1) 1	(4)	4							
D8				(3) 2	(5)	4							
D7				(5) 3	(6)	4							
D6						2							
D4				(3) 2	(6)	5					1		
COMPRESSOR													
100cfm				(13) 7	(26)	20	1				1		
180cfm				(33) 17	(61)	45							1
350cfm				(13) 7	(17)	11							3
DRILLING RIGS													
CALWELD						27							
INVESTIGATOR				4		12							
SMALL AUGER				14		18							
ROTARY													
CRANE													
EXCAVATOR											1		
GENERATOR													
small				(3) 2	(27)	26	1	2					1
large				(14) 7	(42)	35							
LOADER-FRONT END				(13) 7	(31)	25							1
NOODLING MACHINE				(1) 1	(10)	10					1		1
SCRAPER													
SELF DUMPER				(2) 1	(6)	5	2						1
TUNNELING MACHINE				(12) 6	(42)	36							
WINCH-AIR/ELECTRIC				(2) 1	(45)	44				1			
WINCH-HAND							1			1			4
YORKE HOIST				(6) 3	(21)	18	3	1			2		2
NO. OF REGISTERED CLAIMS AT 13-10-82		2	6		624		8	4	2	2	7	1	18

EQUIPMENT 9·10·82	GUN GULLY	HALFWAY	HALLION HILL	HORSE PADDOCK	JUBILEE	KOSKAS	LUNATIC HILL	STAN HILL	STEVENS GULLY	TEA TREE FLAT	TRIANGLE	WHITE DAM	YARLOO
BACKHOE													
BLOWER			2						1	1			
BOGGER													
BUCKET ELEVATOR													
BULLDOZER													
D9													
D8													
D7							1		1				
D6												1	
D4												1	
COMPRESSOR													
100cfm									1	2		3	
180cfm	1		1				3		2	1		1	
350cfm			1						1				
DRILLING RIGS													
CALWELD													
INVESTIGATOR													
SMALL AUGER													
ROTARY													
CRANE													
EXCAVATOR													
GENERATOR													
small									1	2		3	
large	1						3						
LOADER-FRONT END													
NOODLING MACHINE										2			
SCRAPER									1				
SELF DUMPER	1						4		3	1		1	
TUNNELING MACHINE													
WINCH-AIR/ELECTRIC													
WINCH-HAND	1		1				2		1	1	1	4	
YORKE HOIST	1						6		1	3	2	2	
NO. OF REGISTERED CLAIMS AT 13·10·82	16		2		1	1	29		16	57	4	45	1

EQUIPMENT	ANDAMOOKA cont'd YARLOO EXTENSION	YARLOO SOUTH	YARLOO WEST	TOWNSHIP AREA	TOTAL		MINTABIE PRECIOUS STONES FIELD MINTABIE 6.10.82			STUART CREEK PRECIOUS STONES FIELD STUART CREEK			
BACKHOE				(3) 2	(4) 3		2						
BLOWER					5		13						
BOGGER													
BUCKET ELEVATOR													
BULLDOZER													
D9							8						
D8							1						
D7				(2) 1	(4) 3		2						
D6				(5) 3	(6) 4								
D4				(1) 1	(3) 3								
COMPRESSOR													
100cfm				(14) 7	(22) 15		4						
180.cfm				(19) 10	(29) 20		7						
350.cfm				(4) 2	(9) 7		10						
DRILLING RIGS													
CALWELD					1		1						
INVESTIGATOR							2						
SMALL AUGER				4	4		1						
ROTARY							1						
CRANE													
EXCAVATOR (LGE)				1	2								
GENERATOR													
small				(3) 2	(13) 12		37						
large				(6) 3	(10) 7		5						
LOADER-FRONT END				(4) 2	(5) 3		3						
NOODLING MACHINE				(1) 1	(5) 5		1						
SCRAPER				(3) 2	(4) 3								
SELF DUMPER				(9) 5	(22) 18		1						
TUNNELING MACHINE													
WINCH-AIR/ELECTRIC					1		2						
WINCH-HAND				(19) 10	(37) 28								
YORKE HOIST				(9) 5	(32) 28		18						
NO. OF REGISTERED CLAIMS AT 13/10/82	1				215		140						

APPENDIX B

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

Surveys: April/June 1981
October 1981

	COOBER PEDY					ANDAMOOKA			MINTABIE APRIL '82			STUART CREEK		
EQUIPMENT JUNE '82	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	30000	5830	10	300000	58300	5	150000	29150	1	30000	5830			
BLOWER	12000	9000	175	2100000	1575000	7	84000	63000	10	120000	90000			
BOGGER	4000	200	6	24000	1200				1	4000	200			
BUCKET ELEVATOR	8500	500	12	102000	6000	1	8500	500						
BULLDOZER														
D9	350000	64440	3	1050000	193320	1	350000	64440	6	2100000	386640			
D8	245000	48170	12	2940000	578040	2	490000	96340	3	735000	144510			
D7	160000	32980	2	320000	65960	4	640000	131920						
D6	100000	23040	3	300000	69120	3	300000	69120						
D4	55000	18720	5	275000	93600	3	165000	56160						
COMPRESSOR														
100cfm	13000	1420	20	260000	28400	21	273000	29820	19	247000	26980			
180cfm	14000	2840	44	616000	124960	16	224000	45440	8	112000	22720			
350cfm	24000	4260	6	144000	25560	3	72000	12780	2	48000	8520			
DRILLING RIGS														
CALWELD	150000	9200	25	3750000	230000	1	150000	9200	3	450000	27600			
INVESTIGATOR	45000	6400	16	720000	102400				3	135000	19200			
SMALL AUGER	5000	4400	15	75000	66000	6	30000	26400	3	15000	13200			
ROTARY	100000	9000							2	200000	18000			
CRANE	15000	400												
EXCAVATOR	138000	32980				1	138000	32980						
GENERATOR														
small/med	800	720	16	12800	11520	14	11200	10080	61	48800	43920			
large	8000	4220	45	360000	189900	6	48000	25320	11	88000	46420			
LOADER-FRONT END	30000	5830	18	540000	104940	1	30000	5830						
NOODLING MACHINE	8000	1000	13	104000	13000	5	40000	5000	1	8000	1000			
SCRAPER	100000	19440				2	200000	38880						
SELF DUMPER	1500	720	2	3000	1440	16	24000	11520	1	1500	720			
TUNNELING MACHINE	25000	1500	40	1000000	60000									
WINCH-AIR/ELECTRIC	1000		37	37000		3	3000		3	3000				
WINCH-HAND	100			NOT	COUNTED	20	2000			NOT	COUNTED			
YORKE HOIST	700	400	16	11200	6400	23	16100	9200	19	13300	7600			
TOTAL $				15044000	3605060		3448800	773080		4358600	863060			

OCTOBER .82 EQUIPMENT	UNIT COST $	OPERATING COST per UNIT per year	COOBER PEDY UNITS	COOBER PEDY TOTAL CAPITAL COST	COOBER PEDY TOTAL RUNNING COST	ANDAMOOKA UNITS	ANDAMOOKA TOTAL CAPITAL COST	ANDAMOOKA TOTAL RUNNING COST	MINTABIE UNITS	MINTABIE TOTAL CAPITAL COST	MINTABIE TOTAL RUNNING COST	STUART CREEK UNITS	STUART CREEK TOTAL CAPITAL COST	STUART CREEK TOTAL RUNNING COST
BACKHOE	30 000	5 830	11	330 000	64 130	3	90 000	17 490	2	60 000	11 660			
BLOWER	12 000	9 000	172	2 064 000	1 548 000	5	60 000	45 000	13	156 000	117 000			
BOGGER	4 000	200	3	12 000	600									
BUCKET ELEVATOR	8 500	500	17	144 500	8 500									
BULLDOZER														
D9	350 000	64 440	4	1 400 000	257 760				8	2 800 000	515 520			
D8	245 000	48 170	4	980 000	192 680				1	245 000	48 170			
D7	160 000	32 980	4	640 000	131 920	3	480 000	98 940	2	320 000	65 960			
D6	100 000	23 040	2	200 000	46 080	4	400 000	92 160						
D4	55 000	18 720	5	275 000	93 600	3	165 000	56 160						
COMPRESSOR														
100 cfm	13 000	1 420	20	260 000	28 400	15	195 000	21 300	4	52 000	5 680			
180 cfm	14 000	2 840	45	630 000	127 800	20	280 000	56 800	7	98 000	19 880			
350 cfm	24 000	4 260	11	264 000	46 860	7	168 000	29 820	10	240 000	42 600			
DRILLING RIGS														
CALWELD	150 000	9 200	27	4 050 000	248 400	1	150 000	9 200	1	150 000	9 200			
INVESTIGATOR	45 000	6 400	12	540 000	76 800				2	90 000	12 800			
SMALL AUGER	5 000	4 400	18	90 000	79 200	4	20 000	17 600	1	5 000	4 400			
ROTARY	100 000	9 000							1	100 000	9 000			
CRANE	15 000	400	3	45 000	1 200									
EXCAVATOR	138 000	32 980				2	276 000	65 960						
GENERATOR														
SMALL/MED	800	720	26	20 800	18 720	12	9 600	8 640	37	29 600	26 640			
LARGE	8 000	4 220	35	280 000	147 700	7	56 000	29 540	5	40 000	21 100			
LOADER-FRONT END	30 000	5 830	25	750 000	145 750	3	90 000	17 490	3	90 000	17 490			
NODDLING MACHINE	8 000	1 000	10	80 000	10 000	5	40 000	5 000	1	8 000	1 000			
SCRAPER	100 000	19 440				3	300 000	58 320						
SELF DUMPER	1 500	720	5	7 500	3 600	18	27 000	12 960	1	1 500	720			
TUNNELING MACHINE	25 000	1 500	36	900 000	54 000									
WINCH-AIR/ELECTRIC	1 000		44	44 000		1	1 000		2	2 000				
WINCH-HAND	100		NOT	COUNTED		28	2 800		NOT	COUNTED				
TUGGER HOIST	700	400	18	12 600	7 200	28	19 600	11 200	18	12 600	7 200			
TOTAL $				14 019 400	3 338 900		2 830 000	653 580		4 499 700	936 020			

APPENDIX C

Large Diameter Prospecting Drills at Coober Pedy.

DRILLING RIGS (CALWELD TYPE)

NAME	TRUCK	REG.	DESCRIPTION & DIST. MARKS	DEPTH FEET	DEPTH METRES
Jim BALLIS	AEC	RRYL811	DK BLUE 'GILL UKENA' ON DOOR	90	27
Len BUTTS	ATKINSON		ORANGE/WHITE 'THE PROSPECTOR'	90	27
Tom CAKER	FODEN		YELLOW	83	25
Jim CRONIN	INTER ROADSTAR		DK GREEN & WHITE EARTH DRILL	93	30
FLIRIS	AEC		GREEN		
Paul FRASER	LEYLAND		BLUE 'GGG' ON MAST	83	25
Neville HYATT	ALBION	RLS637	GREEN		
Con IARRANCA	AEC	RAS800	RED		
KAMBANOS	ALBION	RXB134	DK BLUE 'KAMBANOS & BRELLAS' ON DOOR	66	20
Arthur LAZARAKI	DODGE		WHITE		
KTENDIS	AEC		RED/WHITE ROOF 'NORTHWEST MINING' ON ROOF		
Dennis LEDGARD?	AEC		ORANGE/WHITE STRIPE		
Ernest KAMITAKAHARA	LEYLAND		DK BLUE 'CONTRACT DRILLER' ON DOOR		
Frank NOVASAL	FODEN		DOUBLE BLUE 'SLAVONIA...'	95	29
PASQUALE	INTER		PALE BLUE		
Aspisito PAPADOPOULOS	DODGE		RED 'OPALTON MINING CO. CO. N. QLD/ON DOORS		
Frank PENNISI	FODEN		PALE BLUE 'FRANK & BOB MINING P/L' ON DOOR		
Wally TURNER	FODEN	JGC707	WHITE HALF CAB		
Nick VISAVARDIS	ALBION	RMZ149	RED		
2A MINING CO.		RYZ791	BLUE GREEN '2A MINING CO.' ON DOORS		
	AEC		WHITE 'OPAL DRILLING' ON DOORS		

NAME	TRUCK	REG.	DESCRIPTION & DIST. MARKS	DEPTH FEET	DEPTH METRES
ATHEANADIS	FODEN	SNA337	RED		
WENTRIRO	FODEN		DARK BROWN T & K EARTH DRILL (KATO DRILL)		
	FODEN		RED 'GEM DRILLERS COOBER PEDY' ON DOORS		
Syd ABSALOM (Mrs. Papadopolous)	FODEN		LEMON YELLOW		
	REO (6 wheel drive)		DK GREEN BUCKET DRILL	40	12
EX KATARAJN	MASTERS MOTORS		GREEN AND YELLOW BUCKET DRILL	115	35
	AEC	RPJ143	RED TRUCK WHITE SQUARE ON DOOR		
Bob ZEC	AEC	UFZ585	YELLOW (EXDILLINGHAM CONSTRUCTION)	ANDAMOOKA	
Matt JUKIC				MINTABIE	

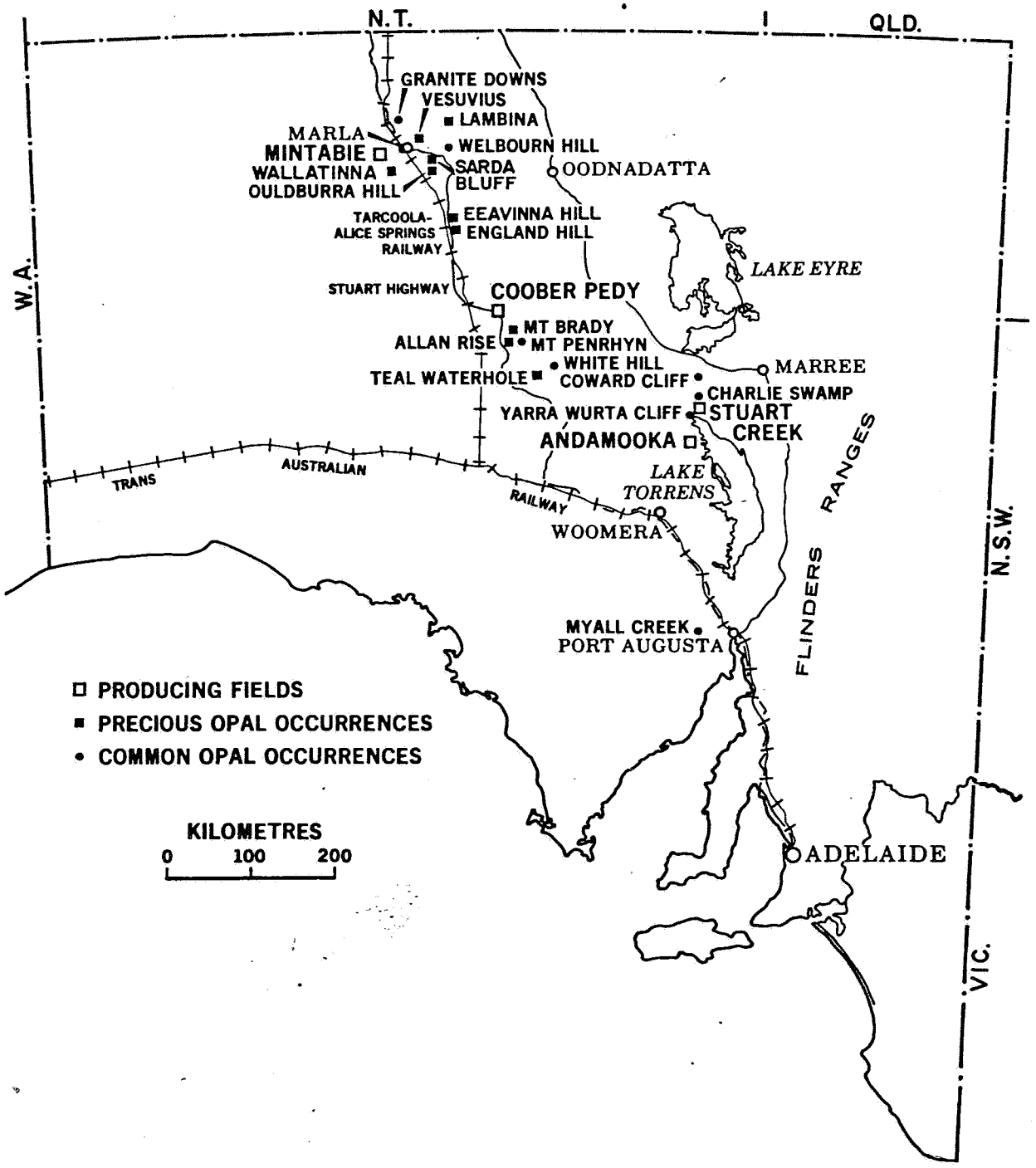


Fig. 1

	DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	SCALE: 1:7400 000
COMPILED: L.C.B.		DATE: 12·9·79
DRN: CKD:	OPAL OCCURRENCES IN SOUTH AUSTRALIA	PLAN NUMBER S14248

SOUTH AUSTRALIAN PRECIOUS STONES FIELDS

NUMBER OF REGISTERED PRECIOUS STONES CLAIMS 1974-1980

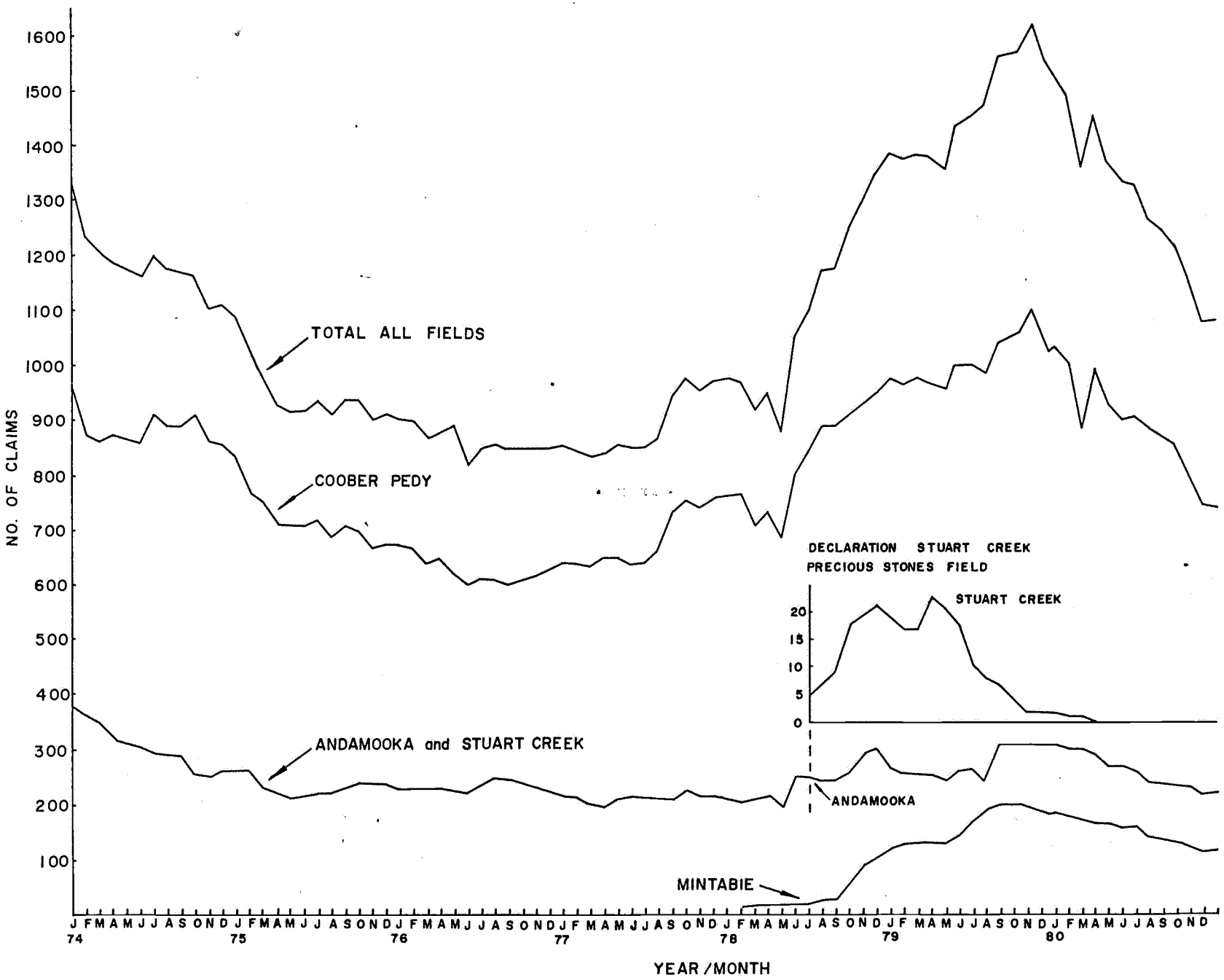


FIG. 2

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

COMPILED	DRAWN	DATE	CHECKED
B.A.	E.W.	6·4·81	

CDO 24·8·81 DATE

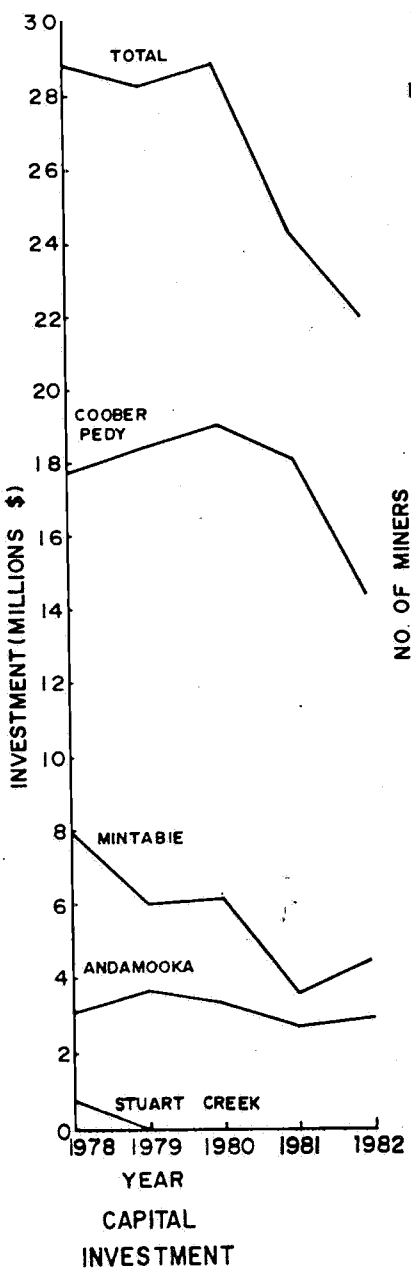
SCALE

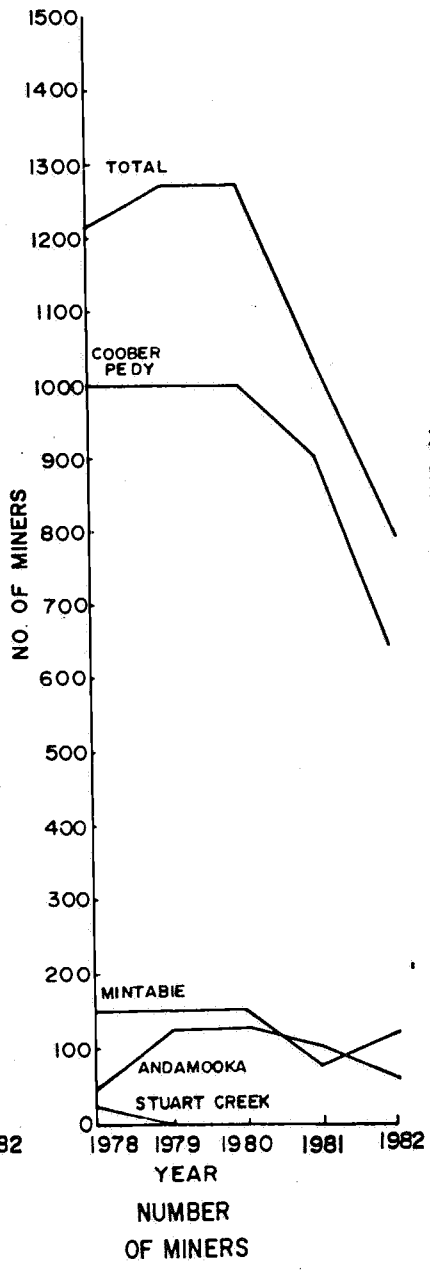
PLAN NUMBER S15474

SOUTH AUSTRALIAN PRECIOUS STONES FIELDS
NUMBER OF REGISTERED PRECIOUS STONES CLAIMS 1980 – 1982

FIG. 3

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	COMPILED M.W.F.	
	DRAWN S.R.	DATE 10-6-83 CHECKED
C.D.O.	SCALE As shown	PLAN NUMBER S16768
DATE 27.6.83		





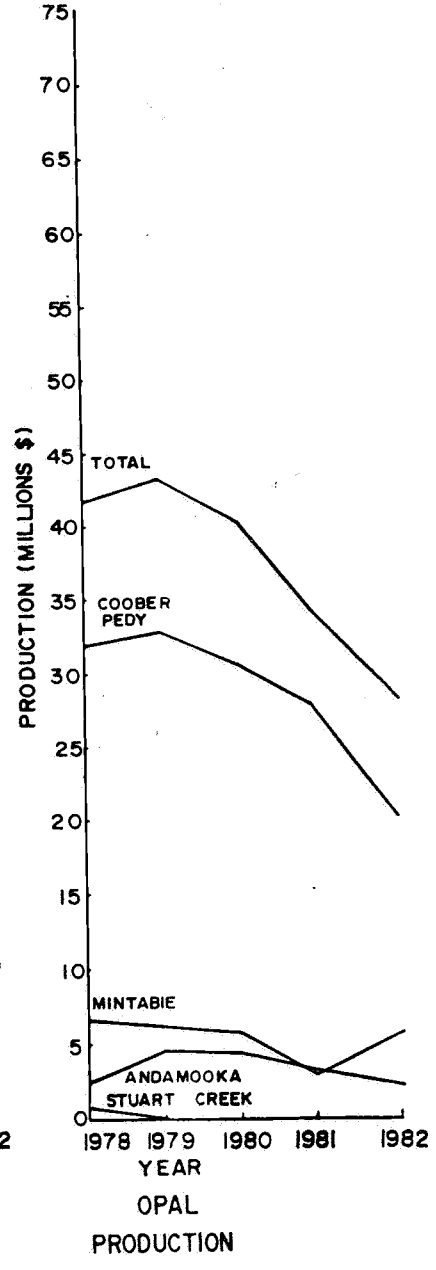


FIG.4

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	COMPILED M.W.F.	CDO 27-6-83 DATE
	DRAWN S.R.	SCALE As shown
SOUTH AUSTRALIAN PRECIOUS STONES FIELDS INVESTMENT, PRODUCTION AND NUMBER OF MINERS 1979 – 1982	DATE 10-6-83	PLAN NUMBER S 16769
	CHECKED	

3210