

# OPERATION

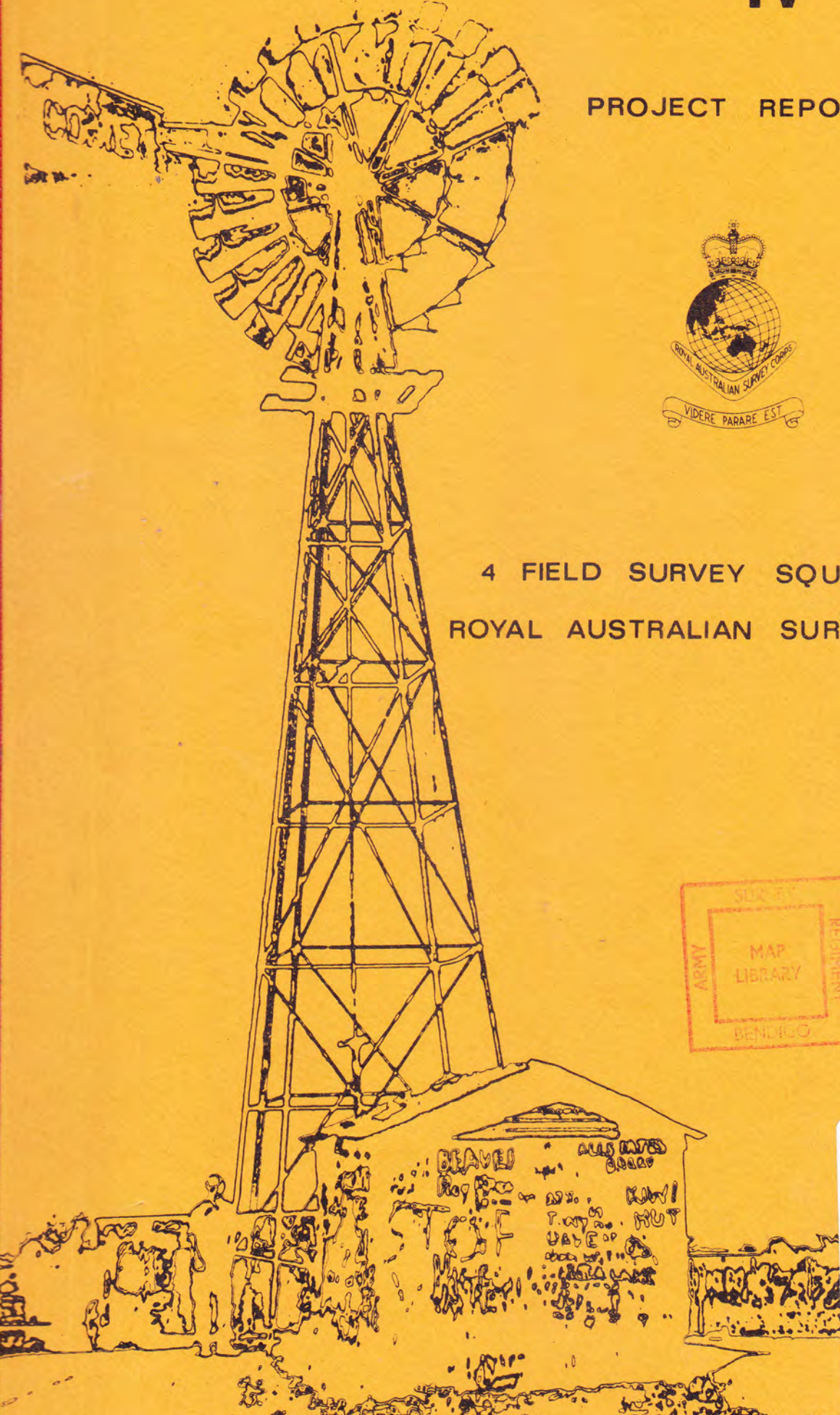
# NOTARIAL

## IV

PROJECT REPORT



4 FIELD SURVEY SQUADRON  
ROYAL AUSTRALIAN SURVEY CORPS



63



4 FIELD SURVEY SQUADRON

PROJECT REPORT

OPERATION NOTARIAL IV

SEPTEMBER 1983

AMENDMENT SHEET

PROJECT REPORT

OPERATION NOTARIAL IV

SEPTEMBER 1983

AMENDMENT LIST		AMENDMENT MADE BY	DATE
NO	DATE		

Front Cover: The front cover was produced from a photograph of Marla Bore

DISTRIBUTION

Dept of Defence (Army Office)	- DSVY-A	3
	- DGOP-A	2
HQ FF Comd	- Ops Br	2
	- SO1 (SVY)	1
HQ 4 MD		2
Army Svy Regt		2
<u>Internal:</u>		
OC 4 Fd Svy Sqn		1
Det IC		1
File		1
Library		2

4 FIELD SURVEY SQUADRONPROJECT REPORTOPERATION NOTARIAL IVSEPTEMBER 1983

Title Page	
Amendment Sheet	iii
Distribution	iv
Contents	v

General

Operational Results

Operational Support

Administration

Logistics

Communications

Operational Difficulties

Conclusions and Recommendations

Annex: A. Field Annotation Report - Marla and Maralinga

B. Control Survey Report

C. Field Annotation Report - UOPM Coober Pedy

## PROJECT REPORT

### OPERATION NOTARIAL STAGE IV

- References:
- A. Dept of Defence (AO) Op Instr 6/82 A339-1-350 dated 20 Aug 82
  - B. HQ 4 MD Mounting Instr 841/16S/11 dated 1 Sep 83
  - C. 4 Fd Svy Sqn Op Instr 788/2/2 dated 8 Sep 83
  - D. FIELDFOR SYDNEY OPORD No 8/83 of 060545Z Sep 83

### General

1. Operation Notarial IV was mounted by 4 Fd Svy Sqn during the period 12 Sep - 10 Oct 83. The aim of the operation was to field annotate 72 x 1:50000 enhanced orthophoto maps in the 1:250000 scale map areas of SG 53-13 EVERARD, SG 53-14 WINTINNA, SH 52-8 MAURICE and SH 52-12 OOLDEA. Appendix 1 to Annex A shows the area of operation.
2. Additional tasks to the operation were as follows:
  - a. establish three control points in the 1:250000 map areas of SH 53-2 MURLOOCOPPIE and SG 53-14 WINTINNA. Appendix 1 to Annex B shows the area of operation;
  - b. field annotate the Coober Pedy 1:10000 urban orthophoto map. A detailed report is contained in Annex C.

### Operational Results

3. Field Annotation. All maps listed for field annotation were completed. A detailed report is contained in Annex A.
4. Control Surveys. The three control stations were established. A detailed report is contained in Annex B.

### Operational Support

5. Aircraft Support. A fixed wing Aero Commander was chartered from Skytours Pty Ltd of Adelaide to be used for field annotation in the AO. Details are:
  - a. Aero Commander, Civil Chartered. Of the allotted 60 hours, 55 hr 59 min were used. Total expenditure for the charter was \$13,070.39 with payment made by Log Comd.
  - b. Serviceability. No serviceability problems were encountered during the operation.
  - c. Personnel. The co-operation between the RA Svy personnel and the civilian pilot was excellent throughout the operation. The interest shown and assistance given by the pilot contributed significantly to the success of the operation.

6. Technical Equipment Support. A Magnavox MX1502 Satellite Surveyor was loaned to 4 Fd Svy Sqn by SA Dept of Lands for the establishment of three control stations during the period 28 Sep - 16 Oct 83. No serviceability problems were encountered with the equipment.

Administration

7. Manning. The force was composed of the following 4 Fd Svy Sqn personnel:

1202181	SSGT A.E. Brown	OIC Party 1	12 Sep - 2 Oct 83
315386	SGT P.J. Smalley	OIC Party 2	19 Sep - 9 Oct 83
222877	SGT N.W. Jones	Party 2	19 Sep - 9 Oct 83
56139	CPL J.A. Ratcliffe	Party 1	12 Sep - 2 Oct 83
552471	CPL R.D. Clarke	OIC Party 3	27 Sep - 10 Oct 83
46111	CPL L.J. Camp	Party 2	19 Sep - 9 Oct 83
63273	SPR A.D. Lucas	Party 1	12 Sep - 2 Oct 83
228115	SPR S.C. Rundle	Party 1	12 Sep - 2 Oct 83
314340	SPR B.A. Graham	Party 2	19 Sep - 9 Oct 83
321968	SPR S.E. McGuiness	Party 3	27 Sep - 10 Oct 83

8. Visit. WO2 R.J. Hayden and WO2 R.J. Williams of 4 Fd Svy Sqn visited the detachment in the AO on 25-28 Sep 83. The purpose of the visit was to:

- a. obtain field information for the enhancement of the Coober Pedy UOPM; and
- b. familiarise WO2 Williams with current techniques of field annotation of the 1:50000 OPM presently on programme.

9. Main Base

- a. Party 1. Main base was situated at the Marla Motel, Marla, during the period 13 Sep - 30 Sep 83.
- b. Party 2. Main base was situated at the Federal Police accommodation at Maralinga during the period 20 Sep - 7 Oct 83.
- c. Party 3. This party moved independently of the other parties and was located at the three control points as required.

10. Rations. Ration stocks were purchased prior to arrival in the AO.

11. Stores. Stores were supplied by 4 Fd Svy Sqn.

12. Health. Two mandays were lost due to gastroenteritis. No other medical or dental treatment was necessary.
13. Morale. The level of morale was high throughout the operation.
14. Discipline. No situations arose where disciplinary action was required.
15. Pay and Allowances
  - a. Pay. Members received pay in advance for the full period of the operation.
  - b. Allowances. The following allowances were paid:
    - (1) Travelling Allowance for insertion and extraction of all parties, and for Party 1 whilst at Marla,
    - (2) District Allowance whilst in the AO,
    - (3) Incidentals for the duration of the op, and
    - (4) Survey Party Ration Allowance for Party 2 at Maralinga and Party 3 whilst in the Wintinna area.
16. Expenditure
  - a. T&S           \$5926
  - b. Rations       \$697
  - c. F&C           \$52
  - d. POL           \$5320 (see also para 20)
17. Public Relations
  - a. Party 1 and 3. Working in the Marla area, contact was made with many members of the public. Assistance was received from the following:
    - (1) Mr Dan Vachon, Pitjantjatjara Land Council
    - (2) Mr Clayton Hannigan, owner Christmas Well Station
    - (3) Mr Gordon Lillecrapp, owner Todmorden Station
    - (4) Mr Ernie Giles, owner Welbourn Hill Station
    - (5) Mr Peter Giles, owner Wintinna Station
    - (6) Owner/Managers, Copper Hill and Mt Willoughby Stations
    - (7) Mr Simon Wood, Hwys Dept Surveyor, working in AO from Adelaide

- (8) Mr Brian Brady, Comalco Surveyor, working in AO from Melbourne.
- b. Party 2. Working in the Maralinga area assistance was received from the following:
  - (1) Snr Constable Peter Watt, Australian Federal Police, in AO from Woomera
  - (2) Snr Constable Stuart Millard, Australian Federal Police, in AO from Woomera
  - (3) Mr Doug Stoneham, Foreman Dept of Housing and Construction, working in the AO from Salisbury.

Logistics

- 18. Supply. The following items were resupplied:
  - a. 1 x Landrover steering damper, and
  - b. 1 x Landrover alternator.

Both items were received within one working day of request.

- 19. Fuel Positioning
  - a. Drummed. Drummed fuel was supplied by 41 Sup Bn and positioned by 4 Tpt & Mov Gp as follows:
    - (1) Marla airstrip - AVGAS 4400 litres
    - (2) Maralinga airstrip - AVGAS 3600 litres
    - (3) Maralinga airstrip - MSS 1400 litres.
  - b. Bulk. 41 Sup Bn supplied SP 27 forms for the purchase of bulk fuel for insertion and extraction of parties and whilst in the AO at Marla. At Oodnadatta, AVGAS was purchased from the airport bulk fuel contractor on an order form supplied from the charterer.

- 20. Fuel Usage. The following fuel was used during the operation:
  - a. AVGAS - 6000 litres (drum)
  - b. AVGAS - 528 litres (bulk)
  - c. MSS - 1000 litres (drum)
  - d. MSS - 2892 litres (bulk)
  - e. MSP - 1824 litres (bulk).

The remaining fuel and drums are to be recovered by 4 Tpt & Mov Gp. This represents an amount of \$2100 for the value of the fuel and drums in addition

to the amount quoted in para 16.

21. Vehicles. The following vehicles were used on the operation:
  - a. 6 x Truck Carryall 3/4 ton GS Series 3 Landrover, and
  - b. 5 x Trailer Cargo 1/2 ton.
22. Vehicle Serviceability. Generally the vehicles performed well over the period of the operation, with the following mechanical problems:
  - a. Alternator, OTS,
  - b. Steering damper, OTS, and
  - c. Two mirrors were lost due to bolt or stud failures.

#### Communications

23. Rear Link. Rear link communications were provided by telephone using a Telecom Credit Card. Reports were made weekly to OC 4 Fd Svy Sqn.
24. Field Parties. Communications between ground parties within each AO was maintained by AN PRU Fl radio. Daily scheduled reporting was successful at all times.

#### Operational Difficulties

25. Entry to Aboriginal Lands. Difficulties were encountered in obtaining approval to enter Pitjantjatjara Aboriginal Lands. The first approach for approval to enter upon Pitjantjatjara Aboriginal Lands was made by HQ 4 MD in June 1983. However, the following conditions for approval could not be met by the Army:
  - a. Aboriginal Liaison camp close to Marla,
  - b. Maintain the camp's food supply,
  - c. Arrange transport from camp to the field and return,
  - d. Vehicle running costs, and
  - e. Up to \$200/day in wages.

On arrival in the AO, permission still had not been granted and a meeting at Indulkana Community was arranged for 17 Sep 83 between OIC Det 4 Fd Svy Sqn, representatives of the Pitjantjatjara Land Council and tribal elders. Once the detachment's area of interest and objectives were explained and clarified, the Lands Council was happy to allow access, provided members were accompanied by the Aboriginals. This was operationally impractical and therefore these areas were annotated by air. Vehicular access was granted for the control survey along a specific route.

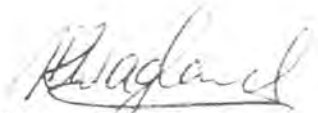
26. Vehicle Accessibility. The sparsely populated nature of the area meant that a lot of time was spent travelling on poorly made roads and tracks just getting to an area of interest. Although this was acceptable for this

area, for future operations the distances from main bases may place a higher reliance on air annotation, and in particular, may require the use of rotary wing acft.

Conclusions and Recommendations

27. The operation was carried out successfully within the resources allocated. In this case, restrictions on vehicular travel within Aboriginal Lands did not adversely affect the results of the operation. However, this may not always be the case. It is recommended that the position of the Defence Forces be examined with a view to establishing rights of entry to land for the purpose of carrying out authorized survey work.

Nov 83

  
(M.R. WAGLAND)  
CAPT  
Administering Command

FIELD ANNOTATION REPORT

- References: A. RA Svy Symbolization All Series 1:50000 map specifications
- B. SOP for Cartographic Enhancement of Random Dot OPM dated 25 Feb 82

Task

1. To field annotate 72 x 1:50000 enhanced orthophoto maps in South Australia. The maps were contained within the following 1:250000 map sheets:
  - a. SH 52-8 MAURICE
  - b. SH 52-12 OOLDEA
  - c. SG 53-13 EVERARD
  - d. SG 53-14 WINTINNA.
2. Appendix 1 to Annex A shows the area of operations.
3. Standards were in accordance with References A and B.

Execution

4. Organization. The force consisted of 2 x two man parties at both Marla and Maralinga, and carried out the annotation by road and air.
5. Deployment. At all times the parties operated from their respective main base.

Field Annotation Material

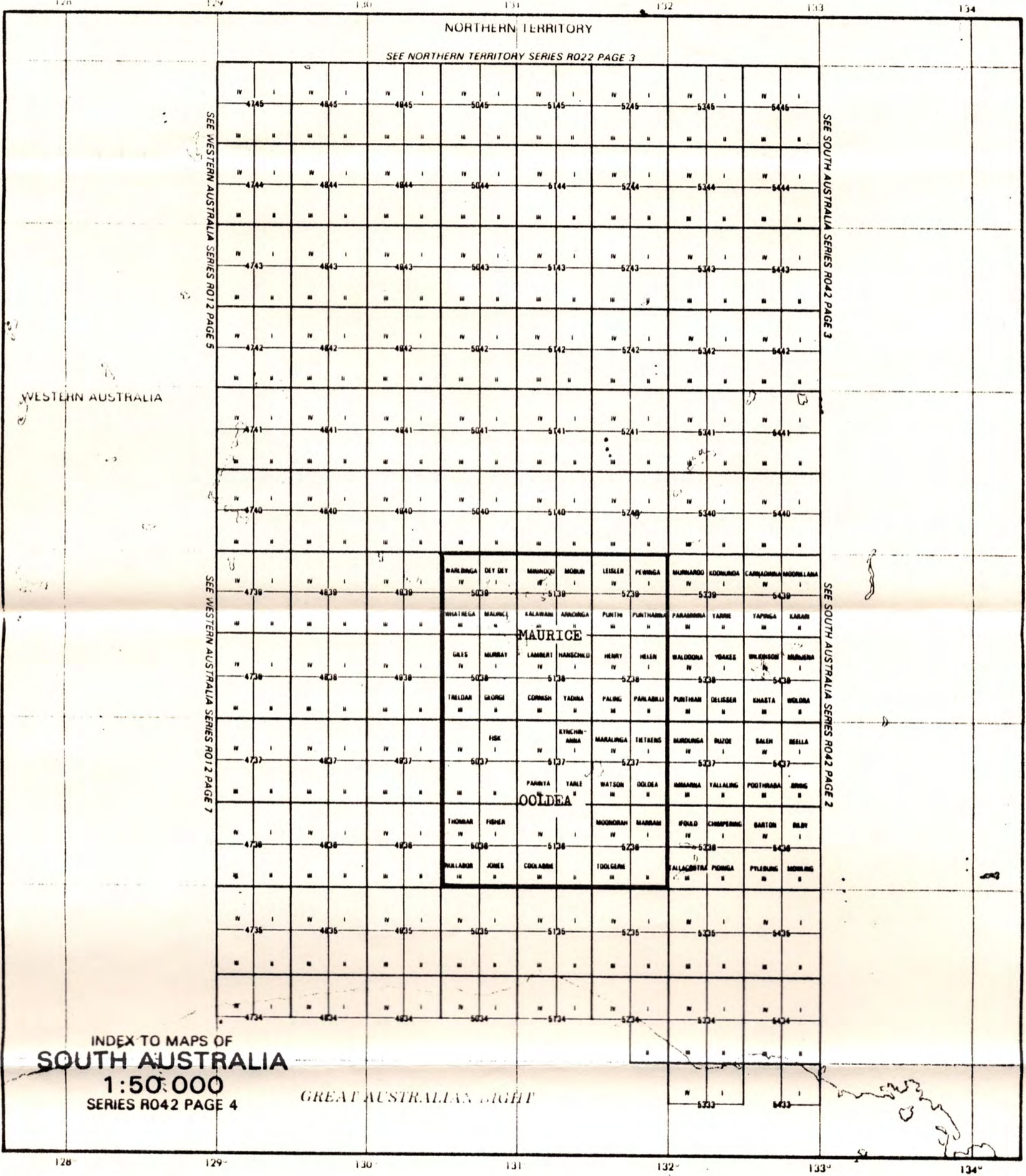
6. Five units were involved in the preparation of field annotation material:
  - a. Map sheet SG 53-12 EVERARD. 4 Fd Svy Sqn plotted 4 x 1:50000 areas. Selected cultural detail had been plotted.
  - b. Map sheet SH 52-8 MAURICE. 4 Fd Svy Sqn plotted 24 x 1:50000 areas. No cultural detail had been plotted.
  - c. Map sheet SG 53-14 WINTINNA. 5 Fd Svy Sqn plotted 20 x 1:50000 areas. Selected cultural detail had been plotted.

- d. Map sheet SH 52-12 OOLDEA. 2 Fd Svy Sqn plotted 16 x 1:50000 areas and 1 Fd Svy Sqn plotted 8 x 1:50000 areas. Selected cultural detail had been plotted.
  - e. Army Survey Regiment supplied one matte and one gloss composite bromide copy of the OPM imagery and grid for each 1:50000 map area. Prior to field parties departing for the AO, one matte bromide copy of each 1:50000 map area was marked with nomenclature and where applicable, the plotted cultural detail.
  - f. Master ozafilm sheets of the cultural detail were produced for use in the AO.
7. Selected detail cultural plots depicting that detail which would otherwise not readily be discernible on the bromides assisted the annotation task.
8. Photography. Nil supplementary photography was flown during the op. Details of photography available are as follows:
- a. SA Lands Dept photography was flown during Oct 83 within map sheet SH 52-8 MAURICE.
  - b. RAAF photography flown Sep 81 was used for the OPM projection in the WINTINNA/EVERARD block. Bromide prints of the photography were used in the AO during field annotation.
  - c. The date of aerotrig photography for each 1:250000 map area is as follows:
    - (1) MAURICE - 1973
    - (2) OOLDEA - 1979
    - (3) WINTINNA - 1975
    - (4) EVERARD - 1976.
9. Comments on Use of Photography. In the Everard/Wintinna area, it was noted that plotting was completed in 1981 from 1975/76 aerial photography whilst the projection was produced from the RAAF 1981 aerial photography. Much time and effort could have been saved during annotation had the plotting been produced from the 1981 aerial photography.
10. Other Agency Data. As a result of technical liaison, the following data was obtained from other agencies:
- a. Pastoral Plans - received from SA Lands Dept.
  - b. Seismic Line Plans - received from COMALCO Ltd.
  - c. Proposed Stuart Highway Plan - received from Highways Dept.

Field Annotation Methods

11. During the initial two weeks prior to the arrival of the aircraft, ground annotation was conducted. After the arrival of the aircraft, a confirmatory check of all maps was done by air. After the departure of the aircraft, anomalies were resolved by ground.
12. The ground and air responsibilities included the annotation of cultural detail, road classification and obtaining and verifying names.
13. A compilation report was prepared for each 1:100000 area detailing problems on specific aspects encountered in the field.
14. Maurice. As no cultural detail had been plotted, annotation was done directly onto the bromides where the detail was visible. When the detail was not visible, the source data was used.
15. Ooldea, Everard and Wintinna. Annotation was done directly onto the bromides where the detail was visible. When the detail was not visible, the selected detail cultural plots and source data was used.
16. After the air annotation, the detail was drawn onto the master ozafilm sheets. Photographs of most bores and ground tonings were taken to assist in cartography and printing.

Appendix: 1. Maps Annotated

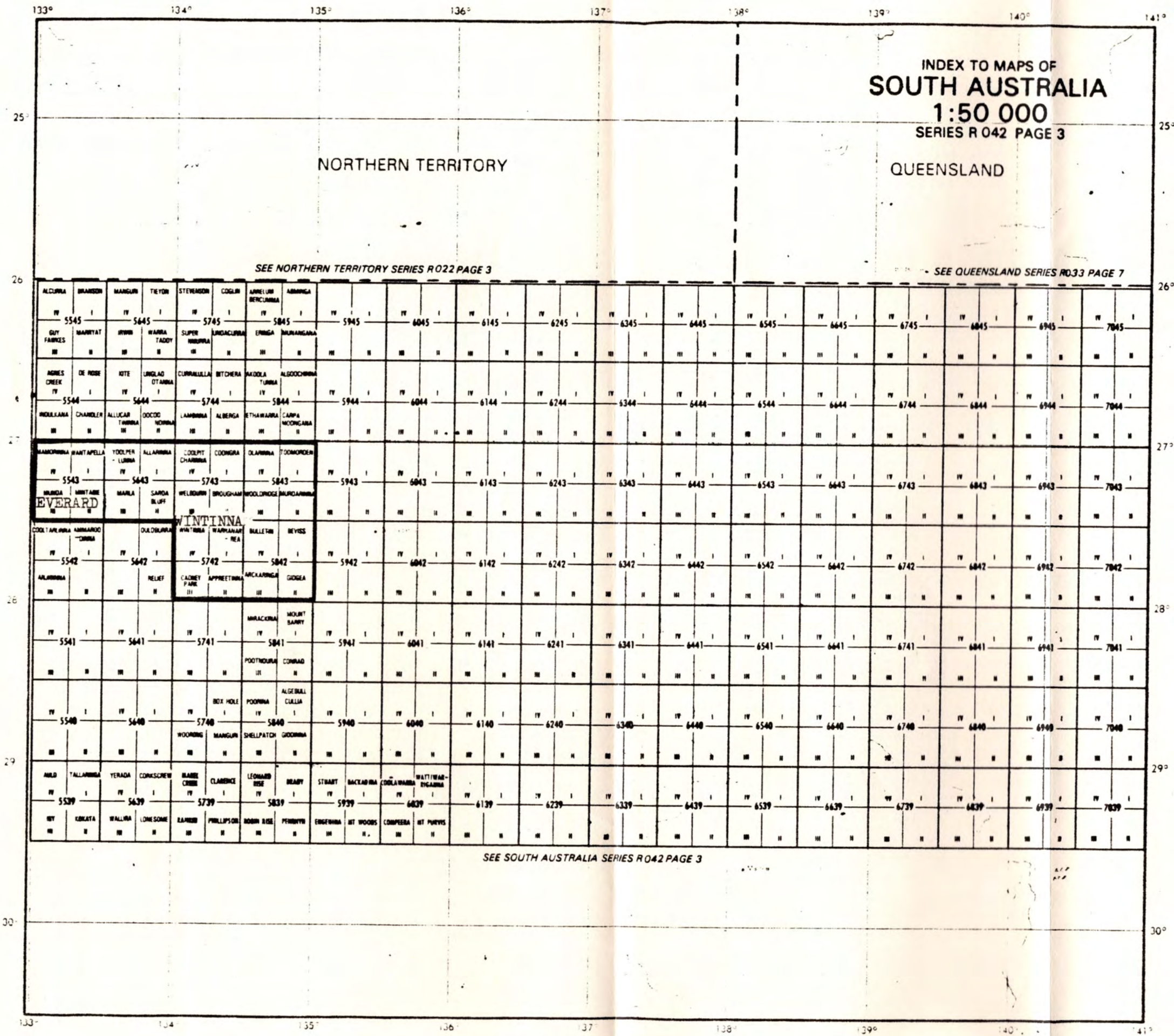


MAP AREAS FIELD ANNOTATED

INDEX TO MAPS OF  
**SOUTH AUSTRALIA**  
 1:50,000  
 SERIES R042 PAGE 4

GREAT AUSTRALIAN LIGHT

APPENDIX 1 TO  
 ANNEX A TO  
 PROJECT REPORT  
 OF NOTARIAL IV



CONTROL SURVEY REPORT

- References:
- A. Standard Specifications and Recommended Practices for Horizontal and Vertical Control Surveys, Edition 3
  - B. SOP for Magnavox MX 1502 Satellite Surveyor dated 30 May 83
  - C. Army Survey Regiment R788-2-6 dated 22 Jul 83

Task

1. To acquire Doppler control for three stations in South Australia. The control is to be used for checking map and aerotrig accuracy. Appendix 1 shows the area of operation.

Execution

2. Organization. The force consisted of a two man party whose mode of insertion was by vehicle.
3. Deployment. The normal rate of deployment was to arrive on station in the morning, set up the Magnavox MX 1502 and track until the third afternoon, then move on to the next station, ie 2.2 days tracking. This gave ample time to get the required number of passes. Travel time, vehicle unserviceability and rest time added to the overall time required to give an average of 4.7 days per station.
4. Passes Observed. The members observed the five precise ephemeris satellites available with the number of passes observed for each control point as follows:
  - a. K 850 - 35 passes observed (30 3-D acceptable).
  - b. K 851 - 34 passes observed (20 3-D acceptable).
  - c. K 852 - 35 passes observed (33 3-D acceptable).
5. Pass Balance. Pairing of satellites to determine pass balance was in accordance with Reference B.
6. Location of Control Points. The points were positioned in accordance with Reference C. Approximate co-ordinates are:
  - a. K 850 - 27° 14' 27" S 134° 48' 06" E
  - b. K 851 - 27° 43' 56" S 133° 35' 08" E
  - c. K 852 - 28° 49' 27" S 134° 43' 19" E.
7. Station Marking. In all cases, station marking consisted of a RA Svy brass plaque stamped with station identification, set in a precast concrete block as ground mark. Three recovery marks, each of 1cm diameter

brass rod in a precast concrete block, and a 6cm diameter galvanized iron pipe painted white, capped and stamped with station identification, were used to aid future recovery.

8. Panelling. In all cases, station panelling consisted of a cross of panelling plastic with arms 2m wide and 6m long.

9. Identification Photography. Each of the control points was connected to a PCP. SA Dept of Lands has also been requested to photograph the points as an opportunity task. This is planned for late Oct 83.

Appendix: 1. Location of Control Points



REPORT ON FIELD ANNOTATION COOBER PEDY

Reference: A. Army Survey Regt, Task Proposal - Coober Pedy UOP,  
788-2-6

Task

1. To field annotate the Coober Pedy 1:10000 urban orthophoto map. This map is contained within the 1:50000 orthophoto maps of 5839-I Brady and 5839-IV Leonard Rise.
2. Annotation requirements are to be as shown in the example 1:10000 UOPM of Castlemaine provided under cover of Reference A.

Execution

3. Field Party. A two man party deployed from Coober Pedy, carried out the annotation by road and foot over the two day period 23 and 24 Sep 83. The party consisted of WO2 Williams and WO2 Hayden.

Delineation of Map Area

4. A standard SA 1:10000 Dept of Lands OPM, sheet No 5839-3, was supplied for annotation purposes with the AO confined to the built up area and including the air field, racecourse and golf course. Sheet location is shown at Annex A.

Field Annotation Material

5. OPM Base. The SA Dept of Lands supplied the half tone negative OPM base which was produced from their photography (Svy 2988/31) flown on 6 Jun 83.
6. Dyelines were used for field annotation and were produced direct from the half tone negative supplied.
7. Other Agency Data. As a result of liaison with the Dept of Mines and Energy in Coober Pedy, a copy of the plan Coober Pedy Precious Stones Field (Plan No 81-497) was supplied.

Field Annotation Methods

8. Field check responsibilities included the identification of all main buildings and places of interest, classification of roads and identification/verification of names.
9. Corrections were marked onto the dyeline using fine felt tip pens of various colours and black ink. Places of interest and/or buildings were identified by numbers and listed separately.

Description of Terrain

10. The terrain within the AO consisted of flat open country with numerous mines and tailing heaps. These were scattered and in no semblance of order throughout the town and surrounding areas. The BUA has grown with the mines and does not appear to have a regular or concise street pattern.

Field Annotation Comments

11. Due to track density, major tracks were shown in the mining areas, with no attempt being made to identify individual mines or tailing heaps.

12. Only one road within the area of Coober Pedy was signposted, and road names will have to be extracted from the UBD Directory (vide Annex B).

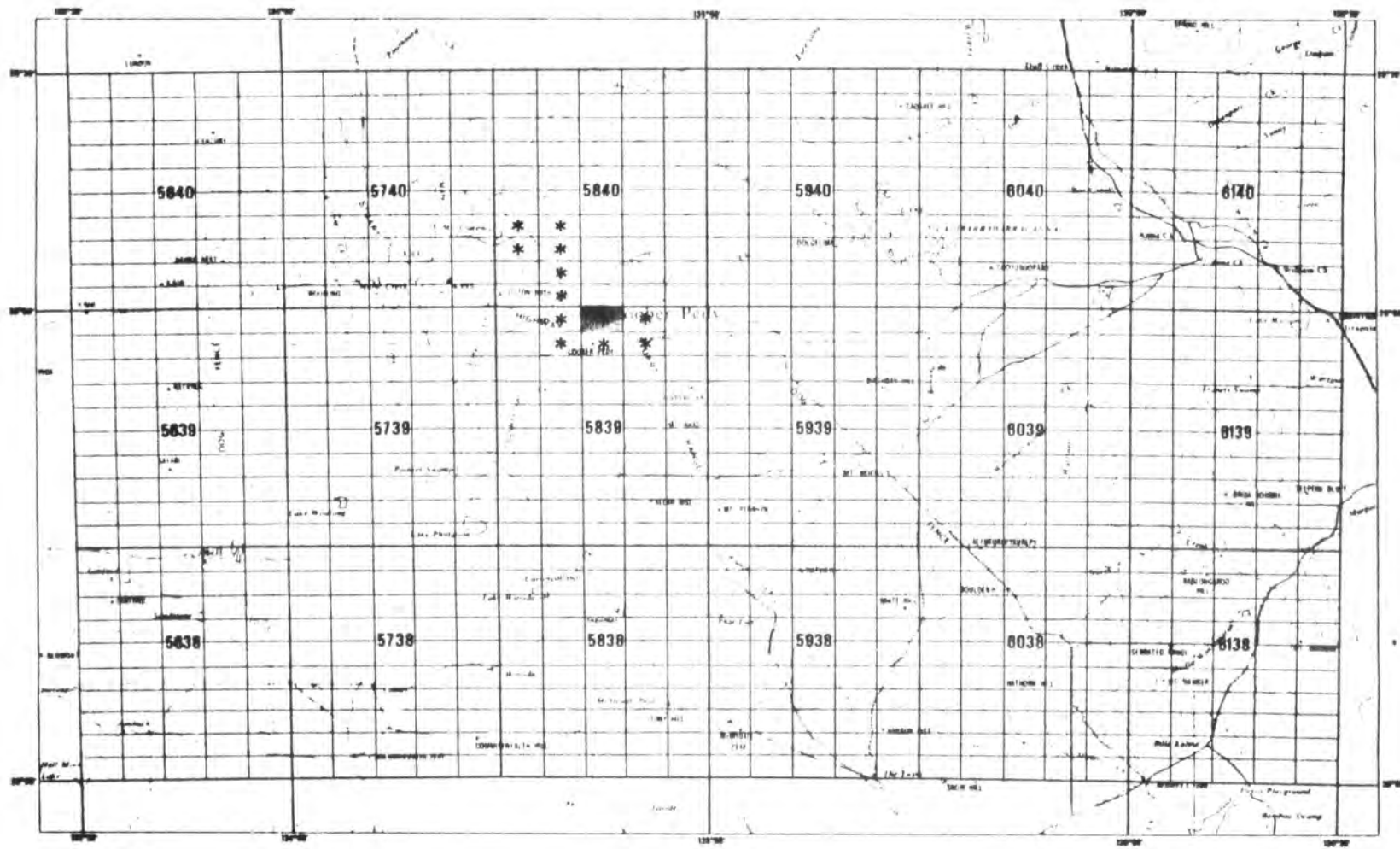
13. Because of a lack of specific requirements for the scope of information required to be collected, buildings in the town area had to be identified. At times this was with difficulty, thus incurring an addition of time which would have been quite significant in a larger AO.

Recommendations

14. It is recommended that a set of requirements be drawn up to specify the scope of information to be collected and therefore assist in consistency of the product and economy of effort.

Appendix: 1. Sheet Location

2. UBD Directory for Coober Pedy



SHEET LOCATION

SOUTHERN PORTION OF  
**SOUTH AUSTRALIA**  
 1:10 000 MAP SERIES

1:100 000 SHEET SUBDIVISION SHOWING 1:10 000 SHEETS

1	2	3	4	5
10	9	8	7	6
11	12	13	14	15
20	19	18	17	16
21	22	23	24	25
30	29	28	27	26
31	32	33	34	35
40	39	38	37	36
41	42	43	44	45
50	49	48	47	46

★ 6626-46

APPENDIX 1 TO  
 ANNEX C TO  
 PROJECT REPORT  
 OF NOTARIAL IV

SOUTH AUSTRALIAN BUSINESS GUIDE

**COOPER PEDY**

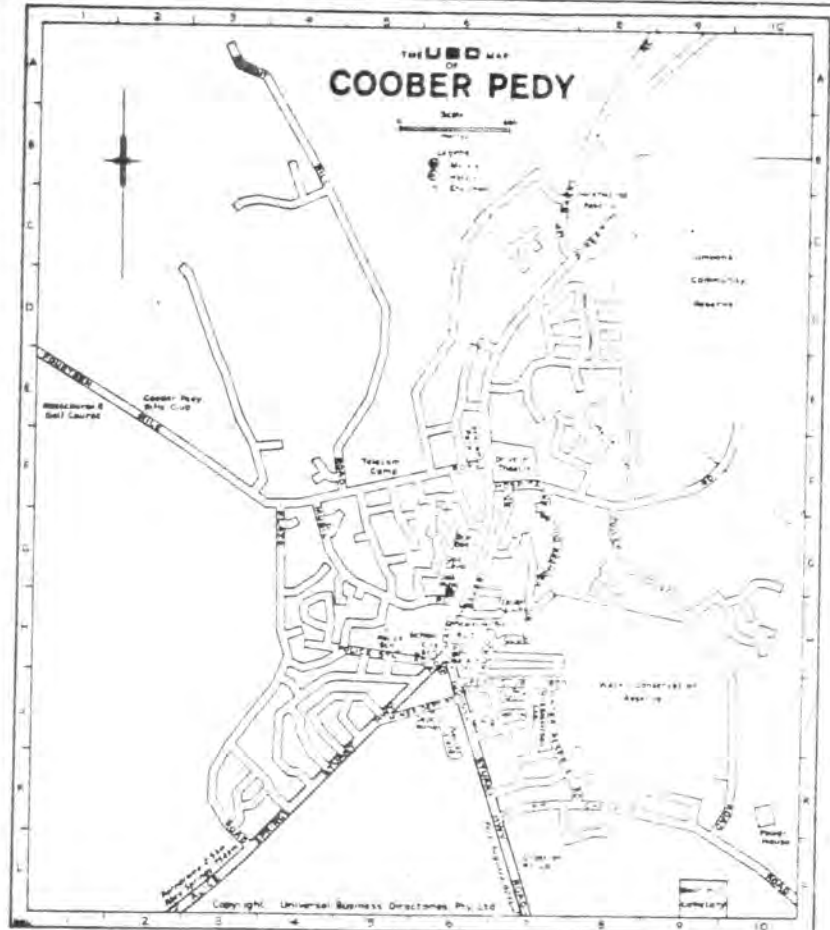
The name is the European pronunciation of the Aboriginal "Kupa Piti" believed to mean "Boy's Waterhole."

The first discovery of opal is credited to Billy, the fourteen year old son of Jim Hutchinson prospecting for gold in the hot summer of 1915. There was evidence of a potential fortune at their feet, but the heat, lack of water, and remoteness of the locale precluded any development of the field at that time.

Access to the area became a little easier with the completion of the Trans-continental Railway in 1917, and in the following years a gradual influx of courageous pioneers saw the beginnings of a settlement. Contrary to the usual term of a town "springing up" this town "dug down" — one sure way to beat the blistering heat was to insulate oneself with a ceiling of solid earth. But the problem of any sort of water availability had yet to be solved — the prevailing method was to cart it from William Creek over a hundred miles distant, by horse and camel.

The State Engineering and Water Supply department tackled the problem in 1922 by constructing a half-million gallon tank. This had limited success in that it was dependant upon rainfall — a limited commodity hereabouts — about 150 mm per annum.

Cooper Pedy's growth saw no major changes until the sixties, when a permanent police station was established and a small airline established better communication with the State Capital. Electric power and light was installed in 1972, and in recent years the town has enjoyed a considerable growth with modern hotel, motels, shops and schools. The attraction of its pioneer character and the excellent chance of buying a bargain or two in gemstone and opal has brought the town to eminence as a tourist stayover or destination.



 **STAR**  
OPAL & GEM  
TRADERS

- LAPIDARY SUPPLIES
- OPAL — ROUGH & CUT
- GIFTWARE ● CRAFTS
- OPAL JEWELLERY

Proprietor: Robert McCormack  
MAIN STREET PH.: 73 5158  
COOPER PEDY P.O. Box 254

 PHONE: 73 5284  
**SZUK**  
**ENGINEERING**

- BUS & CARAVAN RESCUE
- ALL WELDING & REPAIRS

New Axles - U-Bolts - Parts Made  
Towing Service  
Main St., opposite Drive-In Theatre  
P.O. Box 420 Coober Pedy

 **OPAL  
HOTEL  
MOTEL**

- Modern motel units or economical hotel-type — Full dining or counter meals.
- Superb display of opals and opal jewellery for sale.

MAIN STREET, COOPER PEDY  
Ph.: 73 5054 Telex 80630

**SLEEP UNDERGROUND  
OVERNIGHT ACCOMMODATION**

- OPAL AND JEWELLERY
- OPAL CUTTER AND GOLDSMITH
- MINE INSPECTION

**RADEKA  
DUG-OUT**

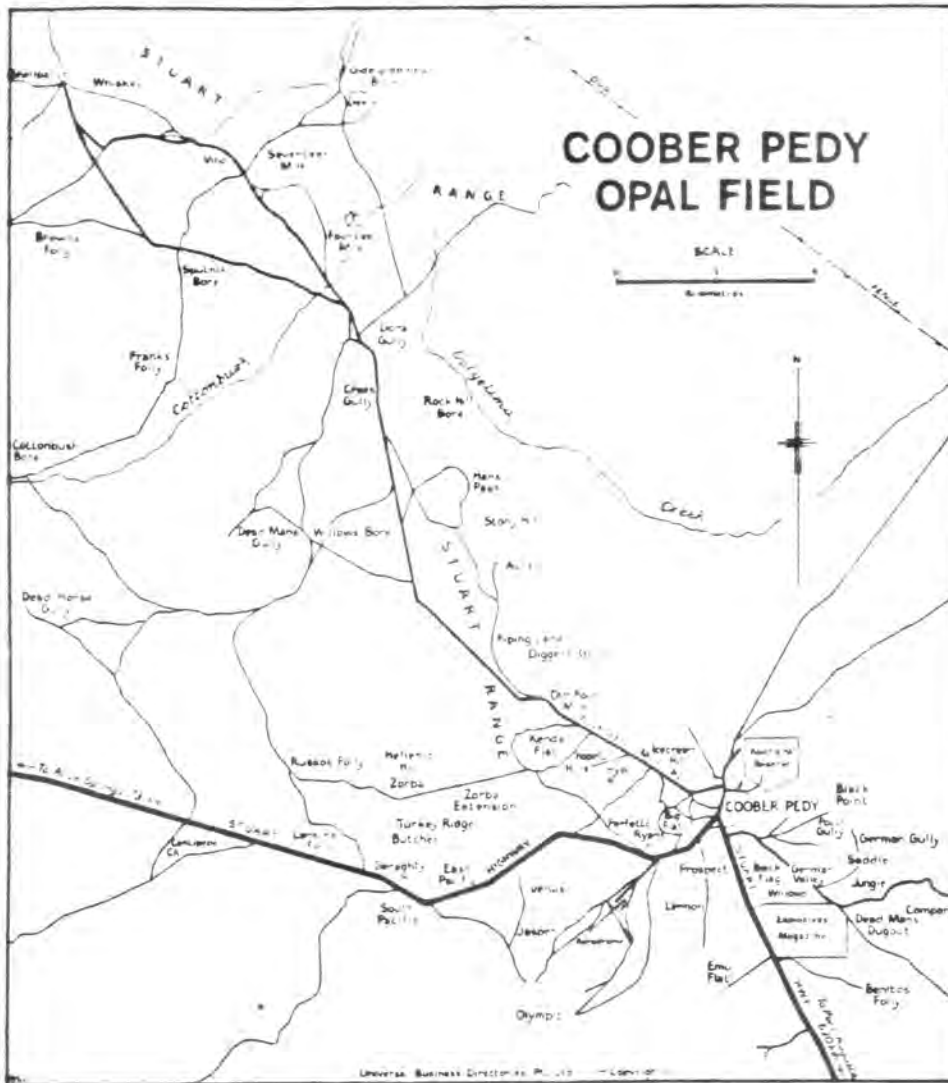
MAIN STREET, COOPER PEDY  
PHONE: 73 5223

 EVERY NEED  
FOR THE  
SHUTTERBUG!

**COOPER PEDY  
PHARMACY**

PHARMACEUTICAL CHEMIST  
MAIN STREET, COOPER PEDY  
PHONE: 73 5159  
P.O. BOX 38

COOBER PEDY



COOBER PEDY

Postcode 5723 UBD State Map Ref. E 2c  
 Location 96.3 km north west of Adelaide  
 Population 1 903  
 Federal Electorate Grey Nearest Large Town Pt. Augusta 644 km  
 Transport Services: Dairy, Night services: Opt. Air Pioneer and Bell Bus; Nearest Railroad Kingscote 285 km. Tourist Features: Underground Church, Opal Caves, Mines and Dugouts. General Notes: Coobee Pedy is the location of the great opal fields. Operation started in 1915 and in three years the population had reached approx. 1300. Beautiful opals are found and processed on the spot. Post Office Ph 73-5062; Hospital Ph 73-5009; Police Ph 73-5056.

- Bank of New South Wales Ltd Ph 73-515
- Bekans J. Bitch Ph 73-5207
- Bens Garage Ph 73-5107
- Bull's Tourist Services Ph 73-5036
- Campaigne T. & P. Taxis Ph 73-5333
- Carroll P. J. Opal Dealer Ph 73-5091
- Catholic Church St. Peter & St. Paul Ph 73-5011
- Christinos E. Opal Dealer Ph 73-5297
- Church of England Rectory Ph 73-5038
- Cobwell Industries Pty Ltd Ph 73-5025
- Community Health Centre Ph 73-5009
- Community Welfare Dept. for Town Office Ph 73-5002
- Coobee Pedy Aviation & Hire Car Services Ph 73-5333
- Coobee Pedy Crash Repairs Ph 73-5273
- Coobee Pedy Gallery Coffee Shop Main St
- Coobee Pedy General Store Ph 73-5006
- Coobee Pedy Medical Centre Ph 73-5009
- Coobee Pedy Pharmacy Ph 73-5159
- Coobee Pedy Progress Association Inc. Community Hall Ph 73-5298
- Coobee Pedy School Ph 73-5077
- Coobee Pedy Services Mining Equipment Ph 73-5065
- Coobee Pedy Towing Service Ph 73-5260
- Cowell Electrical Supply Power Station Ph 73-5057
- Desert Cave Motel Ph 73-5004
- Desert Traders Tyre Sales & Service Ph 73-5236
- Engineering & Water Supply Dept. Ph 73-5019
- Golden Fleece Service Station Ph 73-5356
- Jackson Gem Co. Ph 73-5072
- Khar F. Opal Buyer Ph 73-5345
- Kmet J. Baker Ph 73-5163
- Krusse Water Suppliers Gen. Contractors Ph 73-5286
- Kypros Bros. Store Ph 73-5148
- Lingnau R. Ph 73-5126
- Lucas Mick & Son Gr. Ph 73-5272
- Lutheran Mission Ph 73-5044
- McCormack & H. Gen. Transport Ph 73-5117
- Miers E. Elect. Contractors Ph 73-5046
- Miners Store Pty Ltd Ph 73-5053
- Miners Store Service Station Ph 73-5257
- Mines Dept. of Ph 73-5018
- Mount & Brown Accnts Ph 73-5051
- Naylor Faye The Opal Cave Ph 73-5028
- Opal Opal Co. Ph 73-5318
- Opal Exploration Co. Ph 73-5360
- Opal Futures Ph 73-5318
- Opal Gallery The Ph 73-5115
- Opal Motel Pty Ltd Ph 73-5054
- Opal Pty Ltd Air Service Ph 73-5088
- Paspalakis B. Opal Centre
- Pek E. & A. Opal Cut. Ph 73-5169
- Pevas Construction Pty Ltd Bldrs Ph 73-5321
- Pizza & Chicken Takeaway Main St. Ph 73-5222
- Public Health Dept. of Ph 73-5009
- Radeka I. & J. Opal Cutters Ph 73-5223
- Simos Bros. Plumbers Ph 73-5241
- Sinodinos S. Gen. Store Ph 73-5225
- Star Opal & Gem Traders Main St. Ph 73-5158
- Stuart Range Opal Mines Pty Ltd. Agents Ph 73-5091
- Supreme Gems Ph 73-5126
- Stuk Welding Service Ph 73-5284
- Umoona Opal Mine Museum Ph 73-5288
- Wilmington Mining Pty Ltd Ph 73-5078
- Wirth R. F. Plumbers Ph 73-5213

**SEE the giant**

**MOONA PAL MINE**

at Coobee Pedy . . . a unique all-underground tourist complex!

OPAL SALES AT COMPETITIVE PRICES • GUIDED TOUR OF AN ACTUAL MINE • TEA AND COFFEE SHOP • SOUVENIRS AND ARTEFACTS  
 ACCOMMODATION AND CAMPING • PROVISION FOR COACH GROUPS

PHONE: ALL HOURS 73 5288 OR WRITE TO P.O. BOX 372

COOBER PEDY MAP INDEX

Alice Springs Rd	L3	Dugout Hill Rd	A3	Abbot Rd	G4	Star Opal	G6
Bakery Rd	H6	Fire Station	H6	M. Barry Rd	C7	Summer Bus Company	H6
Book Hill Cemetery	L9	Fish Rd	G4	Opal Air Office	H6	Summer Hwy	H4/H6
		Fourteen Mile Rd	E1	Opal Cafe	G4		
				Opal Mine	G6	Telephone Centre	F5
Caravan Park	B8	Golf Course	E1	Police Station	H6	Tennis & Basketball Courts	J7
Catholic Church	H6	Green CAMP Rd	J6	Post Office	H6		
Community Hall	JL	Green Orthodox Church	J7	Power House Rd	G4	Lansons Community Reserve	D8
Crocker Out	LT	Hospice	E8	Rec. Centre	E1	Water Conservation Reserve	J8
Crocker Gully Rd	G7	Hospice Rd	F7	Rifle Club	E2	Water Reserve	D8
				School	H6	William Creek Rd	K1
Department of Mines	J8	John S. Mines Department Rd	J6	St. Coobee Field	J6		B.61
Shrine Theatre	F7						



Phone: TOM & PAT CAMPAGNA

**COOBER PEDY**

**AVIATION, HIRE CAR AND TAXI SERVICES**

**OPAL FIELD TOURS — AIRPORT BUS AVIATION FUEL**

**MAIN STREET, COOBER PEDY**

**PHONE: 73 5333**