RESTRICTED

14

L AUSTRALIAN SURVEY CORPS

REPORT ON OPERATION

SHORT WALK

4 FIELD SURVEY SQUADRON

1975

RESTRICTED

AUSTRALIAN ARMY

000011

4 Field Survey Squadron
Keswick Barracks
KESWICK SA 5035

13 Jun 75

See Distribution List

PROJECT REPORT - OPERATION "SHORT WALK"

1. Enclosed for your retention is/are [ ] copies of the above Report.

2. Your attention is drawn to the security classification of the Report.

3. Please sign and return to this Sqn the duplicate copy of this letter. An addressed envelope is enclosed for your convenience.

R.J. Hall LT
for (J. GRUSZKA)
Maj

Enclosures: 1. [ ] copies Report.
2. Duplicate letter.
3. Addressed envelope.

D Svy
Department of Defence (Army Office)
4 FF Gp
Army Svy Regt
WRE - Woomera
WRE - Salisbury

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PROJECT REPORT

OPERATION

"SHORT WALK"

AMENDMENTS

No	Date	Initials	No	Date	Initials
1	Jun 75	[illegible]			

RESTRICTED

ROYAL AUSTRALIAN SURVEY CORPS

4 FD SVY SQN

OPERATION "SHORT WALK" 1975

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PROJECT REPORT
OPERATION "SHORT WALK"

References: A. Department of Defence (Army Office) A474-1-2 Pt 1 of 31 Oct 74.

B. HQ FF Comd 788-K1-27 of 24 Dec 74.

C. HQ 4 FF Gp 569/KS1/12 of 28 Feb 75.

General

1. 4 Fd Svy Sqn undertook field survey operations in the WOOMERA area during the period 10 Mar 75 - 27 Mar 75. The ground aspect of the operation was based out of MIRIKATA and the airborne aspect, APR and photography, was based out of WOOMERA.

Operational Programme

2. Three separate survey tasks were planned for the operation and all were successfully completed. Briefly these were:

a. Ground Control. To revisit, re-establish and/or panel existing control points required for the aerotriangulation of 4 x 1:250,000 map areas KINGOONYA, BILLA KALINA, COOBER PEDY and TARCOOLA. A total of 48 horizontal and 6 vertical control points were visited and panelled. Refer Annexes 'B' and 'C'.

b. Aerial Photography. The Sqn was required:

(1) to photograph all the panelled control points to provide photo identifications for aerotriangulation. A total of 54 points were photographed, and

(2) to obtain continuous runs of photography in conjunction with APR measurements. A total of 4100 km were flown. Refer to Annex 'C'.

c. Laser Terrain Profile Recorder (WREMAPS II). To establish vertical control for 5 x 1:250,000 map areas by acquisition of N-S terrain profiles at intervals of $22\frac{1}{2}$ minutes of longitude, and E-W profiles at intervals of 1 degree of latitude along map sheet boundaries. The five maps were KINGOONYA, BILLA KALINA, COOBER PEDY, TARCOOLA and COPLEY. A total of 4100 km of profiles were flown. Refer Annex 'D'.

/Strength of

Strength of the Detachment

3. The detachment comprised:

a. 2 Offrs and 13 ORs RA Svy.

b. 1 Offr (pilot) A Avn.

c. 1 Civilian pilot.

A Nominal Roll of the detachment is shown at Annex 'A'.

Air Support

4. The operation was supported by 1 FW, twin engine, civil charter acft fitted with the APR equipment and an RC 10 aerial camera. A flying time of 100 hrs was allocated for the task. Total flown was 80 hrs.

Logistic Support - WRE

5. The Det received considerable logistic support from WRE Woomera in the form of:

a. Rations and Quarters. With the exception of the Sqn one-man combat ration packs for emergency purposes, rations and quarters for the party elements operating from bases at WOOMERA and MIRIKATA, and rations for field parties were supplied by WRE Woomera.

b. Aviation Fuel. Supply of acft fuel was by WRE Woomera.

c. MT Fuel. The supply of MT fuel for the Sqn vehicles was by WRE Woomera.

d. Accommodation. Office accommodation at Woomera for the APR team, and at Mirikata for the remainder of the Det.

6. The standard of the accommodation provided was excellent, all living and working areas were air-conditioned.

7. Quantity and quality of the food served in the Messes at Woomera and Mirikata, as well as rations supplied for the field parties, were more than adequate.

8. Co-operation of the WRE Staff at Woomera and Mirikata throughout the operation deserves high praise; it contributed considerably towards the success of the operation.

(J. GRUSZKA)

23 Jun 75

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ANNEX A TO
PROJECT REPORT
OF "SHORT WALK"

NOMINAL ROLL
OP "SHORT WALK"

Serial	Army No	Name	Remarks
1	52882	Maj J. GRUSZKA	OC
2	45879	2Lt J. PAUL	Admin Offr
3	57371	S Sgt D.L. WICKER	Tech NCO
4	53139	Sgt R.I. GRIFFIN	MT Spvr
5	44004	Cpl R.C. BROOKER	Spvr Ground Party
6	313446	Cpl R.J. McHENRY	" " "
7	216968	Cpl J.M. HUNTER	APR Operator
8	45637	Cpl R.D. CROXTON	Spvr Ground Party
9	45480	Cpl R.K. GRIMSHAW	" " "
10	46205	Spr G.S. PETTS	Camera Operator
11	45901	Spr R.R. DIKKENBERG	Field Assistant
12	44540	Spr R.J.A. HUNTER	Driver
13	45880	Spr P.K. BRUNT	Field Assistant
14	31445	Spr R.J. REES	" "
15	1203940	Spr A.N. THOMPSON	" "
		ATTACHED PERSONNEL	
16	43464	Sgt C.L. DAHLBERG	APR Operator 2 Fd Svy Sqn
17	39269	Capt L. KIDBY	Pilot A Avn (Co-pilot civ charter)
18	-	Mr K.J.G. SULLIVAN	Pilot civil charter acft
19	2190641	Cfn G.J. MAUNSELL	RAEME - Radar Mechanic
20	221011	Cfn G.F. EVANS	RAEME " "

EXTRACT OF STATION SUMMARY

ANNEX B TO
PROJECT REPORT
OP SHORT WALK

Station ALYUKURLPYKURLPY **Order** FIRST

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 29° 30'13" **Long** 135° 38'48.6" **Ht** m

E 562693 N 6736030

Photo Ident RC1O CPE 27306 **Photo** 006 **Flying ht** 10000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station BIRTHDAY **Order** FIRST

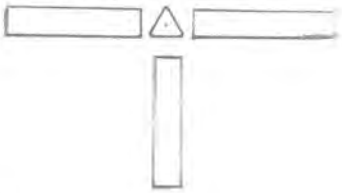
Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 19 33.8" **Long** 134° 28'32.9" **Ht** m

E 449609 N 6644957

Photo Ident RC1O CPE 27311 **Photo** 185 **Flying ht** 10,000 ft

Panel White plastic panels placed as shown right



Remarks Nil

Station BOUNDARY **Order** FIRST

Established by ROYAL AUSTRALIAN SURVEY CORPS

Values **1966 adj** **Lat** 30° 57'11.8 " **Long** 136° 24'21.4" **Ht** m

E 634293 N 6574716

Photo Ident RC1O CPE 27294 **Photo** 068 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark, on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station BOUNDARY HILL **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 55'10.9" **Long** 135° 35'15.1" **Ht** m

E 556135 N 6579137

Photo Ident RC1O CPE 27294 **Photo** 053 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

EXTRACT OF STATION SUMMARY

Station HANSON **Order** FIRST

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 30° 52'9.0" **Long** 136° 13' 42.0" **Ht** m

E 617411 N 6582701

Photo Ident RC1O **CPE** 27294 **Photo** 065 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station HAWKS NEST **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 28° 54'17.6" **Long** 133° 52' 8.0" **Ht** m

E 390807 N 6802024

Photo Ident RC1O **CPE** 27306 **Photo** 027 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station HEARTBREAK **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 57'38.1" **Long** 134° 30'11.1" **Ht** m

E 452542 N 6574650

Photo Ident RC1O **CPE** 27311 **Photo** 179 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark.

Remarks Panels are not aligned N-S, E-W. See Appendix 2 to Annex C for details.

Station HICKSON HILL **Order** FIRST

Established by ROYAL AUSTRALIAN SURVEY CORPS

Values **1966 adj** **Lat** 30° 33' 39" **Long** 135° 39'30.3" **Ht** m

E 563144 N 6618872

Photo Ident RC1O **CPE** 27294 **Photo** 050 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

EXTRACT OF STATION SUMMARY

B-3

Station HUDSON **Order** FIRST

Established by ROYAL AUSTRALIAN SURVEY CORPS

Values **1966 adj** **Lat** 30° 29' 08.6" **Long** 135° 55'04" Ht m

E 588 085 **N** 6627021

Photo Ident RC10 CPE 27306 **Photo** 039 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station IRRAPATANA **Order** FIRST

Established by THE DIVISION OF NATIONAL MAPPING

Values **1966 adj** **Lat** 29° 01' 07.8 " **Long** 136° 27' 54.4 " **Ht** m

E 642685 **N** 6789032

Photo Ident RC10 CPE 27310 **Photo** 041 **Flying ht** 10,000 ft

Panel White plastic panels centred about the eccentric mark on bearings of 000°, 090°, 180° and 270°.

Remarks Eccentric used.

Coordinates E 642405m N 6789167m.

Station K606 PREMIER **Order** THIRD

Established by ROYAL AUSTRALIAN SURVEY CORPS

Values **1966 adj** **Lat** 30° 15' 30.9" **Long** 136° 29' 03.7" **Ht** m

E 642 799 **N** 6651616

Photo Ident RC10 CPE 27306 **Photo** 049 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station K614 **Order** THIRD

Established by ROYAL AUSTRALIAN SURVEY CORPS (1962)

Values **1966 adj** **Lat** 29° 58' 20.4" **Long** 135° 59' 05.4" **Ht** m

E 595014 **N** 6683860

Photo Ident RC10 CPE 27306 **Photo** 033 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

EXTRACT OF STATION SUMMARY

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Station K631 **Order** THIRD

Established by ROYAL AUSTRALIAN SURVEY CORPS (1962)

Values **1966 adj** **Lat** 30° 01' 27.7" **Long** 135° 00' 33.9" **Ht** m

E 500908 **N** 6678504

Photo Ident RC10 CPE 27306 **Photo** 018 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station K658 **Order** FIRST

Established by ROYAL AUSTRALIAN SURVEY CORPS (1962)

Values **1966 adj** **Lat** 29° 00' 06.4" **Long** 133° 32' 12.0" **Ht** m

E 357466 **N** 6790923

Photo Ident RC10 CPE 27311 **Photo** 210 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station K663 JUBILEE **Order** FIRST

Established by ROYAL AUSTRALIAN SURVEY CORPS (1963)

Values **1966 adj** **Lat** 29° 31' 51.8" **Long** 133° 48' 28.5" **Ht** m

E 384484 **N** 6732573

Photo Ident RC10 CPE 27311 **Photo** 216 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks An additional photo ident has been provided to facilitate point transfer. Details are:
4 Fd Svy C2/63 No 037

Station K664 GARFORD **Order** FIRST

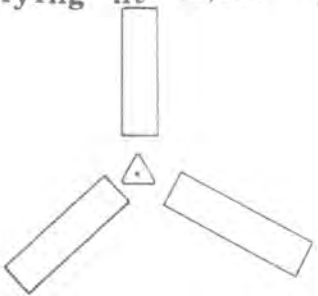
Established by ROYAL AUSTRALIAN SURVEY CORPS

Values **1966 adj** **Lat** 29° 36' 42.3" **Long** 133° 35' 05.2" **Ht** m

E 362970 **N** 6723387

Photo Ident RC10 CPE 27311 **Photo** 218 **Flying ht** 10,000 ft

Panel White plastic panels as shown right.



Remarks Nil

EXTRACT OF STATION SUMMARY

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Station K667 MONSOON **Order** FIRST

Established by ROYAL AUSTRALIAN SURVEY CORPS

Values **1966 adj** **Lat** 30° 06' 34.4" **Long** 133° 30' 34.3" **Ht** m

E 356396 **N** 6668125

Photo Ident RC1O **CPE** 27311 **Photo** 0225 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station K681 DEVILS POINT **Order** THIRD

Established by ROYAL AUSTRALIAN SURVEY CORPS (1964)

Values **1966 adj** **Lat** 30° 02' 33.5" **Long** 136° 12' 38.8" **Ht** m

E 616730 **N** 6675860

Photo Ident RC1O **CPE** 27306 **Photo** 036 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station K725 ANZAC **Order** THIRD

Established by ROYAL AUSTRALIAN SURVEY CORPS (JUNE 1964)

Values **1966 adj** **Lat** 30° 15' 23.4" **Long** 135° 01' 19.2" **Ht** m

E 502117 **N** 6652781

Photo Ident RC1O **CPE** 27306 **Photo** 021 **Flying ht** 10,000 ft

Panel White plastic panels centred about the Witness Post on bearings of 000°, 090°, 180° and 270°. **Panel Coordinates** E 502 117 N 6652 782

Remarks Original GM was not recovered. Sqn records do not indicate position of Witness Post relative to GM; however in comparison to nearby stations similarly marked in the same time period, and discussions with surveyors who were in the Corps at the time, we conclude that the GM should be no more than 1.0-2.0 metres south of the Witness Post.

Station K753 MT PENRHYN ECCE **Order** THIRD

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 29° 25' 50.0" **Long** 135° 01' 36.4" **Ht** m

E 502598 **N** 6744300

Photo Ident RC1O **CPE** 27306 **Photo** 012 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

EXTRACT OF STATION SUMMARY

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Station K757 **Order** THIRD

Established by ROYAL AUSTRALIAN SURVEY CORPS

Values **1966 adj** **Lat** 29° 33' 09.0" **Long** 134° 31' 48.3" **Ht** m

E 454475 **N** 6730698

Photo Ident RC10 CPE 27311 **Photo** 191 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station K763 **Order** THIRD

Established by ROYAL AUSTRALIAN SURVEY CORPS (JUNE 1965)

Values **1966 adj** **Lat** 29° 58' 25.3" **Long** 134° 37' 19.2" **Ht** m

E 463533 **N** 6684057

Photo Ident RC10 CPE 27311 **Photo** 188 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station K832 **Order** THIRD

Established by ROYAL AUSTRALIAN SURVEY CORPS

Values **1966 adj** **Lat** 30° 33' 50.7" **Long** 134° 58' 41.2" **Ht** m

E 497901 **N** 6618695

Photo Ident RC10 CPE 27294 **Photo** 047 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station MT CHRISTIE **Order** FIRST

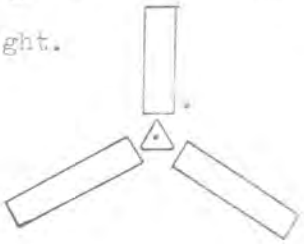
Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 18' 22.6" **Long** 133° 30' 54.7" **Ht** m

E 357228 **N** 6646330

Photo Ident RC10 CPE 27311 **Photo** 228 **Flying ht** 10,000 ft

Panel White plastic panel centred about the station mark as shown right.



Remarks Nil

EXTRACT OF STATION SUMMARY

B-7

Station KINGOONYA **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 57' 47.0" **Long** 135° 20 57.5" **Ht** m

E 533359 **N** 6574429

Photo Ident RC10 **CPE** 27311 **Photo** 161 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station KOREA **Order** SECOND

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 31' 28.0" **Long** 136° 26' 56.6" **Ht** m

E 639026 **N** 6622193

Photo Ident RC10 **CPE** 27306 **Photo** 042 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks An additional photo ident has been provided to facilitate point transfer. Photo details are:
4 Fd Svy 22, 3 Jul 73, Task KING 1. CPE 26577 Photo No 16

Station LAKESIDE **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 53' 22.1" **Long** 136° 01' 37.3" **Ht** m

E 598161 **N** 6582183

Photo Ident RC10 **CPE** 27294 **Photos** 059 & 005 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearing of 000°, 7,000 090°, 180° and 270°.

Remarks The panels are extremely hard to detect on photo 059 but are readily visible on photo 005.

Station MAC DOWELL **Order** FIRST

Established by ROYAL AUSTRALIAN SURVEY CORPS

Values **1966 adj** **Lat** 30° 45' 37.8" **Long** 136° 10' 38.0" **Ht** m

E 612669 **N** 6596336

Photo Ident RC10 **CPE** 27294 **Photo** 062 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

EXTRACT OF STATION SUMMARY

Station MULGATHING ROCKS **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 13' 57.6" **Long** 133° 57' 28.1" **Ht** m

E 399714 **N** 6654961

Photo Ident RC1O **CPE** 27311 **Photo** 234 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station NORTH COONDAMBO **Order** FIRST

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 30° 56' 13.1" **Long** 135° 53' 33.7" **Ht** m

E 585279 **N** 6577029

Photo Ident RC1O **CPE** 27294 **Photo** 056 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station PEPPERCORN **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 29° 10' 10.9" **Long** 134° 57' 47.3" **Ht** m

E 496416 **N** 6773202

Photo Ident RC1O **CPE** 27311 **Photo** 194 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station PICNIC **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 34' 23.3" **Long** 133° 26' 15.5" **Ht** m

E 350178 **N** 6616654

Photo Ident RC1O **CPE** 27311 **Photo** 231 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

EXTRACT OF STATION SUMMARY

B-9

Station PURVIS **Order** FIRST

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 29° 26' 27.8" **Long** 135° 54' 44.9" **Ht** m

E 588497 **N** 6742790

Photo Ident RC1O **CPE** 27306 **Photo** 003 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° & 270°.

Remarks North arm of panel not aligned correctly. See Appendix Z to Annex C.

Station RENTON NM/E/66 **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 57' 38.7" **Long** 135° 04' 25.5" **Ht** m

E 507044 **N** 6574735

Photo Ident RC1O **CPE** 27311 **Photo** 164 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station SNOW **Order** FIRST

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 30° 00' 34.3" **Long** 135° 33' 34" **Ht** m

E 553959 **N** 6680016

Photo Ident RC1O **CPE** 27306 **Photo** 030 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station STALEY RIDGE **Order** SECOND

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 30° 41' 02.4" **Long** 136° 31' 41.8" **Ht** m

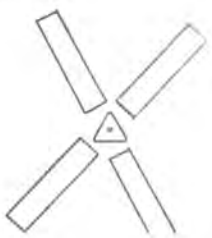
LAUF Transformation **E** 646386 **N** 6604410

Photo Ident RC1O **CPE** 27306 **Photo** 046 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark as shown right.

Remarks Nil

Amdt No1 Jun 75



EXTRACT OF STATION SUMMARY

B-10

Station STRANGWAYS STATION **Order** FIRST

Established by THE DIVISION OF NATIONAL MAPPING

Values **1966 adj** **Lat** 29° 11' 58.0" **Long** 136° 26' 46.1" **Ht** m

E 640590 **N** 6769041

Photo Ident RC1O **CPE** 27310 **Photo** 005 **Flying ht** 7,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Eccentric used.

Coordinates E 640587m N 6769039m

Station T1/5739 **Order** SECOND

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 29° 00' 03.1" **Long** 134° 01' 09.1" **Ht** m

E 404466 **N** 6791511

Photo Ident RC1O **CPE** 27311 **Photo** 207 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station T1/5840 COTTONBUSH **Order** FIRST

Established by THE DIVISION OF NATIONAL MAPPING

Values **1966 adj** **Lat** 28° 58' 17.6" **Long** 134° 30' 59.1" **Ht** m

E 452885 **N** 6795059

Photo Ident RC1O **CPE** 27311 **Photo** 200 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station T1/6039 **Order** SECOND

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 29° 00' 13.2" **Long** 135° 31' 03.2" **Ht** m

E 550408 **N** 6791486

Photo Ident RC1O **CPE** 27306 **Photo** 009 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

EXTRACT OF STATION SUMMARY

B-11

Station T2/5739 **Order** SECOND

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 29° 00' 16.7" **Long** 134° 29' 43.9" **Ht** m

E 450866 **N** 6791385

Photo Ident RC10 CPE 27311 **Photo** 203 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station T2/5840 **Order** SECOND

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 29° 00' 05.3" **Long** 135° 00' 03.7" **Ht** m

E 500101 **N** 6791841

Photo Ident RC10 CPE 27311 **Photo** 197 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station T1/5736 FINKE **Order** FIRST

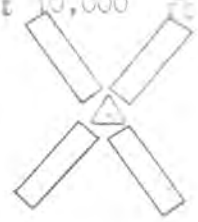
Established by THE DIVISION OF NATIONAL MAPPING

Values **1966 adj** **Lat** 30° 55' 35.8" **Long** 134° 00' 39.6" **Ht** m

E 405509 **N** 6578101

Photo Ident RC10 CPE 27311 **Photo** 173, 174 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark as shown right.



Remarks Stereo coverage of station is required to detect panels.

Station T2/6139 **Order** FIRST

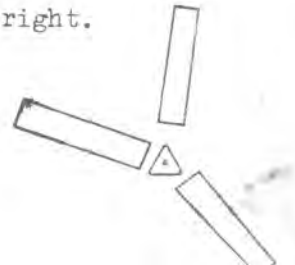
Established by THE DIVISION OF NATIONAL MAPPING

Values **1966 adj** **Lat** 29° 00' 50.0" **Long** 136° 02' 22.7" **Ht** m

E 601249 **N** 6790020

Photo Ident RC10 CPE 27310 **Photo** 035 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark as shown right.



Remarks Nil

RESTRICTED

EXTRACT OF STATION SUMMARY

B-12

Station T2/6238 **Order** SECOND

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 29° 29' 48.1" **Long** 136° 29' 49.1" **Ht** m

E 645112 **N** 6736039

Photo Ident RC1O CPE 27310 **Photo** 002 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station T6/6137 **Order** SECOND

Established by DEPARTMENT OF LANDS: SOUTH AUSTRALIA

Values **1966 adj** **Lat** 30° 00' 02.1" **Long** 136° 29' 43.3" **Ht**

E 644233 **N** 6680198

Photo Ident RC1O CPE 27306 **Photo** 052 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station T1 TREE **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 29° 58' 01.8" **Long** 135° 00' 35.7" **Ht** m

E 500957 **N** 6684841

Photo Ident RC1O CPE 27306 **Photo** 015 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Station WILGENA **Order** FIRST

Established by DEPARTMENT OF INTERIOR

Values **1966 adj** **Lat** 30° 42' 16.1" **Long** 134° 42' 56.3" **Ht** m

E 472771 **N** 6603102

Photo Ident RC1O CPE 27311 **Photo** 182 **Flying ht** 10,000 ft

Panel White plastic panels centred about the station mark on bearings of 000°, 090°, 180° and 270°.

Remarks Nil

Compiled ..... (R J Mc HENRY)
Date: 26 Mar 76.

Checked ..... (R K GRIMSHAW)
Date: 26 Mar 76.

ANNEX C TO
PROJECT REPORT
OP "SHORT WALK"

IDENTIFICATION PHOTOGRAPHY

General

1. The task of photographing selected horizontal control points for the photogrammetric adjustment of the 4 x 1:250,000 areas was carried out in conjunction with the APR operation soon after the field parties marked the stations with identification panels.

RC 10 Camera

2. The Camera (No 1236) was installed in the Queenair aircraft in Sydney; on arrival in Woomera it was found to be unserviceable. Two cables, one connecting the NF 2 mount to the NF 2 head and the second cable connecting the NF 2 mount to the circuitry unit were found to be missing. These were received two days later thanks to prompt action by 2 Fd Svy Sqn.

3. It was apparent that the installation was carried out in a hurry and in a very untidy manner, viz:

a. A cable has been placed between the external pulse connection on the control unit and the NF 2 mount. Fortunately no attempt was made to operate the camera while this connection was in place as it may have resulted in some damage to the electrical system.

b. The remote levelling functions to tip and drift servo-motors on the PAV 10 mount would not operate. To gain access to these motor fuses in the PAV 10 mount it was necessary to remove the lens cone from the mount without its cover and handles. The fuses were noted to be missing for no apparent reason. They were most difficult to replace with the mount in position in the aircraft.

4. Considerable trouble was experienced with the pressure plate vacuum which operated on 400 mw instead of the normal 600 mw and eventually vacuum was lost completely.

/5. Forwarding

5. Forwarding of the camera to Sydeny for repair would have adversely affected the whole operation, therefore it was decided to investigate the cause of the problem on location and if possible, to rectify the fault.

6. The soft "O" ring between the pressure plate and drive unit was found to be broken. With the assistance of the attached radar technician a temporary part was made from plastic tubing. This allowed the camera to be put back into operation.

7. To ascertain that the low vacuum did not adversely affect quality of photo imagery, a sample film was exposed and processed by the operator. The negative showed no deterioration in the sharpness of photo detail.

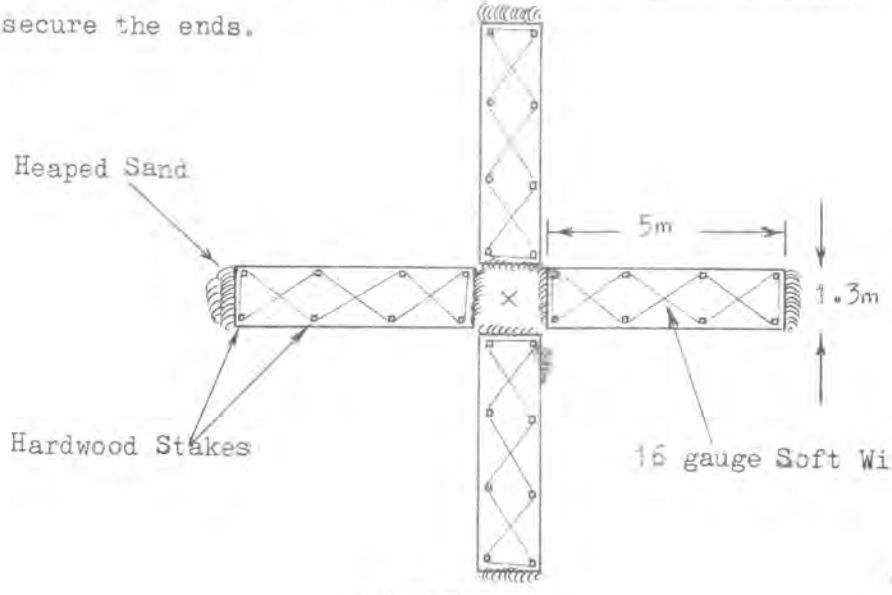
8. All faults encountered were present from the start of the operation. Only the operator's good knowledge of the equipment, and his extensive practical experience, saved the entire airborne aspect of the operation from a serious setback, which would have been the case if the camera was returned to Sydney for repair.

Panelling

9. The panels used were of white plastic with 5 m x 1.3 m arms. Initially a 1 m separation and later 2 m was left at the intersection of the arms.

10. Generally a cross was used aligned N-S and E-W. Where terrain or cultural features did not permit this panel configuration, an alternative shapes of either "T" or "Y" with the GM at the intersection of the arms were used.

11. To secure the panels, in sandy areas, 1 m wooden stakes were driven through the plastic near the edges and 16 gauge soft wire was crisscrossed between the stakes to hold the panels down (see diagram below). Sand was used to secure the ends.



/12. The time

12. The time taken to secure the panels by wiring was, on an average, $\frac{1}{2}$ to $\frac{3}{4}$ hrs, depending on the clearing required.

Results Achieved

13. A total of 54 photo identifications were taken, each of three frames, from two different heights, 7,000 and 10,000 AGL. The panelled stations appear near the centre of the middle frame.

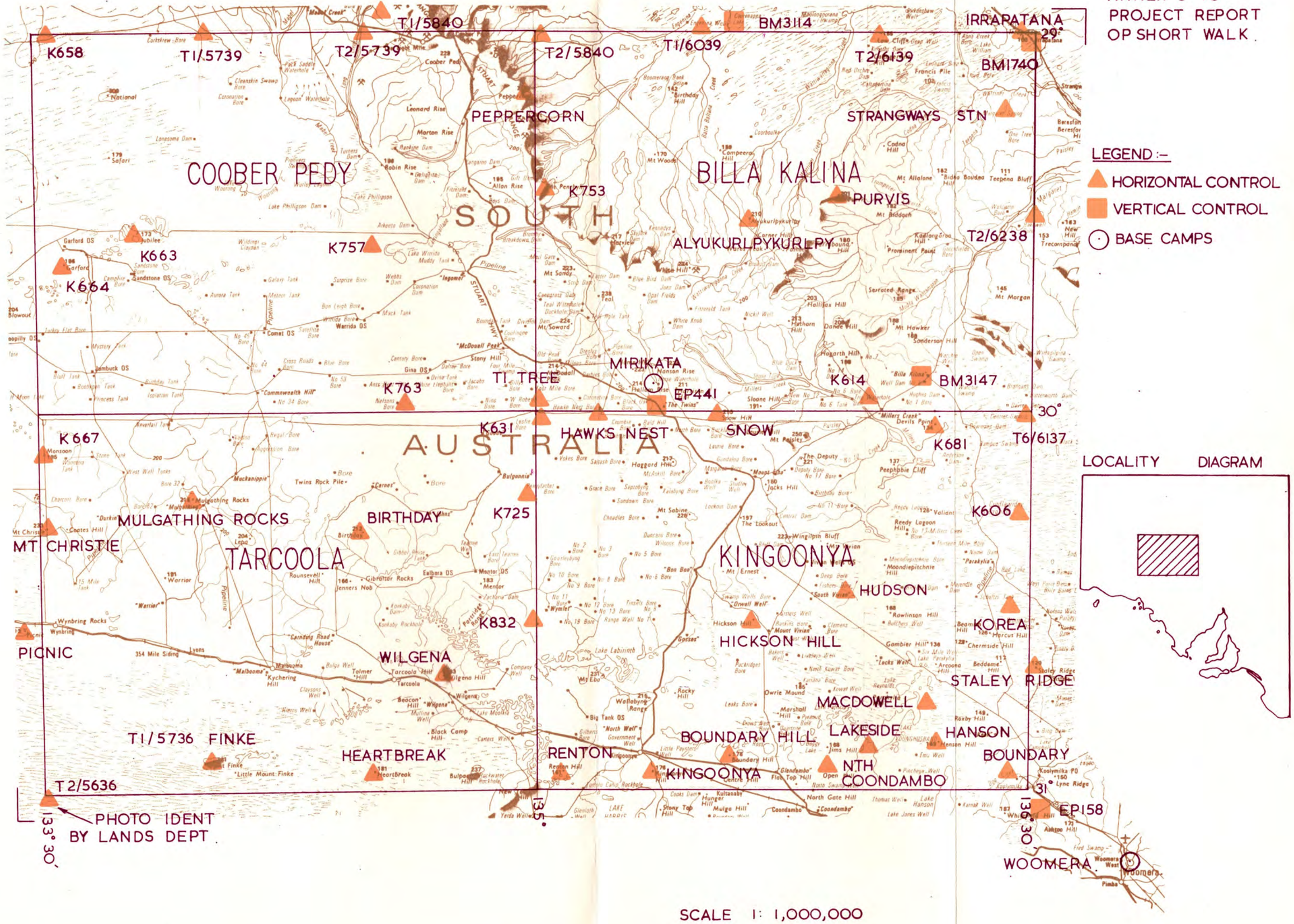
14. Most of the stations are clearly visible on the prints. In some instances the white panels blend with the surrounding ground, especially in sandy areas without distinctive vegetation. It is felt that they would appear much clearer on the film negative than on the bromide prints.

15. Detailed information on results achieved is shown in Appendices 1 and 2 of this Annexure.

IDENTIFICATION PHOTOGRAPHY

HORIZONTAL AND VERTICAL CONTROL

APPENDIX 1 TO ANNEX 'C' TO PROJECT REPORT OP SHORT WALK.



APPENDIX 2 TO
ANNEX C TO
PROJECT REPORT
OP "SHORT WALK"

SUMMARY OF PHOTO IDENTIFICATIONS OBTAINED

STATION	PHOTO DATA			PANEL CONFIG-URATION	REMARKS
	SCALE	FILM	FRAME NO		
ALYUKURLPYKURLPY	1:22,000	CPE 27293	037-039		Panels Visible
"	1:33,000	CPE 27306	005-007		" "
BIRTHDAY	1:33,000	CPE 27311	184-186		" "
BOUNDARY	1:22,000	CPE 27293	004-006		" "
"	1:33,000	CPE 27294	067-069		" "
BOUNDARY HILL	1:22,000	CPE 27294	013-015		" "
"	1:33,000	CPE 27294	052-054		" "
B.M. 1740	1:22,000	CPE 27310	010-012		Vertical Control Point. Panels Visible
"	1:33,000	CPE 27310	037-039		" " "
B.M. 3114	1:22,000	CPE 27310	022-024		" " "
B.M. 3125	1:22,000	CPE 27310	013-015		" " "
"	1:22,000	CPE 27310	016-018		" " "
B.M. 3147	1:22,000	CPE 27293	022-024		" " "
E.P. 158	1:22,000	CPE 27293	001-003		" " "
E.P. 441	1:22,000	CPE 27294	043-045		" " "
"	1:33,000	CPE 27306	023-025		" " "
HANSON	1:22,000	CPE 27293	050-052		Panels Visible
"	1:33,000	CPE 27294	064-066		" "
HAWKS NEXT	1:22,000	CPE 27294	040-042		" "
"	1:33,000	CPE 27306	026-028		" "
HEARTBREAK	1:22,000	CPE 27311	175-177		Landrover & Panels Visible
"	1:33,000	CPE 27311	178-180		" " "
HICKSON HILL	1:22,000	CPE 27293	043-045		Panels Visible
"	1:33,000	CPE 27294	049-051		" "

APPENDIX 2

STATION	PHOTO DATA			PANEL CONFIG-URATION	REMARKS
	SCALE	FILM	FRAME NO		
HUDSON	1:22,000	CPE 27293	046-048		Panels Visible
"	1:33,000	CPE 27306	038-040		" "
IRRAPATANA (ECCE)	1:22,000	CPE 27310	007-009		" "
"	1:33,000	CPE 27310	040-042		" "
K606 PREMIER	1:22,000	CPE 27293	013-015		" "
"	1:33,000	CPE 27306	048-050		" "
K614	1:22,000	CPE 27293	025-027		Panels Visible
"	1:33,000	CPE 27306	032-034		" "
K631	1:22,000	CPE 27294	031-033		" "
"	1:33,000	CPE 27306	017-019		" "
K658	1:33,000	CPE 27311	209-211		" "
K663 JUBILEE	1:33,000	CPE 27311	215-217		Panels barely visible
K664 GARFORD	1:33,000	CPE 27311	218-220		Panels Visible
K667 MONSOON	1:33,000	CPE 27311	224-226		" "
K681 DEVILS POINT	1:22,000	CPE 27293	019-021		" "
"	1:33,000	CPE 27306	035-037		" "
K725 ANZAC (ECCE)	1:22,000	CPE 27294	028-030		Refer to Note on Extract of Station Summary in Annex B Panels visible.
K725 " "	1:33,000	CPE 27306	020-022		" "
K753 MT PENRHYN(ECCE)	1:22,000	CPE 27294	037-039		Panels Visible
"	1:33,000	CPE 27306	011-013		" "
K757	1:33,000	CPE 27311	190-192		" "
K763	1:33,000	CPE 27311	187-189		" "
K832	1:22,000	CPE 27294	025-027		" "
"	1:33,000	CPE 27294	046-048		" "
KINGOONYA	1:22,000	CPE 27294	016-018		" "
"	1:33,000	CPE 27311	160-162		" "

APPENDIX 2

STATION	PHOTO DATA			PANEL CONFIG-URATION	REMARKS
	SCALE	FILM	FRAME NO		
KOREA	1:22,000	CPE 27293	010-012		Panels barely visible
"	1:33,000	CPE 27306	041-043		" " "
LAKESIDE	1:22,000	CPE 27294	004-006		Panels extremely hard to
"	1:33,000	CPE 27294	058-060		" " " detect
MACDOWELL	1:22,000	CPE 27293	007-009		Panels Visible
"	1:33,000	CPE 27294	061-063		" "
MT CHRISTIE	1:33,000	CPE 27311	227-229		" "
MULGATHING ROCKS	1:33,000	CPE 27311	232-235		Panels Visible
NORTH COONDAMBO	1:22,000	CPE 27294	007-009		" "
" "	1:33,000	CPE 27294	055-057		" "
PEPPERCORN	1:10,000	CPE 27310	031-033		" "
"	1:33,000	CPE 27311	193-195		" "
PICNIC	1:33,000	CPE 27311	230-232		" "
PURVIS	1:22,000	CPE 27293	034-036		North Arm of Panel, not aligned N-S but visible.
"	1:33,000	CPE 27306	002-004		" " "
RENTON NM/E/66	1:22,000	CPE 27294	019-021		Panels Visible
" "	1:33,000	CPE 27311	163-165		" "
SNOW	1:22,000	CPE 27293	040-042		" "
"	1:33,000	CPE 27306	029-031		" "
STALEY RIDGE	1:22,000	CPE 27294	001-003		" "
" "	1:33,000	CPE 27306	045-047		" "
STRANGWAYS STATION (ECCE)	1:22,000	CPE 27310	004-006		" "
T1/5736 FINKE	1:22,000	CPE 27311	169-171		Stereo coverage of point is required for indent
" "	1:33,000	CPE 27311	172-174		" " "

APPENDIX 2

STATION	PHOTO DATA			PANEL CONFIG-URATION	REMARKS
	SCALE	FILM	FRAME NO		
T1/5739	1:33,000	CPE 27311	205-208		Panels Visible
T1/5840 COTTONBUSH	1:33,000	CPE 27311	199-201		" "
T1/6039	1:22,000	CPE 27310	025-027		" "
"	1:33,000	CPE 27306	008-010		" "
T2/5739	1:33,000	CPE 27311	202-204		" "
T2/5840	1:10,000	CPE 27310	028-030		" "
"	1:33,000	CPE 27311	196-198		" "
T2/6139	1:22,000	CPE 27310	019-021		" "
"	1:33,000	CPE 27310	034-036		" "
T2/6238	1:22,000	CPE 27293	028-29 031-033		" "
"	1:33,000	CPE 27310	001-003		" "
T6/6137	1:22,000	CPE 27293	016-018		" "
"	1:33,000	CPE 27306	051-053		" "
TI TREE	1:22,000	CPE 27294	034-036		Panels Visible
"	1:33,000	CPE 27306	014-016		" "
WILGENA	1:22,000	CPE 27311	166-168		" "
"	1:33,000	CPE 27311	181-183		" "
T2/5636	—	SVY SA 1109	8756-8758	NIL	Anulus visible around station

Unless shown otherwise all panels are as detailed in para 11 of Annex C.

Compiled: G.S. Petts Spr
(G.S. PETTS)

Checked: R.K. Grimshaw Cpl
(R.K. GRIMSHAW)

Date: 23 May 75

ANNEX D TO
PROJECT REPORT
OP "SHORT WALK"

WREMAPS II - LASER TERRAIN PROFILE RECORDER

Introduction

1. The WREMAPS II equipment (APR) was installed in Sydney in a Beechcraft Queen Air (VH-RUU) on charter to the Army. The aircraft arrived in Adelaide on Sun 9 Mar 75 and the following morning flew to RAAF Base Edinburgh where the Tape Recorder was removed by WRE technicians for minor repair. The repair was effected that day and the aircraft proceeded to Woomera.

APR/RC 10 Crew

2. The aircraft crew consisted of two pilots, one APR operator and one RC 10 operator. This is considered to be the minimum number of personnel required to efficiently conduct the operation.

3. The holding of aircraft heading and constant altitude in sympathy with the Barometric Reference Unit (BRU) indicator requires a great deal of concentration. This reason alone justifies the requirement for two pilots in the aircraft at all times.

4. There were only two passenger compartment seats available for take-off and landing, one for APR and one for RC 10 operators; consequently on-the-job-training (OJT) of either APR or RC 10 operators was not possible.

5. The fitting of an additional seat, if possible, should be considered, as it would provide an opportunity for OJT, not so much for new operators as for those who need refresher or additional training.

6. It was felt that the operators trained at the last APR course were not quite confident to take full control of the equipment on their own. A few hours of OJT with a competent operator would have eliminated their doubts.

7. On a continuous APR/RC 10 operation when weather conditions and performance of equipment permit daily flying, every endeavour should be made to have two operators available for each equipment. The work load generated by daily sorties, as experienced during this operation, is much too great to be handled by two men. Also the flying of more than one sortie per day by the same operator should be avoided.

/Equipment

Equipment

8. APR. Apart from very minor, easily repairable faults, WREMAPS II performed very well. The faults were:

a. Tape Recorder - some malfunctioning in the tape transportation mechanism. The fault was rectified at WRE Salisbury.

b. 70 mm Camera - the timing marks were not visible on the developed film. Camera was checked by WRE and no apparent fault found. Film developing technique was suspected as the first film had to be developed in the Photographic Section, WRE Woomera. Timing marks appeared on the subsequent films.

c. Tape Recorder - again minor malfunctioning in the tape transportation mechanism; repaired by Det Radar Technician.

d. Barometric Reference Unit (BRU) - some fault developed during the last days of the operation. As a result, the last E-W line on the North edge of COOBER PEDY 1:250,000 (not in the area of immediate interest) could not be flown. The BRU was sent to WRE Salisbury for repair; has since been repaired and returned to Sydney. Some minor modification was necessary, and WRE has requested that the other BRU be forwarded to Salisbury for the modification.

9. RC 10 Aerial Camera. Refer Annex C.

10. Film Developing Unit. The unit on loan from RAAF did not arrive in Woomera with the APR equipment but several days after the commencement of operation. This resulted in a delay in developing films obtained in early sorties. When the equipment was received it was noted that there were no ancillaries such as thermometer, timing clock, measuring jug.

11. The new film developing unit which was received about mid way through the operation was found to be much more sophisticated but less reliable than the currently used equipment of same vintage. Apart from this apparent sophistication in design it offers no advantages over the unit on loan from RAAF, viz:

a. It cannot be operated without a dark room.

/b. It will

b. It will not accept thin base film.

c. Heavy and bulky.

d. Requires 240V power supply.

e. Not designed for use in a field environment.

12. It is suggested that the RAAF film developing unit be retained, or one of a similar design procured. A more elaborate equipment should only be considered if it dispenses with the darkroom requirement and provides a daylight film-loading facility.

RAEME Technician

13. The intention was not to deploy RAEME technician in support of APR during this operation and arrangements had been made with WRE Salisbury to provide any necessary assistance in case of APR break-downs. However, just prior to the commencement of the operation, advice was received from Sydney that two craftsmen would be arriving in Adelaide and were to accompany the equipment to Woomera.

14. As no provision had been made for R&Q at Woomera for the additional two men, and no workshop facilities were known to be available, it was decided that the two technicians were to remain in Adelaide and be attached to WRE Salisbury to work with Laser Staff, where they could receive further training and gain valuable experience under their guidance.

15. This proposal did not apparently meet with DEME approval, and a further directive was received from Canberra to send both technicians to Woomera.

16. Because of the lack of proper workshop facilities and the very limited range of repair and test equipment brought to Woomera, the intended OJT of the second craftsman was insignificant.

17. Recommendation. The APR equipment performed very well throughout the operation until the breakdown of the Barometric Reference Unit (BRU) and the operators were quite capable of looking after it. However, it would be beneficial if the operators could fully concentrate on the technical aspect of operation and be relieved of the worries associated with the routine maintenance of the equipment and minor problems. To this end a Radar technician should always accompany the equipment regardless of the duration of operation.

/Results Achieved

Results Achieved

18. In the period of time allocated for the task 4100 km of usable terrain profiles have been obtained. Favourable weather conditions, excellent performance of the APR and the civil charter aircraft, good co-operation of the air crew and commendable effort of both APR and RC 10 operators produced results greater than anticipated.

19. The profiles obtained should satisfy vertical control requirements for the following 1:250,000 areas:

BILLA KALINA	TARCOOLA
KINGOONYA	COPLEY
COOBER PEDY	

20. For further information on results achieved see Appendices 1, 2 and 3 to this Annex.

APR-OPERATION "SHORT WALK."

RESTRICTED

APPENDIX 1 TO ANNEX 'D' TO PROJECT REPORT OP SHORT WALK.

COOBER PEDY

SOUTH AUSTRALIA

BILLA KALINA

TARCOOLA

KINGOONYA

LEGEND:—

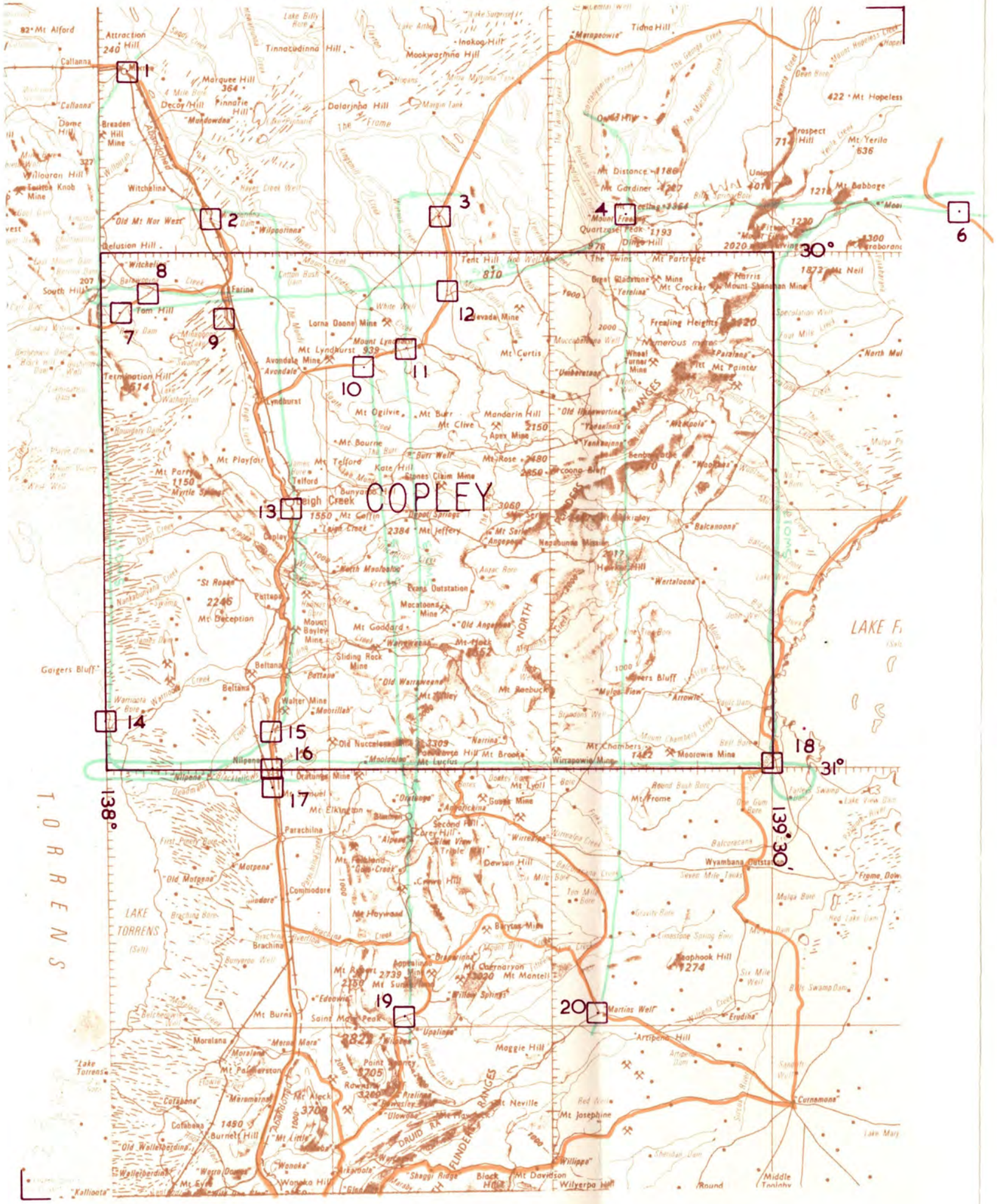
1. APR LINES. SW004
2. LEVEL TRAVERSE (AHD).
3. APR DATUM PTS. ⊡3.

LOCALITY DIAGRAM

SCALE 1:1,000,000

RESTRICTED.

APR-OPERATION "SHORT WALK."



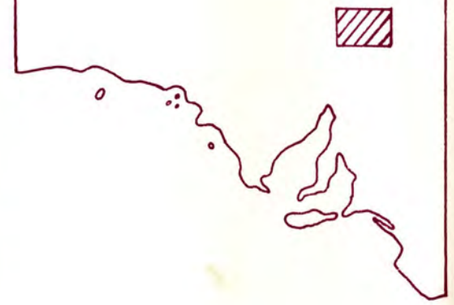
SCALE 1:1,000,000

APPENDIX 2. TO
ANNEX 'D' TO
PROJECT REPORT
OP SHORT WALK.

LEGEND:—

1. APR LINES. SHORT
2. LEVEL TRAVERSE (AHD).
3. APR DATUM PTS ⊡3.

LOCALITY DIAGRAM



APR Run	Film Title	Datum Point Data			AHD Connection			Ht Datum	Remarks
		Pt No	Photo	Time	To Pt	Ht(m)	Photo	Pt(m)	
SW 002	CPE 27291	3	146	0 58 26.0	BM 3025	187.0	146		
	Exp 001-149	13	088	0 38 14.0	BM 4542	172.7	088		
	APR 6	24	040	0 20 03.9	BM 4720	130.4	040		
SW 003	CPE 27291	2	158	1 13 10.2	BM 3017	193.3	158		
	Exp 150-299	23	250	1 50 08.7	BM 4710	148.5	250		
	APR 6			2 07 06.2					
SW 004	CPE 27295	1	171	1 04 00.8	BM 3007	182.5	171		
	Exp 001-175	22	075	0 29 53.7	BM 4702	156.0	075		
	APR 7	29	047	0 19 46.6	T1/5636	-	-		
SW 005	CPE 27296	6	0149	1 15 31.8	BM/3108	115.5	0149		
	Exp 001-168	16	0087	0 53 35.8	BM 2551	188.6	0087		
	APR 8/1	27	0033	0 36 02.8	BM 2529	440.6	0033		
		30	0019	0 31 57.9	BM 2524	144.4	0019		
SW 006	CPE 27297	8	001	1 40 26.3	-	-	-		
	Exp 002-133	19	073	2 03 33.7	BM 3157 (S&P)	174.7	073		
	APR 8/2	21	093	2 10 05.7	EP 240	-	093		
		31	0126	2 20 57.2	BM 2516	142.6	126		
SW 007	CPE 27297	9	308	0 58 50.2	BM 1747	94.9	308		
	Exp 135-314	17	233	0 33 59.0	BM 3148 (S&P)	130.8	233		
	APR 8/2	28	176	0 16 40.2	EP 190? (S&P)	-	176		
		32	153	0 09 18.6	EP 130	-	153		
SW 008	CPE 27298	10	0002	1 18 09.2	BM 1741	57.9	0002		
	Exp 001-168	11	0031	1 26 26.5	BM 3132	37.9	0031		
	APR 8/3	18	0077	1 38 54.0	T6/6137	-	0077		
		33	0160	2 04 54.4	BMP 514	86.5	0160		
SW 009	CPE 27304	4	0252	1 32 16.9	BM 2585	193.5	0252		
	Exp 001-258	14	0189	1 13 38.2	BM 4551	162.7	0189		
	APR 9	20	0140	-	-	-	-		
		25	0126	0 54 07.9	BM 4726	148.9	0126		
		31	0052	0 24 04.8	BM 2516	142.6	0052		
		32	0029	0 14 10.1	EP 129	-	0029		
		33	0007	0 05 52.4	BMP 515	87.0	0007		
SW 014	CPE 27305	26	0054	0 27 42.0	BM 4734	126.1	0054		
		26	0007	0 13 42.2	BM 4734	126.1	0007		
	Exp 001-299	15	0120	0 48 42.8	BM 2560	151.4	0120		
	APR 10 1"	5	0175	1 05 14.8	BM 3099	149.3	0175		
		7	0247	1 26 21.7	BM 3116	116.3	0247		
		10	0297	1 42 03.5	BM 1741	57.9	0297		
SW 015	CPE 27306 Exp 054-267	18	0058	0 10 09.9	T6/6137	-	0058		
	APR 10 2"	16	0130	0 34 02.8	BM 2551	188.6	0130		
		12	0200	0 57 59.7	BM 4538	202.6	0200		
	CPE 27307	22	0002	1 24 42.8	BM 4702	156.0	0002		
	Exp 001-189	29	0031	1 33 53.2	T1/5636	-	0031		
	APR 10 3"	30	0187	2 17 11.9	BM 4521	149.0	0187		

Total AHD Connection Distance 50 km (one way)

APR Run	Film Title	Datum Point Data Pt No	Photo	Time	AHD Connection To Pt	Ht(m)	Photo	HT Datum Pt(m)	Remarks
				LEIGH CREEK					
SW 011	CPE 27310								
	Exp 043-150	1	0045	0 09 24.5	BM 1361	46.0	0045		
	30 Pt 1	7	0081	0 23 22.7	BM 2452	162.7	0081		
		14	0132	0 42 15.3	6536/1007	39.4	0132		
SW 012	CPE 27310								
	Exp 151-223	15	0162	0 54 44.6	BM 1641	231.4	0162		
	30 Pt 1	13	0178	1 00 35.5	BM 1634	195.5	0178		
		2	0220	1 13 42.3	BM 1621	69.6	0220		
SW 013	CPE 27310								
	Exp 224-269	3	0040	0 32 00.9	BM 3424	122.8	-		
	30 Pt 1								
	CPE 27311								
	Exp 001-039	11	0013	0 24 28.3	BM 3415	190.9	0013		
SW 017	CPE 27309	17	0001	0 24 22.1	BM 1646	160.2	0001		
	Exp 001-236								
	APR 11 1	16	0057	0 43 07.6	BM 1645	181.6	0057		
		18	0134	1 03 26.9	BM 4930	13.4	0134		
	SW 75/017	18	0147	1 06 57.0	BM 4930	13.4	0147		
SW 018	CPE 27309				BM 4974	40.4			
	Exp 237-318	6	0237	1 37 35.0	BM 4975	40.0	0237		
	APR 11 1	12	0316	2 01 25.8	BM 3420	174.7	0316		
	SW 75/018	9	0021	2 10 46.9	BM 1625	97.9	0021		
	CPE 27308								
	Exp 001-056	8	0041	2 17 03.5	BM 2455	126.4	0041		
	APR 11 2								
	SW 75/018	9	0052	2 20 19.8	BM 1625	97.9	0052		
SW 019	CPE 27308								
	Exp 057-164	10	0067	2 30 04.7	BM 3413	206.6	0067		
	APR 11 2								
	SW 75/019	19	0159	-	BM 7267 (D Mines)	532.1	0159		
SW 020	CPE 27308								
	Exp 165-301	4	0276	3 43 04.2	BM 7196	-	0276		
	APR 11 2								
	SW 75/020	20	0165	3 09 19.6	BM 7354	177.5	0165		

Compiled: (J.M. HUNTER) Cpl

Checked: (D.L. WICKER) S Sgt

Date: May 75

ANNEX E TO
PROJECT REPORT
OP "SHORT WALK"

AIR SUPPORT - QUEEN AIR AIRCRAFT

General

1. The support provided by the Contractor was excellent, both with regard to aircraft performance and crew co-operation.

2. Flying times on the task amounted to 66 h 15 m, plus ferry time of 13 h 45 m, total for the operation 80 h 00 m.

Installation of Equipment

3. Several minor modifications/additions which would improve performance and working conditions for the operators during combined APR/RC 10 operations are recommended. These are:

a. Enlarge external opening for the Navsight towards the front and move the seat back a little. At present, movement of Navsight is too restricted and over long flights the operator is severely fatigued.

b. Internal Communication. At present the APR and camera operators have no direct comms with the pilot, all messages must be relayed through the co-pilot. When there is a requirement for the camera operator to go to the rear of the aircraft to adjust the camera, change cassette, etc, he has no way of communicating directly with either APR operator or the pilots. Additional outlets for intercom should be provided.

c. Cabin Heat. The cabin temperature at the rear of the aircraft was very close to the temperature outside the aircraft, which at 10,000 AGL was near 0° C. This was caused mainly by poor sealing of the RC 10 camera in the aircraft. If the cabin heat was turned on it soon became unbearable for the camera operator in his normal "in flight" position, and the pilots, but made a very little difference to the temperature at the rear of aircraft. The APR operator had to use blankets to seal the camera area in an endeavour to keep warm. This problem would be overcome by:

/(1) better

(1) better sealing of RC 10 (would also reduce engine noise), and

(2) providing a heating outlet near the APR operator at the rear of the aircraft.

d. Additional Seat. One extra seat should be installed to provide the facility for OJT and to permit in-flight inspection/fault finding of the equipments by the radar technician.

ANNEX F TO
PROJECT REPORT
OP "SHORT WALK"

COMMUNICATIONS

General

1. Operational communications were provided by HF/SSB radio between MIRIKATA Base and field parties. A rear link was maintained at MIRIKATA by telephone to WOOMERA and by telephone and telex to 4 Fd Svy Sqn in ADELAIDE.

HF Radio

2. The operation commenced with seven PRC-FI radios. Except one, all were serviceable throughout the operation.

3. Frequencies. The two frequencies allocated for the operation were in the 6-7 Mhz band. For no apparent reason it was not possible to establish radio contact with the field parties in excess of 30 km distance radius from MIRIKATA. After two days of unsuccessful attempts, using every possible aerial configuration and elevation, on advice from WRE radio technicians, HQ 4 FF Gp was requested to allocate additional two frequencies in the 3-4 Mhz band. The introduction of these new frequencies provided adequate radio comms to all field parties.

4. Operating Conditions. The strange phenomenon of not being able to establish radio comms over distances not longer than 160 km, on the two allocated frequencies, was very disturbing. The radios were carefully packed and left Adelaide in a serviceable condition, also the greater majority of the Det members were experienced operators.

5. The WRE radar technicians who helped to establish the comms after exhaustive trials concluded that the combination of the type of terrain and atmospheric conditions created a "dead area" for the frequencies in that particular band, and that the use of lower frequencies would probably overcome this problem.

6. Their assumptions were confirmed when accidently excellent radio contact was made with an Army station in PUCKAPUNYAL, Victoria, 1,200 km from MIRIKATA. This station was transmitting to Army in ADELAIDE.

Conclusion

7. To avoid similar experience in future operations in the area, the use of alternative frequencies in the 3-4 Mhz band should be authorised.

8. The best periods for transmission were found to be from 1000-1200 hrs and 1300-1500 hrs, local time.

GDE/JH

ROYAL AUSTRALIAN SURVEY CORPS

ARMY SURVEY REGIMENT

AEROTRIANGULATION REPORT

May 76

BLOCK BILLAKALINA-KINGOONYA SOUTH AUSTRALIA

PHOTOGRAPHY ZEISS RMK A 8.5/23 SWA COLOUR

PHOTOGRAMMETRIC MODELS 320

INTRODUCTION

1. This adjustment provides mapping control for the following 1:50,000 map sheets:

5936-I	GOSSE	6037-IV	EBA
5937-I	KALABYNG	6038-I	YARRABOLINAH
5937-II	BON BON	6038-II	HOGARTH
5938-I	BALTA	6038-III	MILLARS CREEK
5938-II	THE TWINS	6038-IV	WARE
6036-I	KOWAL	6136-IV	LOCK
6036-IV	VIVIAN	6137-III	REEDY LAGOON
6037-I	PAISLEY	6137-IV	PEEPHARIE
6037-II	MINGILPIN	6138-III	BILLAKALINA
6037-III	LOOKOUT	6138-IV	

2. This adjustment also provides mapping control to the same standard, for the remaining 1:50,000 map sheets in the BILLAKALINA and KINGOONYA 1:250,000 areas.

3. LOCATION This block is located 29° to 31° South Latitude and 135° to 136°30' East Longitude in Central South Australia. The block is not tied to any adjacent blocks.

4. PHOTOGRAPHY Consists of 17 runs of ZEISS RMK A 8.5/23 SWA colour photography at an approximate scale of 1:90,000. Photographic details are:

Job Run 1	Svy 1484 SA	13 Jan 73	fc 85.52mm
Job Run 2	Svy 1484 SA	13 Jan 73	fc 85.52mm
Job Run 3	Svy 1484 SA	13 Jan 73	fc 85.52mm
Job Run 4	Svy 1485 SA	13 Jan 73	fc 85.52mm
Job Run 5	Svy 1485 SA	13 Jan 73	fc 85.52mm
Job Run 6	Svy 1487 SA	14 Jan 73	fc 85.52mm
Job Run 7	Svy 1486 SA	14 Jan 73	fc 85.52mm
Job Run 8	Svy 1486 SA	14 Jan 73	fc 85.52mm
Job Run 9	Svy 1357 SA	13 Jan 72	fc 85.52mm
Job Run 10	Svy 1357 SA	13 Jan 72	fc 85.52mm
Job Run 11	Svy 1357 SA	13 Jan 72	fc 85.52mm
Job Run 12	Svy 1382 SA	13 Jan 72	fc 85.52mm

/Job Run 13

Job Run 13	Svy 1382 SA	26 Feb 72	fc 85.52mm
Job Run 14	Svy 1362 SA	26 Feb 72	fc 85.52mm
Job Run 15	Svy 1359 SA	14 Jan 72	fc 85.52mm
Job Run 16	Svy 1358 SA	14 Jan 72	fc 85.52mm
Job Run 17	Svy 1360 SA	14 Jan 72	fc 85.52mm

5. During point marking and mensuration some small depressions were noticed in a few of the models. They occurred at irregular intervals and differing positions in the model and are probably due to lack of film flattening.

6. DIAPOSITIVES Contact colour film diapositives were produced by Air Photographs Ltd from colour negative films supplied by South Australian Lands Dept. No corrections were applied for earth curvature, atmospheric refraction or lens distortion. These corrections must be applied during stereo compilation.

AEROTRIANGULATION

7. PREPARATION Initial planning showed that the photographic coverage supplied barely overlapped the sheet edges and as some of the APR lines fell outside the sheet edges, it was necessary to order additional photographs and diapositives.

8. 4 Fd Svy Sqn supplied additional idents on available control which were evaluated and several additional points were used to supplement the original control.

9. POINT MARKING AND MENSURATION. Transfer and marking was carried out on WILD PUG IV and observations on ZEISS (Jena) Stecometer.

10. Some difficulty was experienced with accurate centring of the film diapositives on the Stecometer stage plates. This was due to there being no principal point marked on the diapositives and hence they had to be centred using the fiducial marks and an eye glass. This procedure was made slow by having to use a plain glass plate to hold the film diapositives. Computation showed that all plates were centred within 150 microns.

11. Several of the runs had 80% overlap models for the first and last 2 models (to get APR control in stereo overlap) and it was found necessary to observe extra orientation points down each side of these narrow based models to form a suitable strip.

12. BLOCK ADJUSTMENT Adjustment was commenced in Mar 76. Initial processing showed a few residuals of the order of 4 to 8 metres in the vertical control. These were investigated and in the case of APR heights this included checking tape breakout and ident transfer. Some of the APR lines were recomputed as the fixed points were found to be in some doubt.

13. Because of the large number of acceptable join points in the block it was found necessary to weight the horizontal control 10 times so that it would have sufficient influence on the block adjustment.

14. The adjustment sequence was Job Runs 1 through to 17. The highest order polynomial terms used were 532. The block was iterated 20 times to converge.

15. ADJUSTMENT ACCURACY The adjustment was satisfactorily completed on 16 Apr 76. The Root Mean Square Errors (RMSE) in ground measurements wer

a. ± 1.69 metres on 35 horizontal control points

b. ± 2.25 metres on 296 horizontal join points

c. ± 1.50 metres on 212 vertical control points

d. ± 1.00 metres on 296 vertical join points

16. HORIZONTAL CONTROL 35 horizontal points were available to control this block and no points were rejected from the adjustment. The horizontal control was weighted 10 times.

17. VERTICAL CONTROL The majority of the vertical control for this bl was provided by WREMAPS II LASER APR. The flying format was chosen to provi 5 N-S runs and 3 E-W runs for control purposes.

18. From the N-S APR runs points were chosen in each lateral overlap and on the centre of each run of the mapping photography. From the E-W runs poin were chosen at 1-2 model intervals along the runs of mapping photography which ccincided with the APR lines. In all approximately 200 APR height points wer chosen to control the two 1:250,000 areas.

19 In addition the heights of 32 trig stations and 9 bench marks were available, together with targetted photo idents.

20. The APR strips were corrected individually for isobaric surface slop using programme APR 2 on the IBM 1130 computer. The intersection points of different strips agreed in all cases to within 2 standard deviations of the WREMAPS II equipment,(3 metres)and in all but one case were better than 2 metr

21. Of all the vertical control used 14 APR points, 1 trig height and 1 bench mark were rejected from the adjustment, see ANNEX A. Only 5 of these rejected heights fell in the lateral overlap and one of these was replaced by bench mark height. Thus most of the rejected height control could be consider as not contributing significantly to the strength of the adjustment. Most of the rejection occurred because of poor point selection. Significantly the APR network was in sympathy with the additional vertical control provided from other sources.

22. PREDICTED MAP ACCURACIES Making allowances for errors introduced during stereo compilation and final map production, and based only on the accur acy figures presented within this report, it is predicted that errors on the published map will be as follows:

a. "The average accuracy of this map is ± 4 metres in the horizontal position of well defined detail and ± 4 metres in elevation".

b. These figures approximate to SDASTAG 2215 Circular/Linear Map Accuracy Standard AI for 1:50,000 mapping and 20 metre contours.

/Conclusion

ANNEX A TO
AEROTRIG REPORT
BILLAKALINA - KINGOONYA
MAY 76

REJECTED VERTICAL CONTROL ANALYSIS

AEROTRIG pt. No.	RESIDUAL (metres)	APR RUN	APR PT. NO	POSITION ON MAPPING PHOTO	COMMENT
3221	-4.6	SW014	H5307186	CENTRE	Pegged on slope, difficult to obs.
3146	5.0	SW008	H5307168	CENTRE	On uneven ground
3093	-6.2	SW006	H5307134	CENTRE	± 1m on trace
3043	-5.1	SW014	H5307180	CENTRE	Large aircraft roll
3070	5.0	SW005	H5307114	CENTRE	On uneven ground
3152	-6.4	SW008	H5307162	CENTRE	On uneven ground
3154	-3.9	SW008	H5307160	CENTRE	Good point, no apparent reason
3053	5.3	SW014	H5311072	OVERLAP	On uneven ground
3083	5.8/4.9	SW005	H5311008	OVERLAP	No apparent reason
3115	4.7	SW006	H5311031	CENTRE	Depression, possible observing error
3116	7.4/9.5	SW006	H5311032	OVERLAP	Hill top, possible observing error
3142	4.7/3.8	SW007	H5311047	OVERLAP	SP576 substituted
3090	-4.6	SW005	H5311016	BOTTOM EDGE	Extrapolated outside control
3191	-4.0	SW009	H5311103	CENTRE	Flat point, no apparent reason
3009	-10.0	PURVIS	TRIG STN		On slope, difficult to observe
3217	-5.5	SM 4520			No apparent reason

CONCLUSION

23. It is considered that this adjustment meets the horizontal and vertical accuracy requirements for 1:50,000 mapping with 20 metre contour interval.

J.R. Cattell

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