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SCOUTING SURVEY

FOR

WESTERN GEOPHYSICAL COMPANY.

LOCATION	**: EP 32 BONAPARTE GULF**
DATE	**: 30th APRIL - 15th MAY, 1992**
REPORT REF	**: 1928**

CONTENTS

APPENDICES

A - OFFSET DIAGRAM M.V. "MERMAID ACHIEVER"

B - SURVEY LINE DIAGRAM

C - SURVEY LINE LOGS

D - DAILY LOGS

E - DATA EXAMPLE OF ECHOSOUNDER SHOWING CORAL PINNACLES

F - DATA EXAMPLE OF SIDESCAN SONAR SHOWING SAND WAVES AND CORAL REEF

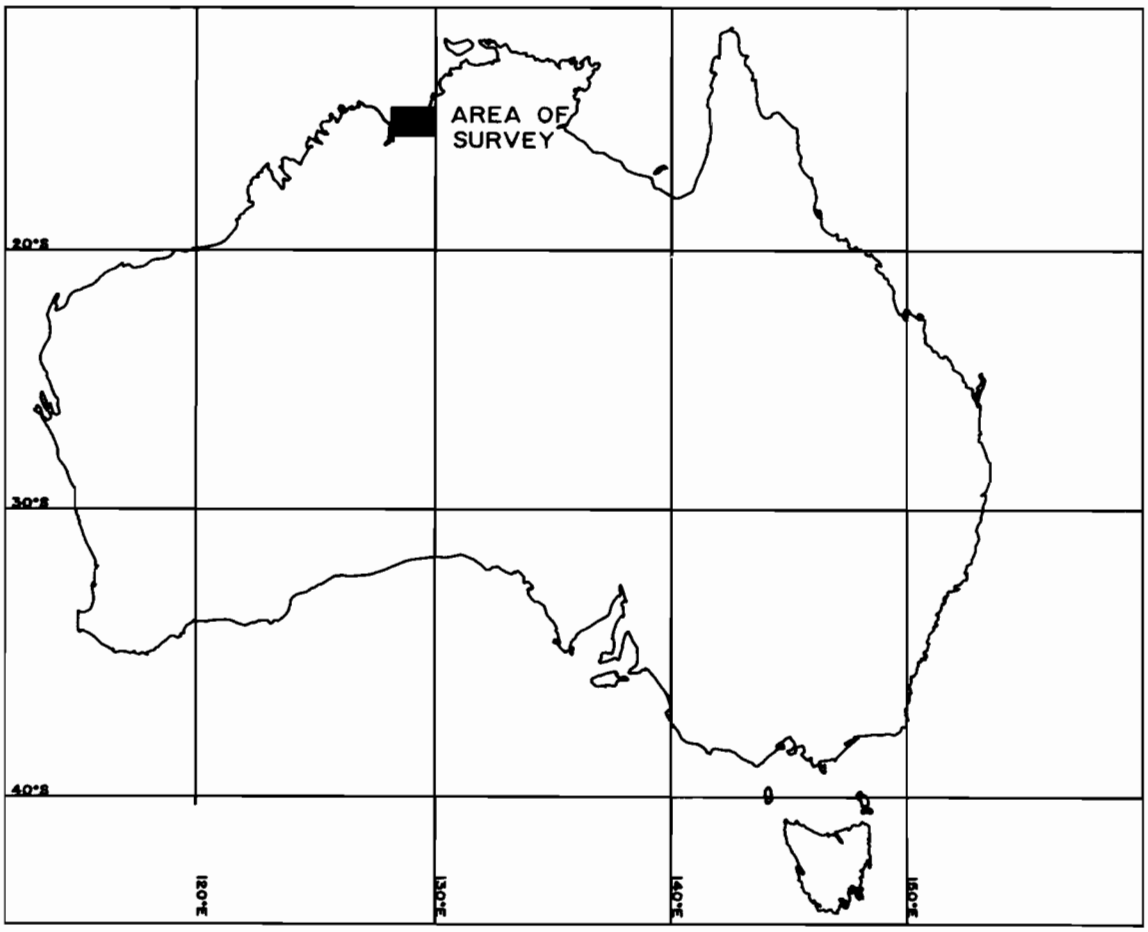
G - STATION DESCRIPTIONS

CHARTS

CHART 1	MASTER PLAN OF CHARTS LAYOUT	SCALE 1:100,000
CHART 2	SHIPS TRACK	SCALE 1:100,000
CHART 3	BATHYMETRIC CONTOURS	SCALE 1:100,000
CHART 4	SUMMARY OF SEABED FEATURES	SCALE 1:100,000
CHART 5 - 25	BATHYMETRY SOUNDINGS	SCALE 1:10,000
CHART 26 - 46	SEABED FEATURES	SCALE 1:10,000

GENERAL LOCATION MAP

FIGURE 1



1. INTRODUCTION

Positioning and geophysical services were provided by RACAL SURVEY AUSTRALIA LIMITED (Racal) for WESTERN GEOPHYSICAL COMPANY (Westerns) in EP 32 in the south-east of BONAPARTE GULF offshore Northern Australia.

The survey requirements and operating procedures were in accordance with the contract between Racal and Westerns.

The survey vessel M.V. "Mermaid Achiever", was utilised for this project, to carry out an inshore scouting survey in the permit area EP 32, to ascertain seabed depth and obstructions prior to a proposed digital survey.

"SkyFix" DGPS navigation system was used in conjunction with an HP 300 series microcomputer and peripherals, supported by Racal's GNS software. These were used to provide the onboard navigation and positioning of the survey vessel.

A Deso 20 echosounder and 100 kHz sidsescan sonar was used to obtain bathymetry and seabed features over the survey area.

Survey lines were planned to scout known features in the area and additional lines were surveyed to define uncharted features and bathymetry information .

All times are in Central Standard Time (G.M.T. + 9.5 hours).

2. RESULTS

2.1 BATHYMETRY RESULTS

All soundings from the echo sounder have been reduced to Chart Datum using co-tidal corrections based on the predicted tides at the tidal stations of Turtle Point, Quoin, Catfish Creek and Pearce Point.

A mean velocity of propagation of sound in seawater of 1540 ms, based on values derived by the bar-check method, was used in the field and subsequently accepted for data reduction and interpretation.

Logged soundings have been reduced and plotted on Charts 5 to 25 at a scale of 1:10,000, for each fix position. All of the echo sounder data was examined to verify the soundings and to identify and plot sonar contacts between the fix positions. The sidescan sonar data was examined to identify and plot estimated depths for high spots not shown on the echo sounder. Inferred bathymetric contours have been plotted at 5 metre intervals.

Bathymetric soundings over the survey area ranged from 62.4 metres to less than 4 metre.

The seabed topography of the survey area is depicted by a series of ridges trending north-westerly at the northern part of survey area and gently shoaling towards the coastline.

The majority of the water depths over the scouting lines are more than 10 metres. Areas of water depth less than 10 metres were noted in the vicinity of lines intersection of lines Tk9 - Tk 23, TkC-Tk7 and TkC - Tk11 which shows a depth of 5.1 metres. As a result, some scouting lines were shortened to avoid the shallow zones. Careful attention should be taken around these areas before conducting the proposed seismic survey.

The tidal range, at spring tides is over 6 metres at Pearce Point which is to the north west of the survey area, and over 10 metres at Quoin, which is to the east of the majority of the survey area. Some survey lines were carried east of Quoin where tidal data can only be interpolated. The tidal range east of Quoin is expected to be greater than 11 metres. Strong tidal currents should be expected to be associated with the large tidal ranges.

2.2 SEABED FEATURES RESULTS

Seabed featues are characterised by high reflectivity coral pinnacles/rock ridges up to 16 metres in height, coral reef with low relief (less than 5 metres), and low to moderate refelctivity carbonate sands/silty sands which are occasionally formed into well developed sand waves. In certain areas, sand waves can be measured up to 3 metres in amplitude and are believed to be caused by strong tidal currents.

More than two thirds of the survey area is covered by coral reef with low relief. An area marked as coral pinnacles/rock ridges, approximately 16km x 2.0km trending north-westerly is observed at the north-western corner of survey area (see chart 4). This area is predominantly within water depths which are more than 20 metres deep, and correlated with series of narrow-spaced contours of ridges in chart 3 - Bathymetry soundings contouring.

A patch of high rise coral pinnacles/rock ridges, up to 16 metres high, is noted in areas of less than 4 metre water depth. This is considered to be a dangerous zone for digital survey. Other coral pinnacles/ridges occur in the western part and north-western portion of the survey area. Generally coral pinnacles/ridges at western part are more than 15 metres below sea surface.

The charts of seabed features at a scale of 1:10,000 are included in chart 26 to chart 46 and a summary of seabed features is shown on chart 4 at a scale of 1:100,000.

TEIKOKU OIL (BONAPARTE GULF) CO., LTD.

Incorporated in Tokyo, JAPAN under the Japanese laws - ARBN 056 249 748

Mr. Gareth Jones
Area Surveyor
Racal Survey
Balcatta 6021
W.A.
Australia

Date: 18 June, 1992

Dear Gareth,

It is pleased to inform you that the full set of report and charts have been received.

In reviewing the report, we have a question on the interpretation of the sea bed features result. The interpretation mentioned the high reflectivity would be caused by coral reefs and you had determined some pinnacles over the surveyed area. In our understanings of the terminology using coral reef, it is a feature of current geography and we may use the term with reef facies for geological meanings.

Under the circum-stance of muddy and high current of water, it will be believed not to be developed any distinguished coral reefs or outcrops of old rocks as limestone in pareozoic age. will be the source of high reflectivity.

Your comments on the interpretation will be highly appreciated since the interpretation had made after my return to Darwin.

Sincerly yours,

Ryohei Tada
Manager, Technical Department

cc; Mr. Boyd Kolozs - Area Manager, Western Geophysical, Singapore

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34-14, Hatagaya 1-chome, Shibuya-ku, Tokyo 151 JAPAN
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19th June, 1992

Teikoku Oil (Bonaparte Gulf) Co., Ltd.
6th Floor, Takara Building
34-14 Hatagaya 1-chome
Shibuya-ku
TOKYO 151
JAPAN

Dear Mr. Tada,

Coral reefs and reefal facies

I am writing in reply to your letter dated 18th of June, 1992, in which you query the application of the term 'coral reefs'.

Recently, Dr. C.J.R. Braithwaite, of the University of Glasgow, UK, has published a series of papers re-defining the applicability of the term 'coral reef' in geological interpretation. It is recommended that this term be applied to continuous barrier-reef type facies or reef-building species.

In this case, given the ambient turbidity, currents and water depth, it has been assumed that the mounds are not created by hermatypic reef-building corals; but are however patch-reef built by ahermatypic corals and calcareous algae.

I apologise for any misunderstanding.

Yours sincerely,

Chew Poh Leng
GEOPHYSICIST

3. SUMMARY OF EVENTS

Racal personnel, S. Bradley and P. Talen arrived in Darwin from Perth on the 30th of April, 1992. During 1st May, 1992 equipment was mobilised onboard the survey vessel M.V. "Mermaid Achiever" at Fishermans Wharf Dampier.

The survey vessel departed Dampier for Bonaparte Gulf at 0700 on the 2nd of May, 1992, and arrived onsite at 0500 on the 3rd of May, 1992.

Equipment checks and an echosounder calibration were carried out before commencing the survey at 1228.

Survey operations continued, working daylight hours until the completion of operation on the 13th of May, 1992.

The survey vessel arrived in Darwin at 1600 on the 14th of May, with demobilisation of personnel and equipment on the 15th of May, 1992.

4. GEODETIC PARAMETERS

The Geodetic parameters used during the project were as follows:

The location co-ordinates and the acoustic positioning systems are defined on Australian Geodetic Datum 84 (AGD 84).

The Global Positioning System (G.P.S.) is referenced to World Geodetic System 1984 (WGS 84).

4.1 DATUMS

DATUM	:	**AGD 1984**
Spheroid	:	Australian National
Semi-major Axis (a)	:	6 378 160.000m
Semi-minor Axis (b)	:	6 356 774.719m
Eccentricity Squared (e^2)	:	0.006 694 542
Flattening (1/f)	:	298.25
DATUM	:	**WGS-84**
Spheroid	:	WGS-84
Semi-major Axis (a)	:	6 378 137.0000m
Semi-minor Axis (b)	:	6 356 752.3142
Eccentricity Squared (e^2)	:	0.006 694 380
Flattening (1/f)	:	298.257 223 563

4.2 PROJECTION	:	**U.T.M.**
AMG Zone	:	52
Central Meridian (C.M.)	:	129° East
Scale factor on the C.M.	:	0.9996
False Easting	:	500 000m
False Northing	:	10 000 000m
Latitude of Origin	:	0° (Equator)
Unit of Measure	:	International Metre

4.3 DATUM TRANSFORMATION PARAMETERS

The datum transformation parameters used in the Racal GNS software to convert WGS 84 co-ordinates to AGD 84 co-ordinates were as follows:

Dx	=	+ 116.00m
Dy	=	+ 50.47m
Dz	=	- 141.69m
Rx	=	+ 0.230"
Ry	=	+ 0.390"
Rz	=	+ 0.344"
Scale(k)	=	- 0.0983

5. OPERATIONAL SUMMARY

5.1 ON-LINE PROCEDURES

The Racal General Navigation System was used to obtain and log the online positioning of the vessel. The "Skyfix" Differential GPS was utilised to provide the positioning and was interfaced to the HP 310 series desk top computer together with the necessary ancillary equipment; plotter, monitors and printer.

Every 100m a fix closure was supplied to the echo sounder and side scan sonar which provided the time, date, fix and line number directly onto the records.

The vessel's position and all navigation data was logged onto diskettes. The data was also logged onto hardcopy paper printout, at the fix interval.

The echo sounder transducer was used as the datum point.

5.2 SKYFIX DIFFERENTIAL GPS SYSTEM

SkyFix is a fully-networked differential correction system which offers its users high accuracies (of the order of five metres) at very long ranges. experience has shown that these accuracies can be held at considerable distances from the reference station, making differential GPS accuracies available over substantially wider areas than ever before. The system in South East Asia gives usable coverage in the South China, Java and Timor Seas, North West-Shelf and is suitable for many applications such as positioning for rig moves, construction projects and seismic exploration.

The reference station network is uplinked to the Inmarsat communications satellite via telecom uplink stations. The user vessel then accesses the correction signal using Inmarsat. A equipment with Racal Survey's decoders which supply the data to the onboard GPS equipment. The integrity of the whole system is maintained at a dedicated control centre which carries out comprehensive monitoring and accurate quality control.

For this project Racal Survey's permanent GPS reference station sited in Darwin was used to derive the 'real-time' pseudo-range corrections for each satellite.

The 'real-time' pseudo-range corrections in R.T.C.M. 104 format were derived at the reference station using Trimble Deltanav-Reference software versions 2.52. On receipt at the mobile installation the R.T.C.M. 104 messages were applied to the GPS data by the use of Trimble DeltaNav-Navigator software version 2.60.

5.3 ECHO SOUNDER

An Atlas Deso 20 Echo Sounder was used, employing a "overside" mounted, dual frequency (33kHz and 210 kHz) transducer. The transmission line was set initially for a draft of 1.8 metres, being the depth of the transducers below sea-level.

The recorder was operated at a scale 3/0, representing a range of 0m - 50m or 4/0 representing a range of 0 - 100m across the recording paper. The stylus motor speed was set for a seawater velocity of sound of 1540 ms which was confirmed by the bar check method when sea conditions permitted.

The bathymetric data was digitally recorded and logged at each fix event.

5.4 SIDE SCAN SONAR

The Side Scan Sonar fish was suspended from the bow of the survey vessel, with a cable length of 5 metres.

A Klein Model 531T three channel Side Scan Sonar recorder was used in conjunction with a 100 kHz, 1.5 degree beam width, tow fish. The recorder was operated on the 150 metre slant range with the fiducial fix marks and annotations recorded on the unused third channel.

6. PERSONNEL AND EQUIPMENT

6.1 PERSONNEL

The following personnel were employed on this project:

For : Racal Survey Australia Limited

Mr. S. Bradley	- Survey Engineer
Mr. P. Talen	- Sidescan Operator/Engineer

For : Western Geophysical Company:

Mr. I. Baker	- Client Representative

6.2 EQUIPMENT

The following equipment was used on this project:

1 x HP 310 Desktop Computer

1 x HP 7475 Plotter

2 x HP 9122 3.5" Dual Disk Drive

1 x Racal Interface 80 Unit

1 x HP Thinkjet Printer

1 x HP 82913A Monitor

1 x Barco VDU

1 x Klein 531T Side Scan Sonar Recorder

1 x Klein Side Scan Sonar Towfish

1 x Atlas Deso-20 Echo Sounder Recorder

1 x Atlas Deso-20 Dual Frequency, Overside Mounted Transducer

plus all associated software, cables, manuals, etc. and 100% back-up of major units.

7. DISTRIBUTION

Copies of this report have been distributed as follows:

Western Geophysical Company. Attn: Mr. B. Kolozc	: 3 copies
Racal Survey Australia Limited	: 1 copy

Gareth Jones
AREA SURVEYOR

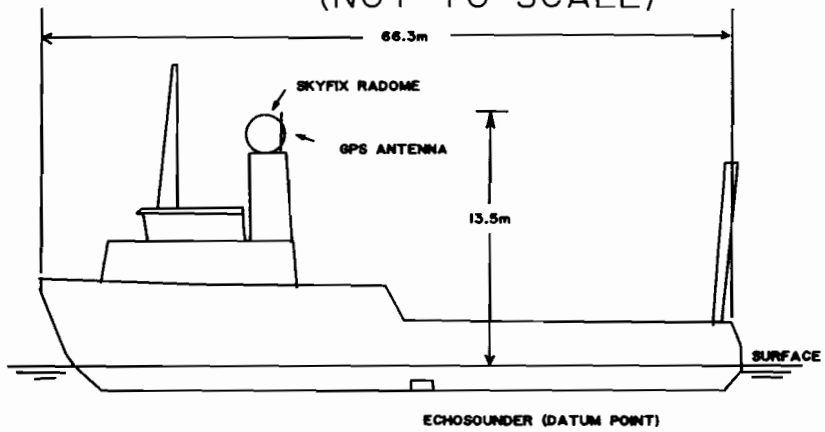
APPENDIX A

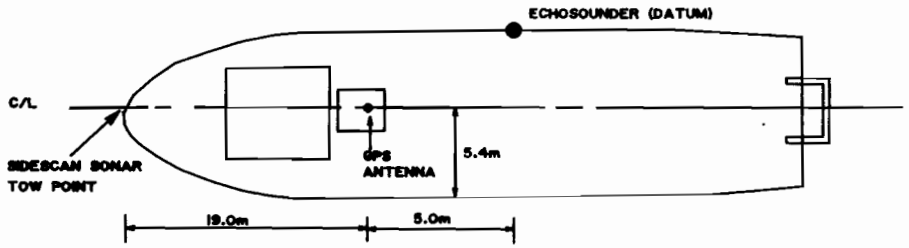
M.V. MERMAID ACHIEVER OFFSET DIAGRAM

M.V MERMAID ACHIEVER

APPENDIX A

(NOT TO SCALE)





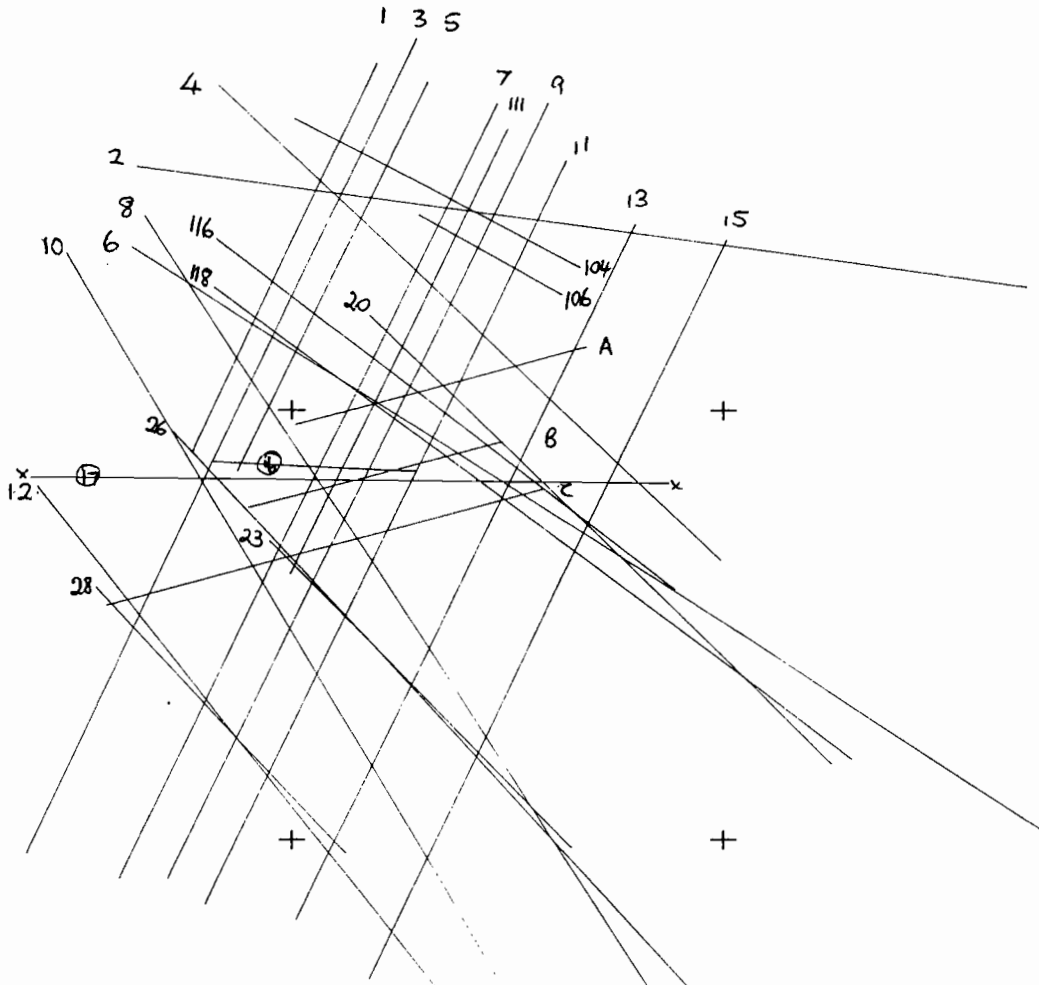
APPENDIX B

SURVEY LINE DIAGRAM

RACAL Survey Aust

Job #1928

Chart no. 9



500000 E

8340000 N

KILOMETERS

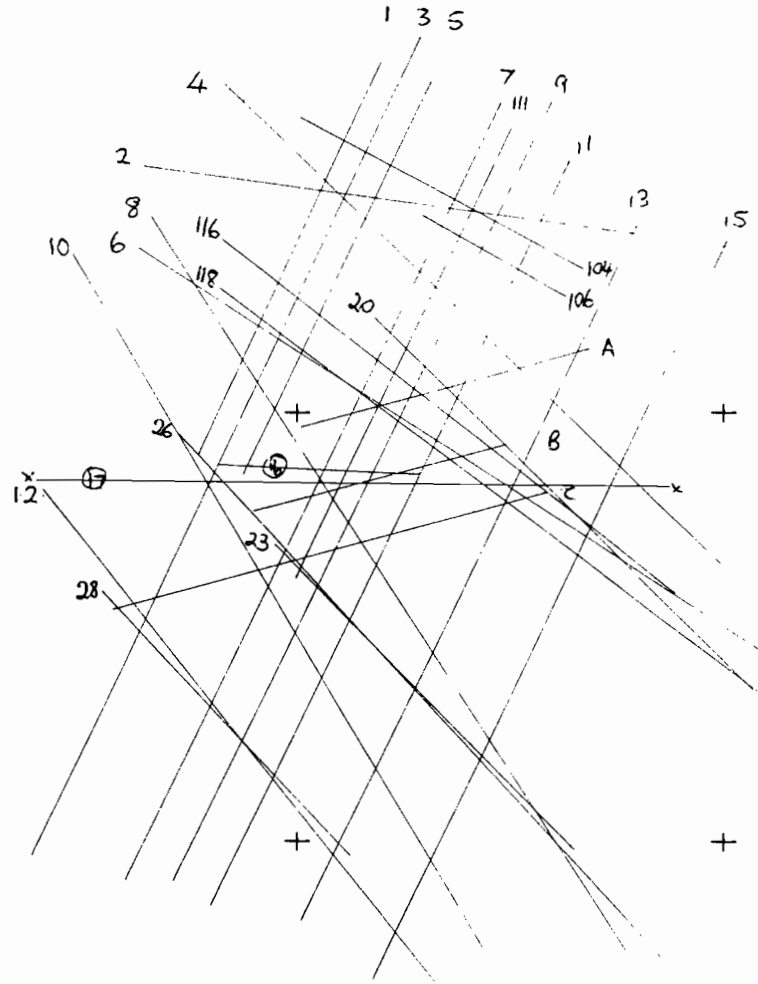
N.MILES

Grid Tick:20000m
Scale 1:250000

RACAL Survey Aust

Job #1928

Chart no. 9



500000 E

8340000 N

KILOMETERS

N.MILES

Grid Tick:20000m
Scale 1:250000

13.5.92

System Definition

System 1 Tau On/Off Status=ON
System 2 Not defined On/Off Status=OFF
System 3 Not defined On/Off Status=OFF

System Definition

System 1 Tau On/Off Status=ON
System 2 Not defined On/Off Status=OFF
System 3 Not defined On/Off Status=OFF

DATA TRANSFER SEQUENCE TO ONLINE OPERATION COMPLETE

Track Guidance Lines

Line No.	SOL(E)	SOL(N)	EOL(E)	EOL(N)	KP NUMBER	DESC
1	535400.00	8378020.00	543900.00	8396190.00	0.000	TK1
2	532800.00	8391310.00	574360.00	8385700.00	0.000	TK2
3	527690.00	8359320.00	545740.00	8397350.00	0.000	TK3
4	536620.00	8395130.00	559900.00	8372940.00	0.000	TK4
5	537500.00	8377130.00	546250.00	8395310.00	0.000	TK5
6	532580.00	8387560.00	578050.00	8358550.00	0.000	TK6
7	532000.00	8358150.00	549510.00	8394300.00	0.000	TK7
8	533180.00	8389010.00	566988.00	8337170.00	0.000	TK8
9	534250.00	8358150.00	551910.00	8394300.00	0.000	TK9
10	529550.00	8387270.00	559000.00	8337590.00	0.000	TK10
11	536000.00	8357000.00	552750.00	8391590.00	0.000	TK11
12	528220.00	8376370.00	547160.00	8352510.00	0.000	TK12
13	540210.00	8356280.00	555970.00	8388650.00	0.000	TK13
14	200000.00	5000000.00	210000.00	5500000.00	0.000	0
15	543550.00	8353550.00	560180.00	8387900.00	0.000	TK15
16	545706.00	8377100.00	536342.00	8377568.00	0.000	TK16
17	527905.00	8376800.00	548517.00	8362718.00	0.000	TK17
18	540180.00	8379320.00	553680.00	8382940.00	0.000	TKA
19	538000.00	8375380.00	549750.00	8378500.00	0.000	TKB-1
20	531420.00	8370830.00	551680.00	8376290.00	0.000	TKC
21	543580.00	8384410.00	565150.00	8363500.00	0.000	TK20
22	530930.00	8371700.00	542520.00	8359320.00	0.000	TK28
23	553000.00	8359600.00	538982.00	8373865.00	0.000	TK23
24	534510.00	8378980.00	560200.00	8351230.00	0.000	TK26
25	536500.00	8387980.00	557770.00	8371580.00	0.000	TK116
26	536400.00	8385730.00	566110.00	8363730.00	0.000	TK118
27	545820.00	8389080.00	552560.00	8385330.00	0.000	TK106
28	540100.00	8393620.00	553400.00	8386580.00	0.000	TK104
29	549980.00	8393120.00	539940.00	8372310.00	0.000	TK111
30	548260.00	8394570.00	537720.00	8372920.00	0.000	TK107

Way No.	Easting	Northing	Tolrnce	Desc
1	635915.00	8636265.00	10.0	DWN1
2	316091.00	8370465.00	0.0	DWN2

APPENDIX C

SURVEY LINE LOGS

LINE LOG

13.5.92

LINE	TIME	FSP	LSP	HDG	ES ROLL / DISC	
TK104	0732	6961		298	11	SOL
"	0851		7123			EOL 1100M RUN OUT.
TK 20	1024	7130		134	11	SOL START 400M EARLY.
"	1230		7330			BOL.
TK116	1242	7331		308	11	
"	1322					SP 7372 LOSS DIFFERENTIALS (NO DATA IN)
"	1330					SP 7381 DIFFS OK
"	1418		7426			BOL. TO START TK8-1.
TK8-1	1436	7427		255	11	SOL
TK8-1	1539		7506			EOL
TK111	1541	7507		206	11	SOL START DOWNLINE 18623M.
"	1611		7557			EOL
TK107	1630	7558		26	11	SOL
"	1732		7660			EOL

APPENDIX C

Logging Disc Log

13 5.92

Disc	Line	File	SPS
11	TK104	1	6961 - 7025
		2	7026 - 7091
		3	7092 - 7123
	TK 20	4	7130 - 7194
		5	7195 - 7260
		6	7261 - 7326
		7	7327 - 7330
	TK116	8	7331 - 7395
		9	7396 - 7426
	TK 8-1	10	7427 - 7491
		11	7492 - 7506
	TK 111	12	7507 - 1557
	TK 107	13	7558 - 7622
		14	7623 - 7660

Line Log

0.5.92

Lin	TIME	FSP	FSP	LSP	HDG	E/BAY DISC	
TK8A	0831		5191		SEE	7/8	SCOUT SNAILOWS SOUTH SIDE GRUGAN ISLAND. No SSS
TK8A	1027				NW		SP 5365 TURN BACK & CONTINUE ON HDG NW
TK8A	1035						SP 5375 LAUNCH SSS FISH & USE TO EOL.
TK8A	1218			5498			EOL. HEAD TO RETRIEVE DINGHY.
1.5.92							
TK8	0825		5499		326	8/8	SOL. START 9701m DOWN LINE AND SOON STBD
TK8	1029			5666			EOL. BREAK OFF TO START TK23
TK23	1032		5668		315	8	NEW LINE.
TK23	1328			5867		9	DISC(LOG) CHANGE. LAST 4 SPS.
TK28	1434		5868		137	9	SOL.
TK28	1628				316		TURN & REVERSE HDG & CONTINUE. SP 6046
TK28	1758			6203			EOL
2.5.92						9/9	
TK	0723		6204		075		SOL
TKC	0820				180		SP6285 TURN PB STBD, TRY FIND CHANNEL
TKC	0853			6325			EOL BREAK OFF & START 26.
TK26	0900		6326		137	9	SOL PART LINE CHECK DEPTHS ALONG NORTH BANK
TK26	0923						TURN STBD SP 6359, THEN TURN BACK AT SP 6377
TK26	1013			6418			BREAK OFF AT SE END OF BANK.
TKC	1059		6419		75	10	CONTINUE LINE. SSS NOT USED FROM SP 6422, BLADES
TKC	1217						BREAK OFF LINE TRAVERSE TO SOL TK8
TKC					315		FIXING EVERY 50 SECS.
TKC	1301			6559			EOL. PREPARE START TK9. SSS OFF-RETERMINATION.
TK8	1325		6590		252	10	SOL FIXING 50 SECONDS. NO SSS
TK8	1505			6709			EOL
TK	1532		6710		75	10	SOL No SSS.
TKA							SP 6826 SSS BACK ON.
TKA	1647			6860			LSP EOL + 1100m.
TK106	1659		6861		299	10	SOL 1362m BEFOR SOL.
TK106	1751			6960			EOL

LOGGING DISC. LOG 10.5.92
+ 11.5.92
+ 12.5.92

DISC	LINE	FILE	SPS.
8	TK8A	35	5191 - 5255
		36	5256 - 5321
		37	5322 - 5387
		38	5388 - 5453
		39	5454 - 5498.
	TK8	40	5499 - 5563
		41	5564 - 5629
		42	5630 - 5666
	TK23	43	5668 - 5732
		44	5733 - 5798
	DISC CHANGE	45	5799 - 5863
9		46	5864 - 5867
	TK28	47	5868 - 5932
		48	5933 - 5998
		49	5999 - 6064
		50	6065 - 6130
		51	6131 - 6196
		52	6197 - 6203.
	TKC	53	6204 - 6268
		54	6269 - 6325
	TK26 (PART)	55	6326 - 6391
		56	6392 - 6418.
10	TKC (CONT)	57	6419 - 6483
		58	6484 - 6549
		59	6550 - 6589
	TKB	60	6590 - 6654
		61	6655 - 6709
	TKA	62	6710 - 6774
		63	6775 - 6840
		64	6841 - 6860
	TK106	65	6861 - 6925
		66	6926 - 6960

LINE LOG.

E/S Bank

LINE	TIME	FSP	LSP	HDG	DISC	RMKS
TK13	0713	3455		206	5/6	START LINE ALCL TO NORTH END TK13 1108m STBD.
TK13	0811		3539			BREAK OFF TO STBD AROUND SHALLOWS.
YY	0814	3540		NNW	6	SOUNDING LINE TOWARD EOL TK2. FIRING 50 SECS.
YY	1000		3667			EOL
TK2(P)	1003	3668		280	6	START 1447DM FROM WEST END. FIRING 50 SECS
TK2(P)	1143		3788			EOL TURN STBD.
VV	1154	3789		140° 026	6	BETWEEN EOL TK2 & EOL TK14
VV	1302		3890			BANK ON PORT SIDE AFTER STBD TURN.
TK4	1305	3891		133	6	PART LINE. FIRING 100m.
TK4	1311					3900 POOR HIGH ONLY 4 SVS. TRY 3 SVS. OK 1346.
TK4	1419		3966		6	EOL TO TURN STBD TO TK3.
TK	1447	3971		205	6	
TK3	1624					SP4109 TURN TO STBD 110° & CONTINUE
TK3	1633		4119			LEAVE LINE AT SP4109 21901 DOWN LINE. EOL NEAR START TK5.
TK5	1638	4120		26	6	
TK5	1715		4180			EOL BREAK OFF TO TURN STBD TK6 303°
TK6	1724	4181		303	7	START LINE 44911m DOWN LINE.
TK6						SP4231 PRINTER JAM
TK6	1832		4274			EOL. SPS4209 - 4268 3 SVS ONLY
9.5.92						
TK8	0728	4276		147	6/7	SOL AT WEST END 100m FIXES
TK8	0856		4467		7	EOL 19102m DOWN LINE.
TK11	0857	4468			7	SOL 17686m DOWN LINE. TO STBD 180m DUE REEF/SHOALS.
TK11	0934		4513			EOL AT 22200m DOWN LINE.
TK16	0936	4514		272	7	LINE BETWEEN TK11 & TK3 (NEW LINE).
TK16	1100		4604			EOL
TK3	1102	4605		206	7	START 21901m DOWN LINE
TK3	1211					SP 4720 TURN OFF TO PORT 110° & CONTINUE ALONG BANK
TK3	1316		4799			EOL
TK12	1318	4800		321	7	
TK12	1457		4984			
TK17	1505	4985		ESE	8?	SCOUT BANKS NORTH OF TK12, ON STBD SIDE BETWEEN TK3 & TK13.
TK17	1728					SP 5125 SSS RETRIEVED DUE SPEED INCREASE.
TK17	1812		5190			EOL.

Logging Disc Log 8.5.92 – 9.5.92.

	Line	File	SPS
Disc 6	TK13 (part)	1	3455 – 3519
	"	2	3520 – 3539
	YY	3	3540 – 3604
	"	4	3605 – 3667
	TK2 (part)	5	3668 – 3732
	"	6	3733 – 3788
	VV	7	3789 – 3853
	"	8	3854 – 3890
	TK4	9	3891 – 3955
	"	10	3956 3966
	TK3	11	CANCELL – ABORT
	TK3	12	3971 – 4035
	"	13	4036 – 4101
	"	14	4102 – 4119
	TK5	15	4120 – 4180
Disc 7	TK6	16	4181 – 4235 or 6
		17	Aborted
		18	4237 – 4274
	TK8	19	4276 – 4340
	"	20	4341 – 4406
	"	21	4407 – 4467
	TK11	22	4468 – 4513
	TK16	23	4514 – 4578
	"	24	4579 – 4604
	TK3	25	4605 – 4669
		26	4670 – 4735
		27	4736 – 4799
	TK12	28	4800 – 4864
		29	4865 – 4930
		30	4931 – 4984
Disc 8	TK17	31	4985 – 5049
		32	5050 – 5115
		33	5116 – 5181
		34	5182 – 5191

LINE LOG

IN S.	Time	FSP	LSP	HDG	E/S ROLL LOG DISC.	REMARKS
TK11	0703	1869		26°	3/4+3	START 22058M ALONG LINE.
TK11	0756				4	SP1934 CHANGE LOG DISC.
TK11	0910					SP2038 TURN TO PORT 310° AND CONTINUE
TK11	0922		2056			
TK9	0924	2057		206°	4	START 1084M DOWN LINE
TK9	1114		2216			BREAK OFF LINE TO PORT HDG 143° TO RECCE SHALLOWS.
ZZ	1115	2217		143°	4	START ZIGZAG LINES TO RECCE SHALLOWS. 45 SEC FIXING
"	1138			120°		SP2247 HDG TO 120°
"	1151			195°		SP2264 " " 195°
"	1220			070°		SP2303 HDG TO 070° (MID BANK AHD)
"	1318			110°		SP2380 HDG TO 120°-100°
"	1337			195°		SP2405 HDG TO 195°
"				80°		SP2452 " CHANGE
"				120°		SP2502 " "
"				195°		SP2514 " "
"				80°		SP2564 " "
"				120°		SP2601 " "
"				180°		SP2611 " "
"	1629			125°		SP2633 " "
ZZ	1737		2724			EOL OF ZZ LINE HEAD TO ANCHOR.
7.5.92						
TK9	0900	2725		206°	4/5	START LINE 17,001M DOWN LINE FROM SP2216
TK9	0958			295°		SP2819 TURN OFF TO STBD 295° + CONTINUE
TK7	1014		2838			STOP LOGGING TO TURN TO TK7
TK7	1021	2839		26°	5	
TK7	1219		3028			BREAK OFF 34400 DOWN LINE.
TK2	1221	3029		98°	5	START 1447KM DOWN LINE
TK2	1346		3116			BREAK OFF 24000M DOWN LINE
XX	1348	3117		180°	5	VARIOUS ZIGZAG HEADINGS — CONVOY LINES.
XX	1508		3204			BREAK OFF EOL.
TK15	1512	3205		26°	5	START 28530M DOWN LINE.
TK15	1632		3322			LINE TO NORTH THEN ROUND BANK WEST OERST.
TK14	1644	3324		WEST	5	LINE ALONG COAST FOR MINIMUM SOUNDINGS
TK14	1719		3365			
TK2	1723	3366		98°	5	CONTINUE TK2
TK2	1825		3453			EOL. TURN BACK 180° FROM SP 3418.

Logging Discs Log 6.5.92 - 7.5.92

	Line	File	SPS
Disc 3 (cont)	Line TK11	15	1869 - 1933
Disc 4	TK 11	16	1934 - 1999
	"	17	2000 - 2056
	TK 9	18	2057 - 2121
	"	19	2122 - 2187
	"	20	2188 - 2216
	'ZZ'	21	2217 - 2281
	"	22	2282 - 2283
	"	23	2285 - 2328
	"	24	2330 - 2394
	"	25	2395 - 2420
	"	26	2422 - 2486
	"	27	2487 - 2552
	"	28	2553 - 2618
	"	29	2619 - 2684
	"	30	2685 - 2724
Disc 5	TK9	1	2725 - 2789
	"	2	2790 - 2838
	TK7	3	2839 - 2903
	"	4	2904 - 2969
	"	5	2970 - 3028
	TK 2	7	3029 - 3093
	"	8	3094 - 3116
	XX	9	3117 - 3181
	"	10	3182 - 3204
	TK15	11	3205 - 3269
	"	12	3270 - 3322
	TK14	13	3324 - 3365
	TK2	14	3366 - 3430
	"	15	3431 - 3453

LINE LOG

3.5.92

Ln.	TIME	FSP	LSP	HDG	E/S ROLL LOGGING	REMARKS
TK10	1228	1		149.3	1 / 1	
TK10	1248		27			BREAK OFF, FISH RECOVERED IN WEED FLOAT.
TK10	1355	28		"	2	RESTART 2000 m ALONG LINE
TK10	1541					SP198 TURN (VEER) PORT TO AVOID SHALLOWS.
TK10	1654		349			BREAK OFF TO LEAVE SHALLOWS FOR NIGHT.
4.5.92						
TK1	0805	358		25.1	2	SP387 LOSS GPS 2 MINS
TK1	1016		570			TURN STBD AT EOL KEEP TRACKING
TK3	1027	571		205	2	SOL 600m DOWN LINE
TK3	1122		647			BREAK OFF, TURN ONTO TK4
TK	1125	648		133.6	2 + 1	50m PORT OF LINE AT START POINT.
TK4	1447					SP896 TURN TO PORT
TK4	1501					SP906 TURN TO PORT, CONTINUE REVERSE DIRECTION
TK4	1640		1025			BREAK OFF LINE TO GO TO TK13
TK13	1643	1026		26	2 / 1	START LINE 30693m DOWN LINE
TK13	1728		1086			GO 660M OVER EOL.
TK2A	1731	1087		290	1	LINE IS 1700m NORTH OF LINE TK2 ROUGHLY PARALEL.
TK2A	1808		1124			
5.5.92						
TK7	0710	1126		26	3	
TK7	0750					SP1190 TURN OFF TO PORT, CONTINUE LOG TO TK5
TK	0818		1242			
TK5	0823	1243		206		SP1243 NOT ON LOG DISC. START ON TIME CHANGE AT SP1247
TK5	0951		1383		3	BREAK OFF TO TURN TO TK6
TK6	0954	1385		122	3	
TK6	1410					SP1609 GO OFF LINE TO STBD AROUND BANK
TK6	1540					SP1704 TURN TO STBD 180° TO START NEW LINE OUT.
TK6	1553		1723			
TK6A	1555	1724		315	3	NEW LINE REVERSE TK6 PARALEL TO SOUTH.
TK6A	1806		1868			EOL. DUE SPEED, TIME, POOR HIGH.

NOTES: FIRING 100m, EXCEPT WHERE ON INFILL BETWEEN LINES CHANGE TO 30 SECS. OR 45 SECS.

LOGGING DISCS LOG. 3.5.92 – 5.5.92

	LINE	FILE	SPS	
DISC 1				
GNS V 2.40	TK10	4	1–27	
	"	5	~~28 – 349~~	NO POSN 1 UTMS.
	TK4	14	779 – 844	
	"	15	845 – 910	GPS STRING ONLY
	"	16	911 – 976	
	"	17	977 – 1025	
	TK13	18	1026 – 1086	
	TK2A	19	1087 – 1124	
DISC 2				
GNS V 240	TK1	6	358 – 424	
	"	7	425 – 490	NO POSN 1 UTMS
	"	8	491 – 556	
	"	9	557 – 570	GPS STRING ONLY
	TK3	10	571 – 635	
	"	11	636 – 647	
	TK4	12	648 – 712	
	"	13	713 – 778	
	TK10	5	28 – 349	
DISC 3				
GNS V 2.33	TK7	1	1126 – 1190	
	"	2	1191 – 1242	POSN 1 OR ↓
	TK5	3	1244 – 1308	
	"	4	1309 – 1374	
	"	5	1375 – 1383	
	TK6	6	1385 – 1449	
	"	7	1450 – 1515	
	"	8	1516 – 1581	
	"	9	1582 – 1647	
	"	10	1648 – 1713	
	"	11	1714 – 1723	
	TK6A	12	1724 – 1788	
	"	13	1789 – 1854	
	"	14	1855 – 1868.	

APPENDIX D

DAILY LOGS

RACAL–SURVEY

DAILY LOG 12101

VESSEL MERMAID ACHIEVER

PROJECT LEADER

CLIENT WESTERN GEOPHYSICAL

DATE 30.4.92

PROJECT SCOUTING

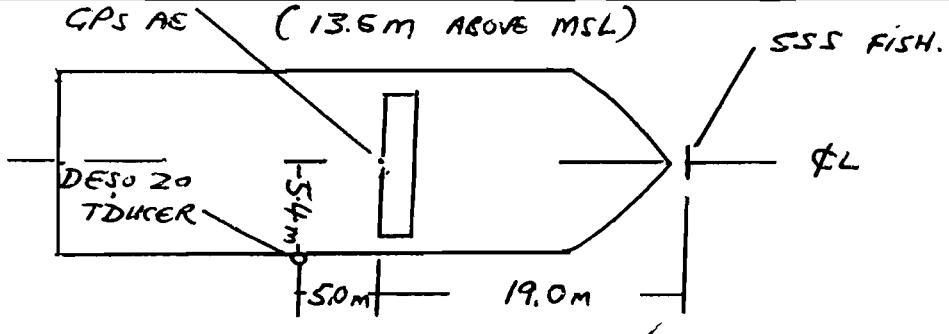
TIMEZONE L CST

SYSTEM DGPS/SSS/ES

TIME	NARRATIVE	INITIAL
	RACAL PERSONNEL: P. TALEN	
	S. BRADLEY	
1600	TALEN & BRADLEY ARRIVE DARWIN. AVIS CAR	
	PICKED UP AND CHECK INTO TRAVELODGE.	
1630	TO AGENTS CONFIRM EQUIPMENT ARRIVAL AND	
	ARRANGEMENTS FOR CRANE, WELDER AND TRANSPORT.	
1930	MEET WGC PERSONNEL, ADVISE RE 1.5.92 MOBILISE.	
	1. 5.92	
0800	BOARD VESSEL AND COMMENCE MOBILISE.	
1015	ALL EQUIPMENT ON BOARD VESSEL. DOME MAINTED.	
	WELDING AND FABRICATION UNDERWAY TO MOUNT E/SOUNDER	
	ON STARBOARD SIDE AND SONAR FISH BOOM ON BOW.	

REMARKS

MERMAID ACHIEVER
40m x 10m



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PROJECT LEADER *CLIENT REPRESENTATIVE*

RACAL–SURVEY

DAILY LOG 12102

VESSEL Mermaid Acheiver

PROJECT LEADER ..... CLIENT Western Geophysical

DATE 2.5.92 PROJECT Scouting

TIMEZONE L CST +9½ SYSTEM DGPS/SSS/ES

TIME	NARRATIVE	INITIAL
0700	Depart Darwin for location.	
	Work on installation. Set up	
	computer for tracking.	
	Repair Gyro interface to Skyfix.	
2000	ETA 0500 hrs 3.5.92	

REMARKS

Dome packing crate and clamps left for WLE to store, Dome sling remains onboard vessel.

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PROJECT LEADER *CLIENT REPRESENTATIVE*

RACAL–SURVEY

JN 1928

DAILY LOG 12103

VESSEL Mermaid Acheiver

PROJECT LEADER ..... CLIENT Western Geophysical

DATE 3.5.92 ..... PROJECT Scouting

TIMEZONE L CST +9½ ..... SYSTEM DGPS/SSS/ES

TIME	NARRATIVE	INITIAL
0500	Arrive location	
0615	Monitor current, making 2.8 knots drift upriver.	
0700	Prepare for bar check work on Deso 20	
	Noise on Analogue	
1015	Complete bar check, launch sonar fish	
	and test tow arrangement over bow.	
1200	Adjust and set up Klein 531T recorder. Run to	
	SOL TK 10 HDG 149.3°. Radcall to Perth re	
	SV 28 no corrections, SV unhealthy at present.	
1228	SOL TK 10 HDG 149.3 SVS 3,11,17,21 PDOP 3.4 FSP 1	
	Fixes 1-9 50m 10→end 100m spacing	
1248	B/EOL Fix 28. Break off due SSS fish problem, weed covered	
1355	R SOL TK10 HDG 149.3 FSP 28. SVs ~~BAD~~ 11 21 25	
	Line restarted 3000m from start of line.	
1541	SP 198 turn to port off line TK10, WD 8.0m shoaling	
	continue then back to stbd and continue 1200m port of line	
1642	Loose Darwin diffs, short period.	
1654	LSP 349. Break off line TK10 ~~349~~ shallows and unable to	
	remain area (river mouth) during NL daylight	
1715	Retrieve overside gear	
1930	Anchor for night. 529 581 E 8384 557 N	
	Check data log discs. Replan plot charts to allow	
	postplot to TK's mylar 1:100 000 charts.	

REMARKS

1. GNS 2.4 no PDOP display on VDU only ???
2. SSS fish over bow, runs close to hull due speed & current.
3. GNS 2.4 displayed room left on disc at SOL then no more during line ?
4. Fixing each 100m

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PROJECT LEADER *CLIENT REPRESENTATIVE*

RACAL–SURVEY

DAILY LOG 12104

VESSEL Mermaid Achiever

PROJECT LEADER ..... CLIENT Western Geophysical

DATE 4.5.92 PROJECT Scouting

TIMEZONE L CST +9½ SYSTEM DGPS/SSJ ES

TIME	NARRATIVE	INITIAL
0630	Anchor up and head to SOL TK1 area.	
0730	Deploy E/sounder pole and bar check.	
0805	SOL TK1 HDG 25.1° FSP 358. Fix mark to SSS manually.	
1016	TK1 LSP 570	
1027	TK3 FSP 571 205°	
1122	TK3 LSP 647 205°	
1125	TK4 FSP 648 133°	
1447	TK4 SP 896 Turn 90° Port, continue	
1501	TK4 SP 906 " " " "	
1640	TK4 LSP 1025 Break off line (extension)	
1643	TK13 FSP 1026 26°	
1728	TK13 LSP 1086	
1731	TK2A FSP 1086 290°. Line along bank, pllel to TK2 + North of.	
1808	TK2A LSP 1124	
	Retrieve Gear, head to anchor near line TK7	
1840	Anchor dropped at TK7.	

REMARKS

1. Plot charts 1:100000
2. Fix to SSS faulty due 25Volt on line to fix box corrupting relay.
3. GNS V2.4, Gyro menu page, press and displays only blank S. keys with gyro periphs on or off. ?
4. GNS V2.4, Not logging system position, Northing + Easting, on log disc only raw data string.
5. GNS V2.33, Still flashes ERROR :– check GPS baud continuously !!

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PROJECT LEADER CLIENT REPRESENTATIVE

J/N 1928

RACAL–SURVEY

DAILY LOG 12105

VESSEL Mermaid Acheiver

PROJECT LEADER ..... CLIENT Western Geophysical

DATE 5.5.92 PROJECT Scouting

TIMEZONE L CST +9½ SYSTEM DGPS/SSS/ES

TIME	NARRATIVE	INITIAL
0620	Anchor up. Set up survey equipment	
0710	TK7 FSP 1426 Hdg 26°	
0750	SP 1190 Turn off to port continue logging towards TK5 Hdg 288°	
0818	TK7 LSP 1242 at turn onto TK5.	
0823	TK5 FSP 1243 Hdg 206° FSP not on log doc, return to dist firing at SP 1247	
0951	TK5 LSP 1383 Turn off to TK6. End TK5 13900m down line	
0954	TK6 FSP 1385 Hdg 122° Start 9300m down line.	
1100 –	To 1219 Hours only 3 SVs available, use aiding for this period, tide on ebb.	
1255	SV 28 OK, ARC being received from Darwin, No MSG 16.	
1328 –	To 1357 3 SV's available only. Vessel to port of line 75m at 1340 SP 1590 due bad track.	
1358	SV constellation OK. 11 15 21 25 28 PDOP 2.4	
1410	Turn to Stbd at SP 1609 to continue past bank. Continue up to 1500m Stbd of line	
1540	Turn 90/90° to Stbd at SP 1704 to reverse course up line TK6 Hdg 302° approx. Change firing to time (45 secs.)	
1553	TK6 LSP 1723	
1555	TK6A FSP 1724 Hdg 305° TK6A 3000m to port of Pllel TK6 Follow bank line to North West.	
1806	TK6A LSP 1868. Break off, speed down to 2 knots against current. Gear onboard 1810 hrs.	
1904	At Anchor 544123 E 8377542 N	

REMARKS

1. GNS V2.33 in use due logging fault on 2.40.

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PROJECT LEADER CLIENT REPRESENTATIVE

RACAL–SURVEY

J/N 1928

DAILY LOG 12106

VESSEL MERMAID ACHEIVER

PROJECT LEADER

CLIENT WESTERN GEOPHYSICAL

DATE 6.5.92

PROJECT SCOUTING

TIMEZONE L CST +9½

SYSTEM DGPS/SSS/ES

TIME	NARRATIVE	INITIAL
0635	ANCHOR UP. DEPLOY EQUIPMENT.	
0703	TK11 FSP 1869 HDG 26° STRONG CURRENT FROM PORT, HOLD 22° PRT.	
0910	TURN OFF RUN OUT TK11 TO PORT, CONTINUE LOGGING. HDG 310°	
0922	TK11 LSP 2056.	
0924	TK9 FSP 2057 HDG 206° START 1054M DOWN LINE	
1114	TK9 LSP 2216. BREAK OFF TO GO TO SCOUT SHALLOWS ON LOW TIDE.	
1115	ZZ FSP 2217. START ZIGZAG SCOUT LINE, HEADING WILL CHANGE AT INTERVALS TO COVER SHALLOWS AREA.	
1737	22' LSP 2724.	
1740	GEAR ONBOARD. GO TO ANCHORAGE.	
1830	AT ANCHOR 562958 E 8366534 N	

REMARKS

ECHO SOUNDER ROLLS
1. TK10 – TK4
2. TK13 – TK6A
3. TK11 – ZZ

SSS ROLL USAGE TO END 6.5.92 = 4

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PROJECT LEADER

CLIENT REPRESENTATIVE

RACAL–SURVEY

DAILY LOG 12107

VESSEL Mermaid Achiever

PROJECT LEADER ..... CLIENT Western Geophysical

DATE 7.5.92 ..... PROJECT Scouting

TIMEZONE L C.S.T. +9½ ..... SYSTEM DGPS/555/ES

TIME	NARRATIVE	INITIAL
0645	Anchor up depart anchorage.	
0830	Equipment in water. Attempt Bar check, current aborts.	
0900	TK9(cont.) FSP 2725 Hdg 206° Restart line at SP2216 Bsn of 6.5.92 1700m down line.	
0958	Turn off to Stbd at SP 2819 shallows ahead. Hdg 295°	
1014	TK9 LSP 2838	
1021	TK7 FSP 2839 Hdg 26°	
1219	TK7 LSP 3028 Turn Stbd to line TK2.	
1221	TK2 FSP 3029 Hdg 98°. Start 14474m down line.	
1346	TK2 LSP 3116. Break off turn south.	
1348	XX FSP 3117 Hdg 180° varying. Zigzag infill line.	
	Bounded by lines TK2 TK13 TK4	
1508	XX LSP 3204 Break off to go to TK15.	
1512	TK15 FSP 3205 Hdg 26° Start 28530m down line.	
1604	TK15 SP3285 Turn to ~~Stbd~~ Port to pass shallows	
1632	TK15 LSP 3322.	
1644	TK14 FSP 3324 heading West. Soundings along coast.	
1719	TK14 LSP 3365. Break off to turn on TK2 (continued)	
1723	TK2(cont) FSP 3366 start down line 23189 m.	
1825	TK2 LSP 3453. Line turned back 180° at SP3448.	
1830	All Gear up Head to Anchorage.	
1900	At Anchor 553320E8389280N	

REMARKS

1. Continue shooting part lines to allow vessel to be in shallow areas at low tide.

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PROJECT LEADER

CLIENT REPRESENTATIVE

RACAL–SURVEY

DAILY LOG 12108

VESSEL Mermaid Acheiver

PROJECT LEADER

CLIENT Western Geophysical

DATE 8.5.92

PROJECT Scouting

TIMEZONE L CST +9½

SYSTEM DGPS/SSS/ES

TIME	NARRATIVE	INITIAL
0640	Anchor up Gear in water.	
0700	Bar check, OK.	
0713	TK13(Port) FSP 3455 Hdg 206. Line starts at top end TK13 and	
	1100m to Stbd merging with TK13 at SP 3500 (80.7km upline).	
0811	TK13(P) LSP 3539.	
0814	YY FSP 3540 Hdg NNW. Fixing 50secs.	
1000	YY LSP 3667. EOL	
1003	TK2(P) FSP 3668 Start line 14470m from west end.	
1143	TK2 LSP 3788.	
1154	VV FSP 3789 Hdg 030°	
1302	VV LSP 3890	
1305	TK4 FSP 3891 Hdg 133°	
1311	TK4 Poop high 45vs until 1346.	
1419	LSP TK4 3966.	
1422	TK3 FSP 3967.	
1427	TK3 Abort SP 3970. Offline 150m. Circle to restart	
1447	TK3 FSP 3971 Hdg 205°	
1624	TK3 4109 Turn offline to port towards TK5. Hdg 119°	
1633	TK3 LSP 4119 End 22291m down line.	
1638	TK5 FSP 4120 Hdg 26°	
1715	TK5 LSP 4180 Break off to start TK6 Hdg 303°	
1724	TK6 FSP 4181 Hdg 303°	
1756	TK6 Printer hangup SP4235 Circle & restart program SP4237.	
1832	TK6 LSP 4274. SPs 4209–4268 3 SVs only.	
1842	Equipment up and to anchor at	

REMARKS

1. Fixing 100m unless otherwise stated.

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RACAL-SURVEY

DAILY LOG 12109

VESSEL Mermaid Achiever

PROJECT LEADER ..... CLIENT Western Geophysical

DATE 9.5.92 PROJECT Scouting

TIMEZONE L CST +9½ SYSTEM DGPS/SSS/ES

TIME	NARRATIVE	INITIAL
0650	Lift anchor gear in water.	
0728	TK8 FSP 4276 HDG 147° start at west end.	
0856	TK8 LSP 4467. Break off 19102m down line.	
0857	TK11 FSP 4468. Start 17686m down line	
0934	TK11 LSP 4513. Bol at SOL 6.5.92	
0936	TK16 FSP 4514 HDG 272° Toward RSOL TK3. HDG 272°	
1100	TK16 LSP 4604.	
1102	TK3 FSP 4605 HDG 206°	
1211	TK3 SP 4720 Turn off to port 110° continue logging	
	along 15m line towards TK12.	
1316	TK3 LSP 4799.	
1318	TK12 FSP 4800 HDG 321°. Start 12107m downline.	
1457	TK12 LSP 4984 ⊟. EOL.	
	Turn stbd to start TK17 scouting around bank.	
1505	TK17 FSP 4984 ESE scout banks between lines	
	TK3 & TK13 which will be on starboard side	
1728	Retrieve SSS fish due to vessel speed increase	
	to make anchorage by dark. SP 5125 speed 7 knots.	
	Line TK17 SP 5070 - 5115 No hard copy data.	
1812	TK17 LSP 5190.	
	Gear up. Head to anchor.	
1845	Head to anchor. Anchor at 1910 hrs.	

REMARKS

Vessel holding 22° HDG against tide on cross currents.

Ref 203 1489000
Ref 202 280000

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PROJECT LEADER CLIENT REPRESENTATIVE

RACAL–SURVEY

DAILY LOG 12110

VESSEL Mermaid Achiever

PROJECT LEADER ..... CLIENT Western Geophysical

DATE 10.5.92 PROJECT Scouting

TIMEZONE L CST + 9½ SYSTEM DGPS/SSS/ES

TIME	NARRATIVE	INITIAL
0645	Up anchor head to 553402 E 8360152 N to launch	
	Scouting dinghy.	
0831	TK8A FSP 5191 HDG SW. Line to scout shallows along	
	South side Bligh Island around line TK8. No SSS.	
1027	TK8A SP 5365 Reverse direction, scout NW closer to bank.	
1035	Launch SSS fish & use until EOL. SP 5375	
1218	TK8A LSP 5498. EOL.	
1250	Dinghy back at vessel and being lifted in. Position check	
	with portable GPS agrees with vessel GPS.	
1430	At anchor 548 470 E 8362920 N	
	Plot dinghy sounding positions.	

REMARKS New line TK 28 542 520 8359 320
530 930 8371 700. Entered.

SIGNED ..... SIGNED W.G.C.

PROJECT LEADER CLIENT REPRESENTATIVE

RACAL–SURVEY

DAILY LOG 12111

VESSEL Mermaid Achiever

PROJECT LEADER

CLIENT Western Geophysical

DATE 11.5.92

PROJECT Scouting

TIMEZONE L CST +9½

SYSTEM DGPS/555/ES

TIME	NARRATIVE	INITIAL
0630	ANCHOR UP STEAM TO SOUTH EDGE TK8 AREA.	
0825	TK8 FSP 5499 HDG 327° RUN 600-500 STBD OF LINE	
1029	TK8 LSP 5666.	
1032	TK23 FSP 5668 HDG 315°	
1328	TK23 LSP 5867 HEAD SOL TK28	
1434	TK28 FSP 5868 HDG 137°	
1628	TK28 SP6046 TURN TO ROUT TO HDG 316° TO	
	CONTINUE LOGGING BACK UP LINE AND BOOM NORTH	
	SIMULATING CABLE TOW TURN.	
1758	TK28 LSP 6203.	
1811	GEAR UP. HEAD TO ANCHORAGE.	
1840	AT ANCHOR 527503E 8375072N	

REMARKS

WEATHER : SWELL 1 M WIND 15 KNOTS. UP UNTIL NOW WEATHER HAS BEEN CALM AND 5 KNOTS WIND.

SIGNED ..... SIGNED W.G.C.

PROJECT LEADER

CLIENT REPRESENTATIVE

RACAL–SURVEY

DAILY LOG 12112

VESSEL Mermaid Achiever

PROJECT LEADER ..... CLIENT Western Geophysical

DATE 12.5.92 ..... PROJECT Scouring

TIMEZONE L CST +9½ ..... SYSTEM DGPS/SSS/ES

TIME	NARRATIVE	INITIAL
	Anchor up & Gear in	
0723	TKC FSP 6204 HDG 075°	
0820	Turn to Stbd fixing 50 secs. 180° HDG.	
0853	TKC LSP 6325	
0900	TK26 FSP 6326 HDG 137°	
0923	Turn to Stbd & reverse course out. Fixing 50 secs	
0939	Turn back to North side of line start 700m off pillel	
1013	TK26 LSP 6418. Break off at South East end of bank	
1059	TKC(cont) FSP 6419 HDG 75°	
1217	TKC. Turn to Port at EOL & continue towards TK B'.	
1301	TKC (cont.) LSP 6589.	
1320	Coords next line checked. Found to be off at	
	East end. Line carried out as is.	
1325	FSP 6590 'TK B' HDG 252° No SSS, working on termination.	
1505	LSP TKB 6709.	
1532	TKA FSP 6710 HDG 75°	
1627	TKA. SSS back on. SP 6826.	
1647	TKA LSP 6860. Turn Port	
1659	TK106 FSP 6861 SOL ES+SSS	
1751	TK106 LSP 6960. Retrieve Gear.	
1900	To Anchor. 543777E 8386 221 N.	
	Radcall to Perth re demob 15.5.92.	

REMARKS

New lines 111, 104, 106, 116, 118 coords supplied. To be surveyed if available time.

SIGNED ..... SIGNED W.G.C.

PROJECT LEADER CLIENT REPRESENTATIVE

RACAL–SURVEY

DAILY LOG 12113

VESSEL Mermaid Achiever

PROJECT LEADER ..... CLIENT Western Geophysical

DATE 13.5.92 PROJECT Scouting

TIMEZONE L CST + 9½ SYSTEM DGPS/555/ES

TIME	NARRATIVE	INITIAL
0732	TK104 FSP 6961 HDG 298° 555 ES	
0851	TK104 EOL 7123	
1024	TK20 FSP 7130 HDG 134° 555 ES	
1230	TK20 LSP 7330.	
1242	TK116 FSP 7331 HDG 308°	
1322	" Loss DIFFERENTIALS - NO DATA IN SP7372	
1330	" DIFFS OK SP 7381. UP TO 50M STBD OF LINE.	
1418	TK116 LSP 7426. EOL. BREAK OFF TO TURN TO TKB-1.	
1436	TKB-1 FSP 7427 HDG 255°	
1539	TKB-1 LSP 7506	
1541	TK111 FSP 7507 HDG 206°	
1611	TK111 LSP 7557 EOL.	
1630	TK107 FSP 7558 HDG 26°	
1732	TK107 LSP 7660 EOL & SURVEY	
1740	GEAR ONBOARD HEAD TO DARWIN.	

REMARKS

1415 NEW LINE: TK107 548260 8394570
537720 8372920.

SIGNED ..... SIGNED W.C.C.

PROJECT LEADER *CLIENT REPRESENTATIVE*

RACAL–SURVEY

DAILY LOG 12114

VESSEL Mermaid Achiever

PROJECT LEADER ..... CLIENT Western Geophysical

DATE 14.5.92 PROJECT Equinox

TIMEZONE L CST +9½ SYSTEM DGPS/SSS/ES

TIME	NARRATIVE	INITIAL
0700	ENROUTE DARWIN.	
	DEMOB DPACK EQUIPMENT	
	CREW BOOKED TO PERTH P.M. 15.5.92	
	ETA DARWIN ALONGSIDE 1600/14.5.92	

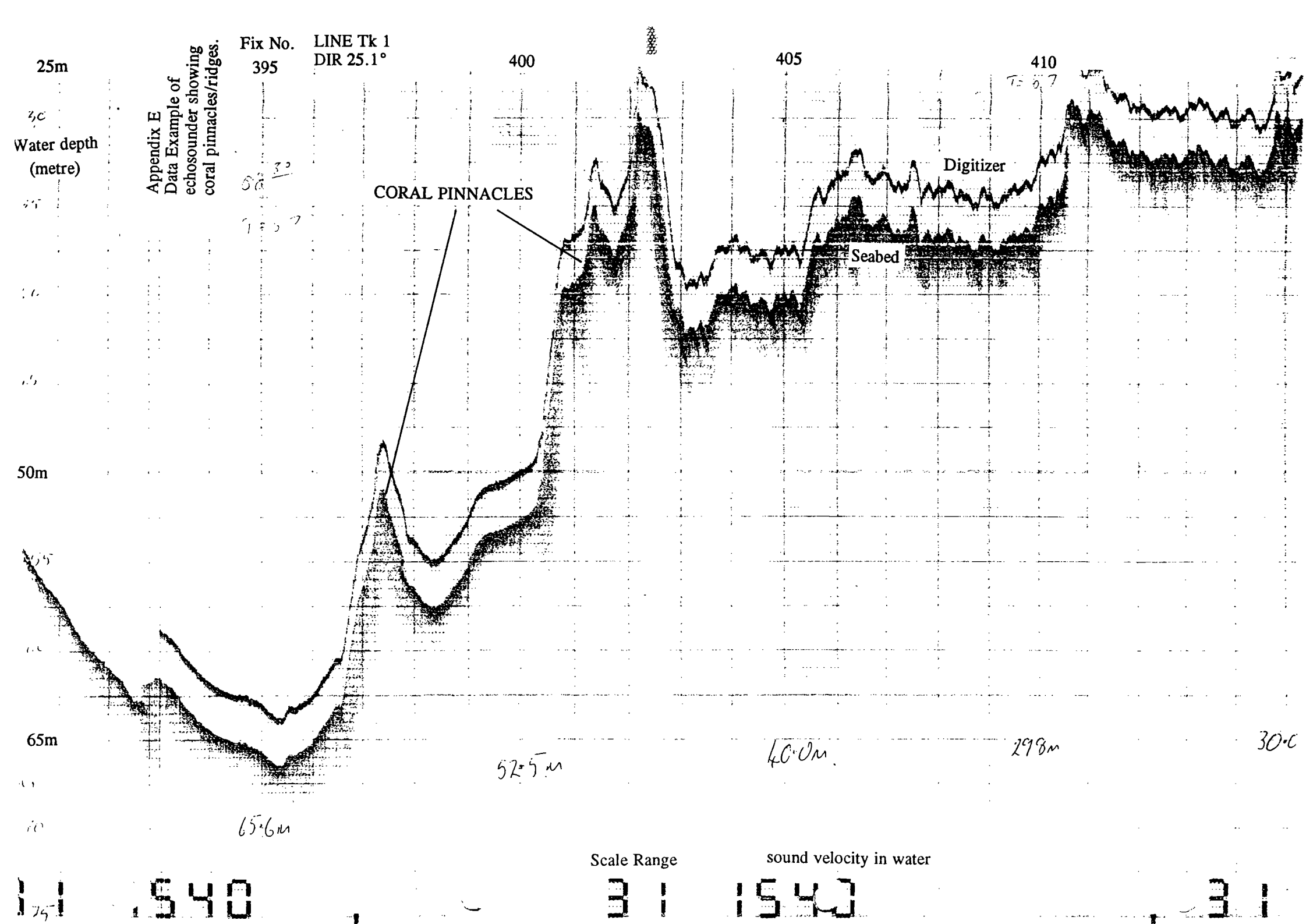
REMARKS

SIGNED ..... SIGNED .....

PROJECT LEADER *CLIENT REPRESENTATIVE*

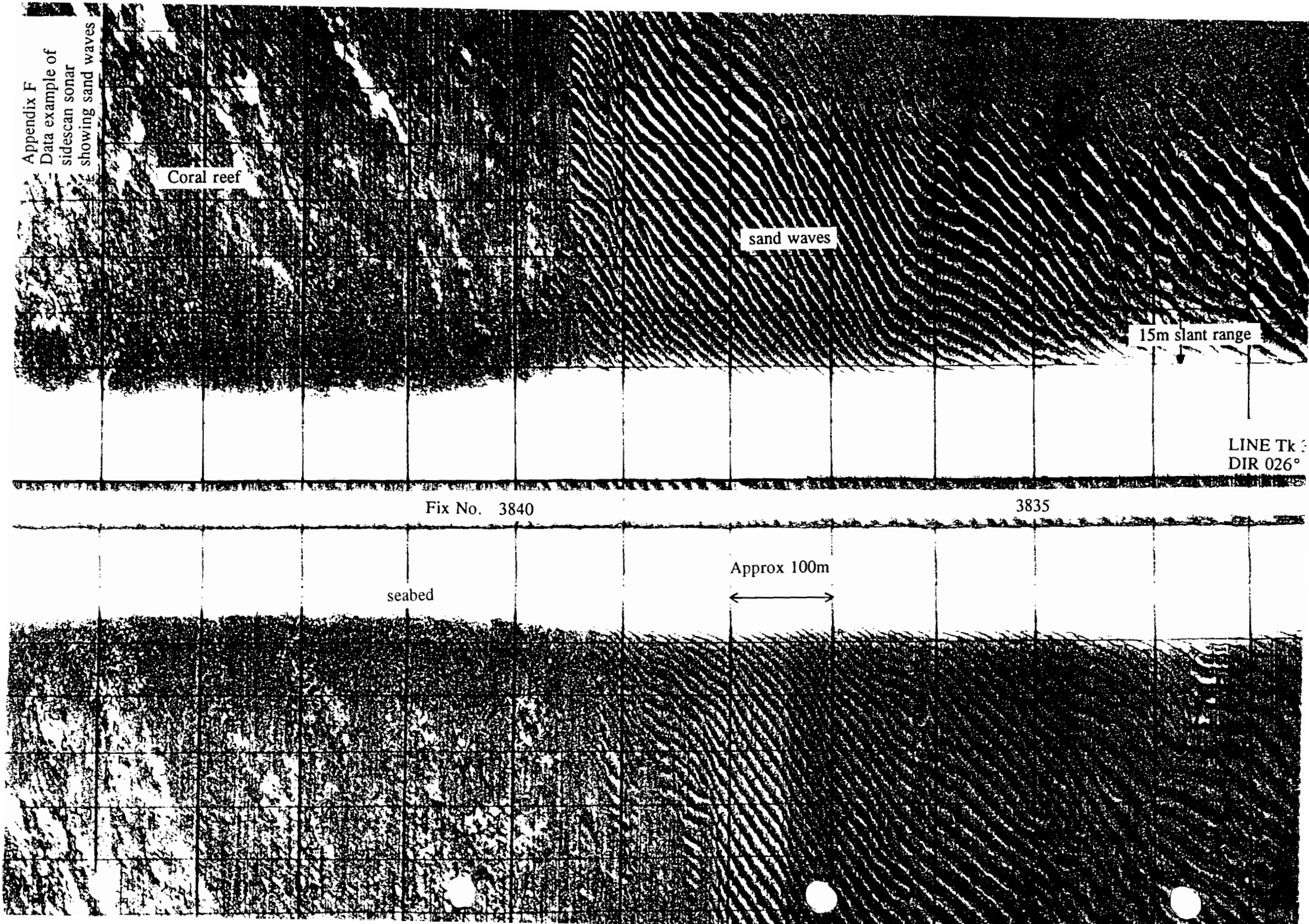
APPENDIX E

DATA EXAMPLE OF ECHOSOUNDER SHOWING CORAL PINNACLES


25m
Water depth (metre)
Appendix E
Data Example of echosounder showing coral pinnacles/ridges.
Fix No.
395
LINE Tk 1
DIR 25.1°
400
405
410
CORAL PINNACLES
Digitizer
Seabed
50m
65m
52·5m
40·0m
29·8m
30·c
65·6m
Scale Range
sound velocity in water
1540
1540

APPENDIX F

DATA EXAMPLE OF SIDESCAN SONAR SHOWING SAND WAVES AND CORAL REEF


Appendix F
Data example of sidescan sonar showing sand waves
Coral reef
sand waves
15m slant range
LINE Tk
DIR 026°
Fix No. 3840
3835
Approx 100m
seabed

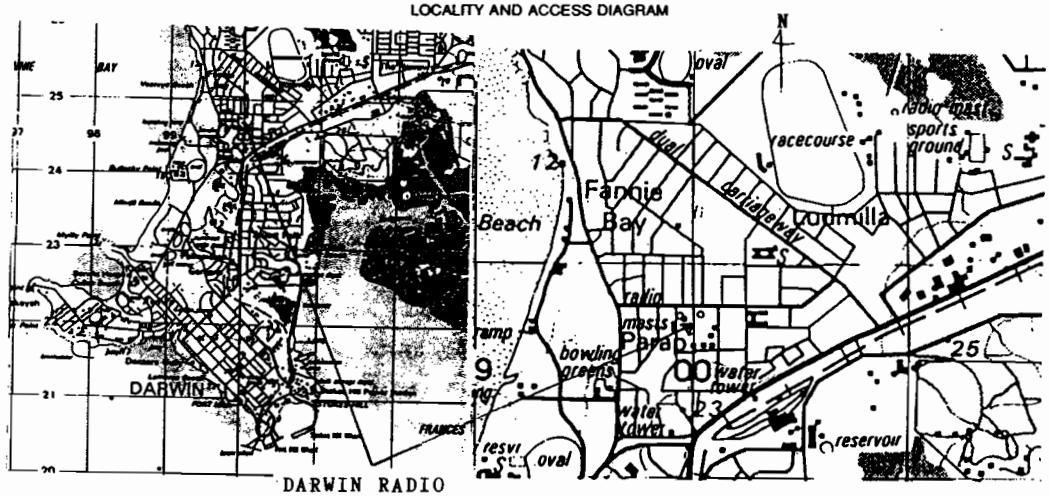
APPENDIX G

STATION DESCRIPTIONS

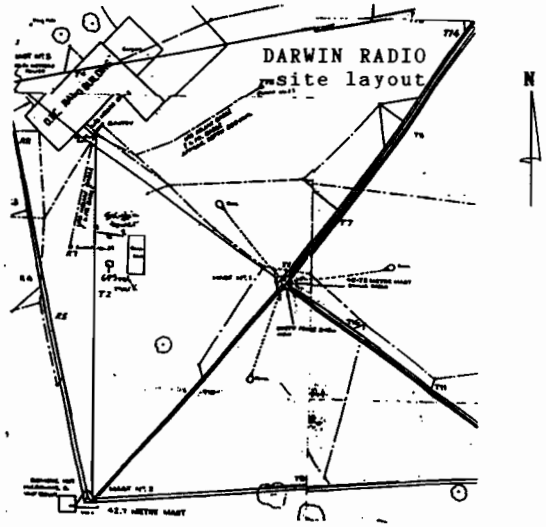
STATION SUMMARY

CLIENT	JOB NO.	STATION NAME/NUMBER DARWIN OTC	ORDER 1
LOCATION Darwin Radio, 15 Gregory Street, Parap, Darwin, N.T. 0820		DATUM WGS 84 a: 6 378 137.000m 1/f: 298.257223563	
ORIGINAL STATION ESTABLISHED BY	DATE	LATITUDE: 12° 25' 58.79093" S LONGITUDE: 130° 50' 26.66577" E	Sph Ht: 72.493m
EXISTING STATION ESTABLISHED BY Racal Survey Lt.	DATE 13.9.91	U.T.M. ZONE EASTING NORTHING	
MAP REFERENCE 50732 Darwin FM999246 PHOTO REFERENCE			

LOCALITY AND ACCESS DIAGRAM



STATION DIAGRAM



REMARKS

Access: Contact station manager prior to visit. Tel: (089) 812 103.

Survey Method:

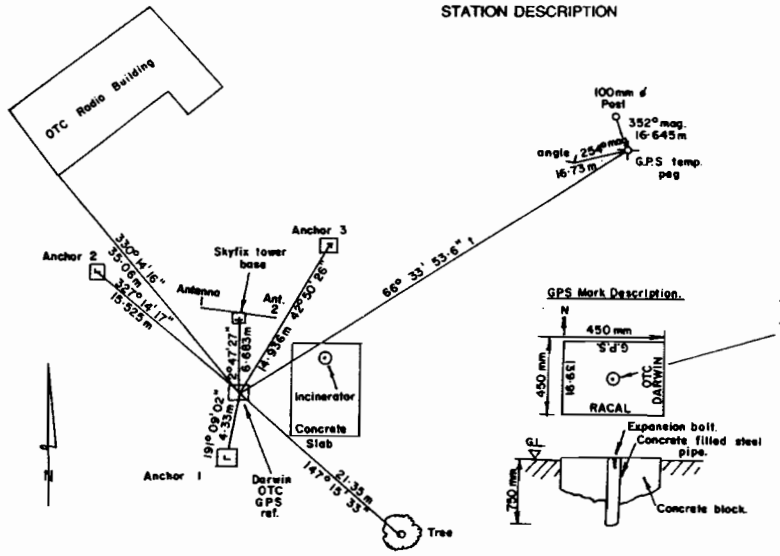
Darwin OTC GPS reference marker was positioned by static dual frequency phase
se differential GPS relative to Dripstone and Darwin Pillar, N.T., together with
h the transportable SLR site, Perth, W.A.

Satellite Visibility: Good.

Equipment Requirement: Tipod over mark. 50m cable run to 240V, 50Mz power supply.

SIGNED M. Thick

STATION DESCRIPTION



Darwin OTC GPS reference mark consists of a galvanised steel expansion bolt fixed in a concrete filled steel pipe embeded in an insitu 0.45m^2 concrete block.

RACAL SURVEY AUSTRALIA

STATION SUMMARY

CLIENT RACAL SURVEY SKYFIX JOB NO

LOCATION MERMAID HOTEL, DAMPIER, N.W. AUSTRALIA

ORIGINAL STATION ESTABLISHED BY DATE

EXISTING STATION ESTABLISHED BY GPS PHASE MEASUREMENTS DATE MARCH 92

MAP REFERENCE PHOTO REFERENCE

STATION NAME/NUMBER DAMPIER DGPS REFERENCE POINT ORDER ±1m

DATUM WGS 84 a: 6 378 137.000m f: 298 257 223 563

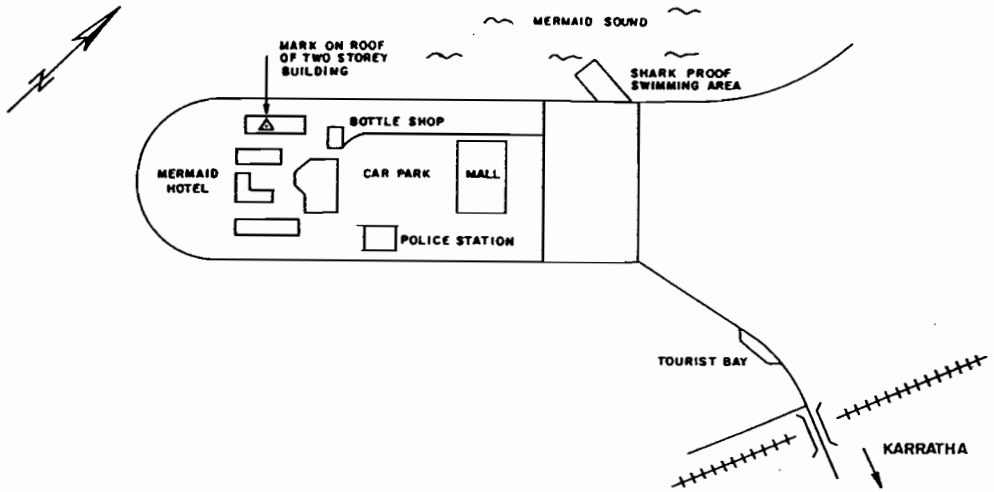
LATITUDE: 20° 39' 46.3378" SOUTH LONGITUDE: 116° 42' 16.4925" EAST Spheroidal Height= 12.371m

U.T.M. ZONE EASTING NORTHING

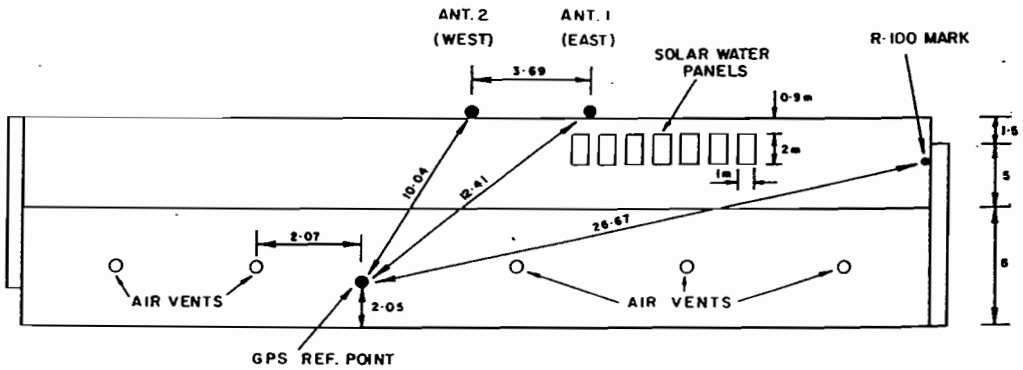
REMARKS

SIGNED

LOCALITY AND ACCESS DIAGRAM



STATION DIAGRAM



STATION DESCRIPTION

The mark is situated on the roof of the Mermaid Hotel, two storey accommodation block.

The roof is corrigated iron. Lines of screws can be seen on both sides of the apex running the length of the roof.

The mark is one screw that is situated by itself between the other rows of screws.