

261001

SAGASCO RESOURCES LTD

COPY 2

**RIG "OCEAN EPOCH"
POSITIONING ONTO
KING 1 LOCATION
BASS STRAIT**

WOLLONGONG

OCTOBER 1992



SAGASCO RESOURCES LTD

RIG "OCEAN EPOCH" POSITIONING

ONTO KING 1 LOCATION.

BASS STRAIT OCTOBER 1992

Issue No: 1
Doc No: LTDO125
Date: November 1992

Prepared by:
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SAGASCO RESOURCES LTD

**RIG "OCEAN EPOCH"
POSITIONING
ONTO KING 1 LOCATION.
BASS STRAIT OCTOBER 1992**

November 1992

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1.0 INTRODUCTION

As part of the Service Agreement between BHP ENGINEERING and Sagasco Resources Ltd, BHP Engineering were required to oversee the work carried out by the survey contractor, RACAL SURVEY (AUSTRALIA), during the moving of the semi-submersible drilling rig "Ocean Epoch" on to the King 1 location ,situated in concession area T18/P,in the Bass Strait.

In addition to the above work BHP Engineering are also required to confirm the final position of the rig by an independent navigation system, namely real time differentially corrected GPS satellite observations.

The project covered in this report began on the 26th October 1992, with the mobilization of Mr Rutherford to Devonport,and was completed on the 30th October 1992 when GPS data was recorded in order to confirm the final location of the rig.

All times mentioned in this report are Local Time unless otherwise stated. The Racal log sheets in Appendix I and the summary of events are referenced to local time.

SUMMARY OF RESULTS

2.0 SUMMARY OF RESULTS.

The coordinates of the King 1 location, as supplied by Sagasco were;

Latitude ; 39 degrees 35 minutes 24.44 seconds South.
Longitude ; 145 degrees 31 minutes 08.80 seconds East.
Eastings ; 372 836 m
Northings ; 5 616 671 m

Proposed Rig Heading ; 250.0 degrees

Sagasco requested that the final position of the rig as determined by GPS observations be within a circle of radius of 30 metres centred on the proposed coordinates.

The rig, Ocean Epoch, was positioned on the above location on the 29th October, 1992, and the coordinates of the drillstem as determined by GPS observations between 23:30hrs 29.10.92 and 01:14hrs on 30.10.92 were;

Latitude ; 39 degrees 35 minutes 24.33 seconds South.
Longitude ; 145 degrees 31 minutes 08.78 seconds East.
Eastings ; 3 72 835.5 m
Northings ; 5 616 674.3 m

Rig Heading ; 257.0 degrees

The above position is a distance of 3.4 metres on a bearing of 352 degrees from the proposed location.

The above position was approved by the Sagasco Company Representative onboard the rig at 01:30 hrs on 30th October 1992, with Sagasco offices in Adelaide advised of the coordinates by fax.

GEODETTIC PARAMETERS

3. GEODETTIC PARAMETERS

The parameters listed below were used throughout this project and should be quoted when reference is made to coordinates shown in this report.

Reference Spheroid	; Australian National Spheroid
Semi-Major Axis	; 6,378,160m
Semi-Minor Axis	; 6,356,774.719m
Flattening 1/f	; 1/298.25
Eccentricity ² (E ²)	; 0.006694542
Reference Datum	; Australian Geodetic Datum 1984
Projection	; Transverse Mercator
False Eastings	; 500,000m
False Northings	; 10,000,000m
Latitude of Origin	; 0.0 degrees

Longitude of Central Meridian;	147 degrees
East Scale Factor on C.M.	; 0.999600
Units	; Metres

The GPS navigation system and the associated satellites work on the WGS 84 Spheroid, whose parameters are shown below, and conversion of coordinates between this Spheroid and the Spheroid mentioned above is performed using parameters shown at the end of this section.

Reference Spheroid	; World Geodetic Spheroid 1984
Semi-Major Axis	; 6,378,137m
Semi-Minor Axis	; 6,356,752.31m
Flattening 1/f	; 1/298.257223563
Eccentricity ² (E ²)	; 0.00669438

GEODETTIC PARAMETERS

In order to convert coordinates from WGS84 to AGD 84 the following seven parameters were used:

dx (metres) = 116.000

dy (metres) = 50.470

dz (metres) = -141.690

Rx (metres) = 0.230

Ry (metres) = 0.390

Rz (metres) = 0.344

scale (ppm) = -0.0983

ACOUSTIC POSITIONING

4. ACOUSTIC POSITIONING**4.1 Acoustic Calibration.**

Racal Survey deployed three Sonardyne Medium Frequency Acoustic Transponders centred on the proposed drilling location between 27th September 1992 and 2nd October 1992. See Racal Report.

4.2 Final Acoustic Drillstem Position

The final position of the rig was taken on the 29th October 1992, after all anchors had been deployed, pre-tensioned, then set to their working tensions and the rig ballasted down to its drilling draught. The final acoustic position was derived from the mean of 34 position fixes taken over 20 minutes.

The coordinates of the acoustic transducer were computed using the following mean raw ranges;

Transponder	Code	Range
1	101	784.97
2	302	489.37
3	303	723.73

Transducer Position

Eastings ; 372 835.6 m

Northings ; 5 616 673.2 m

Using the offsets shown in Appendix C the position of the drillstem was computed as follows;

Latitude ; 39 degrees 35 minutes 24.35 seconds South.

Longitude ; 145 degrees 31 minutes 08.85 seconds East.

Eastings ; 372 837.3 m

Northings ; 5 616 673.6 m

ACOUSTIC POSITIONING

Rig Heading ; 257.0 degrees

The above position is a distance of 3.0 metres on a bearing of 24 degrees from the proposed location.

This position was approved by the Sagasco Company Representative onboard the rig at 2330 hrs on 29th October 1992.

GPS CONFIRMATION POSITION

5. GPS CONFIRMATION POSITION

The confirmation of the acoustic coordinates was carried out between 2330hrs on the 29th October and 0114hrs on the 30th October, 1992, using one GPS receiver set up onboard the rig and the Adelaide base station as the monitor station .

Selective availability has been installed on certain satellites within the GPS system so as to degrade the accuracy of the system available to the user. However by recording data at a know point (monitor station) from identical satellites as those being recorded by the mobile receiver, and simultaneously, the errors caused by selective availability are eliminated. The following constellations were observed during this period both onboard the rig and by the GPS monitor situated at Adelaide;

Constellation No. Satellites Used

A	28,21,23,17,26
B	03,21,23,17,26
C	03,28,23,17,26
D	03,28,21,23,17
E	03,28,21,23,17,11
F	03,21,23,17,11

Data was recorded by both GPS receivers, and real time differential corrections passed direct to the rig via the "Skyfix" communication link. Using the real-time differentially corrected data a mean position of the antenna was computed as;

WGS 84 Spheroid.

Latitude ; 39 degrees 35 minutes 24.644 seconds South.
 Longitude ; 145 degrees 31 minutes 07.006 seconds East.

Using the offsets as shown in appendix C the coordinates of the drillstem were computed as;

GPS CONFIRMATION POSITION

AGD 84 Spheroid. Central Meridian 147 degrees

Latitude ; 39 degrees 35 minutes 24.331 seconds South.

Longitude ; 145 degrees 31 minutes 08.780 seconds East.

Eastings ; 372 835.53m

Northings ; 5 616 674.27m

Rig Heading ; 257 degrees

The above position is a distance of 3.4 metres on a bearing of 351.8 degrees from the proposed location.

The above position was approved by the Sagasco Company Representative onboard the rig at 0130hrs on 30th October 1992, with Sagasco offices in Adelaide advised of the coordinates fax later that morning.

SUMMARY OF EVENTS

6. SUMMARY OF EVENTS.

26.10.92 Mobilise BNE-DPO

27.10.92 Fly to Rig.

Meet Racal, Sagasco and Rig personnel Check equipment settings and offsets Standing by for positioning

28.10.92 Commenced anchor deployment

Positioning provided for run into location and during anchor handling.

29.10.92 #8 anchor slipping.

"Terge Viking" at rest for 10 hours till noon

#8 recovered and redeployed

Rig positioned onto location Ballasting down to drilling draft

Final Acoustic fix between 2231 and 2330 Commenced final DGPS fix

30.10.92 Completed DGPS final fix

Packed equipment

JR to DPO-MEL-BNE

Racal recover transponders

SUMMARY OF EVENTS

7. DISCUSSION

The only slight problem encountered was with the operation of the Acoustic positioning system during the final fix. It did not appear to operate as it should have with data output at one second intervals instead of every six seconds. This was overcome by manually logging the acoustic data.

All Racal personnel performed their tasks efficiently and in a professional manner.

CLIENT: SAGASCO RESOURCES LTD

TITLE: RIG "OCEAN EPOCH" POSITIONING
ONTO KING 1 LOCATION.
BASS STRAIT OCTOBER 1992

REPORT NO: LTDO121

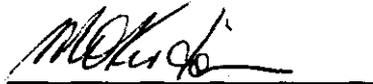
COPIES: 4

ISSUE DATE: 25 November 1992

PREPARED BY:

J RUTHERFORD

Date



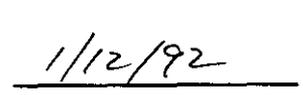


APPROVED BY:

M POIDEVIN

Date





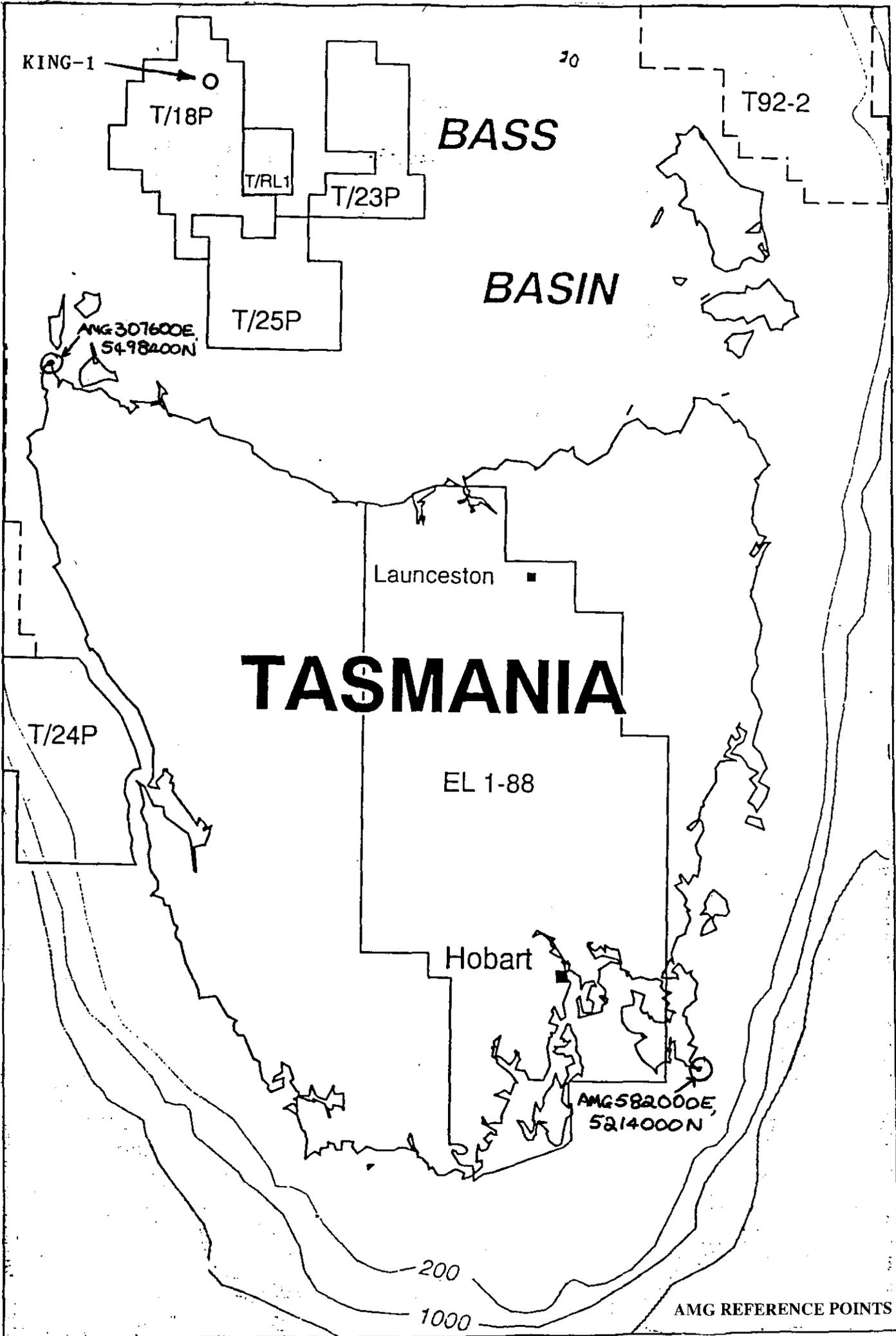
BHP Engineering Reference No: R705/10

APPENDIX A

LOCATION MAP

5 cm

261017



AMG REFERENCE POINTS ADDED

APPENDIX B

CORRESPONDENCE
SHOWING PROPOSED
COORDINATES

APPENDIX 1

Item 1

SERVICES

1.0 Location of Work

Positioning of the drilling rig "Ocean Epoch" in Permit T18/P, is to be performed at the King #1 location with Australian National Spheroid co-ordinates as follows:

Latitude	39 degrees 35 minutes 24.44 seconds South
Longitude	145 degrees 31 minutes 08.80 seconds East

Australian Geodetic Datum 1984 co-ordinates:

Easting	372,836 m
Northing	5,616,671 m

Zone 55
Central Meridian 147 degrees East

Positioning of the drilling rig "Ocean Epoch" in permit T/25P is to be performed at the Flinders 1 location within Australian National Spheroid co-ordinates as follows:

Latitude	40 degrees 22 minutes 51.8 seconds South
Longitude	145 degrees 40 minutes 18.7 seconds East

Australian Geodetic Datum 1984 co-ordinates:

Easting	387,261 m
Northing	5,529,085 m

2.0 Works to be Performed

Rig Positioning Services are to be performed at the King 1 and Flinders 1 drilling locations as detailed below:

Phase 1

- Perform King 1 Final rig positioning utilising Acoustic Net.
- Confirm rig position utilising real time DGPS survey methods.

Phase 2

- Perform Flinders 1 Final rig positioning utilising Acoustic Net.
- Confirm Rig Position utilising real time DGPS survey methods.

APPENDIX C

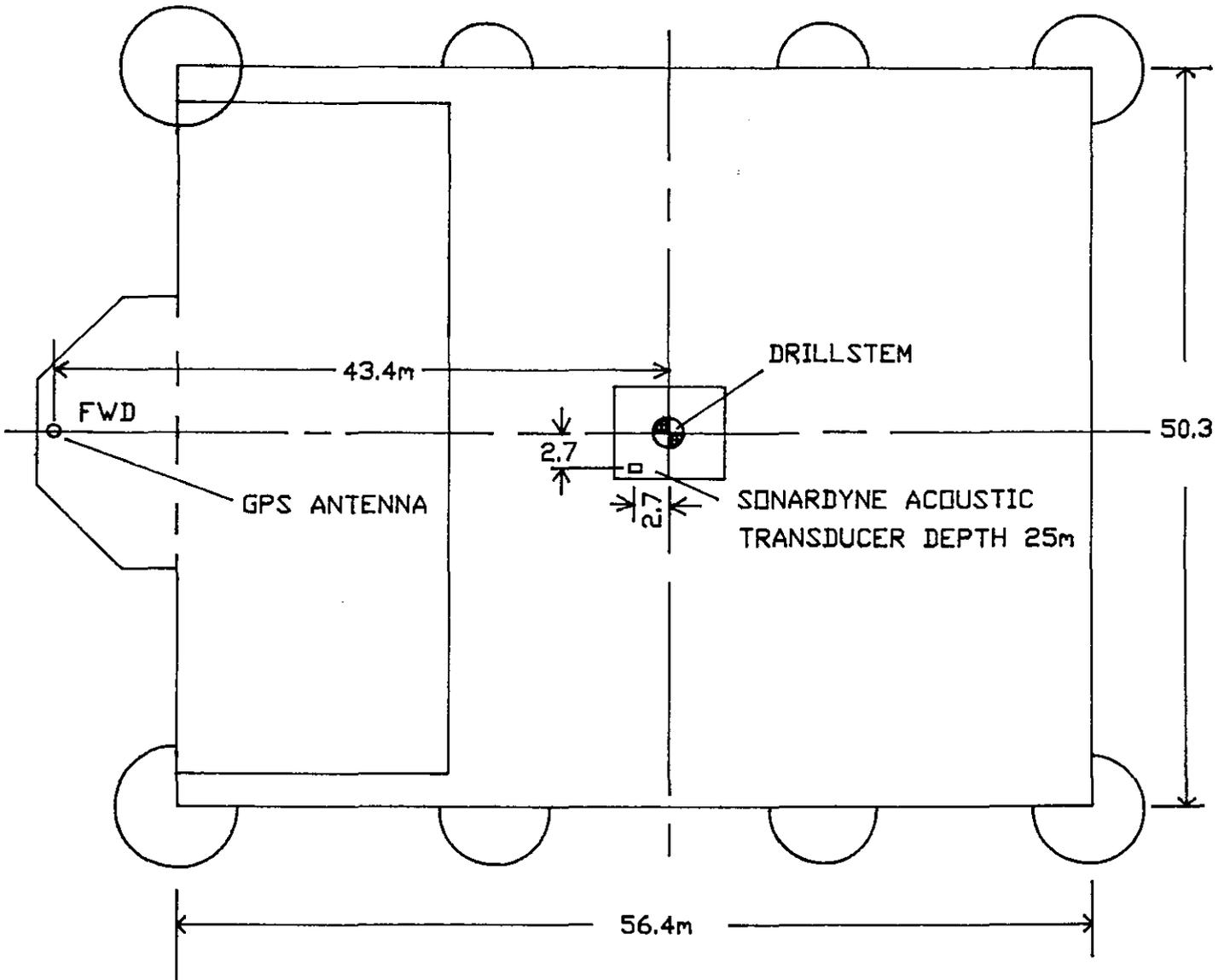
**OFFSET DIAGRAM OF
OCEAN EPOCH RIG**

OCEAN EPOCH LAYOUT DIAGRAM

(DIAGRAMATIC ONLY - NOT TO SCALE)

DIMENSIONS SHOWN IN METRES

RIG HEADING 257 DEGREES



GENERAL ARRANGEMENT MAIN / HELIDECK PLAN VIEW

LOCATION: KING-1	
DATE OCT 92	BHP Engineering
SCALE NTS	SKETCH No. REV.

APPENDIX D

FINAL GPS POSITION
PRINTOUT

1. COMPUTED FINAL ANTENNA POSITION
WGS 84 Spheroid
GPS Weighting Option - Constellations weighted by sample size
Mean Corrected Gyro... 257.2 Gyro Correction... +0.0
Mean Grid Heading..... 256.2, Convergence..... +0.94%

261023

SECONDARY COMPUTATION - Tau

CONSTELLATIONS USED

Const.	# Samples	S. U. s
A	168	28, 21, 23, 17, 26
B	8	03, 21, 23, 17, 26
C	129	03, 28, 23, 17, 26
D	13	03, 28, 21, 23, 17
E	1	03, 28, 21, 23, 17, 11
F	57	03, 21, 23, 17, 11

Total number of samples used = 376

COMPUTED FINAL ANTENNA POSITION

WGS 84 Spheroid

Latitude 39 DEG 35 MIN 19.247 SEC S (S.D. 1.09 Metres)
Longitude 145 DEG 31 MIN 11.871 SEC E (S.D. .81 Metres)
Height 17.89 Metres (S.D. 1.65 Metres)

AUSTRALIAN NAT 1984 Spheroid

Latitude 39 DEG 35 MIN 24.694 SEC S
Longitude 145 DEG 31 MIN 07.006 SEC E
Height 33.18 Metres

UTM/TM

Eastings 372793.38 Metres
Northings 5615663.93 Metres

COMPUTED FINAL DATUM POSITION

AUSTRALIAN NAT 1984 Spheroid

Latitude 39 DEG 35 MIN 24.331 SEC S
Longitude 145 DEG 31 MIN 08.780 SEC E
UTM/TM

Eastings 372835.32 Metres
Northings 5616674.27 Metres

INTENDED FINAL DATUM LOCATION

AUSTRALIAN NAT 1984 Spheroid

Latitude 39 DEG 35 MIN 24.440 SEC S
Longitude 145 DEG 31 MIN 08.800 SEC E
UTM/TM

Eastings 372836.07 Metres
Northings 5616670.92 Metres

Final Datum Position is 3.39 Metres (spheroidal distance) bearing 351.83 T from the Intended Loc.

APPENDIX E

COPIES OF TELEXES/
FAXES RELATING TO
FINAL COORDINATES

29th October 1992

TO: SACASCO RESOURCES LTD

FROM: RON KING

C/- "OCEAN EPOCH"

BY: J. RUTHERFORD

BHP ENGINEERING

SUBJECT: FINAL POSITION - KING 1 LOCATION.

ACOUSTIC POSITIONING AT KING 1 LOCATION INDICATES RIG
"OCEAN EPOCH" IS AT FOLLOWING CO-ORDINATES

LATITUDE S 39° 35' 24".35

LONGITUDE E 145° 31' 08".85

AGD 84 ZONE 55

EASTING 372 837.3

NORTHING 5616 673.6

RIG HEADING 257°

PLACING DRILLSTEM 2.9 METRES ON A BEARING OF 24 DEGREES
FROM INTENDED LOCATION FOR KING 1.

CONFIRMATION OF POSITION BY DGPS IS CONTINUING.

REGARDS



APPENDIX F

**COPY OF RACAL DAILY
LOG SHEETS**



DAILY RECORD SHEET

0600			
1200			
1800			

Client : <u>SINARCO</u>		Job No :# <u>2009</u>		Date : <u>25 OCT 92</u>		Vessel : <u>OCEAN EPOCH</u>		Anchors / Tpdrs		
RACAL Equipment on Board	Op	NonOp	RACAL Equipment on Board	Op	NonOp	RACAL Personnel	Consummables		Laid	Recovered
SKYFIX			STD-12 / VELOCITY PROBE			J. AUSTIN	ITEM	USED	REMAIN	
SYLEDIS			ECHO SOUNDER (20/25)			C. HAKKENISS	SIDESCAN PAPER			
MICROFIX			SIDESCAN (595/531/PINGER)				E/SOUNDER PAPER			
ARGO			BOOMER (DELPH/EPC)				ELICS PAPER			
GNS			SPARKER (DELPH/EPC)				DISKS			
GYRO			CORING (GRAVITY/GRAB)				PRINTER CART.			
TRIMBLE SST'S			THEODOLITE / EDM			CLIENT Personnel	EPC ROLLS			
TELEMETRY			UNDERWATER TRACKING			R. KING				
SONARDYNE COMPATTS										
SONARDYNE PAN										
SONARDYNE (Dunker/Winch/Fish)										

DIARY OF OPERATIONS: SUNDAY 25 OCT 92

1600. J. AUSTIN ARRIVED AT LAUNCESTON AIRPORT. (C. HAKKENISS HAD ARRIVED EARLIER AND WAS ENGAGED SELECTING AND PACKING EQUIP AT BELL BAY)

1730. J. AUSTIN ARRIVED AT SINGAPORE BELL BAY. ALL WORK COMPLETED.

1900. PARTS OF R. KING (SINGAPORE) J. LAMBERT, J. AUSTIN, C. HAKKENISS ARRIVED DEVONPORT. OVERNIGHT IN SUNRISE MOTOR INN, DEVONPORT.

Forms are to be completed daily in duplicate on all vessels. Each form should be countersigned by the Clients Representative, the original being retained on board until the next crew change or at the end of job, whichever is the earlier, when they should be returned to the PERTH office.

Transponders to be listed by type and serial numbers. Following codes to be used: L - Laid, R - Recovered, FR - Failed to Reply, FS - Failed to Surface.

Signature

[Signature]
SURVEYOR/ENGINEER

WHITE : Commercial Office
 BLUE : Operations
 YELLOW : Clients Representative

Signature

CLIENTS REPRESENTATIVE

261027

0600	3	1m	15kt
1200	3	1m	15kt
1800			

Client : SAGASCO		Job No : 2009		Date : 28 OCT 92		Vessel : OCEAN EPOCH		Anchors / Tides		
RACAL Equipment on Board	Op	NonOp	RACAL Equipment on Board	Op	NonOp	RACAL Personnel	Consummables		Laid	Recovered
SKYFIX	2		SEPIZ / VELOCITY PROBE	1		J. AUSTIN	ITEM	USED	REMAIN	5
SYLEDIS			ECHO SOUNDER (20/25)			C. HAKKENLS	SIDECAN PAPER			
MICROFIX			SIDECAN (595/531/PINGER)				E/SOUNDER PAPER			
ARGO			BOOMER (DELPH/EPC)				ELICS PAPER			
GNS	2		SPARKER (DELPH/EPC)				DISKS		4	
GYRO	1		CORING (GRAVITY/GRAB)				PRINTER CART.		2	
TRIMBLE SST'S			THEODOLITE / EDM			CLIENT Personnel	EPC ROLLS			
TELEMETRY			UNDERWATER TRACKING			J. RUTHERFORD	RIAM PAPER		1	
SONARDYNE COMPATTS	3									
SONARDYNE PAN	2									
SONARDYNE (Dunker/Winch/Fish)	2/0/0									

DIARY OF OPERATIONS: WEDNESDAY 28 OCTOBER 1992.

0620 - NO GYRO CHECK POSSIBLE - SUN OBSCURED. RIG 5 MILLS FROM START OF RUN-IN.

0809 - 2600m TO RUN. 60(s) FIXING COMMENCED ON GNS SYSTEM.

0834 - ANC-7 DROPPED, APPROX 125m FROM INTENDED LOCATION.

0846 - RIG STOPPED, CLOSE TO LOCATION. NO.3 ANCHOR BEING PREPARED FOR RUNNING. GNS FIXING STOPPED.

0930 - FOG, VISIBILITY 1 MILE.

1128 - RAGNA VIKING COMMENCED RUNNING ANC-3

1148 - ANC-3 ON BOTTOM.

1400 - SITREP - RAGNA VIKING STANDING BY TO TAKE ANC-6. TERSE VIKING ON BRIDLE - STATIC TOW. RIG HAS TWO ANCHORS DOWN AND IS 30m FROM LOCATION. FOG CONDITIONS - CLING 150m, VISIBILITY PATCHY, 1-4 MILES.

Forms are to be completed daily in duplicate on all vessels. Each form should be countersigned by the Clients Representative, the original being retained on board until the next crew change or at the end of job, whichever is the earlier, when they should be returned to the PERTH office.

Transponders to be listed by type and serial numbers. Following codes to be used: L - Laid, R - Recovered, FR - Failed to Reply, FS - Failed to Surface.

Signature J. Austin
SURVEYOR/ENGINEER

WHITE : Commercial Office
BLUE : Operations
YELLOW : Clients Representative

Signature [Signature]
CLIENTS REPRESENTATIVE

261029

0600	2	1	1	1
1200	2	1	1	1
1800	2	1	1	1

Client : SAG ASCO		Job No : 2009		Date : 29 OCT 92		Vessel : OCEAN EPOCH		Anchors / Tdhrs						
RACAL Equipment on Board		Op	NonOp	RACAL Equipment on Board		Op	NonOp	RACAL Personnel		Consummables		Laid	Recovered	
SKYFIX	2			STD 12 / VELOCITY PROBE				J. AUSTIN		ITEM	USED	REMAIN	4	1
SYLEDIS				ECHO SOUNDER (20/25)				C. HAKKENNES		SIDESCAN PAPER				
MICROFIX				SIDESCAN (595/531/PINGER)						E/SOUNDER PAPER				
ARGO				BOOMER (DELPH/EPC)						ELICS PAPER				
GNS	2			SPARKER (DELPH/EPC)						DISKS		4		
GYRO	1			CORING (GRAVITY/GRAB)						PRINTER CART.		2		
TRIMBLE SST'S				THEODOLITE/EDM				CLIENT Personnel		EPC ROLLS				
TELEMETRY				UNDERWATER TRACKING				J. RUTHIRFORD		REAM PAPER		1		
SONARDYNE COMPATTS	3			- (KING-1 NET)										
SONARDYNE PAN	2													
SONARDYNE (Dunker/Winch/Fish)	2/0													

DIARY OF OPERATIONS: THURSDAY 29 OCTOBER 1992

0011 ANC-8 ON BOTTOM. RAGNA VIKING'S STERN BEARS 147° (T). (FOG HAS LIFTED)

0051 ANC-1 BEING RUN.

0118 ANC-1 ON BOTTOM.

0217 RUNNING ANC-4 - RAGNA VIKING

0242 ANC-4 ON BOTTOM.

0309 RAGNA VIKING COMMENCED 10-HOUR REST BREAK.

0330 ANC-8 NOT HOLDING TENSION. INTENTION IS TO LET IT 'SOAK' UNTIL 0900.
RAGNA VIKING WILL AGAIN BE AVAILABLE TO RE-RUN ANCHORS AT 1200

0830 ANC-8 TESTED AGAIN - DID NOT HOLD.

1130 ANC-8 RECOVERED AND RACKED.

1315 RAGNA VIKING RUNNING ANC-8. VISIBILITY IN FOG 200 M. ANCHOR PLACEMENT INDETERMINABLE.

1334 ANC-8 AGAIN ON BOTTOM. TENSIONING COMMENCED.

Forms are to be completed daily in duplicate on all vessels. Each form should be countersigned by the Clients Representative, the original being retained on board until the next crew change or at the end of job, whichever is the earlier, when they should be returned to the PERTH office.

Transponders to be listed by type and serial numbers. Following codes to be used: L - Laid, R - Recovered, FR - Failed to Reply, FS - Failed to Surface.

Signature

SURVEYOR/ENGINEER

WHITE : Commercial Office
 BLUE : Operations
 YELLOW : Clients Representative

Signature

CLIENTS REPRESENTATIVE

261031

0600			
1200			
1800			

Client : SAGASCO		Job No : 2009		Date : 29 OCT 92		Vessel : OCEAN EPOCH		Anchors / Tpdrs		
RACAL Equipment on Board	Op	NonOp	RACAL Equipment on Board	Op	NonOp	RACAL Personnel	Consummables		Laid	Recovered
SKYFIX			STD I2 / VELOCITY PROBE			J. AUSTIN	ITEM	USED	REMAIN	
SYLEDIS			ECHO SOUNDER (20/25)			C. HARKENNES	SIDESCAN PAPER			
MICROFIX			SIDESCAN (595/531/PINGER)				E/SOUNDER PAPER			
ARGO			BOOMER (DELPH/EPC)				ELICS PAPER			
GNS			SPARKER (DELPH/EPC)				DISKS			
GYRO			CORING (GRAVITY/GRAB)				PRINTER CART.			
TRIMBLE SST'S			THEODOLITE / EDM			CLIENT Personnel	EPC ROLLS			
TELEMETRY			UNDERWATER TRACKING			J. RUTHERFORD				
SONARDYNE COMPATTS										
SONARDYNE PAN										
SONARDYNE (Dunker/Winch/Fish)										

DIARY OF OPERATIONS: THURSDAY 29 OCTOBER CONTINUED.

1524 COMMENCED BALLASTING DOWN. RIG APPROXIMATELY 25 FEET, 340° FROM TARGET.

2231 STARTED ACOUSTIC FIX. (RIG BALLASTED DOWN, CABLES TENSIONED)

2245 ACOUSTIC FIX CRASHED.

2250 RESTARTED ACOUSTIC FIX.

2252 ACOUSTIC FIX CRASHED. DATA HAND-RECORDED: SV 1496.3m/s SET INTO PAN.

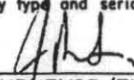
TRANSPONDER "101

784.8	785.1	785.1	785.3	785.1	784.8	785.1	
785.1	785.0	785.0	785.0	785.3	785.1	783.4	$\bar{X} = 784.97m$
785.1	785.1	785.1	785.1	784.8	785.3	785.1	
785.1	785.1	785.0	785.3	785.0	784.2	785.0	
785.4	784.8	784.5	785.1	785.4	784.4		

Forms are to be completed daily in duplicate on all vessels. Each form should be countersigned by the Clients Representative, the original being retained on board until the next crew change or at the end of job, whichever is the earlier, when they should be returned to the PERTH office.

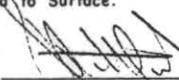
Transponders to be listed by type and serial numbers. Following codes to be used: L - Laid, R - Recovered, FR - Failed to Reply, FS - Failed to Surface.

Signature


SURVEYOR/ENGINEER

WHITE : Commercial Office
 BLUE : Operations
 YELLOW : Clients Representative

Signature


CLIENTS REPRESENTATIVE

261032



DAILY RECORD SHEET - PAGE THREE.

0600		
1200		
1800		

Client : SAGASCO	Job No : 2009		Date : 29 OCT 92	Vessel : OCEAN EPOCH		Anchors / Tpdrs			
RACAL Equipment on Board	Op	NonOp	RACAL Equipment on Board	Op	NonOp	RACAL Personnel	Consummables	Laid	Recovered
SKYFIX			STD I2 / VELOCITY PROBE				ITEM	USED	REMAIN
SYLEDIS			ECHO SOUNDER (20/25)				SIDESCAN PAPER		
MICROFIX			SIDESCAN (595/531/PINGER)				E/SOUNDER PAPER		
ARGO			BOOMER (DELPH/EPC)				ELICS PAPER		
GNS			SPARKER (DELPH/EPC)				DISKS		
GYRO			CORING (GRAVITY/GRAB)				PRINTER CART.		
TRIMBLE SST'S			THEODOLITE / EDM			CLIENT Personnel	EPC ROLLS		
TELEMETRY			UNDERWATER TRACKING						
SONARDYNE COMPATTS									
SONARDYNE PAN									
SONARDYNE(Dunker/Winch/Fish)									

DIARY OF OPERATIONS: THURSDAY 29 OCTOBER 1992 CONTINUED

TRANSPONDER #302

489.0	489.0	489.6	489.8	488.9	488.9	489.5	
489.1	489.0	489.6	489.3	490.1	489.1	488.9	$\bar{X} = 489.37_m$
489.5	489.8	489.7	489.2	489.2	489.7	489.7	
488.9	489.2	489.8	489.6	489.5	489.2	489.3	
489.2	489.0	489.7	489.6	489.7	489.5		

TRANSPONDER #303

723.9	723.7	723.8	723.7	724.0	723.7	724.5	
723.9	724.0	723.6	723.7	723.4	723.6	723.3	$\bar{X} = 723.73$
723.8	723.6	723.8	723.5	723.8	723.1	723.6	
723.8	723.3	723.6	723.2	723.9	723.8		
723.7	724.0	723.9	723.9	724.4	723.6		

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Transponders to be listed by type and serial numbers. Following codes to be used: L - Laid, R - Recovered, FR - Failed to Reply, FS - Failed to Surface.

Signature

SURVEYOR/ENGINEER

- WHITE : Commercial Office
- BLUE : Operations
- YELLOW : Clients Representative

Signature

CLIENTS REPRESENTATIVE

261033

0600			
1200			
1800			

Client : SAGASCO		Job No : 2009		Date : 29 OCT92		Vessel : OCEAN EPOCH		Anchors / Tpdrs					
RACAL Equipment on Board		Op	NonOp	RACAL Equipment on Board		Op	NonOp	RACAL Personnel		Consummables		Laid	Recovered
SKYFIX				STD I2 / VELOCITY PROBE						ITEM	USED	REMAIN	
SYLEDIS				ECHO SOUNDER (20/25)						SIDESCAN PAPER			
MICROFIX				SIDESCAN (595/531/PINGER)						E/SOUNDER PAPER			
ARGO				BOOMER (DELPH/EPC)						ELICS PAPER			
GNS				SPARKER (DELPH/EPC)						DISKS			
GYRO				CORING (GRAVITY/GRAB)						PRINTER CART.			
TRIMBLE SST'S				THEODOLITE / EDM				CLIENT Personnel		EPC ROLLS			
TELEMETRY				UNDERWATER TRACKING									
SONARDYNE COMPATTS													
SONARDYNE PAN													
SONARDYNE (Dunker/Winch/Fish)													

DIARY OF OPERATIONS: THURSDAY 29 OCTOBER 1992 CONTINUED

ACOUSTIC FIX: E 372835.645
(OF TRANSPONDER) N 5616673.226

THE TRANSPONDER WAS ON THE CENTRELINE, 1.7m FWD OF THE DATUM.
SHIPS HEAD 257°; THEREFORE BEARING TO DATUM WAS 077°.

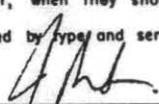
DATUM CO-ORDS E 372837.3 ZONE 55 ϕ 39° 35' 24".35 ANS.
N 5616673.6 λ 145° 31' 08".85

WHICH IS 2.9m ON A BEARING OF 024°T FROM THE INTENDED LOCATION
2336 COMMENCED GPS FINAL FIX.

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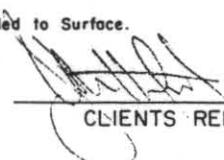
Transponders to be listed by type and serial numbers. Following codes to be used: L - Laid, R - Recovered, FR - Failed to Reply, FS - Failed to Surface.

Signature


SURVEYOR/ENGINEER

WHITE	: Commercial Office
BLUE	: Operations
YELLOW	: Clients Representative

Signature


CLIENTS REPRESENTATIVE

261034

002/004

BHP WOLL

RSA LTD

344 8783

13/11 '92 11:07

RACAL

RACAL SURVEY AERIAL LIMITED

DAILY RECORD SHEET

VX	Qty	Unit	Kind
0000	2	1	LS
0600	2	1	ES
1200	2	1	LA
1800	2	1	WS

Client: SAGASCO		Job No: 2009		Date: 30 OCT 92		Vessel: CLEAN EPOCH		Anchors / Tpdrs		
RACAL Equipment on Board	Op	NonOp	RACAL Equipment on Board	Op	NonOp	RACAL Personnel	Consummables		Laid	Recovered
SKYFIX	2		STRIP VELOCITY PROBE	1		J. AUSTIN	ITEM	USED	REMAIN	
SYLEDIS			ECHO SOUNDER (20/25)			C. HAKKENES	SIDESCAN PAPER			
MICROFIX			SIDESCAN (595/531/PINGER)				E/SOUNDER PAPER			
AR60			BOOMER (DELPH / EPC)				ELICS PAPER			
GNS	2		SPARKER (DELPH/EPC)				DISKS	1	3	
	1		CORING (GRAVITY/GRAB)				PRINTER CART	1	1	
TRIMBLE SST'S			THEODOLITE / EDM			CLIENT Personnel	EPC ROLLS			
TELEMETRY			UNDERWATER TRACKING			J. RUTHERFORD	RIAM PAPER	1		
SONARDYNE COMPATTS										
SONARDYNE PAN	2									
SONARDYNE (Dunlop/Winch/Fish)	2/0/0									

DIARY OF OPERATIONS: FRIDAY 30 OCTOBER 1992

0001 CONTINUING GPS FINAL FIX

0113 COMPLETED GPS FINAL FIX - 376 SAMPLES, 6 CONSTELLATIONS

FINAL DATUM POSITION E 372 835.53 m ϕ 39° 35' 24.331 SN 5616674.27 m λ 145° 31' 08.780 E

WHICH IS 3.89 m BEARING 351.8 (T) FROM THE INTENDED LOCATION.

0137 HEIGHT OF GPS ANTENNA - 18.55 m ABOVE INSTANTANEOUS WATER LEVEL
0.3m ABOVE THE HELIDECK.1030 J. AUSTIN TRANSFERRED TO RAGNA VIKING, - TRANSponder 'POPPING'
DELAYED BY FOG INDUCED POOR VISIBILITY.

1045 J. RUTHERFORD DEPARTED BY HELO, FURTHER HELO'S CANCELLED - FOG.

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PS - Fused In Surface.

WHITE Commercial Office

Signature

CLIENTS REPRESENTATIVE

261035

0000	£	Sw	dDir
0600			
1200			
1800			

RACAL

DAILY RECORD SHEET PAGE TWO

Client: SAGASIO	Job No: 2009	Date: 30 OCT 92	Vessel: OCEAN EPOCH	Anchors / Tpdrs						
RACAL Equipment on Board	Op	NonOp	RACAL Equipment on Board	Op	NonOp	RACAL Personnel	Consummables		Lost	Recovered
SKYFIX	2		SKYFIX VELOCITY PROBE	1		J. AUSTIN	ITEM	USED	REMAIN	101
SYLEDIS			ECHO SOUNDER (20/25)			C. HARKENNES	SIDESCAN PAPER			302
MICROFIX			SIDESCAN (595/531/PINGER)				E/SOUNDER PAPER			303
ARGO			BOOMER (DELPH/EPC)				ELICS PAPER			
GNS	2		SPARKER (DELPH/EPC)				DISKS			
GYRO	1		CORING (GRAVITY/GRAB)				PRINTER CART			
TRIMBLE SST'S			THEODOLITE / EDM			CLIENT Personnel	EPC ROLLS			
TELEMETRY			UNDERWATER TRACKING			J. RUTHERFORD				
SONARDYNE COMPATTS										
SONARDYNE PAN	2									
SONARDYNE (Dinner/Winch/Faa)	2/00									

DIARY OF OPERATIONS:

1414 FOG NOW CLEARED. POPPED TRANSPONDER #101 B.C. 219 VOLTS 30.1
 1427 POPPED TRANSPONDER 302 B.C. 214 VOLTS 30.6
 1443 POPPED TRANSPONDER 303 B.C. 212 VOLTS 30.2
 1500 J. AUSTIN AND COMPATTS TRANSFERRED BACK TO OCEAN EPOCH
 1530 HELO ON DECK. ALL RACAL 'SKYFIX' EQUIPMENT LOADED
 1545 FLIGHT DELAYED - HELO DEFECT
 1704 HELO DEPARTED OCEAN EPOCH WITH RACAL PERSONNEL
 1800 HELO ARRIVED AT DEVONPORT. BOTH RACAL PERSONNEL TRAVEL TO
 SUNRISE MOTEL OVERNIGHT. DUE TO MISSED FLIGHT CONNECTIONS.

7

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Signature [Signature]
 SURVEYOR/ENGINEER

WHITE - Commercial Office
 BLUE - Operations
 YELLOW - Clients Representative

Signature _____
 CLIENTS REPRESENTATIVE

003/004
 BHP WOLL
 RSA LTD
 009 344 8783
 13/11 '92 11:08

261036

004/004

BHP WOLL

RSA LTD

309 344 8783

13/11/92 11:09

RACAL

RACAL JERSEY AUSTRALIA LIMITED

DAILY RECORD SHEET 31 OCT92

Time	Observer	SWB	Dir.
0000			
0600			
1200			
1800			

Client : SAGASCO		Job No : 2009		Date : 31 OCT92		Vessel : OCEAN EPOCH		Anchors / Tpdrs		
RACAL Equipment on Board	Op	NonOp	RACAL Equipment on Board	Op	NonOp	RACAL Personnel	Consummables		Laid	Recovered
SKYFIX			STDP2 / VELOCITY PROBE	1		J. AUSTIN	ITEM	USED	REMAIN	
SYLEDIS			ECHO SOUNDER (20/25)			C. HAKKENES	SIDESCAN PAPER			
MICROFIX			SIDESCAN (595/531/PINGER)				E/SOUNDER PAPER			
ARGO			BOOMER (DELPH/EPC)				ELICS PAPER			
GNS	2		SPARKER (DELPH/EPC)				DISKS			
GYRO	1		CORING (GRAVITY/GRAB)				PRINTER CART.			
TRIMBLE SST'S			THEODOLITE/EDM			CLIENT Personnel	EPC ROLLS			
TELEMETRY			UNDERWATER TRACKING							
SONARDYNE COMPATTS										
SONARDYNE PAN	2									
SONARDYNE (Dontar/Wloch/Fish)	2/0									

DIARY OF OPERATIONS: SATURDAY 31 OCTOBER 1992

0700 J. AUSTIN DEPARTED HOTEL FOR DEVONPORT AIRPORT IN HIRE CAR TO ARRANGE FREIGHTING OF SKYFIX EQPT AND TO COLLECT THREE TRANSPONDERS

1015 C. HAKKENES FLEW FROM DEVONPORT TO MELBOURNE

1020 J. AUSTIN ARRIVED AT SAGASCO'S BELL BAY TERMINAL. DISMANTLED TRANSPONDERS AND PACKED PALLETS READY FOR SHIPMENT BY ROAD TRANSPORT. COLLECTED SKYFIX A.C.U. UNITS.

1115 J. AUSTIN DEPARTED BELL BAY FOR LAUNCESTON AIR FREIGHT

1205 A.C.U. UNITS DELIVERED FOR ONFREIGHTING.

1320 J. AUSTIN FLEW FROM LAUNCESTON TO CAIRNS.

7

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Signature


 SURVEYOR/ENGINEER

WHITE	• Commercial Office
BLUE	• Operations
YELLOW	• Clients Representative

Signature

CLIENTS REPRESENTATIVE

261037