FINAL REPORT

OFFSHORE NAVIGATION (AUSTRALIA) PTY.LTD.

PROJECT 1419

WELL LOCATION ATHENE No.1

MAY, 1983

ADDENDUM 1

FINAL REPORT
OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.
PROJECT 1419

FOR

PHILLIPS AUSTRALIAN OIL COMPANY

VICTORIA, AUSTRALIA
MAY 1983

WELL LOCATION ATHENE - 1

ONA

OFFSHORE NAVIGATION,
(AUSTRALIA) PTY. LTD.

FINAL REPORT

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

PROJECT 1419

FOR

PHILLIPS AUSTRALIAN OIL COMPANY

VICTORIA, AUSTRALIA

WELL LOCATION ATHENE - 1

MAY 1983

TABLE OF CONTENTS

I. INTRODUCTION

Offshore Navigation (Australia) Pty. Ltd.(ONA), under contract to Phillips Australian Oil Company (PHILLIPS), employed a Maxiran Radiopositioning System to position the Drilling Vessel (D/V) DIAMOND M EPOCH on a location that was designated by PHILLIPS as:

WELL LOCATION ATHENE - 1

The survey was conducted in Bass Strait, off the coast of Victoria, Australia. The well was located approximately 91 kilometers south-southeast of Cape Conran, Victoria.

The ONA base of operation was established at Bairnsdale on 13 May 1983.

II. FIELD OPERATIONS RECAP

The Maxiran system required to control this survey was stored in the area from a previous operation. ONA personnel necessary for this operation travelled to Melbourne on 12 May 1983. The Maxiran system was picked up from storage in Welshpool on 13 May, and transported to Station Emerald (Offset). The Maxiran system was calibrated at this station on 14 May 1983. See "Maxiran Calibration" of this report for details.

On completion of the Maxiran calibration, the Maxiran base station equipment was transported to the three sites occupied to control the survey. Installation of the Maxiran base station equipment on these three sites began on 14 May 1983, and was completed on 16 May 1983.

The ONA mobile operator and mobile equipment were transported via helicopter to the Drilling Vessel (D/V) DIAMOND M EPOCH on 15 May 1983, arriving on board the rig at 1255 hours that date. Installation of the Maxiran mobile equipment on board the D/V DIAMOND M EPOCH was completed at 1630 hours 15 May 1983.

II. FIELD OPERATIONS RECAP (continued)

Moving of the D/V DIAMOND M EPOCH from its position at Well Location ATHENE - 1 was delayed due to weather. Towing of the D/V DIAMOND M EPOCH to the well site began at 1940 hours 19 May 1983. The D/V DIAMOND M EPOCH arrived in the location area, and the first anchor was dropped at 0157 hours 20 May. The anchors were secured, and spudding of the 30-inch casing began at 0130 hours 2 May. A preliminary Maxiran reading was obtained at 0100 hours 2 May 1983, prior to the beginning of the spudding operation.

The 30-inch casing was set, and final Maxiran readings was recorded at 0810 hours 23 May 1983. The Maxiran system was released and secured at 1230 hours 23 May 1983. See Appendix A, Daily Operations Logs, of this report for details of operation.

The Maxiran mobile equipment and ONA mobile operator were transported to Welshpool by helicopter on 24 May 1983. The Maxiran mobile equipment was returned to the Welshpool storage facility that same date. Dismantling

II. FIELD OPERATIONS RECAP (continued)

of Stations Cape Conran and Seacombe was accomplished on 24 may. Dismantling of Station Nighthout was not completed until 25 May, due to weather conditions on 24 May 1983 that did not permit a helicopter flight to this site.

The ONA mobile operator and one base operator were released from this survey on 25 May 1983. A second ONA base operator was released on 26 May, and the ONA party chief was released on 27 May. The third ONA base operator was released from his assignment on 28 May 1983.

III. GENERAL INFORMATION

A. Maxiran frequencies used were:

Mobile Transmitter	441 MHz
Base Transmitter	429 MHz

B. Satisfactory radiotelephone communications were maintained between the Maxiran stations on the frequency of 7840.0 (SSB) kilocycles.

C. The Maxiran field data was turned over to Mr. J. Goodin, the PHILLIPS representative, on 24 May 1983. The final Maxiran ranges recorded on 23 May 1983 were transmitted to the ONA office in Perth, W.A. for final computation.

D. Three Maxiran base station installations were provided by ONA for this survey.

E. Three Maxiran base station sites were occupied during this operation. They were:

STATION CAPE CONRAN

STATION NIGHTOUT

STATION SEACOMBE

III. GENERAL INFORMATION (continued)

F. The maximum range observed by the Maxiran system during this survey was 180 kilometers.

G. The Maxiran mobile equipment was checked daily for proper delay setting. The delay setting was determined by a Maxiran Calibration conducted on 14 May 1983.

IV. MAXIRAN CALIBRATION

The Maxiran system was calibrated on 14 May 1983, prior to the commencement of the Well Location ATHENE - 1 survey. For this calibration, the Maxiran system was transported to Station Emerald (Offset), and the equipment installed at two markers at this site. The Maxiran mobile equipment was installed at the Station Emerald (Offset) marker, and the Maxiran base station equipment was installed at the calibration marker. The computed slope range of 1102.00 meters between the two markers, used to calibrate the system, were derived from a survey conducted by M.A. Nicholas and Associates.

The following pages consist of the field report of this calibration.

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 14 MAY 1983

MOBILE STATION			BASE STATION		
LOCATION: EMERALD (OFFSET)			LOCATION: CALIBRATION MARK		
OPERATOR: K. J. MOLLOY			OPERATOR: H. BRIDGES.		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	010 CODE 1
INTERROGATOR	NTM-01	009	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	063	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NCU-01	037	AMPLIFIER P/S	NCU-01	077
PREAMP	SAU-12	148	PREAMP	SAU-12	096
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS	82 FT.		ANDREWS	82 FT.
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	WHIP	25 FT.		'H' 2 PL.	20'
INPUT VOLTAGE	117 VAC		INPUT VOLTAGE	117 V AC	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	MIN.		RX. GAIN SETTING	MAX	
WEATHER CONDITIONS	HEAVY O'CAST.		WEATHER CONDITIONS	HEAVY O'CAST.	

OBSERVED RANGE IN CALIBRATE: 6.110 KM

COMPUTED SLANT RANGE: 1.107 KM

MOBILE ZERO SETTING IS: 5.008 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1000

SIGNED: K. J. Molloy.

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
2. All readings entered hereon will be final readings for the item in question, not preliminary or intermediate readings.
3. Each report will be complete in itself. Do not refer to other reports for information.
4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 14 MAY 1983

MOBILE STATION			BASE STATION		
LOCATION: EMERALD (OFFSET)			LOCATION: CALIBRATION MARK		
OPERATOR: K. J. MOLLOY			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	036 CODE 5
INTERROGATOR	NTM1-01	009	CONTROL BOX	NCL-02	077
AMPLIFIER	NTH-02	063	AMPLIFIER	NTH-02	033
AMPLIFIER P/S	NCH-01	037	AMPLIFIER P/S	NCH-01	077
PREAMP	SAH-12	148	PREAMP	SAH-12	096
COAX TYPE	COAX LENGTH		COAX TYPE	COAX LENGTH	
ANDREWS	82 FT		ANDREWS	82 FT	
ANTENNA TYPE	ANTENNA HEIGHT		ANTENNA TYPE	ANTENNA HEIGHT	
WHIP	25 FT		WHIP	25 FT	
INPUT VOLTAGE	117 VAC		INPUT VOLTAGE	117 VAC	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	MIN		RX. GAIN SETTING	MAX	
WEATHER CONDITIONS	HEAVY E'CAST		WEATHER CONDITIONS	HEAVY E'CAST	

OBSERVED RANGE IN CALIBRATE: 6.110 KM

COMPUTED SLANT RANGE: 1.102 KM

MOBILE ZERO SETTING IS: 5.008 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1010

SIGNED: K. J. Molloy

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
2. All readings entered hereon will be final readings for the item in question, not preliminary or intermediate readings.
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OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 14/12/84 '82

MOBILE STATION			BASE STATION		
LOCATION: EMERALD (OFFSET)			LOCATION: CALIBRATION MARK		
OPERATOR: K. J. MOLLOY			OPERATOR: H. R. BRIDGES.		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	064 CODE 5
INTERROGATOR	NTM-01	009	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	063	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NCU-01	037	AMPLIFIER P/S	NCU-01	077
PREAMP	SAU-12	148	PREAMP	SAU-12	096
COAX TYPE	COAX LENGTH		COAX TYPE	COAX LENGTH	
ANDREWS	82 FT		ANDREWS	82 FT	
ANTENNA TYPE	ANTENNA HEIGHT		ANTENNA TYPE	ANTENNA HEIGHT	
WHIP	25 FT.		'H' L.P.L.	20FT	
INPUT VOLTAGE	117 VAC		INPUT VOLTAGE	117 VAC	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	MIN		RX. GAIN SETTING	MAX	
WEATHER CONDITIONS	HEAVY O'CAST.		WEATHER CONDITIONS	HEAVY O'CAST	

OBSERVED RANGE IN CALIBRATE: 6.110 KM

COMPUTED SLANT RANGE: 1.102 KM

∴ MOBILE ZERO SETTING IS: 5.008 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1020

SIGNED: K. J. Molloy.

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
2. All readings entered hereon will be final readings for the item in question, not preliminary or intermediate readings.
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4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 14 MAY 1983

MOBILE STATION		
LOCATION: EMERALD (OFFSET)		
OPERATOR: K. J. MOLLOY		
UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041
INTERROGATOR	NTM-01	009
AMPLIFIER	NTU-02	063
AMPLIFIER P/S	NCU-01	037
PREAMP	SAU-12	148
COAX	TYPE	LENGTH
	ANDREWS	82 FT
ANTENNA	TYPE	HEIGHT
	WHIP	25 FT.
INPUT VOLTAGE	117 VAC	
TX. FREQUENCY	441 MHz	
RX. FREQUENCY	429 MHz	
RX. GAIN SETTING	MIN	
WEATHER CONDITIONS	HEAVY O'CAST.	

BASE STATION		
LOCATION: CALIBRATION MARK		
OPERATOR: H. R. BRIDGES.		
UNIT	MODEL	SERIAL No.
BEACON	NTL-01	006 CODE 1
CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NCU-01	077
PREAMP	SAU-12	096
COAX	TYPE	LENGTH
	ANDREWS	82 FT
ANTENNA	TYPE	HEIGHT
	'H' LPL	20 FT.
INPUT VOLTAGE	117 VAC	
TX. FREQUENCY	429 MHz	
RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	MAX	
WEATHER CONDITIONS	HEAVY O'CAST.	

* THIS CAN TO BE OPERATED IN MAX MANUAL GAIN SETTING. A.G.C. NOT WORKING PROPERLY.

OBSERVED RANGE IN CALIBRATE: 6.110 KM

COMPUTED SLANT RANGE: 1.102 KM

MOBILE ZERO SETTING IS: 5.008 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1040

SIGNED: K. J. Molloy

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
2. All readings entered hereon will be final readings for the item in question, not preliminary or intermediate readings.
3. Each report will be complete in itself. Do not refer to other reports for information.
4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 14 MAY 1983

MOBILE STATION			BASE STATION		
LOCATION: EMERALD (OFFSET)			LOCATION: CALIBRATION MARK		
OPERATOR: K. J. MOLLOY			OPERATOR: H.R. BRIDGES.		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	067 CODE 3
INTERROGATOR	NTM-01	009	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	063	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NCU-01	037	AMPLIFIER P/S	NCU-01	077
PREAMP	SAU-12	148	PREAMP	SAU-12	096
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS	82 FT		ANDREWS	82 FT
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	WHIP	25 FT.		'H' LPL	20FT
INPUT VOLTAGE	117 VAC		INPUT VOLTAGE	117 VAC	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	MIN		RX. GAIN SETTING	MAX	
WEATHER CONDITIONS	HEAVY O'CAST		WEATHER CONDITIONS	HEAVY O'CAST.	

OBSERVED RANGE IN CALIBRATE: 6.110 KM

COMPUTED SLANT RANGE: 1.102 KM

∴ MOBILE ZERO SETTING IS: 5.008 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1050

SIGNED: K. J. Molloy.

NOTES REGARDING CALIBRATION PROCEDURES:

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OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 14 MAY 1983

MOBILE STATION			BASE STATION		
LOCATION: EMERALD (OFFSET)			LOCATION: CALIBRATION MARK		
OPERATOR: K.J MOLLOY			OPERATOR: H.R. BRIDGES.		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	089 CODE 3
INTERROGATOR	NTM-01	009	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	063	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NCU-01	037	AMPLIFIER P/S	NCU-01	077
PREAMP	SAU-12	148	PREAMP	SAU-12	096
COAX TYPE	COAX LENGTH		COAX TYPE	COAX LENGTH	
ANDREWS	82 FT		ANDREWS	82 FT	
ANTENNA TYPE	ANTENNA HEIGHT		ANTENNA TYPE	ANTENNA HEIGHT	
WHIP	25 FT.		'H' LPL.	20FT.	
INPUT VOLTAGE	117 VAC		INPUT VOLTAGE	117 VAC	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	MIN		RX. GAIN SETTING	MAX	
WEATHER CONDITIONS	HEAVY O'CAST		WEATHER CONDITIONS	HEAVY O'CAST.	

OBSERVED RANGE IN CALIBRATE: 6.110 KM

COMPUTED SLANT RANGE: 1.102 KM

MOBILE ZERO SETTING IS: 5.008 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1100

SIGNED: K.J. Molloy.

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OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 14 MAY 1983

MOBILE STATION			BASE STATION		
LOCATION: EMERALD (OFFSET)			LOCATION: CALIBRATION MARK		
OPERATOR: K. T. MOLLOY			OPERATOR: H. R. BRIDGES.		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM - 01B	041	BEACON	NTL - 01	084 CODE 3 -
INTERROGATOR	NTM - 01	050	CONTROL BOX	NCL - 02	077
AMPLIFIER	NTU - 02	063	AMPLIFIER	NTU - 02	033
AMPLIFIER P/S	NCU - 01	037	AMPLIFIER P/S	NCU - 01	077
PREAMP	SAU - 12	148	PREAMP	SAU - 12	096
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS	82 FT.		ANDREWS	82 FT
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	WHIP	25 FT		'H' L.P.L.	20 FT.
INPUT VOLTAGE	117 VAC		INPUT VOLTAGE	117 VAC	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	MIN		RX. GAIN SETTING	MAX	
WEATHER CONDITIONS	HEAVY O'CAST		WEATHER CONDITIONS	HEAVY O'CAST.	

OBSERVED RANGE IN CALIBRATE: 6.110 KM

COMPUTED SLANT RANGE: 1.102 KM

∴ MOBILE ZERO SETTING IS: 5.008 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1105

SIGNED: K. J. Molloy.

NOTES REGARDING CALIBRATION PROCEDURES:

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OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 14 MAY 1983

MOBILE STATION			BASE STATION		
LOCATION: EMERALD (OFFSET)			LOCATION: CALIBRATION MARK		
OPERATOR: K. J. MOLLOY			OPERATOR: H. R. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	044	BEACON	NTL-01	089 CODE 3
INTERROGATOR	NTM-01	009	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	063	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NCU-01	037	AMPLIFIER P/S	NCU-01	077
PREAMP	SAU-12	148	PREAMP	SAU-12	096
COAX TYPE	COAX LENGTH		COAX TYPE	COAX LENGTH	
ANDREWS	82 FT		ANDREWS	82 FT	
ANTENNA TYPE	ANTENNA HEIGHT		ANTENNA TYPE	ANTENNA HEIGHT	
'H' LPL	25 FT		'H' LPL	20 FT	
INPUT VOLTAGE	117 VAC		INPUT VOLTAGE	117 VAC	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	MIN		RX. GAIN SETTING	MAX	
WEATHER CONDITIONS	HEAVY O'CAST		WEATHER CONDITIONS	HEAVY O'CAST	

OBSERVED RANGE IN CALIBRATE: 6.111 KM

COMPUTED SLANT RANGE: 1.102 KM

MOBILE ZERO SETTING IS: 5.009 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1110

SIGNED: K. J. Molloy

NOTES REGARDING CALIBRATION PROCEDURES:

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OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: 14 MAY 1983

MOBILE STATION			BASE STATION		
LOCATION: EMERALD (OFFSET)			LOCATION: CALIBRATION MARK		
OPERATOR: K. J. MOLLOY			OPERATOR: H. R. BRIDGES.		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM1 - 01B	041	BEACON	NTL - 01	059 CODE 3
INTERROGATOR	NTM1 - 01	050	CONTROL BOX	NCL - 02	077
AMPLIFIER	NTM - 02	063	AMPLIFIER	NTM - 02	033
AMPLIFIER P/S	NCM - 01	037	AMPLIFIER P/S	NCM - 01	077
PREAMP	SAM - 12	148	PREAMP	SAM - 12	096
COAX: TYPE	LENGTH		COAX: TYPE	LENGTH	
ANDREWS	82 FT		ANDREWS	82 FT	
ANTENNA: TYPE	HEIGHT		ANTENNA: TYPE	HEIGHT	
'H' LPL	25 FT		'H' LPL	20 FT	
INPUT VOLTAGE	117 VAC		INPUT VOLTAGE	117 VAC	
TX. FREQUENCY	441 MHz		TX. FREQUENCY	429 MHz	
RX. FREQUENCY	429 MHz		RX. FREQUENCY	441 MHz	
RX. GAIN SETTING	MIN		RX. GAIN SETTING	MAX	
WEATHER CONDITIONS	HEAVY O'CAST		WEATHER CONDITIONS	HEAVY O'CAST	

OBSERVED RANGE IN CALIBRATE: 6.115 KM

COMPUTED SLANT RANGE: 1.102 KM

∴ MOBILE ZERO SETTING IS: 5.013 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1115

SIGNED: K. J. Molloy.

NOTES REGARDING CALIBRATION PROCEDURES:

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V. WELL LOCATION INFORMATION

The following information pertains to the positioning of the D/V DIAMOND M EPOCH on Well Location ATHENE - 1.

Coordinates of the desired location were obtained from PHILLIPS as:

Latitude	38°35'52"20 S	N = 5,726,831 meters
Longitude	148°27'20"60E	E = 626,768 meters

The D/V DIAMOND M EPOCH was secured on location, and the 30-inch casing was set the morning of 23 May 1983. The following final Maxiran ranges were recorded at 0810 hours 23 May 1983, with the Maxiran mobile equipment installed on board the rig:

Sta. Cape conran to mobile antenna	90.913 kilometers
Sta. Nightout to mobile antenna	176.824 kilometers
Sta. Seacombe to mobile antenna	100.802 kilometers

At the time these final Maxiran ranges were recorded, the drill stem was 28 meters, at a bearing of 113° True, from the Maxiran mobile antenna.

V. WELL LOCATION INFORMATION (continued)

FINAL COMPUTED COORDINATES - WELL LOCATION ATHENE - 1:
(Drill stem)

Latitude 38°35'52".14 S N = 5,726,833 meters
Longitude 148°27'20".16 E E = 626,757 meters
Least square adjusted tie = .48 meter
From desired to final position = 10.68 m. @ 279.218° True

The final coordinates of the drill stem were derived by applying a propagation factor of .9999285, and the reported offset and bearing, to the final Maxiran ranges recorded.

Coordinates of the desired and final position are expressed in the Universal Transverse Mercator Projection, Australian National Spheroid of Reference, Zone 55, Central Meridian 147° East, AUSTRALIAN GEODETIC DATUM.

VI. BASIC CONTROL

Coordinates of the three Maxiran base stations, occupied to control this survey, were obtained from the ONA Basic Control files. Coordinates of Station Emerald (Offset), occupied to calibrate the Maxiran system, was obtained from a M.A. Nicholas and Associates survey.

Universal Transverse Mercator Projection
Australian National Spheroid
Zone 55
Central Meridian 147° East
AUSTRALIAN GEODETIC DATUM

STATION CAPE CONRAN:

Latitude	37°48'28".42 S	N = 5,814,075 meters
Longitude	148°43'46".98 E	E = 652,266 meters
Elevation	43 meters	

STATION NIGHTOUT:

Latitude	38°54'29".93 S	N = 5,693,244 meters
Longitude	146°27'37".03 E	E = 453,205 meters
Elevation	229 meters	

STATION SEACOMBE:

Latitude	38°07'58".47 S	N = 5,779,291 meters
Longitude	147°27'51".55 E	E = 540,692 meters
Elevation	28 meters	

VI. BASIC CONTROL

STATION EMERALD (OFFSET):

Latitude	37°48'48".60 S	N = 5,814,632 meters
Longitude	147°42'00".03 E	E = 561,615 meters
Elevation	70 meters	

VII. PERSONNEL

NAME	POSITION
Bridges, H.	Party Chief
Molloy, K.	Mobile Operator
Walsh, S.	Base Operator
Ward, G.	Base Operator
Wells, G.	Base Operator

VIII. DISTRIBUTION

Phillips Australian Oil Company
23rd Floor, City Centre Tower
48 St. Georges Terrace
Perth, W.A. 6000
AUSTRALIA

Attention: Mr. R.F.C. Chase — Four copies

Offshore Navigation, Inc.
Post Office Box 23504
Harahan, Louisiana 70183
U.S.A. — Two copies

Offshore Navigation (Australia) Pty. Ltd.
Post Office Box 291
Cloverdale, W.A. 6105
AUSTRALIA — One copy

STATION: CAPE CONRAN

LOCATED: Station Cape Conran is located on the southeastern corner of Gippsland, Victoria, Australia, approximately 34 kilometers southeast of Orbost.

The station site is located at the highest lookout in the area. The terrain is fairly flat, and covered with small 1-foot high bush. The open sea is approximately one-half mile from the station.

ACCESS: From Orbost, follow the road through Marlo, a small built up area 15 kilometers from Orbost. Drive 18 kilometers past Marlo to a fork in the road. Turn right at this fork, and drive on a gravel road for approximately one kilometer to a sand track on the left. This track will be seen before reaching a boat ramp and lighthouse. Turn left onto this sand track to a round about. You will notice two galvanized pipes inside the round about. This identifies the station site. This track to the station is a small narrow sand track, and has been used as a stopping place for tourists due to it being the highest lookout in the area.

MARKER: The station marker consists of a brass plate at ground level. The two galvanized pipes, which protrude 2 feet above ground level, are on either side of the marker. The brass plate is inscribed "GEODETIC SURVEY VICTORIA - TRIANGULATION STATION".

Four permanent star stakes, driven to ground level, are at this site. The star stakes are located 10 meters, at a bearing of 010°, 12 meters, at a bearing of 105°, 17 meters, at a bearing of 205°, and 12 meters, at a bearing of 285°, from the station marker.

STATION: CAPE CONRAN (continued)

GENERAL: Food, fuel and water can be obtained in Orbost, Bairnsdale, or Marlo. If camping equipment needs to be purchased, it is best to make this purchase in Bairnsdale.

This station site can become very cold during the winter months.

A 30-foot tower was erected at this station, the minimum height required to clear surrounding obstructions. Clear vista is from 180° to 270°. Star stakes were used to secure the tower.

The station site is located on Crown land. Permission to occupy the site must be obtained from Crown Land and Survey Department, Bairnsdale, Mr. Jim Bennett, telephone 051-523975

ELEVATION: 43 meters

SKETCH: See next page.

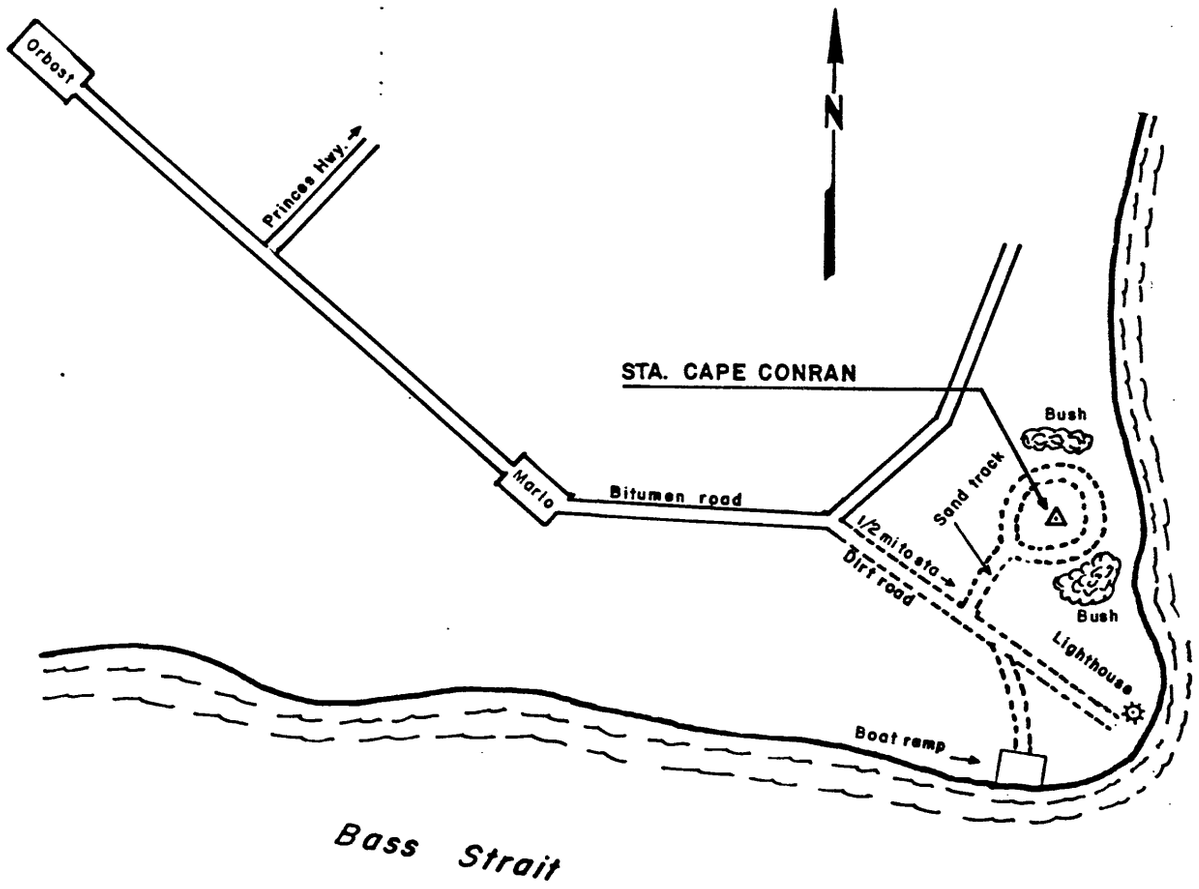
UTM PROJECTION, AUSTRALIAN NATIONAL SPHEROID
ZONE 55, C.M. 147° EAST ----------A.G.D.

Lat. 37°48'28"42 S N = 5,814,075 meters
Long. 148°43'46"98 E E = 652,266 meters

STA. CAPE CONRAN——————AUSTRALIA

LAT. 37°48'28".42 S — N 5,814,075 meters
LONG. 148°43'46".98 E — E 652,266 meters
ELEV. 43 meters

UTM PROJ. ——— AUST. NAT. SPHEROID
ZONE 55, C.M. 147° E ——— A.G.D.



11/82/1419

STATION: NIGHTOUT

LOCATED: Station Nightout is located in the northeast corner of Wilsons Promontory, Victoria, Australia.

The station site is located on the summit of a hill. The marker is surrounded by a few small rocks and 18-inch high scrub. The hill slopes away on all sides. There are hills of less elevation to the south, east, and northeast of the station. The Verever Ranges are about 5 kilometers away, and Mount Roundback is about 1.5 kilometers north-northwest of the station. Sealers Cove is about 11 kilometers from the station, at a bearing of 175° to 180°.

ACCESS: Access to this station is by helicopter only. All vehicular traffic is prohibited in this area. The helicopter transported personnel and equipment from Welshpool to the site. The area at the station site is fairly flat with a slight slope to the west and is quite suitable for helicopter landing.

MARKER: The station marker consists of a brass Department of Lands and Surveys Triangulation marker, set in a 6-inch square block of concrete that is flush with the ground. Two 1-1/2-inch galvanized iron pipes, standing 24 inches high, are set on either side of the marker. The pipes are painted blue and orange. See Sketch for references to this marker.

Food, fuel, water, and food is available in Welshpool.

A 35-foot tower was erected at this site. A minimum tower height of 10 feet would be required to clear surrounding obstructions. Clear vista is from 030° to 165°. Star stakes were used to secure the tower.

STATION: NIGHTOUT (continued)

The station site is on land that is owned by the National Parks, Victoria. Permission to occupy the station must be obtained from the Director of National Parks, Mr. Don Saunders, 240-250 Victoria Parade, Melbourne, telephone 03-6514111. The Wilsons Promotory contact is Mr. Ray Leivers of National Parks, Wilsons Promotory (South Gippsland), telephone 822796. A $1000.00 bond had to be submitted to the National Parks to occupy the station.

ELEVATION: 229 meters

SKETCH: See next page.

UTM PROJECTION, AUSTRALIAN NATIONAL SPHEROID
ZONE 55, C.M. 147° EAST ----------A.G.D.

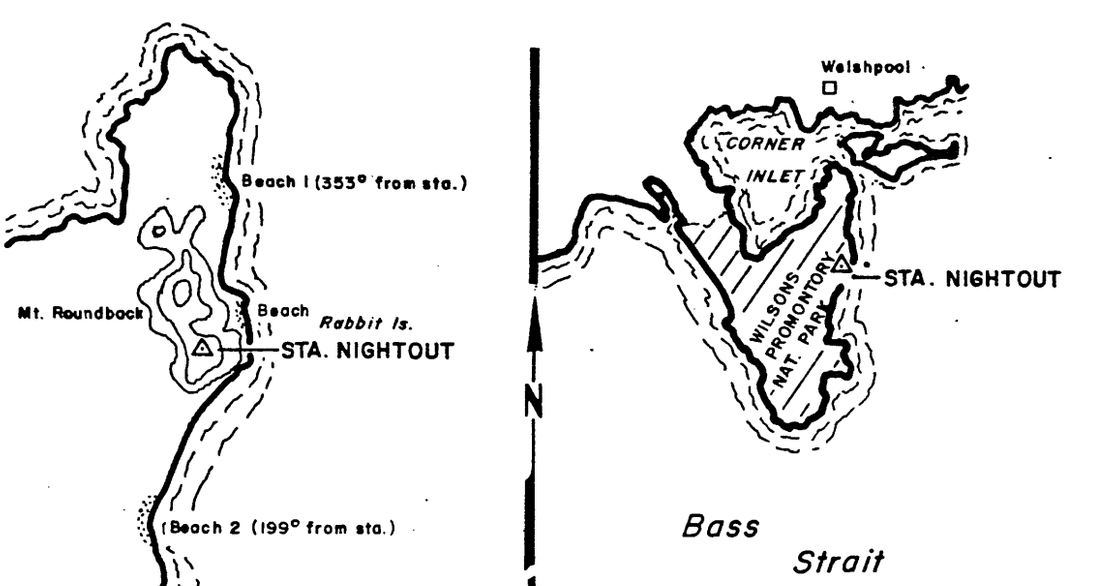
Lat. 38°54'29.93 S N = 5,693,244 meters
Long. 146°27'37.03 E E = 453,205 meters

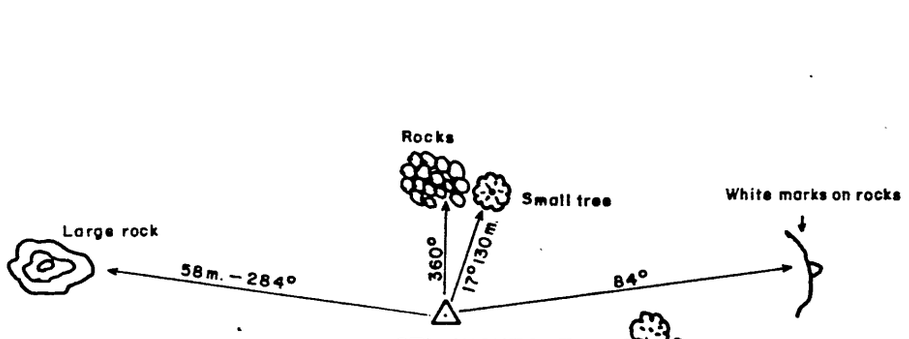
STA. NIGHTOUT ——————— AUSTRALIA

LAT. 38°54'29".93 S
LONG. 146°27'37".03 E
ELEV. 229 meters

N 5,693,244 meters
E 453,205 meters

UTM PROJ. ——— AUST. NAT. SPHEROID
ZONE 55, C.M. 147° E ——— A.G.D.





11/82/1419

STATION: SEACOMBE

LOCATED: Station Seacombe is located approximately 12 kilometers south of the township of Lock Sport, Victoria, Australia. The station site is located on a small hill, with gently sloping sides. The ground at the station is hard packed sand. Plant life in the surrounding area consists of 10 to 15-foot high trees and brush. The surrounding country side is similar, with trees reaching a height of 25 to 30 feet. The land to the south, west, north, and northeast is flat to the horizon. Lake beds, approximately 1/4 mile in distance, can be seen to the southeast of the site. The lake beds lie in a strip of land known as "90-Mile Beach". The sea lies beyond this strip of land. "Ninety-Mile Beach" is relatively low land. With the exception of the rise on which the station is located, there seems to be no other feature in the area which can distinguish the site.

ACCESS: From Yarram, Victoria, drive south on the Gippsland Highway to Sale. From Sale, continue south on the Gippsland Highway to Longford, a distance of 6 kilometers from Sale. On reaching the entrance to Longford, turn off towards Dutson and Golden Beach and drive 26 kilometers to a turnoff to the left signposted "Seacombe". Turn left onto this road and drive for approximately 12.5 kilometers on this road to a track on the right hand side of the road that is signposted "Trig Mark". This sign can be easily missed, as it is partly obscured by bush. Turn onto this track, and follow the track until you pass a cleared area for a pipe line. Go beyond this pipe line crossing to a point where another track will be seen on the right. turn right onto this steep track and follow it to its end and the station marker. A four-wheel drive vehicle is required to reach this station.

MARKER: The station marker is located on a 10-foot diameter sand mound, approximately 3 feet above surrounding levels. The trig marker consists of

STATION: SEACOMBE (continued)

a 6-inch square block of concrete, with a 4-inch diameter bronze plaque embedded in its center. The bronze plaque is inscribed "GEODETIC SURVEY VICTORIA - 69/104 - TRIANGULATION STATION". A 10-foot high steel tubular quadrupod is located over the marker. Two 2-foot diameter black steel discs are mounted vertically on top of the quadrupod.

Four permanent star stakes are at this site. The star stakes are located 32 feet, at a bearing of 015°, 30 feet, at a bearing of 120°, 30 feet, at a bearing of 215°, and 35 feet, at a bearing of 310°, from the station marker.

GENERAL: The town of Lock Sport is located northeast of the station, 10 kilometers away along the hard top road. This is a small town that caters to private boats. The town has a couple of gas stations, which also serve as local stores. The Shell Station, located at the entrance to Lock Sport, is probably the best station for supplies. In addition to fuel supplies, vegetables, canned and frozen foods, cooking gas, water, reading material, hardware and tools can be purchased at this station. The station is also equipped to perform minor vehicle repairs, including welding. There is also a post office and marina located in Lock Sport. No local labor could be found in the area.

The station site is located on the Gippsland Lakes National Park. Permission to occupy the site was obtained from Mr. Gordon Godsack of the National Parks, telephone 051-460278. A $1000.00 bond was submitted to the National Park to occupy the station.

It is imperative that the site be kept clean. Garbage and old oil should be disposed of at the garbage dump, 2 kilometers from Lock Sport, and 8 kilometers from the turnoff to the site.

STATION: SEACOMBE (continued)

Toilet facilities are available at Seacombe, 4.5 kilometers southwest of the site, and their use should be encouraged. The site area is also vulnerable to fire. The brush is dry and of an oily nature.

Flies, mosquitoes and sand flies are present at this station. Personnel are well advised to have a supply of repellant on hand. Warm clothing is a must, as nights at this site are very cold.

A 30-foot tower was erected at this site. A minimum height of 20 feet is required to clear surrounding obstructions. Clear vista is from 040° to 260°. Star stakes were used to secure the tower.

ELEVATION: 28 meters

SKETCH: See next page.

Coordinates of the station markers were obtained from a Department of Crown Lands and Survey, Victoria summary sheet.

UTM PROJECTION, AUSTRALIAN NATIONAL SPHEROID
ZONE 55, C.M. 147° EAST - - A.G.D.

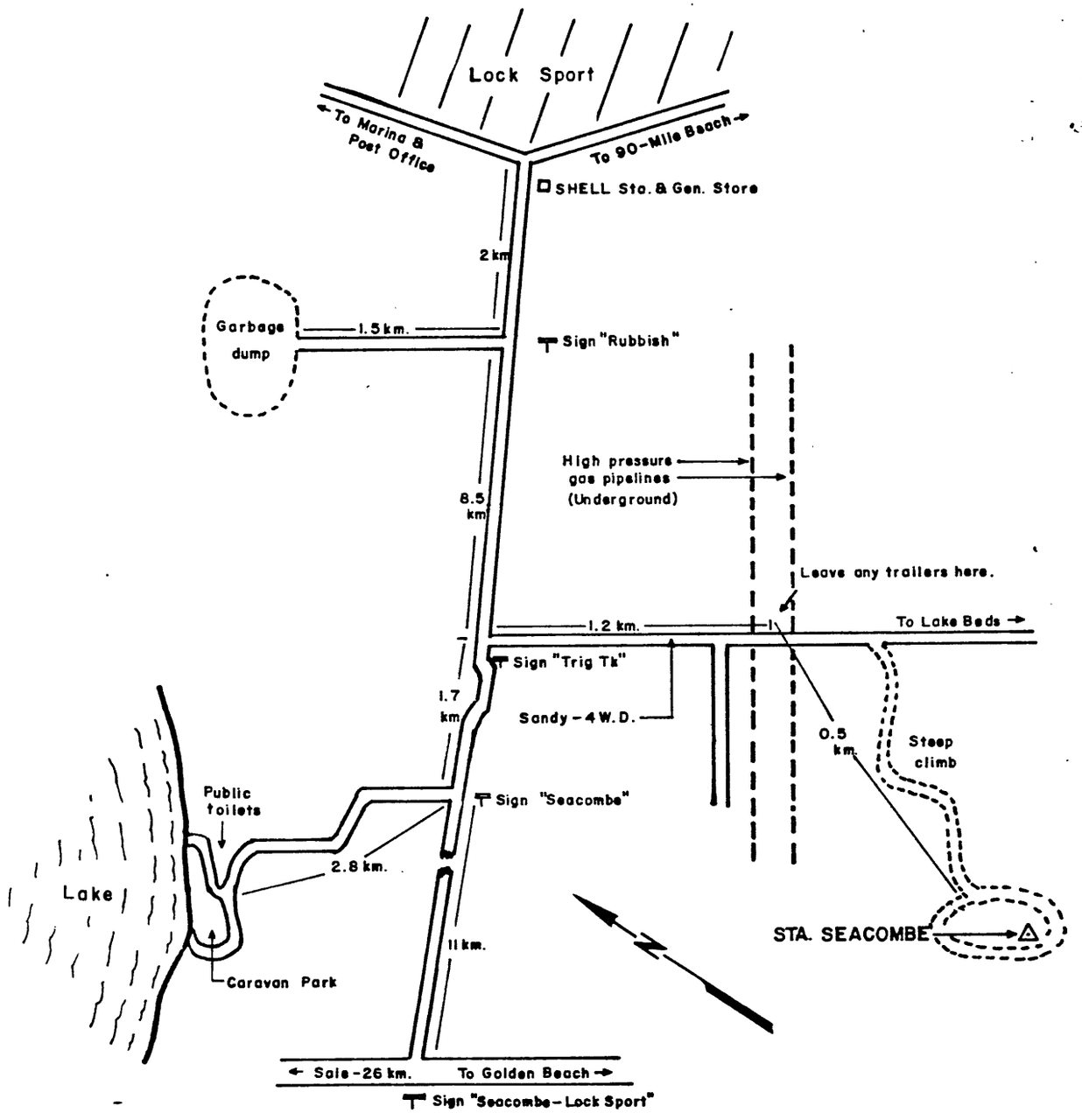
Lat. 38°07'59"47 S N = 5,779,291 meters
Long. 147°27'51"55 E E = 540,692 meters

STA. SEACOMBE——————————AUSTRALIA

LAT. 38°07'59".47 S
LONG. 147°27'51".55 E
ELEV. 28 meters

N 5,779,291 meters
E 540,692 meters

UTM PROJECTION, AUST. NATIONAL SPHEROID
ZONE 55 C.M. 147° E
AUSTRALIAN GEODETIC DATUM



5/82/1392

STATION: EMERALD (OFFSET)

LOCATED: Station Emerald (Offset) is located on Emerald Hill, approximately 9 kilometers northeast of Bairnsdale, Victoria, Australia.

ACCESS: From the Marlin Motel in Bairnsdale, travel east towards Lakes entrance. Set the vehicle's odometer to 0.00 kilometer at the bridge just outside of Bairnsdale. Drive to 1 kilometer and a fork. Take the left fork to Lakes Entrances, and turn left onto Cummins Road at 5.2 kilometers. Cummins Road will be seen just before a railroad crossing. Follow Cummins Road to 6.5 kilometers and a "T" junction. Turn left, and follow the road to a gate at 7.1 kilometers. Turn into this gate, and the station marker will be located along the fence line. This is the location of the Offset marker.

A calibration marker is also established at this site. This calibration marker is 1102.1 meters, at a bearing of 319° Magnetic, from the Offset marker.

To reach the calibration marker, remain on the road at 7.1 kilometers, and drive to a second "T" junction at 8.0 kilometers. Turn left at this junction, and follow this road to 8.8 kilometers, where a cow shed will be to the right of the road, and a gate on the left hand side. The calibration point is located near this gate. See Sketch for details.

MARKER: The offset marker consists of a 1-1/2-inch brass pipe set in concrete, with a galvanized plug.

The calibration marker consists of a star stake embedded in the ground, and set in concrete.

STATION: EMERALD (OFFSET) (continued)

GENERAL: All necessary supplies and labor are available in Bairnsdale.

This station was occupied during October 1982 only to calibrate the Maxiran system between the offset and calibration markers. A 10-foot tower was erected adjacent of the two markers for this calibration. Star stakes were used to secure the towers.

The station site and markers are on land owned by Mr. Paul Needham. Permission must be obtained from Mr. Needham to occupy the sites. His telephone number is 52-5347.

ELEVATION: 70 meters (Offset) marker

SKETCH: See next page.

Coordinates of the offset marker were obtained from a M.A. Nicholas and Associates summary sheet. No coordinates are published for the calibration marker.

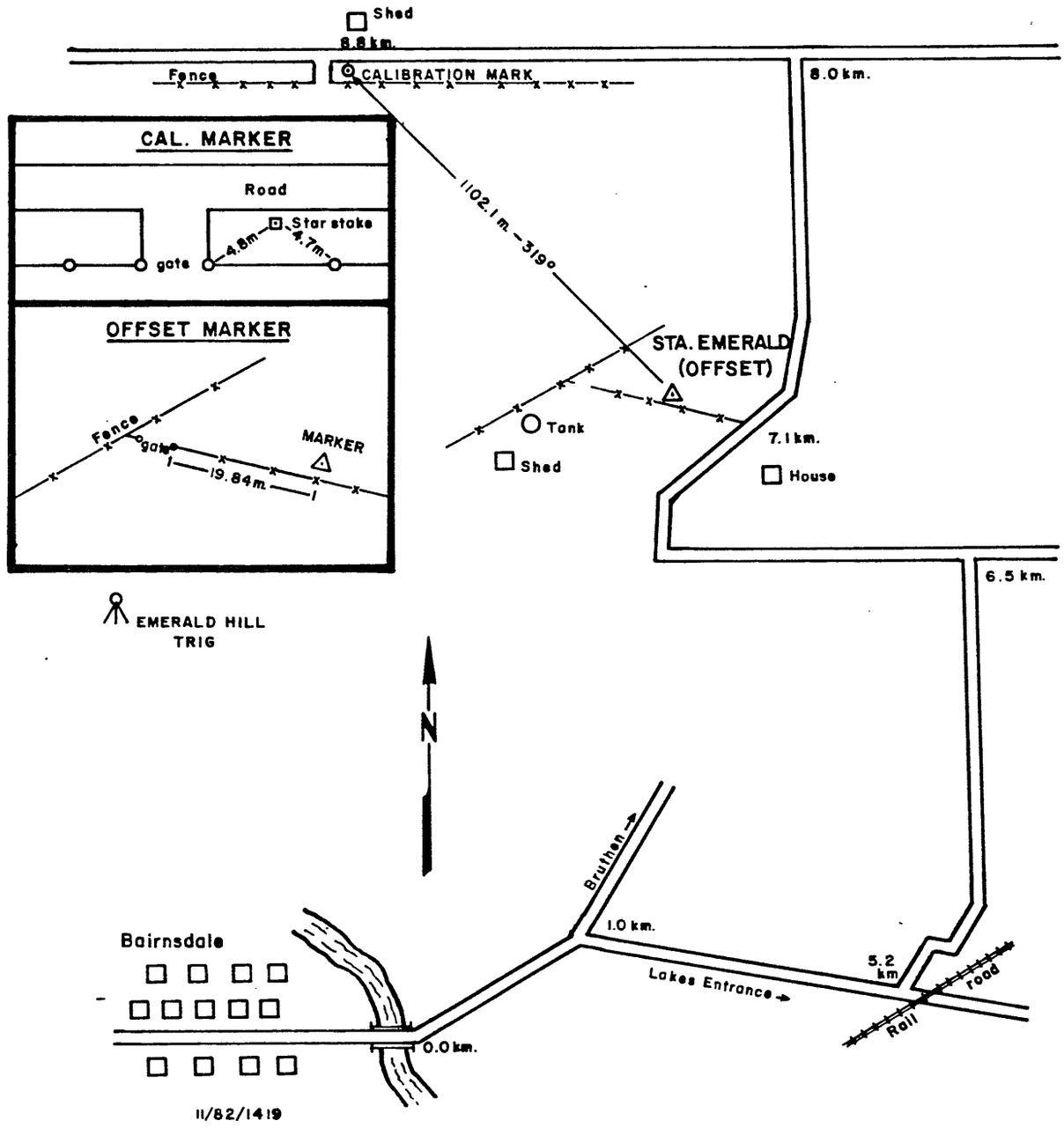
UTM PROJECTION, AUSTRALIAN NATIONAL SPHEROID
ZONE 55, C.M. 147° EAST - - A.G.D.

Lat. 37°48'48".60 S N = 5,814,632 meters
Long. 147°42'00".03 E E = 561,615 meters

STA. EMERALD (OFFSET)———AUSTRALIA

LAT. 37°48'48".60 S N 5,814,632 meters
LONG. 147°42'00".03 E E 561,615 meters
ELEV. 70 meters

UTM PROJ. ———— AUST. NAT SPHEROID
ZONE 55, C.M. 147° E ————— A.G.D.



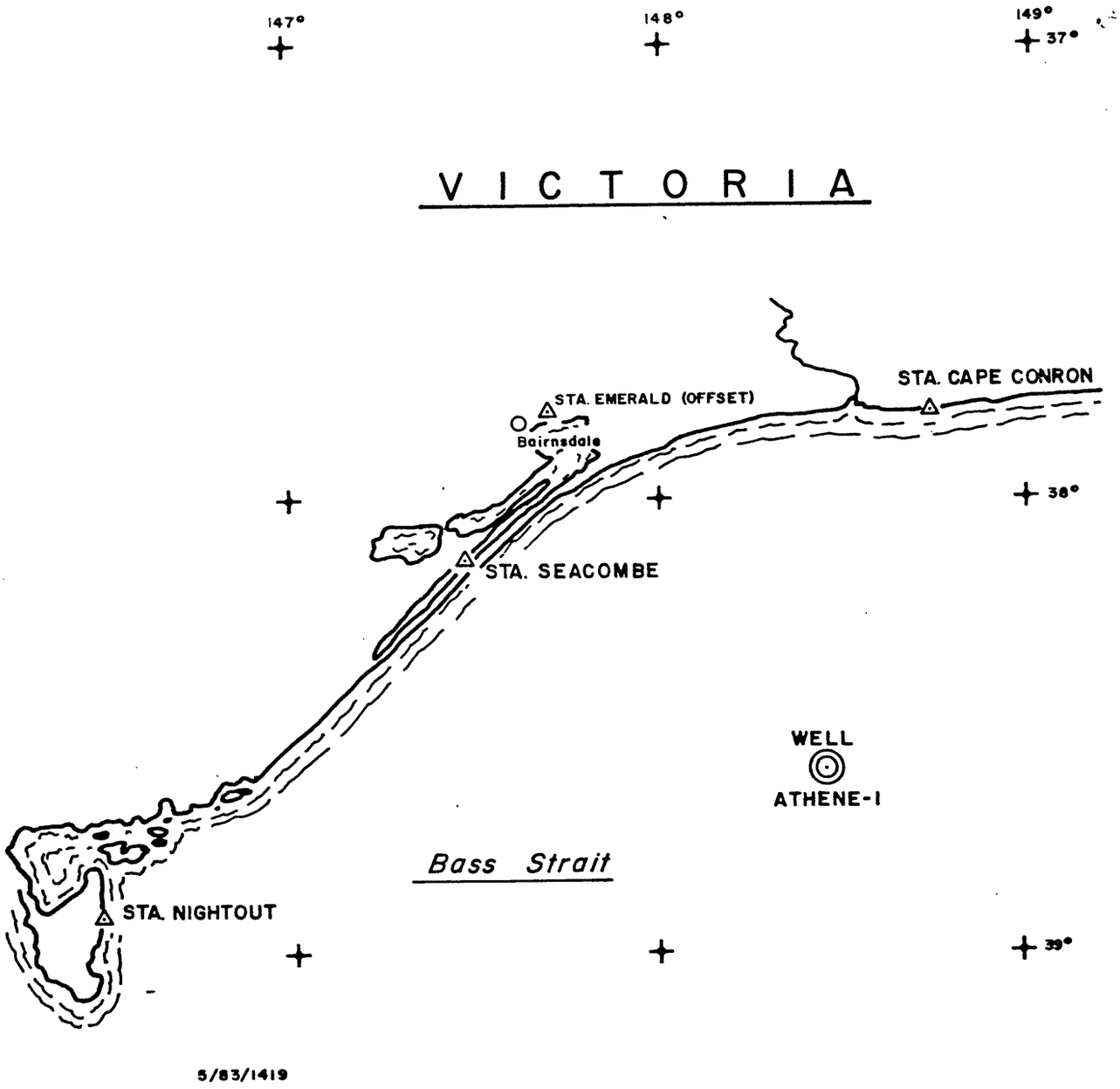
11/82/1419

WELL ATHENE-1 —————— AUSTRALIA

LAT. 38° 35' 52".14 S
LONG. 148° 27' 20".16 E

N 5,726,833 meters
E 626,757 meters

UTM PROJ. —————— AUST. NAT SPHEROID
ZONE 55, C.M. 147° E —————— A.G.D.



5/83/1419

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

APPENDIX A

DAILY OPERATIONS LOGS

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number 1419 Date 15 MAY 1983 RIG Boat DIAMOND M EPOCH Client Party Number RIG LOCATION.

Geophysical Company N.A. Oil Company PHILLIPS PET. CO. Radio Frequency 7840

Country AUSTRALIA Area/Prospect OFFSHORE GIPPSLAND Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	009	041	063	WHIP.

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
LIGHT OUT	G. WELLS	429	089	006	3	500F
SEACOMBE	S. WALSH	429	064	055	5	500F
CONRAN	G. WARD	429	010	033	1	500F

OPERATING TIME

Time On	Time Off	Requested By	System Used For

O/T Requested By | Total System - Hours Operation for Client

LOST TIME

From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks

1220 - 1255 MOB. OP. AND EQUIPMENT TO RIG DIAMOND M EPOCH BY CHOPPER.
1315 - 1630 MOB INSTALLATION
2200 NO RADIO CONTACT ANY STATIONS, SHUT DOWN UNTIL 0800/16 MAY.
2400 STAND BY ON RIG.

Mobile Operators K. J. MOLLOY

Party Chief

Form N-1A SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number 1419 Date 16 MAY 1983 Rig Boat DIAMOND M EPOCH Client Party Number RIG LOCATION

Geophysical Company N.A. Oil Company PHILLIPS PET. CO. Radio Frequency 7840

Country AUSTRALIA Area/Prospect OFFSHORE GIPPSLAND Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	009	041	063	WHIP

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
NIGHTOUT	G. WELLS	429	084	006	3	5008
SEALOMBE	S. WALSH	429	064	055	5	5008
CONRAN	G. WARD	429	010	033	1	5008

OPERATING TIME

Time On	Time Off	Requested By	System Used For

O/T Requested By | Total System - Hours Operation for Client

LOST TIME

From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks

0001. WAITING ON RIG MOVE.
0430. WINDS GUSTING 90 M/HR. BLEW TOWER DOWN. EXTREMELY ROUGH SEAS. BOATS CANNOT WORK ANCHORS.
0800. RADIO CHECK STN'S SEALOMBE, CONRAN & BASE. SECURE STN'S. TOO WINDY TO ERECT TOWER.
0900 RADIO CHECK NIGHTOUT.
1200 RADIO CHECK.
[illegible]00 RADIO CHECK.
2400 WAITING ON RIG TO MOVE WEATHER

Mobile Operators K-T. MOLLOY

Party Chief [signature]

Form N-1A SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number 1419 Date 17 MAY 1983 Rig Boat DIAMOND M EPOCH Client Party Number RIG LOCATION

Geophysical Company N.A. Oil Company PHILLIPS PET. CO. Radio Frequency 7840

Country AUSTRALIA Area/Prospect OFFSHORE GIPPSLAND Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	009	041	063	WHIP

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
NIGHTOUT	G. WELLS	429	089	006	3	5008
SEACOMBE	S. WALSH	429	064	055	5	5008
CONRAN	G. WARD	429	010	033	1	5008

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0800	1800	J. GOODIN	RIG LOCATION.

O/T Requested By | Total System - Hours Operation for Client | 10.00

LOST TIME

From	To	Hours Lost	Reason(s)
			NIL.

Brief Operations Log & Remarks

0001 WAITING ON WEATHER
0400 RIG TENDERS WORKING ON ANCHORS.
0800 STATIONS TO OPERATE - WARM GEAR UP. WORK ON MOB ANTENNA.
0930 SIGNAL FROM SEACOMBE @ 90 KM WITH ANTENNA LAYING ON DECK
0945 ANTENNA ERECTED. SIG FROM SEACOMBE @ 90KM. SIG FROM CONRAN @ 96 KM.
1250 SIGNAL FROM NIGHTOUT ≈ 164 KM.
1800 SECURE STN'S UNTIL 0800 / 18 MAY.
2400 WAITING ON RIG MOVE.

Mobile Operators K. T. MOLLOY

Party Chief

Form N-1A SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number 1419 Date 18 MAY 1983 Rig Boat DIAMOND M EPOCH Client Party Number RIG LOCATION

Geophysical Company N.A. Oil Company PHILLIPS PET. CO. Radio Frequency 7840

Country AUSTRALIA Area/Prospect OFFSHORE GIPPSLAND Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	009	041	063	WHIP.

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
FLIGHTOUT	G. WELLS	147.9	084	006	3	5008
SEACOMBE	S. WALSH	147.9	064	051	5	5008
CONRAN	G. WARD	147.9	010	033	1	5008

OPERATING TIME

Time On	Time Off	Requested By	System Used For

O/T Requested By | Total System - Hours Operation for Client

LOST TIME

From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks

0001. WAITING ON MOVE.
0800 RADIO CHECK ALL STN'S.
1200 " " " "
1750 " " " "
2400 WAITING ON RIG MOVE.

Mobile Operators K.T. MOLLOY

Party Chief

Form N-1A

SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number 1419 Date 19 MAY 1983 Rig Beat DIAMOND M EPOCH Client Party Number RIG LOCATION

Geophysical Company N.A. Oil Company PHILLIPS PET. Co. Radio Frequency 7840

Country AUSTRALIA Area/Prospect OFFSHORE GIPPSLAND Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	009	041	063	WHIP.

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
NIGHTOUT	G. WELLS	429	084/067	006	3	500F
SEACOMBE	S. WAASH	429	064	055	5	5008
CONRAN	G. WARD	429	010	033	1	5008

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0500	2400	J. GOODIN	RIG LOCATION.

O/T Requested By | Total System - Hours Operation for Client: 16 HRS

LOST TIME

From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks

0001. WAITING ON ANCHORS.
0500 MAXIRAN NET TO OPERATE.
1220 3.W.F. NIGHTOUT 163.282, SEACOMBE 89.515, CONRAN 95.938
1447 " " 163.428, " 89.642, " 95.888
1640 CHANGED OUT NIGHT OUT CAN - 3WF'S NOT COMPUTING CORRECTLY.
1655 3WF. NIGHTOUT 163.393, SEACOMBE 89.64 CONRAN 95.915
1735 " " 163.183, " 89.397 " 95.948
1940 UNDER TOW FROM "HERMES 1" TO NEW LOCATION "ATHENE 1"
2400 ON TOW.

Mobile Operators K.T. MOLLOY.

Party Chief

Form N-1A SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number 1419 Date 20 MAY 1983 Rig Boat DIAMOND M EPOCH Client Party Number RIG LOCATION

Geophysical Company N.A. Oil Company PHILLIPS PET. CO. Radio Frequency 7840

Country AUSTRALIA Area/ Prospect OFFSHORE GIPPSLAND Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	009	041	063	WHIP

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
NIGHTOUT	G. WELLS	429	067	006	3	500f
BEACONSE	S. WALSH	429	064	055	5	500f
CONRAN	G. WARD	429	010	033	1	500f

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0001.	2400	J. GOODIN	RIG LOCATING

O/T Requested By | Total System - Hours Operation for Client 24 HRS.

LOST TIME

From	To	Hours Lost	Reason(s)
			NIL.

Brief Operations Log & Remarks

0001. ON TOW TO "ATHENE #1" LOCATION.
0157 ANCHOR #7 LET GO.
0210 RIG POSITIONED OVER SITE.
0810 FOUR ANCHORS SET. BOATS "LAYING TO" FOR UNION BREAK.
1300 RESTART RUNNING ANCHORS.
2400 WORKING ANCHORS

Mobile Operators K. T. MOLLOY.

Party Chief

Form N-1A SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number 1419 Date 21 MAY 1983 Rig Boat DIAMOND M EPOCH Client Party Number RIG LOCATION

Geophysical Company N.A. Oil Company PHILLIPS PET. CO. Radio Frequency 7840

Country AUSTRALIA Area/ Prospect OFFSHORE GIPPSLAND Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	009	041	063	WHIP

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
NIGHTOUT	G. WELLS	429	067	006	3	5008
SEACOMBE	S. WALSH	429	064	055	5	5008
CONRAN	G. WARD	429	010	033	1	5008

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0001.	2400	J. GOODIN	RIG LOCATING

D/T Requested By | Total System - Hours Operation for Client 24 HRS

LOST TIME

From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks

0001. RUNNING ANCHORS.
0815. J.W.F. NIGHTOUT 176-825 SEACOMBE 100-804 CONRAN 90-913
2400 RUNNING PRIME & PIGGY BACK ANCHORS.

Mobile Operators K. J. MOLLOY.

Party Chief

Form N-1A SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number 1419 Date 22 MAY 1983 Rig Boat DIAMOND M EPOCH Client Party Number RIG LOCATION

Geophysical Company N.A. Oil Company PHILLIPS PET. CO. Radio Frequency 7840

Country AUSTRALIA Area/Prospect OFFSHORE GIPPSLAND Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441.	009	041	063	WHIP

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
NIGHTOUT	G. WELLS	429	067	006	3	500f
SEACOMBE	S. WALSH	429	064	055	5	500f
CONRAN	G. WARD	429	010	033	1	500f

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0001.	2400	J. GOODIN	

S/T Requested By | Total System - Hours Operation for Client 24 HRS

LOST TIME

From	To	Hours Lost	Reason(s)
			NIL

Brief Operations Log & Remarks

0001. STRAINING ANCHORS.
0000 PRELIMINARY FIX. NIGHTOUT 176.826, SEACOMBE 100.807 CONRAN 90.912.
DRILL STEM IS 6.8 MTRS BEARING 272° FROM DESIRED LOCATION.
0130 START DRILLING 30 INCH HOLE FOR CASING.
2400 SETTING 30 INCH CASING

Mobile Operators K. J. MOLLOY.

Party Chief

Form N-1A

SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number 1419 Date 23 MAY 1983 Rig Boat DIAMOND M EPOCH Client Party Number RIG LOCATION

Geophysical Company N.A. Oil Company PHILLIPS PET. CO. Radio Frequency 7840

Country AUSTRALIA Area/Prospect OFFSHORE GIPPSLAND Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	009	041	063	WHIP

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
NIGHTOUT	A. WELLS	429	067	006	3	500f
SEACOMBE	J WALSH	429	064	055	5	500f
CONRAN	G. WARD	429	010	033	1	500f

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0001	1230	J. GOODIN	RIG LOCATION

D/T Requested By | Total System - Hours Operation for Client 12-5 HRS

LOST TIME

From	To	Hours Lost	Reason(s)
			NIL.

Brief Operations Log & Remarks

0001. SETTING 30 INCH CASING

0410 FINAL FIX: NIGHTOUT 176·824, SEACOMBE 100·802, CONRAN 90·913
DRILL STEM BEARS 113° TRUE FROM ANTENNA @ 28 METERS.
CLIENT ON BOARD COMPUTATION PUTS DRILL STEM OFF LOCATION 10.7MET.
@ BEARING 281° FROM COMPUTED.

0815 STANDING BY FOR FURTHER INSTRUCTIONS FROM PHILLIPS PET. CO. PERTH
AS TO O.N.A. MOVEMENTS.

1230 MAXIRAN NET SECURED. AWAITING ON TX PORT ASHORE.

2400 WAITING ON TRANSPORT.

Mobile Operators K. J. MOLLOY

Party Chief

Form N-1A

SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number 1419 Date 24 MAY 1983 Rig Boat DIAMOND M EPOCH Client Party Number RIG LOCATION

Geophysical Company N.A. Oil Company PHILLIPS PET. CO. Radio Frequency 7840

Country AUSTRALIA Area/ Prospect OFFSHORE GIPPSLAND Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay

OPERATING TIME

Time On	Time Off	Requested By	System Used For

O/T Requested By | Total System - Hours Operation for Client

LOST TIME

From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks

0001. DEMOBILISE RIG AND WAIT ON TRANSPORT ASHORE.

1140 LEAVE RIG BY HELICOPTER.

1420 AT WELSHPOOL - STORE MOB. EQUIP.

Mobile Operators K. J. Molloy

Party Chief

Form N-1A SEE INSTRUCTIONS ON REVERSE

APPENDIX B

THE MAXIRAN RADIOPOSITIONING SYSTEM

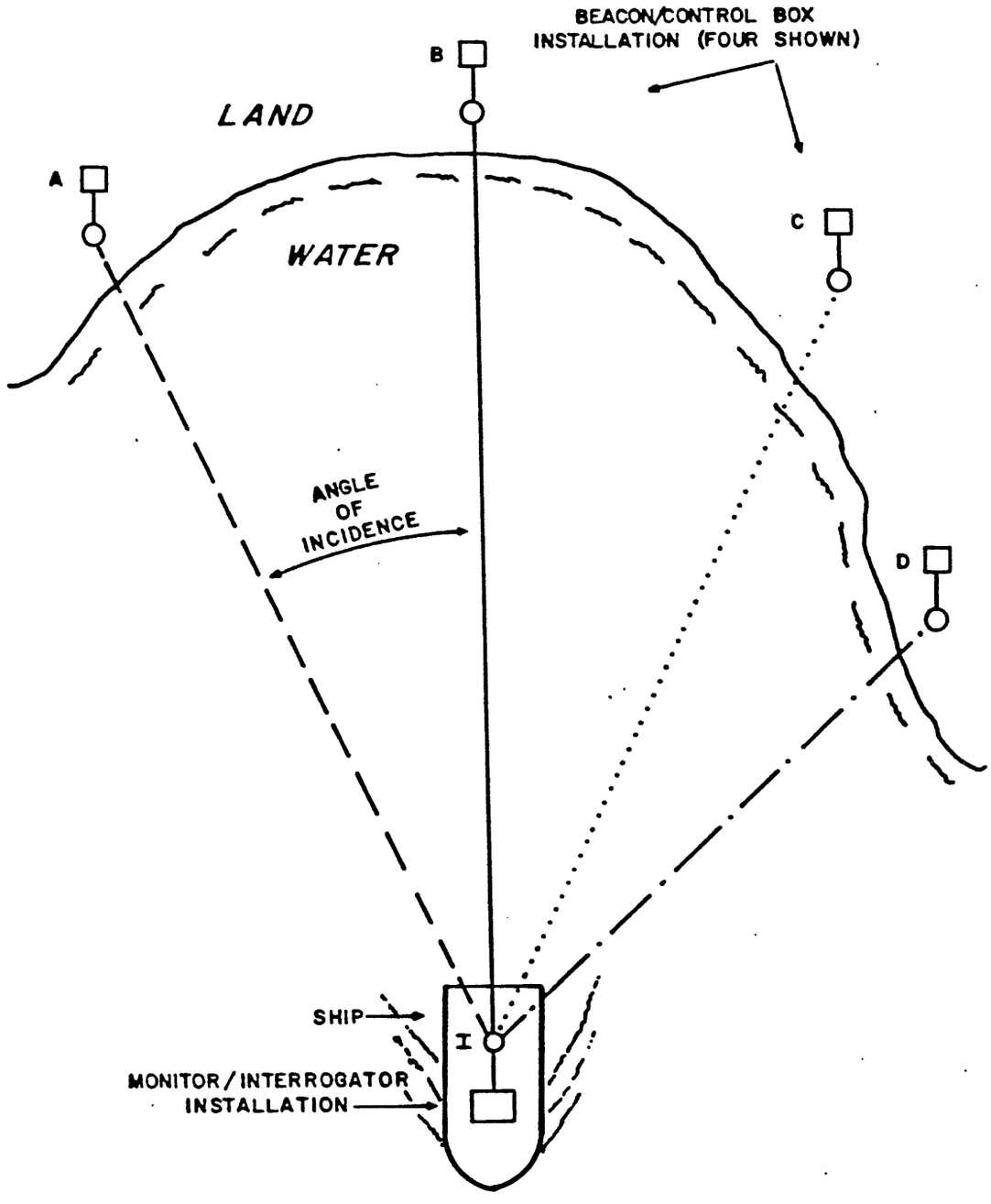
I. THE MAXIRAN RADIOPOSITIONING SYSTEM

The Maxiran Radiopositioning System is a precision electronic ranging system, capable of both manual and automatic tracking of range. It is especially useful for measuring distances across bodies of water.

The use of the Maxiran requires three or more electronic installations. For the purposes of this discussion, one of these installations is assumed to be aboard a ship (see Figure 1). This installation consists of the Maxiran Monitor and Interrogator. The other installations are located onshore. Each of these installations consist of a Maxiran Beacon and a Control Box. There are two or more of the Beacon Control Box installations situated at appropriate locations onshore.

In operation, the Monitor/Interrogator installation transmits a radio signal (containing a Beacon-Select code which addresses a selected Beacon) which is picked up by all of the Beacon/Control Box installations. Each Beacon decodes the received signal and decides whether the Beacon-Select code transmitted corresponds to that Beacon. If the Beacon-Select code is correct for a

FIGURE-1. TYPICAL MAXIRAN SYSTEM



OFFSHORE NAVIGATION
(AUSTRALIA) PTY. LTD.

I. THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

Beacon, it responds by transmitting a radio signal reply. The Monitor measures the amount of time elapsed between the Interrogator's transmission and the received reply sent by the Beacon. Since, for all practical purposes, radio signals travel at a known speed, the time elapsed between transmission and response is a measure of the distance the radio signal travelled. The elapsed time is converted by the Monitor into distance and then displayed. Knowing the location of the land stations and the current distance from the ship to each of them, the position of the ship can be readily calculated.

For the purposes of this discussion, let us first assume that only two Beacons are being utilized. They are the Beacons marked "A" and "B" in Figure 1. Since the distance from Beacon "A" to the Interrogator (call it distance A1), and the distance from Beacon "B" to the Interrogator (call it distance B1) are now known (these distances are the distances displayed on the Monitor front panel), we can use some geometry to calculate the position of the ship with reference to Beacons "A" and "B".

I. THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

As illustrated in Figure 2, the distances of A1 and B1 define two intersecting circles, one with a radius of length A1 centered about Beacon "A", the other with radius of length B1 centered about Beacon "B". The two circles intersect at two points (marked I and I' in Figure 2). Obviously, the ship can only be located at one of the points. Since point I' happens to be located on land, we can safely assume that the ship is located at Point I.

There is always some uncertainty associated with the exact measurements of the Beacons. This is illustrated in Figure 3. Figure 3 illustrates an enlarged view of the intersection of the circles shown in Figure 2. If the tolerance of the measurements of Beacon "B" is plus-or-minus 5 meters, then the two solid lines in Figure 3 are 10 meters apart. The tolerance of the measurements of Beacon "A" should be the same as that of Beacon "B", but this is not always the case due to differences in geographical location. Under the above conditions, we only know that the ship is located somewhere in the shaded area of Figure 3.

FIGURE-2. SYSTEM WITH TWO BEACONS

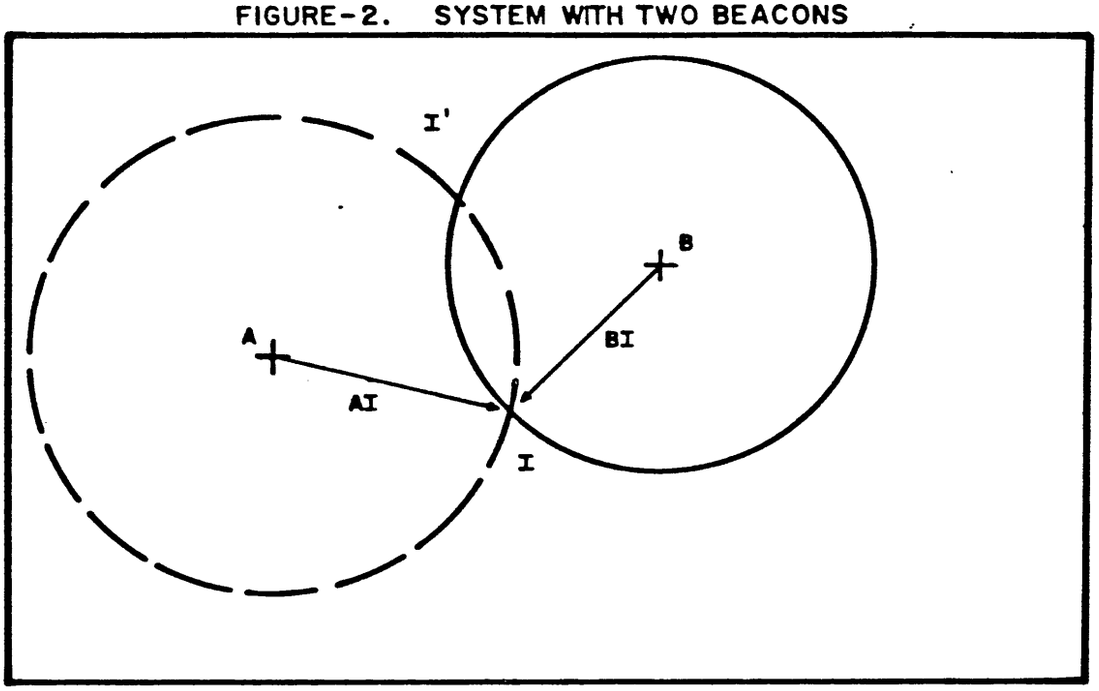
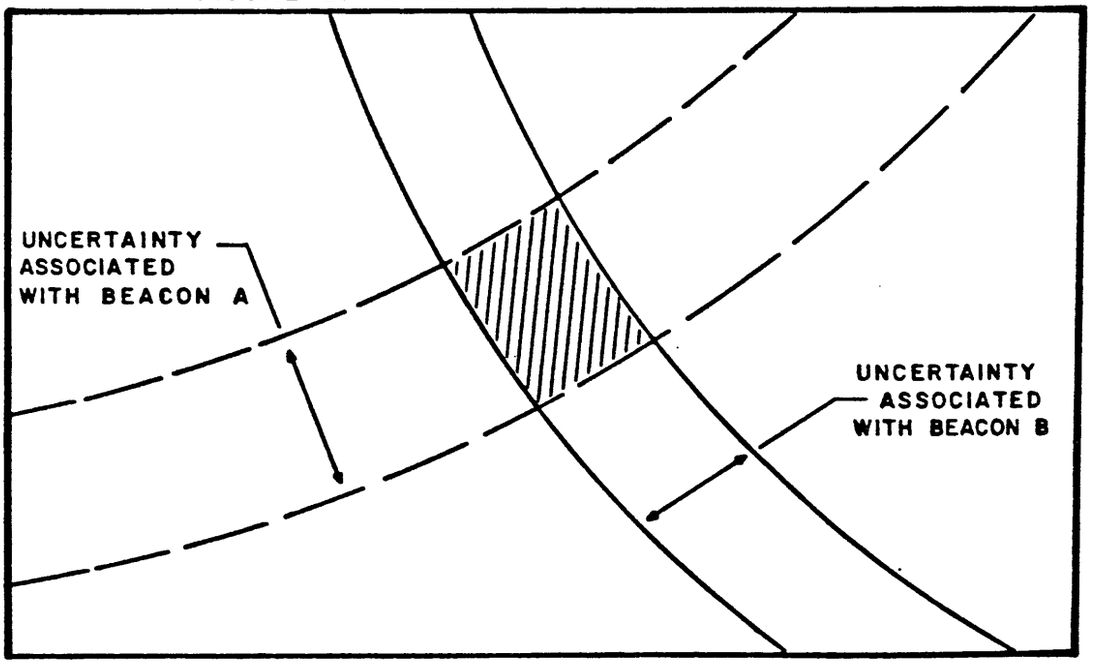


FIGURE-3. UNCERTAINTY WITH TWO BEACONS



I. THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

For the purposes of the following discussion, it is assumed that there are now three Beacons utilized. Now three circles are defined, instead of the two from the discussion above. The third distance, from Beacon "C" to the Interrogator (call it distance Cl), defines a circle of radius length CI centered about Beacon "C". The new situation is illustrated in Figure 4. Notice that with the three circles, there is only one location where all three circles can intersect. This eliminates the ambiguity associated with using only two Beacons. Now there is no I' to worry about. An additional advantage of using three Beacons is illustrated in Figure 5. Now the area of uncertainty has been reduced even though the tolerance of Beacon "C"'s measurement isn't any better than that of the other Beacons.

As the ship moves along, one or more of the Beacons may become unusable for various reasons; out of range, too small or too great an operating angle, etc. If additional Beacons are situated on shore, they may be interrogated, as desired, to greatly expand the range and usability of the system.

FIGURE-4. SYSTEM WITH THREE BEACONS

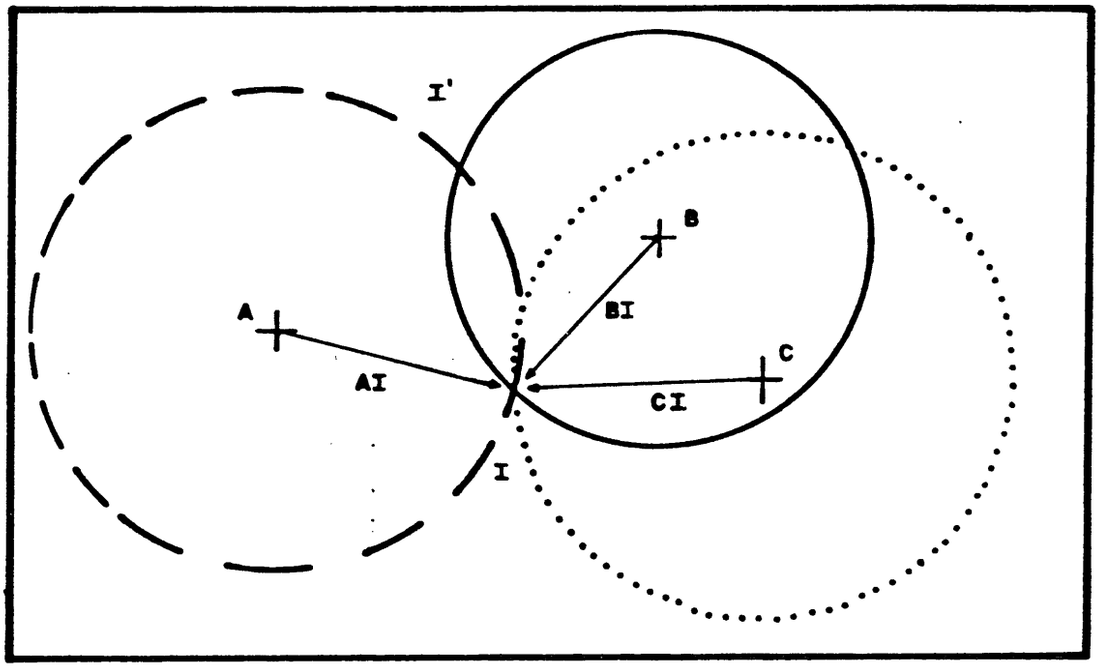
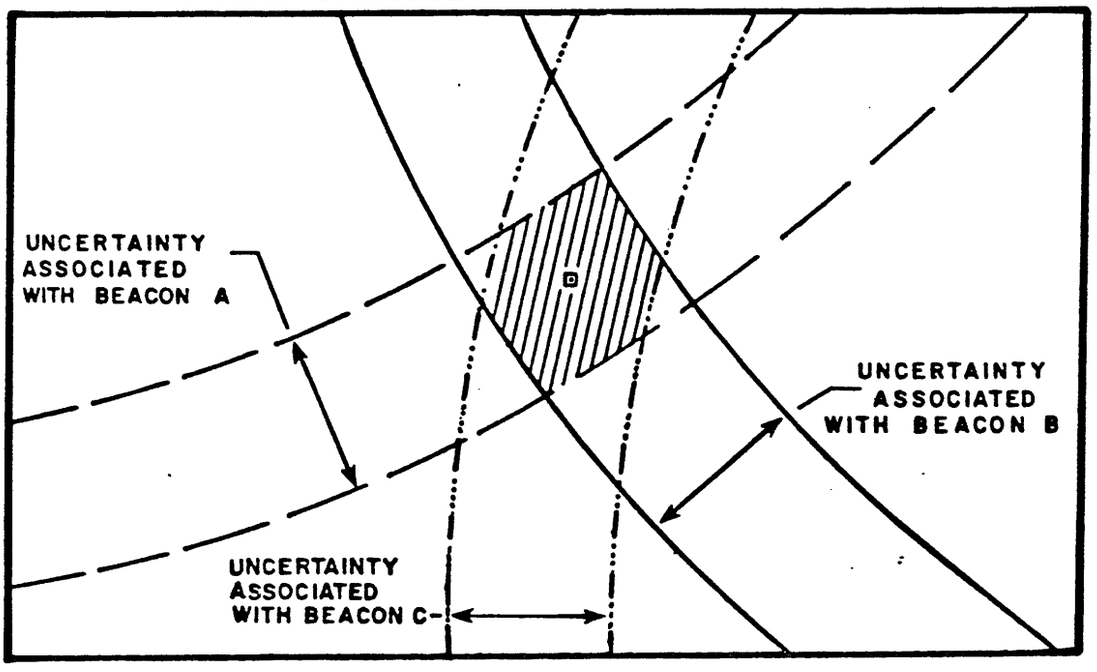


FIGURE-5. UNCERTAINTY WITH THREE BEACONS



I. THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

As many as three different Beacons may be selected at one time by the proper setting of the Monitor's Beacon-Select switches.