



FINAL REPORT
OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.
PROJECT 1419
FOR
PHILLIPS AUSTRALIAN OIL COMPANY
VICTORIA, AUSTRALIA
FEBRUARY 1983

W803

WELL LOCATION HERMES #1

OIL and GAS DIVISION

23 SEP 1983

ADDENDUM NO. 1

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

FOR
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WELL LOCATION HERMES #1

FEBRUARY 1983

AVAILABLE IN WELL FILE

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.
PHILLIPS AUSTRALIAN OIL COMPANY

TABLE OF CONTENTS

	<u>Page</u>
Introduction	1
Field Operations Recap	2
General Information	5
Maxiran Calibration	7
Well Location Information	15
Basic Control	17
Personnel	19
Distribution	19
Base Station Descriptions and Plats	20
Area of Operations Plat	33
APPENDIX A - Daily Operations Logs	
APPENDIX B - The Maxiran Radiopositioning System	

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 HERMES #1

The survey was conducted in Bass Strait, off the coast of Victoria, Australia. The well was located approximately 47 nautical miles southeast of Bairnsdale, Victoria.

The ONA base of operation was established at Bairnsdale on 9 February 1983.

II. FIELD OPERATIONS RECAP

The Maxiran system required to control this survey was stored in the area from a previous operation. Advance ONA personnel travelled to Bairnsdale on 7 February 1983 to prepare for the mobilization of the Maxiran system. All ONA personnel necessary for this survey were in the operational area by 8 February 1983.

The Maxiran system was calibrated on 10 February 1983 at Station Emerald (Offset). 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 was completed on 11 February 1983.

The ONA mobile operator and mobile equipment were transported via helicopter to the Drilling Vessel (D/V) DIAMOND M EPOCH on 10 February 1983, arriving on board

II. FIELD OPERATIONS RECAP (continued)

the rig at 1745 hours that date. Installation of the Maxiran mobile equipment on board the D/V DIAMOND M EPOCH was completed at 2000 hours 10 February 1983.

Moving of the D/V DIAMOND M EPOCH from its position at Well Location SELENE #1 was delayed due to weather. Towing of the D/V DIAMOND M EPOCH to Well Location HERMES #1 began at 1520 hours 13 February 1983. The D/V DIAMOND M EPOCH arrived in the location area, and the first anchor was dropped at 1755 hours 13 February. The anchors were secured, and spudding of the 30-inch casing began at 0650 hours 15 February. A preliminary Maxiran reading was obtained at 0300 hours 15 February 1983, prior to the beginning of the spudding operation.

The D/V DIAMOND M EPOCH had to move slightly off location due to difficulties being experienced in spudding. The 30-inch casing was set, and a final Maxiran reading was recorded at 1015 hours 18 February 1983.

II. FIELD OPERATIONS RECAP (continued)

The Maxiran system completed its assignment and was released at 1100 hours 18 February 1983. Dismantling of the Maxiran mobile and base stations was accomplished on 18 February 1983. All Maxiran equipment was stored in Welshpool, Victoria for the next survey.

The ONA mobile operator and three base operators were released from this survey on 19 February 1983. The ONA party chief was released on 20 February 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 frequencies of 4637.5 and 7840.0 (SSB) kilocycles.

C. The Maxiran field data was turned over 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 175 kilometers.

- G. The Maxiran mobile equipment was checked daily for proper delay setting. The delay setting was determined by a Maxiran Calibration conducted on 10 February 1983.

IV. MAXIRAN CALIBRATION

The Maxiran system was calibrated on 10 February 1982, prior to the commencement of the Well Location HERMES #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: 10 FEB 1983

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
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	050	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NCU-01	038	AMPLIFIER P/S	NCU-01	077
PREAMP	SAU-12	056	PREAMP	SAU-12	096
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS	52'		ANDREWS	82'
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	QUAD LPL'S	10 FT.		QUAD LPL'S	10 FT.
INPUT VOLTAGE	117 V AC		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	OVERCAST		WEATHER CONDITIONS	OVERCAST	

OBSERVED RANGE IN CALIBRATE: 6.112 KM
COMPUTED SLANT RANGE: 1.102 KM
MOBILE ZERO SETTING IS: 5.010 KM
OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 0900

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.

9

MAXIRAN CALIBRATION REPORT

DATE: 10 FEB 1963

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
OPERATOR: K. J. MOLLOY			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	*006 CODE 1
INTERROGATOR	NTM-01	050	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NLU-01	038	AMPLIFIER P/S	NLU-01	077
PREAMP	SAU-12	056	PREAMP	SAU-12	096
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS	82'		ANDREWS	82'
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	QUAD LPL'S	10 FT.		QUAD LPL'S	10 FT.
INPUT VOLTAGE		117 V A.C.	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		OVERCAST	WEATHER CONDITIONS		OVERCAST.

NO POWER TO NON-EXISTANT SIG. NOT TO BE USED.

OBSERVED RANGE IN CALIBRATE: 6.112 KM
 COMPUTED SLANT RANGE: 1.102 KM
 MOBILE ZERO SETTING IS: 5010 KM
 OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 0910

SIGNED:

NOTES REGARDING CALIBRATION PROCEDURES:

1. All equipment will be allowed to warm up for at least 30 minutes prior to calibrating.
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OFFSHORE NAVIGATION, INC.

10

MAXIRAN CALIBRATION REPORT

DATE: 10 FEB 83

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
OPERATOR: K. J. MULLOY			OPERATOR: H. BRIDGES.		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	VTL-01	067 CODE 3
INTERROGATOR	NTM-01	050	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NLU-01	038	AMPLIFIER P/S	NLU-01	077
PREAMP	SAU-12	056	PREAMP	SAU-12	096
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS	82'		ANDREWS	82 FT
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	QUAD LPL'S	10 FT		QUAD LPL'S	10 FT.
INPUT VOLTAGE		117 V AC	INPUT VOLTAGE		117 V A.C.
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		OVERCAST	WEATHER CONDITIONS		OVERCAST.

OBSERVED RANGE IN CALIBRATE: 6.112 KM
 COMPUTED SLANT RANGE: 1.102 KM
 MOBILE ZERO SETTING IS: 5010 KM
 OBSERVED RANGE IN OPERATE: 6.102 KM TIME: 0925

SIGNED: *H. J. Mulloy*

NOTES REGARDING CALIBRATION PROCEDURES:

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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.

11

MAXIRAN CALIBRATION REPORT

DATE: 10 FEB 37

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
OPERATOR: K. J. MOLLOY			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	*075 CODE 3
INTERROGATOR	NTM-01	050	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NCU-01	038	AMPLIFIER P/S	NCU-01	077
PREAMP	SAU-12	056	PREAMP	SAU-12	096
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS	82'		ANDREWS	82'
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	QUAD LPL'S	10 FT		QUAD LPL'S	10 FT.
INPUT VOLTAGE		117V A.C.	INPUT VOLTAGE		117V AC
TX. FREQUENCY		441 MHz	TX. FREQUENCY		429 MHz
RX. FREQUENCY		429 MHz	RX. FREQUENCY		441 MHz
RX. GAIN SETTING		MID	RX. GAIN SETTING		MAX
WEATHER CONDITIONS		OVERCAST	WEATHER CONDITIONS		OVERCAST

AGC PROBLEM - USE IN EMERGENCY.

OBSERVED RANGE IN CALIBRATE: 6.112 KM
 COMPUTED SLANT RANGE: 1.102 KM
 MOBILE ZERO SETTING IS: 5010 KM
 OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 0937

SIGNED: *K. J. Molloy*

NOTES REGARDING CALIBRATION PROCEDURES:

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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.

12

MAXIRAN CALIBRATION REPORT

DATE: 10 FEB 83

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
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	NTM-01	050	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NLU-01	038	AMPLIFIER P/S	NLU-02	077
PREAMP	SAU-12	056	PREAMP	SAU-12	046
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS	82'		ANDREWS	82'
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	QUAD LPI'S	10 FT		QUAD LPI'S	10 FT.
INPUT VOLTAGE		117 V AC	INPUT VOLTAGE		117 V A.C.
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		OVERCAST	WEATHER CONDITIONS		OVERCAST.

OBSERVED RANGE IN CALIBRATE: 6.113 KM

COMPUTED SLANT RANGE: 1.102 KM

MOBILE ZERO SETTING IS: 5010 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 0956

SIGNED: K. J. Molloy

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OFFSHORE NAVIGATION, INC.

13

MAXIRAN CALIBRATION REPORT

DATE: 10 FEB 83

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
OPERATOR: K. J. MOLLOY			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	064 CODE 5
MODERATOR	NTM-01	050	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NLU-01	038	AMPLIFIER P/S	NLU-01	077
PREAMP	SAU-12	056	PREAMP	SAU-12	096
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS	82'		ANDREWS	82'
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	QUAD LPL'S	10 FT.		QUAD LPL'S	10 FT.
INPUT VOLTAGE		117 V AC	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		OVERCAST	WEATHER CONDITIONS		OVERCAST

OBSERVED RANGE IN CALIBRATE: 6.110 KM
 COMPUTED SLANT RANGE: 1.102 KM
 MOBILE ZERO SETTING IS: 5010 KM
 OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1010

SIGNED: K. J. Molloy

NOTES REGARDING CALIBRATION PROCEDURES:

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OFFSHORE NAVIGATION, INC.

14

MAXIRAN CALIBRATION REPORT

DATE: 10 FEB 83

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
OPERATOR: K. J. MOLLOY			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NVL-01	036 CODE 5
INTERROGATOR	NTM-01	009	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	033
AMPLIFIER P/S	NLU-01	038	AMPLIFIER P/S	NLU-01	077
PREAMP	SAL-12	056	PREAMP	SAL-12	046
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS	82'		ANDREWS	82.5 FT
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	QUAD LPL'S	10 FT.		QUAD LPL'S	10 FT.
INPUT VOLTAGE		117 V A.C.	INPUT VOLTAGE		117 V A.C.
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		OVERCAST	WEATHER CONDITIONS		OVERCAST

OBSERVED RANGE IN CALIBRATE: 6.112 KM

COMPUTED SLANT RANGE: 1.102 KM

MOBILE ZERO SETTING IS: 5010 KM

OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1035

SIGNED: *K. J. Molloy*

NOTES REGARDING CALIBRATION PROCEDURES:

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4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

V. WELL LOCATION INFORMATION

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

Coordinates of the desired location were obtained from PHILLIPS as:

Latitude	38°36'08"55 S	N = 5,726,533 meters
Longitude	148°17'54"19 E	E = 613,059 meters

The D/V DIAMOND M EPOCH was secured on location, and the 30-inch casing was set the morning of 18 February 1983. The following final Maxiran ranges were recorded at 1015 hours 18 February 1983, with the Maxiran mobile equipment installed on board the rig:

Sta. Cape conran to mobile antenna	95.934 kilometers
Sta. Nightout to mobile antenna	163.334 kilometers
Sta. Seacombe to mobile antenna	89.557 kilometers

At the time these final Maxiran ranges were recorded, the drill stem was 28 meters, at a bearing of 107° True, from the Maxiran mobile antenna.

V. WELL LOCATION INFORMATION (continued)

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

Latitude 38°36'08"02 S N = 5,726,549 meters
Longitude 148°17'54"28 E E = 613,061 meters
Least square adjusted tie = .074 meter
From desired to final position = 16.56 m. @ 007.336°

True

The final coordinates of the drill stem were derived by applying a propagation factor of .999932, 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 CONTROLSTATION 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
Dunn, P.	Base Operator
Hassett, B.	Base Operator
Russell, D.	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

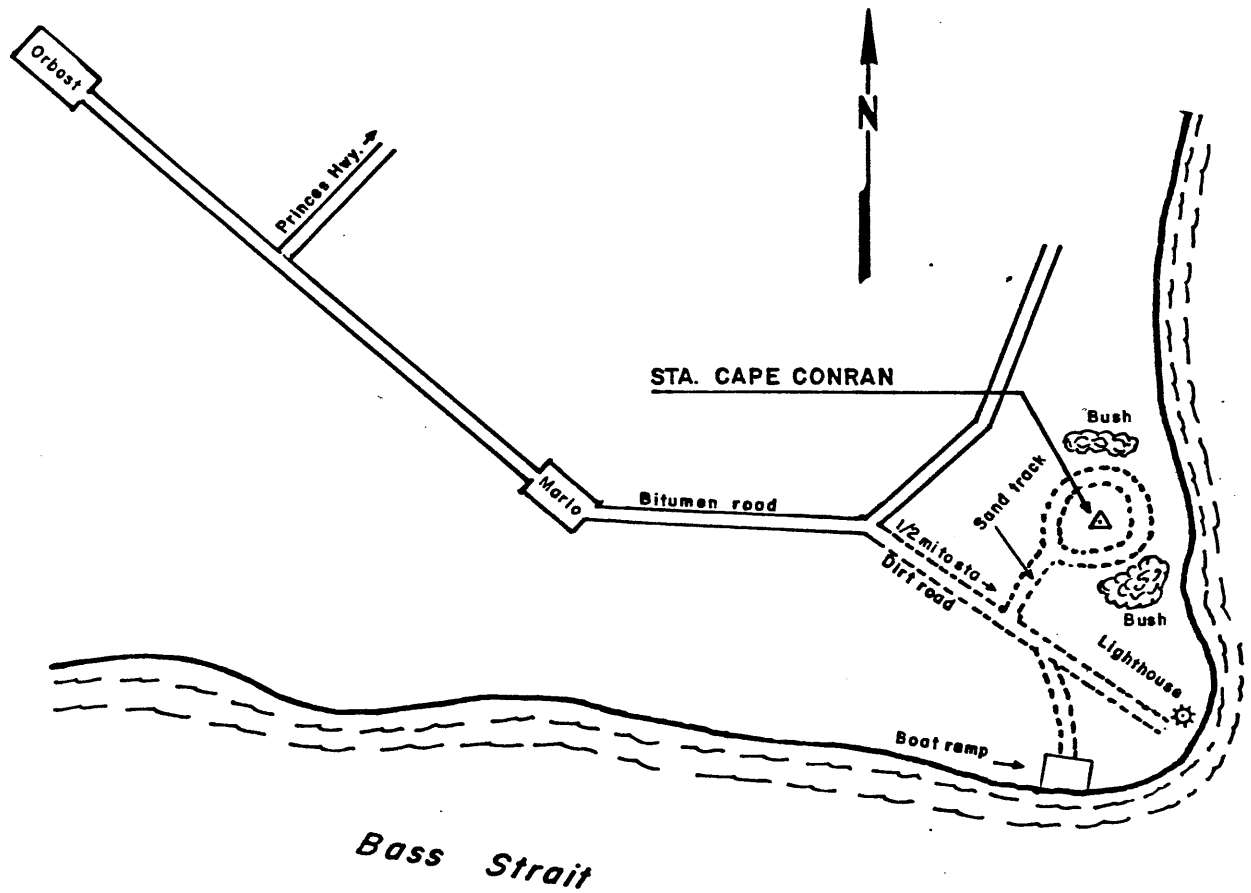
LONG. 148°43'46".98 E

E 652,266 meters

ELEV. 43 meters

UTM PROJ. ————— AUST. NAT. SPHEROID

ZONE 55, C.M. 147° E ————— A.G.D.



11/82/1419

OFFSHORE NAVIGATION
(AUSTRALIA) PTY. LTD.

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.

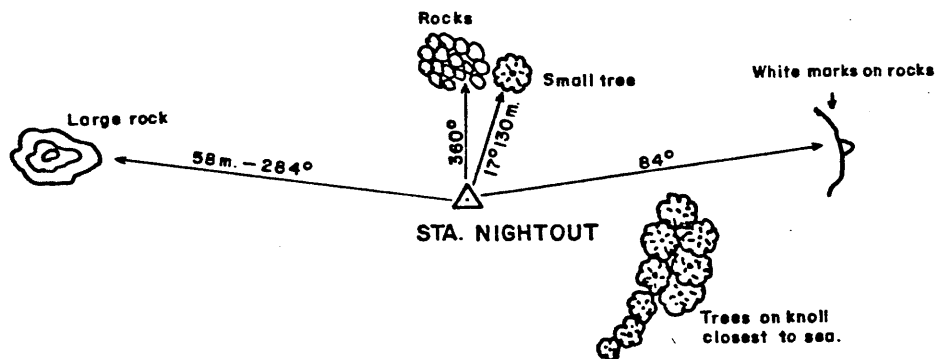
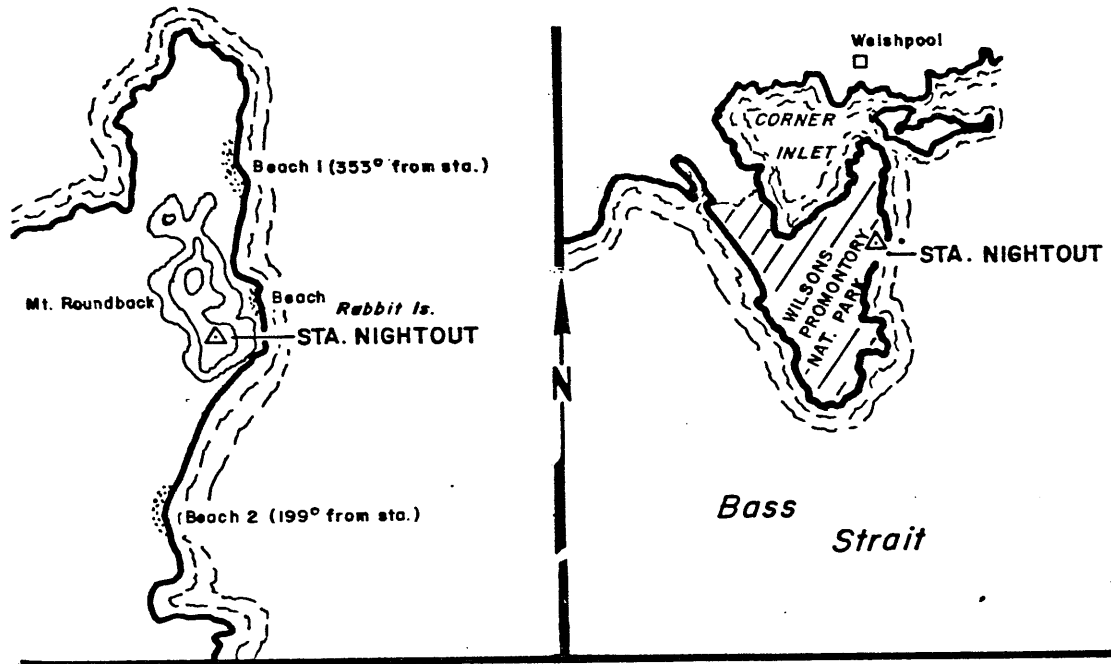
Lat.	38°54'29"93 S	N = 5,693,244 meters
Long.	146°27'37"03 E	E = 453,205 meters

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

OFFSHORE NAVIGATION
(AUSTRALIA) PTY. LTD.

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 quadropod is located over the marker. Two 2-foot diameter black steel discs are mounted vertically on top of the quadropod.

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 (OFFSET) (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 repellent 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.

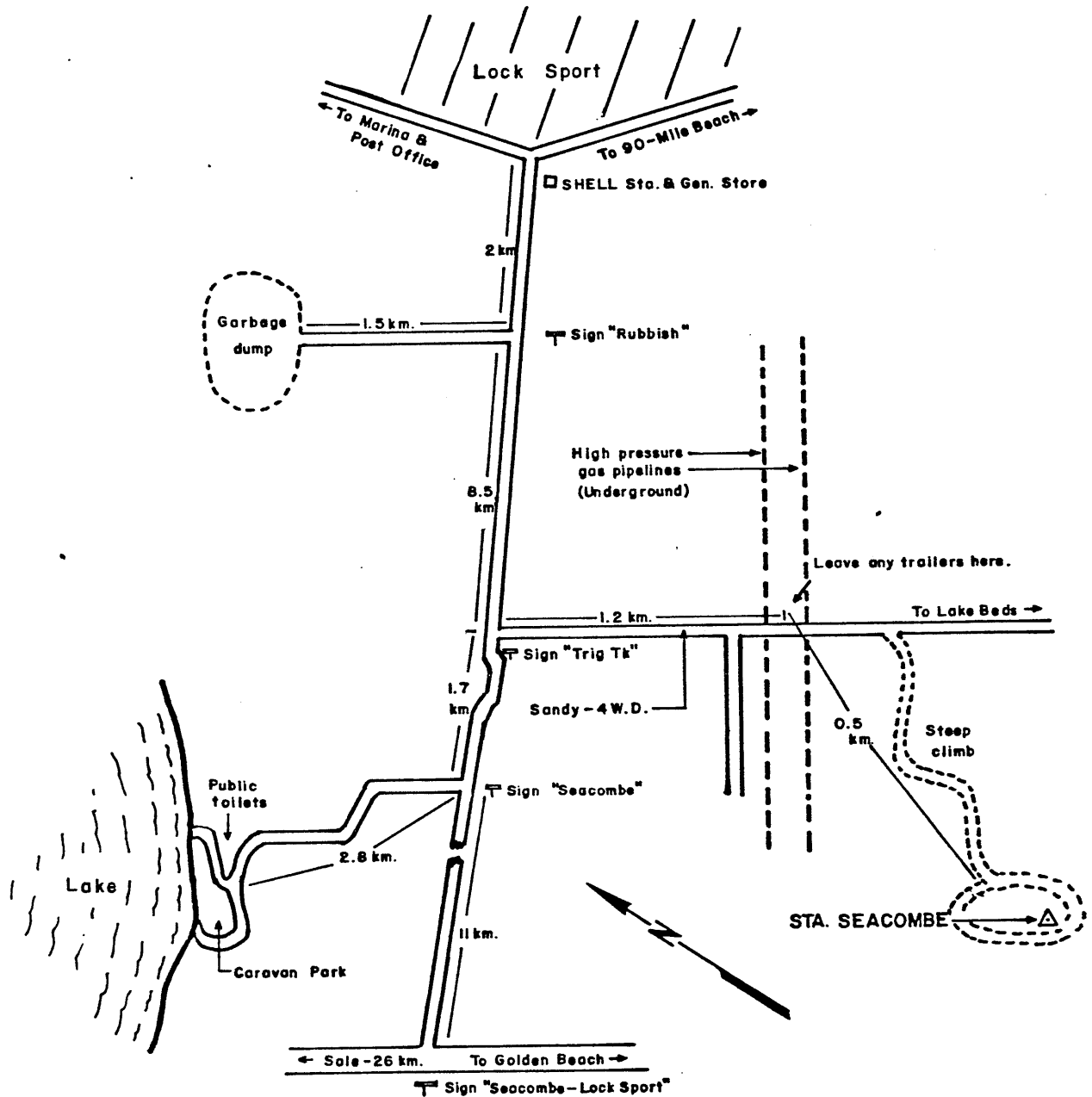
Lat.	38°07'59".47 S	N = 5,779,291 meters
Long.	147°27'51".55 E	E = 540,692 meters

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

OFFSHORE NAVIGATION
(AUSTRALIA) PTY. LTD.

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.

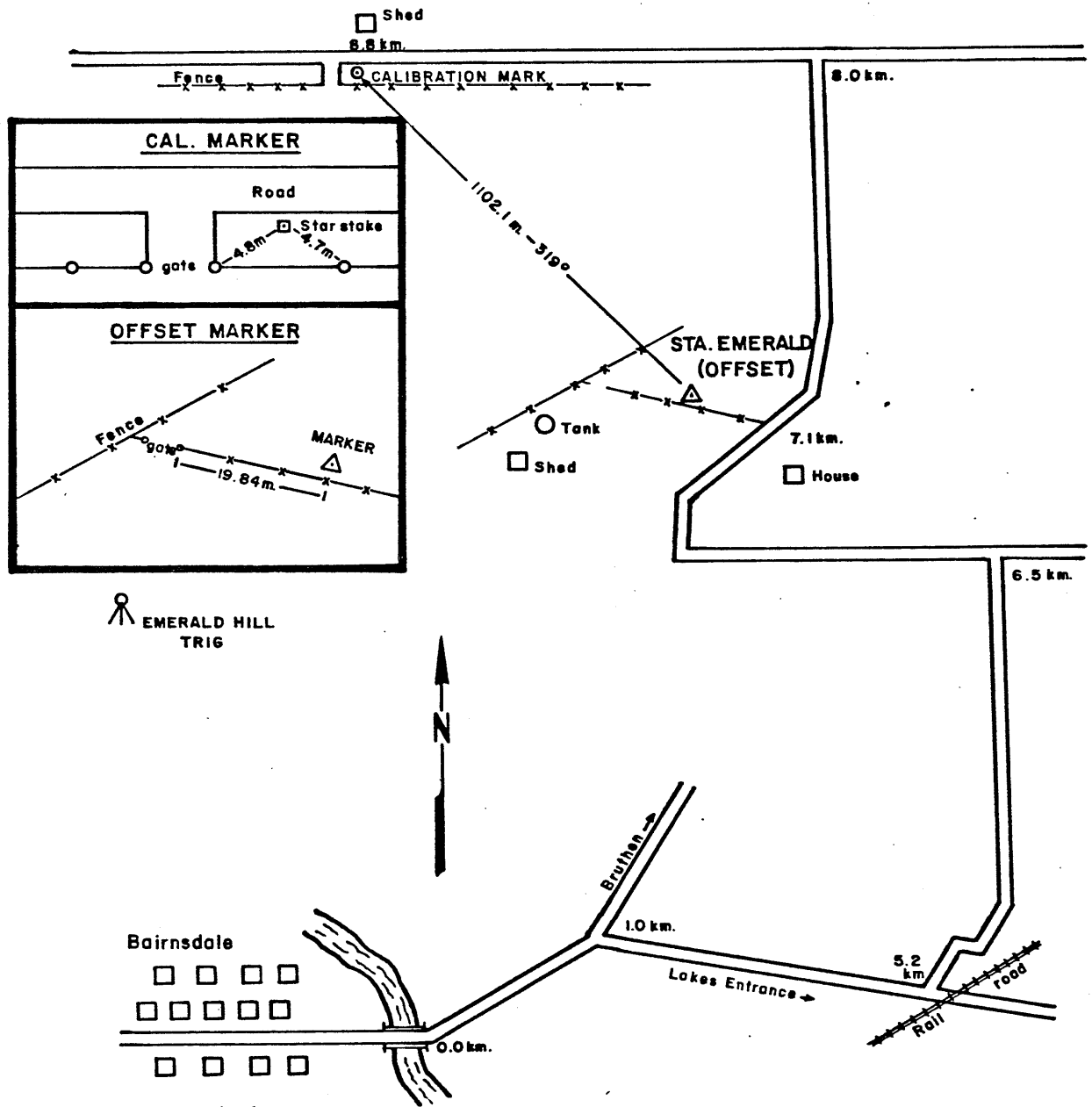
Lat. 37°48'48"60 S N = 5,814,632 meters
Long. 147°42'00"03 E E = 561,615 meters

STA. EMERALD (OFFSET) — AUSTRALIA

LAT. 37°48'48".60 S
 LONG. 147°42'00".03 E
 ELEV. 70 meters

N 5,814,632 meters
 E 561,615 meters

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



11/82/1419

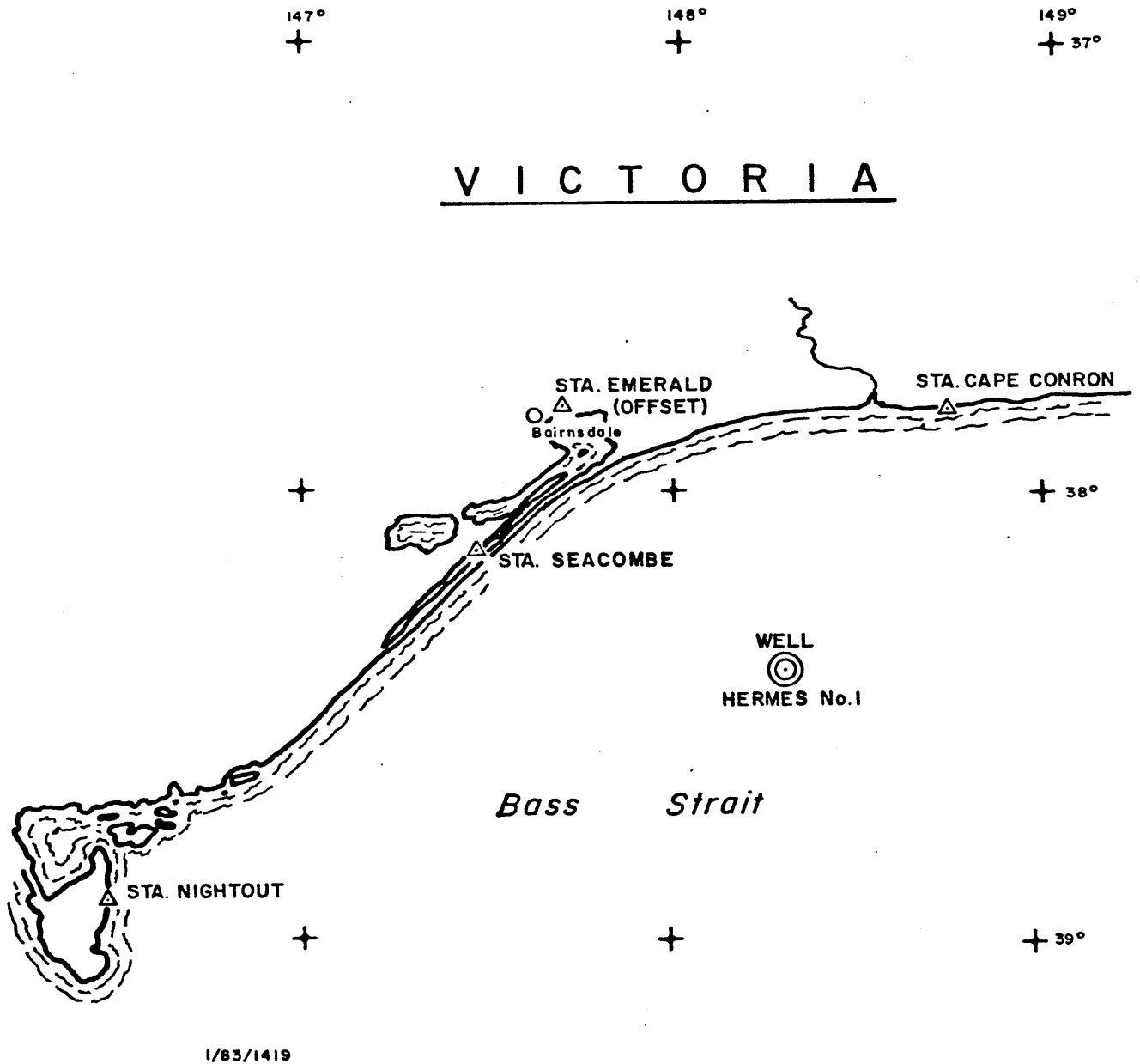
OFFSHORE NAVIGATION
 (AUSTRALIA) PTY. LTD.

WELL HERMES No.1 ————— AUSTRALIA

LAT. 38° 36' 08" 02 S
LONG. 148° 17' 54" 28 E

N 5,726,549 meters
E 613,061 meters

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



OFFSHORE NAVIGATION
(AUSTRALIA) PTY. LTD.

APPENDIX A
DAILY OPERATIONS LOGS

**OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG**

Project Number 1419 Date 10 FEB 1983 Boat RIG DIAMOND M EPOCH Client Party Number RIG LOCATION
 Geophysical Company N.A. Oil Company PHILLIPS PET. Radio Frequency 7840
 Country AUSTRALIA Area/Prospect BASS STRAIT Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	050	041	073	QUAD LPI'S

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
NIGHTOUT	P. DUNNE	429	036	122	006	5
SEACOMBE	B. HASSETT	429	067	040	055	3
COVRAN	D. RUSSELL	429	010	077	033	1

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
1800	2400	J. GOODIN	RIG LOCATION
O/T Requested By			Total System - Hours Operation for Client <u>6 HRS</u>

LOST TIME			
From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks
705-1745 MOBILE OF A EQUIPMENT BY CHAFFER TO RIG "DIAMOND M EPOCH"
2000 WEAK Sig FROM SEACOMBE
2130 " " " NIGHTOUT
2400 WORKING ON ANCHORS

Mobile Operators K. J. MOLLOY

Party Chief

[Signature]

Form N-1A

SEE INSTRUCTIONS ON REVERSE

**OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG**

Project Number 1419 Date 11 FEB 1983 Boat RIG DIAMOND M EPOCH Client Party Number RIG LOCATION
 Geophysical Company N.A. Oil Company PHILLIPS PET. Radio Frequency 7840
 Country AUSTRALIA Area/Prospect BASS STRAIT Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	<u>441</u>	<u>050</u>	<u>041</u>	<u>073</u>	<u>QUAD LPL'S</u>

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
<u>NIGHTOUT</u>	<u>P. DUNNE</u>	<u>429</u>	<u>036</u>	<u>122</u>	<u>006</u>	<u>5</u>
<u>SEACOMBE</u>	<u>B. HASSETT</u>	<u>429</u>	<u>067</u>	<u>040</u>	<u>055</u>	<u>3</u>
<u>CONRAN</u>	<u>D. RUSSELL</u>	<u>429</u>	<u>010</u>	<u>077</u>	<u>033</u>	<u>1</u>

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
<u>0001</u>	<u>2400</u>	<u>J. GOODIN</u>	<u>RIG LOCATION.</u>
O/T Requested By			Total System - Hours Operation for Client <u>24 HRS.</u>

LOST TIME			
From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks 0001. WORKING ON ANCHORS.
100 WEAK SIG FROM CONRAN. NIGHTOUT.
1735 3 WE. AT SELENE #1 LOC. ~~WEIGHT~~ 174.618 Km, SEACOMBE 100.573 Km.
CONRAN 94.137 Km.
1745 TOO ROUGH FOR ANCHOR WORK - STANDING BY.
2400 STANDING BY.

Mobile Operators K. J. MULLOY Party Chief [Signature]

**OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG**

Project Number 1419 Date 12 FEB 1983 Boat RIG DIAMOND M EPOCH Client Party Number RIG LOCATION
 Geophysical Company N.A. Oil Company PHILLIPS PET. Radio Frequency 7240
 Country AUSTRALIA Area/Prospect BASS STRAIT Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY <u>441</u>	INTERROGATOR <u>050</u>	MONITOR <u>041</u>	AMPLIFIER <u>073</u>	ANTENNA SYSTEM <u>QUAD LPE'S</u>
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BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
<u>WIGHTOUT</u>	<u>P. DUNNE</u>	<u>429</u>	<u>036</u>	<u>122</u>	<u>006</u>	<u>5</u>
<u>SEACONBE</u>	<u>B. HASSETT</u>	<u>429</u>	<u>067</u>	<u>040</u>	<u>055</u>	<u>3</u>
<u>CONRAN</u>	<u>D. RUSSELL</u>	<u>429</u>	<u>010</u>	<u>077</u>	<u>033</u>	<u>1</u>

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
<u>0001</u>	<u>2400</u>	<u>J GOODIN</u>	<u>RIG LOCATION</u>
O/T Requested By			Total System - Hours Operation for Client <u>24 HRS.</u>

LOST TIME			
From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks
001 - 2400. PICKING UP ANCHORS FOR SHIFT.

Mobile Operators K. J. MOLLOY Party Chief [Signature]

**OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG**

Job Number **1419** Date **12 FEB 1983** Boat **RIG DIAMOND M EPDM** Client Party Number **RIG LOCATION**
 Geophysical Company **N.A.** Oil Company **PHILLIPS PET.** Radio Frequency **7840**
 Country **AUSTRALIA** Area/Prospect **BASS STRAIT** Stepback **N.A.** Shot Point Interval **N.A.**

Mobile Station	FREQUENCY 441	INTERROGATOR 050	MONITOR 041	AMPLIFIER 073	ANTENNA SYSTEM QUAD LPL'S
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BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
WIGHTOUT	P. DUNNE	429	036	122	006	5
JEACOMBE	B. HASSETT	429	067	040	055	3
LOVRAN	D. RUSSELL	429	010	077	033	1

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
0001	2400	J. GOUDIN	RIG LOCATION.
O/T Requested By			Total System - Hours Operation for Client 24 HRS

LOST TIME			
From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks

001. PICKING UP ANCHORS.

020 ON TOW TO NEW LOCATION: HERMES #1.

075 ANCHOR #7 DROPPED.

1400 WORKING ANCHORS.

Mobile Operators **K. J. Molloy** Party Chief **[Signature]**

Form N-1A SEE INSTRUCTIONS ON REVERSE

**OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG**

Project Number 1419 Date 14 FEB 1983 Boat RIG DIAMOND M EP2M Client Party Number RIG LOCATION
 Geophysical Company N.A. Oil Company PHILLIPS PET. Radio Frequency 7840
 Country AUSTRALIA Area/Prospect BASS STRAIT Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY <u>441</u>	INTERROGATOR <u>050</u>	MONITOR <u>041</u>	AMPLIFIER <u>073</u>	ANTENNA SYSTEM <u>QUAD LPL'S</u>
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BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
<u>NIGHTOUT</u>	<u>P. DUNNE</u>	<u>429</u>	<u>036</u>	<u>122</u>	<u>006</u>	<u>5</u>
<u>SEACOMBE</u>	<u>B. HASSETT</u>	<u>429</u>	<u>067</u>	<u>040</u>	<u>055</u>	<u>3</u>
<u>C. COVRAN</u>	<u>D. RUSSELL</u>	<u>429</u>	<u>010</u>	<u>077</u>	<u>033</u>	<u>1</u>

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
<u>0001</u>	<u>2400</u>	<u>J. GOODIN</u>	<u>RIG LOCATION.</u>
O/T Requested By			Total System - Hours Operation for Client <u>24 HRS.</u>

LOST TIME			
From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks
0001 WORKING ANCHERS.
2020 SWF NIGHTOUT 163.320 SEACOMBE 89.490 COVRAN 95.889
2400 ANCHOR WORK.

Mobile Operators H. J. MALLORY Party Chief [Signature]

**OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG**

Project Number 1419 Date 15 FEB 1983 Boat RIG DIAMOND M RFXH Client Party Number RIG LOCATION
 Geophysical Company N.A. Oil Company PHILLIPS PET. Radio Frequency 7840
 Country AUSTRALIA Area/Prospect BASS LOCAT Stepback NA Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	050	041	073	QUAD LPL'S

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
NIGHTOUT	P. DINNÉ	429	036	122	006	5
SEACOMBE	B. HASSETT	429	067	040	055	3
C. COVRAN	D. RUSSELL	429	010	077	033	1

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
0001.	2400	J. GODIN	RIG CALIBRATION.
O/T Requested By			Total System - Hours Operation for Client

LOST TIME			
From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks 0001 ANCHOR WORK.
0015 3WF. NIGHTOUT 163.327, SEACOMBE 89.551, COVRAN 95.944.
0100 - 0250 FINAL MANOUEVERING TO WORKING TENSION ON ANCHORS.
0250 3WF NIGHTOUT 163.329, SEACOMBE 89.561, COVRAN 95.945
PRELIMINARY FINAL.
0650 BEGIN "SPUDDING IN" 30 INCH CASING.
0400 ATTEMPTING TO "SPUD IN".
0700 . PRELIM FINAL FIX PUTS MOUPOOL APPROX. 5.5 METRES OFF LOCATION.

Mobile operators K. J. MULLOY. Party Chief [Signature]
 Form N-1A SEE INSTRUCTIONS ON REVERSE

**OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG**

Date 16 FEB 1983 Client Party RIG DIAMOND M EPOCH Client Party Number RIG LOCATION
 Oil Company PHILLIPS PET. Radio Frequency 7260
 Area/Prospect N.A. Stepback N.A. Shot Point Interval N.A.

Country <u>AUSTRALIA</u>	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
Mobile Station <u>441</u>		<u>050</u>	<u>041</u>	<u>073</u>	<u>QUAD HL'S</u>

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
<u>WIGHTOUT</u>	<u>P. DUNNE</u>	<u>429</u>	<u>036</u>	<u>122</u>	<u>006</u>	<u>5</u>
<u>BEACON BE</u>	<u>D. HASSETT</u>	<u>429</u>	<u>067</u>	<u>040</u>	<u>055</u>	<u>3</u>
<u>PCV RAN.</u>	<u>D. RUSSELL</u>	<u>429</u>	<u>010</u>	<u>077</u>	<u>033</u>	<u>1</u>

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
<u>0001</u>	<u>2400</u>	<u>J. GOODIN</u>	<u>RIG LOCATION</u>
O/T Requested By			Total System - Hours Operation for Client <u>24 Hrs</u>

LOST TIME			
From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks

2:00 ATTEMPTING TO SET 30" CASING.

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Mobile Operators K. J. MOLLOY Party Chief [Signature]

SEE INSTRUCTIONS ON REVERSE

**OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG**

Project Number 1419 Date 17 FEB 1983 Boat RIG DIAMOND M EPOCH
 Geophysical Company N.A. Area/Prospect BASS STRAIT Stepback N.A.
 Client Party Number RIG LOCATION
 Radio Frequency 7860
 Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	050	041	073	QUAD LPL ^S

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
NIGHT OUT	P. DUNNE	429	036	122	006	5
SEALONDE	B. HASSETT	429	067	040	055	3
CONRAN	D. RUSSELL	429	010	677	033	1

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
0001.	2400	J. GOODWIN	RIG LOCATION
O/T Requested By			Total System - Hours Operation for Client 24 HRS.

LOST TIME			
From	To	Hours Lost	Reason(s)

Brief Operations Log & Remarks
 0001. ATTEMPTING TO SP-D IN 30" CASING
 2400 " " " " " " "

Mobile Operators K. J. Miller Party Chief McCoy
 Form N-1A SEE INSTRUCTIONS ON REVERSE

**OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG**

Project Number 1419 Date 18 FEB 1983 Boat RIG DIAMOND M EPOCH Client Party Number RIG LOCATION
 Geophysical Company N.A. Oil Company PHILLIPS P.E.T. Radio Frequency 7840
 Country AUSTRALIA Area/Prospect BASS STRAIT Stepback N.A. Shot Point Interval N.A.

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441	050	041	073	QUAD LPL'S

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
NIGHTOUT	P. DUNNE	429	036	122	006	5
SEACOMBE	B. HASSETT	429	067	040	055	3
R. COVRAN	D. RUSSELL	429	010	077	033	1

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
0001.	1100	J. Goodwin	RIG LOCATION.

O/T Requested By _____ Total System - Hours Operation for Client 1100 HRS.

LOST TIME			
From	To	Hours Lost	Reason(s)

Chief Operations Log & Remarks
 0001. SHUDDING IN.
 * 1015. FINAL FIX. NIGHTOUT 163:334, SEACOMBE 89:557, R. COVRAN 95:934.
 MCDONNELL BEARS 107° FROM ANTENNA. DIST. 28 METERS.
 1100 SECURE NET.
 * FINAL FIX TAKEN AFTER RIG MANOEUVERED ON ANCHOR CHAIN TO
 INSERT 30 INCH CASING. ENDED UP APPROX 16 METRS OFF LOCATION.

Mobile Operators K. J. Molloy Party Chief [Signature]
 Form N-1A SEE INSTRUCTIONS ON REVERSE

APPENDIX B

THE MAXIRAN RADIOPOSITIONING SYSTEM

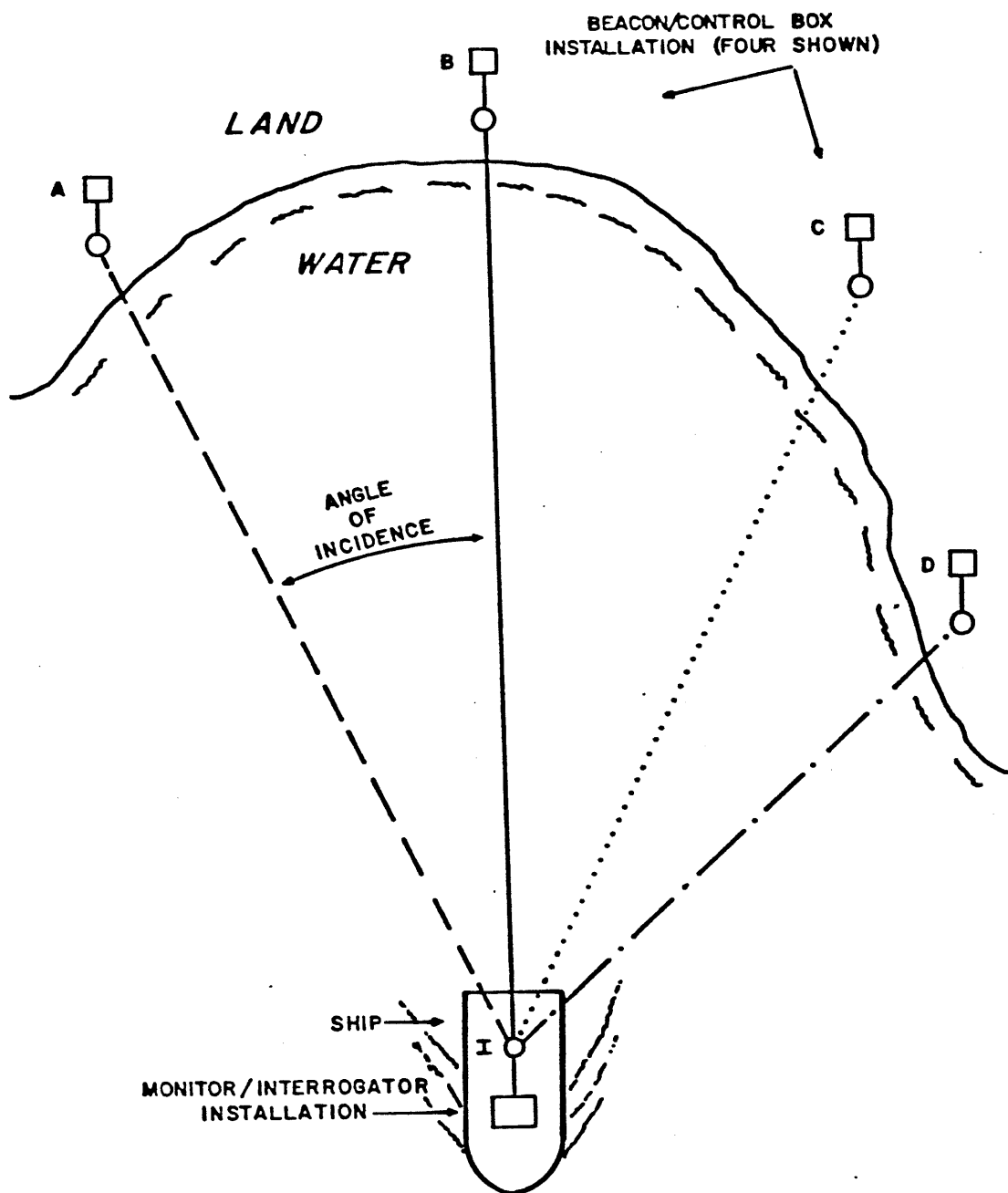
I. THE MAXIRAN RADIOPOSITIONING SYSTEM

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



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 A_1), and the distance from Beacon "B" to the Interrogator (call it distance B_1) 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

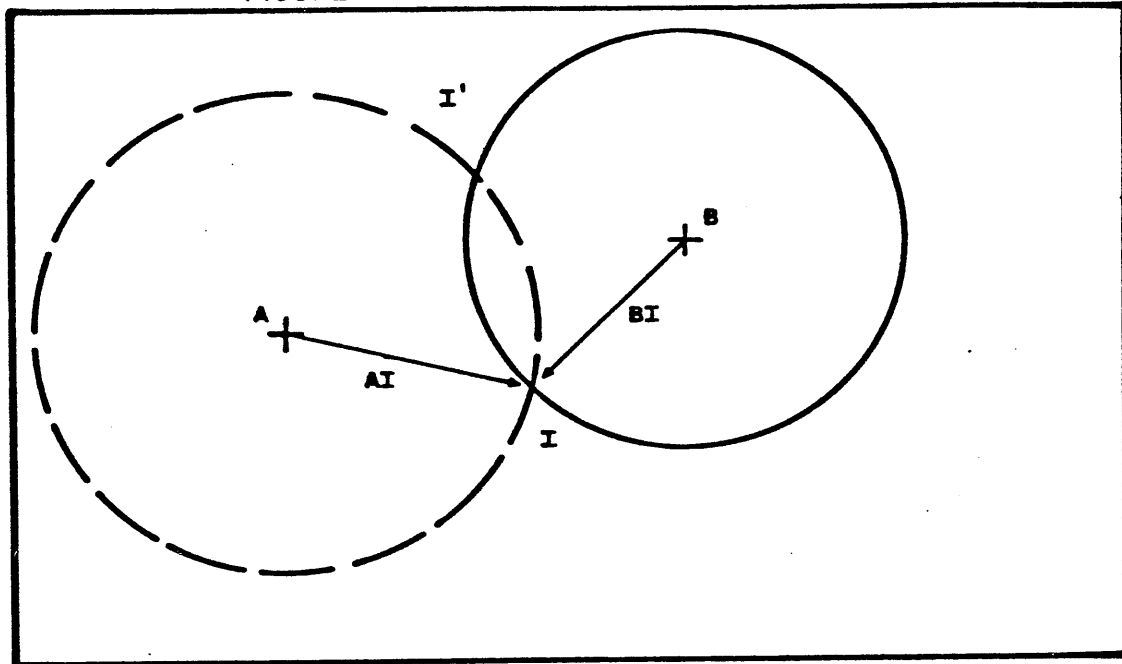
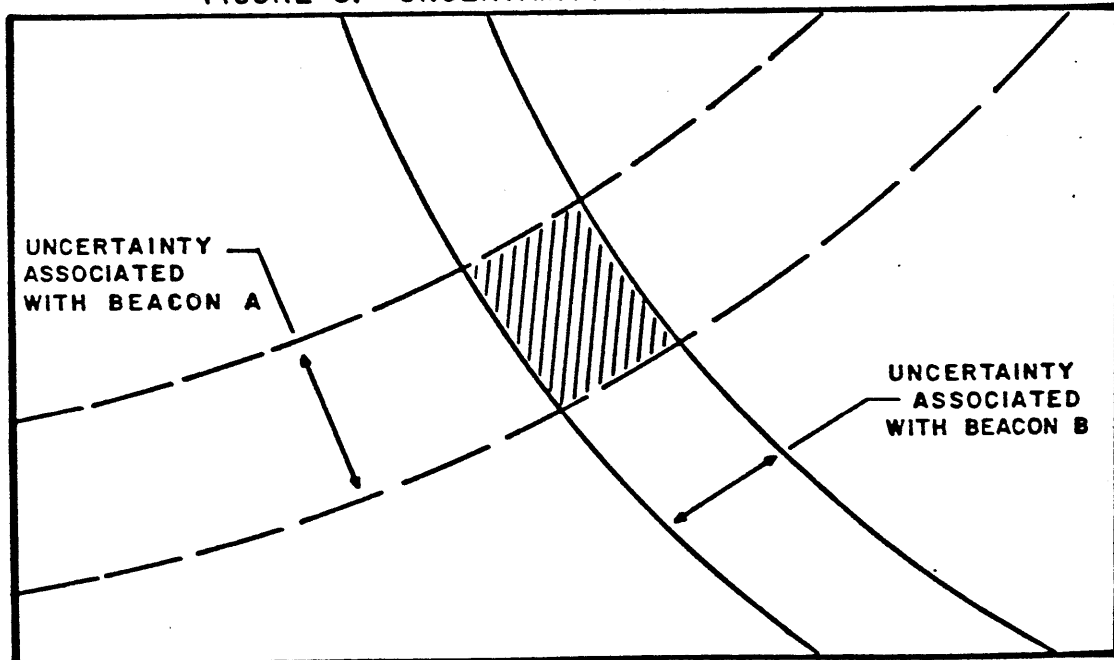


FIGURE-3. UNCERTAINTY WITH TWO BEACONS



UNCERTAINTY
ASSOCIATED
WITH BEACON A

UNCERTAINTY
ASSOCIATED
WITH BEACON B

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 C_1), defines a circle of radius length C_1 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

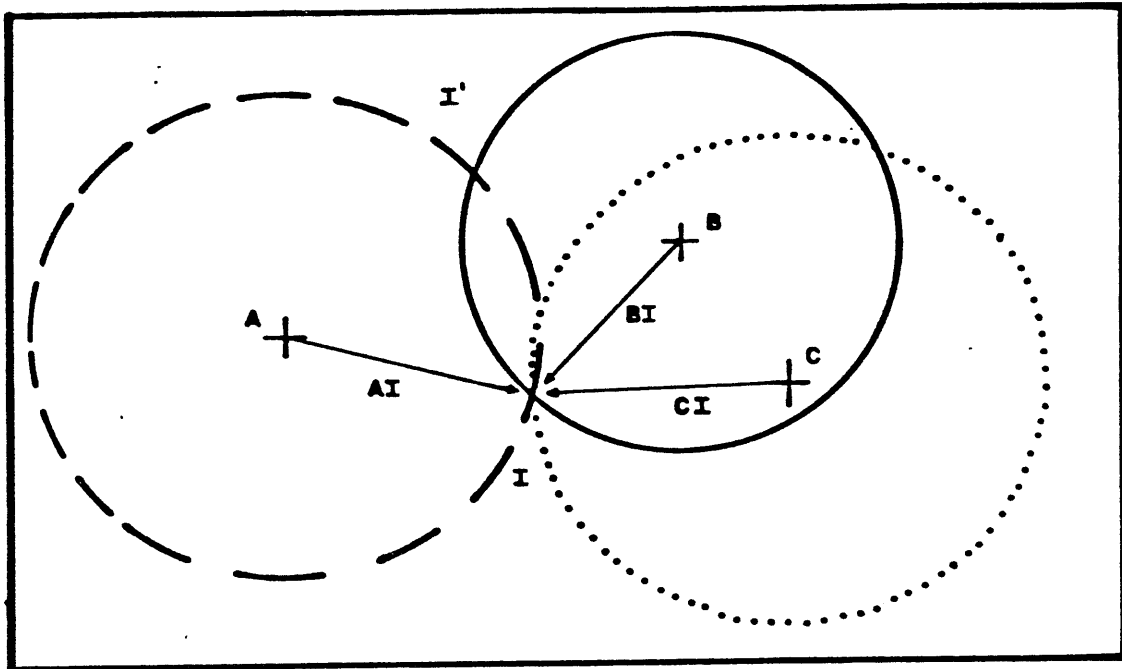
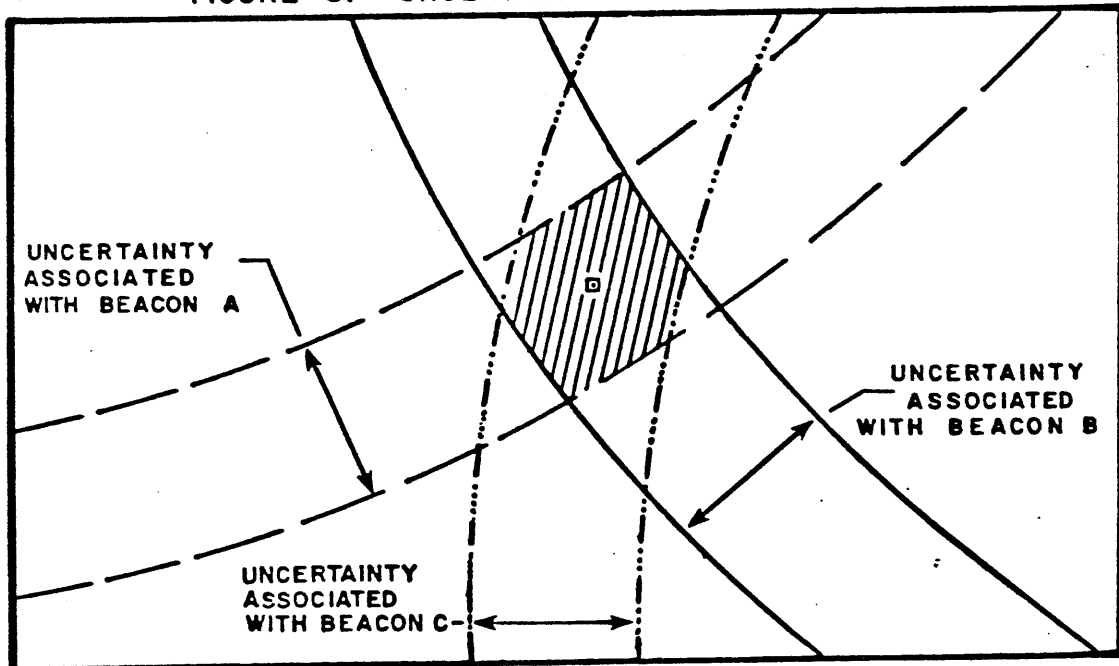


FIGURE-5. UNCERTAINTY WITH THREE BEACONS



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.