

DEPT. NAT. RES & ENV



PE906318

FINAL REPORT

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

PROJECT 1419

WELL LOCATION SELENE-1

W795 Final Report
DECEMBER, 1982 11 JUL 1983

OIL and GAS DIVISION

ADDENDUM 1

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

FOR
PHILLIPS AUSTRALIAN OIL COMPANY

VICTORIA, AUSTRALIA
WELL LOCATION SELENE #1

DECEMBER 1982

OFFSHORE NAVIGATION
(AUSTRALIA) PTY. LTD.

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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 SELENE #1

The survey was conducted in Bass Strait, off the coast of Victoria, Australia. The well was located approximately 94 kilometers, at a bearing of 016° , from Cape Conran, Victoria.

The ONA base of operation was established at Bairnsdale, Victoria on 16 December 1982.

II. FIELD OPERATIONS RECAP

ONA personnel travelled to Melbourne on 16 December 1982. The Maxiran equipment necessary was air freighted from Perth to Melbourne, and arrived on 16 December. ONA Personnel and the Maxiran system then travelled to Bairnsdale, arriving on 16 December 1982.

The Maxiran system was calibrated on 17 December 1982 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 began 17 December 1982, and was completed on 18 December 1982.

The ONA mobile operator and mobile equipment were transported to the Drilling Vessel (D/V) DIAMOND M EPOCH on 17 December, arriving on board the rig at 1900 hours that date. Installation of the Maxiran mobile equipment on board the D/V DIAMOND M EPOCH was completed on 18 December 1982.

II. FIELD OPERATIONS RECAP (continued)

Moving of the D/V DIAMOND M EPOCH from its position at Well Location HELIOS #1 was delayed due to weather.

Towing of the D/V DIAMOND M EPOCH to Well Location SELENE #1 began at 0045 hours 22 December 1982. The D/V DIAMOND M EPOCH arrived in the location area, and the first anchor was dropped at 0805 hours 22 December. The anchors were secured, and drilling operations began at 1900 hours 25 December, 1982.

A final Maxiran reading was recorded at 09:30 hours 28 December 1982 after the 30-inch casing was cemented. The Maxiran system was released at 1100 hours 28 December 1982.

Dismantling of the Maxiran system began on 28 December 1982 and was completed on 29 December. The Maxiran system was packaged and shipped to the ONA office in Perth by surface freight on 30 December, and arrived at the ONA Perth, W.A. office at 1700 hours 31 December 1982.

II. FIELD OPERATIONS RECAP (continued)

The ONA mobile operator and one base operator was released from this survey on 29 December 1982. The two remaining ONA base operators were released on 30 December. The ONA party chief drove the truck containing the Maxiran system to Perth, and was released on his arrival in Perth on 31 December, 1982.

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 Mr. J. Goodin, the PHILLIPS representative, on 28 December 1982. The final Maxiran position of the drill stem was computed by the ONA office in Perth.

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 (OFFSET)

STATION NIGHTOUT

STATION SEACOMBE (OFFSET)

III. GENERAL INFORMATION (continued)

- F. The maximum range observed by the Maxiran system during this survey was 175 kilometers. Some difficulties were experienced in this survey in receiving Maxiran signals due to adverse weather conditions.
- G. The Maxiran mobile equipment was checked daily for proper delay setting. The delay setting was determined by a Maxiran Calibration conducted on 17 December 1982.

IV. MAXIRAN CALIBRATION

The Maxiran system was calibrated on 17 December 1982, prior to the commencement of the Well Location SELENE #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.

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MAXIRAN CALIBRATION REPORT

DATE: DEC 17TH 1982

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
OPERATOR: A. HOGGART			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	075 CODE 3
INTERROGATOR	NTM-01	012	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	006
AMPLIFIER P/S	NCU-01	037	AMPLIFIER P/S	NCU-01	076
PREAMP	SAU-12	056	PREAMP	SAU-12	155
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS RG-8 & RG-58	74' 33'		ANDREWS RG-8 & RG-58	74' 44'
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	OMNI	10'		QUAD L.P.Ls	10'
INPUT VOLTAGE		117V AC	INPUT VOLTAGE		117V AC
TX. FREQUENCY		441 MHz	TX. FREQUENCY		429 MHz
RX. FREQUENCY		429 MHz	RX. FREQUENCY		441 MHz
RX. GAIN SETTING		AGC	RX. GAIN SETTING		AGC
WEATHER CONDITIONS		WARM SUNNY ± 26°C	WEATHER CONDITIONS		WARM SUNNY ± 26°C

OBSERVED RANGE IN CALIBRATE: 6.108 KM
 COMPUTED SLANT RANGE: 1.102 KM
 MOBILE ZERO SETTING IS: 5.006 KM
 OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1120

SIGNED: 

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.

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MAXIRAN CALIBRATION REPORT

DATE: DEC 17TH 1980

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
OPERATOR: A. HOGGART			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	075 <small>CODE 3</small>
INTERROGATOR	NTM-01	012	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	006
AMPLIFIER P/S	NCU-01	037	AMPLIFIER P/S	NCU-01	076
PREAMP	SAU-12	056	PREAMP	SAU-12	155
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS RG-8 & RG-58	74' 41'		ANDREWS RG-8 & RG-58	74' 44'
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	QUAD L.P.Ls	10'		QUAD L.P.Ls	10'
INPUT VOLTAGE		117V AC	INPUT VOLTAGE		117V AC
TX. FREQUENCY		441 MHz	TX. FREQUENCY		429 MHz
RX. FREQUENCY		429 MHz	RX. FREQUENCY		441 MHz
TX. GAIN SETTING		AGC	RX. GAIN SETTING		AGC
WEATHER CONDITIONS		WARM SUNNY 22.6°C	WEATHER CONDITIONS		WARM SUNNY 22.6°C

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: 1125

SIGNED: 

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.
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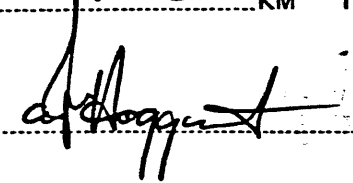
10

MAXIRAN CALIBRATION REPORT

DATE: Dec 17TH 1982

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
OPERATOR: A. HOGGART			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM1-01B	041	BEACON	NTL-01	075 CODE 3
INTERROGATOR	NTM-01	009	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	006
AMPLIFIER P/S	NCU-01	037	AMPLIFIER P/S	NCU-01	076
PREAMP	SAU-12	056	PREAMP	SAU-12	155
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS RG-8 & RG-58	74' 41'		ANDREWS RG-8 & RG-58	74' 44'
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	QUAD L.P.L.s	10'		QUAD L.P.L.s	10'
INPUT VOLTAGE		117V AC	INPUT VOLTAGE		117V AC
TX. FREQUENCY		441 MHz	TX. FREQUENCY		429 MHz MHz
RX. FREQUENCY		429 MHz	RX. FREQUENCY		441 MHz
RX. GAIN SETTING		AGC	RX. GAIN SETTING		AGC
WEATHER CONDITIONS		WARM SUNNY = 26°C	WEATHER CONDITIONS		WARM SUNNY = 26°C

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: 1133

SIGNED: 

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.

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MAXIRAN CALIBRATION REPORT

DATE: DEC 17TH 1982

MOBILE STATION			BASE STATION		
LOCATION: EMERALD HILL OFFSET			LOCATION: EMERALD HILL CALIBRATION		
OPERATOR: A. HOGGART			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	075 CODE 3
INTERROGATOR	NTM-01	009	CONTROL BOX	NCL-02	077
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-02	006
AMPLIFIER P/S	NCU-01	037	AMPLIFIER P/S	NCU-01	076
PREAMP	SAU-12	056	PREAMP	SAU-12	155
COAX	TYPE	LENGTH	COAX	TYPE	LENGTH
	ANDREWS RG-8 & RG-58	74' 33'		RG-8 & RG-58	43'
ANTENNA	TYPE	HEIGHT	ANTENNA	TYPE	HEIGHT
	OMNI	10'		QUAD L.P.Ls	10'
INPUT VOLTAGE		117 V AC	INPUT VOLTAGE		117 V AC
TX. FREQUENCY		441 MHz	TX. FREQUENCY		441 MHz
RX. FREQUENCY		429 MHz	RX. FREQUENCY		429 MHz
RX. GAIN SETTING		AGC	RX. GAIN SETTING		AGC
WEATHER CONDITIONS		WARM SUNNY 26°C	WEATHER CONDITIONS		WARM SUNNY 26°C

OBSERVED RANGE IN CALIBRATE: 6.084 KM
 COMPUTED SLANT RANGE: 1.102 KM
 MOBILE ZERO SETTING IS: 4.982 KM
 OBSERVED RANGE IN OPERATE: 1.102 KM TIME: 1207

SIGNED: 

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.
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.

V. WELL LOCATION INFORMATION

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

Coordinates of the desired location were obtained from PHILLIPS as:

Latitude	38°37'24".97 S	N = 5,723,998 meters
Longitude	148°26'11".51 E	E = 625,051 meters

The D/V DIAMOND M EPOCH was secured on location, and the following final Maxiran ranges were recorded at 1400 hours 27 December 1982, with the Maxiran mobile equipment installed on board the rig:

Sta. C. Conran (Off) to mob. ant.	94.099 kilometers
Sta. Nightout to mobile antenna	174.620 kilometers
Sta. Seacombe (Off to mob. ant.)	100.891 kilometers

At the time these final Maxiran ranges were recorded, the drill stem was 28 meters, at a bearing of 104° True, from the Maxiran mobile antenna.

V. WELL LOCATION INFORMATION (continued)

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

Latitude 38°37'25"16 S N = 5,723,992 meters
Longitude 148°26'11"37 E E = 625,048 meters
Least square adjusted tie = .11 meter
From desired to final position = 6.8 m. @ 210.029° True

The final coordinates of the drill stem were derived by applying a propagation factor of .99993, 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 (OFFSET):

Latitude 37°48'29"33 S N = 5,814,047 meters
 Longitude 148°43'46"56 E E = 652,255 meters
 Elevation 43 meters
 The Maxiran tower was OFFSET 30 meters, at a bearing of 200° True, from the Station Cape Conran marker.

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 (OFFSET):

Latitude 38°07'58"73 S N = 5,779,314 meters
 Longitude 147°27'51"47 E E = 540,690 meters
 Elevation 28 meters
 The Maxiran tower was OFFSET 23 meters, at a bearing of 355°, from the Station Seacombe marker.

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
Hoggart, A.	Mobile Operator
Smith, G.	Base Operator
Walsh, S.	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

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 (OFFSET)

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, to Cape Conran, a distance of approximately 5 miles from Marlo. After passing Marlo, you will come to a fork in the road. Turn right at this fork, and drive on a gravel road for approximately one-half mile to a boat ramp and lighthouse. Before reaching the boat ramp or lighthouse, a sand track will be seen on the left. 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".

During the December 1982 Well Location SELENE #1 survey, the Maxiran tower was OFFSET 30 meters, at a bearing of 200° True, from the station marker. This OFFSET position was marked by a star stake at ground level, with the tower connector bolted to the star stake. Coordinates listed in this description are for the OFFSET position.

STATION: CAPE CONRAN (OFFSET) (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°48'29"33 S N = 5,814,047 meters
Long. 148°43'46"56 E E = 652,255 meters

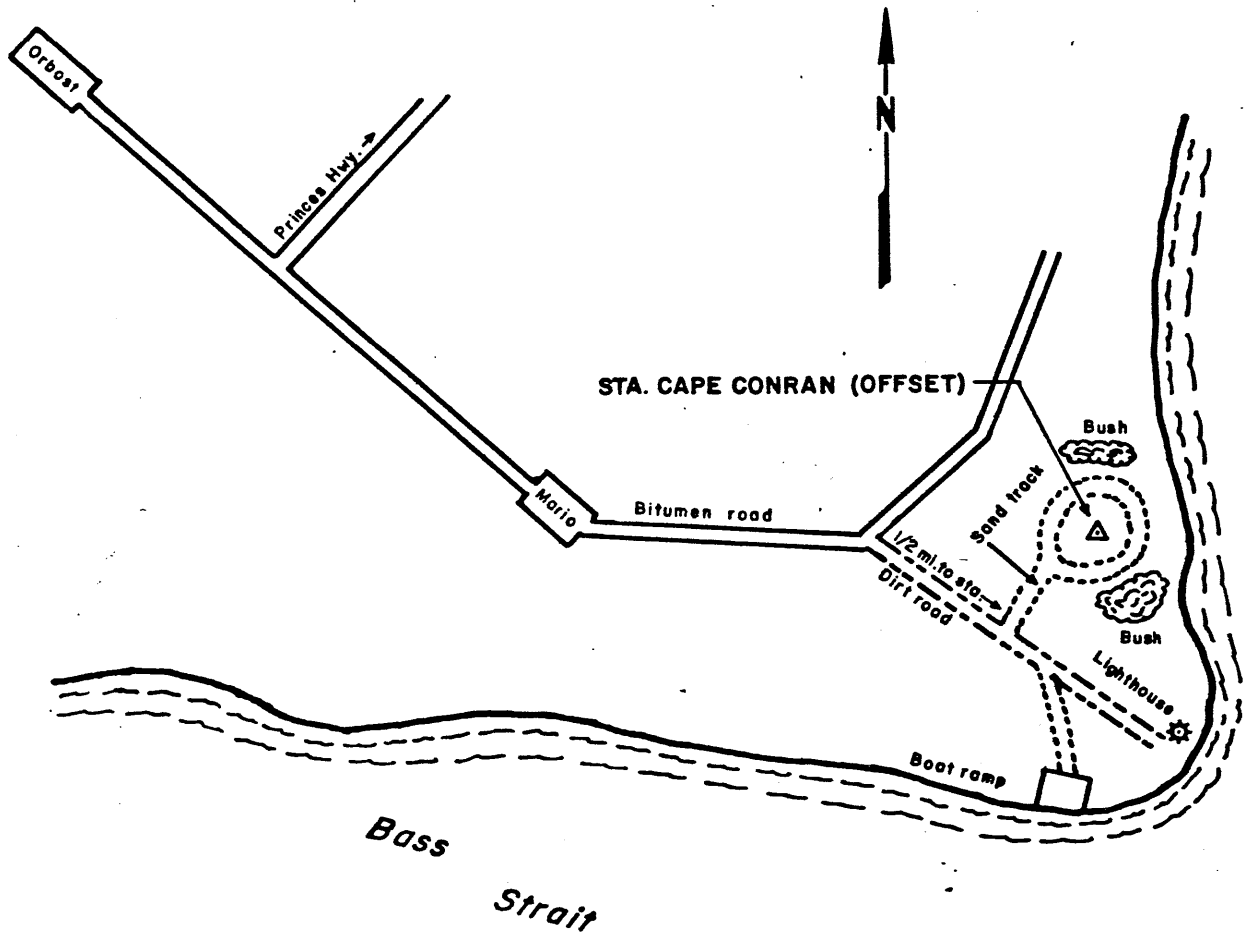
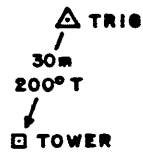
STA. CAPE CONRAN (OFFSET) — AUSTRALIA

LAT. 37°48'29".33 S
LONG. 148°43'46".56 E
ELEV. 43 meters

N 5,814,047 meters
E 652,255 meters

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

OFFSET DETAILS



12/82/1419

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.

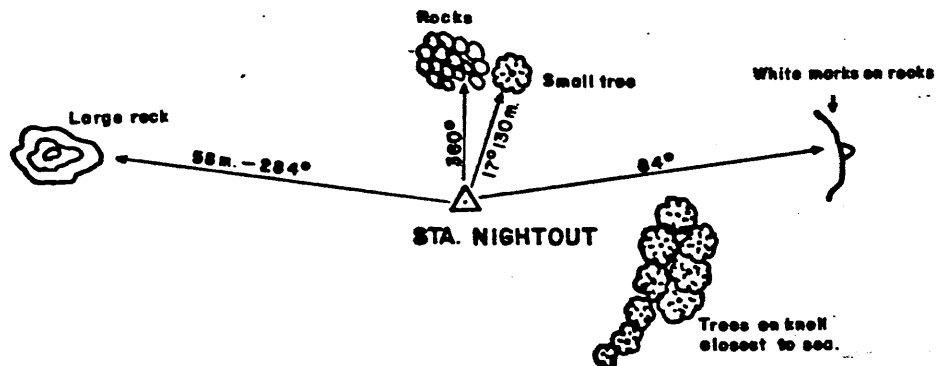
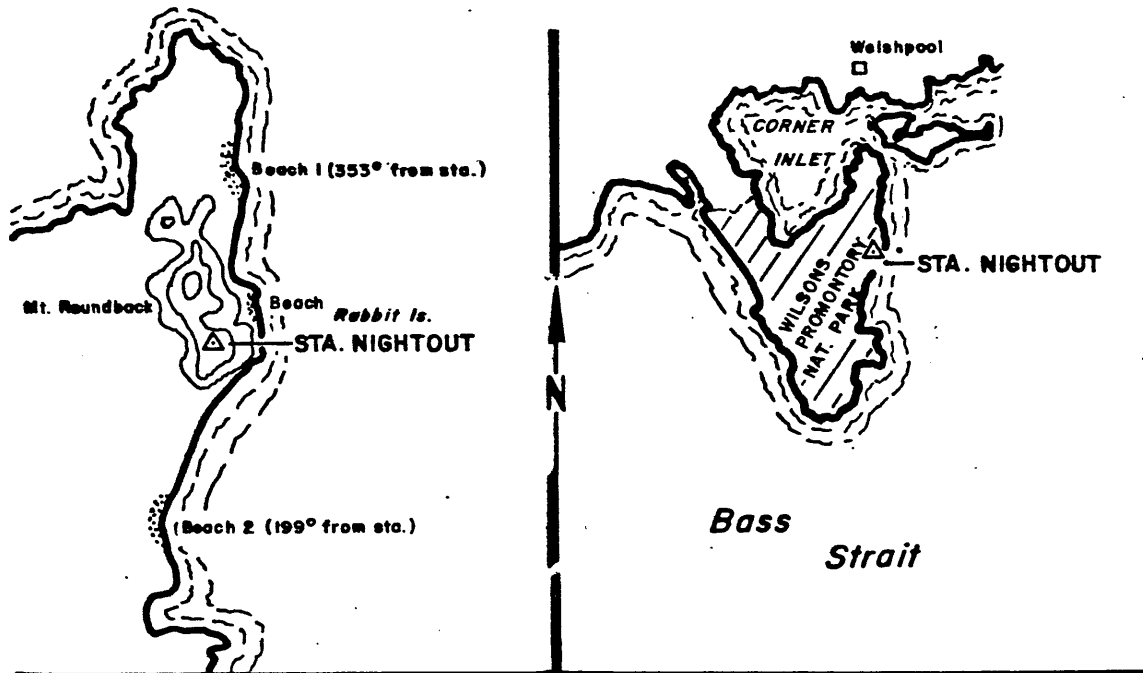
Lat. 38°54'29".93 S N = 5,693,244 meters
Long. 146°27'37".03 E E = 453,205 meters

STA. NIGHTOUT — AUSTRALIA

LAT. 38°54'29"30 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 (OFFSET)

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 towards Sale to Longford. On reaching the entrance to Longford, turn off towards Dutson and Golden Beach. Turn left towards Lock Sport and Seacombe, approximately 26 kilometers past Longford. Drive 12.5 kilometers on this road to track on the right hand side of the road that is sign-posted "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 (OFFSET) (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 - 69104 - 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.

During the December 1982 Well Location SELENE #1 survey, the Maxiran tower was OFFSET 23 meters, at a bearing of 355°, from the station marker. This OFFSET position was marked by a star stake at ground level, with the tower connector bolted to the star stake. Coordinates listed in this description are for the OFFSET position.

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.

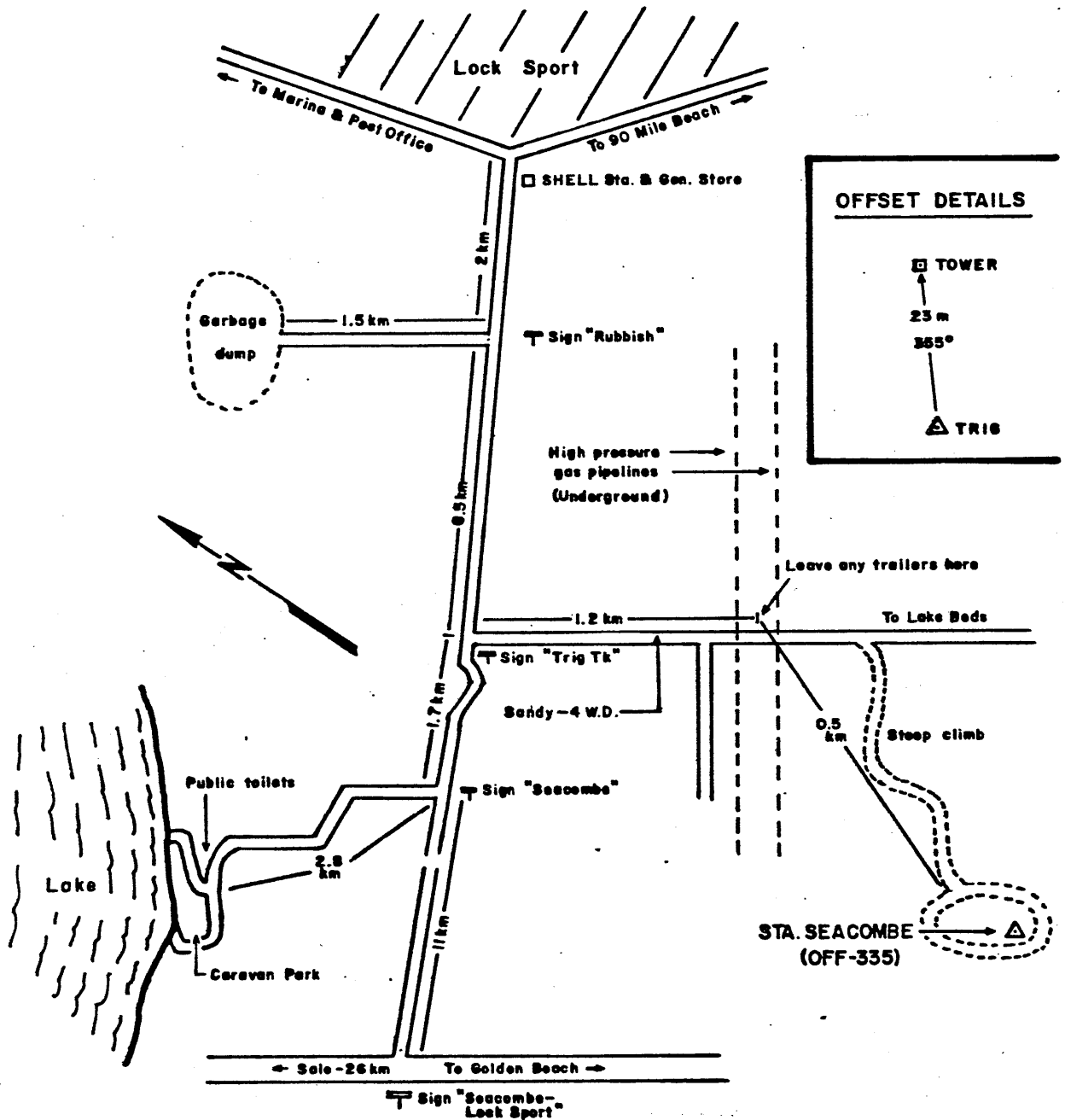
Lat.	38°07'58"73 S	N = 5,779,314 meters
Long.	147°27'51"47 E	E = 540,690 meters

STA. SEACOMBE (OFF-355) — AUSTRALIA

LAT. 38°07'58".73 S
 LONG. 147°27'51".47 E
 ELEV. 28 meters

N 5,779,314 meters
 E 540,690 meters

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



12/82/1419

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

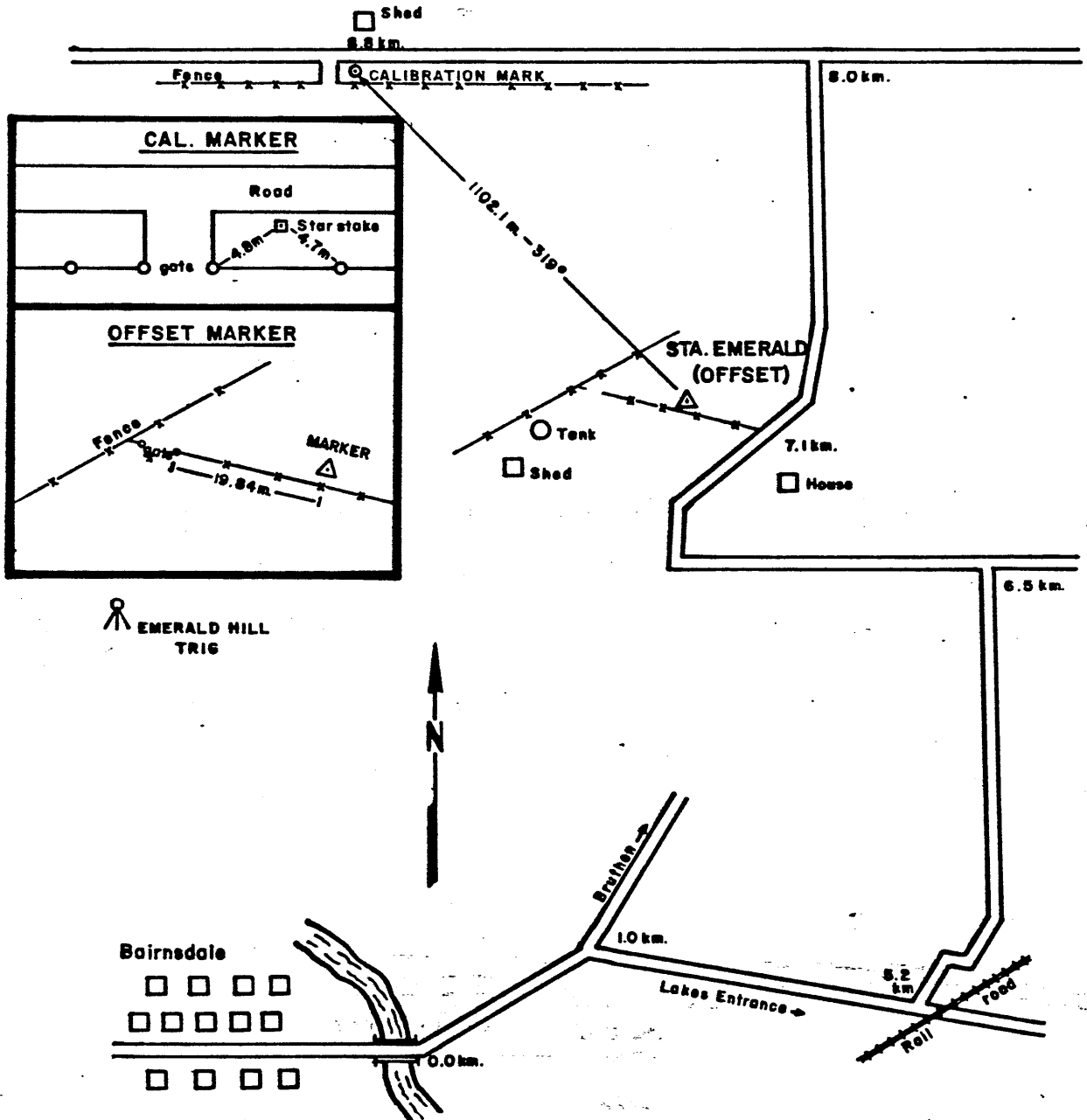
Long. 147°42'00"03 E E = 561,615 meters

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.



N/82/1419

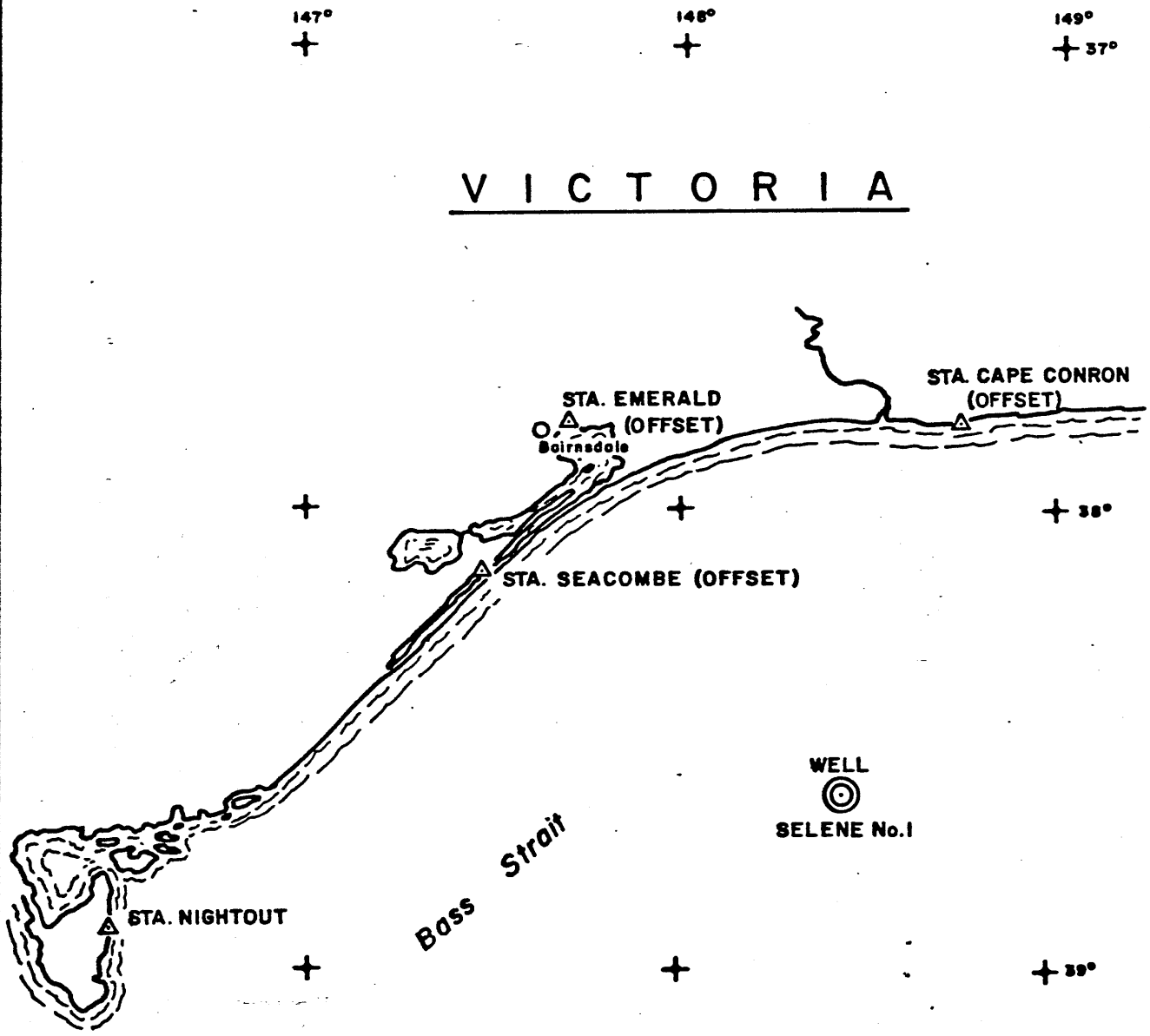
OFFSHORE NAVIGATION
 (AUSTRALIA) PTY. LTD.

WELL SELENE No.1 ————— AUSTRALIA

LAT. 38°37'25".16 S
LONG. 148°26'11".37 E

N 5,723,992 meters
E 625,048 meters

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



12/82/1419

OFFSHORE NAVIGATION
(AUSTRALIA) PTY. LTD.

APPENDIX A
DAILY OPERATIONS LOGS

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number **P 1419** Date **Dec 17th 1982** Boat **DIAMOND M EPOCH** Client Party Number **SELENE N° 1**
 Geophysical Company _____ Oil Company **PHILLIPS** Radio Frequency **7840 KHZ**
 Country **AUSTRALIA** Area/Prospect **VIC / P18** Stepback _____ Shot Point Interval _____

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	461 MHZ	009	041	073	WHIP

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
NIGHTOUT	G. SMITH	429MHZ	064	122	035	85
SEA COMBE	S. WALSH	429MHZ	067	077	016	3
CONRAN	G. WELLS	429MHZ	006	040	033	51

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
1000	1215	J. GOODIN	CALIBRATION
O/T Requested By _____			Total System - Hours Operation for Client 2h 15m

LOST TIME			
From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks
1000 - 1215 CALIBRATION AS PER CALIBRATION LOGS
STATIONS BEING SET
1900 MOB OPP & EQUIPMENT ABOARD "EPOCH"
COMMENCE INSTILLATION

Operator **A. HOGGART**

Party Chief **H. BRIDGES**
 SEE INSTRUCTIONS ON REVERSE

Form N-1A

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number **P 1419** Date **DEC 18TH 1982** Boat **DIAMOND M. EPOCH** Client Party Number **SELENE N° 1**
 Geophysical Company **PHILLIPS** Oil Company **PHILLIPS** Radio Frequency **2840 KHZ**
 Country **AUSTRALIA** Area/Prospect **Vic / P18** Stepback _____ Shot Point Interval _____

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441 MHZ	009	041	073	WHIP

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code / <i>py</i>
NIGHTOUT	G. SMITH	229 MHZ	064	122	035	5 / 5.003
SEACOMBE <i>OFF</i>	S. WALSH	229 MHZ	067	077	016	3 / 5.003
CONRAN <i>OFF</i>	G. WELLS	229 MHZ	006	040	033	3 / 5.003

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
1400	2400	J. GOODIN	RIG POSITIONING
O/T Requested By			Total System - Hours Operation for Client 10h 0m

LOST TIME			
From	To	Hours Lost	Reason(s)
		NIL	

Chief Operations Log & Remarks

COMPLETE MOBILE INSTALLATION

1200 RADIO CHECK W/STATIONS
SEACOMBE NEW OFFSET 23m @ 355° FROM ORIGINAL

1400 SYSTEM ON IN OPERATE SIGNALS OK

1700 CHECK 3 WAY N=159.481 S=94.366 C=106.101

1830 CHECK 3 WAY N=159.508 S=94.431 C=106.141

2400 PULLING ANCHORS

Mobile Operators **A. HOGGART** Party Chief **H. BRIDGES**

Form N-1A SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number P.419 Date DEC 19TH 1982 Boat DIAMOND M. EPOCH Client Party Number SELENE N°1
 Geophysical Company PHILLIPS Oil Company PHILLIPS Radio Frequency 7840 KHz
 Country AUSTRALIA Area/Prospect VIC / P18 Stepback Shot Point Interval

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441 MHz	009	041	073	WHIP

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code/Dy
NIGHTOUT	R. SMITH	429 MHz	064	122	035	5/5.003
MACOMBE OFF	S. WALSH	429 MHz	067	077	016	3/5.003
CONRAN OFF	G. WELLS	429 MHz	006	040	033	1/5.003

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

LOST TIME			
From	To	Hours Lost	Reason(s)
		NIL	

Chief of Operations Log & Remarks 0001 WAITING ON WEATHER
PERIODIC RADIO CHECKS
1200 CHECK 3 WAY N=159.505 S=94.410 C=106.120
1400 WAITING ON WEATHER

Mobile Operators A. HOLLGART Party Chief H. BRIDGES

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

Project Number **P1419** Date **DEC 20TH 1982** Boat **DIAMOND M EPOCH** Client Party Number **SELENNE NO 1**
 Geophysical Company **PHILLIPS** Oil Company **PHILLIPS** Radio Frequency **7840 KHZ**
 Country **AUSTRALIA** Area/Prospect **Vic/P18** Stepback _____ Shot Point Interval _____

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441 MHZ	009	041	073	WHIP

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code /dy
NIGHTOUT	G. SMITH	429 MHZ	064	122	035	5/5.003
SEACOMBE OFF	S. WALSH	429 MHZ	067	077	016	3/5.003
CONRAN OFF	G. WELLS	429 MHZ	006	040	033	1/5.003

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
0001	2000	J. GOODIN	RIG POSITIONING
O/T Requested By			Total System - Hours Operation for Client 20h On

LOST TIME			
From	To	Hours Lost	Reason(s)
		NIL	

Chief Operations Log & Remarks **0001 WAITING ON WEATHER**
1400 TOLD BY HELICOPTER PILOT THAT ANTENNA MUST BE MOVED - TOO WINDY AT PRESENT TIME
2000 SECURE STATIONS FOR THE NIGHT
2100 WAITING ON WEATHER

Mobile Operators **A. HOGGART** Party Chief **H. BRIDGES**

Form N-1A SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number P1119 Date DEC 21ST 1982 Boat DIAMOND M EPOCH Client Party Number SELENG N° 1
 Geophysical Company PHILLIPS Oil Company PHILLIPS Radio Frequency 7840 KHZ
 Country AUSTRALIA Area/Prospect VIC/P18 Stepback Shot Point Interval

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	<u>441 MHz</u>	<u>009</u>	<u>041</u>	<u>073</u>	<u>WHIP</u>

BASE STATIONS							
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code/Dy	
<u>NIGHTOUT</u>	<u>G. SMITH</u>	<u>429 MHz</u>	<u>064</u>	<u>122</u>	<u>035</u>	<u>5/5.003</u>	
<u>SPALOMBE OFF</u>	<u>S. WALSH</u>	<u>429 MHz</u>	<u>067</u>	<u>077</u>	<u>016</u>	<u>3/5.003</u>	
<u>CONRAN OFF</u>	<u>G. WELLS</u>	<u>429 MHz</u>	<u>006</u>	<u>040</u>	<u>033</u>	<u>1/5.003</u>	

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
<u>1000</u>	<u>2400</u>	<u>J. GODDIN</u>	<u>RIG POSITIONING</u>
O/T Requested By			Total System - Hours Operation for Client <u>14hrs 0m</u>

LOST TIME			
From	To	Hours Lost	Reason(s)
		<u>NIL</u>	

Chief Operations Log & Remarks 0001 WAITING ON WEATHER
0800 STNS IN RADIO STANDBY
MOVE MOBILE ANTENNA TO AFT RAIL OF ACCOMODATION
1000 ON IN OPERATE
1015 CHECK 3 WAY N= 159.528 S= 96.466 C= 106.152
1600 CHECK 3 WAY N= 159.293 S= 96.173 C= 106.118
PICKING UP ANCHORS
2100 PREPARING RIG FOR MOVE

Mobile Operators A. HOGGART Party Chief H. BRIDGES

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

Project Number **P 1419** Date **DEC 22ND 1982** Boat **DIAMOND M EPOCH** Client Party Number **SELENE N°1**
 Geophysical Company **PHILLIPS** Oil Company **PHILLIPS** Radio Frequency **7840 KHZ**
 Country **AUSTRALIA** Area/Prospect **VIC/P18** Stepback _____ Shot Point Interval _____

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441 MHz	009	041	073	WHIP

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code/Dy
NIGHTOUT	G. SMITH	429MHz	064	122	035	5/5.003
SECOMBE OFF	S. WALSH	429MHz	067	077	016	3/5.003
CONRAN OFF	G. WELLS	429MHz	006	040	033	1/5.003

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
0001	2400	J. GOODIN	RIG POSITIONING
O/T Requested By _____			Total System - Hours Operation for Client 24 h

LOST TIME			
From	To	Hours Lost	Reason(s)
		M/V	

Brief Operations Log & Remarks **0001 PREPARING RIG**
0045 COMMENCE TOW TO NEW LOCATION
0805 ANCHOR #7 DROPPED 4000 FT FROM LOCATION -
TOO FAR SHOULD HAVE BEEN AT A DISTANCE TO ACCOMODATE
4000 FT OF CHAIN
SETTING ANCHORS
4000 SETTING ANCHORS

Mobile operators **A. HOGGART** Party Chief **H. BRIDGES**

Form N-1A SEE INSTRUCTIONS ON REVERSE

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

Project Number **P 1419** Date **DEC 23RD 1982** Boat **DIAMOND M EPOCH** Client Party Number **SELENE N°1**
 Geophysical Company **PHILLIPS** Oil Company **PHILLIPS** Radio Frequency **7840 KHZ**
 Country **AUSTRALIA** Area/Prospect **VIC 1P18** Stepback _____ Shot Point Interval _____

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441 MHZ	009	041	073	WHIP

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code/Dy
NIGHTOUT	G. SMITH	429MHZ	064	122	035	5/ 5.003
SEACOMBE OFF	S. WALSH	429MHZ	067	077	016	3/ 5.003
CONRAN OFF	G. WELLS	429MHZ	006	040	033	1/ 5.003

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
0001	2400	J. GOODIN	RIG POSITIONING
O/T Requested By _____			Total System - Hours Operation for Client 24 h

LOST TIME			
From	To	Hours Lost	Reason(s)
		NIL	

Chief Operations Log & Remarks **0001 SETTING ANCHORS**
0915 CONRAN BEACON 006 OUT & AID IN
0940 CONRAN AMP 033 OUT & 032 IN
0950 POSN. N=174.635 S=100.870 C=94.051 A.T.D.S. 28m @ 107°
1945 POSN. N=174.633 S=100.880 C=94.075 A.T.D.S. 28m @ 095°

2400 SETTING ANCHORS

.....

.....

.....

Mobile Operators **A. HOGGART** Party Chief **H. BRIDGES**
 Form N-1A SEE INSTRUCTIONS ON REVERSE

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

Project Number P1419 Date DEC 25TH 1982 Boat DIAMOND M. EPSON Client Party Number SELENE N°1
 Geophysical Company PHILLIPS Oil Company PHILLIPS Radio Frequency 7840 KHZ
 Country AUSTRALIA Area/Prospect VIC/P18 Stepback _____ Shot Point Interval _____

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	<u>441 MHz</u>	<u>009</u>	<u>041</u>	<u>073</u>	<u>WHIP</u>

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code/Dy
<u>NIGHT OUT</u>	<u>G. SMITH</u>	<u>429 MHz</u>	<u>064</u>	<u>122</u>	<u>035</u>	<u>5/5.003</u>
<u>SEACOMBE OFF</u>	<u>S. WALSH</u>	<u>429 MHz</u>	<u>067</u>	<u>077</u>	<u>016</u>	<u>3/5.003</u>
<u>CONRAN OFF</u>	<u>G. WELLS</u>	<u>429 MHz</u>	<u>010</u>	<u>040</u>	<u>032</u>	<u>1/5.003</u>

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

LOST TIME			
From	To	Hours Lost	Reason(s)
		<u>MIL</u>	

Brief Operations Log & Remarks 0001 SETTING ANCHORS
0700 WEATHER BAD SIGNALS IFFY CHANGE MOBILE ANTENNA
TO QUAD L.P.L.S DELAY NOW 5.003 ON ALL STATIONS
ANCHORS OK
0830 POSN N=174.618 S=100.865 C=94.090 FE TO D.S. 28m @ 103°
1900 POSN N=124.622 S=100.888 C=94.099 FE TO D.S. 28m @ 095°
DIAMOND M PREPARING TO DRILL SIGNALS NOT GOOD
ENOUGH TO GET GOOD FINAL POSN.

Mobile Operators A. HOGGART Party Chief H. BRIDGES

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

Project Number **P1419** Date **DEC 26TH 1982** Boat **DIAMOND M EPOCH** Client Party Number **SELENE N° 1**
 Geophysical Company Oil Company **PHILLIPS** Radio Frequency **7860 KHZ**
 Country **AUSTRALIA** Area/Prospect **VIC / P18** Stepback Shot Point Interval

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441 MHz	009	041	073	WHIP

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code/Dy
RIGHTOUT	G. SMITH	429 MHz	064	122	035	5/5.003
SEACOMBE OFF	S. WALSH	429 MHz	067	077	016	3/5.003
COURAN OFF	G. WELLS	429 MHz	010	040	032	1/5.003

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

LOST TIME			
From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks **0001 SETTING ANCHORS**

0800 Posn. N=174.606 S=100.860 C=96.086 ETD 28h @ 106°

2400 SETTING ANCHORS

Mobile Operators **A. HOGGART** Party Chief **H. BRIDGES**

Form N-1A SEE INSTRUCTIONS ON REVERSE

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

Product Number **P.419** Date **DEC 26TH 1982** Boat **DIAMOND M. EPON** Client Party Number **SELENE N° 1.**
 Geophysical Company **PHILLIPS** Oil Company **PHILLIPS** Radio Frequency **7840 KHZ**
 Country **AUSTRALIA** Area/Prospect **VIC/P18** Stepback Interval

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	441 MHZ	009	041	073	WHP

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code
NIGHTOUT	G. SMITH	429 MHZ	064	122	035	5/5.008
SEACOMBE OFF	S. WALSH	429 MHZ	067	077	016	3/5.008
CURRAN OFF	G. WELLS	429 MHZ	010	040	032	1/5.008

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
0901	2400	J. GOODWIN	RIG POSITIONING
O/T Requested By			Total System - Hours Operation for Client 24h

LOST TIME			
From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks
0700 SIGNALS STILL WFFY CHANGE MOBILE AMP TO N° 063 NO CHANGE
0800 POSN N=174.616 S=100.886 C=94.099 ETO D.S. 28m @ 095°
WATER DEPTH FOUND TO BE 837'
DIAMOND M. DRILLING

Mobile Operators **A. HOGGART**
 Party Chief **H. BRIDGES**

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

Project Number P.1419 Date DEC 27TH 1982 Boat DIAMOND M EPOCH Client Party Number SELENE N° 1
 Geophysical Company PHILLIPS Oil Company PHILLIPS Radio Frequency 7840 KHZ
 Country AUSTRALIA Area/Prospect Vic/P 18 Stepback _____ Shot Point Interval _____

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	<u>441 MHz</u>	<u>009</u>	<u>041</u>	<u>063</u>	<u>QUAD L.P.Ls</u>

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code/Dy
<u>NIGHTOUT</u>	<u>G. SMITH</u>	<u>429 MHz</u>	<u>064</u>	<u>122</u>	<u>035</u>	<u>5/5.008</u>
<u>SACOMBE OFF</u>	<u>S. WALSH</u>	<u>429 MHz</u>	<u>067</u>	<u>077</u>	<u>016</u>	<u>3/5.008</u>
<u>CONRAN OFF</u>	<u>G. WELLS</u>	<u>429 MHz</u>	<u>010</u>	<u>040</u>	<u>032</u>	<u>1/5.008</u>

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

LOST TIME			
From	To	Hours Lost	Reason(s)
		<u>NIL</u>	

Brief Operations Log & Remarks 0001 DIAMOND M DRILLING

100 RIG POSN. N=174.620 S=100.891 C=94.099 E To D.S. 28m @ 104°
PROP. FACTOR USED .999930 TO COMPUTE POSN.

2400 DIAMOND M SETTING 30" CASING

Mobile Operators A. HOGGART
 Party Chief H. BRIDGES

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

Project Number P1419 Date DEC 28TH 1982 Boat DIAMOND M EPSCH Client Party Number SELENG NO 1
 Geophysical Company PHILLIPS Oil Company PHILLIPS Radio Frequency 7840 KHZ
 Country AUSTRALIA Area/Prospect Vic / P18 Stepback Shot Point Interval

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM
	<u>441 MHz</u>	<u>009</u>	<u>041</u>	<u>063</u>	<u>QUAD C.P.L.</u>

BASE STATIONS						
Position	Operator	Frequency	Beacon	Control Box	Amplifier	Code/D/I
<u>NIGHTOUT</u>	<u>G. SMITH</u>	<u>429 MHz</u>	<u>064</u>	<u>127</u>	<u>035</u>	<u>5/5.008</u>
<u>SEACOMBE OFF</u>	<u>S. WALSH</u>	<u>429 MHz</u>	<u>067</u>	<u>077</u>	<u>016</u>	<u>3/5.008</u>
<u>CONRAN OFF</u>	<u>G. WELLS</u>	<u>429 MHz</u>	<u>010</u>	<u>040</u>	<u>032</u>	<u>1/5.008</u>

OPERATING TIME			
Time On	Time Off	Requested By	System Used For
<u>0001</u>	<u>1100</u>	<u>J. GOODIN</u>	<u>RIG POSITIONING</u>

O/T Requested By Total System - Hours Operation for Client 11 h 0m

LOST TIME			
From	To	Hours Lost	Reason(s)
		<u>NIL</u>	

Chief Operations Log & Remarks 0001 DIAMOND M SETTING 30" CASING
1100 CREW RELEASED
DISMANTLING
1535 DEPART RIG WITH EQUIPMENT

Mobile Operators A. HOGGART Party Chief H. BRIDGES

APPENDIX B

THE MAXIRAN RADIOPOSITIONING SYSTEM

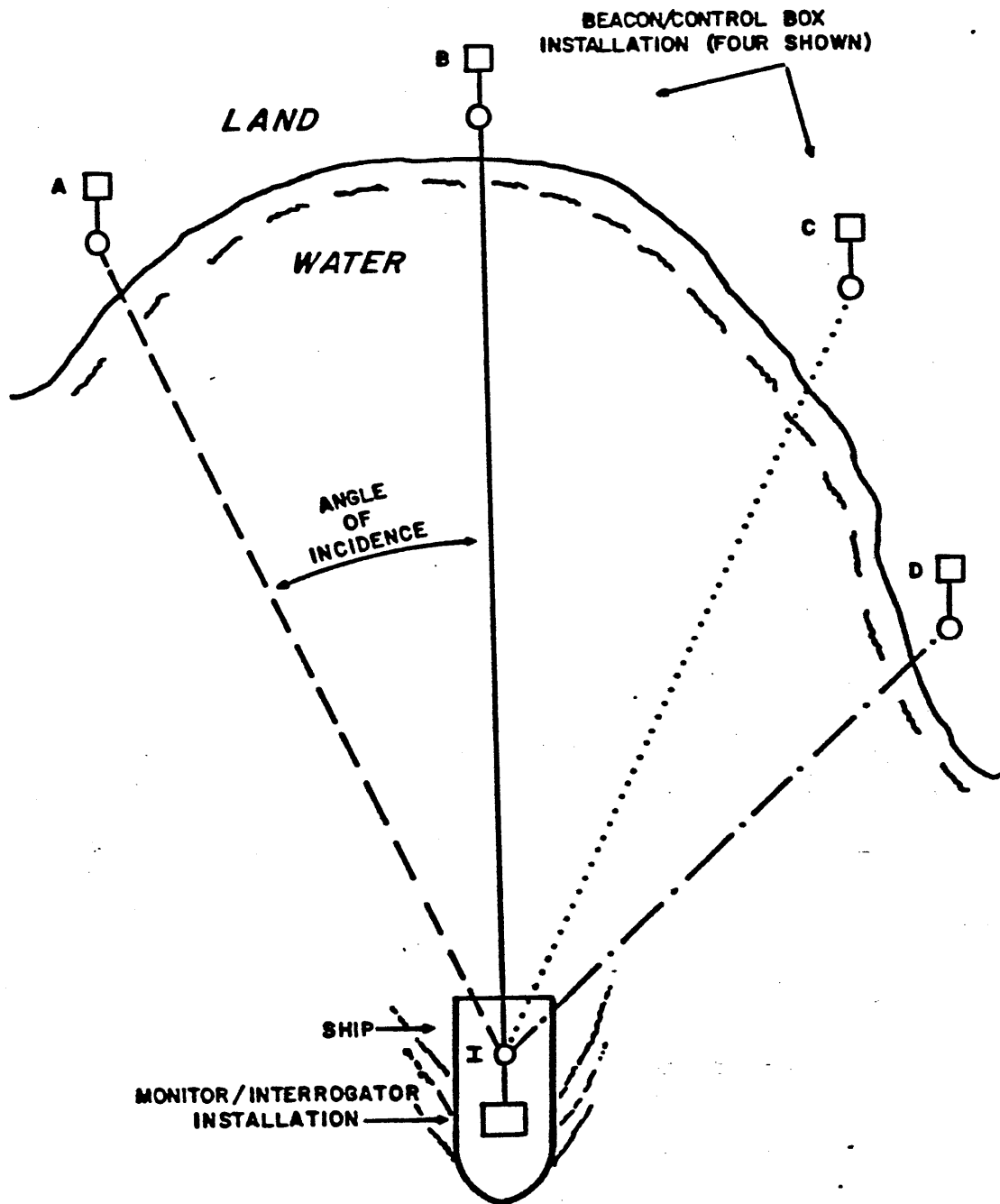
I. THE MAXIRAN RADIOPOSITIONING SYSTEM

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

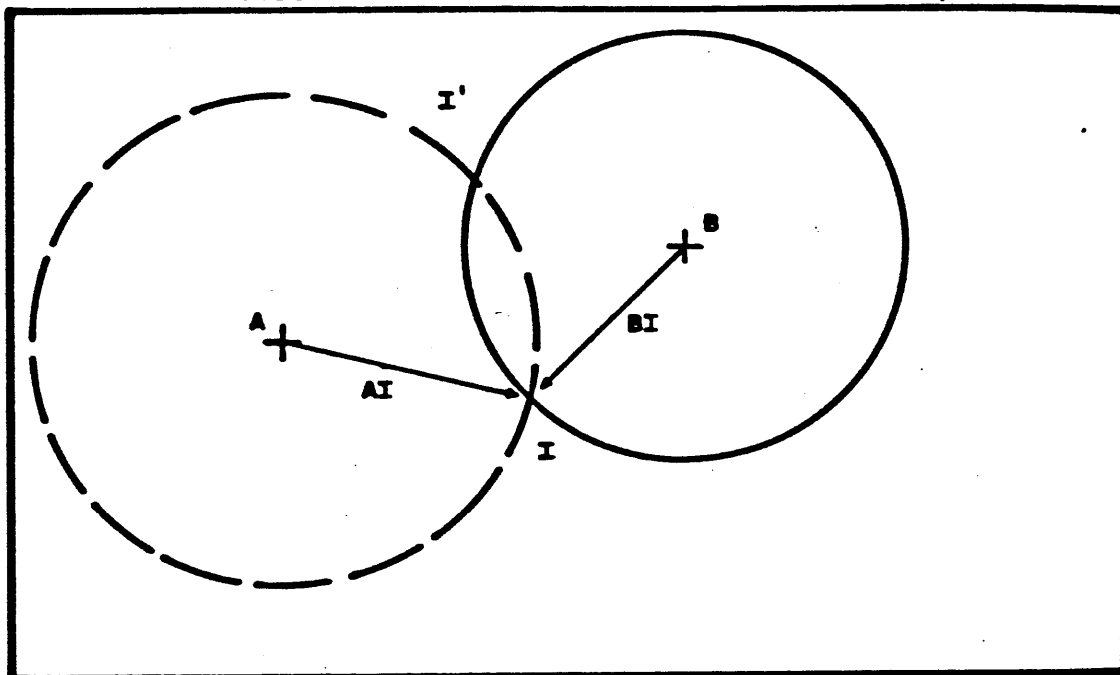
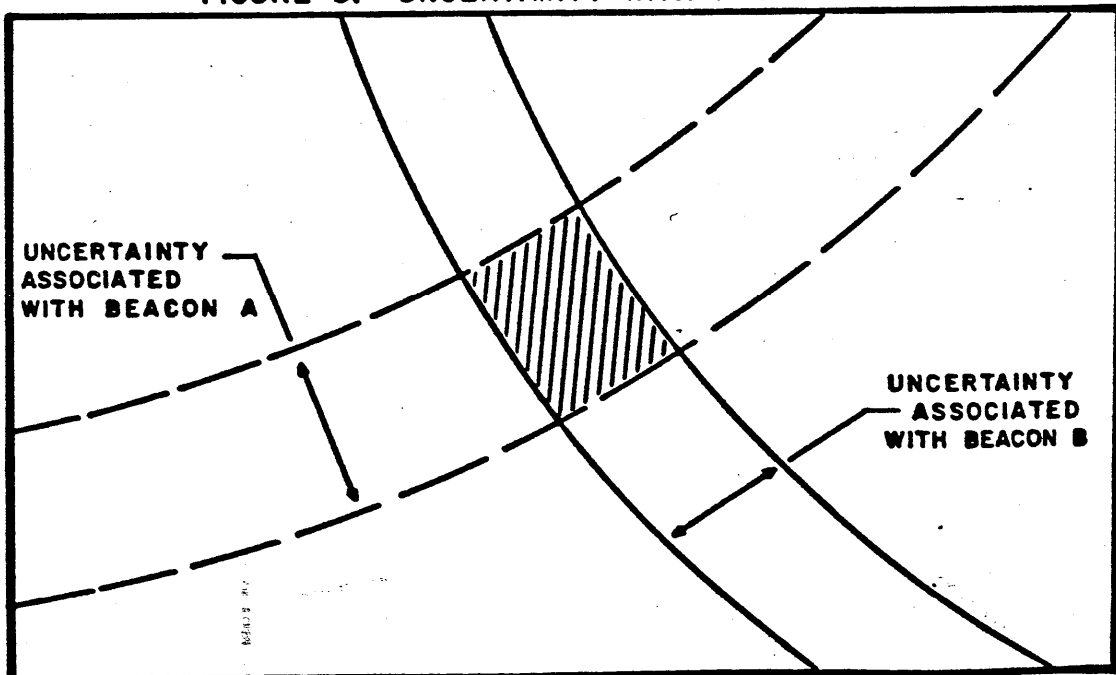


FIGURE-3. UNCERTAINTY WITH TWO BEACONS



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

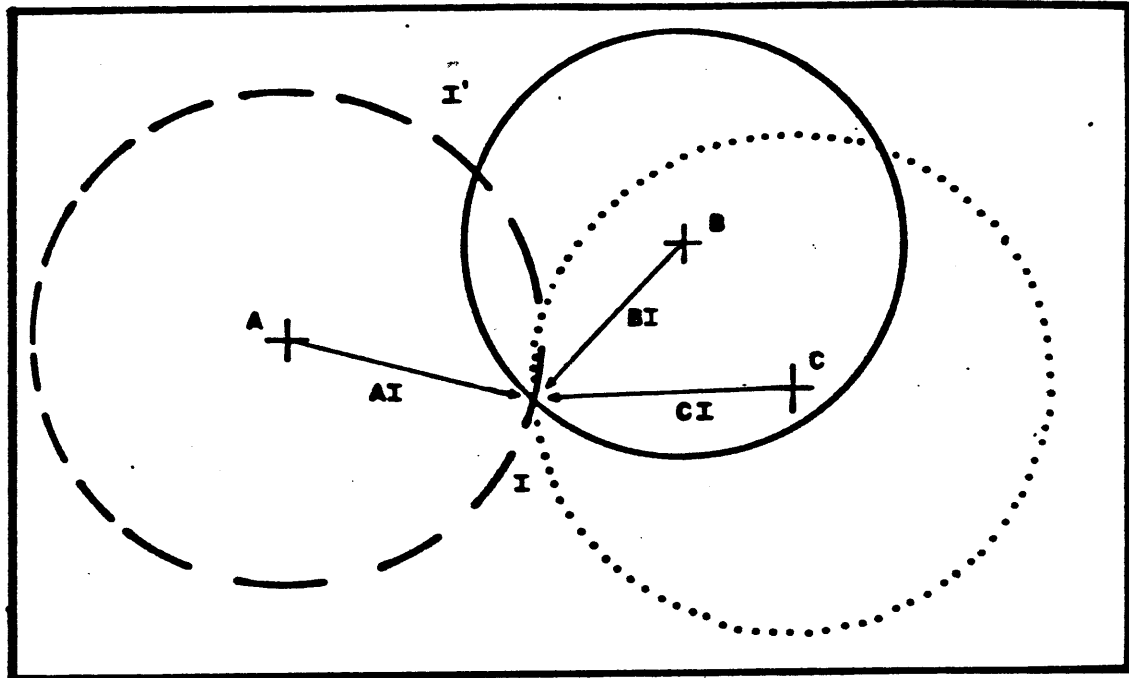
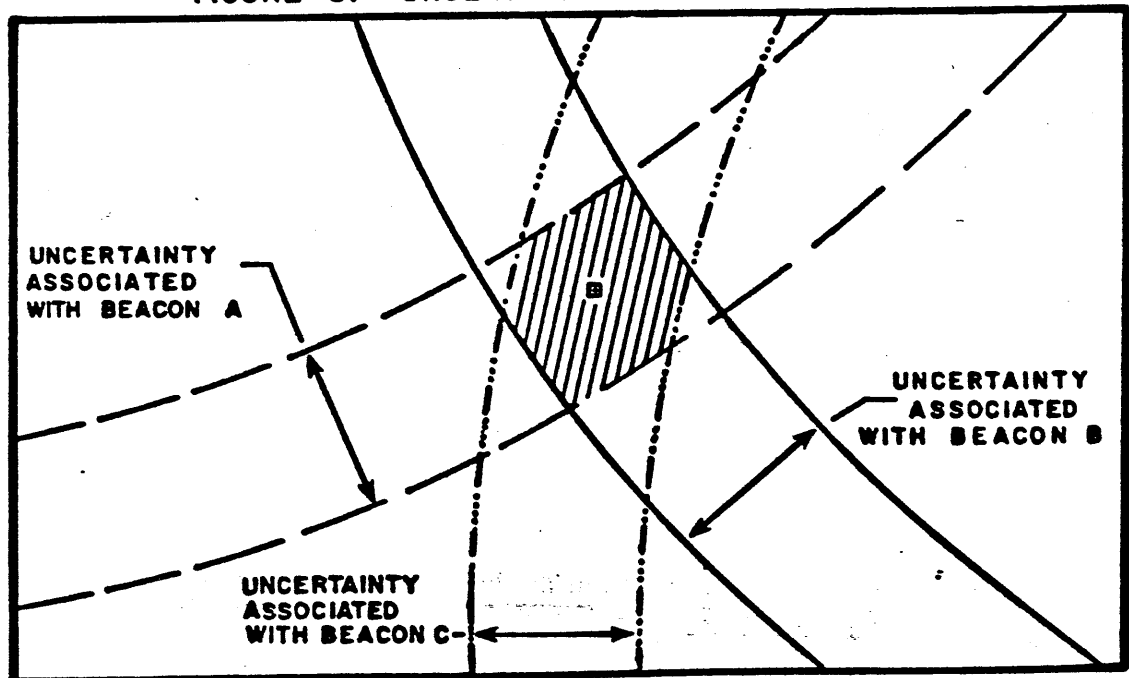


FIGURE-5. UNCERTAINTY WITH THREE BEACONS



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.