ADDENDUM 1

FINAL REPORT

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

PROJECT 1419

W783

WELL LOCATION DISCOVERY BAY-1 W.C.R.

AUGUST - SEPTEMBER 1982

ADDENDUM 1

FINAL REPORT

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

PROJECT 1419

FOR

PHILLIPS AUSTRALIAN OIL COMPANY

VICTORIA, AUSTRALIA

WELL LOCATION DISCOVERY BAY #1

AUGUST - SEPTEMBER 1982

TABLE OF CONTENTS

I. INTRODUCTION

Offshore Navigation (Australia) Pty. Ltd.(ONA), under contract to Phillips Australia 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 DISCOVERY BAY #1

The survey was conducted in the Great Australian Bight, off the coast of Victoria, Australia. The well was located approximately 29 kilometers west of Cape Bridgewater.

The ONA base of operation was initially established at Portland, Victoria on 20 August 1982.

II. FIELD OPERATIONS RECAP

The Maxiran equipment necessary for this survey was air freighted from Perth, W.A. to Melbourne, Victoria, and arrived on 19 August 1982. ONA personnel necessary for the survey travelled from Perth to Melbourne on 19 August. The Maxiran equipment was loaded onto Land Rovers. The vehicles transported ONA personnel and the Maxiran equipment to Portland, Victoria on 20 August. The Maxiran system was transported to Station Crows Hill on 21 August, and the system calibrated between two known points at this site on 22 August 1982. See "Maxiran Calibration" of this report for details.

ONA personnel were advised on 23 August 1982 that the rig move was cancelled. The Maxiran base station equipment was transported to Portland and stored on 24 August. The Maxiran mobile equipment and ONA mobile operator travelled to Hobart, Tasmania on 24 August. The ONA mobile operator transported the equipment from Hobart to Strahan, where it was stored on 25 August 1982.

II. FIELD OPERATIONS RECAP (continued)

Two ONA base operators were released on 25 August 1982. The ONA party chief and the third base operator was released on 26 August, and the ONA mobile operator was released on 27 August 1982.

ONA personnel returned to Portland on 5 September 1982, and the ONA base of operation was again established that date. The Maxiran base station equipment was removed from storage and transported to their respective site. Installation of the Maxiran base station equipment on the three sites occupied to control the survey began 6 September and was completed 7 September 1982.

The ONA mobile operator arrived in Strahan on 13 September 1982. He and the Maxiran mobile equipment was transported, via helicopter, to the D/V DIAMOND M EPOCH that same date. Installation of the Maxiran mobile equipment on board the rig was completed on 14 September 1982.

II. FIELD OPERATIONS RECAP (continued)

The D/V DIAMOND M EPOCH arrived at Well Location DISCOVERY BAY #1 on 16 September 1982. Anchor operations began at 0922 hours that date, and were completed at 1700 hours 21 September. Some difficulties were experienced during this time period with anchors holding. The rig base plate was cemented in at 2130 hours 22 September 1982, and the final Maxiran position was recorded. See Appendix A of this report for details of operations.

Dismantling of the Maxiran system began 23 September 1982 and was completed 24 September. The Maxiran system was packaged and shipped to the ONA office in Perth by surface freight on 25 September 1982.

All ONA personnel were released from this survey on 24 September 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 retained by ONA on completion of the survey. 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 BRIDGEWATER

STATION JONES RIDGE

STATION MOUNT RUSKIN

III. GENERAL INFORMATION (continued)

F. The maximum range observed by the Maxiran system during this survey was 45 kilometers.

G. The Maxiran mobile equipment was checked daily for proper delay setting. The delay setting was determined by a Maxiran Calibration conducted on 22 August 1982.

IV. MAXIRAN CALIBRATION

The Maxiran system was calibrated on 22 August 1982, prior to the commencement of the Well Location DISCOVERY BAY #1 survey. For this calibration, the Maxiran system was transported to Station Crows Hill, and the equipment installed at two markers at this site. The computed slope range of 1004.518 meters was derived from a survey made by Kevin W. Porter and Associates.

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

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: AUG 29 1982

MOBILE STATION			BASE STATION		
LOCATION: CROWS HILL			LOCATION: CROWS HILL		
OPERATOR: A. HOGGART			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MODULATOR	NMM-01B	041	BEACON	NTL-01	036 CODE 5
INTERROGATOR	NTM-01	050	CONTROL BOX	NCL-01	109
AMPLIFIER	NTU-02	073	AMPLIFIER	NTU-01	016
AMPLIFIER P/S	NCU-01	038	AMPLIFIER P/S	NCU-01	018
PREAMP	SAU-12	056	PREAMP	SAU-12	145
	TYPE	LENGTH		TYPE	LENGTH
COAX TX	ANDREWS/RG-8	74'/29'	COAX TX	ANDREWS/RG-8	74'/29'
RX		74'/29'	RX		74'/37'
	TYPE	HEIGHT		TYPE	HEIGHT
ANTENNA	QUAD L.P.L.	90'	ANTENNA	VERTICAL L.P.Ls	10'
INPUT VOLTAGE	117V AC		INPUT VOLTAGE	117V AC 12V DC	
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	COOL SCATTERED CLOUD		WEATHER CONDITIONS	AS MOBILE	

OBSERVED RANGE IN CALIBRATE: 6.005 KM

COMPUTED SLANT RANGE: 1.004 KM

MOBILE ZERO SETTING IS: 5.001 KM

OBSERVED RANGE IN OPERATE: 1.004 KM TIME: 1811

SIGNED: A Hoggart

NOTES REGARDING CALIBRATION PROCEDURES:

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

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: AUG 29 1982

MOBILE STATION			BASE STATION		
LOCATION: CROWS HILL			LOCATION: CROWS HILL		
OPERATOR: A. HOGGART			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	036 CODE 5
INTERROGATOR	NTM-01	009	CONTROL BOX	NCL-01	109
AMPLIFIER			AMPLIFIER	NTU-01	016
AMPLIFIER P/S			AMPLIFIER P/S	NCU-01	018
PREAMP			PREAMP	SAU-12	145
COAX	TYPE: ANDREWS RG-8	LENGTH: 74' 13'	COAX TX / RX	TYPE: ANDREWS/RG8	LENGTH: 74' / 29' 74' / 37'
ANTENNA	TYPE: WHIP	HEIGHT: 20'	ANTENNA	TYPE: VERTICAL L.P.Ls	HEIGHT: 10'
INPUT VOLTAGE	117V AC		INPUT VOLTAGE	117V AC	12V DC
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	COOL SCATTERED CLOUD		WEATHER CONDITIONS	AS MOBILE	

OBSERVED RANGE IN CALIBRATE: 6.000 KM

COMPUTED SLANT RANGE: 1.004 KM

MOBILE ZERO SETTING IS: 4.996 KM

OBSERVED RANGE IN OPERATE: 1.004 KM TIME: 1753

SIGNED: A. Hoggart

NOTES REGARDING CALIBRATION PROCEDURES:

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

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: AUG 22 1982

MOBILE STATION			BASE STATION		
LOCATION: CROWS HILL			LOCATION: CROWS HILL		
OPERATOR: A. HOGGART			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-01	109
AMPLIFIER			AMPLIFIER	NTU-01	016
AMPLIFIER P/S			AMPLIFIER P/S	NCU-01	018
PREAMP			PREAMP	SAU-12	145
COAX	TYPE: ANDREWS RG-8	LENGTH: 74' 13'	COAX TX RX	TYPE: ANDREWS/RG-8	LENGTH: 74'/29' 74'/37'
ANTENNA	TYPE: WHIP	HEIGHT: 20'	ANTENNA	TYPE: VERTICAL L.P.L.	HEIGHT: 10'
INPUT VOLTAGE	117V AC		INPUT VOLTAGE	117V AC 12V DC	
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	COOL SCATTERED CLOUD		WEATHER CONDITIONS	AS MOBILE	

OBSERVED RANGE IN CALIBRATE: 6.000 KM

COMPUTED SLANT RANGE: 1.004 KM

MOBILE ZERO SETTING IS: 4.996 KM

OBSERVED RANGE IN OPERATE: 1.004 KM TIME: 1741

SIGNED: [signature]

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.

11

MAXIRAN CALIBRATION REPORT

DATE: AUG 22 1982

MOBILE STATION			BASE STATION		
LOCATION: CROWS HILL			LOCATION: CROWS HILL		
OPERATOR: A. HOGGART			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	032 CODE 3
INTERROGATOR	NTM-01	050	CONTROL BOX	NCL-01	109
AMPLIFIER			AMPLIFIER	NTU-01	016
AMPLIFIER P/S			AMPLIFIER P/S	NCU-01	018
PREAMP			PREAMP	8AU-12	145
COAX	TYPE: ANDREWS RG-8	LENGTH: 74' 13'	COAX TX RX	TYPE: ANDREWS/RG-8	LENGTH: 74' / 29' 74' / 37'
ANTENNA	TYPE: WHIP	HEIGHT: 20'	ANTENNA	TYPE: VERTICAL L.P.L.	HEIGHT: 10'
INPUT VOLTAGE	117V AC		INPUT VOLTAGE	117V AC 12V DC	
TX. FREQUENCY	441 MHZ		TX. FREQUENCY	429 MHZ	
RX. FREQUENCY	429 MHZ		RX. FREQUENCY	441 MHZ	
RX. GAIN SETTING	AGC		RX. GAIN SETTING	MIN FOR BEST SIGNAL	
WEATHER CONDITIONS	COOL SCATTERED CLOUD		WEATHER CONDITIONS	AS MOBILE	

OBSERVED RANGE IN CALIBRATE: 6.000 KM

COMPUTED SLANT RANGE: 1.004 KM

∴ MOBILE ZERO SETTING IS: 4.996 KM

OBSERVED RANGE IN OPERATE: 1.004 KM TIME: 1736

SIGNED: A. Hoggart

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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3. Each report will be complete in itself. Do not refer to other reports for information.
4. Use the reverse side of this report for any additional comments deemed necessary or advisable for completeness and clarity.

OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: AUG 22 1982

MOBILE STATION			BASE STATION		
LOCATION: CROWS HILL			LOCATION: CROWS HILL		
OPERATOR: A. HOGGART			OPERATOR: H. BRIDGES		
UNIT	MODEL	SERIAL No.	UNIT	MODEL	SERIAL No.
MONITOR	NMM-01B	041	BEACON	NTL-01	067 CODE 3
INTERROGATOR	NTM-01	050	CONTROL BOX	NCL-01	109
AMPLIFIER			AMPLIFIER	NTU-01	016
AMPLIFIER P/S			AMPLIFIER P/S	NCU-01	018
PREAMP			PREAMP	SAU-12	145
COAX	TYPE: ANDREWS RG-8	LENGTH: 74' 13'	COAX Tx Rx	TYPE: ANDREWS/RG-8	LENGTH: 74' / 29' 74' / 37'
ANTENNA	TYPE: WHIP	HEIGHT: 20'	ANTENNA	TYPE: VERTICAL L.P.Ls	HEIGHT: 10'
INPUT VOLTAGE	117V AC		INPUT VOLTAGE	117 V AC	12V DC
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	COOL SCATTERED CLOUD		WEATHER CONDITIONS	AS MOBILE	

OBSERVED RANGE IN CALIBRATE: 6.000 KM

COMPUTED SLANT RANGE: 1.004 KM

∴ MOBILE ZERO SETTING IS: 4.996 KM

OBSERVED RANGE IN OPERATE: 1.004 KM TIME: 1730

SIGNED: A. Hoggart

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.

MAXIRAN CALIBRATION REPORT

DATE: AUG 22 1982

MOBILE STATION			BASE STATION		
LOCATION: CROWS HILL			LOCATION: CROWS HILL		
OPERATOR: A. HOGGART			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-01	109
AMPLIFIER			AMPLIFIER	NTU-01	016
AMPLIFIER P/S			AMPLIFIER P/S	NCU-01	018
PREAMP			PREAMP	SAU-12	145
COAX TYPE	ANDREWS RG-8		COAX TYPE Tx Rx	ANDREWS / RG-8	
COAX LENGTH	74' / 13'		COAX LENGTH	74' / 74'	29' / 37'
ANTENNA TYPE	WHIP		ANTENNA TYPE	VERTICAL 4PLs	
ANTENNA HEIGHT	20'		ANTENNA HEIGHT	10'	
INPUT VOLTAGE	117V AC		INPUT VOLTAGE	117V AC 12V DC	
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	COOL SCATTERED CLOUD		WEATHER CONDITIONS	COOL SCATTERD CLOUD	

OBSERVED RANGE IN CALIBRATE: 5.999 KM

COMPUTED SLANT RANGE: 1.004 KM

∴ MOBILE ZERO SETTING IS: 4.995 KM

OBSERVED RANGE IN OPERATE: 1.004 KM TIME: 1722

SIGNED: A. Hoggart

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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3. Each report will be complete in itself. Do not refer to other reports for information.
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OFFSHORE NAVIGATION, INC.

MAXIRAN CALIBRATION REPORT

DATE: AUG 22 1982

MOBILE STATION			BASE STATION		
LOCATION: CROWS HILL			LOCATION: CROWS HILL		
OPERATOR: A. HOGGART			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-01	109
AMPLIFIER			AMPLIFIER	NTU-01	016
AMPLIFIER P/S			AMPLIFIER P/S	NCU-01	018
PREAMP			PREAMP	SAU-12	145
COAX	TYPE: ANDREWS RG-8	LENGTH: 74' 13'	COAX Tx / Rx	TYPE: ANDREWS/RG-8 / ANDREWS/RG8	LENGTH: 74' / 29' 74' / 37'
ANTENNA	TYPE: WHIP	HEIGHT: 20'	ANTENNA	TYPE: VERTICAL LPLs	HEIGHT: 10'
INPUT VOLTAGE	117V AC		INPUT VOLTAGE	117V AC 12V DC	
TX. FREQUENCY	441 MHZ		TX. FREQUENCY	429 MHZ	
RX. FREQUENCY	429 MHZ		RX. FREQUENCY	441 MHZ	
RX. GAIN SETTING	AGC		RX. GAIN SETTING	MIN FOR BEST SIGNAL	
WEATHER CONDITIONS	COOL SCATTERED CLOUD		WEATHER CONDITIONS	AS	

OBSERVED RANGE IN CALIBRATE: 6.001 KM

COMPUTED SLANT RANGE: 1.004 KM

∴ MOBILE ZERO SETTING IS: 4.997 KM

OBSERVED RANGE IN OPERATE: 1.004 KM TIME: 1711

SIGNED: A. Hoggart

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.

V. WELL LOCATION INFORMATION

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

Coordinates of the desired location were obtained from PHILLIPS as:

(Line op 80-17, Shotpoint 1080)

Latitude	38°24'37"97 S	N = 5,748,615 meters
Longitude	141°04'23"12 E	E = 506,381 meters

The D/V DIAMOND M EPOCH was secured on location, and the following final Maxiran ranges were recorded at 2130 hours 22 September 1982, with the Maxiran mobile equipment installed on board the rig:

Sta. C. Bridgewater to mobile antenna	29.307 kilometers
Sta. Jones Ridge to mobile antenna	44.976 kilometers
Sta. Mount Ruskin to mobile antenna	41.422 kilometers

At the time these final Maxiran ranges were recorded, the drill stem was 36 meters, at a bearing of 125° True, from the Maxiran mobile antenna.

V. WELL LOCATION INFORMATION (continued)

FINAL COMPUTED COORDINATES - WELL DISCOVERY BAY #1:
(Drill stem)

Latitude 38°24'42".90 S N = 5,748,463 meters
Longitude 141°04'21".10 E E = 506,332 meters
Least square adjusted tie = 0.5 meter
From desired to final position = 160 meters @ 198°

Coordinates of the desired and final position are expressed in the Universal Transverse Mercator Projection, Australian National Spheroid of Reference, Zone 54, Central Meridian 141° East, AUSTRALIAN GEODETIC DATUM.

VI. BASIC CONTROL

Coordinates of the two Maxiran base stations, occupied to control this survey, were obtained from the ONA Basic Control files.

Universal Transverse Mercator Projection
Australian National Spheroid
Zone 54
Central Meridian 141° East
AUSTRALIAN GEODETIC DATUM

STATION CAPE BRIDGEWATER:

Latitude	38°23'17".21 S	N = 5,751,029 meters
Longitude	141°24'22".81 E	E = 535,487 meters
Elevation	135 meters	

STATION JONES RIDGE:

Latitude	38°02'37".35 S	N = 5,789,282 meters
Longitude	141°17'13".40 E	E = 525,188 meters
Elevation	140 meters	

STATION MOUNT RUSKIN:

Latitude	38°02'54".56 S	N = 5,788,789 meters
Longitude	140°57'49".58 E	E = 496,821 meters
Elevation	38 meters	

VII. PERSONNEL

NAME	POSITION
Bridges, H.	Party Chief
Hoggart, A.	Mobile Operator
Thieman, C.	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 BRIDGEWATER

LOCATED: The station is located near the township of Cape Bridgewater, approximately 19 kilometers west of Portland, Victoria, Australia.

ACCESS: From Portland, drive 19 kilometers west towards Cape Bridgewater. On entering the town, turn left at the first intersection past the school. Drive on this road, and make a hard turn to the right. Just after making this hard right turn, a house will be seen to your left. Follow the track, as indicated in the sketch, to the station.

MARKER: The physical description of the marker was not submitted from the field operations. The station is on the property of Mr. J. Boyle, who lives in the house at the junction of the road and track. He should be able to point out the marker. The Maxiran tower was erected 2 meters, at a bearing of 090° Magnetic, from the marker.

GENERAL: A 40-foot tower was erected at this station. A minimum tower height of 20 feet is required to clear surrounding obstructions. Clear vista has not been reported. Star stakes were used to secure the tower.

Mr. J. Boyle can be contacted at telephone number 055-26-7213. Permission must be obtained from Mr. Boyle to set a station on his property. No rent was paid for the use of the property.

ELEVATION: 135 meters

SKETCH: See next page.

Coordinates of the trig marker were obtained from the Lands & Surveys Department, Victoria.

UTM PROJECTION, AUSTRALIAN NATIONAL SPHEROID
ZONE 54, C.M. 141° EAST ---------- A.G.D.

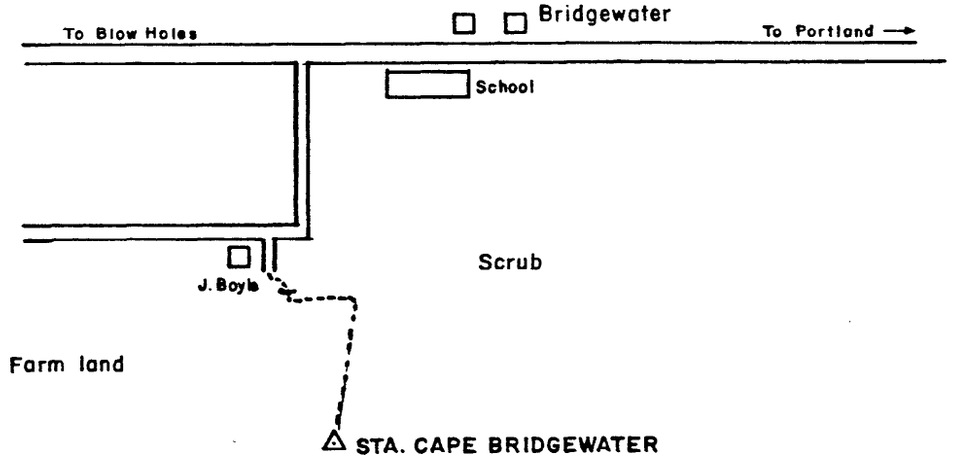
Lat. 38°23'17"21 S N = 5,751,029 meters
Long. 141°24'22"81 E E = 535,487 meters

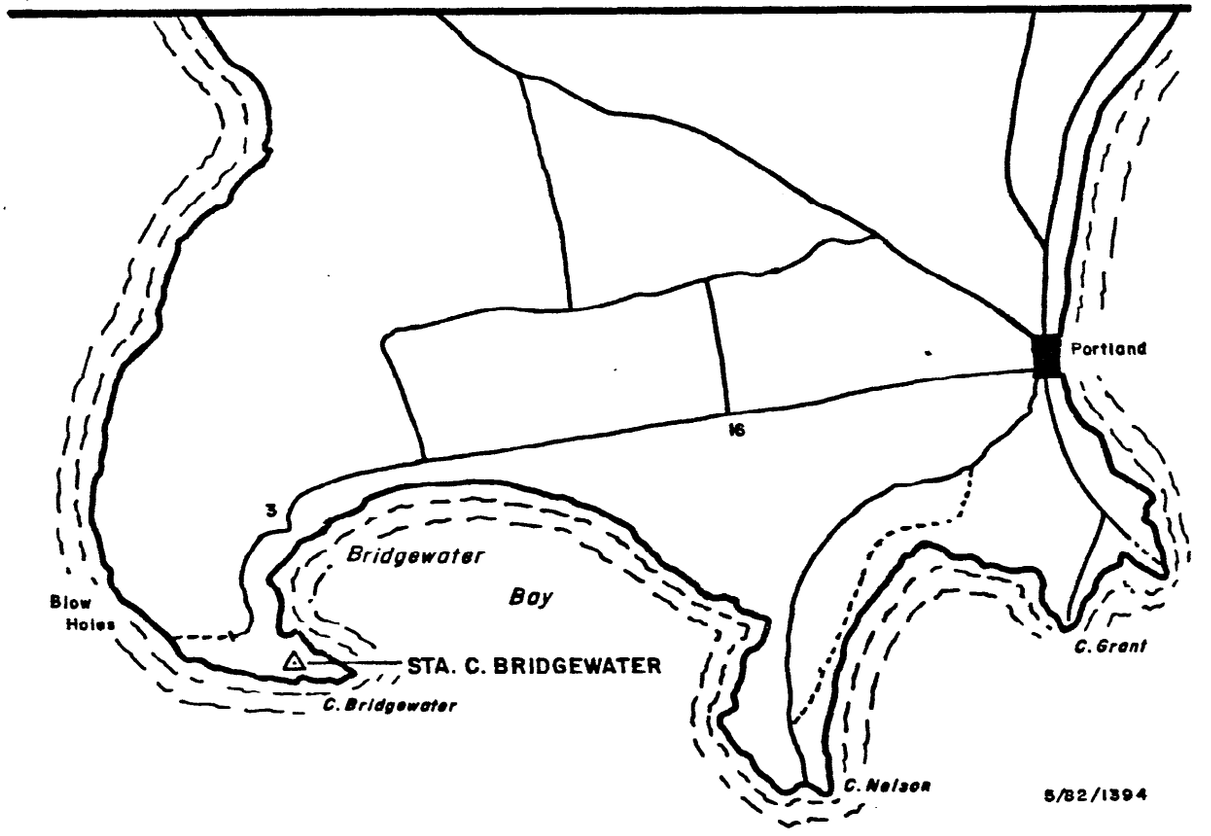
STA. CAPE BRIDGEWATER ——— AUSTRALIA

LAT. 38°23' 17".21 S
LONG. 141°24' 22".81 E
ELEV. 135 meters

N 5,751,029 meters
E 535,487 meters

UTM PROJECTION, ZONE 54
AUST. NAT. SPHEROID
C. M. 141° E
AUSTRALIAN GEODETIC DATUM





OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

STATION: JONES RIDGE

LOCATED: Station Jones Ridge is located 45.2 kilometers by road from Portland, Victoria, Australia, and 11.5 kilometers from Winnap. The station marker is on a grassy ridge on the east of the Winnap - Nelson Road. A forestry tower is also on the ridge, and the station marker is some 160 meters to the south-southeast of the tower. The tower can be seen from the road. The ground at the station is very rocky.

ACCESS: Two access routes are given for this station, one access from Winnap, and another from Portland.

FROM WINNAP, set the odometer at 0.00 kilometer at the Winnap Store, and proceed towards Heywood. Turn right onto the Drik Drik Road at 0.1 kilometer, and cross a narrow bridge at 0.3 kilometer. Continue straight at 0.4 kilometer, where a road on the left will be encountered. Continue on Drik Drik Road, passing Liddles Lane (3.0 kilometer), Clarkes Road (4.8 kilometers), Drik Drik Cemetery (5.4 kilometers), and a scenic lookout on the righthand side of the road at 11.0 kilometers. At 11.5 kilometers, turn left into a gateway. Take the righthand gate, and proceed along a track to the next gate. Go through this gate and pass the remains of a bluestone cottage on the left, through another gate, and up the ridge to the station site.

FROM PORTLAND, set the odometer at 0.00 kilometer at the Portland Post Office, and proceed north on the Henry Highway, turning left onto the signposted Nelson Road at 2.65 kilometers. Drive on Nelson Road, crossing a railroad track at 3.85 kilometers, the junction with Gorea West Road at 16.4 kilometers, a scenic lookout on the left at 32.7 kilometers, to a junction at 58.8 kilometers. Take the right fork at this junction, and drive on Drik Drik Road to 69.1 kilometers, and the gate. Turn right into this gate and follow the route described in the Winnap Access.

STATION: JONES RIDGE (continued)

MARKER: The trig marker consists of a block concrete ground marker (No. 80502), with a 4.34-meter quadruped beacon sitting above the marker.

GENERAL: All supplies, including water and labor, can be obtained in Portland.

The station site is on property owned by Mr. Phil Jones, 1164 Princess Highway, Mumbannar. Mr. Jones' phone number is Dartmoor 286264. Permission to occupy the station must be obtained from Mr. Jones. No rent was paid for the use of the property.

A 40-foot tower was erected at this station, the minimum height required to clear surrounding obstructions. Star stakes were used to secure the tower.

ELEVATION: 140 meters

SKETCH: See next page.

Coordinates of the trig marker were obtained from the Lands & Surveys Department, Victoria.

UTM PROJECTION, AUSTRALIAN NATIONAL SPHEROID
ZONE 54, C.M. 141° EAST ---------- A.G.D.

Lat. 38°02'37".35 S N = 5,789,282 meters
Long. 141°17'13".40 E E = 525,188 meters

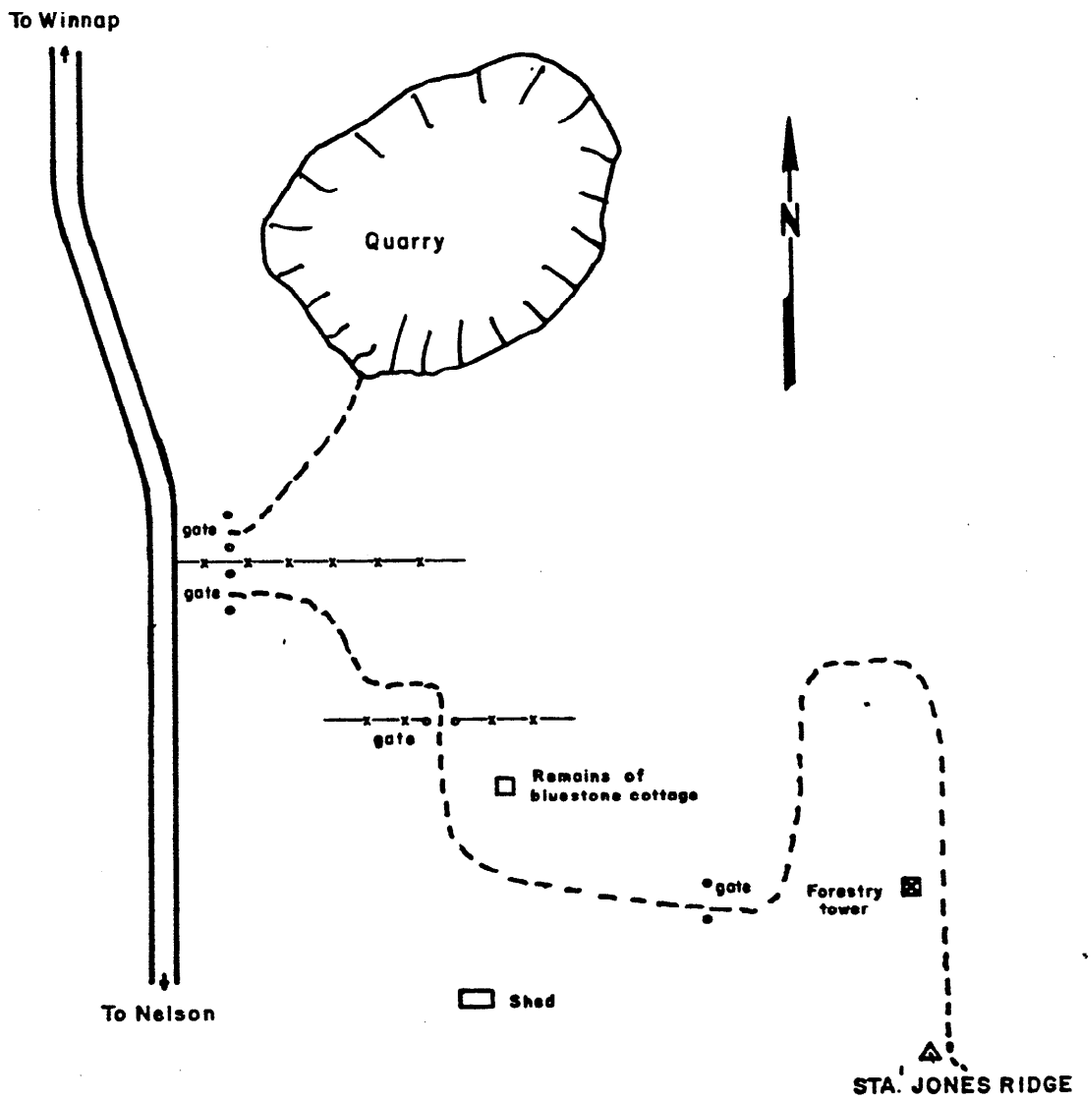
STA. JONES RIDGE——————AUSTRALIA

PHILLIPS COORDINATES

LAT.	38°02' 37".35 S	N	5,789,282 meters
LONG.	141° 17' 13".40 E	E	525,188 meters

ELEV. 140 meters

UTM PROJECTION, ZONE 54
AUST. NAT. SPHEROID
C. M. 141° E
AUSTRALIAN GEODETIC DATUM

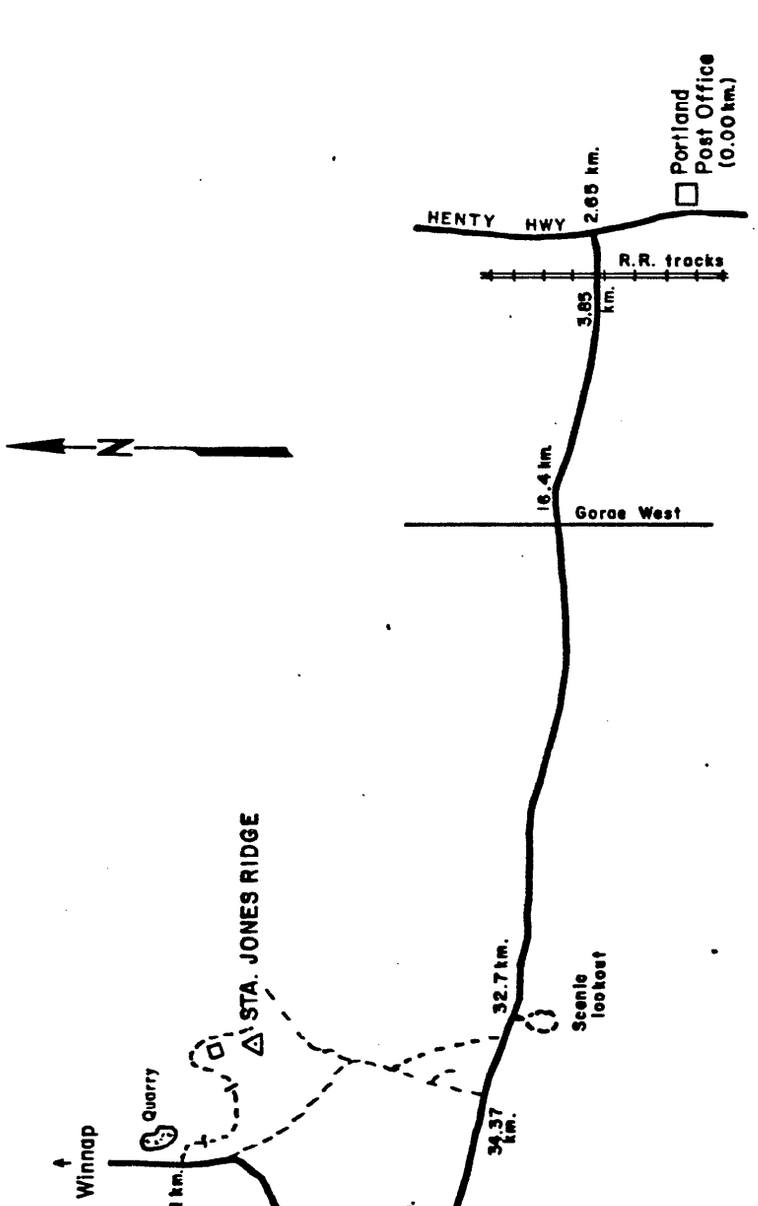


1/81/1201

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

STA. JONES RIDGE ——————— AUSTRALIA

ACCESS——FROM PORTLAND

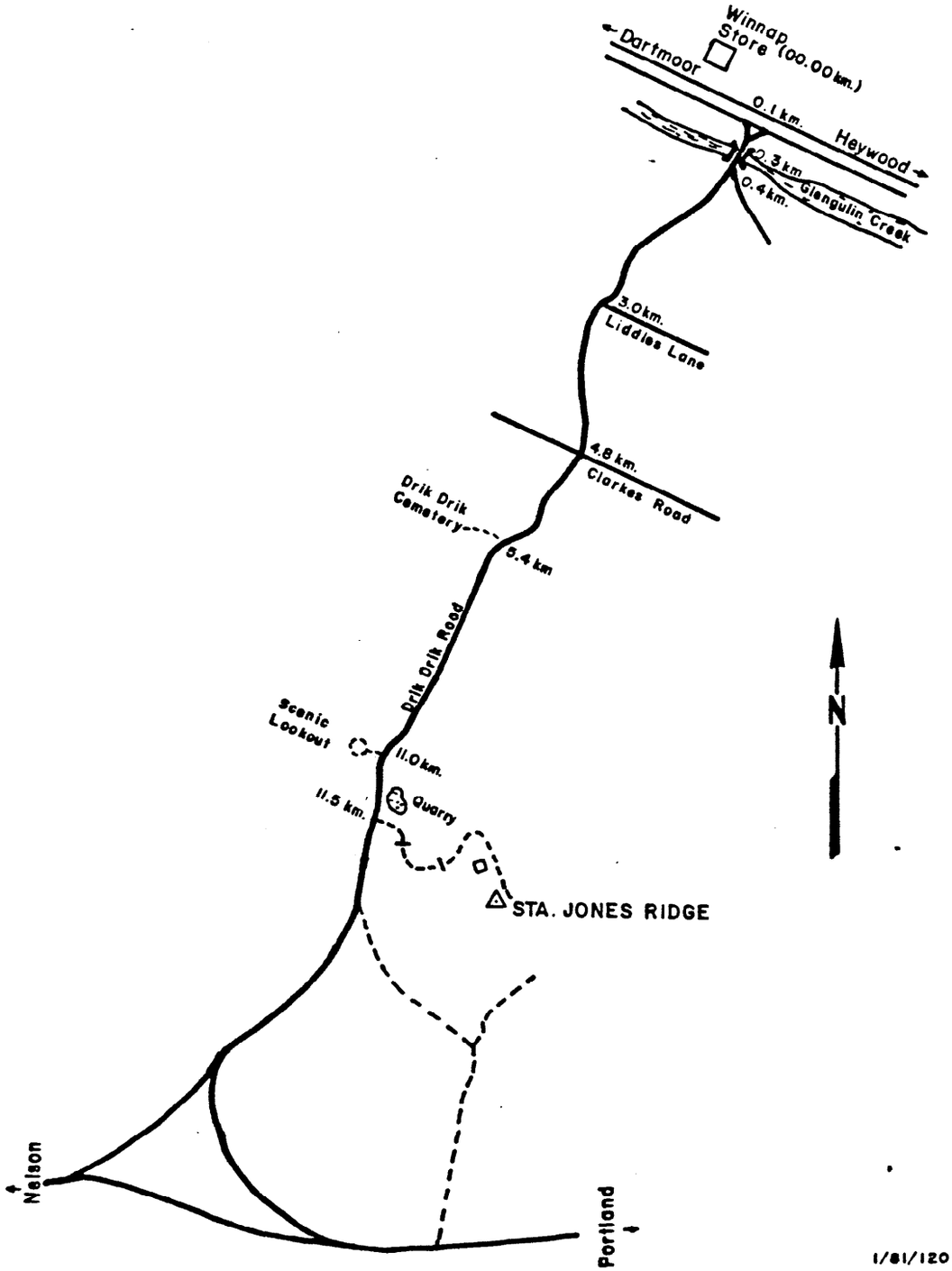


1/81/1201

OFFSHORE NAVIGATION
(AUSTRALIA) PTY. LTD.

STA. JONES RIDGE——————AUSTRALIA

ACCESS——FROM WINNAP



OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

STATION: MOUNT RUSKIN

LOCATED: Station Mount Ruskin is located on the Victoria-South Australia border, about 4 miles west of the township of Nelson, Victoria. The station is on a prominent hill, which can be seen from the Port Nelson - Mount Gambier Highway at the border sign. The station is in a large paddock on the farm of Mr. Max Holaway.

ACCESS: From the Portland, Victoria General Post Office building, set the vehicle's odometer to 0.00 kilometer, and travel on the North Princess Highway for 2.7 kilometers to a Shell garage. Turn left at this point, remaining on the Princess Highway, and drive to Nelson. At 65.2 kilometers, and in the township of Nelson, a Mobil garage will be passed. Continue on the Princess Highway, crossing a bridge that is over the Elenee River at 65.5 kilometers, pass the entrance to Mr. Holaway's house at 68.5 kilometers, and drive to a gate on the lefthand side of the road at 69.3 kilometers, just past the Victoria - South Australia border. Turn left and go through the gate. Follow the track from the gate to the station, a distance of 1.4 kilometers. A four-wheel drive vehicle is required to negotiate the track during periods of wet weather.

MARKER: The station marker consists of a standard Victorian Department of Lands & Surveys marker, a circular concrete wheel with a metal pin in its center. A 12-foot steel quadruped sits over the marker.

Mr. Holaway's house is located approximately 1 kilometer, at a bearing of 080°, from the marker. A windmill and tank is approximately one-half kilometer away from the marker, at a bearing of 180°.

STATION: MOUNT RUSKIN (continued)

GENERAL: All food, fuel, oil, and water supplies can be purchased in either Nelson or Portland. Water from the bores in the station area is suitable for drinking. Labor is available in Portland at approximately $40.00 per day.

The station property owner, Mr. Max Holaway, must be notified when this station is to be occupied, and permission obtained. No rent was paid for the use of the property.

A 60-foot tower was erected at this station. A minimum tower height of 40 feet is required to clear surrounding obstructions. Clear vista is from 120° to 250°. Double star stakes are required to secure the tower, due to strong winds that can be experienced in this area. Difficulty can be experienced in trying to keep a tent up in these winds. A caravan, to house the equipment and operator, is required.

ELEVATION: 38 meters

SKETCH: See next page.

Coordinates of the trig marker were obtained from the Lands & Surveys Department, Victoria.

UTM PROJECTION, AUSTRALIAN NATIONAL SPHEROID
ZONE 54, C.M. 141° EAST ---------- A.G.D.

Lat. 38°02'54"56 S N = 5,788,789 meters
Long. 140°57'49"58 E E = 496,821 meters

STA. MOUNT RUSKIN——————AUSTRALIA

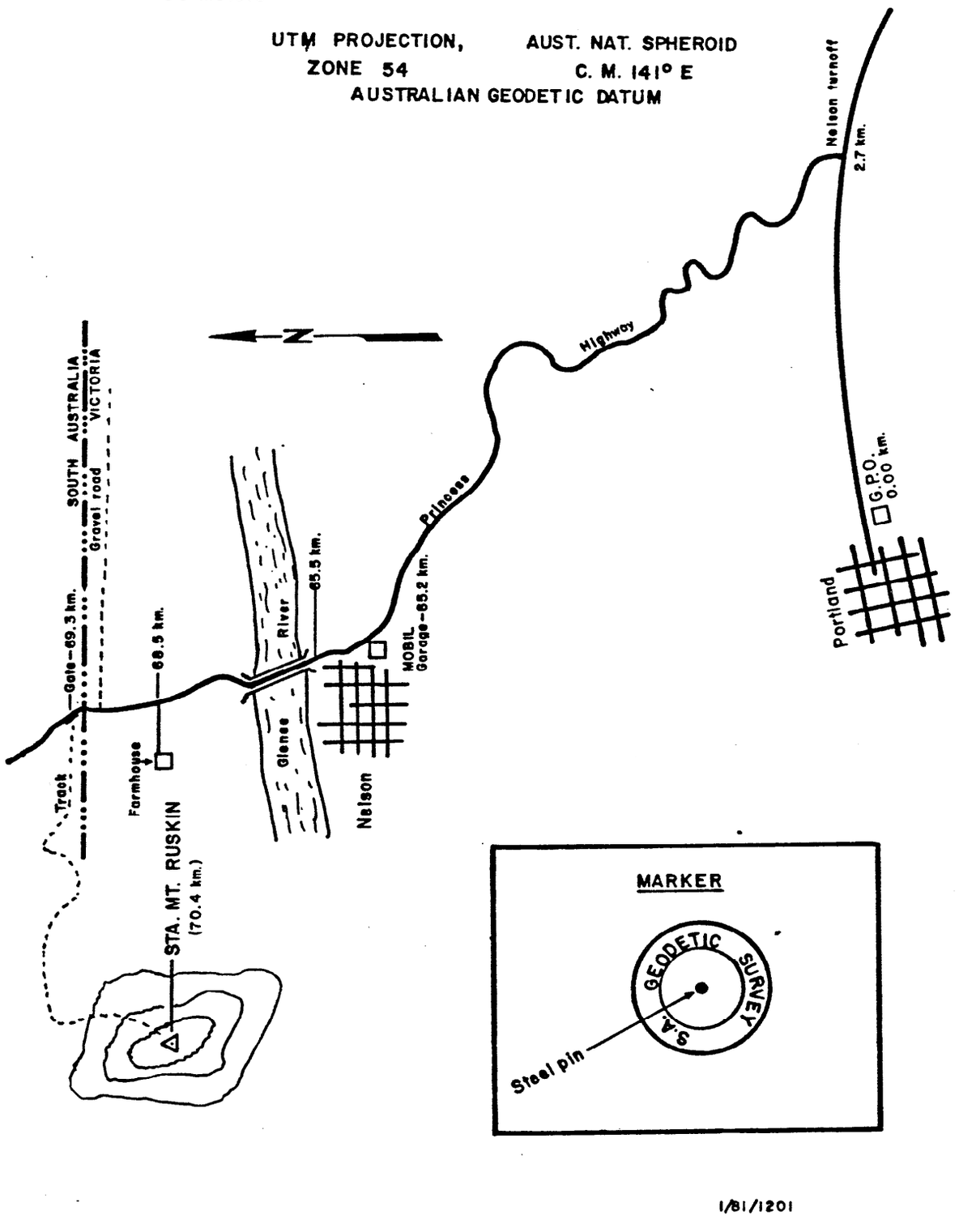
PHILLIPS COORDINATES

LAT. 38°02' 54".56 S — N 5,788,789 meters

LONG. 140°57' 49".58 E — E 496,821 meters

ELEV. 38 meters

UTM PROJECTION, AUST. NAT. SPHEROID
ZONE 54 C. M. 141° E
AUSTRALIAN GEODETIC DATUM



1/81/1201

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

WELL DISCOVERY BAY No.1 ——————— AUSTRALIA

LAT. 38°24' 42".90 S
LONG. 141°04' 21".10 E

N 5,748,463 meters
E 506,332 meters

UTM PROJECTION, ZONE 52
AUST. NAT. SPHEROID
C. M. 129° E
AUSTRALIAN GEODETIC DATUM

9/82/1419

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

APPENDIX A

DAILY OPERATIONS LOGS

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number P1419 Date SEPT 13TH 1982 Boat DIAMOND M EPOCH Client Party Number DISCOVERY BAY N° 1
Geophysical Company Oil Company PHILLIPS Radio Frequency 7840 KHZ
Country AUSTRALIA Area/Prospect VIC/P14 Stepback Shot Point Interval

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

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
RUSKIN	C. THGIMAN	429 MHZ	036	036	5	4.996
JONES RIDGE	G. WELLS	429 MHZ	010	032	1	4.995
RIDGEWATER	S. ~~RAYNE~~ WALSH	429 MHZ	067	016	3	4.996

OPERATING TIME

Time On	Time Off	Requested By	System Used For

O/T Requested By — Total System - Hours Operation for Client: NIL

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

MOBILE OPP TRAVELS HOBART TO STRAHAN
1545 OUT TO RIG VIA HELICOPTER WITH EQUIPMENT
COMMENCE MOBILE INSTILATION
2350 ALL ANCHORS ABOARD — COMMENCE TOW
2400 EN ROUTE FOR LOCATION

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 SEPT 14TH 1982 Boat DIAMOND M GEOGIA Client Party Number DISCOVERY BAY N° 1

Geophysical Company ..... Oil Company PHILLIPS Radio Frequency 7840 KHZ

Country AUSTRALIA Area/Prospect VIC / P 14 Stepback ..... Shot Point Interval .....

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

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
MT. RUSKIN	C. THEIMAN	429 MHZ	036	036	5	4.996
JONES RIDGE	G. WELLS	429 MHZ	010	032	1	4.995
BRIDGEWATER	S. ~~BOYCE~~ WALSH	429 MHZ	067	016	3	4.996

OPERATING TIME

Time On	Time Off	Requested By	System Used For

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

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks 0001 EN ROUTE FOR LOCATION
COMPLETE MOBILE INSTILATION

PERIODIC RADIO CHECKS AND SIGNAL CHECKS
BUT UNABLE TO GET MAXIRAN SIGNALS AT THESE RANGES
AS INSTILLATION PROBLEMS WOULD ONLY ALLOW LOW POWER
SET UP ON THE MOBILE END

2400 EN ROUTE FOR LOCATION

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 SEPT 15TH 1982 Boat DIAMOND M EPOCH Client Party Number DISCOVERY BAY N°1
Geophysical Company ..... Oil Company PHILLIPS Radio Frequency 7840 KHZ
Country AUSTRALIA Area/Prospect VIC / P 14 Stepback ..... Shot Point Interval .....

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

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
MT. RUSKIN	C. THEIMAN	429 MHZ	036	036	5	4.996
JONES RIDGE	G. WELLS	429 MHZ	010	032	1	4.995
BRIDGE WATER	S. ~~PAYNE~~ WALSH	429 MHZ	067	016	3	4.996

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0900	0930	C. CUTTS	CHECK SIGNALS
1200	1230	C. CUTTS	CHECK SIGNALS
1500	2400	C. CUTTS	CHECK SIGNALS AND TRACK PROGRESS OF RIG

O/T Requested By ..... Total System - Hours Operation for Client 10h 0m

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks 0001 GN ROUTE FOR LOCATION
0900 NET ON RECEIVING MT RUSKIN WEAK AT 260 Km
AND BRIDGEWATER SOLID AT 205 Km — NO JONES RIDGE
0930 NET OFF
1200 NET ON RECEIVING MT RUSKIN & BRIDGEWATER BUT
NO JONES RIDGE
1230 NET OFF
1500 NET ON TRACKING ALL THREE STATIONS
1245 3 WAY CK R = 117.757 B = 68.195 J = 107.825
1325 3 WAY CK R = 114.149 J = 104.496 B = 64.882
1400 GN ROUTE FOR LOCATION

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 SEPT 16TH 1982 Boat DIAMOND M EPOCH Client Party Number DISCOVERY BAY N°1
Geophysical Company Oil Company PHILLIPS Radio Frequency 7840 KHZ
Country AUSTRALIA Area/Prospect VIC / P14 Stepback Shot Point Interval

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

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
MT. RUSKIN	C. THEIMAN	429 MHZ	036	036	5	4.996
JONES RIDGE	G. WELLS	429 MHZ	010	032	1	4.995
BRIDGEWATER	S. WALSH	429 MHZ	067	016	3	4.996

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0001	2400	C. CUTTS	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 0001 EN ROUTE FOR LOCATION
0023 R = 103.128 J = 94.219 B = 54.732
0140 R = 92.462 J = 84.133 B = 44.914
0254 R = 81.527 J = 73.914 B = 35.290
0405 R = 71.828 J = 64.962 B = 27.465
0514 R = 62.039 J = 57.042 B = 22.798
0922 DROP 7 ANCHOR R = 41.982 J = 44.922 B = 28.439
0945 R = 41.273 J = 44.778 B = 29.202
1125 R = 41.355 J = 44.926 B = 29.318 Æ TO D.S. 36m @ 120°T
1420 R = 41.345 J = 44.883 B = 29.239 Æ TO D.S. 36m @ 137°T
1734 R = 41.302 J = 44.835 B = 29.252 Æ TO D.S. 36m @ 134°T
1949 R = 41.297 J = 44.825 B = 29.244 Æ TO D.S. 36m @ 127°T

OVER

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 SEPT 19TH 1982 Boat DIAMOND M EPOCH Client Party Number DISCOVERY BAY N°1
Geophysical Company Oil Company PHILLIPS Radio Frequency 7840 KHZ
Country AUSTRALIA Area/Prospect VIC/P14 Stepback Shot Point Interval

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

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
T. RUSKIN	C. THEIMAN	429 MHZ	036	036	5	4.996
JONES RIDGE	G. WELLS	429 MHZ	010	032	1	4.995
BRIDGEWATER	S. ~~BOYCE~~ WALSH	429 MHZ	067	016	3	4.996

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0001	2400	C. CUTTS	RIG POSITIONING

O/T Requested By — Total System - Hours Operation for Client: 24 h

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks 0001 ANCHOR WORK IN PROGRESS
0700 R= 41.382 J= 44.942 B= 29.313 Æ TO D.S. 36m @ 129° T
ANCHORS SLIPPING BADLY DISPATCH SERVICE
BOAT TO GET MORE ANCHORS FOR PIGGY BACKS

~~ANCHORS~~ WORK BOAT BACK BUT WEATHER
NOW TOO BAD FOR THEM TO WORK

2400 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 P1419 Date SEPT 18TH 1982 Boat DIAMOND M EPOCH Client Party Number DISCOVERY BAY N°1

Geophysical Company ..... Oil Company PHILLIPS Radio Frequency 7840 KHZ

Country AUSTRALIA Area/Prospect VIC/P14 Stepback ..... Shot Point Interval .....

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

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
RUSKIN	C. THEIMAN	429 MHZ	036	036	5	4.996
JONES RIDGE	G. WELLS	429 MHZ	010	032	1	4.995
BRIDGEWATER	S. WALSH	429 MHZ	067	016	3	4.996

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0001	2400	C. CUTTS	RIG POSITIONING

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

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks .....

WAITING ON WEATHER PERIODIC RADIO AND POSITION CHECKS

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 SEPT 19TH 1982 Boat DIAMOND M EPOCH Client Party Number DISCOVERY BAY No 1

Geophysical Company Oil Company PHILLIPS Radio Frequency 7840 KHZ

Country AUSTRALIA Area/Prospect VIC/P14 Stepback Shot Point Interval

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

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
MT. RUSKIN	C. THEIMAN	429 MHZ	036	036	5	4.996
JONES RIDGE	G. WELLS	429 MHZ	010	032	1	4.995
BRIDGEWATER	S. ~~PAYNE~~ WALSH	429 MHZ	067	016	3	4.996

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0001	2400	C. CUTTS	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

RIG PERSONELL ATTEMPTING TO GET ANCHORS TO HOLD — WORKING ON ANCHORS ALL DAY

2400 POSN. R: 41.406 J: 44.972 B: 29.324 Æ TO D.S. 36m @ 125°T

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 SEPT 20TH 1982 Boat DIAMOND M EPOCH Client Party Number DISCOVERY BAY N°1
Geophysical Company Oil Company PHILLIPS Radio Frequency 7840 KHZ
Country AUSTRALIA Area/Prospect VIC/P14 Stepback Shot Point Interval

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

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
MT RUSKIN	C THOMAND	429 MHZ	036	036	5	4.996
JONES RIDGE	G. WELLS	429 MHZ	010	032	1	4.995
BRIDGEWATER	S. ~~PAYNE~~ WALSH	429 MHZ	067	016	3	4.996

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0001	2400	C. CUTTS	RIG POSITIONING

C/T Requested By — Total System - Hours Operation for Client 24 h

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

WORKING ON ANCHORS

1100 POSN R=41.432 J=44.989 B=29.323 Æ TO D.S. 36m @ 129° T

1100 POSN R=41.420 J=44.982 B=29.319 Æ TO D.S. 36m @ 125° T

SOAKING 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 SEPT 21ST 1982 Boat DIAMOND M EPOCH Client Party Number DISCOVERY BAY N°1
Geophysical Company Oil Company PHILLIPS Radio Frequency 7840 KHZ
Country AUSTRALIA Area/Prospect VIC/P14 Stepback Shot Point Interval

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

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
MT RUSKIN	C. THEIMANN	429 MHZ	036	036	5	4.996
JONES RIDGE	G. WELLS	429 MHZ	010	032	3	4.995
RIDGE WATER	S. WALSH RAYNE	429 MHZ	067	016	1	4.996

OPERATING TIME

Time On	Time Off	Requested By	System Used For
0001	2400	C. CUTTS	RIG POSITIONING

O/T Requested By — Total System - Hours Operation for Client: 24 h

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

0700 POSN. R:41.420 J:44.982 B:29.320 Æ TO D.S. 36m @ 125°T
ATTEMPT TO DRILL — NO GOOD
RIG MOVED OVER

1700 POSN. R:41.421 J:44.977 B:29.308 Æ TO D.S. 36m @ 126°T.

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 SEPT 22ND 1982 Boat DIAMOND M EPOCH Client Party Number DISCOVERY BAY No 1

Geophysical Company Oil Company PHILLIPS Radio Frequency 7840 KHZ

Country AUSTRALIA Area/Prospect VIC/P14 Stepback Shot Point Interval

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

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
MT RUSKIN	C. THEIMAN	429MHZ	036	036	6	4.996
JONES RIDGE	G. WELLS	429MHZ	010	032	3	4.995
BRIDGEWATER	S. WALSH	429MHZ	067	016	1	4.996

OPERATING TIME

Time On	Time Off	Requested By	System Used For
2001	2130	C. CUTTS	RIG POSITIONING

O/T Requested By — Total System - Hours Operation for Client 21h 30m

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks

0100 POSN R=41.422 J=44.976 B=29.307 AE TO D.S. 36m @ 125°T

2130 BASE PLATE CEMENTED IN FINAL POSITION

MT RUSKIN = 41.422 JONES RIDGE = 44.976 BRIDGEWATER = 29.307

ANTENNA TO DRILL STEM 36m AT 125°T

NET SECURED

Job Supervisors A. HOGGART

Party Chief H. BRIDGES

Form N-1A SEE INSTRUCTIONS ON REVERSE

OFFSHORE NAVIGATION INC.
MAXIRAN DAILY OPERATIONS LOG

Project Number P1419 Date SEPT 23-24 1982 Boat DIAMOND M EPOCH Client Party Number DISCOVERY BAY No 1

Geophysical Company Oil Company PHILLIPS Radio Frequency

Country AUSTRALIA Area/Prospect VIC/P14 Stepback Shot Point Interval

Mobile Station	FREQUENCY	INTERROGATOR	MONITOR	AMPLIFIER	ANTENNA SYSTEM

BASE STATIONS

Position	Operator	Frequency	Beacon	Amplifier	Code	Delay
	C. THOMAN					
	A. WELLS					
	S. WALSH					

OPERATING TIME

Time On	Time Off	Requested By	System Used For

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

LOST TIME

From	To	Hours Lost	Reason(s)
		NIL	

Brief Operations Log & Remarks 23RD MOBILE EQUIPMENT PACKED UP AND PUT ABOARD THE MAERSK HELPER, BASE STATIONS TAKEN DOWN

24TH MOBILE OPERATOR T EQUIPMENT OFFLOADED IN PORTLAND

Mobile Operators A. HOGGART

Party Chief H. BRIDGES

Form N-1A SEE INSTRUCTIONS ON REVERSE

Operations Log & Remarks (con'd.)

1957 R=41.293 J=44.822 B=29.246 Æ To D.S. 36m @ 129° T

ANCHORS NOT HOLDING ANCHOR BOATS RE SETTING & PIGGY BACKING ANCHORS

2400 AS ABOVE

INSTRUCTIONS

1. This form is to be filled out completely for each day that the crew, or any member thereof, is in a work status.
2. It is intended to provide a concise but complete log of one day's activity on an operating radiopositioning crew. Completeness is more important than brevity.
3. If more space is needed in order to make a complete report, use supplemental sheets.
4. In addition to providing an operational log, it also provides information required for billing purposes, particularly as it lists operating days, lost time, overtime, etc.
5. It has been specifically modified from previous forms to provide (under Operating Time) for a notation as to what the system is being used for during a specific period. This is particularly important (1) in case of overtime operations; (2) when the system is being used for other than the client's normal, day to day, operations; and (3) when the system is kept on the air but no production is being realized.
6. Under "Operating Time", the name of the client's representative requesting that the system be turned on or off or requesting overtime (O/T) operations should be noted. Notations such as "Client" or "Client Rep." are not sufficient.
7. Mobile operators should ascertain from their Party Chief if overtime charges are applicable on a particular operation (Party Chiefs are normally furnished with a copy of the applicable contract). If overtime is applicable to the operation, it should not be incurred without the client representative being fully aware of it and specifically authorizing it. In brief, if the system is not required, it should be turned off. If the client will not permit its being turned off to eliminate unnecessary overtime, that should be noted on this form, including all pertinent particulars.
8. The client, or his representative, always has the final decision as to whether the system should be turned on or off.

APPENDIX B

THE MAXIRAN RADIOPOSITIONING SYSTEM

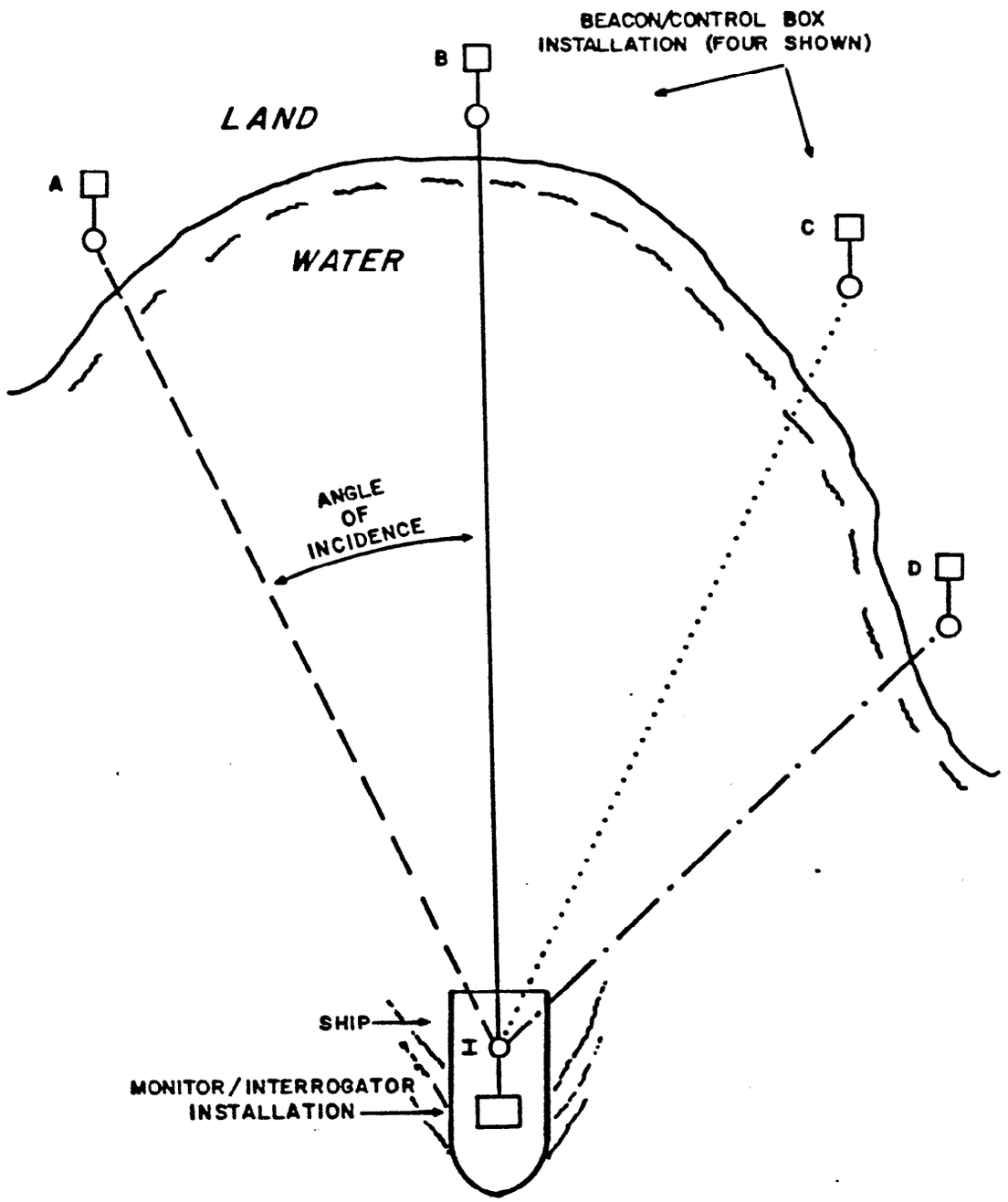
I. THE MAXIRAN RADIOPOSITIONING SYSTEM

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-I. TYPICAL MAXIRAN SYSTEM



OFFSHORE NAVIGATION
(AUSTRALIA) PTY. LTD.

I. THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

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

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

I. THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

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

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

FIGURE-2. SYSTEM WITH TWO BEACONS

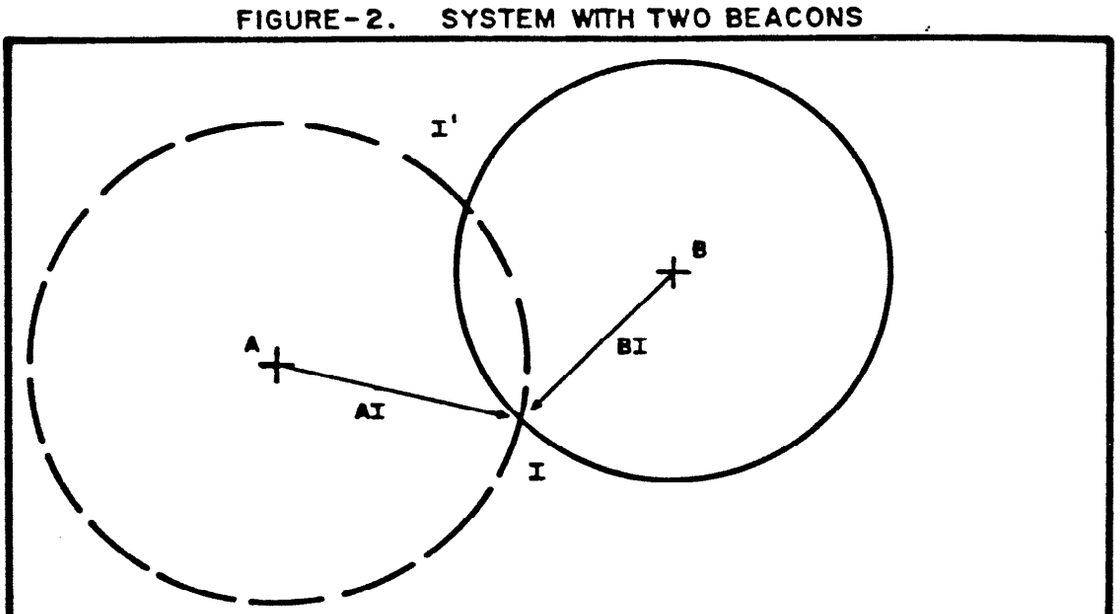
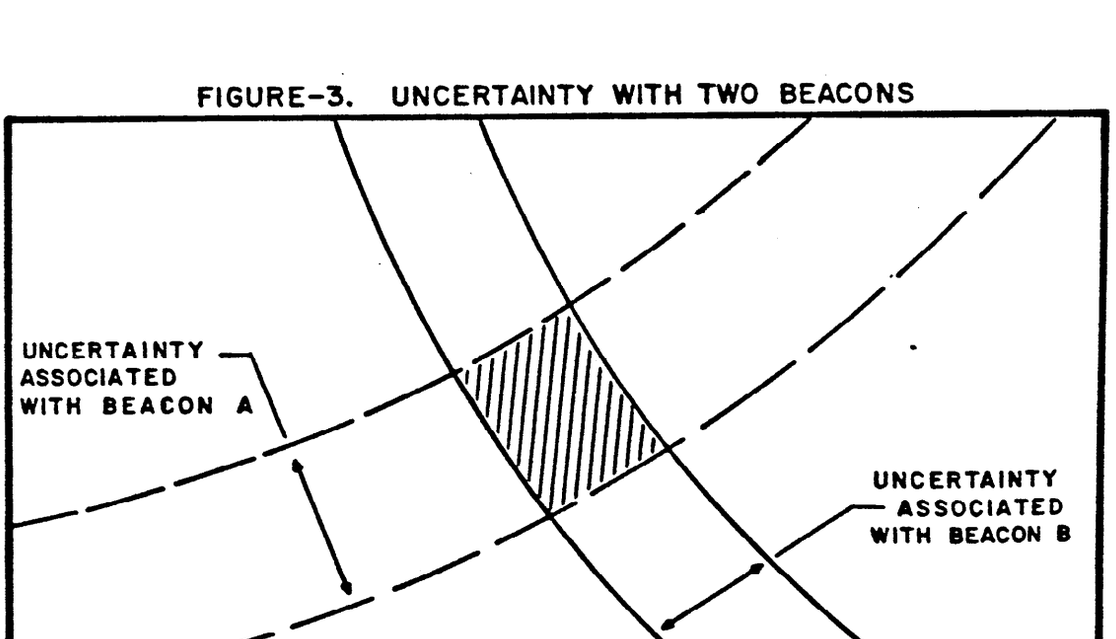


FIGURE-3. UNCERTAINTY WITH TWO BEACONS



I. THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

For the purposes of the following discussion, it is assumed that there are now three Beacons utilized. Now three circles are defined, instead of the two from the discussion above. The third distance, from Beacon "C" to the Interrogator (call it distance C1), defines a circle of radius length CI centered about Beacon "C". The new situation is illustrated in Figure 4. Notice that with the three circles, there is only one location where all three circles can intersect. This eliminates the ambiguity associated with using only two Beacons. Now there is no I' to worry about. An additional advantage of using three Beacons is illustrated in Figure 5. Now the area of uncertainty has been reduced even though the tolerance of Beacon "C"'s measurement isn't any better than that of the other Beacons.

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

FIGURE-4. SYSTEM WITH THREE BEACONS

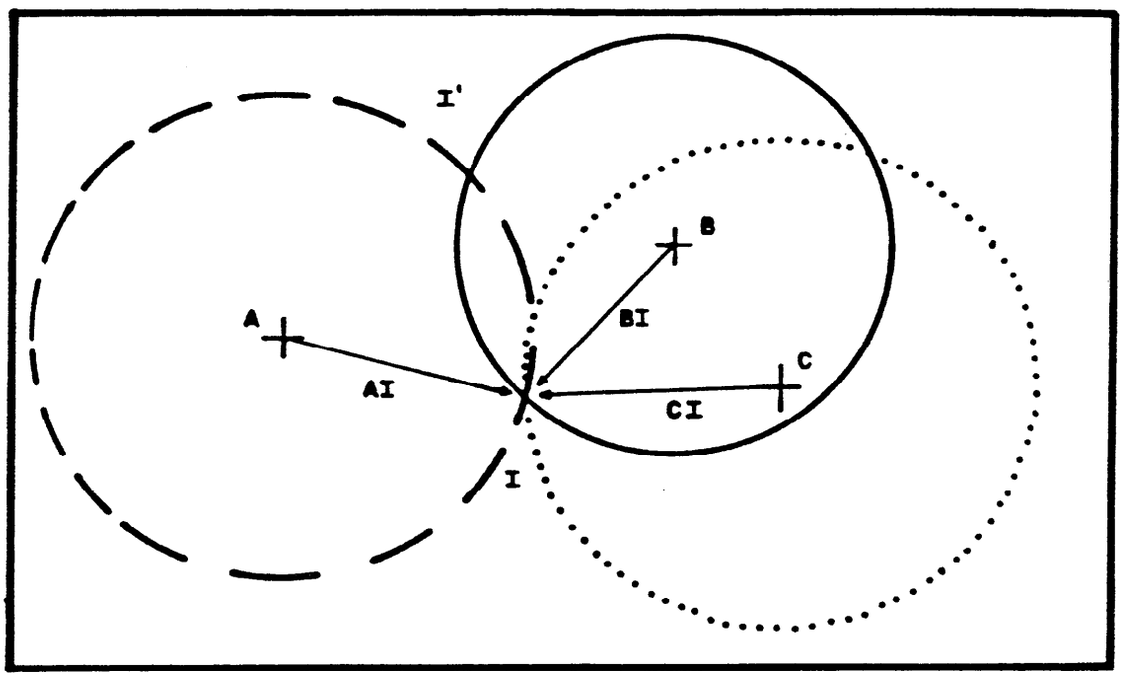
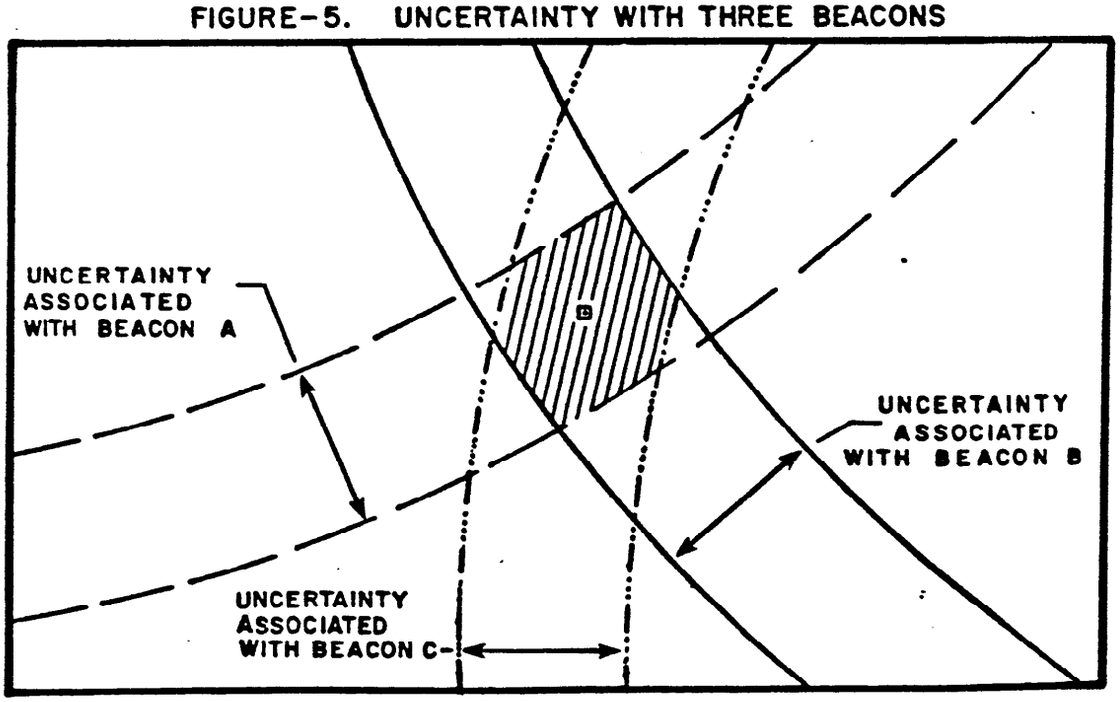


FIGURE-5. UNCERTAINTY WITH THREE BEACONS



I. THE MAXIRAN RADIOPOSITIONING SYSTEM (continued)

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