FINAL REPORT

OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.

PROJECT 1357

(EPP 18 SNIFFER SURVEY)

FOR

ULTRAMAR AUSTRALIA LIMITED

SOUTH AUSTRALIA

MAY - JULY 1981



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### ABSTRACT

Project 1357 was a Mini-Ranger controlled marine sidescan and sparker operation that was conducted off the coast of South Australia, in the Southern Ocean.

The principal and prime contractor was Ultramar Australia Limited (ULTRAMAR).

EG&G GES Pty. Ltd. (EG&G) was the geophysical operator.

Offshore Navigation (Australia) Pty. Ltd. (ONA) provided a Mini-Ranger III Position Determining System to this survey.

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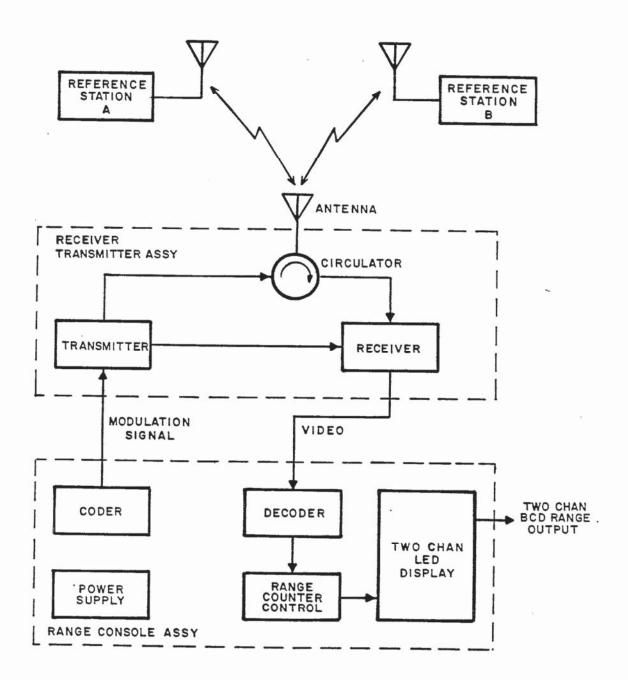
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### I. THE MINI-RANGER III POSITION DETERMINING SYSTEM

The Mini-Ranger III System (MRS III) accurately locates the position of a vehicle or vessel with respect to two known geographical locations (reference points). It operates on the principle of pulse radar, with a radar interrogator located on the mobile unit, and a radar transponder (reference station) positioned at each reference point. The elapsed time between the transmitted pulse and the reference station reply pulse is used as the basis for determining the range to each reference station. This range information, together with the known locations of the reference station, can be trilaterated to obtain a fix on the position of the mobile unit.

A unique coding system is used in the MRS III. This system minimizes any false range readings that may be caused by radar interference. Selective reference station interrogation is provided by commutation of the interrogation codes.

The relationship of the units of the MRS III is shown in Figure 1. General operating principals of the individual units are described in the following paragraphs.



MRS III, OVERALL BLOCK DIAGRAM

Figure 1

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### I. THE MINI-RANGER III POSITION DETERMINING SYSTEM (cont'd.)

RECEIVER-TRANSMITTER ASSEMBLY OPERATION - The receivertransmitter consists of a radar transmitter, a radar receiver, and a video processor assembly. As shown in Figure 1, the encoder modulation signal from the Range Console passes through the video processor to the transmitter. The resulting coded, rf transmitted, signal passes through the circulator to the antenna. At the same time, the transmitter control signal passes through the video processor to the Range Console where it is used as a start signal for the range counters. Meanwhile, the interrogation signal is received, processed, and a reply signal is received by the receiver-transmitter antenna, and then passed through the circulator to the receiver. The resulting video passes through the signal processor to the Range Console. Here, it is decoded and becomes the stop signal for the range counters.

RANGE CONSOLE OPERATION - The range console consists of a coder, a decoder, a range counter control, a numerical readout (range counter display), and a power supply. The power

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### I. THE MINI-RANGER III POSITION DETERMINING SYSTEM (cont'd.)

supply provides operating voltages for both the range console and the receiver-transmitter. The coder generates the transmitter modulation signal. When a start signal (sampled and processed interrogation) is received from the receiver-transmitter, the range counter starts to count. The transponder reply video is decoded by the decoder assembly and becomes the stop signal for the range counter. After five consecutive interrogations, and the receipt of five consecutive reference station replies, the range counter control commands the front panel range counter display to refresh the range readout. The range information, in parallel BCD format, is also available at a rear panel connector for use by peripheral equipment such as printers or computers.

REFERENCE STATION OPERATIONS - The reference stations, containing solid state radar transponders, are installed at known locations and serve as reference points in the Mini-Ranger III System. The reference stations receive pulse-coded interrogations from the receiver-transmitter. The interrogations are decoded by the applicable reference stations (depending on the pulse spacings of the

### I. THE MINI-RANGER III POSITION DETERMINING SYSTEM (cont'd.)

interrogations), and produce a coded reference station reply.

The Mini-Ranger III System is usually calibrated to measure the distance between the antenna on the receiver-transmitter and the antenna on the reference station. The normal calibration procedure is to place the reference stations at a known distance (greater than 100 meters) from the receiver-transmitter antenna and to adjust the front panel control of the Mini-Ranger Range Console until the display range equals the known range. A separate calibration circuit and control is provided for each of the reference stations that can be used with the system. To minimize the residual effects on the pulse rise time, it is desirable, where possible, to calibrate the system at a range close to expected operational range and under the conditions expected during operation.

The Mini-Ranger III position Determining System measures ranges up to 37 kilometers (20 nautical miles) from each reference station to the Mini-Ranger mobile station, with a probable range error of less than 3 meters.

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### II. AREA OF OPERATIONS

Operations were conducted off the coast of South Australia, in the Southern Ocean. The survey extended along the coast from Cape Nelson to Beachport, South Australia, and up to approximately 46 kilometers offshore.

The ONA base of operation was established in Mount Gambier, South Australia, on 9 May 1981.

#### III. FIELD OPERATIONS RECAP

Advance ONA personnel arrived in the operational area on 8 May 1981, and began scouting Mini-Ranger base station sites to be occupied to control this survey on 9 May. All ONA personnel necessary for this survey were in the operational area by 19 May 1981.

The Mini-Ranger system was airfreighted by ONA's parent company, Offshore Navigation, Inc. (ONI), from New Orleans, Louisiana, USA, to Melbourne, Victoria, arriving

### III. FIELD OPERATIONS RECAP (continued)

in Melbourne on 16 May 1981. The equipment cleared Customs formalities on 18 May 1981, and was received by ONA personnel.

The Mini-Ranger was transported to Station Crows Hill on 20 May 1981, and calibrated over the calibration range at that site. See "Mini-Ranger Calibration" of this report for details.

The Mini-Ranger mobile equipment was transported to Portland on 20 May 1981, and loaded on board the recording vessel M/V HALCYON. Installation of the Mini-Ranger mobile equipment on board the vessel was accomplished on 20 May 1981.

Installation of the Mini-Ranger base equipment on the initial sites occupied to control this survey began 21 May 1981, and was completed 23 May 1981.

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### III. FIELD OPERATIONS RECAP (continued)

The M/V HALCYON departed Portland on 25 May 1981, and proceeded to the survey area. Geophysical operations began on 26 May and were completed 21 June 1981.

On completion of the geophysical operations, the M/V HALCYON was scheduled to pick up three current meters. However, this could not be done due to weather conditions. The vessel returned to Portland to await weather conditions favorable for picking up the current meters. The Mini-Ranger base stations that were not necessary for the pickup of the three current meters were secured on 21 June 1981, and dismantled. The stations required for the operation remained in operation. The current meters were picked up on 8 July 1981, using Mini-Ranger control. The Mini-Ranger system was secured on completion of this operation, and the ONA personnel were instructed to dismantle the system.

The Mini-Ranger stations used to control the current meter pickup were dismantled on 8 July 1981. The Mini-Ranger mobile equipment was removed from the M/V

### III. FIELD OPERATIONS RECAP (continued)

HALCYON on 9 July. All Mini-Ranger equipment was packaged on 9 July, and shipped to the ONA office in Perth, Western Australia, on 10 July 1981. All electronics were returned to Perth by airfreight, and all the hardware was shipped to Perth by road transport.

All ONA personnel were released from this survey on 12 July 1981.

#### IV. GENERAL INFORMATION

A. Mini-Ranger frequencies used were:

Mobile Transmitter

9330 MHz

Base Transmitter

9420 MHz

- B. Satisfactory radiotelephone communications between all Mini-Ranger installations were maintained on the frequencies of 4637.5 and 7840.0 (SSB) kilocycles.
- C. The Mini-Ranger field data was turned over to the ONI office in New Orleans, Louisiana, for final mapping.
- D. Five Mini-Ranger base station installations were provided by ONA for this survey.
- E. Six Mini-Ranger base station sites were occupied during this operation. They were:

STATION BEACHPORT
STATION CAPE BANKS OFFSET
STATION CAPE BUFFON

### IV. GENERAL INFORMATION (continued)

STATION C. NORTHUMBERLAND L/H OFF.

STATION MOUNT ELEPHANT OFFSET

STATION MOUNT RUSKIN OFFSET

- F. The maximum range observed by the Mini-Ranger system during this survey was 50 kilometers.
- H. ONA provided the following peripheral with the Mini-Ranger mobile equipment:

Digital Printer

Event Counter & Clock

### V. MINI-RANGER CALIBRATION

The Mini-Ranger was calibrated over a calibrated range at Station Crows Hill on 20 May 1981. The Mini-Ranger mobile equipment was installed at the Station Crows Hill marker, and the Mini-Ranger base station equipment was installed at the offset marker, which was surveyed at a distance of 1,004.07 meters from the station marker.

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

### OFFSHORE NAVIGATION, INC.

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### 

DATE: 20 MAY 1981 MOBILE STATION **BASE STATION** DOCATION: CROWS HILL BASE LOCATION: 1004.07 H. OFFSET OPERATOR: OPERATOR: RUSSEL / WELL RESTROM MODEL SERIAL No. UNIT MODEL SERIAL No. UNIT CODE WONITOR BEACON 474-04 002 4MM-10 CONTROL BOX TERROGATOR TM-04 003 AMPLIFIER MPLIFIER NIA VIA AMPLIFIER P/S AMPLIFIER P/S NIA NIA PREAMP REAMP NIA NA LENGTH TYPE LENGTH TYPE COAX NA ERCONNECT 00 F1 HEIGHT TYPE HEIGHT TYPE ANTENNA NTENNA HORN HOM-10-005 10FEET 10 FEET PUT VOLTAGE INPUT VOLTAGE 24 0 ZYV TX. FREQUENCY X. FREQUENCY 5525 5425 MAZ Mhz X. FREQUENCY RX. FREQUENCY 5425 Mhz RX. GAIN SETTING RX. GAIN SETTING EATHER CONDITIONS WEATHER CONDITIONS FAIR

OBSERVED RANGE IN CALIBRATE:	1000	KM METERS
OMPUTED SLANT RANGE:	1004,07	METERS
MOBILE ZERO SETTING IS: ADJ		
BSERVED RANGE IN OPERATE:	1004	KM TIME: /352 Local
1	SIGNED:	Mile Bernstrom

#### NOTES REGARDING CALIBRATION PROCEDURES:

HALANI

- 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.
- B. 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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## MINIRANGER THE MAXIBATION REPORT

					DATE: 2	OMAY	1981				
	MOBILE STATION	BASE STATION									
CATION: CROW	US HILL BASE	LOCATION: 1004 07 M. CEFSET									
	FRESTROM /		OPERATOR: RU	ISSEL /	WELL	5					
UNIT	MODEL	SERIAL No.	UNIT		DEL	SER	IAL No.				
MONITOR	HMM-10	002	BEACON	HTL	-04	013	CODE				
INTERROGATOR	HTM -04	003	CONTROL BOX	N	A						
MPLIFIER	MA		AMPLIFIER	N/	•						
AMPLIFIER P/S	NA		AMPLIFIER P/S				NA		1925.2		
REAMP	NA		PREAMP						NIA		
<del>©DA</del> X	TYPE	LENGTH	COAX	TY	TYPE LE		NGTH				
EE CONFECT		100 FT.	J GOAX	N	IA						
	TYPE	HEIGHT	ANTENNA	TYPE		НЕ	IGHT				
ANTENNA	HQM-10-005	IOFEET	ANTENNA	HO	RN	101	FEET				
MPUT VOLTAGE	241	/	INPUT VOLTAGE		2	40	3. JANAA 1982 M.C.				
X. FREQUENCY	552	25 MAZ	TX. FREQUENCY			425					
X. FREQUENCY	542	S Mbz	RX. FREQUENCY		S	525					
RX. GAIN SETTING			RX. GAIN SETTING		Parties and the same of the sa	NIA					
		IR	WEATHER CONDI	TIONS	1	FAIR					
			,								

OBSERVED RANGE IN CALIBRATE:	1004	*M METERS
OMPUTED SLANT RANGE:	1004,07	-// -
		KM -'-
BSERVED RANGE IN OPERATE:	1004	HM TIME: /359 Local

SIGNED: M. Le Beigste

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# OFFSHORE NAVIGATION, INC.

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### MINI RANGER ZZ MAXIRAN CALIBRATION REPORT

	-					DATE: Z	MAY	1981
	STATION	BASE STATION						
DCATION: CROP	WS HIL	L BASE	STATION	LOCATION:	0040	7 M. O	FF52	
PERATOR: BE	RUSTI	EOM / P	YE	OPERATOR: PL				
UNIT	1997/89/0107	DEL	SERIAL No.	UNIT		DEL	1	IAL No.
ONITOR	HM	4-10	002	BEACON	HTL -	05	002	CODEZ
INTERROGATOR	471	7-04	003	CONTROL BOX	N	IA		
MPLIFIER	K	1/19		AMPLIFIER		18		
AMPLIFIER P/S	N	119		AMPLIFIER P/S		NIA		
REAMP	N	19		PREAMP		118		
COAX	TY	PE	LENGTH	COAX	T	YPE	LENGTH	
A ELCOPNECT			100 FT	COAX	N	1/A		25 ACIVA-200
4417774144	TY	PE	HEIGHT	ANTENNA	T	/PE	HEIGHT	
ANTENNA	Ham	-10-005	IDFT.	ANTENNA	HOL	-9-008	10	FT
PUT VOLTAGE		24	V	INPUT VOLTAGE			240	d - 21
TX. FREQUENCY		55	25 Mhz	TX. FREQUENCY	′	54	25 Mhz	
X. FREQUENCY		54	25 Mhz	RX. FREQUENCY			25 H	14 Z
RX. GAIN SETTING			119	RX. GAIN SETTING				
EATHER CONDIT	IONS	FAI	IR	WEATHER COND	ITIONS	F	AIR	
		1						

BSERVED RANGE IN GALIBRATE:	999	M HETERS
OMPUTED SLANT RANGE:	1004,07	<del></del>
MOBILE ZERO SETTING IS:	+ 5	KM -//-
BSERVED RANGE IN OPERATE:(POj.)	1004	KMTIME: 1406 LOCAL
	SIGNED: Miles	Bergstrom

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## MINICANGER ZZ MAXIRAN CALIBRATION REPORT

		00-00-100 00-00-100				DATE: 2	20 MA	1981		
	MOBILE	STATION	BASE STATION							
DCATION: CRO	US HI	LL BASE	STATION	LOCATION: 1004, 07 M. OFFSET						
OPERATOR: BE	RUSTI	eom /F	PYE	OPERATOR: P	USSIEL	IWEL	25			
UNIT		DEL	SERIAL No.	UNIT	1	DEL		IAL No.		
ONITOR	HMI	4-10	00Z	BEACON	HITL	-04	007	CODE 3		
INTERROGATOR	HTI	4-04	003	CONTROLBOX	N	IA				
MPLIFIER	K	1/19		AMPLIFIER	N	NA				
AMPLIFIER P/S	N	10		AMPLIFIER P/S	NA		•			
REAMP	N	14		PREAMP	1			NIA		
<del>COAX</del>	Т	YPE	LENGTH	COAX	1	TYPE N/A				NGTH
ERCONNECT			100 FT	COAX	N					
-		YPE	HEIGHT	ANTENNA	TYPE		Н	EIGHT		
ANTENNA	Ham	-10-005	IOFT	ANTENNA	HO	RN	10	PFT		
IPUT VOLTAGE			IV	INPUT VOLTAGE			24 V			
IX. FREQUENCY		.55	25 MAZ	TX. FREQUENCY		5	S425 MAZ			
X. FREQUENCY			25 Mhz	RX. FREQUENCY		SSZSMHZ		thz		
RX. GAIN SETTING			VIA	RX. GAIN SETTIN			NA			
EATHER CONDIT	IONS	F	AIR	WEATHER COND	ITIONS		FAIR			

OBSERVED RANGE IN CALIBRATE:	1000	KM	METERS
OMPUTED SLANT RANGE:	1004,07	KM	-11 -
	+ 4		~"-
BSERVED RANGE IN OPERATE:	1004	KM	TIME: 14/0 60001

SIGNED: M. Ke Berystrom

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## OFFSHORE NAVIGATION, INC.

### MINICANGER TH MAXIBAN CALIBRATION REPORT

DATE: 20 MAY 1981

MOBILE STATION			BASE STATION											
CATION: CRO	LOCATION: 1004 OFM OFFSET													
OPERATOR: BE				OPERATOR: P										
UNIT		DEL	SERIAL No.	UNIT		DEL	1	RIAL No.						
MONITOR	HMI	4-10	00Z	BEACON	HTL	-04	001	CODE 3						
TERROGATOR		4-04	003	CONTROL BOX	N	11								
AMPLIFIER		1/19		AMPLIFIER	W/	NIA								
MPLIFIER P/S		1/19		AMPLIFIER P/S		S 40040 G25		0. 74.120 02.0		0.7012.020		NA		
REAMP		119		PREAMP		NIA								
		YPE	LENGTH	COAX		TYPE		NGTH						
DAX WERCONNECT			100 FT	COAX	N	IA								
	T	/PE	HEIGHT	ANITENINA	TY	/PE	н	EIGHT						
NTENNA	HOM-1	0-005	IDET	ANTENNA	HOR	2N	/	OFT						
INPUT VOLTAGE		92.	240	INPUT VOLTAGE		2	240							
X. FREQUENCY		76 9339 -	525 MAZ	TX. FREQUENCY	1	5 9	125	Muz						
HX. FREQUENCY				RX. FREQUENCY			SSZS MAZ							
		NIA	RX. GAIN SETTIN	RX. GAIN SETTING		NIA								
EATHER CONDITIONS FAIR			WEATHER CONDITIONS		75	FAIR								
							E:							

OBSERVED RANGE IN GALIBRATE:	1004	км	METGRS
OMPUTED SLANT RANGE:	1004,07	км	-11 -
MOBILE ZERO SETTING IS:			-11-
BSERVED RANGE IN OPERATE:	1004	KM	TIME: 1413 LOCAL

SIGNED: Mhe Berystrom

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MINIERNOSSE ##
MAXIBAN CALIBRATION REPORT

						DATE: 2	MAY	1981
	BASE STATION							
DCATION: CRO	WS HI	LL BASE	E STATION	LOCATION: 100	4.07	M. OF.	ESET	-
		ROM /		OPERATOR: RU	SSEL	WELL	5	
UNIT		DEL	SERIAL No.	UNIT	MODEL		100000000000000000000000000000000000000	AL No.
MONITOR	HHI	7-10	002	BEACON	HTL	-04	004	CODE
TERROGATOR	HTH	1-04	003	CONTROL BOX	N	IA		
MPLIFIER	N	1A		AMPLIFIER	N	IA		
AMPLIFIER P/S		IA		AMPLIFIER P/S		IA		
REAMP	N	10		PREAMP	NIA			
<del></del> 047	,	YPE	LENGTH	COAX	TYPE		YPE LEN	
PERCONNECT			100 FT	COAX	N	A		
	T	/PE	HEIGHT	ANTENNA	TY	PE .	HE	IGHT
NTENNA	Ham-	10.005	IDET	ANTENNA	HOI	en	10	FT
INPUT VOLTAGE		1	40	INPUT VOLTAGE		Z	40	
X. FREQUENCY		53	SZS MAZ	TX. FREQUENCY			125 /	142
X. FREQUENCY			125 MAZ	RX. FREQUENCY			525 M	
BX. GAIN SETTING			NA	RX. GAIN SETTING			NIA	
EATHER CONDITI	IONS	Į.	AIR	WEATHER CONDIT	WEATHER CONDITIONS		AIR	
								9.

OBSERVED RANGE IN CALIBRATE:	1001	KM	METERS
OMPUTED SLANT RANGE:	1004,02	KM	-11 -
		км	
BSERVED RANGE IN OPERATE:	1004	K <del>M</del>	TIME: 1415 Local
	SIGNED: M. Ke	. Bergs	trone

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# OFFSHORE NAVIGATION, INC.

### MINIERPOSE ZZ. MAXIHAN CALIBRATION REPORT

					LINE LINE	DATE: 2	O MA	Y 1981	
2*1	MOBILE	STATION			BASE S	TATION			
DCATION: CROW	US HI	ILL BAS	E STATION	LOCATION: /C	040	2 M. C	PESE	->-	
OPERATOR: 13E	RUST	ROMIA	YE	OPERATOR: RU					
UNIT		DEL	SERIAL No.	UNIT		MODEL		SERIAL No.	
MONITOR	HM	M-10	002	BEACON	117	4-04	004	CODE 4	
NTERROGATOR	HOI	4-8	001	CONTROL BOX		VIA			
MPLIFIER	N	IA		AMPLIFIER		1/A			
AMPLIFIER P/S	N,	IA		AMPLIFIER P/S		I/A			
REAMP	N	IA		PREAMP		IA			
€OAX	T'	YPE	LENGTH	COAX		PE.	LE	NGTH	
LA TERCONNECT			IDOFT	COAX	N	1/A			
	T	YPE	HEIGHT	ANITENNA	TY	PE .	Н	IGHT	
NTENNA	OM	NI	10 FT	ANTENNA	H	PEN	10	PFT	
INPUT VOLTAGE	1000	Z	40	INPUT VOLTAGE		71-71-71	40		
X. FREQUENCY			SZS MAZ	TX. FREQUENCY			4251	MAZ	
X. FREQUENCY	R		125 MAZ	RX. FREQUENCY			SZS		
BX. GAIN SETTING		gnother and a second	NIA	RX. GAIN SETTING	3,133		NIA		
EATHER CONDITION	ONS	<i>j=</i>	AIR	WEATHER CONDIT	IONS		RIR		
	-147744			,					
100000									

OBSERVED RANGE IN CALIBRATE:	1004	<del>KM</del> ,	HETERS
OMPUTED SLANT RANGE:	1004,07	KM	-11 -
MOBILE ZERO SETTING IS:	•	K <del>M</del>	-"-
BSERVED RANGE IN OPERATE:	1004	KM	TIME: 1430 LOCAL

SIGNED: M. Ke Bergstram

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### VI. MAPPING

Mini-Ranger preplots of the survey were provided to the field operations by WESTCOM, 514 Stirling Highway, Pepperment Grove 6011, Western Australia. The interval between shotpoint locations was constant at 50 meters.

Final mapping of the survey was accomplished by ONA's parent company, Offshore Navigation, Inc. (ONI), at their office in New Orleans, Louisiana. Three charts, at a scale of 1:50,000, were constructed by ONI to accomplish this final mapping. The first, last, and every tenth shotpoint location of each line surveyed was postplotted on these final maps. The postplotted position indicates the Mini-Ranger mobile antenna position.

ONI also provided the postplotted data on a 3-part final recompute listing and 9-track magnetic tape (on Standard ONI EBCDIC Format). The data of the first, last, and every fifth shotpoint location of each line surveyed was entered on the final recompute listing and 9-track magnetic tape. The positions indicate the Mini-Ranger mobile antenna position.

### VI. MAPPING (continued)

Scale factor correction was applied to all postplotting computations accomplished by ONI on this survey.

The three original mylar film base maps, and 3-part final recompute listing, were transmitted on 12 August 1981 to:

American Ultramar Limited 90 S. Bedford Road Mount Kisco, New York 10549

Attention: Mr. Robert Ducharme

Three blueline copies of the final maps, 9-track magnetic tape, and 2-part tape dump, were transmitted on 12 August 1981 to:

InterOcean Systems, Inc. 3540 Aero Court San Diego, California 92123

Attention: Mr. Joel Sigalove

Final mapping of the survey was accomplished in the Universal Transverse Mercator Projection, Australian National Spheroid of Reference, Zone 54, Central Meridian 141° East, AUSTRALIAN GEODETIC DATUM.

### VII. BASIC CONTROL

The initial coordinates of the station markers were obtained from the South Australian Department of Lands. Offset positions of Stations Mount Ruskin, Mount Elephant, and Cape Banks were derived by the ONI Computing Department in New Orleans, Louisiana. Coordinates of the offset position at Cape Northumberland Lighthouse were obtained from the field.

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

### STATION BEACHPORT:

Latitude  $37^{\circ}29'12"54 \text{ S}$  N = 5,850,640 meters Longitude  $140^{\circ}00'11"28 \text{ E}$  E = 411,870 meters Elevation 30 meters

### STATION CAPE BANKS OFFSET:

Latitude  $37^{\circ}53'58"43$  S N = 5,805,130 meters Longitude  $140^{\circ}22'31"04$  E = 445,077 meters Elevation 30 meters

### STATION CAPE BUFFON:

Latitude  $37^{\circ}34'03"37$  S N = 5,841,769 meters Longitude  $140^{\circ}06'23"92$  E = 421,106 meters Elevation 30 meters

### VII. BASIC CONTROL (continued)

### STATION CAPE NORTHUMBERLAND L/H OFFSET:

Latitude  $38^{\circ}03^{\circ}28!!12 \text{ S}$  N = 5,787,703 meters Longitude  $140^{\circ}39^{\circ}58!!06 \text{ E} = 470,710 \text{ meters}$  Elevation 33 meters

## STATION MOUNT ELEPHANT OFFSET:

Latitude 37°40'02"70 S N = 5,830,859 meters Longitude 140°19'46"96 E E = 440,885 meters Elevation 53 meters

### STATION MOUNT RUSKIN OFFSET:

Latitude  $38^{\circ}02'54"59 \text{ S}$  N = 5,788,789 meters Longitude  $140^{\circ}57'49"61 \text{ E}$  E = 496,822 meters Elevation 38 meters

### VIII. PERSONNEL

NAME

POSITION

Russell, D. Party Chief

Bergstrom, M. Mobile Operator

Hoggart, A.

Mobile Operator

Pye, M.

Mobile Operator

Wells, G.

Base Operator

### IX. DISTRIBUTION

American Ultramar Limited 90 South Bedford Road Mount Kisco, New York 10549

Attention: Mr. Robert Ducharme

Five 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: BEACHPORT

LOCATED:

Station Beachport is located approximately 50 meters from Durants Lookout, on the highest feature in the Council Reserve, approximately 1 kilometer southwest of the town of Beachport, on the coast of South Australia. The surrounding area is undulating sand hills, covered with low salt scrub. Rivoli Bay is to the east of the station, with the Southern Ocean to the south.

ACCESS:

From Mount Gambier, follow the Princess Highway (Highway 1) to Millicent, a distance of approximately 50 kilometers. Turn left at the road junction at the Ampol Service Station (sign-posted "Beachport"), and follow this road (Alternate Highway 1). This road bypasses Millicent. Follow this road for approximately 3 kilometers, to its end, and turn left at the "Y" junction. Follow this road for approximately 36 kilometers past the "Y" junction to Beachport, passing the town of Rendalshem, then the Southend turnoff approximately 15 kilometers before reaching Beachport.

At Beachport, turn right at the "T" junction, pass the hotel, and turn left onto McCourt Street. This turnoff will be just past the Beachport District Council Office, which will be located on the lefthand side. McCourt Street becomes gravel. Follow this road past a salt lake, and turn left at a "T" junction. Follow this road 30 meters, and turn left at the track leading to Durants Lookout. During very wet weather, a four-wheel drive may be necessary to negotiate this track. The surface is very soft loose sand in places. From the lookout, a track leads to the highest point, where the station marker is located. The last 30 meters to the station is a "walking" track.

MARKER:

The station marker consists of a 12mm-diameter pipe driven approximately one-half meter below natural ground level. This pipe is located in the center of two star stakes, 1.3 meters apart

STATION: BEACHPORT (continued)

that is driven into the ground, with 0.6 meter protruding above ground level. These two stakes are aligned approximately north-south.

Cape Martin Lighthouse is located approximately 1200 meters, at a bearing of 100° Magnetic, from the station marker.

#### GENERAL:

Labor is available locally. All necessary supplies of food, fuel, oil, and camping can be purchased in either Mount Gambier or Millicent. Both towns have well-stocked stores, supermarkets, etc. Beachport has several general stores. Food supplies, and possibly some camping items, could be purchased there. Fuel and oil are also available in Beachport. The Beachport Hotel, and adjacent Beach Motor Inn (telephone 087-358070) have accommodations.

The station site is exposed, and quite windy. Heaters must be used on this station during the winter months, April through October.

A 30-foot Mini-Ranger tower was erected at this station during the P-1357 survey. A minimum height of 10 feet of tower is required to give 360° clear vista. Steel star stakes were used to secure the tower.

The station site property is owned by the Beach-port District Council, P.O. Box 19 (McCourt Street), Beachport 5280, South Australia. The office phone is 087-358029. Permission to occupy the station was obtained from Mr. Eldridge, the District Clerk, in May 1981.

ELEVATION: 30 meters

SKETCH: See next page.

			AUSTRALIAN GEODET	IC DATUM
	GEOGRAPHICA	AL COORDINATES	NATIONAL SPHEROID * EAST	
I	Latitude	Longitude	North	East
Ī	37°29'12"54 S	140°00'11"28 E	5,850,640 meters	411,870 meters

UFFSHUHE NAVIGATION (AUSTRALIA) PTY, LTD.

### STA. BEACHPORT-

-AUSTRALIA

LAT. 37°29' 12"54 S

N 5,850,640 meters

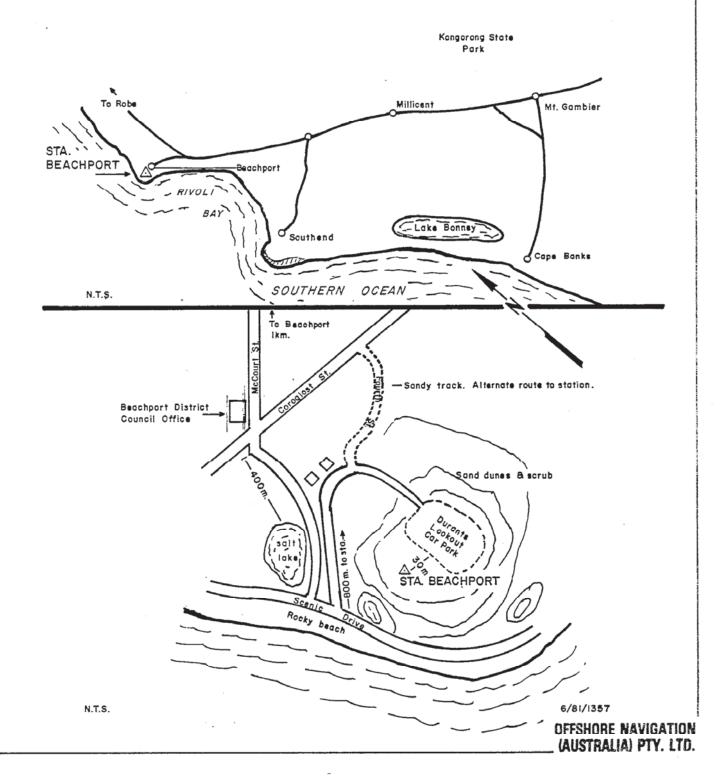
LONG. 140°00' 11"28 E

E 411,870 meters

ELEV. 30 meters

ZONE 54 C.M. 141° E

AUSTRALIAN GEODETIC DATUM







STATION BEACHPORT MARKER

STATION: CAPE BANKS OFFSET

LOCATED: Station Cape Banks Offset is located approximately 4 kilometers north of the town of Carpenters Rocks, South Australia. The station marker is adjacent to the Cape Banks Lighthouse. The surrounding area to the north, east, and west of the station is undulating sand hills, with low salt bush scrub. The ground to the south of the station drops sharply to the beach, approximately 70 meters from the station. A bay, some 200 meters west of the station, extends to the north and west.

ACCESS: In Mount Gambier, turn off of Commercial Street onto Whyte Avenue. Follow this bitumen sealed road for approximately 39 kilometers to the small fishing town of Carpenters Rocks. At Carpenters Rocks, follow the dirt track straight ahead for approximately 4 kilometers to Cape Banks Lighthouse. A four-wheel drive vehicle will be required during the wet season (May through September) on this dirt track.

MARKER: The unmanned lighthouse is the actual trig marker. The Mini-Ranger tower was OFFSET 12 meters, at a bearing of 270° Magnetic, from the lighthouse. Coordinates listed in this description are for the OFFSET position. The tower position was outside of the wire fence surrounding the lighthouse. The location was marked by a star stake, painted white, driven into the ground with 0.3 meter protruding above ground level.

GENERAL: All station supplies should be purchased in Mount Gambier. There is a small general store in Carpenters Rocks, which has a reasonable supplementry food supply.

Labor should be obtained in Mount Gambier, although labor may be available in Carpenters Rocks during the winter months.

Heaters must be provided on this station during the winter months, April through October.

STATION: CAPE BANKS OFFSET (continued)

A 30-foot Mini-Ranger tower was erected at this station during the P-1357 survey. A minimum height of 10 feet is required to give a clear vista of 110° to 360°. Steel star stakes were used to secure the tower.

The station site property is owned by the Department of Transport. Permission to occupy the station was obtained from the Administrator of the Department of Transport, Victoria Square, Adelaide, South Australia 5000. No rent was paid for its use.

ELEVATION: 30 meters

SKETCH: See next page.

AUSTRALIAN GEODETIC DATUM

Latitude Longitude North East		UTM PROJ., AUST. NATIONAL SPHEROID ZONE 54, C.M. 141° EAST		AL COORDINÀTES	GEOGRAPHICA
		East	North	Longitude	Latitude
37°53'58"43 S   140°22'31"04 E   5,805,130 meters   445,077 meters   0173107E	NAVICATION	445,077 meters	5,805,130 meters	140°22'31"04 E	37°53'58"43 S

(AUSTRALIA) PTY. LTD.

### STA. CAPE BANKS (OFFSET) ------AUSTRALIA

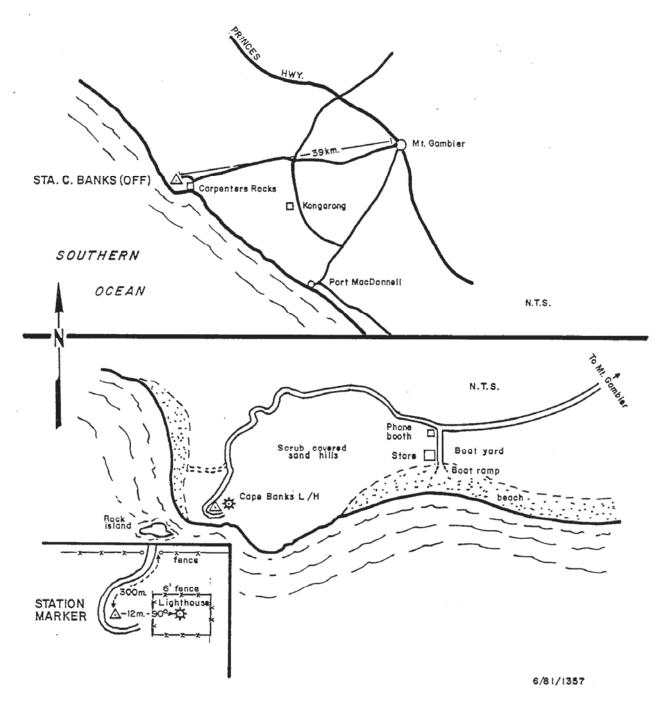
LAT. 37°53'58"43 S

N 5,805,130 meters

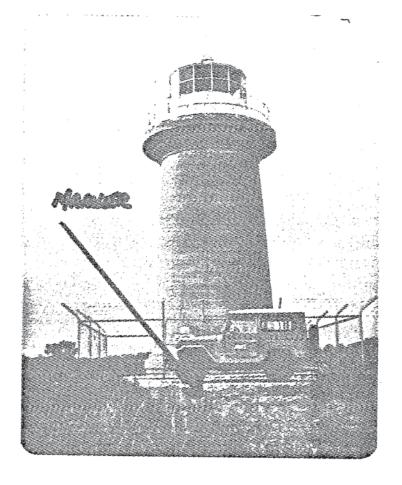
LONG. 140°22'31."04 E E 445,077 meters

ELEV. 30 meters

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

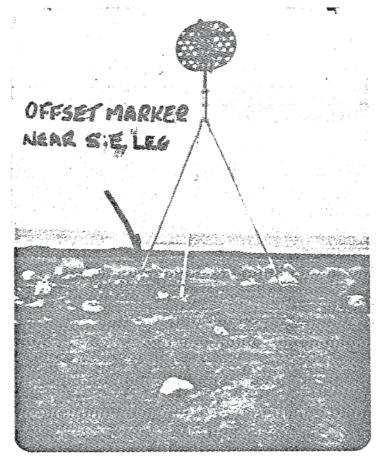


OFFSHORE NAVIGATION (AUSTRALIA) PTY. LTD.



STATION CAPE BANKS

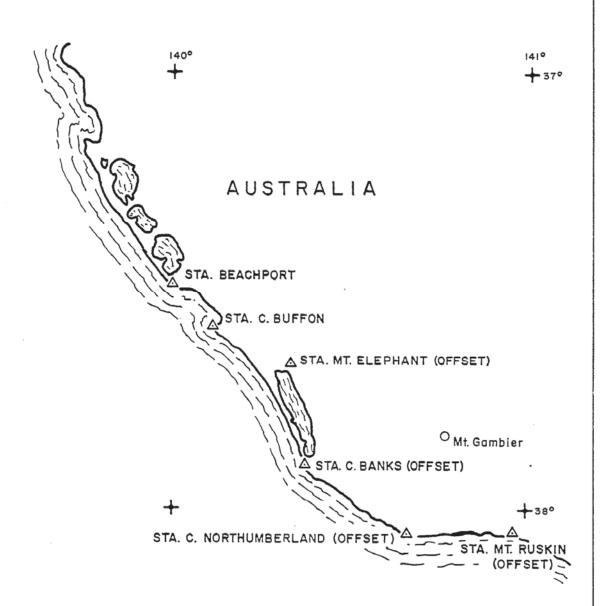
000136





STATION MOUNT RUSKIN OFFSET MARKER

## AREA OF OPERATIONS



SOUTHERN

OCEAN

6/81/1357

STATION: CAPE BUFFON

LOCATED:

Station Cape Buffon is located on a very rocky point, near an automatic light beacon in Canunda National Park. This park is near the small town of Southend, on the south coast of South Australia. The station marker is 20 meters east of the light beacon, which is at the edge of a 30-meter cliff that drops to the sea. The area is undulating sand dunes, covered with scrub.

ACCESS:

From Mount Gambier, follow the Princess Highway (Highway 1) to Millicent, a distance of approximately 50 kilometers. Turn left at the road junction at the Ampol Service Station (signposted "Beachport"), and follow this road (Alternate Highway 1). This road bypasses Millicent. Follow this road for approximately 3 kilometers, to its end, and turn left at the "Y" junction. Follow this road for approximately 21 kilometers to the well-marked Southend turnoff to the left. Turn onto this road, and drive 5.4 kilometers to the small village of Southend. From the village, the road swings sharply left, and goes over a narrow bridge. Follow this sealed road, past the National Parks and Wildlife Office and Ranger House, for approximately 1.4 to the Fish Cold Stores on the right. At this store, the road turns right and proceeds about 300 meters to the Safcol Jetty. A gravel road, which goes straight ahead, is located opposite the Fish Cold Stores. Take this road to its end, and a parking area. The marker will be found just west of the parking area.

GENERAL:

Labor is available locally. However, during peak fishing, labor may be hard to find. The park rangers and local fishermen are very helpful. All necessary supplies of food, fuel, oil, and camping can be purchased in either Mount Gambier or Millicent. Both towns have wellstocked stores, supermarkets, etc. There are two small general stores opposite the caravan

STATION: CAPE BUFFON (continued)

park in Southend, where a reasonable variety of food is available. Both stores sell gasoline and oil.

The station site is exposed, and quite windy. Heaters must be provided on this station during the winter months, April through October.

A 20-foot Mini-Ranger tower was erected at this station during the P-1357 survey. A minimum height of 10 feet is required to give 360° clear vista. Steel star stakes were used to secure the tower.

The station site property is owned by the Canunda National Park. Permission to occupy the station was obtained from the National Park and Wildlife Service, G.P.O. Box 1782, Adelaide, South Australia 5000. The Regional Senior Ranger, 3 Helen Street, Mount Gambier (telephone 087-241578) should also be contacted.

ELEVATION: 30 meters

SKETCH: See next page.

	GEOGRAPHICA	AL COORDINATES	AUSTRALIAN GEODET UTM PROJ., AUST. ZONE 54, C.M. 141	NATIONAL SPHEROID	
	Latitude	Longitude	North	East	1
379	34'03"37 s	140°06'23"92 E	5,841,769 meters	421,106 meters	MAVICATION

(AUSTRALIA) PTY. LTD.

### STA. CAPE BUFFON-

### -AUSTRALIA

LAT. 37°34'03"37 S LONG. 140°06'23"92 E

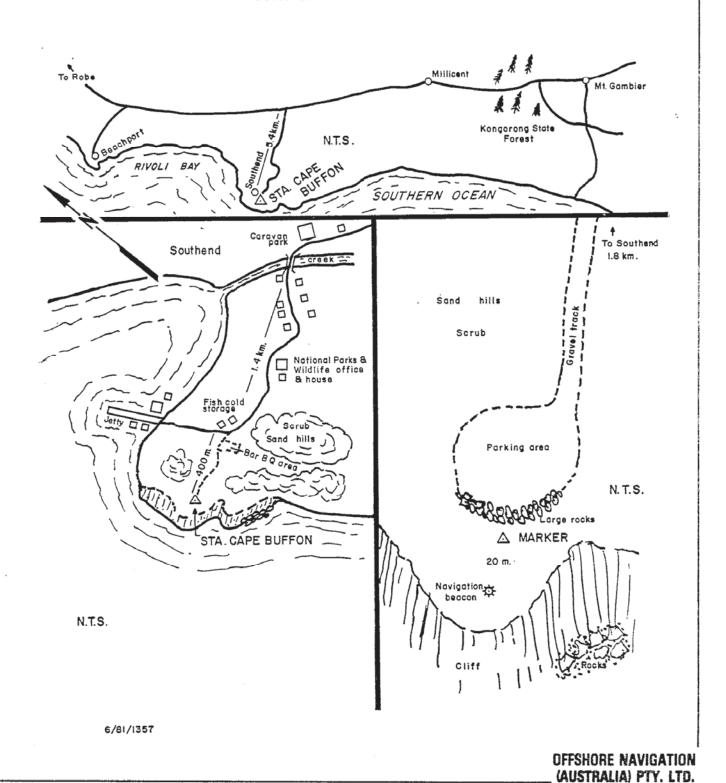
N 5,841,769 metersE 421,106 meters

ELEV. 30 meters

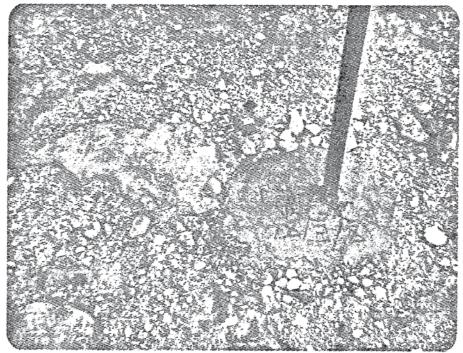
UTM PROJECTION, AUST. NATIONAL SPHEROID

ZONE 54 C.M. 141° E

AUSTRALIAN GEODETIC DATUM







STATION CAPE BUFFON

STATION: CAPE NORTHUMBERLAND L/H OFFSET

LOCATED:

This station is located at the Cape Northumberland Lighthouse, approximately 2 kilometers from the town of Port MacDonnel, South Australia. The lighthouse is located on high ground, approximately 500 meters from 25-meter steep cliffs, which falls away to the Southern Ocean. The main vegetation in this area are high stunted shrub, from 2 to 3 meters tall.

ACCESS:

From Mount Gambier, South Australia, proceed on the Port MacDonnel Road, past Blue Lake, to Port MacDonnel, a distance of approximately 29 kilometers. Turn right on Seafront Road, and drive approximately 2 kilometers to the lighthouse gate on the right. The gate is kept locked, and the key is held by the caretaker, Mr. John Jordon, whose house is approximately 500 meters before reaching the gate. It is the only house in the vicinity with a flagpole, and is the last house before starting up the hill and gate.

MARKER:

The center of the lighthouse is the survey point. The OFFSET position is a point on the lower catwalk rail, 180° True from the center of the lighthouse. The offset is approximately 2.5 meters from the center of the lighthouse.

This offset position is for unmanned operations only. The Tl/7021 marker should be used for manned station operations. The South Australia Department of Lands Station Summary Sheet lists the Tl/7021 coordinates as:

Latitude 38°03'26"71 S Longitude 140°39'58"23 E AUSTRALIAN GEODETIC DATUM 1966

Coordinates published in this description are for the OFFSET position.

STATION: CAPE NORTHUMBERLAND L/H OFFSET (continued)

GENERAL: Food, fuel, oil, and camping supplies, as well as any necessary labor, can be obtained at either Mount Gambier or Port MacDonnel.

Heaters must be used on this station during the winter months, April through October.

An 8-foot Mini-Ranger tower was erected at the 37-foot elevation of the lighthouse during the P-1357 survey, giving the Mini-Ranger tower height 45 feet. A minimum height of 10 feet of tower is recommended to give clear vista from 060° to 300°. The tower was secured to the existing lighthouse structure.

The station site property is owned by the Department of Transport. Permission to occupy the station was obtained from the Administrator at the Department of Transport, Victoria Square, Adelaide, South Australia 5000. No rent was paid for its use.

ELEVATION: 33 meters

SKETCH: See next page.

GEOGRAPHIC	AL COORDINATES	UTM PROJ., AUST. ZONE 54, C.M. 141	NATIONAL SPHEROID		
Latitude	Longitude	North	East		
38°03'28"12 S	140°39'58"06 E	5,787,703 meters	470,710 meters		

OFFSHURE NAVIGATION (AUSTRALIA) PTY. LTD.

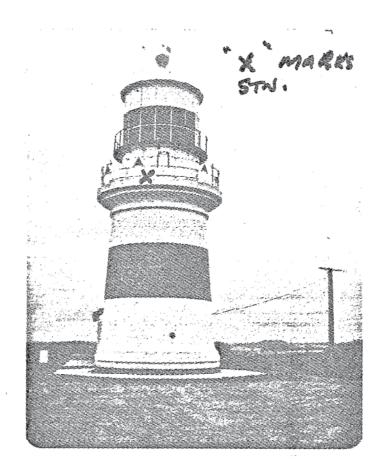
# STA. C. NORTHUMBERLAND L/H (OFF)—AUSTRALIA

LAT. 38°03'28"12 S LONG. 140°39'58"06 E

N 5, 787, 703 metersE 470, 710 meters

ELEV. 33 meters

UTM PROJECTION, AUST. NATIONAL SPHEROID ZONE 54 C. M. 141° E AUSTRALIAN GEODETIC DATUM Mt. Gambier Blue Lake Bellum Bellum Allendale East Corpenters Rocks Port MacDonnell SOUTHERN OCEAN STA. CAPE NORTHUMBERLAND L/H (OFF) STA. CAPE NORTHUMBERLAND L/H (OFFSET)
(2.5 m., 180° T. from center of L/H—On lower catwalk rail.) houses Port MacDonnell Caretaker's house Mt. Gambier 29 km Nelson-34k Sea front road Pack area 6/81/1357. **OFFSHORE NAVIGATION** (AUSTRALIA) PTY. LTD.



STATION CAPE NORTHUMBERLAND LIGHTHOUSE

STATION: MOUNT ELEPHANT OFFSET

LOCATED:

Station Mount Elephant Offset is located on the summit of a 51-meter bare stony hill, which is south of Millicent, South Australia, overlooking Lake Bonney. The station is approximately 100 meters above the peat moss processing plant of Mayurra Products. The general area is undulating farm lands, with sparse timber areas to seaward. Canunda National Park bounds the coastline on the southwestern shores of Lake Bonney.

ACCESS:

From Mount Gambier, South Australia, follow the Princess Highway (Highway 1) toward Millicent, passing through S.A. Tantanoola State Forests, and Tantanoola Caves. About 40 kilometers from Mount Gambier, a railway line will be crossed, just before reaching the Cellulose Australia factory, which will be on the righthand side. Snuggery Sub-Station, will be seen on the left, just past the factory. Approximately 3 kilometers from the sub-station, the terrain breaks into cleared farmland on the left. A new chocolate colored brick house (May 1981) will be on the lefthand side, 200 meters from the road, and just before a blue parking bay sign. Turn left onto a narrow sealed road at a point approximately 400 meters past the parking bay sign. Follow this road for 4.7 kilometers to a "T" junction with Mayurra Road, a gravel road. Turn right at this junction, and drive 1.5 kilometers to the first turnoff on the left. Turn left, and follow this winding road 2.5 kilometers to its end at another "T" junction, and turn left. Approximately 1 kilometer after this last junction, a gate will be on the right. This gate is usually locked, except during working house, Monday through Friday. From this point, the peat moss plant can be seen. Follow the track through the gate, pass the plant, and turn left. Follow the track for another 100 meters to the station marker. During extremely wet conditins, a four-wheel drive vehicle may be required to reach the station marker.

STATION: MOUNT ELEPHANT OFFSET (continued)

MARKER:

This is a first order trig station. The ground marker consists of a section of galvanized pipe set in a limestone block 1.5 feet below ground level. A wooden quadripod, with 2-1/2 foot vanes, has been constructed over the marker. The height to the top of the vanes is 15.4 feet.

The Mini-Ranger tower was erected 1.5 meters, at a bearing of 190° Magnetic, from the ground marker. Coordinates listed in this description represent the Mini-Ranger tower location.

GENERAL:

Food, fuel, oil, and camping supplies, as well as any necessary labor, can be obtained at either Mount Gambier or Millicent.

Heaters must be used on this station during the winter months, April through October.

A 30-foot Mini-Ranger tower was erected at this station during the P-1357 survey. A minimum height of 10 feet of tower is required to give a clear vista of 360°. Steel star stakes were used to secure the tower.

The station site property is owned by Mayurra Products, 11 fourth St., Millicent, South Australia. Permission to occupy the station was obtained from Mr. Jim Vanschaik of Mayurra Products, and can be contacted at the Millicent office, phone 332742. No rent was paid for its use. Arrangements can be made with Mr. Vanschaik to provide a lock with a number of keys (ONI provided lock and keys).

ELEVATION: 53 meters

SKETCH: See next page.

	GEOGRAPHICA	AL COORDINATES	UTM PROJ., AUST.	TRALIAN GEODETIC DATUM PROJ., AUST. NATIONAL SPHEROID E 54, C.M. 141° EAST						
Γ	Latitude	Longitude	North	East						
	37°40'02"70 S	140°19'46".96 E	5,830,859 meters	440,885 metersns	NAVIGATION IA) PTY. LTD.					

### STA. MT. ELEPHANT (OFFSET) ------AUSTRALIA

LAT. 37°40' 02"70 S

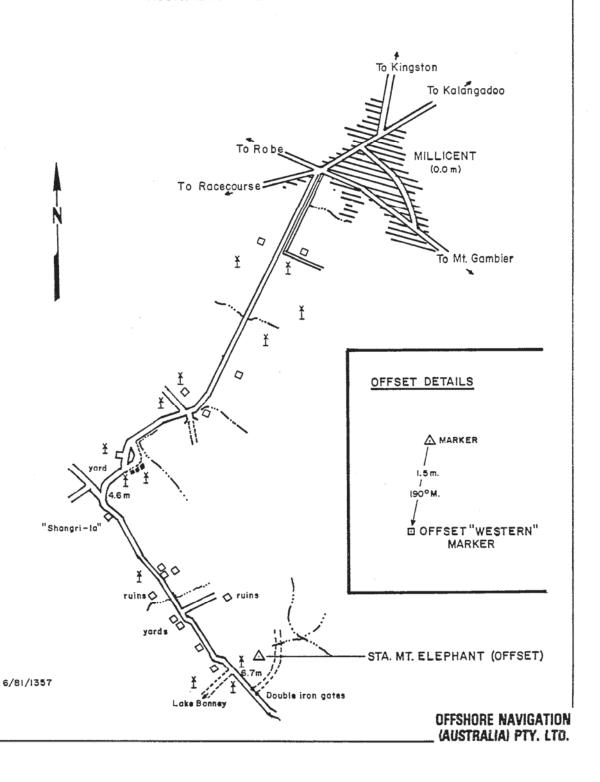
N 5,830,859 meters

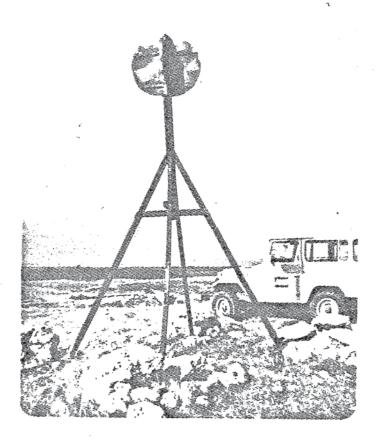
LONG. 140° 19'46"96 E

E 440,885 meters

ELEV. 53 meters

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





STATION MOUNT ELEPHANT

STATION: MOUNT RUSKIN OFFSET

LOCATED:

Station Mount Ruskin Offset is located on the Victoria-South Australia border, about 4 miles west of the township of Cape Nelson, Victoria. The station is on a prominent hill. This hill 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 General Post Office building in Portland, set the vehicle's odometer at 0.00 kilometers, 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 Cape Nelson. At 65.2 kilometers, and in the township of Cape 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.

Access can also be made from Mount Gambier, South Australia. From Commercial Street in Mount Gambier, turn right at the Ampol Service Station onto the road to Cape Nelson. Follow this sealed road for about 35 kilometers to the South Victoria-Australia border. From this point, turn into the gate as detailed in the first access paragraph.

MARKER:

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

#### STATION: MOUNT RUSKIN OFFSET (continued)

The Mini-Ranger tower, during the P-1357 survey, was OFFSET 1.2 meters, at a bearing of 140° Magnetic, from the trig station. The tower was located on the "Western Offset Marker". NOTE: The magnetic variation exceeds 09° in this area. Coordinates listed in this description are for the OFFSET MINI-RANGER position.

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

GENERAL:

All food, fuel, oil, and water supplies can be purchased in Cape 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.

Food, camping supplies, fuel, oil, and labor can also be obtained in Mount Gambier.

Heaters must be utilized on manned stations during the winter months, April through October.

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 site.

A 20-foot tower was erected at this station during the P-1357 survey, with the Mini-Ranger tower erected at the "Western Offset Marker". A minimum of 10 feet of tower is required to give a clear vista of 360°. Double star stakes are sometimes required to secure the tower, due

STATION: MOUNT RUSKIN OFFSET (continued)

to strong winds that can be experienced at this site. 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.

AUSTRALIAN GEODETIC DATUM

		AUSTRALIAN GEODET	IC DATOM		
GEOGRAPHIC	AL COORDINATES	UTM PROJ., AUST. ZONE 54, C.M. 141			
Latitude	Longitude	North	East		
38°02'54"59 S	140°57'49"61 E	5,788,789 meters	496,822 meters		

UFFSHURE NAVIGATION (AUSTRALIA) PTY, LTD.

### STA. MOUNT RUSKIN (OFFSET) ------ AUSTRALIA

LAT. 38°02'54"59 S

N 5, 788, 789 meters

LONG. 140° 57' 49"61 E

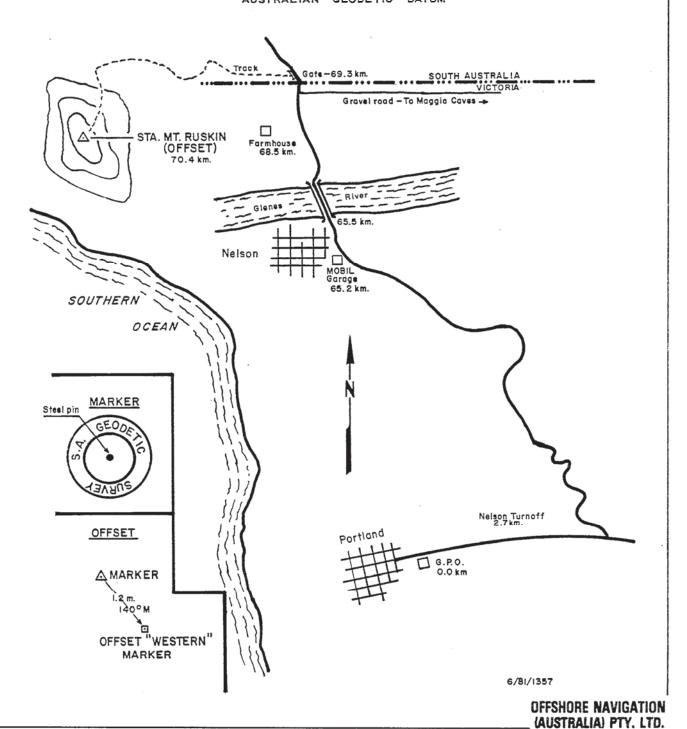
E 496, 822 meters

ELEV. 38 meters

UTM PROJECTION, AUST. NATIONAL SPHEROID

ZONE 54 C.M. 141° E

AUSTRALIAN GEODETIC DATUM



APPENDIX A

DAILY OPERATIONS LOGS

# 000155

# OFFSHORE NAVIGATION INC. MAXIRAN DAILY OPERATIONS LOG

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# OFFSHORE NAVIGATION INC.

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Mobile Operator(s)		Be		STROM			Proje. Super	ct visor	0.	Ris	rs:EL			

Project Number	0-13	57 Da	te 3	JUNE 1981	Ves	sel	4	ALC)	ON	_	Party Number	N/	9
Geophysica Company	ـ ــ اه			COCEAN							Radio Frequen	1cv 78	41,4Khz
		EALI	Are Pro	ea/ ospect Sour	H	S1	tepbac	k SIEZ	E DE	EAWI	NG Shot Po		OM
Mobile	FI	REQUENC	- Transferred	INTERROGAT				NITOR			AMPLIFIER		NNA SYSTEM
Station	933	30 M.	12	HTM-04/0	03	HI	411-	-10/002		_		HOM	-10/005
	***				Е	ASE	STATIO	ONS					
Station	n Name,	/No.		Operator	Frequ	iency	Be	acon	Contro	ol Box	Amplifier	Code	Ant. Type(s)
BEAC	HPO	RT	RUSS	ELJURELLS	9220 HT		HT	2-04	00	8		/_	HORN
C. BUP	FOR	/		- // -	- 11	-11- HT		-04	00	5		_ 4	HORN
MT. E	LEPH	MUT.		- 11 -	-11- 4171		HITL	-05	00	8		Z	HQL-9
C. BAK	VICS		-	"-	- "	_	HTL	04	00	7	-	3	HORN
					0	PERA	TING '	TIME					
Time (	On	Time	e Off	Reques	sted B	у		Syster	n Used	For			
0001 1500 P. KRONFIELD SNIFFER/SPARKER/SIA									e/sip	ESCAN			
2000	>	240	0	CLIENT	RE	EP							
O/T Req	uested	Ву						Total :	System	- Hours	Operation Fo	r Client	19 Hrs
						LOS	T TIM	E					
From	1	Т	o	Hours Lost						Rea	son(s)		
NIL	_											•	
							-110						
											21		
Brief Opera	ations I	og & B	emarks	ALL TIM	TES	7	in.	LOC.	AL	TIN	IE (UI	( ت	
				FOR LI									
***************************************				20 FSP1									
	7100			81-20 SP									
				DESCAN									
													MPROVEMEN;
M				CUEARER									N-CIECLIE
				REPAIRE									
	*****************			NE 081-20									즐겁게 하면 하다 가게 된 이 아이에 들었다면 살아가게 보다 살아 살아 보다.
***************************************	******************			= U8/-ZC									
	600	00	SP#	500 WIL	د ے	Fro	1	ees.	70	E 2.	WE LA	TER	
													LINPIACE
				V LOCATI									POSITION
				OP C-RUS							SNIFF	FR	***************************************
				ANCHOR							// CAA	, 20.00	1 1101-77
				-SNIFFE	e K	EPI	1112	ED	MER	41111	GFORA	. PARI	L UST-22
Mobile Operator(s	*			TROM			Proje	ect	/-				
	M	PY	€				Supe	rvisor	D_	200	SEL		

MINIPANCER TE MAXIRAN DAILY OPERATIONS LOG

				-							Client		
Project A	0-13.	57 Dat	4	JUNE 81	Ves	sel	HI	220>	ON	v	Party Numbe	· · · ·	IA
				COCEAN							Radio Freque	ncv 78	41,9Khz
Country 4				ea/ spect Sour		.pu,	enhack	SEE	= 0	RAW	Shot P	oint Sc	M
		EQUENC		INTERROGATO	_			NITOR	1		AMPLIFIER		NNA SYSTEM
Mobile — Station		OMA		41714-04/				1010	02		_	HOM	-10/005
<u> </u>	-700	0 / / /	-	.,,,,			STATIO						
Station	n Name/	'No.		Operator		jency		acon	Cont	rol Box	Amplifier	Code	Ant. Type(s)
BEAC	H PO1	e_	RUSS	EL /WELLS	9220		HIL	4112-04		08		_/	HORN
C-BUT	FOR	/		-//-	-11		HTL	-04	00	05		4	HORN
MT. E	LEPH	INT	_	-11-	-11	<u></u>	HIL	-05	00	28		Z	HQL 39
C-BA	11-	-11.	_	HIL	-04	00	7		3	HORN			
					0	PERA	TING T	TIME					
Time (	On	Time	Off	Reques	sted B	У		Syster	n Use	d For			
0001 Z400 P.KRO						EL	0_	SNI	FFE	ER/S	PARKE	e/5101	ESCAN
											1- 10-11-1		
O/T Red	quested	Ву						Total S	Syster	n - Hour	s Operation Fo	or Client   2	Y HIVS
						LOS	T TIM	E					
From	n	Т	o	Hours Lost						Rea	son(s)	12 12	- 1000 - 1000 - 1000
NIC	-												
		v											
D :- ( O	[	° P	amarka.	ALL 7	110	ES	11	v 20	001	9L 1	TIME (	(VIC-)	)
OOO/	ع المانانة الم	1007	-ING	- ON LIN	= 0	1181	/ <b>-</b> 3	· ->	Z 7	00			
				= 281-3							265 000	= 70 /	YEAVY
	RAI	NS	CUA	228 - 61	RC	C 15	-				#*************************************		
0515.	·RE	-57A	27	LINE US.	1-3	$\rightarrow$	270	o" F	50	440	A/440	- 450 1.	S'A'SMOTS
0600.	AB	ORT	211	E U81-3 S	P5	90	10	57-	516	NAC	DUE	70 M	EAVY
		N 5									a		
0635	: RE	STA	27 1	INE U81.	-3 -	>27	200	-50	580	DA(S	130 - 59	0 15 7	"SHOTS)
				LSP "									
				FSP=1-									
				LSP# 102									
**************************				-SP 100.									
				BETWEE		LIN	1=5	US	7-5	131	00 081	-7/	MINOTE
				NTERVA					······································	-			
				LSP 114		20		~ >-			- 11 :2-		÷ 60
				FSP30->							7/ 6.13/7	76	
						37							
Operator(s				TROM	·····		Proje	ect	1	0.01	155EL		
	17.	PY				* ······	Supe	ervisor					

# 000159

### OFFSHORE NAVIGATION INC.

MINIMANGER ET MAXIRAN DAILY OPERATIONS LOG

Project			-							Client Party		<i>)</i> —	
Number /-/-										Number			
Geophysical Company	56/	INTE	ROCEAN	Com	oany	U	LTR	AM	19R	Freque		41,9 Khz	
Country AUST	RALIF	Pros	spect South	4	St	epback	SEE	= 200		Interval		011	
Mobile	REQUENC		INTERROGATO				VITOR			AMPLIFIER	ANTE	NNA SYSTEM	
Station 93	30 M	12 1	21111-04/00	03	HH	111-	10/0	02			Hor	10/005	
					,	TATIO				1 110			
Station Name	/No.		Operator	Frequency		Bea	econ	#		Amplifier	Code	Ant. Type(s)	
BEACHPOI	RT	RUSSE	el/WELLS		9420		-04		<u> 28</u>		-	HOKN	
C. BUFFOR			- // -	-11	_	HTL	-04	00	25		4	HORN	
MT. ELEPH	ANT		// -	-11		HIL	-05	00	28		2	HQL-9	
C. BANK	-11-	-	HTZ	-04	00	7.7		3	HURN				
OPERATING TIME													
Time On Time Off Requested By System Used For													
0001	FIE	20		SNI	EFE	e/si	PARKER	SIDE	SCAN				
	- R	EX	2	SUA	EVIE	~		0: 50.00					
							20 3000						
O/T Requested	Bý						Total S	System	- Hour	Operation Fo	or Client	24 Hrs	
					LOS	TIM	E						
From	Т	0	Hours Lost	ļ					Rea	son(s)			
NIL												*******	
Brief Operations	Log & Re	emarks	ALL TI	ME	3	10	20	CA	4 7	IME (	VIC.	1	
0001: 5	1100	TINO	= ON LI	NIS	- 0	181	- 7	>	' _	70			
0045: EC	72 03	21-7	250 98	<u> </u>						~ ~ ~ ~ ~ ~	ــــــــــــــــــــــــــــــــــــــ	C=1c	
0100 : NO							_					_	
0700 : SA 0950: SO	, ,,,	71.9	ESPITIEL	> 0	900	ii c	inc		BANK	IC. BUF	FON TO	SP 172	
			CHANTIC.										
			THEN C.B										
1055: AB	007	SPZ	208 SN1	FFE	FR	720	DU 30	15-	CIRC	CIE 2/7	57 600	058200	
1315: RE.	STARI	TLIA	IE U81-9	->0	900	15	PI	901	11	10 702	00 15	A SHOTS	
1620 : EO.	1 U8	1-9	LSP 836	OFI	- 2,	NE	- 111	En	00	UE STR	PONE C	URRIENT	
			FSP#200		70°	120	NG	CB.	ANK	S/NT.FL	EPHIAN		
2010 : EUL	1 08	1-11	LSP= 697							<i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
2048:50	L U8	1-16	FSP1 -	> 00	00	US	inc	- 11	T-EL	EPHINNT	12 1300	FOR 70	
			EN MT.EC						er	70 SP	898 7	MEN	
			BEACHPO						200	<u>.</u>			
			ONLIN		0	-/		2					
Mobile Operator(s)	1. BE.		TROM			Proje	ct	D	RI	ISSEL			

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

Project	2-13	757 no	6	JUNE 81.	Vassal	HALCY	on	Client Party Number	N	IA			
				20UFAN				<b>.</b>		11,9 KHZ			
			Are	ea/. spect Sour	Company		- nasu			) M			
Country		CALL CO.				MONITOR		AMPLIFIER		NA SYSTEM			
Mobile Station		REQUENC		INTERROGATO				AWITCIFIEN					
Station	7.	550?	7172	HTM-04/0			02		HOM	1-10/005			
0		/N-		Onemter		STATIONS Beacon	Centrol Box	Amplifier	Code	Ant. Type(s)			
Statio	on Name	/No.		Operator	Frequency	-	<b>#</b>	Amplifier					
BEAC	H POI	er_	RUSS	EL JWELLS		HTL-04	008			HORN			
C. BU	FFO	N		- // -	- 11-	HTL-04	005		_4	HORN			
MIE	LEPH	ANT		- //-	-11-	416-05	008	/	Z	HQL-9			
C. B1				-11-	- "-	HTL-OY	64 CHANGE	/	3	HORN			
/-/	-,-,-				OPERA	TING TIME							
Time	On	Time	Off	Reques	sted By		m Used For						
					Charles and the control of the contr				1-				
000	/	240	00	P. KRON	IFIEL.	D SNII	EFER/S	PARKERI	ISIDES	CAN			
				CLIENT	REP	SURVEY							
O/T Re	equested	Ву				Total	System - Hours	Operation Fo	r Client   2	ZY Hrs.			
					LOS	ST TIME							
Fro	m ]	Т	0	Hours Lost		,	Rea	son(s)					
11.						,				330 30 30 30 30 30			
NIL					<u> </u>								
rief Ope	rations l	og & R	emarks	ALL TI	MES	IN 200	CAC TI	MESCO	urc.)				
				ONEINE		16 ->	0000	·····					
				6 LSP 9		······································			······································				
0130	CAC	138	1711	UG SNIF	FER				***************************************				
0310	: C1	76/13	IZAT.	ION COMP	CETE	O HEAD	WG FO	or LIN	E U81	<u>- 2</u>			
				FSP"1 -		USING	4T.ELEP.	MANT/BE	ACHPOI	et to ec			
				LSP 54									
				FSP#/->		USING P	11. ELEP	41145/155	ACH POR	et to Eoc			
1110	FOL	. 08	1-4	15P 55E	, , , ,								
1200				FSP#1-				BEACH	PORT TO	osr E			
				HANT BEAC									
1400	ABO	RTC	INE	U816 SP	421	SNIFFE	R TROO	IBUE L	PST G	000			
	SP	400	· c	IRCLE				/-		_ ~ _			
				NE U81-6		PESP	390A	390-4	00 15 1	SHOTS)			
				LSP#720		······································			······································				
***************************************				FSP = 1 ->		ISING M	TELEPH	ANT/BEI	REMPOR	T 70 EOL			
210	2: EC	12 08	1-8	LSP 74	/								
Mobile	(0) 1	7. BE	RGS	TROM									
operator(		DY				Project	D. RUS	52					

Operations Log & Remarks (cont'd.) BLL TIMES IN LOCAL TIME (VIC.)
Z144-SOL U81-10 FSP 1 -> 180° USING MT ELEPHIANT CBUFFER
TO SP GIO THEN MT. ELEPHINIT/BEAUMFORT TO SP 848
THEN CRUEFON/ DEPENDENT TO ECC
이 사람들이 사용하게 하는 아니라
ZYOU: SHOOTING ON LINE US-10
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.
- 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.
- 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 operations 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

sicing on to we other the system should be turned on or off.

Project	0 1		7	1:11=0.			111			Client Party	4.	10
				JUNE 81						Number Radio		
Company	EC	3 6/	Area	ROCEAN	Com	pany		1271	RAMAI	Frequer Shot Po	oint _	
Country	CV-CV-CV-CV-CV-CV-CV-CV-CV-CV-CV-CV-CV-C			pect <i>Sour</i>		Ste						014
Mobile		REQUENC		INTERROGATO				NITOR		AMPLIFIER		NA SYSTEM
Station	93	304	nz .	HTM-04/003 HMI			114-	10/0	02   3		Ham	-10/005
-	- No.	/NI=		Operator		ASE S		NS acon	Control Box	Amplifier	Code	Ant. Type(s)
	on Name			EL JUELLS				2-04	= 008		/	HORN
	VEFE			11-	- // -		_		005		4	HORN
	ELEP	10		11-					008		2	HQL-9
C. 13	ANK	٠ . ک	_	1	-11	-	HIL	-04	007		3	HORN
OPERATING TIME												
Time	On	Time	Off	. Reques	sted B	У		Syster	m Used For			
0001 2400 P. KRONFIELD SNIFFER/SPARKER/SIDESCAN										CAN		
								SUI	RVEY			
O/T R	equested	Ву						Total :	System - Hours	Operation Fo	r Client	24 Hrs
						LOS	TIM	E				
Fr	om	Т	О	Hours Lost					Reas	son(s)		
NI	_									750		
				77			1,0					
Brief Op	erations	Log & R	emarks	ALL T	100	<u> </u>		V	LOCAL	TIME	(inc	= )
000	1: 51	4007	ING	ON LINI	= .	U81	-10	$\rho \rightarrow$	180°		······································	
				10 25/			··············					
021.	5: 01	11/3	RATI	NG SNIF	FFE	e			2 FO	1 C F1		- : //3 - / -
0450	; CB	11131	ATIO	N COMP	LE	TED		75/1/	VAC AT	e s.en		= USI-12
0612	2:50	20	8/-/	2 FSP# 864 LBS				CA	WZ 171.1	AL BILLE	25000	FREGRE
0845	1180	OPI.	3 P	864 2735 E USI-12	/ <u> </u>	000	20 2	CP 6	YIOA 14	10 10 42	0 15"A"	CNOTI
U710	11811	11 10	TELE	PHANT/ BEI	ecu.	POR	770	0 50	807 141	EN CBUZ	FONI	3ENCHPORT
		EOL										
1140	of FO	2 U	81-12	Z 15P	81	7						
122	o: sc	L V.	81-19	Y FSPE	<del>-&gt;</del> ,	150	US.	iNG.	C.BUFFO	NIBENCI	HRUET!	to sp
				MTELEPIN								
	***************	************************		- BUFFON		EO	_					
1713	8: E0	6 00	81-14	1 650 94	0							***************************************
181				FSP#1						PHIRATIC	BUFFE	ow TOSP
				ELEONIANT	BE	ACH	POR.	7 70	DEOL			
Mobile Operato	r(s) /	1. BE	RES	TROM								
70	erator(s) M. BEICESTICOM Project N. DYE Supervisor D. RUSSEL											

Operations Log & Remarks (cont'd.) ALL TIMES IN LOCAL TIME (U.D.90163
2342:50L U81-20 FSP 880 -> 180' COUNTING DOWN USING
MT. ELEPTIANT/C. BUFFOR
2400 : SHOOTING ON LINE USI-20-180°
2255: ECL USI-18 LSP 910 SHALLOW WATER CUT SHORT
*
•
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.
- 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.
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- 9. The 1think and the consequent of all in a treatter field decision case what it is the evetem should be turned on or off

MINIERNOER III MAXIBAN DAILY OPERATIONS LOG

Project	0-135	7 Da	te	JUNE 81	Ves	se!	HA	1207	on	Party Number	N	17	
Geophysic	cal برسر	011	NIE	ROCEAN	Oil	nany	0	127/2	AMAR	Radio Frequen	cy 7	341,9 Khz	
Country	AUSI	RAL	Pro	ea/ ospect Sovi	74	St	epbacl	K SIE	EDRAD	Interval	3	OM	
Mobile		REQUENC		INTERROGAT				NITOR	·	AMPLIFIER	ANTE	NNA SYSTEM	
Station	93.	38M	hz	11111-04/0	03	111	My.	10/0	202		HOI	1-10/005	
					E	SASE S				1		- TA	
Statio	on Name,	/No.		Operator	Frequ	uency	Be	acon	Control Bo	-	Code	Ant. Type(s)	
C. 130	FFOR		RUSS	ELIWELLS	94	20	HIL	1-04	005	-	_ 4	HORN	
MT- E	LEPH	ONT		- // -	-11-		HIT	2-05	008			1142-9	
C. BI	C. BANKS			-11-	-11	-11- 1-1		2-04	007		3	HORN	
				*									
					C	PERA	TING	TIME					
Time	On	Time	e Off	Reque	sted E	Ву		System	n Used For				
000	/	140	0	P. KRO	CONFIELD SNIFFER SPARKER SIDE.					SCAN			
				CLIEN	<i>.</i>	RE.	0	SURVEY					
O/T R	equested	Ву						Total	System - Ho	urs Operation Fo	r Client	14 Hrs.	
						LOS	T TIN	1E					
Fro	om		Го	Hours Lost					R	eason(s)			
NIC	,												
1010						n=3/6							
					_				-				
				ALL TI	1000	=	111	10	CAL	TIME (	VIC)		
Brief Op	erations	Log & F	emarks سے رسریں د سے	FON EI.	a 1 5E	- 2	191	-2	0	1800			
000	7. S		1181	-20 2	50		390	AI	SP.50	0 70 5	P.39	90 15	
023	"A"	500	075	· S'ECMEN	-7	RE.	540	07 1	UE SO	SPECT	GAS	510)	
032	6 7	0 05	19	SHOOTIN	6	A	C/	2055	OVE	R LIN	<i>=</i> 7	307	
	DUE	= 70	A 1	4155UNDE	1251	111	1011	ve	OVER	THE	2220	2/3	
	M	DOE	ON	BONRD	134	- 12	K	RON	FIELD	ONI	OP.	USINC	
	VI	20N	G 13	ASE STAT	10n	٠٠.	no	40	1711 50	CKATCH	ED H	1166	
	R,	ETU	RN	AND SA	07	71	415	C.E.	055 81	PLAT	ER D	BTE	
	B	ر ک	7 0	COVERS !	gN.	190	e E	70,	E. AL	FOMALI	77ES		
052	0:	CAL	130	D71NG 5.	W		=12	ME	PPINE	FOR	NO RIT	7 END	
		OF	2/	VE U81	-2	4			0-6	(			
110	2:	502	U	81-24 /	55/	60	2 -	<b>&gt;</b> /	80- 03	126 6.15	- CO	MY ECEPHIN	
115	50:	ABO	et c	LINE TOO	P	912	OF	= 21	NE C	7757 600		200	
/2	35 = ,	RESI	TART	- LINE US	-	= 4.	-> /	300	75/	904 30	CED I	DE ALIFONA	
				NLINE									
				UALLS	//	DE,	66	1812	-11/	IND WE	17////		
Mobile Operato	r(s) 🚣	1. 132	-106	STROM			Pro	iect	^	2			
		1. 0,					Sur	pervisor	2.	PUSSIEL			

Operations Log & Remarks (cont'd.) BLL TIMES IN LOCAL TIME (UIC.).
CONT : NORTH PUSHING VESSEL MAKING IT IMOSSIBLE
TO STEER PROPERLY.
1330 - ABORT LINE USI-ZY GIVING UP TRYING
WEATHER WORSENING ALL DATA SCRATCHED
1400: HEADING FOR PORTLAND DUE ROUGH WEATHER
2300: ARRIVED PORTLAND
Z400: MOURED IN PORTLAND STANDING BY DUE
TO BAD WEATHER
***************************************
5

#### INSTRUCTIONS

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#### MINIRANGER

# OFFSHORE NAVIGATION INC. MAXIRAN DAILY OPERATIONS LOG

Project Number &	P-135	Z Date	9 SUNE EROCEAN	Vess	el	MALC	YON		Party Number	N	M			
Geophysic Company	cal EGO	= / /NT2	EK OCEAN ea/	Oil Com	pany	ULTA	2AMI	912	Radio Frequence Shot Poi	y 78 nt	41,9 Khz			
Country				Stepback										
Mobile	FRE	QUENCY	INTERROGATO	DR	·	MONITOR		۵.	MPLIFIER	ANTE	NNA SYSTEM			
Station	8.3	30 Mhz	HTM 04/0	203	HM	14-10/0	02			HOM	1-10/005			
						TATIONS	Cantral	Pau I	Amplificat	Code	IAnt Time(a)			
Statio	on Name/N	0.	Operator	Frequ	ency	Beacon	Control	BOX	Amplifier	Code	Ant. Type(s)			
	ONE	USED									-			
				0.5	DEDAT	ING TIME								
Time	On I	Time Off	Reques		-		m Used	For						
NI														
							730330							
O/T Re	equested By	/				Total	System -	Hours	Operation For	Client	NIL			
				,	LOST	TIME								
Fro	om	То	Hours Lost		Reason(s)									
NI	''													
0800	01: 14 134 12 0: 20 0: 12	DUE SIE DING SIES WAITIN	PLCYON I POWER STA MOT POUTINE TA MOT WE WER	100 W 152 MM EL	PRE EN PINI ER	FO IN PTHER PORT FAINAN PORTLA	LAN LAN CE WO	27. 11. 10. 57.	LAND- OPERA U EQU,	TOR	ONE S STAYS			
Mobile	(s) M	WE BE	ERGSTRO											
		ES P				Project Supervisor	2	Æ	USSEL					

Client Party Number ..... Project NA D-1357 Date 10 JUNE 81 Vessel HALCYON Radio Frequency EGG/INTEROCEAN Company ..... Geophysical 78419Kbz Shot Point Area/ Prospect South Country AUSTRALIA .. Stepback SEE DEAWING Interval ... SOM ANTENNA SYSTEM MONITOR AMPLIFIER FREQUENCY INTERROGATOR Mobile Station 9330 Hhz HQM-10/005 HTM 04/003 HMM-10/002 BASE STATIONS Control Box Amplifier Code Ant. Type(s) Station Name/No. Operator Frequency Beacon NUNE USED OPERATING TIME System Used For Time Off Requested By Time On NIL Total System - Hours Operation For Client O/T Requested By LOST TIME Reason(s) Hours Lost From NIL Brief Operations Log & Remarks 1966 TIMES IN LOCAL TIME (VIC-) ODDI: MIN HALCYON MODRED IN PORTLAND - STANDING BY WEATHER . STAYING IN SIESTA MOTEL DUE TO ROUGH ROUTINE MAINTAINANCE ON EQUIPMENT 1800: IN SIESTA MOTEL PORTLAND STANDING BY 10 BUBITING WEATHER 2400: STANDING BY AS Mobile Operator(s) M. BERGSTROM

Project D. RUSSEL

MINIRANGER

MAXIRAN DAILY OPERATIONS LOG

381000

Project Number	-/357	Date	SOCEAN	Vessel	HALC	YON	D-7:-			
Geophysical Company _	EGG,	INTER	ea/ Court	Company	ULTI	CAMAR	Frequen	cy 7	841, 9 On	
Country (2		<i>-//9</i> Pr	ospect SOUT			The second secon				
Mobile _	FREC	UENCY	INTERROGATO	OR	MONITOR		AMPLIFIER	ANTE	NNA SYSTEM	
Station	9330	Mhz	11111-04/0	03 41	411-101	looz		HOM	4-10/005	
				1	STATIONS	10 15	1 4		14	
Station	Name/No	).	Operator	Frequency	Beacon	Control Box	Amplifier	Code	Ant. Type(s)	
NON	UE C	SED								
				OPERA	TING TIME					
Time C	)n	Time Off	Reques	Requested By System Used For						
NIL										
						-			V - 44	
O/T Requ	uested By		1		Total	System - Hour	s Operation For	r Client	NIC	
				LOS	T TIME		· · · · · · · · · · · · · · · · · · ·			
From		То	Hours Lost		195	Rea	son(s)			
NIL										
									,	
0001. 0800: 1200 .	STAN	OPED GRT M TENNA 2 WOL	PLL TO POINT OUNTING POUNT.	ETUA) OUI ED 5		E RO	UCH H ONBO, TIBNO	VE 197. PRD "1 PIE13	HALCYON HALCYON	
1300:			R ROUGE		ADING	FOR -	SPIEC TO	ER /	·	
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Mobile										
Operator(s)			STROM		Project	1 <u>1</u>	및 주의			
	M.	PYE			Supervisor	D. 20	55 EL			

Client

# OFFSHORE NAVIGATION INC.

roject P-135	7 0000	12	IUNE 81	Ves	sel	111	ALC;	on	/	Party Number	N	19		
ieophysical	Date .		COLEAN	Oil		//	1712	AM.	AR	Radio Frequen	cv 75	41,9 Khz		
0.10.		A	pect Sour	Com	рапу		<	= 12	enw.	Shot Po		o M		
	RALIA	Pros	INTERROGATO		St		NITOR			MPLIFIER		NNA SYSTEM		
Mobile	REQUENCY	30 MAZ HTM -04/003			211					_		HQM-10/005		
Station 7.3	30 199	2 /	1111-09/0					02			1141	1-10/003		
	/No. 1		Operator		ASE S	STATIO	ONS	Contr	ol Box-	Amplifier	Code	Ant. Type(s)		
Station Name			·					#						
MT. ELEP.	HANT R	USSE	EL/WELLS	94	20	HIL	-05	00				HQL-9		
C. BANKS		_	• • •	-11- HTL.			-04	04 007				HORN		
7021 OFF	-5.	-	<i>"</i> –	- "	-11- HTL-04 005 -					- 4	-11-			
MT. RUSK	-111	-1	·/ -	-11	_	HITL	-04	01	3	-	1	-11-		
MILEOSE				0	PERA	TING T	TIME							
Time On	Time C	Off	Reques					n Used	d For					
	17.45		D upair	,-,	=1		Cale		ple	PARKER	150	ESCAN		
0500	240	0_	P. KRON			-				,,,-,,-,,-	/			
			CLIENT	REP. S			SURVEY							
	1			10 10 10							- N			
O/T Requested	I Ву						Total	System	n - Hours	Operation Fo	r Client	17 hrs		
				, _	LOS	T TIM	IE							
From	То		Hours Lost		Reason(s)									
NIL														
												25		
	<u> </u>							, , , , , , , , , , , , , , , , , , , ,						
			ALL III	NE	-	in	100	AL	TI	TE (VI	16.1			
Brief Operations	Log & Rem	narks	IN FIS	HE	-PH	on.	s co	OVE	- 0	VE TO A	COUGA	Y WEATHE		
0001- 1	CHOO I	100	TEADING P	-00	211	UE G	181-	214	I. EN	D MINI	RANG	ER ON.		
0500. 112	CHOK C	= 00	= PLANS,	N	ردن	H	FADI	NG	FOI	e Sour	4 EN	DOF		
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713	PICIE	- ///	SPIRE	5	FO	e	EEN	FR	1750	R	<b></b>			
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ILINS: EI	21 1181	- 50	0 LSP 61	2	51	1192	10W	wi	PIE	e - C U7	- 2/12	DET		
1470: 5	OL 5	OX	GOING	BL	on	16	COAS	572	INE	ERSI	TWAR	05		
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			LSP											
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11.500	IFET	- 0	ORT MAC	001	w	EL	HEI	DIR	16 F	ORLIN	EUS	2/-/3		
1822:-	50L U.	81-1	13 FSP#1	00	-> 2	270	USI	NG	702	1/6-1319	uns ?	TO EUL		
2210:	FOL U	81-1	13 LSP = 7.	10	D	EEI	o w	1752	ER.	CUT	51101	e7		
2220=	COING	E	AIR SEA	5 7	0	CA	1131	2AT	IE S	WIFF	ER			
Mobile Operator(s)														
	1. PYE					Pro	ject ervisor	D.	RO	ISSEL				

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MINIRANGER MAXIRAN DAILY OPERATIONS LOG Client Party Number Project D-1357 Date 13 JUNE 81 Vessel ..... NA Number Geophysical Oil Company ULTRAMAR Radio GG/INTEROCIEAN 7841,9KAZ Frequency Company Shot Point DRAWING Interval . Country AUSTRALIA SOUTH 50 M Prospect ... Stepback SEE INTERROGATOR MONITOR AMPLIFIER FREQUENCY ANTENNA SYSTEM Mobile Station 9330 MHZ HIM-04/003 4611-10/005 HMM-10/002 BASE STATIONS Frequency Amplifier Station Name/No. Operator Beacon Gontrol Box Code Ant. Type(s) RUSSEL/WELLS 2 9420 HQL-9 MT. ELEPHANT 008 3 -11-C. BANKS 456-04 HORN 4 -11-7021 OFFS. 411-04 005 - // ---/1--11-4111-04 013 -11 -MT. RUSKIN OPERATING TIME Time Off System Used For Requested By Time On P. KRONFIELD SPARKER/SIDESCAN 2400 SNIFFER 0001 CLIENT REP SURVEY Total System - Hours Operation For Client O/T Requested By ZY HRS LOST TIME To Hours Lost Reason(s) From UL IN LOCAL TIME TIMES LINE USI-ZY WORKING ON SNIET ODDI: CIRCLING S. END OF 0124: SNIFFER OK HEADING FOR SOL USI-ZY SOUTH END 0150: SOL U81-ZY FSP=1 -> 000° MT ELEPHINKT / C-BANKS USING 0400: ABORT LINE USI-24 SP# 333 SNIFFER FAULT OS43: NOW PECIDED TO SHOT LINE USI-28 FROM SOUTH END 0642: SOL U81-28 FSP #1->000° USING 7021/MT. ELEPHINAT TO SP370 0916 : ABORT 370 SNIFFER FAULT CIRCLE 1030: RESTART LINE USI-28 FSP 300A -> 000° USING ELEPHANT TO SP 420 THEN 7021/C BUFFON TO SP 431 THEN C. BANKS/MT. ELEPHANT 1255: SP 696 LOST SIGNAL FM MT ELEPHANT - SP TRACK ON 1359: FOL USI-28 LSP #910 SHALLOW WATTER - CUT SHORT 1441: SUL U81-30 FSP = 20 -> 180° USING C.BANKS/MT. ELEPHINET TO SP 182 THEN FOR IMF ELEPHINAT 1843: EOL U81-30 LSP 832 Mobile Operator(s) M- BIERESTROM

M. PYE

Project

Supervisor D. RUSSEZ

Operations Log & Remarks (cont'	(d.)	VES IN	LOCAL 7	TIME (VIC).	
Perations Log & Remarks (cont'd.)  ALL TIMES IN LOCAL TIME (VIC).  1900 - 2130 CALL BEATING SNIFFER - FAIR SEAS  2200: SOL V81-17 FSP*1 -> 090° USING HTTRUSKINJC.BMKS  TO SP 370 THEN MT RUSKINJ721 TO EOL  2400: SHOOTING ON LINE U81-17 -> 090					
2200: 502 1/8	1-17 FSPE	/ → 090°	USING P	T-RUSKIN/C.BAN	us
				DEOL	
2400: SHOOTING	ON LINE	081-17	7090		
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- o Ti allost and the case total and a stand of and decision as to unit therethe system should be turned on or off

## 000173

## OFFSHORE NAVIGATION INC.

MAXIBAN DAILY OPERATIONS LOG

Project Number	1357 D	ate 14	JUNE 81	Ves	sel	MALC	10,	v	Party Number	N/	A
			ROCEAN						Padia		41,9 Khz
Country AUS		9 Ar	rea/ ospect Sour.	OO	S+	enhack SEZ	= a	enwi	Shot Po	oint	
Mobile	FREQUEN	CY	INTERROGAT	OR		MONITOR			AMPLIFIER		NA SYSTEM
	330 M	h2	HTM-04/0		HM		02		_		10/005
						STATIONS				17777	70,000
Station Na	me/No.		Operator	Frequ		Beacon	Cont	rol Box	Amplifier	Code	Ant. Type(s)
MT. ELEI	PHANT	RUS	SEL/WELLS	94	20	HTL-05	00	08		Z	HQL-9
C-BANA	25		- // -	-11	-	HTL-04	00	07		_3	HORN
7021 01	EES			-11	-	HTL-04	00	5	/	4	-11-
MT. RUS	KIN	-	-//-	- 11 -	•	HITL-04	01	′3	/	1	-11-
				01	PERAT	ING TIME					
Time On	Tim	e Off	Reques	sted By	,	System	m Use	d For			
0000	200	00	P. KRON	VFI	EL1.	s sui	FF	ER/S	PARKE	RISID	ESCAN
CLIENT REP. SURVEY											
									TLS (01)	7000	
O/T Request	ed By					Total	Systen	n - Hours	Operation For	Client   Z	OHYS.
					LOST	TIME					
From	1 7	Го	Hours Lost					Reas	son(s)		
NIL											
1012											
	_		·				-			37-17-1-11	
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			LSP# 91					7	······································	***************************************	
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0655 : Æ	ESTAR	25 21	NE U81-1	17 1	-5/	570A -	3 C	1900	1570 10	760 15	A"SHETS)
			7 2500			million Brottermortenpunca					
0930-	HEAV	1 1211	IN SQUAL	- 22	-5%	canes	UE.	24	ERRAT	7¢	
			ART LINE								KIN/7021
			- 081-60								
			VE U81-60							***************************************	***************************************
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Mobile Operator(s)						\$2	- 8			A0160.	
	PYE					Project Supervisor	0.	RUS	SEL		

Operations Log & Remarks (cont'd.) ALL TIMES IN LOCAL TIME (UIC.)
1514: SOL U81-58 FSP=60 -> 180° USING MT-RUSKIN / 7021
SP 447 TO 4SI POWER FRILURE
SP 513 TO 526 CHANGE PAPER IN PRINTER
1927: FOL U81-58 LSP#807
2000: HEADING FOR PORTLAND MINIRANGER OFF
Z400: BICKIVED PORTLAND
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## OFFSHORE NAVIGATION INC.

			JUNE 81				Client Party Number Radio					
Country AUS			ea/ ospect Sour						HI, 9Knz			
Country 7703					-				314			
Mobile Station	FREQUEN		INTERROGATO		MONITOR		AMPLIFIER	ANTE	NNA SYSTEM			
Station 9	530.4	142	HTM-04/0	03 111	HMM-10/002 - HQM-10/005							
	(1)	1		1	STATIONS							
Station Na	me/No.		Operator	Frequency	Beacon	Centrol Box ≠	Amplifier	Code	Ant. Type(s)			
MT. ELE.	PHANT	RUSS	EL/WELLS	9420	H172-05	05 008		_ Z	HQZ-9			
C. BAN	IKS		- // -	-11-	HTL-04	007		3	HORN			
70210	FFS.			- 11 -	HTL-04	005		4	- // -			
MT. RUSA	KIN		-11-	-11-	HTL-04	013	/	1	-11-			
				OPERAT	TING TIME							
Time On	Time	e Off	Reques	sted By		n Used For	-					
1500	24	00	P. KROK	IFIEL	0		0-400-0					
CLIENT REP.												
CONTRACT CON												
O/T Requests	ed By		<u> </u>	- 1	Total	System - Hours	Operation Fo	r Client 6	2 //			
0,110,000				1.05	T TIME	-,	- i		Hrs			
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			PORTLAN		C01/10/20							
~			TING SK		••••••	Y WOK	ERINO	MEEN	<b>Z</b>			
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Mobile Operator(s)	M 20	-000	5 PC14									
Operator(s)	1. 13E	1263 E	/20//		Project	D. Rus	رسيرن					
		=			Supervisor	LE KUS.	122					

### MINIRANGER

## OFFSHORE NAVIGATION INC.

Geophysi Company	cal ZG	6//	WTE.	JUNE 81	Comp	oany	0	47/2/	AMAR		ncy 78	IA YI,9KHZ	
Country	AUST.	RALI	Pro	ea/ spect South		Ste	epback	SEE	= DEAW	Shot Po Interval	ک ۔۔۔۔۔	011	
Mobile	FF	REQUENC	Y	INTERROGATO	OR		МО	NITOR		AMPLIFIER	ANTE	ANTENNA SYSTEM	
Station	93	30M	1/2	HTM-04/0	03	HM	19-10	0/00	2	_	Ha	17-10/005	
							TATIO						
	on Name			Operator	Freque	ency	Be	acon	Control-Box	Amplifier	Code	Ant. Type(s)	
	RUSKO	500000	RUS.	SEL/WELLS	94	9420 411			008		_/	HORN	
147.1	ELEPH	IANT		–	-11.	-	HTL	-05	008		_ 2	HQL-9	
C; B1	gnes	,	-	- //	-11- HT		HTL	-04	007		3	HORN	
702	1 OF.	Z5.	-	- // -	-11-	.	HTL	-04	005		4	HORN	
					OP		ING 1						
Time	On	Time	Off	Reques	ted By		1		n Used For				
0001	,	240	0	P. KRON	IFIE	ELL	0	SNI	FFERI	SPARKE	R ISIN	ESCAN	
0001 2400 P. KRONFIELD SNIFFER/SPARKER/SIDESCA													
O/T Re	equested	Ву		530-00				Total S	System - Hours	Operation Fo	r Client	24 Hrs.	
						LOST	TIM						
Fro	m	Т	0	Hours Lost					Rea	son(s)	1500		
NII						0.000				13/10/10/10			
70.0													
47													
Brief Ope	rations L	og & Re	emarks	ALL T	IME US	-5	15	ノ L	0CAL 270°	TIME	(vie		
				LSP 119						UT SA	IORT		
0635.	: 504	U81	-26	FSP#SO	>	00	0"	051	NG 702	IMTELE,	PHANT	TO SP 415	
	THE	EN .	C.BA	NES/C.BU	=FOX	1 7	0	P 79	11 THEN	MT.ELEPHI	AND/C.80	FIBN TO	
	SP	809	THER	MT.ELEPIN	11117	10.13	PANK	5 7	TO EOL				
0741	· 5P	260	AB	ORT LINE	70	>	C1	2055	WELL	HEAD			
0812	: 500	- WE	Littl	ADCKOSSI	vG -	-> K	NE	J=57	0#/ US	ING MT.C	ELEPHA	v-/70Z/	
START	POINT	32-5	9'-11	713/5 140	-15'-	03"	5/3/	EN	OPOINT	370571	05, 85	5 S	
1400	-16:	36"	9866	<b>=</b> )						·····	·····		
0841	: E0	cu	FLE	HEADCROS	551N	6	ري	0#9	0				
1000	0: R	ESTA	PRT C	INE USI-	26	F	5/	2501	9 1250	-2601	5 79" 5	4055)	
133	Y: EC	76 U	181-2	?6 LSP 9	760	.ک	MA	220	wwgs.	ER-CU	17 5110	DET	
1554	1: 50	12 0	81-2	4 FSP#.	50 -	->	180	0005	106 C.	muss/1	T FLE	PHANT TO	
	5011	7 740	W MT.	ELPHANT/C.BU	=FON	70	51	370 7	THEN C.	BANKS K B	シキダロル	TO IECL	
1730	: 50	370	LINA	= U81-24	ABO	127	- 7	0 0	RUSS /	NONA	24 21	UES TA/B	
1814	1:50	4 7	BFS	SP1-> 3	7/5	0	SIL	16 1	MITELL	PHANT	16-1319	NES	
	(01)	STATE OF THE PARTY	the branch of the Avenue	TROM								70 T	
		DYE					Proje	ct rvisor	D. RU.	SSEL			

	Eur	000177
Operations Log & Remarks (cont'd.) ALL TIME	S IN LOCAL TI	
1842: EOL 7B LSP # 85		
1913: SOL 7A FSP#1->7	A USING MT. FIFE	WHAT / C ROWER
1938: EOL 7A. LSP 75		
ZOIS: RESTART LINE USI-24-	> 180° ESP 360A	(360, 330, 15"6" 540.55)
2756 : EOL U81-24 LSP 88	0	360-370 / 4 340/5)
2400: LINE CHANGE USI-		)
·		**************************************
		***************************************
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### 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.
- 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.
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- 9. The client or lie representative always less the final decision as to un'ether the system should be turned on or off.

## OFFSHORE NAVIGATION INC. MAXIBAN DAILY OPERATIONS LOG

MINIPANGERILL

Project Number & Geophysic	Diet												
Company	EG AUST	RALI	NTEN A Pro	EOCEAN  spect Sout	Com	pany	enhack	SE	ED) ED)	Y A K E A W	Shot P	oint S	
			The second second		Name and Address of the Owner, where the Owner, which the				ĺ				
Station						Hr			02		_		
					В	ASE S	STATIC	NS					
Statio	on Name	/No.		Operator	Frequ	ency	Bea	econ	Contr	el Box	Amplifier	Code	Ant. Type(s)
11T- E	LEPI	YANT	RUSS	EL/WELLS	94	20	HTL	-05	00	28		Z	HQL-9
C.B.	ANK			- // -	-11-		HITL	-04	00	7		3	HORN
7021	OFF	-5		-11-	-11-		HIL	-04	00	25		4	- //-
MT.	eusk.	IN		-//	-"		HTL	-04	01	3		1	-4-
				·······	0	PERAT	TING T	IME		m te Soutel /s			
Time	On	Time	Off	Reques	ted By	,		Systen	n Use	d For			
000	91	240	00	P. KRON	FIE	40		SNI	FE	2/5	PARKIER	2/512	PESCAN
				D. POWE	16		1				· ·		
			*	CLIENT	RE.	ترص	- 1						
O/T Re	quested	Ву						Total S	System	- Hours	Operation Fo	r Client	ZYtirs
						LOST	TIM	E					
Fro	m	Т	0	Hours Lost						Rea	son(s)		
1111													
70 7 -													S. 1810.
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rief One	rations I	og & Re	marke	ALL	711	7E	5	IN	10	CAL	TIM	= (v	115.1
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	EL	EPHI	INT	TO SP 57	0 7	THE	<i>.</i>	C.131	ANK	5/M	T-ELEPHI	gur to	O EOC
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						> 0	000	USi	VG-	700	21/1/21	70000	Tr. FCI
•				OR PORT									
				AT PO					un	EL			
Mobile Operator (	el M	BER	CSTIL	014									
sperator (		PYE					Project Super	ct visor	2	RU	SSEL		
		1100		~									

0.00179
Operations Log & Remarks (cont'd.) BLL TIMES IN LOCAL TIME WITE
1900: CLIENT REP P. KROWFIELD LEFT, D. POWELL REPURI
HIM - ONI NAVIGATOR M. PYE REPLACED BY
A. HOGGART.
2000: LEFT PORTMACDONNEL HEADING FOR LINE USI-52
ZI19: SOL UBI-SZ FSP# 70 -> 180 USING 7021/HT. RUSKIN
GOING BLONG LINE SUSPECT STEERING TROUBLE
AS VESSEL DOES NOT RESPOND PROPERY TO HELM
2249: SP=372 ABORTED LINE TO EXAMINE STEERING
ALL DATA SCRATCHED
Z400: EXAMINING STEERING-TRIAL PUNS
•

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## OFFSHORE NAVIGATION INC.

MINIERNIGER TO MAXIRAN DAILY OPERATIONS LOG

			SUNE 81				Party Number Radio	2. SO 8000000000		
	•	A	OCEAN	Company	ULTR	AMAR	Frequen		11,9 Knz	
Country AUS	TRALIA	Pro	spect SOUTH	Z St	tepback 5	DEHIUI	Interval		M	
Mobile	FREQUENC	Y	INTERROGAT	OR	MONITOR		AMPLIFIER	ANTE	NNA SYSTEM	
Station 9	330 M	HZ	HTM-04/0	03 HI	419-10/00	02		HQM-10/005		
				BASE	STATIONS					
Station Na	me/No.		Operator	Frequency	Beacon	Gentrol Box	Amplifier	Code	Ant. Type(s)	
MT. ELE	PHANT	RUSS	EL WELLS	9420	H17L-05	008		_ Z	HQL-9	
C. BAN	IKS_		-/-	-11 -	HTL-04	007			HORN	
7021 0	FFS.		-//-	-11-	HTL-04	005		4	-11-	
MT. RUS	KIN		-11-	-11-	1174-04	013		/	-11-	
				OPERA'	TING TIME					
Time On	Time	Off	Reques	sted By	System	m Used For				
0001 0120 D. POWELL SNIFFER SPARKER SIDESCAN										
2000 2400 CLIENT REP SURVEY										
O/T Request	ted By		,		Total	System - Hour	s Operation Fo	r Client   S	Hrs 20min	
				Los	T TIME					
From	Т Т	o	Hours Lost			Rea	son(s)			
NIL								112312		
1010										
	_					7712 EV				
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rief Operation	s Log & R	emarks .	ALL TI	(===	200	" 15 0	TE (VI	0=00	20000	
			C SHIPS ENVE OU H							
			RRENTS							
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			BNCHOR							
			P HEAD!					***************************************		
			PORTLA					/ <del>************************************</del>		
			e TLAND		DING 1	FOR LI	NE USI	-19	E. END	
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			DUE VE							
	····	***************************************	= U81-							
			PANCE							
	,		***************************************							
Mobile Operator(s)	M- BE	RES	TROM		<b></b>					
	T- HO				Project Supervisor	0.20	SSEC			

### MINIRANGER

## OFFSHORE NAVIGATION INC.

Project Number	P-13	SZ Da	te 19	JUNE 81	Ves	se!	11/1	200	ON	/	Party Number	·	11	A
Geophysic	cal	0/1	VIER	OCEAN	Oil	npany	U	271	en,	MAR	Radio Freque	ncy	78	41,9 KAZ
Company	AUST	RALL	A Are	spect Sour	OO!!	C+	onhack	SÆÆ	- 01	2AWIK	Shot P			214
		REQUENC		INTERROGATO	-			VITOR	1		MPLIFIER		NTENI	NA SYSTEM
Mobile Station	-	30 M		HTM-04/0		Lu		-	7.9		_			10/005
	1 7,00	3077	12	1111-04/0			STATIO					1770	711	10,003
Stati	on Name	/No.		Operator	1	uency		con	Cont	rol Box	Amplifier	Co	de	Ant. Type(s)
			RUSS	EL JUEUS	942	20 M	HIL	-05	-05 00			2	7	HQL-9
	BANK		-	-11-		-11 - HT		-04 00		ファ	7 -		?	HURN
702	1 01	FS.			-11- HTL		-04	005			5	_	-//-	
MT.	RUSK	:IN		-//-	-//	-	HIL	-04	01	3		/		-11-
					0	PERAT	TING T	-						
Time	On	Time	e Off	Reques	sted B	У		Systen	n Use	d For				
000	2/	240	0	D. POW.	EL	۷		SNI	FFE	ER/SI	PARKER	1511	OES	CAN
CLIENT REP. SURVEY														
O/T R	equested	Ву		<u> </u>				Total S	Systen	n - Hours	Operation Fo	or Client	20	HRS.
						Los	T TIMI							
Fro	om	7	о	Hours Lost						Reas	on(s)			
NI	4													
			7—88 — W.S.R											
Priof One	rations I	100 & B	amarks	ALL.	7/1	1ES	. /	v	100	- PR	TIME	- (0	112	)
000		LEDI	ING.	FOR S	207	-11	EN	00	7=	LIA	I U	81 -	42	
0625	5: 5	دد	U81	-42 FSP	#/		> C	00	U51	NG	7021/0	- 13AL	VES	TO EOL.
1930	: E	04 6	181-	42 LSP#	570	0	SHI	1660	w e	VATI	FR CU	F 51	HOX	27
1000	2:50	56 6	181-	40 FSP 4	77	′ →	15	00	USI	NC	702//0	-BAN	IKS.	TO FOL
1100	: SF	F300	AB	ORT - SMIF	E/ER	72	0013	ive o	113	7 600	00 SP#	280-	- Ci	RCCE.
				ESTART LI										SHOTS!
				10 LSPAS										
				18 FSP#1										
1436				ST SIGNALS				auk	C _	NE 7	O HEAD	VY RI	gIL.	syumus
	CIR	CLE		957 GOOP	5/	7/	30			······································			<del></del>	
1745	: 50	120A	RES	TART LIND	= 0	181-	-38 -	>00	0 (	120	-/30 /	5 19	54	075)
				8 LSP#S9										
2030	0: CA	21132	BTIN	VG SWITE	EK		our	RU	v /	44/5/	. 1	FOR	'	NE ISA
******************				FSP#1-							1 - 13 A	wes		0 150 -
2400	0: SI	4001	126	ON LIN	= /	/3/	7 -	209	0			<b></b>		
Mobile Operator	(s) /	-13:=	1865	TROH			 D!-							
		110					Proje Supe	rvisor	~	2. R	USSEL			

## OFFSHORE NAVIGATION INC.

MINIRANGER

Project Number . Geophysi	<i>ال-رح</i> مار cal	S'7 Da	te <u>20</u>	JUNE 81	Ves	sel	HAL	C Y C	ON	Client Party Number Radio		
	AUST.		A	ea/ spect Sout								OM
Mobile	and the last section is a second section of the last section of th	REQUENC		INTERROGATO			MON			MPLIFIER		INA SYSTEM
Station	933	OMA	2	HTM-04/0	03	HA	117-10	0/0	02		HOM	-10/005
					E	BASE	STATIO	NS				
Stati	on Name,	/No.		Operator	Frequ	uency	Bead	con	Control Box	Amplifier	Code	Ant. Type(s)
MT-1	ELEPHI	BUT	RUSS	ELIWELLS	94	20	HITL.	-05	008		Z	HQL-9
C. B.	ANKS			- //	-/	/~	HIL.	-04	007		3	HORN
702	1 OF	es			//	-	HTL-	-04	005		4	-//-
MT.	RUSKI	w		-11-	-"		HTL-	-04	013	-	/	-//-
				nellar	C	PERA	TING TI					
Time	On	Time	Off	Reques	sted B	Ву		Systen	n Used For			
000	/	240	00	D. POU	IEL	4	=	SNIF	FER SF	PARKERI	SIDESC	-AN_
CLIENT REP SURVEY												
O/T R	equested	Ву						Total S	System - Hours	Operation For	Client	24.00
						LOS	T TIME					
Fre	om	Т	ю	Hours Lost					Reas	son(s)		
NIL												
0001	· · · S	HOOT OL	18A	PLL TI	E	134 8	1 → →0	90	0	***************************************		
0134	ر در	02 0	181-	44 FSP	<b>~</b> 2	0	<del>-&gt;</del> /	180	USING	7021/	C-BAN	KS TO
				IEN MT. E			702	1 7	O FOL	······································		
0415	EC	22 0	81-6	14 LSP 2	`ک ځ	98		_				
0500				16 FSP =						ST. RUSKE	N/702	. To
00:3	- SP	352	7/1	FX 7021,		BA.	- S-	T.C.	200	·	-07-	
082	1 50	040	101-	48 FSP	A 2/	· ·	- 200 -> 18	200	MANGE	5 0.00 mm	13021	TO FOL
				8 LSP4.						La de la		
1211	SOL	$\nu$	81.5	Z FSP#	/	<i>→</i> >	000	o US	NG M	T. RUSKIN	17021	TO ECL
1300	0 51	2 /3	9 /	BURT LI	v=	ری	UIF	= 1=15	2 TROU	1361= -	CIRCL	. <i>IE</i>
	-	957	60	00 50	130	ڪ						
132	2 /	EST	net	- EINE	18.	1-5	2 /	=5:/-	120A	(120	-130 1	SA" SHOT)
154	3 E	02 0	18/-	52 LSP	59	0	2 -	1-117	ilows	- CUT	SHOR	<i></i>
162	0 50	12 0	81 -	SY FSP	100	· -	->/	800	ISING A	T. RUSICIA	1/7021	- TO EUL
Mobile Operator	(s) 1	1. BE	PEGS	STROM			·····					
				ret			Projec	ct visor	0.1	PUSSEL		

Operations Log & Remarks (cont'd.) ALL TIMES IN LOCAL TIME (VIC.)
1918: FOL USI-SY LSP=730
2016: 506 U81-21 FSP #1 -> 270 USING MT. RUSKIN/ 7021 TO ECC
Z148: FOL USI-ZI LSP #Z44 DEEP WATTER - CUT SMORT
ZZOO! CALIBRATING SNIFFER GOING FAIR SEAS (SW)
2250: CALIBRATION COMPLETED HEADING FOR LINE USI-19
WEST END.
2400: IN LINE CHANCE
INSTRUCTIONS
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000183

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sufficient.

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	•	MINIK	BNG	OFFSH			AVIGATIO		±		00018
Project Number Ceophysic Company	0-13 al <u>EG</u>	57 Da	te 2/	JUNE 81  OCEAN  ea/ ospect South	Ves Oil Com	sel	HALCY	on mar	Client Party Number Radio Freque Shot P Interval	ncy 784	IA II, 4 KAZ OM
		REQUENC		INTERROGATO			MONITOR		AMPLIFIER		NNA SYSTEM
Mobile - Station		304		HTM-04/6	03	MM	m-10/00	2		Han	-10/005
<del></del>							STATIONS				
Statio	n Name	/No.		Operator	Frequ	uency	Beacon	Gentrol Box	Amplifier	Code	Ant. Type(s)
MT. E	FLEDA	HANT	RUS	SEL/WELLS	9420		HTL-05	008		_ Z	HQL-9
C. B.				-11 -	-//		1712-04	007	_	3	HORN
		0.2				·-	HTL-04		_	4	HURN
7021 OFFS" 1									HORN		
191.1	KUSK	ciw_				PERA	TING TIME				
Time	On	Time	e Off	Reques				m Used For			
		150	20	O. POWE	=,,		SV	FFER/S	PARKE	n /510	ESCAN
000.		150	0			1W 17-2		RUEY			
				CLIENT	102			CUET		-	
		<u> </u>		1			Total	System - Hours	Operation Fo	or Client	15 Hrs
O/T Re	equested	ву				100				1/	3 7771
Fro	.m	1 -	Го	Hours Lost		LUS	T TIME	Rea	son(s)		
					-					*	
NI					-						
					-						
000	,/; ;;	CINIE	- Cir 181-	19 LSP#	5A0.	iNG <del>-&gt;</del> 19	50R L	INE US	RUSKIN I	W. EX	2/
0538	: 50	06 1	TA	(EXTRA) F.	SPZ	95	0->27	00 (00	UNTING	DOWN	ON 5:01
	U	SING	MT.1	USKIN/702	1/ /	105	P#368	THEN 70	21/613/	NES TO	O EOL
1020	<u> </u>	PI	52	CIRCLE		11	STRUM	ENT T	ROUBL	<u> </u>	- 200
1057	75 1	eEsti	DRT	LINIE 17A	2 ->	270	FSP	160A	160-	752 /2	5 /4 2 HO/S
1202	? : <i>[</i> =	-02	17A	15P #/			45-00	ue N	W 70	OKVIZ Dir U	110
1300	2 /	722	GE	PR ON 130	MR.	<i>2</i>	(FAD)	~			
1000		URR	WEX	WORSE	מנע	16-	TURNI	NO ARC	ouro	ANDI	YEADINE
1500				PETLAND							
277	ر • زم	900	100	D PORT	-219	no					
240	0: .	//	Pol	2721920	زي	ne	10,00	34 201	E BAL	ONER	THER
									v		
Mobile		40		40746							
Operator	(s)	- 13	266	GSTROM			Project	D. RU	SEL		

## OFFSHORE NAVIGATION INC. MAXIMAN DAILY OPERATIONS LOG

roject P-/3	57 Data 2	Z JUNE 81	Vessel	HI	ALCYO	N	Party Number	N)	119
Seophysical	= / ///TE	Z JUNE 81 PROCEAN	Oil	ن	KTRA	MAR	Radio Frequenc	v 78	41,9KAZ
ompany	-0110 A	rospect SOUT	Company	-b-al	. 5,=;=	DEAVI	US Shot Poi	nt Sk	OM
	REQUENCY		DR DE	MO	NITOR	Î A	MPLIFIER	ANTE	NNA SYSTEM
MIODINE						_		SION.	1-10/00
1. 93	30 MIZ	HTM-04/0		-				17747	, -,0,00.
Station Name	-/No	Operator	BASE ST			ontrol Box	Amplifier	Code	Ant. Type(s
Station Name	5/ NO.	Operator	- requestey	-					
NONE	USED								
							ĺ		
			OPERATI	NG '	TIME				
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## OFFSHORE NAVIGATION INC. RANGER FE MAXIRAN DAILY OPERATIONS LOG

000186

	MINIENPE	ER AL WANT	AN DAIL	1 OI LIL	110140		Client		0002
Project Number 2-	/357 Date 23	3 JUNE 81	Vessel	MALC	YON	•	Party Number	N	İA
Geophysical Company	EGG/INTER	OCEAN	Oil Company	, uci	FRAM	AR	Radio Frequen	cv 75	11,9 KAZ
Country AC	USTERLIA P	rea/	-H	Stepback <u>S</u>	EE L	RAW	Shot Po	int 5	014
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	1330 Hhz	474-04/0	03 4	MM-10	1002		_	Han	-10/005
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Mobile Operator(s)	MIKE B	ERGSTROM							
				Project	or O	RU	SEL	1900 PRINCIPLE (ALL DONAL)	

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## OFFSHORE NAVIGATION INC. MINIRALEER MAXIRAN DAILY OPERATIONS LOG

Project P-/35 Number P-/35 Geophysical	57 Date 29	JUNE 81	Vessel	111204	ON	Client Party Number Radio Frequency		
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## OFFSHORE NAVIGATION INC.

MAXIRAN DAILY OPERATIONS LOG

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Project .	C2	70			4	10100	2011	Client Party		110
Number 2-13 Geophysical Company 2-6	Dat	e <u>23</u>	JUNI 31	Vessel		,	24120			41,9416
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Project Supervisor .....

### MINIRANGER

## OFFSHORE NAVIGATION INC. MAXIRAN DAILY OPERATIONS LOG

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## OFFSHORE NAVIGATION INC. HINTERAGER MAXIRAN DAILY OPERATIONS LOG

roject D-/	757 Date Z	8 JUNE 81 EROCEAN	Vessel	11716	YON	Party Number		1/R
eophysical company	TEALIA A	rea/ rospect Sout	Oil Company	ULTIC	AMAR E ORA	Radio Frequen Shot Po	oint 5	841,9 KL
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# OFFSHORE NAVIGATION INC.

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Project P-/357	Date 29	JUNE 81	Voc	sol	HALC	YOA	,			
Geophysical Company										
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IVIODITE		INTERROGAT		-	MONITOR			AMPLIFIER		NNA SYSTEM
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## OFFSHORE NAVIGATION INC.

000193

Client Party Number Project Number P-1357 Date 30 JUNE 81 Vessel . NIA Oil ... Company ... Radio Geophysical Company EGG/INTEROCIEAN ULTRAMAR 7841,9 Khz Frequency Shot Point Area/ Prospect .. Stepback SEE DEAUING 50 M AUSTRALIA SOUTH Interval Country AMPLIFIER ANTENNA SYSTEM MONITOR FREQUENCY INTERROGATOR Mobile Station 9330 MH2 HQM-10/005 BASE STATIONS Amplifier Control Box Code Ant. Type(s) Station Name/No. Operator Frequency Beacon NONE UTILIZED OPERATING TIME System Used For Requested By Time Off Time On NIL Total System - Hours Operation For Client O/T Requested By LOST TIME Reason(s) Hours Lost To From NIL ALL TIMES IN LOCAL Brief Operations Log & Remarks .. POCK STANDING 134 ODDI: MIN HALCYON IN AND WEATHER TO GO OUT AND RE-AWAITING AND =Z DOING PORTLAND STANDING Operator(s) MINE BERGSTROM Project D. RUSSIEL Supervisor ..

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FERE INTERNATIONAL INC.			Remarks	Sol	SP 020 (1522)	35-200 Hg. A. S. PO36	SP160 Prysed	21															
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26-5-41			Line	1-15																	!		
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dartychr Line about - Marigation Line other wantelin table. FEERE INTERNATIONAL INC. Remarks SOL# 45 abrab Soc # P SOL #38 E05#38 Rox 推38 17 3 7 (E02) 305 25 Base Tran-Station sponder ; 1 ; Navigation System 18833 ! Var 200m Scale , 7 555 Cable Length ! 200 Trans-ducer ; : Stepback H'Phone 100 1 -: Sepa-ration Liver 40 ; j. Gain i Operators: 300 Filters LC HC 1 Boomer 7 Sparker s 20 Sweep , , 7 75 Job: 600 - 009 0045 481-19 SPOOL 11KJ 1000 Scale 1 Power (Joules) . 1 570. 50 120 135 5000 USINE SP 501 123 A Fix No. 100 100 5000 590 080 1181-38 2326 181-134 081-40 1 Line 3 1 3 0930 8110 5790 1305 7001 Page: 1349 20 20 1435 1745 0 216 1180 Time

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### SPARKER LINES

### LINE NO.

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1.

- Moderate sea. Loss of generator power at SP 180. No further data. 15KJ. 01
- No data failed deck generator. Other systems continued. 02
- Data good. 15 KJ. 03
- No data failed deck generator. Other systems continued. 04
- 15KJ. 05~ Moderate sea. Data good.
- No data failed deck generator. Other systems continued. 06
- Moderate sea. Data good. 15KJ. 07
- Moderate sea. Data good. 15KJ. 07X
  - No data failed deck generator. Other systems continued. 80 kernetalias prikari india i gistika, sistema
  - 10' swell poor conditions. 15KJ. 09 0
  - No data failed deck generator. Other systems continued. 10
  - 10' swell poor conditions. SOL at SP 080. Generator failed at SP 620. No data from SP 620 to EOL, at SP 697. 15KJ. (2 plans) 11
  - No data failed deck generator. Other systems continued. 12
  - 10' swell, rough sea poor conditions. SOL at SP 100. Sparker 13 / down until SP 220 with failed power supply. 11KJ power.
  - Moderate sea, Tong period 10' swell. Data reasonable. 13A
  - 14 No data - failed deck generator. Other systems continued.
  - Moderate sea, long period 10' swell. Data reasonable. 15 /
  - No data failed deck generator. Other systems continued. 16
  - Rough sea, affecting data quality. 'Sniffer' anomoly around SP 600. 11KJ. (3 plans) 17 :-
    - Rough sea, 10' swell, reducing data quality. 40 knot wind towards end of 17A SP's 170-200 no data due to changing hydrophone battery. 11KJ.
    - X17A Rough sea. 11KJ.
    - X17B Rough sea. 11KJ.
    - No data failed deck generator. Other systems continued. 18
  - Rough sea, 8' swell, reducing data quality. 11 KJ. (2 plans) 11 19 -
  - Rough sea. Unable to 'fire-up'due to seaspray on deck until line re-start 20 √ (SP270).
    - Moderate sea, data reasonable. 11KJ. 21
  - Rough sea, 10' swell. SP's 440-480 no data, power supplies tripped out. (2 plans) 1 1 22
  - Rough sea, very poor conditions. Trying 13KJ at 4 s firing. (3 plans) 111 24:
    - Moderate sea, 8' long period swell. Data reasonable. 11KJ. (2 plans) 26 .
      - Rough sea, very poor conditions. 13 KJ at 4s initially. 9KJ at 2s 28 . trial at SP 480.
      - 30 -Rough sea. 11KJ.
        - Moderate to rough sea, 6'swell. Data reasonable. 11KJ. 32

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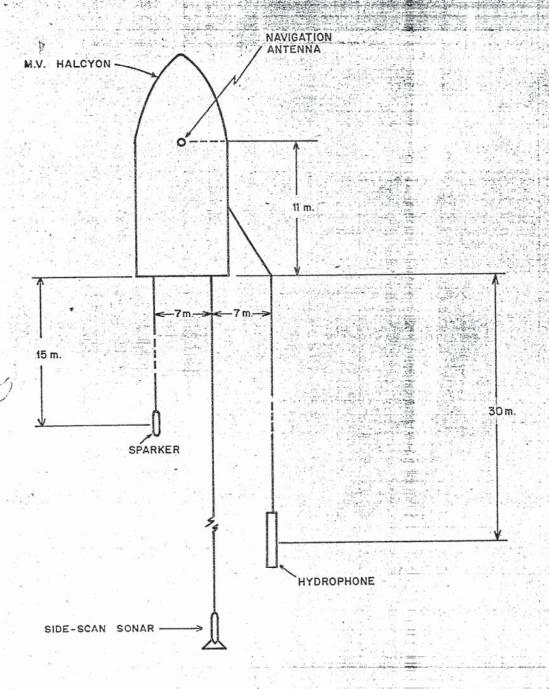
# APPENDIX 1 - SUMMARY OF SPARKER LINES - CONT ... LINE NO.

WELL HERD CROSSING.

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1 .	34	Moderate to rough sea, 6' swell. Data reasonable. 11KJ.
4	36	Moderate to rough sea, 6' swell. Data reasonable. 11KJ.
1	38	Moderate sea, long period 10' swell. Data reasonable, but some incoherence. 11KJ.
,	40 /	Moderate sea, long period 10' swell. Data reasonable, but some incoherence. 11KJ.
ſ	42	Moderate sea, long period 10' swell. Data reasonable, but some incoherence. 11KJ.
	44	
	46	
1	48	Moderate sea, long period 10' swell. 11KJ, SP380-450 no data. generator failed.
1	50 √	Rough sea, 10' swell. SOL to SPO70 no data, generator failed. 11KJ.
1	50X	Rough sea, 10' swell. 11KJ.
111	52	Moderate sea, 6' swell. Data reasonable. 11KJ. (3 plans)
1	54	Moderate sea 6' swell. Data reasonable. 11KJ.
7	56	Moderate sea, long period 10' swell. Data reasonable. 11KJ.
1	58	Rough sea. 11KJ.
r	60	Rough sea. 11KJ.

- 1 X 9 electrode sparkarray
- 3 X EGG 232 power supply
- 3 X 231 Trigger/capacitor bank
- 6 X 233 capacitor bank
- 1 X 50' 8 element XOC 45 hydrophone 1 X EPC 4600 graphic recorder
- 1 X Kronhite 3700 filter.
- 1 X TSS' 307 TVG amplifier
- 1 X TSS 30 8 tape replay unit
  2 X Nakamichi cassette tape deck (with read after write facility)



TOWING CONFIGURATION OF EG&G SYSTEMS