

242001

SEISMIC SUPERVISION REPORT
IN
BASS BASIN AREAS T/18P, T/14P, T89-2
AND
TORQUAY SUB-BASIN AREA VIC/P28
FOR
SHELL-AUSTRALIA E & P OIL AND GAS
FROM
18TH FEBRUARY TO 16TH MARCH, 1990

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TPR
OR-0246

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242002

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1.0 INTRODUCTION

1.1 Prospect Area

Halliburton Geophysical Services had been contracted by The Shell Company of Australia Ltd to acquire marine seismic data in the Shell permit areas offshore Victoria and in the Bass Strait region of Southern Australia.

The permit areas in which data was to be acquired were:

T/18P	200.35 kms
T/14P	733.25 kms
VIC/P25	1185.75 kms

Refer to section 1.6 for prospect location charts.

1.2 Program/Line Numbering

The program consisted of 2119.35 kms of preplotted seismic lines over which 2D data was to be acquired.

The survey was divided into three separate block namely:

T/18P	10 Lines
T/14P	31 Lines
VIC/P28	41 Lines

Water depths through the areas T/18P and T/149 ranged between 77 and 80 metres.

Line in Block T/18P had the prefix :BS90B-: followed by a two digit line identification number.

Lines in Block T/14P had the prefix :BS90A-: followed by a two digit line identification number.

Lines in Block VIC/P28 had the prefix :089A-: followed by a two digit line identification number.

In case of line reshoots or circles a full half cable overlap plus the offset was allowed for and was deemed non-chargeable. Shotpoint numbering remained constant during the overlap shotpoint range.

E.G. BS90B-01	First line attempt
BS90B-01A	First reshoot attempt
BS090B-01B	Second reshoot attempt

Overlap diagrams are included in the Appendices section of this report.

All lines started with SP 1001 regardless of direction or orientation.

1.3 Method

2D seismic data was to be acquired with the aid of a single digital fibre optic streamer and a 2180 cubic inch VSX airgun array operating at 1850 psi.

The Halliburton Geophysical Services chartered vessel, the Pacific Titan, was used in acquisition of all seismic data.

The on site recording system was the Titan 1000 which was configured to record and reproduce 300 channels of marine seismic data.

A nominal operating depth of 8 metres was required for the streamer.

Group length was to be 12.5 metres with a shotpoint interval of 25 metres.

A 2150 cubic inch gun array operating at 1850 psi was to be utilised as the energy source. The operating depth was 6.5 metres.

In block T/14P gravity and magnetometer data were recorded concurrently with the seismic data.

Navigation in block T/18P and T/14P was by way of Argo which had previously been calibrated to a Syledis chain set on Tasmania and King Island.

The same Syledis chain was relocated to the Australian mainland and became the prime navigation system for the VIC/P28 survey block.

Full details of all equipment used in the survey can be found under the following sections of this report.

242006

1.4 Contractors

ECL Australia Pty Ltd were contracted to supply an experienced field person to supervise and oversee all operations pertaining to the above mentioned seismic survey and to ensure all contractual requirements and industry standards were adhered to.

This person was then to report fully to The Shell Company of Australia Ltd on all aspects of the survey on completion of the survey.

Halliburton Geophysical Services were contracted to supply personnel, equipment and spares to complete the survey to both The Shell Company of Australia Ltd and the industry standards.

Offshore Navigation Australia were then sub-contracted by Halliburton Geophysical Services to supply personnel, equipment and enough spares to maintain and operate both an Argo and Syledis navigation chain based in Tasmania whilst Halliburton Geophysical Services were in control of the Syledis in Australia for the VIC/P28 survey.

Edcon supplied two qualified persons to maintain and operate A La Coste gravity meter and a geometrics marine proton magnetometer in the T/14P block.

242007

1.5 Dates

17th February, 1990	Vessel arrived at Esso Terminal, Barry Beach.
18th February, 1990	Vessel departed to commence navigation calibration and system checks.
22nd February, 1990	Commence production in T/18P - 04.21 hours.
24th February, 1990	Complete production T/18P - 09.18 hours.
24th February, 1990	Commence production T/14P - 17.36 hours.
3rd March, 1990	Complete production T/14P - 18.06 hours.
6th March, 1990	Commence production VIC/P28 - 10.15 hours.
16th March, 1990	Complete production VIC/P28 - 18.00 hours.

242008

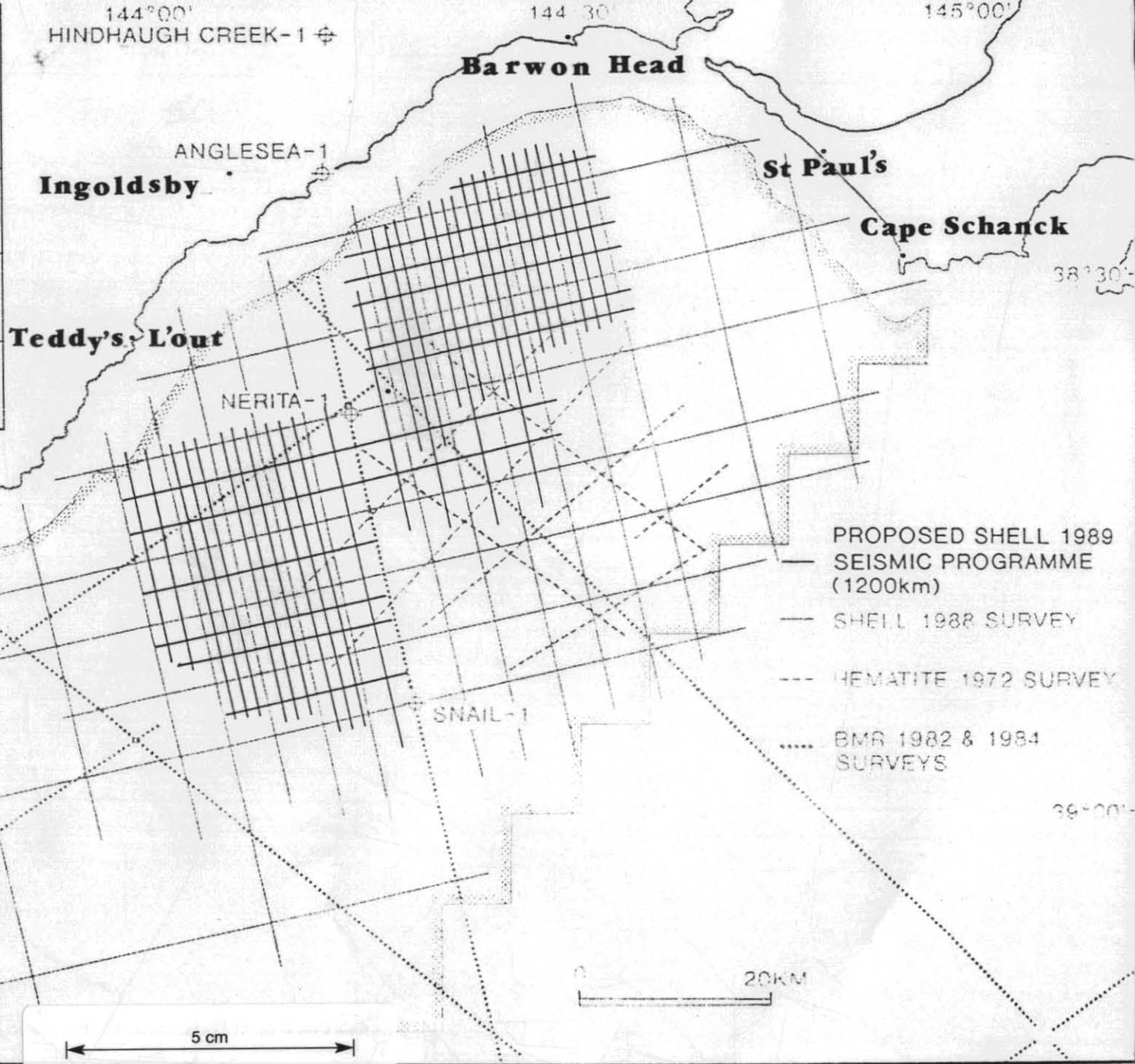
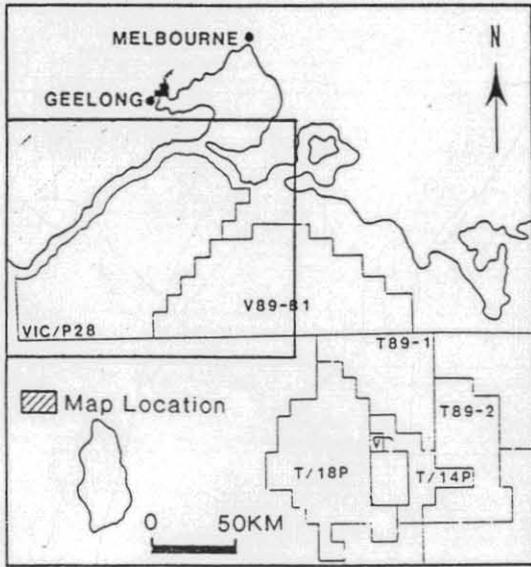
1.6 Survey Location Charts



PROPOSED 1989 SEISMIC PROGRAMME

VIC/P28 TORQUAY SUB-BASIN

Figure

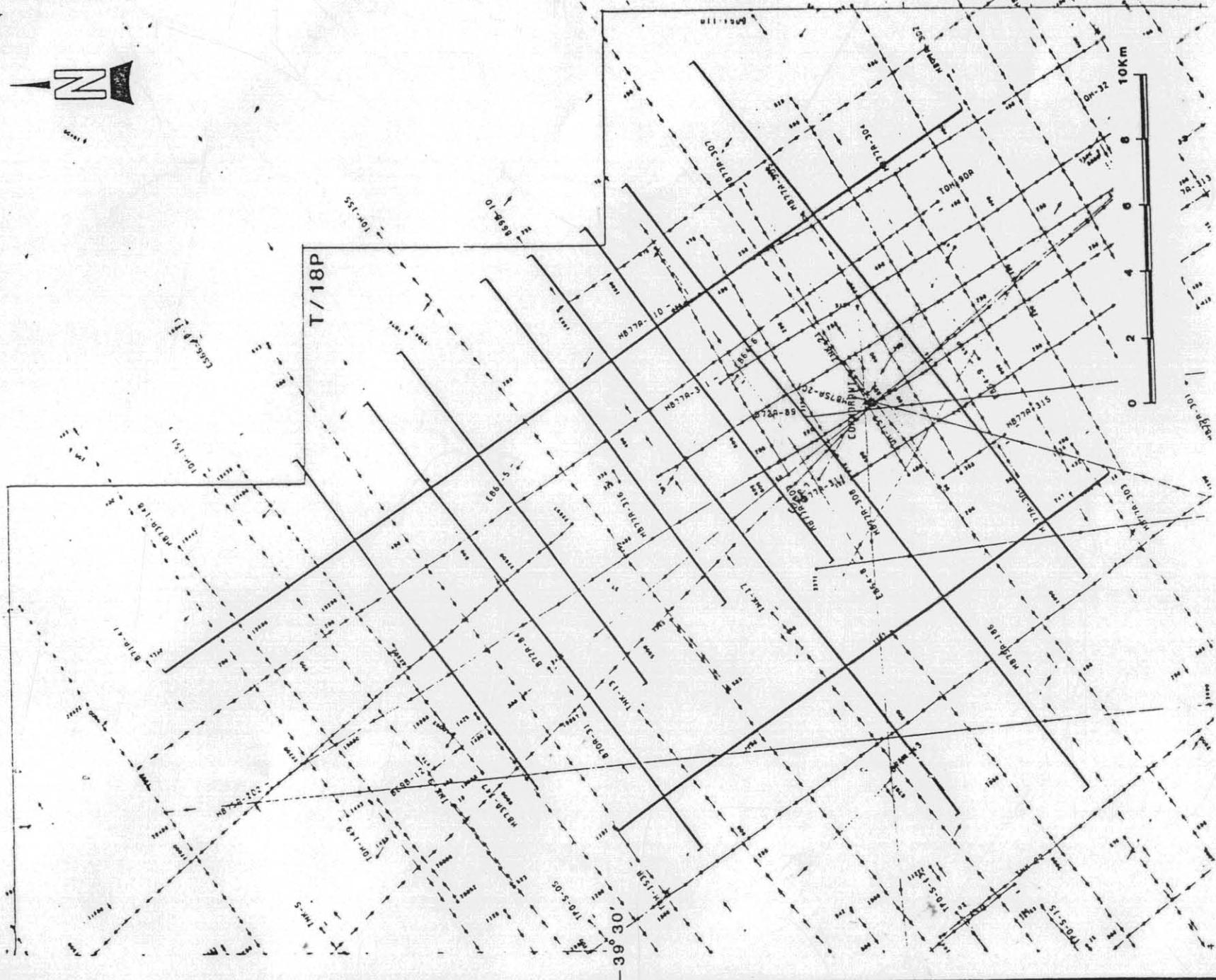
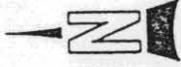


- PROPOSED SHELL 1989 SEISMIC PROGRAMME (1200km)
- SHELL 1988 SURVEY
- HEMATITE 1972 SURVEY
- BMR 1982 & 1984 SURVEYS

242009

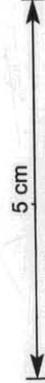
145° 30'

242010



FULL FOLD (181.2) KM

TOTAL LINE KM 201.2



BASS BASIN

T/18P PROPOSED 1989 SEISMIC PROGRAMME (BS89B)

Author: EXO

Report No.:

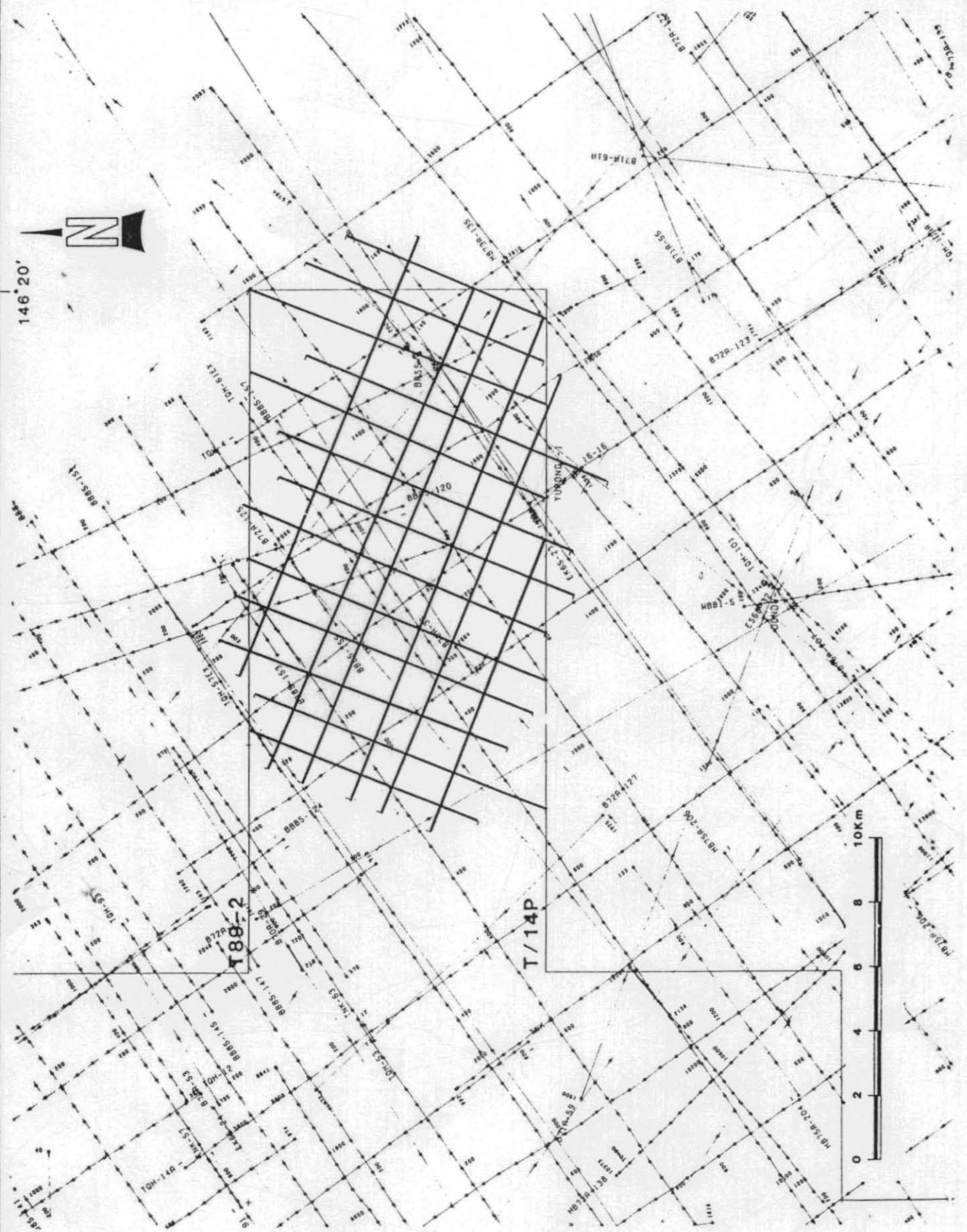
Date: NOVEMBER 1989 | Drawing No.: 25725

Figure

242011

39° 50'

146° 20'



FULL FOLD (213.6) KM
 TOTAL LINE KM 231.6

5 cm

146° 20'

242012

T89-2

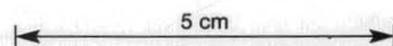


39° 50'

T/14P



— FULL FOLD 470 KM
TOTAL LINE KM 500.2



SHELL-AUSTRALIA
E. & P. OIL AND GAS

BASS BASIN

T89-2 PROPOSED 1989
SEISMIC PROGRAMME (BS89A)

Figure

Author: EXO

Report No.:

Date NOVEMBER 1989

Drawing No.: 25729

242013

1.7 Data Shipments

242014

1.7 Data Shipments

Recorded data from Block T/18P Block was transferred by helicopter on the 24th February at the request of Shell.

Data from T/14P was offloaded in Geelong on the 5th March, 1990.

A final data shipment from VIC/P28 was offloaded at the Esso Marine Terminal, Barry Beach on the 17th March, 1990 on completion of the survey.

Data shipment details are included with the Appendices in this report.

The final destination of the seismic data was:-

Digicon
54-56 Brooke Street
BRISBANE QLD 4006

ATTENTION: NIGEL FISHER

Gravity and magnetometer data was hand carried from the Pacific Titan by Mr D. Gisolf of The Shell Company of Australia Ltd during the Port call in Geelong on the 5th March, 1990. Shipping and processing arrangements of the gravity and magnetometer data were to be arranged by The Shell Company of Australia Ltd.

2.0 CHARGEABLE ITEMS/PRODUCTION

242015

2.1 Chargeable Production

Block	Gravity	Magnetometer	Seismic
T/18P	Nil	Nil	200.35
T/14P T89-2	733.25	716.425	733.25
VIC/P28	Nil	Nil	1185.75
Total Kms	733.25	716.425	2119.35

2.2 Chargeable Downtime

Shipping Interference:

Date	Time	Reason
9/3/90	11:27-13:18 1 h, 51 mins	Stop shooting/circle Ship noise excessive
9/3/90	13:18-13:30 0 h, 12 mins	Shooting overlap SP after circle
12/3/90	07:54-09:45 1 h, 51 mins	Stop shooting/circle Excessive ship noise
12/3/90	09:45-09:57 0 h, 12 mins	Shoot overlap after circle for shipping

Total Shipping downtime logged : 4 hours 06 mins

Weather Downtime:

Date	Time	Reason
22/02/90	18:21-19:24 1 h, 3 mins	Reshoot partial line due to excessive swell noise
6/03/90	12:36-17:39 5 h, 3mins	Standby for sea/swells
6/03/90	21:21-24:00 2 h, 39 mins	Standby for sea/swells
7/03/90	00:00-03:00 3 h, 00 mins	Standby for sea/swells
7/03/90	06:22-09:00 2 h, 38 mins	Standby for sea/swells

08/03/90	17:03-17:15 0 h, 12 mins	Shooting overlaps. After line termination due to weather. Line OS90A-12
10/03/90	22:33-22:39 0 h, 6 mins	Abort line attempt due to excessive swell noise
10/03/90	22:39-24:00 1 h, 21 mins	Standby for swell to drop and conditions to improve
11/03/90	00:00-24:00 24 h, 00 mins	Full day weather standby. Seas up to 8 feet. Winds 35 knots maximum
12/03/90	00:00-05:00 5 h, 00 mins	Weather improving. Standing by for swell to ease
15/03/90	17:39-18:18 0 h, 39 mins	Abort line attempt. Standby for weather and swells
15/03/90	18:18-24:00 5 h, 42 mins	Standby for sea/swell
16/03/90	00:00-01:00 1 h, 00 mins	Weather standby. Standby for swell to ease
16/03/90	02:48-06:42 3 h, 54 mins	Standing by/circle for swells to drop
16/03/90	10:48-14:48 4 h, 00 mins	Circle and standing by sea state to improve
Total Weather downtime logged		: 60 hours 17 mins
Weather downtime allowance		: 4 hours per 100 kilometres of recorded seismic data
		: 84 hours

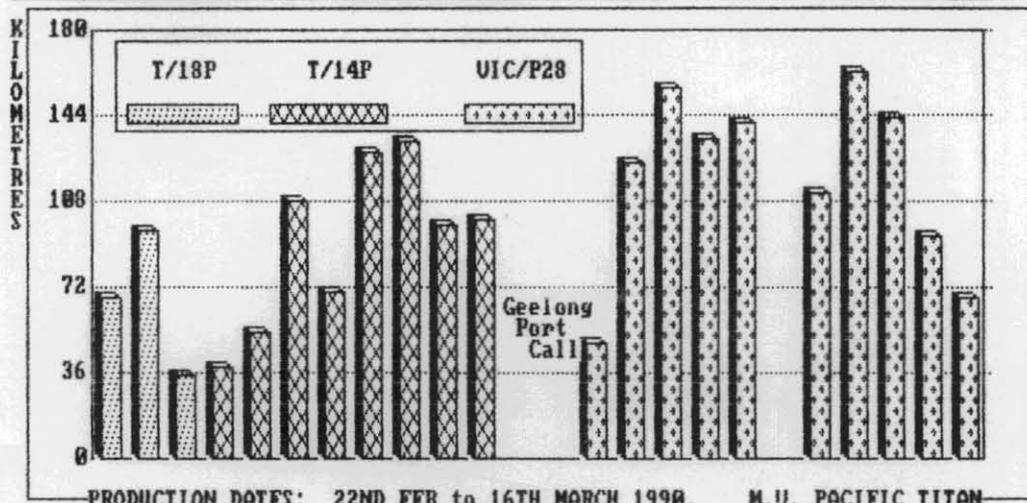
242016

242017

2.3 Daily Production Graph

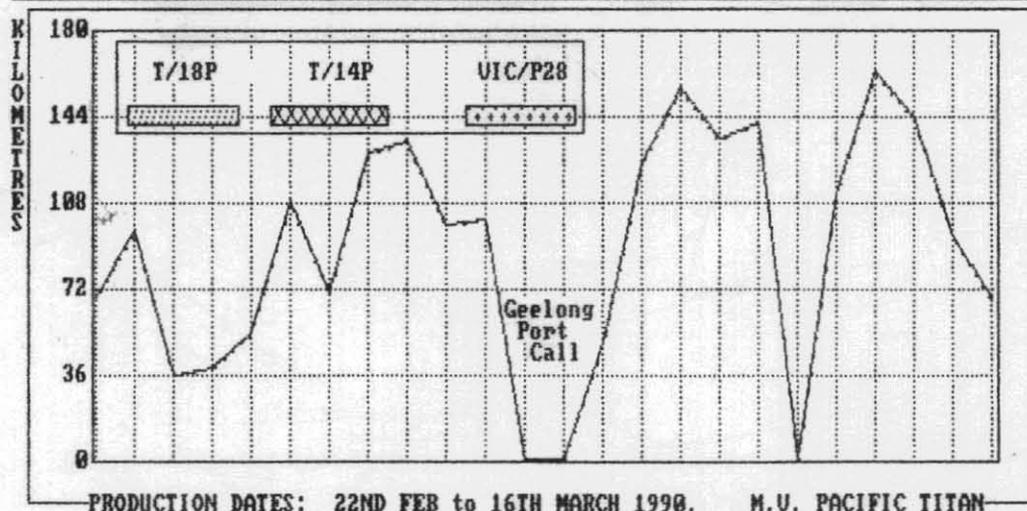
242018

SHELL AUSTRALIA DAILY PRODUCTION GRAPH. BLOCKS: T/18P T/14P UIC/P28



PRODUCTION DATES: 22ND FEB to 16TH MARCH 1990. M.U. PACIFIC TITAN

SHELL AUSTRALIA DAILY PRODUCTION GRAPH. BLOCKS: T/18P T/14P UIC/P28



PRODUCTION DATES: 22ND FEB to 16TH MARCH 1990. M.U. PACIFIC TITAN

5 cm

3.0 PARAMETERS/OFFSETS/CODES

3.1 Survey Parameters

242019

Instrument type	:	Titan 1000
Number of Channels	:	300
Group Interval	:	12.5 m
Fold Coverage	:	75
Sample Rate	:	2 msec
Record Length	:	6 sec
Hi-Cut Filter	:	128 Hz/72 dB/Oct
Lo-Cut Filter	:	8 Hz/18 dB/Oct
Streamer Type	:	Digital Marine
Single/Dual Operation	:	Single
Number of Groups	:	300
Group Length	:	12.5 m
Streamer Length	:	3750 m
Streamer Offset	:	100 m nominal
Streamer Operating Depth	:	8.0 - 9.0 m
Maximum Feather Angle	:	10 degs
Shotpoint Interval	:	25.0 m
Source Array Type	:	VSX Sleeve Airguns
Array Volume	:	2180 cu.in.
Operating Pressure	:	1850-1950 psi
Source Operating Depth	:	6.5 m
Array Length	:	14 m
Array Spread	:	3 x 10 m
Number of Strings	:	4

Navigation Parameters

Primary Navigation : Argo and Syledis
Secondary Navigation : Satellite
Base Stations : North Point
(T/18P & T/14P) : Point Sorell
: Naracoopa
Base Stations : Cape Schanck No.5
(Vic P/28) : St Paul's No.7
: Barwon Heads No.4
: Teddy's Lookout No.2
: Ingoldsby No.3
Shotpoint Interval : 25 m
First Shotpoint : 1001 on all lines
Start Line Extension : - 7 SPs
End Line Extension : + 7 SPs

242020

Propogation Parameters

Ellipsoid : Australian
Semi-Major Axis : 6378160.000
Semi-Minor Axis : 6356774.719
Projection : U.T.M.
U.T.M. Zone : 55
Origin Latitude : 00 degs 00 mins 00.00 secs N
Central Meridian : 147 degs 00 mins 00.00 secs E
Origin Scale Factor : 0.9996000
False Northing : 10000000.00
False Easting : 500000.00
Projection Units : Metres

Magnetic Dec T/18P, T/14P : 11.9 degs E

Magnetic Dec VIC/P28 : 11.1 degs E

242021

Offsets

Central Navigation Point
to the Stern : 46.50 m

Argo Antenna to CNP : 0.3 m at 090 degs

Syledis Antenna to CNP : 2 m at 220 degs

Stern to Centre of Array : 77.00 m

Centre of Array to Centre
of First Live Group : * 100.00 m

Central Navigation Point
to Centre of 1st Group : 223.50 m

Central Navigation Point
to Fathometer Location : 4.20 m aft
2.00 m starboard

Water Velocity Value : 1484 m/sec

* Following is a mathematical calculation for the near trace
offset.

Offset shots were recorded at the start of each line to
verify near trace offsets.

Offset Calculation

Average Time to First Break : 114.00 m/sec

Deduct Gun Timing Delay : - 51.20 m/sec

= 62.80 m/sec

Multiply by Velocity Constant : x 1484.0 m/sec

= 93.1952 m

+ 6.25 m 1/2 First Group : + 6.25 m

Calculated Offset = 99.4452 m

Physical Offset

242022

- a. Central Navigation Point to Stern = 46.5 m
- b. Stern to Centre of Gun Array = 77.0 m
- c. Central Navigation Point to Centre of First Live Group = 223.5 m
- d. Centre of the Gun array to the Centre of First Live Group = 100.00 m
[d = c-(a+b)]

3.2 ECL Survey Parameter Listing

242023

Survey Name or Location : T-18P
Client : Shell Australia
Contractor : Halliburton G.S.
Crew : Pacific Titan
Date on Which Parameters
Last Validated : 24/02/90
Size of Survey : 10 Lines and 200.0 kms

Recording

Recording Instrument : Titan 1000
Number of Channels : 300
Record Length : 6 secs
Sample Rate : 2.0 msec
Filters -
Lo-Cut : 8.0 Hz
Slope : 18 dB/Oct
Hi-Cut : 128.0 Hz
Slope : 72 dB/Oct

Source

Type : VSX Airgun
Number of Sources : 1
Array Description : 2180 cu.in. VSX Airgun Array,
Operating Depth : 6.5 m
Operating Pressure : 1900 psi
Number of Gun Strings : 4
Array Length : 14 m
String Spacing : 10 m

242024

Array Volume : 2180 cu.in.
Minimum Volume Allowed : 1910 cu.in.
Work Pressure : 1900 psi
Minimum Pressure Allowed : 1800 psi
Required Depth : 7 : 7 : 7 : 7 m

Receivers

Spread Description : 300 Trace Digital Streamer
Operating Depth : 8-9 m
GRP Length : 12.5 m
Group Length : 12.50 m
Number of Active Groups : 300
Shotpoint Interval : 0025.0000 m
Active Length : 3750 m
Coverage : 7500 m
Required Depth : 8.5 m
Limit +/- : 1.00 m

Navigation

Primary Type : Argo
Primary Stations : Point Sorell, North Point,
Naracoopa
Secondary Type : Satellite
Secondary Stations : None Defined
Spheroid in Use : Aust. Nat
Delta X : 122.0
Delta Y : 41.0
Delta Z : -146.0

Offsets

Cable Offset From Centre Source
to Centre Near Group -

Aft : 100.00 m

Starboard : 00.00P

Prime Antenna Offset to
Centre Source -

Aft : 123.50 m

Starboard : 00.00S

242025

Survey Name or Location : T-14P
Client : Shell Australia
Contractor : Halliburton G.S.
Crew : Pacific Titan
Date on Which Parameters
Last Validated : 05/03/90
Size of Survey : 31 Lines and 733.25 kms

242026

Recording

Recording Instrument : Titan 1000
Number of Channels : 300
Record Length : 6 secs
Sample Rate : 2.0 msec
Filters -
Lo-Cut : 8.0 Hz
Slope : 18 dB/Oct
Hi-Cut : 128.0 Hz
Slope : 72 dB/Oct

Source

Type : VSX Airgun
Number of Sources : 1
Array Description : 2180 cu.in. VSX Airgun Array,
Operating Depth : 6.5 m
Operating Pressure : 1900 psi
Number of Gun Strings : 4
Array Length : 14 m
String Spacing : 10 m
Array Volume : 2180 cu.in.

242027

Minimum Volume Allowed : 1800 cu.in.
Work Pressure : 1850 psi
Minimum Pressure Allowed : 1800 psi
Required Depth : 7 : 7 : 7 : 7 m

Receivers

Spread Description : 300 Trace Digital Streamer
Operating Depth : 8.5 m
GRP Length : 12.5 m
Group Length : 12.50 m
Number of Active Groups : 300
Shotpoint Interval : 0025.0000 m
Active Length : 3750 m
Coverage : 7500 m
Required Depth : 8.5 m
Limit +/- : 1.0 m

Navigation

Primary Type : Argo
Primary Stations : Point Sorell, North Point,
Naracoopa
Secondary Type : Satellite
Secondary Stations : None Defined
Spheroid in Use : Aust.Nat
Delta X : 122.0
Delta Y : 41.0
Delta Z : -166.0

Offsets

Cable Offset From Centre Source
to Centre Near Group -

Aft : 100.00 m

Starboard : 00.00P

Prime Antenna Offset to
Centre Source -

Aft : 123.50 m

Starboard : 00.00P

242028

Survey Name or Location : VIC/P28
Client : Shell Australia
Contractor : Halliburton G.S.
Crew : Pacific Titan
Date on Which Parameters
Last Validated : 05/03/90
Size of Survey : 41 Lines and 1200.0 kms

242029

Recording

Recording Instrument : Titan 1000
Number of Channels : 300
Record Length : 6 secs
Sample Rate : 2.0 msec
Filters -
Lo-Cut : 8.0 Hz
Slope : 18 dB/Oct
Hi-Cut : 128.0 Hz
Slope : 72 dB/Oct

Source

Type : VSX Airgun
Number of Sources : 1
Array Description : 2180 cu.in. VSX Airgun Array,
Operating Depth : 6.5 m
Operating Pressure : 1850 psi
Number of Gun Strings : 4
Array Length : 14 m
String Spacing : 10 m
Array Volume : 2180 cu.in.

Minimum Volume Allowed : 1910 cu.in.
Work Pressure : 1850 psi
Minimum Pressure Allowed : 1800 psi
Required Depth : 7 : 7 : 7 : 7 m

242030

Receivers

Spread Description : 300 Trace Digital Streamer
Operating Depth : 8.5 m
GRP Length : 12.5 m
Group Length : 12.50 m
Number of Active Groups : 300
Shotpoint Interval : 0025.0000 m
Active Length : 3750 m
Coverage : 7500 m
Required Depth : 8.5 m
Limit +/- : 1.00 m

Navigation

Primary Type : Syledis
Primary Stations : Teddy's Lookout, Ingoldsby,
Barwon Heads, Point Shanck
Secondary Type : Satellite
Secondary Stations : None Defined
Spheroid in Use : Aust.Nat
Delta X : 122.0
Delta Y : 41.0
Delta Z : -146.0

Offsets

Cable Offset From Centre Source
to Centre Near Group -

242031

Aft : 100.00 m
Starboard : 00.00P

Prime Antenna Offset to
Centre Source -

Aft : 123.50 m
Starboard : 00.00S

3.3 ECL Numeric Production Codes

P01	Recording Time	P
P02	Line Change	O
P03	Travel Time	O
P04	Weather Downtime	D
P05	Resupply	O
P06	CMS Failure	H
P07	Instrument Failure	H
P08	Source Failure	H
P09	Compressor Failure	H
P10	Mechanical Stream Failure	H
P11	Navigation Failure	H
P12	Vessel Problems	H
P13	Electrical Stream Failure	H
P14	Cable Handling	H
P15	Navigation Setup/Calibration	H
P16	3D Fill/Reshoots	H
P17	Mobilisation/Demobilisation	H
P18	Seismic Interference	C
P19	In Port	S
P20	Ship/Fish/Boats	C
P21	Ancillary Instrument Failure	H
P22	Shark Damage	H
P23	Streamer Damage	H
P24	Source Handling	O
P25	Laser Failure	H
P26	Shell Request	C
P27	Halliburton Request	H
P28	Shooting Overlap	H
P29	Spare	
P30	Spare	

242032

Charge Codes

P for Prime Time
O for Operational Time
S for Standby
C for Contractor
D for Dispute/Discussion

Line Status Codes

A for abort
R for Reshoot
C for Complete
D for Contractor Downtime
F for fill-in
N for Non Contractor Downtime
X for Extension
O for Off-Line
T for To Be Completed

4.0 QUALITY CONTROL

4.1 Recording Instruments

24203

1. Recording Instrument Specifications

System Name : Titan 1000 Marine Data
Acquisition System

Recording system : Field Computer System III

Software Version : GSISYS29

Tape Format : SEG-D.2.5 Byte Group Coded

Recording : 6250 BPI

Tape Speed : 125 ips

Channels on Tape : 300 + 12 auxiliary

Sample Rate : 2 msec

Record Length : 6 secs

Dynamic Range : 115 dB
Referred to Input Noise

Polarity : Positive pressure gives a
negative number on tape as SEG
convention

Hi-Cut Filter : 128 Hz, 72 dB/Oct

Lo-Cut Filter : 8 Hz, 18 dB/Oct

2. Tests and Calibrations

Following is a list of the quality control and system checks carried out on the Titan 1000 recording system.

These tests were completed prior to commencement of production and were continued throughout the survey on a regular basis to ensure recording parameters and data quality assurance specifications were adhered to at all times.

On completion of the survey a full set of monthly tests were also recorded and checked on board by the Halliburton Geophysical Services Instrument Engineer.

Monthly and semi-monthly tests as listed below were also recorded by the onboard technicians to ensure optimum instrument performance.

Start up SEM and system tests were completed on the vessel prior to the commencement of any production.

The results of all instruments tests were available to the Shell Representative on board for checking and approval prior to the commencement or continuation of production.

- | | | | |
|------------------------------------|-------|--------------|-----------|
| 1. Dynamic Range Determination | Level | 20.48 milliv | 0 dB |
| 2. Dynamic Range Determination | Level | 5.12 milliv | 10 dB |
| 3. Dynamic Range Determination | Level | 1.28 milliv | 20 dB |
| 4. Dynamic Range Determination | Level | 320 mvolts | 30 dB |
| 5. Dynamic Range Determination | Level | 80 mvolts | 40 dB |
| 6. Dynamic Range Determination | Level | 20 mvolts | 50 dB |
| 7. Dynamic Range Determination | Level | 20 mvolts | 60 dB |
| 8. Dynamic Range Determination | Level | 0 | 70 dB |
| 9. Dynamic Range Determination | Level | 0 mvolts | 70 dB |
| (This checks the system DC offset) | | | |
| 10. Equivalent Input Noise | Level | 5 mvolts | Lo-Cut In |
| 11. Equivalent Input Noise | Level | 0 | Lo-Cut In |
| 12. Filter Pulse Test | Level | 0 | Lo-Cut In |
| 13. Crossfeed Test | Level | 20.48 milliv | Even Off |
| 14. Crossfeed Test | Level | 20.48 milliv | Even On |
| 15. Harmonic Distortion Attn 0 dB | Level | 20.48 milliv | Lo-Cut In |
| 16. Harmonic Distortion " 20 dB | Level | 1.28 milliv | Lo-Cut In |
| 17. Harmonic Distortion " 30 dB | Level | 320 mvolts | Lo-Cut In |
| 18. Harmonic Distortion " 40 dB | Level | 80 mvolts | Lo-Cut In |

Daily Test Procedures

Daily tests were carried out regularly and the results of all tests performed were made available for onboard checking and evaluation. Daily quality control checks consisted of the following tests:

1. Dynamic Range Determination Level 20.48 milliv 0 dB
(0 dB Attenuation on Test Signal)
2. Dynamic Range Determination Level 0 70 dB
(Test Signal is OFF)
3. Harmonic Distortion Attn 0 dB 15.625 Hz Test Signal
4. Harmonic Distortion Attn 0 dB 31.250 Hz Test Signal
5. Inwater Dynamic Range Test Level 20.48 milliv 0 dB
6. Inwater Dynamic Range Test Level 0 70 dB

The following lists periodic system checks which were performed on the Titan 1000 system during the Shell Australia survey:

1. SEM Dynamic Range Determination Test
 - Amplitude/gain calibration of the analogue amplifiers
 - Analogue/Digital Dynamic range
 - Analogue/Digital Convertor dc offset
 - Analogue/Digital Convertor noise level
2. SEM Equivalent Input Noise
 - Analogue system input noise
 - Channel or trace DC offset
3. SEM Filter Pulse Tests and Impulse Test
 - Filter Amplitude and Phase response
4. SEM Crossfeed Test
 - Channel-to-Channel crossfeed isolation
5. SEM Harmonic Distortion
 - Total system harmonic distortion
 - Channel-to-Channel phase duplication
6. System Timing
 - Time difference between system time zero and the field time break

The "Pacific Titan" had onboard capability to process and check all the recorded instrument tests and supply the QC with a hard copy printout of the results.

It was from these test results that it was possible to determine or evaluate any of the recorded tests and make field decisions as to whether the tests were acceptable and allow the survey to continue.

3. System Failure and Repairs

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Date	Time	Failure/Repairs
23/02/90	13:05-15:21 2 h, 16 mins	Stop shooting and circle on Line BS90B-07 due to seismic processing unit lock-up. Replace and reseal filter board.
27/02/90	05:12-05:15 0 h, 3 mins	Abort line attempt due to computer system hang-up. Circle.
	05:15-07:09 1 h, 54 mins	Circle. Reboot system. Testing.
14/03/90	13:12-15:09 1 h, 57 mins	Circle due to system recording problems. Every 2nd SP missed. Reboot system and run tests.
	15:09-15:21 0 h, 12 mins	Shooting overlaps after circle.
	16:24-18:18 1 h, 54 mins	Circle due to Field Computer System halt. Restart system. Run tests.
	18:18-18:30 0 h, 12 mins	Shooting overlaps after circle.
15/03/90	12:48-15:03 2 h, 15 mins	Abort Line OS90A-11 due to FCS/plotter hang-up. Only recording every 2nd shotpoint. Reseat boards.
	15:03-15:09 0 h, 06 mins	Abort second line attempt. System locking up and recording every 2nd SP. Remove cards/clean and reseal.
	15:09-17:39 2 h, 30 mins	Run test line and circle whilst Field Computer System (FCS). Run system tests. All check good.

4. System Description

The Titan 1000 Marine Data Acquisition System is an integrated system which combines the FCS 111 (Field Computer System 111), the Titan 1000 digital fibre optic streamer with its associated electronics and control system.

The FCS 111 has the capability to record up to 480 channels of seismic data thus allowing the use of considerably longer streamers with smaller group intervals. This gives the client the opportunity of recording longer spreads and obtaining a higher fold cover.

The recording system receives the seismic data via the Seismic Control System interfaced into the Titan system via Ethernet links.

Trace headers are applied prior to writing data from mass memory to tape.

The system initiates recording by first writing the record header and then "pulling" the seismic data on a trace by trace basis for mass memory and writing these in trace sequential format on tape. The mass memory stores data in one buffer whilst data is extracted from the other and recorded on tape.

The data is recorded on three separate 6250 BPI tape transports which switch automatically when a tape is full or an error condition is present.

These units operate in a read-after-write mode permitting quality control checking of the data all the way to the tape.

The system can receive, store, format, write on tape, digitally check and reproduce read-after-write records.

The system installed on the "Pacific Titan" was configured to record 300 seismic channels of seismic data plus an additional 12 auxiliary channels.

4.2 Digital Streamer

1. Digital Streamer Specifications

Type	:	Marine Digital Streamer
Manufacturer	:	Texas Instruments/ GSI
Streamer Power	:	240 volts AC, with automatic safety shutdown and leakage detection
No. of Channels	:	300
Streamer Length	:	3750 m
Operating Depth	:	8-9 m
Group Length	:	12.5 m
Live Section Length	:	75 m
Stretch Section Length	:	100 m
Repeater Module Length	:	0.46 m

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Streamer Trace Mix : Traces 1-300 1:1 mix
Strain Member Type : Kevlar
Hydrophones/Group : 32
Hydrophone Spacing : Linear, 1 phone/0.3906 m
Hydrophone Type : GSI dish type/acceleration
cancelling
Group Sensitivity : 53.4 mvolts/mbar, +/- 1.2 dB
Depth Control Location : 1, 25, 49, 73, 97, 121, 145, 169,
193, 217, 241, 265 289, 295
Compass Location : Incorporated with depth
controllers
No. of Stretch Sections : 1 at front end,
1 at tail end
Skin Type : Polyurethane
Near Trace Nominal Offset : 100 m
Depth Transducer Locations : In all SEMs and compass/birds

Streamer Control System Details

Manufacturer : Texas Instruments
Operating System : Motorola VersaDos Ver 4.6
SCS Software : Version 2.0
Gain Control Mode : I.F.P.
Sample Interval : 2 msec
Record Length : 6144 msec
Recording Delay : 0 sec
Pre-amplifier Gain : 0.535
Dynamic Range : 115 dB
(referred to input noise)

Lo-Cut : 8 Hz @ 18 dB/Oct
 Hi-Cut : 128 Hz @ 72 dB/Oct
 Selected Time Zero Source : Field Time Break

2. Tests and Calibrations

The following streamer checks were completed prior to the commencement of any production and continued throughout the survey on a regular daily and line to line basis.

- Confirm streamer operating depth.
- Check calibration of all depth controllers.
- Check battery voltages and depth controller operations in both dive and surface modes.
- Check cable polarity.
- Check cable leakage.
- Check cable continuity.
- Check cable/trace sensitivity.
- Check cable/tailbuoy feathering on line.
- Check cable depth on line.
- Check/log trace status (weak, dead, wild, etc.)
- Record streamer noise on tape at SOL/EOL.
- Ensure replacement SEMs were tested and passed before being configured into the cable.
- Check polarity/leakage/continuity of replacement sections when being configured into the cable.

3. Failures and Repairs

Date	Time (HH:MM)	Reason for Downtime
23/02/90	22:30-24:00 1 h, 30 mins	Retrieve cable and replace the front stretch section which developed pin and plug faults.
24/02/90	00:00-02:30 2 h, 30 mins	Line change after completing section change and then shoot required overlap.
24/02/90	09:18-13:33 4 h, 15 mins	Retrieve guns and cable to swap after shark bite/attack.
	15:48-16:27 0 h, 39 mins	Deploy guns after cable repairs.
25/02/90	06:40-12:45 6 h, 05 mins	Retrieve guns and cable after ground fault halt. Problem was caused by shark bite/attack. Changed out damaged section.

26/02/90	01:03-03:00 1 h, 57 mins	Change out holed cable section. 242040
27/02/90	02:15-05:12 2 h, 57 mins	Change out section. Bad traces.
01/03/90	17:40-20:00 2h , 20 mins	Retrieve cable & change section after shark attack.
01/03/90	20:00-24:00 4 h, 00 mins	Change out 3 damaged sections after shark attack.
02/03/90	00:00-01:25 1 h, 25 mins	Complete cable repairs
02/03/90	01:25-06:27 5 h, 02 mins	Change bad section. Causing ground faults.
	20:24-21:42 1 h, 18 mins	Change out damaged section.
02/03/90	21:42-22:30 0 h, 48 mins	New section displays dead trace.
02/03/90	22:30- 24:00 1 h, 30 mins	Complete cable repairs. Damaged section. Possible shark bite.
03/03/90	00:00-03:06 3 h, 06 mins	Complete repairs. Deploy cable.

Fourteen cable sections were replaced during the T/18P and T/14P surveys as a direct result of damage incurred by shark bites and attacks.

After a shark bite to the cable had occurred it was noticed that the section in question would display a noisy or bad trace followed shortly by a complete system ground fault as water would enter the streamer section and replace the cable oil. The guns and cable would be retrieved and the damaged section would be replaced and checked prior to deployment.

Two tailbuoys were lost due to shark bites on the tail and stretch section but both units were finally recovered, albeit one by fishermen some two weeks from the date of the shark attack.

No other cable damage was incurred during the survey.

Cable downtime was logged on two separate occasions when replacement sections were included into the streamer to repair and replace sections ravaged by sharks. On checking, these sections contained dead groups and no system continuity.

On these occasions the section would be replaced once again. All faulty replacement sections were returned to the USA for credit and repair.

4. Description

The Digital Fibre Optic Streamer is the inwater portion of the Titan 1000 Data Recording System.

The fibre optic streamer consists of four major inwater components: these being live sections, program plugs, electronic modules and repeater modules.

The live sections are the active cable sections which actually encase the hydrophones and the fibre optics. Each live section contains 32 dish type acceleration cancelling hydrophones.

The program plugs connect separate live sections together and also determine the trace 'mix' as required by any particular client, i.e. 1:1, 3:1 or 5:1.

Signal processing in the streamer is achieved by the installation of SEMs (electronic modules) throughout the streamer. Each SEM receives 6 groups of analogue data from the live section ahead of its location and 6 groups of analogue data for the SEM behind its location.

The signal processing consists of pre-amplifying, filtering, multiplexing, gain ranging and the analogue to digital conversion of the signal.

Each channel may be filtered with a choice of lo-cut filter and then applied to a fixed 265 Hz, 72 dB/Octave anti-alias filter.

It is then multiplexed, gain adjusted and converted to digital form. The digital data is then added to the incoming data stream from the previous SEM in and along the streamer for transmission by optical to the next SEM.

4.3 Energy Source

1. Airgun Array Specifications

Manufacturer	: Texas Instrument/GSI
Type	: Versatile Sleeve Airgun Array
Operating Volume	: 2180 cu. in.
Operating Depth	: 6.5 m (+/- 1 m)

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Configuration : 4 sub-arrays
String No. 1 : 16 guns, 520 cu.in.
String No. 2 : 16 guns, 570 cu.in.
String No. 3 : 16 guns, 570 cu.in.
String No. 4 : 16 guns, 520 cu.in.
String Spread : 10.0 m between strings
Operating Pressure : 1850-1950 psi
Nominal Output : 100 barmetres
Primary to Bubble Ratio : At least 13:1
Timing Delay : 51.2 msec
Timing Control : Tiger II Gun Controller
Compressors : 4 C-600 Sullair (150- 300 psi)
 2 L.M.F. (300-2000 psi)
Stern to Centre of Array
Offset : 77 m
Array Length : 14 m
String Formation : 4 parallel strings

2. Tests and Calibraions

The following system tests and calibrations were performed on a regular basis prior to the commencement of any production and continued on a regular basis up to the time of completion.

Start-up Tests:

Check gun type

Check gun size and array dimensions

Confirm and check array towing depths

Confirm gun timing delay

Confirm shotpoint interval

Check operation of Tiger gun controller prior to commencement of any line

Survey/Online Checks:

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Cycle the array on the run-in to each line to check pulse shape, air pressure, timing, depth control and gun status

Check entire gun system operation during test firing of array on the line run-in

Take offset shots prior to line commencement

Continually check gun timing on line

Continuous check on pressure/depth control

Ensure all misfires, no fires, autofires are being correctly monitored and logged.

3. Failures and Repairs

Date	Time	Failure/Repairs
22/02/90	16:27-18:21 1 h, 54 mins	Extended line change whilst the non-return valve on the compressor raw water cooling pump was replaced. Original unit was leaking badly from sea water corrosion.

No other downtime was contributed to guns or associated systems.

4. Description

The Versatile Source Array (VSX) utilises a relatively new but well tried and tested airgun type: the sleeve gun.

The sleeve gun incorporates a new concept in airgun design in that the shuttle is an external sleeve that produces a full 360 degree port. This allows for more efficient acoustical pulse than that of the traditionally ported airguns.

These guns have proved themselves to be extremely efficient and reliable.

The array in use for this particular survey consisted of four gun strings towed in parallel with a string spacing of 10 metres. The overall length of the array was 14 metres.

The total volume of the gun array was 2180 cubic inches and this comprised of sleeve guns of various individual volumes. The operating pressure to the guns was 1850 to 1900 psi.

Air was supplied to the array by way of four Sullair and two LMF compressors. It was necessary only to operate and maintain a

steady volume and pressure with two of the Sullair's and one LMF thus maintaining a 100% back-up system throughout the survey.

4.4 Navigation

242044

1. Navigation System Specifications

Argo System:

System Type	:	Argo
Operating Mode	:	Range/Range
Frequency	:	1620 kHz
Survey Company	:	O.N.A.
Mobile Antenna Height	:	25 m above sea level
Mobile Antenna Location	:	0.3m @ 90 degs from CNP
Offset From Stern	:	46.5 m
Maximum Range	:	740 kms rated (day)
	:	408 kms rated (night)
Range Accuracy	:	1.4 metres instrumental
Lane Width	:	92.49043 m

Argo Base Station Locations

Point Sorell -

Latitude	:	041 degs 07 mins 23.63 secs S
Longitude	:	146 degs 31 mins 42.34 secs E
Offset	:	Nil
Elevation	:	30.0 m

North Point -

Latitude	:	040 degs 42 mins 52.15 secs S
Longitude	:	145 degs 15 mins 30.28 secs E
Offset	:	Nil
Elevation	:	5.5 m

Naracoopa -

Latitude : 039 degs 55 mins 29.05 secs S
 Longitude : 144 degs 07 mins 39.03 secs E
 Offset : Nil
 Elevation : 55.9 m

Syledis System

System Type : Syledis
 Manufacturer : Sercel
 Operating Mode : Range/Range
 Frequency : 420 - 450 mHz
 Survey Company : HGS
 Mobile Antenna Height : 20 m above sea level
 Antenna Location : 2.0 m @ 220 degs from CNP
 Offset From Stern : 46.5 m

Syledis Base Station Location for T/18P and T/14P

Point Sorell -

Latitude : 041 degs 07 mins 24.75 secs S
 Longitude : 146 degs 31 mins 41.91 secs E
 Offset : Nil
 Elevation : 5.5 m
 Delay : - 225.8

North Point -

Latitude : 040 degs 42 mins 51.40 secs S
 Longitude : 145 degs 15 mins 31.31 secs E
 Offset : Nil
 Elevation : 56.0 m
 Delay : - 228.5

Naracoopa -

Latitude : 039 degs 55 mins 29.95 secs S
Longitude : 144 degs 07 mins 39.47 secs E
Offset : Nil
Elevation : 56.0 m
Delay : - 225.8

Syledis Base Station Locations for VIC P/28

Barwon Head -

Latitude : 038 degs 17 mins 30.5766 secs S
Longitude : 144 degs 29 mins 54.0329 secs E
Elevation : 33.0 m
Antenna Height : 7.0 m
Offset : Nil

St Paul's -

Latitude : 038 degs 21 mins 28.6615 secs S
Longitude : 144 degs 44 mins 35.1746 secs E
Elevation : 55.1 m
Antenna Height : 13.0 m
Offset : 0.5 m @ 320 degs

Offset Location -

Latitude : 038 degs 21 mins 28.6500 secs S
Longitude : 144 degs 44 mins 35.1600 secs E

Ingoldsby -

Latitude : 038 degs 24 mins 43.9726 secs S
Longitude : 144 degs 09 mins 23.1811 secs E
Elevation : 121.0 m
Antenna Height : 13.0 m

Offset : 1.5 m @ 120 degs

Offset Location -

Latitude : 038 degs 24 mins 43.9969 secs S

Longitude : 144 degs 09 mins 23.2346 secs E

Teddy's Lookout -

Latitude : 038 degs 33 mins 19.0198 secs S

Longitude : 143 degs 58 mins 41.4838 secs E

Elevation : 120.1 m

Antenna Height : 13.0 m

Offset : 1 m @ 0 degs

Offset Location -

Latitude : 038 degs 33 mins 18.9876 secs S

Longitude : 143 degs 58 mins 41.4800 secs E

Cape Schanck -

Latitude : 038 degs 29 mins 39.33 secs S

Longitude : 144 degs 53 mins 07.16 secs E

Elevation : 70.0 m

Antenna Height : 13.0 m

Offset : 1.5 m @ 300 degs

Offset Location -

Latitude : 038 degs 29 mins 39.3057 secs S

Longitude : 144 degs 53 mins 07.1064 secs E

2. Tests and Calibrations

Blocks : T/189, T/14P

Due to geometry and logistics it was only feasible to cut the Point Sorell/North Point Baseline.

On both of these locations Syledis and Argo stations had been set and installed.

A total of four baseline crossings were completed and the results were good with only a 3 metre difference being observed between all crossings.

Computed baseline distances and the observed distances follow in this report with graphed results included in the Appendices.

With the Syledis positioning accepted, a calibration of the Argo system to the Syledis was successfully completed.

It was possible to verify this calibration by observing the quality of 3-way fixes obtained during the survey.

The average of 3-way fix in both the T-18P Block and T-14P was 1.5 to 3 metres throughout the survey.

Whilst on line, 3-way fixes, signal levels and quality were continuously monitored and recorded.

Other navigation checks included the following:

- Confirm and check geodetic parameters

- Confirm and check base station co-ordinates

- Record and check baseline crossings

- Check 3-way fix standard deviations and residuals on all lines and random check on line changes

- Check signal strength and signal-to-noise ratio on/off line

- Observe and log any skywave interference at night with regard to the Argo system

- Verify Argo lane width (92.49043 m)

Block : VIC/P28

Syledis navigation checks during the VIC/P28 survey included the following:

- Check and confirm base station co-ordinates

- Confirm station locations/offsets

- Check, log, beacon delays

- Confirm antenna heights

- Cut baselines and compute results

- Check 3-way fix results

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Check signal/noise ratios

Check online AGC/signal levels

Check input of system delays to CMS

Cut baselines on completion of survey

A full system calibration of the system had been completed prior to the T/14P and T/18P surveys and the calibration results were accepted for the VIC/P28 survey which followed on after completion of the previous surveys.

All baselines were crossed and the results checked prior to the start-up of any production in VIC/P28.

Graphed results of baseline crossings are included in the Appendices of this report.

3-way fixing was continually monitored and the average of 3-way fixes was 1-2 metres.

On completion of the VIC/P28 block all baselines were crossed for a final system verification and a full system calibration was to be completed by HGS personnel.

Syledis Baseline Crossing Results:

Date : 20th February, 1990

Client : Shell Australia

Area : Bass Strait

Pass	Station Name	Computed Distance	Min Obs.
1	Pt Sorrell/North Point	116205.3m	116205.1m
2	Pt Sorrell/North Point	116205.3m	116206.1m
3	Pt Sorrell/North Point	116205.3m	116206.6m
4	Pt Sorrell/North Point	116205.3m	116208.5m

All recorded ranges are measured in metres.

Graphed examples of the above four baseline crossings can be found in the Appendices at the end of this report.

It should be noted that the Syledis ranges at the time of the baseline crossings were unstable. As four crossings were completed with a 3 metre difference the results were accepted.

A minimum of 40 raw data ranges were recorded and logged to obtain the final baseline results in all cases.

Pass	Station Names	Computed Distance	Observed Distance	C-0
2	Teddy's Lookout/Cape Schanck (Incorrect offset for Teddy's Lookout)	79394.1	79388.95	+5.2
3	Teddy's Lookout/Cape Schanck (Incorrect offset for Teddy's Lookout)	79394.1	79388.70	+5.4
4	Teddy's Lookout/Cape Schanck (Incorrect offset for Teddy's Lookout)	79394.1	79387.94	+6.2
5	* Teddy's Lookout/Cape Schanck (Cut with revised co-ordinates for Cape Schanck) (Teddy's Lookout incorrect offset)	79393.0	79386.67	+6.3
1	Ingoldsby/Cape Schanck (Incorrect station offsets - disregard)	64272.2	64267.69	+4.5
2	Ingoldsby/Cape Schanck (Incorrect station offsets - disregard)	64272.2	64267.77	+4.4
3	Ingoldsby/Cape Schanck (Incorrect station offsets - disregard)	64272.2	64267.71	+4.5
4	* Ingoldsby/Cape Schanck (Cut with revised co-ordinates for Cape Schanck)	64270.9	64266.49	+4.5
5	Teddy's Lookout/Cape Schanck (Offset not taken into account)	79393.0	79386.67	+6.7
1	Ingoldsby/Cape Schanck (Offset not taken into account)	64269.6	64264.75	+4.8
1	Ingoldsby/St Paul's (Changed mobile - incorrect delays entered)	51608.9	51603.85	+5.0
2	Ingoldsby/St Paul's (Changed mobile - incorrect delays entered)	51608.9	51604.73	+4.2
1	Teddy's Lookout/St Paul's (Disregard - incorrect delays in system)	70266.3	70259.48	+6.8

Stations Cape Schanck, Ingoldsby and Barwon Head were all slightly offset up to 1.5 metres. Additional baseline checks were performed with good results and necessary location co-ordinates were corrected on the 8th March.

1.	Ingoldsby/St Paul's	51608.9	51605.55	+3.3
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2	Ingoldsby/St Paul's	51608.9	51606.38	+2.5
2	Teddy's Lookout/St Paul's	70266.3	70264.16	+2.1
3	Teddy's Lookout/St Paul's	70266.3	70262.45	+3.9
1	Ingoldsby/Cape Schanck	62469.6	64269.04	+0.6
2	Ingoldsby/Cape Schanck	64269.6	64269.90	-0.3
1	Teddy's Lookout/Cape Schanck	79392.9	79390.57	+2.3

Post survey Baseline Checks

16th and 17th March, 1990

1	Teddy's Lookout/Cape Schanck	79392.9	79392.24	+0.7
1	Ingoldsby/Cape Schanck	64269.6	64270.41	-0.8
1	Teddy's Lookout/St Paul's	70266.3	70264.45	+1.8
1	Ingoldsby/St Paul's	51608.9	51610.02	-1.1
1	Barwon Head/Cape Schanck	40592.3	40590.07	+2.2

All above distances are measured in metres.

Graphed results of all baseline crossings are included in the Appendices of this report.

3. Failures and Repairs

Date	Time	Failure/Repairs
23/02/90	00:53-03:27 2 h, 30 mins	Lost Argo signals due to skywaves and propagation problems
24/02/90	23:15-24:00 0 h, 45 mins	Lost Argo ranges. Skywaves
25/02/90	00:00-03:18 3 h, 18 mins	Standby. Argo ranges unstable
	12:21-14:51 2 h, 30 mins	Lost signals from Point Sorell. Station power problem
	21:09-23:40 2 h, 31 mins	Standby for Argo. Skywaves
26/02/90	03:50-04:06 0 h, 16 mins	Standby for Argo. Skywaves

	21:15-24:00	Standby.	Skywave interference
	2 h, 45 mins		
27/02/90	00:00-01:21	Standby.	Skywave interference
	0 h, 21 mins		
	20:45-23:30	Standby.	Skywave interference
	2 h, 45 mins		
28/02/90	21:30-24:00	Standby.	Skywave interference
	2 h, 30 mins		
01/03/90	00:00-00:21	Standby.	Skywave interference
	0 h, 21 mins		

3. System Descriptions

Argo

The DM-54 Argo system installed was designed to provide accurate long-range positioning information.

A mobile unit was installed on the vessel whilst three base stations were located on shore.

The Argo operates in the high frequency band of 1600-2000 kHz, utilising the ground wave component of the radiated signal. The system can provide accurate positioning up to 400 miles, depending on atmospheric conditions.

The mobile unit (on board the vessel) initiates the basic ranging process by transmitting a pulse. The shore base stations receive this pulse (interrogation burst) and correct their internal phase to that of the received transmission, and, in sequence broadcast reply bursts of RF energy.

These pulses are received by the mobile, and the phases of these signals are compared to the phase of that of the original broadcast or interrogation.

This phase difference is used to compute the in-line distance. This value is displayed and used in the whole lane computation process.

This concept is derived from the physical laws that: (a) a propagated RF signal will travel through the transmission medium at a predictable velocity: and (b) that for any particular frequency the wavelength (distance travelled during one cycle) is determinable.

Syledis is a medium range positioning system manufactured by Sercel, which operates in the 420-450 MHz band.

The equipment is highly portable and extremely reliable.

The system can be operated in either of the three following modes:

Range/Range: where the interrogator is placed on board. The mobile unit has four channels of which only three can be displayed at any one time.

Hyperbolic: where an unlimited number of mobile units can operate.

Compound: which is a combination of the Range/Range and Hyperbolic Modes.

In the simplest case, Range/Range, the mobile station installed on the vessel transmits interrogation signals to three shore based stations which are received, filtered and re-transmitted back to the vessel.

The ranges are determined by measuring the propagation time between the instant of interrogation and the instant of arrival of the responses on board the mobile vessel.

Each station has a designated signal code applied to it to allow for signal response identification.

The Syledis in this survey operated in the Range/Range mode.

5. ANCILLARY EQUIPMENT

5.1 C. Itoh 600 Graphic Printer/Plotter

242054

Manufacturer : C. Itoh & Co. Ltd
Model : CI 880Q
Type : Dot Matrix
Maximum Resolution : 400 dots/in
Near Trace Display : 298

Comments:

A C. Itoh single trace profiler/plotter was in use to supply hard copy of any specific single trace data in the digital streamer configuration.

A single trace profile taken from Trace 298 was displayed for each line and was included with all relevant line data and information forwarded to processing.

The system operated well throughout the survey producing a good clear single trace profile image.

5.2 Multi-Trace Plotter

Make : Oyo, U.S.A.
Model : GS 622-Thermal Plotter
Number of Traces : 1000 maximum
Plotter type : Thermal
Paper Size : 22 in x 300 ft
Software : Westren Fastbox II
Version : 1.04

Comments

The Oyo multi-trace plotter (camera) which was installed on board the "Pacific Titan" replaces the older type cameras usually in use with the DFS-V recording type systems.

This new camera/plotter is in fact a high speed thermal transfer plotter allowing up to 1000 individual channels of seismic data to be displayed on a 22 inch thermal paper roll.

Western Fastbox II Version 1.04 was the software supplied and in use to interface and transfer the recorded seismic data into a format which could be displayed via the Oyo GS-622 plotter.

An advantage of this camera is that it automatically labels and heads each printout with relevant line data pertaining to the line such as shotpoint, file, line numbers and time.

Clear well defined shot records were produced throughout the survey and the unit was basically maintenance free.

5.3 Fathometer

Manufacturer : Simrad
 Model : EA
 Velocity Setting : 1484 m/sec
 Transducer Location : 4.2 m aft of CNP
 : 2.0 m stbd c/line
 Draft Correction : 3.3 m

Comments

The fathometer operated on all lines throughout the Shell 2D survey. A good clear image of the sea bed features was reproduced at all times.

An event mark appeared every 50 shotpoints to assist with future interpretation of results.

Manual marking of the unit showed shotpoint numbers and recorded water depths.

A fathometer calibration check was made whilst the vessel was alongside in Geelong on the 5th March 1990.

The unit was operational on all lines during the survey.

5.4 Gravity Meter

Manufacturer : LaCoste and Romberg
 Model : Land/Sea
 Serial Number : S 31
 Accuracy : 1/10 milligal

Display : Strip Chart
Magnetic Data Tape

242056

Event Mark : Shotpoint number and time divisions

Edcon personnel installed and operated the LaCoste and Romberg gravity meter on board the "M/V Pacific Titan".

A full system test, including still reading and K-Check was completed prior to the vessel's departure from the Esso Marine Terminal at Barry Beach.

Two still readings were recorded and these values were:

1st reading : 8468.0 counter units

2nd reading : 8467.4 counter units

In addition to the marine observations and readings a separate land tie value was recorded by an independent operator contracted by Halliburton Geophysical Services whilst the vessel was at the Barry Beach Terminal.

Land Gravity Value : 980060.74 mgals
Isogal 84 datum

Mr John Peacock of Geoterrex performed the land gravity tie at the Barry Beach Terminal on Sunday 18th February, 1990.

Gravity data was recorded on both magnetic data tape and strip chart with the strip charts being annotated manually every 15 minutes with time and gravity readings.

Due to timing and logistics it was not possible to obtain a base gravity reading whilst the vessel was alongside in Geelong on the 5th March.

Arrangements were made by Halliburton Geophysical Services to have an independent contractor obtain the reading at a later date at a predesignated point set by Edcon personnel during the port call. The base reading observed at Geelong on the 6th March 1990 as recorded by Geoterrex Pty Limited was:

980000.61 mgals

A successful still reading was recorded on completion of the survey whilst alongside at Geelong.

The still reading value was : 8468.0 counter units

Gravity data was recorded on all lines during the T/14P survey permits.

The quality of the gravity recorded data was very good with only

low noise levels being attributed to sea state.

242057

The manual marking and annotating of all recorded hard copy data was excellent and both operators were most conscientious with regard to their systems and operations of the same.

733.25 kilometres of gravity data was recorded.

5.5 Magnetometer

Manufacturer : Geometrics
Model : G801 Marine Proton
Sensitivity : 1 gamma
Chart Scale : Small Division 1 gamma
: Full Scale 100 gammas
Data Display : Strip Chart,
Magnetic Data Tape
Event Mark : Every 50 shotpoints,
Manual
Sensor Offset : 210 m astern

Comments

The Geometrics G801 magnetometer was installed by Edcon personnel, as was the gravity meter.

Data was recorded on strip chart and magnetic tape only in specified areas in the Bass Basin, as per Shell Australia contractual requirements.

Strip charts were annotated with the time and the magnetic value in gammas every 15 minutes.

The recording and collection of all magnetic data was controlled by Edcon personnel and a full report should be available from that company on completion of the survey.

No land based magnetometer was available for a land tie or to check magnetic variation during the survey.

Good magnetic data was recorded on all lines of the T/14P survey with the exception of Line BS90A-06 when, due to repairs being made to the sensor tow cable, the unit was inoperable for the entire line. The repairs to the sensor cable were caused by the cable becoming entangled with the gun array whilst retrieving both systems at the same time.

It was noted that the noise levels in calm seas were very low (1 gamma) but, as seas increased slightly, so did noise levels, up to 5 gammas. ⁴²⁰⁵⁸

Overall the quality of the magnetic data was good and the Edcon operators were extremely systematic and accurate in the manual marking and annotating of their strip chart data.

716.425 kilometres of magnetometer data was recorded.

6. CONCLUSIONS AND RECOMMENDATIONS

242059

6.1 General

Overall the entire survey was well conducted and minimal problems were encountered.

The survey was well planned and presurvey meetings with key personnel were most informative and clearly explained any problems that were expected to arise throughout.

Most lines were successfully completed. In four instances lines were terminated early due to "foul ground" conditions existing at the ends of these lines. The "foul ground" area as marked on the marine chart indicated an area where derelict shipping had been sunk or so we were informed by the Port Phillip Pilot Station. Very little information on this area could be obtained, so, following conversations with Shell and Halliburton Geophysical Services personnel, a decision was made not to attempt to acquire data in this possibly dangerous area.

Line OS90A-22 was aborted due to a fishing boat in very close proximity to the streamer, which posed a definite cable threat.

The lines affected are listed below and the portion of line data not acquired is also shown:

Foul ground	OS90A-47	terminated 36	shotpoints from EOL
Foul ground	OS90A-49	terminated 60	shotpoints from EOL
Foul ground	OS90A-51	terminated 65	shotpoints from EOL
Foul ground	OS90A-53	terminated 41	shotpoints from EOL
Fishing boat	OS90A-22	terminated 58	shotpoints from EOL

The majority of downtime logged was due to three problems, namely, loss of Argo signals due to propagation and skywave effect, shark bite damage to the streamer, and weather in Block VIC/P28.

Equipment and system faults were minimal throughout.

It appeared throughout the survey that numerous bad tapes had been received with the new tape shipment. A number of bad files were reported and when these occurred a tape change was made and the problem resolved. All tapes used on board were new, so no real explanation could be offered as to the bad files.

It is possible the records could be corrupted by dust particles on the tape reading heads but, on observations made, these heads were cleaned after all tape changes and a complete tape drive clean was carried out on line changes.

All bad data files and records were clearly logged on all line data sheets.

Following is a brief account of the systems and any operational problems encountered during the survey.

6.2 Instruments

The Titan 1000 Recording System comprising of the Field Computer System and the Digital Fibre Optic Streamer operated well throughout the survey but not without some system problems.

The instruments (FCS) did show problems with the Seismic Processing Unit and shots were missed when this unit would "hang-up".

The cause of the system halt occurs when bad data is sent to the SPU and the unit will not accept this information and resets itself. Halliburton Geophysical Services personnel did advise the author that this problem has been on-going for the past few months and all attempts to trace the cause have, to date, come up with no real solution to rectify the problem at source.

Whilst in production on line BS90A-03 very strong interference was noted on the data records from shotpoint 2500 to the end of line. First thought was that, it was possible interference from an underwater telecommunications cable or an underwater beacon of some description. Closer investigation into the matter changed this train of thought to a vessel or possibly a submarine very close to the ship.

On completion of the line and with the guns disabled, the noise was still evident on the streamer.

The Department of the Navy in Canberra was contacted and we were advised that no Naval vessels were operating in our vicinity.

No real explanation as to the source of the disturbance was ever made.

Both Halliburton Geophysical Services and Shell personnel were informed of the matter.

Instrument downtime was incurred on the 14th and 15th of March when, due to intermittent system faults within, the FCS (Field Computer System) and the single trace plotter, data on every second shot was not being recorded to tape.

The system controller boards were removed, cleaned and then replaced on three occasions during this period and no faults could be traced or definite repairs be effected at the time.

The survey continued but the faults were never clearly rectified at source.

The digital fibre optic streamer was configured to record 300 traces of seismic data.

Depth was controlled by Digicourse Cable Levellers set to operate at 8 metres in good conditions and to 9.5 metres in rougher swell type conditions.

Cable balance and control overall was of a very high standard.

The sensitivity and operation of the streamer was good and minimal downtime was logged due to actual cable fault or failure. The majority of streamer downtime was due to damage caused by shark bites which was a common occurrence in Blocsk T/18P and T/14P.

Cable noise levels were monitored closely throughout the survey. Average noise levels recorded at the start and end of each line was in the vicinity of 5 ubars. This was slightly high but one must bear in mind the front end noise on near traces ranged from 9 to 15 ubars at any given time.

These high noise levels were caused directly by the vessel's own generated propellor noise.

Tests have been carried out by Halliburton Geophysical Services in an attempt to isolate the cause of the high noise but any changes made have failed to reduce these high levels to any significant degree.

6.4 Airgun Array

The Versatile Source (VSX) Airgun Array operated extremely well throughout the entire survey.

The capacity of the array was 2180 cubic inches and operating pressure was rated at 1850 p.s.i.

The minimal downtime was logged due to a leak in the raw water cooling pump, supplying water to the compressors.

No downtime was logged due to airguns or the array system.

No lines were terminated due to airgun problems although on all lines singular gun no-fires were logged.

Operating pressure and volume were always well maintained above the contractual requirements.

Operationally, both the Syledis and the Argo systems installed on board operated well for the entire survey.

Station setups and moves from Tasmania to the mainland were completed with minimal delay.

Baseline crossings indicated good station positioning and system calibration.

Argo was the prime system in use for the T/18P and T/14P whilst Syledis was used in the VIC/P28 block.

The Argo signal quality was badly affected by skywaves and some external radio interference also on a regular nightly basis was noted.

Downtime was logged daily and during these times it was not possible to continue data acquisition as the base stations did in fact lose lock and the entire chain was tracking on skywaves.

During these downtime periods it was possible to hear radio stations operating in the same frequency bands as the Argo operates.

This information was relayed to the ONA shore personnel in the hope that it may be possible to trace the source of the interference via Telecoms. At the time of completion of the interference in addition to the skywave problem was forthcoming.

VIC/P28

Originally four stations were set to supply good navigation control of the VIC/P28 survey area.

Signals were steady and baseline crossing information verified the station locations as being correct and acceptable.

On checking baseline crossing results and computations it was noticed that minor station offsets had not been taken into the system configuration:-

Ingoldsby	1.5 metre offset @ 200 degrees from the original marker.
Teddy's Lookout	1.0 metre offset @ 360 degrees from the original marker.
Cape Schanck	1.5 metre offset @ 300 degrees from the original marker.
St Pauls	0.5 metre offset @ 320 degrees from the original marker.

These corrections were input to the system at 1530 hours local time on the 8th of March 1990 on completion of line OS90A-03 and Halliburton Geophysical Services navigation department were informed of the system changes.

The new co-ordinates, when applied, did improve the Syledis net and baseline crossing results were slightly improved.

On the 11th of March the on board Syledis mobil unit failed and was replaced with an on board spare unit. During this changeover there was some confusion as to the correct delays input into the system and, on running baseline checks, it was found that the incorrect delays had in fact been entered into the spare.

There was no delay problem with the installation of the original unit.

The correct delays were input and further baseline checks performed with good results. These checks proved positive with correct system delays and all station offsets.

It was noticeable that on lines in the south east of the VIC/P28 signals became unstable and the angle of cut was poor. Signals from Cape Schanck developed blockages in this area also.

A decision was then made to set a fifth base station at the St Paul's location. All equipment was available and the station was set by Halliburton Geophysical Services shore navigation personnel.

This new station supplied better signals and improved coverage for the south eastern line ends.

Additional baselines tying St Paul's into the chain set up were completed prior to this station being utilised.

Overall fixing and online control was good, and 3-way fixes were less than two metres for VIC/P28.

It was recommended that if the equipment is available at the time to set the fifth station, this should be done at the outset to save possible delays in setting up during the survey. Furthermore, baseline crossings could be completed simultaneously. However, in this instance, no time was lost, as production still continued whilst the station was being set and the baseline crossings were checked during a period of weather downtime.

7.0 VESSEL

Vessel Name : "M/V Pacific Titan"
Length : 63.50 m
Beam : 14.50 m
Depth : 6.00 m
Light Draft : 2.73 m
Loaded Draft : 5.18 m
Registration : Australia
Home Port : Sydney, N.S.W., Australia
Owner : Swire Pacific Offshore Pty Ltd
Class : ABS + A1 Seismic Support Vessel
+ AMS
Call Sign : VLAJ
Official No. : 850174
Built : 1982, Teraoka, Japan
Gross Tonnage : 1748
International Tonnage : 1564
Net Tonnage : 524
Main Engines : 4 x 1600 HBP Yanmar 6Z-ST
Propellers : 2 x Controllable Pitch in Kort Type
Nozzle
Bow Thruster : Kanome Controllable Pitch, 420 BHP
Diesel Drive, Yanmar LAAL-DTN
Generators : 2 x 280 Kw, 1 x 200 Kw
440 v, 60 Hz, Yanmar 6LAAL-DTN Drive
Fuel Capacity : 527 cu.l
Potable Water : 461 cu.l
Ballast Water : 892 cu.m
Endurance : 45 days

242064

Speed : Max 12 kn, cruising speed 9.0 kn

Berths : 32 (12 ship's crew, 20 seismic crew)

Radar : 1 Furuno FR 1101 Gyro Stabilised,
1 Furuno 701

Radios : 1 Sailor HF R1119/T1127/s 1301

: 1 Sailor HF R110/T124 Crystallised

: 2 Sailor VHF FT 144B

Ship Fathometer : 1 Simrad ED 162 with digital display

Auto Pilot : 1 Tokyo Keiki with Sperry ES11 Gyro
Compass

Direction Finder : 1 Furuno FD 120K

Marisat : 1 Sperry MCS2-A

: Telephone/Telex I/D 1543345

: Facsimile ID 1543346

Heliport Specifications : 14.65 m x 14.65m clear landing area
with peripheral area to AIP/AGA/7
Type D HLS physical specifications
for Bell 212 or 412 helicopters

7.1 Vessel Comments

The "M/V Pacific Titan" was originally constructed in 1982 as a rig supply vessel. Since that time she has been converted to a marine seismic survey vessel.

Overall the condition of the vessel was good and it was obvious that maintenance has been of a high order.

All accommodation and interior work areas were clean and air-conditioned. The Galley and eating areas were regularly cleaned after each meal and on a normal daily basis.

Cabins were small but adequate and a steward was on hand to clean cabins and make up bunks, also on a daily basis.

A recreation and video room was available for the crew and both TV and videos were supplied by Halliburton Geophysical.

Work areas throughout the boat were good and kept clean by both the ship's crew and seismic crew.

Tests on safety systems and equipment were well documented and safety inspections and maintenance of these systems was performed on a regularly planned basis.

Minimal downtime due to vessel related problems was logged on the 26th February, when it was necessary to retrieve the guns and the streamer due to an electrical power problem on the Bridge which could have affected vessel steering and control. Repairs to the system were completed successfully and the vessel was again fully operational in a short period of time.

242066

8.0 PERSONNEL LISTING

Crew Change : 17th February, 1990

Vessel Operations Manager : Taylor, Ian
Shore Based Administrator : Wilson, Larry
Master : Nielsen, George
Party Manager : Pickstone, Eric
Systems Engineer/
Survey Operator : Lloyd, Bill
Survey Engineer : Campbell, Dave
Quality Control : Halversen, Clive
: Ellis, Graeme
: Hadland, Arthur
Systems Operator : Whittle, Gary
: Murray, Drew
: Walker, Trevor
Compressor Engineer : Eggington, Marcus
Source Mechanic : Lunnie, Bill
: Clark, Graeme
: Vickery, Jeremy
: Salter, Jeff
ONA Navigator/Supervisor : Warmke, Peter
ONA Navigator : Vinney, Bruce
Edcon Gravity/Magnetics
Technician : Miller, Frank
Edcon Gravity/Magnetics
Operator : Ward, Cliff
ECL Client Representative : Haig, Ken

242067

The entire crew of the "Pacific Titan" appeared very professional in their attitude towards the job in hand.

The galley staff and the back deck crew did an excellent job of maintaining the vessel and cleanliness throughout was of the highest order.

Vessel and personnel safety was at all times of the highest priority, and safety drills were held on a regular basis and attended to by all available crew members.

The seismic crew were all experienced and handled the control of the TSR and ancillary recording systems well. Instrument tests were run regularly and the results were always available to the Shell representative.

Overall this was a good crew with a great deal of previous seismic experience behind them, all willing to work hard and accept job responsibilities outside their own normal working day or shift if the case required.

9.0 SHIPPING AND FISHING ACTIVITY

Blocks : T/18P, T/14P

242069

Shipping caused minimal interruption for the duration of the above surveys.

One hour of downtime was logged due to the necessity to extend a line change to clear a fishing vessel with pots in the water. This was the only incident in which fishing activities affected the survey.

26/2/1990 09:12-10:12 Extend line change/clear
 1 h, 00 mins fishing boat and pots

Block : VIC/P28

Shipping from Port Melbourne was a source of concern during the VIC/P28 survey.

As the survey was located adjacent to the entrance of Port Phillip Bay a close watch had to be maintained by the Master and the on-shift Watch Keeper on the Bridge.

Good communications were kept between the Port Phillip Pilot Station and the "Pacific Titan". The pilot station advised the "Pacific Titan" regularly of vessel movements to and from Port Phillip Bay.

A number of vessels had to be contacted by radio and in most cases if possible they would alter course to give the "Pacific Titan" a wide berth and hopefully their generated noise would not affect the data quality to any great degree.

On lines close inshore at night it was noticed that a number of squid fishing vessels were operating in the area. These boats did not cause any problems, although, if future lines were to be located closer into shore, it is possible these activities could hinder production.

A number of white fishing floats were observed close inshore at the start of Line OS90A-31 and with the sighting of these floats the Co-ordinator issued the necessary "Warning Notice". No damage occurred or time was lost due to these particular fishing floats.

Line OS90A-22 was terminated 58 shotpoints short of full run-out due to a fishing vessel in the area on a course and heading to cross the cable. He would not respond to radio calls or signal flares and thus the decision was made to terminate the line rather than run the risk of incurring any cable damage. It could not be determined if this vessel was laying crayfish pots or towing a "long-line" as used when shark fishing.

Following is a list of downtime incurred due to shipping during the VIC/P28 survey.

9/3/90	11:27-13:30 2 h, 03 mins	Stop shooting and circle. Excessive ship noise. Vessel crossing 1.5 miles behind the tailbuoy. Would not alter course or respond to radio calls.
12/3/90	09:54-09:57 2 h, 03 mins	Halt production. Circle and recommence line and overlap. Excessive ship noise from passing vessel.

Warning Notice

Whilst on line change to OS90A-31 a number of white fishing floats were observed very close to the port and starboard of the line. Due to the swell conditions at the time these floats were difficult to sight until extremely close to the vessel and cable.

The Co-ordinator issued a warning notice that from 17:10 hours on the 10th March, 1990 he considered area VIC/P28 to be a hazardous zone.

Line OS90A-31 was acquired with no damage to the cable or trailing equipment by the aforementioned fishing floats.

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10. WEATHER/SEA/FEATHER

242071

Blocks : T/18P, T/14P

Weather and sea conditions were good for the duration of Blocks T/18P and T/14P. Only one hour and three minutes of downtime was logged due to a partial line reshoot when excessive swell noise was recorded.

For the duration of the survey winds were ENE and 10 to 15 knots with seas from up to a metre from the same direction

Tailbuoy feathering was nominal and the maximum feathering angle was 4 degrees with the average feather in the range of 1-2 degrees for the majority of the survey.

VIC/P28

Weather and sea conditions during the VIC/P28 survey were generally good although interspersed with periods of weather downtime.

Localised winds would increase, to up to 35 knots, and the sea and swell noise would force a halt of data acquisition.

Considerable weather downtime due to sea state was incurred on the 10th and 11th March when seas increased to 8 feet, fed by 35 knot winds from the south west throughout that period of time.

Swell noise became excessive and cable control was affected badly and continued production was not possible.

The vessel stood by with all systems still deployed until conditions improved. In the meantime baseline checks were completed during the weather downtime period.

Additional weather downtime was also logged on the 15th and 16th March when winds and seas from the south west increased and production was again halted till conditions improved.

Seas ran generally from the SSE with an average swell and wave height of less than one metre for the majority of the survey. Average wind velocity was 10 to 15 knots.

Due to the close proximity of the survey to the shoreline and the actual geographic location, sea currents did affect the tailbuoy feathering.

Average tailbuoy feather was 2 degrees but at times feathering angles of 8 degrees had been recorded.

The highest feathering angle recorded was that of 9 degrees and this was due to a short run-in to clear an area on the chart

marked as "Foul Ground". This was reduced rapidly and the cable was inside specifications within the first 20 shotpoints on line, so data quality was not compromised due to the short run in.

Refer to Section 2.0 of this report for total downtime chargeable to weather and sea state.

242072

Fire and lifeboat drills were held regularly on board the vessel whilst under contract to Shell Australia.

During drills all personnel were expected to attend their designated muster stations wearing supplied life-jackets and properly clothed.

Overall the vessel was found to be clean and all muster areas and fire stations were clean and clear of any obstructions or debris. All fire equipment including pumps and hoses were regularly checked and well maintained.

At each weekly fire and lifeboat drill various pieces of safety equipment would be discussed and examples of how to use such equipment would be demonstrated by the Master or First Mate on duty at the time.

Safety apparel and footwear was supplied by Halliburton Geophysical Services and on numerous observations made whilst on the back deck and other work areas, it was noted that the proper use of this equipment was being made and that other items, such as safety goggles and welding visors, were also used at all times whenever repairs were being carried out necessitating the use of protective clothing and equipment.

Unsafe Act audits were carried out by the author on a regular basis and the findings in these audits were reported to the Safety Officer and the Party Manager.

It was noted that some seamen when painting on deck were not wearing safety shoes or other acceptable footwear. In fact rubber thongs were being worn, which are definitely not acceptable.

In these cases any findings were reported to the Party Manager and then to the Captain who would take care of the matter. The reason for this was to save any conflict between the author, Halliburton Geophysical Services and the Australian Seamen Union personnel.

The matter of safety shoes was relayed to Mr Ian Taylor of Halliburton Geophysical Services and he was going to take the matter up with the company who organised the seamen's roster for this vessel.

In the meantime it should be noted that the seamen on subsequent inspections were found to be wearing normal footwear when on deck which was, at the time, acceptable.

Following are reports on all safety meetings and associated fire drills performed on board the "Pacific Titan" for the duration of 1990 survey.

All matters concerning safety and equipment on board as per the findings of the Shell Safety Audit team at the survey start-up had been rectified in a short space of time and the commitment to safety by both HGS and personnel on board was of a high standard.

The author feels the only shortcomings in attitude were with the ship's crew regarding safety footwear, and also the fact that safety glasses were not worn when chipping off rust and paint.

This matter should be brought to the attention of Halliburton Geophysical Services management and they in turn should be responsible for informing all personnel that the safety requirement of Shell apply to all persons on board the vessel.

Vessel : "M/V Pacific Titan"
Date : 17th February, 1990
Location : Esso Marine Terminal, Barry Beach
Victoria
Time : 10:30 hours local time

A Shell Safety Audit team attended the vessel on the above mentioned date and carried out a safety inspection of the vessel and equipment prior to the start-up of the 1990 offshore marine seismic survey.

The team consisted of the following personnel:

Mr B. Challenger	Senior Safety Advisor, Shell
Mr K. Spence	Head of Operations, Shell
Mr E. Allison	Geophysical Operations, Shell

Also present on board at the time of the Safety Audit were:

Mr D. Geisolf	Shell Chief Geophysicist
Mr K. Haig	ECL Australia Pty Ltd

On completion of the Safety Audit the findings of the team were supplied and explained to the Halliburton Geophysical Services (HGS) personnel present at this time.

The Halliburton Geophysical Services personnel responsible for the vessel during this inspection were:

Mr Ian Taylor	Vessel Operations Manager
Mr Larry Williams	Vessel Administrator
Mr Colin Mann	Mechanical Supervisor
Mr Kevin Webber	Party Manager

Items which required attention on board as per the Shell Safety Audit findings were:

1. Work Permits

Not all hot work and welding work cards were being completed correctly. That is, all jobs should be signed off as completed by the fireman and expiry date/time should also be used.

Action Taken: At a safety meeting held on the 19th February, 1990 correct useage of the work card system was explained.

2. Induction

242076

It was found that no formal induction procedure did exist for marine crew regarding the Halliburton Geophysical Services seismic onboard activities.

Action Taken: The master was informed of this and in future will instruct all joining personnel of the Halliburton Geophysical Services activities and need for care when entering back deck work areas.

3. Safety Policy

It was noted that the Halliburton Geophysical Services Safety Policy was not displayed on the vessel.

Action Taken: Framed copies of the Policy were produced and displayed throughout the vessel.

4. Cable Reel Stowage on Top Deck

A number of empty cable reels were found not to be adequately secured on the top deck area.

Action Taken: The Party Manager was informed. A number of the reels were removed and the remainder will be inspected as to ways of improving storage.

5. Training

No list was available on board of all personnel safety or first aid course training completed by Halliburton Geophysical Services persons.

Action Taken: A copy of the training courses was supplied prior to vessel departure.

6. Life Ring and Beacon

The plastic beacon casing attached to a life ring below the Bridge was cracked and required replacement.

Action Taken: The Master was advised and the unit will be replaced.

7. Fire Detectors

It was found that no smoke detectors were installed in the laundry areas. Additional smoke detectors should also be installed in the Reading Room, and there were no smoke detectors or fire detection system installed in the Paint Locker.

Action Taken: Responsible personnel were advised of the matter and new detectors were installed in the Laundry and Recording Room. The Paint Locker would be included in a vessel update of a revised fire detection system installation. New detectors were installed in the Recording Room and Laundry on 9th March, 1990.

8. Safety Meetings

The monthly safety meeting as conducted by Halliburton Geophysical Services was not acceptable to Shell Safety personnel.

Action Taken: Following discussions it was decided that fire and life boat drills would be held on alternate weeks interspersed with station muster when fire and safety equipment would be explained and displayed. Actual safety meetings would still continue on the normal monthly basis.

9. Hydraulics Room Step

A step near the hydraulics room was noted as having a jagged and dangerous sharp edge.

Action Taken: A piece of metal is to be welded to the leading edge of the step for protection.

10. Helicopter Beacon

No direction finding beacon for helicopter navigation was available. A copy of the helipad rating was to be supplied by Halliburton Geophysical Services as soon as available. Available helicopter radio frequencies are to be supplied.

Action Taken: A request to the Halliburton Geophysical Services office in Perth would be followed up by vessel personnel regarding the purchase and installation of a RDF beacon for aircraft and helicopter navigation.

Some details of the helipad ratings were supplied but full details will be forwarded to Shell for HGS Perth. Aircraft radio frequencies were supplied forthwith.

11. Unsafe Act Auditing

No Unsafe Act Auditing procedures had been initiated by Halliburton Geophysical Services.

Action Taken: The ECL Shell Representative with the Party Manager and First Mate are to make weekly Unsafe Act Auditing inspection.

SAFETY MEETING.

Vessel : M/V Pacific Titan
Date : 18th February 1990.
Time : 1630 hours local time.

Attendance : HGS personnel,EDCON,ONA,Master,Chief Mate.

.....

A Safety Meeting was convened in the Mess of the Pacific Titan whilst alongside at the Esso Marine Terminal, Barry Beach prior to the departure of the vessel to commence the 1990 2D Marine Seismic Survey in the Bass Strait.

The following matters regarding personnel and vessel safety were discussed:

1. A review of muster/fire station/abandon ship and man overboard stations for new crew members explained. Procedures for the same were also highlighted.
2. Review of all Emergency Signals.
3. Induction and Safety Manuals explained, and all crew were instructed to read and sign the same.
4. Mr Arthur Hadland was appointed as Safety Man of the Month and was to act as Safety Focal Point.
5. Review and discuss welding and hot work permits.
6. Present findings and report on load tests carried out in January. All reports are to remain on board for future reference.

7. Discuss paravane modifications to reduce the chance of flooding.

Following this the meeting was adjourned at 1718 hours and personnel were released to tend to their former duties.

18th February 1990



Ken. L. Haig
Exploration Consultants Limited
Shell Company of Australia Representative.

242080

FIRE AND LIFE BOAT DRILL.

Vessel : M.V. Pacific Titan.

Date : 19th February 1989

Location: Bass Strait.

Time : 1300 hours.

* Present: All crew and contractors on board the vessel.

.....

A Fire and Life Boat Drill was held on board the vessel at the above appointed time and location.

All Fire Alarm Systems were checked and personnel were expected to attend suitably clothed and wearing life jackets attached with lights and whistles.

All life jackets were personally checked by the Master in charge.

Following a discussion on personal and life boat safety, a mock fire was then to be extinguished on the back deck in the area of the cable reel.

Fire fighting teams had previously organised to attend to this particular mock set-up.

During the exercise supposedly injured personnel were moved to safety by the fire support teams whilst the remainder of the crew and contract personnel observed the drill.

242081

In the course of the drill fire suits were donned and all fire hoses including the foam spray system on the back deck and main deck/bridge fire monitors were operated and tested.

The drill was well organised and the crew input was good.

Following the drill all personnel were released to tend to their former duties.

18th February 1990



Ken L. Haig
Exploration Consultants Limited.
Shell Company Representative.

MAN OVERBOARD DRILL.

Vessel : M.V. Pacific Titan.
Date : 21st February 1990.
Location : Bass Strait.
Time : 1800 hours.

.....

A man overboard drill was performed at the above appointed time and during this drill all on shift personnel were expected to attend and be present at their duty stations.

A life ring was thrown overboard and the Man Overboard boat was launched and the pre-selected crew comprising of the Chief Mate and seamen from the Pacific Titan successfully recovered the life ring in a reasonably short space of time.

The reason for the drill was to familiarise all crew with their Man Overboard stations and to demonstrate to correct procedures required when launching small boats for a moving ocean vessel.

The drill was well conducted and all crew showed interest and concern in the matter.

With the life ring recovered and the Man Overboard correctly secured all crew were released to their former duties.

21st February 1990.



Ken L. Haig.
Exploration Consultants Limited.
Shell Company Representative.

242083

FIRE AND LIFEBOAT DRILL.

Vessel : M/V Pacific Titan
Location : Bass Strait
Date : 4th March 1990
Time : 1245 hours local time.

.....

A Fire and Life Boat Drill was held on board at the above appointed time and location.

All persons were expected to attend properly clothed and wearing life jackets.

All life jackets were checked with regard to correct donning procedures and to ensure lights and whistles were attached and operable.

The Captain was in direct control of the drill.

A simulated fire was to be extinguished in the area of the cable reel in which personnel had suffered injury and were to be evacuated to safety.

Fire hoses, fire suits and breathing apparatus were used and tested during the drill.

The drill was successfully completed and crew interest and input was good.

242084

Following the drill the release signal was sounded and all personnel returned to their former duties whilst emergency equipment was stowed in its correct vessel locations.

During the drill all persons not actively engaged in the fire fighting teams were to remain at their respective Muster Stations to standby for any orders from the Captain.

4th March 1990



Ken L. Haig
Exploration Consultants Limited.
Shell Company Representative.

ACCIDENT REPORT.

Name: HELGE OSTHAUG

Job Title: Able Seaman.

Location: Barry Beach Marine Terminal.

Date: 18-02-90

Employer: Finbar Marine. HGS Sub-contractor.

Time at work : 2 hours after return from 5 week vacation.

.....

Whilst assisting to load stores from the dockside Mr Osthaug contracted severe pain to the lower back region above the right hip and down the right leg.

The person in question was immediately relieved from his duties and transported to the nearest hospital on shore located at Foster to seek medical attention.

No medical treatment was supplied from the Captain of the M/V Pacific Titan.

Mr Osthaug then reported back to the vessel and it was reported that he had in fact suffered a slipped disc in the lower region.

Following this he left the vessel and would seek further assistance from a Chiropractor in Melbourne from 19th February 1990.

242086

It was not disclosed if this person has had a record of previous back related problems in the past.

The matter was not officially reported to the Shell Representative on board at the time due to the fact that the vessel had not sailed and persons were under the impression that being, the case the vessel was not contracted to Shell at the time and the matter was more of a HGS/Finbar accident related problem.

All concerned persons have now been personally advised to report all, if any accidents, which may occur.

22nd February 1990



Ken L. Haig.
Exploration Consultants Limited.

ACCIDENT REPORT. No: 2

Name: JEFF ANTHONY SALTER.G

Age : 32 years

Job Title: Gun Mechanic

Location: Offshore Tasmania, Bass Strait.

Date: 01-03-90

Time: 1630 hours local time.

Employer: Halliburton Geophysical Services.

Length of Service: 20 months.

Accident Type: First Aid Case. No lost time.

.....

ACCIDENT DESCRIPTION.

Whilst attempting to remove a rubber water hose from a Sullair Compressor cooling pipe the hand slipped and the little finger on the left hand was consequently lacerated.

The pipe on which the finger was cut was found to have a jagged, rough edge.

The main cause of the accident was the action of the left hand slipping on the jagged pipe and it is possible the accident could have been prevented if the employee had been wearing work gloves.

242088

Sea conditions were calm at the time and the vessel was not pitching or rolling.

The matter was reported to the Party Manager, Safety Officer, Captain and Shell Representative immediately.

The wound was cleaned and disinfectant and a bandage were supplied by the Captain to dress the cut.

At the next safety drill or meeting it has been suggested that a discussion on work gloves and the advantages of using the same be delivered to the crew this will also include all personal protective clothing and apparatus.

1st March 1990.

Ken L. Haig.
Exploration Consultants Limited.
Shell Representative.

12. STATISTICAL DATA: T/18P12.1 Production Log

242089

Line No.	Dir Degs	FCSP	LCSP	Total SPs	Kms	Status	
18/02/90							
No production							
Accumulated total to date							0.000
19/02/90							
No production							
Accumulated total to date							0.000
20/02/90							
No production							
Accumulated total to date							0.000
21/02/90							
No production							
Accumulated total to date							0.000
22/02/90							
BS90B-04	325	1001	2275	1275	31.875	Complete	
BS90B-15	234	1001	1581	581	14.525	Complete	
BS90B-02	144	1001	1876	876	21.900	Complete	
Total kms for day					68.300		
Accumulated total to date							68.300
23/02/90							
BS90B-03	233	1001	1999	999	24.975	Complete	
BS90B-01A	52	1001	1857	857	21.425	Complete	
BS90B-07	233	1005	1728	724	18.100	To be completed	
BS90B-07A	233	1729	1937	209	5.225	Complete	
BS90B-13	53	1001	1755	755	18.875	Complete	
BS90B-09	233	1001	1311	311	7.775	To be completed	
Total kms for day					96.375		
Accumulated total to date							164.675
24/02/90							
BS90B-09A	233	1312	1573	262	6.550	Complete	
BS90B-11	53	1001	1574	574	14.350	Complete	
BS90B-05	233	1001	1591	591	14.775	Complete	
Total kms for day					35.675		
Accumulated total to date							200.350

12.2 Survey Line Analysis

SURVEY LINE ANALYSIS

242091

PACIFIC TITAN

Line name BS90B-01A Heading 52 deg.
 Line Status Complete
 Date started 23/02/90 Start Time 07:24 End Time 09:39
 First File 1001 First Reel 00869A Last File 1857 Last Reel 00879A

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1857	1857	857	21.425Kms

----- WEATHER -----

Wind dir. SW force 2 Sea state 2 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	72.0m.	Eol.	73.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.1 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8-9 METRES. GRP LENGTH 12.5m.

Cable depth	Min. 8.5 m.	Max. 9.0 m.
Feather	Sol. 4.0 S	Eol. 01.0 S
		Max. 4.0 S

Acoustic Transponders:

Compass	: 0036.90 COMP 1	0036.60 COMP 2	0036.60 COMP 3	0037.60 COMP 4	0037.20 COMP 5
Tailbuoy	: 4.0 STBD SOL	2.9 STBD	2.0 STBD	1.2 STBD	1.0 STBD EO

Dead Grp: TRACE 184 DEAD COMPLETE LINE. EDIT.
 TRACE 185 SPIKING INTERMITTENTLY

Noise: AVE NOISE SOL: 6.5uB. SOME SWELL NOISE EVIDENT.
 AVE NOISE EOL: 5.2uB.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 8-9M TO
 REDUCE SWELL NOISE.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1900 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN MISFIRES LOGGED. 40 SINGLE GUN NO FIRES REPORTED.
 GOOD PRESSURE CONTROL FOR COMPLETE LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary

Sol. Lat.	039/37/53.34S	Sol. Long.	039/30/54.91E
Eol. Lat.	145/28/03.63E	Eol. Long.	145/39/51.71E

Note GOOD FIXING AND CONTROL ON LINE. THREE WAY FIX AVERAGE 1-2.
 ARGO SIGNALS STABLE ON LINE.

Message CONSIDER COMPLETE. GOOD DATA AND RECORDS. NO ON LINE SYSTEM
 FAULTS. RANDOM GUN NO FIRES LOGGED. SOME SWELL BURSTS VISIBLE ON LINE.

242092

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90B-02 Heading 144 deg.
Line Status Complete
Date started 22/02/90 Start Time 13:06 End Time 15:21
First File 1001 First Reel 00836A Last File 1874 Last Reel 00848A

F.S.P. F.C.S.P. L.C.S.P. L.S.P. Shot Points Coverage
1001 1001 1876 1876 876 21.900Kms

WEATHER

Wind dir. W force 2 Sea state 2 Swell dir. W Height 1 m

RECORDING

Magnetometer N Gravity N
Water depth Sol. 72.0m. Eol. 74.0m. Ave Speed 5.3 Kts.
Parity Errors 0 No Data Record 4 Misfires 2

DIGITAL STREAMER

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8-9 METRES. GRP LENGTH 12.5m.
Cable depth Min. 8.5 m. Max. 9.0 m.
Feather Sol. 4.8 S Eol. 00.1 S Max. 4.8 S
Acoustic Transponders:
Compass : 0126.20 COMP 1 0126.60 COMP 2 0126.60 COMP 3 0128.00 COMP 4 0129.00 COMP 5
Tailbuoy : 4.8 STBD SOL 3.6 STBD 2.4 STBD 1.7 STBD 0.1 STBD EO

Dead Grp: NO DEAD GROUPS ON LINE.
TRACE 30 SPIKING INTERMITTENTLY.
Noise: AVE NOISE SOL: 4.7uB. SOME SWELL NOISE EVIDENT.
AVE NOISE EOL: 5.8uB.
Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 8-9M TO
REDUCE SWELL NOISE.

ENERGY SOURCE

Source type VSX AIRGUN
Source Volume : 2180 Pressure: 1850
2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
OPERATING PRESSURE 1900 PSI. NUMBER OF GUN STRINGS = 4.
ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
Note NO GUN MISFIRES LOGGED. 50 SINGLE GUN NO FIRES REPORTED.
GOOD PRESSURE CONTROL FOR COMPLETE LINE.

NAVIGATION

Prime : ARGO Secondary : SATELLITE
Primary POINT SORELL,NORTH POINT,NARACOOPA,
Secondary

Sol. Lat. 039/30/03.91S Sol. Long. 039/39/42.36S
Eol. Lat. 145/22/35.64E Eol. Long. 145/31/27.78E

Note GOOD FIXING AND CONTROL ON LINE. THREE WAY FIX AVERAGE 1-2.
ARGO SIGNALS STABLE ON LINE.

Message CONSIDER COMPLETE. GOOD DATA AND RECORDS. NO ON LINE SYSTEM
FAULTS. RANDOM GUN NO FIRES LOGGED. SWELL/SEA NOISE INCREASING SLIGHTLY.

242095

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name RS90B-05 Heading 233 deg.
 Line Status Complete
 Date started 24/02/90 Start Time 07:45 End Time 09:18
 First File 1001 First Reel 00919A Last File 1591 Last Reel 00925A

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1591	1591	591	14.775Kms

===== WEATHER =====

Wind dir. SW force 4 Sea state 3 Swell dir. SW Height 1 m

===== RECORDING =====

Magnetometer	N	Gravity	N
Water depth Sol.	73.0m. Eol. 72.0m.	Ave Speed	5.1 Kts.
Parity Errors	0 No Data Record 2	Misfires	0

===== DIGITAL STREAMER =====

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8-9 METRES. GRP LENGTH 12.5m.

Cable depth Min. 8.5 m. Max. 9.0 m.
 Feather Sol. 1.9 P Eol. 0.2 S Max. 2.7 P

Acoustic Transponders:

Compass	: 0222.60 COMP 1	0223.60 COMP 2	0223.90 COMP 3	0224.30 COMP 4	0224.30 COMP 5
Tailbuoy	: 1.9 PORT SOL	2.7 PORT	1.6 PORT	0.6 PORT	0.2 STBD EO

Dead Grp: TRACES 184-185 DEAD COMPLETE LINE. EDIT.

Noise: AVE NOISE SOL: 6.6uB. SWELL BURSTS NOTED ON DATA.

AVE NOISE EOL: 4.7uB.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. NO CABLE FAULTS.
 SOME SWELL BURSTS EVIDENT ON RECORDS.

===== ENERGY SOURCE =====

Source type VSX AIRGUN

Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1900 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN MISFIRES LOGGED. 27 SINGLE GUN NO FIRES REPORTED.

GOOD PRESSURE CONTROL FOR COMPLETE LINE.

===== NAVIGATION =====

Prime : ARGO

Secondary : SATELLITE

Primary POINT SORELL, NORTH POINT, NARACOOPA,

Secondary

Sol. Lat. 039/29/37.67S Sol. Long. 039/34/21.49S

Eol. Lat. 145/35/23.91E Eol. Long. 145/27/06.25E

Note GOOD FIXING AND CONTROL ON LINE. THREE WAY FIX AVERAGE 1-2.

Message COMPLETE. SOME SWELL BURSTS THROUGHOUT LINE.

2 BAD RECORDS LOGGED ON LINE. TRACE 30 SPIKING. 2 DEAD TO BE REPLACED.

242096

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90B-07 Heading 233 deg.
 Line Status To Be Completed
 Date started 23/02/90 Start Time 11:15 End Time 13:05
 First File 1004 First Reel 00880A Last File 1727 Last Reel 00888A

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1005	1728	1728	724	18.100Kms

----- WEATHER -----

Wind dir. S force 2 Sea state 2 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	75.0m.	Eol.	71.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	3.5 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8-9 METRES. GRP LENGTH 12.5m.

Cable depth	Min.	8.5 m.	Max.	9.0 m.
Feather	Sol.	2.5 S	Eol.	04.6 S
			Max.	4.6 S

Acoustic Transponders:

Compass	:	0219.40 COMP 1	0221.10 COMP 2	0219.40 COMP 3	0220.10 COMP 4	0218.70 COMP 5
Tailbuoy	:	2.5 STBD SOL	2.3 STBD	3.1 STBD	4.1 STBD	4.6 STBD ED

Dead Grp: TRACE 184 DEAD COMPLETE LINE. EDIT.

TRACE 185 SPIKING INTERMITTENTLY

Noise: AVE NOISE SOL: 4.5uB. SOME SWELL NOISE EVIDENT.
 AVE NOISE EOL: 5.1uB.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 8-9M TO
 REDUCE SWELL NOISE. STOP SHOOTING DUE TO INSTRUMENT FAULTS.

----- ENERGY SOURCE -----

Source type VSX AIRGUN

Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1900 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN MISFIRES LOGGED. 41 SINGLE GUN NO FIRES REPORTED.

*GOOD PRESSURE CONTROL FOR COMPLETE LINE.

----- NAVIGATION -----

Prime : ARGO

Secondary : SATELLITE

Primary POINT SORELL, NORTH POINT, NARACOOPA,

Secondary

Sol. Lat. 039/28/55.47S Sol. Long. 039/34/47.33E

Eol. Lat. 145/34/39.77E Eol. Long. 145/24/28.28E

Note GOOD FIXING AND CONTROL ON LINE. THREE WAY FIX AVERAGE 1-2.

ARGO SIGNALS STABLE ON LINE.

Message TO BE COMPLETED. STOP SHOOTING DUE TO SYSTEM FILTER FAULTS.

RANDOM GUN NO FIRES LOGGED. SOME SWELL BURSTS VISIBLE ON LINE.

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90B-09 Heading 233 deg.
 Line Status To Be Completed
 Date started 23/02/90 Start Time 20:30 End Time 21:21
 First File 1001 First Reel 00903A Last File 1311 Last Reel 00906A

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1311	1311	311	7.775Kms

----- WEATHER -----

Wind dir. SW force 2 Sea state 4 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	73.0m.	Eol.	73.0m.
Parity Errors	0	No Data Record	4
		Ave Speed	4.9 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER, OPERATING DEPTH 8-9 METRES, GRP LENGTH 12.5m.

Cable depth Min. 8.5 m. Max. 9.0 m.
 Feather Sol. 1.0 S Eol. 00.2 P Max. 1.0 S

Acoustic Transponders:

Compass	: 0218.30 COMP 1	0220.40 COMP 2	0220.80 COMP 3	0221.10 COMP 4	0217.20 COMP 5
Tailbuoy	: 1.0 STBD SOL	0.8 STBD	0.4 STBD	0.2 STBD	0.2 PORT EO

Dead Grp: TRACE 184 DEAD COMPLETE LINE, EDIT.
 TRACE 185 SPIKING INTERMITTENTLY

Noise: AVE NOISE SOL: 6.5uB. SWELL BURSTS NOTED ON DATA.
 AVE NOISE EOL: 5.5uB.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. LINE COMPLETE. NO
 CABLE PROBLEMS ON LINE. SOME SWELL BURSTS EVIDENT ON RECORDS.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY, OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1900 PSI, NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES, STRING SPACING = 10 METRES.

Note NO GUN MISFIRES LOGGED, 15 SINGLE GUN NO FIRES REPORTED.
 GOOD PRESSURE CONTROL FOR COMPLETE LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL, NORTH POINT, NARACOOPA,
 Secondary

Sol. Lat. 039/27/58.79S Sol. Long. 039/30/34.47S
 Eol. Lat. 145/34/13.69E Eol. Long. 145/29/45.14E

Note FAIR FIXING AND CONTROL ON LINE. THREE WAY FIX AVERAGE 1-2.

ARGO SIGNALS SLIGHTLY UNSTABLE ON LINE, MAINTAINED LANE COUNT THROUGHOUT.

Message TO BE COMPLETED, STOP SHOOTING DUE TO SYSTEM HALT. LAST GOOD
 SP 1311. HANGUP IN SEISMIC PROCESSING UNIT. SOME SWELL BURSTS NOTED.

SURVEY LINE ANALYSIS

242100

PACIFIC TITAN
 Line name BS90B-11 Heading 53 deg.
 Line Status Complete
 Date started 24/02/90 Start Time 04:39 End Time 06:06
 First File 1001 First Reel 00912A Last File 1574 Last Reel 00918A

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1574	1574	574	14.350Kms

----- WEATHER -----

Wind dir. SW force 4 Sea state 3 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	72.0m.	Eol.	75.0m.
Parity Errors	0	No Data Record	3
		Ave Speed	5.3 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER, OPERATING DEPTH 8-9 METRES, GRP LENGTH 12.5m.

Cable depth	Min. 8.5 m.	Max. 9.0 m.
Feather	Sol. 2.1 S	Eol. 4.8 S
		Max. 4.8 S

Acoustic Transponders:

Compass	: 0038.30 COMP 1	0039.00 COMP 2	0039.40 COMP 3	0040.40 COMP 4	0039.70 COMP 5
Tailbuoy	: 2.1 STBD SOL	2.9 STBD	3.1 STBD	4.5 STBD	4.8 STBD EO

Dead Grp: TRACES 184-185 DEAD COMPLETE LINE, EDIT,
 TRACE 30 SPIKING INTERMITTENTLY

Noise: AVE NOISE SOL: 5.2uB, SWELL BURSTS NOTED ON DATA.
 AVE NOISE EOL: 5.9uB.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. NO CABLE FAULTS.
 SOME SWELL BURSTS EVIDENT ON RECORDS.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY, OPERATING DEPTH 6.5 METRES,
 OPERATING PRESSURE 1900 PSI, NUMBER OF GUN STRINGS = 4,
 ARRAY LENGTH = 14 METRES, STRING SPACING = 10 METRES.

Note NO GUN MISFIRES LOGGED, 27 SINGLE GUN NO FIRES REPORTED,
 GOOD PRESSURE CONTROL FOR COMPLETE LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL, NORTH POINT, NARACOOPA,
 Secondary

Sol. Lat.	039/30/30.855	Sol. Long.	039/25/55.075
Eol. Lat.	145/25/49.59E	Eol. Long.	145/33/53.18E

Note GOOD FIXING AND CONTROL ON LINE, THREE WAY FIX AVERAGE 1-2.

Message COMPLETE, SOME SWELL BURSTS THROUGHOUT LINE,
 2 BAD RECORDS LOGGED ON LINE.

242101

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90B-13 Heading 53 deg.
 Line Status Complete
 Date started 23/02/90 Start Time 17:17 End Time 19:06
 First File 1001 First Reel 00893A Last File 1753 Last Reel 00902A

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1755	1755	755	18.875Kms

----- WEATHER -----

Wind dir. SW force 2 Sea state 2 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	71.0m.	Eol.	75.0m.
Parity Errors	0	No Data Record	4
		Ave Speed	5.6 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8-9 METRES. GRP LENGTH 12.5m.

Cable depth Min. 8.5 m. Max. 9.0 m.
 Feather Sol. 0.3 S Eol. 01.9 S Max. 1.7 S

Acoustic Transponders:

Compass	: 0039.70 COMP 1	0041.50 COMP 2	0041.50 COMP 3	0041.80 COMP 4	0041.50 COMP 5
Tailbuoy	: 0.3 STBD SOL	0.1 STBD	0.7 STBD	1.7 STBD	1.9 STBD EO

Dead Grp: TRACE 184 DEAD COMPLETE LINE. EDIT.
 TRACE 185 SPIKING INTERMITTENTLY

Noise: AVE NOISE SOL: 6.2uB. SWELL BURSTS NOTED ON DATA.
 AVE NOISE EOL: 5.4uB.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. LINE COMPLETE. NO
 CABLE PROBLEMS ON LINE. SOME SWELL BURSTS EVIDENT ON RECORDS.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1900 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN MISFIRES LOGGED. 35 SINGLE GUN NO FIRES REPORTED.
 GOOD PRESSURE CONTROL FOR COMPLETE LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary

Sol. Lat.	039/31/25.12S	Sol. Long.	039/25/20.52S
Eol. Lat.	145/22/15.62E	Eol. Long.	145/32/50.23E

Note GOOD FIXING AND CONTROL ON LINE. THREE WAY FIX AVERAGE 1-2.
 ARGO SIGNALS STABLE ON LINE.

Message COMPLETE. SOME SWELL BURST VISIBLE. SP 1471 ROBOT SYSTEM
 DUE TO SYSTEM HANGUP IN SEISMIC PROCESSING UNIT.MISSED 2 SP.

12.3 Daily Time Log

242103

From	To	Act	Cau	Chg	Comment	HH:MM
18/02/90						
00:00	20:30	05	03	O	Crew change/resupply Barry Bch	20:30
20:30	24:00	03	03	O	Travel to cut navig. baselines	03:30
19/02/90						
00:00	13:00	03	03	O	Travel to cut navig. baselines	13:00
13:00	15:30	03	03	O	Safety drills en route b/line	02:30
15:30	23:30	14	14	O	Deploy/carry out cable repairs	08:00
23:30	24:00	14	14	O	Run streamer/system tests	00:30
20/02/90						
00:00	05:30	14	14	O	Continue cable/. inst. checks	05:30
05:30	08:45	14	14	O	Rtve cable to cut baseline	03:15
08:45	11:00	15	15	O	Travel to cut baseline	02:15
11:00	14:30	15	15	O	Cut Pt North/Sorrell baseline	03:30
14:30	17:00	15	15	O	Travel to Argo calib. point	02:30
17:00	17:45	15	15	O	Complete Point Sorrel Argo cal.	00:45
17:45	20:03	15	15	O	Travel to North Point Argo cal.	02:18
20:03	21:54	15	15	O	Complete Point North Argo cal.	01:51
21:54	22:45	15	15	O	Compute and check Argo calib.	00:51
22:45	24:00	15	15	O	Standby to install Naracoopa	01:15
21/02/90						
00:00	10:30	15	15	O	Standby. Installing Naracoopa	10:30
10:30	14:06	15	15	O	Travel/prepare for Argo calib.	03:36
14:06	16:54	15	15	O	Complete Naracoopa Argo calib.	02:48
16:54	20:30	03	03	O	Travel to prospect area	03:36
20:30	23:54	03	03	O	Travel to survey. Poor Argo	03:24
23:54	24:00	15	15	O	Head inshore, test Argo, erratic	00:06
22/02/90						
00:00	01:30	15	15	O	3-way Argo good, head to line	01:30
01:30	03:00	24	24	O	Deploy guns, check offset shot	01:30
03:00	04:21	02	02	O	Run to Line BS90B-4, 325 degs	01:21
04:21	07:51	01	01	P	Line BS90B-04	03:30
07:51	10:03	02	02	O	Line change to BS90B-15	02:12
10:03	11:30	01	01	P	Line BS90B-15	01:27
11:30	13:06	02	02	O	Line change to BS90B-2	01:36
13:06	15:21	01	01	P	Line BS90B-02	02:15
15:21	16:27	02	02	O	Line change to BS90B-01	01:06
16:27	18:21	02	09	H	Ext L/C compressor pump down	01:54
18:21	19:24	04	04	D	To reshoot due to swell noise	01:03
19:24	20:00	22	22	H	Abort line. shark bite damage	00:36
20:00	20:45	24	22	H	Rtve guns to repair shark dam.	00:45
20:45	22:15	10	22	H	Change section shark damaged	01:30
22:15	22:50	10	10	H	Replace new faulty HGS section	00:35
22:50	23:30	14	22	H	Deploy cable after repairs	00:40
23:30	24:00	24	22	H	Deploy guns after shark repair	00:30

From To Act Cau Chg Comment 242104 HH:MM

23/02/90

00:00	00:30	24	22	H	Deploy guns after shark repair	00:30
00:30	00:53	02	22	H	Run to line, streamer checks, O.K.	00:23
00:53	01:45	11	11	H	Bad skywaves, no Argo fixing	00:52
01:45	03:27	11	11	H	Argo restored, run to line	01:42
03:27	06:09	01	01	P	Line BS90B-03	02:42
06:09	07:24	02	02	O	Line change to BS90B-1A	01:15
07:24	09:39	01	01	P	Line BS90B-01A	02:15
09:39	11:15	02	02	O	Line change to BS90B-07	01:36
11:15	13:05	01	01	P	Line BS90B-07	01:50
13:05	15:21	02	07	H	Circle due to inst. filter fail.	02:16
15:21	15:51	01	01	P	Line BS90B-07A	00:30
15:51	17:17	02	02	O	Line change to BS90B-13	01:26
17:17	19:06	01	01	P	Line BS90B-13	01:49
19:06	20:30	02	02	O	Line change to BS90B-09	01:24
20:30	21:21	01	01	P	Line BS90B-09	00:51
21:21	22:30	02	02	O	Line change to BS90B-09A	01:09
22:30	24:00	10	10	H	Rtve cable chnge stretch sect.	01:30

24/02/90

00:00	02:18	02	07	H	L/C after inst/cable repairs	02:18
02:18	02:30	28	28	H	Shooting o/lap on line, reshoot	00:12
02:30	03:09	01	01	P	Line BS90B-09A	00:39
03:09	04:39	02	02	O	Line change to BS90B-11	01:30
04:39	06:06	01	01	P	Line BS90B-11	01:27
06:06	07:45	02	02	O	Line change to BS90B-05	01:39
07:45	09:18	01	01	P	Line BS90B-05	01:33

12.4 Daily Diary Summary

242105

- 16th February, 1990 Travel Mount Gambier to Melbourne.
Overnight at the Sheraton Hotel.
- 17th February, 1990 Travel Melbourne to Esso Marine Terminal.
Join "M/V Pacific Titan". Observe
instrument tests. Complete Shell Safety
Audit.
- 18th February, 1990 Observe and complete gravity meter tests.
Complete HGS crew change. HGS safety
meeting convened. Sail for survey area.
- 19th February, 1990 En route to survey area to check
baselines. Carry out fire and life boat
drills. Run streamer and gun tests. Two
Argo stations operational at 19:30 hours.
- 20th February, 1990 Complete cable and gun tests. Cut Syledis
baseline. Commence Argo calibration
checks.
- 21st February, 1990 Complete Argo calibrations. Deployed guns
and cable. Travel to prospect.
- 22nd February, 1190 Standby for Argo signals. Bad skywave
effect. Commence production. Shark
attack on cable.
- 23rd February, 1990 Production/Argo skywave downtime.
- 24th February, 1990 Production. Complete T-18P

12.5 Misfire Statistics

242106

From 18/02/90 to 24/02/90

Number of lines/line segments acquired 12
 Total chargeable kilometres acquired 200.350

Total number of misfires	2	Percentage of total SPs	0.02
Total number of NDRs	23	Percentage of total SPs	0.29
Total number of parity errors	0	Percentage of total SPs	0.00
Total number of shots	8014	Percentage bad shots	0.31

Worst case lines

Misfires

Line BS90B-02	Misfires	2	NDRs	4	Parity Errors	0
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Parity Errors

Line	Misfires	0	NDRs	0	Parity Errors	0
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No Data Records

Line BS90B-04	Misfires	0	NDRs	4	Parity Errors	0
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12.6 Production/Downtime By Cause

242107

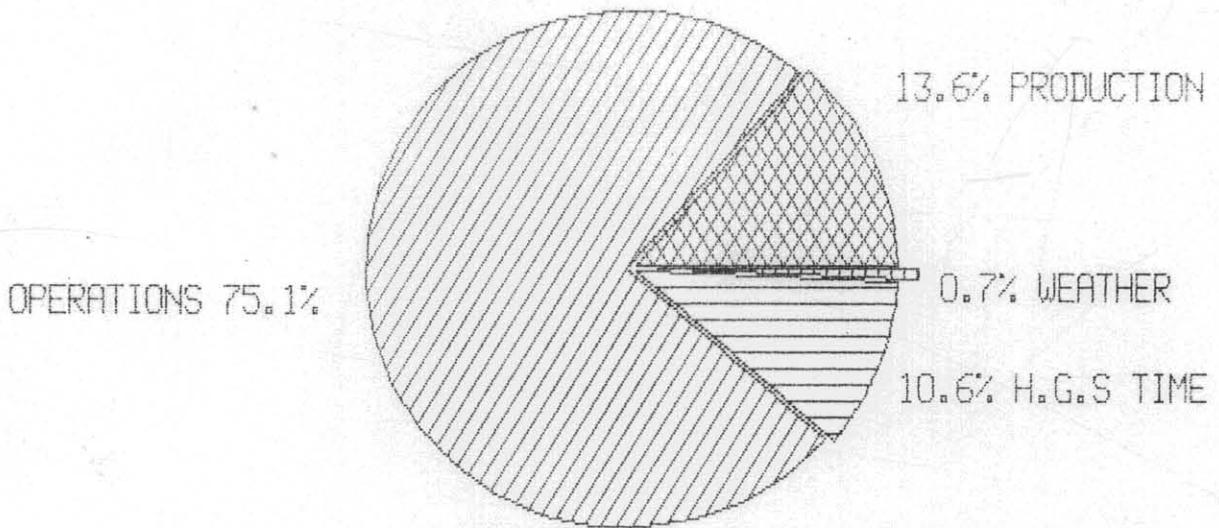
From 18/02/90 to 24/02/90

Code		HH:MM	Percent
P01	Recording Time	20:48	13.57
P02	Line Change	16:14	10.59
P03	Travel Time	26:00	16.96
P04	Weather Downtime	01:03	0.68
P05	Resupply	20:30	13.37
P07	Instrument Failure	04:34	2.98
P09	Compressor Failure	01:54	1.24
P10	Mechanical Streamer Failure	02:05	1.36
P11	Navigation Failure	02:34	1.67
P14	Cable Handling	17:15	11.25
P15	Navigation Set-up/Calibration	33:45	22.02
P22	Shark Attack	04:54	3.20
P24	Source Handling	01:30	0.98
P28	Shooting Overlap	00:12	0.13

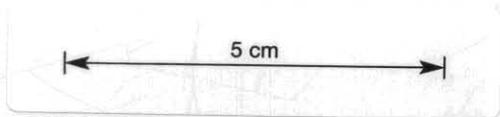
Production/Downtime Summary

Prime Time	20:48	13.57
Operational Time	115:14	75.17
Standby	00:00	0.00
Client/Shell Time	00:00	0.00
Discussion/Dispute	01:03	0.68
Halliburton Charge	16:13	10.58
Total Time	153:18	

SHELL AUSTRALIA
PRODUCTION/DOWNTIME BY CAUSE
SURVEY BLOCK : T/18P
PERIOD : 18TH FEB to 24TH FEB 1990



EXPLORATION CONSULTANTS LIMITED
M.V. PACIFIC TITAN.



12.7 Production/Downtime By Activity

242109

From 18/02/90 to 24/02/90

Code		HH:MM	Percent
P01	Recording Time	20:48	13.57
P02	Line Change	23:05	15.06
P03	Travel Time	26:00	16.96
P04	Weather Downtime	01:03	0.68
P05	Resupply	20:30	13.37
P10	Mechanical Stream Failure	03:35	2.34
P11	Navigation Failure	02:34	1.67
P14	Cable Handling	17:55	11.69
P15	Navigation Set-up/Calib	33:45	22.02
P22	Shark Attack	00:36	0.39
P24	Source Handling	03:15	2.12
P28	Shooting Overlap	00:12	0.13

Production/Downtime Summary

Prime Time	20:48	13.57
Operational Time	115:14	75.17
Standy	00:00	0.00
Client/Shell Time	00:00	0.00
Discussion/dispute	01:03	0.68
Halliburton charge	16:13	10.58
Total Time	153:18	
Total Kms	200.350	

13.0 STATISTICAL DATA; T/14P

242110

13.1 Production Log

Line No.	Dir Degs	FCSP	LCSP	Total SPs	Kms	Status
24/02/90						
BS90A-12	112	1001	2570	1570	39.250	Complete
Total kms for day					39.250	
Accumulated total to date						39.250
25/02/90						
BS90A-16	291	1001	1715	715	17.875	Complete
BS90A-14A	111	1001	1680	680	17.000	Complete
BS90A-10	91	1001	1747	747	18.675	Complete
Total kms for day					53.550	
Accumulated total to date						92.800
26/02/90						
BS90A-08A	111	1001	2238	1238	30.950	Complete
BS90A-06	291	1001	1673	673	16.825	Complete
BS90A-04	111	1001	2602	1602	40.050	Complete
BS90A-02	291	1001	1844	844	21.100	To be completed
Total kms for day					108.925	
Accumulated total to date						201.725
27/02/90						
BS90A-02A	291	1845	2221	377	9.425	To be completed
BS90A-02C	291	2222	2571	350	8.750	Complete
BS90A-09	22	1001	1558	558	13.950	Complete
BS90A-01	201	1001	1391	391	9.775	Complete
BS90A-13	21	1001	1476	476	11.900	Complete
BS90A-05	200	1001	1462	462	11.550	Complete
BS90A-15A	22	1001	1190	190	4.750	Complete
Total kms for day					70.100	
Accumulated total to date						271.825
28/02/90						
dBS90A-15A	22	1191	1477	287	7.175	Complete
BS90A-07	201	1001	1476	476	11.900	Complete
BS90A-19	23	1001	1492	492	12.300	Complete
BS90A-17	3	1001	2054	1054	26.350	Complete
BS90A-03	21	1001	2503	1503	37.575	Complete
BS90A-11	202	1001	2340	1340	33.500	Complete
Total kms for day					128.800	
Accumulated total to date						400.625
01/03/90						
BS90A-27A	22	1001	1999	999	24.975	Complete
BS90A-23	202	1001	1879	879	21.975	Complete
BS90A-29	23	1001	2005	1005	25.125	Complete

Line No.	Dir Degs	FCSP	LCSP	Total SPs	Kms	Status
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242111

BS90A-25	203	1001	1855	855	21.375	Complete
BS90A-31	22	1001	2604	1604	40.100	Complete
Total kms for day					133.550	
Accumulated total to date						534.175

02/03/90

BS90A-21	202	1001	2471	1471	36.775	Complete
BS90A-33	22	1001	2007	1007	25.175	Complete
BS90A-39	203	1001	2047	1047	26.175	Complete
BS90A-35	22	1001	1418	418	10.450	To be completed
Total kms for day					98.575	
Accumulated total to date						632.750

03/03/90

BS90A-35A	22	1419	1942	524	13.100	Complete
BS90A-41	203	1001	1956	956	23.900	Complete
BS90A-37	22	1001	1939	939	23.475	Complete
BS90A-43	202	1001	1799	799	19.975	Complete
BS90A-45	22	1001	1802	802	20.050	Complete
Total kms for day					100.500	
Accumulated total to date						733.250

04/03/90

No production						
Accumulated total to date						733.250

242112

13.2 Survey Line Analysis

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-02 Heading 291 deg.
Line Status To Be Completed
Date started 26/02/90 Start Time 19:11 End Time 21:15
First File 1001 First Reel 1025AA Last File 1845 Last Reel 1035AA

F.S.P. F.C.S.P. L.C.S.P. L.S.P. Shot Points Coverage
1001 1001 1844 1845 844 21.100Kms

WEATHER

Wind dir. E force 2 Sea state 2 Swell dir. E Height 01 m

RECORDING

Magnetometer Y Gravity Y
Water depth Sol. 77.0m Eol. 77.0m Ave Speed 5.5 Kts.
Parity Errors 0 No Data Record 2 Misfires 0

DIGITAL STREAMER

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth Min. 7.8 m. Max. 8.4 m.
Feather Sol. 2.8 S Eol. 0.3 P Max. 2.8 S

Acoustic Transponders:
Compass : 275.60 COMP 1 275.60 COMP 2 276.70 COMP 3 278.10 COMP 4 278.10 COMP 5
Tailbuoy : 2.80 STBD SOL 0.90 STBD 2.30 STBD 0.30 STBD 0.20 PORT EO

Dead Grp: NO DEAD TRACES ON LINE.

Noise: AVG SOL NOISE : 4.1uB
AVG EOL NOISE : 3.5uB.

Note GOOD BALANCE AND CABLE CONTROL.
NO OTHER CABLE OR SYSTEM FAULTS.

ENERGY SOURCE

Source type VSX AIRGUN
Source Volume : 2180 Pressure: 1850
2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
37 SINGLE GUN MISFIRES RECORDED ON LINE.

NAVIGATION

Prime : ARGO Secondary : SATELLITE
Primary
Secondary

Sol. Lat. 040/04/33.16S Sol. Long. 040/00/19.60S
Eol. Lat. 146/30/28.46E Eol. Long. 146/16/41.05E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
ARGO SIGNALS STABLE AT SOL.

Message TO BE COMPLETED. STOP SHOOTING DUE TO LOSS OF NARACOOPA ARGO
SIGNAL. CIRCLE. SEAS CALM. NO OTHER SYSTEM FAULTS LOGGED.

SURVEY LINE ANALYSIS

242115

PACIFIC TITAN

Line name BS90A-02A Heading 291 deg.
 Line Status To Be Completed
 Date started 27/02/90 Start Time 01:21 End Time 02:15
 First File 1761 First Reel 1036AA Last File 2242 Last Reel 1041AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1761	1845	2221	2242	377	9.425Kms

----- WEATHER -----

Wind dir. E force 2 Sea state 2 Swell dir. E Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m. Eol. 79.0m.	Ave Speed	7.2 Kts.
Parity Errors	0 No Data Record 2	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.
 Cable depth Min. 7.8 m. Max. 8.4 m.
 Feather Sol. 0.3 P Eol. 0.1 S Max. 0.4 P
 Acoustic Transponders:
 Compass : 278.80 COMP 1 279.90 COMP 2 279.50 COMP 3 280.60 COMP 4 280.60 COMP 5
 Tailbuoy : 0.30 PORT SOL 0.40 PORT 1.00 PORT 0.40 PORT 0.10 STBD EO
 Dead Grp: TRACE 291 DEAD ON LINE.

Noise: AVG SOL NOISE : 3.7uB
 AVG EOL NOISE : 3.8uB.
 Note GOOD BALANCE AND CABLE CONTROL.
 TERMINATE LINE DUE TO CABLE GROUND FAULT AT SP 2242. LAST GOOD SP 2221.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m
 Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 23 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary :
 Secondary :

Sol. Lat. 040/00/45.21S Sol. Long. 039/58/20.57S
 Eol. Lat. 146/18/03.85E Eol. Long. 146/10/11.90E
 Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.

ARGO SIGNALS STABLE AT SOL.

Message TO BE COMPLETED. STOP SHOOTING DUE TO CABLE GROUND FAULT.
 LAST GOOD SHOTPOINT 2221. 84 NON CHARGEABLE O/LAPS AT SOL.

242116

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-02C Heading 291 deg.
 Line Status Complete
 Date started 27/02/90 Start Time 07:09 End Time 08:12
 First File 2141 First Reel 1043AA Last File 2571 Last Reel 1048AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
2141	2222	2571	2571	350	8.750Kms

----- WEATHER -----

Wind dir. CLM force 1 Sea state 1 Swell dir. CLM Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	77.0m.	Eol.	77.0m.
Parity Errors	0	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth Min. 7.8 m. Max. 8.4 m.
 Feather Sol. 4.6 P Eol. 0.6 P Max. 4.6 S

Acoustic Transponders:
 Compass : 270.00 COMP 1 272.40 COMP 2 274.20 COMP 3 275.60 COMP 4 277.10 COMP 5
 Tailbuoy : 4.60 STBD SOL 1.40 STBD 0.30 STBD 0.10 PORT 0.60 PORT E0

Dead Grp: TRACE 291 DEAD ON LINE.
 TRACE 30 SPIKING AND TRACE 70 NOISY

Noise: AVG SOL NOISE : 3.6uB
 AVG EOL NOISE : 6.8uB.

Note GOOD BALANCE AND CABLE CONTROL.
 81 NON CHARGEABLE SHOTPOINTS AT SOL.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 18 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary :
 Secondary :

Sol. Lat. 039/58/50.49S Sol. Long. 039/56/41.50S
 Eol. Lat. 146/11/51.96E Eol. Long. 146/04/50.38E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message NOW COMPLETE. NO CHARGEABLE SHOT AT SOL. NO CABLE FAULTS.
 GRAVITY AND MAGNETOMETER RECORDED.

SURVEY LINE ANALYSIS

242117

PACIFIC TITAN

Line name BS90A-03 Heading 21 deg.
 Line Status Complete
 Date started 28/02/90 Start Time 11:09 End Time 15:03
 First File 1001 First Reel 1108AA Last File 2503 Last Reel 1126AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2503	2503	1503	37.575Kms

----- WEATHER -----

Wind dir. E force 2 Sea state 2 Swell dir. ENE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	77.0m.	Eol.	78.0m.
Parity Errors	0	No Data Record	6
		Ave Speed	5.2 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth Min. 7.8 m. Max. 8.4 m.
 Feather Sol. 0.3 S Eol. 2.0 P Max. 2.2 P

Acoustic Transponders:

Compass	: 6.70 COMP 1	7.70 COMP 2	8.40 COMP 3	9.10 COMP 4	9.90 COMP 5
Tailbuoy	: 0.30 STBD SOL	0.80 STBD	0.10 STBD	0.90 PORT	2.00 STBD EO

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 194 SPIKING. TRACE 3 WEAK FROM SP 2000

Noise: AVG SOL NOISE : 3.2uB
 AVG EOL NOISE : 3.7uB.

Note GOOD BALANCE AND CABLE CONTROL.
 UNIDENTIFIED SIES INTERF ON RECORDS FROM SP 2050 TO EOL. NO SHIP IN AREA.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 53 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary

Sol. Lat. 039/59/26.42S Sol. Long. 039/40/27.93E
 Eol. Lat. 146/06/27.91E Eol. Long. 146/15/52.41E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. COMPASS/BIRD 1 ERRATIC ON LINE. UNIDENTIFIED SEIS
 NOISE ON RECORDS FROM SP 2050 TO EOL. NO SHIPPING IN AREA.

SURVEY LINE ANALYSIS

242118

PACIFIC TITAN

Line name B590A-04 Heading 111 deg.
 Line Status Complete
 Date started 26/02/90 Start Time 13:33 End Time 17:33
 First File 1001 First Reel 1004AA Last File 2602 Last Reel 1024AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2602	2602	1602	40.050Kms

----- WEATHER -----

Wind dir. SSW force 1 Sea state 1 Swell dir. VAR Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	78.0m. Eol. 78.0m.	Ave Speed	5.4 Kts.
Parity Errors	0 No Data Record 15	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.
 Cable depth Min. 7.8 m. Max. 8.4 m.
 Feather Sol. 2.3 S Eol. 0.7 P Max. 2.3 S
 Acoustic Transponders:
 Compass : 99.90 COMP 1 97.90 COMP 2 97.10 COMP 3 98.10 COMP 4 98.80 COMP 5
 Tailbuoy : 2.30 STBD SOL 1.70 STBD 0.40 STBD 0.70 PORT 0.70 PORT EO
 Dead Grp: NO DEAD TRACES ON LINE.
 DEPTH INDICATOR AND COMPASS 1 SPIKING ALL LINE.
 Noise: AVG SOL NOISE : 3.8uB
 AVG EOL NOISE : 4.2uB.
 Note GOOD BALANCE AND CABLE CONTROL.
 NO OTHER CABLE OR SYSTEM FAULTS.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m
 Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 52 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary :
 Secondary :

Sol. Lat. 039/53/05.03S Sol. Long. 040/01/01.89S
 Eol. Lat. 146/07/58.51E Eol. Long. 146/34/08.24E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.
 Message COMPLETE. MAG DATA NOISY TO SP 1320. SP MISSED DUE TO SPU
 SYSTEM HANGUPS ON LINE. TRACE 89 OCCASIONAL SPIKE FROM SP 2240. LOW SWELL

SURVEY LINE ANALYSIS

242119

PACIFIC TITAN
 Line name BS90A-05 Heading 200 deg.
 Line Status Complete
 Date started 27/02/90 Start Time 17:57 End Time 19:03
 First File 1001 First Reel 1067AA Last File 1462 Last Reel 1072AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1462	1462	462	11.550Kms

===== WEATHER =====

Wind dir. E force 3 Sea state 4 Swell dir. ENE Height 01 m

===== RECORDING =====

Magnetometer	Y	Gravity	Y
Water depth Sol.	77.0m.	Eol.	77.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.7 Kts.
		Misfires	0

===== DIGITAL STREAMER =====

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth	Min. 7.8 m.	Max. 8.4 m.
Feather	Sol. 2.3 S	Eol. 0.8 S
		Max. 2.3 S

Acoustic Transponders:

Compass	: 183.20 COMP 1	187.70 COMP 2	186.30 COMP 3	186.30 COMP 4	186.80 COMP 5
Tailbuoy	: 2.30 STBD SOL	2.20 STBD	1.90 STBD	0.90 STBD	0.80 STBD EO

Dead Grp: TRACE 3 SLIGHTLY WEAK.
 TRACE 30 INTERMITTENT SPIKING.

Noise: AVG SOL NOISE : 4.0uB
 AVG EOL NOISE : 3.6uB.

Note GOOD BALANCE AND CABLE CONTROL.
 GRAVITY AND MAGNETOMETER RECORDED ON LINE.

===== ENERGY SOURCE =====

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 8.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 30 SINGLE GUN MISFIRES RECORDED ON LINE.

===== NAVIGATION =====

Prime : ARGO Secondary : SATELLITE

Primary POINT SORELL, NORTH POINT, NARACOOPA,
 Secondary

Sol. Lat.	039/49/37.54S	Sol. Long.	039/55/27.93E
Eol. Lat.	146/12/18.34E	Eol. Long.	146/09/28.01E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. COMPASS/BIRD 1 ERRATIC ON LINE. SEAS CALM. GOOD
 DATA. GRAVITY AND MAGNETOMETER RECORDED ALL LINE. NO SYSTEM FAULTS LOGGED.

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-06 Heading 291 deg.
Line Status Complete
Date started 26/02/90 Start Time 10:12 End Time 11:54
First File 1001 First Reel 995AA Last File 1673 Last Reel 1003AA

F.S.P. F.C.S.P. L.C.S.P. L.S.P. Shot Points Coverage
1001 1001 1673 1673 673 16.825Kms

WEATHER

Wind dir. SSW force 1 Sea state 1 Swell dir. VAR Height 01 m

RECORDING

Magnetometer N Gravity Y
Water depth Sol. 78.0m. Eol. 79.0m. Ave Speed 5.3 Kts.
Parity Errors 0 No Data Record 0 Misfires 0

DIGITAL STREAMER

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.
Cable depth Min. 7.8 m. Max. 8.4 m.
Feather Sol. 0.2 P Eol. 2.0 P Max. 2.0 P
Acoustic Transponders:
Compass : 280.90 COMP 1 279.10 COMP 2 279.90 COMP 3 280.90 COMP 4 281.90 COMP 5
Tailbuoy : 0.20 PORT SOL 2.30 PORT 2.00 PORT 1.90 PORT 2.00 PORT EO
Dead Grp: NO DEAD TRACES ON LINE.

Noise: AVG SOL NOISE : 3.8uB
AVG EOL NOISE : 3.5uB. TRACE 71 SLIGHTLY NOISY

Note GOOD BALANCE AND CABLE CONTROL.
TRACE 71 SLIGHTLY NOISY. NO OTHER CABLE OR SYSTEM FAULTS.

ENERGY SOURCE

Source type VSX AIRGUN
Source Volume : 2180 Pressure: 1850
2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
30 SINGLE GUN MISFIRES RECORDED ON LINE.

NAVIGATION

Prime : ARGO Secondary : SATELLITE
Primary ""
Secondary ""

Sol. Lat. 039/55/12.19S Sol. Long. 039/51/50.00S
Eol. Lat. 146/18/00.65E Eol. Long. 146/07/03.03E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. NO MAGNETOMETER DATA RECORDED THIS LINE. BAD
SENSOR. TRACE 71 SLIGHTLY NOISY. NO OTHER PROBLEMS. SEAS CALM. LOW SWELL

242121

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-07 Heading 201 deg.
 Line Status Complete
 Date started 28/02/90 Start Time 02:03 End Time 03:15
 First File 1001 First Reel 1082AA Last File 1476 Last Reel 1087AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1476	1476	476	11.900Kms

===== WEATHER =====

Wind dir. E force 2 Sea state 1 Swell dir. ENE Height 01 m

===== RECORDING =====

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	79.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.4 Kts.
		Misfires	0

===== DIGITAL STREAMER =====

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth	Min.	7.8 m.	Max.	8.4 m.
Feather	Sol.	3.2 S	Eol.	2.4 S
			Max.	3.5 S

Acoustic Transponders:

Compass	:	187.10 COMP 1	185.60 COMP 2	185.20 COMP 3	185.60 COMP 4	185.60 COMP 5
Tailbuoy	:	3.20 STBD SOL	2.80 STBD	2.10 STBD	2.20 STBD	2.40 STBD E0

Dead Grp: ALL TRACES GOOD ON LINE

Noise: AVG SOL NOISE : 3.9uB
 AVG EOL NOISE : 351uB.

Note GOOD BALANCE AND CABLE CONTROL.
 GRAVITY AND MAGNETOMETER RECORDED ON LINE.

===== ENERGY SOURCE =====

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 29 SINGLE GUN MISFIRES RECORDED ON LINE.

===== NAVIGATION =====

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOODPA,
 Secondary

Sol. Lat.	039/49/52.03S	Sol. Long.	039/55/51.98S
Eol. Lat.	146/13/11.51E	Eol. Long.	146/10/12.32E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. COMPASS/BIRD 1 ERRATIC ON LINE. SEAS CALM. GOOD
 DATA. GRAVITY AND MAGNETOMETER RECORDED ALL LINE. NO SYSTEM FAULTS LOGGED.

242122

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-08A Heading 111 deg.
 Line Status Complete
 Date started 26/02/90 Start Time 04:06 End Time 07:18
 First File 1001 First Reel 979AA Last File 2238 Last Reel 974AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2238	2238	1238	30.950kms

===== WEATHER =====

Wind dir. SSW force 1 Sea state 1 Swell dir. VAR Height 01 m

===== RECORDING =====

Magnetometer	Y	Gravity	Y
Water depth Sol.	78.0m	Eol.	77.0m.
Parity Errors	0	No Data Record	5
		Ave Speed	5.2 Kts.
		Misfires	0

===== DIGITAL STREAMER =====

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth Min. 7.8 m. Max. 8.4 m.
 Feather Sol. 0.7 P Eol. 0.0 P Max. 2.1 P

Acoustic Transponders:

Compass	: 98.40 COMP 1	100.20 COMP 2	99.90 COMP 3	100.60 COMP 4	100.60 COMP 5
Tailbuoy	: 0.70 PORT SOL	0.50 PORT	2.10 PORT	0.60 PORT	0.10 PORT EO

Dead Grp: NO DEAD TRACES ON LINE.
 TRACE 30 SPIKING.

Noise: AVG SOL NOISE : 3.7uB
 AVG EOL NOISE : 3.7uB. TRACE 71 NOISY.

Note GOOD BALANCE AND CABLE CONTROL.
 TRACE 71 NOISY AND TRACE 30 INTERMITTENT SPIKING ON LINE.

===== ENERGY SOURCE =====

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 39 SINGLE GUN MISFIRES RECORDED ON LINE.

===== NAVIGATION =====

Prime : ARGO Secondary : SATELLITE
 Primary :
 Secondary :

Sol. Lat. 039/51/45.40S Sol. Long. 039/57/50.56E
 Eol. Lat. 146/08/47.34E Eol. Long. 146/29/01.04E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. GRAVITY AND MAG RECORDED FOR COMPLETE LINE.
 TRACE 30 SPIKING. NO SYSTEM OR DATA PROBLEMS ON LINE. SEAS CALM. LOW SWELL

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-09 Heading 22 deg.
 Line Status Complete
 Date started 27/02/90 Start Time 10:00 End Time 11:27
 First File 1001 First Reel 1049AA Last File 1558 Last Reel 1055AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1558	1558	558	13.950Kms

===== WEATHER =====

Wind dir. ESE force 3 Sea state 2 Swell dir. ESE Height 01 m

===== RECORDING =====

Magnetometer	Y	Gravity	Y
Water depth Sol.	78.0m.	Eol.	78.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.2 Kts.
		Misfires	0

===== DIGITAL STREAMER =====

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. BRP LENGTH 12.5M.

Cable depth	Min.	7.8 m.	Max.	8.4 m.
Feather	Sol.	1.6 S	Eol.	0.1 S
			Max.	1.8 S

Acoustic Transponders:

Compass	:	8.40 COMP 1	8.40 COMP 2	8.10 COMP 3	8.40 COMP 4	9.10 COMP 5
Tailbuoy	:	1.60 STBD SOL	1.70 STBD	0.60 STBD	0.50 STBD	0.10 STBD EQ

Dead Grp: TRACE 71 NOISY ON LINE.

Noise: AVG SOL NOISE : 3.9uB
 AVG EOL NOISE : 4.0uB.

Note GOOD BALANCE AND CABLE CONTROL.
 COMPASS 1 EXCLUDED FROM DATA FROM SP 1140. WILD AND SPIKING.

===== ENERGY SOURCE =====

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 21 SINGLE GUN MISFIRES RECORDED ON LINE.

===== NAVIGATION =====

Prime : ARGO Secondary : SATELLITE
 Primary :
 Secondary :

Sol. Lat.	039/54/55.458	Sol. Long.	039/47/56.488
Eol. Lat.	146/11/33.02E	Eol. Long.	146/15/14.18E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. COMPASS 1 SPIKING ON LINE. DISREGARD INPUT.
 GRAVITY AND MAGNETOMETER RECORDED. MAG SLIGHTLY NOISY.

SURVEY LINE ANALYSIS

242125

PACIFIC TITAN

Line name BS90A-11 Heading 202 deg.
 Line Status Complete
 Date started 28/02/90 Start Time 16:15 End Time 19:42
 First File 1001 First Reel 1127AA Last File 2340 Last Reel 1143AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2340	2340	1340	33.500Kms

----- WEATHER -----

Wind dir. E force 2 Sea state 1 Swell dir. ENE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	77.0m.
Parity Errors	0	No Data Record	2
		Ave Speed	5.2 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER, OPERATING DEPTH 8.5 METRES, GRP LENGTH 12.5M.

Cable depth	Min. 7.8 m.	Max. 8.4 m.
Feather	Sol. 3.7 S	Eol. 0.3 P Max. 3.7 S

Acoustic Transponders:					
Compass	: 179.30 COMP 1	186.70 COMP 2	186.70 COMP 3	187.40 COMP 4	187.70 COMP 5
Tailbuoy	: 3.70 STBD SOL	2.20 STBD	2.40 STBD	0.60 STBD	0.30 STBD EOL

Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 194 SPIKING. TRACE 133 WEAK/SPIKING.

Noise: AVG SOL NOISE : 4.1uB
 AVG EOL NOISE : 3.5uB.

Note GOOD BALANCE AND CABLE CONTROL.
 GRAVITY AND MAGNETOMETER RECORDED ON LINE.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY, OPERATING DEPTH 6.5 METRES,
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE, GOOD PRESSURE AND VOLUME.
 55 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary

Sol. Lat.	039/44/31.79S	Sol. Long.	040/01/18.28S
Eol. Lat.	146/17/58.08E	Eol. Long.	146/09/09.19E

Note GOOD FIXING AND CONTROL ON LINE, 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message COMPLETE, COMPASS/BIRD 1 ERRATIC ON LINE, NO SYSTEM FAULTS
 ON LINE, MAG AND GRAVITY RECORDED, SEAS CALM.

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-12 Heading 112 deg.
 Line Status Complete
 Date started 24/02/90 Start Time 17:36 End Time 21:39
 First File 1001 First Reel 926AA Last File 2570 Last Reel 945AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2570	2570	1570	39.250Kms

----- WEATHER -----

Wind dir. W force 3 Sea state 4 Swell dir. W Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	78.0m.	Eol.	79.0m.
Parity Errors	0	No Data Record	2
		Ave Speed	0.0 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth Min. 7.8 m. Max. 9.1 m.
 Feather Sol. 0.8 S Eol. 4.7 S Max. 4.7 S

Acoustic Transponders:

Compass	: 97.70 COMP 1	99.50 COMP 2	99.10 COMP 3	99.50 COMP 4	99.10 COMP 5
Tailbuoy	: 0.80 STBD SOL	1.80 STBD	3.20 STBD	3.70 STBD	4.70 STBD EOL

Dead Grp: TRACE 133 DEAD FROM SP 1890. POSSIBLE SHARK BITE.
 TRACE 134 SPIKING.

Noise: AVG SOL NOISE : 3.7uB ODD SWELL BURSTS NOTED.

AVG EOL NOISE : 4.0uB

Note GOOD BALANCE AND CABLE CONTROL. SP 1621-1710 RAISE CABLE TO
 8 METRES IN CALM CONDITIONS.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4

ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED ON LINE. GOOD VOLUME AND PRESSURE.

34 SINGLE GUN NO FIRES REPORTED.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE

Primary : ""

Secondary : ""

Sol. Lat. 039/50/24.32S Sol. Long. 039/58/20.00S

Eol. Lat. 146/09/30.77E Eol. Long. 146/35/03.28E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.

ARGO SLIGHTLY UNSTABLE AT EOL.

Message COMPLETE. GRAVITY AND MAG RECORDED FOR COMPLETE LINE.

TRACE 30 AND 182 OCCASIONAL SPIKES. GOOD NAV BECOMING SHAKY AT EOL

242127

SURVEY LINE ANALYSIS

PACIFIC TITAN
 Line name BS90A-13 Heading 21 deg.
 Line Status Complete
 Date started 27/02/90 Start Time 15:18 End Time 16:30
 First File 1001 First Reel 1061AA Last File 1476 Last Reel 1066AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1476	1476	476	11.900Kms

----- WEATHER -----

Wind dir. E force 3 Sea state 3 Swell dir. E Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	78.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.4 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.
 Cable depth Min. 7.8 m. Max. 8.4 m.
 Feather Sol. 0.5 F Eol. 0.3 S Max. 1.0 S
 Acoustic Transponders:

Compass	: 7.70 COMP 1	10.20 COMP 2	9.50 COMP 3	9.50 COMP 4	9.50 COMP 5
Tailbuoy	: 0.50 PORT SOL	0.30 STBD	0.70 STBD	0.60 STBD	1.00 STBD EO

Dead Grp: NO DEAD TRACES ON LINE.

TRACE 30 INTERMITTENT SPIKING.

Noise: AVG SOL NOISE : 3.6uB

AVG EOL NOISE : 3.8uB.

Note GOOD BALANCE AND CABLE CONTROL.

COMPASS 1 EXCLUDED FROM DATA. WILD AND SPIKING ALSO AFFECTING CABLE DEPTH

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4

ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.

48 SINGLE GUN MISFIRES RECORDED ON LINE. SP 1099 GUN 24 OFF. VOLUME 2140 CI

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary

Sol. Lat. 039/55/25.34S Sol. Long. 039/49/26.22S
 Eol. Lat. 146/13/21.25E Eol. Long. 146/16/25.24E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.

ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. COMPASS 1 SPIKING ON LINE. DISREGARD INPUT.

COMPASS AND DEPTH CONTROLLER BAD DOES NOT AFFECT CABLE CONTROL.

SURVEY LINE ANALYSIS

242128

PACIFIC TITAN

Line name BS90A-14A Heading 111 deg.
 Line Status Complete
 Date started 25/02/90 Start Time 14:51 End Time 16:33
 First File 1001 First Reel 958AA Last File 1680 Last Reel 967AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1680	1680	680	17,000Kms

----- WEATHER -----

Wind dir. ENE force 1 Sea state 1 Swell dir. ENE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	78.0m.
Parity Errors	0	Misfires	0
	No Data Record		

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER, OPERATING DEPTH 8.5 METRES, GRP LENGTH 12.5M.

Cable depth Min. 7.6 m. Max. 8.4 m.
 Feather Sol. 1.2 S Eol. 0.2 S Max. 1.2 S

Acoustic Transponders:

Compass	:	96.30 COMP 1	97.70 COMP 2	97.70 COMP 3	98.40 COMP 4	98.40 COMP 5
Tailbuoy	:	1.20 STBD SOL	1.30 STBD	1.10 STBD	0.70 STBD	0.20 STBD EOL

Dead Grp: NO DEAD TRACES ON LINE.
 TRACE 30 SPIKING.

Noise: AVG SOL NOISE : 4.0uB ONLY SLIGHT SWELL BURSTS.
 AVG EOL NOISE : 5.8uB

Note GOOD BALANCE AND CABLE CONTROL.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY, OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI, NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE, GOOD PRESSURE AND VOLUME.
 27 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary :
 Secondary :

Sol. Lat. 039/49/54.238 Sol. Long. 039/53/13.238
 Eol. Lat. 146/11/29.82E Eol. Long. 146/22/36.64E

Note GOOD FIXING AND CONTROL ON LINE, 3 WAY FIX AVERAGE 2 METRES.

Message COMPLETE, GRAVITY AND MAG RECORDED FOR COMPLETE LINE.
 TRACE 30 SPIKING, RN 1679-808AD RECORD AT TAPE CHANGE.EDIT.

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-15A Heading 22 deg.
 Line Status Complete
 Date started 27/02/90 Start Time 23:30 End Time 00:45
 First File 1001 First Reel 1075AA Last File 1477 Last Reel 1081AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1477	1477	477	11.925Kms

----- WEATHER -----

Wind dir. E force 2 Sea state 1 Swell dir. ENE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	78.0m. Eol. 78.0m.	Ave Speed	5.2 Kts.
Parity Errors	0 No Data Record 5	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth	Min. 7.8 m.	Max. 8.4 m.
Feather	Sol. 0.8 S Eol. 1.0 P	Max. 1.7 S

Acoustic Transponders:

Compass	: 12.70 COMP 1	10.90 COMP 2	9.10 COMP 3	9.10 COMP 4	8.80 COMP 5
Tailbuoy	: 0.80 STBD SOL	1.30 STBD	0.20 STBD	0.60 PORT	1.00 PORT EO

Dead Grp: TRACE 3 DEAD ON LINE.

Noise: AVG SOL NOISE : 3.6uB
 AVG EOL NOISE : 4.1uB.

Note GOOD BALANCE AND CABLE CONTROL.
 GRAVITY AND MAGNETOMETER RECORDED ON LINE.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 16 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary

Sol. Lat.	039/55/24.27S	Sol. Long.	039/49/27.17S
Eol. Lat.	146/14/15.56E	Eol. Long.	146/17/28.12E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. COMPASS/BIRD 1 ERRATIC ON LINE. SEAS CALM. GOOD
 DATA. GRAVITY AND MAGNETOMETER RECORDED ALL LINE. NO SYSTEM FAULTS LOGGED.

SURVEY LINE ANALYSIS

242130

PACIFIC TITAN
 Line name 8590A-16 Heading 291 deg.
 Line Status Complete
 Date started 25/02/90 Start Time 03:18 End Time 05:09
 First File 1001 First Reel 946AA Last File 1715 Last Reel 955AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1715	1715	715	17.875Kms

----- WEATHER -----

Wind dir. E force 3 Sea state 2 Swell dir. ENE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m. Eol. 78.0m.	Ave Speed	5.2 Kts.
Parity Errors	0 No Data Record 9	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.
 Cable depth Min. 7.6 m. Max. 8.4 m.
 Feather Sol. 2.3 S Eol. 2.0 S Max. 2.7 S
 Acoustic Transponders:
 Compass : 278.10 COMP 1 277.40 COMP 2 277.10 COMP 3 277.70 COMP 4 277.70 COMP 5
 Tailbuoy : 2.30 STBD SOL 2.10 STBD 2.30 STBD 1.60 STBD 2.00 STBD EO
 Dead Grp: TRACE 133 DEAD FROM SP 1890. POSSIBLE SHARK BITE.
 TRACE 134 AND 30 SPIKING.
 Noise: AVG SOL NOISE : 4.3uB ONLY SLIGHT SWELL NOISE.
 AVG EOL NOISE : 4.1uB
 Note GOOD BALANCE AND CABLE CONTROL.
 IT APPEARS AS THOUGH TRACES 133/134 HAVE BENN DAMAGED BY A SHARK ATTACK.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m
 Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 49 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary :
 Secondary :

Sol. Lat. 039/56/32.28S Sol. Long. 039/52/56.19S
 Eol. Lat. 146/34/56.02E Eol. Long. 146/23/09.91E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SLIGHTLY UNSTABLE AT SOL.
 Message COMPLETE. GRAVITY AND MAG RECORDED FOR COMPLETE LINE.
 TRACE 30 AND 133 OCCASIONAL SPIKES. MISSED SHOTS DUE TO SYSTEM HANGUP.

SURVEY LINE ANALYSIS

242131

PACIFIC TITAN

Line name BS90A-17 Heading 3 deg.
 Line Status Complete
 Date started 28/02/90 Start Time 07:09 End Time 09:39
 First File 1001 First Reel 1095AA Last File 2054 Last Reel 1107AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2054	2054	1054	26.350Kms

----- WEATHER -----

Wind dir. E force 2 Sea state 2 Swell dir. ENE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	77.0m. Eol. 77.0m.	Ave Speed	5.7 Kts.
Parity Errors	0 No Data Record 3	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.
 Cable depth Min. 7.8 m. Max. 8.4 m.
 Feather Sol. 1.0 S Eol. 0.9 S Max. 0.1 S
 Acoustic Transponders:
 Compass : 201.80 COMP 1 190.60 COMP 2 189.50 COMP 3 189.90 COMP 4 190.20 COMP 5
 Tailbuoy : 1.00 STBD SOL 1.00 STBD 0.90 STBD 0.50 STBD 0.10 STBD EO
 Dead Grp: ALL TRACES GOOD ON LINE

Noise: AVG SOL NOISE : 4.1uB
 AVG EOL NOISE : 3.3uB.
 Note GOOD BALANCE AND CABLE CONTROL.
 GRAVITY AND MAGNETOMETER RECORDED ON LINE.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m
 Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 23 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary

Sol. Lat. 039/50/04.88S Sol. Long. 040/03/10.50S
 Eol. Lat. 146/18/03.23E Eol. Long. 146/10/47.96E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.
 Message COMPLETE. COMPASS/BIRD 1 ERRATIC ON LINE. SEAS CALM. GOOD
 DATA. GRAVITY AND MAGNETOMETER RECORDED ALL LINE. NO SYSTEM FAULTS LOGGED.

SURVEY LINE ANALYSIS 242132

PACIFIC TITAN
 Line name BS90A-19 Heading 23 deg.
 Line Status Complete
 Date started 28/02/90 Start Time 04:39 End Time 05:48
 First File 1001 First Reel 1088AA Last File 1492 Last Reel 1094AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1492	1492	492	12.300kms

----- WEATHER -----

Wind dir. E force 2 Sea state 2 Swell dir. ENE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	78.0m.
Parity Errors	0	No Data Record	5
		Ave Speed	5.8 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.
 Cable depth Min. 7.8 m. Max. 8.4 m.
 Feather Sol. 1.0 S Eol. 1.2 S Max. 1.6 S
 Acoustic Transponders:
 Compass : 10.20 COMP 1 9.90 COMP 2 9.10 COMP 3 9.50 COMP 4 10.20 COMP 5
 Tailbuoy : 1.00 STBD SOL 0.90 STBD 1.60 STBD 1.30 STBD 1.20 STBD EOL
 Dead Grp: ALL TRACES GOOD ON LINE

Noise: AVG SOL NOISE : 3.7uB
 AVG EOL NOISE : 3.8uB.
 Note GOOD BALANCE AND CABLE CONTROL.
 GRAVITY AND MAGNETOMETER RECORDED ON LINE.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m
 Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 23 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL, NORTH POINT, NARACOOPA,
 Secondary

Sol. Lat.	039/55/58.80S	Sol. Long.	039/49/51.60S
Eol. Lat.	146/15/42.48E	Eol. Long.	146/19/04.16E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.
 Message COMPLETE. COMPASS/BIRD 1 ERRATIC ON LINE. SEAS CALM. GOOD
 DATA. GRAVITY AND MAGNETOMETER RECORDED ALL LINE. NO SYSTEM FAULTS LOGGED.

SURVEY LINE ANALYSIS 242133

PACIFIC TITAN
 Line name BS90A-21 Heading 202 deg.
 Line Status Complete
 Date started 02/03/90 Start Time 06:27 End Time 10:15
 First File 1001 First Reel 1211AA Last File 2471 Last Reel 1230AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2471	2471	1471	36.775Kms

----- WEATHER -----

Wind dir. ENE force 2 Sea state 1 Swell dir. ENE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	77.0m.
Parity Errors	0	No Data Record	10
		Ave Speed	5.2 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth Min. 7.9 m. Max. 8.2 m.
 Feather Sol. 0.1 S Eol. 0.3 S Max. 1.3 S

Acoustic Transponders:

Compass	:	190.60 COMP 1	190.90 COMP 2	190.20 COMP 3	190.20 COMP 4	190.20 COMP 5
Tailbuoy	:	0.10 STBD SOL	1.30 STBD	1.00 STBD	0.60 STBD	0.30 STBD EOL

Dead Grp: TRACE 297 DEAD ON LINE.

Noise: AVG SOL NOISE : 4.6uB. NEAR TRACE NOISE : 9.5uB.
 AVG EOL NOISE : 3.4uB.

Note GOOD BALANCE AND CABLE CONTROL.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4

ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE AND VOLUME.

79 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary ,,,,,,,,,,

Sol. Lat. 039/44/27.95S Sol. Long. 040/02/39.14E
 Eol. Lat. 146/22/59.92E Eol. Long. 146/13/03.26E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.

ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. INTERMITTENT FAULTS WITH SEISMIC PROCESSOR UNIT.
 GOOD DATA ON LINE. TRACE 297 DEAD. NO OTHER SYSTEM FAULTS LOGGED.

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-23 Heading 202 deg.
 Line Status Complete
 Date started 01/03/90 Start Time 03:51 End Time 05:57
 First File 1001 First Reel 1158AA Last File 1879 Last Reel 1168AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1879	1879	879	21.975Kms

----- WEATHER -----

Wind dir. E force 3 Sea state 1 Swell dir. E Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	78.0m.
Parity Errors	0	No Data Record	1
		Ave Speed	5.7 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.
 Cable depth Min. 7.8 m. Max. 8.4 m.
 Feather Sol. 1.6 S Eol. 0.5 S Max. 2.4 S
 Acoustic Transponders:
 Compass : 188.10 COMP 1 188.80 COMP 2 187.70 COMP 3 189.10 COMP 4 189.90 COMP 5
 Tailbuoy : 1.60 STBD SOL 2.40 STBD 1.20 STBD 2.00 STBD 0.50 STBD EO
 Dead Grp: NO DEAD GROUPS ON LINE.
 COMPASS 1 EXCLUDED ALL LINE SPIKING AND ERRATIC
 Noise: AVG SOL NOISE : 4.3uB
 AVG EOL NOISE : 3.7uB.
 Note GOOD BALANCE AND CABLE CONTROL.
 GRAVITY AND MAGNETOMETER RECORDED ON LINE. RN 1214 BAD FILE SYSNCH ERROR.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m
 Note NO GUN FAULTS LOGGED THIS LINE. GOOD PRESSURE AND VOLUME.
 37 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary. POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary

Sol. Lat. 039/51/03.17S Sol. Long. 040/02/01.12S
 Eol. Lat. 146/20/32.72E Eol. Long. 146/14/38.12E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. COMPASS/BIRD 1 DISREGARD ON LINE ERRATIC. NO OTHER
 SYSTEM FAULTS. GRAVITY AND MAG RECORDED. SEAS SLIGHT. GOOD NAVIGATION.

242135

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-25 Heading 203 deg.
 Line Status Complete
 Date started 01/03/90 Start Time 10:28 End Time 12:27
 First File 1001 First Reel 1181AA Last File 1855 Last Reel 1191AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1855	1855	855	21.375Kms

----- WEATHER -----

Wind dir. SE force 2 Sea state 1 Swell dir. SE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	77.0m. Eol. 78.0m.	Ave Speed	5.8 Kts.
Parity Errors	0 No Data Record 2	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth	Min. 7.8 m.	Max. 8.4 m.
Feather	Sol. 1.8 S Eol. 0.6 P	Max. 1.8 S

Acoustic Transponders:

Compass	: 182.10 COMP 1	189.10 COMP 2	188.80 COMP 3	189.10 COMP 4	189.50 COMP 5
Tailbuoy	: 1.80 STBD SOL	1.50 STBD	0.90 STBD	0.30 PORT	0.60 PORT EOL

Dead Grp: TRACE 3 DEAD FROM SP 1400.

COMPASS 1 SLIGHTLY ERRATIC ON LINE.

Noise: AVG SOL NOISE : 4.1uB. NEAR TRACE NOISE : 9.5uB.
 AVG EOL NOISE : 3.4uB.

Note GOOD BALANCE AND CABLE CONTROL.

GRAVITY AND MAGNETOMETER RECORDED ON LINE.

----- ENERGY SOURCE -----

Source type VSX AIRGUN

Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4

ARRAY LENGTH = 14m STRING SPACING = 10m

Note SP 1676 GUN 60 OFF TO EOL. GOOD PRESSURE AND VOLUME.

*43 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO

Secondary : SATELLITE

Primary POINT SORELL,NORTH POINT,NARACOOPA,

Secondary

Sol. Lat. 039/51/42.37S Sol. Long. 040/02/18.11S

Eol. Lat. 146/21/14.16E Eol. Long. 146/15/17.14E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.

ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. COMPASS/BIRD 1 ERRATIC.FROM SP 1676 TO EOL GUN VOL

AT 2140 CUBIC INCHES. GUN 60 OFF. SEAS SLIGHT. GOOD NAVIGATION.

242138

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-31 Heading 22 deg.
 Line Status Complete
 Date started 01/03/90 Start Time 13:51 End Time 17:40
 First File 1001 First Reel 1192AA Last File 2604 Last Reel 1210AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2604	2604	1604	40.100Kms

===== WEATHER =====

Wind dir. ENE force 3 Sea state 1 Swell dir. ESE Height 01 m

===== RECORDING =====

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	78.0m.
Parity Errors	0	No Data Record	4
		Ave Speed	5.7 Kts.
		Misfires	0

===== DIGITAL STREAMER =====

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth Min. 7.8 m. Max. 8.4 m.
 Feather Sol. 1.6 S Eol. 2.0 S Max. 2.0 S

Acoustic Transponders:

Compass	: 10.10 COMP 1	10.90 COMP 2	11.20 COMP 3	11.51 COMP 4	12.55 COMP 5
Tailbuoy	: 1.68 STBD SOL	1.20 STBD	0.49 STBD	1.53 PORT	2.00 PORT EO

Dead Grp: TRACE 3 DEAD. TRACE 198 SPIKING.

COMPASS 1 SLIGHTLY ERRATIC ON LINE.

Noise: AVG SOL NOISE : 4.1uB. NEAR TRACE NOISE : 9.5uB.

AVG EOL NOISE : 4.5uB.

Note GOOD BALANCE AND CABLE CONTROL.

SP 1600 TRACES 193-198 NOISY. POSSIBLE SHARK BITE. CONTINUE TO END OF LINE.

===== ENERGY SOURCE =====

Source type VSX AIRGUN

Source Volume : 2180 Pressure: 1850

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4

ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE AND VOLUME.

45 SINGLE GUN MISFIRES RECORDED ON LINE.

===== NAVIGATION =====

Prime : ARGO

Secondary : SATELLITE

Primary POINT SORELL,NORTH POINT,NARACOOKA,

Secondary ,,,,,,,,,,

Sol. Lat. 040/01/55.65S Sol. Long. 039/41/54.85S

Eol. Lat. 146/18/28.01E Eol. Long. 146/29/17.11E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.

ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. COMPASS/BIRD 1 ERRATIC.FROM SP 2340 UNKNOWN SEIS

INTERFERENCE ON RECORDS. 2 BAD RECORDS DUE TO SPU FAULTS.

SURVEY LINE ANALYSIS

242141

PACIFIC TITAN

Line name BS90A-35A Heading 22 deg.
 Line Status Complete
 Date started 03/03/90 Start Time 03:06 End Time 04:30
 First File 1341 First Reel 1265AA Last File 1942 Last Reel 1272AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1341	1419	1942	1942	524	13.100Kms

----- WEATHER -----

Wind dir. E force 2 Sea state 1 Swell dir. E Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	79.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.8 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth Min. 7.9 m. Max. 8.2 m.
 Feather Sol. 0.1 P Eol. 1.4 S Max. 2.5 S

Acoustic Transponders:

Compass	:	19.30 COMP 1	13.70 COMP 2	11.60 COMP 3	10.20 COMP 4	8.80 COMP 5
Tailbuoy	:	0.10 PORT SOL	2.00 STBD	2.50 STBD	1.70 STBD	1.40 STBD EO

Dead Grp: TRACE 254 DEAD ON LINE.

TRACE 294 OCCASIONAL SPIKING AFTER START OF LINE.

Noise: AVG SOL NOISE : 4.7uB. NEAR TRACE NOISE : 9.7uB.

AVG EOL NOISE : 4.9uB.

Note GOOD BALANCE AND CABLE CONTROL. ONE DEAD TRACE AND 1 TRACE
 SPIKING INTERMITTENTLY. EXCLUDE DATA FROM COMPASS 1 ERRATIC ON LINE.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1875

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4

ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE AND VOLUME.
 25 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL, NORTH POINT, NARACOOPA,
 Secondary

Sol. Lat. 039/58/12.74S Sol. Long. 039/50/41.82S
 Eol. Lat. 146/22/19.86E Eol. Long. 146/26/22.91E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.

ARGO SIGNALS STABLE AT SOL. 78 SP NON CHARGEABLE SHOT AT SOL.

Message NOW COMPLETE. TRACE 254 DEAD. TRACE 294 OCCASIONAL SPIKING.
 COMPASS 1 ERRATIC DATA. DISREGARD. SEAS CALM. GOOD DATA.

242142

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-37 Heading 22 deg.
 Line Status Complete
 Date started 03/03/90 Start Time 09:17 End Time 11:39
 First File 1001 First Reel 1285AA Last File 1939 Last Reel 1296AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1939	1939	939	23.475Kms

----- WEATHER -----

Wind dir. ESE force 3 Sea state 1 Swell dir. ESE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	77.0m.	Eol.	77.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.4 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 6.5 METRES. GRP LENGTH 12.5M.

Cable depth Min. 7.9 m. Max. 8.2 m.
 Feather Sol. 0.2 P Eol. 2.4 P Max. 2.9 P

Acoustic Transponders:

Compass	: 13.37 COMP 1	10.90 COMP 2	11.20 COMP 3	11.20 COMP 4	11.20 COMP 5
Tailbuoy	: 0.20 PORT SOL	0.80 PORT	1.60 PORT	2.90 PORT	2.40 PORT E0

Dead Grp: TRACE 254 60 HZ PICKUP.
 TRACE 145 NOISY.

Noise: AVG SOL NOISE : 3.9uB. NEAR TRACE NOISE : 9.7uB.
 AVG EOL NOISE : 4.7uB.

Note GOOD BALANCE AND CABLE CONTROL. ONE DEAD TRACE AND 1 TRACE
 60 CYCLES PICKUP. COMPASS 1 ERRATIC. NO OTHER SYSTEM FAULTS.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1875
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE AND VOLUME.
 48 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL, NORTH POINT, NARACOOPA,
 Secondary

Sol. Lat. 040/02/41.46S Sol. Long. 146/20/53.47S
 Eol. Lat. 039/50/59.79E Eol. Long. 146/27/17.57E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. TRACE 254 DEAD. TRACE 145 DEAD. 60 Hz PICKUP.
 SEAS CALM. GOOD DATA. NO OTHER SYSTEM FAULTS LOGGED ON LINE.

SURVEY LINE ANALYSIS

242143

PACIFIC TITAN

Line name BS90A-39 Heading 203 deg.
 Line Status Complete
 Date started 02/03/90 Start Time 15:33 End Time 18:12
 First File 1001 First Reel 1244AA Last File 2047 Last Reel 1258AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2047	2047	1047	26.175Kms

----- WEATHER -----

Wind dir. ENE force 2 Sea state 1 Swell dir. ENE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	79.0m.
Parity Errors	0	No Data Record	6
		Ave Speed	5.3 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.

Cable depth	Min. 7.9 m.	Max. 8.2 m.
Feather	Sol. 2.1 S	Eol. 0.8 S
		Max. 2.1 S

Acoustic Transponders:

Compass	: 188.80 COMP 1	188.80 COMP 2	189.50 COMP 3	189.50 COMP 4	189.50 COMP 5
Tailbuoy	: 2.10 STBD SOL	1.40 STBD	1.50 STBD	1.20 STBD	0.80 STBD E0

Dead Grp: TRACE 297 DEAD ON LINE.

TRACE 256 DEAD FROM SP 1701. SHARK BITE

Noise: -AVG SOL NOISE : 4.2uB. NEAR TRACE NOISE : 9.7uB.

AVG EOL NOISE : 3.0uB.

Note GOOD BALANCE AND CABLE CONTROL.

TWO DEAD TRACE ON LINE. TR 297 AND 256

----- ENERGY SOURCE -----

Source type VSX AIRGUN

Source Volume : 2180 Pressure: 1875

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4

ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE AND VOLUME.

55 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO

Secondary : SATELLITE

Primary POINT SORELL,NORTH POINT,NARACOOPA,

Secondary 111111111

Sol. Lat. 039/52/17.32S Sol. Long. 040/05/16.17E

Eol. Lat. 146/27/34.22E Eol. Long. 146/20/17.59E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.

ARGO SIGNALS STABLE AT SOL.

Message COMPLETE. 6 BAD RECORDS ALL OCCURRED ON TAPE CHANGES. 2 DEAD

TRACES ON LINE. NO OTHER SYSTEM FAULTS. CONDITIONS GOOD SEAS SLIGHT.

242144

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-41 Heading 203 deg.
 Line Status Complete
 Date started 03/03/90 Start Time 05:45 End Time 08:00
 First File 1001 First Reel 1273AA Last File 1956 Last Reel 1284AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1956	1956	956	23.900Kms

----- WEATHER -----

Wind dir. ESE force 3 Sea state 1 Swell dir. ESE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	78.0m.
Parity Errors	0	No Data Record	4
		Ave Speed	5.7 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER, OPERATING DEPTH 8.5 METRES, GRP LENGTH 12.5M.

Cable depth Min. 7.9 m. Max. 8.2 m.
 Feather Sol. 2.1 S Eol. 2.7 S Max. 2.7 S

Acoustic Transponders:

Compass	: 192.70 COMP 1	186.70 COMP 2	188.40 COMP 3	189.90 COMP 4	190.20 COMP 5
Tailbuoy	: 2.10 STBD SOL	1.60 STBD	1.20 STBD	0.80 STBD	2.70 STBD EOL

Dead Grp: TRACE 254 DEAD ON LINE.
 TRACE 145 NOISY.

Noise: AVG SOL NOISE : 5.3uB, NEAR TRACE NOISE : 9.7uB.
 AVG EOL NOISE : 4.3uB.

Note GOOD BALANCE AND CABLE CONTROL, ONE DEAD TRACE AND 1 TRACE
 NOISY, NO OTHER CABLE FAULTS OR PROBLEMS LOGGED.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1875
 2180 CUBIC INCH VSX AIRGUN ARRAY, OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI, NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN MISFIRES LOGGED ON LINE, GOOD PRESSURE AND VOLUME,
 57 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary

Sol. Lat.	039/52/38.24S	Sol. Long.	146/28/53.12S
Eol. Lat.	040/04/30.46E	Eol. Long.	146/22/17.97E

Note GOOD FIXING AND CONTROL ON LINE, 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.

Message COMPLETE, TRACE 254 DEAD, TRACE 145 NOISY.
 SEAS CALM, GOOD DATA, MISSED 2 SHOTPOINTS DUE TO SPU DROPOUT AND RESET.

SURVEY LINE ANALYSIS

242145

PACIFIC TITAN

Line name BS90A-43 Heading 202 deg.
 Line Status Complete
 Date started 03/03/90 Start Time 13:00 End Time 14:51
 First File 1001 First Reel 1297AA Last File 1799 Last Reel 1309AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1799	1799	799	19.975Kms

----- WEATHER -----

Wind dir. SE force 3 Sea state 1 Swell dir. SE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	77.0m.	Eol.	78.0m.
Parity Errors	0	No Data Record	8
		Ave Speed	5.8 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M.
 Cable depth Min. 7.9 m. Max. 8.2 m.
 Feather Sol. 5.3 S Eol. 1.8 S Max. 5.3 S
 Acoustic Transponders:
 Compass : 195.50 COMP 1 184.90 COMP 2 185.20 COMP 3 186.00 COMP 4 185.60 COMP 5
 Tailbuoy : 5.30 STBD SOL 4.00 STBD 2.20 STBD 1.90 STBD 1.80 STBD EOL

Dead Grp: TRACE 254 60 HZ PICKUP.
 TRACE 145 NOISY.
 Noise: AVG SOL NOISE : 4.9uB. NEAR TRACE NOISE : 9.6uB.
 AVG EOL NOISE : 4.0uB.
 Note GOOD BALANCE AND CABLE CONTROL. ONE DEAD TRACE AND 1 TRACE
 60 CYCLES PICKUP. COMPASS 1 ERRATIC. SLIGHT BEND AT TAIL END OF CABLE.

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1875
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m
 Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE AND VOLUME.
 37 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL,NORTH POINT,NARACOOPA,
 Secondary ,,,,,,,

Sol. Lat. 039/55/05.07S Sol. Long. 146/30/38.32S
 Eol. Lat. 040/05/03.16E Eol. Long. 146/25/15.83E

Note GOOD FIXING AND CONTROL ON LINE. 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL.
 Message COMPLETE. TRACE 254 DEAD. TRACE 145 DEAD. 60 Hz PICKUP.
 SEAS CALM. GOOD DATA. MISSED 8 SHOTPOINTS ON TAPE CHANGEOVERS.

242146

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name BS90A-45 Heading 22 deg.
 Line Status Complete
 Date started 03/03/90 Start Time 16:11 End Time 18:06
 First File 1001 First Reel 1310AA Last File 1802 Last Reel 1320AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1802	1802	802	20.050Kms

----- WEATHER -----

Wind dir. SE force 1 Sea state 1 Swell dir. SE Height 01 m

----- RECORDING -----

Magnetometer	Y	Gravity	Y
Water depth Sol.	79.0m.	Eol.	80.0m.
Parity Errors	0	No Data Record	2
		Ave Speed	5.6 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER, OPERATING DEPTH 8.5 METRES, GRP LENGTH 12.5M.

Cable depth Min. 7.9 m. Max. 8.2 m.
 Feather Sol. 2.1 S Eol. 3.1 S Max. 3.3 S

Acoustic Transponders:

Compass	: 18.60 COMP 1	8.80 COMP 2	8.40 COMP 3	8.40 COMP 4	8.10 COMP 5
Tailbuoy	: 2.10 STBD SOL	1.80 STBD	2.20 STBD	3.20 STBD	3.10 STBD ED

Dead Grp: TRACE 254 60 HZ PICKUP, TRACE 93 DEAD, SHARK BITE
 TRACE 145 AND 147 NOSIV.

Noise: AVG SOL NOISE : 5.4uB, NEAR TRACE NOISE : 9.6uB.
 AVG EOL NOISE : 5.0uB.

Note GOOD BALANCE AND CABLE CONTROL, ONE DEAD TRACE AND 1 TRACE
 60 CYCLES PICKUP, ODD NOSIV TRACES DUE TO SHARK BITE, TO BE REPLACED AT EOL

----- ENERGY SOURCE -----

Source type VSX AIRGUN
 Source Volume : 2180 Pressure: 1875
 2180 CUBIC INCH VSX AIRGUN ARRAY, OPERATING DEPTH 8.5 METRES.
 OPERATING PRESSURE 1850 PSI, NUMBER OF GUN STRINGS = 4
 ARRAY LENGTH = 14m STRING SPACING = 10m

Note NO GUN MISFIRES LOGGED ON LINE, GOOD PRESSURE AND VOLUME,
 50 SINGLE GUN MISFIRES RECORDED ON LINE.

----- NAVIGATION -----

Prime : ARGO Secondary : SATELLITE
 Primary POINT SORELL, NORTH POINT, NARACOOPA,
 Secondary

Sol. Lat. 040/04/55.55S Sol. Long. 146/28/38.59S
 Eol. Lat. 039/54/55.34E Eol. Long. 146/34/04.64E

Note GOOD FIXING AND CONTROL ON LINE, 3 WAY FIX AVERAGE 2 METRES.
 ARGO SIGNALS STABLE AT SOL, COMPASS DATA ON 1 ERRATIC, DISREGARD DATA.

Message COMPLETE, TRACE 254 SHOW 60 HZ PICKUP, TRACE 93 DEAD FROM A
 SHARK ATTACK, SEAS CALM, SP 1601 UNEXPLAINED SEISMIC INTERFERENCE.

13.3 Daily Time Logs

242147

From	To	Act	Cau	Chg	Comment	HH:MM
24/02/90						
09:18	10:40	24	22	H	Retrieve guns to change sect.	01:22
10:40	12:12	14	22	H	Rtve cable to change section	01:32
12:12	12:36	22	22	H	Change damaged section, shark	00:24
12:36	13:33	14	22	H	Deploy cable after repairs	00:57
13:33	15:48	03	03	O	Travel to Block T/14P	02:15
15:48	16:27	24	22	H	Deploy guns after cable repair	00:39
16:27	17:36	02	02	O	Run to Line BS90A012, Dir 112	01:09
17:36	21:39	01	01	P	Line BS90A-12	04:03
21:39	23:15	02	02	O	Line change to BS90A-16	01:36
23:15	24:00	11	11	H	Standby, Argo skywaves/unstable	00:45
25/02/90						
00:00	03:18	11	11	H	Standby, Argo skywaves/unstable	03:18
03:18	05:09	01	01	P	Line BS90A-16	01:51
05:09	06:40	02	02	O	Line change to BS90A-10	01:31
06:40	06:58	13	22	H	Cable ground fault, shark bite	00:18
06:58	07:45	24	22	H	Rtve guns to check shark bite	00:47
07:45	09:10	14	22	H	Rtve cable, check shark damage	01:25
09:10	10:30	14	22	H	Deploy, changed damaged section	01:20
10:30	11:30	24	22	H	Deploy guns, cable repaired	01:00
11:30	12:21	02	22	H	Running to Line BS90A-14	00:51
12:21	12:45	29	29	H	Abort, lost Argo Stn, P Sorell	00:24
12:45	14:51	29	29	H	Circle, Point Sorrel operating	02:06
14:51	16:33	01	01	P	Line BS90A-14A	01:42
16:33	17:51	02	02	O	Line change to BS90A-10	01:18
17:51	19:39	01	01	P	Line BS90A-10	01:48
19:39	21:09	02	02	O	Line change to BS90A-08	01:30
21:09	23:40	11	11	H	Standby for Argo to stabilize	02:31
23:40	24:00	24	12	H	Rtve guns, vessel elect. fault	00:20
26/02/90						
00:00	00:30	12	12	H	Repair vessel 24 v elect. sys.	00:30
00:30	01:03	14	12	H	Deploy cable after ship repair	00:33
01:03	03:00	14	13	H	Change faulty cable section	01:57
03:00	03:50	24	12	H	Deploy guns, ship elect. sys. OK	00:50
03:50	04:06	02	11	H	Run to line, Argo navig. stable	00:16
04:06	07:18	01	01	P	Line BS90A-08A	03:12
07:18	09:12	02	02	O	Line change to BS90A-06	01:54
09:12	10:12	02	20	H	Ext L/C for fishing boat/buoy	01:00
10:12	11:54	01	01	P	Line BS90A-06	01:42
11:54	13:33	02	02	O	Line change to BS90A-04	01:39
13:33	17:33	01	01	P	Line BS90A-04	04:00
17:33	19:11	02	02	O	Line change to BS90A-02	01:38
19:11	21:15	01	01	P	Line BS90A-02	02:04
21:15	24:00	11	11	H	Circle to rstore Argo signals	02:45

From To Act Cau Chg Comment 242148 HH:MM

27/02/90

00:00	01:09	11	11	H	Circle to restore Argo signals	01:09
01:09	01:21	28	28	H	Shoot o/laps due to nav. signal	00:12
01:21	02:15	01	01	P	Line BS90A-02A	00:54
02:15	03:25	23	10	H	Rtve guns to change section	01:10
03:25	04:15	14	10	H	Rtve change damaged section	00:50
04:15	04:30	24	10	H	Deploy guns, run system tests	00:15
04:30	05:12	02	10	H	Run to line, cable tests O.K.	00:42
05:12	05:15	07	07	H	Abort line, computer sys. fail	00:03
05:15	07:09	07	07	H	Circle to restart line, tests	01:54
07:09	08:12	01	01	P	Line BS90A-02C	01:03
08:12	10:00	02	02	O	Line change to BS90A-01	01:48
10:00	11:27	01	01	P	Line BS90A-09	01:27
11:27	12:39	02	02	O	Line change to BS90A-01	01:12
12:39	13:33	01	01	P	Line BS90A-01	00:54
13:33	15:18	02	02	O	Line change to BS90A-13	01:45
15:18	16:30	01	01	P	Line BS90A-13	01:12
16:30	17:57	02	02	O	Line change to BS90A-05	01:27
17:57	19:03	01	01	P	Line BS90A-05	01:06
19:03	20:33	02	02	O	Line change to BS90A-15	01:30
20:33	20:45	11	11	H	Standby, nav. Argo skywaves	00:12
20:45	23:30	11	11	H	Abort/circle lost Argo nav.	02:45
23:30	24:00	01	01	P	Line BS90A-15A	00:30

28/02/90

00:00	00:45	01	01	P	Line BS90A-15A	00:45
00:45	02:03	02	02	O	Line change to BS90A-07	01:18
02:03	03:15	01	01	P	Line BS90A-07	01:12
03:15	04:39	02	02	O	Line change to BS90A-19	01:24
04:39	05:48	01	01	P	Line BS90A-19	01:09
05:48	07:09	02	02	O	Line change to BS90A-17	01:21
07:09	09:39	01	01	P	Line BS90A-17	02:30
09:39	11:09	02	02	O	Line change to BS90A-03	01:30
11:09	15:03	01	01	P	Line BS90A-03	03:54
15:03	16:15	02	02	O	Line change to BS90A-11	01:12
16:15	19:42	01	01	P	Line BS90A-11	03:27
19:42	21:30	02	02	O	Line change to BS90A-27	01:48
21:30	21:42	11	11	H	Abort line, Argo skywaves	00:12
21:42	24:00	11	11	H	Standby for Argo nav. skywaves	02:18

01/03/90

00:00	00:21	11	11	H	Standby for Argo nav. skywaves	00:21
00:21	02:48	01	01	P	Line BS90A-27A	02:27
02:48	03:51	02	02	O	Line change to BS90A-23	01:03
03:51	05:57	01	01	P	Line BS90A-23	02:06
05:57	07:09	02	02	O	Line change to BS90A-29	01:12
07:09	09:27	01	01	P	Line BS90A-29	02:18
09:27	10:28	02	02	O	Line change to BS90A-25	01:01
10:28	12:27	01	01	P	Line BS90A-25	01:59
12:27	13:51	02	02	O	Line change to BS90A-31	01:24

From	To	Act	Cau	Chg	Comment	242149	HH:MM
13:51	17:40	01	01	P	Line BS90A-31		03:49
17:40	20:00	22	22	H	Rtve cable, change sect., shark		02:20
20:00	24:00	22	22	H	Repair shark damage, 3 section		04:00
02/03/90							
00:00	01:25	22	22	H	Complete repairs, shark attack		01:25
01:25	06:27	13	13	H	Change section, ground faults		05:02
06:27	10:15	01	01	P	Line BS90A-21		03:48
10:15	11:49	02	02	O	Line change to BS90A-33		01:34
11:49	14:27	01	01	P	Line BS90A-33		02:38
14:27	15:33	02	02	O	Line change to BS90A-39		01:06
15:33	18:12	01	01	P	Line BS90A-39		02:39
18:12	19:17	02	02	O	Line change to BS90A-35		01:05
19:17	20:24	01	01	P	Line BS90A-35		01:07
20:24	21:42	22	22	H	Change out damaged section		01:18
21:42	22:30	13	13	H	New section faulty, change out		00:48
22:30	24:00	22	22	H	Complete cable repairs, shark		01:30
03/03/90							
00:00	03:06	22	22	H	Complete cable repairs, shark		03:06
03:06	04:30	01	01	P	Line BS90A-35A		01:24
04:30	05:45	02	02	O	Line change to BS90A-41		01:15
05:45	08:00	01	01	P	Line BS90A-41		02:15
08:00	09:17	02	02	O	Line change to BS90A-37		01:17
09:17	11:39	01	01	P	Line BS90A-37		02:22
11:39	13:00	02	02	O	Line change to BS90A-43		01:21
13:00	14:51	01	01	P	Line BS90A-43		01:51
14:51	16:11	02	02	O	Line change to BS90A-45		01:20
16:11	18:06	01	01	P	Line BS90A-45		01:55
18:06	19:15	24	24	O	Rtve guns, Block T/14P complete		01:09
19:15	21:30	14	14	O	Complete T/14P, rtve cable		02:15
21:30	24:00	03	03	O	Travel to VIC/P28, Geelong		02:30
04/03/90							
00:00	12:00	03	03	O	Travel to Geelong, maintenance		12:00

13.4 Daily Diary Summary

24th February, 1990 Travel and commence survey in Block T/14P. shark bite damage to streamer. Navigation downtime due to skywaves.

25th February, 1990 Standby for Argo to stabilize. Production. Cable damage due to shark bite.

26th February, 1990 Production. Navigation downtime. Argo skywave problem.

27th February, 1990 Navigation downtime. Argo skywave problem. Production.

28th February, 1990 Production. Argo skywave standby.

1st March, 1990 Navigation standby. Repair shark damage to cable.

2nd March, 1990 Repair shark damage to cable. Replace three sections. Change out faulty cable section. Production. Standby for Argo. Skywave interference.

3rd March, 1990 Shark damage to cable. Production. Complete Block T/14P. Secure Argo and Syledis stations at 18:15 hours. Travel to Geelong.

4th March, 1990 En route to Geelong. Standby for Syledis to become operational.

13.5 Misfire Statistics

From 24/02/90 to 04/03/90

Number of lines/line segments acquired		34
Total chargeable kilometres acquired		733.250
Total number of misfires	0	Percentage of total SPs 0.00
Total number of NDRs	102	Percentage of total SPs 0.35
Total number of parity errors	0	Percentage of total SPs 0.00
Total number of shots	29330	Percentage bad shots 0.35

Worst case lines

Misfires

Line	Misfires	0	NDRs	0	Parity Errors	0
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Parity Errors

Line	Misfires	0	NDRs	0	Parity Errors	0
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No Data Records

Line BS90A-04	Misfires	0	NDRs	15	Parity Errors	0
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13.6 Production/Downtime By Cause

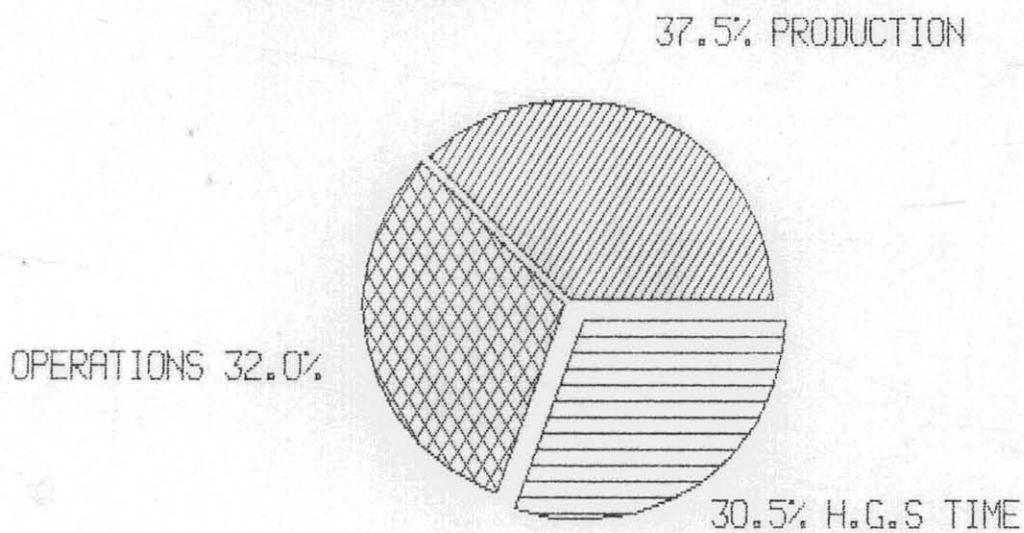
From 24/02/90 to 04/03/90

Code		HH:MM	Percent
P01	Recording Time	73:03	37.52
P02	Line Change	42:08	21.64
P03	Travel Time	16:45	8.60
P07	Instrument Failure	01:57	1.00
P10	Mechanical Streamer Failure	02:57	1.52
P11	Navigation Failure	16:32	8.49
P12	Vessel Problems	02:13	1.14
P13	Electrical Stream Failure	07:47	4.00
P14	Cable Handling	02:15	1.16
P20	Ship/Fish/Boats	01:00	0.51
P22	Shark Damage	24:14	12.45
P24	Source Handling	01:09	0.59
P28	Shooting Overlap	00:12	0.10
P29	Spare	02:30	1.28

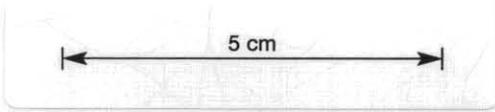
Production/Downtime Summary

Prime Time	73:03	37.52
Operational Time	62:17	31.99
Standby	00:00	0.00
Contractor	00:00	0.00
Dispute/Discussion	00:00	0.00
Halliburton Charge	59:22	30.49
Total Time	194:42	

SHELL AUSTRALIA
PRODUCTION/DOWNTIME BY CAUSE
SURVEY BLOCK : T/14P
PERIOD : 24TH FEB to 4TH MARCH 1990



EXPLORATION CONSULTANTS LIMITED
M.V. PACIFIC TITAN.



13.7 Production/Downtime By Activity

242153

From 24/02/90 to 04/03/90

Code		HH:MM	Percent
P01	Recording Time	73:03	37.52
P02	Line Change	44:57	23.09
P03	Travel Time	16:45	8.60
P07	Instrument Failure	01:57	1.00
P11	Navigation Failure	16:16	8.35
P12	Vessel Problems	00:30	0.26
P13	Electrical Stream Failure	06:08	3.15
P14	Cable Handling	10:49	5.56
P22	Shark Damage	14:03	7.22
P23	Stramer Damage	01:10	0.60
P24	Source Handling	06:22	3.27
P28	Shooting Overlap	00:12	0.10
P29	Spare	02:30	1.28

Production/Downtime Summary

Prime Time	73:03	37.52
Operational Time	62:17	31.99
Standby	00:00	0.00
Contractor	00:00	0.00
Halliburton Charge	59:22	30.49
Total Time	194:42	
Total Kms	733.250	

14. STATISTICAL DATA; VIC-P28

242154

14.1 Production Log

Line No	Dir Degs	FCSP	LCSP	Total SPs	Kms	Status
04/03/90						
No production						
Accumulated total to date					0.000	
05/03/90						
No production						
Accumulated total to date					0.000	
06/03/90						
OS90A-12	77	1001	1900	900	22.500	To be completed
OS90A-27	347	1001	2060	1060	26.500	Complete
Total kms for day					49.000	
Accumulated total to date						49.000
07/03/90						
OS90A-24	77	1001	1708	708	17.700	Complete
OS90A-39	347	1001	1390	390	9.750	Complete
OS90A-35	167	1001	2405	1405	35.125	Complete
OS90A-29	347	1001	2411	1411	35.275	Complete
OS90A-25	167	1001	2079	1079	26.975	Complete
Total kms for day					124.825	
Accumulated total to date						173.825
08/03/90						
OS90A-06	257	1001	2026	1026	25.650	Complete
OS90A-01	347	1001	1971	971	24.275	Complete
OS90A-05	167	1001	2258	1258	31.450	Complete
OS90A-03	347	1001	2027	1027	25.675	Complete
OS90A-12A	77	1901	2977	1077	26.952	Complete
OS90A-55	347	1001	1879	879	21.975	Complete
Total kms for day					155.950	
Accumulated total to date						329.775
09/03/90						
OS90A-57	167	1001	1818	818	20.450	Complete
OS90A-53	347	1001	1560	560	14.000	Complete
OS90A-45	167	1001	2116	1116	27.900	Complete
OS90A-51	347	1001	1551	551	13.775	To be completed
OS90A-51A	347	1552	1851	300	7.500	Complete
OS90A-41	167	1001	2115	1115	27.875	Complete
OS90A-49	347	1001	1851	851	21.275	Complete
OS90A-37	167	1001	1072	72	1.800	Complete
Total kms for day					134.575	
Accumulated total to date						464.350

Line No	Dir	FCSP	LCSP	Total SPs	Kms	Status	
10/03/90							
OS90A-37	167	1073	2038	966	24.150	Complete	
OS90A-47	347	1001	1890	890	22.250	Complete	
OS90A-43	167	1001	2712	1712	42.800	Complete	
OS90A-33	347	1001	2039	1039	25.975	Complete	
OS90A-31	167	1001	2055	1055	26.375	Complete	
Total kms for day					141.550		
Accumulated total to date							605.900
11/03/90							
No production							
Accumulated total to date							605.900
12/03/90							
OS90A-20	77	1001	1301	301	7.525	To be completed	
OS90A-20A	77	1302	2196	895	22.375	Complete	
OS90A-22	257	1001	2151	1151	28.775	Complete	
OS90A-18	77	1001	2230	1230	30.750	Complete	
OS90A-16	257	1001	1910	910	22.750	Complete	
Total kms for day					112.175		
Accumulated total to date							718.075
13/03/90							
OS90A-16	257	1911	2237	327	8.175	Complete	
OS90A-14A	77	1001	2237	1237	30.925	Complete	
OS90A-10	257	1001	2976	1976	49.400	Complete	
OS90A-08	77	1001	2103	1103	27.575	Complete	
OS90A-04	257	1001	1956	956	23.900	Complete	
OS90A-02	77	1001	1895	895	22.375	Complete	
Total kms for day					162.350		
Accumulated total to date							880.425
14/03/90							
OS90A-21	347	1001	2407	1407	35.175	Complete	
OS90A-23	167	1001	2531	1531	38.275	Complete	
OS90A-19	347	1001	1761	761	19.025	To be completed	
OS90A-19A	347	1762	2140	379	9.475	To be completed	
OS90A-19B	347	2141	2411	271	6.775	Complete	
OS90A-17	167	1001	2404	1404	35.100	Complete	
Total kms for day					143.825		
Accumulated total to date							1024.250
15/03/90							
OS90A-15	347	1001	2326	1326	33.150	Complete	
OS90A-13	167	1001	2318	1318	32.950	Complete	
OS90A-11	347	1001	2103	1103	27.575	To be completed	
Total kms for day					93.675		
Accumulated total to date							1117.925

242156

Line No.	Dir Degs	FCSP	LCSP	Total SPs	Kms	Status
16/03/90						
OS90A-11C	347	2104	2300	197	4.925	Complete
OS90A-09	347	1001	2257	1257	31.425	Complete
OS90A-7B	347	1001	2259	1259	31.475	Complete
Total kms for day					67.825	
Accumulated total to date						1185.750

242157

14.2 Survey Line Analysis

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name 0590A-01 Heading 347 deg.
 Line Status Complete
 Date started 08/03/90 Start Time 04:36 End Time 07:12
 First File 1001 First Reel 1430AA Last File 1971 Last Reel 1443AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1971	1971	971	24.275Kms

----- WEATHER -----

Wind dir. SE force 1 Sea state 1 Swell dir. SE Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol. 74.0m.	Eol. 48.0m.	Ave Speed 5.0 Kts.	
Parity Errors 0	No Data Record 4	Misfires 0	

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 9.1 m.	Max. 10.1 m.
Feather	Sol. 5.0 S	Eol. 5.9 S
		Max. 6.4 S

Acoustic Transponders:

Compass	: 336.10 COMP 1	334.30 COMP 2	331.20 COMP 3	330.10 COMP 4	330.10 COMP 5
Tailbuoy	: 5.00 STB SOL	5.60 STB	4.70 STB	5.80 STB	5.90 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 283 OCCASIONAL SPIKING.

Noise: SOL AVGE NOISE: 4.9uB. EOL AVGE NOISE: 6.5uB

OCCASIONAL SWELL BURSTS THROUGHOUT THE LINE.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. SWELL NOISE RANDOM
 RUN CABLE AT 9 METRES TO REDUCE SWELL NOISE. 1 SPIKING TRACE.

----- ENERGY SOURCE -----

Source type AIRGUN

Source Volume : 2180 Pressure: 1870

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN PROBLEMS OF FAULTS LOGGED ON LINE. GOOD PRESSURE.

38 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS

Secondary : SATELLITE

Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,

Secondary

Sol. Lat. 038/51/30.28S Sol. Long. 038/38/40.38S

Eol. Lat. 144/01/03.58E Eol. Long. 143/57/31.86E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE.

Message LINE COMPLETE. RANDOM SWELL NOISE. GOOD CABLE BALANCE AND
 CONTROL. NO GUN FAULTS LOGGED. SWELL NOISE GRADUALLY DECREASING AT EOL.

SURVEY LINE ANALYSIS

242159

PACIFIC TITAN

Line name 0590A-02 Heading 77 deg.
 Line Status Complete
 Date started 13/03/90 Start Time 21:18 End Time 23:30
 First File 1001 First Reel 1794AA Last File 1895 Last Reel 1807AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1895	1895	895	22.375Kms

----- WEATHER -----

Wind dir. E force 2 Sea state 1 Swell dir. E Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	72.0m.	Eol.	76.0m.
Parity Errors	0	No Data Record	6
		Ave Speed	5.5 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 8.4 m.	Max. 9.5 m.
Feather	Sol. 0.8 P	Eol. 0.5 P
		Max. 2.2 S

Acoustic Transponders:

Compass	: 68.20 COMP 1	68.60 COMP 2	67.50 COMP 3	66.40 COMP 4	65.40 COMP 5
Tailbuoy	: 0.80 PRT SOL	1.40 STB	1.50 STB	0.10 STB	0.50 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 108 AND 190 SPIKING ON LINE

Noise: SOL AVGE NOISE: 5.2uB. EOL AVGE NOISE: 5.6uB
 WEAK SWELL BURSTS NOTED ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TWO POOR TRACES ON LINE. NO OTHER CABLE PROBLEMS.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1875
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN FAULTS LOGGED ON LINE. GOOD PRESSURE AND VOL ALL LINE
 36 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,
 Secondary """"""

Sol. Lat.	038/54/20.86S	Sol. Long.	038/51/47.63E
Eol. Lat.	144/04/30.00E	Eol. Long.	144/19/37.96E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES.

Message COMPLETE. 6 BAD RECORDS DUE TO TAPES. GOOD NAVIGATION
 CABLE BALANCE AND CONTROL. FRONT END NOISE 10-15uB. NO OTHER PROBLEMS.

SURVEY LINE ANALYSIS

242160

PACIFIC TITAN

Line name 0590A-03 Heading 347 deg.
 Line Status Complete
 Date started 08/03/90 Start Time 12:27 End Time 15:03
 First File 1001 First Reel 1464AA Last File 2027 Last Reel 1476AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2027	2027	1027	25.675Kms

----- WEATHER -----

Wind dir. NNE force 3 Sea state 1 Swell dir. WSW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	73.0m.	Eol.	53.0m.
Parity Errors	0	No Data Record	6
		Ave Speed	5.3 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth Min. 8.5 m. Max. 9.5 m.
 Feather Sol. 6.1 P Eol. 1.2 P Max. 6.1 P

Acoustic Transponders:

Compass	:	340.70 COMP 1	342.10 COMP 2	342.70 COMP 3	342.45 COMP 4	342.70 COMP 5
Tailbuoy	:	6.10 PRT SOL	5.70 PRT	4.90 PRT	2.80 PRT	1.20 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 283 OCCASIONAL SPIKING.

Noise: SOL AVGE NOISE: 5.4uB. EOL AVGE NOISE: 6.0uB

SLIGHT SWELL BURSTS THROUGHOUT THE LINE.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. ONLY SLIGHT SWELL

BURSTS NOTED. CABLE DEPTH SET AT 8.5 METRES. 1 INTERMITTENT SPIKING TRACE.

----- ENERGY SOURCE -----

Source type AIRGUN

Source Volume : 2180 Pressure: 1875

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN MISFIRTES LOGGED ON LINE. GOOD PRESSURE ALL LINE.

33 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE

Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,

Secondary

Sol. Lat. 038/52/03.63S Sol. Long. 038/38/30.07S

Eol. Lat. 144/02/25.44E Eol. Long. 143/58/38.85E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS

THAN 1 METRE.

Message LINE COMPLETE. SLIGHT SWELL NOISE. GOOD CABLE BALANCE AND

CONTROL. SINGLE SPIKING TRACE. 6 BAD RECORDS DUE TO SPU DROPOUT-RESET

242162

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name 0590A-05 Heading 167 deg.
 Line Status Complete
 Date started 08/03/90 Start Time 08:12 End Time 11:12
 First File 1001 First Reel 1444AA Last File 2258 Last Reel 1463AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2258	2258	1258	31.450Kms

----- WEATHER -----

Wind dir. N force 2 Sea state 1 Swell dir. WSW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol. 65.0m. Eol. 73.0m.		Ave Speed 5.7 Kts.	
Parity Errors 0 No Data Record 8		Misfires 0	

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 9.1 m.	Max. 10.1 m.
Feather	Sol. 3.5 S	Eol. 5.3 S Max. 5.3 S

Acoustic Transponders:

Compass	: 130.80 COMP 1	145.90 COMP 2	150.80 COMP 3	157.75 COMP 4	158.60 COMP 5
Tailbuoy	: 3.50 STB SOL	0.80 STB	3.00 STB	5.30 STB	7.20 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 283 OCCASIONAL SPIKING.
 Noise: SOL AVGE NOISE: 4.0uB. EOL AVGE NOISE: 5.0uB
 OCCASIONAL SWELL BURSTS THROUGHOUT THE LINE.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. ONLY SLIGHT SWELL
 BURSTS NOTED. CABLE DEPTH SET AT 9 METRES. 1 INTERMITTENT SPIKING TRACE.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note SP 1029 GUN 51 OFF. INTERMITTENT. VOLUME AT EOL 2140 CU INCH
 61 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat.	038/39/16.28S	Sol. Long.	038/55/52.35S
Eol. Lat.	144/00/56.59E	Eol. Long.	144/05/33.77E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE. CABLE IN SLIGHT BEND AT TAIL. SHORT RUN IN NEAR LAND.
 Message LINE COMPLETE. SLIGHT SWELL NOISE. GOOD CABLE BALANCE AND
 CONTROL. SINGLE SPIKING TRACE. NO OTHER SYSTEM FAULTS.

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name 0590A-7B Heading 347 deg.
 Line Status Complete
 Date started 16/03/90 Start Time 14:48 End Time 18:00
 First File 1001 First Reel 1963AA Last File 2259 Last Reel 1978AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2259	2259	1259	31.475Kms

----- WEATHER -----

Wind dir. SSE force 1 Sea state 3 Swell dir. SW Height 2 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	74.0m. Eol.	67.0m.	Ave Speed 5.3 Kts.
Parity Errors	0 No Data Record	8	Misfires 0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 8.5 m. Max. 9.9 m.
 Feather Sol. 3.9 S Eol. 1.6 P Max. 5.5 P
 Acoustic Transponders:
 Compass : 337.10 COMP 1 338.20 COMP 2 336.80 COMP 3 335.10 COMP 4 336.10 COMP 5
 Tailbuoy : 3.9 STB SOL 5.30 STB 3.60 STB 3.10 STB 1.60 STB EOL
 Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 108 AND 253 SPIKING ON LINE
 Noise: SOL AVGE NOISE: 5.3uB. EOL AVGE NOISE: 6.2uB
 STRONG SWELL NOISE ON RECORDS FROM SOL.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TWO BAD TRACES ON LINE. FRONT END NOISE 10-15 uBARS. STRONG SWELL NOISE

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 8.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN FAULTS LOGGED. GOOD VOLUME AND PRESSURE ALL LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary: TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,
 Secondary :

Sol. Lat.	038/54/33.37S	Sol. Long.	038/37/55.89S
Eol. Lat.	144/06/03.35E	Eol. Long.	144/01/26.30E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS THAN 2 METRES.
 Message COMPLETE. STRONG LONG SWELL EVIDENT ON RECORDS. LIGHT WINDS
 CABLE CONTROL GOOD. NO SYSTEM OR CABLE PROBLEMS ON LINE.

SURVEY LINE ANALYSIS

242166

PACIFIC TITAN

Line name 0590A-09 Heading 347 deg.
 Line Status Complete
 Date started 16/03/90 Start Time 06:42 End Time 09:42
 First File 1001 First Reel 1946AA Last File 2257 Last Reel 1960AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2257	2257	1257	31.425Kms

----- WEATHER -----

Wind dir. SSE force 1 Sea state 2 Swell dir. SW Height 2 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	72.0m.	Eol.	70.0m.
Parity Errors	0	No Data Record	2
		Ave Speed	5.7 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 8.5 m. Max. 9.9 m.
 Feather Sol. 5.3 P Eol. 2.1 P Max. 5.8 P
 Acoustic Transponders:
 Compass : 337.10 COMP 1 338.20 COMP 2 336.80 COMP 3 335.10 COMP 4 336.10 COMP 5
 Tailbuoy : 5.0 STB SOL 5.80 PRT 4.00 PRT 3.00 PRT 2.10 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 108 AND 253 SPIKING ON LINE
 Noise: SOL AVGE NOISE: 7.5uB. EOL AVGE NOISE: 6.4uB
 STRONG SWELL NOISE ON RECORDS FROM SOL.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TWO BAD TRACES ON LINE. FRONT END NOISE 10-15 uBARS. STRONG SWELL NOISE

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN FAULTS LOGGED. GOOD VOLUME AND PRESSURE ALL LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,
 Secondary

Sol. Lat.	038/54/23.55S	Sol. Long.	038/37/48.04S
Eol. Lat.	144/06/56.31E	Eol. Long.	144/02/16.53E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS THAN 2 METRES.
 Message COMPLETE. STRONG LONG SWELL EVIDENT ON RECORDS. LIGHT WINDS
 CABLE CONTROL GOOD. NO SYSTEM OR CABLE PROBLEMS ON LINE.

SURVEY LINE ANALYSIS

242167

PACIFIC TITAN

Line name 0590A-10 Heading 257 deg.
 Line Status Complete
 Date started 13/03/90 Start Time 06:51 End Time 12:03
 First File 1001 First Reel 1744AA Last File 2976 Last Reel 1767AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2976	2976	1976	49.400Kms

----- WEATHER -----

Wind dir. E force 2 Sea state 1 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	75.0m. Eol. 77.0m.	Ave Speed	5.1 Kts.
Parity Errors	0 No Data Record 0	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth Min. 8.4 m. Max. 9.5 m.
 Feather Sol. 0.1 P Eol. 1.3 S Max. 2.8 P

Acoustic Transponders:

Compass	: 241.90 COMP 1	244.30 COMP 2	245.40 COMP 3	246.40 COMP 4	247.10 COMP 5
Tailbuoy	: 0.10 PRT SOL	2.40 PRT	2.80 PRT	0.10 PRT	1.30 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 108 NOISY. TRACES 283/287 OCCASIONAL SPIKES.

Noise: SOL AVGE NOISE: 4.8uB. EOL AVGE NOISE: 8.2uB

WEAK SWELL BURSTS NOTED ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 THREE POOR TRACES ON LINE. NO OTHER CABLE PROBLEMS.

----- ENERGY SOURCE -----

Source type AIRGUN

Source Volume : 2180 Pressure: 1870

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN FAULTS LOGGED ON LINE. GOOD PRESSURE AND VOL ALL LINE

79 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS

Secondary : SATELLITE

Primary TEDDYS LOOKOUT, BARWON HEADS, CAPE SCHANCK,

Secondary

Sol. Lat. 038/38/43.15S Sol. Long. 038/44/34.39S

Eol. Lat. 144/28/52.51E Eol. Long. 143/55/39.17E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES.

Message COMPLETE. NO CABLE OR SYSTEM FAULTS ON LINE. GOOD NAVIGATION
 CABLE BALANCE AND CONTROL. ONLY SLIGHT SWELL BURSTS NOTED.

SURVEY LINE ANALYSIS

242168

PACIFIC TITAN

Line name DS90A-11 Heading 347 deg.
 Line Status To Be Completed
 Date started 15/03/90 Start Time 10:00 End Time 12:48
 First File 1001 First Reel 1925AA Last File 2117 Last Reel 1938AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2103	2125	1103	27.575Kms

----- WEATHER -----

Wind dir. SW force 5 Sea state 4 Swell dir. SW Height 2 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	79.0m.	Eol.	73.0m.
Parity Errors	0	No Data Record	4
		Ave Speed	5.4 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 8.5 m. Max. 9.9 m.
 Feather Sol. 0.4 P Eol. 6.5 S Max. 6.7 S
 Acoustic Transponders:
 Compass : 337.10 COMP 1 338.20 COMP 2 336.80 COMP 3 336.10 COMP 4 336.10 COMP 5
 Tailbuoy : 0.40 PRT SOL 1.40 STB 2.60 STB 3.90 STB 6.50 STB EOL
 Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 108 AND 253 SPIKING ON LINE
 Noise: SOL AVGE NOISE: 9.7uB. EOL AVGE NOISE: 6.7uB
 SWELL NOISE ON RECORDS FROM SOL.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TWO BAD TRACES ON LINE. FRONT END NOISE 10-15 uBARS.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN FAULTS LOGGED. GOOD VOLUME AND PRESSURE ALL LINE.
 57 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,
 Secondary

Sol. Lat.	038/55/47.40S	Sol. Long.	038/39/45.75S
Eol. Lat.	144/09/06.09E	Eol. Long.	144/04/34.51E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS THAN 2 METRES.

Message TO COMPLETE. STOP SHOOTING FCS HANGUP. LGSP 2125. MODERATE TO STRONG SWELL BURSTS NOTED ON RECORDS.

SURVEY LINE ANALYSIS

242169

PACIFIC TITAN

Line name DS90A-12 Heading 77 deg.
 Line Status To Be Completed
 Date started 06/03/90 Start Time 10:15 End Time 12:36
 First File 1001 First Reel 1321AA Last File 1900 Last Reel 1331AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1900	1900	900	22.500Kms

----- WEATHER -----

Wind dir. SW force 4 Sea state 3 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	72.0m.	Eol.	70.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.2 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 7.9 m. Max. 8.9 m.
 Feather Sol. 4.8 S Eol. 4.2 S Max. 5.2 S
 Acoustic Transponders:
 Compass : 61.20 COMP 1 61.90 COMP 2 61.20 COMP 3 61.20 COMP 4 61.50 COMP 5
 Tailbuoy : 4.80 STB SOL 5.20 STB 3.50 STB 2.20 STB 4.20 STB EOL
 Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 8.1uB. EOL AVGE NOISE: 6.9uB
 SWELL NOISE INCREASING AT EOL. STOP SHOOTING.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. SWELL NOISE RANDOM
 FROM SOL AND INCREASING. STOP SHOOTING AT SP 1900. SP 1480-1700 SHIP NOISE

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note SP 1074 GUN 37 OFF POOR TIMING. NO OTHER FAULTS LOGGED.
 41 SINGLE GUN NOFIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARNON HEADS,
 Secondary ,,,,,,,,,

Sol. Lat.	038/42/28.76	Sol. Long.	038/39/50.09
Eol. Lat.	143/56/35.47	Eol. Long.	144/11/44.61

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS THAN 1 METRE.
 Message TO BE COMPLETED. STOP SHOOTING SP 1900 DUE TO EXCESSIVE SEA NOISE. SP 1480-1700 SHIP NOISE ALSO LOGGED. RUN CABLE AT 9 METRES.

SURVEY LINE ANALYSIS

242170

PACIFIC TITAN

Line name OS90A-12A Heading 77 deg.
 Line Status Complete
 Date started 08/03/90 Start Time 17:15 End Time 19:51
 First File 1821 First Reel 1477AA Last File 2977 Last Reel 1495AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1821	1901	2977	2977	1077	26.925Kms

----- WEATHER -----

Wind dir. NE force 2 Sea state 1 Swell dir. VAR Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	71.0m. Eol. 75.0m.	Ave Speed	6.0 Kts.
Parity Errors	0 No Data Record 12	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 7.9 m.	Max. 8.5 m.
Feather	Sol. 2.0 P	Eol. 1.3 S Max. 2.0 P

Acoustic Transponders:

Compass	: 71.40 COMP 1	69.60 COMP 2	66.80 COMP 3	66.80 COMP 4	66.10 COMP 5
Tailbuoy	: 2.00 PRT SOL	0.70 PRT	0.30 PRT	2.00 PRT	1.30 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 283 OCCASIONAL SPIKING.

Noise: SOL AVGE NOISE: 3.8uB. EOL AVGE NOISE: 4.8uB
 MINIMAL SWELL NOISE ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. ONLY SLIGHT SWELL
 BURSTS NOTED. 80 SP OVERLAP AT SOL NON CHARGEABLE. CHARGED AS WEATHER TIME.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN MISFIRTES LOGGED ON LINE. GOOD PRESSURE ALL LINE.
 55 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat.	038/40/04.86S	Sol. Long.	038/36/39.07S
Eol. Lat.	144/10/24.09E	Eol. Long.	144/29/50.69E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE.

Message LINE COMPLETE. SLIGHT SWELL NOISE. GOOD CABLE BALANCE AND
 CONTROL. 12 BAD RECORDS DUE TO BAD SYSTEM TAPE CHANGES. 80 SP O/LAP NO CHARGE

SURVEY LINE ANALYSIS

242171

PACIFIC TITAN

Line name DS90A-13 Heading 167 deg.
 Line Status Complete
 Date started 15/03/90 Start Time 05:24 End Time 09:42
 First File 1001 First Reel 1907AA Last File 2318 Last Reel 1924AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2318	2318	1318	32.950Kms

----- WEATHER -----

Wind dir. SW force 5 Sea state 4 Swell dir. SW Height 2 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	72.0m.	Eol.	75.0m.
Parity Errors	0	No Data Record	6
		Ave Speed	4.1 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 8.1 m.	Max. 9.2 m.
Feather	Sol. 2.4 S	Eol. 3.6 S
		Max. 4.1 S

Acoustic Transponders:

Compass	: 155.10 COMP 1	153.60 COMP 2	154.30 COMP 3	154.00 COMP 4	153.60 COMP 5
Tailbuoy	: 2.40 STB SOL	3.40 STB	4.10 STB	4.10 STB	3.60 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 108 AND 253 SPIKING ON LINE

Noise: SOL AVGE NOISE: 5.6uB. EOL AVGE NOISE: 7.0uB
 SP 1730 SWELL NOISE INCREASING. SEA/SWELL RISING.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TWO BAD TRACES ON LINE. FRONT END NOISE 10-15 uBARS.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note SP 1204 GUN 60 OFF. GOOD VOLUME AND PRESSURE ALL LINE.
 66 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,
 Secondary

Sol. Lat.	038/38/31.30S	Sol. Long.	038/55/54.69S
Eol. Lat.	144/05/06.76E	Eol. Long.	144/09/59.31E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS THAN 2 METRES.

Message COMPLETE. SWELL BURSTS ON LINE. TAKE CABLE TO 9 METRES TO
 REDUCE SWELL NOISE. WINDS INCREASING FROM SW. 6 BAD RECORDS DUE TO TAPES.

242172

SURVEY LINE ANALYSIS

PACIFIC TITAN
Line name 0590A-14A Heading 77 deg.
Line Status Complete
Date started 13/03/90 Start Time 01:54 End Time 05:00
First File 1001 First Reel 1727AA Last File 2237 Last Reel 1743AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2237	2237	1237	30.925Kms

----- WEATHER -----

Wind dir. E force 2 Sea state 1 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	72.0m.	Eol.	73.0m.
Parity Errors	0	No Data Record	4
		Ave Speed	5.4 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
Cable depth Min. 8.4 m. Max. 9.5 m.
Feather Sol. 2.0 P Eol. 1.5 S Max. 2.6 S
Acoustic Transponders:
Compass : 68.60 COMP 1 68.90 COMP 2 67.50 COMP 3 67.10 COMP 4 66.40 COMP 5
Tailbuoy : 2.00 PRT SOL 0.40 PRT 1.10 STB 2.60 STB 1.50 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.
TRACE 108 NOISY. TRACES 283/287 OCCASIONAL SPIKES.
Noise: SOL AVGE NOISE: 4.2uB. EOL AVGE NOISE: 5.1uB
OCCASIONAL SWELL BURSTS NOTED ON RECORDS.
Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
THREE POOR TRACES ON LINE. NO OTHER CABLE PROBLEMS.

----- ENERGY SOURCE -----

Source type AIRGUN
Source Volume : 2180 Pressure: 1850
2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
Note NO GUN FAULTS LOGGED ON LINE. GOOD PRESSURE AND VOL ALL LINE
59 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
Secondary

Sol. Lat. 038/35/16.41S Sol. Long. 038/31/35.94E
Eol. Lat. 144/14/43.78E Eol. Long. 144/35/23.68E
Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
THAN 2 METRES.

Message COMPLETE. 4 BAD RECORDS DUE TO BAD TAPES AT CHANGEOVER.
VERY SLIGHT SWELL BURSTS NOTED. GOOD DATA. NO OTHER SYSTEM FAULTS.

SURVEY LINE ANALYSIS

242173

PACIFIC TITAN

Line name 0590A-15 Heading 347 deg.
 Line Status Complete
 Date started 15/03/90 Start Time 00:57 End Time 04:15
 First File 1001 First Reel 1886AA Last File 2325 Last Reel 1906AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2326	2326	1326	33.150Kms

----- WEATHER -----

Wind dir. SW force 3 Sea state 2 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	97.0m.	Eol.	73.0m.
Parity Errors	0	No Data Record	12
		Ave Speed	5.4 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER, OPERATING DEPTH 8.5 METRES, GRP LENGTH 12.5M
 Cable depth Min. 7.5 m. Max. 8.8 m.
 Feather Sol. 8.5 S Eol. 2.0 S Max. 8.5 S
 Accoustic Transponders:
 Compass : 321.30 COMP 1 327.30 COMP 2 330.50 COMP 3 330.50 COMP 4 330.50 COMP 5
 Tailbuoy : 8.50 STB SOL 5.50 STB 4.20 STB 3.30 STB 2.00 STB EOL
 Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 108 AND 253 SPIKING ON LINE
 Noise: SOL AVGE NOISE: 4.7uB. EOL AVGE NOISE: 5.4uB
 OCCASIONAL SWELL BURSTS NOTED ON RECORDS.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 8 METRE
 TWO BAD TRACES ON LINE. FRONT END NOISE 10-15 uBARS.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1890
 2180 CUBIC INCH VSX AIRGUN ARRAY, OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN FAULTS ON LINE. GOOD VOLUME AND PRESSURE ALL LINE.
 46 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,
 Secondary ,,,,,,,,,

Sol. Lat.	038/54/42.60S	Sol. Long.	038/37/11.95S
Eol. Lat.	144/10/26.65E	Eol. Long.	144/05/37.64E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS THAN 2 METRES.

Message COMPLETE. OCC SWELL BURSTS ON LINE. SLIGHT SHIP NOISE AT SP
 2200-2300. MISSED SP ON TAPE CHANGES. NO OTHER SYSTEM FAULTS.

SURVEY LINE ANALYSIS

242174

PACIFIC TITAN

Line name OS90A-16 Heading 257 deg.
 Line Status Complete
 Date started 12/03/90 Start Time 21:45 End Time 00:48
 First File 1001 First Reel 1708AA Last File 2236 Last Reel 1726AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2237	2237	1237	30.925Kms

----- WEATHER -----

Wind dir. SSE force 2 Sea state 1 Swell dir. CON Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	71.0m.	Eol.	72.0m.
Parity Errors	0	No Data Record	8
		Ave Speed	5.5 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 8.4 m.	Max. 9.5 m.
Feather	Sol. 4.8 S	Eol. 2.5 S
		Max. 2.9 S

Acoustic Transponders:

Compass	: 236.90 COMP 1	241.20 COMP 2	242.20 COMP 3	243.60 COMP 4	244.00 COMP 5
Tailbuoy	: 4.80 STB SOL	1.30 STB	1.60 STB	2.70 STB	2.50 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 108 NOISY TRACE 283 SPIKING.

Noise: SOL AVGE NOISE: 6.7uB. EOL AVGE NOISE: 4.7uB

OCCASIONAL SWELL BURSTS NOTED ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 NO CABLE FAULTS ON LINE. S2 BAD TRACES. NO OTHER CABLE PROBLEMS.

----- ENERGY SOURCE -----

Source type AIRGUN

Source Volume : 2180 Pressure: 1875

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN FAULTS LOGGED ON LINE. GOOD PRESSURE AND VOL ALL LINE

54 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS

Secondary : SATELLITE

Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,

Secondary ,,,,,,,,,,

Sol. Lat.	038/30/49.65S	Sol. Long.	038/34/28.80S
Eol. Lat.	144/33/37.07E	Eol. Long.	144/12/51.05E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS THAN 2 METRES.

Message COMPLETE. 8 BAD RECORDS DUE TO BAD TAPES AT CHANGEOVER.
 MISSED SP 2140 ON TAPE CHANGEOVER. OCCASIONAL SWELL BURSTS NOTED.

SURVEY LINE ANALYSIS

242175

PACIFIC TITAN

Line name 0590A-17 Heading 167 deg.

Line Status Complete

Date started 14/03/90 Start Time 20:21 End Time 24:00

First File 1001 First Reel 1869AA Last File 2404 Last Reel 1885AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2404	2404	1404	35.100Kms

----- WEATHER -----

Wind dir. SW force 1 Sea state 1 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	71.0m.	Eol.	77.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.2 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth Min. 7.5 m. Max. 8.8 m.
 Feather Sol. 0.6 S Eol. 3.7 P Max. 3.7 P

Acoustic Transponders:

Compass	: 155.40 COMP 1	156.40 COMP 2	155.70 COMP 3	155.70 COMP 4	155.10 COMP 5
Tailbuoy	: 0.60 STB SOL	1.10 PRT	1.50 PRT	3.40 PRT	3.70 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 108 AND 253 SPIKING ON LINE

Noise: SOL AVGE NOISE: 5.1uB. EOL AVGE NOISE: 4.8uB

SLIGHT SWELL BURSTS NOTED ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 8 METRE
 TWO BAD TRACES ON LINE. FRONT END NOISE 10-15 uBARS.

----- ENERGY SOURCE -----

Source type AIRGUN

Source Volume : 2180 Pressure: 1900

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 8.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN FAULTS ON LINE. GOOD VOLUME AND PRESSURE ALL LINE.

71 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS

Secondary : SATELLITE

Primary TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,

Secondary

Sol. Lat. 038/37/59.98S Sol. Long. 038/56/32.26S

Eol. Lat. 144/07/38.52E Eol. Long. 144/12/47.74E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES.

Message COMPLETE. NO SYSTEM FAULTS LOGGED ON LINE. NO CABLE PROBLEMS
 SLIGHT SWELL NOISE ON RECORDS. INTERMITTENT.

242176

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name 0590A-18 Heading 77 deg.
Line Status Complete
Date started 12/03/90 Start Time 17:33 End Time 20:36
First File 1001 First Reel 1690AA Last File 2230 Last Reel 1707AA

F.S.P. F.C.S.P. L.C.S.P. L.S.P. Shot Points Coverage
1001 1001 2230 2230 1230 30.750Kms

WEATHER

Wind dir. SSE force 2 Sea state 1 Swell dir. W Height 1 m

RECORDING

Magnetometer N Gravity N
Water depth Sol. 69.0m. Eol. 69.0m. Ave Speed 5.4 Kts.
Parity Errors 0 No Data Record 11 Misfires 0

DIGITAL STREAMER

300 TRACE DIGITAL STREAMER, OPERATING DEPTH 8.5 METRES, GRP LENGTH 12.5M

Cable depth Min. 8.4 m. Max. 9.5 m.
Feather Sol. 1.0 S Eol. 1.2 S Max. 2.9 S

Acoustic Transponders:
Compass : 66.40 COMP 1 66.40 COMP 2 65.40 COMP 3 65.10 COMP 4 64.30 COMP 5
Tailbuoy : 1.00 STB SOL 1.00 STB 1.80 STB 2.90 STB 1.20 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.
TRACE 108 NOISY/SPIKING ON LINE.

Noise: SOL AVGE NOISE: 5.9uB. EOL AVGE NOISE: 5.3uB
OCCASIONAL SWELL BURSTS NOTED ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE, RUN CABLE AT 9 METRE
NO CABLE FAULTS ON LINE.

ENERGY SOURCE

Source type AIRGUN
Source Volume : 2180 Pressure: 1900
2180 CUBIC INCH VSX AIRGUN ARRAY, OPERATING DEPTH 6.5 METRES.
OPERATING PRESSURE 1850 PSI, NUMBER OF GUN STRINGS = 4.
ARRAY LENGTH = 14 METRES, STRING SPACING = 10 METRES.

Note NO GUN FAULTS LOGGED ON LINE, GOOD PRESSURE AND VOL ALL LINE
45 SINGLE GUN NO-FIRES LOGGED ON LINE, GOOD PRESSURE THROUGHOUT LINE.

NAVIGATION

Prime : SYLEDIS Secondary : SATELLITE
Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
Secondary

Sol. Lat. 038/31/50.15S Sol. Long. 038/28/26.20S
Eol. Lat. 144/13/39.71E Eol. Long. 144/33/03.19E

Note GOOD FIXING AND CONTROL ON LINE, AVERAGE THREE WAY FIX LESS
THAN 2 METRES.

Message COMPLETE, 11 BAD RECORDS DUE TO BAD TAPES AT CHANGEDOVER.
NO GUN OR CABLE FAULTS ON LINE, OCCASIONAL SWELL BURSTS NOTED.

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name 0590A-19 Heading 347 deg.

Line Status To Be Completed

Date started 14/03/90 Start Time 11:18 End Time 13:12

First File 1001 First Reel 1846AA Last File 1761 Last Reel 1856AA

242177

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1761	1761	761	19.025Kms

----- WEATHER -----

Wind dir. NNE force 2 Sea state 1 Swell dir. SE Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	77.0m.	Eol.	74.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.4 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER, OPERATING DEPTH 8.5 METRES, GRP LENGTH 12.5M

Cable depth Min. 7.5 m. Max. 8.8 m.
 Feather Sol. 7.2 S Eol. 7.1 S Max. 8.0 S

Acoustic Transponders:

Compass	: 324.90 COMP 1	327.30 COMP 2	329.40 COMP 3	330.50 COMP 4	331.90 COMP 5
Tailbuoy	: 7.20 STB SOL	5.60 STB	5.90 STB	8.00 STB	7.10 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 108 AND 253 SPIKING ON LINE

Noise: SOL AVGE NOISE: 4.5uB. EOL AVGE NOISE: 5.4uB

WEAK SWELL BURSTS NOTED ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE, RUN CABLE AT 8 METRE

TWO POOR TRACES ON LINE. FEATHERING ANGLE INCREASING SLIGHTLY, 8 DEGREES.

----- ENERGY SOURCE -----

Source type AIRGUN

Source Volume : 2180 Pressure: 1890

2180 CUBIC INCH VSX AIRGUN ARRAY, OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN MISFIRE ON LINE, GOOD VOLUME AND PRESSURE ALL LINE.

25 SINGLE GUN NO-FIRES LOGGED ON LINE, GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS

Secondary : SATELLITE

Primary TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,

Secondary

Sol. Lat. 038/55/19.16S Sol. Long. 038/44/56.56S

Eol. Lat. 144/13/18.86E Eol. Long. 144/10/24.60E

Note GOOD FIXING AND CONTROL ON LINE, AVERAGE THREE WAY FIX LESS THAN 2 METRES.

Message TO BE COMPLETED, STOP SHOOTING SYSTEM MALFUNCTION, MISREADING DATA, RECORDING EVERY 2ND SHOT, SIRCLE LAST GOOD SP 1761, NO OTHER PROBLEMS

SURVEY LINE ANALYSIS

242179

PACIFIC TITAN

Line name 0590A-19B Heading 347 deg.
 Line Status Complete
 Date started 14/03/90 Start Time 18:30 End Time 19:09
 First File 2061 First Reel 1864AA Last File 2411 Last Reel 1868AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
2061	2141	2411	2411	271	6.775Kms

----- WEATHER -----

Wind dir. NNE force 1 Sea state 1 Swell dir. NNE Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	73.0m.	Eol.	72.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	7.3 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER, OPERATING DEPTH 8.5 METRES, GRP LENGTH 12.5M

Cable depth	Min. 7.5 m.	Max. 8.8 m.
Feather	Sol. 2.6 P	Eol. 1.8 P Max. 1.0 S

Acoustic Transponders:

Compass	: 339.90 COMP 1	337.90 COMP 2	337.90 COMP 3	338.90 COMP 4	338.60 COMP 5
Tailbuoy	: 2.60 PRT SOL	1.10 PRT	0.40 STB	1.10 STB	1.00 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 108 AND 253 SPIKING ON LINE

Noise: SOL AVGE NOISE: 5.6uB. EOL AVGE NOISE: 4.9uB

WEAK SWELL BURSTS NOTED ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 8 METRE

TWO BAD TRACES ON LINE. FRONT END NOISE 10-15 uBARS.

----- ENERGY SOURCE -----

Source type AIRGUN

Source Volume : 2180 Pressure: 1875

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note SP 2362 GUN 21 OFF. GOOD VOLUME AND PRESSURE ALL LINE.

27 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS

Secondary : SATELLITE

Primary TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,

Secondary

Sol. Lat. 038/41/19.35S Sol. Long. 038/36/42.45E

Eol. Lat. 144/09/24.91E Eol. Long. 144/08/06.78E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS THAN 2 METRES.

Message NOW COMPLETE. 80 SP NON CHARGEABLE OVERLAP AT SOL. NO CABLE FAULTS ON LINE. SLIGHT SWELL BURSTS NOTED ON RECORDS. FCS SYSTEM GOOD.

SURVEY LINE ANALYSIS

242180

PACIFIC TITAN

Line name 0590A-20 Heading 77 deg.
 Line Status To Be Completed
 Date started 12/03/90 Start Time 07:03 End Time 07:54
 First File 1001 First Reel 1659AA Last File 1341 Last Reel 1663AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1301	1341	301	7.525Kms

----- WEATHER -----

Wind dir. S force 2 Sea state 1 Swell dir. SWW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	68.0m. Eol.	Ave Speed	5.4 Kts.
Parity Errors	0 No Data Record 0	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 8.4 m.	Max. 9.5 m.
Feather	Sol. 2.9 S	Eol. 0.5 S Max. 2.9 S

Acoustic Transponders:

Compass	: 61.20 COMP 1	62.90 COMP 2	63.30 COMP 3	64.70 COMP 4	64.30 COMP 5
Tailbuoy	: 2.90 STB SOL	2.20 STB	1.30 STB	1.20 STB	0.50 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.
 TRACES 190 AND 287 SPIKING OCCASIONALLY ON LINE.
 Noise: SOL AVGE NOISE: 5.9uB. EOL AVGE NOISE: 8.5uB
 INTERMITTENT SWELL BURSTS THROUGHOUT LINE.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TO REDUCE SWELL NOISE. STOP SHOOTING DUE TO SHIP NOISE. LGSP 1301.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN FAULTS LOGGED ON LINE. GOOD PRESSURE AND VOL ALL LINE
 15 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat. 038/30/23.17S	Sol. Long. 038/29/23.40S
Eol. Lat. 144/13/58.85E	Eol. Long. 144/19/41.67E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES.
 Message TO COMPLETE. CABLE DEEP REDUCE SWELL NOISE. NO BAD RECORDS
 STOP SHOOTING. LGSP 1301 DUE TO SHIP NOISE. NO GUN OR CABLE FAULTS ON LINE.

242181

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name 0590A-20A Heading 77 deg.
 Line Status Complete
 Date started 12/03/90 Start Time 09:57 End Time 12:09
 First File 1221 First Reel 1664AA Last File 2196 Last Reel 1675AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1221	1302	2196	2196	895	22.375Kms

----- WEATHER -----

Wind dir. S force 2 Sea state 1 Swell dir. S Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol. 67.0m. Eol. 70.0m.		Ave Speed 6.0 Kts.	
Parity Errors 0 No Data Record 0		Misfires 0	

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 8.4 m.	Max. 9.5 m.
Feather	Sol. 6.3 P	Eol. 1.8 S Max. 6.3 P

Acoustic Transponders:

Compass	: 81.20 COMP 1	74.60 COMP 2	70.30 COMP 3	68.90 COMP 4	67.50 COMP 5
Tailbuoy	: 6.30-PRT SOL	2.10 PRT	1.10 PRT	0.10 PRT	1.80 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 108 NOISY/SPIKING ON LINE.
 Noise: SOL AVGE NOISE: 4.5uB. EOL AVGE NOISE: 6.1uB
 SLIGHT SWELL NOISE ON LINE. INTERMITTENT.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 81 SP O/LAP COMPETED NON CHARGEABLE. NO CABLE FAULTS ON LINE.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN FAULTS LOGGED ON LINE. GOOD PRESSURE AND VOL ALL LINE
 29 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat.	038/29/44.72S	Sol. Long.	038/26/52.33S
Eol. Lat.	144/17/41.07E	Eol. Long.	144/34/03.13E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES.
 Message NOW COMPLETE. SLIGHT CABLE NOISE. 81 SP NON CHARGEABLE O/LAP
 CABLE SLIGHTLY DEEPER TO REDUCE SWELL NOISE.

SURVEY LINE ANALYSIS

242182

PACIFIC TITAN

Line name 0590A-21 Heading 347 deg.
 Line Status Complete
 Date started 14/03/90 Start Time 01:39 End Time 05:03
 First File 1001 First Reel 1808AA Last File 2403 Last Reel 1825AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2407	2407	1407	35.175Kms

----- WEATHER -----

Wind dir. NE force 2 Sea state 1 Swell dir. SE Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	78.0m. Eol. 75.0m.	Ave Speed	5.6 Kts.
Parity Errors	0 No Data Record 8	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 7.9 m.	Max. 8.8 m.
Feather	Sol. 4.0 S	Eol. 0.1 P Max. 4.0 S

Acoustic Transponders:

Compass	: 330.10 COMP 1	332.90 COMP 2	334.00 COMP 3	334.00 COMP 4	333.60 COMP 5
Tailbuoy	: 4.00 STB SOL	2.60 STB	3.10 STB	0.30 STB	0.10 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 108 AND 253 SPIKING ON LINE

Noise: SOL AVGE NOISE: 4.8uB. EOL AVGE NOISE: 4.5uB
 WEAK SWELL BURSTS NOTED ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 8 METRE
 TWO POOR TRACES ON LINE. NO OTHER CABLE PROBLEMS.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1870
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note SP 2158 GUN 35 OFF. VOLUME TO EOL 2140 CUBIC INCHES.
 90 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,
 Secondary

Sol. Lat.	038/55/12.48S	Sol. Long.	038/36/33.21E
Eol. Lat.	144/14/10.06E	Eol. Long.	144/08/56.90E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES.

Message COMPLETE. MISSED SP DUE TO TAP CHANGES/BAD TAPE. SP 1846
 TAPE TRANSPORT 0 IS DOWN FOR REPAIRS. NO CABLE FAULTS.

SURVEY LINE ANALYSIS

242183

PACIFIC TITAN

Line name 0590A-22 Heading 257 deg.
 Line Status Complete
 Date started 12/03/90 Start Time 13:18 End Time 16:06
 First File 1001 First Reel 1676AA Last File 2151 Last Reel 1689AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2151	2151	1151	28.775Kms

----- WEATHER -----

Wind dir. S force 2 Sea state 1 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	70.0m. Eol. 67.0m.	Ave Speed	5.5 Kts.
Parity Errors	0 No Data Record 2	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth Min. 8.4 m. Max. 9.5 m.
 Feather Sol. 0.3 S Eol. 0.2 S Max. 1.4 S

Acoustic Transponders:

Compass	:	246.40 COMP 1	245.70 COMP 2	244.30 COMP 3	244.70 COMP 4	244.30 COMP 5
Tailbuoy	:	0.30 STB SOL	1.00 STB	0.90 PRT	0.20 PRT	0.20 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 108 NOISY/SPIKING ON LINE.

Noise: SOL AVGE NOISE: 625uB. EOL AVGE NOISE: 4.6uB

OCCASIONAL SWELL BURSTS NOTED ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TERMINATED 1.5 KMS SHORT DUE TO FISHING BOAT ON LINE. NO CABLE FAULTS.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 8.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN FAULTS LOGGED ON LINE. GOOD PRESSURE AND VOL ALL LINE
 48 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat. 038/25/50.15S Sol. Long. 038/29/12.34S
 Eol. Lat. 144/32/10.11E Eol. Long. 144/12/52.37E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES.

Message COMPLETE. TERMINATE 1.5 KMS FROM EOL DUE TO FISHING BOAT.
 CABLE SLIGHTLY DEEPER TO REDUCE SWELL NOISE. NO OTHER SYSTEM PROBLEMS.

SURVEY LINE ANALYSIS

242184

PACIFIC TITAN

Line name 0570A-23 Heading 167 deg.
 Line Status Complete
 Date started 14/03/90 Start Time 06:15 End Time 10:09
 First File 1001 First Reel 1826AA Last File 2531 Last Reel 1845AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2531	2531	1531	38.275Kms

----- WEATHER -----

Wind dir. NE force 2 Sea state 1 Swell dir. SE Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	71.0m.	Eol.	77.0m.
Parity Errors	0	No Data Record	4
		Ave Speed	5.3 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth Min. 7.5 m. Max. 8.8 m.
 Feather Sol. 6.1 S Eol. 2.1 P Max. 6.1 S

Acoustic Transponders:

Compass	: 143.40 COMP 1	149.40 COMP 2	150.10 COMP 3	151.20 COMP 4	151.50 COMP 5
Tailbuoy	: 6.10 STB SOL	4.10 STB	1.10 STB	0.40 STB	2.10 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 108 AND 253 SPIKING ON LINE

Noise: SOL AVGE NOISE: 3.8uB. EOL AVGE NOISE: 4.6uB
 WEAK SWELL BURSTS NOTED ON RECORDS.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 8 METRE
 TWO POOR TRACES ON LINE. SLIGHT SHIP PROP NOISE AT SP 1200. MOVING QUICKLY.

----- ENERGY SOURCE -----

Source type AIRGUN

Source Volume : 2180 Pressure: 1870

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN MISFIRE ON LINE. GOOD VOLUME AND PRESSURE ALL LINE.

85 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PRESSURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS

Secondary : SATELLITE

Primary TEDDYS LOOKOUT, INGOLDSBY, ST PAULS,

Secondary

Sol. Lat. 038/37/23.18S Sol. Long. 038/57/36.58S

Eol. Lat. 144/11/53.95E Eol. Long. 144/17/30.39E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES.

Message COMPLETE. MISSED 4 SHOTS NO HEADER DATA WRITTEN TO TAPE.

NO OTHER SYSTEM OR CABLE FAULTS. GOOD DATA. WEAK SWELL NOISE OCCASSIONALLY

SURVEY LINE ANALYSIS

242186

PACIFIC TITAN

Line name 0590A-25 Heading 167 deg.
 Line Status Complete
 Date started 07/03/90 Start Time 20:18 End Time 23:06
 First File 1001 First Reel 1403AA Last File 2079 Last Reel 1416AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2079	2079	1079	26.975Kms

----- WEATHER -----

Wind dir. SE force 1 Sea state 2 Swell dir. SE Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	70.0m.	Eol.	75.0m.
Parity Errors	0	No Data Record	4
		Ave Speed	5.2 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 9.1 m. Max. 10.1 m.
 Feather Sol. 3.1 F Eol. 3.2 S Max. 3.2 S
 Acoustic Transponders:
 Compass : 160.70 COMP 1 161.40 COMP 2 160.30 COMP 3 158.90 COMP 4 158.20 COMP 5
 Tailbuoy : 3.10 PRT SOL 0.30 PRT 0.10 STB 2.30 STB 3.20 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 283 OCCASIONAL SPIKING.
 Noise: SOL AVGE NOISE: 6.3uB. EOL AVGE NOISE: 5.6uB
 OCCASIONAL SWELL BURSTS THROUGHOUT THE LINE.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. SWELL NOISE RANDOM
 RUN CABLE AT 9 METRES TO REDUCE SWELL NOISE. 1 SPIKING TRACE.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1850
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN FAULTS LOGGED ON LINE. GOOD PRESSURE AND VOLUME.
 62 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat.	038/50/59.26S	Sol. Long.	038/45/05.90S
Eol. Lat.	144/14/09.73E	Eol. Long.	144/18/08.66E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE.
 Message LINE COMPLETE. RANDOM SWELL NOISE. 2 BAD RECORDS LOGGED ON
 TAPE CHANGES. ONE SPIKING TRACE. 2 BAD RECORDS DUE TO SPU DROPOUT.

SURVEY LINE ANALYSIS

242187

PACIFIC TITAN

Line name OS90A-27 Heading 347 deg.
 Line Status Complete
 Date started 06/03/90 Start Time 17:39 End Time 20:24
 First File 1001 First Reel 1332AA Last File 2060 Last Reel 1345AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2060	2060	1060	26.500Kms

----- WEATHER -----

Wind dir. SSW force 4 Sea state 3 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	74.0m.	Eol.	38.0m.
Parity Errors	0	No Data Record	2
		Ave Speed	5.2 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 8.8 m. Max. 9.1 m.
 Feather Sol. 7.1 S Eol. 2.2 S Max. 7.1 S
 Acoustic Transponders:
 Compass : 326.60 COMP 1 328.40 COMP 2 330.50 COMP 3 328.70 COMP 4 329.40 COMP 5
 Tailbuoy : 7.10 STB SOL 4.90 STB 4.60 STB 2.40 STB 2.20 STB EOL
 Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 6.4uB. EOL AVGE NOISE: 4.2uB
 SWELL NOISE NOTED THROUGHOUT LINE. RANDOM/STRONG
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. SWELL NOISE RANDOM
 SP 1970-2000 LOW LEVEL SHIP NOISE LOGGED. NO OTHER STREAMER FAULTS.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1880
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note SP 1722 GUN 53 OFF POOR TIMING. NO OTHER FAULTS LOGGED.
 88 SINGLE GUN NOFIRES LOGGED ON LINE. VOLUME AT EOL 2140 CUBIC INCHES.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat.	038/39/44.98	Sol. Long.	038/25/47.53
Eol. Lat.	144/18/42.22	Eol. Long.	144/14/44.18

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS THAN 1 METRE.
 Message LINE COMPLETE. SOME SWELL NOISE LOGGED THROUGHOUT LINE.
 SP 1970-2000 LOW SHIP NOISE. NO OTHER ON LINE PROBLEMS.

SURVEY LINE ANALYSIS

242189

PACIFIC TITAN

Line name 0590A-31 Heading 167 deg.
 Line Status Complete
 Date started 10/03/90 Start Time 17:21 End Time 20:00
 First File 1001 First Reel 1645AA Last File 2055 Last Reel 1657AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2055	2055	1055	26.375Kms

----- WEATHER -----

Wind dir. WNW force 2 Sea state 2 Swell dir. SW Height 2 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	64.0m.	Eol.	75.0m.
Parity Errors	0	No Data Record	2
		Ave Speed	5.4 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 8.4 m.	Max. 9.5 m.
Feather	Sol. 0.6 S	Eol. 3.2 P Max. 3.2 P

Acoustic Transponders:

Compass	: 152.90 COMP 1	154.00 COMP 2	152.90 COMP 3	152.60 COMP 4	154.30 COMP 5
Tailbuoy	: 0.60 STB SOL	1.20 STB	0.30 PRT	1.60 PRT	3.20 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACES 190 AND 283 SPIKING OCCASIONALLY ON LINE.

Noise: SOL AVGE NOISE: 4.4uB. EOL AVGE NOISE: 5.4uB

INTERMITTENT SWELL BURSTS THROUGHOUT LINE.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TO REDUCE SWELL NOISE. NO CABLE FAULTS ON LINE.

----- ENERGY SOURCE -----

Source type AIRGUN

Source Volume : 2180 Pressure: 1900

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note SP 1470 GUN 51 OFF. VOLUME TO EOL 2140 CUBIC INCHES.

61 SINGLE GUN NO-FIRES LOGGED ON LINE. GOOD PREEASURE THROUGHOUT LINE.

----- NAVIGATION -----

Prime : SYLEDIS

Secondary : SATELLITE

Primary INGOLDSBY, BARWON HEADS, CAPE SCHANCK,

Secondary ,,,,,,,,,

Sol. Lat. 038/26/44.32S Sol. Long. 038/40/39.56S

Eol. Lat. 144/16/44.63E Eol. Long. 144/20/46.05E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES.

Message COMPLETE. CABLE DEEPER TO REDUCE SWELL NOISE. 2 BAD RECORDS
 DUE TO SPU FAULT. INTERMITTENT SWELL BURSTS. SP 1470 GUN 51 OFF TO EOL.

SURVEY LINE ANALYSIS

242100

PACIFIC TITAN
 Line name 0990A-33 Heading 347 deg.
 Line Status Complete
 Date started 10/03/90 Start Time 13:51 End Time 16:21
 First File 1001 First Reel 1631AA Last File 2039 Last Reel 1644AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2039	2039	1039	25.975Kms

----- WEATHER -----

Wind dir. NE force 3 Sea state 2 Swell dir. SW Height 2 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	75.0m.	Eol.	57.0m.
Parity Errors	0	No Data Record	5
		Ave Speed	5.6 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 8.4 m. Max. 9.5 m.
 Feather Sol. 1.0 P Eol. 1.3 P Max. 1.4 P
 Accoustic Transponders:
 Compass : 336.40 COMP 1 338.60 COMP 2 338.90 COMP 3 337.90 COMP 4 337.90 COMP 5
 Tailbuoy : 1.00 PRT SOL 0.50 PRT 0.70 PRT 1.10 PRT 1.30 PRT EOL
 Dead Grp: NO DEAD GROUPS ON LINE.
 TRACE 108 SPIKING OCCASIONALLY ON LINE.
 Noise: SOL AVGE NOISE: 7.6uB. EOL AVGE NOISE: 6.5uB
 INTERMITTENT SWELL BURSTS THROUGHOUT LINE.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TO REDUCE SWELL NOISE. NO CABLE FAULTS ON LINE.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1875
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE ALL LINE.
 65 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary INGOLDSBY, BARWON HEADS, CAPE SCHANCK,
 Secondary

Sol. Lat.	038/38/55.28S	Sol. Long.	038/25/13.68E
Eol. Lat.	144/21/57.24E	Eol. Long.	144/18/10.16E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES.

Message COMPLETE. CABLE DEEPER TO REDUCE SWELL NOISE. 2 NO DATA RECS
 DUE TO BAD TAPES ON CHANGEOVER. SP 1678/80 BAD DATA DUE TO SPU DROPOUT.

SURVEY LINE ANALYSIS

242191

PACIFIC TITAN

Line name 0590A-35 Heading 167 deg.
 Line Status Complete
 Date started 07/03/90 Start Time 11:03 End Time 14:27
 First File 1001 First Reel 1361AA Last File 2402 Last Reel 1381AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2405	2405	1405	35.125Kms

----- WEATHER -----

Wind dir. SSE force 2 Sea state 2 Swell dir. SSE Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	67.0m. Eol. 76.0m.	Ave Speed	5.6 Kts.
Parity Errors	0 No Data Record 10	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth Min. 9.1 m. Max. 10.1 m.
 Feather Sol. 1.4 S Eol. 0.6 S Max. 4.5 S

Acoustic Transponders:

Compass	: 156.10 COMP 1	157.10 COMP 2	155.10 COMP 3	154.00 COMP 4	154.30 COMP 5
Tailbuoy	: 1.40 STB SOL	4.10 STB	4.60 STB	2.30 STB	0.60 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.

TRACE 283 OCCASIONAL SPIKING.

Noise: SOL AVGE NOISE: 5.9uB. EOL AVGE NOISE: 6.2uB
 SWELL NOISE DECREASING THROUGHOUT LINE.

Note CABLE BALANCE AND CONTROL GOOD ON LINE. SWELL NOISE RANDOM
 SP 1956 FRONT END AT 11 METRES DUE TO VESSEL SPEED LOSS. SP 1965 O.K.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2140 Pressure: 1870

2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.

OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.

ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note GUN 53 OFF COMPLETE LINE. SP 2091 GUN51 OFF. VOL TO EOL 2100
 227 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat. 038/26/16.07S Sol. Long. 038/44/49.73S
 Eol. Lat. 144/19/17.64E Eol. Long. 144/24/29.86E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE.

Message LINE COMPLETE. SWELL NOISE LOGGED THROUGHOUT LINE. IMPROVING.
 MISSED SP 1047/1051. MINIMAL GUN PROBLEMS ON LINE. VOLUME AT EOL 2100 CU IN

SURVEY LINE ANALYSIS

242193

PACIFIC TITAN

Line name 0590A-39 Heading 347 deg.
 Line Status Complete
 Date started 07/03/90 Start Time 09:00 End Time 09:57
 First File 1001 First Reel 1356AA Last File 1390 Last Reel 1360AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1390	1390	390	9.750Kms

----- WEATHER -----

Wind dir. S force 3 Sea state 3 Swell dir. S Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	72.0m.	Eol.	63.0m.
Parity Errors	0	No Data Record	0
		Ave Speed	5.5 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth Min. 9.1 m. Max. 10.1 m.
 Feather Sol. 0.5 S Eol. 1.1 P Max. 1.4 P

Acoustic Transponders:

Compass	: 333.30 COMP 1	335.40 COMP 2	335.40 COMP 3	335.70 COMP 4	337.50 COMP 5
Tailbuoy	: 0.50 STB SOL	0.90 PRT	1.20 PRT	1.40 PRT	1.10 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 7.7uB. EOL AVGE NOISE: 7.2uB
 SWELL NOISE NOTED THROUGHOUT LINE. RANDOM/STRONG
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. SWELL NOISE RANDOM

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1840
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note SP 1094 GUN 53 OFF AIR LEAK. NO OTHER FAULTS LOGGED.
 62 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary ,,,,,,,,,,

Sol. Lat.	038/29/53.72S	Sol. Long.	038/24/46.47S
Eol. Lat.	144/22/09.70E	Eol. Long.	144/20/42.87E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS THAN 1 METRE.

Message LINE COMPLETE. SWELL NOISE LOGGED THROUGHOUT LINE.
 SEA CONDITIONS IMPROVING. ONE GUN FAILURE (53) ON LINE. NO OTHER FAULTS.

SURVEY LINE ANALYSIS

242194

PACIFIC TITAN

Line name OS90A-41 Heading 167 deg.
 Line Status Complete
 Date started 09/03/90 Start Time 15:39 End Time 18:39
 First File 1001 First Reel 1557AA Last File 2115 Last Reel 1570AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2115	2115	1115	27.875Kms

----- WEATHER -----

Wind dir. SW force 4 Sea state 2 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	63.0m.	Eol.	77.0m.
Parity Errors	0	No Data Record	7
		Ave Speed	5.0 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth Min. 8.4 m. Max. 9.1 m.
 Feather Sol. 1.0 P Eol. 2.6 P Max. 2.8 P

Acoustic Transponders:

Compass	: 160.70 COMP 1	159.20 COMP 2	156.10 COMP 3	157.10 COMP 4	157.90 COMP 5
Tailbuoy	: 1.00 PRT SOL	2.00 STB	1.10 STB	0.10 STB	2.60 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 6.5uB. EOL AVGE NOISE: 8.6uB
 FRONT END PROP NOISE: 10 uB

Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TO TRY AND REDUCE SWELL NOISE. SP 1390 CABLE AVERAGE DEPTH 8.9 METRES.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE ALL LINE.
 51 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat.	038/26/46.80S	Sol. Long.	038/39/31.10S
Eol. Lat.	144/21/34.39E	Eol. Long.	144/25/37.44E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE.

Message COMPLETE. RUN CABLE SLIGHTLY DEEPER TO REDUCE SWELL NOISE.
 BAD RECORDS LOGGED DUE TO SPU DATA DROPOUT. NO OTHER FAULTS.

SURVEY LINE ANALYSIS

242195

PACIFIC TITAN

Line name 0590A-43 Heading 167 deg.
 Line Status Complete
 Date started 10/03/90 Start Time 07:30 End Time 11:48
 First File 1001 First Reel 1607AA Last File 2712 Last Reel 1630AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2712	2712	1712	42.800Kms

----- WEATHER -----

Wind dir. W force 1 Sea state 2 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	64.0m. Eol. 76.0m.	Ave Speed	5.4 Kts.
Parity Errors	0 No Data Record 8	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 8.4 m. Max. 9.5 m.
 Feather Sol. 3.7 P Eol. 2.9 S Max. 3.7 P
 Acoustic Transponders:
 Compass : 159.20 COMP 1 160.70 COMP 2 159.90 COMP 3 160.30 COMP 4 159.90 COMP 5
 Tailbuoy : 3.70 PRT SOL 1.70 PRT 1.40 PRT 0.70 PRT 2.90 STB EOL
 Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 4.6uB. EOL AVGE NOISE: 6.4uB
 INTERMITTENT SWELL BURSTS THROUGHOUT LINE.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TO REDUCE SWELL NOISE. NO CABLE FAULTS ON LINE.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1870
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE ALL LINE.
 78 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARNON HEADS, CAPE SCHANCK,
 Secondary ,,,,,,,,,

Sol. Lat.	038/24/41.51S	Sol. Long.	038/47/17.88S
Eol. Lat.	144/22/22.88E	Eol. Long.	144/28/41.97E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 2 METRES. SP 2302 DROP STN 5 AND REACQUIRE STN 2. THREE WAY FIXING.
 Message COMPLETE. CABLE DEEPER TO REDUCE SWELL NOISE. 8 NO DATA RECS
 DUE TO BAD TAPES ON CHANGEOVER. SP 1559/61 BAD DATA DUE TO SPU DROPOUT.

SURVEY LINE ANALYSIS

242196

PACIFIC TITAN

Line name DS90A-45 Heading 167 deg.
 Line Status Complete
 Date started 09/03/90 Start Time 05:30 End Time 08:24
 First File 1001 First Reel 1527AA Last File 2116 Last Reel 1543AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	2116	2116	1116	27.900Kms

----- WEATHER -----

Wind dir. SW force 3 Sea state 1 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	63.0m.	Eol.	75.0m.
Parity Errors	0	No Data Record	8
		Ave Speed	5.2 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 7.9 m. Max. 8.5 m.
 Feather Sol. 9.1 P Eol. 0.6 P Max. 9.1 P
 Acoustic Transponders:
 Compass : 171.20 COMP 1 168.10 COMP 2 163.50 COMP 3 162.10 COMP 4 161.40 COMP 5
 Tailbuoy : 9.10 PTY SOL 5.00 PRT 2.80 PTY 2.40 PRT 0.60 PRT EOL
 Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 6.8uB. EOL AVGE NOISE: 5.8uB
 HIGH FRONT END PROP NOISE UP TO 20 uB.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. HIGH FRONT END PROP
 NOISE DUE TO ENGINE RPM. SHALL SLOW DOWN. NO OTHER CABLE PROBLEMS

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1880
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE ALL LINE.
 48 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat.	038/24/27.23S	Sol. Long.	038/36/37.36S
Eol. Lat.	144/23/13.12E	Eol. Long.	144/26/35.45E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE. CABLE IN SLIGHT BEND AT SOL AVOIDING FOUL GROUND AREA
 Message LINE COMPLETE. GOOD CABLE BALANCE AND CONTROL. 8 BAD DATA
 RECORDS DUE TO DATA TAPES. FRONT END NOISE HIGH DUE TO PROP NOISE.

242198

SURVEY LINE ANALYSIS

PACIFIC TITAN
 Line name OS90A-49 Heading 347 deg.
 Line Status Complete
 Date started 09/03/90 Start Time 20:09 End Time 22:21
 First File 1001 First Reel 1571AA Last File 1851 Last Reel 1582AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1851	1851	851	21.275Kms

----- WEATHER -----

Wind dir. SW force 4 Sea state 4 Swell dir. SW Height 2 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol. 74.0m Eol. 55.0m		Ave Speed 5.2 Kts.	
Parity Errors 0 No Data Record 8		Misfires 0	

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 8.4 m. Max. 9.5 m.
 Feather Sol. 4.7 S Eol. 1.5 S Max. 4.7 S
 Acoustic Transponders:
 Compass : 330.10 COMP 1 332.60 COMP 2 331.20 COMP 3 330.80 COMP 4 331.90 COMP 5
 Tailbuoy : 4.70 STB SOL 4.60 STB 3.40 STB 2.30 STB 1.50 STB EOL
 Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 6.3uB. EOL AVGE NOISE: 7.0uB
 INTERMITTENT SWELL BURSTS THROUGHOUT LINE.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. RUN CABLE AT 9 METRE
 TO TRY AND REDUCE SWELL NOISE. STOP SHOOTING 60 SP FROM EOL. FOUL GROUND.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE ALL LINE.
 40 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary INGOLDSBY, BARWON HEADS, CAPE SCHANCK,
 Secondary

Sol. Lat. 038/33/59.67S	Sol. Long. 038/22/46.29S
Eol. Lat. 144/28/28.14E	Eol. Long. 144/25/21.36E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE. STOP SHOOTING 60 SP BEFORE EOL DUE TO FOUL GROUND AHEAD.
 Message COMPLETE. RUN CABLE SLIGHTLY DEEPER TO REDUCE SWELL NOISE.
 8 BAD RECORDS LOGGED DUE BAD DATA TAPES. STOP SHOOTING 60 SP FROM EOL.

SURVEY LINE ANALYSIS

242199

PACIFIC TITAN

Line name 0890A-51 Heading 347 deg.
 Line Status To Be Completed
 Date started 09/03/90 Start Time 09:48 End Time 11:27
 First File 1001 First Reel 1544AA Last File 1629 Last Reel 1551AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1551	1629	551	13.775Kms

----- WEATHER -----

Wind dir. WSW force 3 Sea state 3 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water Sol.	74.0m.	Eol.	64.0m.
Parity Errors	0	No Data Record	8
		Ave Speed	5.1 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min. 7.9 m.	Max. 8.5 m.
Feather	Sol. 0.3 P	Eol. 0.8 P
		Max. 1.1 P

Acoustic Transponders:

Compass	: 334.00 COMP 1	337.90 COMP 2	337.50 COMP 3	336.40 COMP 4	336.80 COMP 5
Tailbuoy	: 0.30 PRT SOL	0.30 STB	0.20 PRT	1.10 PRT	0.80 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 5.0uB. EOL AVGE NOISE: 6.9uB
 HIGH FRONT END PROP NOISE UP TO 13 uB.
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. HIGH FRONT END PROP
 NOISE DUE TO ENGINE RPM. NO OTHER CABLE FAULTS.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE ALL LINE.
 27 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat.	038/33/45.73S	Sol. Long.	038/25/28.01S
Eol. Lat.	144/29/15.87E	Eol. Long.	144/26/58.50E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE. TERMINATE LINE FOR SHIP NOISE FROM BEHIND. RANGE 1.5 KMS
 Message TO BE COMPLETED. LAST GOOD SHOT POINT 1551 STOP SHOOTING DUE
 TO SHIP PASSING BEHIND CABLE. EXCESSIVE NOISE. 8 BAD SPU RECORDS LOGGED.

242200

SURVEY LINE ANALYSIS

PACIFIC TITAN

Line name 0890A-51A Heading 347 deg.
 Line Status Complete
 Date started 09/03/90 Start Time 13:30 End Time 14:15
 First File 1471 First Reel 1552AA Last File 1851 Last Reel 1556AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1471	1552	1851	1851	300	7.500kms

===== WEATHER =====

Wind dir. W force 2 Sea state 2 Swell dir. SW Height 1 m

===== RECORDING =====

Magnetometer	Water depth Sol.	Eol.	Gravity
Parity Errors 0	70.0m	54.0m.	N
No Data Record 0			Ave Speed 6.9 Kts.
			Misfires 0

===== DIGITAL STREAMER =====

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth	Min.	Max.
Feather	7.9 m.	8.5 m.

Acoustic Transponders:	Sol.	Eol.	Max.
Compass	4.5 P	1.4 P	4.5 P
Tailbuoy	342.10 COMP 1	343.80 COMP 2	341.70 COMP 3
	4.50 PRT SOL	3.20 PRT	1.80 PRT
			340.30 COMP 4
			1.50 PRT
			339.20 COMP 5
			1.40 PRT EOL

Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 5.6uB. EOL AVGE NOISE: 5.0uB
 FRONT END PROP NOISE: 10 uB
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. 80 SHOTPOINTS O/LAP
 NON CHARGEABLE SHOT. CHARGED AS TIME. NO CABLE FAULTS ON LINE.

===== ENERGY SOURCE =====

Source type AIRGUN
 Source Volume : 2180 Pressure: 1875
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE ALL LINE.
 17 SINGLE GUN NO-FIRES LOGGED ON LINE.

===== NAVIGATION =====

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat.	Sol. Long.
038/27/33.70S	038/22/41.10S
Eol. Lat.	Eol. Long.
144/27/32.16E	144/26/12.25E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE. 80 SP OVERLAP SHOT NON CHARGEABLE.
 Message NOW COMPLETE. 80 SP OVERLAP NON CHARGEABLE. INTERMITTENT SEA
 BURSTS LOGGED ON LINE. TERMINATE 65 SP FROM EOL DUE TO FOUL GROUND.

SURVEY LINE ANALYSIS

242201

PACIFIC TITAN
 Line name 0590A-53 Heading 347 deg.
 Line Status Complete
 Date started 09/03/90 Start Time 03:09 End Time 04:27
 First File 1001 First Reel 1519AA Last File 1560 Last Reel 1526AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1560	1560	560	14.000Kms

----- WEATHER -----

Wind dir. NE force 3 Sea state 1 Swell dir. SW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	69.0m. 56.0m.	Ave Speed	5.8 Kts.
Parity Errors	0 No Data Record 6	Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M
 Cable depth Min. 7.9 m. Max. 8.5 m.
 Feather Sol. 3.1 S Eol. 2.7 S Max. 3.1 S
 Accoustic Transponders:
 Compass : 328.00 COMP 1 332.90 COMP 2 333.60 COMP 3 334.70 COMP 4 335.40 COMP 5
 Tailbuoy : 3.10 STB SOL 1.80 STB 2.80 STB 2.40 STB 2.70 STB EOL
 Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 5.9uB. EOL AVGE NOISE: 4.7uB
 MINIMAL SWELL NOISE. PROP NOISE HIGH ON NEAR TRACE
 Note CABLE BALANCE AND CONTROL GOOD ON LINE. ONLY SLIGHT SWELL
 NOISE. NO OTHER CABLE PROBLEMS ON LINE.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1800
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.
 Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE ALL LINE.
 21 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat. 038/29/27.65S Sol. Long. 038/22/04.92S
 Eol. Lat. 144/28/58.06E Eol. Long. 144/26/55.13E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE.
 Message LINE COMPLETE. GOOD CABLE BALANCE AND CONTROL. 6 BAD DATA
 RECORDS DUE TO DATA TAPES. FRONT END NOISE HIGH DUE TO PROP NOISE.

SURVEY LINE ANALYSIS

242202

PACIFIC TITAN

Line name DS90A-55 Heading 347 deg.
 Line Status Complete
 Date started 08/03/90 Start Time 20:45 End Time 22:54
 First File 1001 First Reel 1496AA Last File 1879 Last Reel 1507AA

F.S.P.	F.C.S.P.	L.C.S.P.	L.S.P.	Shot Points	Coverage
1001	1001	1879	1879	879	21.975Kms

----- WEATHER -----

Wind dir. NE force 2 Sea state 2 Swell dir. SSW Height 1 m

----- RECORDING -----

Magnetometer	N	Gravity	N
Water depth Sol.	74.0m.	Eol.	55.0m.
Parity Errors	0	No Data Record	4
		Ave Speed	5.5 Kts.
		Misfires	0

----- DIGITAL STREAMER -----

300 TRACE DIGITAL STREAMER. OPERATING DEPTH 8.5 METRES. GRP LENGTH 12.5M

Cable depth Min. 7.9 m. Max. 8.5 m.
 Feather Sol. 1.9 S Eol. 1.8 S Max. 2.8 S

Acoustic Transponders:

Compass	:	335.70 COMP 1	336.10 COMP 2	333.60 COMP 3	333.60 COMP 4	333.60 COMP 5
Tailbuoy	:	1.90 STB SOL	2.90 STB	2.40 STB	1.90 STB	1.80 STB EOL

Dead Grp: NO DEAD GROUPS ON LINE.

Noise: SOL AVGE NOISE: 5.8uB. EOL AVGE NOISE: 3.4uB
 MINIMAL SWELL NOISE. FRONT END NOISE 10-13uB

Note CABLE BALANCE AND CONTROL GOOD ON LINE. ONLY SLIGHT SWELL
 NOISE. NO OTHER CABLE PROBLEMS ON LINE.

----- ENERGY SOURCE -----

Source type AIRGUN
 Source Volume : 2180 Pressure: 1900
 2180 CUBIC INCH VSX AIRGUN ARRAY. OPERATING DEPTH 6.5 METRES.
 OPERATING PRESSURE 1850 PSI. NUMBER OF GUN STRINGS = 4.
 ARRAY LENGTH = 14 METRES. STRING SPACING = 10 METRES.

Note NO GUN MISFIRES LOGGED ON LINE. GOOD PRESSURE ALL LINE.
 45 SINGLE GUN NO-FIRES LOGGED ON LINE.

----- NAVIGATION -----

Prime : SYLEDIS Secondary : SATELLITE
 Primary TEDDYS LOOKOUT, INGOLDSBY, BARWON HEADS,
 Secondary

Sol. Lat. 038/32/56.38S Sol. Long. 038/21/21.54S
 Eol. Lat. 144/30/50.38E Eol. Long. 144/27/35.86E

Note GOOD FIXING AND CONTROL ON LINE. AVERAGE THREE WAY FIX LESS
 THAN 1 METRE.

Message LINE COMPLETE. SLIGHT SWELL NOISE. GOOD CABLE BALANCE AND
 CONTROL. 4 BAD RECORDS AT TAPE CHANGES (BAD TAPES) NO OTHER SYSTEM FAULTS.

14.3 Daily Time Log

242204

From	To	Act	Cau	Chg	Comment	HH:MM
04/03/90						
12:00	19:30	15	15	O	Standby for Syledis set-up	07:30
19:30	24:00	15	15	O	Cutting all Syledis baselines	04:30
05/03/90						
00:00	01:30	15	15	O	Cutting all Syledis baselines	01:30
01:30	09:15	03	05	O	Travel Geelong, gravity checks	07:45
09:15	15:15	05	05	O	In port, resupply, gravity chk	06:00
15:15	20:10	03	03	O	Travel to survey area, VIC/P28	04:55
20:10	23:25	15	15	O	Check all baseline crossings	03:15
23:25	24:00	03	03	O	Travel, cable deploy location	00:35
06/03/90						
00:00	01:00	03	03	O	Travel, cable deploy location	01:00
01:00	08:22	14	14	O	Deploying cable, testing	07:22
08:22	09:25	24	24	O	Deploying gun arrays, testing	01:03
09:25	10:15	02	02	O	Line change to OS90A-12	00:50
10:15	12:36	01	01	P	Line OS90A-12	02:21
12:36	17:39	04	04	D	Standby for weather/seas	05:03
17:39	20:24	01	01	P	Line OS90A-27	02:45
20:24	21:21	02	02	O	Line change to OS90A-25	00:57
21:21	24:00	04	04	D	Standby weather/seas rough	02:39
07/03/90						
00:00	03:00	04	04	D	Rough seas/swell standby	03:00
03:00	05:00	01	01	P	Line OS90A-24	02:00
05:00	06:22	02	02	O	Line change to OS90A-22	01:22
06:22	09:00	04	04	D	Abort attempt, S/B weather/sea	02:38
09:00	09:57	01	01	P	Line OS90A-39	00:57
09:57	11:03	02	02	O	Line change to OS90A-35	01:06
11:03	14:27	01	01	P	Line OS90A-35	03:24
14:27	15:45	02	02	O	Line change to OS90A-29	01:18
15:45	19:06	01	01	P	Line OS90A-29	03:21
19:06	20:18	02	02	O	Line change to OS90A-25	01:12
20:18	23:06	01	01	P	Line OS90A-25	02:48
23:06	24:00	02	02	O	Line change to OS90A-06	00:54
08/03/90						
00:00	00:09	02	02	O	Line change to OS90A-06	00:09
00:09	02:42	01	01	P	Line OS90A-06	02:33
02:42	04:36	02	02	O	Line change to OS90A-1	01:54
04:36	07:12	01	01	P	Line OS90A-01	02:36
07:12	08:12	02	02	O	Line change to OS90A-05	01:00
08:12	11:12	01	01	P	Line OS90A-05	03:00
11:12	12:27	02	02	O	Line change to OS90A-03	01:15
12:27	15:03	01	01	P	Line OS90A-03	02:36
15:03	17:03	02	02	O	Line change to OS90A-12A	02:00
17:03	17:15	28	04	D	Reshoot/overlap due to weather	00:12
17:15	19:51	01	01	P	Line OS90A-12A	02:36

From	To	Act	Cau	Chg	Comment	242205	HH:MM
19:51	20:45	02	02	O	Line change to OS90A-55		00:54
20:45	22:54	01	01	P	Line OS90A-55		02:09
22:54	24:00	02	02	O	Line change to OS90A-57		01:06
09/03/90							
00:00	00:01	02	02	O	Line change to OS90A-57		00:01
00:01	01:52	01	01	P	Line OS90A-57		01:51
01:52	03:09	02	02	O	Line change to OS90A-53		01:17
03:09	04:27	01	01	P	Line OS90A-53		01:18
04:27	05:30	02	02	O	Line change to OS90A-45		01:03
05:30	08:24	01	01	P	Line OS90A-45		02:54
08:24	09:48	02	02	O	Line change to OS90A-51		01:24
09:48	11:27	01	01	P	Line OS90A-51		01:39
11:27	13:18	20	20	C	Circle due to ship noise		01:51
13:18	13:30	28	20	C	Shoot o/laps after line halt		00:12
13:30	14:15	01	01	P	Line OS90A-51A		00:45
14:15	15:39	02	02	O	Line change to OS90A-41		01:24
15:39	18:39	01	01	P	Line OS90A-41		03:00
18:39	20:09	02	02	O	Line change to OS90A-49		01:30
20:09	22:21	01	01	P	Line OS90A-49		02:12
22:21	23:49	02	02	O	Line change to OS90A-37		01:28
23:49	24:00	01	01	P	Line OS90A-37		00:11
10/03/90							
00:00	02:30	01	01	P	Line OS90A-37		02:30
02:30	04:00	02	02	O	Line change to OS90A-47		01:30
04:00	06:24	01	01	P	Line OS90A-47		02:24
06:24	07:30	02	02	O	Line change to OS90A-43		01:06
07:30	11:48	01	01	P	Line OS90A-43		04:18
11:48	13:51	02	02	O	Line change to OS90A-33		02:03
13:51	16:21	01	01	P	Line OS90A-33		02:30
16:21	17:21	02	02	O	Line change to OS90A-31		01:00
17:21	20:00	01	01	P	Line OS90A-31		02:39
20:00	22:33	02	02	O	Line change to OS90A-14		02:33
22:33	22:39	04	04	D	Abort line attempt, swell noise		00:06
22:39	24:00	04	04	D	Standby for weather/sea/swells		01:21
11/03/90							
00:00	24:00	04	04	D	Standby for weather/sea/swell		24:00
12/03/90							
00:00	05:00	04	04	D	Standing by for weather/swell		05:00
05:00	07:03	02	02	O	Line change to OS90A-20		02:03
07:03	07:54	01	01	P	Line OS90A-20		00:51
07:54	09:45	02	20	C	Circle due to ship noise		01:51
09:45	09:57	28	20	C	Overlap shooting after circle		00:12
09:57	12:09	01	01	P	Line OS90A-20A		02:12
12:09	13:18	02	02	O	Line change to OS90A-22		01:09
13:18	16:06	01	01	P	Line OS90A-22		02:48
16:06	17:33	02	02	O	Line change to OS90A-18		01:27
17:33	20:36	01	01	P	Line OS90A-18		03:03

242206

From	To	Act	Cau	Chg	Comment	HH:MM
20:36	21:45	02	02	O	Line change to OS90A-16	01:09
21:45	24:00	01	01	P	Line OS90A-16	02:15
13/03/90						
00:00	00:48	01	01	P	Line OS90A-16	00:48
00:48	01:54	02	02	O	Line change to OS90A-14A	01:06
01:54	05:00	01	01	P	Line OS90A-14A	03:06
05:00	06:51	02	02	O	Line change to OS90A-10	01:51
06:51	12:03	01	01	P	Line OS90A-10	05:12
12:03	13:30	02	02	O	Line change to OS90A-08	01:27
13:30	16:18	01	01	P	Line OS90A-08	02:48
16:18	17:48	02	02	O	Line change to OS90A-04	01:30
17:48	20:09	01	01	P	Line OS90A-04	02:21
20:09	21:18	02	02	O	Line change to OS90A-02	01:09
21:18	23:30	01	01	P	Line OS90A-02	02:12
23:30	24:00	02	02	O	Line change to OS90A-21	00:30
14/03/90						
00:00	01:39	02	02	O	Line change to OS90A-21	01:39
01:39	05:03	01	01	P	Line OS90A-21	03:24
05:03	06:15	02	02	O	Line change to OS90A-23	01:12
06:15	10:09	01	01	P	Line OS90A-23	03:54
10:09	11:18	02	02	O	Line change to OS90A-19	01:09
11:18	13:12	01	01	P	Line OS90A-19	01:54
13:12	15:09	07	07	H	Circle due to inst. hang-up	01:57
15:09	15:21	28	07	H	Shoot o/laps after inst. faults	00:12
15:21	16:24	01	01	P	Line OS90A-19A	01:03
16:24	18:18	07	07	H	Circle due to FCS system fault	01:54
18:18	18:30	28	07	H	Shoot o/lap after system fault	00:12
18:30	19:09	01	01	P	Line OS90A-19B	00:39
19:09	20:21	02	02	O	Line change to OS90A-17	01:12
20:21	24:00	01	01	P	Line OS90A-17	03:39
15/03/90						
00:00	00:57	02	02	O	Line change to OS90A-15	00:57
00:57	04:15	01	01	P	Line OS90A-15	03:18
04:15	05:24	02	02	O	Line change to OS90A-13	01:09
05:24	09:42	01	01	P	Line OS90A-13	04:18
09:42	10:00	02	02	O	Line change to OS90A-11	00:18
10:00	12:48	01	01	P	Line OS90A-11	02:48
12:48	15:03	02	07	H	Circle due to FCS/plotter halt	02:15
15:03	15:09	07	07	H	Abort line attempt, FCS failure	00:06
15:09	17:39	07	07	H	Circle due to FCS failure	02:30
17:39	18:18	04	04	D	Abort line, excess swell	00:39
18:18	24:00	04	04	D	Weather sea/swell standby	05:42
16/03/90						
00:00	01:00	04	04	D	Weather standby, large swells	01:00
01:00	01:12	28	07	H	Shoot non-chargeable overlaps	00:12
01:12	01:39	01	01	P	Line OS90A-11C	00:27
01:39	02:48	02	02	O	Line change to OS90A-09	01:09

242207 HH:MM

From	To	Act	Cau	Chg	Comment	HH:MM
02:48	06:42	04	04	D	Abort line attempt, long swell	03:54
06:42	09:42	01	01	P	Line OS90A-09	03:00
09:42	10:48	02	02	O	Line change to OS90A-07	01:06
10:48	14:48	04	04	D	Circle, standby for swells	04:00
14:48	18:00	01	01	P	Line OS90A-07B	03:12
18:00	18:36	24	24	O	Survey complete, rtve gun array	00:36
18:36	19:05	03	15	O	Travel to cut baseline	00:29
19:05	19:16	15	15	O	Cut Cape Schanck/Teddy Lookout	00:11
19:16	21:20	14	14	O	Rtve cable, survey complete	02:04
21:20	24:00	15	15	O	Post survey baseline checks	02:40
17/03/90						
00:00	01:33	15	15	O	Complete post survey baselines	01:33
01:33	17:00	03	03	O	Travel to Barry Beach, complete	15:27

14.4 Daily Diary Summary

4th March, 1990	En route to Geelong. Standby for Syledis to become operational. Cut Syledis baselines.
5th March, 1990	Complete baseline checks. Travel to Geelong. Resupply. Gravity meter checks. Offload Argo.
6th March, 1990	Production in VIC/P28. Weather downtime.
7th March, 1990	Production. Weather downtime.
8th March, 1990	Production.
9th March, 1990	Production. Downtime for shipping.
10th March, 1990	Production. Weather downtime.
11th March, 1990	Full day weather standby.
12th March, 1990	Weather downtime. Shipping downtime. Production.
13th March, 1990	Production.
14th March, 1990	Production. Instrument downtime.
15th March, 1990	Production.
16th March, 1990	Complete survey. Cut baselines.
17th March, 1990	Travel to Barry Beach Marine Terminal. Travel to Melbourne.
18th March, 1990	Travel from Melbourne to Mount Gambier.

14.5

MISFIRE STATISTICS

PACIFIC TITAN

From 04/03/90 To 16/03/90

Number of lines / line segments acquired 47
 Total chargeable Kilometers acquired 1185.750

Total number of Misfires	0	Percentage of total SPs.	0.00
Total number of NDRs.	204	Percentage of total SPs.	0.43
Total number of parity errors	0	Percentage of total SPs.	0.00
Total number of shots	47430	Percentage bad shots	0.43

Worst case lines

Misfires					
Line	Misfires	0	NDRs.	0	Parity errors 0
Parity Errors					
Line	Misfires	0	NDRs.	0	Parity errors 0
No Data Records					
Line OS90A-12A	Misfires	0	NDRs.	12	Parity errors 0

PRODUCTION/DOWNTIME
BY CAUSE

242210
PACIFIC TITAN

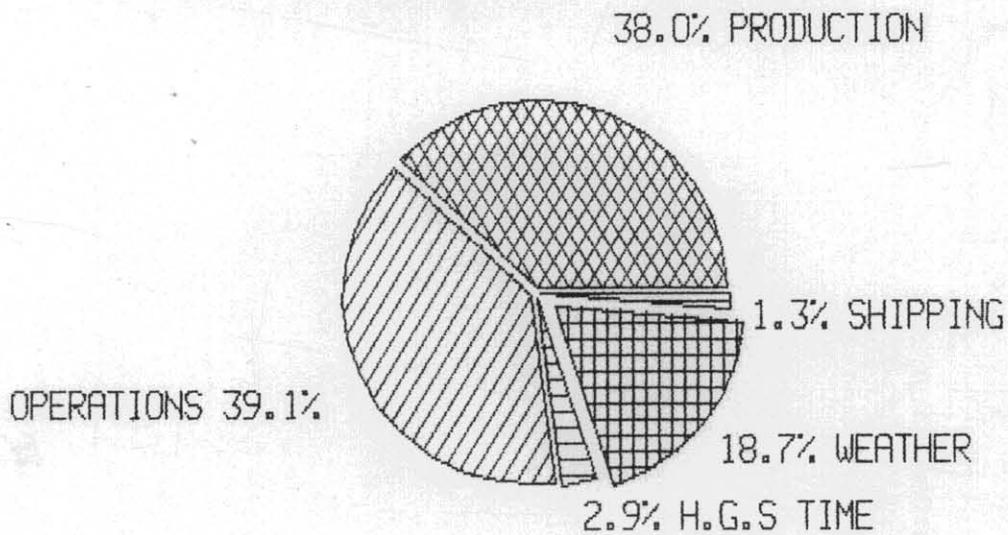
From 04/03/90 To 17/03/90

Code		HH:MM	Percent
P01	Recording Time	120:29	38.01
P02	Line Change	55:28	17.50
P03	Travel Time	21:57	6.92
P04	Weather Downtime	59:14	18.69
P05	Resupply	13:45	4.34
P07	Instrument Fail	09:18	2.93
P14	Cable Handling	09:26	2.98
P15	Nav Setup/Calib	21:38	6.82
P20	Vessel interf	04:06	1.29
P24	Source Handling	01:39	0.52

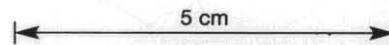
PRODUCTION/DOWNTIME SUMMARY

PRIME TIME	120:29	38.01
OPERATIONAL TIME	123:53	39.08
STANDBY	00:00	0.00
CLIENT/SHELL TIME	04:06	1.29
DISPUTE/DISCUSSION	59:14	18.69
HALLIBURTON TIME	09:18	2.93
TOTAL Time	317:00	

SHELL AUSTRALIA
PRODUCTION/DOWNTIME BY CAUSE
SURVEY BLOCK : VIC/P28
PERIOD : 5TH MARCH to 17TH MARCH 199



EXPLORATION CONSULTANTS LIMITED
M.V. PACIFIC TITAN.



242212

14.7

PRODUCTION/DOWNTIME
BY ACTIVITY

PACIFIC TITAN

From 04/03/90 To 17/03/90

Code		HH:MM	Percent
P01	Recording Time	120:29	38.01
P02	Line Change	59:34	18.79
P03	Travel Time	30:11	9.52
P04	Weather Downtime	59:02	18.62
P05	Resupply	06:00	1.89
P07	Instrument Fail	06:27	2.03
P14	Cable Handling	09:26	2.98
P15	Nav Setup/Calib	21:09	6.67
P20	Vessel interf	01:51	0.58
P24	Source Handling	01:39	0.52
P28	Shooting overlap	01:12	0.38

PRODUCTION/DOWNTIME SUMMARY

RIME TIME	120:29	38.01
OPERATIONAL TIME	123:53	39.08
STANDBY	00:00	0.00
CLIENT/SHELL TIME	04:06	1.29
DISPUTE/DISCUSSION	59:14	18.69
HALLIBURTON TIME	09:18	2.93
TOTAL Time	317:00	
TOTAL Kms	1185.750	

242213

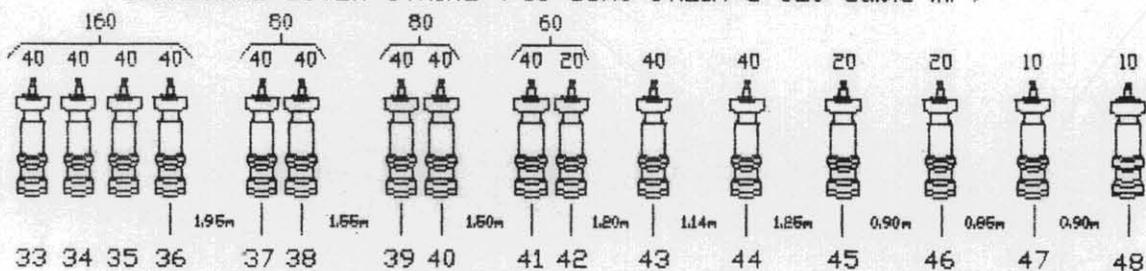
APPENDIX A

STREAMER DIAGRAMS

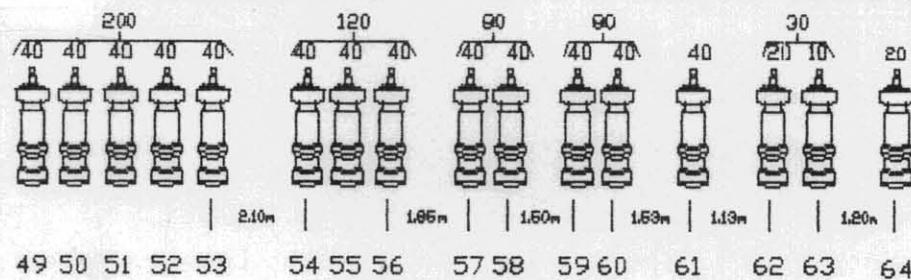
Plate 5A
Plate 6
Plate 7

PLATE #5A
M/V PACIFIC TITAN
2180 CUBIC-INCH SLEEVE AIRGUN ARRAY
CLIENT: SHELL AUST AREA: T/18P, T/14P
DATE: 18Feb90 - 16Mar90 VIC/P28

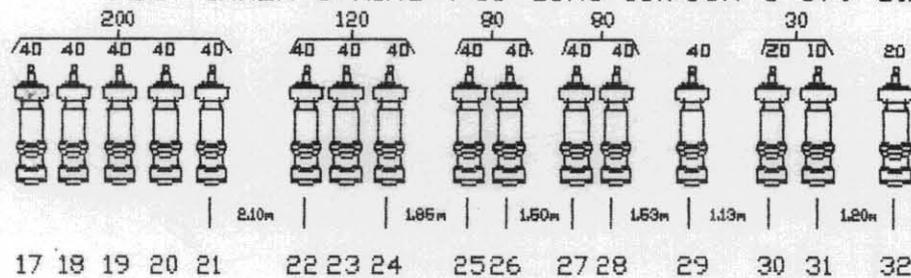
STARBOARD OUTER STRING (16 GUNS 14.21m @ 520 cubic in.)



STARBOARD INNER STRING (16 GUNS 13.765m @ 570 cubic in.)



PORT INNER STRING (16 GUNS 13.765m @ 570 cubic in.)



PORT OUTER STRING (16 GUNS 14.21m @ 520 cubic in.)

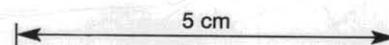
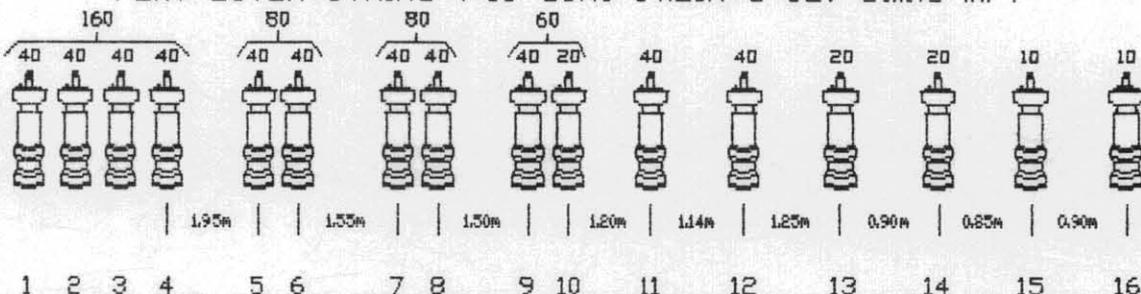
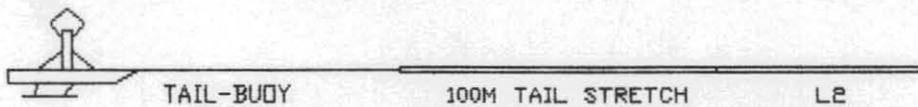
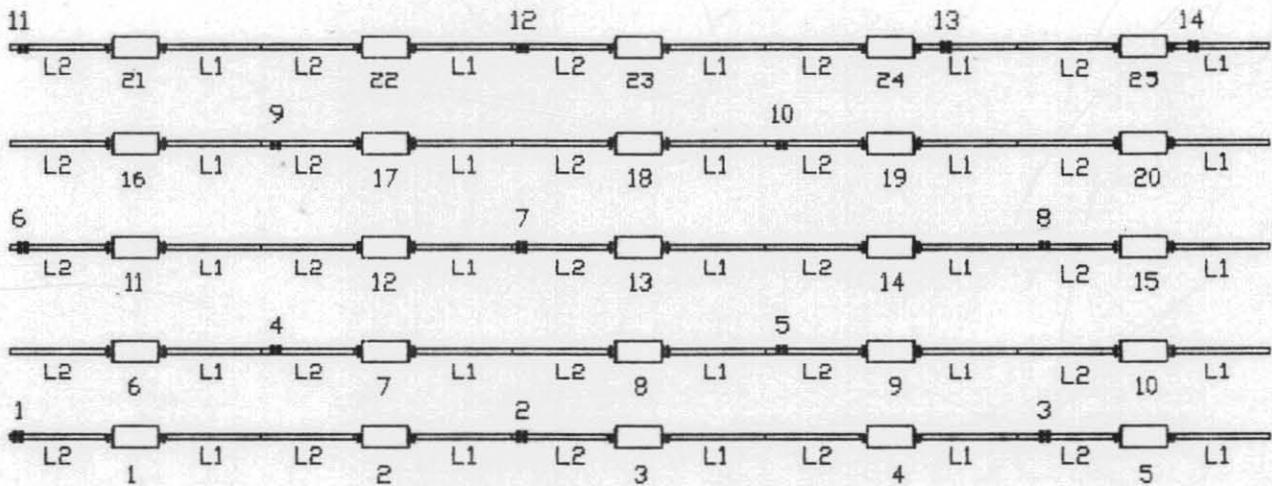
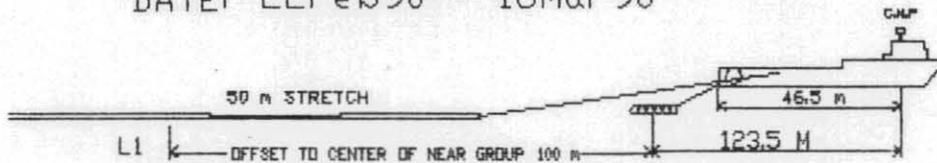


PLATE #6
M/V PACIFIC TITAN
H.G.S. 300 TRACE STREAMER
CLIENT: SHELL AUST AREA: T/18P, T/14P, VIC/P28
DATE: 22Feb90 - 16Mar90



KEY

- DEPTH COMPASS LOCATION (BIRD)
- ◻ STREAMER ELECTRONIC MODULE (SEM)

NOTES

- 1: TOTAL LENGTH OF A L1/SEM/L2 CLUSTER IS 150M
- 2: GROUP LENGTH IS 12.5M
- 3: THE CENTRAL NAV. POINT IS THE POSITION THAT ALL ANTENNAE ARE REFERENCED TO I.E. A SHOT OCCURS WHEN THE C.N.P IS OVER THE PREPLOTTED SHOTPOINT CO-ORDINATE.

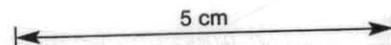
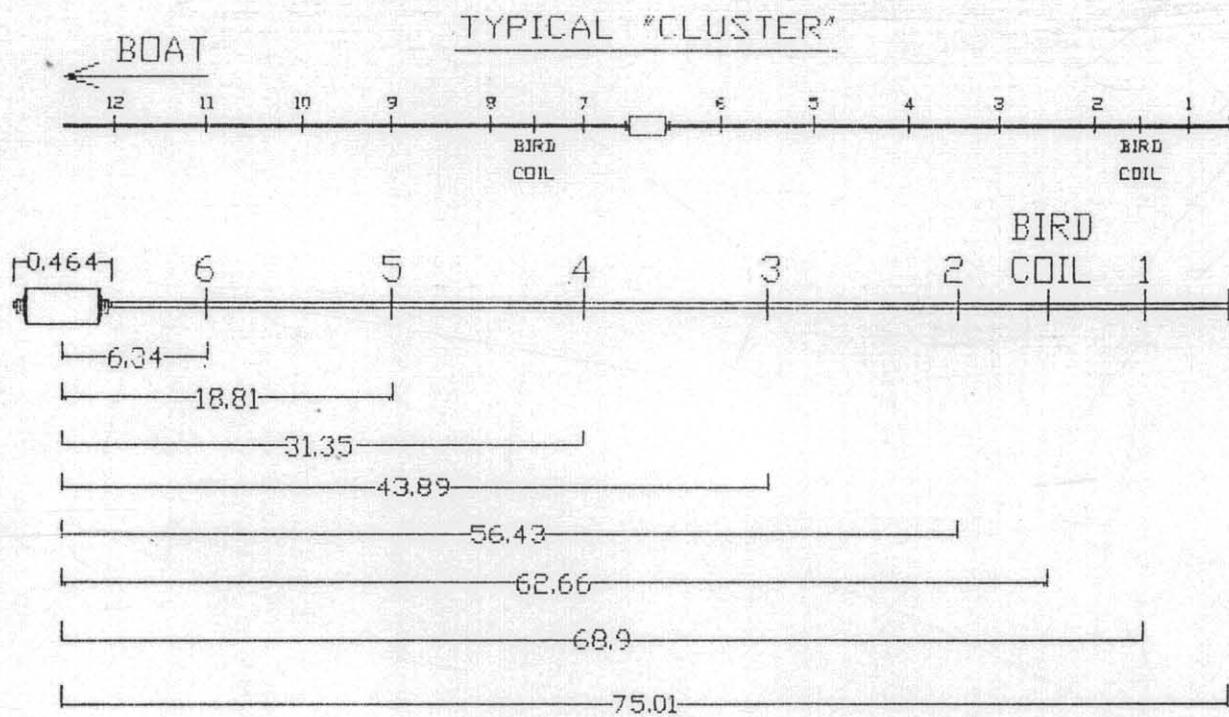
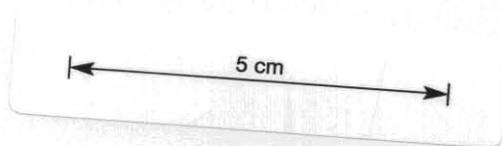


PLATE #7

M/V PACIFIC TITAN
SECTION DIAGRAM



NOTE: ALL DISTANCES IN METERS AND REFERENCED
TO THE CENTER OF THE SEM.
DISTANCES ARE TO THE CENTER OF THE GROUP



242217

APPENDIX B

AIRGUN DIAGRAMS

AIRGUN ARRAY DIAGRAM

Plate 5B

PLATE #5B

M/V PACIFIC TITAN

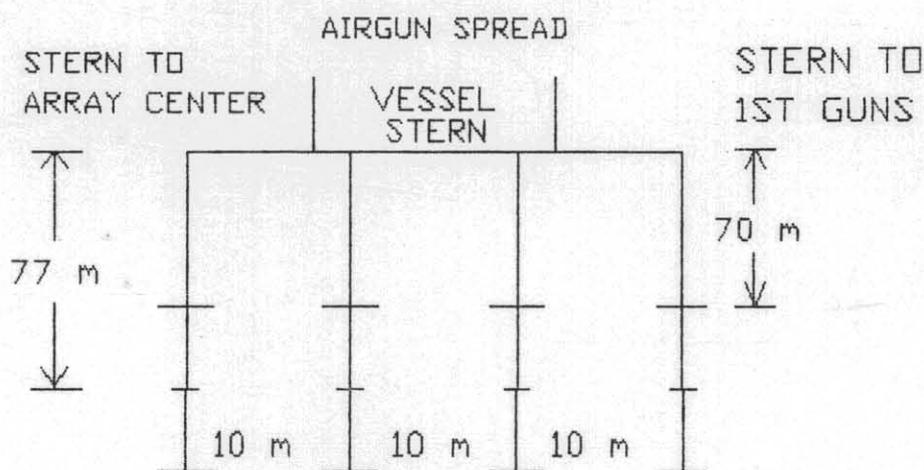
2180 CUBIC-INCH SLEEVE AIRGUN ARRAY

CLIENT: SHELL AUST AREA: T/18P, T/14P

DATE: 18Feb90 - 16Mar90

VIC/P28

WIDE TOW ARRAY



NOTES

1. GUN SIZE IN CUBIC INCHES
2. CENTERLINE TO CENTERLINE SPACING OF ALL COALESCED GUNS IS 0.495m
3. PREDICTED AVERAGE PERFORMANCE PER SUB-ARRAY
 $P_a = 25$ BAR-M (P-P, 0-250 Hz)
 TOTAL APPROXIMATE 100 BAR-M
4. DEPTH INDICATORS ARE SITUATED WITH GUNS # 2,15,18,31,34,47,50,63.

ARRAY CLUSTER COMPOSITION

2 X 200	2 X 30
2 X 160	6 X 40 SINGLE
2 X 120	6 X 20 SINGLE
8 X 80	4 X 10 SINGLE
2 X 60	

5 cm

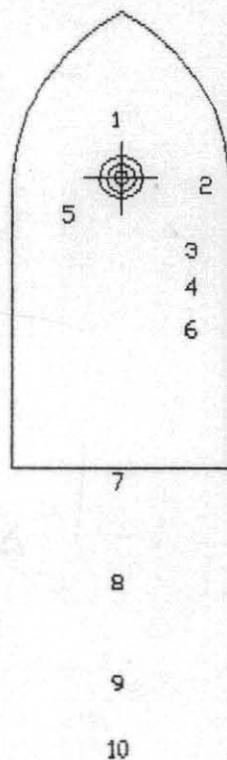
242220

APPENDIX C

VESSEL ANTENNA LOCATIONS

Plate 4

PLATE #4
 M/V PACIFIC TITAN
 ANTENNAE LOCATION DIAGRAM
 CLIENT: SHELL AUST AREA: T/18P, T/14P
 DATE: FEB/MAR 1990 VIC\P28



KEY

LOCATION	OFFSET FROM CNP	
	X (+ STB)	Y (+ FWD)
1 CNP - ARGO ANTENNA	0.0 m	0.0 m
2 TRANSIT SATELLITE ANTENNA	1.0 m	-2.5 m
3 FATHOMETER TRANSDUCER	2.0 m	-4.2 m
4 SONAR TRANSDUCER	2.0 m	-14.3 m
5 SYLEDIS PORT ANTENNA	-2.0 m	-2.4 m
6 GRAVITY SENSOR	2.0 m	-18.05 m
7 CENTRE-STERN	0.0 m	-46.5 m
8 CENTRE OF SOURCE	0.0 m	-123.5 m
9 CENTRE OF NEAR GROUP	0.0 m	-223.5 m
10 NEAR COMPASS (BCU)	0.0 m	-279.8 m
11 MAGNETOMETER	-23.0 m	-236.5 m

NB: THE COMMON NAV POINT (CNP) IS THE REFERENCE POINT FOR SHOT CONTROL.

5 cm

242222

APPENDIX D

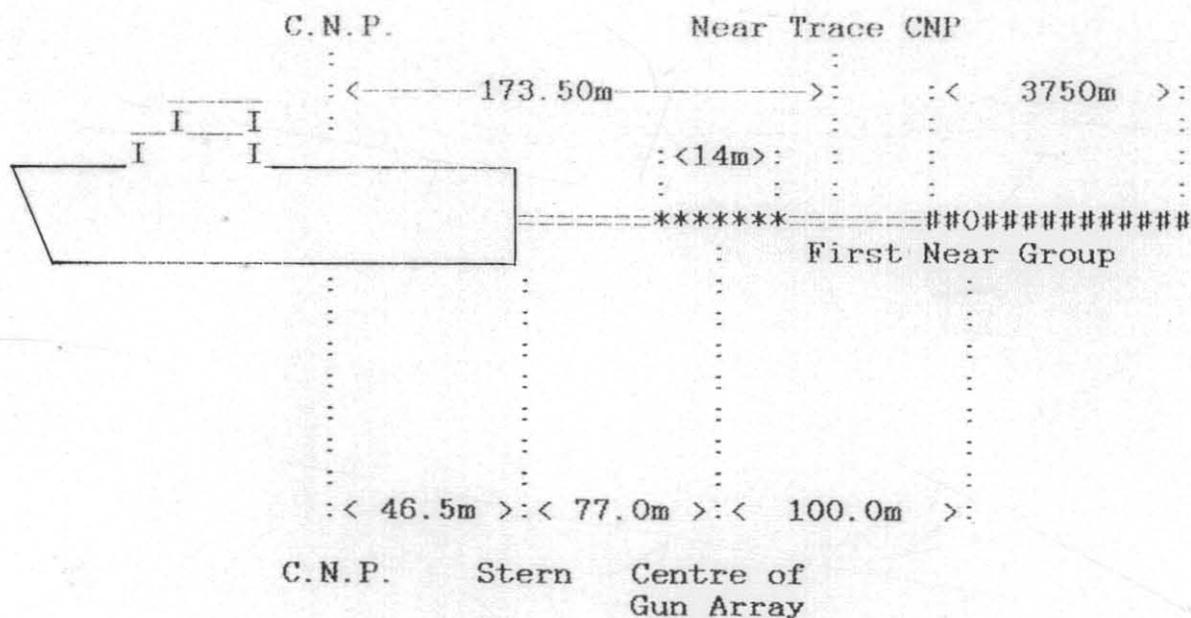
VESSEL OFFSET DIAGRAM

OFFSET DIAGRAM.

M.V. PACIFIC TITAN.

PROSPECTS: T/18P T/14P VIC/P28.

* NOT TO SCALE.



***** Airgun Array.
Overall length 14 metres.

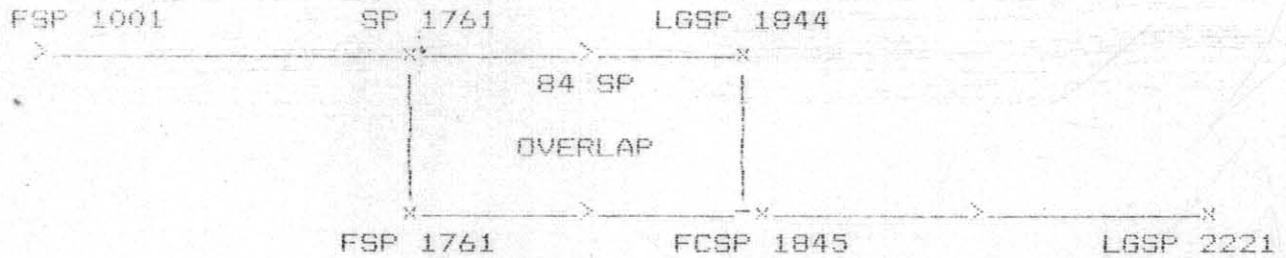
300 trace digital streamer.
Overall length 3750 metres.
Group length 12.5 metres.

C.N.P. Central Navigation Point.

APPENDIX E
OVERLAP DIAGRAMS

OVERLAP DIAGRAM

LINE NO. BS90A-02 I.D. 2 DIR. 291.6 DEG.



LINE NO. BS90A-02A I.D. 1002 DIR. 291.7 DEG.

FIRST CHARGEABLE SHOTPOINT = 1845

COMMENTS

LINE BS90A-02 - TERMINATED DUE TO LOSS OF NAVIGATION SIGNAL
 T.B.C./PROCESS.

LINE BS90A-02A - TERMINATED DUE TO GROUND FAULT
 T.B.C./PROCESS.

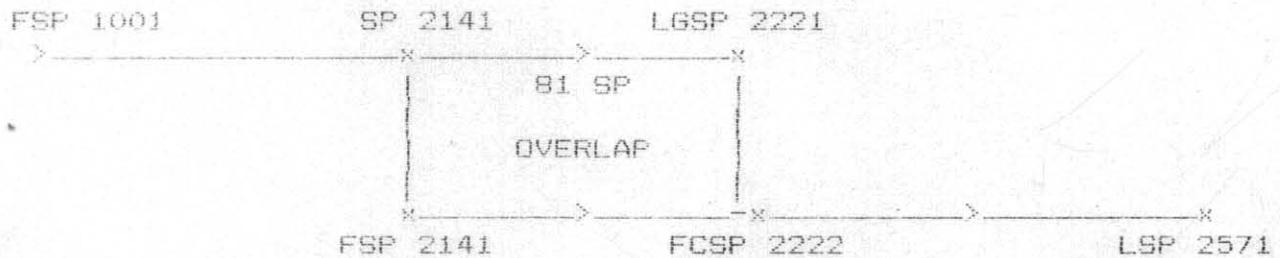
NB. OVERLAP REQUIRED IS EQUAL TO 1/2 STREAMER LENGTH.

OVERLAP DIAGRAM

LINE NO. BS90A-02A

I.D. 1002

DIR. 291.7 DEG.



LINE NO. BS90A-02C

I.D. 3002

DIR. 291.7 DEG.

FIRST CHARGEABLE SHOTPOINT = 2222

COMMENTS

- LINE BS90A-02A - TERMINATED DUE TO GROUND FAULT T.B.C./PROCESS.
- LINE BS90A-02B - TERMINATED AT B.O.L. DUE TO FCS FAILURE
- LINE BS90A-02C - COMPLETE/PROCESS

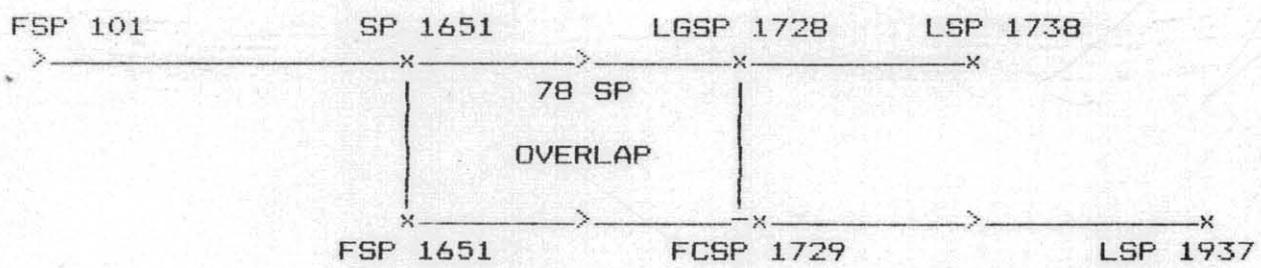
NB. OVERLAP REQUIRED IS EQUAL TO 1/2 STREAMER LENGTH.

242227

SHELL BS90B SURVEY FEBRUARY 1990
=====

OVERLAP DIAGRAM

LINE NO. BS90B-07 I.D. 7 DIR. 233.3 DEG.



LINE NO. BS90B-07A I.D. 1007 DIR. 233.3 DEG.

FIRST CHARGEABLE SHOTPOINT = 1729

COMMENTS

LINE BS90B-07 - TERMINATED DUE TO SPUB HANG UP.

T.B.C./PROCESS.

LINE BS90B-07A - COMPLETE/PROCESS.

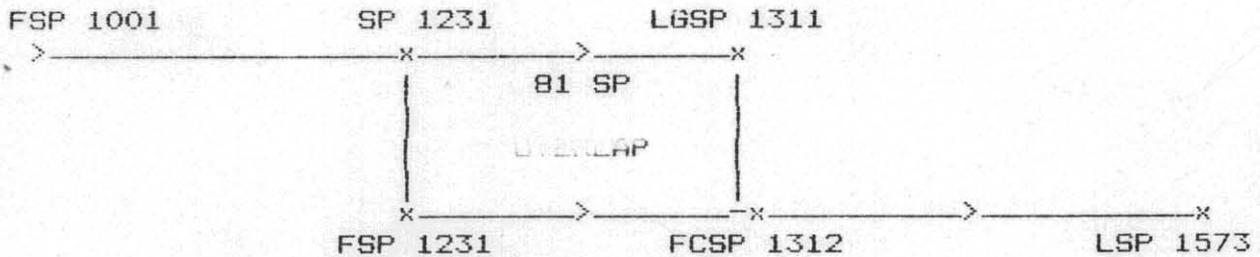
NB. OVERLAP REQUIRED IS EQUAL TO 1/2 STREAMER LENGTH.

242228

SHELL BS90B SURVEY FEBRUARY 1990

OVERLAP DIAGRAM

LINE NO. BS90B-09 I.D. 9 DIR. 233.2 DEG.



LINE NO. BS90B-09A I.D. 1009 DIR. 233.2 DEG.

FIRST CHARGEABLE SHOTPOINT = 1312

COMMENTS

LINE BS90B-09 - TERMINATED DUE TO CABLE FAILURE

T.B.C./PROCESS.

LINE BS90B-09A - COMPLETE/PROCESS.

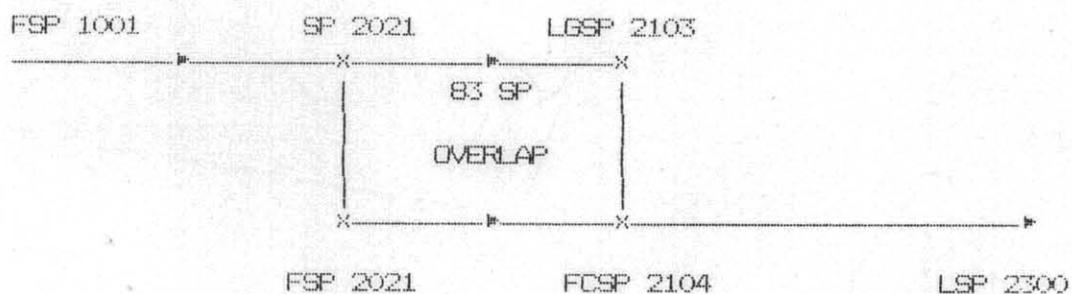
NB. OVERLAP REQUIRED IS EQUAL TO 1/2 STREAMER LENGTH.

242229

SHELL OS90A SURVEY MARCH 1990

OVERLAP DIAGRAM

LINE NO. OS90A-11 I.D. 11 DIR. 347.6 DEG.



LINE NO. OS90A-11C I.D. 3011 DIR. 347.6 DEG.

FIRST CHARGEABLE SHOTPOINT = 2104

COMMENTS

LINE OS90A-11 - TERMINATED DUE TO FCS HANG UP
T.B.C./PROCESS.

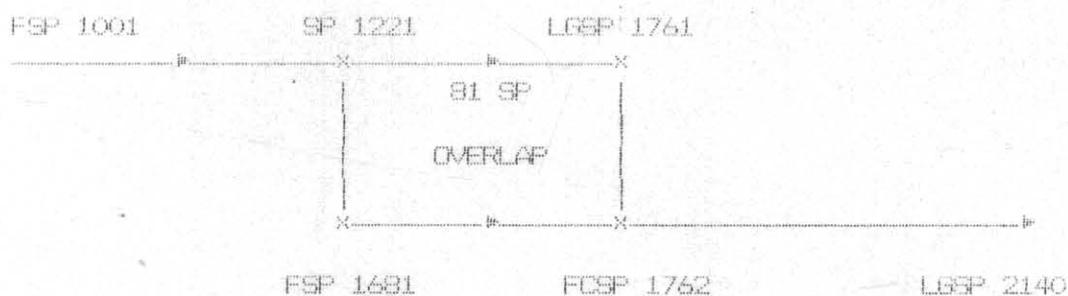
LINE OS90A-11C - COMPLETE/PROCESS

NB. OVERLAP REQUIRED IS EQUAL TO 1/2 STREAMER LENGTH + STREAMER OFFSET

SHELL 0590A SURVEY MARCH 1990

OVERLAP DIAGRAM

LINE NO. 0590A-19 I.D. 19 DIR. 347.6 DEG.



LINE NO. 0590A-19A I.D. 1019 DIR. 347.7 DEG.

FIRST CHARGEABLE SHOTPOINT = 1762
 LAST GOOD SHOT POINT = 2140

COMMENTS

LINE 0590A-19 - TERMINATED DUE TO FCS HANG UP
 T.B.C./PROCESS.

LINE 0590A-19A - T.B.C./PROCESS
 TERMINATED DUE TO FCS HANG UP

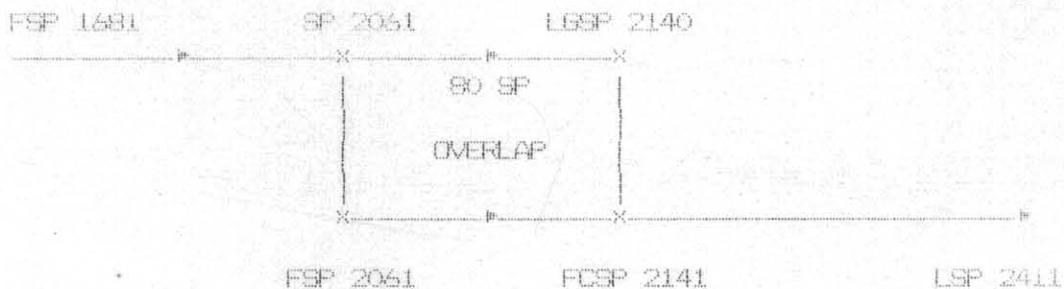
NB. OVERLAP REQUIRED IS EQUAL TO 1/2 STREAMER LENGTH + STREAMER OFFSET

242231

SHELL 0590A SURVEY MARCH 1990

OVERLAP DIAGRAM

LINE NO. 0590A-19A I.D. 1019 DIR. 347.7 DEG.



LINE NO. 0590A-19B I.D. 2019 DIR. 347.6 DEG.

FIRST CHARGEABLE SHOTPOINT = 2141

COMMENTS

LINE 0590A-19A - TERMINATED DUE TO FCS HANG UP
T.B.C./PROCESS.

LINE 0590A-19B - COMPLETE/PROCESS

NB. OVERLAP REQUIRED IS EQUAL TO 1/2 STREAMER LENGTH + STREAMER OFFSET

242232

SHELL OS90A SURVEY FEBRUARY 1990

OVERLAP DIAGRAM

LINE NO. OS90A-20 I.D. 20 DIR. 077.6 DEG.



LINE NO. OS90A-20A I.D. 1020 DIR. 077.5 DEG.

FIRST CHARGEABLE SHOTPOINT = 1302

COMMENTS

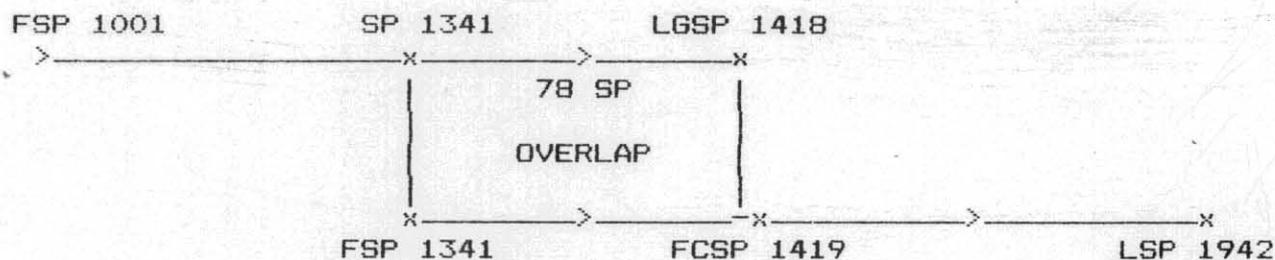
LINE OS90A-20 - TERMINATED DUE TO SHIPPING
T.B.C./PROCESS.

LINE OS90A-20A - COMPLETE/PROCESS

NB. OVERLAP REQUIRED IS EQUAL TO 1/2 STREAMER LENGTH + STREAMER OFFSET

OVERLAP DIAGRAM

LINE NO. BS90A-35 I.D. 35 DIR. 022.6 DEG.



LINE NO. BS90A-35A I.D. 1035 DIR. 022.6 DEG.

FIRST CHARGEABLE SHOTPOINT = 1419

COMMENTS

LINE BS90A-35 - TERMINATED DUE TO NAVIGATION
T.B.C./PROCESS.

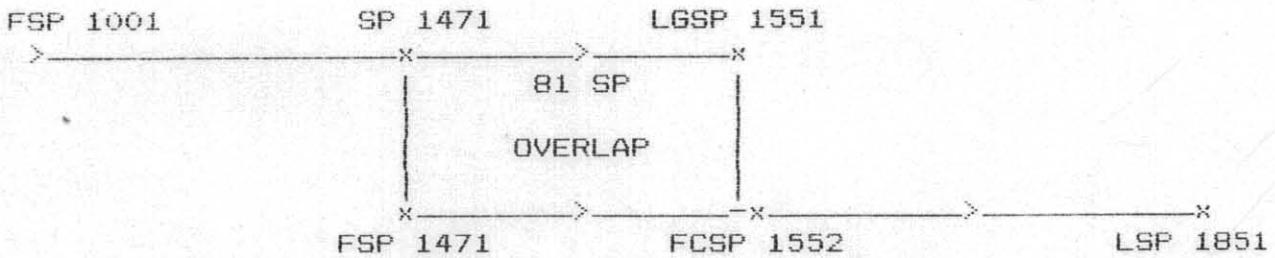
LINE BS90A-35A - COMPLETE/PROCESS

NB. OVERLAP REQUIRED IS EQUAL TO 1/2 STREAMER LENGTH.

242234

OVERLAP DIAGRAM

LINE NO. 0590A-51 I.D. 1051 DIR. 347.8 DEG.



LINE NO. 0590A-51A I.D. 1051 DIR. 347.9 DEG.

FIRST CHARGEABLE SHOTPOINT = 1552

COMMENTS

LINE 0590A-51 - TERMINATED DUE TO SHIP NOISE
T.B.C./PROCESS.

LINE 0590A-51A - CONSIDER COMPLETE/PROCESS

NB. OVERLAP REQUIRED IS EQUAL TO 1/2 STREAMER LENGTH.

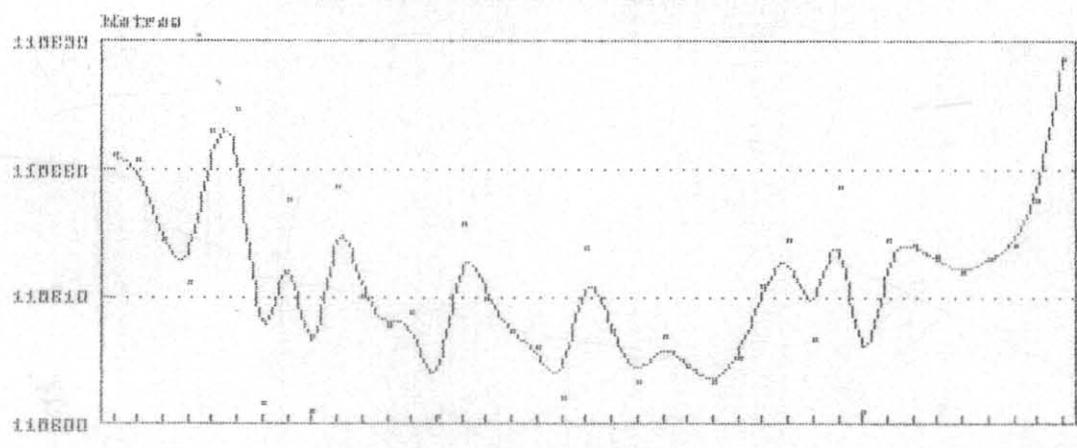
242235

APPENDIX F

BASELINE CROSSING DATA/GRAPHS

242230

BASELINE CROSSING # 1 PT. SORRELL/NORTH PT.



40 samples

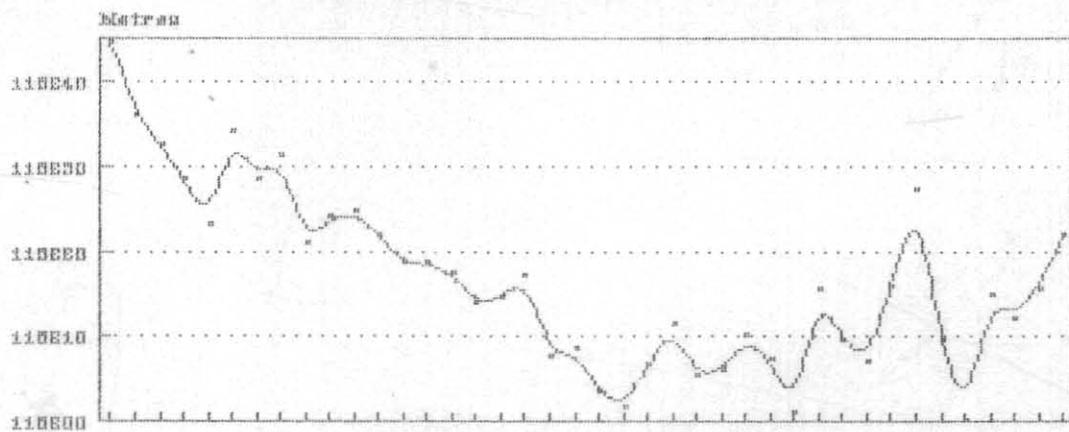
— CORP 1027; 118805.0M

PACIFIC TREN

5 cm

242237

BASELINE CROSSING # 2 PT. SORRELL/NORTH PT.



40 samples

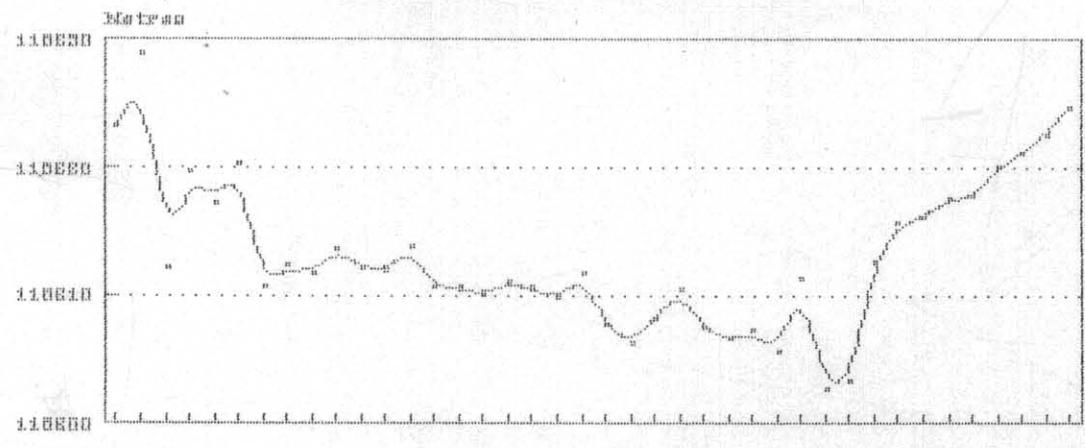
— COMP DEST: 110600.00

PACIFIC TIME

5 cm

242238

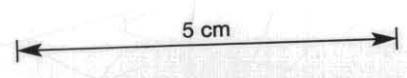
BASELINE CROSSING # 3 PT. SORRELL/NORTH PT.



40 samples

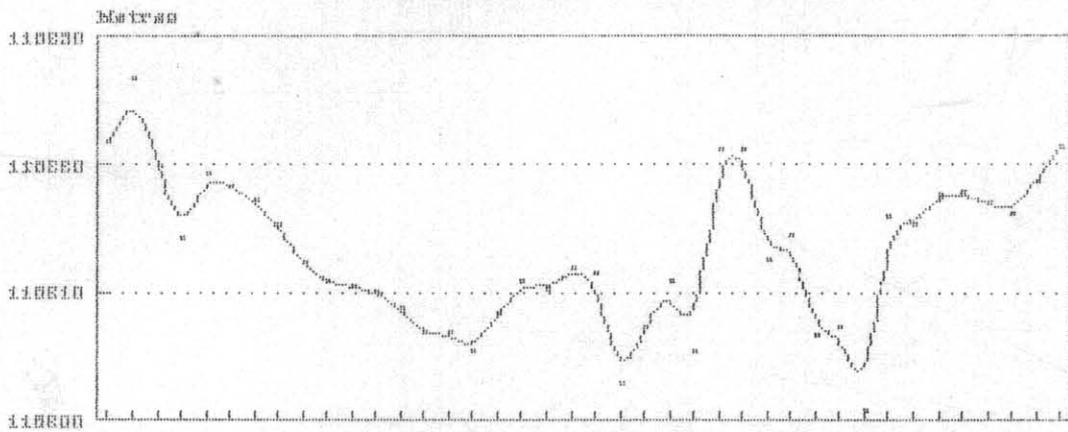
— MEAN

MAGNETIC FIELD



242239

BASELINE CROSSING # 4 PT. SORRELL/NORTH PT.



40 samples

— 0100P 000P; 110800.00

PACIFIC TIME

5 cm

5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
CAPE

ID.. PASS1

Date...03-04-1990

S-Time..22:15:17

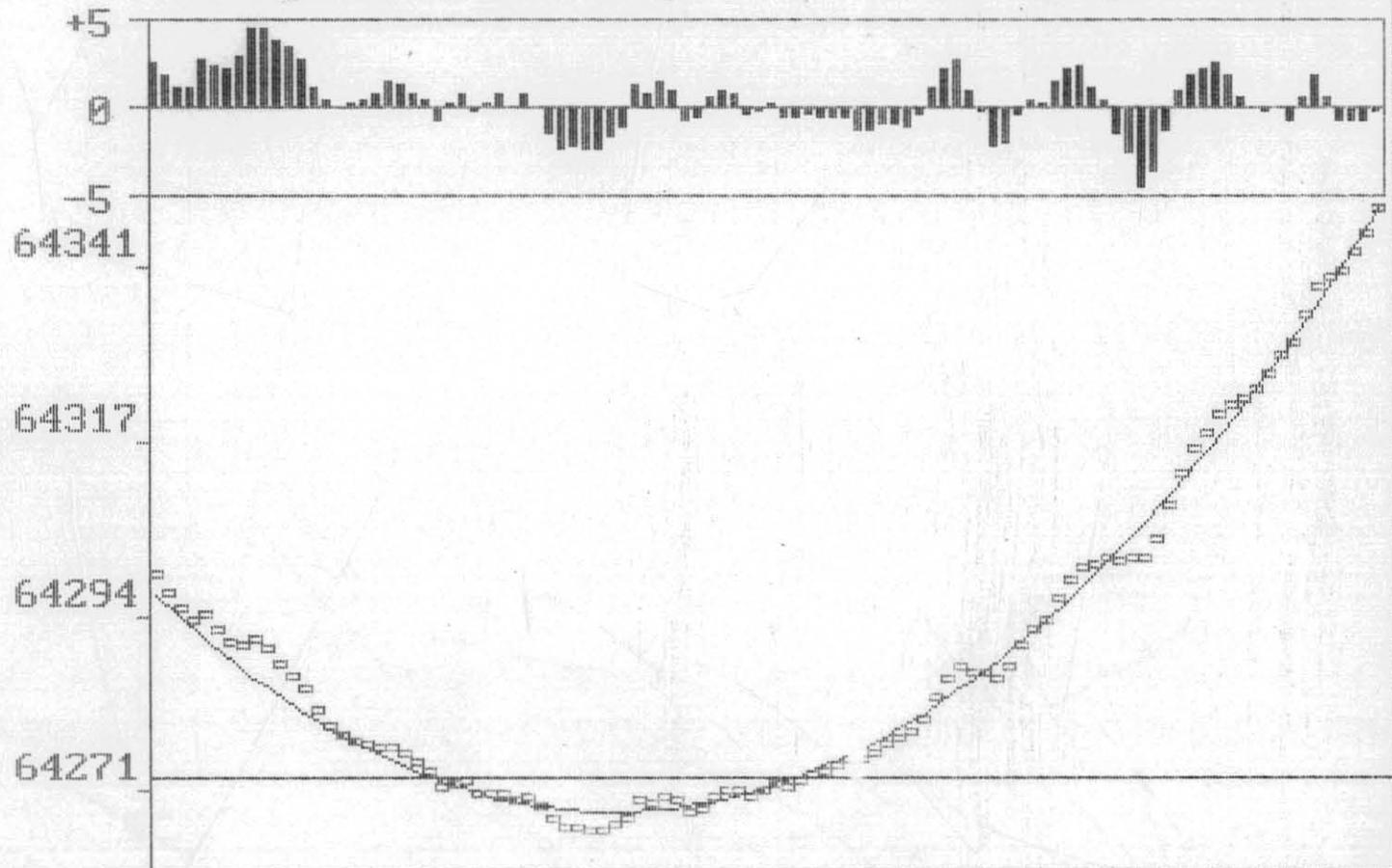
E-Time..22:31:58

Computed Range
64272.2

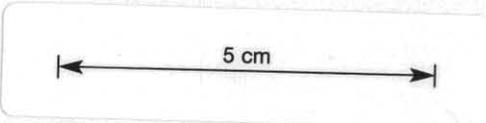
Observed Range
64267.69

C-0 = +4.5

Graph of (Raw Range - Curve Fit Range) Mtrs.



242240



Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

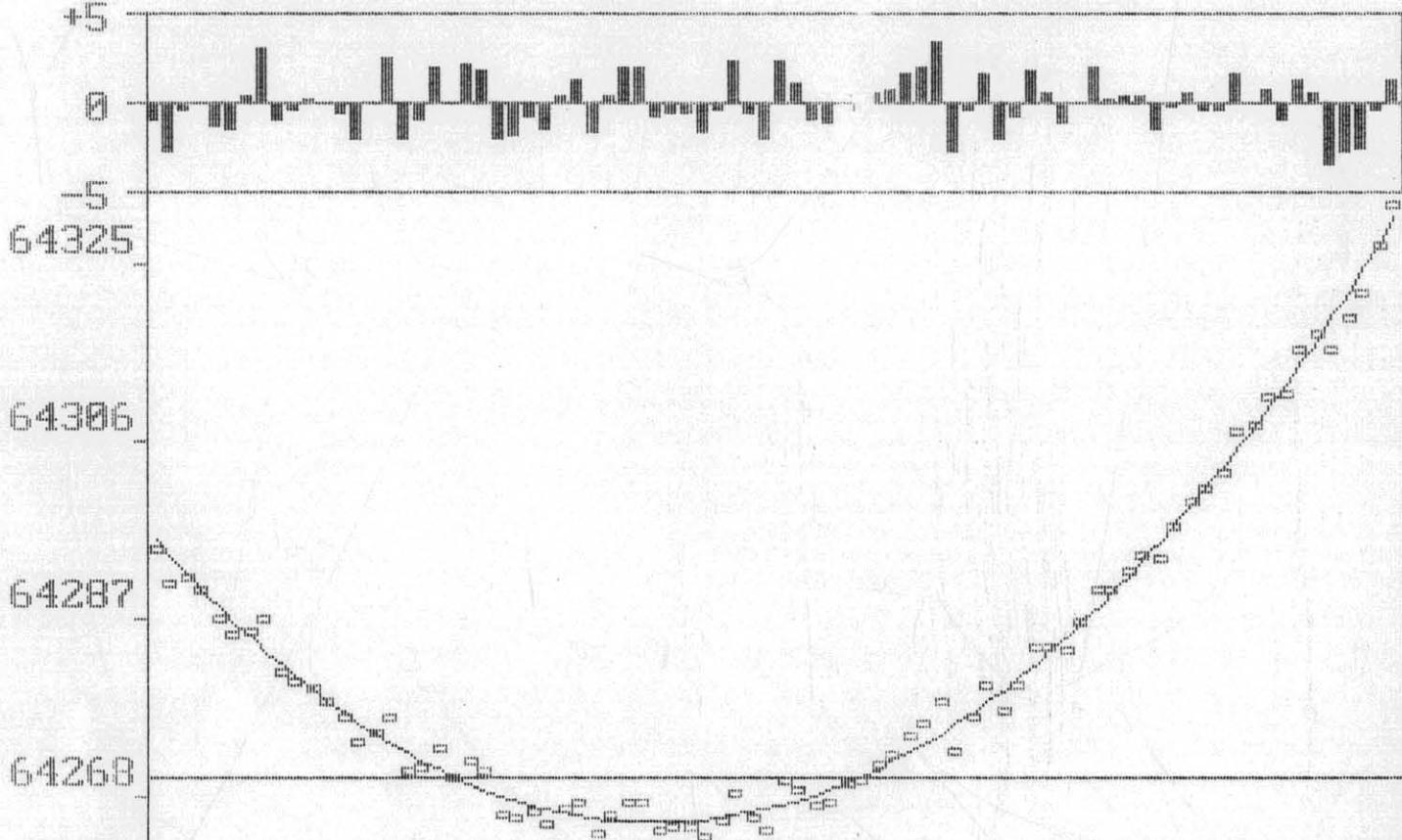
BASELINE
INGOLDSBY
CAPE SCHANK

ID.. PASS1
Date...03-11-1990
S-Time..04:17:40
E-Time..04:31:11

Computed Range
64269.6
Observed Range
64264.75

C-0 = +4.8

Graph of (Raw Range - Curve Fit Range) Mtrs.



242241

5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

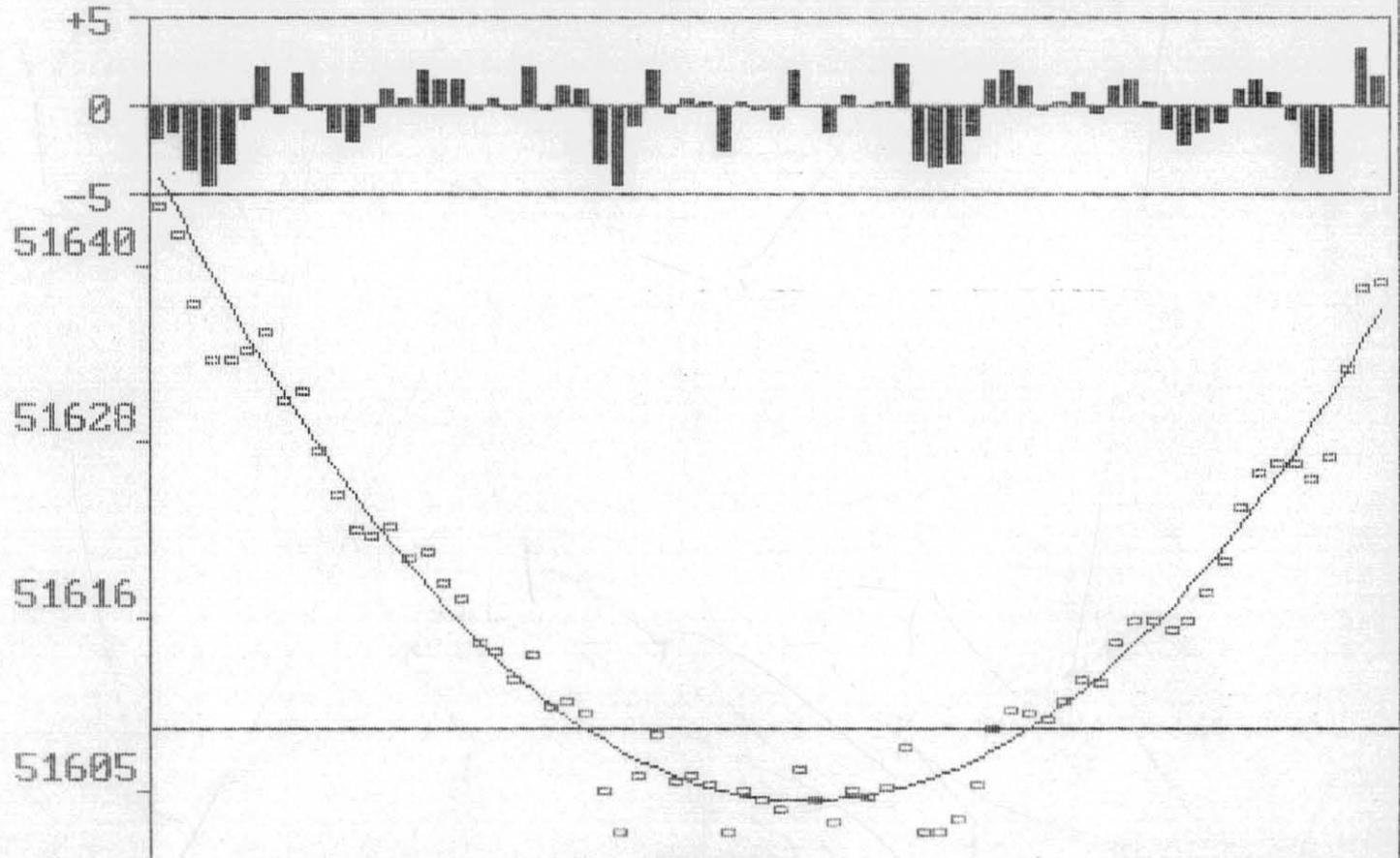
BASELINE
INGOLDSBY
ST. PAULLS

ID.. PASS1
Date...03-11-1990
S-Time..05:06:00
E-Time..05:17:33

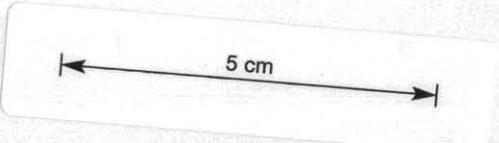
Computed Range
51608.9
Observed Range
51603.85

C-0 = +5.0

Graph of (Raw Range - Curve Fit Range) Mtrs.



242242



Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

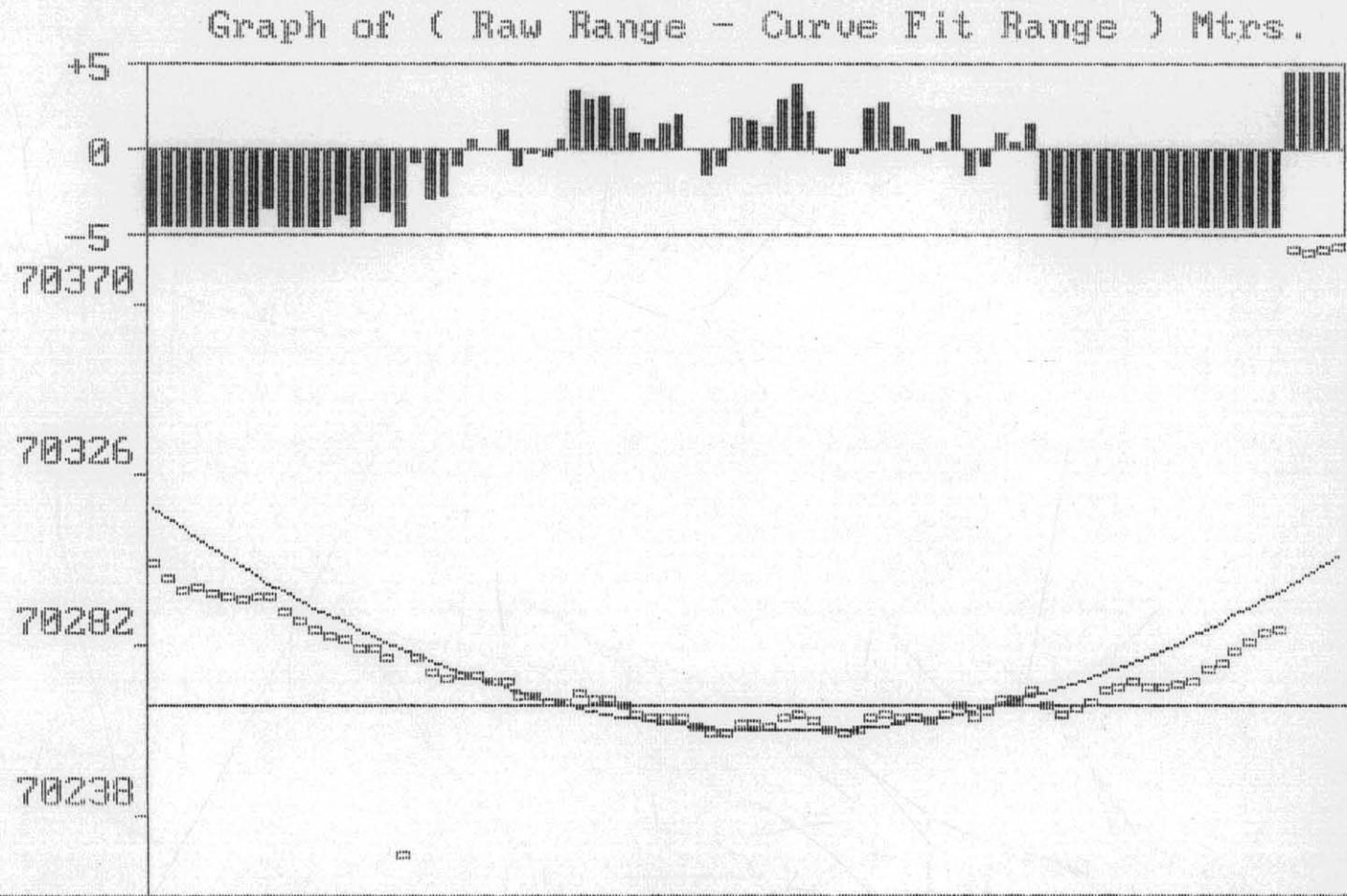
BASELINE
TEDDY'S LOOK
ST. PAULLS

ID.. PASS1
Date...03-11-1990
S-Time..08:12:06
E-Time..08:25:48

Computed Range
70266.3

Observed Range
70259.48

C-0 = +6.8



5 cm

Halliburton Geophysical Services Inc.
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
ST. PAULLS

ID.. PASS1

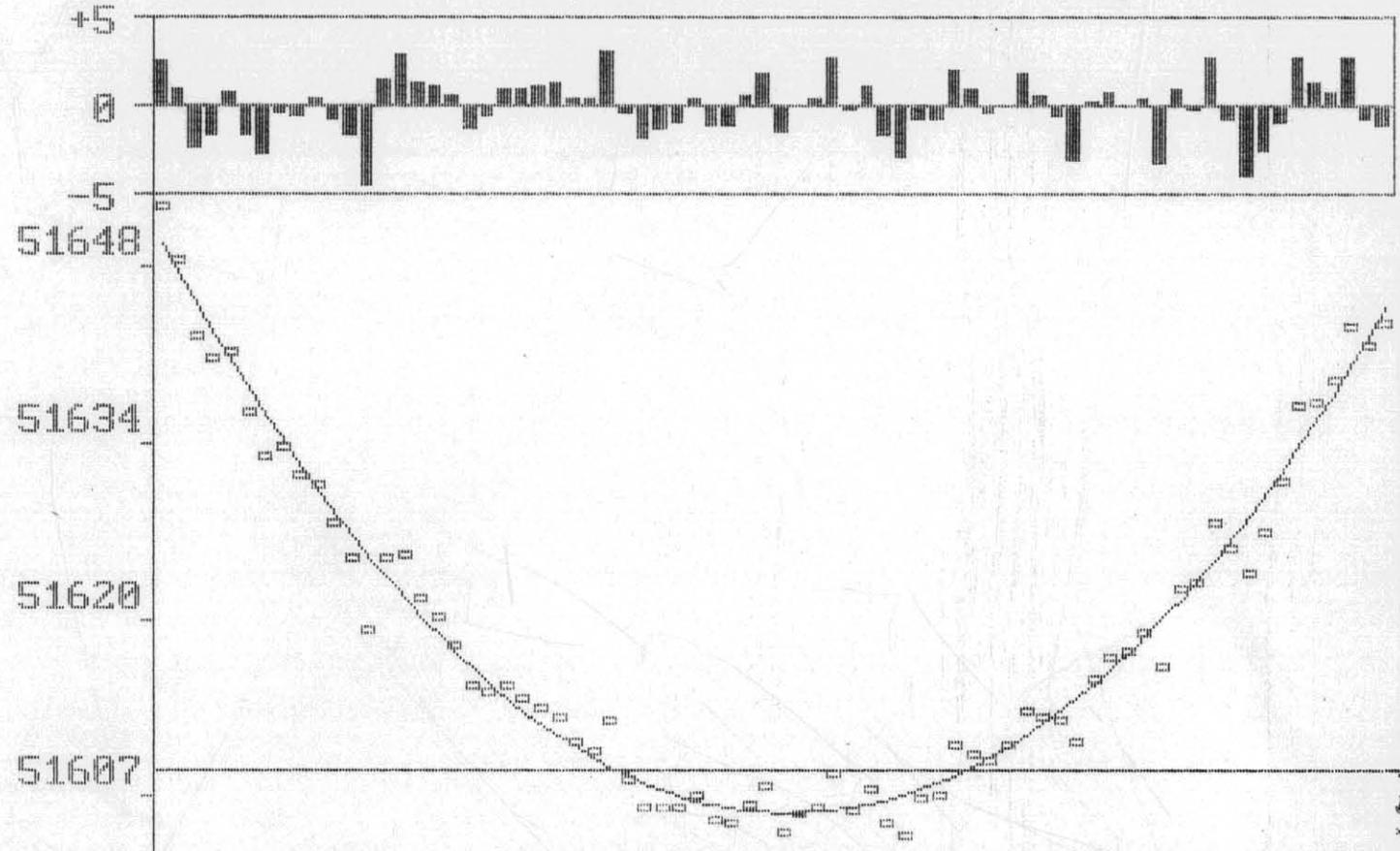
Date... 83-11-1990
S-Time.. 08:55:19
E-Time.. 09:07:20

Computed Range
51608.9

Observed Range
51605.55

C-0 = +3.3

Graph of (Raw Range - Curve Fit Range) Mtrs.



242944

5 cm

Halliburton Geophysical Services Inc.,
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
CAPE SCHANK

ID.. PASS1

Date...03-11-1990

S-Time..14:02:51

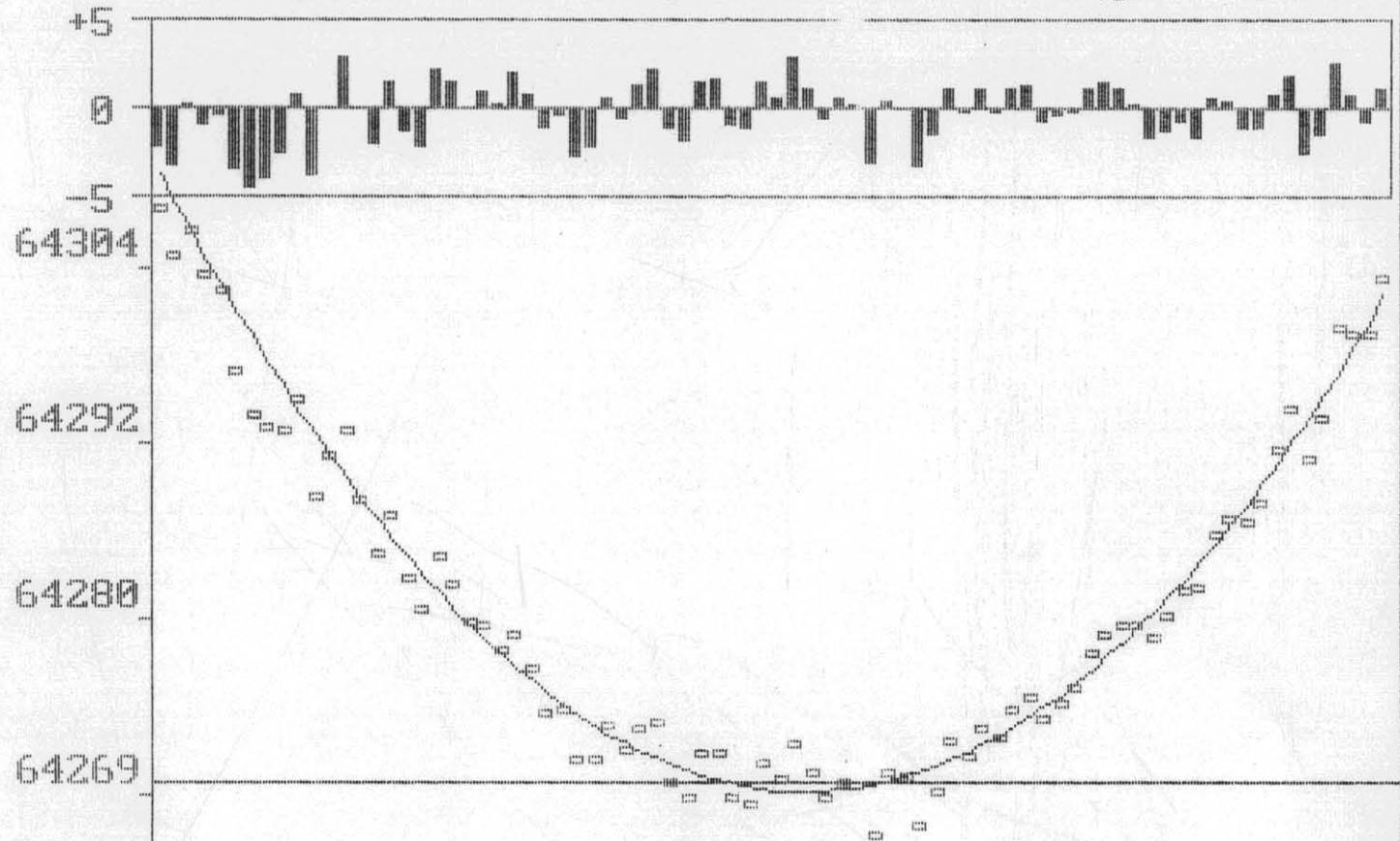
E-Time..14:16:14

Computed Range
64269.6

Observed Range
64269.04

C-O = +0.6

Graph of (Raw Range - Curve Fit Range) Mtrs.



5 cm

Halliburton Geophysical Services Inc.,
Baseline Crossing Utilities.

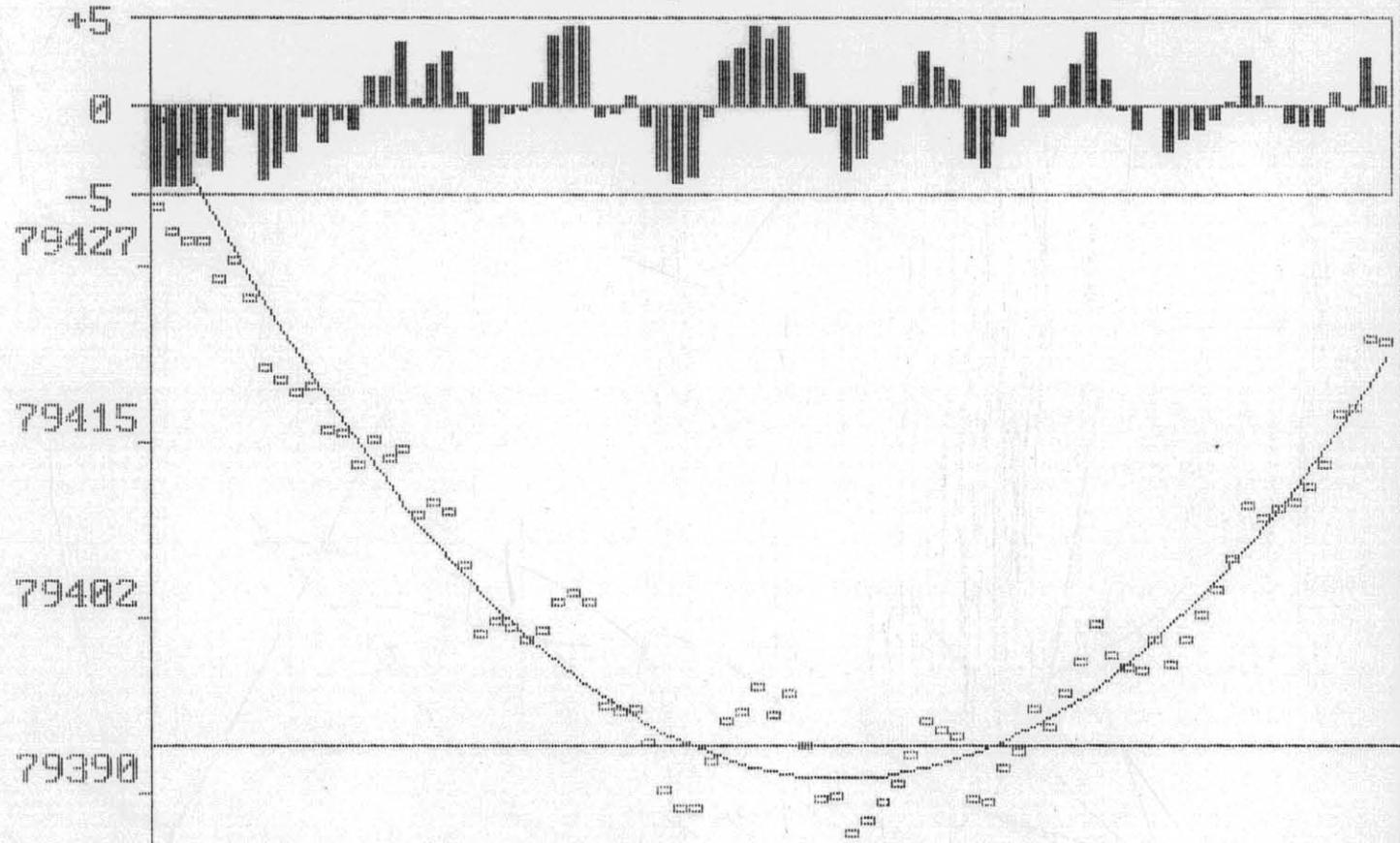
BASELINE
TEDDY'S LOOK
CAPE SCHANK

ID.. PASS1
Date...03-11-1990
S-Time..15:36:59
E-Time..15:50:34

Computed Range
79392.9
Observed Range
79390.57

C-O = +2.3

Graph of (Raw Range - Curve Fit Range) Mtrs.



242246

5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
BARWON HEAD
CAPE SCHANK

ID.. PASS1

Date...03-16-1990

S-Time..01:19:02

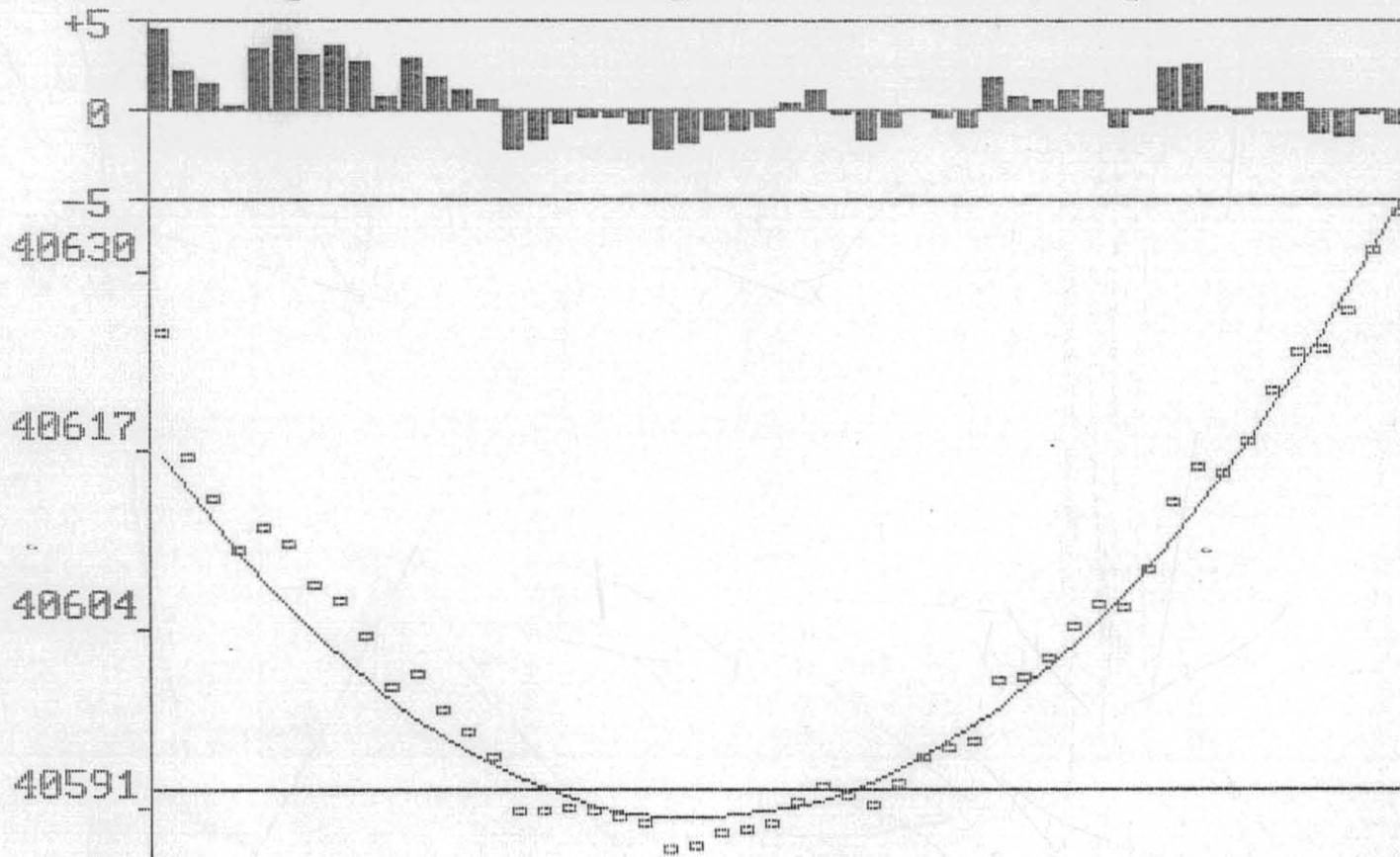
E-Time..01:27:23

Computed Range
40592.3

Observed Range
40590.07

C-0 = +2.2

Graph of (Raw Range - Curve Fit Range) Mtrs.



242247

5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
TEDDY'S LOOK
CAPE SCHANK

ID.. PASS1

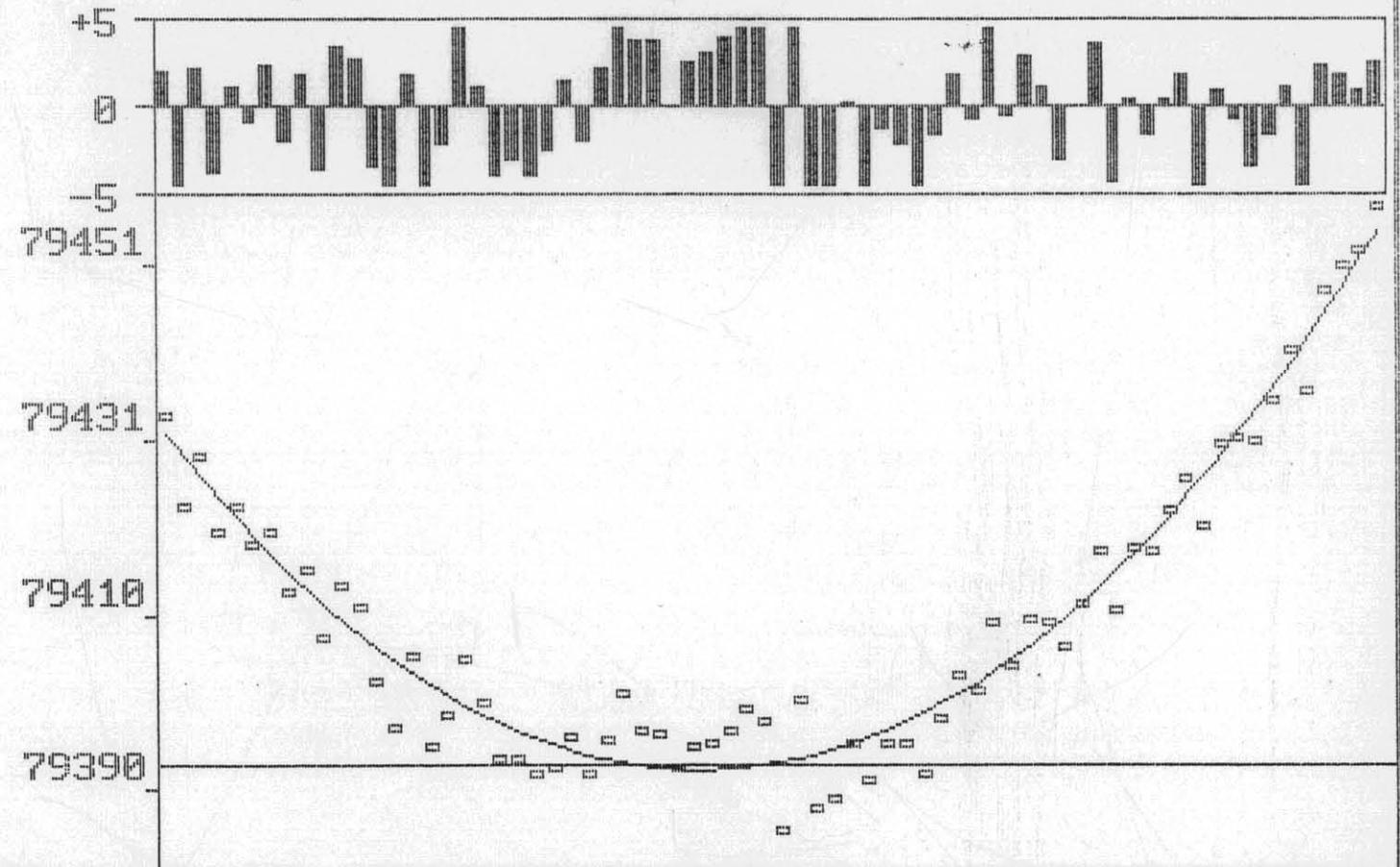
Date...03-16-1990
S-Time..19:02:59
E-Time..19:14:40

Computed Range
79392.9

Observed Range
79392.24

C-0 = +0.7

Graph of (Raw Range - Curve Fit Range) Mtrs.



5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
CAPE SCHANK

Graph of (Raw Range - Curve Fit Range) Mtrs.

ID.. PASS1

Date...03-16-1990

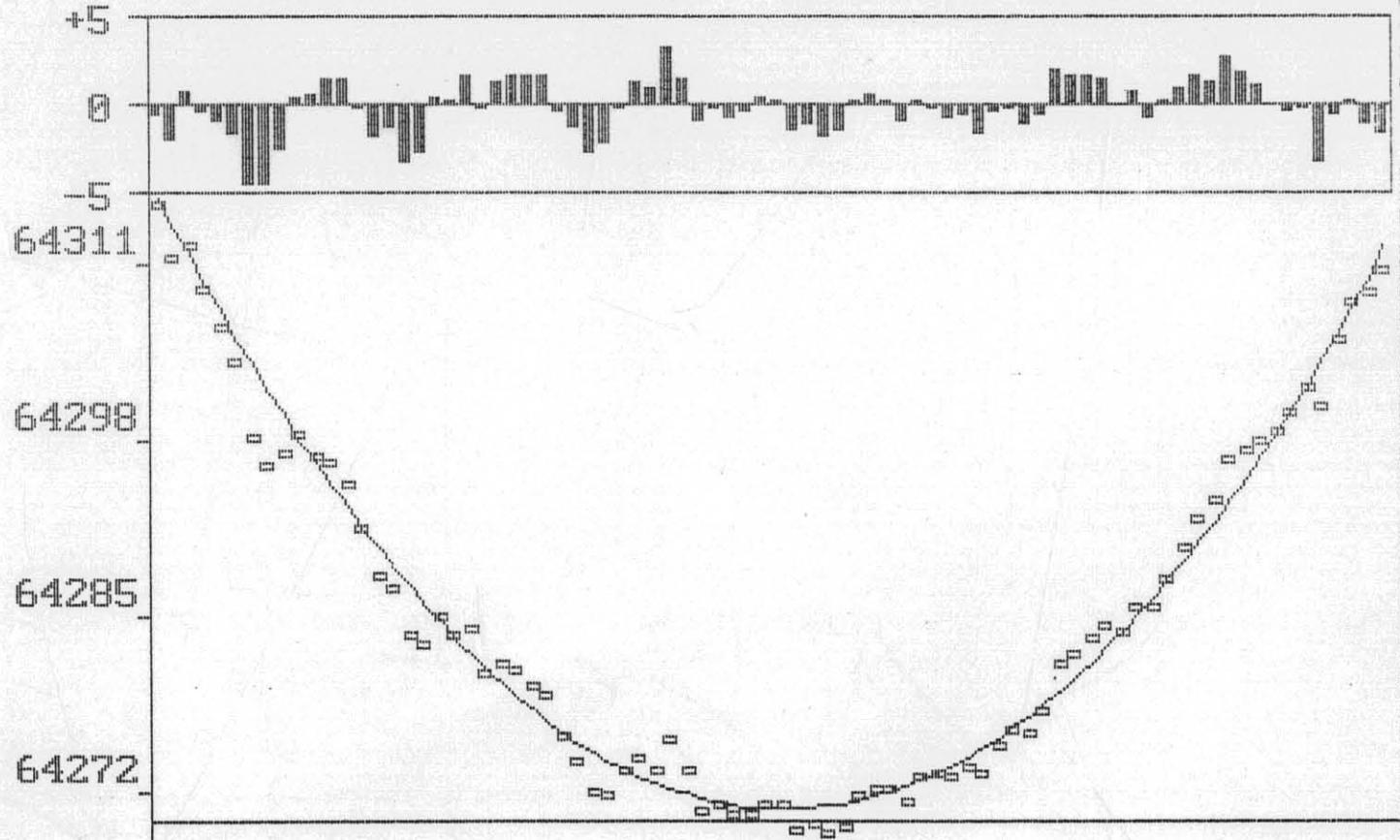
S-Time..22:52:04

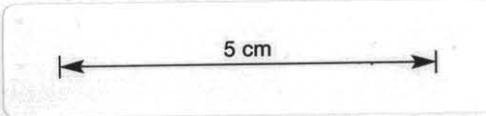
E-Time..23:05:25

Computed Range
64269.6

Observed Range
64270.41

C-0 = -0.8





Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
TEDDY'S LOOK
ST. PAULLS

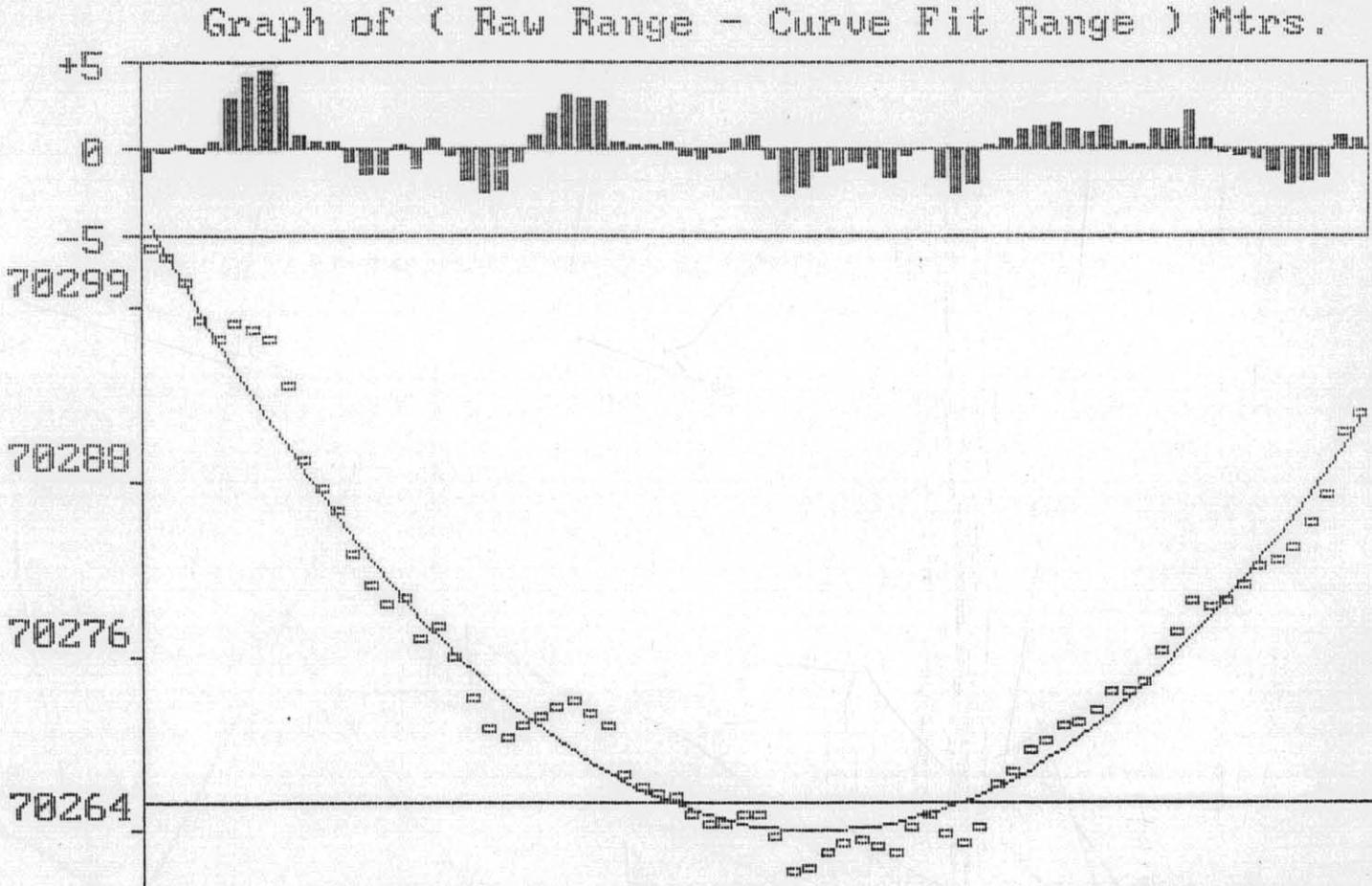
ID.. PASS1

Date...03-16-1990
S-Time..23:20:02
E-Time..23:32:22

Computed Range
70266.3

Observed Range
70264.45

C-0 = +1.8



5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
ST. PAULLS

ID.. PASS1

Date...03-16-1998

S-Time..23:57:04

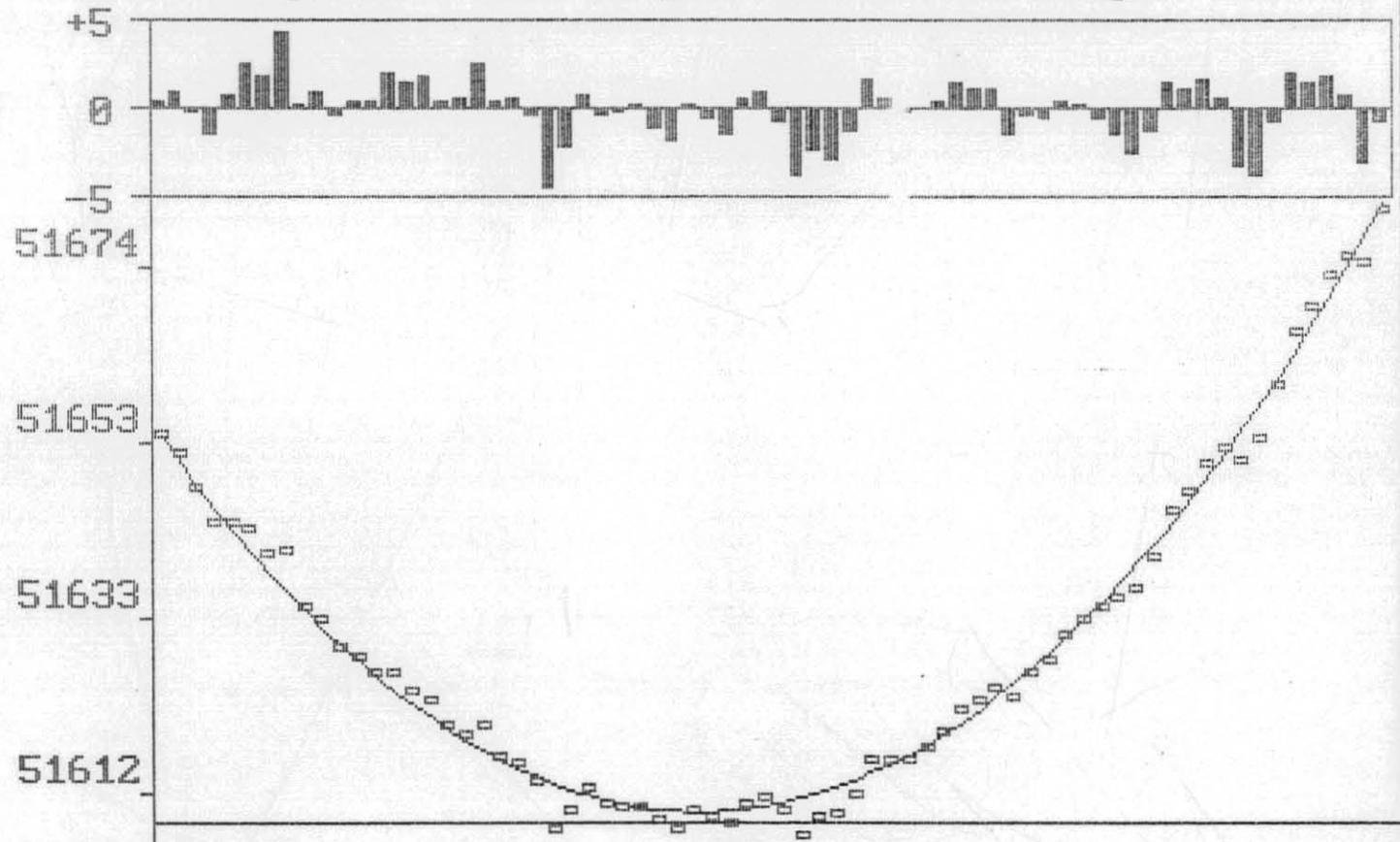
E-Time..00:08:47

Computed Range
51608.9

Observed Range
51610.02

C-0 = -1.1

Graph of (Raw Range - Curve Fit Range) Mtrs.



242251

5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
TEDDY
CAPE

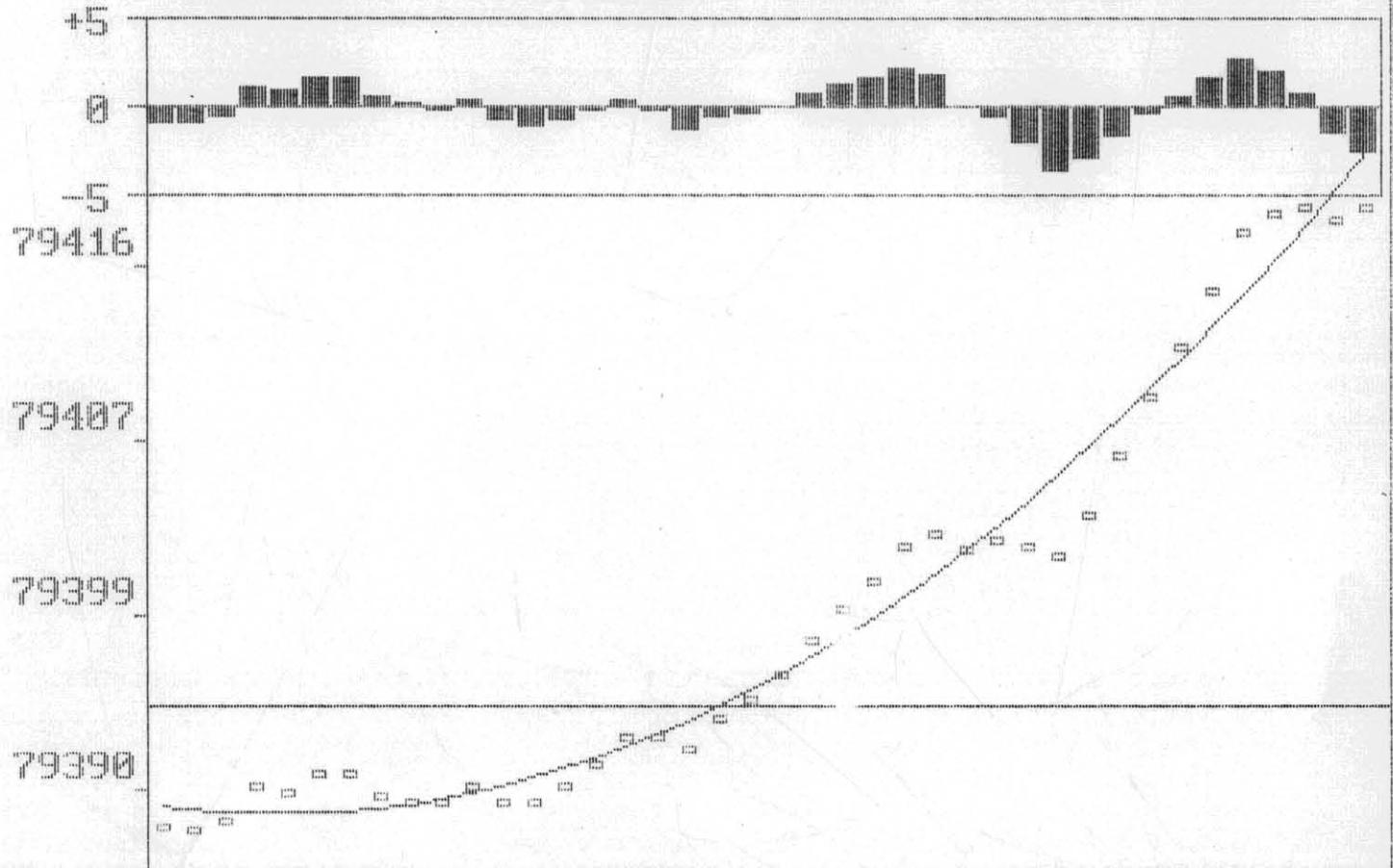
Graph of (Raw Range - Curve Fit Range) Mtrs.

ID.. PASS#2
Date...03-04-1990
S-Time..20:03:13
E-Time..20:10:19

Computed Range
79394.1

Observed Range
79388.95

C-O = +5.2



242252

5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
CAPE

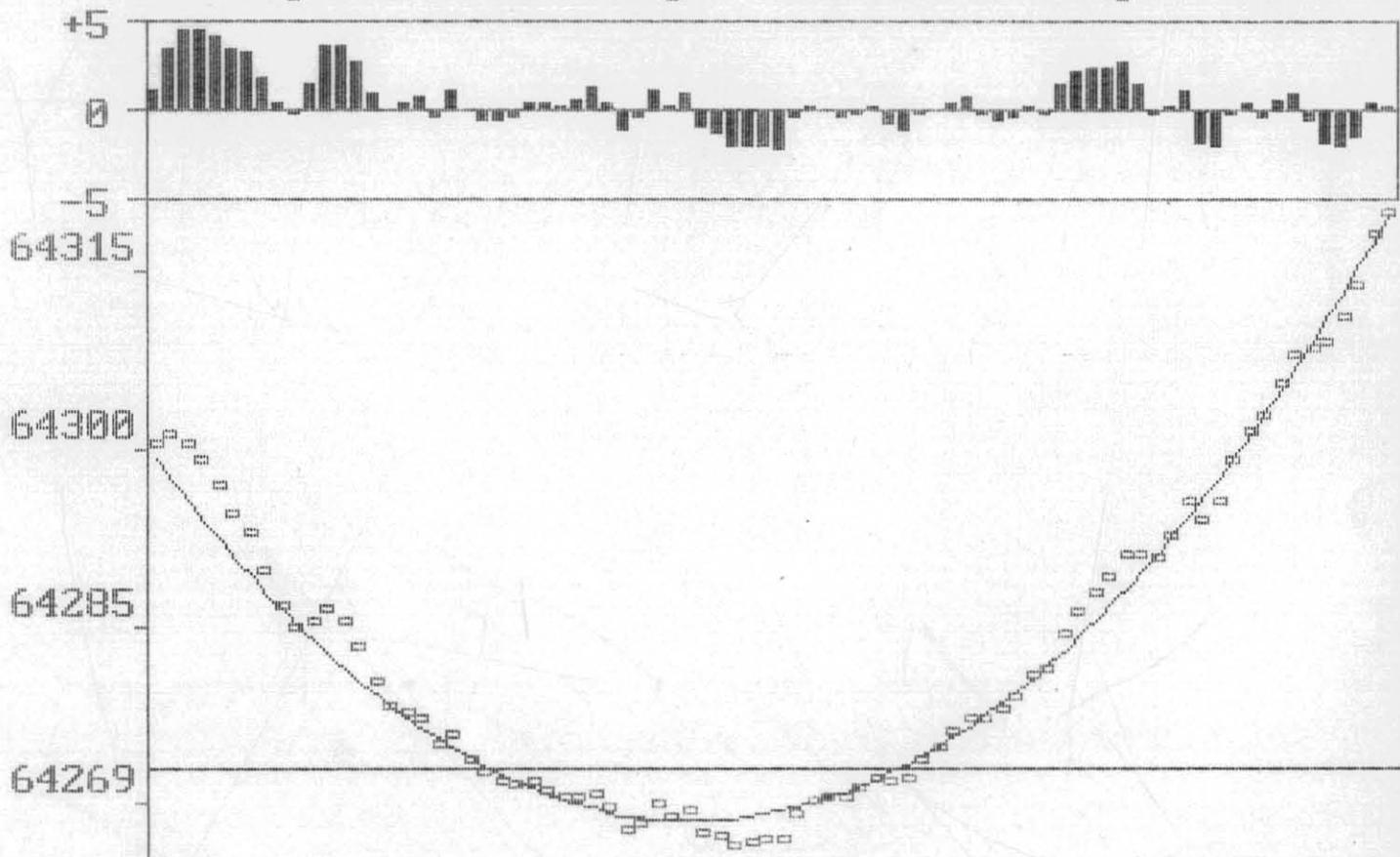
Graph of (Raw Range - Curve Fit Range) Mtrs.

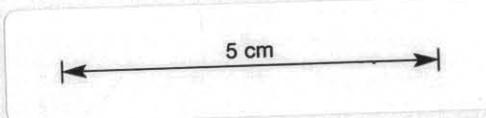
ID.. PASS2
Date...03-04-1990
S-Time..22:39:59
E-Time..22:53:20

Computed Range
64272.2

Observed Range
64267.77

C-0 = +4.4





Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
ST. PAULLS

Graph of (Raw Range - Curve Fit Range) Mtrs.

ID.. PASSZ

Date...03-11-1990

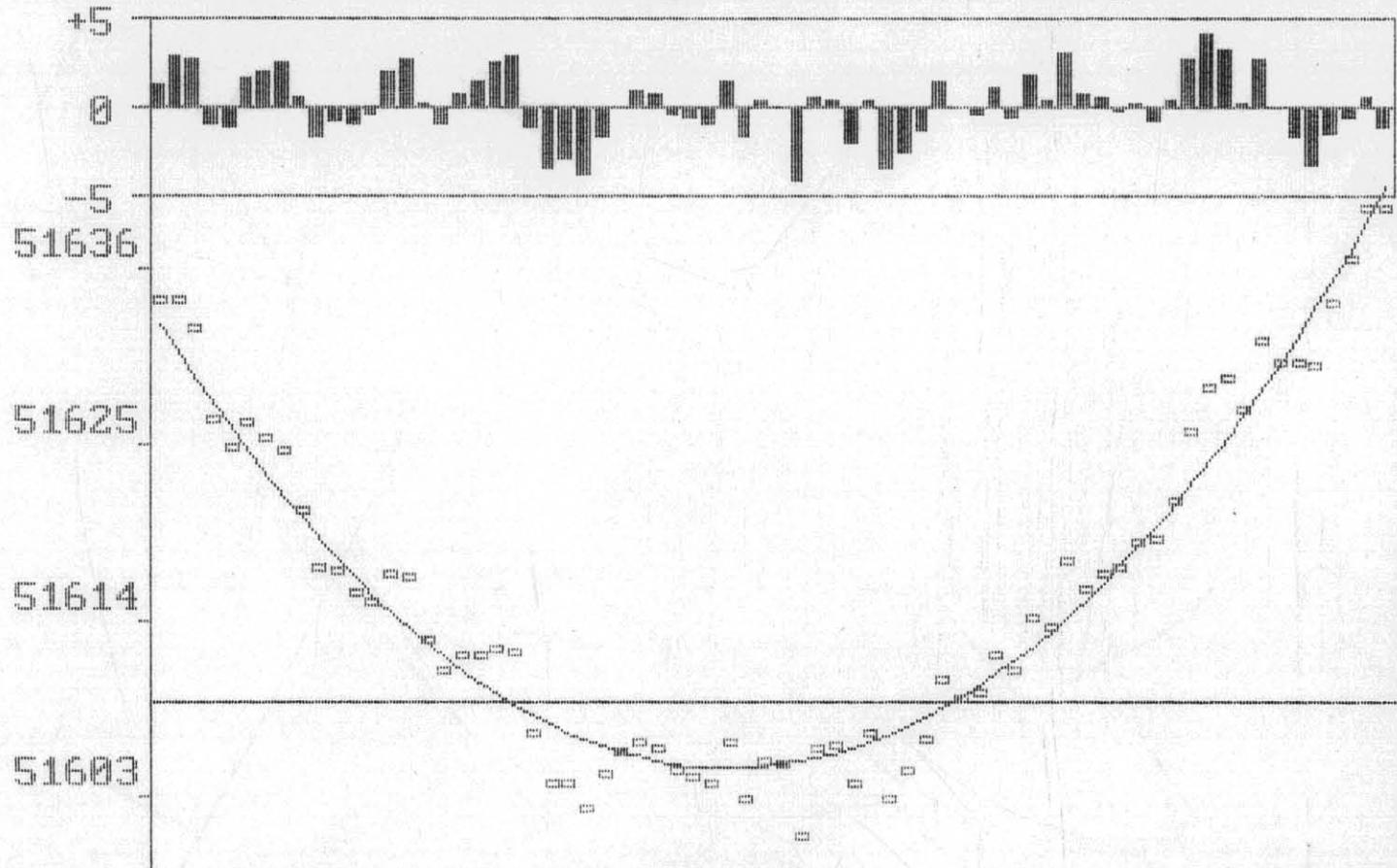
S-Time..05:39:44

E-Time..05:51:26

Computed Range
51608.9

Observed Range
51604.73

C-O = +4.2



24294

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
ST. PAULLS

ID.. pass2

Date...03-11-1990

S-Time..09:24:53

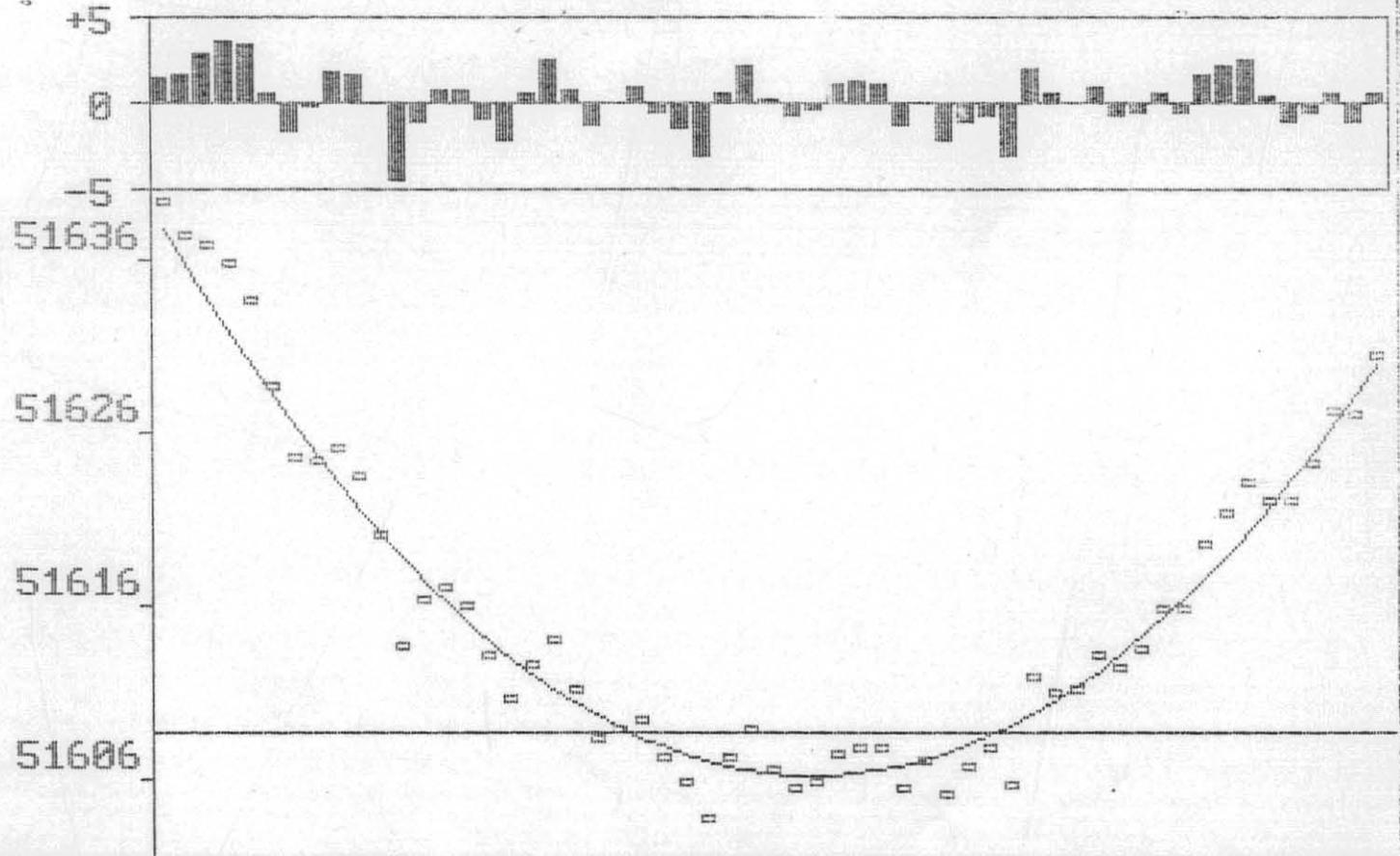
E-Time..09:34:29

Computed Range
51608.9

Observed Range
51606.38

C-0 = +2.5

Graph of (Raw Range - Curve Fit Range) Mtrs.



5 cm

5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
TEDDY'S LOOK
ST. PAULLS

ID.. PASS2

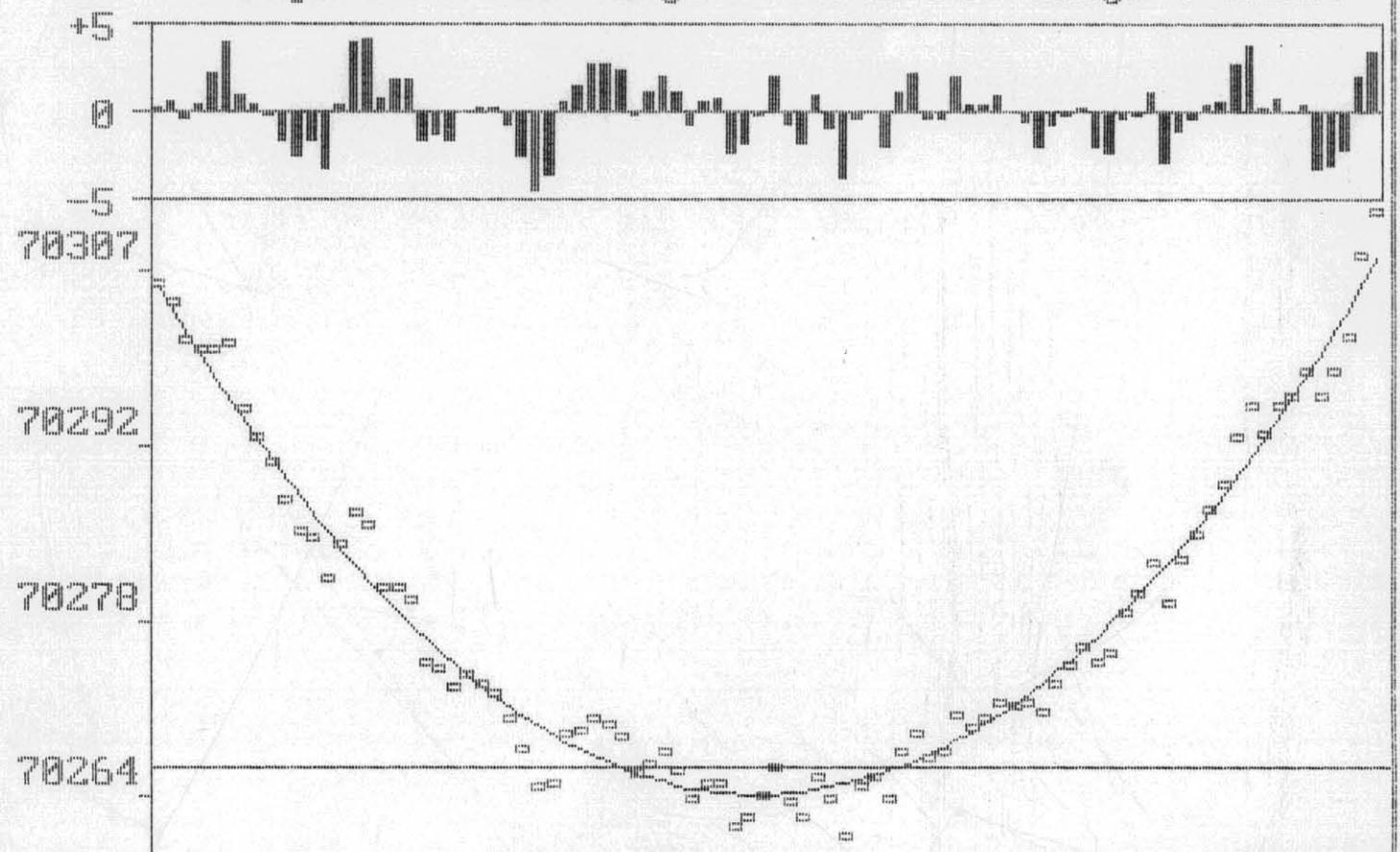
Date...03-11-1990
S-Time..10:05:19
E-Time..10:20:07

Computed Range
70266.3

Observed Range
70264.16

C-0 = +2.1

Graph of (Raw Range - Curve Fit Range) Mtrs.



5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
CAPE SCHANK

ID.. PASS2

Date...03-11-1990

S-Time..14:39:33

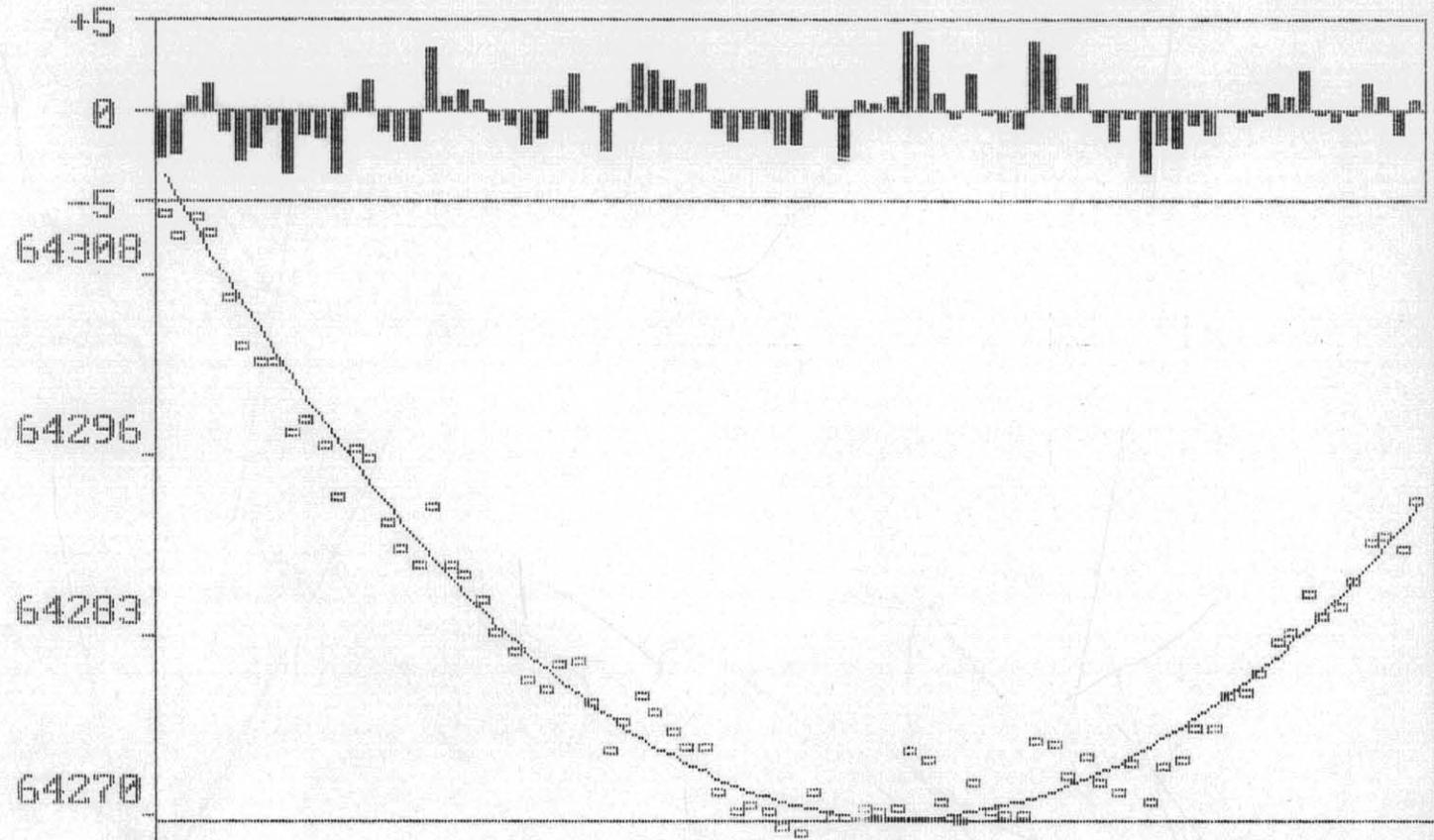
E-Time..14:52:54

Computed Range
64269.6

Observed Range
64269.9

C-O = -0.3

Graph of (Raw Range - Curve Fit Range) Mtrs.



212676

5 cm

Halliburton Geophysical Services Inc.,
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
CAPE

Graph of (Raw Range - Curve Fit Range) Mtrs.

ID.. PASS3

Date....03-04-1990

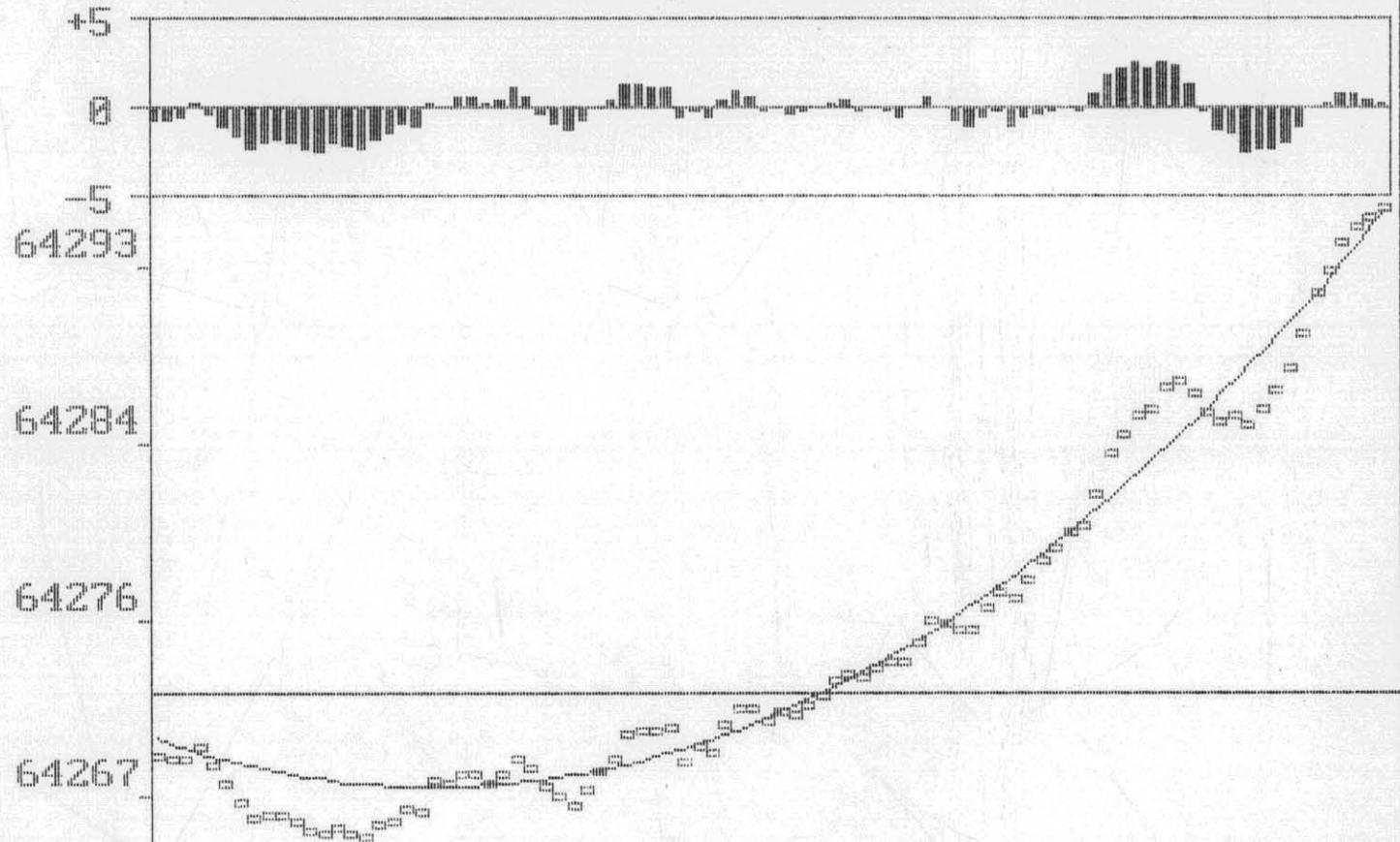
S-Time..23:11:44

E-Time..23:19:17

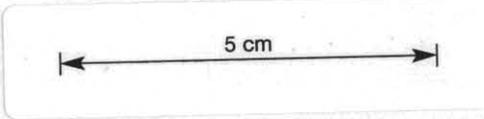
Computed Range
64272.2

Observed Range
64267.71

C-0 = +4.5



242258



Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
BARWON HEAD
CAPE

ID.. PASS3

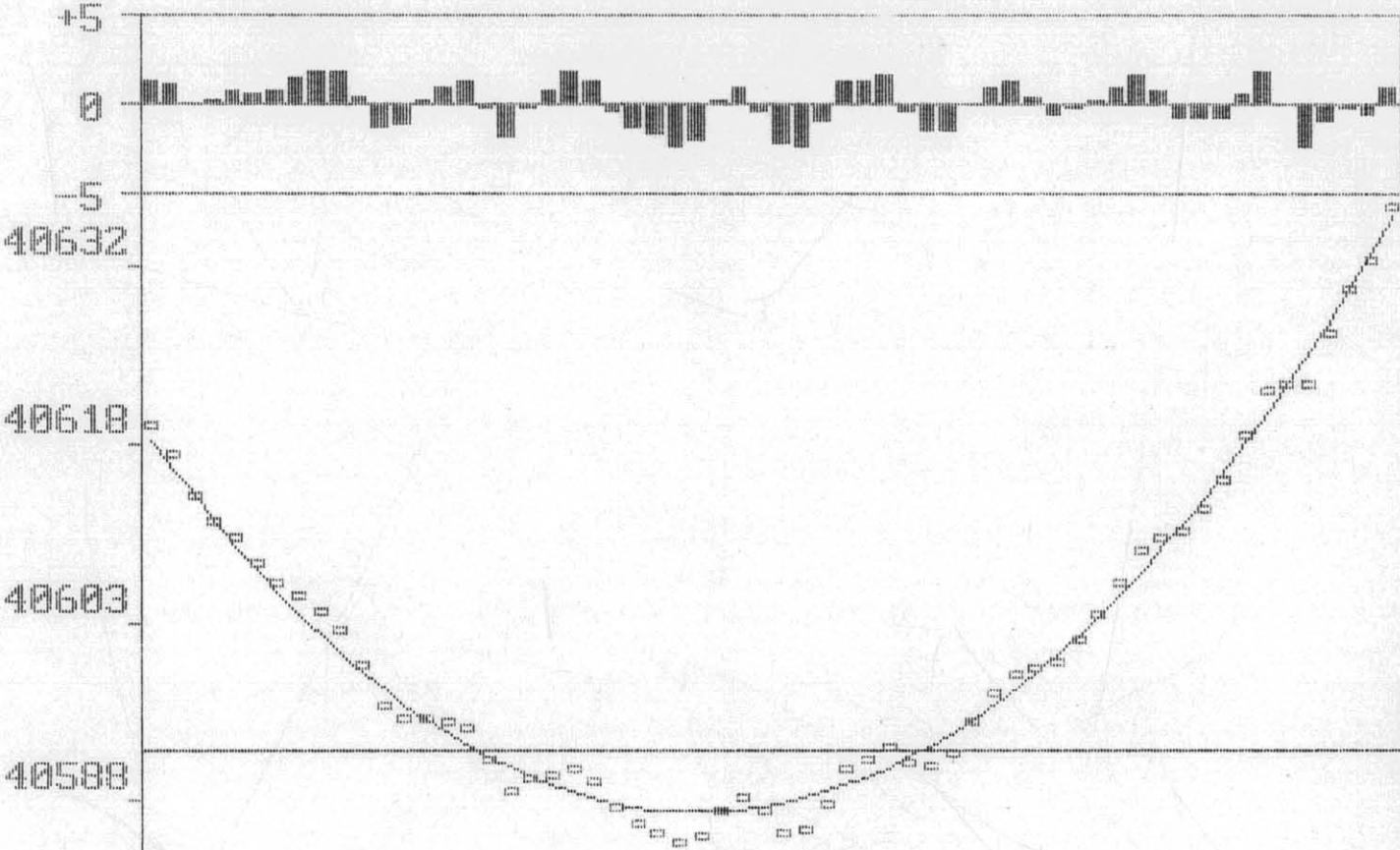
Date...03-05-1990
S-Time..20:09:54
E-Time..20:19:54

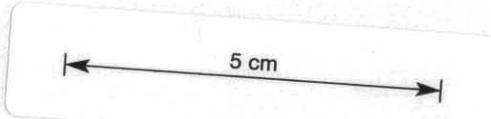
Computed Range
40592.3

Observed Range
40587.13

C-O = +5.2

Graph of (Raw Range - Curve Fit Range) Mtrs.





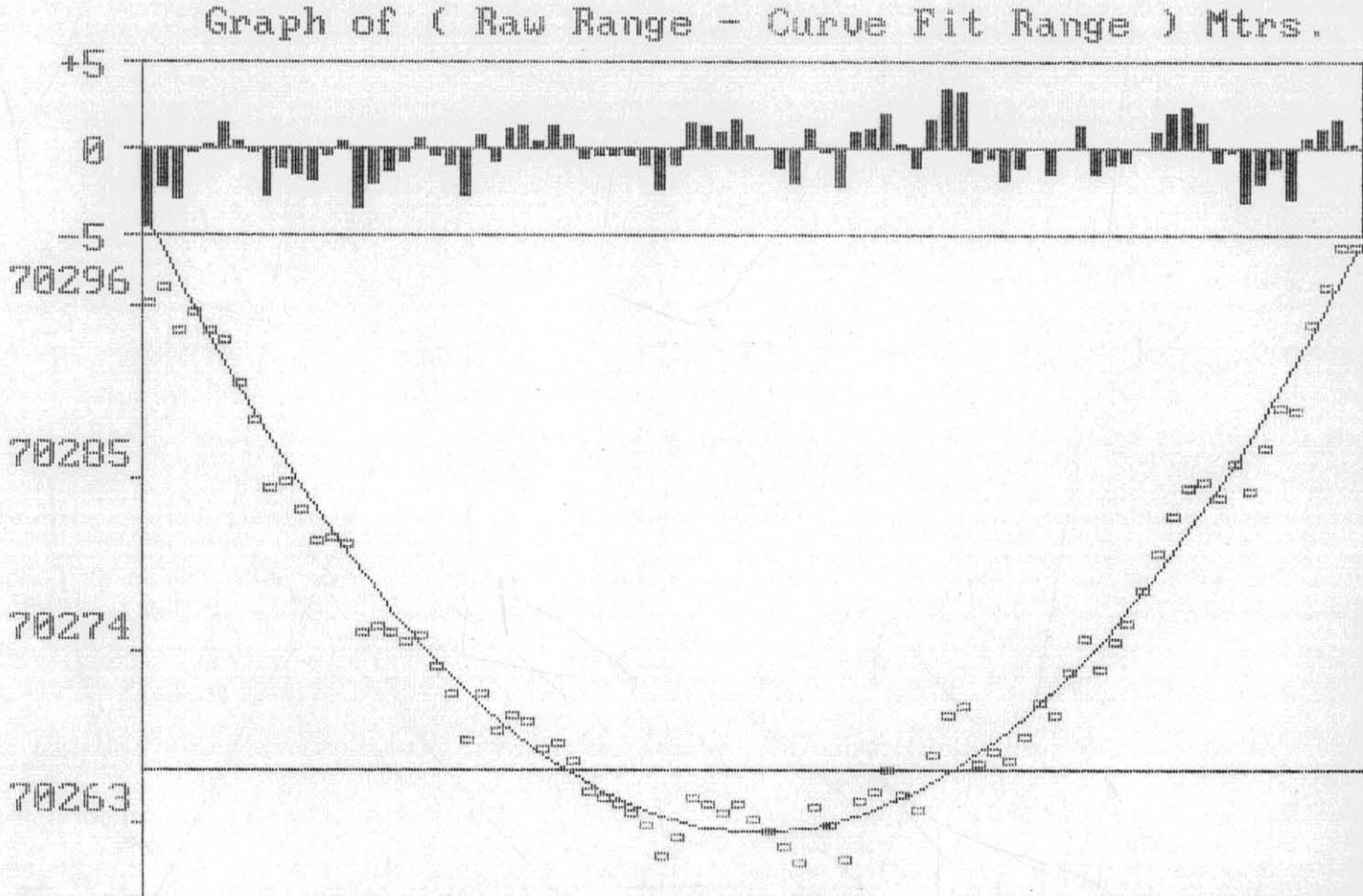
Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
TEDDY'S LOOK
ST. PAULLS

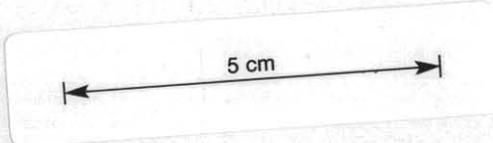
ID.. PASS3
Date...03-11-1990
S-Time..10:54:52
E-Time..11:08:17

Computed Range
70266.3
Observed Range
70262.45

C-0 = +3.9



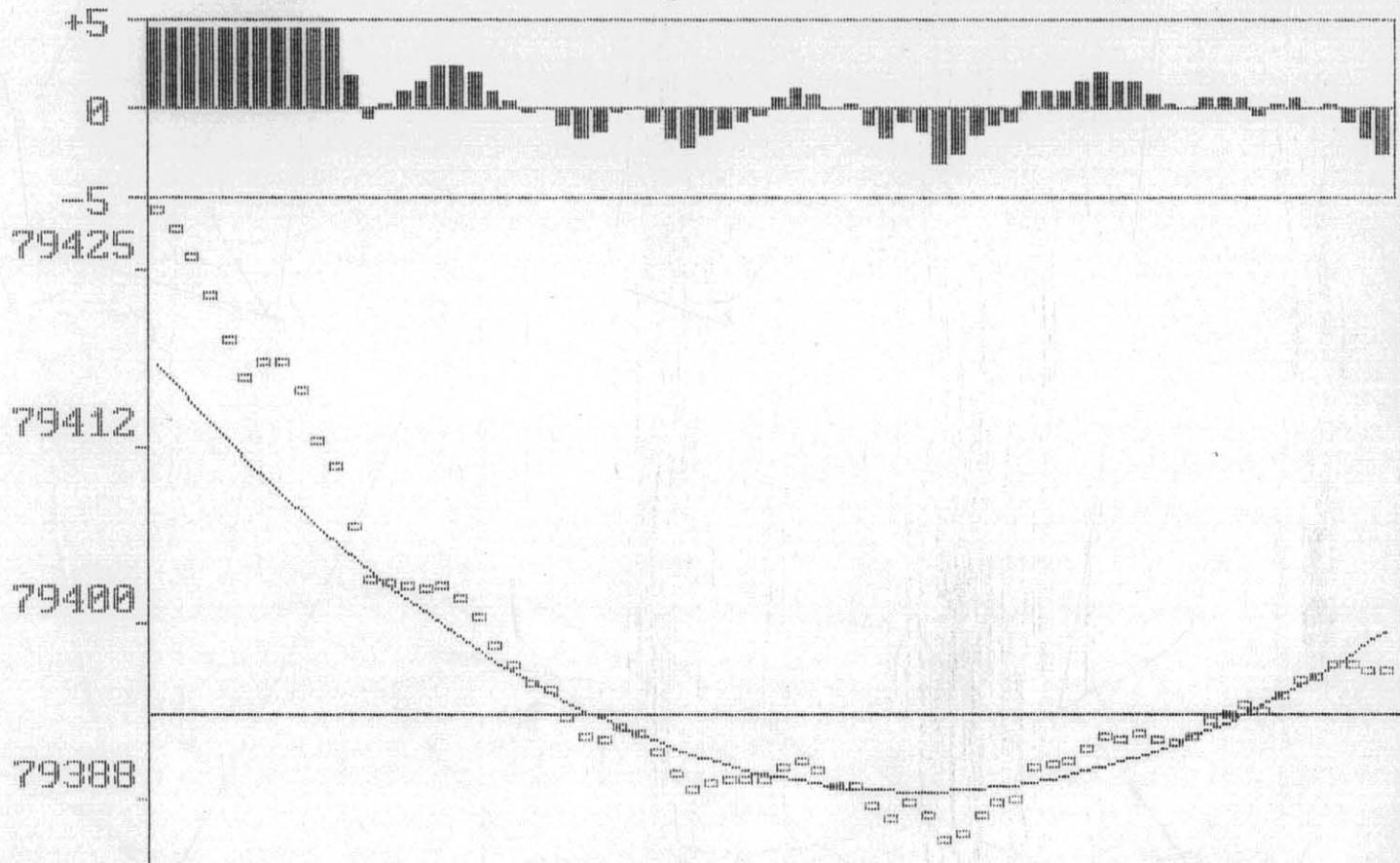
242260



Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
TEDDY
CAPE

Graph of (Raw Range - Curve Fit Range) Mtrs.



ID.. PASS#3 EXTENDED

Date...03-04-1990

S-Time..20:22:39

E-Time..20:31:00

Computed Range
79394.1

Observed Range
79388.7

C-0 = +5.4

2142261

5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

Graph of (Raw Range - Curve Fit Range) Mtrs.

BASELINE
TEDDY
CAPE

ID.. PASS#4

Date...03-04-1990

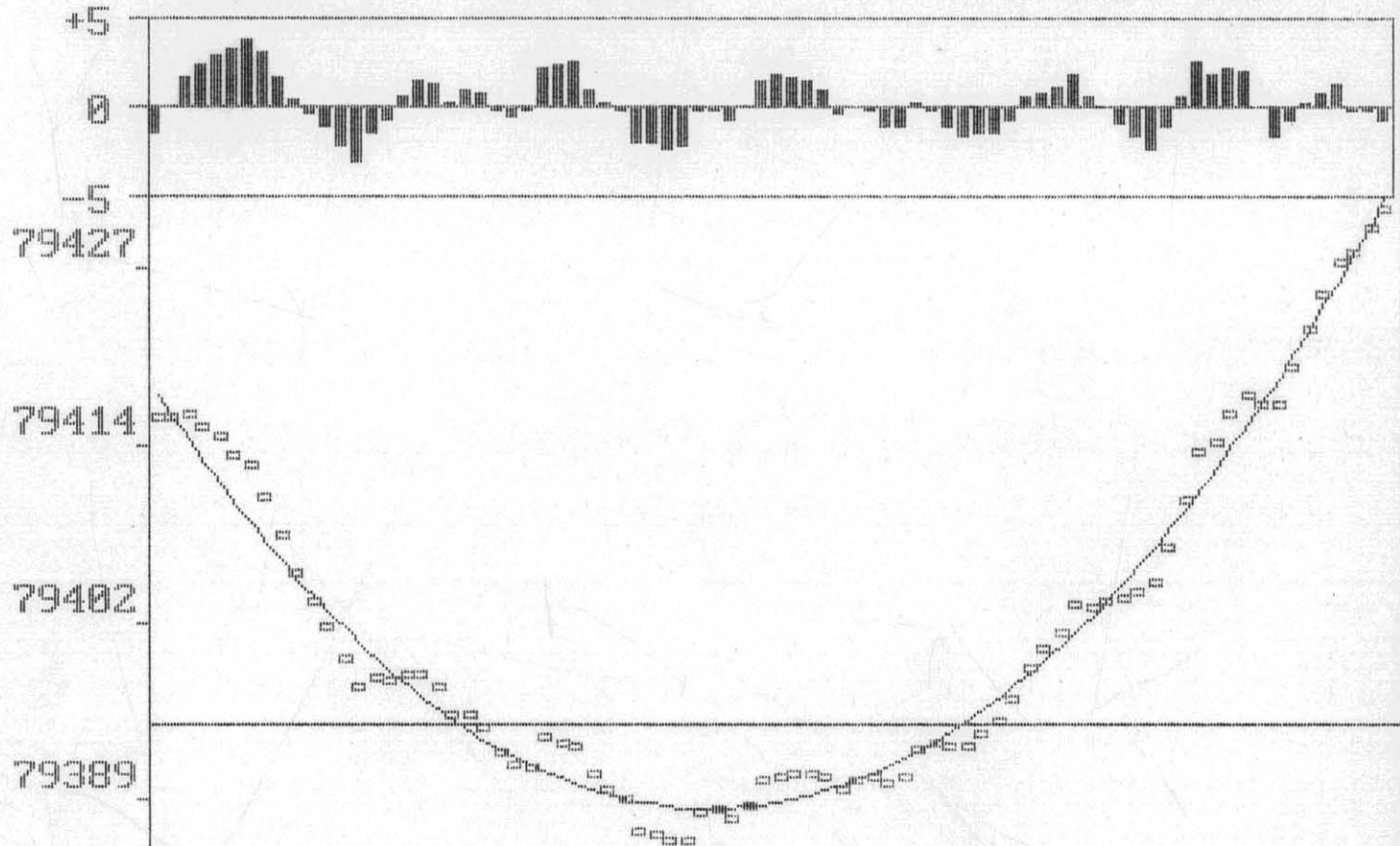
S-Time..20:46:18

E-Time..20:59:45

Computed Range
79394.1

Observed Range
79387.94

C-0 = +6.2



242262

5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
BARWON HEAD
CAPE

ID.. PASS4

Date...03-05-1990

S-Time..20:30:53

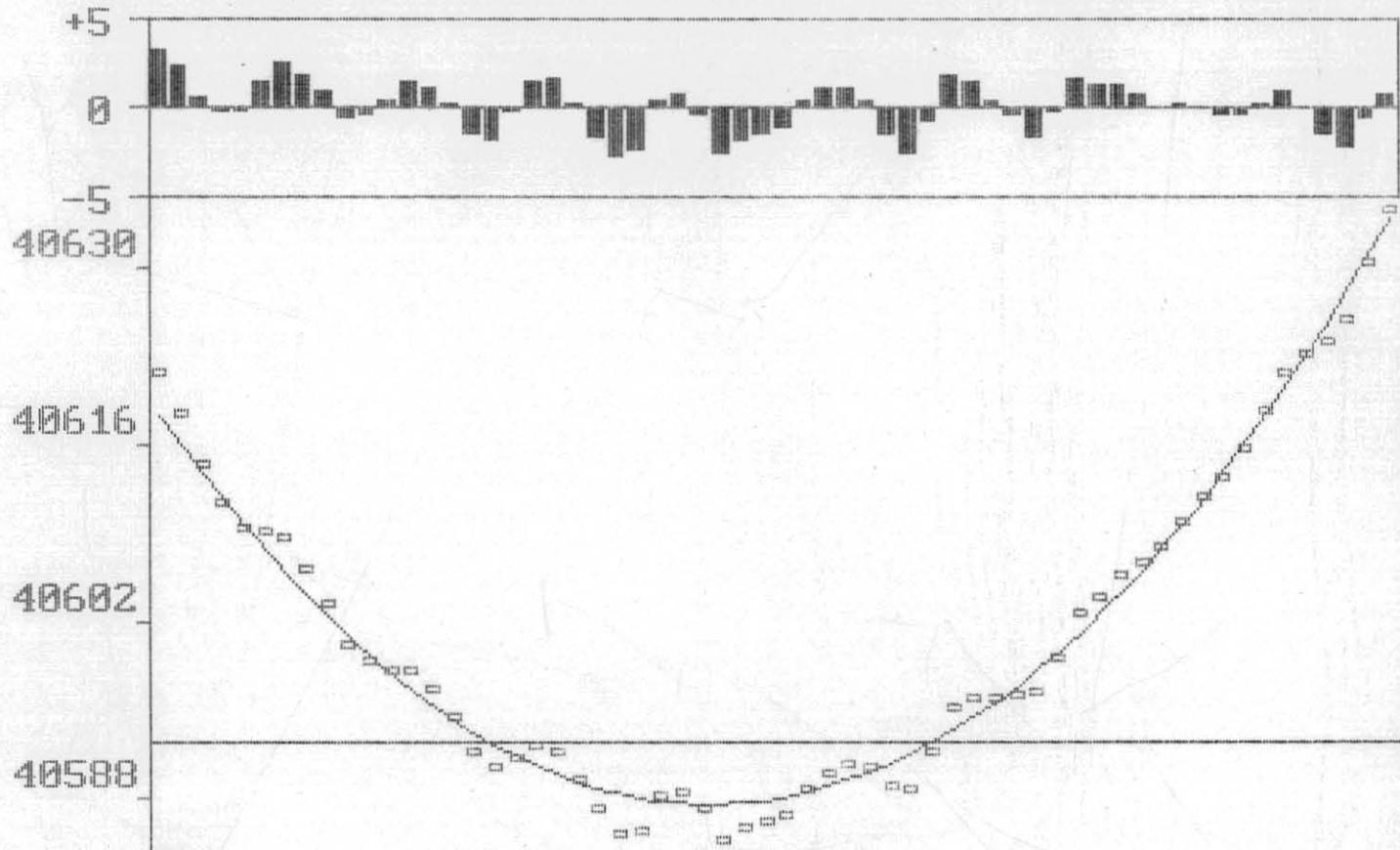
E-Time..20:40:52

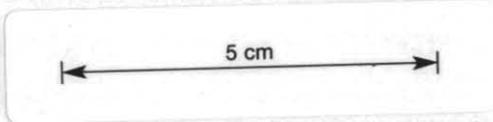
Computed Range
40592.3

Observed Range
40587.22

C-0 = +5.1

Graph of (Raw Range - Curve Fit Range) Mtrs.





Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
INGOLDSBY
CAPE

ID.. PASS4

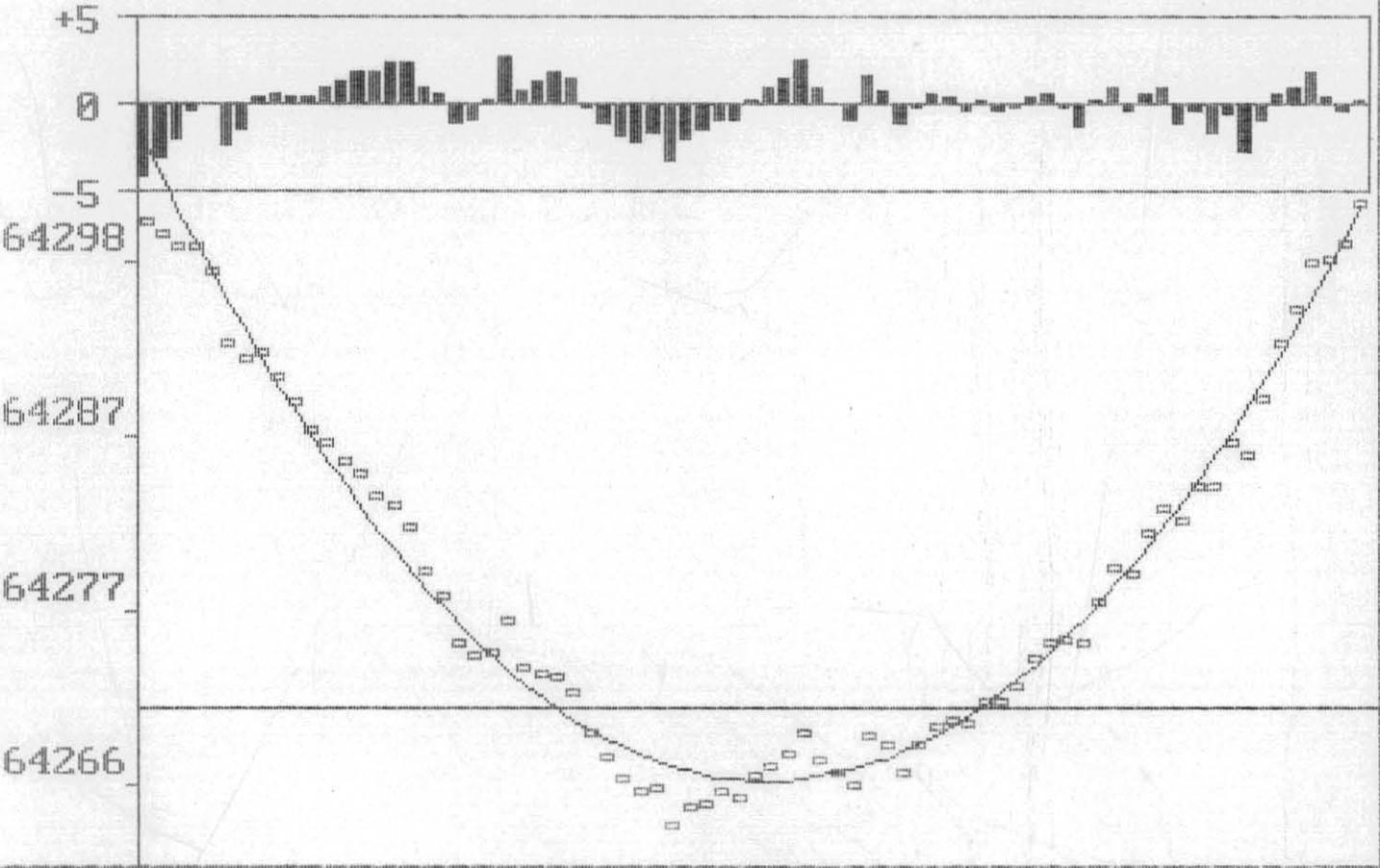
Date...03-05-1990
S-Time..22:11:03
E-Time..22:23:36

Computed Range
64270.9

Observed Range
64266.39

C-0 = +4.5

Graph of (Raw Range - Curve Fit Range) Mtrs.



5 cm

Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
BARWON HEAD
CAPE

Graph of (Raw Range - Curve Fit Range) Mtrs.

ID.. PASS5

Date...03-05-1990

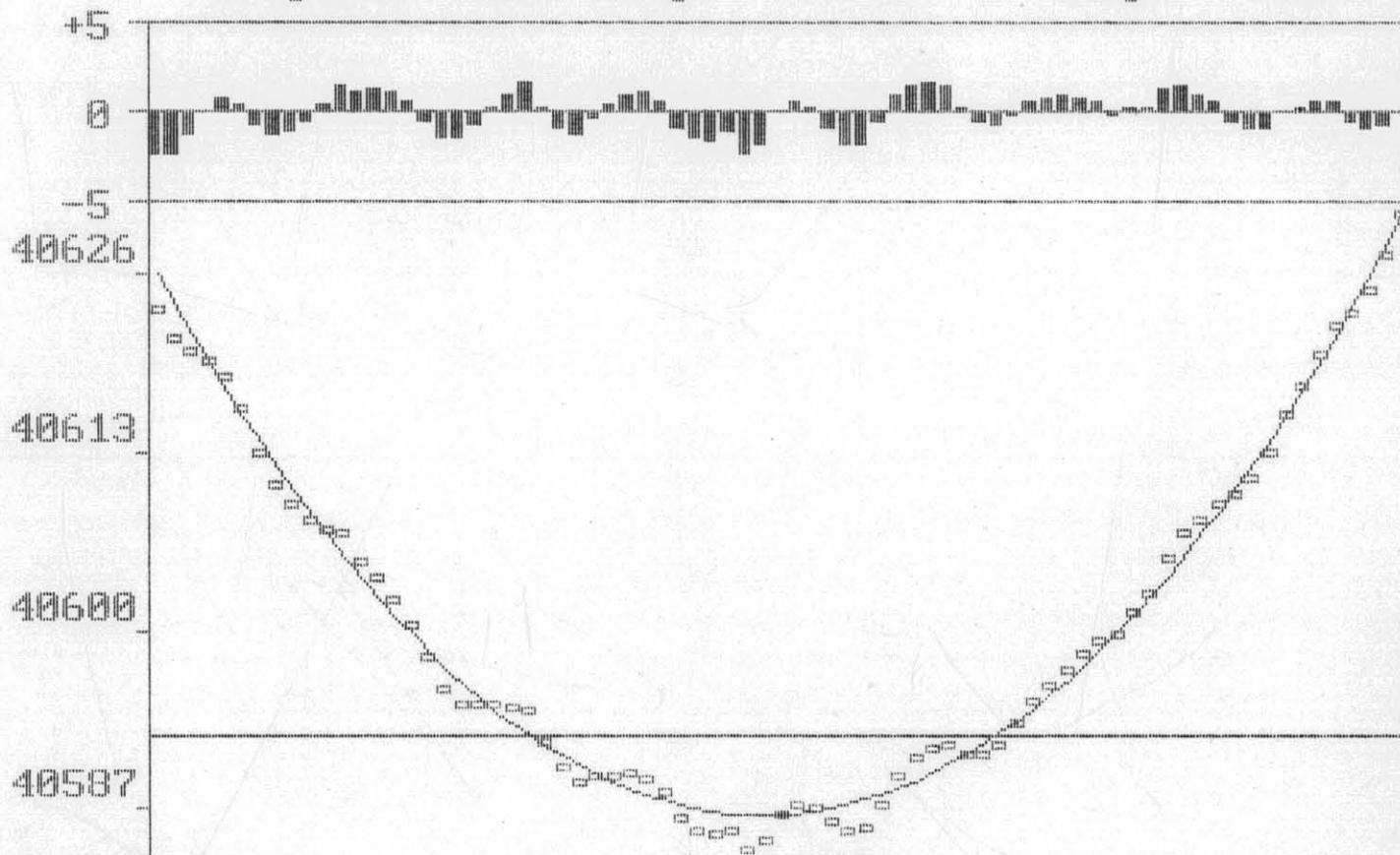
S-Time..20:53:34

E-Time..21:06:02

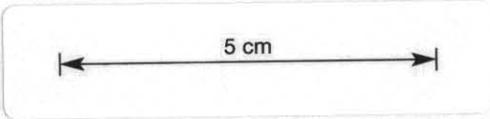
Computed Range
40592.3

Observed Range
40586.45

C-O = +5.9



242265



Halliburton Geophysical Services Inc..
Baseline Crossing Utilities.

BASELINE
TEDDY
CAPE

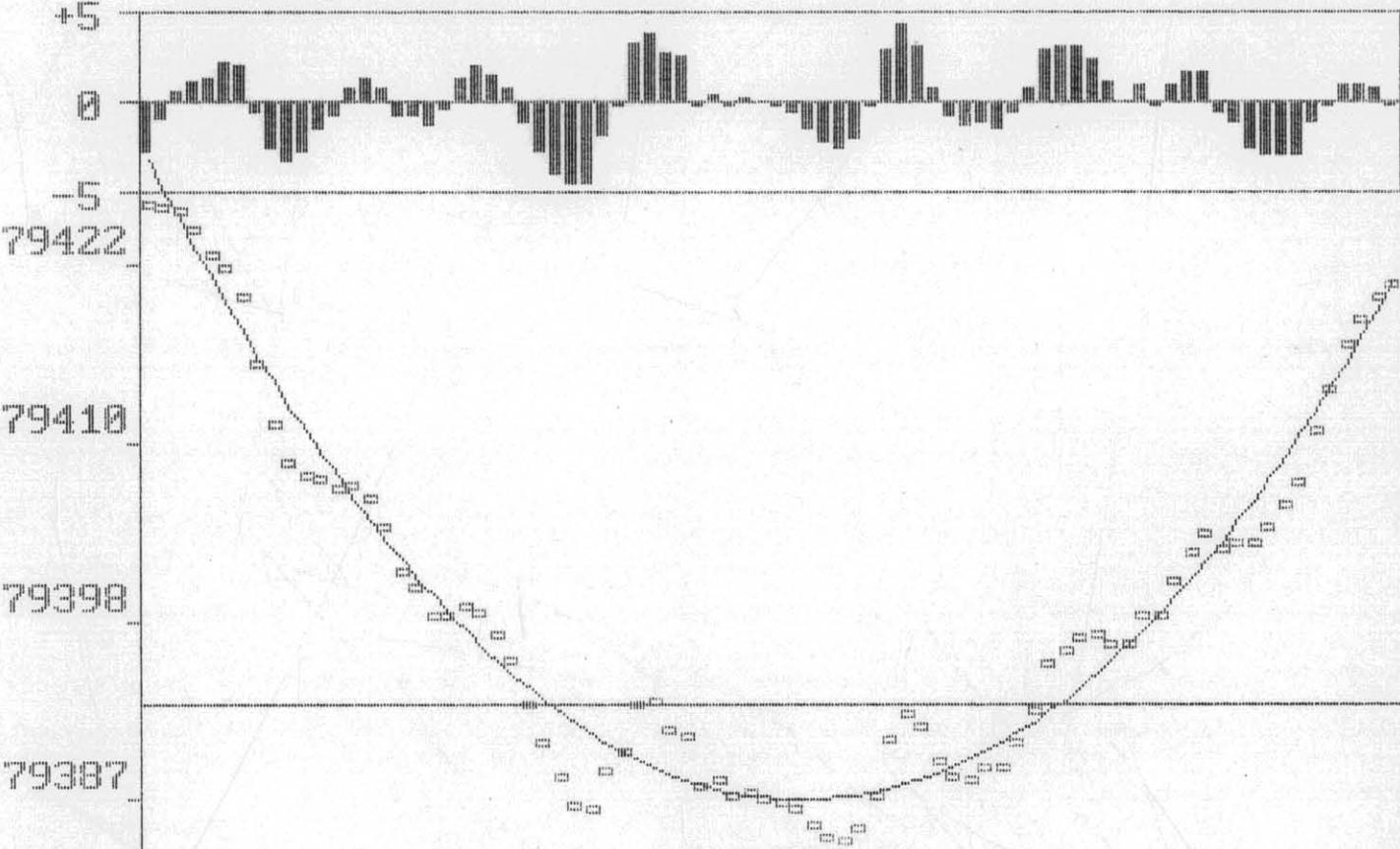
Graph of (Raw Range - Curve Fit Range) Mtrs.

ID.. PASS5
Date...03-05-1990
S-Time..22:45:57
E-Time..22:59:19

Computed Range
79393

Observed Range
79386.67

C-O = +6.3



242267

APPENDIX G

DATE/TAPE SHIPMENT LISTINGS

-B1-

FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
22/02/90	00811AA	ES90B-04	1001 - 1080	1001 - 1080	01
	00812AA	ES90B-04	1081 - 1165	1081 - 1165	
	00813AA	ES90B-04	1166 - 1250	1166 - 1250	
	00814AA	ES90B-04	1335 - 1420	1335 - 1420	
	00815AA	ES90B-04	1421 - 1505	1421 - 1505	
	00816AA	ES90B-04	1506 - 1590	1506 - 1590	
	00817AA	ES90B-04	1591 - 1675	1591 - 1675	
	00818AA	ES90B-04	1676 - 1685	1676 - 1685	
	00819AA	ES90B-04	1686 - 1770	1686 - 1770	
	00820AA	ES90B-04			
22/02/90	00821AA	ES90B-04	1771 - 1855	1771 - 1855	02
	00822AA	ES90B-04	1856 - 1859	1856 - 1859	
	00823AA	ES90B-04	1860 - 1944	1860 - 1944	
	00824AA	ES90B-04	1945 - 2029	1945 - 2029	
	00825AA	ES90B-04	2030 - 2114	2030 - 2114	
	00826AA	ES90B-04	2115 - 2199	2115 - 2199	
	00827AA	ES90B-04	2200 - 2275	2200 - 2275	
	00828AA	ES90B-15	1001 - 1080	1001 - 1080	
	00829AA	ES90B-15	1081 - 1165	1081 - 1165	
	00830AA	ES90B-15	1166 - 1250	1166 - 1250	
22/02/90	00831AA	ES90B-15	1251 - 1335	1251 - 1335	03
	00832AA	ES90B-15	1336 - 1420	1336 - 1420	
	00833AA	ES90B-15	1421 - 1436	1421 - 1436	
	00834AA	ES90B-15	1437 - 1521	1437 - 1521	
	00835AA	ES90B-15	1522 - 1581	1522 - 1581	
	00836AA	ES90B-02	1001 - 1080	1001 - 1080	
	00837AA	ES90B-02	1081 - 1165	1081 - 1165	
	00838AA	ES90B-02	1166 - 1180	1166 - 1180	
	00839AA	ES90B-02	1181 - 1265	1181 - 1265	
	00840AA	ES90B-02	1266 - 1350	1266 - 1350	
22/02/90	00841AA	ES90B-02	1351 - 1435	1351 - 1435	04
	00842AA	ES89B-02	1436 - 1520	1436 - 1520	
	00843AA	ES89B-02	1521 - 1605	1521 - 1605	
	00844AA	ES89B-02	1606 - 1690	1606 - 1690	
	00845AA	ES90B-02	1691 - 1775	1691 - 1775	
	00846AA	ES90B-02	1776 - 1862	1776 - 1860	
	00847AA	ES90B-02	1863 - 1871	1861 - 1869	
	00848AA	ES90B-02	1872 - 1876	1870 - 1874	
	00849AA	ES90B-01	D.N.P.	D.N.P.	
	00850AA	ES90B-01	D.N.P.	D.N.P.	

-E2-

FIELD TAPE INVENTORY

<u>DATE</u>	<u>TAPE NO.</u>	<u>LINE NO.</u>	<u>SP. RANGE</u>	<u>RECORD NOS.</u>	<u>BOX</u>
22/02/90	00851AA	ES90B-01	D.N.P.	D.N.P.	05
	00852AA	ES90B-01	D.N.P.	D.N.P.	
	00853AA	ES90B-01	D.N.P.	D.N.P.	
	00854AA	ES90B-01	D.N.P.	D.N.P.	
	00855AA	ES90B-01	D.N.P.	D.N.P.	
	00856AA	ES90B-01	D.N.P.	D.N.P.	
	00857AA	ES90B-03	1001 - 1080	1001 - 1080	
	00858AA	ES90B-03	1081 - 1165	1081 - 1165	
	00859AA	ES90B-03	1166 - 1250	1166 - 1250	
	00860AA	ES90B-03	1251 - 1335	1251 - 1335	
23/02/90	00861AA	ES90B-03	1336 - 1420	1336 - 1420	06
	00862AA	ES90B-03	1421 - 1505	1421 - 1505	
	00863AA	ES90B-03	1506 - 1590	1506 - 1590	
	00864AA	ES90B-03	1591 - 1675	1591 - 1675	
	00865AA	ES90B-03	1676 - 1760	1676 - 1760	
	00866AA	ES90B-03	1761 - 1845	1761 - 1845	
	00867AA	ES90B-03	1846 - 1930	1846 - 1930	
	00868AA	ES90B-03	1931 - 1999	1931 - 1999	
	00869AA	ES90B-01A	1001 - 1080	1001 - 1080	
	00870AA	ES90B-01A	1081 - 1165	1081 - 1165	
23/02/90	00871AA	ES90B-01A	1166 - 1250	1165 - 1250	07
	00872AA	ES90B-01A	1251 - 1335	1251 - 1335	
	00873AA	ES90B-01A	1336 - 1420	1336 - 1420	
	00874AA	ES90B-01A	1421 - 1505	1421 - 1505	
	00875AA	ES90B-01A	1506 - 1590	1506 - 1590	
	00876AA	ES90B-01A	1591 - 1675	1591 - 1675	
	00877AA	ES90B-01A	1676 - 1760	1676 - 1760	
	00878AA	ES90B-01A	1761 - 1845	1761 - 1845	
	00879AA	ES90B-01A	1846 - 1857	1846 - 1857	
	00880AA	ES90B-07	1001 - 1078	1000 - 1077	
23/02/90	00881AA	ES90B-07	1079 - 1163	1078 - 1162	08
	00882AA	ES90B-07	1164 - 1248	1163 - 1247	
	00883AA	ES90B-07	1249 - 1333	1248 - 1332	
	00884AA	ES90B-07	1334 - 1418	1333 - 1417	
	00885AA	ES90B-07	1419 - 1503	1418 - 1502	
	00886AA	ES90B-07	1504 - 1588	1503 - 1587	
	00887AA	ES90B-07	1589 - 1673	1588 - 1672	
	00888AA	ES90B-07	1674 - 1738	1673 - 1737	
	00889AA	ES90B-07A	1651 - 1730	1651 - 1730	
	00890AA	ES90B-07A	1731 - 1815	1731 - 1815	

-ES-

FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
23/02/90	00891AA	ES90B-07A	1816 - 1900	1816 - 1900	09
	00892AA	ES90B-07A	1901 - 1937	1901 - 1937	
	00893AA	ES90B-13	1001 - 1080	1001 - 1080	
	00894AA	ES90B-13	1081 - 1165	1081 - 1165	
	00895AA	ES90B-13	1166 - 1250	1166 - 1250	
	00896AA	ES90B-13	1251 - 1335	1251 - 1335	
	00897AA	ES90B-13	1336 - 1420	1336 - 1420	
	00898AA	ES90B-13	1421 - 1507	1421 - 1505	
	00899AA	ES90B-13	1508 - 1592	1506 - 1590	
	00900AA	ES90B-13	1593 - 1677	1591 - 1675	
23/02/90	00901AA	ES90B-13	1678 - 1744	1676 - 1742	10
	00902AA	ES90B-13	1745 - 1755	1743 - 1753	
	00903AA	ES90B-09	1001 - 1080	1001 - 1080	
	00904AA	ES90B-09	1081 - 1165	1081 - 1165	
	00905AA	ES90B-09	1166 - 1250	1166 - 1250	
	00906AA	ES90B-09	1251 - 1321	1251 - 1317	
24/02/90	00907AA	ES90B-09A	1231 - 1310	1231 - 1310	
	00908AA	ES90B-09A	1311 - 1395	1311 - 1aw5	
	00909AA	ES90B-09A	1396 - 1480	1396 - 1480	
	00910AA	ES90B-09A	1481 - 1565	1481 - 1565	
24/02/90	00911AA	ES90B-09A	1566 - 1573	1566 - 1573	11
	00912AA	ES90B-11	1001 - 1080	1001 - 1080	
	00913AA	ES90B-11	1081 - 1165	1081 - 1165	
	00914AA	ES90B-11	1166 - 1250	1165 - 1250	
	00915AA	ES90B-11	1251 - 1335	1251 - 1335	
	00916AA	ES90B-11	1336 - 1420	1336 - 1420	
	00917AA	ES90B-11	1421 - 1505	1421 - 1505	
	00918AA	ES90B-11	1506 - 1574	1506 - 1574	
	00919AA	ES90B-05	1001 - 1080	1001 - 1080	
	00920AA	ES90B-05	1081 - 1167	1081 - 1165	
24/02/90	00921AA	ES90B-05	1168 - 1252	1166 - 1250	12
	00922AA	ES90B-05	1253 - 1337	1251 - 1335	
	00923AA	ES90B-05	1338 - 1422	1336 - 1420	
	00924AA	ES90B-05	1423 - 1507	1421 - 1505	
	00925AA	ES90B-05	1508 - 1591	1506 - 1591	

END OF SHIPMENT 2931-005-MIS-90

-B4-

FIELD TAPE INVENTORY

<u>DATE</u>	<u>TAPE NO.</u>	<u>LINE NO.</u>	<u>SP. RANGE</u>	<u>RECORD NOS.</u>	<u>BOX</u>
24/02/90	00926AA	ES90A-12	1001 - 1080	1001 - 1080	01
	00927AA	ES90A-12	1081 - 1165	1081 - 1165	
	00928AA	ES90A-12	1166 - 1250	1166 - 1250	
	00929AA	ES90A-12	1251 - 1335	1251 - 1335	
	00930AA	ES90A-12	1336 - 1420	1336 - 1420	
	00931AA	ES90A-12	1421 - 1456	1421 - 1456	
	00932AA	ES90A-12	1457 - 1541	1457 - 1541	
	00933AA	ES90A-12	1542 - 1626	1542 - 1626	
	00934AA	ES90A-12	1627 - 1711	1627 - 1711	
	00935AA	ES90A-12	1712 - 1796	1712 - 1796	
24/02/90	00936AA	ES90A-12	1797 - 1881	1797 - 1881	02
	00937AA	ES90A-12	1882 - 1966	1882 - 1966	
	00938AA	ES90A-12	1967 - 2054	1967 - 2054	
	00939AA	ES90A-12	2055 - 2136	2055 - 2136	
	00940AA	ES90A-12	2136 - 2221	2136 - 2221	
	00941AA	ES90A-12	2222 - 2306	2222 - 2306	
	00942AA	ES90A-12	2307 - 2391	2307 - 2391	
	00943AA	ES90A-12	2392 - 2476	2392 - 2476	
	00944AA	ES90A-12	2477 - 2561	2477 - 2561	
	00945AA	ES90A-12	2562 - 2570	2562 - 2570	
25/02/90	00946AA	ES90A-16	1001 - 1080	1001 - 1080	03
	00947AA	ES90A-16	1081 - 1165	1081 - 1165	
	00948AA	ES90A-16	1166 - 1250	1166 - 1250	
	00949AA	ES90A-16	1251 - 1335	1251 - 1335	
	00950AA	ES90A-16	1336 - 1420	1336 - 1420	
	00951AA	ES90A-16	1421 - 1505	1421 - 1505	
	00952AA	ES90A-16	1506 - 1590	1506 - 1590	
	00953AA	ES90A-16	1591 - 1675	1591 - 1675	
	00954AA	ES90A-16	1675 - 1690	1676 - 1690	
	00955AA	ES90A-16	1691 - 1715	1691 - 1715	
25/02/90	00956AA	ES90A-14	D.N.P.	D.N.P.	04
	00957AA	ES90A-14	D.N.P.	D.N.P.	
	00958AA	ES90A-14A	1001 - 1080	1001 - 1080	
	00959AA	ES90A-14A	1081 - 1165	1081 - 1165	
	00960AA	ES90A-14A	1166 - 1250	1166 - 1250	
	00961AA	ES90A-14A	1251 - 1335	1251 - 1335	
	00962AA	ES90A-14A	1336 - 1420	1336 - 1420	
	00963AA	ES90A-14A	1421 - 1505	1421 - 1505	
	00964AA	ES90A-14A	1506 - 1590	1506 - 1590	
	00965AA	ES90A-14A	1591 - 1669	1591 - 1669	

-B5-

FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
25/02/90	00966AA	ES90A-14A	1670 - 1679	1670 - 1679	05
	00967AA	ES90A-14A	1680 - 1680	1680 - 1680	
	00968AA	ES90A-10	1001 - 1165	1001 - 1165	
	00969AA	ES90A-10	1166 - 1250	1166 - 1250	
	00970AA	ES90A-10	1251 - 1335	1251 - 1335	
	00971AA	ES90A-10	1336 - 1420	1336 - 1420	
	00972AA	ES90A-10	1421 - 1505	1421 - 1505	
	00973AA	ES90A-10	1506 - 1590	1506 - 1590	
	00974AA	ES90A-10	1591 - 1675	1591 - 1675	
00975AA	ES90A-10	1676 - 1735	1676 - 1735		
25/02/90	00976AA	ES90A-10	1736 - 1737	1736 - 1737	06
	00977AA	ES90A-10	1738 - 1747	1738 - 1747	
	00978AA	ES90A-08	D. N. P.	D. N. P.	
26/02/90	00979AA	ES90A-08A	1001 - 1080	1001 - 1080	
	00980AA	ES90A-08A	1081 - 1165	1081 - 1165	
	00981AA	ES90A-08A	1166 - 1250	1166 - 1250	
	00982AA	ES90A-08A	1251 - 1287	1251 - 1287	
	00983AA	ES90A-08A	1288 - 1372	1288 - 1372	
	00984AA	ES90A-08A	1373 - 1457	1373 - 1457	
	00985AA	ES90A-08A	1458 - 1542	1458 - 1542	
	00986AA	ES90A-08A	1543 - 1627	1543 - 1627	
26/02/90	00987AA	ES90A-08A	1628 - 1712	1628 - 1712	07
	00988AA	ES90A-08A	1713 - 1797	1713 - 1797	
	00989AA	ES90A-08A	1798 - 1882	1798 - 1882	
	00990AA	ES90A-08A	1883 - 1967	1883 - 1967	
	00991AA	ES90A-08A	1968 - 2052	1968 - 2052	
	00992AA	ES90A-08A	2053 - 2137	2053 - 2137	
	00993AA	ES90A-08A	2138 - 2222	2138 - 2222	
	00994AA	ES90A-08A	2223 - 2238	2223 - 2238	
	00995AA	ES90A-06	1001 - 1080	1001 - 1080	
26/02/90	00996AA	ES90A-06	1081 - 1165	1081 - 1165	08
	00997AA	ES90A-06	1166 - 1250	1166 - 1250	
	00998AA	ES90A-06	1251 - 1335	1251 - 1335	
	00999AA	ES90A-06	1336 - 1420	1336 - 1420	
	01000AA	ES90A-06	1421 - 1505	1421 - 1505	
	01001AA	ES90A-06	1506 - 1590	1506 - 1590	
	01002AA	ES90A-06	1591 - 1660	1591 - 1660	
	01003AA	ES90A-06	1661 - 1673	1661 - 1673	
	01004AA	ES90A-04	1001 - 1080	1001 - 1080	
	01005AA	ES90A-04	1081 - 1165	1081 - 1165	

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FIELD TAPE INVENTORY

<u>DATE</u>	<u>TAPE NO.</u>	<u>LINE NO.</u>	<u>SP. RANGE</u>	<u>RECORD NOS.</u>	<u>BOX</u>
26/02/90	01006AA	BS90A-04	1166 - 1250	1166 - 1250	09
	01007AA	BS90A-04	1251 - 1335	1251 - 1335	
	01008AA	BS90A-04	1336 - 1420	1336 - 1420	
	01009AA	BS90A-04	1421 - 1505	1421 - 1505	
	01010AA	BS90A-04	1506 - 1590	1506 - 1590	
	01011AA	BS90A-04	1591 - 1675	1591 - 1675	
	01012AA	BS90A-04	1676 - 1760	1676 - 1760	
	01013AA	BS90A-04	1761 - 1845	1761 - 1845	
	01014AA	BS90A-04	1846 - 1930	1846 - 1930	
	01015AA	BS90A-04	1931 - 2015	1931 - 2015	
	26/02/90	01016AA	BS90A-04	2016 - 2100	
01017AA		BS90A-04	2101 - 2185	2101 - 2185	
01018AA		BS90A-04	2186 - 2270	2186 - 2270	
01019AA		BS90A-04	2271 - 2355	2271 - 2355	
01020AA		BS90A-04	2356 - 2440	2356 - 2440	
01021AA		BS90A-04	2441 - 2525	2441 - 2525	
01022AA		BS90A-04	2526 - 2526	D. N. P.	
01023AA		BS90A-04	2527 - 2589	2527 - 2589	
01024AA		BS90A-04	2590 - 2602	2590 - 2602	
01025AA		BS90A-02	1001 - 1080	1001 - 1080	
26/02/90		01026AA	BS90A-02	1081 - 1165	1081 - 1165
	01027AA	BS90A-02	116aw- 1250	1166 - 1250	
	01028AA	BS90A-02	1251 - 1335	1251 - 1335	
	01029AA	BS90A-02	1336 - 1420	1336 - 1420	
	01030AA	BS90A-02	1421 - 1505	1421 - 1505	
	01031AA	BS90A-02	1506 - 1590	1506 - 1590	
	01032AA	BS90A-02	1591 - 1675	1591 - 1675	
	01033AA	BS90A-02	1676 - 1696	1676 - 1696	
	01034AA	BS90A-02	1697 - 1781	1697 - 1781	
	01035AA	BS90A-02	1782 - 1845	1782 - 1845	
	27/02/90	01036AA	BS90A-02A	1761 - 1840	1761 - 1840
01037AA		BS90A-02A	1841 - 1925	1841 - 1925	
01038AA		BS90A-02A	1926 - 2010	1926 - 2010	
01039AA		BS90A-02A	2011 - 2095	2011 - 2095	
01040AA		BS90A-02A	2096 - 2180	2096 - 2180	
01041AA		BS90A-02A	2181 - 2242	2181 - 2242	
01042AA		BS90A-02B	D. N. P.	D. N. P.	
01043AA		BS90A-02C	2141 - 2220	2141 - 2220	
01044AA		BS90A-02C	2221 - 2305	2221 - 2305	
01045AA		BS90A-02C	2306 - 2390	2306 - 2390	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
27/02/90	01046AA	BS90A-02C	2391 - 2475	2391 - 2475	13
	01047AA	BS90A-02C	2476 - 2aw0	2476 - 2560	
	01048AA	BS90A-02C	2561 - 2571	2561 - 2571	
	01049AA	BS90A-09	1001 - 1080	1001 - 1080	
	01050AA	BS90A-09	1081 - 1165	1081 - 1165	
	01051AA	BS90A-09	1166 - 1250	1166 - 1250	
	01052AA	BS90A-09	1251 - 1335	1251 - 1335	
	01053AA	BS90A-09	1336 - 1420	1336 - 1420	
	01054AA	BS90A-09	1421 - 1505	1421 - 1505	
	01055AA	BS90A-09	1506 - 1558	1506 - 1558	
27/02/90	01056AA	BS90A-01	1001 - 1080	1001 - 1080	14
	01057AA	BS90A-01	1081 - 1165	1081 - 1065	
	01058AA	BS90A-01	1166 - 1250	1166 - 1250	
	01059AA	BS90A-01	1251 - 1335	1251 - 1335	
	01060AA	BS90A-01	1336 - 1391	1336 - 1391	
	01061AA	BS90A-13	1001 - 1080	1001 - 1080	
	01062AA	BS90A-13	1081 - 1165	1081 - 1165	
	01063AA	BS90A-13	1166 - 1250	1166 - 1250	
	01064AA	BS90A-13	1251 - 1335	1251 - 1335	
	01065AA	BS90A-13	1336 - 1420	1336 - 1420	
27/02/90	01066AA	BS90A-13	1421 - 1476	1421 - 1476	15
	01067AA	BS90A-13	1001 - 1080	1001 - 1080	
	01068AA	BS90A-13	1081 - 1165	1081 - 1165	
	01069AA	BS90A-13	1166 - 1250	1166 - 1250	
	01070AA	BS90A-13	1251 - 1335	1251 - 1335	
	01071AA	BS90A-13	1336 - 1420	1336 - 1420	
	01072AA	BS90A-13	1421 - 1462	1421 - 1462	
	01073AA	BS90A-15	D.N.P.	D.N.P.	
	01074AA	BS90A-15	D.N.P.	D.N.P.	
	01075AA	BS90A-15A	1001 -1080	1001 - 1080	
27/02/90	01076AA	BS90A-15A	1081 - 1165	1081 - 1165	16
	01077AA	BS90A-15A	1166 - 1181	1166 - 1181	
28/02/90	01078AA	BS90A-15A	1182 - 1266	1182 - 1266	
	01079AA	BS90A-15A	1267 - 1351	1267 - 1351	
	01080AA	BS90A-15A	1352 - 1436	1352 - 1436	
	01081AA	BS90A-15A	1437 - 1477	1437 - 1477	
	01082AA	BS90A-07	1001 - 1079	1001 - 1079	
	01083AA	BS90A-07	1080 - 1164	1080 - 1164	
	01084AA	BS90A-07	1165 - 1249	1165 - 1249	
	01085AA	BS90A-07	1250 - 1334	1250 - 1334	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
28/02/90	01086AA	BS90A-07	1335 - 1419	1335 - 1419	17
	01087AA	BS90A-07	1420 - 1476	1420 - 1476	
	01088AA	BS90A-19	1001 - 1080	1001 - 1080	
	01089AA	BS90A-19	1081 - 1165	1081 - 1165	
	01090AA	BS90A-19	1166 - 1171	1166 - 1171	
	01091AA	BS90A-19	1172 - 1256	1172 - 1256	
	01092AA	BS90A-19	1257 - 1341	1257 - 1341	
	01093AA	BS90A-19	1342 - 1426	1342 - 1426	
	01094AA	BS90A-19	1427 - 1492	1427 - 1492	
	01095AA	BS90A-17	1001 - 1080	1001 - 1080	
28/02/90	01096AA	BS90A-17	1081 - 1165	1081 - 1165	18
	01097AA	BS90A-17	1166 - 1250	1166 - 1250	
	01098AA	BS90A-17	1251 - 1335	1251 - 1335	
	01099AA	BS90A-17	1336 - 1420	1336 - 1420	
	01100AA	BS90A-17	1421 - 1505	1421 - 1505	
	01101AA	BS90A-17	1506 - 1590	1506 - 1590	
	01102AA	BS90A-17	1591 - 1675	1591 - 1675	
	01103AA	BS90A-17	1676 - 1760	1676 - 1760	
	01104AA	BS90A-17	1761 - 1845	1761 - 1845	
	01105AA	BS90A-17	1846 - 1930	1846 - 1930	
28/02/90	01106AA	BS90A-17	1931 - 2015	1931 - 2015	19
	01107AA	BS90A-17	2016 - 2054	2016 - 2054	
	01108AA	BS90A-03	1001 - 1080	1001 - 1080	
	01109AA	BS90A-03	1081 - 1165	1081 - 1165	
	01110AA	BS90A-03	1166 - 1250	1166 - 1250	
	01111AA	BS90A-03	1251 - 1335	1251 - 1335	
	01112AA	BS90A-03	1336 - 1420	1336 - 1420	
	01113AA	BS90A-03	1421 - 1505	1421 - 1505	
	01114AA	BS90A-03	1506 - 1590	1506 - 1590	
	01115AA	BS90A-03	1591 - 1675	1591 - 1675	
28/02/90	01116AA	BS90A-03	1676 - 1760	1676 - 1760	20
	01117AA	BS90A-03	1761 - 1845	1761 - 1845	
	01118AA	BS90A-03	1846 - 1930	1846 - 1930	
	01119AA	BS90A-03	1931 - 1941	1931 - 1941	
	01120AA	BS90A-03	1942 - 2026	1942 - 2026	
	01121AA	BS90A-03	2027 - 2111	2027 - 2111	
	01122AA	BS90A-03	2112 - 2196	2112 - 2196	
	01123AA	BS90A-03	2197 - 2281	2197 - 2281	
	01124AA	BS90A-03	2282 - 2366	2282 - 2366	
	01125AA	BS90A-03	2367 - 2951	2367 - 2951	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
28/02/90	01126AA	BS90A-03	2452 - 2503	2452 - 2503	21
	01127AA	BS90A-11	1001 - 1080	1001 - 1080	
	01128AA	BS90A-11	1081 - 1165	1081 - 1165	
	01129AA	11	1166 - 1227	1166 - 1227	
	01130AA	BS90A-11	1228 - 1312	1228 - 1312	
	01131AA	BS90A-11	1313 - 1397	1313 - 1397	
	01132AA	BS90A-11	1398 - 1482	1398 - 1482	
	01133AA	BS90A-11	1483 - 1567	1483 - 1567	
	01134AA	BS90A-11	1568 - 1652	1568 - 1652	
	01135AA	BS90A-11	1653 - 1737	1653 - 1737	
	28/02/90	01136AA	BS90A-11	1738 - 1822	
01137AA		BS90A-11	1823 - 1907	1823 - 1907	
01138AA		BS90A99	1908 - 1992	1908 - 1992	
01139AA		BS90A-11	1993 - 2077	1993 - 2077	
01140AA		BS90A-11	2078 - 2162	2078 - 2162	
011499		BS90A-11	2163 - 2247	2163 - 2247	
01142AA		BS90A-11	2248 - 2332	2248 - 2332	
01143AA		BS90A-11	2333 - 2340	2333 - 2340	
01144AA		BS90A-27	D.N.P.	D.N.P.	
01145AA		BS90A-27	D.N.P.	D.N.P.	
01/03/90		01146AA	BS90A-27A	1001 - 1080	1001 - 1080
	01147AA	BS90A-27A	1081 - 1165	1081 - 1165	
	01148AA	BS90A-27A	1166 - 1250	1166 - 1250	
	01149AA	BS90A-27A	1251 - 1335	1251 - 1335	
	01150AA	BS90A-27A	1336 - 1420	1336 - 1420	
	01151AA	BS90A-27A	1421 - 1505	1421 - 1505	
	01152AA	BS90A-27A	1505 - 1590	1505 - 1590	
	01153AA	BS90A-27A	1591 - 1675	1591 - 1675	
	01154AA	BS90A-27A	1676 - 1760	1676 - 1760	
	01155AA	BS90A-27A	1761 - 1845	1761 - 1845	
01/03/90	01156AA	BS90A-27A	1846 - 1930	1846 - 1930	24
	01157AA	BS90A-27A	1931 - 1999	1931 - 1999	
	01158AA	BS90A-23	1001 - 1080	1001 - 1080	
	01159AA	BS90A-23	1081 - 1165	1081 - 1165	
	01160AA	BS90A-23	1166 - 1250	1166 - 1250	
	01161AA	BS90A-23	1251 - 1335	1251 - 1335	
	01162AA	BS90A-23	1336 - 1420	1336 - 1420	
	01163AA	BS90A-23	1421 - 1505	1421 - 1505	
	01164AA	BS90A-23	1506 - 1590	1506 - 1590	
	01165AA	BS90A-23	1591 - 1675	1591 - 1675	

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FIELD TAPE INVENTORY

<u>DATE</u>	<u>TAPE NO.</u>	<u>LINE NO.</u>	<u>SP. RANGE</u>	<u>RECORD NOS.</u>	<u>BOX</u>
01/03/90	01166AA	BS90A-23	1676 - 1760	1676 - 1760	25
	01167AA	BS90A-23	1761 - 1845	1761 - 1845	
	01168AA	BS90A-23	1846 - 1879	1846 - 1879	
	01169AA	BS90A-29	1001 - 1080	1001 - 1080	
	01170AA	BS90A-29	1081 - 1165	1081 - 1165	
	01171AA	BS90A-29	1166 - 1250	1166 - 1250	
	01172AA	BS90A-29	1251 - 1335	1251 - 1335	
	01173AA	BS90A-29	1336 - 1420	1336 - 1420	
	01174AA	BS90A-29	1421 - 1505	1421 - 1505	
	01175AA	BS90A-29	1506 - 1590	1506 - 1590	
	01/03/90	01176AA	BS90A-29	1591 - 1675	
01177AA		BS90A-29	1676 - 1760	1676 - 1760	
01178AA		BS90A-29	1761 - 1845	1761 - 1845	
01179AA		BS90A-29	1846 - 1930	1846 - 1930	
01180AA		BS90A-29	1931 - 2005	1931 - 2005	
01181AA		BS90A-25	1001 - 1080	1001 - 1080	
01182AA		BS90A-25	1081 - 1165	1081 - 1165	
01183AA		BS90A-25	1166 - 1178	1166 - 1178	
01184AA		BS90A-25	1179 - 1263	1179 - 1263	
01185AA		BS90A-25	1264 - 1348	1264 - 1348	
01/03/90		01186AA	BS90A-25	1349 - 1433	1349 - 1433
	01187AA	BS90A-25	1434 - 1518	1434 - 1518	
	01188AA	BS90A-25	1519 - 1603	1519 - 1603	
	01189AA	BS90A-25	1604 - 1688	1604 - 1688	
	01190AA	BS90A-25	1698 - 1773	1698 - 1773	
	01191AA	BS90A-25	1774 - 1855	1774 - 1855	
	01192AA	BS90A-31	1001 - 1080	1001 - 1080	
	01193AA	BS90A-31	1081 - 1165	1081 - 1165	
	01194AA	BS90A-31	1166 - 1250	1166 - 1250	
	01195AA	BS90A-31	1251 - 1335	1251 - 1335	
	01/03/90	01196AA	BS90A-31	1336 - 1420	1336 - 1420
01197AA		BS90A-31	1421 - 1505	1421 - 1505	
01198AA		BS90A-31	1506 - 1590	1506 - 1590	
01199AA		BS90A-31	1591 - 1675	1591 - 1675	
01200AA		BS90A-31	1676 - 1760	1676 - 1760	
01201AA		BS90A-31	1761 - 1845	1761 - 1845	
01202AA		BS90A-31	1846 - 1930	1846 - 1930	
01203AA		BS90A-31	1931 - 2015	1931 - 2015	
01204AA		BS90A-31	2016 - 2100	2016 - 2100	
01205AA		BS90A-31	2101 - 2185	2101 - 2185	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
01/03/90	01206AA	BS90A-31	2186 - 2270	2186 - 2270	29
	01207AA	BS90A-31	2271 - 2355	2271 - 2355	
	01208AA	BS90A-31	2356 - 2440	2356 - 2440	
	01209AA	BS90A-31	2441 - 2525	2441 - 2525	
	01210AA	BS90A-31	2526 - 2604	2526 - 2604	
02/03/90	01211AA	BS90A-21	1001 - 1080	1001 - 1080	
	01212AA	BS90A-21	1081 - 1165	1081 - 1165	
	01213AA	BS90A-21	1166 - 1250	1166 - 1250	
	01214AA	BS90A-21	1251 - 1335	1251 - 1335	
	01215AA	BS90A-21	1336 - 1420	1336 - 1420	
02/03/90	01216AA	BS90A-21	1421 - 1435	1421 - 1435	30
	01217AA	BS90A-21	1436 - 1520	1436 - 1520	
	01218AA	BS90A-21	1521 - 1605	1521 - 1605	
	01219AA	BS90A-21	1606 - 1620	1606 - 1620	
	01220AA	BS90A-21	1621 - 1705	1621 - 1705	
	01221AA	BS90A-21	1706 - 1790	1706 - 1790	
	01222AA	BS90A-21	1791 - 1875	1791 - 1875	
	01223AA	BS90A-21	1876 - 1960	1876 - 1960	
	01224AA	BS90A-21	1961 - 2045	1961 - 2045	
	01225AA	BS90A-21	2046 - 2130	2046 - 2130	
02/03/90	01226AA	BS90A-21	2131 - 2215	2131 - 2215	31
	01227AA	BS90A-21	2216 - 2300	2216 - 2300	
	01228AA	BS90A-21	2301 - 2385	2301 - 2385	
	01229AA	BS90A-21	2386 - 2459	2386 - 2459	
	01230AA	BS90A-21	2460 - 2471	2460 - 2471	
	01231AA	BS90A-33	1001 - 1080	1001 - 1080	
	01232AA	BS90A-33	1081 - 1165	1081 - 1165	
	01233AA	BS90A-33	1166 - 1250	1166 - 1250	
	01234AA	BS90A-33	1251 - 1335	1251 - 1335	
	01235AA	BS90A-33	1336 - 1420	1336 - 1420	
02/03/90	01236AA	BS90A-33	1421 - 1505	1421 - 1505	32
	01237AA	BS90A-33	1506 - 1590	1506 - 1590	
	01238AA	BS90A-33	1591 - 1675	1591 - 1675	
	01239AA	BS90A-33	1676 - 1760	1676 - 1760	
	01240AA	BS90A-33	1761 - 1845	1761 - 1845	
	01241AA	BS90A-33	1846 - 1930	1846 - 1930	
	01242AA	BS90A-33	1931 - 1934	1931 - 1934	
	01243AA	BS90A-33	1935 - 2007	1935 - 2007	
	01244AA	BS90A-39	1001 - 1080	1001 - 1080	
	01245AA	BS90A-39	1081 - 1165	1081 - 1165	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
02/03/90	01246AA	ES90A-39	1166 - 1250	1166 - 1250	33
	01247AA	ES90A-39	1251 - 1335	1251 - 1335	
	01248AA	ES90A-39	1336 - 1420	1336 - 1420	
	01249AA	ES90A-39	1421 - 1432	1421 - 1432	
	01250AA	ES90A-39	1433 - 1517	1433 - 1517	
	01251AA	ES90A-39	1518 - 1523	1518 - 1523	
	01252AA	ES90A-39	1524 - 1608	1524 - 1608	
	01253AA	ES90A-39	1609 - 1693	1609 - 1693	
	01254AA	ES90A-39	1694 - 1778	1694 - 1778	
	01255AA	ES90A-39	1779 - 1810	1779 - 1810	
	02/03/90	01256AA	ES90A-39	1811 - 1895	
01257AA		ES90A-39	1896 - 1980	1896 - 1980	
01258AA		ES90A-39	1981 - 2047	1981 - 2047	
01259AA		ES90A-35	1001 - 1080	1001 - 1080	
01260AA		ES90A-35	1081 - 1165	1081 - 1165	
01261AA		ES90A-35	1166 - 1250	1166 - 1250	
01262AA		ES90A-35	1251 - 1335	1251 - 1335	
01263AA		ES90A-35	1336 - 1420	1336 - 1420	
01264AA		ES90A-35	D.N.F.	D.N.F.	
03/03/90	01265AA	ES90A-35A	1341 - 1420	1341 - 1420	
03/03/90	01266AA	ES90A-35A	1421 - 1505	1421 - 1505	35
	01267AA	ES90A-35A	1506 - 1590	1506 - 1590	
	01268AA	ES90A-35A	1591 - 1675	1591 - 1675	
	01269AA	ES90A-35A	1676 - 1760	1676 - 1760	
	01270AA	ES90A-35A	1761 - 1845	1761 - 1845	
	01271AA	ES90A-35A	1846 - 1930	1846 - 1930	
	01272AA	ES90A-35A	1931 - 1942	1931 - 1942	
	01273AA	ES90A-41	1001 - 1080	1001 - 1080	
	01274AA	ES90A-41	1081 - 1165	1081 - 1165	
	01275AA	ES90A-41	1166 - 1250	1166 - 1250	
03/03/90	01276AA	ES90A-41	1251 - 1335	1251 - 1335	36
	01277AA	ES90A-41	1336 - 1420	1336 - 1420	
	01278AA	ES90A-41	1421 - 1505	1421 - 1505	
	01279AA	ES90A-41	1506 - 1590	1506 - 1590	
	01280AA	ES90A-41	1591 - 1675	1591 - 1675	
	01281AA	ES90A-41	1676 - 1760	1676 - 1760	
	01282AA	ES90A-41	1761 - 1845	1761 - 1845	
	01283AA	ES90A-41	1846 - 1930	1846 - 1930	
	01284AA	ES90A-41	1931 - 1956	1931 - 1956	
	01285AA	ES90A-37	1001 - 1080	1001 - 1080	

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FIELD TAPE INVENTORY

<u>DATE</u>	<u>TAPE NO.</u>	<u>LINE NO.</u>	<u>SP. RANGE</u>	<u>RECORD NOS.</u>	<u>BOX</u>
03/03/90	01286AA	BS90A-37	1081 - 1165	1081 - 1165	37
	01287AA	BS90A-37	1166 - 1250	1166 - 1250	
	01288AA	BS90A-37	1251 - 1335	1251 - 1335	
	01289AA	BS90A-37	1336 - 1420	1336 - 1420	
	01290AA	BS90A-37	1421 - 1505	1421 - 1505	
	01291AA	BS90A-37	1506 - 1590	1506 - 1590	
	01292AA	BS90A-37	1591 - 1675	1591 - 1675	
	01293AA	BS90A-37	1676 - 1760	1676 - 1760	
	01294AA	BS90A-37	1761 - 1845	1761 - 1845	
	01295AA	BS90A-37	1846 - 1930	1846 - 1930	
03/03/90	01296AA	BS90A-37	1931 - 1939	1931 - 1939	38
	01297AA	BS90A-43	1001 - 1080	1001 - 1080	
	01298AA	BS90A-43	1081 - 1165	1081 - 1165	
	01299AA	BS90A-43	1166 - 1250	1166 - 1250	
	01300AA	BS90A-43	1251 - 1335	1251 - 1335	
	01301AA	BS90A-43	1336 - 1420	1336 - 1420	
	01302AA	BS90A-43	1421 - 1435	1421 - 1435	
	01303AA	BS90A-43	1436 - 1520	1436 - 1520	
	01304AA	BS90A-43	1521 - 1605	1521 - 1605	
	01305AA	BS90A-43	1606 - 1611	1606 - 1611	
03/03/90	01306AA	BS90A-43	1612 - 1696	1612 - 1696	39
	01307AA	BS90A-43	1697 - 1781	1697 - 1781	
	01308AA	BS90A-43	1782 - 1788	1782 - 1788	
	01309AA	BS90A-43	1789 - 1799	1789 - 1799	
	01310AA	BS90A-45	1001 - 1080	1001 - 1080	
	01311AA	BS90A-45	1081 - 1165	1081 - 1165	
	01312AA	BS90A-45	1166 - 1250	1166 - 1250	
	01313AA	BS90A-45	1251 - 1335	1251 - 1335	
	01314AA	BS90A-45	1336 - 1420	1336 - 1420	
	01315AA	BS90A-45	1421 - 1505	1421 - 1505	
03/03/90	01316AA	BS90A-45	1506 - 1590	1506 - 1590	40
	01317AA	BS90A-45	1591 - 1675	1591 - 1675	
	01318AA	BS90A-45	1676 - 1698	1676 - 1698	
	01319AA	BS90A-45	1699 - 1783	1699 - 1783	
	01320AA	BS90A-45	1784 - 1802	1784 - 1802	

END OF SHIPMENT 2931-006-MIS 90

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
06/03/90	01321AA	0890A-12	1001 - 1079	1001 - 1079	01
	01322AA	0890A-12	1080 - 1164	1080 - 1164	
	01323AA	0890A-12	1165 - 1249	1165 - 1249	
	01324AA	0890A-12	1250 - 1334	1250 - 1334	
	01325AA	0890A-12	1335 - 1419	1335 - 1419	
	01326AA	0890A-12	1420 - 1504	1420 - 1504	
	01327AA	0890A-12	1505 - 1589	1505 - 1589	
	01328AA	0890A-12	1590 - 1674	1590 - 1674	
	01329AA	0890A-12	1675 - 1759	1675 - 1759	
	01330AA	0890A-12	1760 - 1844	1760 - 1844	
06/03/90	01331AA	0890A-12	1845 - 1900	1845 - 1900	02
	01332AA	0890A-27	1001 - 1080	1001 - 1080	
	01333AA	0890A-27	1081 - 1165	1081 - 1165	
	01334AA	0890A-27	1166 - 1250	1166 - 1250	
	01335AA	0890A-27	1251 - 1335	1251 - 1335	
	01336AA	0890A-27	1336 - 1349	1336 - 1349	
	01337AA	0890A-27	1350 - 1434	1350 - 1434	
	01338AA	0890A-27	1435 - 1519	1435 - 1519	
	01339AA	0890A-27	1520 - 1604	1520 - 1604	
	01340AA	0890A-27	1605 - 1689	1605 - 1689	
06/03/90	01341AA	0890A-27	1690 - 1774	1690 - 1774	03
	01342AA	0890A-27	1775 - 1859	1775 - 1859	
	01343AA	0890A-27	1860 - 1944	1860 - 1944	
	01344AA	0890A-27	1950 - 2029	1950 - 2029	
	01345AA	0890A-27	2030 - 2060	2030 - 2060	
07/03/90	01346AA	0890A-24	1001 - 1080	1001 - 1080	
	01347AA	0890A-24	1081 - 1165	1081 - 1165	
	01348AA	0890A-24	1166 - 1250	1166 - 1250	
	01349AA	0890A-24	1251 - 1335	1251 - 1336	
	01350AA	0890A-24	1336 - 1420	1336 - 1420	
07/03/90	01351AA	0890A-24	1421 - 1505	1421 - 1505	04
	01352AA	0890A-24	1506 - 1537	1506 - 1537	
	01353AA	0890A-24	1538 - 1622	1538 - 1622	
	01354AA	0890A-24	1623 - 1690	1623 - 1690	
	01355AA	0890A-24	1691 - 1708	1691 - 1708	
	01356AA	0890A-39	1001 - 1080	1001 - 1080	
	01357AA	0890A-39	1081 - 1165	1081 - 1165	
	01358AA	0890A-39	1166 - 1250	1166 - 1250	
	01359AA	0890A-39	1251 - 1335	1251 - 1335	
	01360AA	0890A-39	1336 - 1390	1336 - 1390	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
07/03/90	01361AA	0590A-35	1001 - 1083	1001 - 1080	05
	01362AA	0590A-35	1084 - 1168	1081 - 1165	
	01363AA	0590A-35	1169 - 1253	1166 - 1250	
	01364AA	0590A-35	1254 - 1265	1251 - 1262	
	01365AA	0590A-35	1266 - 1350	1263 - 1347	
	01366AA	0590A-35	1351 - 1356	1348 - 1353	
	01367AA	0590A-35	1357 - 1368	1354 - 1365	
	01368AA	0590A-35	1369 - 1453	1366 - 1450	
	01369AA	0590A-35	1454 - 1538	1451 - 1535	
	01370AA	0590A-35	1539 - 1623	1536 - 1620	
07/03/90	01371AA	0590A-35	1624 - 1708	1621 - 1705	06
	01372AA	0590A-35	1709 - 1793	1706 - 1790	
	01373AA	0590A-35	1794 - 1878	1791 - 1875	
	01374AA	0590A-35	1879 - 1890	1876 - 1887	
	01375AA	0590A-35	1891 - 1975	1888 - 1972	
	01376AA	0590A-35	1976 - 2060	1973 - 2057	
	01377AA	0590A-35	2061 - 2145	2058 - 2142	
	01378AA	0590A-35	2146 - 2230	2143 - 2227	
	01379AA	0590A-35	2231 - 2315	2228 - 2312	
	01380AA	0590A-35	2316 - 2334	2313 - 2331	
07/03/90	01381AA	0590A-35	2335 - 2405	2332 - 2402	07
	01382AA	0590A-29	1001 - 1080	1001 - 1080	
	01383AA	0590A-29	1081 - 1165	1081 - 1165	
	01384AA	0590A-29	1166 - 1250	1166 - 1250	
	01385AA	0590A-29	1251 - 1335	1251 - 1335	
	01386AA	0590A-29	1336 - 1420	1336 - 1420	
	01387AA	0590A-29	1421 - 1505	1421 - 1505	
	01388AA	0590A-29	1506 - 1590	1506 - 1590	
	01389AA	0590A-29	1591 - 1675	1591 - 1675	
	01390AA	0590A-29	1676 - 1760	1676 - 1760	
07/03/90	01391AA	0590A-29	1761 - 1845	1761 - 1845	08
	01392AA	0590A-29	1846 - 1930	1846 - 1930	
	01393AA	0590A-29	1931 - 1945	1931 - 1945	
	01394AA	0590A-29	1946 - 2030	1946 - 2030	
	01395AA	0590A-29	2031 - 2041	2031 - 2041	
	01396AA	0590A-29	2042 - 2061	2042 - 2061	
	01397AA	0590A-29	2062 - 2146	2062 - 2146	
	01398AA	0590A-29	2147 - 2231	2147 - 2231	
	01399AA	0590A-29	2232 - 2316	2232 - 2316	
	01400AA	0590A-29	2317 - 2323	2317 - 2323	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
07/03/90	01401AA	0590A-29	2324 - 2396	2324 - 2396	09
	01402AA	0590A-29	2397 - 2411	2397 - 2411	
	01403AA	0590A-25	1001 - 1080	1001 - 1080	
	01404AA	0590A-25	1081 - 1165	1081 - 1165	
	01405AA	0590A-25	1166 - 1250	1166 - 1250	
	01406AA	0590A-25	1251 - 1335	1251 - 1335	
	01407AA	0590A-25	1336 - 1420	1336 - 1420	
	01408AA	0590A-25	1421 - 1505	1421 - 1505	
	01409AA	0590A-25	1506 - 1590	1506 - 1590	
	01410AA	0590A-25	1591 - 1675	1591 - 1675	
07/03/90	01411AA	0590A-25	1676 - 1760	1676 - 1760	10
	01412AA	0590A-25	1761 - 1845	1761 - 1845	
	01413AA	0590A-25	1846 - 1930	1846 - 1930	
	01414AA	0590A-25	1931 - 1942	1931 - 1942	
	01415AA	0590A-25	1943 - 2027	1943 - 2027	
	01416AA	0590A-25	2028 - 2079	2028 - 2079	
08/03/90	01417AA	0590A-06	1001 - 1080	1001 - 1080	
	01418AA	0590A-06	1081 - 1165	1081 - 1165	
	01419AA	0590A-06	1166 - 1250	1166 - 1250	
	01420AA	0590A-06	1251 - 1335	1251 - 1335	
08/03/90	01421AA	0590A-06	1336 - 1420	1336 - 1420	11
	01422AA	0590A-06	1421 - 1505	1421 - 1505	
	01423AA	0590A-06	1506 - 1590	1506 - 1590	
	01424AA	0590A-06	1591 - 1675	1591 - 1675	
	01425AA	0590A-06	1676 - 1760	1676 - 1760	
	01426AA	0590A-06	1761 - 1845	1761 - 1845	
	01427AA	0590A-06	1846 - 1930	1846 - 1930	
	01428AA	0590A-06	1931 - 2015	1931 - 2015	
	01429AA	0590A-06	2016 - 2026	2016 - 2026	
	01430AA	0590A-01	1001 - 1080	1001 - 1080	
	08/03/90	01431AA	0590A-01	1081 - 1165	
01432AA		0590A-01	1166 - 1250	1166 - 1250	
01433AA		0590A-01	1251 - 1335	1251 - 1335	
01434AA		0590A-01	D. N. P.	D. N. P.	
01435AA		0590A-01	1337 - 1421	1337 - 1421	
01436AA		0590A-01	1422 - 1506	1422 - 1506	
01437AA		0590A-01	1507 - 1591	1507 - 1591	
01438AA		0590A-01	1592 - 1676	1592 - 1676	
01439AA		0590A-01	1677 - 1761	1677 - 1761	
01440AA		0590A-01	1762 - 1846	1762 - 1846	

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FIELD TAPE INVENTORY

<u>DATE</u>	<u>TAPE NO.</u>	<u>LINE NO.</u>	<u>SP. RANGE</u>	<u>RECORD NOS.</u>	<u>BOX</u>
08/03/90	01441AA	0590A-01	1847 - 1851	1847 - 1851	13
	01442AA	0590A-01	1851 - 1936	1851 - 1936	
	01443AA	0590A-01	1937 - 1971	1937 - 1971	
	01444AA	0590A-05	1001 - 1080	1001 - 1080	
	01445AA	0590A-05	1081 - 1165	1081 - 1165	
	01446AA	0590A-05	1166 - 1250	1166 - 1250	
	01447AA	0590A-05	1251 - 1335	1251 - 1335	
	01448AA	0590A-05	1336 - 1420	1336 - 1420	
	01449AA	0590A-05	1421 - 1425	1421 - 1425	
	01450AA	0590A-05	1426 - 1510	1426 - 1510	
	08/03/90	01451AA	0590A-05	1511 - 1595	
01452AA		0590A-05	1596 - 1680	1596 - 1680	
01453AA		0590A-05	1681 - 1765	1681 - 1765	
01454AA		0590A-05	1766 - 1850	1766 - 1850	
01455AA		0590A-05	1851 - 1860	1851 - 1860	
01456AA		0590A-05	1861 - 1945	1861 - 1945	
01457AA		0590A-05	1946 - 2030	1946 - 2030	
01458AA		0590A-05	2031 - 2051	2031 - 2051	
01459AA		0590A-05	2052 - 2136	2052 - 2136	
01460AA		0590A-05	2137 - 2221	2137 - 2221	
08/03/90		01461AA	0590A-05	D. N. P.	D. N. P.
	01462AA	0590A-05	2223 - 2236	2223 - 2236	
	01463AA	0590A-05	2237 - 2258	2237 - 2258	
	01464AA	0590A-03	1001 - 1080	1001 - 1080	
	01465AA	0590A-03	1081 - 1165	1081 - 1165	
	01466AA	0590A-03	1166 - 1250	1166 - 1250	
	01467AA	0590A-03	1251 - 1335	1251 - 1335	
	01468AA	0590A-03	1336 - 1420	1336 - 1420	
	01469AA	0590A-03	1421 - 1505	1421 - 1505	
	01470AA	0590A-03	1506 - 1590	1506 - 1590	
	08/03/90	01471AA	0590A-03	1591 - 1675	1591 - 1675
01472AA		0590A-03	1676 - 1760	1676 - 1760	
01473AA		0590A-03	1761 - 1814	1761 - 1814	
01474AA		0590A-03	1815 - 1899	1815 - 1899	
01475AA		0590A-03	1900 - 1984	1900 - 1984	
01476AA		0590A-03	1985 - 2027	1985 - 2027	
01477AA		0590A-12A	1821 - 1900	1821 - 1900	
01478AA		0590A-12A	1901 - 1985	1901 - 1985	
01479AA		0590A-12A	1986 - 2070	1986 - 2070	
01480AA		0590A-12A	2071 - 2155	2071 - 2155	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
08/03/90	01481AA	0590A-12A	2156 - 2240	2156 - 2240	17
	01482AA	0590A-12A	2241 - 2325	2241 - 2325	
	01483AA	0590A-12A	2326 - 2410	2326 - 2410	
	01484AA	0590A-12A	2411 - 2495	2411 - 2495	
	01485AA	0590A-12A	2496 - 2524	2496 - 2524	
	01486AA	0590A-12A	2525 - 2537	2525 - 2537	
	01487AA	0590A-12A	2538 - 2622	2538 - 2622	
	01488AA	0590A-12A	2623 - 2630	2623 - 2630	
	01489AA	0590A-12A	2631 - 2644	2631 - 2644	
	01490AA	0590A-12A	2645 - 2729	2645 - 2729	
08/03/90	01491AA	0590A-12A	2730 - 2814	2730 - 2814	18
	01492AA	0590A-12A	2815 - 2830	2815 - 2830	
	01493AA	0590A-12A	2831 - 2915	2831 - 2915	
	01494AA	0590A-12A	2916 - 2931	2916 - 2931	
	01495AA	0590A-12A	2932 - 2977	2932 - 2977	
	01496AA	0590A-55	1001 - 1080	1001 - 1080	
	01497AA	0590A-55	1081 - 1165	1081 - 1165	
	01498AA	0590A-55	1166 - 1192	1166 - 1192	
	01499AA	0590A-55	1193 - 1277	1193 - 1277	
	01500AA	0590A-55	1278 - 1362	1278 - 1362	
08/03/90	01501AA	0590A-55	1363 - 1374	1363 - 1374	19
	01502AA	0590A-55	1375 - 1459	1375 - 1459	
	01503AA	0590A-55	1460 - 1544	1460 - 1544	
	01504AA	0590A-55	1545 - 1629	1545 - 1629	
	01505AA	0590A-55	1630 - 1714	1630 - 1714	
	01506AA	0590A-55	1715 - 1799	1715 - 1799	
	01507AA	0590A-55	1800 - 1879	1800 - 1879	
09/03/90	01508AA	0590A-57	1001 - 1080	1001 - 1080	
	01509AA	0590A-57	1081 - 1165	1081 - 1165	
	01510AA	0590A-57	1166 - 1250	1166 - 1250	
09/03/90	01511AA	0590A-57	1251 - 1335	1251 - 1335	20
	01512AA	0590A-57	1336 - 1420	1336 - 1420	
	01513AA	0590A-57	1421 - 1449	1421 - 1449	
	01514AA	0590A-57	1450 - 1534	1450 - 1534	
	01515AA	0590A-57	1535 - 1619	1535 - 1619	
	01516AA	0590A-57	1620 - 1704	1620 - 1704	
	01517AA	0590A-57	1705 - 1789	1705 - 1789	
	01518AA	0590A-57	1790 - 1818	1790 - 1818	
	01519AA	0590A-53	1001 - 1080	1001 - 1080	
	01520AA	0590A-53	1081 - 1114	1081 - 1114	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
09/03/90	01521AA	0590A-53	1115 - 1199	1115 - 1199	21
	01522AA	0590A-53	1200 - 1284	1200 - 1284	
	01523AA	0590A-53	1285 - 1369	1285 - 1369	
	01524AA	0553A-53	1370 - 1397	1370 - 1397	
	01525AA	0590A-53	1398 - 1482	1398 - 1482	
	01526AA	0590A-53	1483 - 1560	1483 - 1560	
	01527AA	0590A-45	1001 - 1080	1001 - 1080	
	01528AA	0590A-45	1081 - 1165	1081 - 1165	
	01529AA	0590A-45	1166 - 1250	1166 - 1250	
	01530AA	0590A-45	1251 - 1335	1251 - 1335	
	09/03/90	01531AA	0590A-45	1336 - 1420	
01532AA		0590A-45	1421 - 1505	1421 - 1505	
01533AA		0590A-45	1506 - 1510	1506 - 1510	
01534AA		0590A-45	1511 - 1595	1511 - 1595	
01535AA		0590A-45	1596 - 1599	1596 - 1599	
01536AA		0590A-45	1600 - 1684	1600 - 1684	
01537AA		0590A-45	1685 - 1769	1685 - 1769	
01538AA		0590A-45	1770 - 1778	1770 - 1778	
01539AA		0590A-45	1779 - 1863	1779 - 1863	
01540AA		0590A-45	1864 - 1948	1864 - 1948	
09/03/90	01541AA	0590A-45	1949 - 1958	1949 - 1958	23
	01542AA	0590A-45	1959 - 2043	1959 - 2043	
	01543AA	0590A-45	2044 - 2116	2044 - 2116	
	01544AA	0590A-51	1001 - 1080	1001 - 1080	
	01545AA	0590A-51	1080 - 1165	1080 - 1165	
	01546AA	0590A-51	1166 - 1250	1166 - 1250	
	01547AA	0590A-51	1251 - 1335	1251 - 1335	
	01548AA	0590A-51	1336 - 1420	1336 - 1420	
	01549AA	0590A-51	1421 - 1505	1421 - 1505	
	01550AA	0590A-51	1506 - 1591	1506 - 1590	
09/03/90	01551AA	0590A-51	1592 - 1629	1591 - 1625	24
	01552AA	0590A-51A	1471 - 1550	1471 - 1550	
	01553AA	0590A-51A	1551 - 1635	1551 - 1635	
	01554AA	0590A-51A	1636 - 1720	1636 - 1720	
	01555AA	0590A-51A	1721 - 1805	1721 - 1805	
	01556AA	0590A-51A	1806 - 1851	1806 - 1851	
	01557AA	0590A-41	1001 - 1080	1001 - 1080	
	01558AA	0590A-41	1081 - 1165	1081 - 1165	
	01559AA	0590A-41	1166 - 1250	1166 - 1250	
	01560AA	0590A-41	1251 - 1335	1251 - 1335	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
09/03/90	01561AA	0590A-41	1336 - 1420	1336 - 1420	25
	01562AA	0590A-41	1421 - 1505	1421 - 1505	
	01563AA	0590A-41	1506 - 1590	1506 - 1590	
	01564AA	0590A-41	1591 - 1675	1591 - 1675	
	01565AA	0590A-41	1676 - 1760	1676 - 1760	
	01566AA	0590A-41	1761 - 1845	1761 - 1845	
	01567AA	0590A-41	1846 - 1930	1846 - 1930	
	01568AA	0590A-41	1931 - 2015	1931 - 2015	
	01569AA	0590A-41	2016 - 2100	2016 - 2100	
	01570AA	0590A-41	2101 - 2115	2101 - 2115	
09/03/90	01571AA	0590A-49	1001 - 1060	1001 - 1060	26
	01572AA	0590A-49	1061 - 1145	1061 - 1145	
	01573AA	0590A-49	1146 - 1230	1146 - 1230	
	01574AA	0590A-49	1231 - 1315	1231 - 1315	
	01575AA	0590A-49	1316 - 1326	1316 - 1326	
	01576AA	0590A-49	1327 - 1342	1327 - 1342	
	01577AA	0590A-49	1343 - 1427	1343 - 1427	
	01578AA	0590A-49	1428 - 1512	1428 - 1512	
	01579AA	0590A-49	1513 - 1597	1513 - 1597	
	01580AA	0590A-49	1598 - 1682	1598 - 1682	
09/03/90	01581AA	0590A-49	1683 - 1767	1683 - 1767	27
	01582AA	0590A-49	1768 - 1851	1768 - 1851	
10/03/90	01583AA	0590A-37	1001 - 1080	1001 - 1080	
	01584AA	0590A-37	1081 - 1165	1081 - 1165	
	01585AA	0590A-37	1166 - 1250	1166 - 1250	
	01586AA	0590A-37	1251 - 1335	1251 - 1335	
	01587AA	0590A-37	1336 - 1420	1336 - 1420	
	01588AA	0590A-37	1421 - 1505	1421 - 1505	
	01589AA	0590A-37	1506 - 1590	1506 - 1590	
	01590AA	0590A-37	1590 - 1675	1590 - 1675	
10/03/90	01591AA	0590A-37	1676 - 1760	1676 - 1760	28
	01592AA	0590A-37	1761 - 1845	1761 - 1845	
	01593AA	0590A-37	1846 - 1930	1846 - 1930	
	01594AA	0590A-37	1931 - 2015	1931 - 2015	
	01595AA	0590A-37	2016 - 2038	2016 - 2038	
	01596AA	0590A-47	1001 - 1080	1001 - 1080	
	01597AA	0590A-47	1081 - 1165	1081 - 1165	
	01598AA	0590A-47	1166 - 1250	1166 - 1250	
	01599AA	0590A-47	1251 - 1335	1251 - 1335	
	01600AA	0590A-47	1336 - 1420	1336 - 1420	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
10/03/90	01601AA	0590A-47	1421 - 1505	1421 - 1505	29
	01602AA	0590A-47	1506 - 1590	1506 - 1590	
	01603AA	0590A-47	1591 - 1675	1591 - 1675	
	01604AA	0590A-47	1676 - 1760	1676 - 1760	
	01605AA	0590A-47	1761 - 1845	1761 - 1845	
	01606AA	0590A-47	1846 - 1890	1846 - 1890	
	01607AA	0590A-43	1001 - 1080	1001 - 1080	
	01608AA	0590A-43	1081 - 1165	1081 - 1165	
	01609AA	0590A-43	1166 - 1250	1166 - 1250	
	01610AA	0590A-43	1251 - 1335	1251 - 1335	
10/03/90	01611AA	0590A-43	1336 - 1420	1336 - 1420	30
	01612AA	0590A-43	1421 - 1425	1421 - 1425	
	01613AA	0590A-43	1426 - 1443	1426 - 1443	
	01614AA	0590A-43	1444 - 1528	1444 - 1528	
	01615AA	0590A-43	1529 - 1534	1529 - 1534	
	01616AA	0590A-43	1535 - 1619	1535 - 1619	
	01617AA	0590A-43	1620 - 1704	1620 - 1704	
	01618AA	0590A-43	1705 - 1789	1705 - 1789	
	01619AA	0590A-43	1790 - 1874	1790 - 1874	
	01620AA	0590A-43	1875 - 1959	1875 - 1959	
10/03/90	01621AA	0590A-43	1960 - 2044	1960 - 2044	31
	01622AA	0590A-43	2045 - 2129	2045 - 2129	
	01623AA	0590A-43	2130 - 2214	2130 - 2214	
	01624AA	0590A-43	2215 - 2229	2215 - 2229	
	01625AA	0590A-43	2230 - 2314	2203 - 2314	
	01626AA	0590A-43	2315 - 2396	2315 - 2396	
	01627AA	0590A-43	2397 - 2481	2397 - 2481	
	01628AA	0590A-43	2482 - 2566	2482 - 2566	
	01629AA	0590A-43	2567 - 2651	2567 - 2651	
	01630AA	0590A-43	2652 - 2712	2652 - 2712	
10/03/90	01631AA	0590A-33	1001 - 1080	1001 - 1080	32
	01632AA	0590A-33	1081 - 1165	1081 - 1165	
	01633AA	0590A-33	1166 - 1250	1166 - 1250	
	01634AA	0590A-33	1251 - 1335	1251 - 1335	
	01635AA	0590A-33	1336 - 1420	1336 - 1420	
	01636AA	0590A-33	1421 - 1429	1421 - 1429	
	01637AA	0590A-33	1430 - 1514	1430 - 1514	
	01638AA	0590A-33	1515 - 1599	1515 - 1599	
	01639AA	0590A-33	1600 - 1684	1600 - 1684	
	01640AA	0590A-33	1685 - 1769	1685 - 1769	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
10/03/90	01641AA	0590A-33	1770 - 1854	1770 - 1854	33
	01642AA	0590A-33	1855 - 1939	1855 - 1939	
	01643AA	0590A-33	1940 - 2024	1940 - 2024	
	01644AA	0590A-33	2025 - 2039	2025 - 2039	
	01645AA	0590A-31	1001 - 1080	1001 - 1080	
	01646AA	0590A-31	1081 - 1165	1081 - 1165	
	01647AA	0590A-31	1166 - 1250	1166 - 1250	
	01648AA	0590A-31	1251 - 1335	1251 - 1335	
	01649AA	0590A-31	1336 - 1420	1336 - 1420	
	01650AA	0590A-31	1421 - 1505	1421 - 1505	
10/03/90	01651AA	0590A-31	1506 - 1590	1506 - 1590	34
	01652AA	0590A-31	1591 - 1675	1591 - 1675	
	01653AA	0590A-31	1676 - 1760	1676 - 1760	
	01654AA	0590A-31	1761 - 1745	1761 - 1845	
	01655AA	0590A-31	1846 - 1930	1746 - 1930	
	01656AA	0590A-31	1931 - 2015	1931 - 2015	
	01657AA	0590A-31	2016 - 2055	2016 - 2055	
	01658AA	0590A-14	D.N.P.	D.N.P.	
12/03/90	01659AA	0590A-20	1001 - 1080	1001 - 1080	
	01660AA	0590A-20	1081 - 1165	1081 - 1165	
12/03/90	01661AA	0590A-20	1166 - 1250	1166 - 1250	35
	01662AA	0590A-20	1251 - 1335	1251 - 1335	
	01663AA	0590A-20	1336 - 1341	1336 - 1341	
	01664AA	0590A-20A	1221 - 1300	1221 - 1300	
	01665AA	0590A-20A	1301 - 1385	1301 - 1385	
	01666AA	0590A-20A	1386 - 1470	1386 - 1470	
	01667AA	0590A-20A	1471 - 1555	1471 - 1555	
	01668AA	0590A-20A	1556 - 1640	1556 - 1640	
	01669AA	0590A-20A	1641 - 1725	1641 - 1725	
	01670AA	0590A-20A	1726 - 1810	1726 - 1810	
12/03/90	01671AA	0590A-20A	1811 - 1895	1811 - 1895	36
	01672AA	0590A-20A	1896 - 1980	1896 - 1980	
	01673AA	0590A-20A	1981 - 2065	1981 - 2065	
	01674AA	0590A-20A	2066 - 2150	2066 - 2150	
	01675AA	0590A-20A	2151 - 2196	2151 - 2196	
	01676AA	0590A-22	1001 - 1080	1001 - 1080	
	01677AA	0590A-22	1081 - 1165	1081 - 1165	
	01678AA	0590A-22	1166 - 1250	1166 - 1250	
	01679AA	0590A-22	1251 - 1335	1251 - 1335	
	01680AA	0590A-22	1336 - 1420	1336 - 1420	

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FIELD TAPE INVENTORY

<u>DATE</u>	<u>TAPE NO.</u>	<u>LINE NO.</u>	<u>SP. RANGE</u>	<u>RECORD NOS.</u>	<u>BOX</u>
12/03/90	01681AA	0590A-22	1421 - 1505	1421 - 1505	37
	01682AA	0590A-22	1506 - 1590	1506 - 1590	
	01683AA	0590A-22	1591 - 1675	1591 - 1675	
	01684AA	0590A-22	1676 - 1760	1676 - 1760	
	01685AA	0590A-22	1761 - 1845	1761 - 1845	
	01686AA	0590A-22	1846 - 1930	1846 - 1930	
	01687AA	0590A-22	1931 - 2002	1931 - 2002	
	01688AA	0590A-22	2003 - 2087	2003 - 2087	
	01689AA	0590A-22	2088 - 2151	2088 - 2151	
	01690AA	0590A-18	1001 - 1080	1001 - 1080	
12/03/90	01691AA	0590A-18	1081 - 1165	1081 - 1165	38
	01692AA	0590A-18	1166 - 1242	1166 - 1242	
	01693AA	0590A-18	1243 - 1327	1243 - 1327	
	01694AA	0590A-18	1328 - 1412	1328 - 1412	
	01695AA	0590A-18	1413 - 1416	1413 - 1416	
	01696AA	0590A-18	1417 - 1501	1417 - 1501	
	01697AA	0590A-18	1502 - 1586	1502 - 1586	
	01698AA	0590A-18	1587 - 1592	1587 - 1592	
	01699AA	0590A-18	1593 - 1603	1593 - 1603	
	01700AA	0590A-18	1604 - 1688	1604 - 1688	
12/03/90	01701AA	0590A-18	1689 - 1773	1689 - 1773	39
	01702AA	0590A-18	1774 - 1858	1774 - 1858	
	01703AA	0590A-18	1859 - 1943	1859 - 1943	
	01704AA	0590A-18	1944 - 2028	1944 - 2028	
	01705AA	0590A-18	2029 - 2113	2029 - 2113	
	01706AA	0590A-18	2114 - 2198	2114 - 2198	
	01707AA	0590A-18	2199 - 2230	2199 - 2230	
	01708AA	0590A-16	1001 - 1080	1001 - 1080	
	01709AA	0590A-16	1081 - 1165	1081 - 1165	
	01710AA	0590A-16	1166 - 1169	1166 - 1169	
12/03/90	01711AA	0590A-16	1170 - 1254	1170 - 1254	40
	01712AA	0590A-16	1255 - 1339	1255 - 1339	
	01713AA	0590A-16	1340 - 1355	1340 - 1355	
	01714AA	0590A-16	1356 - 1440	1356 - 1440	
	01715AA	0590A-16	1441 - 1525	1441 - 1525	
	01716AA	0590A-16	1526 - 1536	1526 - 1536	
	01717AA	0590A-16	1537 - 1621	1537 - 1621	
	01718AA	0590A-16	1622 - 1706	1622 - 1706	
	01719AA	0590A-16	1707 - 1791	1707 - 1791	
	01720AA	0590A-16	1792 - 1876	1792 - 1876	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
13/03/90	01721AA	0590A-16	1877 - 1961	1877 - 1961	41
	01722AA	0590A-16	1962 - 2046	1962 - 2046	
	01723AA	0590A-16	2047 - 2131	2047 - 2131	
	01724AA	0590A-16	2132 - 2139	2132 - 2139	
	01725AA	0590A-16	2141 - 2225	2140 - 2224	
	01726AA	0590A-16	2226 - 2237	2225 - 2236	
	01727AA	0590A-14A	1001 - 1080	1001 - 1080	
	01728AA	0590A-14A	1081 - 1165	1081 - 1165	
	01729AA	0590A-14A	1166 - 1170	1166 - 1170	
	01730AA	0590A-14A	1171 - 1255	1171 - 1255	
13/03/90	01731AA	0590A-14A	1256 - 1340	1256 - 1340	42
	01732AA	0590A-14A	1341 - 1425	1341 - 1425	
	01733AA	0590A-14A	1426 - 1429	1426 - 1429	
	01734AA	0590A-14A	1430 - 1514	1430 - 1514	
	01735AA	0590A-14A	1515 - 1599	1515 - 1599	
	01736AA	0590A-14A	1600 - 1684	1600 - 1684	
	01737AA	0590A-14A	1685 - 1769	1685 - 1769	
	01738AA	0590A-14A	1770 - 1854	1770 - 1854	
	01739AA	0590A-14A	1855 - 1939	1855 - 1939	
	01740AA	0590A-14A	1940 - 2024	1940 - 2024	
13/03/90	01741AA	0590A-14A	2025 - 2109	2025 - 2109	43
	01742AA	0590A-14A	2110 - 2194	2110 - 2194	
	01743AA	0590A-14A	2195 - 2237	2195 - 2237	
	01744AA	0590A-10	1001 - 1080	1001 - 1080	
	01745AA	0590A-10	1081 - 1165	1081 - 1165	
	01746AA	0590A-10	1166 - 1250	1166 - 1250	
	01747AA	0590A-10	1251 - 1335	1251 - 1335	
	01748AA	0590A-10	1336 - 1420	1336 - 1420	
	01749AA	0590A-10	1421 - 1505	1421 - 1505	
	01750AA	0590A-10	1506 - 1590	1506 - 1590	
13/03/90	01751AA	0590A-10	1591 - 1675	1591 - 1675	44
	01752AA	0590A-10	1676 - 1760	1676 - 1760	
	01753AA	0590A-10	1761 - 1845	1761 - 1845	
	01754AA	0590A-10	1846 - 1930	1846 - 1930	
	01755AA	0590A-10	1931 - 2015	1931 - 2015	
	01756AA	0590A-10	2016 - 2100	2016 - 2100	
	01757AA	0590A-10	2101 - 2185	2101 - 2185	
	01758AA	0590A-10	2186 - 2270	2186 - 2270	
	01759AA	0590A-10	2271 - 2355	2271 - 2355	
	01760AA	0590A-10	2356 - 2440	2356 - 2440	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
13/03/90	01761AA	0590A-10	2441 - 2525	2441 - 2525	45
	01762AA	0590A-10	2526 - 2610	2526 - 2610	
	01763AA	0590A-10	2611 - 2695	2611 - 2695	
	01764AA	0590A-10	2696 - 2780	2696 - 2780	
	01765AA	0590A-10	2781 - 2865	2781 - 2865	
	01766AA	0590A-10	2866 - 2950	2866 - 2950	
	01767AA	0590A-10	2951 - 2976	2951 - 2976	
	01768AA	0590A-08	1001 - 1080	1001 - 1080	
	01769AA	0590A-08	1081 - 1165	1081 - 1165	
	01770AA	0590A-08	1166 - 1250	1166 - 1250	
13/03/90	01771AA	0590A-08	1251 - 1335	1251 - 1335	46
	01772AA	0590A-08	1336 - 1420	1336 - 1420	
	01773AA	0590A-08	1421 - 1505	1421 - 1505	
	01774AA	0590A-08	1506 - 1590	1506 - 1590	
	01775AA	0590A-08	1591 - 1677	1591 - 1675	
	01776AA	0590A-08	1678 - 1762	1676 - 1760	
	01777AA	0590A-08	1763 - 1847	1761 - 1845	
	01778AA	0590A-08	1848 - 1932	1846 - 1930	
	01779AA	0590A-08	1933 - 2017	1931 - 2015	
	01780AA	0590A-08	2018 - 2090	2016 - 2088	
13/03/90	01781AA	0590A-08	2091 - 2103	2089 - 2101	47
	01782AA	0590A-08	1001 - 1080	1001 - 1080	
	01783AA	0590A-08	1081 - 1165	1081 - 1165	
	01784AA	0590A-08	1166 - 1250	1166 - 1250	
	01785AA	0590A-08	1251 - 1335	1251 - 1335	
	01786AA	0590A-08	1336 - 1420	1336 - 1420	
	01787AA	0590A-08	1421 - 1505	1421 - 1505	
	01788AA	0590A-08	1506 - 1590	1506 - 1591	
	01789AA	0590A-08	1592 - 1676	1591 - 1675	
	01790AA	0590A-08	1677 - 1761	1676 - 1760	
13/03/90	01791AA	0590A-08	1762 - 1846	1761 - 1845	48
	01792AA	0590A-08	1847 - 1931	1846 - 1930	
	01793AA	0590A-08	1932 - 1956	1931 - 1955	
	01794AA	0590A-02	1001 - 1080	1001 - 1080	
	01795AA	0590A-02	1081 - 1165	1081 - 1165	
	01796AA	0590A-02	1166 - 1250	1166 - 1250	
	01797AA	0590A-02	1251 - 1335	1251 - 1335	
	01798AA	0590A-02	1336 - 1420	1336 - 1420	
	01799AA	0590A-02	1421 - 1428	1421 - 1428	
	01800AA	0590A-02	1429 - 1513	1429 - 1513	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
13/03/90	01801AA	0590A-02	1514 - 1598	1514 - 1598	49
	01802AA	0590A-02	1599 - 1609	1599 - 1609	
	01803AA	0590A-02	1610 - 1694	1610 - 1694	
	01804AA	0590A-02	1695 - 1779	1695 - 1779	
	01805AA	0590A-02	1780 - 1787	1780 - 1787	
	01806AA	0590A-02	1788 - 1872	1788 - 1872	
	01807AA	0590A-02	1873 - 1895	1873 - 1895	
	14/03/90	01808AA	0590A-21	1001 - 1080	
01809AA		0590A-21	1081 - 1165	1081 - 1165	
01810AA		0590A-21	1166 - 1250	1166 - 1250	
14/03/90	01811AA	0590A-21	1251 - 1335	1251 - 1335	50
	01812AA	0590A-21	1336 - 1420	1336 - 1420	
	01813AA	0590A-21	1421 - 1505	1421 - 1505	
	01814AA	0590A-21	1506 - 1590	1506 - 1590	
	01815AA	0590A-21	1591 - 1675	1591 - 1675	
	01816AA	0590A-21	1676 - 1760	1676 - 1760	
	01817AA	0590A-21	1761 - 1845	1761 - 1845	
	01818AA	0590A-21	1846 - 1930	1846 - 1930	
	01819AA	0590A-21	1931 - 2015	1931 - 2015	
	01820AA	0590A-21	2016 - 2100	2016 - 2100	
	14/03/90	01821AA	0590A-21	2101 - 2109	
01822AA		0590A-21	2114 - 2198	2110 - 2194	
01823AA		0590A-21	2199 - 2283	2195 - 2279	
01824AA		0590A-21	2284 - 2368	2280 - 2364	
01825AA		0590A-21	2369 - 2407	2365 - 2403	
01826AA		0590A-23	1001 - 1080	1001 - 1080	
01827AA		0590A-23	1081 - 1165	1081 - 1165	
01828AA		0590A-23	1166 - 1250	1166 - 1250	
01829AA		0590A-23	1251 - 1335	1251 - 1335	
01830AA		0590A-23	1336 - 1420	1336 - 1420	
14/03/90	01831AA	0590A-23	1421 - 1505	1421 - 1505	52
	01832AA	0590A-23	1506 - 1590	1506 - 1590	
	01833AA	0590A-23	1591 - 1675	1591 - 1675	
	01834AA	0590A-23	1676 - 1760	1676 - 1760	
	01835AA	0590A-23	1761 - 1845	1761 - 1845	
	01836AA	0590A-23	1846 - 1930	1846 - 1930	
	01837AA	0590A-23	1931 - 2015	1931 - 2015	
	01838AA	0590A-23	2016 - 2100	2016 - 2100	
	01839AA	0590A-23	2101 - 2185	2101 - 2185	
	01840AA	0590A-23	2186 - 2270	2186 - 2270	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
14/03/90	01841AA	0590A-23	2271 - 2281	2271 - 2281	53
	01842AA	0590A-23	2282 - 2366	2282 - 2366	
	01843AA	0590A-23	2367 - 2373	2367 - 2373	
	01844AA	0590A-23	2374 - 2458	2374 - 2458	
	01845AA	0590A-23	2459 - 2531	2459 - 2531	
	01846AA	0590A-19	1001 - 1080	1001 - 1080	
	01847AA	0590A-19	1081 - 1165	1081 - 1165	
	01848AA	0590A-19	1166 - 1250	1166 - 1250	
	01849AA	0590A-19	1251 - 1335	1251 - 1335	
	01850AA	0590A-19	1336 - 1420	1336 - 1420	
14/03/90	01851AA	0590A-19	1421 - 1505	1421 - 1505	54
	01852AA	0590A-19	1506 - 1590	1506 - 1590	
	01853AA	0590A-19	1591 - 1675	1591 - 1675	
	01854AA	0590A-19	1676 - 1760	1676 - 1760	
	01855AA	0590A-19	1761 - 1772	1761 - 1766	
	01856AA	0590A-19	D.N.P.	D.N.P.	
	01857AA	0590A-19A	1681 - 1760	1681 - 1760	
	01858AA	0590A-19A	1761 - 1845	1761 - 1845	
	01859AA	0590A-19A	1846 - 1883	1846 - 1883	
	01860AA	0590A-19A	1884 - 1968	1884 - 1968	
14/03/90	01861AA	0590A-19A	1969 - 2053	1969 - 2053	55
	01862AA	0590A-19A	2054 - 2138	2054 - 2138	
	01863AA	0590A-19A	2139 - 2171	2139 - 2153	
	01864AA	0590A-19B	2061 - 2140	2061 - 2140	
	01865AA	0590A-19B	2041 - 2225	2041 - 2225	
	01866AA	0590A-19B	2226 - 2310	2226 - 2310	
	01867AA	0590A-19B	2311 - 2395	2311 - 2395	
	01868AA	0590A-19B	2396 - 2411	2396 - 2411	
	01869AA	0590A-17	1001 - 1080	1001 - 1080	
	01870AA	0590A-17	1081 - 1165	1081 - 1165	
14/03/90	01871AA	0590A-17	1166 - 1250	1166 - 1250	56
	01872AA	0590A-17	1251 - 1335	1251 - 1335	
	01873AA	0590A-17	1336 - 1420	1336 - 1420	
	01874AA	0590A-17	1421 - 1505	1421 - 1505	
	01875AA	0590A-17	1506 - 1590	1506 - 1590	
	01876AA	0590A-17	1591 - 1675	1591 - 1675	
	01877AA	0590A-17	1676 - 1760	1676 - 1760	
	01878AA	0590A-17	1761 - 1845	1761 - 1845	
	01879AA	0590A-17	1846 - 1930	1846 - 1930	
	01880AA	0590A-17	1931 - 2015	1931 - 2015	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
14/03/90	01881AA	0590A-17	2016 - 2100	2106 - 2100	57
	01882AA	0590A-17	2101 - 2185	2101 - 2185	
	01883AA	0590A-17	2186 - 2270	2186 - 2270	
	01884AA	0590A-17	2271 - 2355	2271 - 2355	
	01885AA	0590A-17	2356 - 2404	2356 - 2404	
15/03/90	01886AA	0590A-15	1001 - 1080	1001 - 1080	
	01887AA	0590A-15	1081 - 1165	1081 - 1165	
	01888AA	0590A-15	1166 - 1250	1166 - 1250	
	01889AA	0590A-15	1251 - 1335	1251 - 1335	
	01890AA	0590A-15	1336 - 1420	1336 - 1420	
15/03/90	01891AA	0590A-15	1421 - 1505	1421 - 1505	58
	01892AA	0590A-15	1506 - 1590	1506 - 1590	
	01893AA	0590A-15	1591 - 1675	1591 - 1675	
	01894AA	0590A-15	1676 - 1693	1676 - 1693	
	01895AA	0590A-15	1694 - 1778	1694 - 1778	
	01896AA	0590A-15	1779 - 1787	1779 - 1787	
	01897AA	0590A-15	1788 - 1791	1788 - 1791	
	01898AA	0590A-15	1793 - 1877	1792 - 1876	
	01899AA	0590A-15	1878 - 1962	1877 - 1961	
	01900AA	0590A-15	1963 - 2047	1962 - 2046	
15/03/90	01901AA	0590A-15	2048 - 2060	2047 - 2059	59
	01902AA	0590A-15	2061 - 2145	2060 - 2144	
	01903AA	0590A-15	2146 - 2165	2145 - 2164	
	01904AA	0590A-15	2166 - 2179	2165 - 2178	
	01905AA	0590A-15	2180 - 2264	2179 - 2263	
	01906AA	0590A-15	2265 - 2326	2264 - 2325	
	01907AA	0590A-13	1001 - 1080	1001 - 1080	
	01908AA	0590A-13	1081 - 1165	1081 - 1165	
	01909AA	0590A-13	1166 - 1250	1166 - 1250	
	01910AA	0590A-13	1251 - 1335	1251 - 1335	
15/03/90	01911AA	0590A-13	1336 - 1420	1336 - 1420	60
	01912AA	0590A-13	1421 - 1505	1421 - 1505	
	01913AA	0590A-13	1506 - 1590	1506 - 1590	
	01914AA	0590A-13	1591 - 1675	1591 - 1675	
	01915AA	0590A-13	1676 - 1689	1676 - 1689	
	01916AA	0590A-13	1690 - 1774	1690 - 1774	
	01917AA	0590A-13	1775 - 1859	1775 - 1859	
	01918AA	0590A-13	1860 - 1871	1860 - 1871	
	01919AA	0590A-13	1872 - 1956	1872 - 1956	
	01920AA	0590A-13	1957 - 2041	1957 - 2041	

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FIELD TAPE INVENTORY

DATE	TAPE NO.	LINE NO.	SP. RANGE	RECORD NOS.	BOX
15/03/90	01921AA	0590A-13	2042 - 2126	2042 - 2126	61
	01922AA	0590A-13	2127 - 2211	2127 - 2211	
	01923AA	0590A-13	2212 - 2296	2212 - 2296	
	01924AA	0590A-13	2297 - 2318	2297 - 2318	
	01925AA	0590A-11	1001 - 1079	1001 - 1079	
	01926AA	0590A-11	1080 - 1164	1080 - 1164	
	01927AA	0590A-11	1165 - 1249	1165 - 1249	
	01928AA	0590A-11	1250 - 1334	1250 - 1334	
	01929AA	0590A-11	1335 - 1419	1335 - 1419	
	01930AA	0590A-11	1420 - 1480	1420 - 1480	
15/03/90	01931AA	0590A-11	1481 - 1565	1481 - 1565	62
	01932AA	0590A-11	1566 - 1650	1566 - 1650	
	01933AA	0590A-11	1651 - 1735	1651 - 1735	
	01934AA	0590A-11	1736 - 1820	1736 - 1820	
	01935AA	0590A-11	1821 - 1905	1821 - 1905	
	01936AA	0590A-11	1906 - 1990	1906 - 1990	
	01937AA	0590A-11	1991 - 2075	1991 - 2075	
	01938AA	0590A-11	2076 - 2125	2076 - 2117	
	01939AA	0590A-11A	D.N.P.	D.N.P.	
16/03/90	01940AA	0590A-11C	2021 - 2101	2020 - 2100	
16/03/90	01941AA	0590A-11C	2102 - 2186	2101 - 2185	63
	01942AA	0590A-11C	2187 - 2271	2186 - 2270	
	01943AA	0590A-11C	2272 - 2286	2271 - 2285	
	01944AA	0590A-11C	2287 - 2300	2286 - 2299	
	01945AA	0590A-07	1001 - 1006	1001 - 1006	
	01946AA	0590A-09	1001 - 1080	1001 - 1080	
	01947AA	0590A-09	1081 - 1165	1081 - 1165	
	01948AA	0590A-09	1166 - 1250	1166 - 1250	
	01949AA	0590A-09	1251 - 1335	1251 - 1335	
	01950AA	0590A-09	1336 - 1420	1336 - 1420	
16/03/90	01951AA	0590A-09	1421 - 1505	1421 - 1505	64
	01952AA	0590A-09	1506 - 1590	1506 - 1590	
	01953AA	0590A-09	1591 - 1675	1591 - 1675	
	01954AA	0590A-09	1676 - 1760	1676 - 1760	
	01955AA	0590A-09	1761 - 1845	1761 - 1845	
	01956AA	0590A-09	1846 - 1930	1846 - 1930	
	01957AA	0590A-09	1931 - 2015	1931 - 2015	
	01958AA	0590A-09	2016 - 2100	2016 - 2100	
	01959AA	0590A-09	2101 - 2185	2101 - 2185	
	01960AA	0590A-09	2186 - 2257	2186 - 2257	

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FIELD TAPE INVENTORY

<u>DATE</u>	<u>TAPE NO.</u>	<u>LINE NO.</u>	<u>SP. RANGE</u>	<u>RECORD NOS.</u>	<u>BOX</u>
16/03/90	01961AA	0590A-07A	D. N. F.	D. N. F.	65
	01962AA	0590A-07A	D. N. F.	D. N. F.	
	01963AA	0590A-07B	1001 - 1080	1001 - 1080	
	01964AA	0590A-07B	1081 - 1165	1081 - 1165	
	01965AA	0590A-07B	1166 - 1250	1166 - 1250	
	01966AA	0590A-07B	1251 - 1335	1251 - 1335	
	01967AA	0590A-07B	1336 - 1420	1336 - 1420	
	01968AA	0590A-07B	1421 - 1505	1421 - 1505	
	01969AA	0590A-07B	1506 - 1590	1506 - 1590	
	01970AA	0590A-07B	1591 - 1675	1591 - 1675	
16/03/90	01971AA	0590A-07B	1676 - 1760	1676 - 1760	66
	01972AA	0590A-07B	1761 - 1845	1761 - 1845	
	01973AA	0590A-07B	1846 - 1930	1846 - 1930	
	01974AA	0590A-07B	1931 - 2015	1931 - 2015	
	01975AA	0590A-07B	2016 - 2100	2016 - 2100	
	01976AA	0590A-07B	2101 - 2185	2101 - 2185	
	01977AA	0590A-07B	2186 - 2199	2186 - 2199	
	01978AA	0590A-07B	2200 - 2259	2200 - 2259	

END OF 2931-010-MIS-90 SHIPMENT VIC P28 PERMIT