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PEL 34, PEL 53 AND PEL 59

SAINT VINCENT BASIN, TROUBRIDGE BASIN, STANSBURY BASIN AND GAWLER CRATON

GULF WATERS (M/V "ROSS SEAL") SEISMIC SURVEY. OPERATIONAL REPORTS FOR THE PERIOD JANUARY TO DECEMBER 1994

Submitted by

Allender Exploration Consultants and Digital Exploration Ltd
1994

Enquiries: Customer Services
Ground Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880

PRIMARY INDUSTRIES AND RESOURCES SA

OFFSHORE SEISMIC EXPLORATION- GULF ST VINCENT, INVESTIGATOR STRAIT AND SPENCER GULF DECLARATION OF ENVIRONMENTAL FACTORS

1 Introduction

The following information represents a summary of the issues that were raised following consultation with relevant State Government agencies, local government industry and members of the public.

2 Issues

The majority of the issues relate to the noise generated by the airguns. Other issues relate to the presence of the vessel and the 3.3 km cable towed behind the vessel and the straight line course from which the boat cannot deviate.

2.1 Shipwrecks

The Heritage Branch of DENR advised of a number of shipwrecks within the area of the proposed survey. The shipwrecks are marked on the sensitivity map. In order to avoid damage to archaeological material airblasts should not be let off any closer than three kilometres from a wreck.

2.2 Fur Seals

NPWS, Port Lincoln advised that New Zealand Fur Seals are presently mating and rearing young in the vicinity of the offshore islands in Investigator Strait and Spencer Gulf. They recommended that airblasts should occur no closer than two kilometres from the islands.

2.3 Seabird Rookeries

There are a number of seabird rookeries along the coastline. The boat is unlikely to venture close to land due to the shallowing sea bottom, however in order to avoid disturbing nesting birds airblasting should occur no closer than 500 metres from rookeries.

2.4 Spawning Areas and Hatcheries

There are a number of fish hatching and spawning areas. The effect of airblasts can be lethal to eggs and larvae at close range. It is recommended that airblasts do not occur within these areas.

2.5 Seagrass

Seagrass provides an important habitat for marine life and does not recover rapidly following disturbance. The boat and cable will not disturb the seabed for obvious safety and financial reasons.

2.6 Whales

The State Museum advised that it is extremely unlikely that any whales would be in the study area until May. However in order to minimise the risk of disturbing whales constant watch should be maintained during daylight hours and contact with NPWS and Whalewatch centre should be made daily. If whales are sighted airblasts are to cease until the whales are ten kilometres away. Any whale sightings are to be reported to

MESA.

2.7 Professional fishing

The prawn fleets may still be operating at night in both gulfs during the survey period. The SA Fishing Industry Council are not concerned about the two activities coinciding as they believe that conflict can be avoided by communicating the vessels location and course to the fleet. Mr F. Valcic, seaphone 018 82 0669, can be contacted concerning Gulf St. Vincent operations; and Mr M. Puglisi, 086 82 1859 can be contacted concerning Spencer Gulf operations. SAFIC have advised their members of the survey. The noise of the survey is not considered to disturb prawns.

Cray pots may be located in the area around the coast of Yorke Peninsula, the offshore islands and submerged reefs. The vessel should avoid all areas shown on the map, communicate with crayfishermen via VHF Channel 16 and keep a constant watch for craypots. Compensation for pots is approximately $200.00. The noise of the survey is not considered to disturb crayfish. Likewise crab pots are set in the Port Broughton - Middle Bank area and will be treated similarly to cray pots.

2.8 Conservation Parks and Aquatic Reserves

There are a number of coastal and offshore areas which are proclaimed under either the National Parks and Wildlife Act or the Fisheries Act. These are indicated on the sensitivity map. Entry into these areas is prohibited by legislation.

2.9 Ship Waste

All ship waste will be handled as required by IMCO and SOLAS international standards as stipulated by the Australian Navigation Act.

2.10 Divers

Airblasts could harm the hearing of divers if they are too close to the vessel. By avoiding reefs, islands and shipwrecks the concern to divers should be negligible, however the SCUBA Diving Association of South Australia has been advised of the survey and have notified their members.

2.11 Safety

A Notice to Mariners has been issued. The major users of the waters have been advised and multi media publicity should ensure that most people are aware of the vessel and its actions and navigational limitations.

3 Organisations consulted

Department of Natural Resources

Adelaide Office
Tim Bond/ Jenny Fenwick ph 226 1861
fax 226 1860

Port Lincoln
Ross Allen ph 086 883177
fax 086 883170

Innes National Park
Acting manager ph 088 544040

fax 088 544072

Kangaroo Island
T Dennis/ Fraser Vickery ph 0848 22381
fax 0848 22531

State Heritage Branch
Bill Jeffery ph 207 2378
fax 207 2490

PISA Fisheries
John Jefferson ph 226 0600
fax 226 0664

SARDI Fisheries
John Johnson ph 226 0621
fax 226 0693

State Museum
Dr Chris Watts ph 207 7478
fax 207 7222

Department of Marine and Harbours
Peter Shipp/ Wally Stuart ph 47 0799
fax 47 0603

SA Fishing Industry Council
Peter Peterson ph 344 9193
fax 269 1040

Recreational Anglers Association of SA
Kym White ph
fax

SCUBA Divers Association of SA
Helena Smadden ph 231 5532
fax 231 3822

All local government authorities abutting the coastline (except those in metro and outer metro Adelaide). See Local Government Directory for phone numbers.

OFFSHORE SEISMIC SURVEY CODE OF ENVIRONMENTAL PRACTICE

The operation shall be conducted in accordance with the APEA Code of Environmental Practice for Offshore Operations. In addition the following specific codes shall apply to this operation:

1. The vessel shall not enter the areas indicated on the sensitivity maps for the purpose of seismic exploration.

2. The vessel shall maintain contact with prawn fishermen and cray fishermen in order to avoid damage to craypots and fishing nets.

3. A constant watch for whales shall be maintained. Daily contact shall be made with the Whalewatch Information Centre (085) 525 644 to check on the presence of whales.

4. If a whale is sighted recording operations shall cease until it is reasonably believed that the whale is ten or more kilometres away.

5. If there is doubt concerning the potential impact of an activity, then the activity shall not be undertaken.

Fax Cover Page

SUBJECT:

CODE OF ENVIRONMENTAL PRACTICE

GOVERNING

GEOPHYSICAL FIELD OPERATIONS

IN THE

Gulf Waters, SOUTH AUSTRALIA

June 1994

To: Terry Crabb	From : J.F.Allender
For Information Call: 272 1171	At: Allender Exploration
Pages: 10	My Fax Number : 272 8551

used as a precaution where high grass or crops are a fire hazard.

Native vegetation must not be cleared unless all alternatives have been considered, and then only under conditions prescribed by SADME.

Erosion control structures such as spur drains and check banks must be included wherever necessary to prevent erosional damage.

All sites of natural, historic or cultural significance must be avoided unless specific written approval has been obtained from the Director, SADME.

If campsites are necessary, they must be established wherever practicable at locations where new track preparation is not required.

2.1.1 Planning

Aerial photographs and topographic maps must be consulted in planning the layout of seismic lines and submitted to 2.1.1 SADME to assist in assessing potential impacts. Where possible, alternative locations which will reduce the overall need for soil disturbance should be selected.

2.1.2 Consultation

Full consultation and permission for access must be obtained from the relevant landholders, as prescribed by the Petroleum Act (1940).

2.2 Line Preparation

The following standards and guidelines (where absolute standards cannot be stated) are aimed at minimizing impact and apply to seismic line preparation:

surface trafficking is the preferred line preparation method

Slashing of vegetation will, wherever practical, be used in preference to dozing or grading. Slashing must be used as a precaution where high grass or crops are a fire hazard.

seismic line width must not exceed that width specified in the relevant Declaration of Environmental Factors and approved by the Director, SADME.

isolated trees must be left standing

Native vegetation must not be cleared unless all alternatives have been considered, and then only under conditions prescribed by SADME.

straight lines will be avoided by weaving around rather than clearing shrubs

when bulldozing is required, the normal blade setting will be at a height just above ground level to leave rootstock in place and to avoid making windrows. Any variation will be subject to the approval of the nominated representative of the Licensees.

prior to commencement or continuation of operations.

All personnel will be responsible for ensuring that standards of "good housekeeping" are maintained while operating on seismic lines. All rubbish and work-associated debris will be picked up and disposed of in receptacles carried for this purpose.

During the operation of the survey, the use of seismic lines by tourists and sightseers will be discouraged. In sensitive areas, temporary signs stating "No Access: Plant Regrowth Area" will be erected with the permission of the landholder.

The Land Manager/Permit Person will make sure that nothing is left in such a hazardous state that it may result in some person or persons having an accident that could result in a subsequent claim for damages.

Existing gates must be used wherever possible and should be left as they are found (i.e. open or closed). Arrangements should be made with the landholder in regard to padlocked gates.

Whenever it is necessary to cut fences to provide access for line preparation equipment, stock-proof temporary gates must be erected until permanent repairs are undertaken. The continuity of electric fences must be maintained.

Where several days are liable to elapse between the various operational phases of the survey, the temporary gates must be checked periodically for stock security.

Permanent marker pegs are only to be located within fencelines (+/- 150 mm) where they are not likely to cause injury to stock or hinder machinery movement. All temporary markers, particularly steel posts and stakes that could puncture tyres, must be removed as soon as possible.

2.3.1 Fire Prevention

Land operations on Yorke Peninsula and other areas can be carried out throughout most of the year. However, the summer-autumn period is the time of highest fire danger. Cereal crops, grass lands and native vegetation are prone to ready ignition and rapid combustion. Seismic crews must be fully aware of fire restrictions and bush fire dangers that may apply to the region in which work is being performed. Fire fighting equipment, training and procedures will be the responsibility of the contractor.

Fire fighting equipment shall be supplied, installed and properly maintained in accordance with the Petroleum Regulations, 1989, with particular reference to the following:

> *all vehicles and other line machinery must be fitted with fire extinguishers complying to the relevant Australian standards*
>
> *all vehicles must be fitted with a sound, efficient exhaust system free from leaks and, where appropriate, spark arresters. When vehicles do not have cabin level exhaust systems, the build-up of flammable material underneath vehicles must be prevented by regular inspection and removal*

areas (forest reserves, areas of remnant vegetation, conservation parks, aboriginal sites, etc), water and stock bores and private properties.

Methods used may include:

reinstating the initial profile to disturbed areas;

tyne-ripping or cultivation either side of an access track or road;

returning the cleared vegetation to the line where this is possible.

Windrow material that has been unavoidably created must be returned to seismic lines taking care to preserve permanent survey markers. In times of high fire danger, care must be taken that cleared vegetation stored for subsequent respreading does not pose a fire hazard.

Any compacted soil must be ripped to provide seed and water catchment for native vegetation or to allow for ongoing agricultural programs to be re-established.

Where fencelines, gates , crops, roads or other improvements are inadvertently damaged, the landholder must be advised immediately. The method of repair must be agreed to and undertaken without delay and the landholder advised and given the opportunity to examine repairs prior to final departure of the survey team on completion of the program. Temporary repairs must be carried out immediately in all instances. This is of paramount importance on registered stud properties or properties where quarantine restrictions are in force. To this end,

the Land Manager/Permit Person must negotiate and finalise compensation or restoration with the minimum of delay (Sections 75-80 of the Petroleum Act);

in the event of a "stalemate", contact is to be made with the head office of the South Australian farmers Fderation which may be in a position to mediate;

the operators will undertake agreed restoration and pay for any crop or similar damage as soon as possible.

A final inspection should be made with the landholder of all roads, gates, fencelines, campsites and operational sites to ensure that they have been left in a reasonable condition.

2.4.1 Shothole Restoration

Shotholes and cave-inns or damage caused by any explosives used must be suitably plugged with dry unconsolidated fill and the disturbed area restored as near as possible to the original state. If plugs are used, these should be inserted at 2 to 2.5 m from the surface before completing the backfilling and tamping of the shothole.

Particular attention will be given to areas frequented by livestock or native animals.

Where pegs have been used to keep the cables out of surface waters when working with explosives, the pegs must be removed at the end of the survey.

2.4.2 Aquifer Contamination Preventative Procedures

The areas thus identified will be mapped to help develop appropriate design and operating strategies to avoid or mitigate adverse effects. The results of the review will be incorporated in a Declaration of Environmental Factors which will be submitted prior to each geophysical operation.

3.2.2 Mapping

Sensitive locations will be plotted on maps of the proposed survey area. The initial objective of the mapping procedure is to identify those locations or areas that are sufficiently sensitive to disturbance that avoidance or special procedures are warranted.

Consideration will be given to both surface and subsurface attributes and to features adjacent to the permit area liable to be affected. The nature of environmentally sensitive areas varies. Generally exploration activities in deeper subtidal zones are not greatly constrained by areas of high environmental sensitivity, in the same sense that airborne activities have only small impacts during land operations. Nearshore, the zones are generally biologically more productive, more readily accessible , and consequently subject to a greater range of commercial and recreational uses.

Areas warranting special consideration include:

commercial fishing grounds

important breeding grounds or nursery areas of high biological productivity such as mangrove and seagrass areas

areas of high conservation or recreational value, including wildlife and water bird sanctuaries and their adjacent feeding grounds

shipwrecks or other sites of historic, scientific or heritage value, including sites of significance to both European and Aboriginal cultures

shoals, islands or headlands where navigational aids or other instrumentation may be deployed

areas adjacent to centres of high population

shipping lanes, particularly where passage of vessels is limited by navigational hazards

submarine cables and pipelines

communication and navigational instruments and structures or other scientific facilities, such as tide or weather gauges

areas of restricted access because of military, naval or other similar considerations.

Particular attention should be given to the marine flora and fauna of the supralittoral, eulittoral and sublittoral zones, including identification of variations in local coastal ecologies due to changes in the nature of the substrate, the rise and fall of tides and wave energy.

3.2.3 Monitoring and auditing

Monitoring of environmental impact will occur at all stages of exploration. The

commencement of operations so that a 'Notice to Mariners' can be issued.

The Department of Marine and Harbours and SADME will be informed of the vessels planned movements.

3.3.1 Seismic surveys

Seismic surveys are likely to comprise the initial and major exploration activity in the licence area. In the quest for drill targets of limited area, the seismic effort will be spread over large areas, including those not considered to be highly prospective.

Such surveys are transitory and can be undertaken with negligible environmental effect or disturbance to others provided the programme is properly planned and managed. To this end:

all statutory notification requirements must be met prior to the commencement of any survey, including the approximate date and duration of the survey, together with details of the methods to be used including cable lengths, energy sources, submergence depths, etc.

other relevant parties, such as commercial or recreational fishing organisations, must be consulted and provision made for the implementation of environmental planning objectives (limiting access to parks, reserves, etc, strict observance of quarantine regulations, etc).

maintain ongoing liason with relevant parties to further minimise impact to other users of the environment.
notification times must be sufficient to allow for static fishing gear or research equipment to be relocated or alternative arrangements made if such facilities are known to exist in the survey area

in areas of high traffic or recreational use, scout boats will be used to provide adequate warning both ahead of the main vessel and astern of the tail buoy (consideration will be made to limit activities in such areas to daylight hours by appropriate survey scheduling)

only low energy, benign acoustic sources will be used (compressed air sources, etc); no chemical explosives will be employed in the marine environment

work programs will be scheduled to avoid areas which are more highly sensitive during specific times, e.g., natural cycles such as breeding or fishing seasons or peak recreational periods, and to avoid known migration paths

all solid domestic waste will be collected for proper disposal on return to shore

no deviation will be made from the planned survey track unless for safety or emergency reasons

allowance will be made for the deviation of the streamer when turning on completion of a survey run

Adequate and properly maintained fire fighting equipment will be present at the campsite and all fires and ignition sources will be controlled to prevent bushfire.

4.3 Campsite Restoration

All campsites must be left in a tidy and rubbish-free condition on abandonment to enable the area to become rapidly restored to its original condition.

Areas of ground subject to compaction and minor, accidental oil spillage must be ripped.

5. INSPECTIONS

Adherence to and compliance with the code will be monitored by Inspectors appointed under the Petroleum Act and its Regulations. If any infractions are reported, the Licensees will comply with the course of action nominated.

Environmental audit reports of all surveys will be provided to SADME within 10 weeks of the survey completion date. Such audits will record the amount of disturbance, the pre-planning methods used to avoid sites of sensitivity, the nature of any field decisions made to ensure that sensitive sites were avoided, a summary of restoration work undertaken including the detail and schedule of any long term requirements, and a copy of any agreements reached with landholders, Local Councils or other Governments which results in clearance or access in excess of requirements or in rehabilitation not being undertaken.

6. RESPONSIBILITIES

The person in charge of the operation shall be responsible for distribution of copies of the Code or an extract of individual responsibilities resulting from the application of this Code (see appendices) to:

chiefs of seismic and drilling operations and their crews

earth-moving contractors and their crews

all other sub-contractors involved in the operation

any other person who is engaged in field activities relating to the geophysical program.

7. BIBLIOGRAPHY

1. Australian Petroleum Exploration Association, 1988; *Code of Environmental Practice - Onshore*, APEA Ltd, Sydney

2. Australian Petroleum Exploration Association, 1988; *Code of Environmental Practice - Offshore*, APEA Ltd, Sydney

3. South Australian Department of Mines and Energy, 1990; *The Environmental Management of Seismic Exploration Operations in the South-East of South Australia*, Stone, M.J. (ed.)

4. Department of Mines, Western Australia, 1987; *Draft Guidelines for*

APPENDIX 1

references

EXTRACT FROM PETROLEUM REGULATIONS 1989

GUIDELINES FOR APPLICATION AND REPORTING REQUIREMENTS

1. DECLARATION OF ENVIRONMENTAL FACTORS

The declaration of environmental factors as required under Regulation 16 must address the following where applicable:

name and type of activity

crew size and equipment to be used

description of natural environment with particular reference to the physical and biological environments and present land use

specific sensitive areas (physical, biological and cultural) and listing of all reserves, aboriginal sites, historic relics, State heritage items and areas, geological monuments, etc within or immediately adjacent to the area of activities

any liaison carried out with responsible groups

a concise evaluation of the environmental impact

measures proposed to avoid or minimize environmental impacts

a code of environmental practice including reclamation and audit procedures in a form and to a standard acceptable to the Director, which shall be observed by the titleholder and contractors

any procedures proposed to monitor the impact on the environment

person in charge

August 1994

If and when this data is available, it will be incorporated into the existing and the 1994 seismic survey (in processing). At that point it will be analyzed and modeled to help prove or disprove the north dip at Troubridge Shoals/Investigator Prospect (modeling takes 4-8 weeks from receipt to completion).

At reporting, detailed location flight line maps have not been delivered to Canyon and no data received. Attached is the fax from SADME dated 12th August 1994, graciously delivered after discussions with SADME.

SEISMIC SURVEY

Canyon, in an attempt to get more key seismic control across the Troubridge/Investigator Prospect and to extend modern coverage to the north, agreed to help fund a seismic survey across PEL 053. The formal proposal was made to Canyon on 3rd March and Canyon agreed to it on 11th March 1994. The Digicon survey was completed on 28th March 1994. Various delays occurred internal to Digicon, et al, which kept tape copies of data from being delivered to Hosking Geophysical for processing until 27th June 1994. Upon receipt they were still missing support and navigation data. Only one half of each of the 44 tapes was readable at Hosking; therefore, the tapes were shipped to Houston where Oil Data Incorporated ascertained that the problem was attributed to a Digicon incompatible hardware/software configuration in Singapore. Digicon was notified immediately on 2nd August 1994. It is assumed that Digicon notified SADME that their tapes were also suspect. Canyon saw no verification of this. New copies of tapes were shipped on 4th August 1994 and received by Hosking Geophysical on 8th August 1994. Tapes were read into Hosking's system beginning 9th August 1994. First indications are that the tapes are readable and the processing sequence has begun. Because of the 10 second processing sequence, processing is expected to extend through September and probably into late October/November. Revised mapping will proceed after receipt. A portion of this survey is a key component in the Troubridge/Investigator Prospect and was planned to be incorporated into the modeling for the in-progress aero mag program.

BIOMARKER GEOCHEMICAL WORK

During this reporting period, Dr. McKirdy was asked by Canyon to relook at the Wilkatana crude samples and compare them to other known Cambrian crudes and to the associated Cambrian rocks. The results of this investigation included a startling new description of the crude, changing it to a naphthenic crude with paraffinic influence as

digital exploration limited.,
incorporated in the united kingdom (a digicon company)
A.R.B.N. 010 324 222

DIGITAL EXPLORATION LIMITED FAXED 6/12/94 BRISBANE CENTRE

FACSIMILE TRANSMISSION

FILE: CF-SAM-5696
PAGE 1 OF 1

5 December, 1994

Department of Mines & Energy
191 Greenhill Road
PARKSIDE SA 5063

ATTN: TERRY CRABB

FAX NO: (08) 272 7597

RE: SA GULF SEISMIC SURVEY PEL 53 & PEL 59 PROCESSING

Processing sequence for line SADME-94 (1) SP 101-32220 (1204.46km).

1. Demultiplex (10sec. 2ms)
2. F-K filter (Apparent Vel = 2500 m/sec)
3. Spherical Divergence Corrections
4. Deconvolution: Shot-averaged, offset dependent
5. Refraction statics application
6. Common mid-point gather
7. Velocity analysis
8. NMO corrections
9. Outer trace mute
10. Horizontal stack
11. Deconvolution: (60ms gap + 200ms operator)
12. Time variant filter
13. Time variant scaling

Regards,

Amy Cheang
SENIOR GEOPHYSICIST
geo034b:tjl

M.E.S.A

GULF WATER SEISMIC SURVEY 1994

(SADME 94-1)

MARCH 1994

1.0 INTRODUCTION

A marine seismic survey for MESA was conducted by DIGITIAL EXPLORATION LTD, in the SPENCER and ST. VINCENT GULF offshore South Austrailia . The seismic survey vessel M/V ROSS SEAL was utilized to collect a total of 1202.187 of 2D seismic data between the . 22 nd March to the 28th. of march.

A 3000 metre (active) digital streamer consisting of 240 groups was used in conjunction with a 37.50 metre shot interval, resulting in a subsurface coverage of 40 fold.

Seismic data from the digital streamer was recorded on magnetic tape in 6250 bpi trace sequential format (SEG-Y) using the Digital Streamer System DSS-240 with Telex 6253 tape transports. The Ramesses onboard processing system was also used to process the data by the client representative.

Four Bolt airgun sub-arrays, with a combined volume of 2970 cubic inches, were deployed in a, point type configuration, to provide the energy source. Operational pressure was 1900 p.s.i. and the firing delay times of individual guns being controlled by the Closed Loop Array Source Synchronizer or CLASS

Primary positioning for this project was the Inmarsat based Differential GPS positioning system, MULITIFIX, provided and maintained by RACAL SURVEY.

Seismic data from this project was forwarded to DIGICON in BRISBANE, while the navigation data was shipped to DIGICON in Singapore.

The vessel departed Portland on March 21,1994, and the survey commenced on March 23,1994, and continued through to March 28,1994, at which time the vessel stoped shooting and headed to Fremantle.

2.0 VESSEL AND EQUIPMENT

2.1 RECORDING VESSEL

VESSEL

NAME	: ROSS SEAL
PORT OF REGISTRY	: GALVESTON, TEXAS, U.S.A.
OWNER	: SEALFLEET
BUILDER	: RYSCO
YEAR BUILT	: 1977
REGISTRATION	: U.S. REGISTRY NO. 582641
RADIO CALL SIGN	: WYG 7180

CLASSIFICATION

U.S.A. FLAG

AMERICAN BUREAU OF SHIPPING CLASS MALTESE CROSS A1, AMS

AMERICAN BUREAU OF SHIPPING INTERNATIONAL LOAD LINE

DIMENSIONS

LENGTH	: 176 FEET (53.64 METRES)
BEAM	: 38 FEET (11.59 METRES)
DRAFT	: 11 FEET (3.35 METRES)
TONNAGE	: G.R.T. 203.00 : N.R.T. 299.17

MACHINERY

MAIN ENGINES	: 2 X CATERPILLAR D398D 1700 HP
GENERATORS	: 2 X 150 kW DRIVEN BY CAT.3406
SPEED	: 12 KNOTS
BOW THRUSTER	: 1 X CATERPILLAR 3406
PROPELLERS	: 2 X 4 BLADE 72162 S.S
STEERING	: SPERRY SR-130
FUEL SEPARATOR	: DELEVAL MAB 104 : ALFA LAVAL MAB-30

ELECTRONIC EQUIPMENT

RADAR	: 1 X FURUNO FR 810D : 1 X FURUNO FR 1510D
NAVIGATION	: LORAN C MODEL T1 9000A
VHF/FM	: 1 X KENWOOD K-407 : 1 X SAILOR RK 263693
SSB	: 1 X SEA 222 COMPACT
FATHOMETER	: FURUNO FMB-603
COMMUNICATIONS	: MCS-9120 MARINE SATELLITE SYSTEM (TELEX, TELEPHONE, FAX)

CAPACITIES

FUEL OIL	: 75,000 U.S. GALLONS (APPROX)
BALLAST	: 90,000 U.S. GALLONS (APPROX)
POTABLE WATER	: 47,000 U.S. GALLONS (APPROX)

2.2 SAFETY EQUIPMENT

SURVIVAL SUITS / LIFE VESTS AND LIFE RAFTS:

37 Survival Suits are provided. One located at each bunk onboard the vessel, the extra suits are in the Float Free Life Vest Container.

31 SOLAS approved Life vests are provided. One located at each bunk onboard.

27 SOLAS approved Life Vests are also stored in Float Free Containers on the Top Deck

4 INFLATABLE LIFE RAFTS
1 x 15 Persons capacity
1 x 20 Persons capacity
2 x 16 Persons capacity

Total capacity 67 persons

MAN OVERBOARD EQUIPMENT:

1 17' Twin engined, fully equipped, purpose built Rescue Craft is located on the upper deck, launched by use of a Husky Crane, with a rating of 1,100 kgs.

9 Life Rings complete with line and lights are located at various positions around the vessel. M.O.B. Smoke Stations are located both on the Bridge wings and also the Reel Deck.

FIRE FIGHTING EQUIPMENT:

6 Fire Hose Stations with fog nozzles are located throughout the vessel.

1 Twin bottle Foam Deluge System, USCG Type A Size 2, is installed for the main cable reel. This system can be activated manually, at the unit itself, or by remote activator positioned at the bulkhead entrance to the work area.

2 Single bottle Foam Deluge Systems, QUELL 80 litre (each) are installed over the storage lofts. The system activators are located at the bulkhead entrance to the work area.

4 Single bottle Foam Deluge Systems, QUELL 50 litre (each) are installed, one over each compressor engine. Again the activators are located at the bulkhead entrance to the work area.

All the above mentioned Deluge Systems comprise of stainless steel storage cylinders, stainless steel distribution nozzle ring main, with nozzles angled to cover the fire risk, and a remote activator.

1 Four bottle KIDDE model 7101, Halon 1301 System is installed in the Engine Room. Each bottle has a capacity of 87 kgs (total capacity 348 kgs) The system is activated from either the Engine Room passageway or at the aft end of the lower passageway.

1 ANSUL R-101 model 30, Dry Chemical Fire Suppression System is installed in the Galley in case of a Range fire. The system has a capacity of 14 kgs and is manually operated.

1 CO2 Fire Suppression System of 4.5 kgs is installed in the Ship's paint locker.

21 Fire extinguishers are located throughout the vessel, types Foam, Dry Chemical, CO2 and Halon.

3 Breathing Apparatus units, complete with fire suits are supplied. Two suits are located aft of the Bridge. One suit is located in the Galley, outside the Engine Room.

35 Smoke Detectors are located throughout the vessel.

In addition to the above there are Fire Axes, Pry Bars etc. located at various locations throughout the vessel.

FIRST AID / MEDICAL SUPPLIES:

2 Fully stocked First Aid kits are located, one each in the aft end of the upper and lower passageways. These kits contain primarily bandages and non-prescription drugs.

5 Portable First Aid kits are located throughout the vessel.

1 Medical locker containing prescription drugs is located in the Masters cabin.

3 Stretchers, one fold away Robinson Litter, and two Stokes Helivac type are positioned around the vessel.

MISCELLANEOUS SAFETY EQUIPMENT:

8 Battery powered Emergency lights located throughout the vessel. These are automatically activated when ship's power is lost.

1 E.P.I.R.B. U.S.C.G. CLASS A FCC TX DATA - ACR/RLB 14 - located on the Bridge. The ship's Inmarsat system is also equipped to send distress messages.

2 U.S.C.G. Line Throwing Apparatus located on the Bridge.

1 K-500 Flare kit with 12 flares located on the Bridge. Additional Pyrotechnics are also stored to replace those used.

Adequate supplies of Hard Hats, Life Vests, Ear, Eye and Foot protection are provided to Personnel working on deck.

3.0 GEOPHYSICAL EQUIPMENT

3.1 RECORDING EQUIPMENT

YEAR OF MANUFACTURE	: 1985
STREAMER	: DIGICON DIGITAL STREAMER SYSTEM (DSS-240)
GROUP LENGTH	: 12.5 m
HYDROPHONES	: 7 DG-018 ACCELERATION CANCELING PHONES PER 12.5m (14 PER 25m)
SENSITIVITY	: 37 uv/ubar
DYNAMIC RANGE	: 111 dB (RMS SIGNAL/RMS)
SAMPLING	: 1 ms (120 TRACE MAX) 2 ms (240 TRACES)
ALIASING FILTERS	: 320, 160, 80 Hz (72 dB/OCTAVE)
LOW CUT FILTERS	: 3 Hz (6 dB/OCTAVE) 8, 16 Hz (18 dB/OCTAVE)
TAPE FORMAT	: DEMUX IBM FLOATING POINT, 6250 BPI, TRACE SEQUENTIAL SEGY
STREAMER POSITIONING	: DIGICOURSE 318 COMPASSES
TAIL BUOY LOCATION	: STROBE LIGHT / RADAR REFLECTOR
DEPTH CONTROLLERS	: DIGICOURSE REMOTE CONTROL BIRDS
READ AFTER WRITE PRINTER	: 14 INCH PRINTRONIX
DISPLAY	: CLOSED CIRCUIT TV SYSTEM SIE ERC 10C ELECTROSTATIC CAMERA MASTER TIMING SYSTEM EPC 4600 SINGLE TRACE RECORDER
FATHOMETERS	: FURUNO FED 816 EF INNERSPACE 449

TRACE HEADER DATA :

NAVIGATION	GUN DEPTHS
STREAMER DEPTHS	AIR PRESSURE
TAIL BUOY BEARING	FATHOMETER
GUN TIMING	DATE, GMT
SHOT POINT	FILE NUMBER
COMPASS HEADING	GYRO HEADING

3.2 RECORDING EQUIPMENT INFORMATION

a) DIGITAL STREAMER

The electronic elements of the Digital Streamer System DSS-240, consist basically of 2 sub systems, the electronic devices of the Data Acquisition Unit in the streamer (CAN's) and the onboard Central Processing Unit (CPU), which is incorporated in the CRU.

The streamer is made up of 3 basic elements, the electronic processing modules or CAN's, as previously mentioned, the active streamer sections and the compass sections. The CAN comprises five electronic cards, with electronic connector on either end, enclosed in a welded titanium tube, and filled with 36 psi of dry nitrogen, this construction allows it to act as a neutrally buoyant stress member as well as data processing module. The basic function of the CAN is to sample the analog data, apply preamplifier gain, filter the seismic signals and perform A to D conversion. The multiplexed data is transferred subsequently to the onboard Central Recording Unit (CRU), which demultiplexes and formats the data for recording and display.

The active streamer sections are constructed in either 50 metre or 100 metre lengths. The 50 metre sections consist of four active groups of hydrophones, each group being 12.5 metres in length. The groups are made up of 7 acceleration canceling hydrophones spaced equally over the 12.5 metres. The 100 metre section is basically the same except the group length is 25 metres, with 14 hydrophones spaced evenly along each group.

The compass sections are constructed to lengths of 4 metres, and contain a calibrated flux-gate Digicourse compass. Data from the compass sections is transmitted via the CAN to the shipboard equipment to record and give a display of the streamer heading and shape.

A non-active Flex or Dead or Passive section is normally inserted at the head of the streamer and a rope section at the tail, both of these acting to lengthen the offsets, where required, and minimize front end and Tail Buoy jerk.

STREAMER DISCUSSION

For this survey a 3000 metre was used comprising of 240 groups. Fourteen digital depth transducers were calibrated and distributed in the streamer in regular intervals. Eight compass sections were incorporated in the streamer to determine feathering angles. One passive section totaling 50 metres, was positioned between group 240 and the stern of the vessel, and one 100 metre length of tailbuoy rope, separated the tail buoy from the far end of the streamer.

The streamer was ballasted for a depth of 07 metres, with fourteen remote controlled streamer levelers (Digicourse) attached. Throughout the survey the weather was no major factor in controlling the depths, and ambient noise was well within specification except in the numerous turns associated with the survey.

b) CENTRAL RECORDING UNIT (CRU)

The Central Recording Unit (CRU) coupled with the Cable Sub- System (CSS) is the main recording control system. The CRU is controlled by the system operator or observer using a TI-820 printer terminal and dedicated input keyboards, surrounded by a cluster of video monitors which show information relating to many acquisition functions. The observer is able to set the recording parameters, run tests and initialize recording. Additional functions of the CRU include operational control of the DSS-240 system by transmitting commands to the CAN's and to the cable levelers, to monitor and display streamer status (interrogating depth transducers, compasses, waterbreaks etc) and several QC and test functions. All these additional functions are performed by the CPU and its microprocessor components contained in the CRU. The CPU comprises of computer boards which control most of the system functions, including the routing of data to the monitoring and memory buffer for storage and transfer to tape.

The twin memory buffer configuration allows the DSS-240 to record a second shot while transfer of data for the previous shot is still in progress. The data written to tape is checked by the formatter for data transfer errors. The CPU can be programmed to manually or automatically test and trouble shoot the system. Using an assortment of quality control programs, streamer condition can be pinpointed, guaranteeing that survey specifications are completely satisfied. Such programs include:-

Cable Acoustic Noise

This test provides a precise measurement of acoustic noise over a selectable range of 1 to 2048 samples. True RMS noise is calculated for every channel with printouts supplied in microbars RMS. Also calculated and printed are high, low and mean values. This precision noise measurement furnishes accurate indications of where streamer noise is originating as well as its severity.

Amplifier Noise and DC Offset

With the preamplifier inputs electronically grounded, small DC offset voltages are measured and corrected in 10 micro volt increments. This dynamic offset correction is made prior to every shot and is effected by automatically injecting a corrective DC signal, thus preserving the maximum dynamic range of the system.

Hydrophone Step Response

Quality control circuits in each CAN generate a precision voltage step for application to each Hydrophone group to determine excessive leakage or drift in Hydrophone capacitance. This analysis prevents any capacitance or resistance change from causing a phase shift of greater than 0.5 milliseconds.

System Impulse Response

A precision voltage step of one millisecond duration is injected through the preamplifiers and analog filters. Either a time or frequency domain analysis of the output can then determine whether any portion of the signal path is out of specification.

There are four TELEX 6250 BPI tape transports used for recording seismic data, a fifth tape transport is used for recording NAV LOG data. Should the Formatter detect an error in the data quality, the CPU will alert the operator by illuminating a Tape Parity Warning light on the control panel and automatically switch to another tape transport. Trace 0 information is written to each tape immediately after the tape header, and before any seismic data. The trace zero information would include navigation, MSDL and gun timing data. Seismic output is in demultiplexed, SEG-Y format at 6250 bpi in IBM or VAX floating point. The tape transport units operate in a full Read After Write mode, permitting quality control of the data all the way to the tape.

The Read After Write (RAW) is used to obtain data after it has been written to tape, and is able to plot up to 240 channels simultaneously in order to check the quality of the data. The RAW sub-system converts data to analog form, with options to apply gain control or AGC. This data is then rasterized by the HSR-11-B rasterizer for plotting on the Printronix plotter/printer. The RAW can also be used to plot a single trace from the NAVLOG tape.

c) CABLE SUB-SYSTEM (CSS)

The main function of the Cable Sub-System (CSS) is to format all commands relating to streamer control. This system is controlled by the CRU and sends controls to the CANS via the serial line in the streamer. The CRU instructs the CSS to start collecting the data from the CANS and in turn passes this data to the memory buffers. Compass and depth data is also passed to the memory buffers to be written to Trace 0. The CSS also reproduces, convert to

analog and routes the seismic data to the Cable Data Display (CDD), for a real time display on video monitor. The CSS will alert the CRU should there be any malfunction or fault on the streamer.

d) MARINE SEISMIC DATA LOGGER (MSDL)

The principle task of the MSDL is the collection and recording of input data from vessel locations remote from the recording room. This is accomplished by manually operated Data Entry Modules or automatic sensors and Interface Modules which supply the necessary information to the MSDL.

The MSDL is an integral part of the Closed Loop Automatic Source Synchronizer (CLASS) and both systems perform functions essential to the operation of the DSS-240 system. The MSDL collects navigation and operational data from a) the Navigation module, in the form of ships speed, b) the Bridge module, in the form of ships heading, tail buoy bearing and engine RPM's, c) water depth data is supplied from a interface module in the recording room, while the source depth, array volume, manifold pressure, gun timing all supplied by data entry and interfaced modules in the gun control room. This data is collected by the MSDL at every shotpoint and recorded on the Trace 0 file of the seismic tape. Two video monitors supply continually updated visual records of the data and is automatically printed out on the MSDL printer.

The MSDL is also utilized to provide the class with the basic timing control, either by elapsed time or from closures provided from the navigation system (Fire By Distance).

e) CLOSED LOOP AUTOMATIC SOURCE SYNCHRONIZER (CLASS)

The CLASS is a sub-system of the MSDL and its function is to control the timing and firing of the arrays. It monitors the shuttle pulse of each airgun and adjusts the individual gun firing times to less than 1 msec. The MSDL sends a command to the CLASS to fire the guns, each firing module then passes a 75 volt pulse to each gun, which fires.

During each firing process the MSDL loads each firing module with the firing timing (TCNTS) and each module will receive a response from the shuttle motion detector (RCNTS), The MSDL is then able to adjust the gun timing as required.

Information that the MSDL gathers from the guns in the form of TCNTS, RCNTS, autofires and no fires is displayed on both the video monitors and printed out on the gun printer. After each shot the CRU will receive time break 64 msec after the fire command and all the above mentioned data will be written to the seismic tape header.

f) FRONT END PROCESSOR (FEP)

This sub-system consists of a microcomputer equipped with a low resolution video card and monitor. This system computes the streamer shape and mid point co-ordinates for up to 240 traces. The Front End Processor provides to the text screen, on a per shot basis the following:-

SHOT NUMBER
FEATHER ANGLE
CROSSLINE DISTANCE TO THE FAR TRACE
CROSSLINE DISTANCE TO THE NEAR, MID AND FAR TRACE MIDPOINTS

The above listed attributes plus system heading and compass readings can be logged and printed

g) AREA DISPLAY SUBSYSTEM (ADSS)

This sub-system consists of a microcomputer equipped with an enhanced graphics adapter (EGA) and high resolution colour display monitor. The ADSS graphically displays, in colour, the following:-

LOCATION OF LOCAL BOAT
LOCATION OF REMOTE BOAT (IF 2 BOAT OPERATIONS)
SOURCE LOCATION
STEER POINT LOCATION
RAIL OF THE STEER POINT TO SOURCE MID POINT FOR LAST 40 SHOTS
STREAMER SHAPE
AIL LINE
AIL LANE AND USER DEFINED OBJECTS OR OBSTRUCTIONS

h) REAL TIME BINNING SUB-SYSTEM

This sub-system consists of a second microcomputer equipped with an EGA and High Resolution colour display monitor. This system performs the Real Time Binning of the data

Output of this system is a High Resolution colour representation of bin coverage on a moving screen, 80 shots long by 23 lines wide. This display can also be placed in a counts mode showing (in a non graphical form) the number of "hits" in a bin. A colour hard copy figure of merit report is available. The purpose of this summarizing report is to show the coverage for each bin, for each of four offset ranges.

A menu driven, Bin editing capability is available to the onboard Geophysicist. This editing capability allows re-binning of the accumulated data, based upon editing of the data base. Some examples of changes would be:-

NEW BIN SIZE DEFINITION
DELETING OF BAD SHOTS OR TRACES
HARDWARE CHANGES (i.e A COMPASS THAT MALFUNCTIONED)
DELETING OF ENTIRE LINES

Upon viewing of the rebinned data, decisions can be made in the field, as to what infill shooting would be necessary.

3.3 ANCILLARY EQUIPMENT

a) SINGLE TRACE PROFILER

An EPC model 4603 graphic recorder is used to produce onboard displays of near trace gathers for each line. The servo-profiler is driven by trace 240 (or the nearest trace) using recording filters and full record length with AGC applied.

b) CAMERA/PRINTER

A Printronix printer is used in conjunction with the DSS-240 reproduce module to generate shot monitors displaying all 240 traces at a fixed gain of 60 dB every 40 shotpoints. Streamer noise levels are monitored by displaying noise strips for all traces and a reference signal of 3 microbars at the start and end of each line.

c) FATHOMETER

An INNERSPACE model 449 echo sounder was used during this survey. This is a self contained, portable precision survey echo sounder recorder It's major feature is a completely solid state high resolution thermal printing technique. The only moving parts in this unit are the paper mechanism. Blank paper is used, with the unit generating all the scale lines and range annotation information, no zero line calibration is ever required. Feet or Metres operation is selectable, with eight ranges available in each mode. Four chart speeds are available in each mode. Speed of sound, draft and tide compensation are accomplished by setting digital thumbwheel switches. The receivers and transmitters are built into the unit. Features include x 0.5, x 2 and x 10 range expansion/reduction; diagnostic self check; velocity, tide and draft annotation; fix annotation; time annotation; DC operation, gray scale 2nd threshold, front panel selection of transmit power and receiver TVG curves.

A FURUNO FE-680 fathometer is available as a backup. The INNERSPACE 449 is interfaced to the FURUNO ED-202 digitizer, to allow logging of water depth for every shot on the MSDL and in the tape header of each record. Water depth never exceeded the range of the echo sounder, however on a few lines problems were encountered due to weather, whereby the ship is rolling to such an extent that the fathometer looses track, and the data becomes erratic or in some cases non existent. When this problem occurs, the data can be recovered by Navigation post processing, by Digitizing the near trace data.

Errors in bathymetric data recording during the "normal" course of events in a seismic survey arise from the following causes:-

1) Precision measurement error of the echo sounder. For the type of echo sounder used on the vessel this will be less than 1.5% of water depth.

2) Errors in transducer depth estimation, and changes in transducer depth due to changes in the ship's trim and ballast conditions as the survey progresses. This error is likely to be in the order of +/- 1 metre.

3) Errors resulting from tidal variation. This will give rise to miss-ties when comparing two crossing lines, which are likely to be in the order of +/- 1.5 metres in the survey area

4) Errors resulting from incorrect estimation of the speed of propagation of sound in the water column. The speed of sound in sea water is typically in the range from 1425m/s to 1550m/s. Selecting a value in the middle of this range results in a potential error in time/depth conversion of up to 4% of water depth

The r.m.s. error value of the errors described above is +/-5m for an area where the water depth is 100m.

d) STREAMER DEPTH CONTROLLERS (BIRDS)

Two types of BIRD are used, Digicourse models 5010 and 395, and are mounted externally on the streamer. These units are powered by four lithium or alkaline D cell battery packs. Communication with the BIRD is via a single twisted pair transmission line, using traditional induction coupling techniques in a 27 KHz FSK communication link. Once the Bird is programmed with an operating depth, it works automatically applying sufficient wing angle to keep the streamer at the correct depth. The BIRDS can be controlled or re-set manually, from the onboard control station, to respond to changing environmental or operational conditions.

e) RAMESSES

RAMESSES, provided to DIGITAL EXPLORATION by ODEGAARD & DANNESKIOLD-SAMSOE APS. is a real time processing system that enables the vessel to monitor the incoming data real-time

RAMESSES is a menu operated computer system for fast real-time, on-line seismic processing, on board seismic vessels. The system is useful as a QC. tool to monitor the data quality of the line being recorded. RAMESSES interfaces directly with the recording system via a versatile interface unit which can be fitted to all tape formatters or various types of digital output. As soon as data is received, it is processed. An optional telecommunications link gives onshore stations quick access to processed data even during the survey. Once processing has started, the system runs automatically, reducing both the operator time and the technical requirements of the operator. RAMESSES calculates and prints out the stacked section as the vessel moves along the line. The quality of the acquired data can be evaluated as fast as possible

Real time processing of seismic data takes place at a high acquisition rate. The kernel of RAMESSES is therefore a very fast signal processing unit, connected directly to the recording system via the interface unit. For each shot, the recorded data being written to tape, is sent via the interface unit to the seismic processor and the stacked output of the seismic processor is printed. The processed stacked section can be stored in SEG-Y format on a magnetic tape drive. If necessary the recorded data can be reprocessed from the field tapes.

3.4 ENERGY SOURCE INFORMATION

a) ENERGY SOURCE CAPABILITIES

SOURCE TYPE	: VARIOUS CONFIGURATIONS
NUMBER OF STRINGS	: 4
TOTAL NUMBER OF GUNS	: 40
VOLUME	: ARRAY CAN BE MODIFIED TO SATISFY CLIENT REQUIREMENTS
SMALLEST GUN VOLUME	: 20 Cu. In.
LARGEST GUN VOLUME	: 460 Cu. In.
GUN TYPES	: BOLT-PAR 600-B AND 1900-C
FIRING SENSOR	: MAGNETIC INDUCTION SHUTTLE SENSORS
DEPTH SENSOR	: 2 PER STRING
SOURCE CONTROL	: CLASS II ACCURACY 0.2 ms
ADJUSTMENT	: AUTOMATIC INDIVIDUAL SOURCE CONTROL
RECORDS	: FIRING AND RETURN TIMES ARRAY VOLUMES INDIVIDUAL GUN VOLUME AND NUMBER OF SHOTS
PROGRAMMABLE	: MULTIPLE ARRAYS INDIVIDUAL FIRING TIMES
ARRAY DIMENSIONS	: VARIABLE WIDTHS TO 32 m VARIABLE LENGTHS TO 50 m
COMPRESSORS	: 3 X 700 SCFM - LMF UNITS 1 X 400 SCFM - LMF UNIT 1900 psi NORMAL OPERATING PRESSURE
OTHER	: RAISED DECK TROLLEY SYSTEM FOR DEPLOYMENT AND RECOVERY OF ARRAYS

b) ENERGY SOURCE INFORMATION

The 2970 cubic inch tuned array was used exclusively in this prospect for the seismic source. The array consists of 4 separate arrays of 9 guns (8 active and 2 spare). The arrays are made up of BOLT-PAR air guns models 1900-C and 600-B. The inboard arrays are towed directly off the gun deck, while the outboard arrays are towed from outriggers, giving the whole array a width of 27.4 metres. Correct depth was achieved by appropriately rigged Norwegian buoys and monitored by the PSDU (Pneumatic Source Depth Unit).

The computer controlled phased array firing system unit monitored and controlled each individual airgun of the active array and assured a constant delay time of 64 msec. The status of the entire array was displayed on video monitor and logged on the MSDL (Marine Seismic Data Logger) for each shot.

Compressed air was supplied by four LMF four stage compressors, three 700 CFM units and one 400 CFM unit, the 1 and 2 stage being of screw or rotary type, and the 3 and 4 stages being piston type. The compressors are driven by Detroit Diesel model 12-V-149 engines.

During the survey line the guns performed excellent and 2970 cubic inches was maintained 99 percent of the line. in one instant a 40 cu gun was turned off so repairs could be made on deck

1900 psi was maintained trough out the survey

3.5 NAVIGATION EQUIPMENT

a) NAVIGATION EQUIPMENT AND CAPABILITIES

A Comprehensive Software Package Is Provided To Operate The Following Onboard System Hardware:

ONE MAGNAVOX DUAL CHANNEL SATELLITE RECEIVER
ONE SPERRY MK37 GYRO
TWO HEWLETT PACKARD 2649 OPERATOR TERMINALS
TWO 9-TRACK TAPE DECKS FOR DATA LOGGING WITH HARD COPY PRINTOUT
ONE T.I. 820 SYSTEM PRINTER/TERMINAL
ONE HEWLETT PACKARD 21 MX SYSTEMS COMPUTER
ONE HEWLETT PACKARD MX 40 SYSTEMS INTERFACE
ONE MAGNAVOX SWITCH CONTROL PANEL
ONE MAGNAVOX MODEL 40 MULTIPLEXER
ONE OKIDATA MICROLINE PRINTER
ONE TRIMBLE 4000 GPS RECEIVER
ONE RUBIDUM FREQUENCY STANDARD
ONE TEXAS MICROSYSTEMS COMPUTER
TWO VIDEO MONITORS (FOR DIGINAV/GRIDNAV)
TWO CONCEPTS UMS INTERFACE UNITS (FOR DIGINAV/GRIDNAV)
ONE HEWLETT PACKARD THINKJET PRINTER
ONE AT&T 6300 WGS NAVIGATION INTERFACE COMPUTER
ONE AT&T 6300 WGS AREA DISPLAY COMPUTER
ONE AT&T 6300 WGS FRONT END PROCESSOR COMPUTER
ONE AT&T 6300 WGS REAL TIME BINNER COMPUTER
ONE AT&T 6300 WGS TRACE 0 REFORMATTOR COMPUTER

The Above Onboard System Has The Capabilities To Interface With The Following Navigation Systems:

ARGO
SYLEDIS
MINI-RANGER
SHORAN
MAXIRAN
TRISPONDER
GPS
STARFIX
HYPERFIX
MICROPHASE
SPOT
GEOLOC
SKYFIX

The System Used On This Survey Was MULITIFIX

a) PRIME NAVIGATION SYSTEM - MULITIFIX

The primary positioning systems used for this survey was MULTIFIX, supplied and maintained by RACAL SURVEY. MULTIFIX is a real time mulyiple reference station Differential GPS that use the Inmarsat marine communications satellite system as the correction data broadcast link.The control stations used on this survey were located ADELAIDE,SYDNEY, MELBOURNE and PERTH.

GPS and MULTIFIX represent a major advance in precise positioning. High accuracy is complemented by the vast areas of coverage possible from satellite altitudes. The problems other systems have with limited coverage, skywaves, noise and other interference, do not exist, and the practical problem of siting transmitters in environmentally hostile territory is eliminated.

MULTIFIX performs detailed real time GPS accuracy analysis. From knowledge of the exact positions of its reference stations, differences between expected and measured station-to-satellite ranges are continuously calculated and the range corrections necessary to bring GPS position back to truth are computed and sent to the user. The Mobil user, uses the data to calculate a position from each station and and a network position using data from all stations

NAVIGATION DISCUSSION

The ROSS SEAL is equipped with one MULTIFIX and one SKYFIX systems, this flexiblity along with selectability of constellations and mask angles, provides the vessel with twenty four hours of coverage on most days. During survey good position comparisions with both systems were observed

b) MAGNAVOX AND DIGINAV SYSTEMS

The MULTIFIX Latitude and Longitude are fed through the Universal Marine System (UMS) interface to the Diginav positioning system which converts the four pseudo ARGO ranges which are in turn passed to the Magnavox HP 100 navigation system. The Magnavox recomputes the vessel position from the pseudo ARGO ranges and uses this position in a filtering algorithm providing line control, shot point positioning (Latitude/Longitude), vessel speed, visual steering aid, etc. Navigation data is passed from the Magnavox and Diginav, through the RDL-II, to the CRU for logging of Seismic and Navigation tapes.

c) GRIDNAV SYSTEM

The Gridnav system functions as a quality control tool for 2-D operations. This is done by interfacing with the individual navigation systems, thereby allowing the Gridnav to ensure the quality of navigation data, based on the raw data and the comparison of various systems. All Gridnav information is recorded to disc and produces time series statistical printouts at the end of every line, the following are presented:-

SHOT INTERVAL AVERAGE (TIME AND/OR DISTANCE)
NORTHING/EASTING DIFFERENCES
VESSEL SPEED
GYRO
PDOP&HDOP
NUMBER OF SATELLITES
UPDATE RATES

On-line parameters from Gridnav are as follows:-

RAW DATA
C-O
AGE OF DATA
DIFFERENCES IN NORTHING AND EASTING
LATITUDE/LONGITUDE
STANDARD DEVIATION FOR SYLEDIS POSITIONING

d) RDL-II SYSTEM

The RDL-II system (Radio Data Link II) is the nerve centre through which the onboard and multi-vessel systems communicate. The name RDL-II refers collectively to the PC based program, a DIGICON designed and built subsystem called REVS (Radio Events System) and a repco radio modem.

This system provides precise control of source firing and time break fault detection for multiple boats as well as multiple source arrays for single boat operations. The RDL-II also provides centralized navigation control.

Once timing is synchronization is established, the RDL-II exchanges vessel position with the other local vessels, and in turn receives their positions. (each vessel has RDL-II and each slave RDL-II acts in concert with the RDL-II on the master vessel) The shot occurs, then source location and raw compass data are shared among the vessels. This sequence of events is repeated every shot.

Throughout the above mentioned set of events, each RDL-II is passing both the onboard and multi-vessel data to the various systems on its vessel. The onboard navigation data is sent to the CRU to be put onto "Trace 0" (header trace) The collection of all vessel positions and compass data are passed to the FEP. The FEP calculates each vessels cable shape and CDP coverage from the compass data and source location, note that each vessels FEP duplicates the same calculations. This information is then sent to the ADSS and the Binner. The ADSS displays the cables, the vessels, the sources and any other positional items for the Navigator. The binner displays prospect coverage and allows for various user utilities such as editing

4.0 KEY PERSONNEL DIGICON

GARY D MORROW	PARTY MANAGER
RAYMONDE WALTER HALES	OBSERVER
STUART FONTAINE	OBSERVER
LES HOPKINS	COMPRESSOR MECHANIC
FRED LEPA	SOURCE MECHANIC
DAVID PHUA	SOURCE MECHANIC
ANDREW SMILEY	JUNIOR OBSERVER
NOEL HARMAN	NAVIGATION
CHUA CHOON	NAVIGATION
THOMAS TIBOR	TECH/S.O

5.0 GEOPHYSICAL PARAMETERS

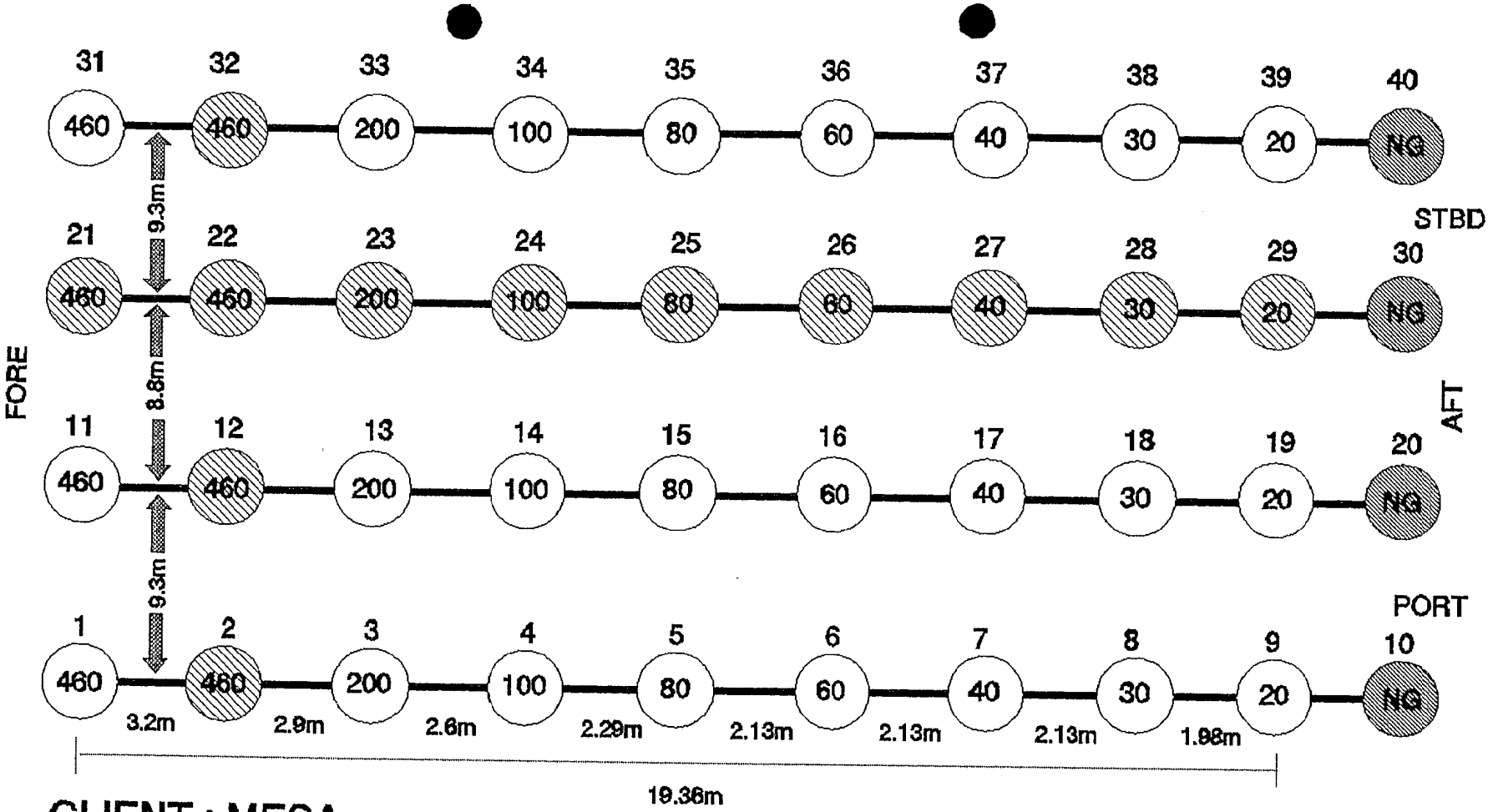
5.1 RECORDING PARAMETERS

NUMBER OF GROUPS	: 240
GROUP INTERVAL	: 12.50 m
SHOTPOINT INTERVAL	: 37.50 m
COVERAGE	: 40 FOLD
SAMPLE RATE	: 2 Mil.Sec
RECORD LENGTH	: 10 Sec
HI-CUT FILTER	: 160 Hz AT 72 dB/OCTAVE
LO-CUT FILTER	: 3 Hz AT 6 dB/OCTAVE
STERN TO SOURCE CENTRE	: 32.54 m
SHOT OFFSET	: 25.21 m
ANTENNA TO STERN	:31.92 m

5.2 ENERGY SOURCE CONFIGURATION

ARRAY TYPE	: POINT/LONG
NOMINAL VOLUME	: 2970 Cu.In
MINIMUM VOLUME	: 2670 Cu.In.
NOMINAL PRESSURE	: 1900 P.S.I.
MINIMUM PRESSURE	: 1800 P.S.I.
ACTIVE GUNS	: 24
SPARE GUNS	: 12
TOTAL GUNS	: 36
ARRAY DEPTH	: 6.0 m (+/- 1.5)
DEPTH TRANSDUCERS	: 8 (2 PER STRING)
GUN TIMING LIMIT	: +/- 2.0 ms

5.3 ENERGY SOURCE DIAGRAM



CLIENT : MESA

PROSPECT : SADME94, Gulf Waters

SPARE GUN NO GUN

M/V ROSS SEAL
2970 in3 AIR GUN ARRAY

5.4 STREAMER CONFIGURATION/OFFSETS

A. Passive lead-in sections - offset between stern and active cable sections (All figures are in metres)

A1	Distance between tie-off and stern	**0.00**
A2	Armoured or non-standard lead section	**1.50**
A3	50 metre Flex section (number x 50)	**00.00**
A4	100 metre Dead sections (number x 100)	**50.00**
A5	Passive sections (number x 50)	**0.00**
A6	Compass sections (number x 4)	**4.00**
A7	This is the total distance from the stern to the nearest active can	
	A7 = A2 + A3 + A4 + A5 + A6 - A1	**51.50**

B. Active sections

B1	Active 50 metre sections (number x 50)	**3000.00**
B2	Active 100 metre sections (number x 100)	**0.00**
B3	Compass sections (number x 4)	**28.00**
B4	Total length of Active Streamer B4 = B1 + B2 + B3	**3028.00**
B5	Total length of Streamer (not inc. tail rope) B5 = A7 + B4	**3079.50**
B6	Tail Buoy rope	**100.00**
B7	Total length Streamer from stern to tail buoy B7 = B5 + B6	**3179.50**

C. Group length

C1	Group length of nears divided by 2	**6.25**
C2	Group length of fars divided by 2	**6.25**
C3	Compass section at nearest Active Can	**0.00**
C4	Stern to centre of nearest group C4 = A7 + C1 + C3	**57.75**
C5	Stern to centre of far group C5 = A7 + B4 - C2	**3073.25**

D. Stern to Gun Array centre accurately measured

D1	Distance from stern to nearest Gun	**22.86**
D2	Distance from stern to farthest Gun	**42.22**
D3	Stern to Gun Array centre $D3 = D1 + \frac{(D2 - D1)}{2}$	**32.54**

E. Important offsets

E1	Gun Array centre to centre of Near Group E1 = C4 - D3	**25.21**
E2	Gun Array centre to centre of Far Group E2 = C5 - D3	**3040.71**

F. Antenna to stern **31.92**

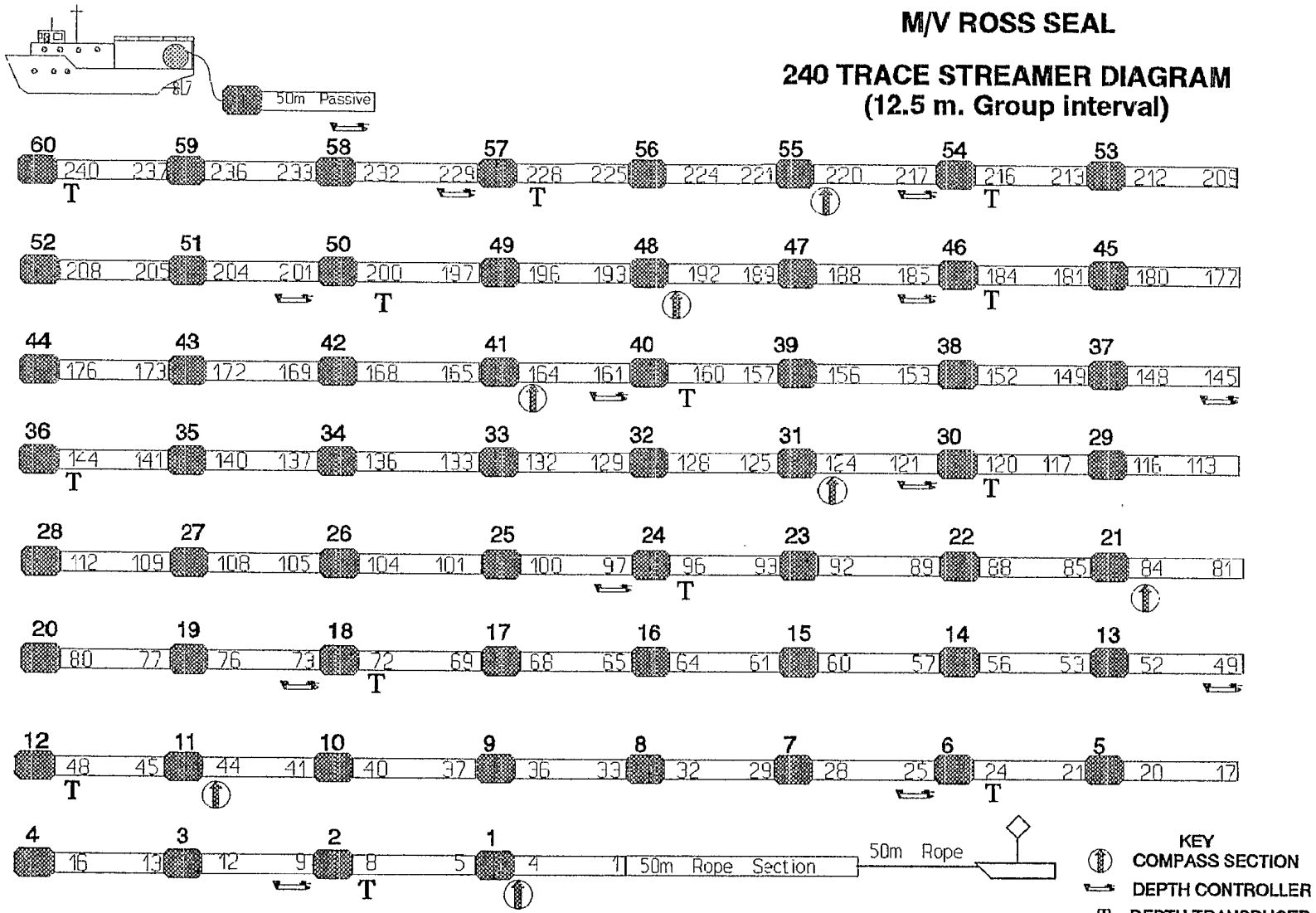
G. Steering Point (nearest CDP)

G1	One half of E1 G1 = E1 / 2	12.60
G2	Stern to Gun Array centre G2 = D3	**32.54**
G3	Steering point from stern G3 = G1 + G2	**45.14**

5.5 STREAMER DIAGRAM

M/V ROSS SEAL

240 TRACE STREAMER DIAGRAM
(12.5 m. Group interval)

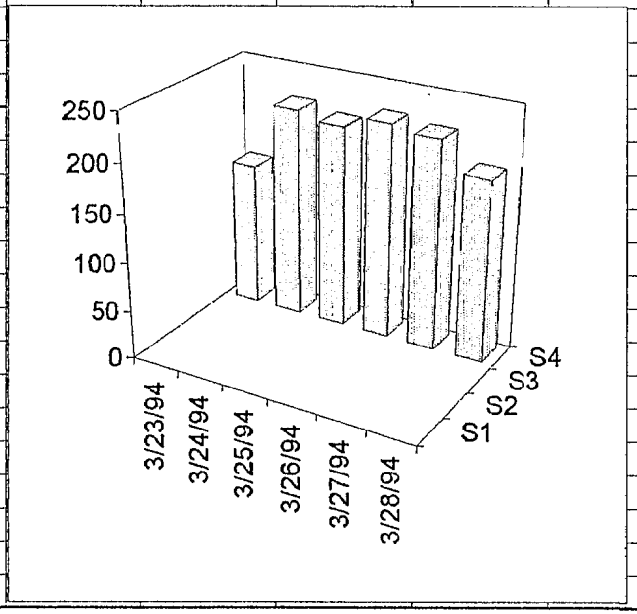


CLIENT : MESA PROSPECT : GULF WATERS (SADME94)

KEY
- COMPASS SECTION
- DEPTH CONTROLLER
- T DEPTH TRANSDUCER
- CANISTER

6.0 PRODUCTION LISTINGS

M.E.S.A	GULF WATERS SURVEY		M/V ROSS SEAL	PTY 522
		PRODUCTION SUMMARY		
DATE		TOTAL KILOMETERS		
3/23/94			148.387	
3/24/94			217.35	
3/25/94			209.775	
3/26/94			222.075	
3/27/94			216.525	
3/28/94			187.35	
		TOTAL	1201.462	



6.1 TIME SUMMARY AND DAILY LOG

To : Digital Exploration Perth / Digicon Singapore/SADME
Attn: Roy Bampton / Charles Ramsden / RIC HORN/TERRY CRAB
From: Ross Seal Party 521 - Area: GULF WATERS
Ref: Status Report March 22 1994

TIME BREAKDOWN

0000-2311	MOBILIZE
2311-2400	DEPLOY

TIME SUMMARY

MOB=	23:18
DEP=	00:82

PRODUCTION SUMMARY

DAY =	0:00
PROSPECT =	0:00
MONTH =	982.725

CHARGEABLE STANDBY

DAY =	24:00
PROSPECT =	30:00

DISPUTED TIME

DAY =	0.00
PROSPECT =	0:00

TAPE SUMMARY

DAY =	0:00
ONBOARD =	1094

FUEL SUMMARY

DAY =	1800
ONBOARD =	58,560

LINE	DIR	FSP	LSP	TSP	KM	STATUS	SOL	EOL

REMARKS

A) MOB — IN ROUTE TO GULF OF ST. VINCENT WORK AREA, WINDS LIGHT SEAS .5 METER

B) DEP — ARRIVE WORK AREA DEPLOYING CABLE.

NOTE: 0330 LOCAL CABLE OUT TO SECTION 60, TRACE 240 WORKING ON OFFSET.

REGARDS,

GARY D MORROW

CLIENT JIM ALLENDER

To : Digital Exploration Perth / Digicon Singapore/SADME
Attn: Roy Bampton / Charles Ramsden / RIC HORN/TERRY CRAB
From: Ross Seal Party 521 - Area: GULF WATERS
Ref: Status Report March 23, 1994

TIME BREAKDOWN

0000-0330	DEPLOY
0330-0530	DEPLOY
0530-0748	DEPLOY
0748-2400	RECORDING

TIME SUMMARY

REC=	16.20
DEP=	7.80

PRODUCTION SUMMARY

DAY =	148.387
PROSPECT =	148.347
MONTH =	1131.112

CHARGEABLE STANDBY

DAY =	24:00
PROSPECT =	54.00

DISPUTED TIME

DAY =	0.00
PROSPECT =	0:00

TAPE SUMMARY

DAY =	83
ONBOARD =	1011

FUEL SUMMARY

DAY =	1340
ONBOARD =	57,220

LINE	DIR	FSP	LSP	TSP	KM	STATUS	SOL	EOL
SADME-94-1	VAR.	101	4057	3957	148.387	INC.	6.6/20.6	XX/XX

REMARKS

A)	DEP	DEPLOYING STREAMER, CABLE DEPLOYED NO BAD TRACES. BALLAST GOOD.
B)	DEP	WORKING ON OFFSET TRYING TO GET OFFSET TO TOW AT CORRECT DEPTH.
C)	DEP	CABLE ALL OUT DEPLOYING GUN ARRAY AND HEADING TO START LINE.
D)	REC	SHOOTING LINE SADME-94-1, CABLE STILL HAD TURN AT TAIL END AT SOL. WINDS LIGHT SEAS CALM, NO CHANGES OR MISFIRES ON ARRAY FOR THE DAY. NO MISSED FILES ON SIESMIC INSTRUMENTS.

THE FOLLOWING IS THE VESSEL POSITION WHILE ON-LINE THE TIMES ARE LOCAL SOUTH AUSTRALIAN TIME

SOL POSITION :	34,38.500 S
	138,05.00 E
1200 POS	34.45.130 S
	138,10.02 E
1800 POS	35,09.888 S
	138,14.18 E
2400 POS	35,28.601 S
	137.50.90 E

REGARDS,

GARY D MORROW

CLIENT: JIM ALLENDER

To : Digital Exploration Perth / Digicon Singapore/MESA
Attn: Roy Bampton / Charles Ramsden / RIC HORN/TERRY CRABB
From: Ross Seal Party 521 - Area: GULF WATERS
Ref: Status Report March 24 1994

TIME BREAKDOWN
0000-2400 RECORDING

TIME SUMMARY
REC= 24.00

PRODUCTION SUMMARY
DAY = 217.350
PROSPECT = 365.737
MONTH = 1348.462

CHARGEABLE STANDBY
DAY = 24:00
PROSPECT = 78.00

DISPUTED TIME
DAY = 0.00
PROSPECT = 0:00

TAPE SUMMARY
DAY = 106
ONBOARD = 905

FUEL SUMMARY
DAY = 2850
ONBOARD = 55,710

LINE	DIR	FSP	LSP	TSP	KM	STATUS	SOL	EOL
SADME-94-1	VAR	4058	9853	5796	217.350	INC.	XX	XX

REMARKS

A) REC CONTINUED SHOOTING LINE SADME-94-1. SP 6686 CHANGED GUN 21 WITH 22 DUE TO AIR LEAK. 1 SHOT MISSED ON 7673 DUE TO BAD TIME BREAK ONLY BAD FILE FOR THE DAY. M. PUGLISISI OF THE SPENCER GULF AND PRAWN FISHERIES CONTACTED AND INFORMED OF THE VESSEL INTERDED SURVEY AREA. ALSO LOBSTER FISHERMAN B. RIGONI CONTACTED. HE INFORMED US OF LOCATION OF HIS POTS.

B) NO WHALES SIGHTED,

C) UNABLE TO CONTACT WALLAROO
BASE STATION. CONTACTED PORT LINCON RADIO

0600 POS.	35,30.997 S
	137,43.72 E
1200 POS.	36,16.772 S
	137,28.70 E
1800 POS	35.32.449 S
	137,00.43 E
2400 POS	35,10.865 S
	136,44.32 E

REGARDS,

CLIENT : JIM ALLENDER

GARY D MORROW

To : Digital Exploration Perth / Digicon Singapore/SADME
Attn: Roy Bampton / Charles Ramsden / RIC HORN/TERRY CRAB
From: Ross Seal Party 521 - Area: GULF WATERS
Ref: Status Report March 25 1994

TIME BREAKDOWN

0000-1424	RECORDING
1424-1542	NAV/REC
1542-2400	RECORDING

TIME SUMMARY

REC= 24.00

PRODUCTION SUMMARY

DAY =	209.775
PROSPECT =	575.512
MONTH =	1558.237

CHARGEABLE STANDBY

DAY =	24:00
PROSPECT =	102:00

DISPUTED TIME

DAY =	0.00
PROSPECT =	0:00

TAPE SUMMARY

DAY =	116
ONBOARD =	789

FUEL SUMMARY

DAY =	2010
ONBOARD =	55,710

LINE	DIR	FSP	LSP	TSP	KM	STATUS	SOL	EOL
SADME-94-1	VAR	9854	13242	3389	127.087	INC	XX	XX
SADME-94-1	VAR	13324	15528	2205	82.687	INC	XX	XX

REMARKS

A) REC — CONTINUE RECORDING LINE SADME-94-1, MISSED SHOT POINT 12223 DUE TO BAD TIME BREAK NO MISFIRES ON THE GUNS OR CHANGES, VOL 2970 PSI 1900. WEATHER SEAS CALM WINDS LIGHT.

B) NAV — SP 13243 TO 13323 MAGNAVOX NAVIGATION COMPUTER HALTED NO NAVIGATION DATA FOR THESE SHOTS.

C) REC — CONT. RECORDING LINE SADME-94-1, NO MISSED SHOTS OR GUN ARRAY CHANGES. SEAS CALM WINDS 5 KNTS

NOTE: NO WHALES OR FISHING ACTIVITY SIGHTED.

REGARDS,

GARY D MORROW

CLIENT: JIM ALLENDER

To : Digital Exploration Perth / Digicon Singapore/SADME
Attn: Roy Bampton / Charles Ramsden / RIC HORN/TERRY CRABB
From: Ross Seal Party 521 - Area: GULF WATERS
Ref: Status Report March 26 1994

TIME BREAKDOWN
0001-2400 RECORDING

TIME SUMMARY
REC= 24:00

PRODUCTION SUMMARY
DAY = 222.075
PROSPECT = 797.587
MONTH = 1780.312

CHARGEABLE STANDBY
DAY = 24:00
PROSPECT = 126.00

DISPUTED TIME
DAY = 0.00
PROSPECT = 0:00

TAPE SUMMARY
DAY = 121
ONBOARD = 668

FUEL SUMMARY
DAY = 1848
ONBOARD = 51,850

LINE	DIR	FSP	LSP	TSP	KM	STATUS	SOL	EOL
SADME-94-1	VAR	15529	21450	5922	222.075	INC	XX/XX	XX/XX

REMARKS

A) REC CONT. RECORDING LINE SADME-94-1, MISSED SP 16245, NO BAD SHOTS ON GUN ARRAY. 2970/1900 PSI FOR DAY. WEATHER SEAS CALM WINDS 5 KNTS.

0600 POS	33.29.772 S
	137.38.69 E
1200 POS	33.48.030 S
	137.19.91 E
1800 POS	33.54.132 S
	136.50.38 E
2400 POS	34.14.375 S
	136.44.45 E

B) NO WHALE SIGHTED AND NO FISHING ACTIVITY

REGARDS,

GARY D MORROW CLIENT JIM ALLENDER

To : Digital Exploration Perth / Digicon Singapore/SADME
Attn: Roy Bampton / Charles Ramsden / RIC HORN/TERRY CRABB
From: Ross Seal Party 521 - Area: GULF WATERS
Ref: Status Report March 27 1994

TIME BREAKDOWN
0001-2400 RECORDING

TIME SUMMARY
REC= 24:00

PRODUCTION SUMMARY

DAY =	216.525
PROSPECT =	1014.112
MONTH =	1996.837

CHARGEABLE STANDBY

DAY =	24:00
PROSPECT =	150.00

DISPUTED TIME

DAY =	0.00
PROSPECT =	0:00

TAPE SUMMARY

DAY =	121
ONBOARD =	547

FUEL SUMMARY

DAY =	1940
ONBOARD =	49910

LINE	DIR	FSP	LSP	TSP	KM	STATUS	SOL	EOL
SADME-94-1	VAR	21451	27224	5774	216.525	INC.	XX/XX	XX/XX

REMARKS

A) REC/ SHOOTING SADME-94-1, SP 23307 TO 23592 GUN VOL 2940. PICK UP STBD IN BOARD FOR REPAIRS. SP 23592 ACT VOL 2970. WEATHER, SEAS CALM WINDS 5 KNTS.

0600	POS	34.29.093 S
		137.14.93 E
1200	POS	34.35.104 S
		136.43.18 E
1800	POS	34.42.401 S
		136.12.54 E
2400	POS	34.43.224S
		136.42.524

B) NO WHALES OR FISHING ACTIVITY SIGHTED

REGARDS,

GARY D MORROW

CLIENT JIM ALLENDER

To : Digital Exploration Perth / Digicon Singapore/SADME
Attn: Roy Bampton / Charles Ramsden / RIC HORN/TERRY CRABB
From: Ross Seal Party 521 - Area: GULF WATERS
Ref: Status Report March 28 1994

TIME BREAKDOWN

0000-2133	RECORDING
2133-2339	DEPLOY
2339-2400	TRAV

TIME SUMMARY

REC=	21.55
DEP=	2.10
TRAV=	0.35

PRODUCTION SUMMARY

DAY =	187.350
PROSPECT =	1201.462
MONTH =	2184.187

CHARGEABLE STANDBY

DAY =	24:00
PROSPECT =	174.00

DISPUTED TIME

DAY =	0.00
PROSPECT =	0:00

TAPE SUMMARY

DAY =	105
ONBOARD =	442
TOTAL USED	661

FUEL SUMMARY

DAY =	1510
ONBOARD =	48,400

LINE	DIR	FSP	LSP	TSP	KM	STATUS	SOL	EOL
SADME-94-1	VAR	27225	32220	4996	187.350	COMP.	XX/XX	4.9/0.3

REMARKS

A)	REC	CONT. RECORDING LINE SADME-94-1, GUN VOL 2970/1900 PSI WX WINDS 5 KNTS SEAS CALM SWELL 1.5 METERS. MISSED SP'S 30615 TO 30621 TO UPDATE RDL II AND FEP. LINE IS COMPLETE.
B)	DEP	PICKING UP GUNS AND CABLE
C)	TRAV	ENROUTE TO PORT. IN PERTH
		NO WHALES OR FISHING ACTIVITY. CURRENT ETA IS 1700 SUNDAY.

REGARDS,

GARY D MORROW

CLIENT JIM ALLENDER

6.2 LINE SUMMARY

ROSS SEAL LINE ANALYSIS

Line number	SADME94	**Direction**	*	**Date**	22nd to 27th March 1994			
Complete	Yes	**Wind**	NE 5kts.	**Seas**	Slight			
FSP	**LSP**	**TOTAL**	**KLM**	**FRN**	**LRN**	**TOTAL**	**SEQ.**	**NAV**
101	32220	32120	1204.5	001	664	664		001-004

FFN	**LFN**
101	2175*

START OF LINE		*END OF LINE*	
TIME LCL/GMT	07:48/22:18 22/03/94	**TIME LCL/GMT**	21:33/07:03
FEATHER ANGLE (DEG)	20.6 deg.	**FEATHER ANGLE(DEG)**	0.3
WATER DEPTH (+3 M)	16.5m.	**WATER DEPTH (+3 M)**	89
NOISE (UBARS)	6.6 ubar (3hz)	**NOISE (UBARS)**	4.9
CABLE DEPTH (FT)	22-24 ft.	**CABLE DEPTH (FT)**	21-23
GUN DEPTH (+2 FT)	18-19 ft.	**GUN DEPTH (+2 FT)**	18-20
GUN VOLUME (CU. IN.)	2970	**GUN VOLUME (CU. IN.)**	2970
GUN PRESSURE (PSI)	1900	**GUN PRESSURE (PSI)**	1900
BAD TRACES	nil	**BAD TRACES**	nil

COMMENTS:

- **Add : 2ft. to all gun depths/ 3 metres to water depths.**
- **SOL: Active source sub-arrays (strings) Port outboard, port inboard & stbd inboard**
- **Trace #139 intermittently noisy throughout line.**

Streamer noise:

Due to the numerous course changes and deviations throughout this line, low frequency noise breakout due to bends in the streamer was present prior to, and after, all vessel course changes. Severity of noise breakout being relative to the amount of change in course. Due to the frequency of these occurences, and being fairly well documented in the observers line log, it was deemed unnecessary to log this information in this summary as well.

NOTE: Streamer ballast throughout the survey was good and was not affected seriously by vessel movements and course changes.

1) **SOL SP 571: Segment 94-1-1 dir: 090 deg.**

2) **SP 572 file 111 : Start segment 94-1-2 dir 149 deg.**

3) **SP 790 file 794 : Start segment 94-1-3 dir 240 deg.**

4) **SP 1360 file 1363 : Start segment 94-1-4 dir 211 deg.**

5) **SP 1480 file 1483 : Start segment 94-1-5 dir 183 deg.**
   SP 1500 file 1497 - Feathering now below 10 degrees port.

6) **SP 1627 file 1630 : Start segment 94-1-6 dir 152 deg.**

7) **SP 2560 file 2563 : Start segment 94-1-7 dir 180 deg.**

8) SP 2780 file 2783 : Start segment 94-1-8 dir 226 deg.

9) SP 2910 file 2913 : Start segment 94-1-9 dir 246 deg.

10) SP 3750 file 3753 : Start segment 94-1-10 dir 230 deg.

11) SP 3815 file 3818 : Start segment 94-1-11 dir 197 deg

12) SP 3950 file 3947 : Start segment 94-1-12 dir 167 deg.
SP 4025 file 4028 - Trace 139 noisy
SP 4279 file 4282 - Small ship passing astern of tailbuoy. 4 miles clear.
SP 4630 file 4633 - Streamer depths set to 19' due to shallow waters ahead.

13) SP 4700 file 4703 : Start segment 94-1-13 dir 200 deg.

14) SP 4755 file 4758 : Start segment 94-1-14 dir 243 deg.

15) SP 4803 file 4806 : Start segment 94-1-15 dir 319 deg.

16) SP 5140 file 5143 : Start segment 94-1-16 dir 336 deg.
SP 5160 file 5163 - Streamer depths back to 21'.

17) SP 6356 file 6359 : Start segment 94-1-17 dir 330 deg.

18) SP 6470 file 6473 : Start segment 94-1-18 dir 303 deg.

19) SP 6597 file 6600 : Start segment 94-1-19 dir 271 deg.

20) SP 6632 file 6635 : Start segment 94-1-20 dir 220 deg.
SP 6686 file 6689 - Gun # 21 De activate. # 22 activate. Vol 2510
SP 6687 file 6690 - Gun # 21 Nact A/F
SP 7673 file 7766 - Bad Timebreak. M.S.D.L. missed closure.
SP 7673 to 7674 files 7677 to 7678 -M.S.D.L. SP no. lagging by one, SP 7673/74 should read SP 7674\7675.
SP 7676 file 7679 - M.S.D.L. SP no. reset, now back in sync.

21) SP 7954 file 7957 - Start segment 94-1-21 dir 227 deg.

22) SP 8190 file 8193 : Start segment 94-1-22 dir 290 deg.

23) SP 8290 file 8293 : Start segment 94-1-23 dir 312 deg.

24) SP 8911 file 8914 : Start segment 94-1-24 dir 310 deg.

25) SP 9477 file 9480 : Start segment 94-1-25 dir 026 deg.
SP 9720 file 9723 - EOT Navlog reel 001. (no DEOF)
SP 9721 file 9724 - SOT Navlog reel 002.

26) SP 10183 file 0187 : Start segment 94-1-26 dir 030 deg.
SP 10233 file 0227 - Bad timebreak. SP no. lag.
SP 10225 file 0229 - M.S.D.L. sp no. reset, now back in sync.

27) SP 10381 file 0385 : Start segment 94-1-27 dir 040 deg.

28) SP 10835 file 0839 : Start segment 94-1-28 dir 040 deg.

29) SP 11056 file 1060 : Start segment 94-1-29 dir 088 deg.

30) SP 11178 file 1182 : Start segment 94-1-30 dir 057 deg.

31) SP 11446 file 1450 : Start segment 94-1-31 dir 035 deg.

32) SP 11871 file 1875 : Start segment 94-1-32 dir 005 deg.

34) SP 12298 file 2302 : Start segment 94-1-34 dir 005 deg.
SP 12512 file 2516 : Gun #27 no-fire, total volume 2930 Cu.In.
SP 12513 file 2517 : Gun #27 no-fire, total volume 2930 Cu.In.
SP 12514 file 2518 - Gun #27 disabled. Total volume 2930 Cu.In.
SP 12515 file 2519 : Gun #37 enabled. Total volume 2970 Cu.In.

35) SP 12679 file 2683 : Start segment 94-1-35 dir 006 deg.
SP 13242 file 3246 - Navigation (Magnavox) hangup.
SP's 13243 to 13323 Files 3247 to 3291 - System still acquiring random SP's throughout hangup. Although nav. system parameters incorrect while bringing magnavox back online. All files deemed as corrupted.
SP 13324 file 3292 - Magnavox back online F.G.S.P. after nav. lockup.
SP 13725 file 3693 - Vessel moving out left of line to avoid shallows.
SP 13744 file 3713 - Vessel now 135 meters left of line. (Max. distance)

36) SP 13811 file 3779 : Start segment 94-1-36 dir 032 deg.

37) SP 14103 file 4071 : Start segment 94-1-37 dir 058 deg.

38) SP 14269 file 4237 : Start segment 94-1-38 dir 011 deg.

39) SP 14381 file 4349 : Start segment 94-1-39 dir 359 deg.

40) SP 14605 file 4573 : Start segment 94-1-40 dir 356 deg.

41) SP 14807 file 4775 : Start segment 94-1-41 dir 359 deg.
SP 15455 file 5423 - Streamer set to 19-20 ft. due to shallow water ahead.

42) SP 15501 file 5469 : Start segment 94-1-42 dir 006 deg.

43) SP 16095 file 6063 : Start segment 94-1-43 dir 028 deg.

44) SP 16185 file 6153 : Start segment 94-1-44 dir 090 deg.
SP 16231 file 6199 - Streamer depths set back to 21-23 ft.
SP 16245 file 0000 - Missed SP.

45) SP 16283 file 6250 : Start segment 94-1-45 dir 155 deg.
SP 16337 file 6304 - Tape error TE111.

SP 16338 file 6305 - Tape error TE135.

46) SP 16838 file 6805 : Start segment 94-1-46 dir 171 deg.

47) SP 17035 file 7002 : Start segment 94-1-47 dir 197 deg.

48) SP 17441 file 7408 : Start segment 94-1-48 dir 172 deg.

49) SP 17777 file 7744 : Start segment 94-1-49 dir 191 deg.
SP 17844 file 7812 - EOT Navlog 002. (no DEOF)
SP 17845 file 7813 - SOT Navlog 003.

50) SP 17888 file 7855 : Start segment 94-1-50 dir 222 deg.

51) SP18008 file 7975 : Start segment 94-1-51 dir 260 deg.

52) SP 18143 file 8110 : Start segment 94-1-52 dir 279 deg.
SP18955 file 8922 - Misfire gun #15

53) SP 18959 file 8926 : Start segment 94-1-53 dir 275 deg.

54) SP 19187 file 9154 : Start segment 94-1-54 dir 263 deg.

55) SP 19446 file 9413 : Start segment 94-1-55 dir 232 deg.

56) SP 19675 file 9642 : Start segment 94-1-56 dir 229 deg.

57) SP 19827 file 9794 : Start segment 94-1-57 dir 225 deg.
SP 20033 file 0001 - File no. clockover. from 9999-0001.

59) SP 20845 file 0813 : Start segment 94-1-59 dir 172 deg.

60) SP 21052 file 1020 : Start segment 94-1-60 dir 117 deg.
SP 21093, 210947 file 1061: Missed SP, RDL comm fault.
SP 22320 file 2287 - Misfire. Gun #22 disabled, 12 enabled. (late).
SP 22321 file 2289 - Total volume 2970 Cu.In.
SP 22322 file 2290 - Misfire. Gun #2.

61) SP 22845 file 2812 : Start segment 94-1-61 dir 183 deg.
SP 22877 - 22879 - Missed SP.
SP 23001 file 2965 - Gun #23 disabled. Total volume 2770 Cu.In.
SP 23002 file 2966 - Gun #33 enabled. Total volume 2970 Cu.In.
SP 23074 file 3038 - Misfire. Bad timebreak.
SP 23076 file 3039 - Tape error TE061.
SP 23098 file 3061 - Gun #24 disabled. Total volume 2870 Cu.In.
SP 23099 file 3062 - Gun #34 enabled. Total volume 2970 Cu. In.
SP 23104 file 3067 - Gun #25 disabled, 25 enabled. Total volume 2970 Cu.In.
SP 23110 file 3073 - Gun #26 disabled, 36 enabled. Total volume 2970 Cu.In.
SP 23115 file 3078 - Gun #28 disabled, 38 enabled. Total volume 2970 Cu.In.
SP 23121 file 3084 - Gun #29 disabled, 39 enabled. Total volume 2970 Cu.In.

62) SP 23197 file 3160 : Start segment 94-1-62 dir 270 deg.
SP 23307 file 3270 - Gun #38 no-fire. Volume 2940 Cu.In.
SP 23308 file 3271 - Gun #38 disabled. Total volume 2940 Cu.In.
SP 23310 - 23487 - Numerous non-active autofires, guns being tested onboard.
SP 23592 file 3555 - Gun #28 enabled. Total volume 2970 Cu. In.
SP 24451 file 4414 - Misfire. Gun #12 disabled, 31 enabled (late).
SP 24454 - 24457 files 4417 - 4420 - Tape errors TE017 - 218.
SP 24849 file 4812 - Bad timebreak.

63) SP 24993 file 4956 : Start segment 94-1-63 dir 251 deg.
SP 25190 file 5153 - Streamer set to 18 - 19 ft. due to shallow waters ahead.
SP 25270 file 5233 - Vessel starting move right of line to avoid shallows.
SP 25301 file 5264 - Misfire, gun #15.
SP 25341 file 5304 - Vessel now 300 metres right of line.
SP 25380 file 5343 - Vessel now steady at 500 metres right of line.
SP 25490 file 5453 - Vessel start move back towards line. Now clear of shallows.
SP 25555 file 5518 - Set streamer back to 21 ft. Vessel now 300 metres right of line.
SP 25640 file 5603 - Vessel now back online. (K.C 0.0).

64) SP 25753 file 5716 : Start segment 94-1-64 dir 167 deg.
SP 25907 file 5870 - Bad timebreak, M.S.D.L. missed closure.
SP 25908 - 25910 files 5871 - 5873 - M.S.D.L. SP no. lagging by one. SP 25908-25910 should read SP 25909-25911.
SP 25912 file 5874 - M.S.D.L. SP no. reset, now back in sync.

65) SP 26064 file 6026 : Start segment 94-1-65 dir 083 deg.
SP 26300 file 6262 - Gun #3 no-fire. Total volume 2770 Cu.In.
SP 26301 file 6363 - Gun #3 disabled. Total volume 2970 Cu. In.
SP 26303 file 6265 - Misfire. Gun #23 enabled. (late).
SP 26304 file 6266 - Total volume 2970 Cu.In.
SP 26322 - 26355 files 6284 - 6287 - Tape errors TE005 - 144.
SP 26950 - 26955 files 6912- 6917 - Reel no. 553 Tape errors all files.
SP 27020 file 6982 - EOT Navlog 003 (no DEOF)
SP 27021 file 6983 - SOT navlog 004.
SP 27340 file 0000 - Missed SP.
SP 27115 file 7676 - Misfire. Gun #9.
SP 27121 file 7682 - Gun #9 disabled. Total volume 2940 Cu.In.

66) SP 27625 file 7586 : Start segment 94-1-66 dir 129 deg.
SP 27722 file 7683 - Misfire. Gun #29 enabled (late).
SP 27723 file 7684 - Total volume 2970 Cu.In.
SP 27773 file 0000 - Missed SP.

67) SP 27808 file 7768 : Start segment 94-1-67 dir 241 deg.
SP 28733 file 8733 - Misfire gun #4.

68) SP 28821 file 8781 : Start segment 94-1-68 dir 222 deg.
SP 28912 file 8872 - Misfire. Gun #4.
SP 29186 file 9146 - Misfire. Gun #4.
SP 29188 file 9149 - Gun #4 disabled. Total volume 2940 Cu.In.
SP 29189 file 9150 - Gun #24 enabled. Total volume 2970 Cu.In.

Note : Sea & swell conditions increasing slightly causing streamer depths to fluctuate and increasing low frequency swell noise breakout on streamer.

69) SP 29951 file 9911 : Start segment 94-1-69 dir 271 deg.
SP 30040 file 0001 - File no. clockover 9999 to 0000.

70) SP 30569 file 0530 : Start segment 94-1-70 dir 294 deg.
SP 30614 file 0575 - L.G.S.P. prior to RDL2 reset.
Note : Having to re-initialize RDL2 setup to obtain new prospect / line limits on ADSS and FEP setup.
SP 30615 - SP 30621 files 0576 - 0578 - Dummy/bad files. (re-initializing RDL2 setup)
SP 30622 file 0579 - F.G.S.P. after RDL2 reset.
SP 30692 file 0649 - Misfire gun #31.
SP 30992 file 0949 - Misfire gun #15.
SP 30996 file 0953 - Misfire gun #15.
SP 31002 file 0959 - Misfire gun #15.
SP 31007 file 0964 - Misfire gun #15.
SP 31031 file 0988 - Misfire gun #15.
SP 31056 file 1013 - Misfire gun #15.
SP 31060 file 1017 - Misfire gun #15.
SP 31061 file 1018 - Gun #15 disabled. Total volume 2890 Cu.In.
SP 31062 file 1019 - Misfire. Gun #25 enabled. (late)
SP 31063 file 1020 - Total volume 2970 Cu.In.
SP 31710 - 31711 file 1667 - 1668 - Misfire gun #31.
SP 31713 file 1670 - Misfire. Gun #31.
SP 31833 - 31834 file 1790 - RDL comm. fault. / missed SP. Nav. erratic.
SP 31884 file 1840 - RDL comm fault.
SP 31884 file 1845 - Missed SP. System speed erratic.

LINE EDITS:

SP	SP	FILE	FILE	COMMENTS
7673	7673	7766	7766	Bad timebreak.
10233	10233	0227	0227	Bad timebreak.
13243	13324	3247	3291	Magnavox lockup. Scratched files.
16245	16245	-	-	Missed SP.
16337	16338	6304	6305	Tape errors. TE111/135.
18955	18955	8922	8922	Misfire. Gun #15.
22320	22320	2287	2287	Misfire. Gun #12.
22322	22322	2290	2290	Misfire. Gun #12.
22877	22879	-	-	Missed SP.
23074	23074	3038	3038	Bad timebreak.
23076	23076	3039	3039	Tape error. TE061.
24451	24451	4414	4414	Misfire. Gun #31.
24454	24457	4417	4420	Tape errors. TE017-218.
24849	24849	4812	4812	Bad timebreak.
25301	25301	5264	5264	Misfire. Gun #15.
25907	25907	5870	5870	Bad timebreak.
26303	26303	6265	6265	Misfire. Gun #23.
26322	26355	6284	6287	Tape errors. Reel #553 - all files.
27340	27340	-	-	Missed SP.

27115	27115	7676	7676	Misfire. Gun #9.
27722	27722	7683	7683	Misfire. Gun #29.
27773	27773	-	-	Missed SP.
28733	28733	7768	7768	Misfire. Gun #4.
28912	28912	8872	8872	Misfire. Gun #4.
29186	29186	9146	9146	Misfire. Gun #4.
30615	30621	0575	0578	RDL2 reset.
30692	30692	0649	0649	Misfire. Gun #31.
30992	30992	0949	0949	Misfire. Gun #15.
30996	30996	0953	0953	Misfire. Gun #15.
31002	31002	0959	0959	Misfire. Gun #15.
31007	31007	0964	0964	Misfire. Gun #15.
31031	31031	0988	0988	Misfire. Gun #15.
31056	31056	1013	1013	Misfire. Gun #15.
31060	31060	1017	1017	Misfire. Gun #15.
31062	31062	1019	1019	Misfire. Gun #25.
31710	31711	1667	1668	Misfire. Gun #31.
31713	31713	1670	1670	Misfire. Gun #31.
31833	31834	1790	-	RDL comm. fault/ missed SP.
31884	31884	1845	1845	Missed SP.

end of report

6.3 TAPE LOG

digicon

DATA REEL SHIPMENT SUMMARY

M.V. ROSS SEAL / 0521

SHIP TO: Digital Exploration Ltd.
54-56 Brookes St.
Bowen Hills,
Queensland, 4006

CLIENT :MESA
PROJECT: SADME94-1
AREA : Gulf Waters
DATE : March 1994

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
001	001	SADME 94-1	101	134	095	138	SOL
"	002		135	183	139	187	
"	003		184	232	188	236	
"	004		233	281	237	285	
"	005		282	330	286	334	
"	006		331	379	335	383	
"	007		380	428	384	432	
"	008		429	477	433	481	
"	009		478	526	482	530	
"	010		527	575	531	579	
002	011		576	624	580	628	
"	012		625	673	629	677	
"	013		674	722	678	726	
"	014		723	771	727	775	
"	015		772	820	776	824	
"	016		821	869	825	873	
"	017		870	918	874	922	
"	018		919	967	923	971	
"	019		968	1016	972	1020	
"	020		1017	1065	1021	1069	
003	021		1066	1114	1070	1118	
"	022		1115	1164	1119	1167	
"	023		1165	1213	1168	1216	
"	024		1214	1265	1217	1262	
"	025		1266	1311	1263	1314	
"	026		1312	1360	1315	1363	
"	027		1361	1409	1364	1412	
"	028		1410	1458	1413	1461	
"	029		1459	1507	1462	1510	
"	030		1508	1559	1511	1556	
004	031		1560	1605	1557	1608	
"	032		1606	1654	1609	1657	
"	033		1655	1703	1658	1706	
"	034		1704	1752	1707	1755	
"	035		1753	1801	1756	1804	
"	036		1802	1850	1805	1853	
"	037		1851	1899	1854	1902	
"	038		1900	1902	1903	1905	Tape errors-all files
"	039		1903	1951	1906	1954	
"	040		1952	1954	1955	1957	Tape errors-all files

BOX No	REEL #	FSP	LSP	FFN	LFN	REMARKS
005	041	1955	2003	1958	2006	
	042	2004	2052	2007	2055	
	043	2053	2101	2056	2104	
	044	2102	2150	2105	2153	
	045	2151	2199	2154	2204	
	046	2200	2248	2205	2251	
	047	2249	2297	2252	2300	
	048	2298	2346	2301	2349	
	049	2347	2395	2350	2398	
	050	2396	2444	2399	2447	
006	051	2445	2493	2448	2496	
	052	2494	2542	2497	2545	
	053	2543	2591	2546	2594	
	054	2592	2640	2595	2643	
	055	2641	2689	2644	2692	
	056	2690	2738	2693	2741	
	057	2739	2787	2742	2790	
	058	2788	2836	2791	2839	
	059	2837	2885	2840	2888	
	060	2886	2934	2889	2937	
007	061	2935	2983	2938	2986	
	062	2984	3032	2987	3035	
	063	3033	3081	3036	3084	
	064	3082	3130	3085	3133	
	065	3131	3179	3134	3182	
	066	3180	3228	3183	3231	
	067	3229	3277	3232	3280	
	068	3278	3326	3281	3329	
	069	3327	3375	3330	3378	
	070	3376	3424	3379	3427	
008	071	3425	3473	3428	3476	
	072	3474	3522	3477	3525	
	073	3523	3571	3526	3574	
	074	3572	3620	3575	3623	
	075	3621	3669	3624	3672	
	076	3670	3718	3673	3721	
	077	3719	3767	3722	3770	
	078	3768	3816	3771	3819	
	079	3817	3865	3820	3868	
	080	3866	3914	3869	3917	
009	081	3915	3963	3918	3966	
	082	3964	4012	3967	4015	
	083	4013	4056	4016	4059	
	084	4057	4105	4060	4108	
	085	4106	4154	4109	4157	
	086	4155	4203	4158	4206	
	087	4204	4252	4207	4255	
	088	4253	4301	4256	4304	
	089	4302	4350	4305	4353	
	090	4351	4399	4354	4402	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
10	091		4400	4448	4403	4451	
	092		4449	4497	4452	4500	
	093		4498	4546	4501	4549	
	094		4547	4595	4550	4598	
	095		4596	4644	4599	4647	
	096		4645	4693	4648	4696	
	097		4694	4742	4697	4745	
	098		4743	4791	4746	4794	
	099		4792	4840	4795	4843	
	100		4841	4889	4844	4892	
11	101		4890	4938	4893	4941	
	102		4939	4987	7942	4990	
	103		4988	5036	4991	5039	
	104		5037	5085	5040	5088	
	105		5086	5134	5089	5137	
	106		5135	5183	5138	5186	
	107		5184	5232	5187	5235	
	108		5233	5281	5236	5284	
	109		5282	5330	5285	5333	
	110		5331	5279	5334	5382	
12	111		5380	5428	5383	5431	
	112		5429	5471	5432	5480	
	113		5478	5526	5481	5529	
	114		5527	5575	5530	5578	
	115		5576	5624	5579	5627	
	116		5625	5673	5628	5676	
	117		5674	5722	5677	5725	
	118		5723	5771	5726	5774	
	119		5772	5820	5775	5823	
	120		5821	5869	5824	5872	
13	121		5870	5918	5873	5921	
	122		5919	5967	5922	5970	
	123		5968	6016	5971	6019	
	124		6017	6065	6020	6068	
	125		6066	6114	6069	6117	
	126		6115	6163	6118	6166	
	127		6164	6212	6167	6215	
	128		6213	6261	6216	6264	
	129		6262	6310	6265	6313	
	130		6311	6359	6314	6362	
14	131		6360	6408	6363	6411	
	132		6409	6457	6412	6460	
	133		6458	6506	6461	6509	
	134		6507	6555	6510	6558	
	135		6556	6604	6559	6607	
	136		6605	6653	6608	6656	
	137		6654	6702	6657	6705	
	138		6703	6751	6706	6754	
	139		6752	6800	6755	6803	
	140		6801	6849	6804	6852	

BOX No	REEL #	FSP	LSP	FFN	LFN	REMARKS
15	141	6850	6898	6853	6901	
	142	6899	6947	6902	6950	
	143	6948	6996	6951	6999	
	144	6997	7045	7000	7048	
	145	7046	7094	7049	7094	
	146	7095	7143	7098	7146	
	147	7144	7192	7147	7195	
	148	7193	7241	7196	7244	
	149	7242	7290	7245	7293	
	150	7291	7339	7294	7341	
16	151	7340	7388	7342	7391	
	152	7389	7437	7392	7440	
	153	7438	7486	7441	7489	
	154	7487	7535	7490	7538	
	155	7536	7584	7539	7587	
	156	7585	7633	7888	7636	
	157	7634	7682	7637	7685	
	158	7683	7731	7686	7734	
	159	7732	7780	7735	7783	
	160	7781	7829	7784	7832	
17	161	7830	7878	7833	7881	
	162	7879	7927	7882	7930	
	163	7928	7976	7931	7979	
	164	7977	8025	7980	8028	
	165	8026	8074	8029	8077	
	166	8075	8123	8078	8126	
	167	8124	8172	8117	8175	
	168	8173	8221	8176	8224	
	169	8222	8270	8225	8273	
	170	8271	8319	8274	8322	
18	171	8320	8368	8323	8371	
	172	8369	8417	8372	8420	
	173	8418	8446	8421	8469	
	174	8467	8515	8470	8518	
	175	8516	8564	8519	8564	
	176	8565	8613	8568	8616	
	177	8614	8662	8617	8665	
	178	8663	8711	8666	8714	
	179	8712	8761	8715	8763	
	180	8761	8809	8764	8812	
19	181	8810	8858	8813	8861	
	182	8859	8907	8862	8910	
	183	8909	8956	8911	8959	
	184	8957	9005	8960	9008	
	185	9006	9054	9008	9057	
	186	9055	9103	9058	9106	
	187	9104	9152	9107	9155	
	188	9153	9201	9156	9204	
	189	9202	9250	9205	9253	
	190	9251	9299	9254	9302	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
20	191		9300	9348	9303	9351	
	192		9349	9397	9352	9400	
	193		9398	9446	9401	9449	
	194		9448	9495	9450	9498	
	195		9496	9544	9499	9547	
	196		9545	9593	9548	9596	
	197		9594	9642	9597	9645	
	198		9643	9691	9646	9694	
	199		9692	9740	995	9743	
	200		9741	9789	9744	9792	
21	201		9790	9838	9793	9841	
	202		9839	9887	9842	9890	
	203		9888	9936	9891	9939	
	204		9937	9985	9940	9988	
	205		9986	10034	9989	0038	
	206		10035	10083	0039	0087	
	207		10084	10132	0088	0136	
	208		10133	10182	0137	0186	
	209		10183	10230	0187	0234	
	210		10231	10280	0235	0283	
22	211		10280	10328	0284	0332	
	212		10329	10377	0333	0381	
	213		10378	10426	0382	0430	
	214		10427	10475	0480	0528	
	215		10476	10524	0529	0577	
	216		10525	10573	0529	0577	
	217		10574	10622	0578	0626	
	218		10623	10573	0627	0626	
	219		10646	10720	066	0724	
	220		10721	10769	0725	0773	
23	221		10770	10181	0774	0822	
	222		10819	10867	0823	0871	
	223		10868	10916	0872	0969	
	224		10917	10965	0921	0969	
	225		10966	11014	0970	1018	
	226		11015	11063	1019	1067	
	227		11064	11112	1068	1116	
	228		11113	11161	1117	1165	
	229		11162	11210	1166	1214	
	230		11211	11259	1215	1263	
24	231		11260	11308	1264	1312	
	232		11309	11357	1313	1361	
	233		11358	11406	1362	1410	
	234		11407	11455	1411	1459	
	235		11456	11504	1460	1508	
	236		11505	11553	1509	1557	
	237		11554	11602	1558	1606	
	238		11603	11651	1607	1655	
	239		11652	11700	1656	1704	
	240		11701	11749	1705	1753	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
25	241		11750	11798	1754	1802	
	242		11799	11847	1803	1851	
	243		11848	11896	1852	1900	
	244		11897	11948	1901	1949	
	245		11946	11994	1950	1998	
	246		11995	12043	1999	2047	
	247		12044	12092	2048	2096	
	248		12093	12141	2097	2145	
	249		12142	12190	2146	2194	
	250		12191	12239	2195	2243	
26	251		12240	12288	2244	2292	
	252		12289	12337	2293	2341	
	253		12338	12386	2342	2390	
	254		12387	12435	2391	2439	
	255		12436	12484	2440	2488	
	256		12485	12533	2489	2537	
	257		12534	12582	2538	2586	
	258		12583	12631	2587	2635	
	259		12632	12680	2636	2684	
	260		12681	12729	2685	2733	
27	261		12730	12778	2734	2782	
	262		12779	12827	2783	2831	
	263		12828	12876	2832	2880	
	264		12877	12925	2881	2929	
	265		12926	12974	2930	2978	
	266		12975	13023	2979	3027	
	267		13024	13072	3028	3076	
	268		13073	13121	3088	3125	
	269		13122	13170	3126	3174	
	270		13171	13219	3175	3223	
28	271		13220	13242	3224	3246	Dummy file 3247-3272
	272		13324	13353	3292	3321	Dummy file 3273-3291
	273		13354	13402	3322	3370	
	274		13403	13451	3371	3419	
	275		13452	13500	3420	3468	
	276		13501	13549	3469	3517	
	277		13550	13598	3518	3566	
	278		13599	13647	3567	3615	
	279		13648	13696	3616	3664	
	280		13697	13745	3665	3714	
29	281		13746	13794	3715	3762	
	282		13795	13843	3763	3811	
	283		13844	13892	3812	3860	
	284		13893	13941	3861	3909	
	285		13942	13990	3910	3958	
	286		13991	14039	3959	4007	
	287		14040	14088	4008	4056	
	288		14089	14137	4057	4105	
	289		14138	14186	4106	4151	
	290		14187	14235	4155	4203	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
30	291		14236	14284	4204	4252	
	292		14285	14333	4253	4301	
	293		14334	14382	4302	4350	
	294		14383	14431	4351	4399	
	295		14432	14480	4400	4448	
	296		14481	14529	4449	4497	
	297		14530	14578	4498	4546	
	298		14579	14627	4547	4595	
	299		14628	14676	4596	4644	
	300		14677	14725	4645	4693	
31	301		14726	14774	4694	4742	
	302		14775	14823	4743	4791	
	303		14824	14872	4792	4840	
	304		14873	14921	4841	4889	
	305		14922	14970	4890	4938	
	306		14971	15019	4939	4987	
	307		15020	15068	4988	5036	
	308		15069	15117	5037	5085	
	309		15118	15166	5086	5134	
	310		15167	15215	5135	5183	
32	311		15216	15264	5184	5232	
	312		15265	15313	5233	5281	
	313		15314	15362	5282	5330	
	314		15363	15411	5331	5379	
	315		15412	15460	5380	5428	
	316		15461	15509	5429	5471	
	317		15510	15558	5478	5526	
	318		15559	15607	5527	5575	
	319		15608	15656	5576	5624	
	320		15657	15705	5625	5673	
33	321		15706	15754	5674	5722	
	322		15755	15803	5723	5771	
	323		15804	15852	5772	5820	
	324		15853	15901	5821	5869	
	325		15902	15950	5870	5918	
	326		15951	15999	5919	5967	
	327		16000	16048	5968	6016	
	328		16049	16097	6017	6065	
	329		16098	16146	6066	6114	
	330		16147	16195	6115	6163	
34	331		16196	16244	6164	6213	
	332		16246	16294	6214	6261	
	333		16295	16338	6262	6305	
	334		16339	16387	6306	6354	
	335		16388	16436	6355	6403	
	336		16437	16485	6404	6452	
	337		16486	16534	6453	6501	
	338		16535	16583	6502	6550	
	339		16584	16632	6551	6599	
	340		16633	16681	6600	6648	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
35	341		16682	16730	6649	6698	
	342		16731	16799	6697	6746	
	343		16780	16828	6747	6795	
	344		16829	16877	6794	6844	
	345		16878	16926	6845	6893	
	346		16927	16975	6894	6972	
	347		16976	16024	6973	6991	
	348		17025	17073	6992	7040	
	349		17074	17108	7041	7075	
	350		17109	17157	7076	7124	
36	351		17158	17206	7125	7173	
	352		17207	17255	7134	7222	
	353		17256	17255	7223	7271	
	354		17305	17353	7272	7320	
	355		17354	17402	7321	7369	
	356		17403	17451	7368	7418	
	357		17452	17500	419	7467	
	358		17501	17549	7468	7516	
	359		17550	17598	7517	7565	
	360		17599	17647	7566	7614	
37	361		17648	17696	7615	7663	
	362		17697	17745	7664	7712	
	363		17746	17794	7713	7761	
	364		17795	17843	7762	7810	
	365		17844	17892	7811	7859	
	366		17893	17941	7860	7908	
	367		17942	17990	7909	7957	
	368		17994	18039	7158	8006	
	369		18040	18088	8007	8055	
	370		18089	18137	8056	8104	
38	371		18138	18186	8105	8153	
	372		18187	18235	8154	8202	
	373		18236	18284	8203	8251	
	374		18285	18333	8252	8300	
	375		18344	18382	8301	8349	
	376		18383	18431	8350	8398	
	377		18432	18480	8398	8447	
	378		18481	18529	8448	8496	
	379		18530	18578	8497	8545	
	380		18579	18627	8546	8594	
39	381		18628	18676	8595	8643	
	382		18677	18725	8644	8692	
	383		18726	18774	8693	8741	
	384		18775	18823	8742	8790	
	385		18824	18872	8791	8839	
	386		18873	18921	8840	8888	
	387		18922	18970	8889	8937	
	388		18971	19019	8938	8986	
	389		19020	19068	8987	9035	
	390		19069	19117	9036	9084	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
40	391		19118	19166	9085	9133	
	392		19167	19215	9134	9182	
	393		19216	19264	9183	9231	
	394		19265	19313	9232	9280	
	395		19314	19362	9281	9329	
	396		19363	19411	9330	9378	
	397		19412	19460	9379	9427	
	398		19461	19509	9428	9476	
	399		19510	19558	9477	9525	
	400		19559	19607	9526	9574	
41	401		19608	19656	9575	9623	
	402		19657	19705	9624	9672	
	403		19706	19754	9673	9721	
	404		19755	19803	9722	9770	
	405		19804	19852	9771	9820	
	406		198583	19901	9821	9868	
	407		19902	19950	9869	9917	
	408		19951	19999	9918	9966	
	409		20000	20033	9967	001	File 9999 - 0001
	410		20034	20082	002	050	
42	411		20083	20131	051	099	
	412		20132	20180	100	148	
	413		20181	20229	149	197	
	414		20230	20278	198	246	
	415		20279	20327	247	295	
	416		20328	20376	296	344	
	417		20377	20425	345	393	
	418		20426	20474	394	442	
	419		20475	20523	443	491	
	420		20524	20572	492	540	
43	421		20573	20621	541	589	
	422		20622	20670	590	638	
	423		20671	20719	639	687	
	424		20720	20768	688	736	
	425		20769	20817	737	785	
	426		20818	20866	786	834	
	427		20867	20915	835	883	
	428		20916	20964	884	932	
	429		20965	21013	933	981	
	430		21014	21062	982	1030	
44	431		21063	21112	1031	1079	
	432		21113	21161	1080	1128	
	433		21162	21210	1129	1177	
	434		21211	21259	1178	1226	
	435		21260	21308	1227	1275	
	436		21309	21357	1276	1324	
	437		21358	21406	1325	1373	
	438		21407	21455	1374	1422	
	439		21456	21504	1423	1471	
	440		21505	21553	1472	1520	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
45	441		21554	21602	1472	1520	
	442		21603	21651	1570	1618	
	443		21652	21700	1618	1667	
	444		21701	21749	1668	1716	
	445		21750	21798	1717	1765	
	446		21799	21847	1766	1814	
	447		21848	21896	1815	1863	
	448		21897	21945	1864	1912	
	449		21946	21994	1913	1961	
	450		21995	22043	1962	2010	
46	451		22044	22092	2011	2059	
	452		22093	22141	2060	2108	
	453		22142	22190	2109	2154	
	454		22191	22239	2158	2206	
	455		22240	2288	2207	2255	
	456		22289	22337	2256	2304	
	457		22338	22386	2305	2353	
	458		22387	22435	2354	2402	
	459		22436	22484	2403	2451	
	460		22485	22533	2452	2500	
47	461		22534	22582	2501	2549	
	462		22583	22631	2550	2598	
	463		22632	22680	2599	2647	
	464		22681	22729	2648	2696	
	465		22730	22778	2697	2745	
	466		27779	22827	2746	2794	
	467		22828	22876	2795	2843	
	468		22880	22928	2844	2892	
	469		22929	22977	2983	2941	
	470		22978	23026	2942	2990	
48	471		23027	23076	2991	3039	
	472		23077	23124	2040	2087	
	473		23125	23172	3088	3135	
	474		23173	23220	3136	3183	
	475		23221	23268	3184	3231	
	476		23269	23316	3232	3279	
	477		23317	23364	3280	3329	
	478		23365	23412	3328	3375	
	479		23413	23467	3376	3473	
	480		23468	23508	3424	3471	
49	481		23509	23556	3472	3519	
	482		23557	23604	3520	3567	
	483		23605	23652	3568	3615	
	484		23653	23700	3616	3663	
	485		23701	23748	3664	3711	
	486		23749	23796	3712	3759	
	487		23797	23844	3760	3807	
	488		23845	23892	3808	3855	
	489		23893	23940	3856	3903	
	490		23941	23988	3904	3951	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
50	491		23989	24036	3952	3999	
	492		24037	24084	4000	4047	
	493		24085	24132	4048	4095	
	494		24133	24180	4096	4143	
	495		24181	24228	4144	4191	
	496		24229	24276	4192	4239	
	497		24277	24324	4240	4287	
	498		24325	24372	4288	4335	
	499		24373	24420	4336	4383	
	500		24421	24457	4384	4420	
51	501		24458	24505	4421	4468	
	502		24506	24553	4469	4516	
	503		24554	24601	4517	4564	
	504		24602	24649	4565	4612	
	505		24650	24697	4613	4660	
	506		24698	24745	4661	4708	
	507		24746	24793	4709	4756	
	508		24794	24841	4757	4804	
	509		24842	24889	4805	4852	
	510		24890	24937	4853	4900	
52	511		24938	24985	4901	4948	
	512		24986	25033	4949	4996	
	513		25034	25081	4997	5044	
	514		25082	25129	5045	5092	
	515		25130	25177	5093	5140	
	516		25178	25225	5141	5188	
	517		25226	25273	5189	5236	
	518		25274	25321	5237	5284	
	519		25322	25369	5285	5332	
	520		25370	25417	5333	5380	
53	521		25418	25465	5381	5428	
	522		25466	25513	5429	5476	
	523		25514	25561	5477	5524	
	524		25562	25609	5525	5572	
	525		25610	25657	5573	5620	
	526		25658	25705	5621	5668	
	527		25706	25753	5669	5716	
	528		25754	25801	5717	5764	
	529		25802	25849	5765	5812	
	530		25850	25897	5813	5860	
54	531		25898	25946	5861	5908	
	532		25947	25994	5909	5956	
	533		25995	26042	5957	6004	
	534		26043	26090	6005	6052	
	535		26091	26138	6053	6100	
	536		26139	26186	6101	6148	
	537		26187	26234	6149	6196	
	538		26235	26282	6197	6244	
	539		26283	26325	6245	6287	
	540		26326	23673	6288	6335	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
55	541		26374	26421	6336	6383	
	542		26422	26469	6384	6431	
	543		26470	26517	6432	6479	
	544		26518	26565	6480	6527	
	545		26566	26613	6528	6575	
	546		26614	26661	6576	6623	
	547		26662	26709	6624	6671	
	548		26710	26757	6672	6719	
	549		26758	26805	6720	6767	
	550		26806	26853	6768	6815	
56	551		26854	26901	6816	6863	
	552		26902	26949	6864	6911	
	553		26950	26955	6912	6917	Tape errors-all files
	554		26954	27003	6918	6965	
	555		27004	27051	6966	7013	
	556		27052	27099	7014	7061	
	557		27100	27147	7062	7109	
	558		27148	27195	7110	7157	
	559		27196	27243	7158	7205	
	560		27244	27291	7206	7253	
57	561		27292	27339	7254	7301	
	562		27341	27388	7302	7349	
	563		27389	27436	7350	7397	
	564		27437	27484	7398	7445	
	565		27485	27832	7446	7492	
	566		27533	27580	7493	7541	
	567		27581	27628	7542	7589	
	568		27629	27676	7590	7637	
	569		27677	27724	7638	7685	
	570		27725	27772	7686	7733	
58	571		27774	27821	7734	7781	
	572		27822	27869	7782	7829	
	573		27870	27917	7830	7877	
	574		27918	27965	7878	7925	
	575		27966	28013	7926	7973	
	576		28014	28061	7974	8021	
	577		28062	28109	8022	8709	
	578		28110	28157	8710	8117	
	579		28158	28205	8118	8165	
	580		28206	28253	8166	8213	
59	581		28254	28301	8214	8261	
	582		28302	28349	8262	8309	
	583		28350	28397	8310	8357	
	584		28398	28445	8358	8405	
	585		28446	28493	8406	8453	
	586		28494	28541	8454	8501	
	587		28542	28589	8502	8549	
	588		28590	28637	8550	8597	
	589		28630	28685	8598	8645	
	590		28686	28733	8646	8693	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
60	591		28734	28781	8694	8741	
	592		28782	28829	8742	8789	
	593		28830	28877	8790	8837	
	594		28878	28925	8838	8885	
	595		28926	28973	8886	8933	
	596		28974	29021	8934	8981	
	597		29022	29069	8982	9029	
	598		29070	29117	9030	9029	
	599		29118	29165	9078	9125	
	600		29166	29213	9126	9173	
61	601		29214	29261	9174	9221	
	602		29262	29309	9222	9269	
	603		29310	29357	9270	9317	
	604		29358	29405	9318	9365	
	605		29406	29453	9366	9413	
	606		29454	29501	9414	9461	
	607		29502	29549	9462	9509	
	608		29550	29597	9510	9557	
	609		29598	29645	9558	9605	
	610		29646	29693	9606	9653	
62	611		29694	29741	9654	9701	
	612		29742	29789	9702	9749	
	613		29790	29837	9750	9797	
	614		29838	29885	9798	9845	
	615		29886	29933	9846	9893	
	616		29934	29981	9894	9941	
	617		29982	30029	9942	9989	
	618		30030	30039	9990	9999	File 9999
	619		30040	30087	0001	0048	File 0001
	620		30088	30135	0049	0096	
63	621		30136	30183	0097	0144	
	622		30184	30231	0145	0192	
	623		30232	30279	0193	0240	
	624		30280	30327	0241	0288	
	625		30328	30375	0289	0336	
	626		30376	30423	0337	0384	
	627		30424	30471	0385	0432	
	628		30472	30519	0433	0480	
	629		30520	30567	0481	0528	
	630		30568	30614	0529	0576	LGSP
64	631		30622	30667	0579	0624	FGSP
	632		30668	30715	0625	0672	
	633		30716	30763	0673	0720	
	634		30764	30811	0721	0768	
	635		30812	30859	0769	0816	
	636		30860	30907	0817	0864	
	637		30908	30955	0865	0912	
	638		30956	31003	0913	0960	
	639		31004	31051	0961	1008	
	640		31052	31099	1009	1056	

BOX No	REEL #	LINE No.	FSP	LSP	FFN	LFN	REMARKS
65	641		31100	31147	1057	1104	
	642		31148	31195	1105	1152	
	643		31196	31243	1153	1200	
	644		31244	31291	1201	1248	
	645		31292	31339	1249	1296	
	646		31340	31387	1297	1344	
	647		31388	31435	1345	1392	
	648		31436	31483	1393	1440	
	649		31484	31531	1441	1448	
	650		31532	31579	1489	1536	
66	651		31580	31627	1537	1584	
	652		31628	31675	1585	1632	
	653		31676	31723	1633	1680	
	654		31724	31771	1681	1728	
	655		31772	31189	1729	1776	
	656		31820	31868	1777	1824	
	657		31869	31917	1825	1872	
	658		31918	31965	1873	1920	
	659		31966	32013	1921	1968	
	660		32014	32061	1969	2016	
67	661		32062	32109	2017	2064	
	662		32110	32157	2065	2112	
	663		32158	32205	2113	2160	
	664		32206	32220	2161	2175	EOL

digicon

DATA TRANSMITTAL

SUMMARY OF SEISMIC DATA SHIPMENT

TO :
DIGITAL EXPLORATION
54-56 Brookes st.
Bowen Hills,
Queensland, 4006

FROM:
M.V. ROSS SEAL
CLIENT : MESA
SURVEY : Gulf Waters
DATE : 28th. March 1994

Shipment No. : 521-001-394 consists of the following -

ITEM	BOX No.	QTY	DESCRIPTION
1.	01 to 66	66	10 ea. Recorded magnetic field tapes
2.	67 to 67	1	4 ea. Recorded magnetic field tapes
3.	68 to 68	1	Associated survey line reports, printouts. (Processing copies)

Total no. boxes in shipment = 68.

6.4 GLOSSARY OF TERMS AND ABBREVIATIONS

AZM	:DIRECTION OF SHOOTING
CODE	:OPERATIONAL CODES STATUS REPORTS
CAD	:CABLE DEPTHS
CALB	:CALIBRATE
CONF	:CONFIGURE / RE-CONFIGURE
CRU	:CENTRAL RECORDING UNIT
CSS	:CABLE SUB-SYSTEM
CU.IN	:CUBIC INCH
CUR	:CURRENTS OR TIDES
DEP	:DEPLOY OR RECOVER EQUIPMENT
DEC	:DECIMAL
FA	:FEATHER ANGLE
EOL	:END OF LINE
FSP	:FIRST SHOT POINT
GUD	:GUN DEPTH
HR	:HOUR
INST	:INSTRUMENT FAILURE
LC	:LINE CHANGE
LSP	:LAST SHOT POINT
MI	:MINUTE
MSDL	:MARINE SEISMIC DATA LOGGER
NAV	:NAVIGATION FAILURE
REC	:RECORDING
RPT	:REPEAT SHOTS
STBY	:STANDBY
SCT	:SCOUT LINES
SCOUT	:SCOUTING
TRAV	:TRAVEL

7.0 SAFETY STATISTICS

MV. Ross Seal
Gulf Waters

Mr Ric Horn /Terry Crabb
MESA

Gulf Waters Seismic Programme

Vessel Track

0748	34 38.500	138 05.000
0900	34 38.502	138 12.092
1000	34 39.189	138 17.722
1100	34 42.660	138 15.419
1200	34 45.132	138 10.025
1300	34 47.975	138 05.042
1400	34 52.643	138 04.024
1500	34 56.981	138 06.707
1600	35 01.125	138 09.307
1700	35 05.451	138 12.020
1800	35 09.888	138 14.187
1900	3514.447	138 13.011
2000	35 17.167	138 07.602
2100	35 19.335	138 01.739
2200	35 12.413	137 56.094
2300	35 24.082	137 51.057
24 March 1994		
0000	35 28.601	137 50.908
0100	35 33.147	137 52.183
0200	35 37.890	137 53.514
0300	35 42.645	137 53.662
0400	35 39.731	137 49.332
0500	35 35.451	137 46.118
0600	35 30.997	137 43.720
0700	35 26.540	137 41.320
0800	35 22.087	137 38.930
0900	35 17.631	137 36.536
1000	35 13.178	137 33.656
1100	35 13.057	137 28.709
1200	35 16.772	137 24.876
1300	35 20.330	137 21.198
1400	35 23.729	137 17.671
1500	32 27.284	137 13.983
1600	35 30.991	137 10.131
1700	35 34.470	137 05.657
1800	35 32.449	137 00.435
1900	35 29.193	136 56.013
2000	35 25.799	136 51.412
2100	35 22.667	136 46.865

2200	35 19.436	136 42.097
2300	35 15.459	136 41.542
25 March 1994		
0000	35 10.865	136 44.324
0100	35 06.376	136 47.026
0200	35 02.281	136 49.735
0300	34 58.736	136 53.001
0400	34 55.311	136 56.473
0500	34 51.899	136 59.961
0600	34 49.978	137 04.962
0700	34 48.125	137 09.821
0800	34 44.544	137 13.011
0900	34 40.660	137 16.087
1000	34 35.809	137 16.717
1100	34 30.949	137 16.862
1200	34 25.898	137 17.391
1300	34 20.852	137 17.977
1400	34.15.402	137 18.619
1500		
1600	34 04.713	137 19.881
1700	33 59.862	137 21.752
1800	33 56.185	137 25.186
1900	33 52.298	137 27.925
2000	33 47.029	137 27.740
2100	33 42.372	137 27.484
2200	33 38.115	137 27.412
2300		
26 March 1994		
0000	33 29.601	137 27.363
0100	33 24.765	137 28.018
0200	33 19.524	137 28.709
0300	33 16.468	137 32.479
0400	33 20.652	137 34.887
0500	33 25.071	137 37.324
0600	33 29.772	137 38.692
0700	33 34.857	137 37.120
0800	33 40.163	137 36.220
0900	33 45.988	137 36.804
1000	33 49.406	137 32.166
1100	33 48.820	137 25.916
1200	33 48.030	137 19.916
1300	33 47.265	137 14.157
1400	33 46.711	137 08.854
1500	33 46.746	137 03.782
1600	33 47.957	136 58.747
1700	33 50.759	136 54.587
1800	33 54.132	136 50.385
1900	33 57.670	136 46.025
2000	34 01.468	136 41.288

2100	34 04.980	136 36.895
2200	34 09.220	136 35.511
2300	34 12.135	136 39.255

27 March 1994

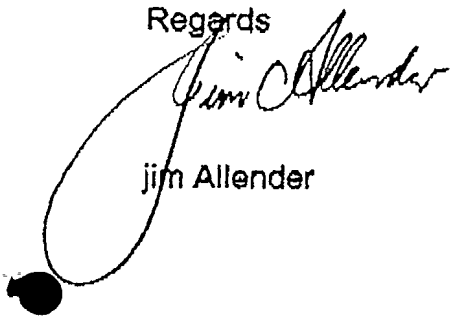
0000	34 14.375	136 44.452
0100	34 16.607	136 49.660
0200	34 18.936	136 55.087
0300	34 21.266	137 00.516
0400	34 23.489	137 05.740
0500	34 25.755	137 11.088
0600	34 29.093	137 14.935
0700	34 34.079	137 14.225
0800	34 34.944	137 08.091
0900	34 34.995	137 01.964
1000	34 35.037	136 55.587
1100	34 35.073	136 49.490
1200	34 35.104	136 43.187
1300	34 35.131	136 37.432
1400	34 35.154	136 32.292
1500	34 36.056	136 26.819
1600	34 37.332	136 21.384
1700	34 39.139	136 15.648
1800	34 42.401	136 12.544
1900	34 45.967	136 15.454
2000	34 45.431	136 20.820
2100	34 44.893	136 26.187
2200	34 44.347	136 31.552
2300	34 43.807	136 36.917

28 March 1994

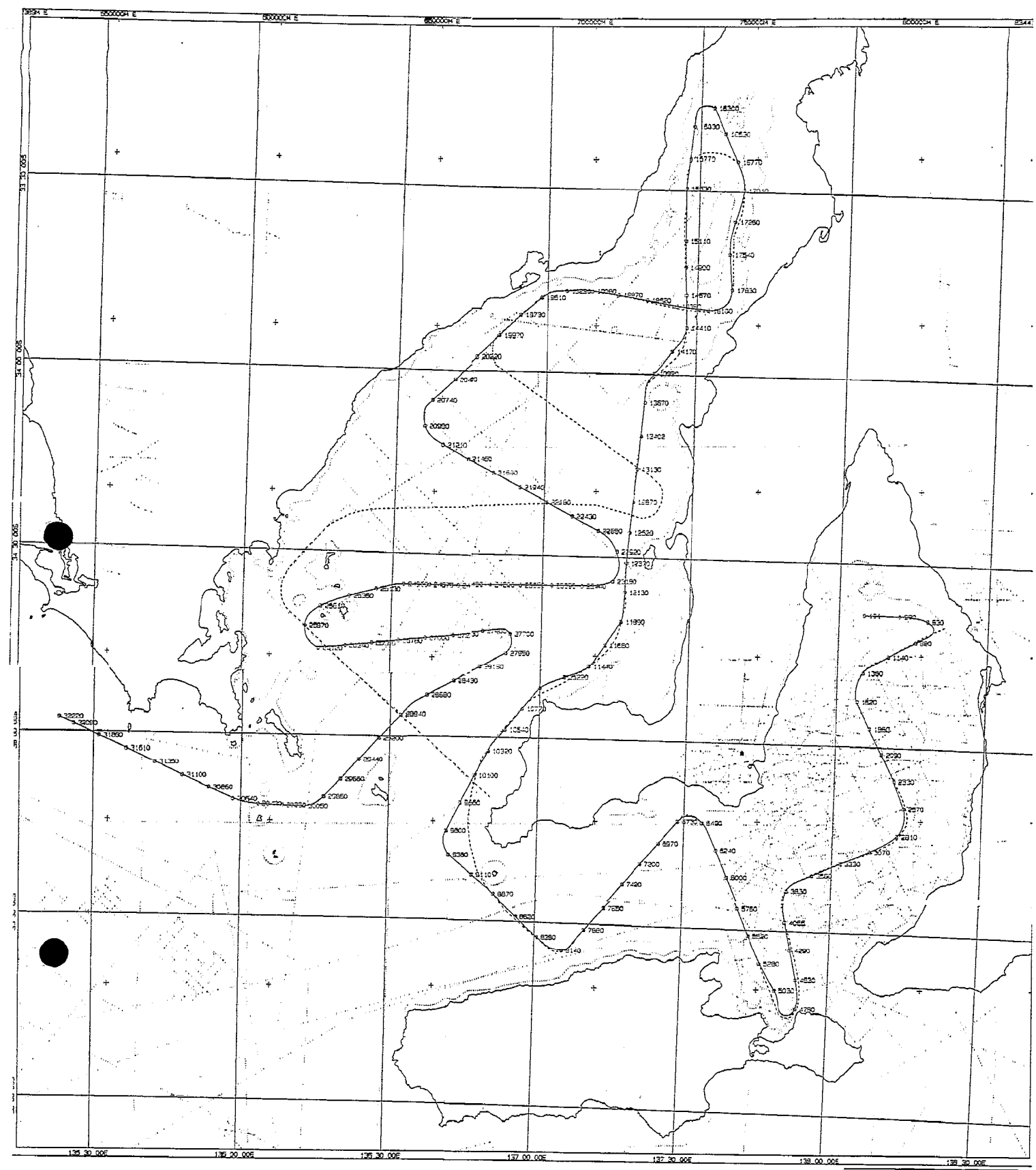
0000	34 43.224	136 42.524
0100	34 42.648	136 48.131
0200	34 43.069	136 53.688
0300	34 46.202	136 52.880
0400	34 48.555	136 47.715
0500	34 50.913	136 42.550
0600	34 53.362	136 37.164
0700	34 56.526	136 32.129
0800	35 00.415	136 27.804
0900	35 04.005	136 23.807
1000	35 07.298	136 20.143
1100	35 10.281	136 16.798
1200	35 11.841	136 12.819
1300	35 11.721	136 08.377
1400	35 11.589	136 03.440
1500	35 10.894	135 58.408
1600	35 09.007	135 53.446
1700	35 07.071	135 48.048
1800	35 04.975	135 42.431
1900	35 02.804	135 36.586

2000	35 00.644	135 31.029
2100	34 58.778	135 25.848
2133	34 57.687	135 22.932

Regards



jim Allender

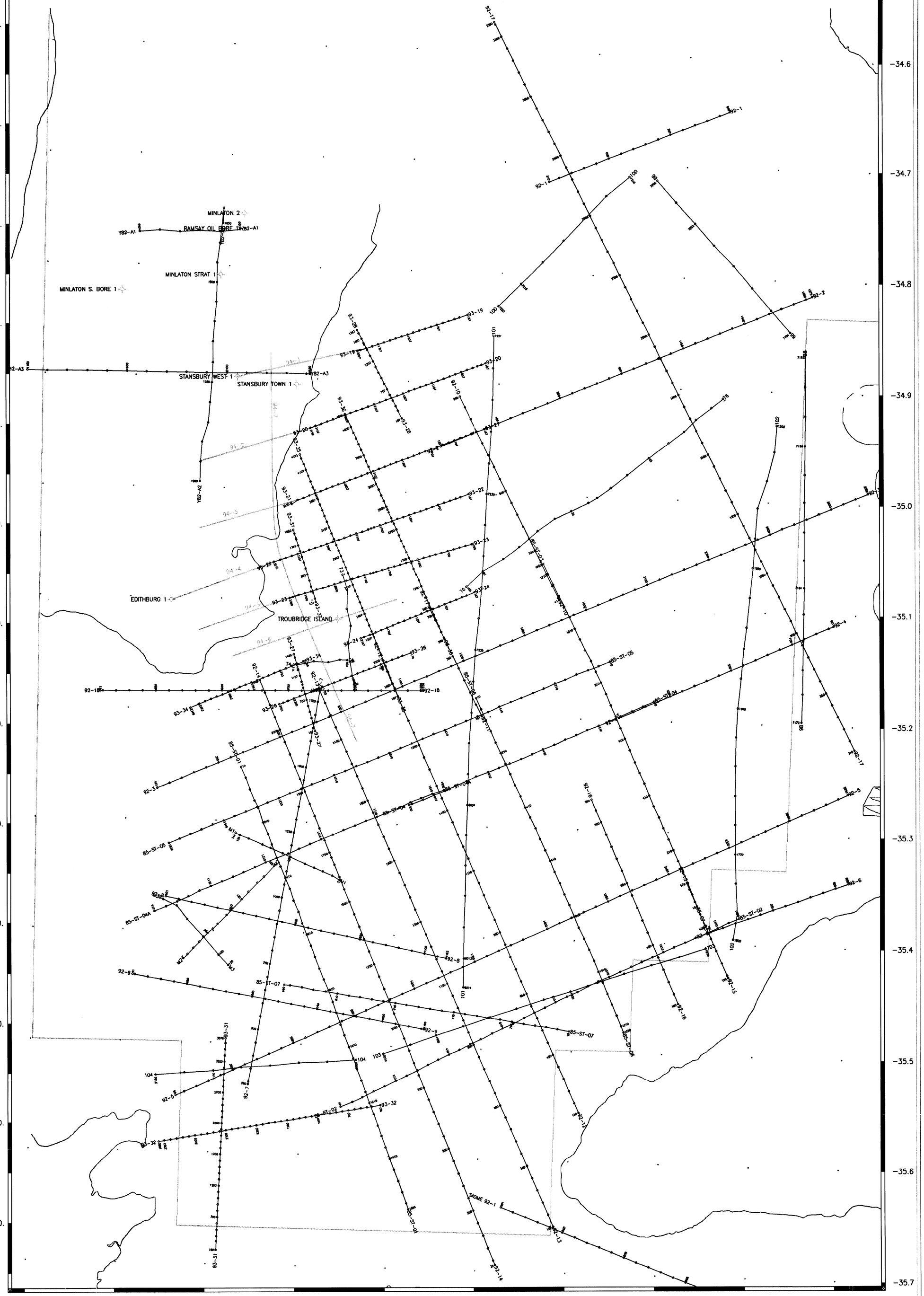

APPROXIMATE NO GO AREAS
SEISMIC LINES
PROPOSED TRACK SEISMIC BOAT
APPROXIMATE TRACK SEISMIC BOAT
SHOTPOINT
KILOMETRES
MILES
MINES AND ENERGY
SOUTH AUSTRALIA
GULF SEISMIC SURVEY
APPROXIMATE LINE ROUTE

730000. 740000. 750000. 760000. 770000. 780000. 790000. 800000. 810000.

6170000. 6160000. 6150000. 6140000. 6130000. 6120000. 6110000. 6100000. 6090000. 6080000. 6070000. 6060000. 6050000.

-34.6 -34.7 -34.8 -34.9 -35.0 -35.1 -35.2 -35.3 -35.4 -35.5 -35.6 -35.7

137.5 137.6 137.7 137.8 137.9 138.0 138.1 138.2 138.3 138.4



Scale 1:150000.

2. 0. 2. 4. 6. 8. 10. miles

10. 0. 10. 20. 30. 40. 50. kilometers

n

8764-1.

CANYON (AUSTRALIA) PTY LTD		
STANSBURY BASIN, SOUTH AUSTRALIA PEL-53 1994 PROPOSED SEISMIC PROGRAM		
BGF		Jan. 19, 1994
	1:150,000	