RKY9309002-DCR

1992 HUNTER SEISMIC SURVEY

FINAL REPORT

BASS BASIN

T/25P - S92A
T/RL1 - S92B

SAGASCO Resources Limited
September 1993

CONTENTS

Introduction

This combined report covers the marine seismic data acquisition and processing operation conducted by SAGASCO Resources Limited on behalf of Joint Venture partners in the exploration permit area T/25P and the retention licence area T/RL1 in the Bass Basin north of the Tasmanian coast (Figure 1). The survey operations began on 25 July and ended on 5 August 1992.

Joint Venture partners in the permits were as follows:

T/25P	SAGASCO Resources Limited	45%	(Operator)
	Ampolex Limited	25%	
	Bridge Oil Limited	20%	
	Gas and Fuel Exploration NL	10%	
T/RL1	SAGASCO Resources Limited	40%	(Operator)
	Gas and Fuel Exploration NL	30.553%	
	Galveston Mining Corporation Pty Ltd	14%	
	Cultus Petroleum NL	10.447%	
	Petroz NL	5%	

The field acquisition was supervised by Rick Romanik of Austral Geophysical Consultants and his report is attached as Appendix 1. The seismic acquisition tender was let to Western Geophysical Company and their vessel "MV Western Atlas". The final operations report is Appendix 2. The seismic data processing tender was let to Western Geophysical Company in Singapore and their report is Appendix 3.

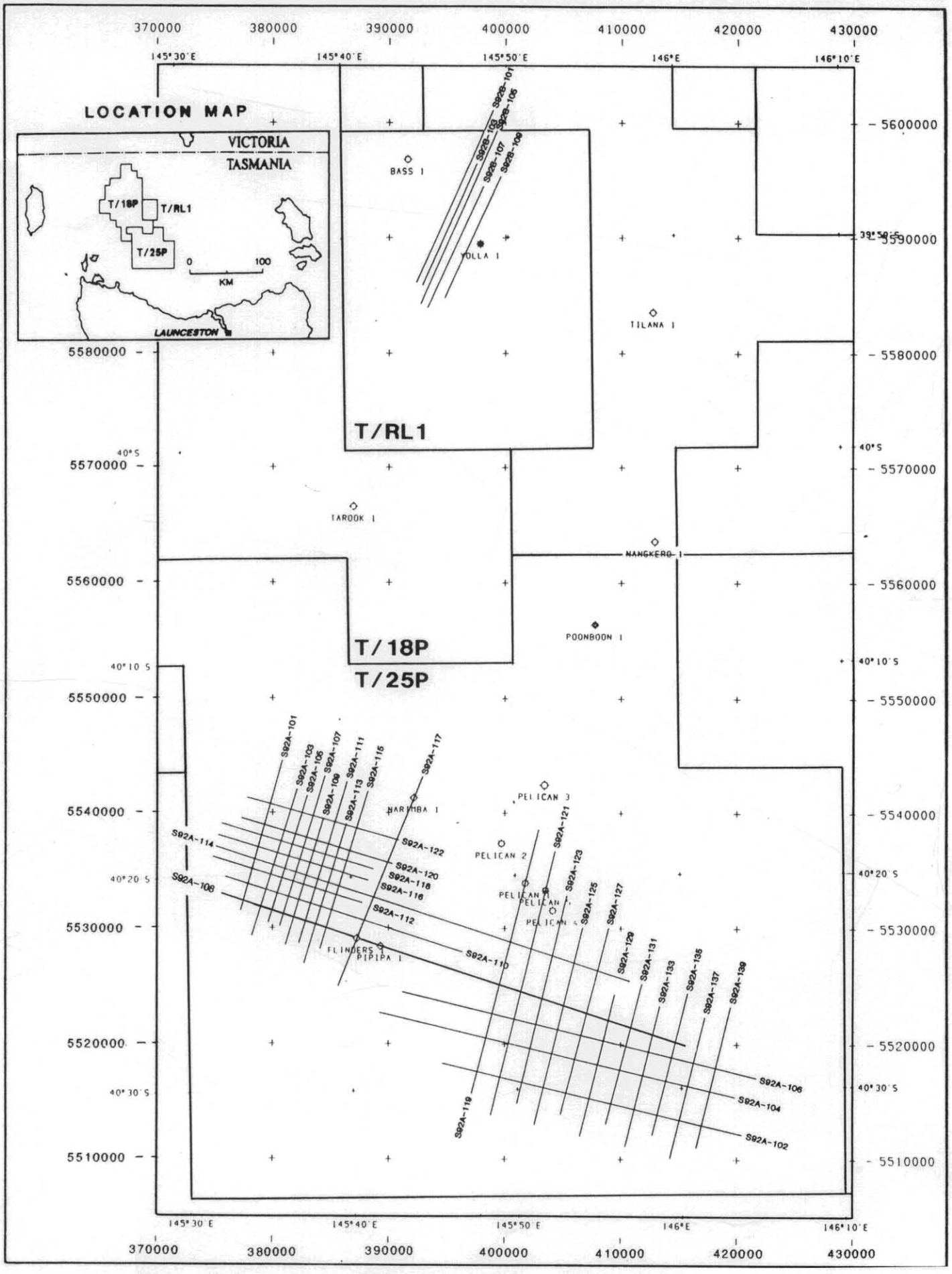
Interpretation of the data is being undertaken as part of follow on mapping projects and is being reported on separately.

Acquisition Summary

The Hunter Seismic Survey acquired 20 lines totalling 559.6 kilometres including tails in T/25P and the lines were designated S92A-101 to S92B-139 (including even numbered lines up to 122). Figure 2 and Enclosure 1 shows the line layout.

The Hunter Seismic Survey acquired 5 lines totalling 58.2 kilometres including tails in T/RL1 and the lines were designated S92B-101 to S92B-109 (odd numbered lines only). Figure 1 and Enclosure 2 shows the line layout.

2590004



5 cm

SAGASCO Resources Limited

BASS BASIN – TASMANIA

T/25P T/RL1 1992 HUNTER SEISMIC SURVEY

LOCATION MAP

AUTHOR: D.ROBERTS DRAWN: SMJ/AB DATE: Sep '93 SCALE: 1:250 000 No.: BAS-00 10250 FIG: 1

PH 235 3737 Fax 223 1851 Interstate prefix 08 International prefix 618 A.C.N 007 845 338

The acquisition parameters are summarised in the following table.

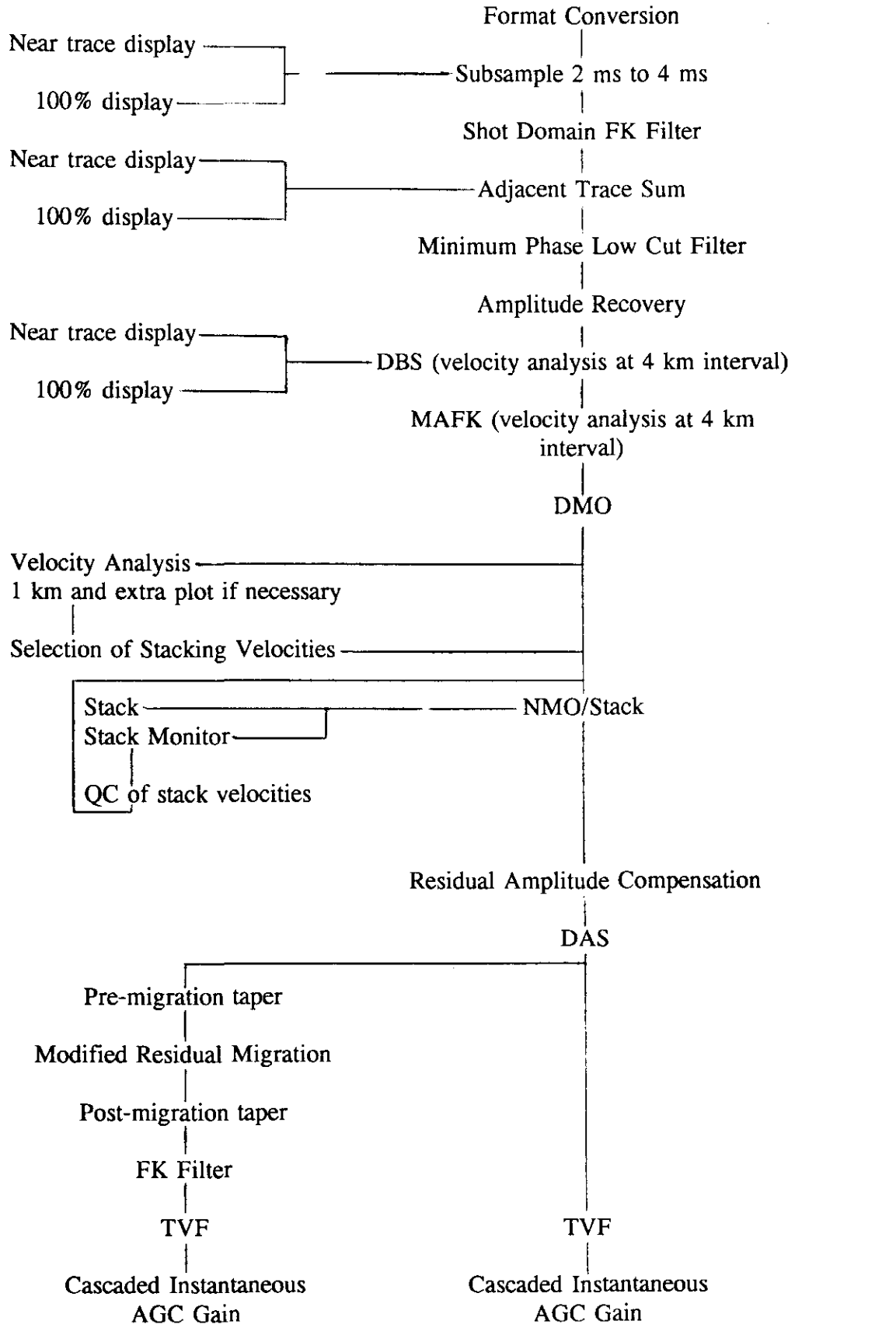
Hunter Seismic Survey Acquisition Parameters

SURVEY NAME	S92A/B Marine Seismic Survey
RECORDING INSTRUMENTS NO OF CHANNELS USED	LSR 16A 240
RECORD LENGTH SAMPLES RATE SP INTERVAL COVERAGE HIGH CUT FILTER LOW CUT FILTER RECORDING FORMAT TIME BREAK TAPE TRANSPORTS TAPES USED DENSITY	6 second 2 ms 26.66 metres 60 fold 188 Hz, Slope 155 dB/Octave 6 Hz, Slope 18 db/Octave SEG D 8015 Coincident with digital start LRS CTU IBM 3M Royal Guard 6250 bpi
STREAMER CABLE(S) ACTIVE LENGTH(S) GROUP LENGTH PHONES PER GROUP HYDROPHONE TYPE SENSITIVITY POLARITY OPERATING DEPTH DEPTH CONTROLLERS CABLE TRACKING ENERGY SOURCE ARRAY VOLUME ARRAY DEPTH OPERATING PRESSURE SYNCHRONISATION TIMING NO OF GUNS NO OF SUB-ARRAYS ARRAY LENGTH ARRAY WIDTH OFFSET C/L GUNS TO C/L FIRST GROUP	Singles LRS 16A Kiloseis 80 metres 13.33 metres 32 LRS 2510 Model WM2-36 53.4 uBar/uVolt SEG Normal 10 metres +/- 1.5 metres Syntron RCL -3 Syntron RCV-381 LRS 700 Low Pressure 5400 cu in 6 metres 1800 psi nominal LRS-100 Synchronisation +/- 1.5 ms 54 4 16 metres 44 metres 93.75 metres
PRIMARY NAVIGATION	Skyfix DGPS (Trimble)
NAVIGATION CONTROLLER NAVIGATION QC SYSTEM	Wisdom Wisdom
SPHEROID DATUM DATUM SHIFT FROM WGS84	Australian National AGD 88 X = 116.000 Y = 50.7000 Z = 144.8856
ECHO SOUNDER WATER VELOCITY	Simrad EA 1518 m/sec

Processing Summary

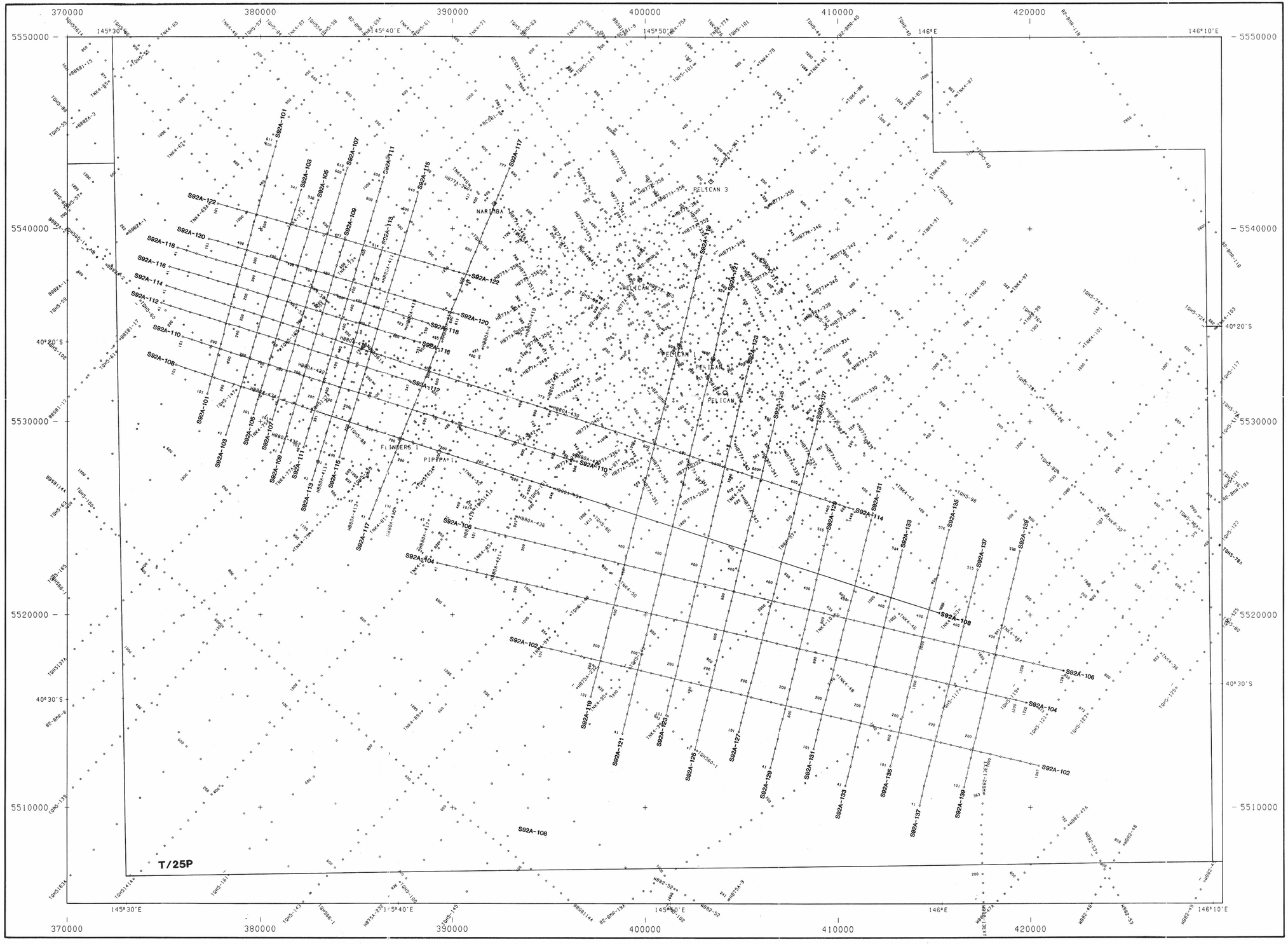
The data processing was conducted at Western Geophysical in Singapore using the following processing flow chart derived after a comprehensive testing process.

SAGASCO Resources Limited (Bass Basin) 1992 Data Processing Flowchart

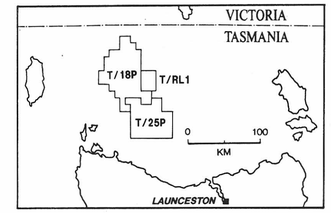


Final products from the processing centre are summarised below:

		Scale
Film Display	Migrated Stack	1:25,000
		1:50,000
	Final Stack	1:25,000
		1:50,000
SEGY Archive Tapes	Unfiltered Stacks	2 x Exabyte Tapes
	Unfiltered Migration	2 x Exabyte Tapes
	Filtered Stacks	2 x Exabyte Tapes
	Filtered Migration	2 x Exabyte Tapes



LOCATION MAP



5 cm

259008

BASS BASIN - TASMANIA

T/25P

HUNTER SEISMIC SURVEY

LINE LOCATION

OR264

AUTHOR: D.ROBERTS	DATE: Sep 93	PLAN No: BAS-00 10250	
DRAWN: SMJ/AB	DATUM:	CHECKED:	
SCALE: 1:100 000	CONTOUR INT:	ENCL. 1	

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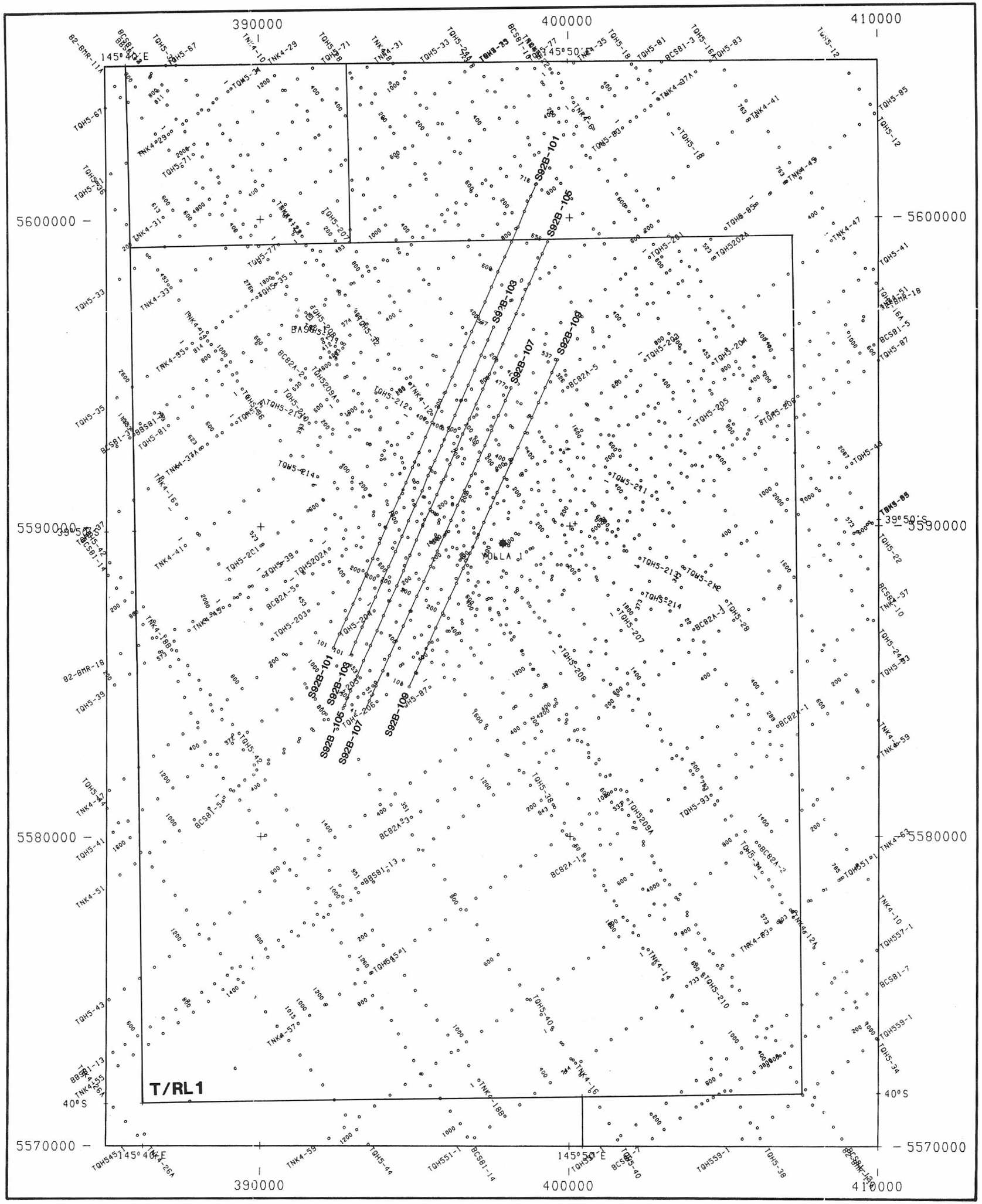
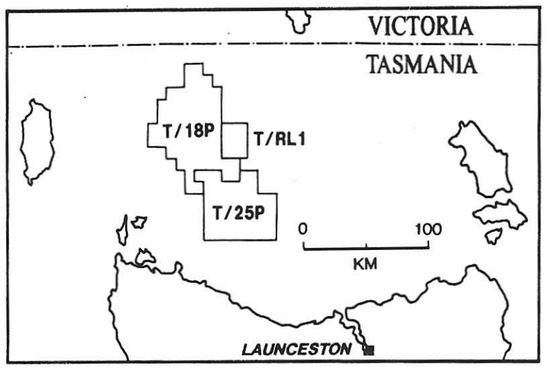


LOCATION MAP



5 cm

259009

BASS BASIN - TASMANIA

T/RL1

HUNTER SEISMIC SURVEY

LINE LOCATION

OR 264

AUTHOR: D.ROBERTS	DATE: Sep 93	PLAN No: BAS-00 10251	
DRAWN: SMJ/AB	DATUM:	CHECKED:	
SCALE: 1:100 000	CONTOUR INT:	ENCL.2	

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259010

FIELD SUPERVISION REPORT

FOR

SAGASCO RESOURCES LTD

2D SEISMIC SURVEY

S92A AND S92B

PERMIT AREAS: T/25P & T/RL1
BASS BASIN

DATES: JULY 25th-AUGUST 5th 1992

VESSEL : M.V. WESTERN ATLAS

SUPERVISOR: RICK ROMANIK

AUSTRAL GEOPHYSICAL CONSULTANTS PTY. LTD.

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LIST OF ILLUSTRATIONS

1 INTRODUCTION

1.1 GENERAL

This report covers the marine seismic data acquisition operation conducted by SAGASCO RESOURCES. LTD. in the exploration permit area T/25P/T/RL1 in the Bass Basin off the Tasmanian coast. The survey operations covered in this document began on the 25th of July and ended on the 5th of August 1992.

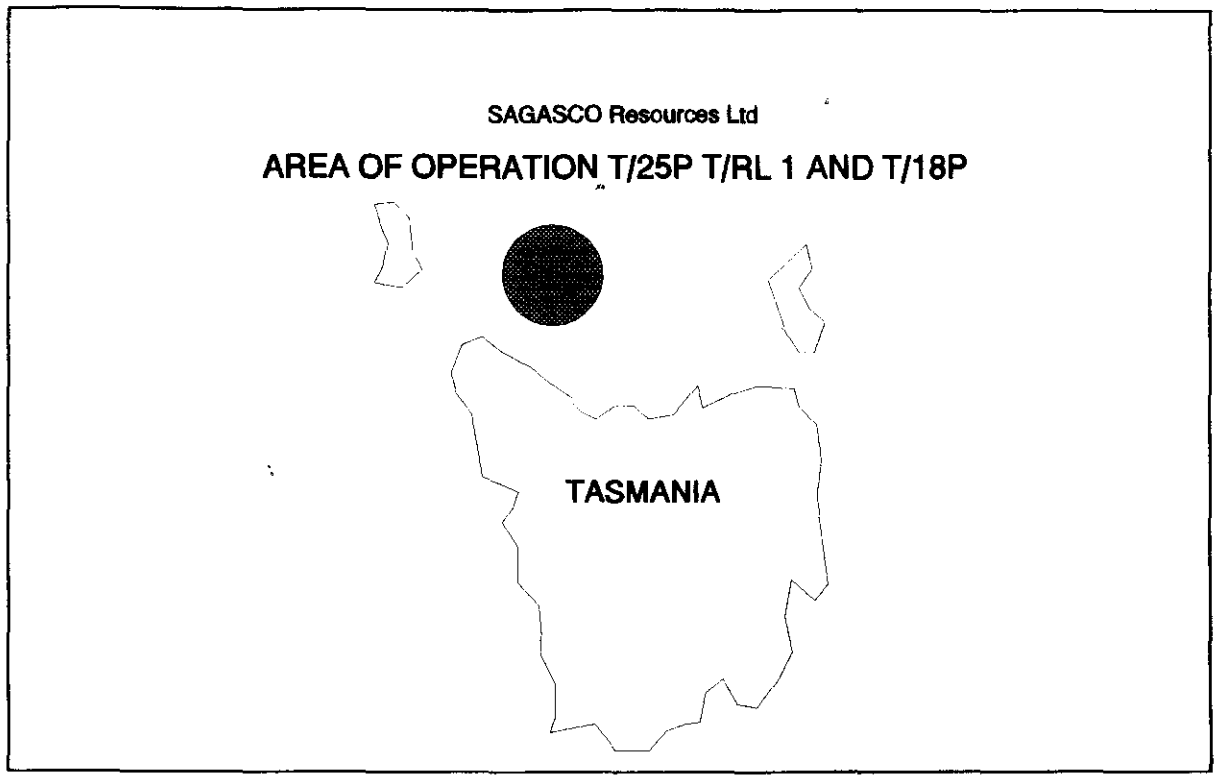


Figure 1.1 AREA OF OPERATIONS

The survey was titled the S92A-S92B MARINE SEISMIC SURVEY and encompassed 2D coverage of some 617.899 kilometres of the sea bed. The data collection technique involved the use of 240 group single streamers and 5400 cu.in. sources.

The contractor chosen to acquire the seismic data was Western Atlas International, the vessel the M.V. Western Atlas. This vessel was suitably equipped to carry out the survey having just completed a survey with a similar source/streamer configuration.

AUSTRAL GEOPHYSICAL CONSULTANTS PTY. LTD. was selected by the operating company to supervise and report on the data acquisition operations carried out by the contractor and to make decisions on data quality control during the course of the survey.

Racal Navigation (AUST.) PTY. LTD. provided SKYFIX along with the Trimble units for the Differential Global Position System. Syntron Inc manufactured the streamer compasses used for the survey.

1.2 PARAMETERS

SURVEY NAME	S92A/B Marine Seismic Survey
RECORDING INSTRUMENTS	LSR 16A
No OF CHANNELS USED	240
RECORD LENGTH	6 second
SAMPLE RATE	2 ms
SP INTERVAL	26.66 metres
COVERAGE	60 fold
HIGH CUT FILTER	188 Hz, Slope 155 dB/Octave
LOW CUT FILTER	6 Hz, Slope 18 db/Octave
RECORDING FORMAT	SEG D 8015
TIME BREAK	Coincident with digital start
TAPE TRANSPORTS	LRS CTU IBM
TAPES USED	3M Royal Guard
DENSITY	6250 bpi
STREAMER CABLE(S)	Singles LRS 16A Kiloseis
ACTIVE LENGTH(S)	80 meter
GROUP LENGTH	13.33 m
PHONES PER GROUP	32
HYDROPHONE TYPE	LRS 2510 Model WM2-36
SENSITIVITY	53.4 uBar/uVolt
POLARITY	SEG Normal
OPERATING DEPTH	10m +/-1.5m
DEPTH CONTROLLERS	Syntron RCL -3
CABLE TRACKING	Syntron RCV-381
ENERGY SOURCE	LRS 700 Low Pressure
ARRAY VOLUME	5400 cu in
ARRAY DEPTH	6 m
OPERATING PRESSURE	1800 psi nominal
SYNCHRONISATION	LRS-100 Synchronisation
TIMING	+/- 1.5 ms
NO OF GUNS	54
NO OF SUB-ARRAYS	4
ARRAY LENGTH	16m
ARRAY WIDTH	44m
OFFSET C/L GUNS TO C/L 1ST GRP	93.75m:
PRIMARY NAVIGATION	SYKFIX DGPS (Trimble)
NAVIGATION CONTROLLER	WISDOM
NAVIGATION QC SYSTEM	WISDOM
SPHEROID	Australian National
DATUM	AGD 88
DATUM SHIFT FROM WGS84	X = 116.0000 Y = 50.7000 Z = 144.8856
ECHO SOUNDER	SIMRAD EA
WATER VELOCITY	1518 m/sec

1.3 SURVEY STATISTICS

The Cumulative Survey Statistics for the S92A\B Survey excluding the 53.116 hours travel time from Duntroon Basin in the Great Australian Bight in South Australia.

CUMULATIVE SURVEY STATISTICS

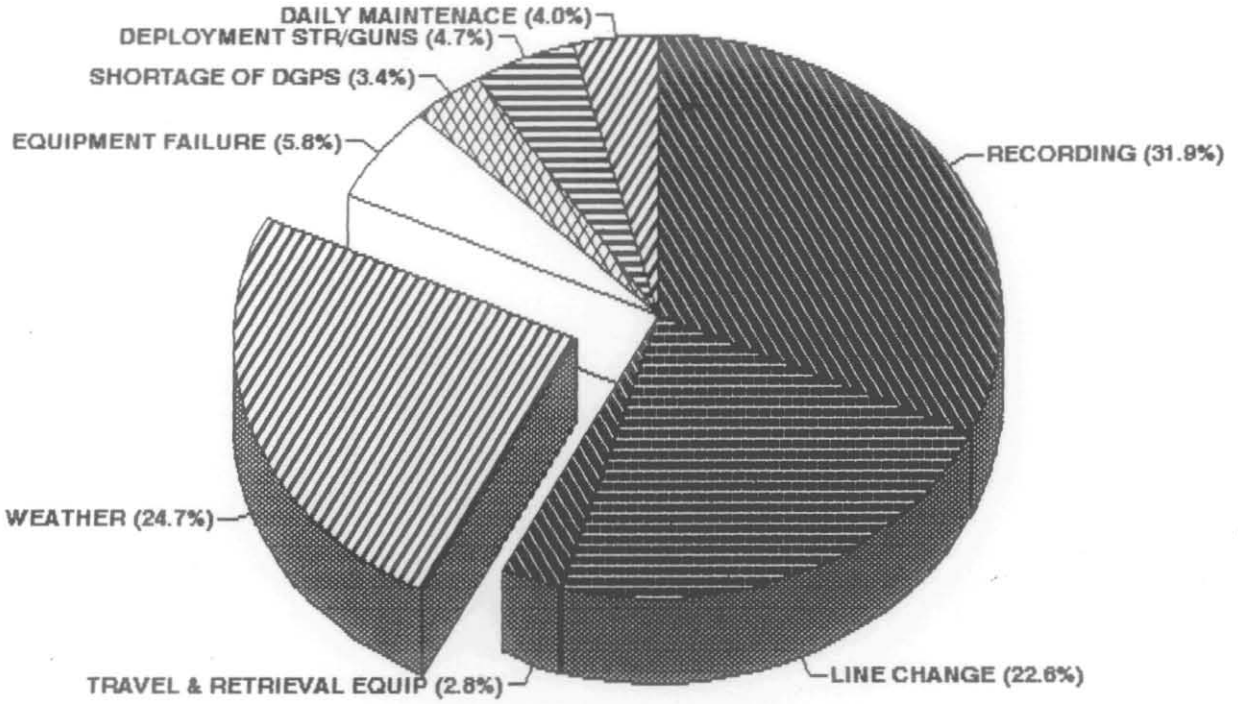
STATISTICS FOR PERIOD : 26/07/92 TO 04/08/92

ACTIVITY DESCRIPTION	HOURS	% OF TOTAL
RECORDING	69.236	31.89%
LINE CHANGE	49.148	22.64%
TRAVEL	4.650	2.14%
WEATHER DOWNTIME	53.633	24.71%
RECORDING INSTRUMENT FAILURE	2.667	1.23%
SOURCE FAILURE	1.367	.63%
COMPRESSOR FAILURE	3.966	1.83%
STREAMER FAILURE	4.650	2.14%
LACK OF SATELLITE COVERAGE	7.400	3.41%
STREAMER HANDLING	8.350	3.85%
1.5 HOURS/DAY FOR MAINTENANCE	8.717	4.02%
RETRIEVAL TRAILING EQUIPMENT	1.416	.65%
SOURCE HANDLING	1.883	.87%
TOTAL	217.083	

TOTAL CHARGEABLE KM	=	617.899
AVERAGE KM/DAY	=	68.313
TOTAL CHARGEABLE HRS	=	194.717
TOTAL WEATHER HOURS	=	53.633
TOTAL FIELD TAPES USED	=	308
TOTAL LINES	=	31
TOTAL T/25	=	559.649
TOTAL T/RL1	=	58.250

1.4 SURVEY STATISTICS GRAPH

S92A MARINE SURVEY T/25 AND T/RL1
JULY 26-AUGUST 04 1992 617.899 KMS



SUMMARY SURVEY STATATICS	
TOTAL KILOMETERS	617.90

RECORDING	69.24
LINE CHANGE	49.15
TRAVEL & RETRIEVAL	6.064
WEATHER	53.633
EQUIPMENT FAILURE	12.65
SHORTAGE OF DGPS	7.4
DEPLOYMENT STR/GU	10.23
DAILY MAINTENACE	8.72
TOTAL HOURS	217.08

2.0 SURVEY OPERATION

2.1 NARRATIVE DIARY

23 July

The Western Atlas completed the Duntroon contract, retrieved the trailing equipment at 07:40 hours and travelled to the Hunter S92A prospect area.

24 July

The vessel called in at Portland, Victoria to resupply and pick up Doug Roberts a senior geophysicist with SAGASCO Resource Ltd. It was at Portland for only 5.167 hours from 15:00 hours to 20:10 hours before departing for the prospect.

25 July

The vessel arrived at the prospect at 19:00 hours only to encounter weather conditions that prevented streamer deployment. The remainder of the day was allocated to weather downtime.

26 July

By 02:00 hours the weather had improved and streamer deployment commenced. The deployment and ballasting of all 20 sections took 8:35 hours.
Recording of the first line, S92A-117A, began after the first attempt was aborted at 14:54 hours due to ITB and source failure. Line S92A-115A was also recorded to give Western a total of 34.044 kilometres for the day.

27 July

Western collected data on line S92A-109 and S92A-105 before the streamer developed a power fault at 05:30 hours and the operation stopped. After rectifying the problem, the vessel circled and data collection commenced on line S92A-113A. The streamer fault was allocated to Western's account which was .967 hours. The sea state changed when finishing line S92A-107 at 13:30 hours and with large swells and strong winds approaching, all trailing equipment was retrieved and the vessel headed for fair seas. Total kilometres recorded for the day was 49.588.

28 July

The whole day was spent trying to keep the vessel on a level keel in swells of 3-3.5 metres and strong winds. Consequently, no recording took place.

29 July

The streamer and source array equipment was deployed at 06:35 hours after the swell had abated. Line S92A-111 was the first to be recorded followed by S92A-103. Unfortunately, line S92A-101 had to be terminated due to lack of satellite data and this caused a 2.467 hour delay while the vessel circled to come back

2.1 NARRATIVE DIARY

on line and another satellite was on streamer. A total of 41.643 kilometres was collected for the day.

30 July

A small cold front caused a 3.367 hour halt due to of swell noise. Despite this, the completion of five lines and the commence of one prior to midnight gave Western a daily total of 88.031 kilometres.
The DGPS was going to be unavailable for two hours so a long line change was initiated. This gave Western the opportunity to repair the streamer, however, everything was operational earlier than expected -in 1.750 hours - which meant that Western was on downtime for streamer repair.

31 July

On the first run-in to line S92A-108, while conducting the daily test, there was excessive distortion on all groups and Western was requested to halt operations. After retrieving the first few sections, the problem was located at section two which was filled with water. On the second run-in to the same line a compressor failed and only 2700 cubic inches of air could be maintained instead of 5400 cubic inches by contract. The decision was made to carry on and hope that the mechanic could fix the problem, but it was not until 7.7 kilometres had been completed that the compressor started and the air volume increased to 5400 cubic inches.
The line direction and recording program allowed Western to reshoot the first portion of the line with production air volume for a direct comparison. The total recording time lost for both streamer and compressor was 8.4 hours.

August 01

With an impressive 53.33% of the day spent recording, Western completed its most productive day since commencing. Total for the day was 121.304 kms which could have been higher if the air guns had not contributed 2.8 hours downtime. Six lines were collected with 34.72% of the remainder of the day taken up by line changes.

August 02

The weather moderated and the swell abated allowing Western to collect data with very good signal to noise ratio. The first two lines, S92A-133 and S92A-139, were uneventful, then after 4.43 kilometres of line S92A-129 the compressor failed and the line was terminated. The downtime of 2.282 hours was allocated between SAGASCO (1.5 hours) and WGC (.783 hours).
A line change at 13:55 hours had to be extended by .617 hours to allow Western to commence the new line S92A-125 with the required satellite coverage.
Seven lines were completed for a daily total of 98.430 kilometres.

2.1 NARRATIVE DIARY

August 03

Line S92A-119, the last line in permit T/25P, was completed at 05:37 hours. The cumulated total recording completed in T/25P was 41 lines and a total of 559.649 kilometres in 10.65 days. After 4.650 hours travel to permit T/R1, recording commenced at 10:16 hours on line S92B-109. Western was requested to conduct two experiments on the prospect so that a comparison of data quality could be evaluated for the next survey. A source comparison between 5400^{3} inch and 2700^{3} inch was conducted on the beginning of line S92B-190 T and a streamer depth comparison - 10 metre versus 6 metre -on line S92B-101 T. The S92B survey was completed at 23:40 hours after all five lines had been recorded.
The total kilometres for the Yolla program was 58.250 which was completed in 13.736 hours.

At 01:05 hours on August 4 the tail buoy was retrieved. The S92A and S92B Marine Survey was completed with a total of 617.899 kilometres collected in 9.014 days excluding the 57 hours travelling time from Duntroon Basin.

2.2 SUMMARY

The Western Atlas had just completed a seismic contract in the Duntroon Basin in the Great Australian Bight and travelled to Portland, Victoria. Doug Roberts a senior geophysicist with SAGASCO RESOURCE LTD boarded the vessel at 14:54 hours. The vessel resupplied and departed for the Hunter prospect at 20:10 hours. The following morning, the Safety man explained standard procedure to new personnel.

The vessel was in transit from 20:00 hours July 24 until 17:00 hours July 25. Arriving at the prospect, the decision was made not to deploy the streamer because of bad weather. During this time, the seismic crew prepared all of the seismic acquisition equipment and calibrated the Syntron depth controllers. The LRS recording instruments were calibrated for the new assign parameters for Hunter Survey S92A and S92B.

The weather improved enough for deployment of the streamer at 02:00 hours and was fully completed at 11:23 hours on July 26. The attempt to record the first line, S92-117, failed because of an excessive number of internal time breaks and because the source array was unable to sync with the LRS 16A.
After circling, the first record of the survey was taken on line S92A-117A at 14:54 hours. Line S92A-115A was also collected for a daily total of 34.044 kilometres. A small interruption of 3.066 hours occurred while recording line S92A-115 due to lack of satellite coverage and the poor DGPS data received by the WISDOM.

While collecting data on the first part of line S92A-105, the power line to the streamer developed a fault causing Western to halt recording. The weather deteriorated as the last two lines, S92A-113A and S92A-107 were gathered, even so, a daily total of 49.588 kilometres was achieved for July 27.

2.2 SUMMARY

The forecast was for gale force winds 30 to 40 knots and seas 3 to 5 metres for two days. Retrieval of the trailing equipment commenced at 13:30 hours as a safety measure and for quicker mobility. Western was on weather downtime all next day waiting for the weather to improve.

After midday, July 29, data commenced on line S92A-111. During recording of line S92A-101 later in the day, the Navigation was not keeping up with the vessel. After investigating the problem, line S92A 101 was halted.

The Trimble Navigation unit aboard the vessel indicated that there was sufficient satellite to continue the operation, but Western was not receiving the differential update for SV #26. After telexes were sent to Racal Navigation Perth and WGC Singapore, it was concluded that the Singapore office had not turned on the differential data for the satellite # 26.

This type of situation - the user not being informed of problems or changes to the satellite data - creates serious problems for the seismic marine vessel.

In the early morning of July 30, the wind velocity increased enough to halt operation because of excessive streamer noise above 30 ubars. Western had already completed lines S92A-122 and S92A-118 before the swell increased to 3.0 meters. After three hours the sea state abated and Western continued recording only to be interrupted by an extended line change due to lack of DGPS coverage. On the line change, Western investigated why the front end of the streamer was riding so low. When the streamer was aboard a section was found to have a small rupture that allowed water in. Replacement of the faulty section and redeployment of the streamer took 2.75 hours. Recording started on line S92A-112 at 22:42 hours and total kilometres for the day was 88.031.

After recording line S92A-112 on July 31, and while on the run-in to the next line, an excessively distorted signal appeared on the test. Western retrieved the front end of the streamer and found that section #2A needed to be replaced because of a leak in the data line. It took 5.18 hours to replace the section and redeploy the streamer and air guns.

During the run-in to record line S92A-108, the compressor failed to output 5400 cubic inches of air continuously for the required source array. The decision was made to record a portion of the line with 2700 cubic inch source array in the hope that the problem would be resolved quickly. The compressor was back on line at SP 332 and the remainder of the line was recorded with the correct volume of air.

Later in the day when collecting data on line S92A-114 the air compressor ceased to operate for no apparent reason and again stopped the operation. After all personnel - both seismic and marine - gathered to solve this mystery, the compressor restarted without anybody's assistance. The vessel circled and continued to record line S92A 114A.

2.2 SUMMARY

The recording line sequence meant that Western could reshoot line S92A-108 without losing any time. The reshoot should be merged into the portion of the line recorded with only 2700 cubic inches to make the line complete.The daily total, after 8.3 hours of downtime and 5.3 hours of line changes, was 86.912 kilometres.

Three days of very good production followed and Western successfully completed the S92A and S92B surveys. August 1st was Western's most productive day with 121.304 kms and six lines completed. The Hunter Survey ended on August 3rd at 05:37 hours with a total of 559.649 kilometres recorded. Travel to the Yolla T\RL1 program took 4.650 hours.

The extension of line S92B by 4.772 kilometres allowed Western to conduct another source comparison between 2700 inch and 5400 in. At the same time, Western assisted in a comparison between 6m and 10 metres streamer depths on line S92B T with 4.772 kilometres of data.
Hopefully the results will assist in the recording parameters for future contracts.

Data collection was complete after line S92B was recorded at 23:40 hours on August 3rd. A total of **617.899 kms** was collected in **217.083** hours for a daily average of **68.313** kilometres. **53.633** hours was allocated to weather downtime.

2.3 CONCLUSIONS AND RECOMMENDATIONS

The M.V. Western Atlas is an excellent vessel for the collection of seismic data. It is very well laid out for seismic equipment and has spacious working areas. Crew accommodation and amenities are of the highest standard.

Engineering wise, the vessel performed reliably and there was no lost time due to equipment failure. The safety standard was also very good.

Weather conditions were typical for winter in Bass Strait; a continual swell from the south west that varied in height from .5 to 3.5 metres.

The feather angle was generally less than 5°. On rare occasions it climbed as high as 9° but this was only for a short period when the vessel completed a sharp turn. It would then drop rapidly to more acceptable limits. The feather angle was measured by compasses attached to the cable. This worked effectively for most of the survey, but occasionally there was a problem with the compass line in the streamer.

Whenever this occurred, compass readings were invalid and the feather angle was taken by bearings to the tail buoy from the ship's radar.

2.3 CONCLUSIONS AND RECOMMENDATIONS

The cable configuration for the survey was 3200 metres in length and contained 240 channels at 13.33 metres interval. This was sufficient for the depth and resolution SAGASCO required.

The LRS-16A recording system was dependable; only 2.633 hours were lost due to instrument failure. The one problem with the LRS-16A is the occasional loss of records during recording. This occurs randomly and is caused by a lock-up of the array formatter. Generally, one file and two shot points are lost when the operator resets the system, it typically occurs once or maybe twice during a line.

This is an inherent problem of the LRS-16A system and is in the controlling software for the system. The problem is not being addressed by Western whose energies are now being channelled into the development of the new WGS-24 recording system. The LRS-16A is gradually being phased out in favour of this new system.

The gun arrays performed quite reliably. Although the arrays contributed only 1.883 hours of the downtime during the survey, the timing and quality control during production was acceptable. Nearly all of the downtime attributed to the guns was caused by intermittent timing problems. As there are no spare guns in this array once a gun is removed the array decrease in volume or the vessel has to circle and repair the problem.

The lack of spare guns meant that if a gun was lost during production, the array would drop by the volume of the gun disabled. This occurred on a number of occasions, but Western adhered to the agreed drop-out specification discussed verbally, and very rarely did more than one big gun in the array fail during production. Details of the gun dropouts are contained in the individual line logs in section 10.5 of the report.

The SKYFIX system operated very well throughout the survey except for the 7.400 hours downtime. In Australia the DGPS does not function on a continuous basis because of the lack of satellite pass over.

There was some concern about the stability of the signals received from the DGPS centre in Perth, especially as the navigators aboard were tracking a satellite which was not receiving differential updates but appeared as a usable vehicle. This particular satellite was required so that Western could work continuously. It did prove to be a problem and updates were inserted only after Doug Roberts telephoned a Racal supervisor to ask about the problem.

RAMESSES is a real-time processing unit that was used as a quality control tool. Real-time means keeping up with the speed of the recording system, i.e. the plotted stacked section is produced as the vessel moves along the line. RAMESSES reads data either on-line via the recording system through an

2.3 CONCLUSIONS AND RECOMMENDATIONS

interface unit, or offline via a tape drive. To enhance noise assessments, raw or processed data can be monitored real-time in either a time or frequency domain. The processed lines can be saved in SEGY format on open reels to enable further processing/plotting with third party equipment.

During this survey the final RAMESSES output data was appreciated as it verified that collected data would be acceptable and that the final section could be interpreted without data collection problems.

The seismic crew's knowledge and experience was just at an acceptable level. Problems arose following a request to conduct a parameter change and it is very difficult to conclude if this can accomplished without the crew having to confer with the senior coordinator.

The supervision of data collection is simplified if a workable contract between the contractor and the client is signed and agreed. The client must have enough marine experience to ensure that all specification requests can be carried out by contractor. The contract must be rigid, but also flexible enough to allow work to continue when the unexpected occurs.

A mutually agreed standard daily and monthly facsimile form which is signed and sent to the client at the end of each day may overcome any differences in the monthly invoice.

3 MISCELLANEOUS

3.1 WEATHER

Weather forecasts were received via coastal radio stations on a standard set of radio frequencies. In addition, a synoptic weather map was received on the ship's weather facsimile. This was supplied by the Bureau of Meteorology also on a standard set of facsimile radio frequencies.

Table #3.1 may assist in the interpretation of wind and sea conditions. Beaufort Scale values are shown in the tables that follow as well as on the Q.A. Line Logs.

3.1 WEATHER

TABLE 3.1 BEAUFORT WIND SCALE (For an effective height of 10 metres above sea level)

No	DESCRIPTION	MEAN WIND SPEED KNOTS	M/SEC	DEEP SEA CRITERION	PROBABLE MEAN WAVE HT. (M.)
0	Calm	<1	0-0.2	Sea like a mirror	-
1	Light-air	1-3	0.3-1.5	Ripples with appearance of scales are formed, but without foam crests	0.1
2	Light breeze	4-6	1.6-3.3	Small wavelets, still short but more pronounced, crests have a glassy appearance but do not break	0.2
3	Gentle breeze	7-10	3.4-5.4	Large wavelets, crests begin to break, foam of glassy appearance perhaps scattered white horses.	0.6
4	Moderate breeze	11-16	5.5-7.9	Small waves becoming longer, fairly frequent white horses	1
5	Fresh breeze	17-21	8.0-10.7	Moderate waves, taking a more pronounced long form, many white horses are formed (chance of spray)	2
6	Strong breeze	22-27	10.8-13.8	Large waves beginning to form, white foam crests more extensive everywhere (probably some spray)	3
7	Near gale	28-33	13.9-17.1	Sea heaps up and white foam from breaking waves begins to be blown in streaks along direction of wind	4
8	Gale	34-40	17.2-20.7	Moderately high waves of greater length, edges of crests begin to break into spindrift,foam is blown in well marked streaks along direction of the wind	5.5
9	Strong gale	41-47	20.8-24.4	High waves, dense streaks of foam along the direction of wind, crests of spray begin to topple, tumble and roll over, spray may effect visibility	7
10	Storm	48-55	24.5-28.4	Very high waves with long overhanging crests, resulting foam in great patches, is blown in dense white streaks along direction of wind, surface of sea takes a white appearance,tumbling of sea becomes heavy and shock like.	9
11	Violent storm	56-63	28.5-32.6	Exceptionally high waves (small and medium sized ships might be lost to view behind the waves) sea completely covered with long white patches of foam lying along direction of wind everywhere the edges of the wave crests are blown into froth, visibility affected	11.5
12	Hurricane	>63	>32.7	The air is filled with foam and spray, sea completely white with driven spray, visibility very seriously affected	14

3.1 CODES TO SEA, SWELL AND VISIBILITY STATES

STATE	SEA	SWELL	HEIGHT (metres)	VISIBILITY (nm)
0	Glassy	No swell	<1	<0.03
1	Rippled	Very slight	<1	0.03
2	Wavelets	Slight	<1	0.1
3	Slight	Low	<1	0.3
4	Moderate	Moderate	1-4	0.5
5	Rough	Fairly heavy	1-4	1.1
6	Very Rough	Heavy	1-4	2.2
7	High	Very heavy	>4	5.4
8	Very High	Phenomenal	>4	11
9	Phenomenal		>4	>27

3.1.1 CONTRACTUAL DISCUSSION

The parameters and requirements for this survey had been discussed in general terms with the SAGASCO Geophysicist, and Doug Roberts who was aboard the vessel for any contractual discussion.

23/07 Facsimile advising that the vessel is in transit to Portland Victoria with an E.T.A. of late P.M July 24

24/07 Facsimile with transit figures.

25/07 Daily Survey Progress Report facsimile to the Client.

26/07 First Daily Survey Progress Report with production included facsimile to the Client.

27/07 Daily Survey Progress Report facsimile to the Client.

28/07 Daily Survey Progress Report facsimile to the Client. Revised Daily Survey Report for July 27.

29/07 Daily Survey Progress Report facsimile to the Client.

30/07 Daily Survey Progress Report facsimile to the Client. Fire drill held and emergency mustered.

31/07 Daily Survey Progress Report facsimile to the Client. Monthly Survey Report and Safety Report facsimile to the Client. Pie graph for the month of July.

August

01/08 Daily Survey Progress Report facsimile to the Client.

02/08 Daily Survey Progress Report facsimile to the Client.

03/08 Daily Survey Progress Report facsimile to the Client.

04/07 Daily Survey Progress Report facsimile to the Client
Final Survey Progress Report facsimile to the Client.

3.1 WEATHER (Continued)

The following weather observations were entered in the ship's daily log by the master or mate at intervals of approximately four hours. The period covered is from first day of leaving Portland Victoria to the last day of production.

WEATHER DETAILS
DIR = WIND DIRECTION. WS = WIND SPEED IN KNOTS.
SEA STATE. C=CALM, S=SLIGHT, M=MODERATE, R=ROUGH, VR=VERY ROUGH, ER=EXTREMELY ROUGH (CYCLONIC)
SWELL = SWELL HEIGHT IN METRES. BARO = BAROMETER READING

DATE	TIME	DIR	WS	SEA	SWELL	BARO	TIME	DIR	WS	SEA	SWELL	BARO	TIME	DIR	WS	SEA	SWELL	BARO
25/7/92	0400	NW	25	R	2.0	1018	0800	SW	27	R	2.5	1012	1200	SW	35	R	2.5	1014
25/7/92	1600	SW	35	R	2.5	1014	2000	SW	35	R	2.5	1017	2400	SW	40	R	2.5	1023
26/7/92	0400	SW	15	M	1.0	1024	0800	WSW	11	M	1.5	1025	1200	WSW	15	M	1.0	1025
26/7/92	1600	NSW	15	M	1.0	1023	1600	WSW	27	M	1.0	1023	2400	WWN	18	M	1.0	1022
27/7/92	0400	ENE	18	M	1.0	1019	0800	NW	21	M/R	2.5	1019	1200	NW	25	M/R	2.0	1016
27/7/92	1600	NW	22	R	2.0	1012	2000	NE	27	R	2.5	1010	2400	NW	35	R	3.5	1007
28/7/92	0400	NW	35	VR	3.5	1004	0800	NW	35	VR	3.5	999	1200	NW	40	VR	3.5	997
28/7/92	1600	W	40	R	3.5	997	2000	WS	30	R	3.0	998	2400	WS	35	R	2.5	1003
29/7/92	0400	SW	15	M	1.5	1006	0800	SW	11	M	1.5	1008	1200	SW	12	M	1.5	1009
29/7/92	1600	WSW	15	M	1.5	1009	2000	WSW	15	M	2.0	1007	2400	WNW	16	M	1.5	1006
30/7/92	0400	NNW	15	M	1.5	1013	0800	NW	21	M/R	2.0	1001	1200	NW	25	M/R	2.0	1001
30/7/92	1600	NNW	18	M	2.0	1011	2000	S'Y	12	SLT	1.5	1014	2400	SW	12	M	1.5	1007
31/7/92	0400	SW	27	R	2.0	1011	0800	SW	23	R	2.0	1016	1200	SW	15	M	1.5	1016
31/7/92	1600	SW	15	M	1.5	1017	2000	WSW	18	M	1.5	1017	2400	W	18	M	1.5	1016
1/8/92	0400	WNW	18	M	1.5	1014	0800	WNW	21	M/R	1.5	1014	1200	NW	23	M	1.0	1013
1/8/92	1600	NW	22	R	2.0	1011	2000	NW	25	R	2.0	1011	2400	NW	25	R	2.0	1010
2/8/92	0400	WSW	16	M	2.0	1011	0800	SLY	20	M	1.5	1012	1200	SW	20	M	1.5	1012
2/8/92	1600	S'L	21	M/R	2.0	1012	2000	S'L	18	M	2.0	1015	2400	SW	20	M	1.5	1015
3/8/92	0400	W'L	10	S	1.0	1016	0800	WSW	14	S	1.0	1017	1200	WS	15	M	1.0	1017
3/8/92	1600	SW	18	M	1.0	1016	2000	SW	18	M	1.0	1018	2400	SW	18	M	1.0	1020
4/8/92	0400	SW	10	M	1.0	1020	0800	NE	10	S	.5	1022	1200	NE	12	S	0.5	1022
4/8/92	1600	SW	12	S	1.0	1021	2000	SW	15	M	0.5	1020	2400	SW	15	S	0.5	1020

3.2 TIDES

The tide table which follows is for Stanley, Tasmania, which is the nearest "Standard Port" to the survey area. Located at: 40° 46′ S, 145° 18′ E

Time Zone GMT +1000 hours.

DATE	TIME	HEIGHT (M)	TIME	HEIGHT (M)	TIME	HEIGHT (M)	TIME	HEIGHT (M)
26/7/92	0147	1.0	0744	3.3	1401	1.4	1937	3.5
27/7/92	0240	0.9	0840	3.3	1457	1.4	2032	3.5
28/7/92	0337	0.8	0939	3.4	1558	1.4	2133	3.6
29/7/92	0438	0.7	1040	3.4	1700	1.3	2238	3.6
30/7/92	0540	0.7	1143	3.5	1807	1.3	2346	3.6
31/7/92	0645	0.6	1245	3.6	1914	1.1		
1/8/92	0056	3.7	0747	0.6	1345	3.7	2017	0.9
2/8/92	0202	3.7	0846	0.6	1441	3.8	2115	0.7
3/8/92	0304	3.8	0942	0.6	1532	3.8	2209	0.6
4/8/92	0400	3.7	1034	0.8	1621	3.8	2300	0.6

3.3 NAVIGATION HAZARDS

There were no natural navigation hazards in the area. The water depth over the entire survey area was greater then 80 metres. The nearest hazard of any kind was King Island, 60 nautical miles to the west.

3.4 EXTERNAL INTERFERENCE

No external seismic interference was encountered during the survey. Shipping and fishing movements in the area were non existent.

3.5 COMMUNICATIONS

Depending on the vessel's location in the prospect, a cellular telephone was operational most of the time if the caller stood in an elevated position.

3.6 SCOUTING OPERATIONS

Scouting operations were not required for this survey. There were no natural hazards in the area that required scouting.

4 PERSONNEL

4.1 PERSONNEL LISTS

4.1.1 SEISMIC CREW

24 July 1992 - 4 August 1992

Coordinators	Dicky Chow John Chandler
Technician	Kevin Roberts Larry Đusolt
Observers	Ron Gregory Bret Smith Mark Donnisonr Johnny Meiars Edwin Simonton Jeff Probert
Gun Mechanics	Tommy Means Larry Carter Brandy Degenstein Simon Curran Tomas Spoto
Navigators	Paul Jacobs Chris Storey Tom Koleske Lyall Cowin Fergus Heeps Gary Geigenmiller
Compressor Mechanics	Dave Hill Galen Heib
RAMESSES Operators	Andrew Kleinert Andrew Stagg
SAGASCO Resources Representative	Doug Roberts
Austral Geophysical Consultant Pty Ltd	Rick Romanik

4.1.2 MARINE CREW

24 July 1992 -	4 August 1992
Captain	John Jones
Chief Mate	Bryan Paine
Second Mate	Max Saverimutto
Chief Engineer	Alan Cooney
Assistant Engineer	John Docherty
Assistant Engineer	Robert McKay
AB Seaman	Alan Robjohns
AB Seaman	Ian Harris
AB Seaman	Chris Edmonds
AB Seaman	Alistair Watson
Chief Cook	Terrence Langdon
Second Cook	Patrick Booth
Chief Steward	Thomas Daff
Assistant Steward	Andrew Richmond

4.1.3 ONSHORE SUPPORT

Supervisor	Ron Nickell
Party Managers	John Evans Tom Meyer

5.0 SURVEY VESSEL

5.1 VESSEL SPECIFICATIONS

M/V WESTERN ATLAS

Registry:	Panama
Home Port:	Panama
Owner:	Western Sea Services, Panama
Operator:	Western Geophysical, Houston
Call Sign:	HP 4862
Length Over All:	80.8 metres
Beam:	17.9 metres
Draft:	4.3 metres
Gross Tonnage:	1577 tonnes
Net Tonnage:	1017 tonnes
Displacement Full:	4394.65 tonnes
Displacement Light:	3000.0 tonnes
Built By:	Ulstein Shipyard, Norway
Converted By:	Bludworth Bond Shipyard, Galveston, Texas
Conversion Year:	1988
Main Engines:	2 X Nohab Polars 1300 HP.
Propellers:	2 x CPP variable pitch.
Bow Thruster:	2 x 800 HP, CPP electric driven.
Stern Thruster:	2 x 500 HP, CPP electric driven.
Generators:	Ships Power 2 x Nohab Diesel Driven, 1250 KW Nohab Alternators.
Fuel Capacity:	1300 tonnes
Fuel Consumption:	21,000 Litres/24 Hrs
Potable Water:	286,000 litres
Watermaker Capacity:	10 Tonnes/24 Hrs
Endurance:	40 days Full Power, 20% Reserve.
Speed:	11 Knots
Berths:	62 plus 3 in hospital.
Radars:	1 x Decca RMS 1200-C 1 x Kelvin Hughes HR 3000R
Ship's Fathometer:	Simrad EA 200
Auto Pilot:	Anschutz, Keil.
Direction Finder:	N/A
Helicopter Landing Site:	8.3 x 18.3 Metres.
Helicopter Rating:	S76, 212 and Super Puma Helicopters.

5.2 VESSEL SAFETY

5.2.1 FIREFIGHTING

Fire Protection:	2 Leader suits
Breathing Apparatus:	8 Fire suits 8 Scott Pack BA sets 7 spare bottles.
Fire Extinguishers:	45 x 4.5 Kg Dry Chemical Powder 2 x 50 Kg Dry Chemical Powder 6 x 9.0 Kg Dry Chemical Powder 14 x 5.5 Kg B.C.F. (Halon) 3 x 6.8 Kg CO2 2 x 9.0 Ltr Foam 2 x 9.0 Kg Lithx.
Fixed Halon Systems:	1180 Lbs. Engine Room. 2330 Lbs. Compressor Room. 794 Lbs. Recording Room. 33 Lbs. Incinerator Room. 33 Lbs. Paint Locker.
Fire Hoses:	18 Hoses with Jet Spray Nozzles. Valve keys available in all fire hose boxes.
Fire Hydrants:	13 On Deck. 5 in Machinery Spaces 2 Fire Monitors for Helideck.
Fire Axes:	6 Fire Axes throughout alley ways. 3 Fire Hatchets throughout alley ways.
Emergency Fire Pump:	Capacity = 25 CU Metres/Hour Make = Mohn Power = Petter Diesel Engine Location = Port Side Aft in Compressor Room.
Smoke/Fire Detectors:	1 in every Cabin, Alley way, Messroom and Work Areas.
Alarm Bells:	Throughout Vessel
Fire Blankets:	1 Outside Galley 1 Spare in Safety Equipment Locker
Fixed Foam Systems:	Cable Deck. Also on Helideck through Fire Monitors.

5.2.2 MAN OVERBOARD

Rescue Craft:	Inflatable Zodiac Mark V, Fitted with 55 HP Johnson Outboard Motor.
Life Rings:	19 Total, 5 with Light Floats, 3 with Smoke and Light, 3 with Smoke,and 8 with Buoyant Lines.
MOB Life Raft:	1 x Single man JON BUOY mounted on cable deck railings near cable reel controls.
Line Throwing Rocket:	4 x Schermuly Speed Line.
Search Lights:	2 x Vero Beam Search Lights Mounted on monkey island fore and aft.

5.2.3 EVACUATION

Life Boats:	2 X Jorgensen Vik A/S Fully enclosed life boats. 30 Man capacity each. Fully equipped with emergency supplies to SOLAS requirements.
Life Rafts:	2 x 10 Man Viking Inflatable Life Rafts 6 x 20 Man Viking Inflatable Life Rafts All fitted with hydrostatic release
Emergency Position	:8 One In each life raft, 2 in wheelhouse.
Indicating Radio:	2 on Bridge Deck Aft, 2 One in Each Life Beacons.(EPIRB's) Boat. 1 on Monkey Island with Hydrostatic Release.
Life Jackets:Total =	121. 59 @ 1 per Berth plus 50 additional in float free boxes with Hydrostatic Release. 3 in Wheelhouse, 3 in Engine Control Room, 3 in Compressor Room, 3 in Steering Flat.
Aldis Lamp:	1 x 12 VDC plug in. Survival/Immersion
Suits:	1 x Immersion Suit. 9 x Mustang Cold Weather Suits
Emergency Radio:	2 x Skanti TRP (1 in each lifeboat).
Pyrotechnics:	12 x Red Parachute Flares in Wheelhouse.
Emergency Lighting:	24 VDC System in Throughout Vessel.

5.2.4 GENERAL SAFETY EQUIPMENT

Safety Boots:	Issued to all seismic crew members,Mandatory use in all work areas.
Work Life Vests:	Available and mandatory on all back deck work areas and on gun deck. Vests are 6 stowed on back deck. Also used in rescue boat and workboat.
Safety	Harnesses:Available as required. Mandatory when working above deck or outside safety rails.
Hard Hats:	Issued to all crew members. Mandatory when using crane or working on gundeck.
Ear Protectors:	Available where applicable. Mandatory on back deck when airgun warning light is on or when air pressure is being released. Also in machinery spaces.
Eye Protection:	Available where applicable. Mandatory when using cutting tools or powertools

5.2.5 FIRST AID

First Aid Boxes:	5 Total on board. 1 x Main First Aid Locker in Hospital. 1 in Wheel House. 1 on Every Deck in Accommodation areas. 1 Each in Gun Workshop,Recording Room, and Recreation Room.
Stretchers:	3 total on board. 1 in Hospital, 1 in Breezeway near Recording Room, 1 on Gun Deck near Galley.
Resuscitation Unit:	1 in Hospita 12 x Trauma Packs in Wheelhouse.

5.2.6 SAFETY MEETINGS

A monthly safety meeting was not held during the survey because it had been conducted on the previous contract.

5.2.7 ACCIDENT REPORTS

There were no accidents or LTIs reported during the course of the survey.

5.2.8 SAFETY DRILLS

WESTERN GEOPHYSICAL
WESTERN ATLAS
INTERNATIONAL

FROM: MASTER M/V: WESTERN ATLAS DATE: 30 JULY 1992
TO: SAFETY DEPARTMENT

DATE HELD: 30 JULY 1992

TYPE OF DRILL		GENERAL EMERGENCY	
X	FIRE	X	ABANDON SHIP
X	ABANDON SHIP		GROUNDING
	MAN OVERBOARD		FLOODING AND FOUNDERING
			INJURY EVACUATION

EVALUATION

A. RESPONSE TIME OF CREW TO STATIONS: X ADEQUATE
INADEQUATE

COMMENTS: N/A

B. CREW PERFORMANCE: X ADEQUATE INADEQUATE

1. PERSONNEL AWARE OF STATION BILL ASSIGNMENTS:	X YES	NO
2. PERSONNEL KNOWLEDGEABLE OF EQUIPMENT USAGE TO WHICH ASSIGNED:	X YES	NO
3. CORRECT PROCEDURES FOLLOWED:	X YES	NO

COMMENTS: PORT LIFEBOAT LAUNCHED AND RUN/STBD LIFEBOAT EMB.DK. ALL EQUIPMENT TESTED FOR ABS SURVEYOR.

C. PROBLEMS/EQUIPMENT FAILURE:(LIST): NO PROBLEMS ENCOUNTERED DAVIT FALLS END FOR ENDED AS PER REGULATIONS.

D. DRILL CONDUCTED AS "WALK-THROUGH"?	X YES	NO
DRILL CONDUCTED AS "ON-THE-JOB" INSTRUCTION BY MASTER?	X YES	NO

RECOMMENDATIONS: VARIOUS SUGGESTIONS MADE AS TO THE USE OF CREW NOT ENGAGED IN FIRE DRILL DUTIES. THIS IS TO BE ADDRESSES IN GREATER DETAIL AT SAFETY MEETING.

DRILL CONDUCTED/OBSERVED BY: J.C.JONES/B. BACHSHALL
TITLE: MASTER/ABS SURVEYOR

6 LRS-16A SEISMIC RECORDING SYSTEM

6.1 ARRAY DATA PROCESSOR AND RECORDING

NUMBER OF INPUT DATA CHANNELS:	480 max.
RECORDING FORMAT:	SEG-D demultiplexed format 2 byte, quaternary format Code 8024 (1s complement)
CABLE SAMPLE INTERVAL:	1 mSec
RECORDING SAMPLE RATES:	1,2 or 4 mSec
HIGH CUT(Antialias Filters):	1 mSec - 3dB @ 375 Hz 156 dB/oct 2 mSec - 3dB @ 188 Hz 156 dB/oct 2 mSec - 3dB @ 128 Hz 120 dB/oct 4 mSec - 3dB @ 87 Hz 132 dB/oct
LOW CUT FILTERS:	6 Hz - 12, 18 OR 24 dB/oct 12 Hz - 12, 18 OR 24 dB/oct
No. OF ARRAY OUTPUT CHANNELS:	240 max. - 1 min.
MAXIMUM RECORD LENGTH: (240 channel non-overlapped)	1 mSec - 12 sec. 2 mSec - 24 sec. 4 mSec - 48 sec.

6.2 LRS-16A DESCRIPTION

The main function of the LRS-16A is to acquire seismic reflection data from the LRS-16 digital telemetry streamer and record raw and array data. Raw data are pipelined into the Raw Data Processor (RDP) unit through the cable controller. The test signal and format converter board converts the incoming serial data to IEEE 32 bit floating point format. The error card checks the data for parity, spikes, sync and bypass errors and corrects all erroneous data bits using a cubic-fit polynomial equation.

Due to the transmission sequence of telemetered data, some channels from each streamer module are received with sampling skew. The skew correct card adjusts the data scans to correct for negative skew. The data are then passed to the Low-Cut filter card.

The low cut filter card applies one of six selectable filters from a software Filter Menu. Options include low-cuts out, 6 or 12 hertz with either a 12, 18 or 24 dB/octave slope. For this survey the 6 Hz 18 dB/oct low-cut filter was used. The low-cut filter card also maps the data into channel sequential format for transfer to the Array Data Processor (ADP). The raw data continue through the RDP pipeline to the Cable Depth Monitor (CDM) interface card.

6.2 LRS-16A DESCRIPTION (Continued)

The CDM I/F card strips the depth and waterbreak data from the incoming flow. The CDM I/F transfers the depth data to the CDM. The first four water break channels are picked to determine the peak waterbreak (first breaks) and continue in the processing stream with the seismic data. The peak pick times are passed to the RDP for recording in the header. The seismic data is split into odd and even channels by two high cut filter cards, the High Cut Master handling the odds whilst the High-Cut slave takes care of the even channels.

When the 1 mSec sample rate is selected on the LRS-16A the High-Cut, antialias filter is selected automatically to 375 Hz 156 dB/octave. The selection of the 2 mSec sample rate gives the user the choice of two High-Cut filters. One filter is 188 Hz with a 156 dB/octave slope. The second filter is 128 Hz with a 120 dB/octave slope. Similarly, the selection of 4 mSec sample rate data will initiate the use of an 87 Hz, 132 dB/octave filter. This feature limits the flexibility of High-Cut filter selection to those preset values and this may occasionally conflict with client preference.

After filtering, the raw data are converted from 32 bit floating point format to SEG-D 16 bit hexadecimal format and are passed to the Recording System Interface (RSI) with the headers, where they are mapped into bulk memory. The RSI controls data transfer from memory to tape via an IBM tape formatter.

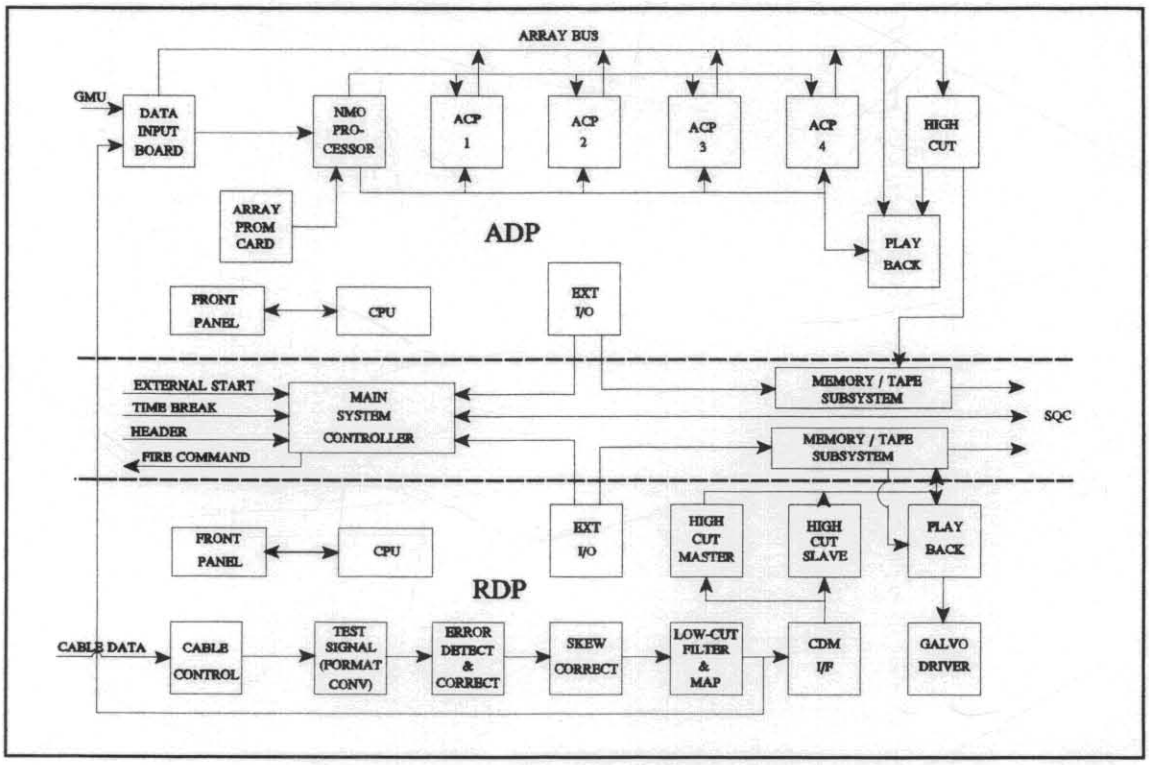


FIG 6.1 LRS-16A BLOCK DIAGRAM

6.2 LRS-16A DESCRIPTION (Continued)

If demultiplexed seismic data is required the raw data must pass through the ADP. The Array Data Processor memory and tape subsystem consists of a bulk memory unit controlled by the RSI and two IBM tape cartridge units controlled by the IBM tape formatter. Seismic data coming from the high-cut filter boards are passed to the bulk memory. The data leaving the ADP are still in multiplexed format but, under control of the RSI the data are mapped into bulk memory so they can be read out in demultiplexed (trace sequential) format. Once a complete file image is constructed in memory the RSI begins to write the data to tape in SEG-D 16 bit quaternary exponent demultiplexed format, SEG-D code 8024. The use of demultiplexed recording limits the maximum number of channels recorded to 240.

Demultiplexed data was recorded for the survey.

6.3 RECORDING INSTRUMENT QUALITY CONTROL

6.3.1 INSTRUMENT TESTS

The following tests were run on a daily basis:

Dynamic Range Determination (-3, -9 dB)
Step Function and 10 ubar signal test

Semi-monthly tests included the above plus a pattern test and a beam steering test

6.3.2 ON LINE QUALITY CONTROL

During line shooting the following QC tools were available:

1. Incoming data from the streamer were continuously checked for telemetry errors on the Cable Error Monitor of the LRS-16A. Error counts were accumulated in the CEM computer and displayed on a colour graph at the end of each record. The graph showed data transmission status for the entire 6-sec record at 0.25 sec intervals. The graph displayed errors by type, streamer module and channel number. A histogram chart (updated every record) of average errors for each module was also displayed

2. The system monitored byte counts of the data that were being recorded on tape, and printed out error messages or hexadecimal dumps of selected data.

3. The raw groups were displayed for each shot on the cable depth display monitor.

6.3.2 ON LINE QUALITY CONTROL (Continued)

4. Read after write data were output to a seismic QC system for analysis. A shot plot was generated by the system on an OYO plotter. All channels were plotted with operator selected programmed gain. Streamer noise was recorded and analysed at the start and end of each line. As well as the channel plot, a graph plot of noise levels for each group were produced on the plotter. This noise analysis could be executed at any time during a line by selecting an appropriate time window and a numerical analysis printed out on the plotter.

5. A -9dB plot was produced at the start and end of each line to demonstrate the DRD of the cables was good.

6. A single channel profile plot of channel 2 of the streamer was made on an electrostatic servo-profile recorder.

7. A printout of the external header was made every 10th shotpoint and whenever a gun misfire occurred. A second printout showing the Field Shotpoint Identification number, the shotpoint, file number, and timebreak time was also logged for every shotpoint.

7 STREAMER CABLE

7.1 STREAMER SPECIFICATIONS

STREAMER TYPE	: LRS 16A Digital Telemetry
STREAMER LENGTH	: 4000 metres
No OF GROUPS	: 300
GROUP INTERVAL	: 13.33 metres
GROUP LENGTH	: 10.55 metres
No HYDROPHONES PER GROUP	: 6
HYDROPHONE TYPE	: LRS-2510 Acceleration cancelling
HYDROPHONE MODEL	: WM2-036
CABLE SENSITIVITY	: 27 uVolts/uBar
DEPTH TRANSDUCERS	: 40 (20 active)
WATERBREAK DETECTORS	: 40 in cable (25 active -only first four active recorded to raw tapes)
INPUT NOISE, rms	: 10.6 μV
MAX. INPUT SIGNAL, rms	: 505 μV : 18.7 mbar
PRE-AMP GAIN, fixed seismic channels waterbreak channel	 : 22.9 dB : 7.4 dB
RESOLUTION	: 12 bits (11 plus sign)
A/D LINEARITY	: 0.05% +/- 1/2 LSB, 0.1%FS
GAIN RANGING	: 60 dB in 6-dB steps (IFP Amplifier)
ACCURACY OF GAIN RANGING	: +/- 0.05% @ min. gain (step to step)
ABSOLUTE ACCURACY	: +/- 2%
CHANNEL/CHANNEL ACCURACY	: +/- 5% (includes hydrophone groups)
HIGH-CUT FILTER	: -3 dB @ 350 Hz 72dB/oct.
LOW-CUT FILTER	: -3 dB @ 6 OR 12 Hz : 18 or 24 dB/oct. slope (includes shipboard digital low-cut)
PHASE DUPLICATION	: +/- 200 μSec @ 31.25 Hz (channel to channel)

7.2 STREAMER DESCRIPTION

The LRS-16A digital streamer, which is an integral part of the LRS-16A system, was used as the energy detection medium. Acquisition of seismic data is done by streamer modules which are controlled by the LRS-16A shipboard electronics. Analogue signals received by the hydrophone groups are input to the modules where they are sampled, digitised and telemetered to the boat.

Between the vessel and the first active section was 250m of steel armoured lead-in and an 80-metre stretch section. The stretch section were inserted between the lead-in and the first active sections to attenuate front-end tow noise. Ahead of the stretch section was a data/command repeater module.

A mini section was installed between the stretch section and the first active section. This mini section contained the SSTS transponder used for positioning the head of the cable.

The active portion of the streamer was made up of forty 80-metre sections; 20 streamer modules and 20 command repeater modules connected alternately to the 40 sections.

Sections connected seaside of a streamer module were called 'A' sections. The sections connected seaside of a repeater module were called 'B' sections. The last active section was connected to a tail end stretch section through a terminator module.

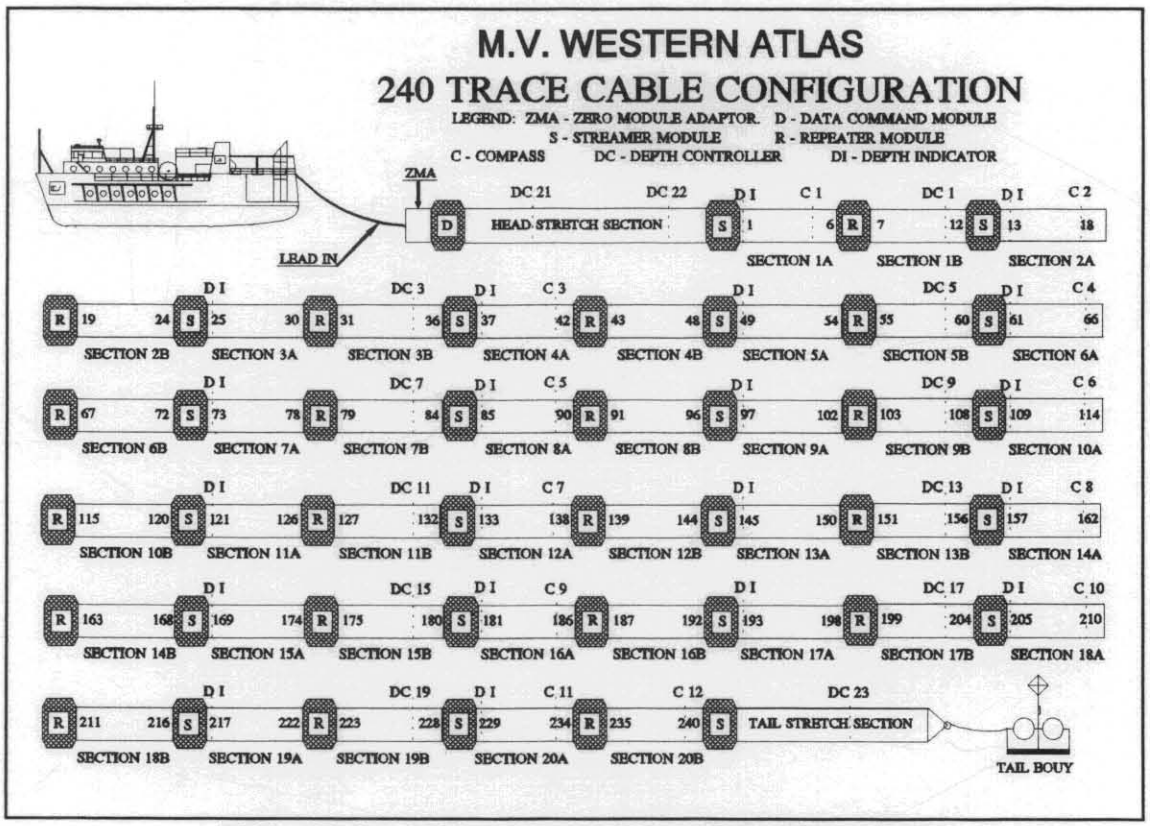


FIG. 7.1 LRS-16A CABLE CONFIGURATION

7.2 STREAMER DESCRIPTION (Continued)

Each active section contained 36 LRS-2510 hydrophones, model WM2-036. Groups of six hydrophones make up one receiver group, or trace. Trace interval is 13.33 metres centre to centre spaced linearly over the length of each active section.

The cable on the Western Atlas is made up of the LRS-16A split group sections. These sections were constructed in an attempt to reduce noise generated by the protective covering over the electronic modules by spreading the sixth group in a section across the boundary of two adjoining sections. To achieve this the active hydrophones in each section were moved back by the distance of three phones. This split the last group in any given section between the last three phones in the leading section and the first three phones in the trailing section. Noise reduction is achieved by averaging the group between three normally quite phones (in the tail of a section) and three phones generally affected by boot noise (at the head of the following section).

By shifting the groups in a section down the length of the cable by three phones the first three phones in the first active section are not used. This cable configuration requires that another three phones are installed at the tail of the cable. This is achieved by installing an active drag/stretch section at the tail of the cable. This active drag/stretch section contains the necessary three phones to complete the last group in the cable. Fig 7.2 illustrates the layout of the hydrophones in the cable.

FIG. 7.2 LRS-16A SPLIT GROUP HYDROPHONE CONFIGURATION

7.2 STREAMER DESCRIPTION (Continued)

The LRS-2510 hydrophone is a dual piezo electric device. There are two pressure sensing elements in the hydrophone thus cancelling acceleration effects caused by motion of the cable through the water.

Each active section contains a depth transducer (LRS HPDT 207-L) installed about one metre from the head of the section. A waterbreak detector (LRS-2510 hydrophone, model WMH-036) is installed at the centre of the section. The depth transducers in all 'A' sections were active, giving 25 in total for each streamer. Only the peak pick times of the first four waterbreak detectors are recorded to the raw data multiplexed tape but not to the array data demultiplexed tape.

There were ten depth controllers installed on the cable to assist in maintaining cable balance. The depth controllers were attached to collars clamped around the cable and are attached to a specific location in the section. This location is isolated from the hydrophone groups by five spacers and two oil blocks to prevent bird generated noise reaching the hydrophones. The depth controllers used were Syntron model RCL-3, which are remotely controlled from the instrument room.

Five Syntron model RCU-831 compasses were attached to the cable in a manner similar to the depth controllers. Two compasses were installed at the head of the cable, one in the centre of the cable and two on the tail of the cable. The data from the compasses were used to determine the feather angle of the cable.

7.3 STREAMER QUALITY CONTROL

The following quality control aids on performance of the streamer were available:

1 .Streamer noise was monitored as described in section 6.3.

2. Streamer depths were continuously displayed on the Cable Depth Monitor, recorded on the external header of the LRS-16A, and printed out on the MDL printout every 10th shotpoint.

3. Data telemetry errors were monitored for the streamer on the Cable Error Monitor display of the LRS16A.

4. Individual trace polarity can be tested during streamer deployment by physically tapping each group and observing the results on the multi-trace plotter. A less time consuming method is to observe the first breaks from a field shot on an expanded, wiggle trace plot of all groups and compare each group with its adjacent counterpart.

7.4 STREAMER THEORY OF OPERATION

The streamer receives commands and power from the shipboard electronics and returns digitised seismic, depth, waterbreak and Q.C. channels in return. All shipboard commands are generated or controlled by the Raw Data Processor (RDP). The Cable Interface Electronics (CIE) serves to interface the streamer with the RDP. It provides a current source output for the command and converts the streamers phase data input to NRZ for RDP processing. All CIE commands are on twisted pairs with the returned data stream coming back to the vessel on a single coaxial cable.

The RDP transmits three different commands, one for polling data and the other two for controlling the module's operation. These commands and their functions are;

SYNC/IP	Streamer modules SYNC and channel interrogation (IP). The two signals poll data output. They are ORed together within the RDP.
Command Line A	Active only at the beginning of a record. The signal starts data acquisition by enabling the IP command input to each streamer module.
Command Line B	Performs a streamer module bypass function by turning off the power in a selected module at SYNC time.

In response to an IP command the Streamer Modules digitise and transmit diphase data to the CIE.

The RDP also provides a means to test and calibrate the Streamer Modules and hydrophones. The RDP transmits a test signal control line to enable the test signal line. Their operation is as follows:-

Test Signal Control	A current source conical signal which activates a test relay in the Streamer Module. This applies the test signal to the low side of the hydrophones.
Test Signal	One of three test signal inputs to the Streamer Modules from the RDP. Either a precision 31.25 Hz sine wave (calibration signal), a single transition step generated at the start of a record, or an externally generated test signal.

The control lines for compasses, birds etc. are not connected to the CIE. They are split out at the head of the deck cable for routing to their respective control units.

The 2 KHz power output to the streamer is generated by the shipboard supply and controlled by an On/Off switch on the RDP. There is also a power "sense" output to the head of the Lead-In cable. This is looped back to the CIE to guard against cable disconnection while power is on. The 2 KHz power is generated by the current source Cable Power Supply. It is inverted from module to module to maintain a balanced load on the supply.

7.4 STREAMER THEORY OF OPERATION (Continued)

The streamer output totals 240 channels in the 240 group configuration and is made up as follows:-

240 Seismic data channels.
20 Waterbreak channels
20 Depth data channels
20 Quality Control channels

Seismic Channels are not transmitted in sequential order, nor do they have an address within the streamer. However, the 15 channels output from each module do have individual addresses within the module. These addresses correspond to the input SYNC and IPs. A SYNC command initiates the transmission sequence and is sent at 1mSec intervals. IPs then instruct each module to output one channel as it travels downstream, returning 25 channels per IP. Since there are 15 channels to each module 15 IPs are received at the Streamer Module every 1m sec, or once every 66.67 μSec. The following table demonstrates the transmission sequence of each of the channels back to the vessel.

Streamer Module Channel Address and Transmission Sequence.

Channel Address	Channel Type	Telemetry Sequence
0	Quality Control	4
1	Waterbreak	5
2	Seismic Channel 1	6
3	Seismic Channel 2	7
4	Seismic Channel 3	8
5	Seismic Channel 4	9
6	Seismic Channel 5	10
7	Seismic Channel 6	11
8	Seismic Channel 7	12
9	Seismic Channel 8	13
10	Seismic Channel 9	14
11	Seismic Channel 10	15
12	Seismic Channel 11	1
13	Seismic Channel 12	2
14	Water Depth	3

As shown, the first channel output from the modules are seismic channel 11. To the shipboard electronics these represent seismic channel 11 from module 1, channel 23 from module 2, channel 35 from module 3, and so forth. As each seismic trace cannot be sampled simultaneously, channels within each module experience a "sample skew". Each channels sample skew is a multiple of the IP rate, with seismic channel 11 and 12 being negative numbers since they are acquired before the SYNC command. These skew values are the same for each Streamer Module and subsequently are repeated at 12 seismic channel intervals. Sample skew is removed by the LRS-16A before recording the seismic data to tape.

8 ENERGY SOURCE

8.1 ENERGY SOURCE DETAILS

TYPE	: LLP airgun
MANUFACTURER	: Litton Resources Systems
TOTAL ARRAY VOLUME	: 5400 in³
OPERATING VOLUME	: 5400 in³
ARRAY OUTPUT	: 64.2 Bar Metres
PRIMARY TO BUBBLE RATIO	: 13.7
NUMBER OF SUB ARRAYS	: 4
SUB ARRAY LENGTH	: 18.11 Metres
SUB ARRAY SPREAD	: 6 x 30 x 6m.
NUMBER OF GUNS	: 14/28
NUMBER OF GUNS IN USE	: 14/28
NUMBER OF SPARE GUNS	: 0
NUMBER OF PRIMARY ARRAYS	: 1
DUAL SOURCE	: No
OPERATING PRESSURE	: 1800 psi. +/- 100 psi
OPERATING DEPTH	: 6 Metres

8.2 ENERGY SOURCE DESCRIPTION

A four string energy source array consisting of 28 low pressure airguns was utilised for this survey. Each string had seven guns giving a total capacity of 5400 cubic inches. All guns in the array were active providing a total operating volume of 5400 cubic inches. This meant there were no spare guns available and the loss of any gun would reduce the array volume by that gun's capacity until the end of line. Only certain combinations of guns could be lost during production on a line. These combinations were as agreed in the proposal between Western Geophysical Company and SAGASCO Resources Limited.

The sub-arrays were towed in a line to give the energy source array an overall length of 16 metres. The two outer sub-arrays were deployed beside the two inner sub-arrays. The first gun on the outer sub-array was even with the first gun on the inner sub-array. The distance between the outer and inner sub-arrays was 6 metres. The inner sub-arrays were separated from each other by 30 metres. Figure 8.1 illustrates the array configuration.

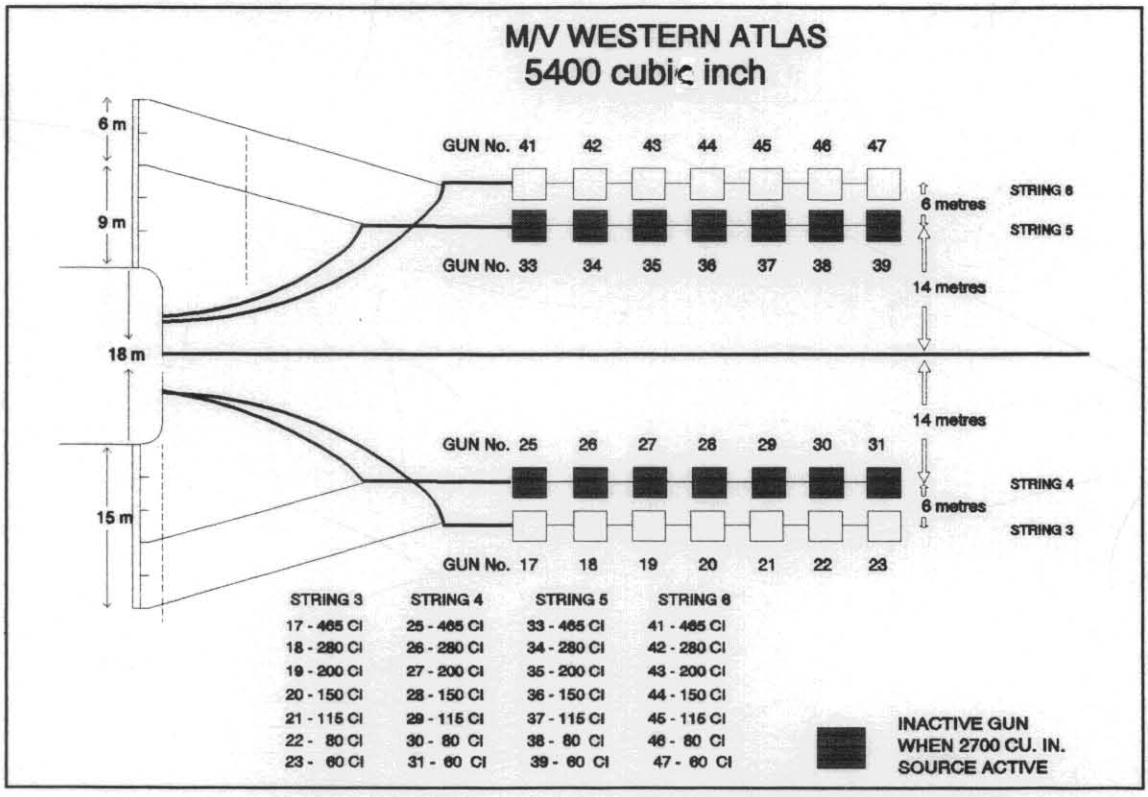


FIG. 8.1 ENERGY SOURCE ARRAY CONFIGURATION

5 cm

8.3 AIRGUN THEORY OF OPERATION

The LLP air gun is designed specifically for use in marine seismic survey operations. The air gun is designed to generate a discrete pulse of acoustic energy into the water when commanded by means of a electrical controlled firing device. The energy is derived from high pressure air stored in a reservoir in the air gun. This high pressure air is released into the water through the four gun ports located in the main housing of the air gun. The air gun is comprised of three main parts, these being the reservoir, the main housing and the top housing that contains a solenoid and pressure sensing device.

Two models of the air gun make up the array on the Western Atlas. These are the LLP-7 and the LLP-8. The volumes of the LLP-7 air gun range from 20 to 200in^3. The LLP-8 volumes are from 115 to 465in^3.

The air pressure supplied by the compressors is carried to the gun by high pressure hose and is fed directly into the gun through an inlet in the top housing. The increasing air pressure in the top housing acts on the shuttle and forces the shuttle to close on the firing seal. A small orifice in the shuttle allows passage of air through the shuttle into the reservoir. The closing of the shuttle seals both the reservoir and the top housing to the ingress of water.

As the gun is completely sealed the air pressure in both chambers continues to rise until it reaches the regulated supply pressure. The gun is fully pressurised at this point and is ready to fire. Because the upper flange of the shuttle is larger in area than the bottom flange, the unbalanced force acting on the shuttle holds the shuttle closed against the seals.

When a command to fire the gun is received from the gun controller, the solenoid located externally on the top housing is energised allowing the solenoid poppet to open. This action allows air from the top housing to flow through a channel in the housing to the underside of the top flange of the shuttle. This extra force under the shuttle, and the subsequent slight drop in the air pressure on the top of the shuttle creates an imbalance in the forces holding the shuttle closed. The pressure in the reservoir overrides the pressure holding the shuttle immobile and forces the shuttle up into the top housing and past the four ports in the gun body. As the lower flange of the shuttle passes the gun ports, air stored in the reservoir is vented through the ports directly into the surrounding water. It is this sudden venting of the high pressure air that creates the energy pulse.

A sensor mounted on the top housing senses the sudden drop in air pressure and indicates to the gun synchroniser that the gun has fired. The drop of pressure in the reservoir caused by the gun firing allows the air in the top housing to force the shuttle closed once again. The cycle is repeated as the air pressure increases in the reservoir and the gun is ready to fired.

8.3 AIRGUN THEORY OF OPERATION (Continued)

The air supply to the guns is supplied by 3 Cherco WBF-74XHD compressors. Each compressor supplies air at the rate of 1600 cubic feet per minute at the required 200 psi. Two compressors are on line during normal operations and the third compressor is on standby as a spare in case of failure of one of the on line compressors. The compressors are driven by Caterpillar 3516 diesel engines of 900 horse power each.

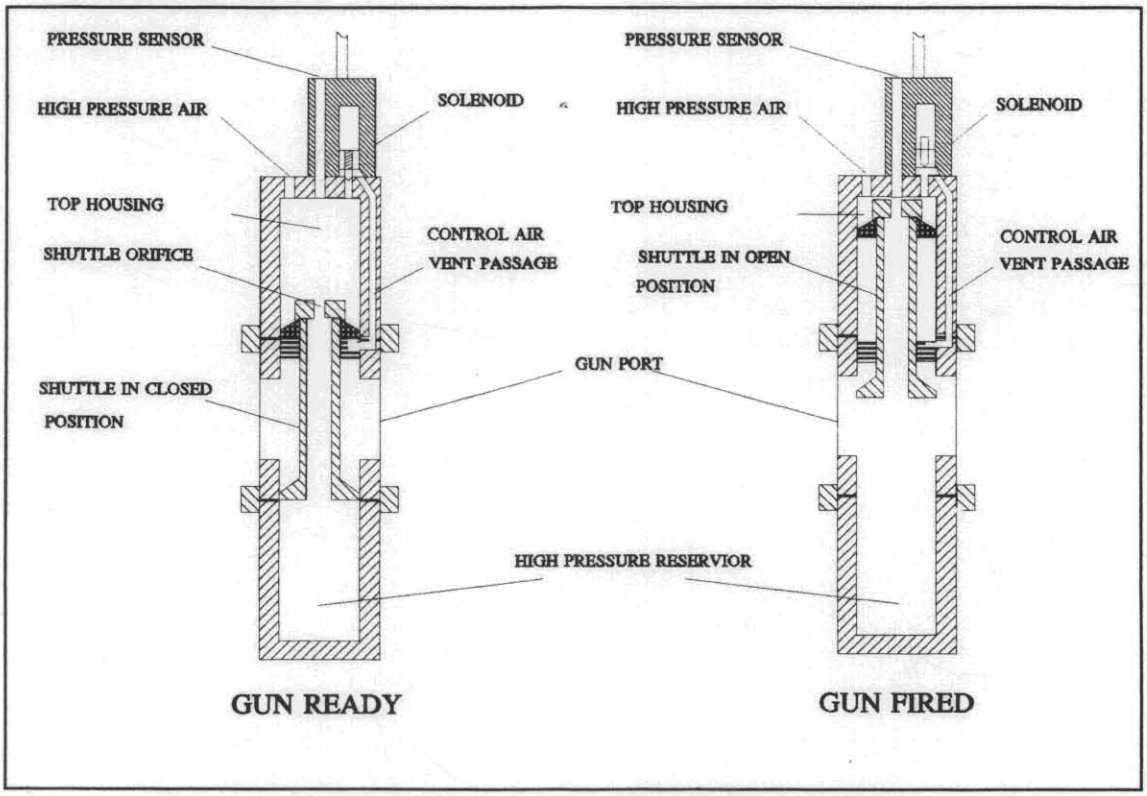


FIG. 8.2 LLP AIR GUN FIRING CYCLE

8.4 ENERGY SOURCE QUALITY CONTROL

8.4.1 LRS-100 GUN CONTROLLER

The LRS-100 is a stand alone, microprocessor controlled unit. It provides the necessary software and hardware to initiate firing of an airgun array and to monitor the performance and timing of the shot. It is interfaced to the LRS-16A system, through a Remote Energy Source Control Unit (RESCU). The RESCU provides the LRS-100 with the command to fire the guns at the pre-defined shotpoint interval. The LRS-16A shot request is initiated by the Wisdom navigation system. The Wisdom system determines the shotpoint position based on the shotpoint interval and the primary navigation fix position. The RESCU in conjunction with the Navigation Interface Unit can control alternate boat firing, alternate array firing or combinations of both.

8.4.1 LRS-100 GUN CONTROLLER (Continued)

The heart of the LRS-100 is the 16-Gun Controller Module (GCM). Up to 3 modules may be installed in the LRS-100 to provide synchronisation of up to 48 guns. The 16-GCM accepts fire commands from the RESCU and contains the circuitry required to provide time controlled fire pulses to each gun interfaced to the module. The 16-GCM also receives, upon firing, a fire detect signal from pressure sensors in each gun. The fire detect pulse nominally occurs at 128 mSec after the fire request is issued. Any deviation from this period for an individual gun is adjusted on subsequent shots. This is done by adjusting the time of gun solenoid activation. This is accomplished via a filter applied to the previous error values. (Reference Figure 8.3). After each firing the 16-GCM forwards the firing data to the Display Controller Module (DCM) and the Gun Monitor Unit (GMU). The LRS 100 issues Field Timebreak when it detects that 62.5 % of the array volume has been released.

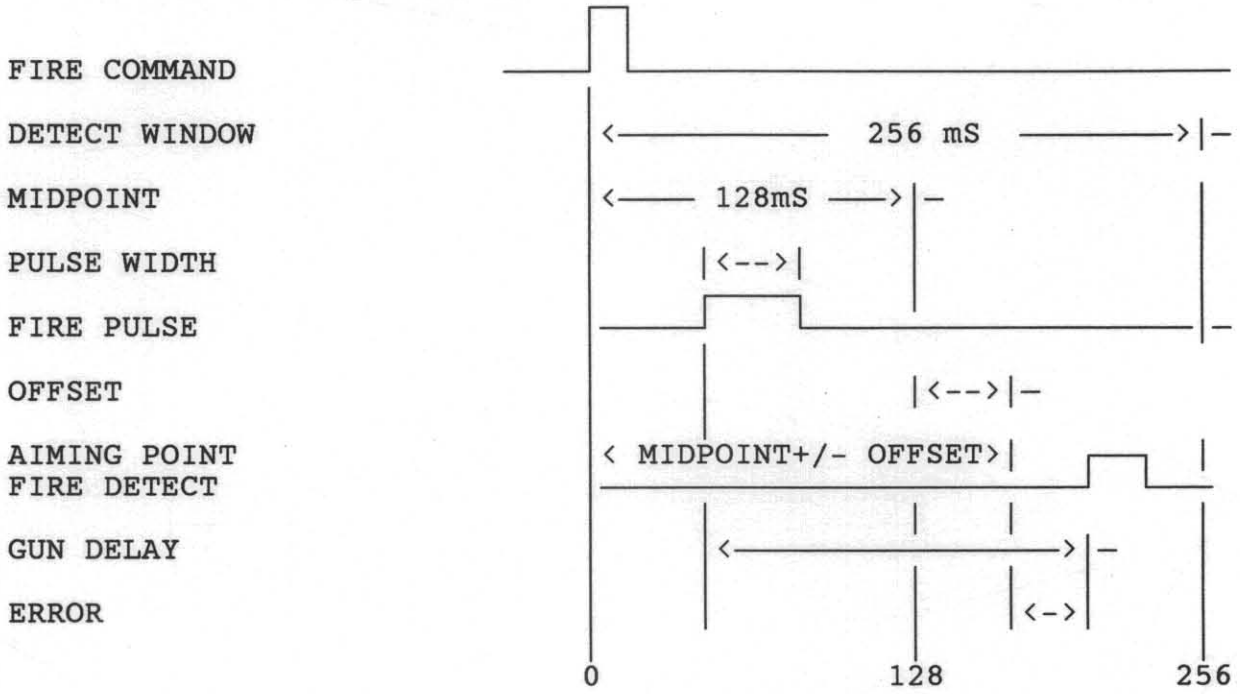
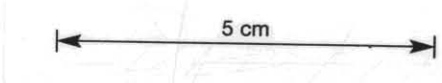


FIG. 8.3 FIRE DETECT WINDOW

Gun timing is normally within a 2 millisecond window of 128 mSec. The error displacement of each gun's fire time from this time is noted by the LRS 100. This error is displayed on the LRS 100 monitor unit, logged on the external header, written to tape in the external header data and printed on the external header printout. The error is displayed as counts; each unit count equivalent to 0.25 ms.



9. POSITION SYSTEM

9.1. DIFFERENTIAL GPS SYSTEM

9.1.1 RACAL SKYFIX DESCRIPTION

Racal Survey has recently introduced its SkyFix Differential GPS System in the Far East using the Inmarsat Pacific Ocean Region and Indian Ocean Region. Extensive performance trials and projects undertaken to date have shown that SkyFix meets the best industry expectations in terms of quality of service and accuracy.

The system embodies the successful combination of data capacity, range and coverage, with a flexible networked approach that lends itself to comprehensive performance and quality monitoring.

The link capacity of 1200 bits per second allows data from a number of networked reference stations to be sent simultaneously without introducing unacceptable delays between reference station and user. With four reference stations, each generating correction data for ranges from eight satellites, an upgrade rate of better than three seconds is achieved by the SkyFix system.

The wide area coverage of the Inmarsat Pacific Ocean Region satellite can be seen in Fig 3. Clearly, the reference station/user separation is no longer constrained by the effective range of a terrestrial data link. This allows full advantage to be taken of the great distance over which the corrections remain valid.

Satellite communications systems, particularly at the Inmarsat L-band frequency of 1.5 GHz, are extremely reliable and free of the interference associated with the crowded M.F./H.F bands. This high data integrity gives users confidence that the correction will be continuously received without interference.

The SkyFix Australia and New Zealand network comprises reference station at Cairns, Darwin, Broome, Perth, Adelaide and Sydney.

The differential correction generated at each reference station is brought via landlink to each data hub, and to a control centre in Singapore where the system is monitored for performance and quality. A composite message containing full RTCM 104 formatted data from all reference stations is then sent via dual redundant landlinks to the OTC earth station at Perth for updating and broadcasting over the Inmarsat Pacific Region satellite. The design of reference station networks provides a high quality service to major offshore hydrocarbons prospect areas. Ideally, each of these will be covered by more than one reference station.

The system is easily expandable to provide new areas of coverage by the addition of further networked reference stations. Correction data is automatically included in the system performance and quality control function at the control centres.

9.1.1. RACAL SKYFIX DESCRIPTION

Whilst the DGPS service providers have no control over the operation of the GPS system itself, performance can be monitored, quantified and reported to users. The function of the SkyFix data hub and control centre in Australia is of fundamental importance as its role is to guarantee the best possible system performance.

The SkyFix control centre has control over and responsibility for the differential data generated at the reference station and the subsequent broadcast to users. For this reason, monitoring and control functions include extensive analysis and archiving of the corrections and the comparison of data arriving from different reference stations within the network. In addition, satellite data link receiving equipment verifies correct broadcast data reception, and this off-air data is applied to locally observed raw observations to verify user-positioning performance. The SkyFix monitoring and control process continues 24 hours a day.

On board the user vessel or drilling rig etc., the data is received either via an existing Inmarsat-A terminal or by a terminal provided by Racal Survey. Whichever terminal is used, the signal is taken at Inmarsat A.I.F. band into a purpose designed unit which tunes to the pre-assigned SkyFix broadcast frequency and demodulates and decodes the correction data.This is then fed directly to the on-board GPS Trimble equipment as illustrated in Fig 9.1

The SkyFix combination of the Inmarsat satellite communication links using the RTCM 104 DGPS data protocol, the reference station, monitoring and user infrastructure has been shown, through a growing body of project and trial experience, to provide a robust Differential GPS operating environment which is consistently capable of pinpointing positions to an accuracy of 5 metres or better.

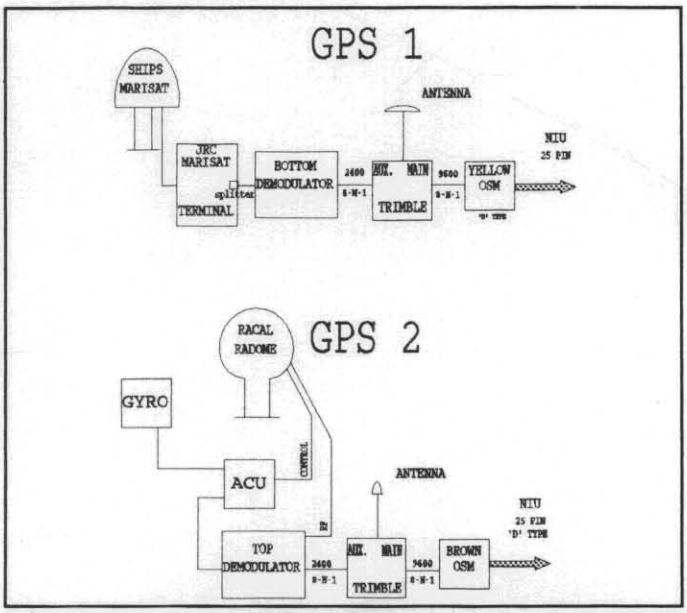


Figure 9.1 RACAL SKYFIX BLOCK DIAGRAM

9.1.2 SPHEROID

All Gps and Transit satellite positions are now broadcast in WGS 84. no transformation from WGS 72 is required.

9.2 WISDOM SYSTEM DESCRIPTION

The Western Integrated Survey Data Onboard Management (WISDOM) system, is a multi channel, integrated radio-positioning and data acquisition system.

The standard WISDOM system is computer based and integrated to an interface, to which a variety of Radio Positioning Systems and remote sensors can be interfaced. This interface is called the GeoScience Data Unit (GDU).

A typical configuration consists of the Hewlett Packard (HP) 2117F computer, the HP 2649C graphics terminal, the Geoscience Data Unit, 2 Telex 9271 tape decks, a printer for the hard copies, a RESCU unit, a Navigation Interface Unit, a status closure panel, a data buffer unit and the integrated radio positioning system. Other configuration options are available depending on user demand.

A navigation data tape reel is created that can be used for mapping and data analysis.

As well as the various Radio Positioning Systems, some of the other sensors typically interfaced to the GDU are, data from the Depth Sounder digitiser, the LRS-100 energy source synchroniser, depth information from the streamer cable and energy source transducers and streamer compass data. Magnetometer and Gravity data are also available, if required.

Data acquired from these sensors are transmitted to the seismic recording system with positioning identifiers. These data are recorded to magnetic tape at either the navigation tape and/or the seismic data tape.

The WISDOM also accepts operator entered input via the HP-2649C graphics terminal. The operator has access and control over all areas of the system operating parameters.

Using the data acquired from the Radio Positioning System, the WISDOM produces a real time best fit solution to position for navigation purposes.

This real time position information is transmitted to the wheelhouse via a VDU display for on line steering of the vessel along a predetermined course. The data are also displayed at various work stations, typically the observers console and the navigation console, so that system performance and navigation quality can be monitored.

The WISDOM also calculates when the energy source should be fired, based on position and time, and issues the fire command at the appropriate time.

Hard copies of all parameters and events are produced at both program and operator specified intervals.

9.3 MAPPING PARAMETERS

The survey was referred to the Australian Geodetic Datum 1984(AGD84), and was plotted on the Universal Transverse Mercator Grid Zone 135. The differential GPS system was operated in World Geodetic System 1984 (WGS84). The relevant parameters of the datums are shown below:

	AGD84	WGS84
Semi-Major Axis:	6378160.00m	6378137.00m
Inverse Flattening:	298.250	298.257224

7-parameter shift from AGD84 to WGS84:

dX:	-116.00m
dY:	-50.47m
dZ:	+141.69m
rX:	-0.23"
rY:	-0.39"
rZ:	-0.344"
f:	+ 0.0983ppm

UTM ZONE 135

Latitude Origin:	0° 00' 00.0" S
Longitude Origin:	117° 00' 00.0" E
False Easting:	500000.0m E
False Northing:	10000000.0m N
Central Scale Factor:	0.9996

All station parameters and positions in this report are quoted in terms of AGD84 and UTM Zone 135 unless otherwise noted.

9.4 BATHYMETRY

9.4.1 FATHOMETER DETAILS

The SIMRAD EA Hydrographic Echo sounder used during the survey is a precision water depth measurement device for use in extremely shallow water depths to 1000-1200 meters. It has an 8" dry paper recorder which can be set to a multiplicity of scales, speeds and resolutions. The sounder is also equipped with a digital depth display and an output connector for BCD depth data signals. The resolution of this output data and the display is 0.1 metre to 200 metres and 1 metre at depths greater than 200 metres. Sound velocity and draft compensation can be manually set for virtually all normal operating conditions. Figure 9.4.1 shows a table for the ranges and sounding rates of the unit.

	BASIC RANGE SELECTOR				
PHASED	A	B	C	D	5m & 10m
RANGE 1	0-50	0-100	0-250	0-500	Phased in 1 m. steps to a maximum range of 175-180
RANGE 2	30-80	60-160	150-400	300-800	
RANGE 3	60-110	120-220	300-550	600-1100	
RANGE 4	90-140	180-280	450-700	900-1400	
RANGE 5	120-170	240-340	600-850	1200-1700	
PULSES	258/min	129/min	51.6/min	25.8/min	258/min

Figure 9.4.1 SIMRAD EA - RANGES AND SOUNDING RATES

The echo sounder has two frequencies of operation, 38 kHz and 710 kHz. Sounding can be performed with either one selected or with dual frequencies, in which case the system transmits alternately on 38 kHz and 710 kHz. When operating with the single 710 kHz the sounding rate is actually 774 soundings per minute of which all are digitised but only every third is displayed on the recording paper.

Sound velocity compensation covers a range from 1400 m/sec to 1547 m/sec and draught corrections from 0 to 9.9 metres are possible in 0.1 metre steps. The unit was also fitted with an AB100 range print out unit which annotated the analogue chart with the range in use automatically.

9.4.2 FATHOMETER DISCUSSION

The fathometer performance during the duration of the survey was at a reasonable level. Analogue charts, while not of optimum quality but were legible. The only real problems arose due to faults in the system coordinator which generated the closures to mark the charts every 50 shotpoints. On occasions such faults would result in irregular marker lines.

10 SURVEY DETAILS

10.1 SURVEY ACTIVITY DETAILS

FROM	TO	ACTIVITY	TOTAL	CHARGE
**		DATE 23/07/92		
	-07:40	COMPLETING CONTRACT FOR BRAND X	7.667	0.000
07:40	24:00	ENROUTE TO PROSPECT	16.333	0.000
** Subtotal **			24.000	0.000
**		DATE 24/07/92		
00:00	14:10	ENROUTE TO PROSPECT VIA PORTLAND	14.167	0.000
14:10	15:00	PILOT ON BOARD FOR WESTERN GEO CO.	0.833	0.000
15:00	20:10	START LOADING STORES/WATER/PERSONNEL	5.167	0.000
20:10	20:23	DEPART PORTLAND WITH PILOT	0.217	0.000
20:23	23:00	PILOT AWAY AND ENROUTE TO PROSPECT	2.617	0.000
23:00	24:00	ENROUTE TO PROSPECT	0.999	0.000
** Subtotal **			24.000	0.000
**		DATE 25/07/92		
00:00	19:00	ENROUTE TO PROSPECT S92A-S92B	19.000	0.000
19:00	19:01	ARRIVED AT S92A/S92B WEATHER N/G	0.017	0.017
19:01	24:00	UNABLE TO DEPLOY TRAILING EQUIPMENT	4.983	4.983
** Subtotal **			24.000	5.000
**		DATE 26/07/92		
00:00	02:00	STILL WAITING ON WEATHER TO ABATE	2.000	2.000
02:00	09:30	STARTED TO DEPLOY STREAMER WGC COST	7.500	0.000
09:30	11:23	DEPLOYING SOURCE ARRAY WGC COST	1.883	0.000
11:23	12:14	GUNS AND STREAMER DEPLOYED CK OFFSET	0.850	0.000
12:14	12:23	COMMENCED RECORDING S92A-117 ABORT	0.150	0.000
12:23	14:54	CIRCLE BECAUSE ITB DATA NOT GOOD	2.517	0.517
14:54	16:58	RECORDING LINE S92A-117A	2.067	2.067
16:58	18:40	LINE CHANGE	1.700	1.700
18:40	19:09	RECORDING S92A-115 LOST SV #11	0.483	0.483
19:09	21:44	CIRCLE BECAUSE OF LACK OF SATELLITE	2.583	2.583
21:44	23:15	RECORDING LINE S92A-115A	1.517	1.517
23:15	24:00	LINE CHANGE	0.750	0.750
** Subtotal **			24.000	11.617
**		DATE 27/07/92		
00:00	00:29	LINE CHANGE	0.483	0.483
00:29	01:46	RECORDING LINE S92A-109	1.283	1.283
01:46	02:59	LINE CHANGE	1.217	1.217
02:59	04:15	RECORDING LINE S92A-105	1.267	1.267
04:15	05:30	LINE CHANGE	1.250	1.250
05:30	05:46	START RECORDING LINE S92A-133 ABORT	0.267	0.000
05:46	07:16	CIRCLE STREAMER FAILURE	1.500	1.500
07:16	07:58	CIRCLE TO LINE STR FAILURE WGC COST	0.700	0.000
07:58	09:17	RECORDING LINE S92A-113A	1.317	1.317
09:17	10:28	LINE CHANGE	1.183	1.183
10:28	11:58	RECORDING LINE S92A-107	1.500	1.500
11:58	13:30	ABORT RUN-IN BECAUSE OF SWELL	1.533	1.533
13:30	17:30	COMMENCE RETRIEVAL OF GUNS	4.000	4.000
17:30	18:10	GUNS ABOARD(STRONG WINDS & LG SWELL	0.667	0.667
18:10	20:20	COMMENCE RETRIEVAL OF STREAMER	2.167	2.167
20:20	24:00	WAITING FOR WEATHER TO ABATE	3.666	3.666
** Subtotal **			24.000	23.033

10.1 SURVEY ACTIVITY DETAILS

FROM	TO	ACTIVITY	TOTAL	CHARGE
**		DATE 28/07/92		
00:00	24:00	UNABLE TO RECORD BECAUSE OF WEATHER	24.000	24.000
** Subtotal **			24.000	24.000
**		DATE 29/07/92		
00:00	06:35	STILL WAITING FOR WEATHER TO ABATE	6.583	6.583
06:35	10:15	COMMENCE DEPLOYING STREAMER	3.667	3.667
10:15	11:29	COMMENCE DEPLOYING SOURCE ARRAY	1.233	1.233
11:29	12:14	START RUN IN TO LINE	0.750	0.750
12:14	13:48	RECORDING LINE S92A-111	1.567	1.567
13:48	15:20	LINE CHANGE	1.533	1.533
15:20	16:50	RECORDING LINE S92A-103 FSP 542	1.500	1.500
16:50	18:13	LINE CHANGE	1.383	1.383
18:13	18:53	RECORDING LINE S92A-101 TBC	0.667	0.667
18:53	21:21	ONLY 2 SATELLITE UNABLE TO RECORD	2.467	2.467
21:21	22:15	RECORD LINE S91A-101A	0.900	0.900
22:15	24:00	LINE CHANGE	1.750	1.750
** Subtotal **			24.000	24.000
**		DATE 30/07/92		
00:00	00:07	LINE CHANGE CONTINUED	0.117	0.117
00:07	01:30	RECORDING LINE S92-122	1.383	1.383
01:30	02:59	LINE CHANGE	1.483	1.483
02:59	04:28	RECORDING LINE S92-118	1.483	1.483
04:28	05:48	LINE CHANGE ABORT EXCESSIVE NOISE	1.333	1.333
05:48	09:10	ABORT RUN-IN EXCESSIVE NOISE	3.367	3.367
09:10	12:04	RECORDING LINE S92-120	2.900	2.900
12:04	13:49	LINE CHANGE	1.750	1.750
13:49	15:11	RECORDING LINE S92-116	1.367	1.367
15:11	16:32	LINE CHANGE	1.350	1.350
16:32	18:45	RECORDING LINE S92-110	2.217	2.217
18:45	20:00	L/C EXT DUE LACK OF SAT COVERAGE	1.250	1.250
20:00	21:00	REPAIR STREAMER SECTION LEAKAGE	1.000	1.000
21:00	22:43	CHANGE OUT FAULTY SECTION #2	1.717	1.717
22:43	24:00	RECORDING LINE S92-112	1.283	1.283
** Subtotal **			24.000	24.000
**		DATE 31/07/92		
00:00	00:10	RECORDING LINE S92A-112	0.167	0.167
00:10	01:44	LINE CHANGE ABORT RUN-IN STREAMER	1.567	1.567
01:44	03:00	GUNS & RETRIEVING STREAMER WGS COST	1.267	0.000
03:00	04:30	DOWN TIME ALLOWED BY CONTRACT 1.5hr	1.500	1.500
04:30	05:38	STREAMER AND GUNS DEPLOYED WGC COST	1.133	0.000
05:38	06:55	GUNS FULLY DEPLOYED RUN-IN WGC COST	1.283	0.000
06:55	11:25	RECORDING LINE S92A-108	4.500	4.500
11:25	12:36	LINE CHANGE	1.183	1.183
12:36	15:58	RECORDING LINE S92A-114	3.367	3.367
15:58	19:09	ABORTED LINE DUE TO COMPRESSOR	3.183	0.000
19:09	19:57	RECORDING LINE S92A-114A	0.800	0.800
19:57	21:12	NORMAL LINE CHANGE REPAIRED GUNS	1.250	1.250
21:12	22:01	RESHOOT S92A-108A WITH 5400 CU. IN.	0.817	0.817
22:01	23:19	LINE CHANGE	1.300	1.300
23:19	24:00	RECORDING LINE S92A-106 MSP 336	0.683	0.683
** Subtotal **			24.000	17.134

10.1 SURVEY ACTIVITY DETAILS

FROM	TO	ACTIVITY	TOTAL	CHARGE
**		DATE 01/08/92		
00:00	02:40	RECORDING LINE S92A-106	2.667	2.667
02:40	04:10	LINE CHANGE	1.500	1.500
04:10	04:58	WORK ON GUN STRINGS WGC DOWNTIME	0.800	0.000
04:58	08:20	RECORDING LINE S92A-104	3.367	3.367
08:20	09:50	LINE CHANGE	1.500	1.500
09:50	11:20	WORKING ON GUNS DURING ALLOWED TIME	1.500	1.500
11:20	11:54	GUN STRINGS REPAIR WGC DOWNTIME	0.567	0.000
11:54	14:47	RECORDING LINE S92-102	2.883	2.883
14:47	17:07	EXTENDED LINE CHANGE DUE TO PROGRAM	2.333	2.333
17:07	18:31	RECORDING LINE S92A-139	1.400	1.400
18:31	20:01	LINE CHANGE	1.500	1.500
20:01	21:18	RECORDING LINE S92A-137	1.283	1.283
21:18	22:48	LINE CHANGE	1.500	1.500
22:48	24:00	RECORDING LINE S92A-135	1.200	1.200
** Subtotal **			24.000	22.633
**		DATE 02/08/92		
00:00	01:36	LINE CHANGE	1.600	1.600
01:36	02:56	RECORDING LINE S92A-133	1.333	1.333
02:56	04:21	LINE CHANGE	1.417	1.417
04:21	05:40	RECORDING LINE S92A-131	1.317	1.317
05:40	07:03	LINE CHANGE	1.383	1.383
07:03	07:33	RECORDING LINE S92A-129 ABORTED	0.500	0.500
07:33	09:03	REPAIRING COMPRESSOR 1.5HRS GRATIS	1.500	1.500
09:03	09:50	STILL REPAIRING COMPRESSOR WGC TIME	0.783	0.000
09:50	10:51	RECORDING LINE S92A-129A	1.017	1.017
10:51	12:12	LINE CHANGE	1.350	1.350
12:12	13:55	RECORDING LINE S92A-127	1.717	1.717
13:55	15:25	LINE CHANGE	1.500	1.500
15:25	16:02	EXTENDED L\CHANGE BECAUSE OF DGPS	0.617	0.617
16:02	17:53	RECORDING S92A-125	1.850	1.850
17:53	19:22	LINE CHANGE	1.483	1.483
19:22	21:21	RECORDING LINE S92A-123	1.983	1.983
21:21	23:14	LINE CHANGE	1.883	1.883
23:14	24:00	RECORDING LINE S92A-121 MSP 645	0.767	0.767
** Subtotal **			24.000	23.217

10.1 SURVEY ACTIVITY DETAILS

FROM	TO	ACTIVITY	TOTAL	CHARGE
**		DATE 03/08/92		
	-01:43	RECORDING LINE S92B-121	1.717	1.717
01:43	03:08	LINE CHANGE	1.417	1.417
03:08	05:37	RECORDING LINE S92B-119	2.483	2.483
05:37	10:16	TRAVEL TO NEW PROGRAM YOLLA T\RL1	4.650	4.650
10:16	11:32	RECORDING LINE S92B-109	1.267	1.267
11:32	13:30	EXTENDED LINE CHANGE FOR TEST LINE	1.967	1.967
13:30	14:01	REC TEST LINE S92B-105 T (2700" inch)	0.517	0.517
14:01	15:15	RECORDING LINE S92B-105 (5400" inch)	1.233	1.233
15:15	16:42	LINE CHANGE	1.450	1.450
16:42	17:55	RECORDING LINE S92B-101 10m streamer	1.217	1.217
17:55	18:24	REC TEST LINE S92A-101 T 6m streamer	0.483	0.483
18:24	19:44	LINE CHANGE	1.333	1.333
19:44	20:56	RECORDING LINE S92B-107	1.200	1.200
20:56	22:23	LINE CHANGE	1.450	1.450
22:23	23:40	RECORDING LINE S92B-103	1.283	1.283
23:40	24:00	S92B SURVEY COMPLETED GUNS ABOARD	0.333	0.333
** Subtotal **			24.000	24.000
**		DATE 04/08/92		
00:00	00:05	STILL RETRIEVING GUNS	0.083	0.083
00:05	01:03	RETRIEVING STREAMER/ALL ABOARD	0.967	0.967
01:03	01:05	TAIL BUOY ABOARD SURVEY COMPLETED	0.033	0.033
01:05	24:00	TRANSIT TO EDEN N.S.W.	22.917	0.000
** Subtotal **			24.000	1.083
*** Total ***			312.000	199.717

10.2 SURVEY PRODUCTION DETAILS

LINE	DIR.	FSP	LSP	TOT-SP	TOT-KM	FCSP	LCSP	TOT-CSP	TOT-CKM	STATUS
**			DATE: 26/07/92							
S92A-117A	203	777	41	737	19.648	777	41	737	19.648	COMP
S92A-115A	017	101	640	540	14.396	101	640	540	14.396	COMP
** Subtotal **								1277	34.044	
**			DATE: 27/07/92							
S92A-109	198	477	41	437	11.650	477	41	437	11.650	COMP
S92A-105	018	101	536	436	11.624	101	536	436	11.624	COMP
S92A-113A	198	514	41	474	12.637	514	41	474	12.637	COMP
S92A-107	017	101	613	513	13.677	101	613	513	13.677	COMP
** Subtotal **								1860	49.588	
**			DATE: 29/07/92							
S92A-111	017	101	650	550	14.663	101	650	550	14.663	COMP
S92A-103	198	541	41	501	13.357	541	41	501	13.357	COMP
S92A-101	016	101	300	200	5.332	101	300	200	5.332	COMP
S92A-101A	016	301	611	311	8.291	301	611	311	8.291	COMP
** Subtotal **								1562	41.643	
**			DATE: 30/07/92							
S92A-122	107	101	612	512	13.650	101	612	512	13.650	COMP
S92A-118	288	552	41	512	13.650	552	41	512	13.650	COMP
S92A-120	108	101	611	511	13.623	101	611	511	13.623	COMP
S92A-116	288	551	41	511	13.623	551	41	511	13.623	COMP
S92A-110	108	101	906	806	21.488	101	906	806	21.488	COMP
S92A-112	288	547	98	450	11.997	547	98	450	11.997	MSP
** Subtotal **								3302	88.031	
**			DATE: 31/07/92							
S92A-112	288	97	41	57	1.520	97	41	57	1.520	COMP
S92A-108	109	101	1659	1559	41.563	101	1659	1559	41.563	COMP
S92A-114	289	1448	243	1206	32.152	1448	243	1206	32.152	COMP
S92A-114A	289	242	41	202	5.385	242	41	202	5.385	COMP
S92A-108A	109	101	391	291	7.758	0	0	0	0.000	TEST
S92A-106	104	101	336	236	6.292	101	336	236	6.292	MSP
** Subtotal **								3260	86.912	

10.2 SURVEY PRODUCTION DETAILS

LINE	DIR.	FSP	LSP	TOT-SP	TOT-KM	FCSP	LCSP	TOT-CSP	TOT-CKM	STATUS
**				DATE: 01/08/92						
S92A-106	104	337	1281	945	25.194	337	1281	945	25.194	COMP
S92A-104	284	1222	41	1182	31.512	1222	41	1182	31.512	COMP
S92A-102	104	101	1097	997	26.580	101	1097	997	26.580	COMP
S92A-139	014	101	575	475	12.664	101	575	475	12.664	COMP
S92A-137	194	515	41	475	12.664	515	41	475	12.664	COMP
S92A-135	015	101	576	476	12.690	101	576	476	12.690	COMP
** Subtotal **								4550	121.304	
**				DATE: 02/08/92						
S92A-133	194	514	41	474	12.637	514	41	474	12.637	COMP
S92A-131	015	101	575	475	12.664	101	575	475	12.664	COMP
S92A-129	195	516	351	166	4.426	516	351	166	4.426	TBC
S92A-129A	195	410	41	370	9.864	350	41	310	8.265	COMP
S92A-127	015	1017	78	940	25.060	0	0	0	0.000	COMP
S92A-127	015	101	726	626	16.689	101	726	626	16.689	COMP
S92A-125	194	701	41	661	17.622	701	41	661	17.622	COMP
S92A-123	014	101	800	700	18.662	101	800	700	18.662	COMP
S92A-121	194	924	645	280	7.465	924	645	280	7.465	MSP
** Subtotal **								3692	98.430	
**				DATE: 03/08/92						
S92A-121	194	644	41	604	16.103	644	41	604	16.103	COMP
S92A-119	14.	101	985	885	23.594	101	985	885	23.594	COMP
								1489	39 697	
							TOTAL		**559.649**	

T/RL1 YOLLA SURVEY

LINE	DIR.	FSP	LSP	TOT-SP	TOT-KM	FCSP	LCSP	TOT-CSP	TOT-CKM	STATUS
**				DATE: 03/08/92						
S92B-109	025	101	537	437	11.650	101	537	437	11.650	COMP
S92B-105T	204	656	478	179	4.772	0	0	0	0.000	TEST
S92B-105	204	477	41	437	11.650	477	41	437	11.650	COMP
S92B-107	205	477	41	437	11.650	477	41	437	11.650	COMP
S92B-103	024	101	537	437	11.650	101	537	437	11.650	COMP
S92B-101	024	101	537	437	11.650	101	537	437	11.650	COMP
S92B-101 T	024	538	716	179	4.772	0	0	0	0.000	TEST
** Subtotal **								2185	58.250	
							TOTAL		**58.250**	

Total**23177 SHOT POINT 617.899 KILOMETRES

10. 3 LINE STATUS

LINE	DIR	FSP	LSP	KMS	FCSP	LCSP	CHGKMS	STATUS
				T/RL 1 YOLLA SURVEY				
101	016	101	300	5.33200	101	300	5.33200	COMP
101A	016	301	611	8.29100	301	611	8.29100	COMP
101	024	101	537	11.6500	101	537	11.6500	COMP
101 T	024	538	716	4.77200	0	0	0.00000	TEST
102	104	101	1097	26.5800	101	1097	26.5800	COMP
103	198	541	41	13.3570	541	41	13.3570	COMP
103	024	101	537	11.6500	101	537	11.6500	COMP
104	284	1222	41	31.5120	1222	41	31.5120	COMP
105	018	101	536	11.6240	101	536	11.6240	COMP
105T	204	656	478	4.77200	0	0	0.00000	TEST
105	204	477	41	11.6500	477	41	11.6500	COMP
106	104	101	336	6.29200	101	336	6.29200	MSP
106	104	337	1281	25.1940	337	1281	25.1940	COMP
107	017	101	613	13.6770	101	613	13.6770	COMP
107	205	477	41	11.6500	477	41	11.6500	COMP
108	109	101	1659	41.5630	101	1659	41.5630	COMP
108A	109	101	391	7.75800	0	0	0.00000	TEST
109	198	477	41	11.6500	477	41	11.6500	COMP
109	025	101	537	11.6500	101	537	11.6500	COMP
				T/25P HUNTER SURVEY				
110	108	101	906	21.4880	101	906	21.4880	COMP
111	017	101	650	14.6630	101	650	14.6630	COMP
112	288	547	98	11.9970	547	98	11.9970	MSP
112	288	97	41	1.52000	97	41	1.52000	COMP
113A	198	514	41	12.6370	514	41	12.6370	COMP
114	289	1448	243	32.1520	1448	243	32.1520	COMP
114A	289	242	41	5.38500	242	41	5.38500	COMP
115A	017	101	640	14.3960	101	640	14.3960	COMP
116	288	551	41	13.6230	551	41	13.6230	COMP
117A	203	777	41	19.6480	777	41	19.6480	COMP
118	288	552	41	13.6500	552	41	13.6500	COMP
119	14.	101	985	23.5940	101	985	23.5940	COMP
120	108	101	611	13.6230	101	611	13.6230	COMP
121	194	924	645	7.46500	924	645	7.46500	MSP
121	194	644	41	16.1030	644	41	16.1030	COMP
122	107	101	612	13.6500	101	612	13.6500	COMP
123	014	101	800	18.6620	101	800	18.6620	COMP
125	194	701	41	17.6220	701	41	17.6220	COMP
127	015	1017	78	25.0600	0	0	0.00000	COMP
127	015	101	726	16.6890	101	726	16.6890	COMP
129	195	516	351	4.42600	516	351	4.42600	TBC
129A	195	410	41	9.86400	350	41	8.26500	COMP
131	015	101	575	12.6640	101	575	12.6640	COMP
133	194	514	41	12.6370	514	41	12.6370	COMP
135	015	101	576	12.6900	101	576	12.6900	COMP
137	194	515	41	12.6640	515	41	12.6640	COMP
139	014	101	575	12.6640	101	575	12.6640	COMP

10.4 FIELD TAPE LOG

LINE No.	FRN	LRN	FIRST TAPE #	LAST TAPE #	TOTAL
		T/25P HUNTER SURVEY			
S92A-117A	1	737	127173	127181	9
S92A-115	1	0	127181	127182	2
S92A-115A	1	540	127184	127190	7
S92A-109	1	437	127191	127196	6
S92A-105	1	436	127197	127202	6
S92A-113A	1	473	127205	127210	6
S92A-107	1	513	127211	127217	7
S92A-111	1	550	127218	127224	7
S92A-103	1	511	127225	127230	6
S92A-101	1	330	127231	127233	3
S92A-101A	1	372	127234	127238	3
S92A-112	1	512	127239	127244	6
S92A-118	1	512	127245	127250	6
S92A-120	1	508	127251	127257	7
S92A-116	1	510	127258	127263	6
S92A-110	1	805	127264	127273	10
S92A-112	1	507	127274	127279	6
S92A-108	11	1558	127280	127298	19
S92A-114	1	1206	127299	127313	15
S92A-114A	2	280	127314	127317	4
S92A-108A	1	291	127318	127321	4
S92A-106	1	1180	127322	127335	14
S92A-104	1	1178	127336	127349	14
S92A-102	1	997	127350	127361	12
S92A-139	1	475	127362	127367	6
S92A-137	1	475	127368	127373	6
S92A-135	1	475	127386	127391	6
S92A-133	1	474	127380	127385	6
S92A-131	1	475	127386	127391	6
S92A-129	1	179	127392	127394	3
S92A-129A	1	370	127395	127399	5
S92A-127	1	625	127400	127407	8
S92A-125	1	660	127408	127415	8
S92A-123	1	695	127416	127426	11
S92A-121	1	883	127427	127437	11
S92A-119	1	883	127438	127448	11
		T/RL1 YOLLA SURVEY			
S92B-109	1	436	127449	127454	6
S92B-105 TEST	1	157	127455	127457	3
S92B-105	1	437	127458	127463	6
S92B-101	1	437	127464	127469	6
S92B-101 TEST	438	616	127470	127472	2
S92B-107	1	437	127473	127478	6
S92B-103	1	437	127479	127485	7
*** Total ***					308

10.5 LINE LOG

LINE: S92A-117A AZIMUTH: 203 STATUS: COMP DATE: 26/07/92

START: 14:54 HRS FSP: 777 FCSP: 777 TOTAL SP: 737 TOTAL KM: 19.648
END: 16:58 HRS LSP: 41 LCSP: 0 TOTAL CSP: 737 TOTAL CKM: 19.648

FSP LAT: 40 15 44.82 S FSP LON: 145 44 36.96 E FSP WATER DEPTH: 77.0
LSP LAT: 40 25 23.43 S LSP LON: 145 39 03.08 E LSP WATER DEPTH: 68.0

OFFSET (M): 89.2 WIND: SW 15 kts SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 4.6 PORT- 5.1 PORT
SOL NOISE: 4.2 uBAR AVERAGE NEAR 6 GROUPS: 5.4 uBAR AVERAGE
EOL NOISE: 3.8 uBAR AVERAGE NEAR 6 GROUPS: 4.2 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR CLOSENESS TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 628 DISABLE GUNS #25 VOL 4935 CU.IN ENABLE #25 AT SP 316.
SP 109 DISABLED GUN #25 AND #35 VOL 4735.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 14,18 and 1
PERFORMANCE: S.O.L. PDOP 2.8 E.O.L. PDOP 1.3.
SP 702 NEW HEADING 202.7 DEGREE AND SP 209 NEW HEADING 202.5 DEGREE.

COMMENTS: EDITS: SP# NIL. THIS WAS THE SECOND ATTEMPT AS THE FIRST WAS ABORTED BECAUSE OF ITB AND SOURCE FAILURE.

LINE: S92A-115A AZIMUTH: 017 STATUS: COMP DATE: 26/07/92

START: 21:44 HRS FSP: 101 FCSP: 101 TOTAL SP: 540 TOTAL KM: 14.396
END: 23:15 HRS LSP: 640 LCSP: 640 TOTAL CSP: 540 TOTAL CKM: 14.396

FSP LAT: 40 23 18.56 S FSP LON: 145 38 12.85 E FSP WATER DEPTH: 68.0
LSP LAT: 40 15 78.34 S LSP LON: 145 41 19.84 E LSP WATER DEPTH: 75.0

OFFSET (M): 90.6 WIND: SE 15 kts SEA: SLT/MOD SWELL (M): .5

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 8.0 PORT - 4.1 PORT
SOL NOISE: 3.7 uBAR AVERAGE NEAR 6 GROUPS: 4.4 uBAR AVERAGE
EOL NOISE: 3.8 uBAR AVERAGE NEAR 6 GROUPS: 4.2 uBAR AVERAGE
STATUS: SP 460 TO SP 480 THE FRONT END OF THE STREAMER WAS SLIGHTLY BELOW SPEC. BECAUSE POWER WAS LOST ON THE PORT MAIN ENGINE OF THE VESSEL .

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 24,13,02,12.
PERFORMANCE: S.O.L. PDOP 1.4 E.O.L. PDOP 1.7

COMMENTS: EDITS: SP# NIL.
THE LINE WAS COMPLETED STEERING WITH ONE ENGINE.

LINE: S92A-113A AZIMUTH: 198 STATUS: COMP DATE: 27/07/92

START: 07:58 HRS FSP: 514 FCSP: 514 TOTAL SP: 474 TOTAL KM: 12.637
END: 09:17 HRS LSP: 41 LCSP: 41 TOTAL CSP: 474 TOTAL CKM: 12.637

FSP LAT: 40 17 63.98 S FSP LON: 145 39 69.88 E FSP WATER DEPTH: 74.0
LSP LAT: 40 24 13.12 S LSP LON: 145 36 98.63 E LSP WATER DEPTH: 67.0

OFFSET (M): 90.6 WIND: NW 21 kts SEA: SL/ROUGH SWELL (M): 2.0

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 0.7 STBD - 0.9 STBD
SOL NOISE: 3.8 uBAR AVERAGE NEAR 6 GROUPS: 4.5 uBAR AVERAGE
EOL NOISE: 5.1 uBAR AVERAGE NEAR 6 GROUPS: 6.3 uBAR AVERAGE
STATUS: THE OCCASIONAL SWELL NOISE ON RECORDS.
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 490 GUN 35 DISENABLE VOL 5200 CU.IN.
SYNC AUTOFIRE AT SP 508,597,506,493,492,491, 301 AND 298.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 11,17,23,28.
PERFORMANCE: S.O.L. PDOP 1.4 E.O.L. PDOP 1.0. SV. 11,12,15,21,25 AND 28.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-107 AZIMUTH: 017 STATUS: COMP DATE: 27/07/92

START: 10:28 HRS FSP: 101 FCSP: 101 TOTAL SP: 513 TOTAL KM: 13.677
END: 11:58 HRS LSP: 613 LCSP: 613 TOTAL CSP: 513 TOTAL CKM: 13.677

FSP LAT: 40 22 10.64 S FSP LON: 145 35 67.21 E FSP WATER DEPTH: 65.0
LSP LAT: 40 15 06.54 S LSP LON: 145 38 55.70 E LSP WATER DEPTH: 75.0

OFFSET (M): 89.4 WIND: NW 21 kts SEA: ROUGH SWELL (M): 2.0+

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 5.7 STBD - 1.1 STBD
SOL NOISE: 7.0 uBAR AVERAGE NEAR 6 GROUPS: 7.6 uBAR AVERAGE
EOL NOISE: 33.1 uBAR AVERAGE NEAR 6 GROUPS: 35 uBAR AVERAGE
STATUS: SWELL NOISE INCREASED NEAR END OF LINE, HIGH WINDS. GUSTS UP TO 35 KTS.

NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 125 GUN #35 OUT NEW VOL 5200 CU.IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.11, 14, 15, 21.
PERFORMANCE: S.O.L. PDOP 1.3 E.O.L. PDOP 3.2. SV. 14, 15 AND 25.
LOST SV. # 15 FOR THE LAST TWO SPOT POINTS.

COMMENTS: EDITS: SP# NIL

LINE: S92A-105 AZIMUTH: 018 STATUS: COMP DATE: 27/07/92

START: 02:59 HRS FSP: 101 FCSP: 101 TOTAL SP: 436 TOTAL KM: 11.624
END: 04:15 HRS LSP: 536 LCSP: 536 TOTAL CSP: 436 TOTAL CKM: 11.624

FSP LAT: 40 21 93.47 S FSP LON: 145 34 97.05 E FSP WATER DEPTH: 63.0
LSP LAT: 40 15 96.39 S LSP LON: 145 37 46.83 E LSP WATER DEPTH: 70.0

OFFSET (M): 91.1 WIND: NW 18 kts SEA: MODERATE SWELL (M): 1.75+

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 7.6 STBD - 4.9 STBD
SOL NOISE: 3.7 uBAR AVERAGE NEAR 6 GROUPS: 3.9 uBAR AVERAGE
EOL NOISE: 4.0 uBAR AVERAGE NEAR 6 GROUPS: 4.6 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SYNC AUTO FIRE SP 127,133,149, 211, 243, 294,298,300,
GUNS 17, 35 ARE THE TWO GUNS AT FAULT.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.3, 16,17,20,25.
PERFORMANCE: S.O.L. PDOP 1.5 E.O.L. PDOP 2.3. SV. 3, 17, 20 AND 23.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-109 AZIMUTH: 198 STATUS: COMP DATE: 27/07/92

START: 00:29 HRS FSP: 477 FCSP: 477 TOTAL SP: 437 TOTAL KM: 11.650
END: 01:46 HRS LSP: 41 LCSP: 41 TOTAL CSP: 437 TOTAL CKM: 11.650

FSP LAT: 40 17 35.11 S FSP LON: 145 38 34.22 E FSP WATER DEPTH: 72.0
LSP LAT: 40 23 33.87 S LSP LON: 145 35 85.16 E LSP WATER DEPTH: 63.0

OFFSET (M): 90.3 WIND: NE 18 kts SEA: MODERATE SWELL (M): 1.5

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 0.6 PORT - 2.1 PORT
SOL NOISE: 3.5 uBAR AVERAGE NEAR 6 GROUPS: 4.1 uBAR AVERAGE
EOL NOISE: 4.4 uBAR AVERAGE NEAR 6 GROUPS: 5.2 uBAR AVERAGE
STATUS: SP 380 TO 364 THE STREAMER WAS FORCED DEEPER BECAUSE OF NO PT ENGINE.
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 385 GUN #17 DISABLED VOL 4935 CU.IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 3,12,13, 16,20
PERFORMANCE: S.O.L. PDOP 1.1 E.O.L. PDOP 1.2. SV. 3, 16, 17, 20,24 AND 25.

COMMENTS: EDITS: SP# NIL.
DURING A SMALL PORTION OF THE LINE THE STREAMER WAS DEEPER THAN SPECIFICATION.

LINE: S92A-111 AZIMUTH: 017 STATUS: COMP DATE: 29/07/92

START: 12:14 HRS FSP: 101 FCSP: 101 TOTAL SP: 550 TOTAL KM: 14.663
END: 13:48 HRS LSP: 650 LCSP: 650 TOTAL CSP: 550 TOTAL CKM: 14.663

FSP LAT: 40 22 89.42 S FSP LON: 145 36 82.05 E FSP WATER DEPTH: 67.0
LSP LAT: 40 15 34.60 S LSP LON: 145 39 90.08 E LSP WATER DEPTH: 75.0

OFFSET (M): 90.2 WIND: 12 KTS SEA: SLIGHT SWELL (M): 1-2

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 3.0 PORT - 0.0 STBD
SOL NOISE: 4.0 uBAR AVERAGE NEAR 6 GROUPS: 4.8 uBAR AVERAGE
EOL NOISE: 3.9 uBAR AVERAGE NEAR 6 GROUPS: 4.3 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: GUN # 35 DISABLED VOL. 5200 CU. IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 15, 25,14,18.
PERFORMANCE: S.O.L. PDOP 1.6 E.O.L. PDOP 2.3. S.V. 14, 19 AND 18.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-103 AZIMUTH: 198 STATUS: COMP DATE: 29/07/92

START: 15:20 HRS FSP: 541 FCSP: 541 TOTAL SP: 501 TOTAL KM: 13.357
END: 16:50 HRS LSP: 41 LCSP: 41 TOTAL CSP: 501 TOTAL CKM: 13.357

FSP LAT: 40 15 98.65 S FSP LON: 145 36 73.45 E FSP WATER DEPTH: 69.0
LSP LAT: 40 22 82.76 S LSP LON: 145 33 84.07 E LSP WATER DEPTH: 62.0

OFFSET (M): 88.9 WIND: WSW 15-18 kts SEA: MODERATE SWELL (M): 1.5

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 5.9 PORT - 4.7 STBD
SOL NOISE: 4.2 uBAR AVERAGE NEAR 6 GROUPS: 4.7 uBAR AVERAGE
EOL NOISE: 4.3 uBAR AVERAGE NEAR 6 GROUPS: 4.9 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: GUN #35 DISABLED PRIOR TO START OF LINE VOL 5200 CU. IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 14, 19 AND 18.
PERFORMANCE: S.O.L. PDOP 3.4 E.O.L. PDOP 1.3. SV. 16, 02, 19, 18 AND 11.
SP 452-450 RECORDING ON MIN. CYCLE TIME D/T HIGH DOP'S PERIOD.

COMMENTS: EDITS: SP# NIL. SP. 541 TO SP 542 D/T LSR 1000 GUN CONTROLLER .
SPS 185-80 SCREW NOISE ON THE RECORDS LESS THAN 3u BARS.

LINE: S92A-101 AZIMUTH: 016 STATUS: COMP DATE: 29/07/92

START: 18:13 HRS FSP: 101 FCSP: 101 TOTAL SP: 200 TOTAL KM: 5.332
END: 18:53 HRS LSP: 300 LCSP: 300 TOTAL CSP: 200 TOTAL CKM: 5.332

FSP LAT: 40 21 33.65 S FSP LON: 145 33 29.74 E FSP WATER DEPTH: 62.0
LSP LAT: 40 18 58.99 S LSP LON: 145 34 37.10 E LSP WATER DEPTH: 67.0

OFFSET (M): 89.8 WIND: W-NW 15 kts SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 5.8 STBD - 2.8 STBD
SOL NOISE: 4.2 uBAR AVERAGE NEAR 6 GROUPS: 4.7 uBAR AVERAGE
EOL NOISE: 4.0 uBAR AVERAGE NEAR 6 GROUPS: 4.5 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 16,02, 19, 18.
PERFORMANCE: S.O.L. PDOP 1.2 E.O.L. PDOP 2.5. SV. 02, 19.
UNABLE TO CONTINUE - NO SATELLITE DATA FROM DGPS STATION.

COMMENTS: EDITS: SP# NIL.
STOPPED RECORDING BECAUSE OF LACK OF DGPS DATA.

LINE: S92A-101A AZIMUTH: 016 STATUS: COMP DATE: 29/07/92

START: 21:11 HRS FSP: 301 FCSP: 301 TOTAL SP: 311 TOTAL KM: 8.291
END: 11:15 HRS LSP: 611 LCSP: 611 TOTAL CSP: 311 TOTAL CKM: 8.291

FSP LAT: 40 18 59.01 S FSP LON: 145 34 36.38 E FSP WATER DEPTH: 67.0
LSP LAT: 40 14 29.02 S LSP LON: 145 36 02.15 E LSP WATER DEPTH: 73.0

OFFSET (M): 90.3 WIND: NW 15 kts SEA: MODERATE SWELL (M): 1.5

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 1.0 PORT - 5.7 PORT
SOL NOISE: 3.7 uBAR AVERAGE NEAR 6 GROUPS: 4.3 uBAR AVERAGE
EOL NOISE: 4.0 uBAR AVERAGE NEAR 6 GROUPS: 4.6 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 02, 13 AND 12.
PERFORMANCE: S.O.L. PDOP 1.9 E.O.L. PDOP 3.5. SV. 24, 13 AND 12.

COMMENTS: EDITS: SP# NIL.
THIS LINE WAS RECORDED IN TWO PARTS.

LINE: S92A-122 AZIMUTH: 107 STATUS: COMP DATE: 30/07/92

START: 00:07 HRS FSP: 101 FCSP: 101 TOTAL SP: 512 TOTAL KM: 13.650
END: 01:31 HRS LSP: 612 LCSP: 612 TOTAL CSP: 512 TOTAL CKM: 13.650

FSP LAT: 40 16 22.16 S FSP LON: 145 33 96.76 E FSP WATER DEPTH: 70.0
LSP LAT: 40 18 33.87 S LSP LON: 145 43 13.62 E LSP WATER DEPTH: 75.0

OFFSET (M): 90.9 WIND: NE 15 kts SEA: MODERATE SWELL (M): 2.0

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 1.2 PORT - 0.3 PORT
SOL NOISE: 4.2 uBAR AVERAGE NEAR 6 GROUPS: 4.8 uBAR AVERAGE
EOL NOISE: 4.0 uBAR AVERAGE NEAR 6 GROUPS: 4.8 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP GUN #33 DISABLED VOL 4935 CU. IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.3,12,13,16,20.
PERFORMANCE: S.O.L. PDOP 1.0 E.O.L. PDOP 1.2 SV. 3, 16, 17, 20, 24 AND 25.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-118 AZIMUTH: 288 STATUS: COMP DATE: 30/07/92

START: 02:59 HRS FSP: 552 FCSP: 552 TOTAL SP: 512 TOTAL KM: 13.650
END: 04:28 HRS LSP: 41 LCSP: 41 TOTAL CSP: 512 TOTAL CKM: 13.650

FSP LAT: 40 19 63.36 S FSP LON: 145 41 39.28 E FSP WATER DEPTH: 72.0
LSP LAT: 40 17 34.23 S LSP LON: 145 32 05.36 E LSP WATER DEPTH: 64.0

OFFSET (M): 90.3 WIND: NNW 10 kts SEA: MODERATE SWELL (M): 1.5

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 3.2 STBD - 2.0 PORT
SOL NOISE: 4.0 uBAR AVERAGE NEAR 6 GROUPS: 4.8 uBAR AVERAGE
EOL NOISE: 7.5 uBAR AVERAGE NEAR 6 GROUPS: 8.2 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 3,16,17,20,23.
PERFORMANCE: S.O.L. PDOP 1.5 E.O.L. PDOP 2.5 SV. 3, 17, 21 AND 23.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-120 AZIMUTH: 108 STATUS: COMP DATE: 30/07/92

START: 10:36 HRS FSP: 101 FCSP: 101 TOTAL SP: 511 TOTAL KM: 13.623
END: 12:04 HRS LSP: 611 LCSP: 611 TOTAL CSP: 511 TOTAL CKM: 13.623

FSP LAT: 40 17 29.94 S FSP LON: 145 33 61.25 E FSP WATER DEPTH: 69.0
LSP LAT: 40 19 44.24 S LSP LON: 145 42 75.44 E LSP WATER DEPTH: 76.0

OFFSET (M): 89.4 WIND: WEST 23 kts SEA: MOD/R SWELL (M): 2.5

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 0.0 PORT - 0.6 STBD
SOL NOISE: 19.2 uBAR AVERAGE NEAR 6 GROUPS: 20.1 uBAR AVERAGE
EOL NOISE: 8.8 uBAR AVERAGE NEAR 6 GROUPS: 9.4 uBAR AVERAGE
STATUS: S.O.L. WAS TAKEN WHEN A HUGH SWELL HIT THE STREAMER.
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 11,14,15,21,25
PERFORMANCE: S.O.L. PDOP 1.3 E.O.L. PDOP 1.4. SV. 25, 14, 13 AND 15.

COMMENTS: EDITS: SP# 388,517, 518, 519, 197 AND 198..
PLEASE NOTE THE STREAMER DEPTH IS NOW 11+/-m.

LINE: S92A-116 AZIMUTH: 288 STATUS: COMP DATE: 30/07/92

START: 13:49 HRS FSP: 551 FCSP: 551 TOTAL SP: 511 TOTAL KM: 13.623
END: 15:11 HRS LSP: 41 LCSP: 41 TOTAL CSP: 511 TOTAL CKM: 13.623

FSP LAT: 40 20 11.64 S FSP LON: 145 40 89.90 E FSP WATER DEPTH: 74.0
LSP LAT: 40 17 87.98 S LSP LON: 145 31 75.24 E LSP WATER DEPTH: 65.0

OFFSET (M): 89.1 WIND: N/W 25 kts SEA: ROUGH SWELL (M): 2.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 1.0 STBD - 0.3 STBD
SOL NOISE: 7.2 uBAR AVERAGE NEAR 6 GROUPS: 7.5 uBAR AVERAGE
EOL NOISE: 13.9 uBAR AVERAGE NEAR 6 GROUPS: 13.6 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 18, 14 AND 19.
PERFORMANCE: S.O.L. PDOP 2.3 E.O.L. PDOP 3.3. SV 18, 14 AND 19.

COMMENTS: EDITS: SP# 513, 513, 424, AND 423.
STREAMER DEPTH 11 METERS.

LINE: S92A-110 AZIMUTH: 108 STATUS: COMP DATE: 30/07/92

START: 16:32 HRS FSP: 101 FCSP: 101 TOTAL SP: 806 TOTAL KM: 21.488
END: 18:46 HRS LSP: 906 LCSP: 906 TOTAL CSP: 806 TOTAL CKM: 21.488

FSP LAT: 40 19 95.21 S FSP LON: 145 32 59.82 E FSP WATER DEPTH: 63.0
LSP LAT: 40 23 59.29 S LSP LON: 145 46 99.25 E LSP WATER DEPTH: 75.0

OFFSET (M): 89.8 WIND: WNW 15-18 kts SEA: MODERATE SWELL (M): 2.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 2.6 PORT - 1.5 STBD
SOL NOISE: 9.3 uBAR AVERAGE NEAR 6 GROUPS: 10.0 uBAR AVERAGE
EOL NOISE: 3.8 uBAR AVERAGE NEAR 6 GROUPS: 4.3 uBAR AVERAGE
STATUS: COMPASS 12 INTERMITTENT.
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 18,16,28,02,19
PERFORMANCE: S.O.L. PDOP 1.1 E.O.L. PDOP 2.5 S.V. 02 AND 19.
LAST 16 SP ON THE LINE WAS RECORDED ON DEAD RECKONING AS THERE WAS ONLY 2 SV.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-112 AZIMUTH: 288 STATUS: COMP DATE: 31/07/92

START: 22:43 HRS FSP: 547 FCSP: 547 TOTAL SP: 507 TOTAL KM: 13.517
END: 00:10 HRS LSP: 41 LCSP: 41 TOTAL CSP: 507 TOTAL CKM: 13.517

FSP LAT: 40 21 18.38 S FSP LON: 145 40 48.68 E FSP WATER DEPTH: 73.0
LSP LAT: 40 18 93.44 S LSP LON: 145 31 42.63 E LSP WATER DEPTH: 63.0

OFFSET (M): 88.7 WIND: SW 22-23 kts SEA: MODERATE SWELL (M): 1.5

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 14.2 PORT -1.9 STBD
SOL NOISE: 14.2 uBAR AVERAGE NEAR 6 GROUPS: 14.4 uBAR AVERAGE
EOL NOISE: 21.0 uBAR AVERAGE NEAR 6 GROUPS: 21.4 uBAR AVERAGE
STATUS: RANDOM NOISE BURST.
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 175 DISABLE GUN 25 VOL 4935 CU. IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 12, 13, 24.
PERFORMANCE: S.O.L. PDOP 2.7 E.O.L. PDOP 1.0. SV. 3, 12, 13, 16 20 AND 24.

COMMENTS: EDITS: SP# NIL.
SWELL NOISE INCREASED AT THE S.O.L.

LINE: S92A-108 AZIMUTH: 109 STATUS: COMP DATE: 31/07/92

START: 06:55 HRS FSP: 101 FCSP: 101 TOTAL SP: 1559 TOTAL KM: 41.563
END: 11:25 HRS LSP: 1659 LCSP: 1659 TOTAL CSP: 1559 TOTAL CKM: 41.563

FSP LAT: 40 20 72.25 S FSP LON: 145 32 33.62 E FSP WATER DEPTH: 60.0
LSP LAT: 40 28 09.50 S LSP LON: 146 00 07.08 E LSP WATER DEPTH: 77.0

OFFSET (M): 87.2 WIND: SW 23 kts SEA: MODERATE SWELL (M): 2.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 4.5 PORT - 1.6 STBD
SOL NOISE: 3.8 uBAR AVERAGE NEAR 6 GROUPS: 4.3 uBAR AVERAGE
EOL NOISE: 3.5 uBAR AVERAGE NEAR 6 GROUPS: 4.5 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: STARTED S.O.L WITH 2700 CU. IN. AT SP 328 ENABLED STRING 4 AND 5

WHICH INCREASED THE VOLUME TO 5400 CU. IN.. THE PROBLEM WAS WITH THE COMPRESSOR

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 11,17,21,23,28
PERFORMANCE: S.O.L. PDOP 1.8 E.O.L. PDOP 2.2 SV. 14, 15, 25.
SP 550 DOGLEG AT 109.4 DEGREE AND AT SP 631 ANOTHER DOG LEG AT 108.6 DEGREE.

COMMENTS: FROM SP 101 TO SP 328 WILL BE RECORDED AGAIN WITH 5400 CUBIC INCH
VOLUME TO BE EVALUATED FOR QUALITY IN DEPTH DATA ALSO FREQUENCY CONTAINED.

LINE: S92A-114 AZIMUTH: 289 STATUS: COMP DATE: 31/07/92

START: 12:37 HRS FSP: 1448 FCSP: 1448 TOTAL SP: 1206 TOTAL KM: 32.152
END: 15:58 HRS LSP: 243 LCSP: 243 TOTAL CSP: 1206 TOTAL CKM: 32.152

FSP LAT: 40 24 93.39 S FSP LON: 145 56 71.65 E FSP WATER DEPTH: 78.0
LSP LAT: 40 19 35.64 S LSP LON: 145 35 20.04 E LSP WATER DEPTH: 68.0

OFFSET (M): 87.2 WIND: SW 15 kts SEA: MODERATE SWELL (M): 1.5

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 1.7 PORT - 3.5 STBD
SOL NOISE: 1.7 uBAR AVERAGE NEAR 6 GROUPS: 2.4 uBAR AVERAGE
EOL NOISE: 3.5 uBAR AVERAGE NEAR 6 GROUPS: 3.7 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 1424 GUN # 25 DISABLED NEW VOL 4935 CU. IN.
SP 441 GUN #25 ABLED VOL 5400 CI. IN. SP 399 DISABLE GUN #25.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 14, 18, 25, 15
PERFORMANCE: S.O.L. PDOP 1.4 E.O.L. PDOP 1.3 S.V. 16, 18, 19, 28 AND 02.
SP 308 MANUAL MODE FOR ONLY ONE SP OPERATOR ERROR.

COMMENTS: EDITS: SP# NIL. LINE WAS NOT COMPLETED DUE TO COMPRESSOR FAILURE
AT SP 243 VESSEL DID CIRCLE TO INVESTIGATE THE FAILURE.

LINE: S92A-114A AZIMUTH: 289 STATUS: COMP DATE: 31/07/92

START: 19:09 HRS FSP: 242 FCSP: 242 TOTAL SP: 202 TOTAL KM: 5.385
END: 20:56 HRS LSP: 41 LCSP: 41 TOTAL CSP: 202 TOTAL CKM: 5.385

FSP LAT: 40 19 34.51 S FSP LON: 145 35 17.10 E FSP WATER DEPTH: 66.0
LSP LAT: 40 18 41.96 S LSP LON: 145 31 62.22 E LSP WATER DEPTH: 63.0

OFFSET (M): 87.6 WIND: W-SW 15-20 kts SEA: SL MOD SWELL (M): 1.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 0.4 STBD - 0.9 STBD
SOL NOISE: 4.1 uBAR AVERAGE NEAR 6 GROUPS: 5.4 uBAR AVERAGE
EOL NOISE: 4.3 uBAR AVERAGE NEAR 6 GROUPS: 4.7 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 222 GUN # 25 DISENABLE TOTAL VOLUME 4935 CU. IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 19, 26, 02,13.
PERFORMANCE: S.O.L. PDOP 1.4 E.O.L. PDOP 1.8. SV. 26, 02 AND 13.

COMMENTS: EDITS: SP# NIL. THIS LINE WAS STARTED WITH A 76 SHOT POINT OVERLAP AT SP 319 AND THE FIRST NEW SP IS SP 242.

LINE: S92A-108A AZIMUTH: 109 STATUS: TEST DATE: 31/07/92

START: 21:12 HRS FSP: 101 FCSP: 0 TOTAL SP: 291 TOTAL KM: 7.758
END: 22:01 HRS LSP: 391 LCSP: 0 TOTAL CSP: 0 TOTAL CKM: 0.000

FSP LAT: 40 20 71.61 S FSP LON: 145 32 34.01 E FSP WATER DEPTH: 61.0
LSP LAT: 40 22 10.41 S LSP LON: 145 37 47.29 E LSP WATER DEPTH: 68.0

OFFSET (M): 89.5 WIND: SW 18 kts SEA: SL MOD SWELL (M): 1.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 4.6 PORT - 0.9 STBD
SOL NOISE: 3.8 uBAR AVERAGE NEAR 6 GROUPS: 4.3 uBAR AVERAGE
EOL NOISE: 3.2 uBAR AVERAGE NEAR 6 GROUPS: 3.9 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 12, 24, 26, 02
PERFORMANCE: S.O.L. PDOP 1.1 E.O.L. PDOP 1.6 SV. 12, 24, 02 AND 13.

COMMENTS: EDITS: SP# 165 AND 242.

LINE: S92A-106 AZIMUTH: 104 STATUS: COMP DATE: 01/08/92

START: 23:18 HRS FSP: 101 FCSP: 101 TOTAL SP: 1181 TOTAL KM: 31.486
END: 02:40 HRS LSP: 1281 LCSP: 1281 TOTAL CSP: 1181 TOTAL CKM: 31.486

FSP LAT: 40 25 41.62 S FSP LON: 145 43 24.15 E FSP WATER DEPTH: 71.0
LSP LAT: 40 29 62.33 S LSP LON: 146 04 80.69 E LSP WATER DEPTH: 77.0

OFFSET (M): 87.8 WIND: W 15-18 kts SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 3.5 PORT - 2.0 STBD
SOL NOISE: 3.5 uBAR AVERAGE NEAR 6 GROUPS: 3.9 uBAR AVERAGE
EOL NOISE: 3.6 uBAR AVERAGE NEAR 6 GROUPS: 4.4 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: GUN #46 DISABLE VOL 5040 CU. IN. GUN #17 SYNC ERRORS 32 TIMES . ON THIS LINE.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 12, 13 AND 24.
PERFORMANCE: S.O.L. PDOP 1.6 E.O.L. PDOP 1.7. SV. 3, 16, 17 AND 20.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-104 AZIMUTH: 284 STATUS: COMP DATE: 01/08/92

START: 04:58 HRS FSP: 1222 FCSP: 1222 TOTAL SP: 1182 TOTAL KM: 31.512
END: 08:20 HRS LSP: 41 LCSP: 41 TOTAL CSP: 1182 TOTAL CKM: 31.512

FSP LAT: 40 30 43.66 S FSP LON: 146 03 01.59 E FSP WATER DEPTH: 75.0
LSP LAT: 40 26 28.79 S LSP LON: 145 41 40.85 E LSP WATER DEPTH: 69.0

OFFSET (M): 89.9 WIND: wnw 18-20 KTS SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 1.5 STBD - 2.4 PORT
SOL NOISE: 4.6 uBAR AVERAGE NEAR 6 GROUPS: 5.0 uBAR AVERAGE
EOL NOISE: 4.3 uBAR AVERAGE NEAR 6 GROUPS: 4.9 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 1208 GUN 34 DISABLE VOL 4655 CU.IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 3, 17,21,26,28
PERFORMANCE: S.O.L. PDOP 1.2 E.O.L. PDOP 1.0 SV. 11, 12, 15, 21, 25 AND 28.

COMMENTS: EDITS: SP# 1202, 1201, 1206, 547, 573, 418, 417, 357, AND SP 356.

LINE: S92A-102 AZIMUTH: 104 STATUS: COMP DATE: 01/08/92

START: 11:54 HRS FSP: 101 FCSP: 101 TOTAL SP: 997 TOTAL KM: 26.580
END: 14:47 HRS LSP: 1097 LCSP: 1097 TOTAL CSP: 997 TOTAL CKM: 26.580

FSP LAT: 40 28 76.91 S FSP LON: 145 45 61.75 E FSP WATER DEPTH: 73.0
LSP LAT: 40 32 27.58 S LSP LON: 146 03 84.64 E LSP WATER DEPTH: 77.0

OFFSET (M): 87.6 WIND: W 20 kts SEA: MODERATE SWELL (M): 1-2.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 1.3 PORT - 0.9 STBD
SOL NOISE: 3.2 uBAR AVERAGE NEAR 6 GROUPS: 3.7 uBAR AVERAGE
EOL NOISE: 13.1 uBAR AVERAGE NEAR 6 GROUPS: 15.3 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 137 DISABLED GUN 34 NEW VOLUME TOTAL 5120 CUBIC INCH.

SP 833 RANDOM NOISE ON STREAMER BECAUSE OF SEA STATE.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.13,14,15 AND 25
PERFORMANCE: S.O.L. PDOP 1.4 E.O.L. PDOP 3.0 SV. 19, 14 AND 18.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-139 AZIMUTH: 014 STATUS: COMP DATE: 01/08/92

START: 17:08 HRS FSP: 101 FCSP: 101 TOTAL SP: 475 TOTAL KM: 12.664
END: 18:32 HRS LSP: 575 LCSP: 575 TOTAL CSP: 475 TOTAL CKM: 12.664

FSP LAT: 40 32 66.47 S FSP LON: 146 00 88.81 E FSP WATER DEPTH: 77.0
LSP LAT: 40 26 03.83 S LSP LON: 146 03 05.49 E LSP WATER DEPTH: 76.0

OFFSET (M): 87.7 WIND: WNW 20 kts SEA: MODERATE SWELL (M): 2.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 8.7 STBD - 3.4 STBD
SOL NOISE: 6.3 uBAR AVERAGE NEAR 6 GROUPS: 7.0 uBAR AVERAGE
EOL NOISE: 5.5 uBAR AVERAGE NEAR 6 GROUPS: 6.0 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 131 GUN 34 DISABLED, NEW TOTAL 5120 CUBIC INCH.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.16,17,18,02,11.
PERFORMANCE: S.O.L. PDOP 1.4 E.O.L. PDOP 1.2 S.V. 26, 19,16,02 AND 11.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-137 AZIMUTH: 194 STATUS: COMP DATE: 01/08/92

START: 20:00 HRS FSP: 515 FCSP: 515 TOTAL SP: 475 TOTAL KM: 12.664
END: 21:18 HRS LSP: 41 LCSP: 41 TOTAL CSP: 475 TOTAL CKM: 12.664

FSP LAT: 40 26 85.78 S FSP LON: 146 01 39.50 E FSP WATER DEPTH: 76.0
LSP LAT: 40 33 46.97 S LSP LON: 145 59 15.25 E LSP WATER DEPTH: 74.0

OFFSET (M): 78.8 WIND: W/N 25 kts SEA: ROUGH SWELL (M): 1-2.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 6.3 PORT - 2.8 PORT
SOL NOISE: 4.5 uBAR AVERAGE NEAR 6 GROUPS: 5.0 uBAR AVERAGE
EOL NOISE: 4.2 uBAR AVERAGE NEAR 6 GROUPS: 4.8 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 26, 13 AND 02.
PERFORMANCE: S.O.L. PDOP 1.8 E.O.L. PDOP 1.1 S.V. 26, 12, 24, 13 AND 02.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-135 AZIMUTH: 015 STATUS: COMP DATE: 01/08/92

START: 22:48 HRS FSP: 101 FCSP: 101 TOTAL SP: 476 TOTAL KM: 12.690
END: 24:00 HRS LSP: 576 LCSP: 576 TOTAL CSP: 476 TOTAL CKM: 12.690

FSP LAT: 40 32 05.03 S FSP LON: 145 58 19.84 E FSP WATER DEPTH: 75.0
LSP LAT: 40 25 42.77 S LSP LON: 146 00 42.46 E LSP WATER DEPTH: 78.0

OFFSET (M): 87.2 WIND: W 20-25 kts SEA: MODERATE SWELL (M): 1.5

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 3.3 STBD - 1.8 PORT
SOL NOISE: 4.0 uBAR AVERAGE NEAR 6 GROUPS: 4.6 uBAR AVERAGE
EOL NOISE: 3.5 uBAR AVERAGE NEAR 6 GROUPS: 3.9 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 513 DISABLE GUN #19 VOL 5200 CU. IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 12, 13 AND 24.
PERFORMANCE: S.O.L. PDOP 2.6 E.O.L. PDOP 1.1. S.V. 3, 12, 13, 16 20 AND 24.

COMMENTS: EDITS: SP# 529, 530-533, 535-539, 542 AND 543.

LINE: S92A-133 AZIMUTH: 194 STATUS: COMP DATE: 02/08/92

START: 01:36 HRS FSP: 514 FCSP: 514 TOTAL SP: 474 TOTAL KM: 12.637
END: 02:56 HRS LSP: 41 LCSP: 41 TOTAL CSP: 474 TOTAL CKM: 12.637

FSP LAT: 40 26 30.26 S FSP LON: 145 58 65.07 E FSP WATER DEPTH: 78.0
LSP LAT: 40 32 95.56 S LSP LON: 145 56 43.18 E LSP WATER DEPTH: 76.0

OFFSET (M): 88.3 WIND: WSW 15-18 kts M SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 0.3 PORT - 3.2 STBD
SOL NOISE: 4.4 uBAR AVERAGE NEAR 6 GROUPS: 5.2 uBAR AVERAGE
EOL NOISE: 3.9 uBAR AVERAGE NEAR 6 GROUPS: 4.3 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 03,16,17, 20.
PERFORMANCE: S.O.L. PDOP 1.3 E.O.L. PDOP 03, 16, 17 AND 20.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-131 AZIMUTH: 015 STATUS: COMP DATE: 02/08/92

START: 04:21 HRS FSP: 101 FCSP: 101 TOTAL SP: 475 TOTAL KM: 12.664
END: 05:40 HRS LSP: 575 LCSP: 575 TOTAL CSP: 475 TOTAL CKM: 12.664

FSP LAT: 40 31 53.70 S FSP LON: 145 55 38.97 E FSP WATER DEPTH: 75.0
LSP LAT: 40 24 93.36 S LSP LON: 145 57 68.03 E LSP WATER DEPTH: 76.0

OFFSET (M): 88.7 WIND: WSW 18 kts SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 2.6 STBD -0.6 PORT
SOL NOISE: 3.2 uBAR AVERAGE NEAR 6 GROUPS: 3.6 uBAR AVERAGE
EOL NOISE: 3.5 uBAR AVERAGE NEAR 6 GROUPS: 4.3 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 466 GUN 9 DISABLED NEW VOL 4935 CU. IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 3,17,21,23,26.
PERFORMANCE: S.O.L. PDOP 1.9 E.O.L. PDOP 1.3 S.V. 17,21,23,26 AND 28.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-129 AZIMUTH: 195 STATUS: TBC DATE: 02/08/92

START: 07:03 HRS FSP: 516 FCSP: 516 TOTAL SP: 166 TOTAL KM: 4.426
END: 07:33 HRS LSP: 351 LCSP: 351 TOTAL CSP: 166 TOTAL CKM: 4.426

FSP LAT: 40 25 74.80 S FSP LON: 145 55 91.32 E FSP WATER DEPTH: 75.0
LSP LAT: 40 28 06.45 S LSP LON: 145 55 13.81 E LSP WATER DEPTH: 74.0

OFFSET (M): 87.7 WIND: SW 20 kts SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 6.4 PORT - 3.9 PORT
SOL NOISE: 6.4 uBAR AVERAGE NEAR 6 GROUPS: 6.8 uBAR AVERAGE
EOL NOISE: 3.9 uBAR AVERAGE NEAR 6 GROUPS: 4.5 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 11,17,21,23,28
PERFORMANCE: S.O.L. PDOP 1.6 E.O.L. PDOP 1.4 S.V. 11,17, 21, 23 AND 28.

COMMENTS: EDITS: SP# 401. LINE TERMINATED BECAUSE OF COMPRESSOR SHUT DOWN.
LAST GOOD SHOT POINT 351.

LINE: S92A-129A AZIMUTH: 195 STATUS: COMP DATE: 02/08/92

START: 09:50 HRS FSP: 410 FCSP: 350 TOTAL SP: 370 TOTAL KM: 9.864
END: 10:51 HRS LSP: 41 LCSP: 41 TOTAL CSP: 310 TOTAL CKM: 8.265

FSP LAT: 40 27 36.78 S FSP LON: 145 55 37.57 E FSP WATER DEPTH: 75.0
LSP LAT: 40 32 37.68 S LSP LON: 145 53 67.78 E LSP WATER DEPTH: 74.0

OFFSET (M): 87.2 WIND: SW 23 kts SEA: MODERATE SWELL (M): 1.5

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 1.3 PORT - 3.1 PORT
SOL NOISE: 4.0 uBAR AVERAGE NEAR 6 GROUPS: 4.4 uBAR AVERAGE
EOL NOISE: 3.9 uBAR AVERAGE NEAR 6 GROUPS: 4.7 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 11,14,15,21,24
PERFORMANCE: S.O.L. PDOP 1.3 E.O.L. PDOP 2.3 S.V 14, 15 AND 25

COMMENTS: EDITS: SP#NIL. THIS IS THE REMAINDER OF S92A-129.

LINE: S92A-127 AZIMUTH: 015 STATUS: COMP DATE: 02/08/92

START: 12:12 HRS FSP: 101 FCSP: 101 TOTAL SP: 626 TOTAL KM: 16.689
END: 13:55 HRS LSP: 726 LCSP: 726 TOTAL CSP: 626 TOTAL CKM: 16.689

FSP LAT: 40 31 03.22 S FSP LON: 145 52 63.14 E FSP WATER DEPTH: 75.0
LSP LAT: 40 22 33.56 S LSP LON: 145 55 69.30 E LSP WATER DEPTH: 79.0

OFFSET (M): 87.6 WIND: SW 20 kts SEA: MODERATE SWELL (M): 1-2.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 5.0 PORT - 0.8 STBD
SOL NOISE: 3.9 uBAR AVERAGE NEAR 6 GROUPS: 4.4 uBAR AVERAGE
EOL NOISE: 3.7 uBAR AVERAGE NEAR 6 GROUPS: 4.2 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 486 GUN 9 DISABLED NEW VOLUME 4935 CU. IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.25,14,15 AND 18
PERFORMANCE: S.O.L. PDOP 1.5 E.O.L. PDOP 2.5 SV. 19, 14 AND 18.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-125 AZIMUTH: 194 STATUS: COMP DATE: 02/08/92

START: 16:02 HRS FSP: 701 FCSP: 701 TOTAL SP: 661 TOTAL KM: 17.622
END: 17:53 HRS LSP: 41 LCSP: 41 TOTAL CSP: 661 TOTAL CKM: 17.622

FSP LAT: 40 22 61.94 S FSP LON: 145 54 02.47 E FSP WATER DEPTH: 77.0
LSP LAT: 40 31 83.18 S LSP LON: 145 50 92.99 E LSP WATER DEPTH: 74.0

OFFSET (M): 88.0 WIND: SW 17-21 kts SEA: MOD/R SWELL (M): 1.5-2

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 0.2 STBD - 0.7 STBD
SOL NOISE: 3.9 uBAR AVERAGE NEAR 6 GROUPS: 4.4 uBAR AVERAGE
EOL NOISE: 4.2 uBAR AVERAGE NEAR 6 GROUPS: 4.7 uBAR AVERAGE
STATUS: DI #7 IS DISABLED.
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 115 GUN #41 DISABLED NEW VOLUME 4935 CUBIC INCH.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.28,19,16,02,18.
PERFORMANCE: S.O.L. PDOP 1.2 E.O.L. PDOP 1.0 S.V. 26,19,16,02,18 AND 11.

COMMENTS: EDITS: SP# NIL.

LINE: S92A-123 AZIMUTH: 014 STATUS: COMP DATE: 02/08/92

START: 19:21 HRS FSP: 101 FCSP: 101 TOTAL SP: 700 TOTAL KM: 18.662
END: 21:21 HRS LSP: 800 LCSP: 800 TOTAL CSP: 700 TOTAL CKM: 18.662

FSP LAT: 40 30 53.03 S FSP LON: 145 49 98.49 E FSP WATER DEPTH: 73.0
LSP LAT: 40 20 76.89 S LSP LON: 145 53 17.43 E LSP WATER DEPTH: 77.0

OFFSET (M): 89.4 WIND: SW 18 kts SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 0.7 STBD - 2.2 STBD
SOL NOISE: 3.3 uBAR AVERAGE NEAR 6 GROUPS: 3.8 uBAR AVERAGE
EOL NOISE: 3.5 uBAR AVERAGE NEAR 6 GROUPS: 3.9 uBAR AVERAGE
STATUS: DI #7 DISABLED.
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.26,19,02 AND 13
PERFORMANCE: S.O.L. PDOP 1.4 E.O.L. PDOP 1.1 S.V. 26, 12, 24, 02 AND 13.

COMMENTS: EDITS: SP# NIL. NOTE: DO NOT PROCESS TAPES #127420 AND 127421 TAPE DECK PROBLEMS AND THERE IS NO DATA ON TAPE. SP 440 TO SP 450 MISSED.

LINE: S92A-121 AZIMUTH: 194 STATUS: COMP DATE: 03/08/92

START: 23:14 HRS FSP: 924 FCSP: 924 TOTAL SP: 884 TOTAL KM: 23.568
END: 01:43 HRS LSP: 41 LCSP: 41 TOTAL CSP: 884 TOTAL CKM: 23.568

FSP LAT: 40 19 03.53 S FSP LON: 145 52 37.87 E FSP WATER DEPTH: 78.0
LSP LAT: 40 31 36.51 S LSP LON: 145 48 27.68 E LSP WATER DEPTH: 74.0

OFFSET (M): 87.3 WIND: SW 18-20 SEA: MODERATE SWELL (M): 2.0

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 6.1 PORT - 0.4 STBD
SOL NOISE: 3.6 uBAR AVERAGE NEAR 6 GROUPS: 4.8 uBAR AVERAGE
EOL NOISE: 4.1 uBAR AVERAGE NEAR 6 GROUPS: 4.8 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.12,13,20 AND 24
PERFORMANCE: S.O.L. PDOP 1.6 E.O.L. PDOP 1.3 S.V. 3, 16, 17, 20, 24 AND 25.

COMMENTS: EDITS: SP# 165 AND 164.
LINE HAS A DOG LEG AT SP 924 HEADING 193.8 AND AT SP 803 HEADING 194.3 DEGREE.

LINE: S92A-119 AZIMUTH: 14. STATUS: COMP DATE: 03/08/92

START: 03:08 HRS FSP: 101 FCSP: 101 TOTAL SP: 885 TOTAL KM: 23.594
END: 05:37 HRS LSP: 985 LCSP: 985 TOTAL CSP: 885 TOTAL CKM: 23.594

FSP LAT: 40 29 99.67 S FSP LON: 145 47 23.60 E FSP WATER DEPTH: 73.0
LSP LAT: 40 17 68.80 S LSP LON: 145 51 51.85 E LSP WATER DEPTH: 78.0

OFFSET (M): 90.4 WIND: W 10 kts SEA: SLIGHT SWELL (M): .5

STREAMER:- DEPTHS (M):11+/-1 FEATHERING : 0.3 PORT - 3.6 PORT
SOL NOISE: 3.1 uBAR AVERAGE NEAR 6 GROUPS: 3.8 uBAR AVERAGE
EOL NOISE: 3.6 uBAR AVERAGE NEAR 6 GROUPS: 4.7 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: 3,16,17,20,23, 26.
PERFORMANCE: S.O.L. PDOP 1.1 E.O.L. PDOP 1.3 S.V. 3, 17, 21, 23, 26 AND 28.

COMMENTS: EDITS: SP# 278 AND 280. THE LAST LINE IN PERMIT T/25.
DOG LEG AT SP 101 HEADING 14.9 DEGREE AND AT SP 794 HEADING 14.4 DEGREE.

LINE: S92B-109 AZIMUTH: 025 STATUS: COMP DATE: 03/08/92

START: 10:16 HRS FSP: 101 FCSP: 101 TOTAL SP: 437 TOTAL KM: 11.650
END: 11:32 HRS LSP: 537 LCSP: 537 TOTAL CSP: 437 TOTAL CKM: 11.650

FSP LAT: 39 52 65.84 S FSP LON: 145 46 26.08 E FSP WATER DEPTH: 79.0
LSP LAT: 39 47 09.75 S LSP LON: 145 49 67.41 E LSP WATER DEPTH: 80.0

OFFSET (M): 87.6 WIND: SW 15 kts SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 3.6 STBD - 2.1 STBD
SOL NOISE: 3.3 uBAR AVERAGE NEAR 6 GROUPS: 4.7 uBAR AVERAGE
EOL NOISE: 4.2 uBAR AVERAGE NEAR 6 GROUPS: 5.6 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.11,14,15,21,25.
PERFORMANCE: S.O.L. PDOP 1.3 E.O.L. PDOP 1.3 S.V. 14, 15 AND 25.

COMMENTS: EDITS: SP# 141,142 AND 41.
THIS IS THE FIRST LINE IN PERMIT T/RL1. TRAVEL TIME FROM T/25 WAS 4.75 HOURS.

T/RL1 YOLLA SURVEY S92B

LINE: S92B-105 AZIMUTH: 204 STATUS: COMP DATE: 03/08/92

START: 13:30 HRS FSP: 477 FCSP: 477 TOTAL SP: 437 TOTAL KM: 11.650
END: 15:15 HRS LSP: 41 LCSP: 41 TOTAL CSP: 437 TOTAL CKM: 11.650

FSP LAT: 39 47 63.34 S FSP LON: 145 47 93.95 E FSP WATER DEPTH: 85.0
LSP LAT: 39 53 26.52 S LSP LON: 145 44 62.69 E LSP WATER DEPTH: 82.0

OFFSET (M): 87.2 WIND: WSW 12-15 kts SEA: SLIGHT SWELL (M): 1.0

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 5.4 PORT - 0.5 STBD
SOL NOISE: 7.0 uBAR AVERAGE NEAR 6 GROUPS: 8.6 uBAR AVERAGE
EOL NOISE: 4.2 uBAR AVERAGE NEAR 6 GROUPS: 4.7 uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV.19, 14 AND 18.
PERFORMANCE: S.O.L. PDOP 2.3 E.O.L. PDOP 1.5 SV. 28, 19, 14 AND 18.

COMMENTS: EDITS: SP# NIL. THIS LINE WAS RECORDED WITH PRODUCTION ENERGY SOURCE OF 5400 CU.IN. THE TEST LINE S92B-105 T WITH 5 KMS OF DATA AT ONLY 2700 CU.

LINE: S92B-105 T AZIMUTH: 204 STATUS: TEST DATE: 03/08/92

START: 13:30 HRS FSP: 656 FCSP: 0 TOTAL SP: 179 TOTAL KM: 4.772
END: 14:03 HRS LSP: 478 LCSP: 0 TOTAL CSP: 0 TOTAL CKM: 0.000

FSP LAT: 39 45 19.38 S FSP LON: 145 49 37.14 E FSP WATER DEPTH: 85.0
LSP LAT: 39 47 50.43 S LSP LON: 145 48 01.67 E LSP WATER DEPTH: 82.0

OFFSET (M): 87.2 WIND: WSW 12-15 kts SEA: SLIGHT SWELL (M): 1.0

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 5.4 PORT - 1.3 PORT
SOL NOISE: 7.0 uBAR AVERAGE NEAR 6 GROUPS: 7.8 uBAR AVERAGE
EOL NOISE: N/A uBAR AVERAGE NEAR 6 GROUPS: N/A uBAR AVERAGE
STATUS:
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 2700 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: THIS LINE WAS RECORDED WITH ONLY THE TWO INSIDE GUN ARRAYS.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 19, 14 AND 18.
PERFORMANCE: S.O.L. PDOP 2.3 E.O.L. PDOP 2.5

COMMENTS: EDITS: SP# 478, 479 AND 480.
DATA GATHERED ON THIS PORTION OF THE LINE IS FOR A COMPARISON 5400 VS 2700CU

LINE: S92B-101 AZIMUTH: 024 STATUS: COMP DATE: 03/08/92

START: 16:42 HRS FSP: 101 FCSP: 101 TOTAL SP: 1054 TOTAL KM: 28.100
END: 17:57 HRS LSP: 538 LCSP: 538 TOTAL CSP: 1054 TOTAL CKM: 28.100

FSP LAT: 39 51 95.81 S FSP LON: 145 44 56.24 E FSP WATER DEPTH: 81.0
LSP LAT: 39 46 20.35 S LSP LON: 145 47 95.96 E LSP WATER DEPTH: 81.0

OFFSET (M): 87.6 WIND: SW 17 kts SEA: MODERATE SWELL (M): 1.5

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 4.1 STBD - 1.9 PORT
SOL NOISE: 4.1 uBAR AVERAGE NEAR 6 GROUPS: 4.7 uBAR AVERAGE
EOL NOISE: 3.8 uBAR AVERAGE NEAR 6 GROUPS: 3.9 uBAR AVERAGE
STATUS: D.I. DISABLED.
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 19,16,18,02,11
PERFORMANCE: S.O.L. PDOP 1.4 E.O.L. PDOP 1.2 SV. 26,19,16,02 AND 11.

COMMENTS: EDITS: SP# NIL. THIS LINE WILL BE USED FOR A COMPARISON WITH
LINE S92A-101T1 THAT WAS RECORDED WITH 6 METER STREAMER DEPTH.

LINE: S92B-101 T AZIMUTH: 024 STATUS: TEST DATE: 03/08/92

START: 17:57 HRS FSP: 539 FCSP: 539 TOTAL SP: 178 TOTAL KM: 4.745
END: 18:24 HRS LSP: 716 LCSP: 716 TOTAL CSP: 178 TOTAL CKM: 4.745

FSP LAT: 39 46 20.27 S FSP LON: 145 47 95.93 E FSP WATER DEPTH: 81.0
LSP LAT: 39 43 89.06 S LSP LON: 145 49 31.71 E LSP WATER DEPTH: 80.0

OFFSET (M): 87.6 WIND: SW 17 kts SEA: MODERATE SWELL (M): 1.5

STREAMER:- DEPTHS (M):6+/-1 FEATHERING : 1.9 PORT - 2.0 PORT
SOL NOISE: 3.7 uBAR AVERAGE NEAR 6 GROUPS: 3.9 uBAR AVERAGE
EOL NOISE: 3.5 uBAR AVERAGE NEAR 6 GROUPS: 3.9 uBAR AVERAGE
STATUS: STREAMER DEPTH IS NOW SET AT 6 METERS FOR A TEST COMPARISON
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: SP 633 GUN #41 DISABLE VOLUME 4935 CU. IN.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 19,16,18,02,11
PERFORMANCE: S.O.L. PDOP 1.4 E.O.L. PDOP 1.2 SV. 26, 19, 16, 02 AND 11.

COMMENTS: EDITS: SP# NIL.

LINE: S92B-107 AZIMUTH: 205 STATUS: COMP DATE: 03/08/92

START: 19:44 HRS FSP: 477 FCSP: 477 TOTAL SP: 437 TOTAL KM: 11.650
END: 20:56 HRS LSP: 41 LCSP: 41 TOTAL CSP: 437 TOTAL CKM: 11.650

FSP LAT: 39 47 75.53 S FSP LON: 145 48 51.03 E FSP WATER DEPTH: 80.0
LSP LAT: 39 53 44.11 S LSP LON: 145 45 04.03 E LSP WATER DEPTH: 79.0

OFFSET (M): 86.8 WIND: SW 17 kts SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 2.1 STBD - 3.1 STBD
SOL NOISE: 4.1 uBAR AVERAGE NEAR 6 GROUPS: 4.6 uBAR AVERAGE
EOL NOISE: 4.1 uBAR AVERAGE NEAR 6 GROUPS: 4.8 uBAR AVERAGE
STATUS: D.I. DISABLED.

NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 26, 13 AND 02.
PERFORMANCE: S.O.L. PDOP 1.8 E.O.L. PDOP 1.4 S.V. 26, 12, 13 AND 02.

COMMENTS: EDITS: SP# NIL.

LINE: S92B-103 AZIMUTH: 024 STATUS: COMP DATE: 03/08/92

START: 22:23 HRS FSP: 101 FCSP: 101 TOTAL SP: 437 TOTAL KM: 11.650
END: 23:41 HRS LSP: 537 LCSP: 537 TOTAL CSP: 437 TOTAL CKM: 11.650

FSP LAT: 39 52 10.55 S FSP LON: 145 44 92.08 E FSP WATER DEPTH: 79.0
LSP LAT: 39 46 38.53 S LSP LON: 145 48 29.59 E LSP WATER DEPTH: 79.0

OFFSET (M): 87.3 WIND: SW 18-20 kts SEA: MODERATE SWELL (M): 1.0

STREAMER:- DEPTHS (M):10+/-1 FEATHERING : 0.6 STBD - 0.4 STBD
SOL NOISE: 3.4 uBAR AVERAGE NEAR 6 GROUPS: 3.9 uBAR AVERAGE
EOL NOISE: 4.0 uBAR AVERAGE NEAR 6 GROUPS: 4.8 uBAR AVERAGE
STATUS: DI. #7 DISABLED.
NEAR 6 GROUPS WILL ALWAYS BE NOISY DUE TO THEIR PROXIMITY TO THE SOURCE.

ENERGY SOURCE:- CAPACITY (in3): 5400 DEPTH (M): 6 PRESSURE (psi): 1800
PERFORMANCE: ALL GUNS WORKING.

NAVIGATION:- SYSTEM: TRIMBLE DGPS STATIONS IN USE: SV. 12, 24 AND 13.
PERFORMANCE: S.O.L. PDOP 2.7 E.O.L. PDOP 1.2 SV. 20, 12, 24, 13 AND 16.

COMMENTS: EDITS: SP# NIL.
LAST LINE ON THE S92A/B SEISMIC MARINE SURVEY.

FINAL OPERATIONS REPORT

SAGASCO RESOURCES LIMITED

BASS BASIN TASMANIA - T/25P
&
BASS BASIN TASMANIA - T/RL1

23 JULY 1992 TO 8 AUGUST 1992

BY
WESTERN GEOPHYSICAL COMPANY
M/V WESTERN ATLAS
PARTY 116

259085

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CONTENTS

1. INTRODUCTION

FINAL OPERATIONS REPORT

1. INTRODUCTION

This is the final report of the marine geophysical survey conducted offshore South-East Australia by WESTERN GEOPHYSICAL COMPANY (WESTERN), M/V WESTERN ATLAS, contracted by SAGASCO RESOURCES LIMITED.

In this report are descriptions of the survey area, general information, vessel and seismic equipment used in the survey, statistical summary, Coordinator's daily logs and Observer's line logs.

Navigation positioning system was provided by WESTERN using the Skyfix DGPS as the primary system subcontracted through RACAL SURVEY.

The Ramesses data processing system was used to quality control data shot during marginal weather conditions.

The survey commenced on 23 July 1992 and was completed on 4 August 1992. A total of 627.443 kilometres of data was acquired in this survey.

2. DESCRIPTION OF SURVEY AREA

2. DESCRIPTION OF SURVEY AREA

The prospect was located at the Bass Basin offshore Southeast Australia, was acquired for SAGASCO RESOURCES LIMITED. The initial weather situation hampered the commencement of acquisition. At the start of the survey, northwest winds reached force 4-5 with seas and swells in excess of four meters. During this period of adverse weather, vessel halted production and moved to a sheltered area for protected from the elements. Production recommenced after winds shifted to the southwest and abated sufficiently for acquisition to resume. Adequate production conditions remained for the remainder of the survey. All through the prospect, average westerly winds of force 1-3, two meter seas and swells were encountered during this survey.

The approximate boundaries of the prospect were as follows:

Latitude	39 degrees 45 minutes to 40 degrees 40 minutes South
Longitude	145 degrees 30 minutes to 146 degrees 15 minutes East

3. GENERAL INFORMATION

3. GENERAL INFORMATION

3.1 LOCATION OF OFFICES

SAGASCO RESOURCES LIMITED
60 Hindmarsh Square
Adelaide
South Australia 5001
Australia
Telephone Number: 61-82353737
Fax Number: 61-82231851

WESTERN GEOPHYSICAL's head office
10,001 Richmond Avenue
Houston, Texas 77042
U.S.A.

The survey detailed in this report was conducted under the supervision of
WESTERN GEOPHYSICAL's Singapore office
1 Ang Mo Kio Street 64
Singapore 2056.
Telephone Number: 65-4822221
Fax Number: 65-4822220

Vessel supervision was conducted from WESTERN GEOPHYSICAL's Perth office
447-449 Belmont Ave
Kendale 6105
Western Australia
Telephone Number: 09-3531999
Mobile Telephone Number: 018-949406

A temporary field office was set up for the Party Manager at
Portland, Victoria 3305
Australia
Telephone / Fax Number: 055-235583
Mobile Telephone Number: 018-837033

3.2 COMMUNICATIONS

All communications with the vessel were made via Marisat and radio (voice and ARQ radio telex system). The facsimile machine and telephone were used for communication between the vessel, SAGASCO's office and WESTERN GEOPHYSICAL's Singapore, Perth and Portland offices.

3.3 KEY FIELD PERSONNEL

SAGASCO RESOURCES LIMITED

Exploration Manager	Doug Roberts
Onboard Representative	Rick Romanik (AUSTRAL)

WESTERN GEOPHYSICAL COMPANY

Operations Supervisor	Ron Nickell
Party Manager	John Evans / Tom Meyer
Coordinator	Dicky Chow / John Chandler
Observer	Ron Gregory / Mike Casey
Observer	Edwin Simonton / Brett Smith
Airgun Mechanic	Calvin Holmes / Tom Spoto
Airgun Mechanic	Tommy Means / Brady
Instrument Technician	Kevin Roberts / Larry Dusolt
Navigator	Chris Story / Lyle Cowin
Navigator	Tom Koleske / Gary Geigenmiller
Compressor Mechanic	Galen Heib / Dave Hill
Ramesses Operator	Andrew Kleinert / Andrew Stag

3.4 DISPOSITION OF DATA

Marine seismic data was shipped to the following address:

Seismic-Horizon
60 Outram Rd
Perth, WA 6055
Australia
Attention: Steve Smith

The navigation data was sent to WESTERN GEOPHYSICAL Singapore for processing.

3.5 INSTRUMENT TEST

An instrument test was conducted during the survey. The data was processed by WESTERN GEOPHYSICAL Singapore.

3.6 MISCELLANEOUS

Local Agents:

Shipping / Freight Agent	Scott Boalch, Newburn Perth, W.A. Attention: Hugh Langridge Telephone Number: 09-4771188 Fax Number: 09-4771189
Marine / Port Agent	United Ship Services Portland Victoria Attention: Daryl Blythman Telephone Number: 055-233372 Fax Number: 055-233790
Travel Agent	Brian Bedwell's Travel Subiaco, W.A. Attention: Brian Bedwell Telephone Number: 09-3824255 Fax Number: 09-3882864
Marine Crew	Total Marine Fremantle, W.A. Attention: Frank Foster Telephone Number: 09-4305595 Fax Number: 09-4305199

Road Freight Agent	K and S Freight Portland Victoria Telephone Number: 055-234215
Airfreight Agent	Adelaide Forwarding Services #4 Kyle Place Port Adelaide, S.A. Attention: Gloria Brown Telephone Number: 08-3411000 Fax Number: 08-3411522
Local Suppliers:	
Supply Food / Misc	Haebich Provedoring Attention: Daryl Blythman Telephone Number: 055-233372 Fax Number: 055-233790
Supply Hardware	United Ship Services Telephone Number: 055-233372 Fax Number: 055-233790

4. VESSEL SPECIFICATIONS

259099

4. VESSEL SPECIFICATIONS

Owner	Western Sea Services of Panama Inc
Flag	Republic of Panama
Port of Registry	Panama
Date Built	1982
Date Refitted	1988
Classification	A.B.S.
Registered Number	18058-88
Call Sign	HP4862
Dimensions	
Length	80.77 meters
Beam	17.98 meters
Draft	4.42 meters
Hull	Steel
Tonnage	3,390 tons (gross) 1,107 tons (net)
Cruising Speed	12 knots
Fuel Capacity	1,354,897 litres (357,926 gallons)
Fuel Endurance	60 days (Average 20 tons per day)
Cable Oil Capacity	17,454 litres (4,611 gallons)

Fresh Water Capacity	322,788 litres (85,272 gallons)
Fresh Water Endurance	Unlimited (Water Makers onboard)
Water Makers	1 x Atlas AFGU 1S-15 Type 1 x Village - Reverse Osmosis Type
Accommodation Capacity	63 + 3 hospital
Heliport	18.3 x 18.3 meters Rated for S76, 212 and Super Puma helicopters
Life Rafts	6 x 20 persons (inflatable rafts) 2 x 10 persons (inflatable rafts)
Life Boats	2 x 30 persons
Propulsion	2 x Controllable Pitch Propellers driven by 2 x Nohab Polars F312V Main Engines (Total horsepower 6,120 bhp)
Main Generators	2 x 1,250 kW driven by Nohab F38
Generators (Instrument)	2 x Westinghouse Life-line T AC Drive Motor, 60 Hz, 3-Phase
Compressors (Airguns)	3 x Cherco WBF74XHD driven by 3 x Cat 3516DI Compressor Engines (Total capacity 4,800 scfm)
Bow Thruster	2 x 800 hp C.P.P. Electric
Stern Thruster	2 x 800 hp C.P.P. Electric

Navigation	2 x Kelvin Hughes 3000A Radar 1 x Tokimek 3400M Radar 1 x Anschutz/Kiel STD 12 Gyro 1 x Sperry MK23 Model 4 Gyro 1 x Koden KS540K MF Direction Finder 1 x Spilsbury LWX100A NDB Direction Finder 1 x Furuno FAX208 Weather Fax
Communication	2 x Sailor RT2048 VHF Transceiver 1 x Skanti WR6000 2182KHz Receiver 2 x ICOM ICM700TY HF SSB 1 x Collins COMM VHF Ground/Air 1 x Polaris Regency VHF Transceiver 1 x JRC JSS710 HF SSB Transceiver 1 x JRC MRII Phone/Telex/Fax Inmarsat
Fire Fighting Equipment	
Halon	Compressor Room, Instrument/Recording Room, Tape Storage Room, Engine Room, Paint Lockers and Incinerator Room
AFFF Foam	Streamer Reels and Streamer Spares Storage Area
Fire Alarm System	Kidde Automated KDR-1000

SEISMIC EQUIPMENT SPECIFICATIONS

Recording Instrument

Type of Instrument	2 x LRS-16A Kiloseis Digital Streamer System
Method of Source Synchronization	LRS-100 Synchronizer
Derivation of Time Zero	Time break when 62.5% of array volume has fired
Recording Format	Raw - SEG D, 6,250 bpi magnetic tape Array - SEG D, 38,000 bpi cartridge tape

Streamer Cable

Type	LRS-16A
No. of Cables	Two
Skin Material	PVC
Length of Each Cable	3,200 meters
Number of Channels	240
Number of Hydrophones (group)	6 per 10.33 meters or 9 per 18.00 meters
Method of Electrical Interconnection Cable	Coaxial Cable
Length of Active Section (group)	10.33 or 18.00 meters
Hydrophone	LRS-2510 Model WM2-036
Depth Indicators	LRS-16A
Depth Controllers	Syntron RCL-4

Waterbreak Detectors	LRS WMH-036
Tailbuoy	Catamaran Sled with Radar Reflector and Strobe Light
Cable Compass	Syntron RCU-831 c/w Syntron CUS 8301 Compass Controller

Energy Source

Source Type	LRS-7000 Low Pressure Airgun System
Source Configuration	8 sub-arrays of 7 guns each
Source Volume	Various (up to 10,800 cubic inches)
Source Pressure	2,000 psi
Gun Monitor Unit	64 (capable of displaying near field signatures and gun depth)

Water Depth Recorder

Simrad EA200 Fathometer

Simrad ED162 Fathometer

Navigation

WISDOM II™ Integrated Navigation System consists of

Hewlett Packard HP2117F Minicomputer
Hewlett Packard HP2649 Graphics Terminal
Epson LQ1170 Printer
Sony VM4515 Video Monitor
WESTERN's Geoscience Data Unit (GDU)
Telex Shamrock 9270 1600/6250 bpi Tape Deck
WESTERN's Navigation Interface Unit (NIU)

Ancillary Equipment (optional)

FLEXQC℠ Real-Time 3-D Binning System

SSTS Phase II Acoustic Positioning System

SONARDYNE Acoustic Positioning System

CNAVCHK℠ Onboard Navigation/QC Processing

FACE™ Onboard Seismic/QC Processing

DART™ (DGPS Automatic Remote Tracking) Tailbuoy Positioning System

RAMESSES™ Data Processing System

5. DESCRIPTION OF EQUIPMENT

5. DESCRIPTION OF EQUIPMENT

5.1 LRS-16A KILOSEIS SYSTEM

The LRS-16A Marine Telemetry System is a multi-channel seismic data acquisition system using closely spaced hydrophone groups for high resolution surveying. The system samples 240 channels of seismic data plus 4 waterbreak channels, 20 depth transducers and 4 general purpose auxiliary channels at 1 msec sample rate. The shipboard system (see APPENDIX B) processes and records the data in raw channel format and in demultiplex array format with programmable array sets up to 240 channels. Both the raw and array formed data recordings are in SEG-D format.

The system operates at a very high data rate. During a seismic recording, 1000 streams of data are received by the shipboard electronics every second. Each 1 msec data stream includes a burst of data from each channel of each streamer module in the cable. An individual data burst contains 20 bits and represents one sample of one channel. These data are telemetered in high speed serial form over one coaxial cable data transmission line. The shipboard system consists of the following units :

1. Cable Power Supply
2. Cable Interface Electronics
3. Raw Data Processor
4. Array Data Processor
5. Main System Controller
6. Cable Depth Monitor
7. Data Buffer Memory
8. Demultiplex Memory
9. Error Display Unit
10. Raw Tape Formatter and Raw Tape Drive
11. Array Tape Formatter and Array Cartridge Tape Unit
12. Seismic Q.C. System

1. Cable Power Supply

Two identical power supplies are used to provide 2 KHz power to the cable to power the modules. The two units are connected in series and receive a 2 KHz drive signal from the Data Processor Unit. This signal is synchronous to the LRS-16A system to eliminate beat frequencies from the 1 KHz sample rate. The power line passes to the system power monitor and then to the Cable Interface Unit. The power monitor permits adjustment of the cable power supply to achieve correct module voltage and also indications of faults in the power lines down the streamer cable.

2. Cable Interface Electronics

These units are the interface for all signals coming from and going to the streamer cable. Data from the streamer enters via the deck lead-in on the single coaxial line in a phase encoded serial format. A decoder then translates the data into a NRZ serial format which is passed to the Raw Data Processor. The module control and test oscillator signals are buffered in this unit before going to the streamer. Circuitry for four auxiliary channels is provided. Three of the channels have filters the same as the streamer modules, the other has no filters at all. These channels are digitized in this unit and fed into the data stream at the correct time.

3. Raw Data Processor

The Raw Data Processor controls the streamer via the Cable Interface Electronics and receives the incoming raw data for processing, filtering, and recording to tape. The Raw Data Processor operates as slave to the Main System Controller and is independent from the Array Data Processor. Raw Data Processor functions are as follows:

Cable control
Test signal generation
Data format conversion
Error detection and correction
Real-time skew correction
Low-cut filtering
Cable data mapping
High-cut (anti-alias) filtering
Raw data transfer to ADP, CEM and CDM
Raw tape header assembly
Raw data recording system control
Read-after-write D/A display

4. Array Data Processor

The Array Data Processor receives operational parameters and header data from the Main System Controller. Raw seismic data are received from the Raw Data Processor before high-cut filtering has been applied. The raw data are processed, array formed, and optionally corrected for differential NMO. The Array Data Processor also controls demultiplexing and recording of the array-formed data. Array Data Processor functions are as follows:

Array forming
Beam steering
High-cut (anti-alias) filtering
Data format conversion
Array tape header assembly
Demultiplexing control
Array recording control
Array data D/A display

5. Main System Controller

The Main System Controller is the central system controller and co-ordinates data acquisition cycling with the navigation and energy source systems. The Main System Controller initializes the Raw Data Processor and Array Data Processor and controls header and data transfer. Each sub-system reports its status on command from the Main System Controller. The Main System Controller functions are as follows:

Power-up initialization
System start control
Header assembly and transfer
Raw Data Processor/Array Data Processor
Operator interface
Remote terminal control

6. Cable Depth Monitor

Provides a graphic display of the cable depth of alternate live sections of the streamer cable referenced to sea level. A scan type display of all 240 channels is also provided with a facility to scan for an operator selectable cable section to observe the 12 seismic channels of a particular module. The depth transducer data is also output to the WISDOM system where it is merged with other navigation data and returned to the LRS-16A for recording in the external header. Outputs are also provided for remote monitors to display the above data.

7. Data Buffer Memory

This memory gets raw data from the Raw Data Processor and outputs to the Raw Tape System. Data buffering is required because the acquisition and recording data rates are different. The recording of a raw data record takes slightly longer than real time when fast sampling rates are used. The memory is a 6 MByte Mostek RAM memory with error correction and diagnostic facilities.

8. Demultiplex Memory

Receives multiplexed, array formed data from the Array Data Processor and outputs demultiplexes, trace sequential data to the Array Tape Formatter. The recording of the demux Array tape will not start until the completion of the seismic data acquisition. External data (WISDOM system) is also merged with the standard SEG-D header in the memory. This data contains gun firing, cable depth, and certain navigation information. The memory is the same type as the Data Buffer Memory.

9. Error Display Unit

This is with floppy disc drives and keyboard. Alpha-numeric and colour graphic applications provide a means for displaying telemetric errors. Parity, bypass and spike error data on all streamer cable channels are output from the Raw Data Processor. Telemetry errors and error locations are displayed in graph form on the monitor with each colour bar representing one channel of one module. The display covers a complete seismic record and is updated each shot. The error data can also be recorded on disc for further analyses at a later time.

10. Raw Tape Formatter and Raw Tape Drive

These units are Telex Model 6850 Formatter and Telex Model 6253-66 tape drives. The Formatter provides control of timing, encoding, decoding, tape gapping, formatting and transfer of data to and from the tape drive. Read after write data is passed from the formatter to the seismic QC system for processing and display. Three 9-track drives are provided operating in 6,250 bpi GCR mode. The format is SEGD 0044 multiplexed.

11. Array Tape Formatter and Array Cartridge Tape Units

The Array Formatter/Cartridge drive system is an IBM 9480 magnetic tape subsystem. This system consists of an IBM Model D01 Formatter with provision for a user to supply an I/O adapter for use with a non IBM cmputer. The Formatter controls and formats the data to and from the drive units, controls tape positioning in the drive and passes status information to the LRS-16A. Read after write data is also routed to the seismic Q.C. system for processing and display. Three cartridge tape units are connected to the Formatter. They are standard IBM 3480 18-track 0.5 inch cartridge drives. The drives receive, interpret and perform data transfer orders sent by the Formatter. It also sends and receives read/write data to and from the Formatter together with status information about the drive. One cartridge unit can store 200 megabyte of data which is slightly less than a 3,600 feet reel of 9 track tape.

12. Seismic Q.C. System

The Seismic Q.C. System is designed to read data from the two tape systems of the LRS-16A recording system and produce a raster plot on an electrostatic plotter. A block diagram of the system is shown in APPENDIX B.

5.1.1 SYSTEM HARDWARE

LRS-16A Raw and Array Formed Data Formatters - are part of the LRS-16A recording system but provide the Seismic Q.C. with data. The data is read after write data from the tape drives. Data can be transferred from both the tape systems to memory for any pop. This enables the operator to select a plot of either the array formed data or the 240 channel 1 to 4 msec sampled RAW data. A plot of both types of data can also be performed consecutively.

Mostek 6 megabyte Memory - provides temporary storage for the data until the minicomputer requires it. The microcontroller interface between the memory and minicomputer also performs demultiplexing of the 240 channel data. Array formed data is received from the LRS-16A in demultiplexed format.

Hewlett Packard 2117F Minicomputer - provides the main control of the system. It controls the transfer of the LRS-16A data to the memory and from the memory to the computer. Scaling factors which are selected by the operator via the terminal are applied to the data. Data is then output to the rasterizer.

Hewlett Packard 2649C Terminal - operators interface with the system. The terminal provide the means to load the operating program via cassette tapes and the operator to specify the types of plots/tests required.

Hewlett Packard 9885M Flexible Disc Drive - provides primary means for loading the system operating software into the computer.

Line Printer - provides a hard copy printout of tape header information, eg. file number, shotpoint number, timebreak time, and the field shot identifier generated by the navigation system.

High Speed Rasterizer - accepts the plot data from the computer and organizes it into a raster format for the electrostatic plotter. The data may be seismic, timing lines or alphanumeric.

Oyo Geospace GS624 Plotter - presents the data on 24 inch wide paper in a variety of plot formats with selectable annotations.

5.1.2 SYSTEM CAPABILITY

The various outputs available with the system may be grouped into the following categories:

1. Seismic Data Plots - may either be of the array formed data or the raw data or both. Any record can be plotted or the operator selects a plot interval that the system will acquire data and automatically produce a plot at this interval of records. Because of the time required to process the data it is not possible to plot consecutive records under normal production shooting rates. An interval of between twenty and thirty records can be handled but this will vary with the vessel speed, cycle time and number of channels array formed.

Data may be presented as wiggle trace or variable density. The operator has many options to choose from as to presentation. These include number of traces per inch, selected part of a record, time variant gain, timing lines and plot header data.

2. Cable Noise Analysis Plots - give a presentation of streamer tow noise with a selected fixed gain. It can be of the raw or array formed data or both.

In addition, a listing of each seismic trace with its RMS noise level in microbars may be invoked. A graphic option is also selectable with noise levels vertically and seismic trace number horizontally. This can also be followed by a graphic presentation of the cable depth at the time of recording.

3. LRS-16A System Test Analysis - with this feature the performance of the whole recording system which includes the hydrophones and modules within the streamer cable can be analyzed onboard the vessel. Using the LRS-16A test oscillator and recording test files, the Seismic Q.C. will produce listings of trace amplitudes, noise and distortion.

Any specified part of a seismic or test record can be dumped in hexadecimal format on the plotter.

4. Seismic Q.C. Self Test - enables the Q.C. system to check itself. A precise sine wave is stored in the minicomputer in the form of a seismic record. The operator can allow this record to go from the computer to the memory, then return to the computer, be processed and output to the plotter.

5.1.3 SYSTEM SPECIFICATIONS

1. System Analog

Input Noise (Input terminated with equivalent group capacitance)	10.6 μV RMS
Input Noise (Equivalent 27 μV/μbar phones)	0.35 μbar RMS
Maximum Input Signal	505 mV RMS
Maximum Input Signal (Equivalent 27 μV/μbar phones)	16.56 mbar RMS

Pre-Amp Fixed Gain	
Seismic Channels	22.9 dB
Waterbreak Channel	7.4 dB
Resolution	12 bits (11 bits + sign)
A/D Linearity	0.05% of full scale (lab measurement only)
Gain Ranging (IFP Amplifier)	60 dB (in 6-dB steps)
Accuracy of Gain Ranging (Step to step)	± 0.05% at minimum gain (lab measurement only)
Absolute Accuracy (Input terminated with equivalent group capacitance)	± 2.5%
Channel to Channel Accuracy (Total system including hydrophone groups)	± 5% (using full scale, -3 dB test signal)
Harmonic Distortion (Total system including hydrophone groups with cable deployed and towed)	Better than 0.10% for 90% of all channels (using a full scale, -9 dB, 31.25 Hz calibrated test signal) Better than 0.15% for all modules (measured on an average of all seismic channels in that module)
High-Cut Filter	350 Hz, 72 dB/octave
Low-Cut Filter	6 Hz, 18 dB/octave
Phase Duplication (Channel to channel)	± 200 μsec at 31.25 Hz

15 Channels per Module	1 Q.C. channel (required) 12 seismic channels 2 auxiliary channels (1 waterbreak phone with no anti-alias, low-cut applied and 1 depth transducer with no filtering)

2. Streamer Cable Configuration

Data Transmission Cable	Coaxial Cable
Maximum Cable Length	
- Between Regenerative Data/Command Repeaters	160 meters (525 feet)
- Between first module and Shipboard Electronics	250 meters (820 feet)
- Between adjacent modules (Streamer or Command Repeaters)	80 meters (262 feet)

3. Shipboard Electronics

Raw Data Processor and Recording

Sampling Interval	1 msec
Recording Format	2 byte, hexadecimal exponent, SEG-D multiplexed format code 0044 (sign and magnitude) gapped data
- Bytes per Scan	Based on number of channels (536 for 240 channel)
- Scans per Block	Based on number of channels (120 for 240 channel)
- Header Format Size	288 bytes plus user header
Sampling Interval	1, 2, or 4 msec

Anti-Alias Filter	1 msec (-3 dB at 350 Hz, 72 dB/octave Module Analog approximates an inverse Chebyshev function) 2 msec (-3 dB at 128 Hz, 120 dB/octave Digital FIR, zero phase) 2 msec (-3 dB at 188 Hz, 156 dB/octave Digital FIR, zero phase) 4 msec (-3 dB at 87 Hz, 132 dB/octave Digital FIR, zero phase)
Low-cut Filter	-3 dB at 6 or 12 Hz, at 18 or 24 dB/octave (includes module low-cut)

Waterbreak Channels

Number Recorded	4 nearest the vessel
Anti-Alias Filter	None
Low-Cut Filter	Same as seismic channels
Recording Sample Rate	Always 1 msec

Shipboard Auxiliary Channels

Number Recorded	4 from Cable Interface Electronics (CIE)
Filtering	Same as seis channels except for Aux Channel 4
Sampling Skew	Module sampling skew-corrected, using digital interpolation filter
Error Detection	Errors are detected using an adaptive cubic polynomial function plus threshold window
Error Correction	Errors are corrected using predicted value if sample is determined to reside outside of acceptable limits

Note : Recording sample skew is removed in system.

Maximum Record Lengths	240 Seismic	480 Seismic
1 ms	20	17
2 ms	20	20
4 ms	20	20

Note : These figures will change, depending on the cable configuration, i.e. number of channels being recorded.

Playback	Read-after-write data are processed and output to the Seismic QC system for evaluation
Seismic Channels (Seismic QC System)	All channels plotted simultaneously with operator-selectable programmed gains

Array Data Processor and Recording

Input to Array Data Processor	Data are input from the Raw Data Processor after processing the following steps: Data Mapping Error Detection and Correction Skew Correction Low-Cut Filtering
Number of Input Data Channels	960 (maximum)
Recording Format	2 byte, quaternary, SEG-D multiplexed format code 8024 (1's complement)
Header Size	Based on number of array output channels, number of coefficients, type of process, beam steering, time variant, etc.
Recording Sample Rates	1, 2, or 4 msec2-28

Anti-Alias Filters	1 msec (-3 dB at 375 Hz, 156 dB/octave Digital FIR, zero phase) 2 msec (-3 dB at 128 Hz, 120 dB/octave Digital FIR, zero phase) 2 msec (-3 dB at 188 Hz, 156 dB/octave Digital FIR, zero phase) 4 msec (-3 dB at 87 Hz, 132 dB/octave Digital FIR, zero phase)

Shipboard Auxiliary Channels

Number Recorded	4 from CIE
Filtering	Same as Seis Channels except for Aux Channel 4
No. of Array Output Channels	240 (maximum) 1 (minimum)
Maximum Length of Arrays	16 at 240 output channels 32 at 120 output channels
Array Overlapping	Up to 8 arrays may reference the same input channel, can be more depending on configuration
Array Definition	Up to 4 configurations processed concurrently Maximum of 4 coefficient sets per configuration Maximum of 32 coefficients per set
Dynamic Correction	Partial NMO correction performed on raw data channels used to form the output array channel
Maximum Correctable Delay	63 msec
Time Variant Weighing	Up to 3 time windows per record within which the coefficients are computed by linear interpolation

Maximum Record Lengths	Overlapped (Seconds)	Non-Overlapped (Seconds)
1 ms	6	12
2 ms	12	24
4 ms	24	48

Note : These times are for a maximum of 240 channels and will be larger for fewer channels. Overlapped record indicates that another record can be started while the previous one is still being recorded on tape.

Playback	Read-after-write data are processed and output to the Seismic QC system for evaluation
Seismic Channels (D/A Scope Display)	Up to 60 channels selected by the operator can bedisplayed in AGC or fixed-gain, 6 dB steps
Seismic Channels (Seismic QC System)	All channels plotted simultaneously with operator-selectable programmed gains
Auxiliary Channels (D/A Scope Display)	4 Channels, fixed-gain, 6 dB steps

5.2 STREAMER CABLE

The LRS-16A streamer cables are each 3,200 meter neutrally buoyant, oil filled, detector cable with provision for the digitizing of the seismic data within the cable itself. Various components combine to form the streamer. They are

1. Deck Lead-in
2. Lead-in
3. Stretch Sections
4. Active Sections
5. Streamer Modules
6. Repeater Modules
7. Terminator Module

1. Deck Lead-in

This 40 meter cable runs from the Cable Interface Unit of the LRS-16A shipboard electronics to the cable reel. Here it connects to the slip ring assembly which is mounted at the end of the reel shaft. A sensor is included so that if the cable is disconnected at the slip ring an alarm will sound in the recording room.

2. Lead-in

The lead-in is a 280 meter armoured cable with fairings attached to reduce the effects of cable strumming in the vicinity of the vessel. At the shipboard end it connects to one side of the slip ring assembly and at the sea end to a lead-in tc Data/Command Repeater Module adaptor.

3. Stretch Sections

These passive sections act to isolate the active part of the streamer from tow forces of the vessel. They are 80 meters long, consisting of one single rope that is capable of stretching to twice the relaxed length of the section. Electrical cables within the section are spirally wrapped to allow for section stretch. In practice, up to two of these sections are connected together at the head of the cable and a single section at the tail. The tail stretch isolates the tail buoy from the active sections.

4. Active Sections

A 240 channel system has 40 of these sections, each 80 meters long and having 6 hydrophone groups per section. The sections are coupled together by the modules via quick disconnect couplings. Coupling of the hydrophones to the water is provided by cable oil within the sections. This also acts to achieve neutral buoyancy of the section in sea water, together with small lead ballast weights.

Each hydrophone group (Model WM2-036) consists of 6 acceleration canceling piezo-electric pressure sensitive (27 microvolts per microbar) crystal phones connected in parallel. Group length is 10.33 meters with group centre/centre of 13.33 meters.

Every active section has an open sea type depth transducer (Model HPDT207-L) between the head coupling and the first hydrophone. Similarly each section has a waterbreak detector phone (Model WMH-036) in the centre of the section. Because of module location in a 240 channel system only every other depth transducer is used. This gives 20 of each in a 3,200 meter cable.

Provision is made for the location of depth controllers and compass units.

5. Streamer Modules

Each electronic streamer module is a data acquisition system operating remotely at the hydrophone input. The module contains electronic circuitry required to amplify, sample, gain, digitize, and telemeter local data as well as circuitry for repeating downstream data.

The module is 38 centimeters long with a diameter of 7.5 centimeters which is the same as the cable section. Weight is 9 kilograms which necessitates the use of a styrene float which clamps around the module to achieve neutral buoyancy in seawater.

Electronic circuitry is on three rectangular PC boards mounted in triangular form. Aluminum sleeves inside the module case absorb any compressional forces and allow the circuit boards to maintain a floating posture. The module is filled with an inert fluid for heat dissipation.

A simplified block diagram of the module is shown in APPENDIX B. The hydrophone data passes through an RF filter which eliminates any high frequency noise associated with the 2 KHz power line frequency. Preamplification, Lo-cut filtering and anti-alias filtering are performed on a single hybrid chip that handles three seismic channels. There are five chips to handle fifteen channels. Twelve are seismic data, one waterbreak and one depth transducer, the fifteenth channel is not used.

After preamplification filtering, the signals are multiplexed and amplified by the instantaneous, floating point amplifier. It has 60 dB gain in ten 6 dB steps. A 12 bit analog to digital converter then generates digital samples of the signals which are passed to the data/receive and regenerate hybrid. Data is then switched onto the coaxial cable at the correct time for transmission to the shipboard electronics.

Control of the modules is provided by the Command, Receive and Transmit Hybrid which receives and regenerates the command lines in the cable.

Power for the module is picked up from the 300 volt 2 KHz power lines, rectified and regulated to give the necessary d.c. voltages for the module electronics.

6. Repeater Modules

These modules are used alternatively with streamer modules in the 240 channel system to connect two active cable sections and allow each of the 40 sections to be built identically. The main function of the Repeater Module is to buffer commands from the streamer module upstream to the next streamer module downstream. Essentially this module only contains the command/receive and transmit portion of the block diagram.

A second version of this module, the Data/Command Repeater Module, is used to buffer both data and commands, and is used between the lead-in and stretch sections to compensate for the long distance between the first streamer module and the shipboard electronics.

7. Terminator Module

Only one of these modules is used in the system. It is located between the last active section and the tail stretch section. Its purpose is to terminate the current power lines, test lines and test control lines passing through the modules.

5.2.1 STREAMER DEPTH CONTROL

To maintain the streamer at the specified towing depth, a Syntron Depth Controller system is used. A control unit onboard the vessel communicates with the depth controllers via inductive coils which are located in each cable section. One line runs the entire length of the streamer with the coils connected across it. Up to 15 controllers would be attached at intervals along the streamer.

In operation the depth controllers are addressed individually and an operating depth message is received by them from the controller. Within the unit is a depth sensor which operates in a feedback loop to control the altitude of the wings. The wing angle and other status information is sent from the device back to the vessel.

5.2.2 STREAMER COMPASS UNITS

A Syntron Syntrak Model CUS 1801 system is used with Model 831 compass units which have a 0.1 degree resolution. These units are attached externally to the streamer in a similar fashion as the depth controllers. Communication between the units and the shipboard microprocessor controller is by pick up coils which are across a pair of wires inside each active cable section. Magnetic heading data is input to the WISDOM system, which calculates the cable shape and displays it on the FLEXQC 3D binning system. This heading data is also written on the navigation and seismic tapes.

5.3 ENERGY SOURCE

The low pressure energy source system consists of 56 WESTERN's low pressure airguns with reservoir capacities ranging from 60 to 465 cubic inches (see diagram in APPENDIX B).

Airguns have some inherent firing delay and do not fire immediately upon receipt of a "fire" command pulse. The amount of this delay tends to drift with time and naturally varies from unit to unit. To overcome this problem and to assure all airguns fire within specs required for an optimum energy pulse, the system is controlled by the LRS-100 Energy Source Synchronizer.

The LRS-100 is a modular microprocessor based system designed specifically to control the firing of a seismic energy source array so that all guns fire concurrently or in a pre-designated staggered time sequence. The system accomplished this by electronically sensing the individual gun delays and automatically establishing a firing sequence to compensate for the variations in delay.

The basic sequence of operation is as follows :

1. The Controller Module receives a fire command which signals the start of the firing cycle. The fire command signal may be issued by the seismic system, navigation system or the LRS-100 Cycle Controller.

2. At some pre-calculated point after receiving the fire command, the controller will issue a fire pulse to the solenoid power supply for each gun. The solenoid in turn triggers the release of the upper chamber air. As this occurs, an imbalance is created between the upper pressure reservoir and the lower pressure reservoir that allows the lower reservoir air to force the seat and shuttle upward and expose the exhaust ports, thus releasing the air to the water.

3. Upon firing, a sensor on the guns produces a return signal which is detected by the controller. Ideally, this fire detect signal should occur at a pre-selected time referred to as the Aiming Point.

4. If the fire detect for any gun does not occur at the Aiming Point, the controller will correct the error by adjusting the time at which the next fire pulse is issued to the gun. These adjustments are computed from a filter applied to the previous error values.

5. Time break for the recording system is generated by the synchronizer when 62.5 percent of the total enabled gun array volume has returned fire detect signals. The time break is thus a true representation of the release of air. There are no delays to be compensated for in processing of the data.

Through this method of constant electronic adjustment, the energy source system delivers its optimal seismic signals.

5.4 RAMESSES

REAL TIME MARINE SEISMIC QC-SYSTEM

PERFORMANCE SPECIFICATION

RAMESSES is a Real-Time Processing System to be used for Quality Control when acquiring marine seismic. Real-Time means that the system is able to keep up with the speed of the recording system, i.e. the plotted stacked section is produced as the vessel moves along the line. RAMESSES reads data either on-line via the recording system through an Interface Unit, or off-line via a type drive. To enhance noise assessments, raw or processed gathers can be monitored real-time in either a time or frequency domain. The processed lines can be saved in SEGY-format on open reels to enable further processing/plotting with third party equipment.

RAMESSES is very easy to operate - once the processing is started, it runs automatically to the end of the line. Commands and parameters are input via pop-up window menus, and parameters are extensively checked for validity.

The RAMESSES Interface Unit can be connected to a wide variety of recording systems and modified to fit almost any kind of digital output.

The RAMESSES System consists of an Interface Unit, a Seismic Processor, a Host Computer, a PC, a Tape Drive and 2 printers. These components do not take up much space when installed on a seismic vessel.

The RAMESSES stack processing involves the following main functions:

Data selection : One or two stacks of up to 60 fold can be processed per shot file in real time. When using trace summation this means that up to 240 traces per shot file can be selected for processing. When processing off line up to 8 stacks at up to 60 fold can be processed per shot file. This means that up to 480 traces (960 traces with trace summation) per shot file can be processed. The system can process up to 1500 samples per trace and can resample input data by a factor 2 and 4, and is thus able to process an input window length of up to 6000 samples.

Reformatting :	SEGB, SEGD or SEGY.
Demultiplexing Gain :	Demultiplexing is performed if required. a) Amplitude recovery using spherical divergence correction and/or exponential gain down to specified time. b) RMS amplitude AGC using up to 20 windows of equal lengths. c) Instantaneous AGC using a user specified window length.
Filtering :	A filter procedure applying an up to 200 sample filter and a resampling, if needed. Normally the filter will be an anti-aliasing filter.
Trace quality check :	In the event that the amplitudes of a trace vary substantially from typical values, the seismic traces will be identified as bad and excluded from the remaining processing.
Sort :	Data are sorted from shot to common midpoint domain.
Mute :	The pre-processing mute procedure zeroes data samples as specified by the user. At the end of the muted region up to s 50 sample taper function is applied. The pre-processing mute is used to zero e.g. the direct arrival.
Filtering :	A filter procedure applying an up to 200 sample filter. Normally a bandpass filter is applied to prepare data for the following deconvolution.

Deconvolution :	A Wiener Levinson predictive deconvolution with an up to 200 sample filter length and a prediction distance up to 200 samples, where the total operator length cannot be greater than 250 samples. The trace windows used for calculation of the necessary autocorrelation functions may be up to 1500 samples and the start points of the windows follow a user specified NMO-curve. Furthermore, the user can specify an added white noise power used for the calculations of the deconvolution filter.
Filtering :	A filter procedure applying an up to 200 sample filter. Normally as bandpass filter is used to post-process data after the deconvolution.
NMO-correction:	NMO-correction is applied with an accuracy of one quarter of the processing sample interval. Up to five velocity profiles can be specified for a line.
Mute :	The stack mute procedure zeroes data sample as specified by the user. At the end of the muted region up to a 50 sample taper function is applied. The stack mute prepares the data for the following stack procedure.
Stacking :	The stacking procedure adds the traces and then an instantaneous AGC procedure can be applied to compensate for the mute procedures.
Deconvolution on stack :	A Wiener Levinson predictive deconvolution on the stack with an up to 200 sample filter length and a prediction distance up to 200 samples, where the total operator length cannot be greater than 250 samples. The stack window used for calculation of the necessary autocorrelation function may be up to 1500 samples and the start point is specified by the user. Furthermore, the user can specify an added white noise power used for the calculation of the deconvolution filter.

Filtering on stack : A time variant filter procedure applying up to six 200 sample filters on the stack. Normally bandpass filters are used to post-process the stack after deconvolution.

The RAMESSES Velocity Analysis involves the following main features :

Velocity spectrum : Colour contour or peak row on monitor with possibility of zoom. Contour or peak, row on printer with marked automatic picks and correlation power trace.

Velocity gathers : Constant or variable velocity gathers specified by velocity corridor.

Velocity stacks : Constant or variable velocity stacks with user specified AGC.

6. SURVEY PARAMETERS

---------- WESTERN GEOPHYSICAL - SURVEY PARAMETER LOG ----------
WGCMDL version 2.0 May 17th 199_

Operator Last Update Date :08/04/92 Report Date : 04/04/92

Division SINGAPORE Vessel R/V WESTERN ATLAS

Client SAGASCO Party 116

Area BASS BASIN Blocks T/28P, T/RL1 3D Geo N

Year 1992 Secondary Vessel(s) NONE

LRS16A Y RAW N ARRAY Y Analog N
DUAL RECORDING N Dual Cable N Dual LRS16A N
ACQUISITION MODE :
SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- PARAMETER RECORD #1 INFORMATION ----------

START: Day 208 Time 14:54 Line Name S92B-117A

END: Day 216 Time 23:41 Line Name S92B-103 Final Y

UNIT OF DISTANCE (Ft or M) M GMT Plus Local (Hrs) 0

---------- GENERAL RECORDING INFORMATION ----------

Recording System LRS 16A Record Length (s) 6.0 Fold 60
System Serial No.16 Firmware version 2.1
Tape Drive Type IBM 3840 CTU Density (BPI) 38000 Speed (IPS) 78

Header Format 640 BYTE VER 4 Deep Water Delay N / Time (S) 0.0

---------- ARRAY DATA RECORDING ONLY ----------

Time Break Is Coincident with Digital Start

From Number 001 Weighting 1,0,0,0 Overlap 0.0
GMU Present N
Recording Format SEG-D 8024 Total Channels Recorded 240 /Aux Channels 4
Aux 1 Aux 2 Aux 3 Aux 4

Cable #1 Single Trace Out.Channel 0
Cable #2 Single Trace Out.Channel 0
Cable #3 Single Trace Out.Channel 0
Cable #4 Single Trace Out.Channel 0

Near GRP No. 1 GRP Length 13.33 Demux Y Sample Interval (mS) 2
LOW Cut (Hz) 6.0 Slope (dB/Oct) 18 HIGH Cut (Hz) 188 Slope (dB/Oct) 185

SEISMIC STREAMER INFORMATION

Streamer Type KILOSEIS Digital Y Operating Depth 10.00 +/- 1.50

No. Of Phones Per Group 6 No. Of Groups Per Section 8

Streamer Length 3200.0 Number of Streamers 1 Trace Polarity (Up/Down) D

Hydrophone Type LRS 2510 Model WM2-036 Sensitivity (uV/uB) 27.00

Water Break Phones At Array Group No. 0 0 0 0

Water Break Phones At Raw Group No. 3 15 27 39

D.I. At Head Of Groups 1 13 25 37 49 61 73 85 97 109
121 133 145 157 169 181 193 205 217 229

Compasses At Head Of Grps 5 53 101 149 197 239

Depth Controllers At Groups 11 35 59 83 107 131 155 179
203 227

ENERGY SOURCE PARAMETERS

Type LITTON LOW PRESSURE Dual Source N Pops/Shot 1 Shot Spacing 26.660

Source Operating Depth 1 6.00+/-0.50 Array Length 18.0 Array Width 44.0
Source Operating Depth 2 0.00+/-0.00
Source Operating Depth 3 0.00+/-0.00

Total Volume (C.I.) 5400 (/-) 15 % Operating Pressure (PSI) 1800 (/-) 10 %
Synchronization (msec) +/- 2.00 Number of Guns 28 Number Guns/Sub-Array 7

Number Sub-Arrays 4 Fire on Time N Interval (sec) 0.0

Comments:
HAVE 4 SUB ARRAYS DEPLOYED. ALL SUB ARRAYS IN USE.

---------- ENERGY SOURCE ELEMENT DESCRIPTION----------

NUMBER = GUN NUMBER; VOLUME = GUN VOLUME

X = INLINE DISTANCE FROM CENTER OF ENERGY SOURCE (+)=FORE, (-)=AFT
Y = CROSSLINE DISTANCE FROM CENTER OF ENERGY SOURCE (+)=STBD, (-)=PORT
Z = VERTICAL DISTANCE FROM SEA LEVEL (+)=ABOVE,(-)=BELOW

NUMBER	X	Y	Z	VOLUME	SOURCE NO.
17	10.70	-20.00	-6.00	465	0
18	6.30	-20.00	-6.00	280	0
19	3.10	-20.00	-6.00	200	0
20	0.00	-20.00	-6.00	150	0
21	-2.90	-20.00	-6.00	115	0
22	5.20	-20.00	-6.00	80	0
23	7.20	-20.00	-6.00	60	0
25	10.70	-14.00	-6.00	465	0
26	6.30	-14.00	-6.00	280	0
27	3.10	-14.00	-6.00	200	0
28	0.00	-14.00	-6.00	150	0
29	-2.90	-14.00	-6.00	115	0
30	-5.20	-14.00	-6.00	80	0
31	-7.20	-14.00	-6.00	60	0
33	10.70	14.00	-6.00	465	0
34	6.30	14.00	-6.00	280	0
35	3.10	14.00	-6.00	200	0
36	0.00	14.00	-6.00	150	0
37	-2.90	14.00	-6.00	115	0
38	-5.20	14.00	-6.00	80	0
39	-7.20	14.00	-6.00	60	0
41	10.70	20.00	-6.00	465	0
42	6.30	20.00	-6.00	280	0
43	3.10	20.00	-6.00	200	0
44	0.00	20.00	-6.00	150	0
45	-2.90	20.00	-6.00	115	0
46	-5.20	20.00	-6.00	80	0
47	-7.20	20.00	-6.00	60	0
0	0.00	0.00	0.00	0	0
0	0.00	0.00	0.00	0	0
0	0.00	0.00	0.00	0	0
0	0.00	0.00	0.00	0	0

---------- NAVIGATION INFORMATION ----------

Contract Navigation RACAL Field Program Version WISDOM 4:A

Primary DGPS,SKYFX,TR01 Seconcary DGPS,SKYFX,TR02

Magnetometer N Gravity N Base Magnetometer N Gravity Serial No.
Magnetometer S/N 0 Base Magnetometer S/N 0
Gyro Alignment Angle 0.0 Degs
Datum AUST. GEODETIC 1984 Dx 116.000 Dy 50.470 Dz -141.690 From WGS 84
SSTS Version Active Tailbuoy N Navtek N
Velocity of sound in water 1500.0 From VELOCIMETER S/N 9509

Fathometer in use 1

Fathometer 1 SIMRAD EA 200 Depth Of The Transducer 4.30
Calibrated Date 02/15/92 Velocity used 1500.0
Draft Compensated For On Tape Y Draft Compensated For On Paper Y
Velocity Compensated For On Tape Y Velocity Compensated For On Paper Y

Fathometer 2 SIMRAD ED 162 Depth Of The Transducer 4.30
Calibrated Date 02/15/92 Velocity used 1500.0
Draft Compensated For On Tape N Draft Compensated For On Paper N
Velocity Compensated For On Tape N Velocity Compensated For On Paper Y

Navigation Comments:
LOCAL DATUM AGD 84. 7 PARAMETER SHIFT FROM WGS 84 TO LOCAL.
FATHOMETER 1 COMPENSATED TO -4.9 m, ACTUAL TRANSDUCER DEPTH IS -4.3 m.

Spheroid Code 17 Central Meridian 147 0.0000 Projection Code UTS
Spheroid name AUST. NATIONAL
Navigation Reference Point (NRP) Description:
NAVIGATION REFERENCE POINT IS THE ARGO ANTENNA.

REFERENCE OFFSET INFORMATION

OFFSETS REFERENCED FROM NRP:	ABOVE (+) BELOW (-)	FORE (+) AFT (-)	STBD (+) PORT (-)
Main Mast	0.00	0.00	0.00
Center Near GRP (STBD) *	-10.00	-346.70	0.00
Center Near GRP (PORT) *	0.00	0.00	0.00
Center Source (STBD)	-6.00	253.00	0.00
Center Source (PORT)	0.00	0.00	0.00
Antenna 1 Type	0.00	0.00	0.00
Antenna 2 Type MX 4200	19.07	-19.05	0.00
Antenna 3 Type TRIMBLE	17.47	-14.07	-4.12
Antenna 4 Type TRIM. B/U	16.49	-14.07	-3.12
Antenna 5 Type	0.00	0.00	0.00
Antenna 6 Type	0.00	0.00	0.00
Antenna 7 Type	0.00	0.00	0.00
GPS Satellite Antenna	0.00	0.00	0.00
Transit Satellite Antenna	0.00	0.00	0.00
Tailbuoy Rope Length	200.00		
Pivot Point To Head stretch	105.00		
Fore Hull Receiver (SSTS)	0.00	0.00	0.00
Aft Hull Receiver (SSTS)	0.00	0.00	0.00
Starboard Towfish (SSTS)	0.00	0.00	0.00
Port Towfish (SSTS)	0.00	0.00	0.00
Fathometer 1	-4.30	-3.18	0.94
Fathometer 2	-4.30	0.00	0.00
Gravity	0.00	0.00	0.00
Magnetometer	0.00	0.00	0.00
Gun String #1 (SSTS)	0.0	0.0	0.0
Gun String #2 (SSTS)	0.0	0.0	0.0
Gun String #3 (SSTS)	0.0	0.0	0.0
Gun String #4 (SSTS)	0.0	0.0	0.0
STBD Cable (SSTS)	0.0	0.0	0.0
PORT Cable (SSTS)	0.0	0.0	0.0

* All offsets were measured from N.R.P. without applying the stretch factor

SONARDYNE CONFIGURATION

		AFT(-)
MID	0.0	0.0
	0.0	0.0
TAIL	0.0	0.0
	0.0	0.0
	0.0	0.0

KEY PERSONNEL

Client Contact	SAGASCO	Field Client Rep RICK ROMANIK
Crew Supervisor	RON NICKEL	Party Manager JOHN EVANS

	Primary	Alternate
Coordinator	DICKY CHOW	J.G. CHANDLER
Technician	KEVIN ROBERTS	LARRY DUSOLT
Navigator	LYLE COWIN	GARY GEIGENMILLER
Shift Leader	EDWIN SIMONTON	RON GREGORY
Quality Control	ANDREW KLEINERT	ANDREW STAG
Gun Chief	CALVIN HOLMES	TOMMY MEANS
Compressor Mechanic	GALEN HEIB	DAVE HILL

SURVEY PARAMETER COMMENTS:

ALL TIMES LOGGED ARE LOCAL. ALL TAIL BUOY DRIFTS COMPUTED FROM COMPASS AVERAGES. OFFSET IN PARAMETER REPORT IS MEASURED DISTANCE. OFFSETS ARE CALCULATED FROM WATER BREAKS AND NOTED FOR EACH INDIVIDUAL LINE ON THE OBSERVERS LOG AND MDL.

----------PARAMETER LOG COMMENTS----------

NOTE: ON PAGE 5 OF THIS PARAMETER REPORT ITEM, CENTER SOURCE (STBD), UNDER THE FORE-, AFT- COLUMN, NUMBER 253.0 SHOULD BE A NEGATIVE NUMBER. IT IS NOT POSSIBLE TO ENTER A NEGATIVE NUMBER IN THIS COLUMN.

NOTE: LINES S92B-101, S92B-103, S92B-105, S92B-107, S92B-109, ARE IN BLOCK T/RL1. ALL LINES PREFIXED S92A-, ARE IN BLOCK T/25F.

NOTE: FROM LINE S92A-102 TO THE END OF SURVEY, GUN STRING #4, GUNS 25-31, WAS REPLACED WITH GUN STRING #2, GUNS 9-15. ALL OFFSETS FOR GUN STRING #2 ARE EXACTLY THE SAME AS THEY WERE FOR GUN STRING #4. ON PAGES 6 & 7 OF THIS REPORT IN THE NUMBER COLUMN, NUMBERS 8-14 ARE THE OFFSETS FOR BOTH GUNS # 25-31 & 9-15. GUN #9, LOCATED IN POSITION # 8, AND GUN #15 LOCATED IN POSITION # 14.

7. STATISTICAL SUMMARY

259138

STATISTICAL LINE SUMMARY FOR THE MONTH OF JULY 1992

CREW/VESSEL : PARTY 116 "WESTERN ATLAS"
CLIENT : SAGASCO RESOURCES LIMITED
LOCATION : BASS BASIN T/25P

DATE JUL	LINE NO.	FSP	LSP	NCSP	CSP	PRIME KMS	DAILY KMS
26	S92A-117A	777	41		737	19.648	
	S92A-115A	101	640		540	14.396	34.044
27	S92A-109	477	41		437	11.650	
	S92A-105	101	536		436	11.624	
	S92A-113A	514	41		474	12.637	
	S92A-107	101	613		513	13.677	49.588
28	NIL						
29	S92A-111	101	650		550	14.663	
	S92A-103	541	41		501	13.357	
	S92A-101	101	300		200	5.332	
	S92A-101A	240	611	61	311	8.291	41.643
30	S92A-122	101	612		512	13.650	
	S92A-118	552	41		512	13.650	
	S92A-120	101	611		511	13.623	
	S92A-116	551	41		511	13.623	
	S92A-110	101	906		806	21.488	
	S92A-122	547	98		450	11.997	88.031
31	S92A-112	97	41		57	1.520	
	S92A-108	101	1659		1559	41.563	
	S92A-114	1448	243		1206	32.152	
	S92A-114A	319	41	77	202	5.385	
	S92A-108A	101	391	291	0	0.000	
	S92A-106	101	336		236	6.292	86.912
						300.218	300.218

Western Atlas International

WESTERN GEOPHYSICAL

259139

STATISTICAL LINE SUMMARY FOR THE MONTH OF AUGUST 1992

CREW/VESSEL : PARTY 116 "WESTERN ATLAS"
CLIENT : SAGASCO RESOURCES LIMITED
LOCATION : BASS BASIN T/25P

DATE AUG	LINE NO.	FSP	LSP	NCSP	CSP	PRIME KMS	DAILY KMS
1	S92A-106	337	1281		945	25.194	
	S92A-104	1222	41		1182	31.512	
	S92A-102	101	1097		997	26.580	
	S92A-139	101	575		475	12.664	
	S92A-137	515	41		475	12.664	
	S92A-135	101	576		476	12.690	121.304
2	S92A-133	514	41		474	12.637	
	S92A-131	101	575		475	12.664	
	S92A-129	516	351		166	4.426	
	S92A-129A	410	41	60	310	8.265	
	S92A-127	101	726		626	16.689	
	S92A-125	701	41		661	17.622	
	S92A-123	101	800		700	18.662	
	S92A-121	924	645		280	7.465	98.430
3	S92A-121	644	41		604	16.103	
	S92A-119	101	985		885	23.594	
	S92A-109	101	537		437	11.650	
	S92A-105T	656	478		179	4.772	
	S92A-105	477	41		437	11.650	
	S92A-101	101	537		437	11.650	
	S92A-101T	538	716		179	4.772	
	S92A-107	477	41		437	11.650	
	S92A-103	101	537		437	11.650	107.491
						327.225	327.225

APPENDIX A - NAVIGATION

1. NAVIGATION FIELD REPORT (RACAL)

259141

POSITIONING CONTROL

FOR

WESTERN GEOPHYSICAL CO LTD

AND

SAGASCO RESOURCES LTD

SUBJECT : **SKYFIX POSITIONING**

DATE : **23rd JULY - 4th AUGUST, 1992**

REFERENCE : **1932b**

CONTENTS

1. ABSTRACT

RACAL SURVEY AUSTRALIA LIMITED (Racal) were contracted by WESTERN GEOPHYSICAL CO LTD to supply "Skyfix" DGPS System for seismic work in conjunction with Sagasco Resources Ltd.

The work was carried out between the 23rd of July and the 4th of August, 1992.

2. SKYFIX DIFFERENTIAL GLOBAL POSITIONING SYSTEM

System Description

The NAVSTAR GPS (Navigational Satellite Timing and Ranging Global Positioning System) is a space based developmental satellite system. It is capable of providing highly accurate three dimensional positioning and can also be used to transfer accurate time to suitably equipped users worldwide. System design consists of three integral parts: the Ground Control Segment, the Space Segment and the User Segment.

When completed, the operational space segment will consist of 21 production satellites and 3 active spares; the term Space Vehicle (SV) is used as a synonym for satellite. The satellites will be in high orbits, at approximately 20,200km, with an orbit period of 12 hours. They will be arranged in 6 orbital planes, inclined at 55 degrees with near circular orbits.

The final configuration will provide 24 hour complete 4 satellite (3D) coverage worldwide. With the present launch schedule 24 hour 3 dimensional coverage will not be available until late 1993. Full 2 dimensional coverage will probably be available in 1992. The available coverage for the survey is shown in Appendix D.

Current Configuration

At present, both Block I (testing) and Block II satellites are in orbit and transmitting healthy data. The Block I's are SV's 3, 11, 12, and 13. The current Block II satellites are SV's 2, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25 and 28. The amount of coverage that the satellite configuration provides, depends upon the geographical position of the user. The approximate coverage for the Adelaide area (assuming 10°elevation mask) was as follows:-

20 hours		4 Satellite coverage
3 hours	additional	3 Satellite coverage
1 hour	additional	2 Satellite coverage

It should be noted that available satellite coverage does not represent actual usable working periods, as the satellites will at times combine to produce poor geometry and therefore poor positioning. This can happen for short periods during the middle of multi-satellite coverage and is a result of the limited satellite constellations presently available. It is essential to ascertain the periods of good coverage prior to commencing any project involving GPS.

Individual satellites can be set 'unhealthy' from time to time whilst they are manoeuvred into new orbital planes or due to other operational circumstances which are usually predicted. The status of GPS was obtained from one of the GPS Bulletin Board Services prior to the project commencing. The status of GPS was monitored throughout the project by downloading status and almanac file on a weekly basis. In addition the Racal Survey Ltd office in Great Yarmouth, England monitor the status of GPS daily, and fax to all Racal operating companies worldwide, including Racal Survey Australia, any notice advisory to NAVSTAR users (NANU's) that may affect the operational capabilities of the system.

GPS Observations

There are two important types of GPS observations (observables):

Pseudorange and Carrier phase.

Carrier phase is sometimes also referred to as carrier beat phase. Pseudorange techniques are generally used for navigation e.g. Deltanav. In high-precision baseline surveying the carrier phase is used. Although the (undifferenced) phase can be used directly, it has become common practice, at least in surveying applications, to process certain linear combinations of the original carrier phase observations (double differences and triple differences).

Pseudoranges

The pseudorange is a measure of the distance between the satellite and the receiver at the epochs of transmission and reception of the signals. The transit time of the signals is measured by comparing (correlating) identical pseudo-random noise (PRN) codes generated by the satellite and by the receiver. A code-tracking loop within the receiver shifts the internal replica of the PRN code in time until maximum correlation occurs. The codes generated at the receiver are derived from the receiver's own clock, and the codes of the satellite transmissions are generated by the satellite system of clocks. It follows that unavoidable timing errors in both the satellite and the receiver clock will cause the measured quantity (pseudorange) to differ from the geometric distance.

In applications offshore where instantaneous positions are required, the pseudorange is the preferred observable. Given the satellite ephemeris (i.e. the position of the satellite at the epoch of transmission), there are seven unknowns: two clock errors, three receiver co-ordinates and the ionospheric and tropospheric delays. The effect of the satellite clock error is negligible for the typical navigation solution, particularly considering that the time errors are indistinguishable from the ionospheric and tropospheric delays. The satellite clocks are constantly monitored and synchronized with GPS time as maintained by the control centre. Actual offsets of the satellite clocks are approximated by polynomials in time and transmitted as part of the navigation message to the user for the correction of the measured pseudoranges. The ionospheric and tropospheric delays can be computed on the basis of ionospheric and tropospheric models, thus there are four unknowns left X, Y, Z and receiver clock error. These can be determined from four pseudoranges measured simultaneously to four GPS satellites.

It must be expected that the navigation accuracy will be degraded to about 100 metres standard deviation (Standard Positioning Service) once the GPS system is fully operational. Selective availability is a program to control the accuracy of pseudorange measurements. Essentially, the user is given a false pseudorange for each satellite so that the resulting measurement is in error by a controlled amount. Differential GPS requires that a receiver be located at a precisely known point from which the pseudorange corrections can be determined and monitored. These pseudorange errors are then communicated by means of a telecommunications link to users (for this project the differential link was "SkyFix"). This Differential GPS technique has proven to be particularly effective and can improve the accuracy figure, even under selective availability conditions, to 5 metres or better. In the relative mode most of the important errors, satellite ephemeris errors, and ionospheric and tropospheric delays, cancel.

Carrier Phase

The phase observable is the difference between the phase of the carrier signal of the satellite, measured at the receiver, and the phase of the local oscillator within the receiver at the epoch of measurement. This can be regarded as a biased range measurement of the satellite-receiver distance with the integer number of carrier waves being unknown. The wavelength of the L1 carrier is about 19cm. Because of the fraction of the carrier phase is measured, the term "interferometry" is often used to describe carrier phase techniques.

Trimble 4000SX and 4000DL GPS Receivers

The Trimble 4000SX GPS receiver is designed for moderate precision static and dynamic positioning applications. The GPS receiver provides time and three-dimensional station co-ordinates at a once-per-second update rate.

The receiver receives the civilian coded signal (C/A) from the GPS NAVSTAR satellites. The receiver automatically acquires and simultaneously tracks GPS satellites and precisely measures carrier and code phase and computes position and velocity.

Latitude, longitude and height values are output on the World Geodetic System (WGS 84) Earth-centred, Earth-fixed co-ordinate system.

The receiver is designed to measure the following observables:

- Coarse/Acquisition (C/A code pseudoranges)
- rate of change of pseudorange
- integrated Doppler

C/A code correlation techniques measure the propagation time of the signal from the satellite to the antenna. Latitude, longitude, height and time can be determined from measurements made from at least 4 satellites, by a process similar to trilateration.

To determine speed and heading, the receiver calculates the rate of change of Range (the range-rate) by measuring the Doppler shift of the carrier.

The Trimble 4000DL GPS receiver, like the 4000SX, provides time, three-dimensional station co-ordinates and velocity measurements at a once-per-second rate. It is capable of receiving and processing differential corrections from other reference sources using the standard format of the Radio Technical Commission for Maritime Services, Special Committee 104 (RTCM SC-104), Version 1.0 or 2.0 protocols.

The 4000DL has several options available, including internal data logging memory, event marker logging etc. and therefore may be used alone or as part of a more extensive navigation system.

"SkyFix" Differential Link

Racal Survey Australia Limited introduced its "SkyFix" Differential GPS System in Australia in January 1991, using the Inmarsat Pacific and Indian Ocean marine communications satellites as the differential data broadcast link. Extensive performance trials and projects undertaken to date have shown "SkyFix" to meet the best industry expectations in terms of quality of service and accuracy.

The system embodies the successful combination of data capacity, range and coverage with a flexible networked approach that lends itself to comprehensive performance and quality monitoring.

The link capacity of 1200 bits per second allows data from a number of networked reference stations to be sent simultaneously without introducing unacceptable delays between reference station and user. With four reference stations each
generating correction data for ranges from eight satellites, an update rate of better than three seconds is achieved by the "SkyFix" system.

Satellite communications systems, particularly at the Inmarsat L-band frequencies of 1.5 GHz are reliable and free of the interference associated with the crowded M.F./H.F. bands. This high data integrity gives users confidence that the corrections will be continuously received without interference.

The "SkyFix" Australia network commenced operation in January 1991, and now comprises reference stations at Dampier, Perth, Adelaide, Sydney, Cairns and Darwin.

The differential corrections generated at each reference station are brought via landline links to the data hub and control centre in Singapore where the system is monitored for performance and quality. From there a composite message containing full RTCM 104 formatted data from all reference stations is sent via dual redundant links to satellite earth stations at Sentosa Island, Singapore and O.T.C. Perth, Western Australia for uplink and broadcast over the Inmarsat Pacific and Indian Ocean Region satellites.

The design of reference station networks provides a high quality service to major offshore hydrocarbons prospect areas, each of which, ideally will be within coverage of more than one reference station.

The system is easily expandable to provide new areas of coverage by the addition of further networked reference stations, with the correction data from these automatically included in the system performance and quality control function at the control centres.

Whilst the DGPS service provider has no control over the operation of the GPS system itself, performance can be monitored, quantified and reported to users. The functions of the "SkyFix" data hub and control centre in Singapore are of fundamental importance as its role is to guarantee the best possible system performance.

The "SkyFix" system includes a 24 hour monitoring facility to ensure the validity of data received at the control centre from the DGPS reference stations and that the same data is received over the "SkyFix" satellite data link.

The monitor system that has been developed by Racal Survey Australia Limited is designed to provide maximum system performance information availability whilst providing a rapid indication of performance or fault problems should they occur.

Monitoring and control functions therefore include extensive analysis and archiving of the reference corrections and the comparison of range rate corrections - arriving from different stations within the network. The system also receives the broadcast message from the satellite data link and applies this data to a monitor receiver at the control centre to verify positioning performance. Time series plots of this performance, in latitude, longitude, height, together with PDOP and HDOP figures are generated.

Monitoring the data on the link in this way also allows link performance to be appraised in terms of message success rate and in terms of overall system message delay.

Other functions include satellite status information, data recording, and a procedural approach to providing client information.

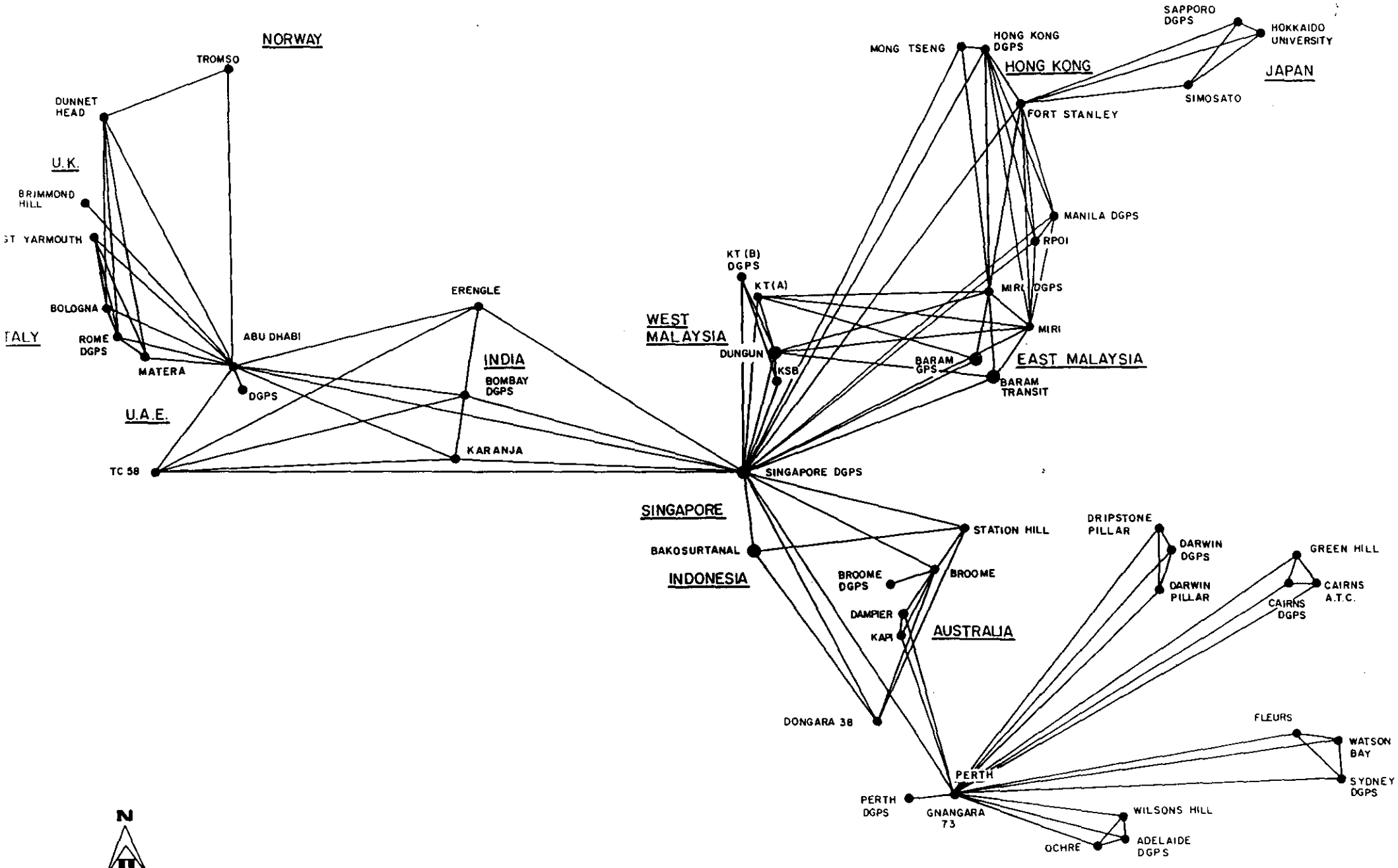
The "SkyFix" combination of the Inmarsat satellite communications links using the RTCM 104 DGPS data protocol, the reference station, monitoring and user infrastructure has been shown through a growing body of project trials experience to provide a Differentially GPS operating environment consistently capable or providing position accuracies of 5 metres or better.

The "SkyFix" scheme, as illustrated overleaf is a homogeneous network within the WGS 84 geodetic reference frame. The original network, prior to the Australian extension included ten primary triangulation stations for which the WGS 84 values were supplied. The vectors established during this build up create a network between the Far East, Australia and Europe. Purely for the purposes of testing the strength and internal consistency the network has been subjected to a least squares adjustment by variation of co-ordinates. In the final analysis two of the primary triangulation stations, Dongara 38 (W.A.) and Matera (Italy), were held fixed. The residual errors pertaining to the remaining eight primaries are listed below. For all stations included in the final analysis the mean semi-major axis of the twenty-nine 95% error ellipsoids is just over 0.6 metres. The total variation about this mean is contained within plus or minus 0.6 metres.

STATION	LATITUDE	LONGITUDE	HEIGHT	MISCLOSURE
Port Stanley (Hong Kong)	0.53m	- 1.56m	- 0.53m	1.73m
TC 58 (Abu Dhabi)	0.76m	- 0.97m	0.83m	1.49m
Station Hill(Broome W.A)	0.35m	0.50m	- 1.23m	1.95m
Gnangara (Perth W.A.)	1.04m	1.00m	- 1.82m	2.32m
Bologna (Italy)	- 0.14m	0.02m	0.39m	0.41m
Brimmond Hill (Scotland)	- 2.85m	0.32m	1.16m	3.09m
Dunnet Head (Scotland)	- 1.59m	1.50m	0.81m	2.04m
Tromso (Norway)	- 1.11m	2.25m	- 0.81m	2.64m

For the Australian extension to the network, two primary geodetic points were used at each site, together with the transportable laser ranging site, Gnangara 73 in Perth.

259149



SKYFIX NETWORK

(NOT TO SCALE)

KEY :- ◉ Station also part of S.E. Asia Pulse / 8-II GPS network

3. EQUIPMENT

Skyfix System:-

	S/N
1 x Skyfix Marisat Dome	007
2 x Demodulators and Cables	SN 2436, 2422
2 x Trimble 4000 DL's $^{C}/_{W}$ AE's	SN 1935, 795
1 x P OSM's and IF Cables	SN 0968
1 x Antenna Control Unit	SN 0169
1 x SG Brown 1000s Gyro $^{C}/_{W}$ Cables	SN FCS/138
1 x 24V Power Supply	SN 9212
Spares and Cables	-

4. GEODETIC PARAMETERS

The location co-ordinates are defined on Australian Geodetic Datum 1966 (AGD 66).

The Global Positioning System (GPS) is referenced to the World Geodetic System 1984 (WGS 84).

4.1 DATUMS

Datum	:	**Australian Geodetic Datum 1966**
Spheroid	:	Australian National
Semi-major Axis (a)	:	6 378 160.000m
Semi-minor Axis (b)	:	6 356 774.719m
Eccentricity Squared (e^2)	:	0.006 694 542
Flattening (1/f)	:	298.25
Datum	:	**World Geodetic System 1984**
Spheroid	:	WGS 84
Semi-major Axis (a)	:	6 378 137.000m
Semi-minor Axis (b)	:	6 356 752.3142m
Eccentricity Squared (e^2)	:	0.006 694 380
Flattening (1/f)	:	298.257 223 563

4.2 PROJECTION

Projection	:	**Universal Transverse Mercator**
AMG Zone	:	53
Central Meridian (C.M.)	:	135° East
Scale factor on the C.M.	:	0.9996
False Easting	:	500 000m
False Northing	:	10 000 000m
Latitude of Origin	:	0° (Equator)
Unit of Measure	:	International Metre

4.3 DATUM TRANSFORMATION

The following 7-parameter datum transformation was used to convert WGS 84 co-ordinates to AGD 66 co-ordinates:

Dx =	+116.00m
Dy =	+50.47m
Dz =	-141.69m
Rx =	+0.230"
Ry =	+0.390"
Rz =	+0.344"
Scale (K) =	-0.0983

Note: The sign conventions used in Racal software in the datum transformations were derived as follows:

GNS Survey Software:
The convention used is that used by the US Department of Defence and by Higgins (Transformation from WGS 84 to AGD 84 - An Interim Solution), where a positive rotation about the Z axis is an anti-clockwise movement of the X and Y axes (when viewed from the North Pole looking towards the centre of the Earth).

The values used for the 7-parameter datum transformation were the AGD 84 values, as it was determined that the difference between the 1984 and 1966 Australian Geodetic Datums in the area of survey operations was negligible.

5. ADELAIDE REFERENCE STATION DESCRIPTION

259154

5 cm

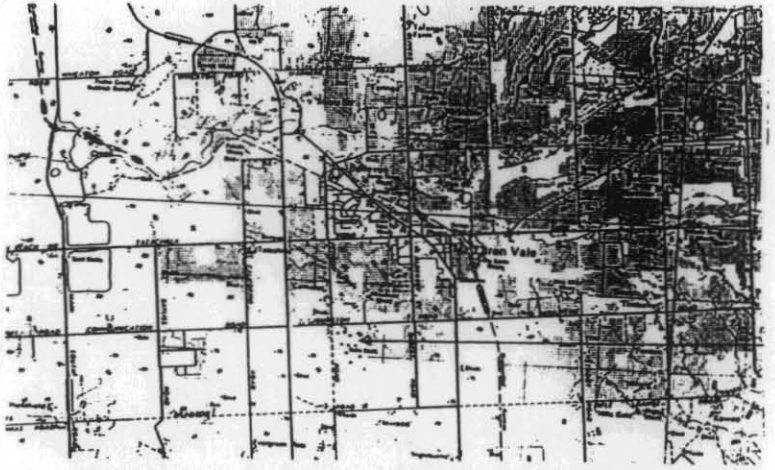
RACAL SURVEY AUSTRALIA

STATION SUMMARY

CLIENT	JOB NO.
LOCATION Adelaide Radio, Johnston Road, McLaren Vale S.A. 5171	
ORIGINAL STATION ESTABLISHED BY	DATE
EXISTING STATION ESTABLISHED BY Racal Survey Ltd.	DATE 17.8.91
MAP REFERENCE	PHOTO REFERENCE

STATION NAME/NUMBER McLaren Vale OTC		ORDER 1
DATUM WGS 84	a: 6 378 137.000m	1/f: 298.257223563
LATITUDE: 35° 13' 52.44446" S	LONGITUDE: 138° 32' 03.42158" E	Sph Ht: 79.145m
U.T.M. ZONE	EASTING	NORTHING

LOCALITY AND ACCESS DIAGRAM



REMARKS Access: Contact station manager prior to visit. Tel: (08) 323 8616

Survey Method

McLaren Vale OTC G.P.S. reference marker was positioned by static dual freqency phase differential G.P.S. relative to Ochre and Mt. Wilson control points, S.A. Together with the transportable SLR SITE, Perth W.A.

Satellite Visibility

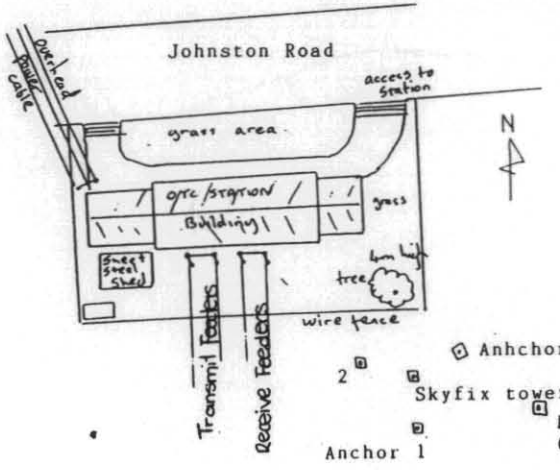
Good.

Equipment Required

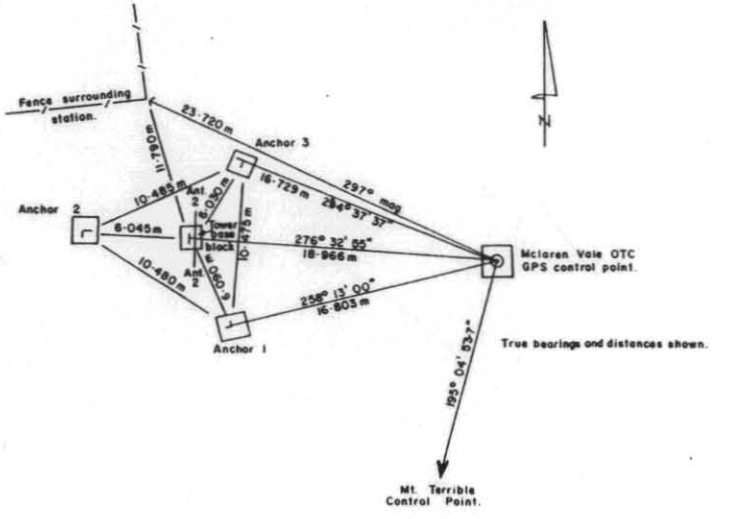
Tripod over mark. 40m cable run to24V, 50Hz power supply.

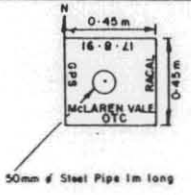
SIGNED M Tuck

STATION DIAGRAM



STATION DESCRIPTION





McLaren Vale OTC G.P.S. reference mark consists of a steel bolt fixed in a concrete filled steel pipe placed in a 0.45m² concrete block.

6. DISTRIBUTION

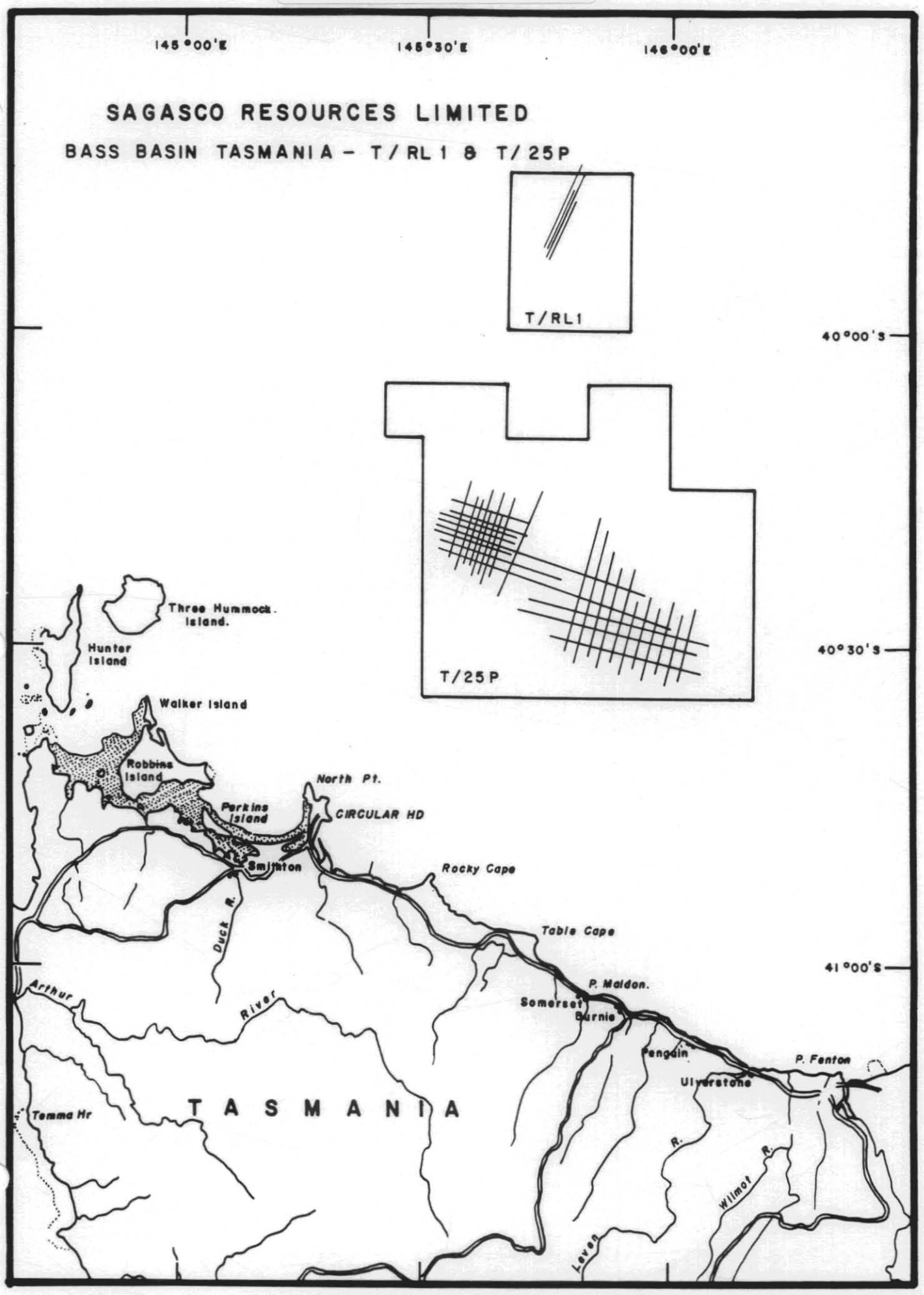
Copies of this report have been distributed as follows:

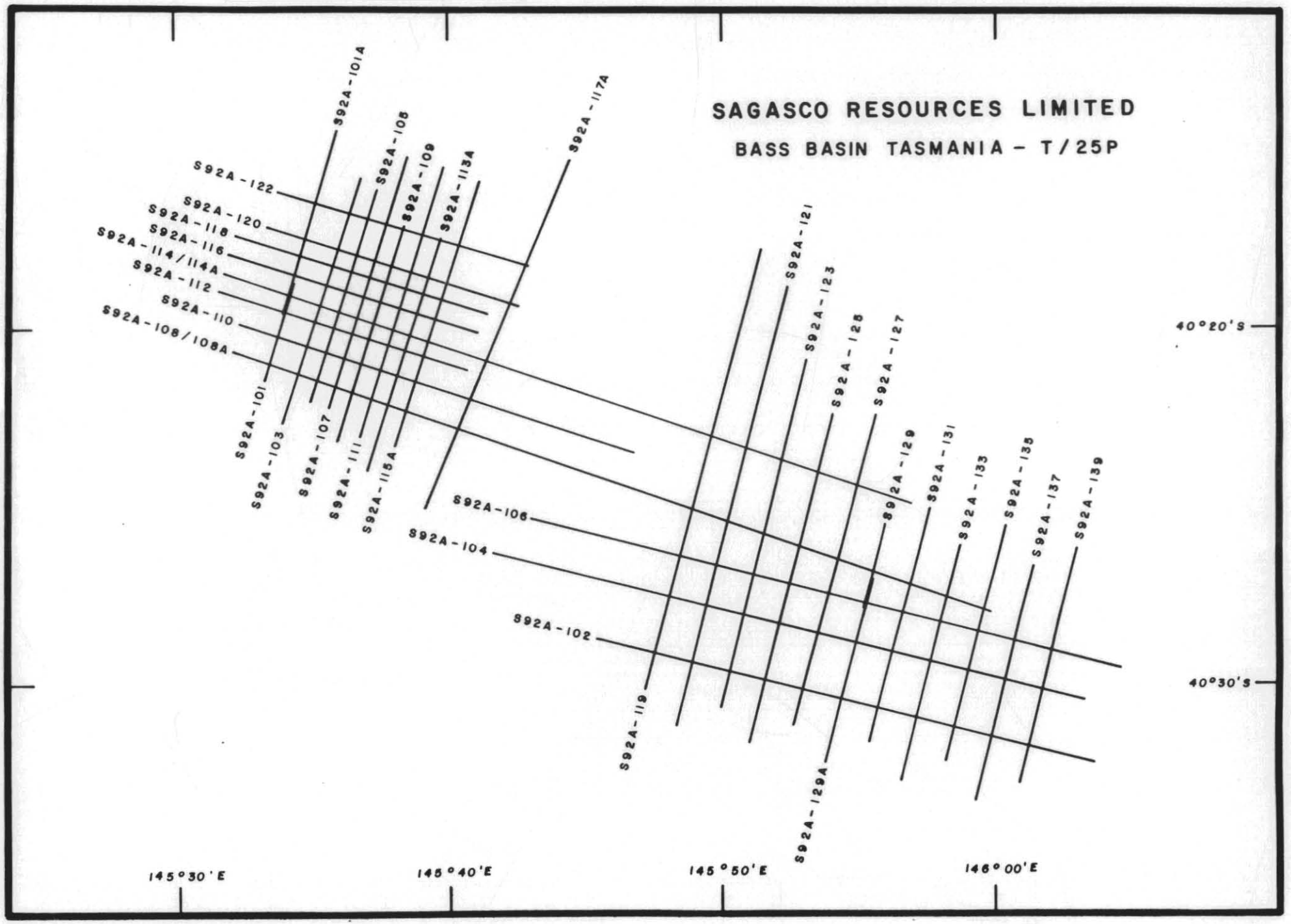
Western Geophysical Co. Limited Attn: Mr. B. Dean	:	3 copies
Racal Survey Australia Limited	:	1 copy

Gareth Jones
Area Surveyor

APPENDIX B - MAPS AND DIAGRAMS

1. LOCALITY AND LINE MAPS

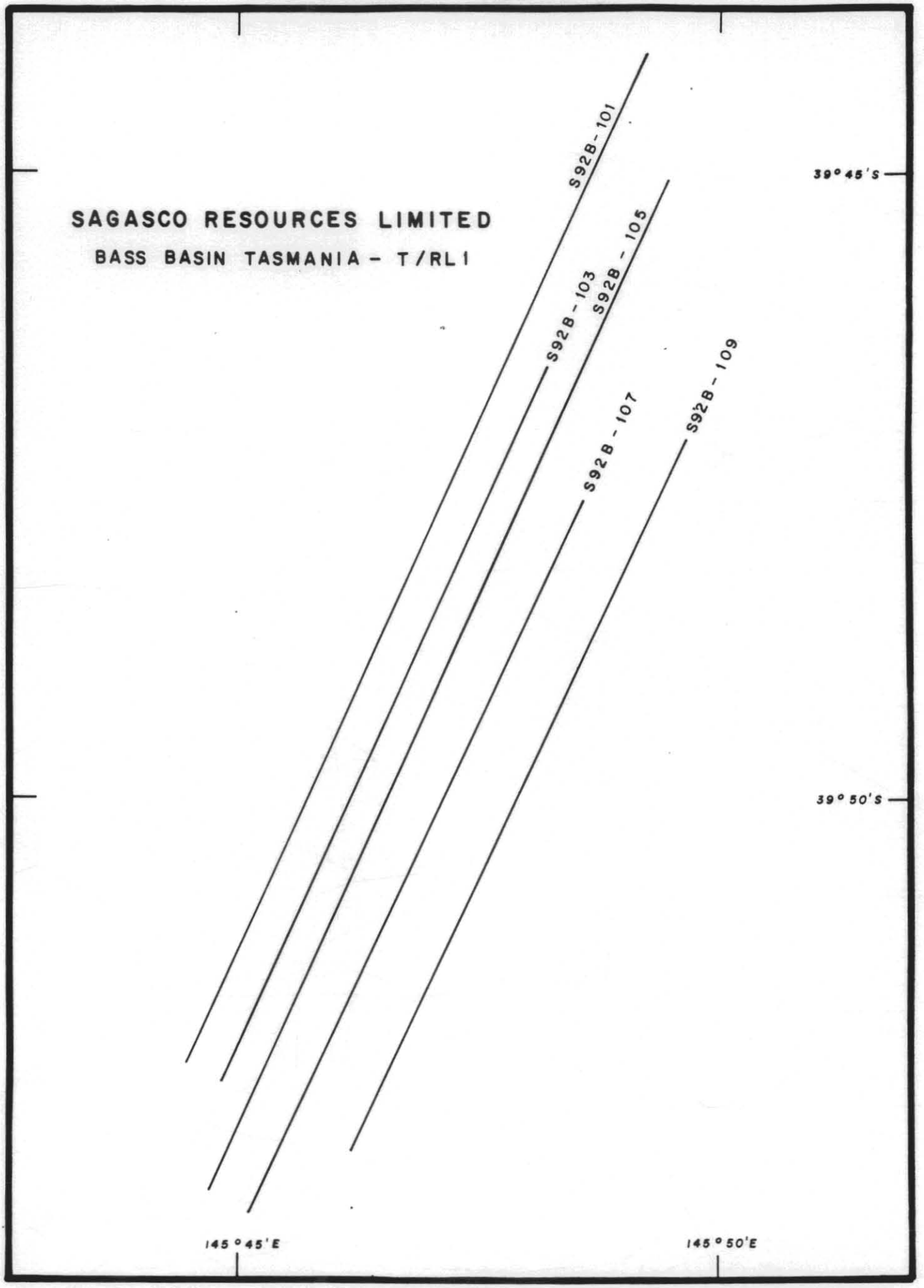

5 cm
145°00'E
145°30'E
146°00'E
SAGASCO RESOURCES LIMITED
BASS BASIN TASMANIA - T/RL1 & T/25P
T/RL1
T/25P
40°00'S
40°30'S
41°00'S
Three Hummock Island.
Hunter Island
Walker Island
Robbins Island
Perkins Island
North Pt.
CIRCULAR HD
Smithton
Rocky Cape
Table Cape
Duck R.
Arthur River
P. Maldon.
Somerset
Burnie
Penguin
P. Fenton
Ulverstone
Tasmania
Tamma Hr
R.
Wilmot R.
Leven


5 cm
SAGASCO RESOURCES LIMITED
BASS BASIN TASMANIA – T/25P
S92A-1014
S92A-1174
S92A-105
S92A-109
S92A-113A
S92A-122
S92A-120
S92A-118
S92A-116
S92A-114/114A
S92A-112
S92A-110
S92A-108/108A
S92A-101
S92A-103
S92A-107
S92A-111
S92A-115A
S92A-106
S92A-104
S92A-102
S92A-119
S92A-129A
S92A-121
S92A-123
S92A-125
S92A-127
S92A-129
S92A-131
S92A-133
S92A-135
S92A-137
S92A-139
40°20'S
40°30'S
145°30'E
145°40'E
145°50'E
146°00'E

259158

5 cm

259159


SAGASCO RESOURCES LIMITED
BASS BASIN TASMANIA - T/RL1
S92B-101
S92B-103
S92B-105
S92B-107
S92B-109
39°45'S
39°50'S
145°45'E
145°50'E

APPENDIX B - MAPS AND DIAGRAMS

2. BOAT GEOMETRY

5 cm

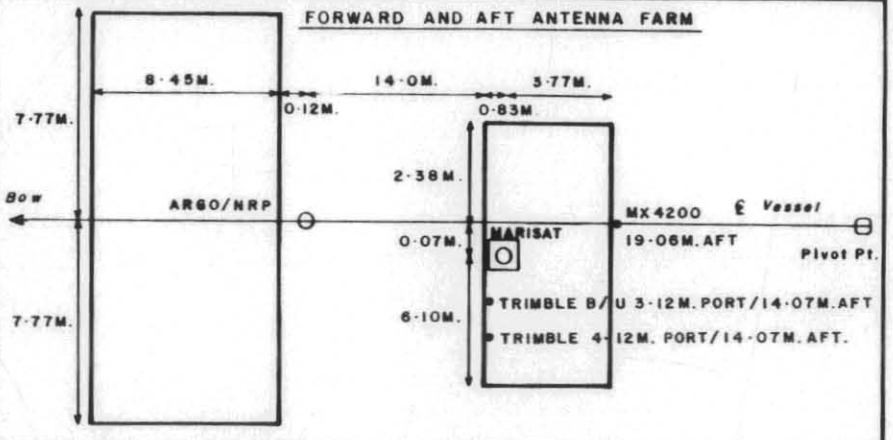
WESTERN ATLAS PARTY 116

FORWARD ANTENNA FARM

VERTICAL REFERENCE HEIGHT (ABOVE MSL)

ANTENNA	HEIGHT
N.R.P.	0·00M.
ARGO	
SYLEDIS	
STARFIX	
GEOLOG	
MX 4200	
MX 1107	
DGPS SERCEL	
MAXIRAN	
PLUSE 8	
HYPERFIX	
SAT – NAV.	

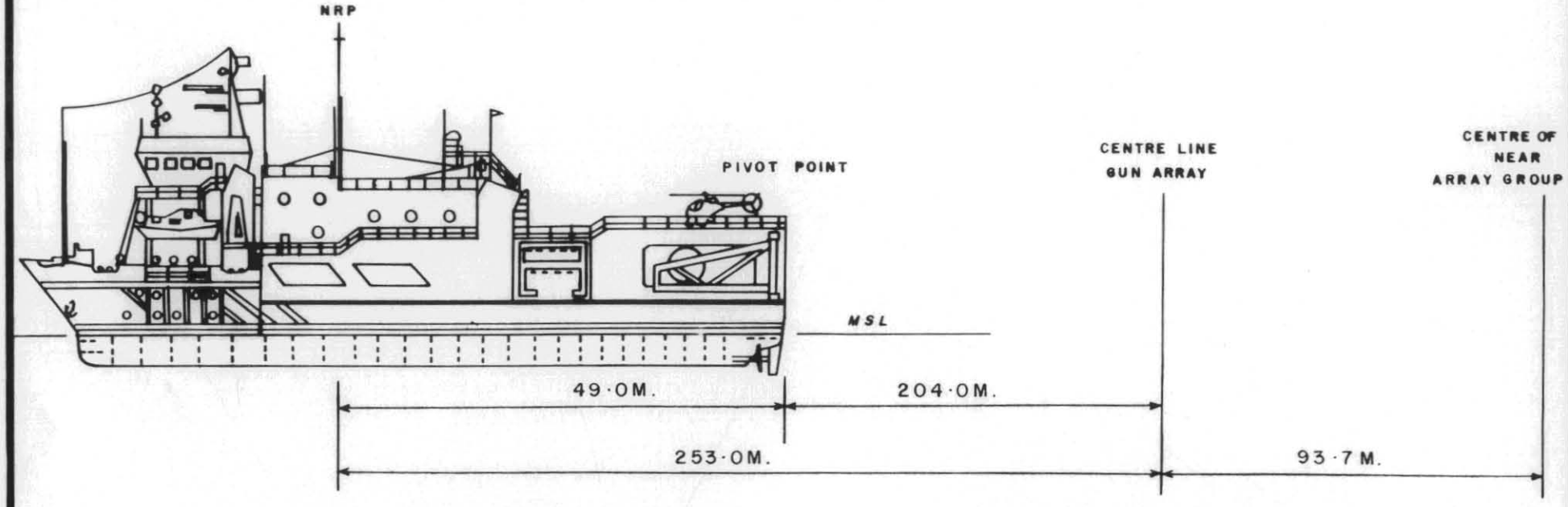
FORWARD AND AFT ANTENNA FARM



AFT. ANTENNA FARM

VERTICAL REFERENCE HEIGHT (ABOVE MSL)

ANTENNA	HEIGHT
N.R.P.	
ARGO	
SYLEDIS	
STARFIX	
TRIMBLE	17·47M.
MX4200	19·07M.
TRIMBLE B/U	16·49M.
DGPS SERCEL	
MAXIRAN	
PLUSE 8	
HYPERFIX	
SAT – NAV.	



CLIENT : SAGASCO RESOURCES LIMITED

AREA : BASS BASIN TASMANIA – T/RL1 & T/25P

DATE FROM : 23TH. JULY 1992

TO DATE : 04TH. AUGUST 1992

25916 1

259162

APPENDIX B - MAPS AND DIAGRAMS

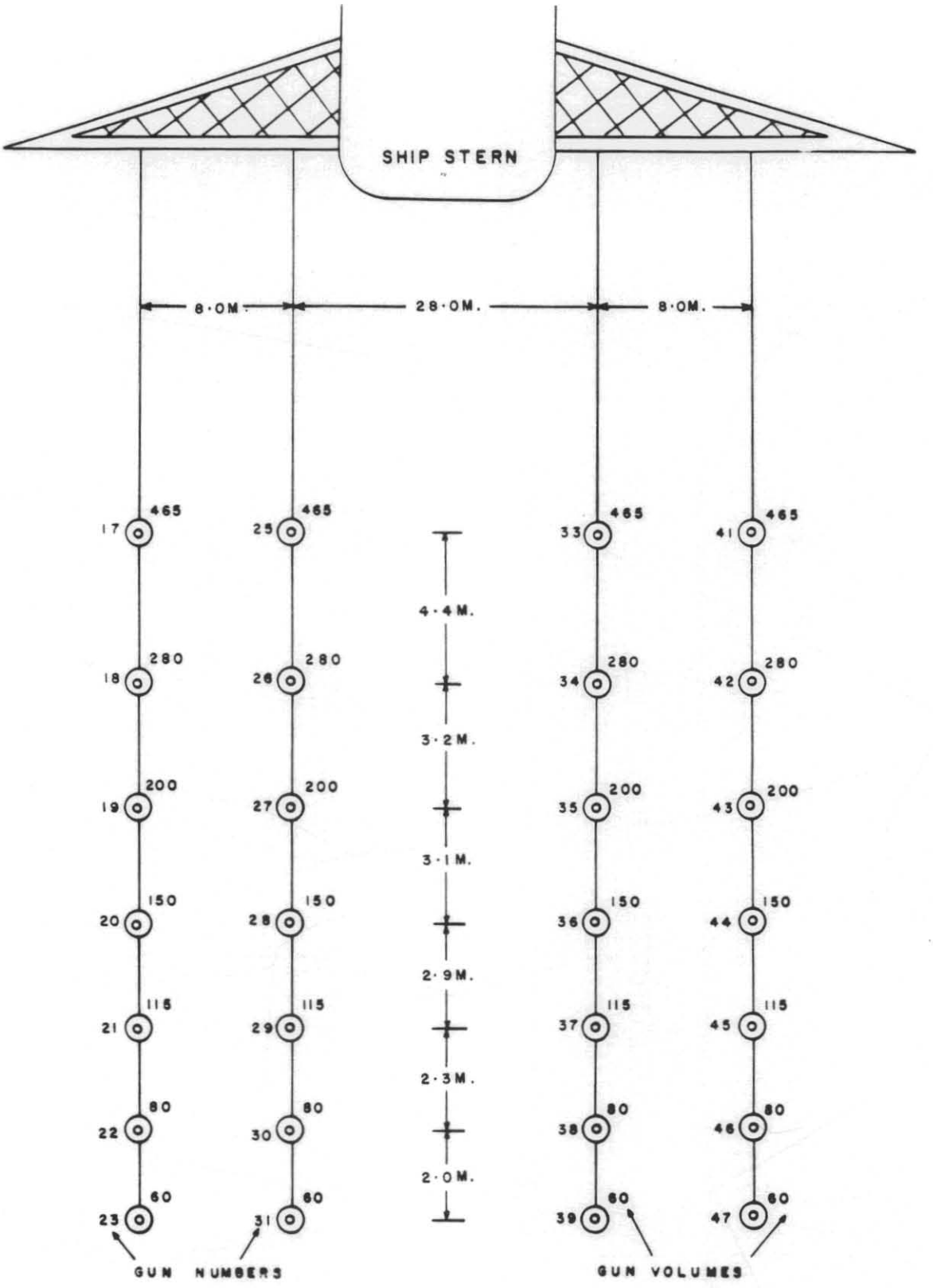
3. AIRGUN ARRAY CONFIGURATION

5 cm

259163

WESTERN ATLAS PARTY 116

5400 CU. IN.



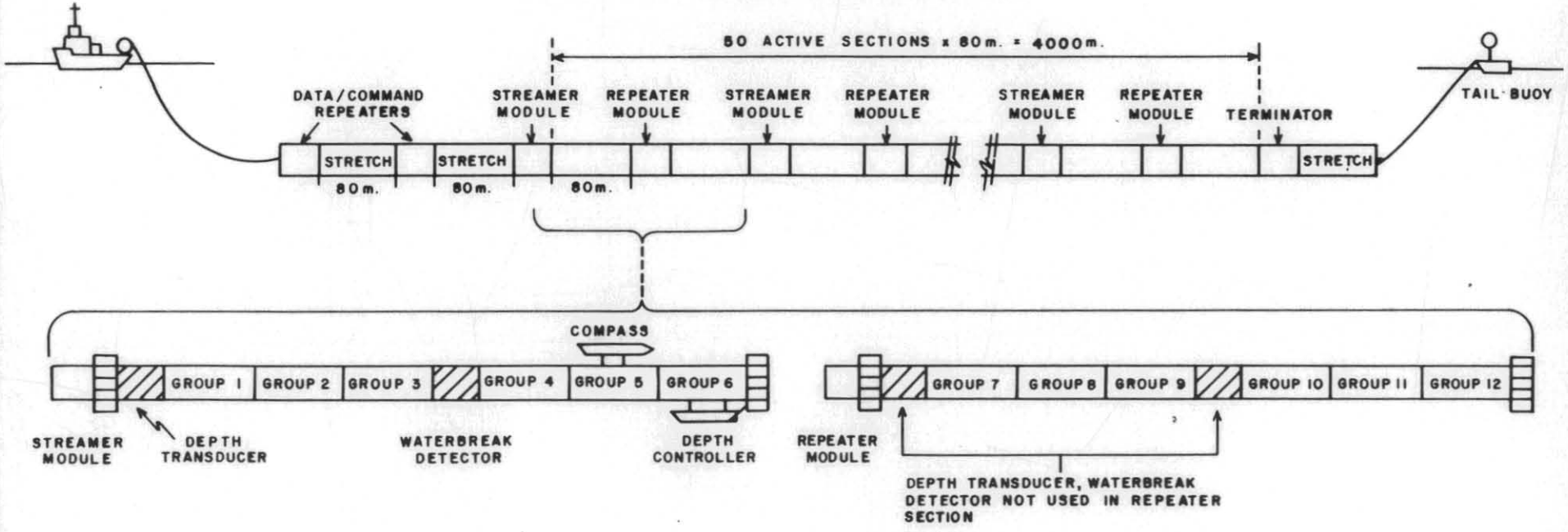
APPENDIX B - MAPS AND DIAGRAMS

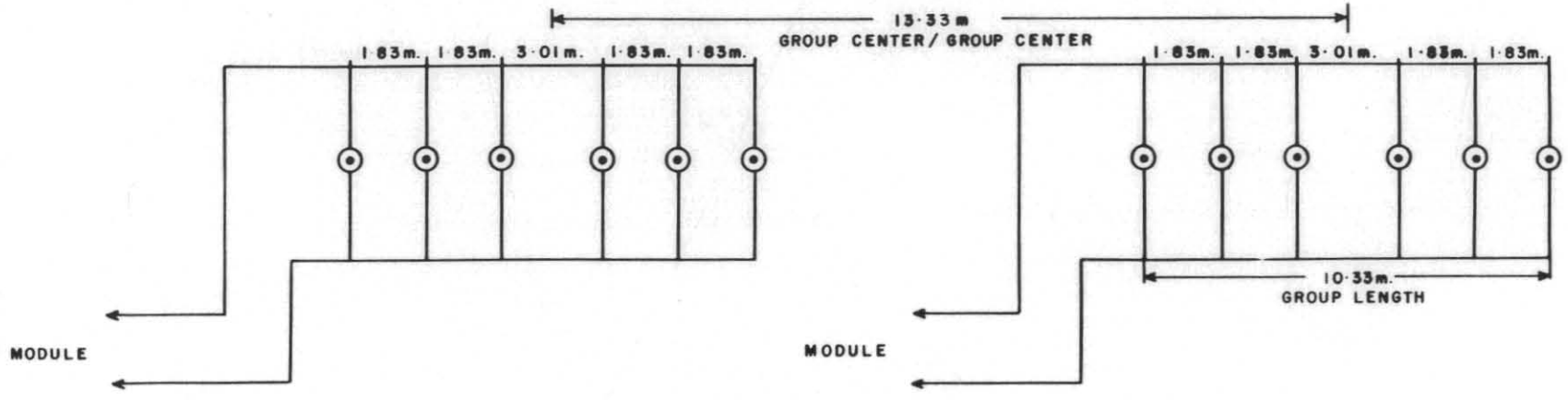
4. LRS 16A CONFIGURATION AND BLOCK DIAGRAMS

5 cm

WESTERN ATLAS PARTY 116

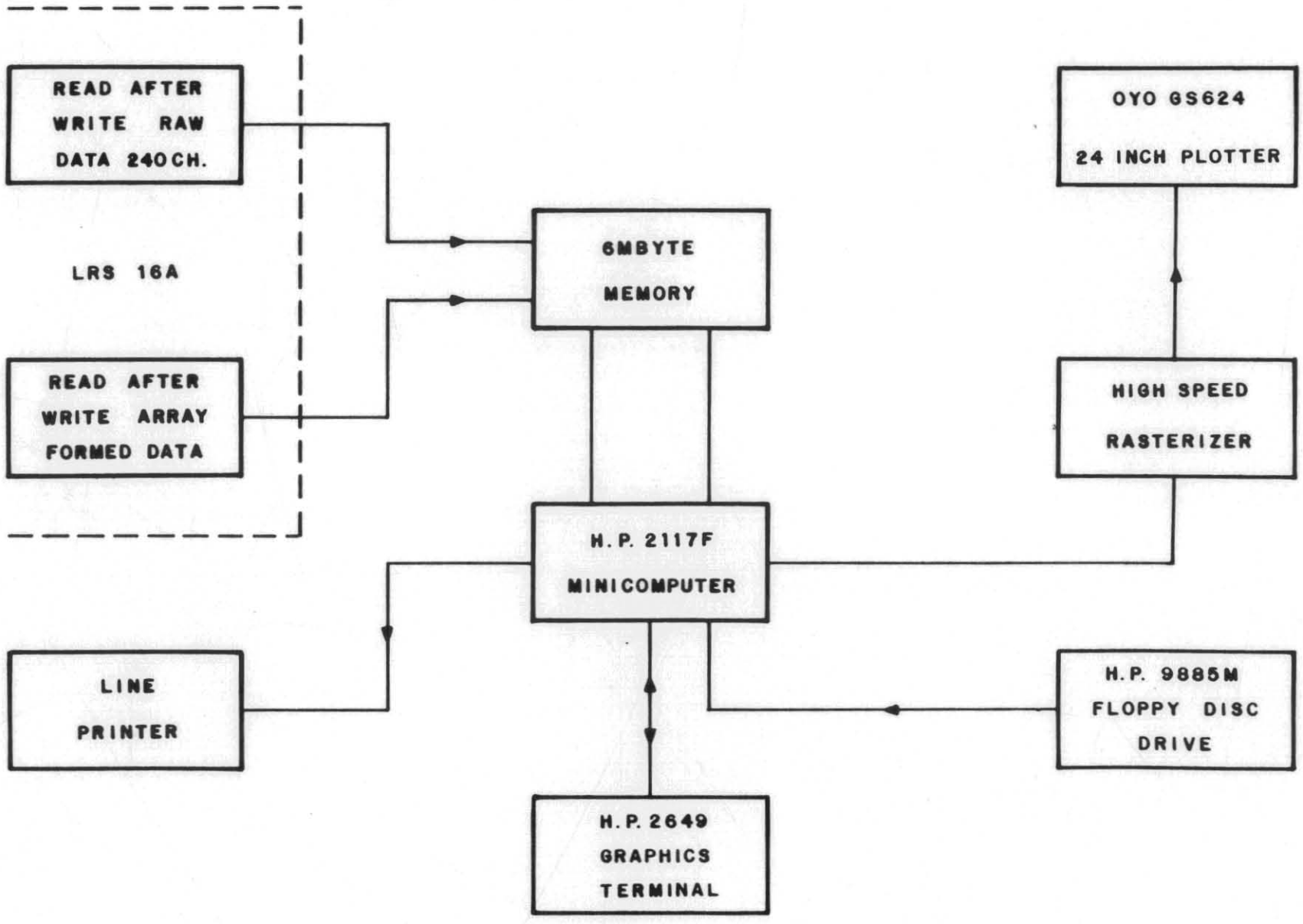
LRS 16A, STREAMER CONFIGURATION



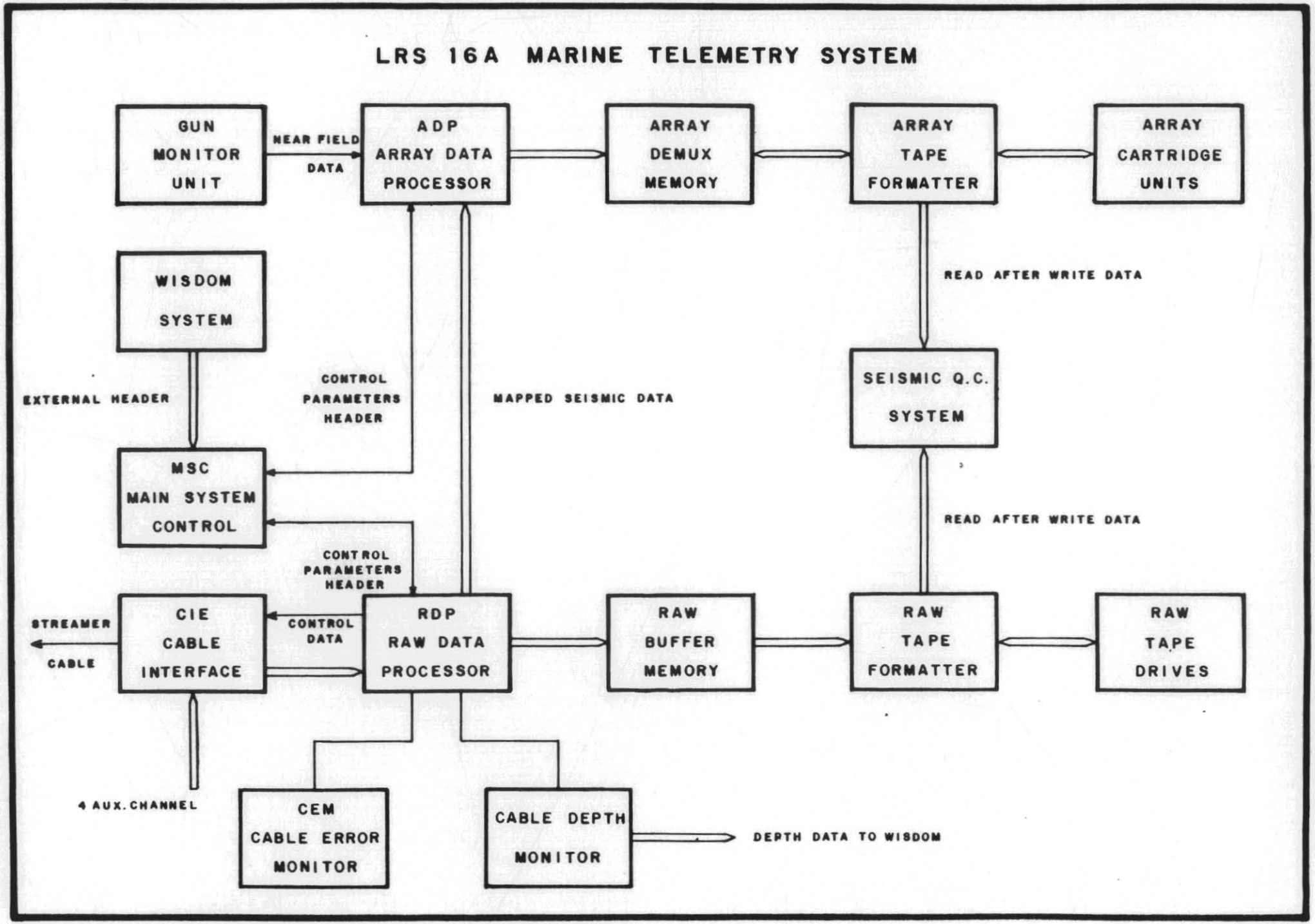


HYDROPHONE ARRAYS

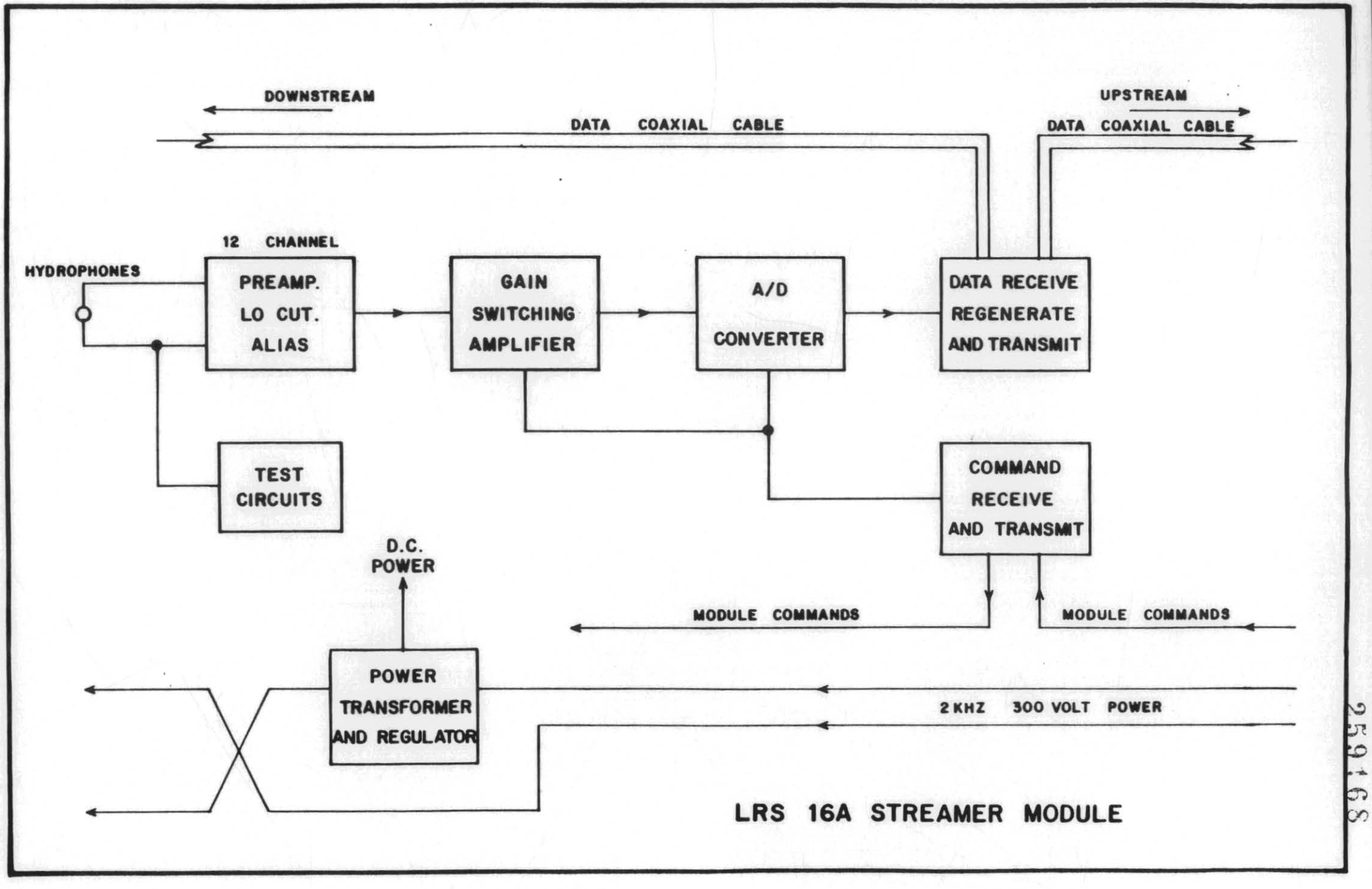
LRS 16A SEISMIC QC BLOCK DIAGRAM



LRS 16A MARINE TELEMETRY SYSTEM



2591467

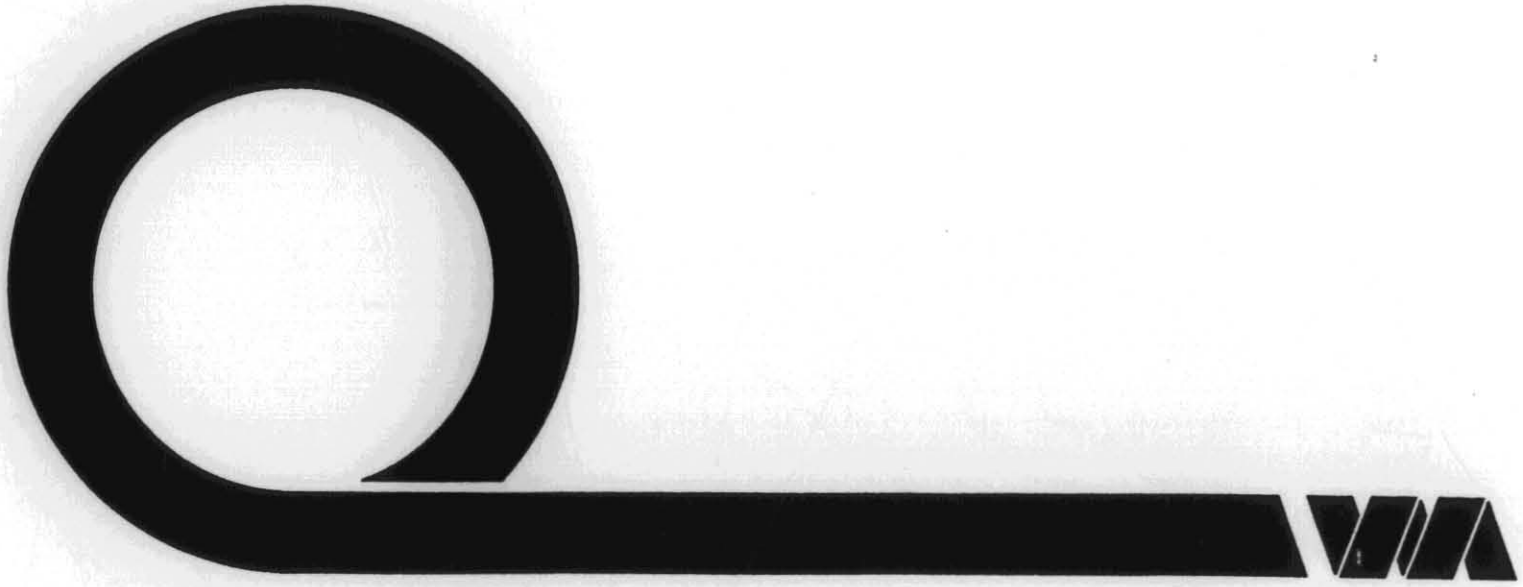

DOWNSTREAM
DATA COAXIAL CABLE
UPSTREAM
DATA COAXIAL CABLE
12 CHANNEL
HYDROPHONES
PREAMP. LO CUT. ALIAS
GAIN SWITCHING AMPLIFIER
A/D CONVERTER
DATA RECEIVE REGENERATE AND TRANSMIT
TEST CIRCUITS
COMMAND RECEIVE AND TRANSMIT
D.C. POWER
MODULE COMMANDS
MODULE COMMANDS
POWER TRANSFORMER AND REGULATOR
2 KHZ 300 VOLT POWER
LRS 16A STREAMER MODULE

259168

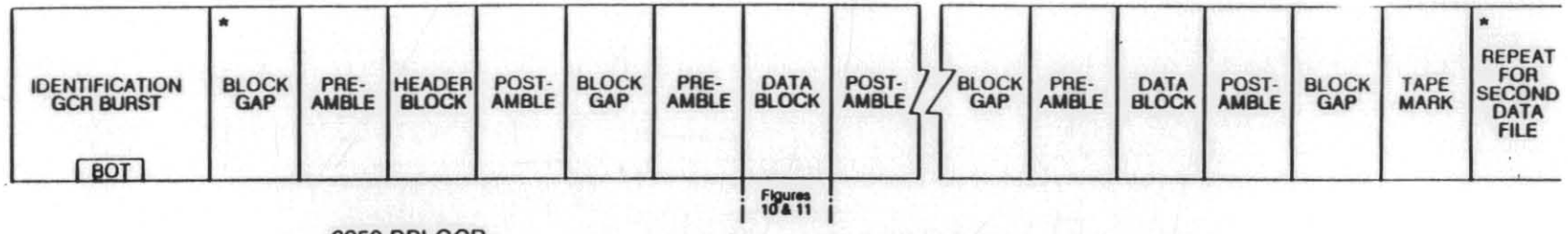
APPENDIX B - MAPS AND DIAGRAMS

5. LRS 16A KILOSEIS TAPE FORMAT

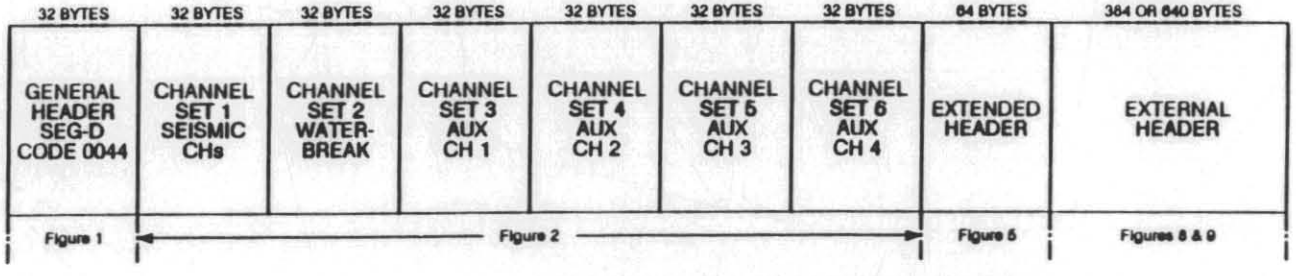
LRS-16A KILOSEIS®
DIGITAL TELEMETRY SYSTEM
TAPE FORMAT



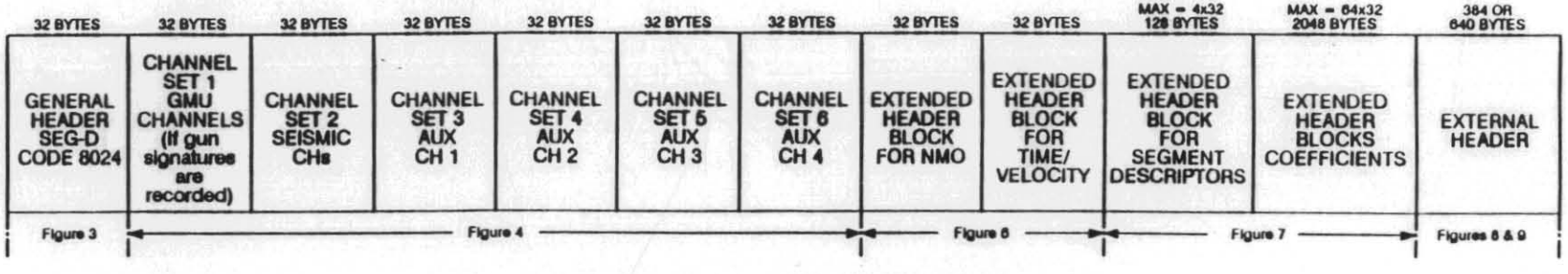
Western
Geophysical



6250 BPI-GCR
RAW DATA SEG-D FORMAT CODE 0044 16-BIT HEXADECIMAL MULTIPLEXED
ARRAY DATA SEG-D FORMAT CODE 8024 16-BIT QUATERNARY DEMULTIPLEXED

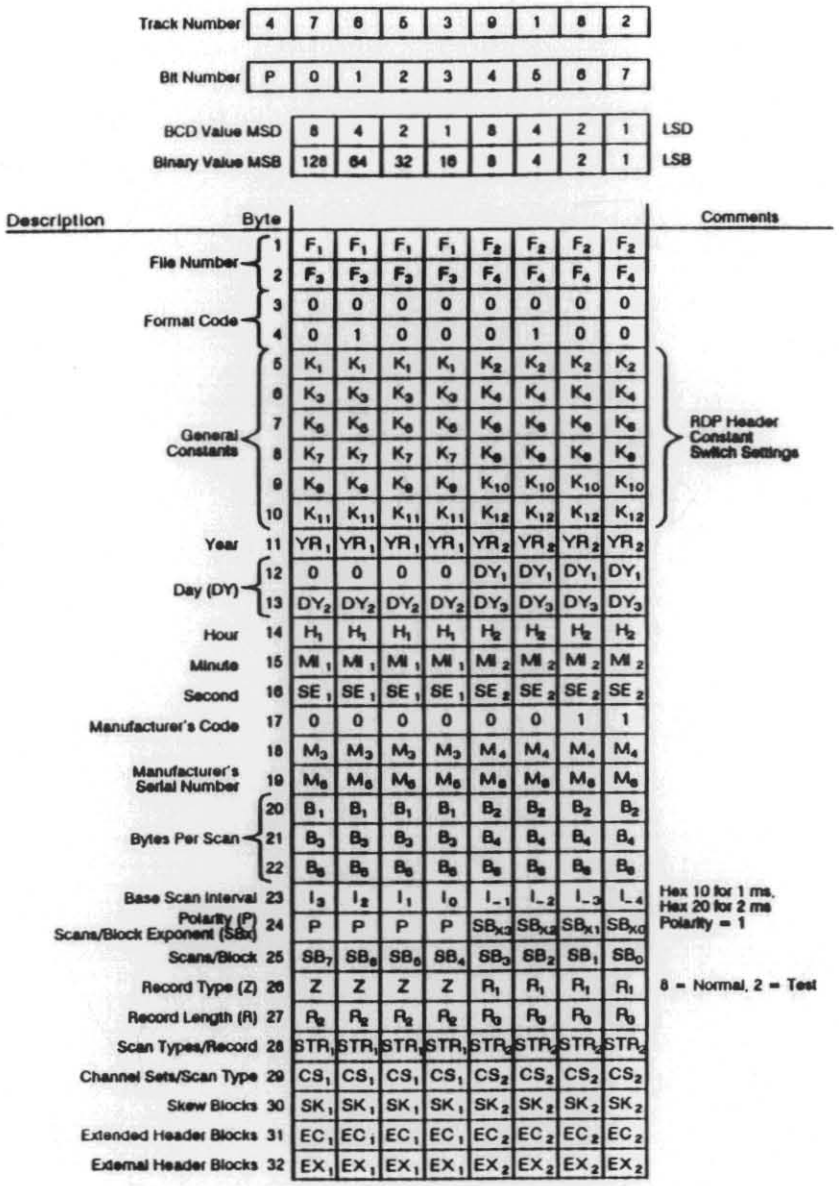


LRS-16A RAW DATA HEADER DESCRIPTION



LRS-16 ARRAY DATA HEADER DESCRIPTION

NOTE. All header fields are assumed to be recorded in binary coded decimal (BCD) format unless otherwise noted.

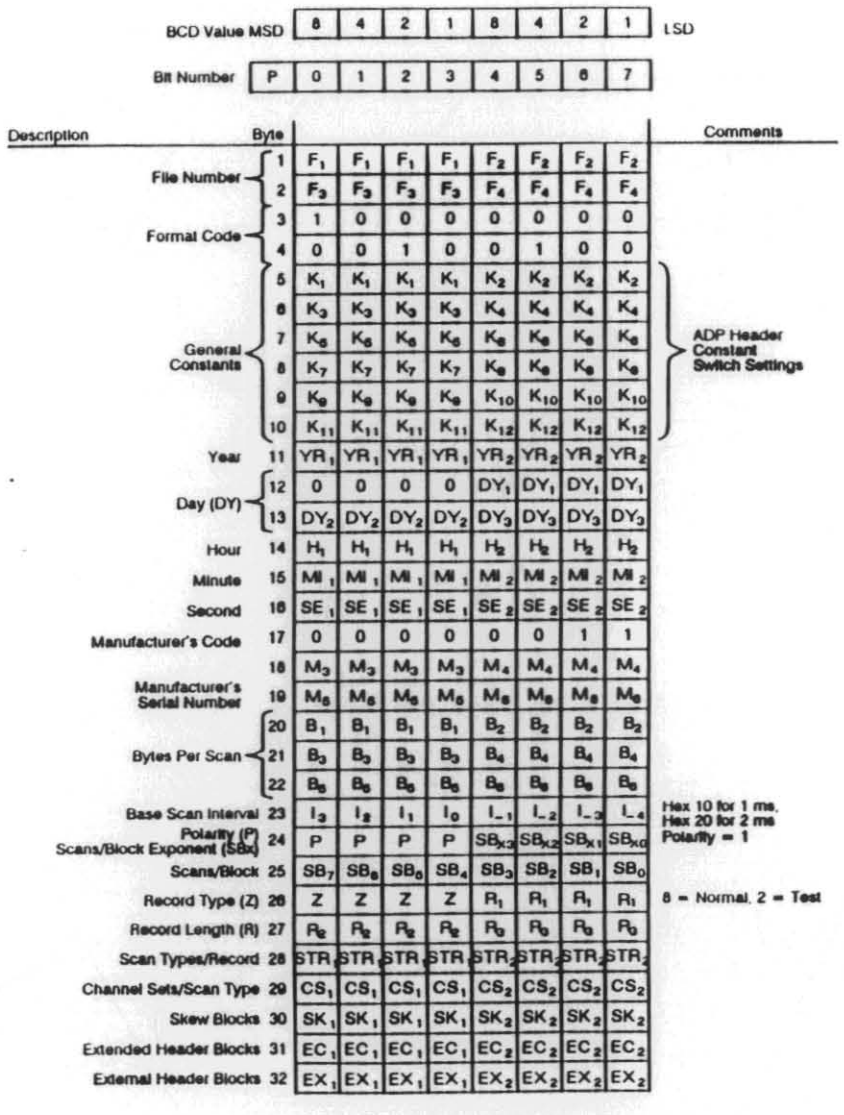


Description	Byte									Comments
	Track Number	4	7	6	5	3	9	1	8	2	
	Bit Number	P	0	1	2	3	4	5	6	7	
	BCD Value MSD	8	4	2	1	8	4	2	1	LSD
	Binary Value MSB	128	64	32	16	8	4	2	1	LSB
File Number	1	F_1	F_1	F_1	F_1	F_2	F_2	F_2	F_2	
	2	F_3	F_3	F_3	F_3	F_4	F_4	F_4	F_4	
Format Code	3	0	0	0	0	0	0	0	0	
	4	0	1	0	0	0	1	0	0	
General Constants	5	K_1	K_1	K_1	K_1	K_2	K_2	K_2	K_2	RDP Header Constant Switch Settings
	6	K_3	K_3	K_3	K_3	K_4	K_4	K_4	K_4	
	7	K_5	K_5	K_5	K_5	K_6	K_6	K_6	K_6	
	8	K_7	K_7	K_7	K_7	K_8	K_8	K_8	K_8	
	9	K_9	K_9	K_9	K_9	K_{10}	K_{10}	K_{10}	K_{10}	
	10	K_{11}	K_{11}	K_{11}	K_{11}	K_{12}	K_{12}	K_{12}	K_{12}	
Year	11	YR_1	YR_1	YR_1	YR_1	YR_2	YR_2	YR_2	YR_2	
Day (DY)	12	0	0	0	0	DY_1	DY_1	DY_1	DY_1	
	13	DY_2	DY_2	DY_2	DY_2	DY_3	DY_3	DY_3	DY_3	
Hour	14	H_1	H_1	H_1	H_1	H_2	H_2	H_2	H_2	
Minute	15	MI_1	MI_1	MI_1	MI_1	MI_2	MI_2	MI_2	MI_2	
Second	16	SE_1	SE_1	SE_1	SE_1	SE_2	SE_2	SE_2	SE_2	
Manufacturer's Code	17	0	0	0	0	0	0	1	1	
Manufacturer's Serial Number	18	M_3	M_3	M_3	M_3	M_4	M_4	M_4	M_4	
	19	M_5	M_5	M_5	M_5	M_6	M_6	M_6	M_6	
Bytes Per Scan	20	B_1	B_1	B_1	B_1	B_2	B_2	B_2	B_2	
	21	B_3	B_3	B_3	B_3	B_4	B_4	B_4	B_4	
	22	B_5	B_5	B_5	B_5	B_6	B_6	B_6	B_6	
Base Scan Interval	23	I_3	I_2	I_1	I_0	I_{-1}	I_{-2}	I_{-3}	I_{-4}	Hex 10 for 1 ms, Hex 20 for 2 ms
Polarity (P) Scans/Block Exponent (SBx)	24	P	P	P	P	SB_{X3}	SB_{X2}	SB_{X1}	SB_{X0}	Polarity = 1
Scans/Block	25	SB_7	SB_6	SB_5	SB_4	SB_3	SB_2	SB_1	SB_0	
Record Type (Z)	26	Z	Z	Z	Z	R_1	R_1	R_1	R_1	8 = Normal, 2 = Test
Record Length (R)	27	R_8	R_8	R_8	R_8	R_0	R_0	R_0	R_0	
Scan Types/Record	28	STR_1	STR_1	STR_1	STR_1	STR_2	STR_2	STR_2	STR_2	
Channel Sets/Scan Type	29	CS_1	CS_1	CS_1	CS_1	CS_2	CS_2	CS_2	CS_2	
Skew Blocks	30	SK_1	SK_1	SK_1	SK_1	SK_2	SK_2	SK_2	SK_2	
Extended Header Blocks	31	EC_1	EC_1	EC_1	EC_1	EC_2	EC_2	EC_2	EC_2	
External Header Blocks	32	EX_1	EX_1	EX_1	EX_1	EX_2	EX_2	EX_2	EX_2	

Figure 1. General Header—Multiplexed (Raw Data)

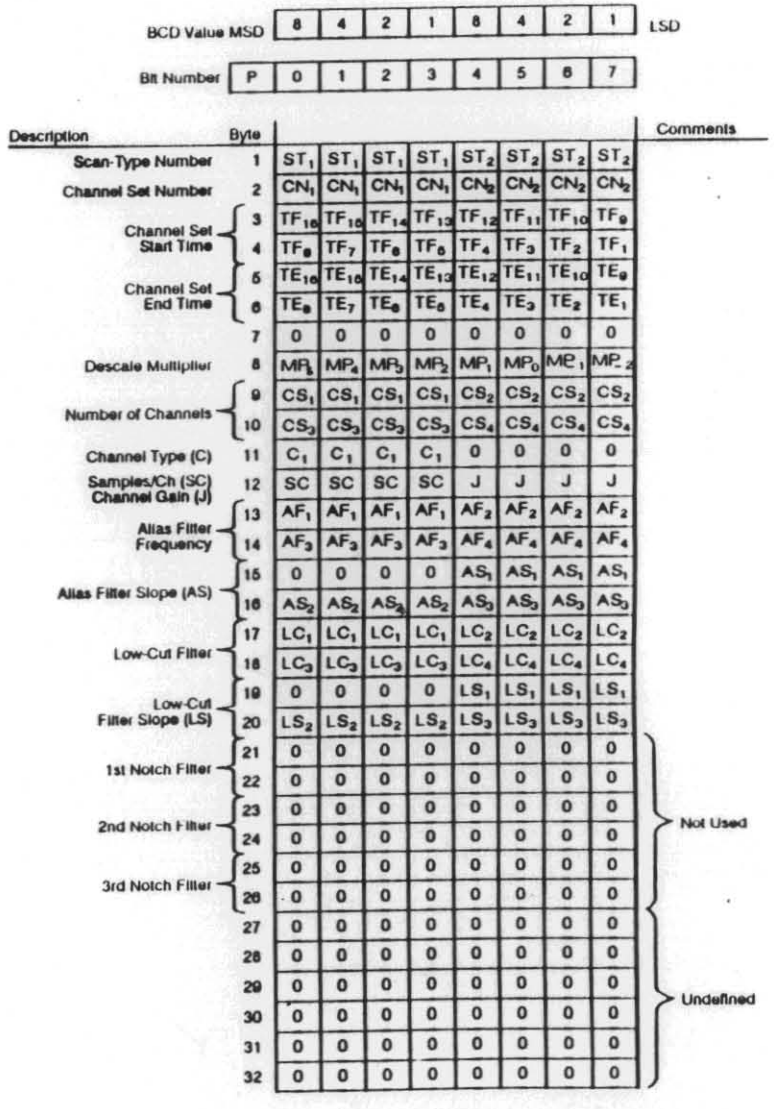
Description	Byte									Comments
	Track Number	4	7	6	5	3	9	1	8	2	
	Bit Number	P	0	1	2	3	4	5	6	7	
	BCD Value MSD	8	4	2	1	8	4	2	1	LSD
	Binary Value MSB	128	64	32	16	8	4	2	1	LSB
Scan-Type Number	1	ST_1	ST_1	ST_1	ST_1	ST_2	ST_2	ST_2	ST_2	
Channel Set Number	2	CN_1	CN_1	CN_1	CN_1	CN_2	CN_2	CN_2	CN_2	
Channel Set Start Time	3	TF_{16}	TF_{15}	TF_{14}	TF_{13}	TF_{12}	TF_{11}	TF_{10}	TF_9	
	4	TF_8	TF_7	TF_6	TF_5	TF_4	TF_3	TF_2	TF_1	
Channel Set End Time	5	TE_{16}	TE_{15}	TE_{14}	TE_{13}	TE_{12}	TE_{11}	TE_{10}	TE_9	
	6	TE_8	TE_7	TE_6	TE_5	TE_4	TE_3	TE_2	TE_1	
	7	0	0	0	0	0	0	0	0	
Descale Multiplier	8	MP_8	MP_4	MP_3	MP_2	MP_1	MP_0	MP_{-1}	MP_{-2}	
Number of Channels	9	CS_1	CS_1	CS_1	CS_1	CS_2	CS_2	CS_2	CS_2	
	10	CS_3	CS_3	CS_3	CS_3	CS_4	CS_4	CS_4	CS_4	
Channel Type (C)	11	C_1	C_1	C_1	C_1	0	0	0	0	
Samples/Ch (SC) Channel Gain (J)	12	SC	SC	SC	SC	J	J	J	J	
Alias Filter Frequency	13	AF_1	AF_1	AF_1	AF_1	AF_2	AF_2	AF_2	AF_2	
	14	AF_3	AF_3	AF_3	AF_3	AF_4	AF_4	AF_4	AF_4	
Alias Filter Slope (AS)	15	0	0	0	0	AS_1	AS_1	AS_1	AS_1	
	16	AS_2	AS_2	AS_2	AS_2	AS_3	AS_3	AS_3	AS_3	
Low-Cut Filter	17	LC_1	LC_1	LC_1	LC_1	LC_2	LC_2	LC_2	LC_2	
	18	LC_3	LC_3	LC_3	LC_3	LC_4	LC_4	LC_4	LC_4	
Low-Cut Filter Slope (LS)	19	0	0	0	0	LS_1	LS_1	LS_1	LS_1	
	20	LS_2	LS_2	LS_2	LS_2	LS_3	LS_3	LS_3	LS_3	
1st Notch Filter	21	0	0	0	0	0	0	0	0	Not Used
	22	0	0	0	0	0	0	0	0	
2nd Notch Filter	23	0	0	0	0	0	0	0	0	
	24	0	0	0	0	0	0	0	0	
3rd Notch Filter	25	0	0	0	0	0	0	0	0	
	26	0	0	0	0	0	0	0	0	
	27	0	0	0	0	0	0	0	0	
	28	0	0	0	0	0	0	0	0	
	29	0	0	0	0	0	0	0	0	Undefined
	30	0	0	0	0	0	0	0	0	
	31	0	0	0	0	0	0	0	0	
	32	0	0	0	0	0	0	0	0	

Figure 2. Channel Set Descriptor—Multiplexed (Raw Data)



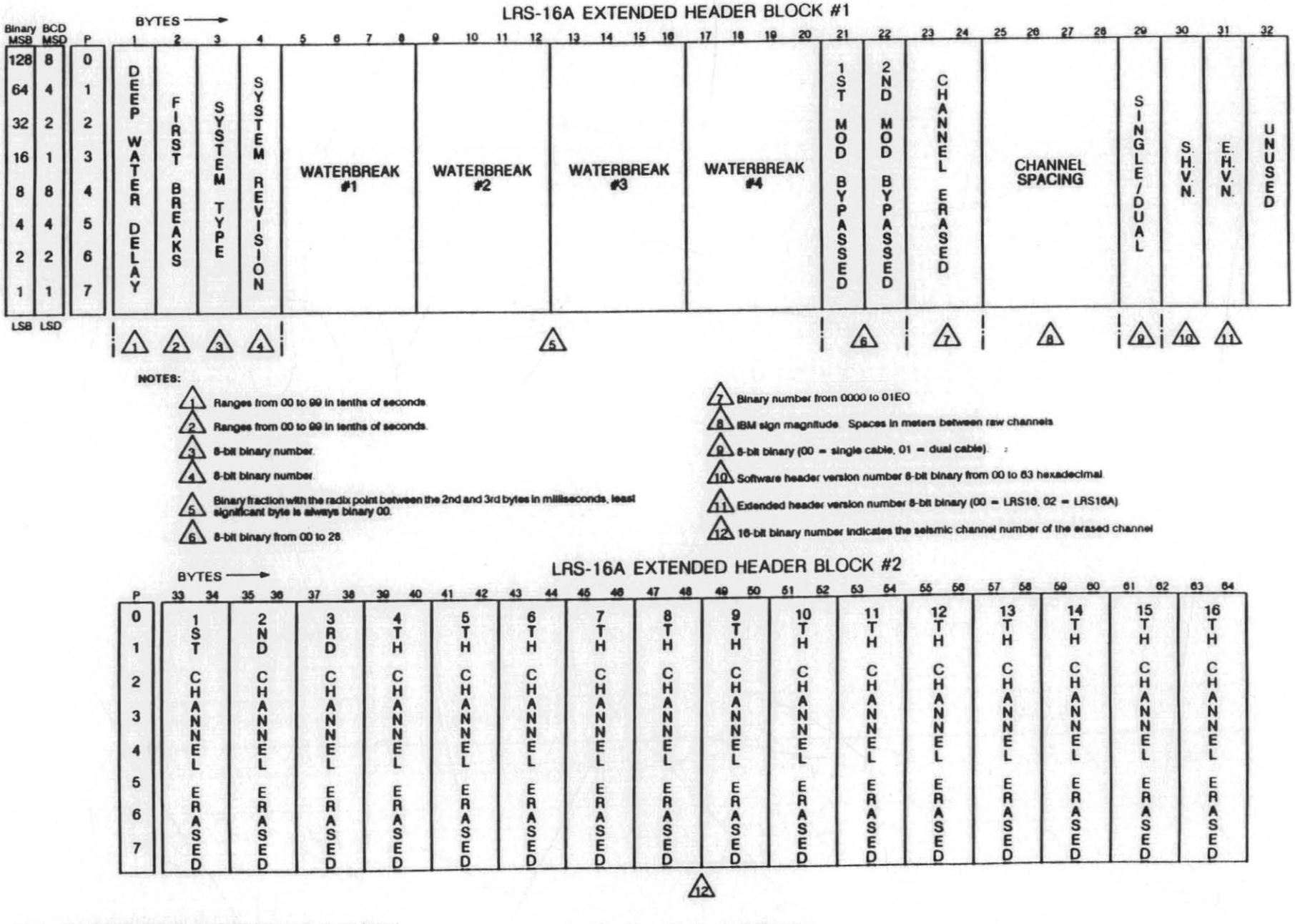
Description	Byte	BCD Value MSD 8	4	2	1	8	4	2	1 LSD	Comments
		Bit Number P	0	1	2	3	4	5	6 7	
File Number	1	F_1	F_1	F_1	F_1	F_2	F_2	F_2	F_2	
	2	F_3	F_3	F_3	F_3	F_4	F_4	F_4	F_4	
Formal Code	3	1	0	0	0	0	0	0	0	
	4	0	0	1	0	0	1	0	0	
General Constants	5	K_1	K_1	K_1	K_1	K_2	K_2	K_2	K_2	ADP Header Constant Switch Settings
	6	K_3	K_3	K_3	K_3	K_4	K_4	K_4	K_4	
	7	K_5	K_5	K_5	K_5	K_6	K_6	K_6	K_6	
	8	K_7	K_7	K_7	K_7	K_8	K_8	K_8	K_8	
	9	K_9	K_9	K_9	K_9	K_{10}	K_{10}	K_{10}	K_{10}	
	10	K_{11}	K_{11}	K_{11}	K_{11}	K_{12}	K_{12}	K_{12}	K_{12}	
Year	11	YR_1	YR_1	YR_1	YR_1	YR_2	YR_2	YR_2	YR_2	
Day (DY)	12	0	0	0	0	DY_1	DY_1	DY_1	DY_1	
	13	DY_2	DY_2	DY_2	DY_2	DY_3	DY_3	DY_3	DY_3	
Hour	14	H_1	H_1	H_1	H_1	H_2	H_2	H_2	H_2	
Minute	15	MI_1	MI_1	MI_1	MI_1	MI_2	MI_2	MI_2	MI_2	
Second	16	SE_1	SE_1	SE_1	SE_1	SE_2	SE_2	SE_2	SE_2	
Manufacturer's Code	17	0	0	0	0	0	0	1	1	
	18	M_3	M_3	M_3	M_3	M_4	M_4	M_4	M_4	
Manufacturer's Serial Number	19	M_5	M_5	M_5	M_5	M_6	M_6	M_6	M_6	
Bytes Per Scan	20	B_1	B_1	B_1	B_1	B_2	B_2	B_2	B_2	
	21	B_3	B_3	B_3	B_3	B_4	B_4	B_4	B_4	
	22	B_5	B_5	B_5	B_5	B_6	B_6	B_6	B_6	
Base Scan Interval	23	I_3	I_2	I_1	I_0	I_{-1}	I_{-2}	I_{-3}	I_{-4}	Hex 10 for 1 ms, Hex 20 for 2 ms
Polarity (P) Scans/Block Exponent (SB_X)	24	P	P	P	P	SB_{X3}	SB_{X2}	SB_{X1}	SB_{X0}	Polarity = 1
Scans/Block	25	SB_7	SB_6	SB_5	SB_4	SB_3	SB_2	SB_1	SB_0	
Record Type (Z)	26	Z	Z	Z	Z	R_1	R_1	R_1	R_1	8 = Normal, 2 = Test
Record Length (R)	27	R_2	R_2	R_2	R_2	R_3	R_3	R_3	R_3	
Scan Types/Record	28	STR_1	STR_1	STR_1	STR_1	STR_2	STR_2	STR_2	STR_2	
Channel Sets/Scan Type	29	CS_1	CS_1	CS_1	CS_1	CS_2	CS_2	CS_2	CS_2	
Skew Blocks	30	SK_1	SK_1	SK_1	SK_1	SK_2	SK_2	SK_2	SK_2	
Extended Header Blocks	31	EC_1	EC_1	EC_1	EC_1	EC_2	EC_2	EC_2	EC_2	
External Header Blocks	32	EX_1	EX_1	EX_1	EX_1	EX_2	EX_2	EX_2	EX_2	

Figure 3. General Header—Demultiplexed (Array Data)



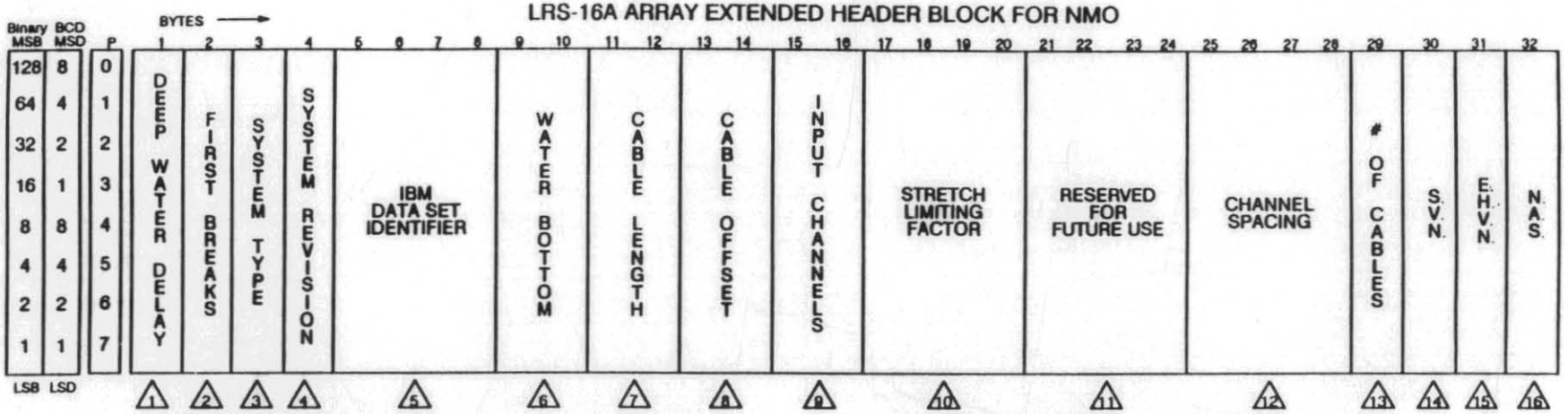
Description	Byte	BCD Value MSD 8	4	2	1	8	4	2	1 LSD	Comments
		Bit Number P	0	1	2	3	4	5	6 7	
Scan-Type Number	1	ST_1	ST_1	ST_1	ST_1	ST_2	ST_2	ST_2	ST_2	
Channel Set Number	2	CN_1	CN_1	CN_1	CN_1	CN_2	CN_2	CN_2	CN_2	
Channel Set Start Time	3	TF_{15}	TF_{15}	TF_{14}	TF_{13}	TF_{12}	TF_{11}	TF_{10}	TF_9	
	4	TF_8	TF_7	TF_6	TF_5	TF_4	TF_3	TF_2	TF_1	
Channel Set End Time	5	TE_{15}	TE_{15}	TE_{14}	TE_{13}	TE_{12}	TE_{11}	TE_{10}	TE_9	
	6	TE_8	TE_7	TE_6	TE_5	TE_4	TE_3	TE_2	TE_1	
	7	0	0	0	0	0	0	0	0	
Descale Multiplier	8	MP_3	MP_4	MP_5	MP_2	MP_1	MP_0	MP_{-1}	MP_{-2}	
Number of Channels	9	CS_1	CS_1	CS_1	CS_1	CS_2	CS_2	CS_2	CS_2	
	10	CS_3	CS_3	CS_3	CS_3	CS_4	CS_4	CS_4	CS_4	
Channel Type (C)	11	C_1	C_1	C_1	C_1	0	0	0	0	
Samples/Ch (SC) Channel Gain (J)	12	SC	SC	SC	SC	J	J	J	J	
Alias Filter Frequency	13	AF_1	AF_1	AF_1	AF_1	AF_2	AF_2	AF_2	AF_2	
	14	AF_3	AF_3	AF_3	AF_3	AF_4	AF_4	AF_4	AF_4	
Alias Filter Slope (AS)	15	0	0	0	0	AS_1	AS_1	AS_1	AS_1	
	16	AS_2	AS_2	AS_3	AS_2	AS_3	AS_3	AS_3	AS_3	
Low-Cut Filter	17	LC_1	LC_1	LC_1	LC_1	LC_2	LC_2	LC_2	LC_2	
	18	LC_3	LC_3	LC_3	LC_3	LC_4	LC_4	LC_4	LC_4	
Low-Cut Filter Slope (LS)	19	0	0	0	0	LS_1	LS_1	LS_1	LS_1	
	20	LS_2	LS_2	LS_2	LS_2	LS_3	LS_3	LS_3	LS_3	
1st Notch Filter	21	0	0	0	0	0	0	0	0	Not Used
	22	0	0	0	0	0	0	0	0	
2nd Notch Filter	23	0	0	0	0	0	0	0	0	
	24	0	0	0	0	0	0	0	0	
3rd Notch Filter	25	0	0	0	0	0	0	0	0	
	26	0	0	0	0	0	0	0	0	
	27	0	0	0	0	0	0	0	0	Undefined
	28	0	0	0	0	0	0	0	0	
	29	0	0	0	0	0	0	0	0	
	30	0	0	0	0	0	0	0	0	
	31	0	0	0	0	0	0	0	0	
	32	0	0	0	0	0	0	0	0	

Figure 4. Channel Set Descriptor — Demultiplexed (Array Data)



NOTE: All header fields are assumed to be recorded in binary coded decimal (BCD) format unless otherwise noted.

Figure 5. Raw Extended Header



NOTES:

1. Deep water delay in BCD. Most significant BCD is in seconds, least significant is in tenths/seconds.
2. First arrivals in BCD. BCD weight same as in 1. (MSD = seconds; LSD = tenths/second).
3. System type in binary (00 = LRS-16; 01 = LRS-16A, Phase I; 02 = LRS-16A, Phase II).
4. Revision level in binary [00 = LRS-16 (1 to 14), 01 = LRS-16 (15 & up), or LRS-16A].
5. IBM Data Set Identifier in BCD. Creation of the PROM set.
6. Water bottom depth in binary (range: 1 to 6000 m).
7. Cable length in binary (range: 1 to 6000 m).
8. Cable offset in binary. Distance between the source and first input channel (range: 1 to 6000 m).
9. Number of input channels in binary (range: 240, 480, 960).
10. Stretch Limiting Factor (bytes 17, 18) in IBM sign magnitude floating point. Bytes 19, 20- max. factor time interval at non-zero offset will be stretched if taken to zero offset (range 1.5 to 5.0).
11. Future use.
12. Channel spacing in meters: IBM sign magnitude floating point. 480 cable = 6.67 m, 140 cable = 13.33 m, 160 cable = 20 m.
13. Number of cables. 0 = single cable, 1 = dual cable.
14. LRS-16A software version no. Binary number from 0A-63 hex (1.0 to revision 9.9).
15. Extended header version number in binary [00 = LRS-16 Version 1 (consists of 1 block), 01 = LRS-16A Version 1 (variable range of blocks in header), 02 = LRS-16A Version 2 (addition of ch. spacing)].
16. Number of array streamers in binary (range: 1 to 4).
17. Time in binary used with time/velocity (range: 0 to 65535 ms).
18. Velocity in binary used with time/velocity (range: 0 to 65535 m/s).

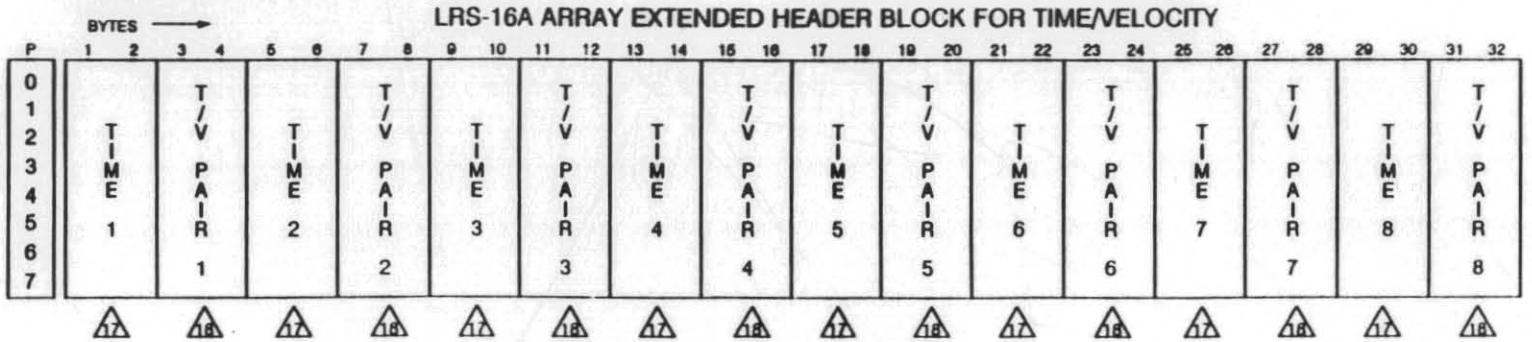
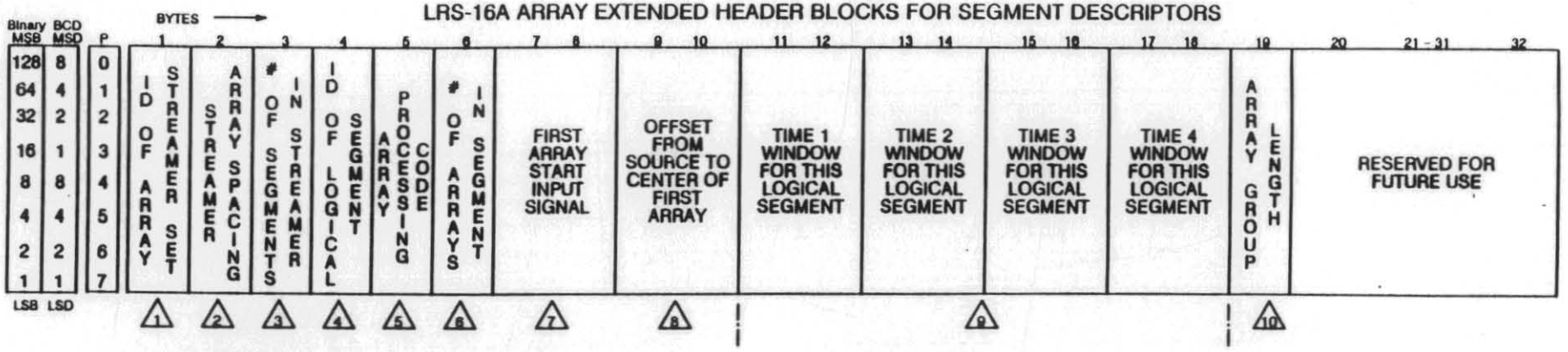
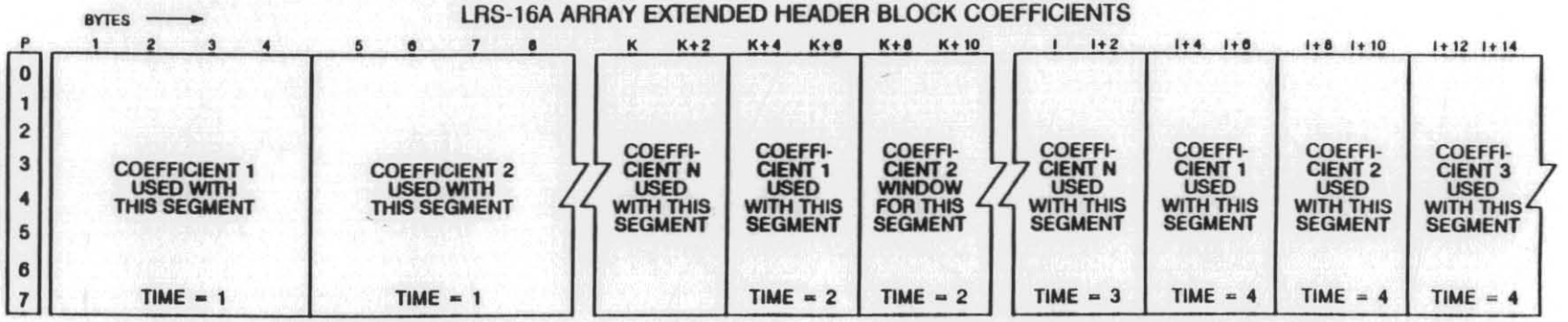


Figure 6. Array Extended Header NMO and Time/Velocity



NOTES:

1. Identification of number of array logical streamer set (range: 1 to 4 in binary).
2. Array spacing for this logical streamer set (range: 1 to 32 in binary).
3. Number of logical segments defined for this logical streamer (range: 1 to 4 in binary).
4. Identification number of the logical segment being described in this 32-byte block (range: 1 to 4 in binary).
5. Array processing code for this logical segment in binary (01 = demux, 02 = array formed, 03 = time variant array formed, 04 = time variant, 05 = beam steer, 06 = time variant beam steer, 07 = time variant space variant beam steer).
6. Number of output channels associated with this logical segment (range: 1 to 6000 m in binary).
7. Starting input channels. Number of first arrays for this logical segment (range 1 to 960 binary).
8. Offset from source to center of first array from this logical segment (range: 1 to 6000 m binary).
9. Time window (range: 0–19000 ms in binary). Note that if fixed weighting is used, time window 1 = time window 2 = time window 3 = time window 4 = zero.
10. Array (group) length for this logical segment (range: 1 to 32 binary).

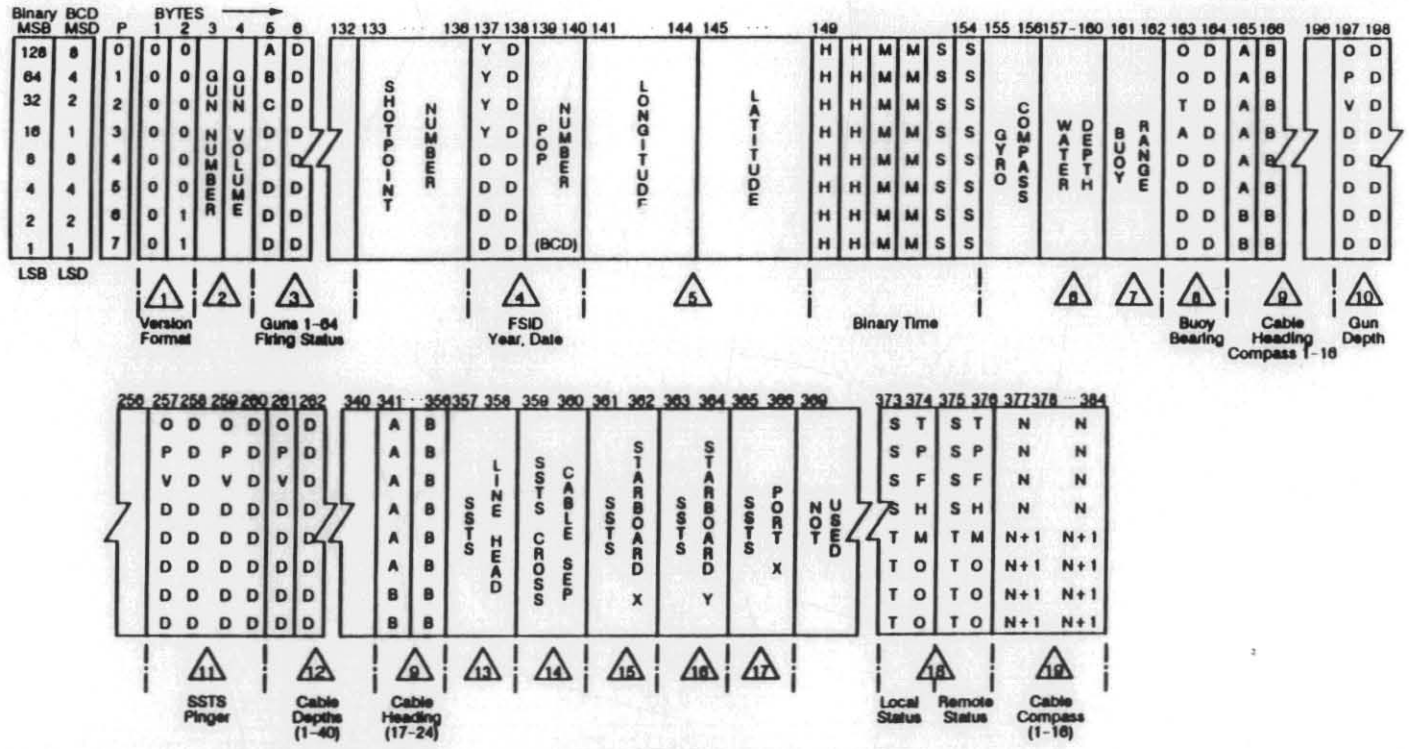


NOTES:

1. Segment in IBM floating point.
2. There are 8 coefficients per coefficient block (4 bytes per coefficient).
3. 'N' is the array (group) length of the logical segment.
4. N + 1 definition: If there is more than one logical segment for the given array logical streamer, then the next segment descriptor block would follow in a similar fashion. After all segment descriptor blocks (followed by appropriate coefficient blocks) of a given array logical streamer had been constructed, the next array logical streamer with its associated blocks could then be developed.

For more information on block coefficients, refer to LRS Drawing No AQ207424-00 Rev. A.

Figure 7. Array Extended Header Segment Descriptors and Block Coefficients



NOTES:

1. The format version number is coded in binary and is set to 3 for this format.

2. Volume = BCD cubic inches divided by 10. Gun number and volume rotate through files; i.e., Gun 1, Volume 1 appear in File N and Gun 2, Volume 2 appear in File N + 1.

3.

A	B	Status
0	0	Normal
0	1	Out of Range
1	0	Misfire
1	1	Gun disabled

C = 1 indicates the gun used for time break.

D = BCD Gun firing time with respect to aiming point in milliseconds of 0.25 ms (512 reference)
D > 512 = Pos.
D < 512 = Neg.

4. FSID Y = Units digit of year in BCD
D = Julian day of the year in BCD

5. Longitude or latitude in binary. Least-significant bit represents 0.01 arc seconds.

6. Water depth in binary. Least-significant bit represents 0.1 m.

7. Tailbuoy distance (range) in BCD. Recorded in multiples of 0.01 miles.

8. Tailbuoy bearing in BCD (D = multiples of 0.1 degrees; T = 0 if target lost; A = 0 if auto).

9. 2 bytes/compass maximum of 16 compasses. Reading depends on the type of compass defined by bytes 377 to 384. (Refer to LRS Drawing no. AQ207426-00.)

10. 2 bytes per gun. Up to 32 guns.
P = Polarity (0 Pos., 1 Neg.)
V = Overrange (0 in range, 1 out of range)
D = BCD depth in feet

11. SSTS pinger depths: First 2 bytes = starboard; second 2 bytes = port.
P = Polarity (0 Pos., 1 Neg.)
V = Overrange (0 in range, 1 out of range)
D = BCD depth in feet

12. D = Cable depth in BCD feet; 2 bytes per depth sensor; up to 40 sensors. P = Polarity (0 = Pos., 1 = Neg.); V = Overrange (0 = in range, 1 = out of range).

13. SSTS line heading in binary. Multiples of 0.1 degrees.

14. SSTS cross-cable separation in binary. Multiples of 0.1 m.

15. SSTS starboard X coordinate in binary. Multiples of 0.1 m.

16. SSTS starboard Y coordinate in binary. Multiples of 0.1 m.

17. SSTS port X coordinate in binary. Multiples of 0.1 m.

18.

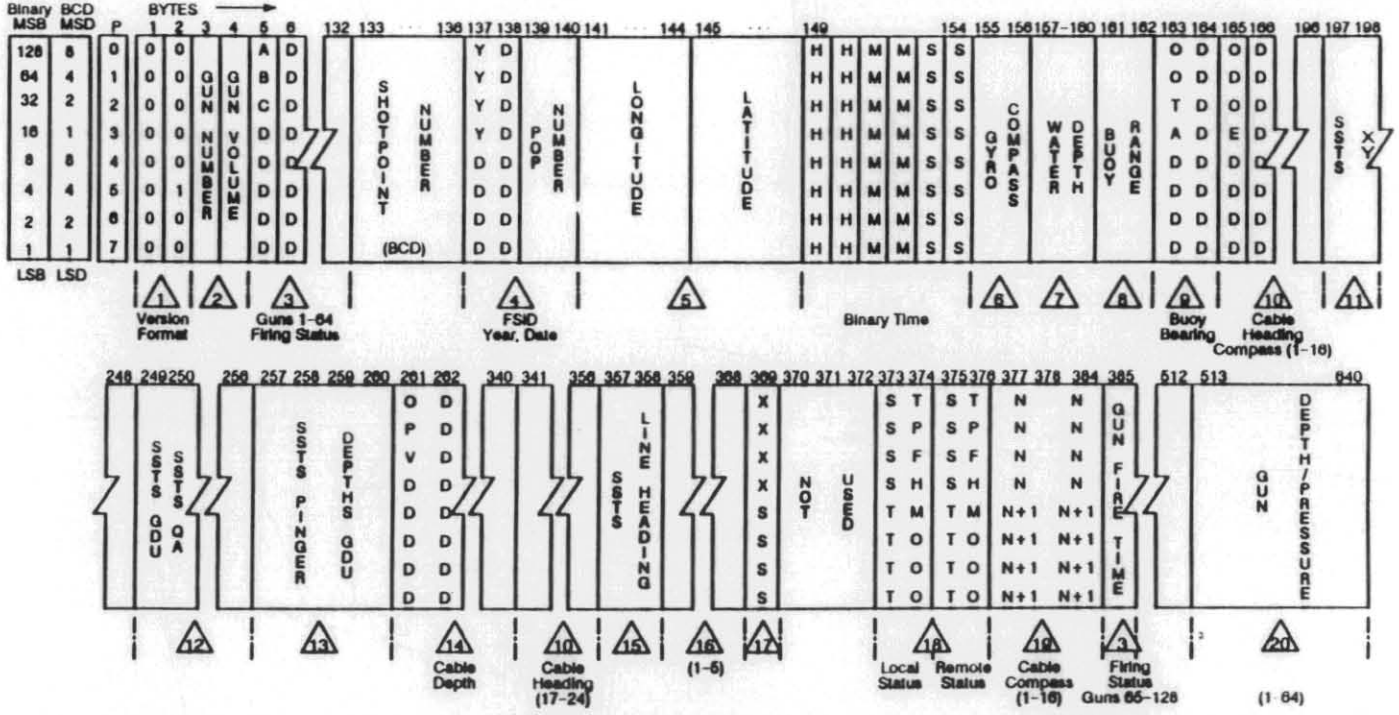
S = Energy Source Origin		T = Time break Acknowledge	
0	= Source 0, Recording boat	1	= Source 0 fired
1	= Aux source 1	2	= Aux 1 fired
2	= Aux source 2	4	= Aux 2 fired
4	= Aux source 3	8	= Aux 3 fired
8	= Aux source 4	16	= Aux 4 fired

P = 1 External POP scan initiate
F = 1 External cycle initiate
H = 1 Initiate header transfer
M = 1 Slave, 0 Master

19. N = First Compass Code
N + 1 = Secondary Compass Code (if used)

N	Codes
1	Digicourse 290, 0.35 degree
2	Digicourse 290, 1.0 degree
3	Digicourse 292, 0.35 degree
4	Digicourse 292, 1.0 degree
5	Syntron CUS 8101, 0.1 degree

Figure 8. User Header Format with Navigation Data
LRS-16A Format Version 3 External Header



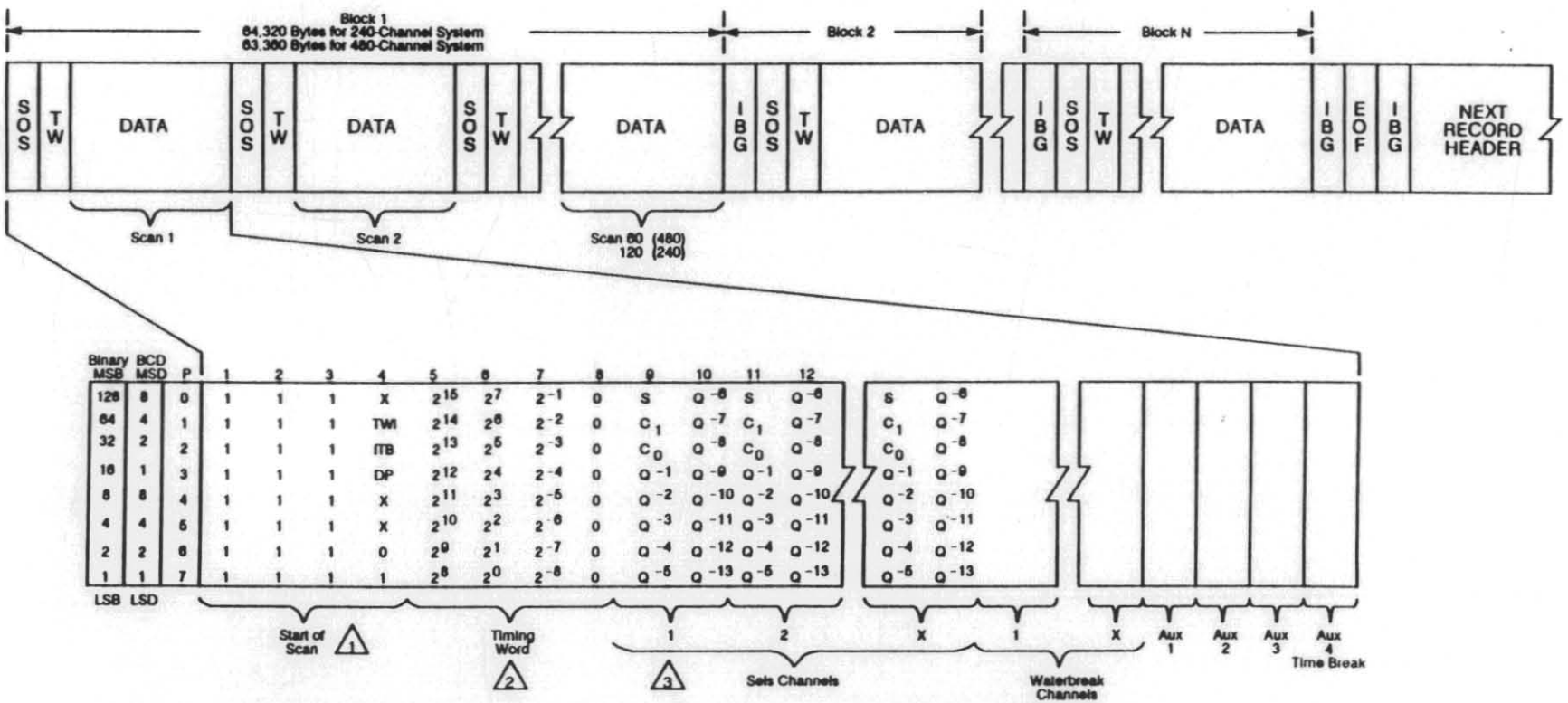
NOTES:

1. The format version number is coded in binary and is set to 4 for this format.
2. Volume = BCD cubic inches divided by 10. Gun number and volume rotate through files; i.e., Gun 1, Volume 1 appear in File N; Gun 2, Volume 2 appear in File N + 1.
3. A B | Status: 0 0 Normal; 0 1 Out of Range; 1 0 Misfire; 1 1 Gun disabled. C = 1 indicates the gun used for time break. D = BCD gun firing time with respect to aiming point in multiples of 0.25 ms (512 reference) D > 512 = Pos. D < 512 = Neg.
4. FSID Y = Units digit of year in BCD; D = Julian day of the in BCD. Pop Number = binary.
5. Longitude or latitude in binary. Least-significant bit represents 0.01 arc seconds.
6. Boat heading in binary semicircles. MSB = 180°. To obtain degrees in range 0 to 359.995°, use (no. x 360.0)/65536.0.
7. Water depth in binary. Least-significant bit represents 0.1 m.
8. Tailbuoy distance (range) in BCD. Recorded in multiples of 0.01 miles.
9. Tailbuoy bearing in BCD (D = multiples of 0.1 degrees; T = 0 if target lost; A = 0 if auto).
10. 2 bytes/compass maximum of 24 compasses. Reading depends on the type of compass defined by bytes 377 to 384. Type of Digicourse: 290 to 292. Syntron CUS 8101: C = 0 for starboard, 1 for port; E = 0 for valid reading, 1 for repeated reading; D = binary x 0.1 degrees.
11. 1 to 13 pairs of X-Y coordinates from the SSTS. 4-byte binary of 0.1 meters measured relative to the navigation reference point.
12. 1 to 16 SSTS data values. 4-bit binary code representing a figure of merit for the associated data value from 0 to A in increments of 10% representing 0° to 100%.
13. SSTS pinger depths is BCD. Least significant digit represents 0.1 feet. Bytes 257-258 starboard pinger and bytes 259-260 port pinger.
14. D = Cable depth in BCD feet; 2 bytes per depth sensor; up to 40 sensors. P = Polarity (0 = Pos., 1 = Neg.); V = Overrange (0 = in range, 1 = out of range).
15. SSTS line heading expressed in binary. Multiples of 0.1 degrees.
16. SSTS cross-cable separation in binary. Multiples of 0.1 m.
17. SSTS configuration X represents X-Y pairs 1 to 15 recorded. S represents cross-cable separations recorded (0 to 15 separations).
18. S = Energy Source Origin: 0 = Source 0, Recording boat; 1 = Aux source 1; 2 = Aux source 2; 4 = Aux source 3; 8 = Aux source 4. T = Time break Acknowledge: 1 = Source 0 fired; 2 = Aux 1 fired; 4 = Aux 2 fired; 8 = Aux 3 fired; 16 = Aux 4 fired.
    P = 1 External POP scan initiate
    F = 1 External cycle initiate
    H = 1 initiate header transfer
    M = 1 Slave, 0 Master
19. N = First Compass Code
    N + 1 = Secondary Compass Code (if used)

N	Codes
1	Digicourse 290, 0.35 degree
2	Digicourse 290, 1.0 degree
3	Digicourse 292, 0.35 degree
4	Digicourse 292, 1.0 degree
5	Syntron CUS 8101, 0.1 degree

20. Gun depths/pressures (1 to 64) up to 64 depth and/or pressure readings. Pressure reading requires 4 BCD digits. Depth reading requires 3 BCD digits. Most significant nibble of each depth reading unused. Pressure readings are in psi, depth readings are in 0.1 ft.

Figure 9. User Header Format with Navigation Data
LRS-16A Format Version 4 External Header



NOTES:

1. TWI – Always 0.
   ITB – 0 means TB was received within TB window.
   A 1 in the first start of scan indicates that time break WAS NOT detected and the record started at the end of the time-break window.
   DP – Dynamic Parameter, always 0.
   X – Undefined.
2. Timing Word – Equal to the time from time 0 to the start of each scan, in ms.
   Timing words from 0 to 65,539.9961 are coded LSB 2^{-6} = 0.0039 ms.
   MSB 2^{15} = 32,768 ms. In the LRS-16, the first timing word is equal to 31 ms + time break or time-break override.
3. S = Sign, 0 = Positive, 1 = Negative
   C_1 C_0 = Hexadecimal exponent, positive value 0-3
   Q_{-1} to Q_{-13} 13-bit, positive binary fraction in MV (Q^{-1} = MSB)
   The bits represent values from 2^{-1}(Q^{-1}) to 2^{-13}(Q^{-13}).
   The recorded data always are normalized, unless exponent is 0.
   input signal (MVP) = S.QQQQQQQQQQQQ x 16^{CC} x 2^{MP} MP is defined in byte 8 of each channel set descriptor header (Figure 2).

Figure 10. Multiplexed Data Format

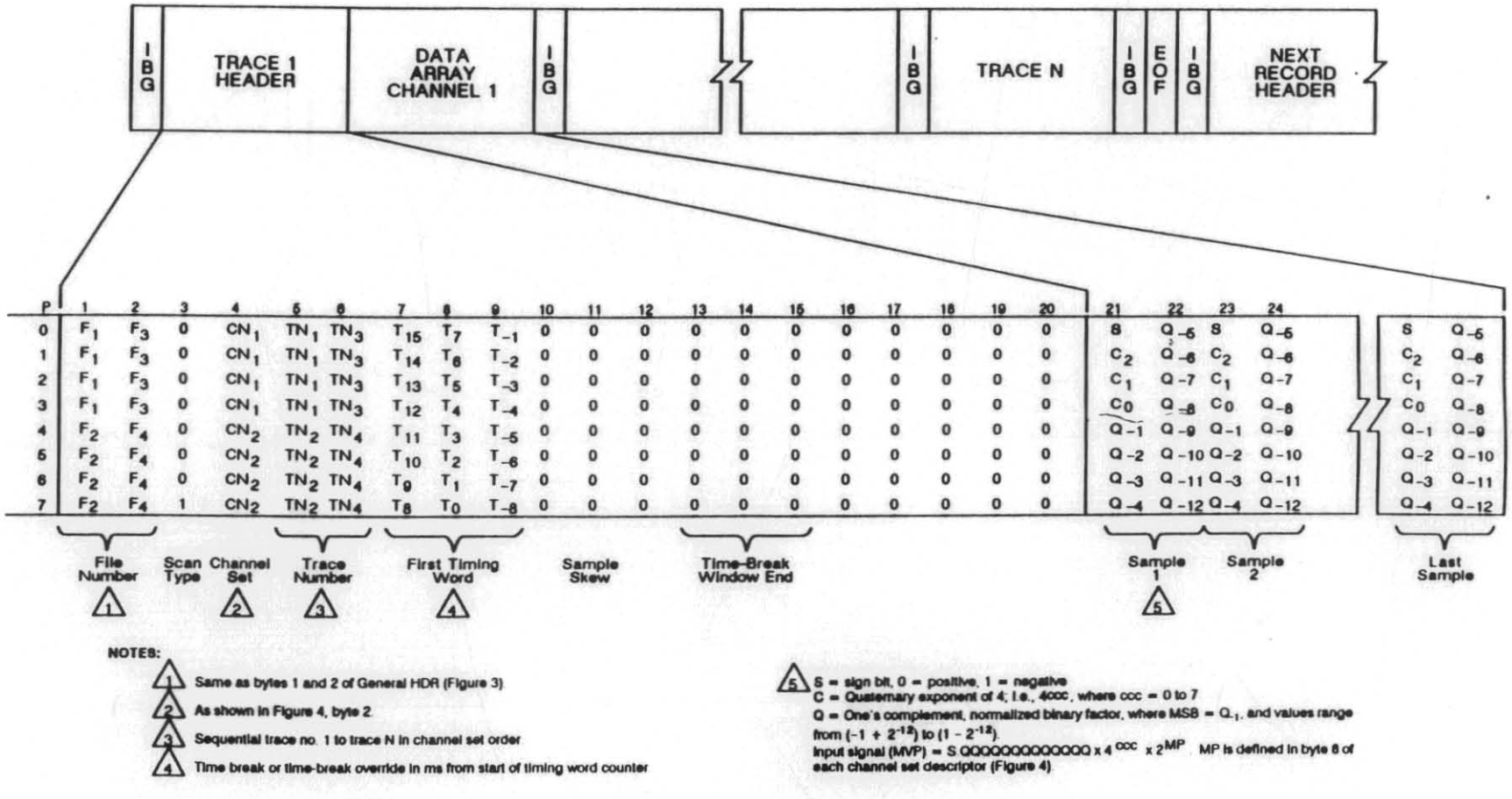


Figure 11. Demultiplexed Data Body

259181

APPENDIX C - LOGS

1. COMPASS LOGS

259182

WESTERN GEOPHYSICAL
COMPASS CHANGE LOG

CLIENT: SAGASCO

AREA : BASS BASIN T/25P & T/RL1 YEAR: 1992
PARTY : 116 COVERING LOGS: 1

SINGLE CABLE\SOURCE

Valid from Day 208 , Line S92A-117
to Day 216 , Line S92B-103

JD	FROM LINE #	TO LINE #	REMARKS
208	S92A-117	S92A-118	ALL ACTIVE
212	S92A-120	S92A-110	RU 12 DISABLED D/T ERRATIC READINGS.
212	S92A-112		ALL ACTIVE, RU 12 ENABLED
216		S92B-103	FAULT WAS IN CABLE.

259183

COMPASS LOG
(STBD CABLE)

CLIENT: SAGASCO
AREA : BASS BASIN T/25P & T/RL1
PARTY : 116

LOG : 1
YEAR: 1992

SINGLE CABLE\SOURCE

MAGNETIC DECLINATION 12.831 & 12.598 DEGREES EAST

Compass Parameters

Valid from Day 208 , Line S92A-117
to Day 216 , Line S92B-103 inclusive.

Compass	RU #	Serial Number	Section Number	Offset (M)*	Bias**
1	2	187-6659-OFG/831D	1 A	-53.4	
2	4	490-6353-G/831D-R891	5 A	-693.4	
3	6	490-7157-OF/831D	9 A	-1333.4	
4	8	187-6837-OF/831D	13 A	-1973.4	
5	10	987-5750-OFG/831D	17 A	-2613.4	
6	12	1284-5726-OFG/831D	20 B	-3173.4	
7					
8					
9					
10					
11					
12					

Note : * All compass offsets are measured from the SSTS cable receiver.

Note : ** Bias as entered in the WISDOM system during data acquisition.

Sequence number on WISDOM and seismic data tapes is always from the lowest to highest RU (remote unit) number.

APPENDIX C - LOGS

2. COORDINATOR'S DAILY LOGS

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 23 JULY 92

SAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/25P
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : XXXX
KM'S : XXXXX
O/LAP SP : XX
TAPES : XX
NAV TAPE : XX

****

TIME	LINE	DIR	FSP/LSP	SP'S	KMS	REMARKS
07:40	ENROUTE TO PORTLAND VICTORIA.					
24:00	ENROUTE TO PORTLAND VICTORIA.					

2591885

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 24 JULY 92 SEGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/25P
CLIENT REP : R. ROMANIK
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : XXXX
KM'S : XXXXX
O/LAP SP : XX
TAPES : XX
NAV TAPE : XX

****

TIME	LINE	DIR	FSP/LSP	SP'S	KMS	REMARKS
00:01	ENROUTE TO PORTLAND VICTORIA.					
13:00	ALTERED COURSE TO PROCEED INTO PORTLAND.					
14:10	PILOT ONBOARD.					
14:54	ALONGSIDE WHARF PORTLAND.					
15:00	COMMENCE LOADING OF FOODSTORES & SHIPMENT. TAKING ON WATER. M.CASEY ON / B.INDRAYONO OFF (WGC) - D.ROBERTS ON (SEGASCO).					
20:10	DEPART PORTLAND.					
20:23	PILOT AWAY - ENROUTE TO SEGASCO PROSPECT.					
24:00	ENROUTE TO SAGASCO PROSPECT.					

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 25 JULY 92

SEGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : XXXX
KM'S : XXXXX
O/LAP SP : XX
TAPES : XX
NAV TAPE : XX

****

TIME	LINE	DIR	FSP/LSP	SP'S	KMS	REMARKS
00:01	ENROUTE TO SEGASCO PROSPECT.					
19:00	IN PROSPECT AREA - UNABLE TO DEPLOY STREAMER DUE TO SEA CONDITIONS.					
24:00	IN PROSPECT AREA WAITING FOR WEATHER TO ABATE.					

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 26 JULY 92 SAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/25P
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : 1277
KM'S : 34.044
O/LAP SP : XX
TAPES : 16
NAV TAPE : XX
SCR TAPE : 2

****

TIME	LINE	DIR	FSP/LSP	SP'S	KMS	REMARKS
00:01	ON PROSPECT AREA WAITING FOR WEATHER TO ABATE.					
02:00	COMMENCE DEPLOYMENT OF STARBOARD STREAMER - CALIBRATING ALL DEPTH INDICATORS.					
03:45	REPLACING SECTION #15 (BAD BIRD COIL).					
04:30	SECTION REPLACED - CONTINUE TO DEPLOY STREAMER.					
09:30	STARBOARD STREAMER DEPLOYED - COMMENCE DEPLOYING GUNS.					
11:23	GUNS DEPLOYED - CHECKING SEPARATION AND OFFSETS.					
12:14	S92A-117	203	777			SOL.
12:23	LINE ABORTED DUE TO SYSTEM ITB PROBLEM. ALL DATA SCRATCHED - CIRCLE.					
14:54	S92A-117A	203	777			SOL.
16:58	S92A-117A	203	41	737	19.648	EOL. RETRIEVE GUN STRINGS 4 & 5.
	SP702 D/LEG FROM 203.4 TO 202.7 DEG. SP209 D/LEG FROM 202.7 TO 202.5 DEGREES.					
18:08	GUNS BACK IN WATER.					
18:40	S92A-115	017	101			SOL.
19:09	CIRCLE DUE TO LOST OF NAVIGATION SATELLITE. ALL DATA SCRATCHED.					
21:44	S92A-115A	017	101			SOL.
23:15	S92A-115A	017	640	540	14.396	EOL.
24:00	ON LINE CHANGE.					

2591888

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 27 JULY 92 SAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/25P
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : 1860
KM'S : 49.588
O/LAP SP : XX
TAPES : 25
NAV TAPE : XX
SCR TAPE : 2

TIME	LINE	DIR	FSP/LSP	SP'S	KMS	REMARKS
00:01	LINE CHANGE TO S92A-109.					
00:29	S92A-109	198	477			SOL.
01:46	S92A-109	198	41	437	11.650	EOL.RETRIEVE GUN STRING #3(02:44 GUNS OUT)
02:59	S92A-105	018	101			SOL.
04:15	S92A-105	018	536	436	11.624	EOL.
05:30	S92A-113	198	514			SOL.
05:46	CIRCLE DUE TO CABLE DROPOUT.ALL DATA SCRATCHED.RETRIEVE GUN STRING #5.(06:45 GUNS OUT)					
07:58	S92A-113A	198	514			SOL.
09:17	S92A-113A	198	41	474	12.637	EOL.RETRIEVE GUN STRING #5.(10:00 GUNS OUT)
10:28	S92A-107	017	101			SOL.
11:58	S92A-107	017	613	513	13.677	EOL.RETRIEVE GUN STRING #5.(13:20 GUNS OUT)
13:30	ABORTED LINE S92A-111, DIR 197 DEG. DUE TO EXCESSIVE NOISE ON STREAMER. (NW 30 KNOTS ROUGH SEAS) IN PROSPECT AREA WAITING FOR WEATHER TO ABATE.					
17:30	COMMENCE RETRIEVAL OF GUNS.					
18:10	GUNS ONBOARD.					
19:10	COMMENCE RETRIEVAL OF STREAMER.					
20:20	STREAMER ONBOARD. WAITING FOR WEATHER TO ABATE.					
24:00	IN PROSPECT WAITING FOR WEATHER TO ABATE.					

FORECAST RECEIVED AT 17:10 HRS.
GALE WARNING CURRENT. NORTHWEST WINDS 30/10 KNOTS WITH SEAS 3 TO 5 METERS.
NEXT DAY WEST TO SOUTHWEST 30/10 KNOTS MODERATING LATER TO 20/25 KNOTS.
SEAS EASING TO 2 TO 3 METERS. SWELL 2 TO 1 METERS.

2591489

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 28 JULY 92 SAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/25P
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : XXXX
KM'S : XXXXX
O/LAP SP : XX
TAPES : XX
NAV TAPE : XX

****

TIME	LINE	DIR	FSP/LSP	SP'S	KM'S	REMARKS
00:01	IN PROSPECT AREA STANDING BY FOR WEATHER TO ABATE.					
12:00	WINDS AT 40/50 KNOTS WITH SWELL 5 TO 6 METERS.					
24:00	IN PROSPECT AREA STANDING BY FOR WEATHER TO ABATE.					

FORECAST RECEIVED AT 1735 HRS.: GALE WARNING IS CURRENT.
WEST TO SOUTHWEST WINDS 30/40 KNOTS EASING TO 20/25 KNOTS OVERNIGHT.
WINDS EXPECTED TO EASE TOMORROW MORNING TO 10/20 KNOTS THEN TENDING
NORTHWESTERLY IN AFTERNOON REACHING 15/25 KNOTS TOMORROW NIGHT.
SEAS 4 TO 5 METERS EASING TO 2 TO 3 METERS BY MORNING. SWELL 3 TO 5 METERS.

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 29 JULY 92 SAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/25P
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS	
SP'S	: 1562
KM'S	: 41.643
O/LAP SP	: 61
TAPES	: 21
NAV TAPE	: XX

****

TIME	LINE	DIR	FSP/LSP	SP'S	KM'S	REMARKS
00:01	IN PROSPECT AREA WAITING FOR WEATHER TO ABATE.					
06:35	COMMENCE DEPLOYMENT OF STARBOARD STREAMER.(WINDS AT 20/25 KNOTS, SEAS AT 2-3 METERS)					
10:15	STREAMER DEPLOYED.					
10:30	COMMENCE DEPLOYMENT OF GUNS.					
11:29	GUNS DEPLOYED.					
12:14	S92A-111	017	101			SOL.
13:48	S92A-111	017	650	550	14.663	EOL.WORK ON GUN STRING #5.(13:59 GUNS DEPLOYED)
15:20	S92A-103	198	541			SOL.(FSP551 TO SP542 NOT RECORDED.LRS CONTROLLER FAULT).
16:50	S92A-103	198	41	501	13.357	EOL.WORK ON GUN STRING #5.(17:30 GUNS DEPLOYED)
18:13	S92A-101	016	101			SOL.
18:53	S92A-101	016	300	200	5.332	STOPPED SHOOTING - ONLY TWO SU'S AVAILABLE.
	(SU 26 NOT AVAILABLE BUT IS SUPPOSE TO BE OPERATIONAL). CIRCLE.					
21:21	S92A-101A	016	240			SOL.(61 "A" SHOTS SP240 TO SP300).
22:15	S92A-101A	016	611	311	8.291	EOL.
24:00	ON RUNIN TO LINE S92A-122.					

259191

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 30 JULY 92 SAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/25P
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : 3302
KM'S : 88.031
O/LAP SP : XX
TAPES : 41
NAV TAPE : 1

TIME	LINE	DIR	FSP/LSP	SP'S	KM'S	REMARKS
00:01	ON RUNIN TO LINE S92A-122.					
00:07	S92A-122	107	101			SOL.
01:30	S92A-122	107	612	512	13.650	EOL.WORK ON GUN STRING #5.(02:30 GUNS OUT)
02:59	S92A-118	288	552			SOL.(RANDOM NOISE BURST ON STREAMER CAUSED BY SEA CONDITION)
04:28	S92A-118	288	41	512	13.650	EOL.
05:48	ABORT S92A-110,DIR 108 DEG.DUE TO EXCESSIVE NOISE ON STREAMER CAUSED BY SEA CONDITION.STANDBY FOR WEATHER.					
06:30	RETRIEVING GUNS. / 07:12 GUNS ONBOARD.					
09:10	DEPLOYING GUNS. / 09:47 GUNS DEPLOYED.					
10:36	S92A-120	108	101			SOL.(RANDOM NOISE BURST ON STREAMER CAUSED BY SEA CONDITION)
12:04	S92A-120	108	611	511	13.623	EOL.
13:49	S92A-116	288	551			SOL.(RANDOM NOISE BURST ON STREAMER CAUSED BY SEA CONDITION)
15:11	S92A-116	288	41	511	13.623	EOL.
16:32	S92A-110	108	101			SOL.(RANDOM NOISE BURST ON STREAMER CAUSED BY SEA CONDITION)
18:45	S92A-110	108	906	806	21.488	EOL.
18:45	LINE CHANGE EXTENDED WAITING ON SATELLITE. (RETRIEVING ALL GUNS)					
19:15	GUNS ONBOARD - RETRIEVING STREAMER TO CHECK LEAKAGE ON POWER LINE TO BIRD/COMPASS LINE.					
19:30	STREAMER IN TO 2ND HEAD STRETCH SECTION.					
19:50	DIFFERENTIAL CORRECTIONS ACQUIRED ON SV#26.(3 SATELLITES ACQUIRED)					
20:00	PROBLEM FOUND IN 2ND HEAD STRETCH SECTION.REPLACED AND CHECKED GOOD - REDEPLOYING STREAMER.					
20:30	STREAMER DEPLOYED - TURNING ON LINE AND DEPLOYING GUNS.					
21:20	GUNS DEPLOYED - ON LINE RUNIN.					
22:43	S92A-112	288	547			SOL.(RANDOM NOISE BURST ON STREAMER CAUSED BY SEA CONDITION)
24:00	S92A-112	288	98	450	11.997	LAST SP OF THE DAY.

259192

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 31 JULY 92 SAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/25P
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : 3260
KM'S : 86.912
O/LAP SP : 77
TAPES : 45
NAV TAPE : XX

TIME	LINE	DIR	FSP/LSP	SP'S	KM'S	REMARKS
00:01	S92A-112	288	97			FIRST SP OF THE DAY.
00:10	S92A-112	288	41	57	1.520	EOL.WORK ON GUN STRING #4 / 01:11 GUNS REDELPOYED.
01:44	ABORTED LINE S92A-108,DIR 109 DUE TO SECT.#2 ALL GROUPS DISTORTION.RETRIEVING ALL GUNS.					
02:35	GUNS ONBOARD - RETRIEVING STREAMER.					
03:00	PROBLEM FOUND IN SECT.2A - REPLACING SECTION 2A.					
04:06	SECTION REPLACED AND CHECKED GOOD.DEPLOYING STREAMER.					
04:30	STREAMER DEPLOYED - DEPLOYING GUNS.					
05:38	GUNS DEPLOYED - ON LINE RUNIN.					
06:55	S92A-108	109	101			SOL.
11:25	S92A-108	109	1659	1559	41.563	EOL.
	ON RUN IN TO LINE S92A-108,ONE COMPRESSOR FAILED.CLIENT REQUESTED TO START LINE WITH 2700 CU IN.ARRAY. AT SP332 GUN ARRAY BACK TO 5400 CU IN.					
	LINE S92A-108 DOGLEG FROM 109.4 TO 108.6 DEG. AT SP559 & DOGLEG FROM 108.6 TO 109.2 DEG. AT SP640 TO EOL.					
12:36	S92A-114	289	1448			SOL.
15:58	S92A-114	289	243	1206	32.152	STOPPED SHOOTING DUE TO COMPRESSOR FAILURE.CIRCLE.
19:09	S92A-114A	289	319			SOL.(77 ALPHA SHOTS RECORDED SP319 TO SP243)
19:57	S92A-114A	289	41	202	5.385	EOL.WORK ON GUN STRING #4 / 20:50 GUNS REDEPLOYED.
21:12	S92A-108A	109	101			SOL.(RESHOOT AT CLIENTS REQUEST GUN ARRAY 5400 CU IN.)
22:01	S92A-108A	109	391			EOL.
23:19	S92A-106	104	101			SOL.
24:00	S92A-106	104	336	236	6.292	LAST SP OF THE DAY.

25919 3

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 01 AUGUST 92 SAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/25P
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : 4550
KM'S : 121.304
O/LAP SP : XX
TAPES : 45
NAV TAPE : XX

****

TIME	LINE	DIR	FSP/LSP	SP'S	KM'S	REMARKS
00:01	S92A-106	104	337			FIRST SP OF THE DAY.
02:40	S92A-106	104	1281	945	25.194	EOL.WORK ON GUN STRINGS #3,4,5 & 6.
	LINE CHANGE EXTENDED FOR GUN WORK.					
04:58	S92A-104	284	1222			SOL.
08:20	S92A-104	284	41	1182	31.512	EOL.WORK ON GUN STRINGS #3,4,5 & 6.
	LINE CHANGE EXTENDED FOR GUN WORK. REPLACING GUN STRING #4 WITH #2.(BAD DATA-MATE PLUG)					
11:54	S92A-102	104	101			SOL.
14:47	S92A-102	104	1097	997	26.580	EOL.WORK ON GUN STRINGS #5 & 6./ 16:58 GUNS REDEPLOYED.
17:07	S9AA-139	014	101			SOL.
18:31	S92A-139	014	575	475	12.664	EOL.WORK ON GUN STRING #5./ 19:10 GUNS REDEPLOYED.
20:01	S92A-137	194	515			SOL.
21:18	S92A-137	194	41	475	12.664	EOL.
22:48	S92A-135	015	101			SOL.
24:00	S92A-135	015	576	476	12.690	EOL.WORK ON GUN STRING #3.

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 02 AUGUST 92 SAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER.
PROSPECT : BASS BASIN T/25P
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : 3692
KM'S : 98.430
O/LAP SP : 60
TAPES : 49
NAV TAPE : XX

TIME	LINE	DIR	FSP/LSP	SP'S	KM'S	REMARKS
00:01	ON LINE CHANGE. / 00:50 GUNS REDEPLOYED.					
01:36	S92A-133	194	514			SOL.
02:56	S92A-133	194	41	474	12.637	EOL.
04:21	S92A-131	015	101			SOL.
05:40	S92A-131	015	575	475	12.664	EOL.WORK ON GUN STRING 2. / 06:37 GUNS REDEPLOYED.
07:03	S92A-129	195	516			SOL.
07:33	S92A-129	195	351	166	4.426	STOP DUE TO COMPRESSOR ENGINE FAILURE - CIRCLE.
09:50	S92A-129A	195	410			SOL.(60 ALPHA SHOTS,SP410 TO SP351)
10:51	S92A-129A	195	41	310	8.265	EOL.
12:12	S92A-127	015	101			SOL.
13:55	S92A-127	015	726	626	16.689	EOL.WORK ON GUN STRING 2. / 15:36 GUNS REDEPLOYED.
15:25	LINE CHANGE EXTENDED DUE TO HIGH DOP (DILUTION OF PRECISION) PERIOD ON GPS.					
16:02	S9A2-125	194	701			SOL.
17:53	S92A-125	194	41	661	17.622	EOL.WORK ON GUN STRING 6. / 19:00 GUNS REDEPLOYED.
19:22	S92A-123	014	101			SOL.
21:21	S92A-123	014	800	700	18.662	EOL.
23:14	S92A-121	194	924			SOL.AT SP803 DOGLEG FROM 193.8 TO 194.3 DEGREES.
24:00	S92A-121	194	645	280	7.465	LAST S.P. OF THE DAY.

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 03 AUGUST 92 — PAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/25P & T/RL1
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : 3674
KM'S : 97.947
O/LAP SP : XX
TAPES : 54
NAV TAPE : 1
TEST SP'S: 358
TEST KM'S: 9.544

TIME	LINE	DIR	FSP/LSP	SP'S	KM'S	REMARKS
00:01	S92A-121	194	644			FIRST S.P. OF DAY.
01:43	S92A-121	194	41	604	16.103	EOL.
03:08	S92A-119	015	101			SOL.AT SP794 DOGLEG FROM 14.995 TO 14.471 DEGREES.
05:37	S92A-119	015	985	885	23.594	EOL.
	LINE CHANGE EXTENDED RUNNING TO NEXT BLOCK (T/RL1)					
10:16	S92B-109	025	101			SOL.
11:32	S92B-109	025	537	437	11.650	EOL.
	LINE CHANGE EXTENDED FOR TEST LINE AT CLIENTS REQUEST.					
13:30	S92B-105T	204	656			SOL.GUN ARRAY 2700 CU IN. TEST AT CLIENTS REQUEST.
14:01	S92B-105T	204	478	179	4.772	COMPLETED 2700 CU IN ARRAY TEST.
14:01	S92B-105	204	477			COMMENCE 5400 CU IN ARRAY PROD. LINE.
15:15	S92B-105	204	41	437	11.650	EOL.
16:42	S92B-101	024	101			SOL.
17:55	S92B-101	024	537	437	11.650	EOL.
17:55	S92B-101T	024	538			COMMENCE TEST LINE WITH STREAMER DEPTH AT 6M AT CLIENTS REQUEST.
18:24	S92B-101T	024	716	179	4.772	END OF TEST LINE.
19:44	S92B-107	205	477			SOL.
20:56	S92B-107	205	41	437	11.650	EOL.
22:23	S92B-103	024	101			SOL.
23:40	S92B-103	024	537	437	11.650	EOL. TURNING FAIR SEAS & RETRIEVING GUNS.
24:00	RETRIEVING GUNS.					

2591196

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 04 AUGUST 92 SAGASCO RESOURCES LTD

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN T/RL1
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS	
SP'S	: XXXX
KM'S	: XXXXX
O/LAP SP	: XX
TAPES	: XX
NAV TAPE	: XX

****

TIME	LINE	DIR	FSP/LSP	SP'S	KM'S	REMARKS
00:01	RETRIEVING GUNS.					
00:05	GUNS ONBOARD - RETRIEVING STREAMER.					
01:05	STREAMER ONBOARD - COMPLETION OF SAGASCO PROSPECT. ENROUTE TO EDEN TO RENDEZVOUS WITH SUPPLY BOAT.					
24:00	ENROUTE TO EDEN TO RENDEZVOUS WITH SUPPLY BOAT.					

2591971

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 05 AUGUST 92

COORDINATOR: CHOW/CHANDLER
PROSPECT : BASS BASIN
CLIENT REP : RICK ROMANIK / DOUG ROBERTS
CONTRACTOR : WESTERN GEOPHYSICAL
NAVIGATION : SKYFIX DGPS

DAILY TOTALS
SP'S : XXXX
KM'S : XXXXX
O/LAP SP : XX
TAPES : XX
NAV TAPE : XX

****

TIME	LINE	DIR	FSP/LSP	SP'S	KM'S	REMARKS
00:01	ENROUTE TO EDEN.					
01:38	SUPPLY BOAT ALONGSIDE OFF EDEN OFF GOING PERSONNEL: (SAGASCO-DOUG ROBERTS, AUSTRAL-RICK ROMANIK, WGC- ANDREW STAGG, ANDREW KLEINERT, PUAL JACOBS.)					
01:42	SUPPLY BOAT AWAY-ENROUTE TO BRISBANE FOR CHANGE.					
24:00	ENROUTE TO BRISBANE.					

2591698

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 06 AUGUST 92

COORDINATOR: CHOW / CHANDLER

TIME	REMARKS
00:01	ENROUTE TO BRISBANE FOR CREW CHANGE.
	MAINTANENCE OF SEISMIC EQUIPMENT - COMPLETE INVENTORY OF ALL SEISMIC STORES AND PREPARATION FOR NEXT JOB.
24:00	ENROUTE TO BRISBANE FOR CREW CHANGE.

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 07 AUGUST 92

COORDINATOR: CHOW / CHANDLER

TIME	REMARKS
00:01	ENROUTE TO BRISBANE.
24:00	ENROUTE TO BRISBANE.

WESTERN GEOPHYSICAL COORDINATORS DAILY LOG
WESTERN ATLAS P116

DATE: 08 AUGUST 92

COORDINATOR: DICKY CHOW
PROSPECT :
CLIENT REP :
NAVIGATION :

DAILY TOTALS
SP'S : XXXX
KM'S : XXXXX

TIME	LINE	DIR	FSP/LSP	SP'S	KM'S	REMARKS
00:01	ENROUTE TO BRISBANE.					
01:30	PILOT ONBOARD.					
05:30	AT ANCHOR OFF BRISBANE.					
05:45	BARGE ALONGSIDE WITH FOODSTORES.					
06:50	BARGE AWAY WITH SEISMIC & NAVIGATION DATA,COMPASSES AND PARTS FOR REPAIR.					
07:30	CREW BOAT ALONGSIDE WITH IN-COMING CREW.					
09:50	CREW BOAT AWAY WITH OFF-GOING CREW.					
14:40	PILOT AWAY - ENROUTE TO CAIRNS.					
24:00	ENROUTE TO CAIRNS.					

259201

APPENDIX C - LOGS

3. OBSERVER'S LINE LOGS

259203

---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-101 Line Seq.: 12 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	101 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	N
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000010 DAY: 211 Date: 07/29/92 Data Shipment #: 1

FSP: 101- GMT Time: 18:13 FSID: 21522 Drift (S/P): 101 / 5.8

LSP: 330- GMT Time: 18:53 FSID: 21751 Drift (S/P): 330 / 2.8

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET: 89.84 EARLY EOL D/T NAV. LAST GOOD SP 300

---------- GENERAL INFORMATION ----------

	SOL	EOL
Feathering Angle	5.8 Deg. STBD	2.8 Deg. STBD
Cable Noise	4.2 uBAR	4.0 uBAR
Noise Strip File	FILE 0000	FILE 231
Dummy Files		
Wind Dir/Speed	W-NW AT 15 KNOTS	N-NW AT 15 KNOTS
Sea State	MODERATE / LOW SWELL	MODERATE / LOW SWELL
Waterbreak	0.0 ms	0.0 ms
Water Depth	62.0	67.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

---------- NAVIGATION INFORMATION ----------

LINE NAME: S92A-101 Status: ACC Nav Reel: P116-0078 Record: 000010

Julian Day 211 Heading 16.00 FSP 101 - GMT Time: 18:13 FSID 21522 DRD 13838

Shipment # 1 Residual 0.00 LSP 330 - GMT Time: 18:53 FSID 21751 DRD 14068

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or N/A
ATB:

Fill-in: N/A

Compass

Navigators :COWIN,HEEPS,KOLESKE.
Comments: EARLY EOL D/T SATELLITE COVERAGE INSUFFICIENT

---------- SIGNIFICANT EDITS ----------

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
301	330	201	230	1000	(Missed Shot Na
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259205

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	6.132	Prime Km :	5.332	2D Overlap Km :	0.000
Rejected Km:	0.800	Fill Km:	0.000	Total Shot Points:	230
Accepted Km	5.332	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
TAILBOUY FEATHERING CALCULATED FROM COMPASS AVERAGES
CABLE DI #7 GIVING INCORRECT READINGS

EARLY EOL D/T NAVIGATION SATELLITE COVERAGE INSUFFICIENT

Observer SIMONTON, SMITH, PROBERT.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259206

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

07/29/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127231	S92A-101	101	184	1	84	3	1
127232	S92A-101	185	269	85	169	3	2
127233	S92A-101	270	330	170	230	3	1

259207

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :392A-101A Line Seq.: 13 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	101 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	N
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	N

Record No.: 000011 DAY: 211 Date: 07/29/92 Data Shipment #: 1

FSP: 240- GMT Time:21:11 FSID: 29464 Drift (S/P): 240 / 1.0

LSP: 611- GMT Time:22:15 FSID: 29835 Drift (S/P): 611 / 5.7

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET 90.23

GENERAL INFORMATION

	SOL		EOL	
Feathering Angle	1.0 Deg.	PORT	5.7 Deg.	PORT
Cable Noise	3.7 uBAR		4.0 uBAR	
Noise Strip File	9999		373	
Dummy Files	0000			
Wind Dir/Speed	NW/@15KNTS		NW/@15KNTS	
Sea State	MOD		MOD	
Waterbreak	0.0 ms		0.0 ms	
Water Depth	67.0		73.0	
Cable Separation	0.0		0.0	
Gun Separation STBD	0.0		0.0	
Gun Separation PORT	0.0		0.0	

```
---------------------------- NAVIGATION INFORMATION ------------------------------

LINE NAME: S92A-101A         Status: ACC    Nav Reel: P116-0078    Record: 000011

Julian Day 211  Heading  16.00 FSP   240 -   GMT Time:21:11 FSID 29464   DRD 14419

Shipment #  1  Residual   0.00 LSP   611 -   GMT Time:22:15 FSID 29835   DRD 14791


General:  TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.


SSTS or     N/A
ATB:


Fill-in:    N/A

Compass

Navigators : COWIN,HEEPS,KOLESKE.
Comment:


------------------------------ SIGNIFICANT EDITS -----------------------------
0 = No Edit                                 S0 = Stbd Source
1 = Edit (Requires Reshoot)                 S1 = Port Source
2 = Edit (No Reshoot)                       C0 = Stbd Cable
                                            C1 = Port Cable

-EDIT RANGE-       -FILE RANGE-        -EDIT STATUS WORD-           -REASON-
 FSP  LSP          FIRST   LAST          (S0 S1  C0 C1)

   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
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   0     0           0      0                 0
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   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
   0     0           0      0                 0
```

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	9.918	Prime Km :	9.918	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	372
Accepted Km	9.918	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
O#I 7 GIVING INCORRECT READINGS.

Observer SIMONTON, SMITH, PROBERT.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259210

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

07/29/92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127234	S92A-101A	240	322	1	83	3	2
12735	S92A-101A	323	407	84	168	3	1
127236	S92A-101A	408	492	169	253	3	2
127237	S92A-101A	493	577	254	338	3	1
127238	S92A-101A	578	611	339	372	3	2

259211

---------- GENERAL SURVEY INFORMATION ----------

---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO PARTY: 116

AREA: BASS BASIN BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-102 Line Seq.: 26 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	102 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000024 DAY: 214 Date: 08/01/92 Data Shipment #: 1

FSP: 101- GMT Time:11:54 FSID: 3879 Drift (S/P): 101 / -1.3

LSP: 1097- GMT Time:14:47 FSID: 4785 Drift (S/P): 1097 / 0.9

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET: 87.60m

---------- GENERAL INFORMATION ----------

	SOL	EOL
Feathering Angle	-1.3 Deg. PORT	0.9 Deg. PORT
Cable Noise	3.2 uBAR	13.1 uBAR
Noise Strip File	9995	998
Dummy Files	9996-0000	N/A
Wind Dir/Speed	W @ 20 KNOTS.	W @ 20 KNOTS.
Sea State	MODERATE / 1-2m SWELL.	MODERATE / 1-2m SWELL.
Waterbreak	0.0 ms	0.0 ms
Water Depth	73.0	77.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

259212

NAVIGATION INFORMATION

LINE NAME: S92A-102 Status: ACC Nav Reel: P116-0079 Record: 000024

Julian Day 214 Heading 104.00 FSP 101 - GMT Time:11:54 FSID 3879 DRD 13005

Shipment # 1 Residual 0.00 LSP 1097 - GMT Time:14:47 FSID 4785 DRD 14002

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :COWIN,HEEPS,STOREY.
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
102	102	2	2	2000	(Sync/Autofire)
105	105	5	5	2000	(Sync/Autofire)
114	114	14	14	2000	(Sync/Autofire)
121	121	21	21	2000	(Sync/Autofire)
125	125	25	25	2000	(Sync/Autofire)
132	132	32	32	2000	(Sync/Autofire)
134	134	34	34	2000	(Sync/Autofire)
136	136	36	36	2000	(Sync/Autofire)
194	194	94	94	2000	(Sync/Autofire)
588	588	488	488	2000	(Sync/Autofire)
606	606	506	506	2000	(Sync/Autofire)
643	643	543	543	2000	(Sync/Autofire)
773	773	673	673	2000	(Sync/Autofire)
799	799	699	699	2000	(Sync/Autofire)
861	861	761	761	2000	(Sync/Autofire)
890	890	790	790	2000	(Sync/Autofire)
913	913	813	813	2000	(Sync/Autofire)
931	931	831	831	2000	(Sync/Autofire)
940	940	840	840	2000	(Sync/Autofire)
1017	1018	917	918	2000	(Sync/Autofire)
1028	1028	928	928	2000	(Sync/Autofire)
1045	1045	945	945	2000	(Sync/Autofire)
1079	1079	979	979	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	26.580	Prime Km :	26.580	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	997
Accepted Km	26.580	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
DI# 7, DISABLED.
CABLE DEPTHS @ 11m, 35ft., PER CLIENT REQUEST.
SP# 137, DISABLED GUN# 34. NEW TOTAL VOLUME, 5120cid.
SP:833-EOL RANDOM NOISE ON CABLE DUE TO SEA STATE.

Observer SIMONTON, SMITH, PROBERT, CASEY.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259214

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

08/01/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127350	S92A-102	101	180	1	80	9	2
127351	S92A-102	181	265	81	165	10	1
127352	S92A-102	266	350	166	250	10	2
127353	S92A-102	351	435	251	335	10	1
127354	S92A-102	436	520	336	420	10	2
127355	S92A-102	521	605	421	505	10	1
127356	S92A-102	606	690	506	590	10	2
127357	S92A-102	691	775	591	675	10	1
127358	S92A-102	776	860	676	760	10	2
127359	S92A-102	861	945	761	845	10	1
127360	S92A-102	946	1030	846	930	10	2
127361	S92A-102	1031	1097	931	997	10	1

259215

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P

3D:

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-103 Line Seq.: 11 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	103 -	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000009 DAY: 211 Date: 07/29/92 Data Shipment #: 1

FSP: 551- GMT Time: 15:20 FSID: 13603 Drift (S/P): 551 / -5.9

LSP: 41- GMT Time: 16:50 FSID: 14113 Drift (S/P): 41 / -4.7

OSP: 0-0 (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET: 88.09 m.

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	-5.9 Deg. PORT	-4.7 Deg. PORT
Cable Noise	4.2 uBAR	4.3 uBAR
Noise Strip File	0000	512
Dummy Files	N/A	N/A
Wind Dir/Speed	WSW @ 15-18 KNOTS.	WSW @ 15-18 KNOTS.
Sea State	MODERATE.	MODERATE.
Waterbreak	0.0 ms	0.0 ms
Water Depth	69.0	62.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: S92A-103 Status: ACC Nav Reel: P116-0078 Record: 000009

Julian Day 211 Heading 198.00°FSP 551 - GMT Time:15:20 FSID 13603 DRD 13096

Shipment # 1 Residual 0.00 LSP 41 - GMT Time:16:50 FSID 14113 DRD 13607

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :COWIN,HEEPS,STOREY.
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
551	541	1	11	20	(Other Cause).
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259217

QUANTITATIVE INFORMATION

Total Kilometers:	13.623	Prime Km :	13.623	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	511
Accepted Km	13.623	Reshoot Km:	0.000	Shot Spacing:	26.660

GENERAL COMMENTS

ALL TIMES LOGGED LOCAL.
GUN# 35, DISABLED PRIOR TO START OF LINE. BOL TOTAL VOLUME 5200cid.
FGSP 541 D/T LRS 100 GUN CONTROLLER MEMORY LOSS.
SPS 185-80 SCREW NOISE ON RECORDS, LESS THAN 5dB.

Observer SIMONTON, SMITH, PROBERT, CASEY.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259218

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

07/29/92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127225	S92A-103	551	468	1	84	3	1
127226	S92A-103	467	383	85	164	3	2
127227	S92A-103	382	298	165	254	3	1
127228	S92A-103	297	213	255	339	3	2
127229	S92A-103	212	128	340	424	3	1
127230	S92A-103	127	41	425	511	3	2

259219

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P

3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-104 Line Seq.: 25 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	104 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000023 DAY: 214 Date: 08/01/92 Data Shipment #: 1

FSP: 1222- GMT Time: 4:58 FSID: 50128 Drift (S/P): 1222 / 1.5

LSP: 41- GMT Time: 8:20 FSID: 51309 Drift (S/P): 41 / -2.4

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET 89.97

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	1.5 Deg. STBD	-2.4 Deg. PORT
Cable Noise	4.6 uBAR	4.3 uBAR
Noise Strip File	9996	1179
Dummy Files	9997-0000	
Wind Dir/Speed	WNW @ 18-20 KTS.	WNW @ 18-20 KTS.
Sea State	MODERATE/1 METER SWELL	MODERATE/1 METER SWELL
Waterbreak	0.0 ms	0.0 ms
Water Depth	75.0	69.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: S92A-104 Status: ACC Nav Reel: P116-0079 Record: 000023

Julian Day 214 Heading 284.00 FSP 1222 - GMT Time: 4:58 FSID 50128 DRD 11273

Shipment # 1 Residual 1.40 LSP 41 - GMT Time: 8:20 FSID 51309 DRD 12455

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :GEIGENMILLER,JACOBS,STOREY
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
1221	1221	2	2	2000	(Sync/Autofire)
1220	1220	3	3	2000	(Sync/Autofire)
1217	1217	6	6	2000	(Sync/Autofire)
1215	1215	8	8	2000	(Sync/Autofire)
1213	1213	10	10	2000	(Sync/Autofire)
1210	1210	13	13	2000	(Sync/Autofire)
1209	1209	14	14	2000	(Sync/Autofire)
1202	1201	21	21	20	(Missed Shot Se
1200	1200	22	22	20	(Array Sys. Err
1182	1182	40	40	2000	(Sync/Autofire)
1181	1181	41	41	2000	(Sync/Autofire)
1163	1163	59	59	2000	(Sync/Autofire)
1144	1144	78	78	2000	(Sync/Autofire)
1142	1142	80	80	2000	(Sync/Autofire)
1137	1137	85	85	2000	(Sync/Autofire)
1125	1125	97	97	2000	(Sync/Autofire)
1005	1005	217	217	2000	(Sync/Autofire)
997	997	225	225	2000	(Sync/Autofire)
984	984	238	238	2000	(Sync/Autofire)
911	911	311	311	2000	(Sync/Autofire)
908	908	314	314	2000	(Sync/Autofire)
883	883	339	339	2000	(Sync/Autofire)
872	872	350	350	2000	(Sync/Autofire)
852	852	370	370	2000	(Sync/Autofire)
842	842	380	380	2000	(Sync/Autofire)
721	721	501	501	2000	(Sync/Autofire)
574	573	648	648	20	(Missed Shot Se

-EDIT RANGE-		-FILE RANGE-		-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
FSP	LSP	FIRST	LAST		
572	572	649	649	20	(Array Sys. Err
521	521	698	698	2000	(Sync/Autofire)
497	497	724	724	2000	(Sync/Autofire)
463	463	758	758	2000	(Sync/Autofire)
456	456	765	765	2000	(Sync/Autofire)
425	425	796	796	2000	(Sync/Autofire)
417	416	804	804	20	(Missed Shot Se
357	356	863	863	20	(Missed Shot Se
355	355	864	864	20	(Array Sys. Err
354	354	865	865	2000	(Sync/Autofire)
326	326	893	893	2000	(Sync/Autofire)
156	156	1063	1063	2000	(Sync/Autofire)
74	74	1145	1145	2000	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259222

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers: 31.512 Prime Km : 31.512 2D Overlap Km : 0.000

Rejected Km: 0.000 Fill Km: 0.000 Total Shot Points: 1182

Accepted Km 31.512 Reshoot Km: 0.000 Shot Spacing: 26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME--DI 7 DISABLED--CABLE TARGET DEPTH 35 FEET
BOL GUN VOL==5400 CUBIC INCHES
SP,1206 FILE 19 RECORDED TWICE,LOST SPS,1202,1201 FILE 21 D/T L/UP
SP,1208 GUN 34 DISABLED NEW GUN VOL==5120 CUBIC INCHES
SP,1124 DISABLED GUN 17 NEW VOL==4655 CUBIC INCHES
L/UP LOST SPS,574,573. FILE 648
SP,418 FILE 803 RECORDED TWICE,LOST SPS,417,416,FILE 804
L/UP LOST SPS,357,356, FILE 863

Observer GREGORY,MIEARS,DONNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259223

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS

PARTY : 116

CLIENT : SAGASCO

08/01/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NU.	FSP	LSP	F.file	Last file	BOX #	Deck #
127336	S92A-104	1222	1142	1	80	9	2
127337	S92A-104	1141	1057	81	165	9	1
127338	S92A-104	1056	972	166	250	9	2
127339	S92A-104	971	887	251	335	9	01
127340	S92A-104	886	802	336	420	9	02
127341	S92A-104	801	717	421	505	9	01
127342	S92A-104	716	632	506	590	9	02
127343	S92A-104	631	545	591	676	9	01
127344	S92A-104	544	460	677	761	9	2
127345	S92A-104	459	374	762	846	9	1
127346	S92A-104	373	287	847	932	9	2
127347	S92A-104	286	202	933	101	9	1
127348	S92A-104	201	117	102	1102	9	2
127349	S92A-104	116	41	1103	1178	9	1

259224

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-105 Line Seq.: 6 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	105 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000005 DAY: 209 Date: 04/13/92 Data Shipment #: 1

FSP: 101- GMT Time: 2:59 FSID: 44886 Drift (S/P): 101 / 7.6

LSP: 536- GMT Time: 4:15 FSID: 45321 Drift (S/P): 536 / 4.9

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==91.10 METERS

GENERAL INFORMATION

	SOL		EOL
Feathering Angle	7.6 Deg.	STBD	4.9 Deg. STBD
Cable Noise	3.7 uBAR		4.0 uBAR
Noise Strip File	9996		437
Dummy Files	9997-0000		
Wind Dir/Speed	NW @ 18 KTS		NW @ 18 KTS.
Sea State	MODERATE		MODERATE
Waterbreak	0.0 ms		0.0 ms
Water Depth	63.0		70.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

---------- NAVIGATION INFORMATION ----------

LINE NAME: S92A-105 Status: ACC Nav Reel: P116-0078 Record: 000005

Julian Day 209 Heading 18.00 FSP 101 - GMT Time: 2:59 FSID 44886 DRD 3951

Shipment # 1 Residual 1.60 LSP 536 - GMT Time: 4:15 FSID 45321 DRD 4387

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :GEIGENMILLER,KOLESKE,JACOBS
Comment:

---------- SIGNIFICANT EDITS ----------

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
127	127	27	27	2000	(Sync/Autofire)
133	133	33	33	2000	(Sync/Autofire)
149	149	49	49	2000	(Sync/Autofire)
211	211	111	111	2000	(Sync/Autofire)
242	242	142	142	2000	(Sync/Autofire)
294	294	194	194	2000	(Sync/Autofire)
298	298	198	198	2000	(Sync/Autofire)
300	300	200	200	2000	(Sync/Autofire)
363	363	263	263	2000	(Sync/Autofire)
391	391	291	291	20	(Array Tape Err
400	400	300	300	20	(Array Tape Err
468	468	368	368	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259226

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	11.624	Prime Km :	11.624	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	436
Accepted Km	11.624	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME
CABLE TARGET DEPTH 10 METERS
BOL GUN VOLUME==5400 CUBIOC INCHES

Observer GREGORY,MIEARS,DONNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259227

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

07/27/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127197	S92A-105	101	180	1	80	2	2
127198	S92A-105	181	265	81	165	2	2
127199	S92A-105	266	350	166	250	2	1
127200	S92A-105	351	435	251	335	2	2
127201	S92A-105	436	520	336	420	2	1
127202	S92A-105	521	536	421	436	2	2

259228

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-106 Line Seq.: 24 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	106 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000022 DAY: 213 Date: 07/31/92 Data Shipment #: 1

FSP: 101- GMT Time: 23:18 FSID: 35214 Drift (S/P): 101 / 3.5

LSP: 1281- GMT Time: 2:40 FSID: 36394 Drift (S/P): 1281 / 2.0

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==87.8 METERS

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	3.5 Deg. PORT	2.0 Deg. PORT
Cable Noise	3.5 uBAR	3.6 uBAR
Noise Strip File	0000	1181
Dummy Files		
Wind Dir/Speed	W @ 15-18 KTS.	W @ 15-18 KTS
Sea State	MODERATE, 1 METER SWELL	MODERATE, 1 METER SWELL
Waterbreak	0.0 ms	0.0 ms
Water Depth	71.0	77.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: S92A-106 Status: ACC Nav Reel: P116-0079 Record: 000022

Julian Day 213 Heading 104.00 FSP 101 - GMT Time: 23:18 FSID 3521[illegible] DRD 9709

Shipment # 1 Residual 0.00 LSP 1281 - GMT Time: 2:40 FSID 36[illegible] DRD 10890

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :GEIGENMILLER,JACOBS,KOLESKE
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
135	135	35	35	2000	(Sync/Autofire)
154	154	54	54	2000	(Sync/Autofire)
157	157	57	57	2000	(Sync/Autofire)
172	173	72	73	2000	(Sync/Autofire)
175	175	75	75	2000	(Sync/Autofire)
179	179	79	79	2000	(Sync/Autofire)
203	203	103	103	2000	(Sync/Autofire)
251	251	151	151	2000	(Sync/Autofire)
253	253	153	153	2000	(Sync/Autofire)
266	266	166	166	2000	(Sync/Autofire)
271	271	171	171	2000	(Sync/Autofire)
275	275	175	175	2000	(Sync/Autofire)
276	276	176	176	2000	(Sync/Autofire)
278	278	178	178	2000	(Sync/Autofire)
299	299	199	199	2000	(Sync/Autofire)
303	303	203	203	2000	(Sync/Autofire)
305	305	205	205	2000	(Sync/Autofire)
309	309	209	209	2000	(Sync/Autofire)
431	431	331	331	2000	(Sync/Autofire)
790	7909	690	690	2000	(Sync/Autofire)
791	791	691	691	2000	(Sync/Autofire)
792	792	692	692	2000	(Sync/Autofire)
811	811	711	711	20	(Missed Shot Se
815	816	715	715	20	(Missed Shot Se
817	817	716	716	2000	(Sync/Autofire)
898	898	797	797	2000	(Sync/Autofire)
899	899	798	798	2000	(Sync/Autofire)

-EDIT RANGE-		-FILE RANGE-		-EDIT STATUS WORD-	-REASON-
FSP	LSP	FIRST	LAST	(S0 S1 C0 C1)	
930	930	829	829	2000	(Sync/Autofire)
933	933	832	832	2000	(Sync/Autofire)
1057	1057	956	956	2000	(Sync/Autofire)
1085	1085	984	984	2000	(Sync/Autofire)
1183	1183	1082	1082	2000	(Sync/Autofire)
1202	1202	1101	1101	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	31.485	Prime Km :	31.485	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	1181
Accepted Km	31.485	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME
DI 7 DISDABLED--CABLE TARGET DEPTH 35 FEET
BOL GUN VOL==5400 CUBIC INCHES
SP,173 FILE 73 GUN STRINGS 5 & 6 DID NOT FIRE
SP,180 FILE 80 DISABLED GUN 34, NEW VOL==5120 CUBIC INCHES
SP,309 FILE 209 DISABLED GUN 46, NEW VOL==5040 CUBIC INCHES
SP,809 FILE 709 RECORDED TWICE-LOST SP,811 FILE 711 D/T L/UP
LOST SPS,815,816 FILE 715 D/T L/UP

Observer SMITH,SIMONTON,PROBERT,GREGORY,MIEARS,DONNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259232

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

08/01/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127322	S92A-106	101	184	1	84	8	2
127323	S92A-106	185	269	85	169	8	1
127324	S92A-106	270	354	170	254	8	2
127325	S92A-106	355	439	255	339	8	1
127326	S92A-106	440	524	340	424	8	2
127327	S92A-106	525	609	425	509	8	1
127328	S92A-106	610	694	510	594	8	2
127329	S92A-106	695	879	595	679	8	1
127330	S92A-106	880	866	680	765	8	2
127331	S92A-106	867	951	766	850	9	1
127332	S92A-106	952	1036	851	935	9	2
127333	S92A-106	1037	1121	936	1020	9	1
127334	S92A-106	1122	1206	1021	1105	9	2
127335	S92A-106	1207	1281	1106	1180	9	1

259233

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

ACCEPTED BY CLIENT 29 JULY 92

LINE :S92A-107 Line Seq.: 9 Status: Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	107 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000007 DAY: 209 Date: 07/27/92 Data Shipment #: 1

FSP: 101- GMT Time:10:28 FSID: 501 Drift (S/P): 101 / 5.7

LSP: 613- GMT Time:11:58 FSID: 1013 Drift (S/P): 613 / 1.1

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==89.47

GENERAL INFORMATION

	SOL		EOL
Feathering Angle	5.7 Deg.	STBD	1.1 Deg. STBD
Cable Noise	7.0 uBAR		33.1 uBAR
Noise Strip File	9996,9997		514
Dummy Files	9998-0000		
Wind Dir/Speed	NW @ 21 KTS		NW @ 21KTS.
Sea State	MODERATE-ROUGH		MODERATE-ROUGH
Waterbreak	0.0 ms		0.0 ms
Water Depth	65.0		75.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

NAVIGATION INFORMATION

LINE NAME: S92A-107 Status: CON Nav Reel: P116-0078 Record: 000007

Julian Day 209 Heading 17.00 FSP 101 - GMT Time:10:28 FSID 501 DRD 5779

Shipment # 1 Residual 0.00 LSP 613 - GMT Time:11:58 FSID 1013 DRD 6292

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :STOREY,GEIGENMILLER,JACOBS
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE-		-FILE RANGE-		-EDIT STATUS WORD-	-REASON-
FSP	LSP	FIRST	LAST	(S0 S1 C0 C1)	
101	101	1	1	2000	(Sync/Autofire)
103	103	3	3	2000	(Sync/Autofire)
106	106	6	6	2000	(Sync/Autofire)
116	116	16	16	2000	(Sync/Autofire)
123	123	23	23	2000	(Sync/Autofire)
124	124	24	24	2000	(Sync/Autofire)
176	176	76	76	2000	(Sync/Autofire)
177	177	77	77	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259235

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	13.677	Prime Km :	0.000	2D Overlap Km :	0.000
Rejected Km:	13.677	Fill Km:	0.000	Total Shot Points:	513
Accepted Km	0.000	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME
CABLE TARGET DEPTH 10 METERS
BOL GUN VOL==5400 CUBIC INCHES
SP,125 FILE 25 GUN 35 DISABLED,NEW VOL==5200 CUBIC INCHES
SP,300 GUNS OFF FOR NOISE
SP,309 GUNS OFF FOR NOISE==20.1 UBAR--QC PRINTOUT OFF SPS 310-341
TAILBOUY FEATHERING ANGLE CALCULATED FROM COMPASS AVERAGES.

Observer GREGORY,MIEARS,DONNISON,CASEY

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259236

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

07/27/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127211	S92A-107	101	180	1	80	3	1
127212	S92A-107	181	265	81	165	3	2
127213	S92A-107	266	350	166	250	3	1
127214	S92A-107	351	435	251	335	3	2
127215	S92A-107	436	520	336	420	3	1
127216	S92A-107	521	605	421	505	3	2
127217	S92A-107	606	613	506	513	3	1

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	41.563	Prime Km :	41.563	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	1559
Accepted Km	41.563	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

GUN VOLUME AT SOL 2700 CU INS DUE TO COMPRESSOR FAILURE, USING STRINGS 3 & 6 ONLY
DOGLEG LINE; BOL-SP550 =109.4 DEG, SP:551-631 =108.6 DEG. SP:632-EOL =109.2 DEG.
GUN OFFSET: 87.23 METRES. ALL TIMES ARE LOCAL TIMES.
DI#7 OFF BOL-EOL. TARGET CABLE DEPTH 35 FEET.
SYSTEM LOCK UP SP:256 RECORDED TWICE, LOST SP:257, 258. LOST FILE:157
SP:328 GUN STRINGS 4 & 5 ENABLED, TOTAL VOLUME 5400 CU INS.

Observer GREGORY, MIEARS, DONNISON, CASEY.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259238

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

07/31/92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127280	S92A-108	101	180	11	80	6	2
127281	S92A-108	181	266	81	165	6	1
127282	S92A-108	267	351	166	250	6	2
127283	S92A-108	352	436	251	335	6	1
127284	S92A-108	437	521	336	420	6	2
127285	S92A-108	522	606	421	505	6	1
127286	S92A-108	607	691	506	590	6	2
127287	S92A-108	692	776	591	675	6	1
127288	S92A-108	777	861	676	760	6	2
127289	S92A-108	862	946	761	845	6	1
127290	S92A-108	947	1031	846	930	6	2
127291	S92A-108	1032	1116	931	1015	7	1
127292	S92A-108	1117	1201	1016	1100	7	2
127293	S92A-108	1202	1286	1101	1185	7	1
127294	S92A-108	1287	1371	1186	1270	7	2
127295	S92A-108	1372	1456	1271	1355	7	1
127296	S92A-108	1457	1541	1356	1440	7	2
127297	S92A-108	1542	1626	1441	1525	7	1
127298	S92A-108	1627	1659	1526	1558	7	2

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P

3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-108A Line Seq.: 23 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	108 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000021 DAY: 213 Date: 07/31/92 Data Shipment #: 1

FSP: 101- GMT Time: 21:12 FSID: 29761 Drift (S/P): 101 / -4.6

LSP: 391- GMT Time: 22: 1 FSID: 30051 Drift (S/P): 391 / 0.9

CSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET = 89.5

GENERAL INFORMATION

	SOL		EOL	
Feathering Angle	-4.6 Deg.	PORT	0.9 Deg.	STBD
Cable Noise	3.8 uBAR		3.2 uBAR	
Noise Strip File	FILE 0000		FILE 292	
Dummy Files				
Wind Dir/Speed	SW AT 18 KNOTS		SW AT 18 KNOTS	
Sea State	SLIGHT-MODERATE	1M SWELLS	SLIGHT-MODERATE	1M SWELLS
Waterbreak	0.0 ms		0.0 ms	
Water Depth	61.0		68.0	
Cable Separation	0.0		0.0	
Gun Separation STBD	0.0		0.0	
Gun Separation PORT	0.0		0.0	

NAVIGATION INFORMATION

LINE NAME: S92A-108A Status: ACC Nav Reel: P116-0079 Record: 000021

Julian Day 213 Heading 109.00 FSP 101 - GMT Time:21:12 FSID 29761 DRD 9192

Shipment # 1 Residual 0.00 LSP 391 - GMT Time:22: 1 FSID 30051 DRD 9483

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or
ATB:

Fill-in:

Compass

Navigators :HEEPS,KOLESKE,COWIN
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
263	263	163	163	20	(Array Sys. Err
265	265	165	165	20	(Missed Shot Se
342	342	242	242	20	(Missed Shot Se
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259241

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	7.758	Prime Km :	7.758	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	291
Accepted Km	7.758	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL
TAILBOUY FEATHERING ANGLE CALCULATED FROM COMPASS AVERAGES
CABLE DI#7 IS DISABLED
CABLE TARGET DEPTH AT 11M (35 FT.) PER CLIENTS REQUEST

SP 263 RECORDED TWICE, LOST SP 265, FILE 165 D/T RESET
SP 342, FILE 242 LOST D/T SYSTEM LOCK-UP

Observer SIMONTON, SMITH, PROBERT

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259242

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

07/31/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127318	S92A-108A	101	184	1	84	8	2
127319	S92A-108A	185	270	85	170	8	1
127320	S92A-108A	271	356	171	256	8	2
127321	S92A-108A	357	391	257	291	8	1

259243

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-109 Line Seq.: 5 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	109 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000004 DAY: 209 Date: 04/13/92 Data Shipment #: 1

FSP: 477- GMT Time: 0:29 FSID: 38051 Drift (S/P): 477 / 0.6

LSP: 41- GMT Time: 1:46 FSID: 38487 Drift (S/P): 41 / 2.1

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==90.23 METERS

GENERAL INFORMATION

	SOL		EOL
Feathering Angle	0.6 Deg.	PORT	2.1 Deg. PORT
Cable Noise	3.5 uBAR		4.4 uBAR
Noise Strip File	9996		438
Dummy Files	9997-0000		
Wind Dir/Speed	NE @ 18 KTS		NW @ 18 KTS
Sea State	MODERATE		MODERATE
Waterbreak	0.0 ms		0.0 ms
Water Depth	72.0		63.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

```
---------------------------- NAVIGATION INFORMATION ----------------------------

LINE NAME: S92A-109          Status: ACC    Nav Reel: P116-0078    Record: 000004

Julian Day 209  Heading 198.00 FSP   477 -   GMT Time: 0:29 FSID 38051   DRD  3273

Shipment # 1  Residual   1.20 LSP    41 -   GMT Time: 1:46 FSID 38487   DRD  3710


General:  TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.


SSTS or   N/A
ATB:


Fill-in:  N/A

Compass

Navigators :GEIGENMILLER,KOLESKE,JACOBS
Comment:


----------------------------- SIGNIFICANT EDITS -----------------------------
0 = No Edit                                S0 = Stbd Source
1 = Edit (Requires Reshoot)                S1 = Port Source
2 = Edit (No Reshoot)                      C0 = Stbd Cable
                                           C1 = Port Cable

-EDIT RANGE-      -FILE RANGE-        -EDIT STATUS WORD-        -REASON-
 FSP  LSP         FIRST   LAST         (S0 S1  C0 C1)

 392  392           86     86              2000              (Sync/Autofire)
 390  390           88     88              2000              (Sync/Autofire)
 387  387           91     91              2000              (Sync/Autofire)
 386  386           92     92              2000              (Sync/Autofire)
 240  240          238    238              2000              (Sync/Autofire)
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
   0    0            0      0                 0
```

259245

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers: 11.650 Prime Km : 11.650 2D Overlap Km : 0.000

Rejected Km: 0.000 Fill Km: 0.000 Total Shot Points: 437

Accepted Km 11.650 Reshoot Km: 0.000 Shot Spacing: 26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME
CABLE TARGET DEPTH 10 METERS
BOL GUN VOLUME==5400 CUBIC INCH
SP,385 FILE 93 GUN 17 DISABLED,NEW VOLUME==4935 CUBIC INCHES
SP,380 TO SP 364 SECTIONS 1-3 OUT OF SPEC D/T PORT ENGINE
SP,348 TO SP 328 SECTIONS 1-3 OUT OF SPEC D/T PORT ENGINE

Observer GREGORY,MIEARS,DONNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259246

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

07/27/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127191	S92A-109	477	398	1	80	2	1
127192	S92A-109	397	313	81	165	2	2
127193	S92A-109	312	228	166	250	2	1
127194	S92A-109	227	143	251	335	2	2
127195	S92A-109	142	58	336	420	2	1
127196	S92A-109	57	41	421	437	2	2

259247

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P

3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-110 Line Seq.: 18 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	110 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000016 DAY: 212 Date: 07/31/92 Data Shipment #: 1

FSP: 101- GMT Time: 16:32 FSID: 16982 Drift (S/P): 101 / -2.6

LSP: 906- GMT Time: 8:46 FSID: 17787 Drift (S/P): 906 / 1.5

SP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET: 89.85 SP 890 TO EOL ONLY TWO SATELLITES VISIBLE FOR NAV.

GENERAL INFORMATION

	SOL		EOL
Feathering Angle	-2.6 Deg.	PORT	1.5 Deg. STBD
Cable Noise	9.3 uBAR		3.8 uBAR
Noise Strip File	FILE 0000		FILE 806
Dummy Files			
Wind Dir/Speed	W-NW AT 15 - 18 KNOTS		W-NW AT 15 - 18 KNOTS
Sea State	MODERATE		MODERATE
Waterbreak	0.0 ms		0.0 ms
Water Depth	63.0		75.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

259248

```
---------------------------- NAVIGATION INFORMATION ----------------------------

LINE NAME: S92A-110          Status: ACC    Nav Reel: P116-0079    Record: 000016

Julian Day 212  Heading 108.00 FSP   101 -   GMT Time:16:32 FSID 16982   DRD  2424

Shipment #  1  Residual   0.00 LSP   906 -   GMT Time: 8:46 FSID 17787   DRD  3230

General:  TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.


SSTS  :
ATB:


Fill-in:

Compass   COMPASS 12 INTERMITTENT

Navigators :KOLESKE,STOREY,COWIN,HEEPS
Comment:


---------------------------- SIGNIFICANT EDITS ------------------------------
0 = No Edit                                  S0 = Stbd Source
1 = Edit (Requires Reshoot)                  S1 = Port Source
2 = Edit (No Reshoot)                        C0 = Stbd Cable
                                             C1 = Port Cable

 EDIT RANGE-        -FILE RANGE-        -EDIT STATUS WORD-        -REASON-
 FSP  LSP           FIRST   LAST         (S0 S1  C0 C1)

 612   613           512     512              20               (Missed Shot Se
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
   0     0             0       0               0
```

259249

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers: 21.488 Prime Km : 21.488 2D Overlap Km : 0.000

Rejected Km: 0.000 Fill Km: 0.000 Total Shot Points. 806

Accepted Km 21.488 Reshoot Km: 0.000 Shot Spacing: 26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED IN LOCAL TIME
TAILBUOY FEATHERING ANGLE CALCULATED FROM COMPASS AVERAGES
GUN OFFSET = 89.85
CABLE DT #7 DISABLED
CABLE TARGET DEPTH AT 35 FT. PER CLIENTS REQUEST
INTERMITTENT NOISE BURST ON CABLE D/T SEA CONDITIONS
LOST SP 612.613 FILE 512 D/T LOCK-UP
SP 890 TO EOL ONLY 2 STELLITES VISIBLE FOR NAVIGATION

Observer CASEY,SIMONTON,PROBERT,SMITH

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259250

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

07/30/92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127264	S92A-110	101	184	1	84	5	2
127265	S92A-110	185	269	85	169	5	1
127266	S92A-110	270	354	170	254	5	2
127267	S92A-110	355	439	255	339	5	1
127268	S92A-110	440	524	340	424	5	2
127269	S92A-110	525	609	425	509	5	1
127270	S92A-110	610	696	510	595	5	2
127271	S92A-110	697	781	596	680	6	1
127272	S92A-110	782	866	681	765	6	2
127273	S92A-110	867	906	766	805	6	1

---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-111 Line Seq.: 10 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	111 -	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	N

Record No.: 000008 DAY: 211 Date: 07/29/92 Data Shipment #: 1

FSP: 101- GMT Time: 12:14 FSID: 4654 Drift (S/P): 101 / -3.0

EOL: 650- GMT Time: 13:48 FSID: 5203 Drift (S/P): 650 / 0.0

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET: 90.23 m.

---------- GENERAL INFORMATION ----------

	SOL	EOL
Feathering Angle	-3.0 Deg. PORT	0.0 Deg.
Cable Noise	4.0 uBAR	3.9 uBAR
Noise Strip File	9996	551
Dummy Files	9999,0000	N/A
Wind Dir/Speed	SW @ 12 KNOTS.	SW @ 12 KNOTS.
Sea State	SLIGHT / 1-2m SWELL.	SLIGHT / 1-2m SWELL.
Waterbreak	0.0 ms	0.0 ms
Water Depth	67.0	75.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

```
---------------------------- NAVIGATION INFORMATION ---------------------------

 INE NAME: S92A-111          Status: ACC    Nav Reel: P116-0078    Record: 000008

Julian Day 211  Heading  17.00 FSP   101 -   GMT Time:12:14 FSID  4654   DRD 12280

Shipment #  1  Residual   0.00 LSP   650 -   GMT Time:13:48 FSID  5203   DRD 12830


General:  TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.


 STS or   N/A
ATB:


Fill-in:  N/A

Compass

Navigators :COWIN,HEEPS,STOREY.
Comment:


----------------------------- SIGNIFICANT EDITS -----------------------------
0 = No Edit                                  S0 = Stbd Source
1 = Edit (Requires Reshoot)                  S1 = Port Source
2 = Edit (No Reshoot)                        C0 = Stbd Cable
                                             C1 = Port Cable

-EDIT RANGE-        -FILE RANGE-          -EDIT STATUS WORD-          -REASON-
 FSP  LSP           FIRST   LAST            (S0 S1  C0 C1)

   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
   0     0            0      0                    0
```

---------- QUANTITATIVE INFORMATION ----------

otal Kilometers:	14.663	Prime Km :	14.663	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	550
Accepted Km	14.663	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
GUN# 35, DISABLED PRIOR TO START OF LINE. BOL TOTAL VOLUME 5200cid.

Observer SIMONTON,SMITH,PROBERT,CASEY.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259254

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO 07/29/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127218	S92A-111	101	183	1	83	3	2
127219	S92A-111	184	268	84	168	3	1
127220	S92A-111	269	353	169	253	3	2
127221	S92A-111	354	438	254	338	3	1
127222	S92A-111	439	523	339	423	3	2
127223	S92A-111	524	608	424	508	3	1
127224	S92A-111	609	650	509	550	3	2

259255

---------- GENERAL SURVEY INFORMATION ----------
---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO PARTY: 116

AREA: BASS BASIN BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-112 Line Seq.: 19 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	112 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000017 DAY: 212 Date: 07/30/92 Data Shipment #: 1

FSP: 547- GMT Time: 22:43 FSID: 33508 Drift (S/P): 547 / 0.1

3P: 41- GMT Time: 0:10 FSID: 34014 Drift (S/P): 41 / -1.9

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==88.72 METERS

---------- GENERAL INFORMATION ----------

	SOL		EOL
Feathering Angle	0.1 Deg.	PORT	-1.9 Deg. STBD
Cable Noise	14.2 uBAR		21.0 uBAR
Noise Strip File	0000		508
Dummy Files			
Wind Dir/Speed	SW A2 22-23 KTS		SW @ 22-23 KTS
Sea State	2 METER SWELL		2 METER SWELL
Waterbreak	0.0 ms		0.0 ms
Water Depth	73.0		63.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

259256

---------- NAVIGATION INFORMATION ----------

LINE NAME: S92A-112 Status: ACC Nav Reel: P116-0079 Record: 000017

Julian Day 212 Heading 288.00 FSP 547 - GMT Time: 22:43 FSID 33508 DRD 3787

Shipment # 1 Residual 1.90 LSP 41 - GMT Time: 0:10 FSID 34014 DRD 4294

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators : KOLESKE, COWIN, HEEPS
Comment:

---------- SIGNIFICANT EDITS ----------

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
180	180	368	368	2000	(Sync/Autofire)
177	177	371	371	2000	(Sync/Autofire)
175	175	373	373	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	13.517	Prime Km :	13.517	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	507
Accepted Km	13.517	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME
DI 7 DISABLED AT BOL
CABLE TARGET DEPTH 35 FEET
INTERMITTENT SEA NOISE
BOL GUN VOL==5400 CUBIC INCHES
SP,175 FILE 373 DISABLED GUN 25,NEW VOL==4935 CUBIC INCHES

Observer SIMONTON,SMITH,PROBERT

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259258

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-113A Line Seq.: 8 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	113 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000006 DAY: 209 Date: 04/13/92 Data Shipment #: 1

FSP: 514- GMT Time: 7:58 FSID: 58264 Drift (S/P): 514 / 0.7

LSP: 41- GMT Time: 9:17 FSID: 58737 Drift (S/P): 41 / -0.9

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==90.60 METERS

GENERAL INFORMATION

	SOL		EOL
Feathering Angle	0.7 Deg.	STBD	-0.9 Deg. PORT
Cable Noise	3.8 uBAR		5.1 uBAR
Noise Strip File	9996		474
Dummy Files	9997-0000		
Wind Dir/Speed	NW @ 21 KTS		NW @ 21 KTS
Sea State	MODERATE-ROUGH		MODERATE-ROUGH
Waterbreak	0.0 ms		0.0 ms
Water Depth	74.0		67.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

---------- NAVIGATION INFORMATION ----------

LINE NAME: S92A-113A Status: ACC Nav Reel: P116-0078 Record: 000006

Julian Day 209 Heading 198.00 FSP 514 - GMT Time: 7:58 FSID 58264 DRD 5093

Shipment # 1 Residual 1.20 LSP 41 - GMT Time: 9:17 FSID 58737 DRD 5567

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :STOREY,GEIGENMILLER,JACOBS
Comment:

---------- SIGNIFICANT EDITS ----------

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
508	508	6	6	2000	(Sync/Autofire)
507	597	7	7	2000	(Sync/Autofire)
506	506	8	8	2000	(Sync/Autofire)
493	493	21	21	2000	(Sync/Autofire)
492	492	22	22	2000	(Sync/Autofire)
491	491	23	23	2000	(Sync/Autofire)
301	301	215	215	2000	(Sync/Autofire)
298	298	216	216	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	12.637	Prime Km :	12.637	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	474
Accepted Km	12.637	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME
CABLE TARGET DEPTH 10 METERS
BOL GUN VOL==5400 CUBIC INCHES
SP,490 FILE 24 GUN 35 DISABLED NEW VOLUME 5200 CUBIC INCHES

Observer GREGORY,MIEARS,DONNISON,CASEY

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259261

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

07/27/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127205	S92A-113A	514	433	0	81	2	1
127206	S92A-113A	432	348	82	166	2	2
127207	S92A-113A	347	263	167	251	2	1
127208	S92A-113A	262	178	252	336	2	2
127209	S92A-113A	177	93	337	421	2	1
127210	S92A-113A	92	41	422	473	2	2

259262

---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS ~~BASIN~~

BLOCKS: T/25P

3D:

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSUR AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-114 Line Seq.: 21 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	114 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	N
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000019 DAY: 212 Date: 07/30/92 Data Shipment #: 1

FSP: 1448- GMT Time: 12:37 FSID: 6260 Drift (S/P): 1448 / -1.7

LSP: 242- GMT Time: 15:58 FSID: 7466 Drift (S/P): 242 / 3.5

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET = 87.23 m. LAST GOOD SP IS 320 D/T NAV

---------- GENERAL INFORMATION ----------

	SOL		EOL
Feathering Angle	-1.7 Deg.	PORT	3.5 Deg. STBD
Cable Noise	4.0 uBAR		4.0 uBAR
Noise Strip File	0000		FILE 1207
Dummy Files	N/A		N/A
Wind Dir/Speed	SW @ 15 KNOTS.		SW @ 15 KNOTS.
Sea State	MODERATE.		MODERATE.
Waterbreak	0.0 ms		0.0 ms
Water Depth	78.0		68.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

259263

NAVIGATION INFORMATION

LINE NAME: S92A-114 Status: ACC Nav Reel: P116-0079 Record: D00019

Julian Day 212 Heading 289.00 FSP 1448 - GMT Time: 12:37 FSII 6260 DRD 7055

Shipment # 1 Residual 0.00 LSP 242 - GMT Time: 15:58 FSII 7466 DRD 8260

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

FSTS or FTB: N/A

Fill-in: N/A

Compass

Navigators :COWIN,HEEPS,STOREY.
Comment: LAST GOOD SP = 320 D/T SATTELITE STABILITY, FIRING ON TIME

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	REASON-
1439	1439	10	10	2000	(Sync/Autofire)
1428	1428	21	21	2000	(Sync/Autofire)
1425	1425	24	24	2000	(Sync/Autofire)
1167	1167	0	0	20	(Missed Shot S0
949	949	499	499	2000	(Sync/Autofire)
836	836	611	611	2000	(Sync/Autofire)
725	725	726	726	2000	(Sync/Autofire)
440	440	1008	1008	2000	(Sync/Autofire)
438	436	1010	1012	2000	(Sync/Autofire)
432	431	1016	1017	2000	(Sync/Autofire)
423	422	1025	1026	2000	(Sync/Autofire)
403	403	1045	1045	2000	(Sync/Autofire)
400	400	1048	1048	2000	(Sync/Autofire)
242	242	1206	1206	1000	(Other Cause).
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	32.179	Prime Km :	32.179	2D Overlap Km ;	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points;	1207
Accepted Km	32.179	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
DI# 7. DISABLED.
CABLE DEPTH @ 11m. 35 FEET PER CLIENT REQUEST.
SP# 1424, DISABLED GUN# 25; NEW TOTAL VOLUME 4935cid.
SP# 441, ENABLED GUN #25; NEW TOTAL VOLUME 5400 cu.in.
SP# 399, DISABLED GUN#25; NEW TOTAL VOLUME 4935 cu.in

SP# 243 EARLY EOL D/T COMPRESSORS
LAST GOOD SP = 320 D/T NAVIGATION SATELLITE STABILITY

Observer SIMONTON.SMITH,PROBERT,CASEY.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259265

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 114

CLIENT : SAGASCO

07/31/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127299	S92A-114	1448	1367	1	82	7	1
127300	S92A-114	1366	1282	83	167	7	2
127301	S92A-114	1281	1197	168	252	7	1
127302	S92A-114	1197	1111	253	337	7	2
127303	S92A-114	1110	1026	338	422	7	1
127304	S92A-114	1025	941	423	507	7	2
127305	S92A-114	940	856	508	592	7	1
127306	S92A-114	855	771	593	677	7	2
127307	S92A-114	770	686	678	762	7	1
127308	S92A-114	685	601	763	847	7	2
127309	S92A-114	600	516	848	932	7	1
127310	S92A-114	515	431	933	1017	7	2
127311	S92A-114	430	346	1018	1102	8	1
127312	S92A-114	345	261	1103	1187	8	2
127313	S92A-114	260	242	1188	1206	8	1

259266

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-114A Line Seq.: 22 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	114 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000020 DAY: 212 Date: 07/30/92 Data Shipment #: 1

FSP: 319- GMT Time: 19: 9 FSID: 23962 Drift (S/P): 319 / 0.4

LSP: 41- GMT Time: 20:56 FSID: 24240 Drift (S/P): 41 / 0.9

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET 87.60

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	0.4 Deg. STBD	0.9 Deg. STBD
Cable Noise	4.1 uBAR	4.3 uBAR
Noise Strip File	0000	281
Dummy Files	0001	
Wind Dir/Speed	W-SW @15-20KNTS	W-SW @15-20KNTS
Sea State	SLIGHT/MOD LOW SWELL	SLIGHT/MOD LOW SWELL
Waterbreak	0.0 ms	0.0 ms
Water Depth	66.0	63.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: S92A-114A Status: ACC Nav Reel: P116-0079 Record: 000020

Julian Day 212 Heading 289.00 FSP 319 - GMT Time:19: 9 FSID 23962 DRD 8714

Shipment # 1 Residual 0.00 LSP 41 - GMT Time:20:56 FSID 24240 DRD 8993

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

BSTS or N/A
ATB:

Fill-in: N/A

Compass DI#7 DISABLED

Navigators :COWIN, HEEPS, KOLESKE.
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
293	293	28	28	2000	(Sync/Autofire)
272	272	49	49	2000	(Sync/Autofire)
262	262	59	59	2000	(Sync/Autofire)
225	224	96	97	2000	(Sync/Autofire)
223	223	98	98	2000	(Gun Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	7.438	Prime Km :	7.438	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	279
Accepted Km	7.438	Reshoot Km:	0.000	Shot Spacing.	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
CABLE DEPTH AT 35 FEET CLIENT REQUEST.
SP-222 GUN# 25 DISABLED TOTAL VOLUME NOW 4935cuin.
DI# 7 DISABLED.

Observer -SIMONTON, SMITH, PROBERT.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259269

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

07/31/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127314	S92A-114A	319	237	2	84	8	2
127315	S92A-114A	236	152	85	169	8	1
127316	S92A-114A	151	67	170	254	8	2
127317	S92A-114A	66	41	255	280	8	1

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P

3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-115A Line Seq.: 4 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	115 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	N

Record No.: 000003 DAY: 208 Date: 07/26/92 Data Shipment #: 1

FSP: 101- GMT Time: 21:44 FSID: 30731 Drift (S/P): 101 / -8.0

LSP: 640- GMT Time: 23:15 FSID: 31270 Drift (S/P): 640 / -4.1

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET = 90.60

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	-8.0 Deg. PORT	-4.1 Deg. PORT
Cable Noise	3.7 uBAR	3.8 uBAR
Noise Strip File	FILE 0000	FILE 541
Dummy Files		
Wind Dir/Speed	SW AT 15 KNOTS	SW AT 15 KNOTS
Sea State	SLIGHT-MODERATE, 1.5 M SWELLS	SLIGHT-MODERATE, 1.5 M SWELLS
Waterbreak	0.0 ms	0.0 ms
Water Depth	68.0	75.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

259271

---------- NAVIGATION INFORMATION ----------

LINE NAME: S92A-115A Status: ACC Nav Reel: P116-0078 Record: 000003

Julian Day 208 Heading 17.00 FSP 101 - GMT Time:21:44 FSID 30731 DRD 2484

Shipment # 1 Residual 0.00 LSP 640 - GMT Time:23:15 FSID 31270 DRD 3024

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or
ATB:

Fill-in:

Compass

Navigators :KOLESKE, HEEPS, COWIN
Comment:

---------- SIGNIFICANT EDITS ----------

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259272

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	14.396	Prime Km :	14.396	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	540
Accepted Km	14.396	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL
TAILBOUY FEATHERING ANGLES CALCULATED FROM COMPASS AVERAGES
TOTAL GUN VOL.=5400 CU IN

SP 460-480 FRONT CABLE DEPTHS EXCEED SPECIFICATIONS DUE TO PROBLEM WITH PORT MAIN ENGINE.

Observer SIMONTON,PROBERT,SMITH

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259273

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

07/26/92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127184	S92A-115A	101	184	1	84	1	2
127185	S92A-115A	185	269	85	169	1	1
127186	S92A-115A	270	354	170	254	1	2
127187	S92A-115A	355	439	255	339	1	1
127188	S92A-115A	440	524	340	424	1	2
127189	S92A-115A	525	609	425	509	1	1
127190	S92A-115A	610	640	510	540	1	2

259274

---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE VESSEL: R/V WESTERN ATLAS

CLIENT : SAGASCO PARTY: 116

AREA: BASS BASIN BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :3924-116 Line Seq.: 17 Status: ACCEPTED Classification: 1

Cable / Source	LINE - TYPE				
Stbd / Stbd	116 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000015 DAY: 212 Date: 07/30/92 Data Shipment #: 1

FSP: 551- GMT Time:13:49 FSID: 9478 Drift (S/P): 551 / 1.0

LSP: 41- GMT Time:15:11 FSID: 9988 Drift (S/P): 41 / 0.3

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET 89.10

---------- GENERAL INFORMATION ----------

	SOL	EOL
Feathering Angle	1.0 Deg. STBD	0.3 Deg. STBD
Cable Noise	7.2 uBAR	13.9 uBAR
Noise Strip File	0000	511
Dummy Files	NIL	NIL
Wind Dir/Speed	N-W @ 25KNTS	N-W @ 25KNTS
Sea State	ROUGH 2M SWELL	ROUGH 2M SWELL
Waterbreak	0.0 ms	0.0 ms
Water Depth	74.0	65.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: 692A-116 Status: ACC Nav Reel: P116-0079 Record: 000015

Julian Day 212 Heading 288.00 FSP 5?1 - GMT Time: 13:49 FSID 9478 DRD 1685

Shipment # 1 Residual 0.00 LSP 41 - GMT Time: 15:11 FSID 9988 DRD 2196

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SATS or ATB: N/A

Fill-in: N/A

Compass COMPASS 12 INTERMITTENT. DI#7 DISABLED.

Navigators : STOREY, COWIN, HEEPS.

Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
512	513	39	39	20	(Missed Shot Se
427	427	124	124	20	(Array Sys. Err
424	423	127	128	20	(Missed Shot Se
279	279	272	272	2000	(Sync/Autofire)
181	181	370	370	2000	(Sync/Autofire)
125	125	426	426	2000	(Sync/Autofire)
96	96	455	455	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259276

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	13.623	Prime Km :	13.623	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	511
Accepted Km	13.623	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
DI# 7.DISABLED.
CABLE @ 35 FEET AS PER CLIENT'S INSTRUCTIONS.
INTERMITTENT SEA NOISE ON RECORDS.
COMPASS 12 NAVIGATION DISABLED.
LOST SHOT POINT'S 512-513. FILE 39. LOCK UP.
LOST SHOT POINT'S 424-423. FILE'S 127-128 D/T RESET.

Observer SIMONTON, SMITH, CASEY, PROBERT.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259277

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

07/30/72

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127258	S92A-116	551	466	1	85	5	2
127259	S92A-116	465	380	86	171	5	1
127260	S92A-116	379	295	172	256	5	2
127261	S92A-116	294	210	257	341	5	1
127262	S92A-116	209	125	342	426	5	2
127263	S92A-116	124	41	427	510	5	1

259278

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-117A Line Seq.: 2 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	117 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000001 DAY: 208 Date: 07/26/92 Data Shipment #: 1

FSP: 777- GMT Time:14:54 FSID: 12075 Drift (S/P): 777 / -4.6

LSP: 41- GMT Time:16:58 FSID: 12811 Drift (S/P): 41 / -5.1

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET: 89.22 m.

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	-4.6 Deg. PORT	-5.1 Deg. PORT
Cable Noise	4.2 uBAR	3.8 uBAR
Noise Strip File	9999	FILE 738
Dummy Files	0000	N/A
Wind Dir/Speed	SW @ 15-18 KNOTS.	SW @ 15-18 KNOTS.
Sea State	MODERATE.	MODERATE.
Waterbreak	0.0 ms	0.0 ms
Water Depth	77.0	68.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: S92A-117A Status: ACC Nav Reel: P116-0078 Record: 000001

Julian Day 208 Heading 203.40 FSP 777 - GMT Time:14:54 FSID 12075 DRD 849

Shipment # 1 Residual 0.00 LSP 41 - GMT Time:16:58 FSID 12811 DRD 1586

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :COWIN,HEEPS,STOREY
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
703	703	75	75	2000	(Sync/Autofire)
650	650	128	128	2000	(Sync/Autofire)
641	641	137	137	2000	(Sync/Autofire)
630	630	148	148	2000	(Sync/Autofire)
628	628	150	150	2000	(Sync/Autofire)
577	577	201	201	2000	(Sync/Autofire)
521	521	257	257	2000	(Sync/Autofire)
453	453	325	325	2000	(Sync/Autofire)
342	342	435	435	2000	(Sync/Autofire)
343	343	436	436	2000	(Sync/Autofire)
313	313	465	465	2000	(Sync/Autofire)
285	285	493	493	2000	(Sync/Autofire)
262	262	516	516	2000	(Sync/Autofire)
260	260	518	518	2000	(Sync/Autofire)
257	257	521	521	2000	(Sync/Autofire)
238	238	540	540	2000	(Sync/Autofire)
162	162	616	616	2000	(Sync/Autofire)
146	146	632	632	2000	(Sync/Autofire)
141	141	637	637	2000	(Sync/Autofire)
117	117	661	661	2000	(Sync/Autofire)
114	113	664	665	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259280

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	19.648	Prime Km :	19.648	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	737
Accepted Km	19.648	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
SP# 628, DISABLED GUN# 25, NEW VOLUME 4935cid.
SP# 316, REENABLED GUN 25, NEW VOLUME 5400 CU IN
SP# 273, DISABLED GUN# 25, ONE SHOT ONLY AT CLIENTS REQUEST
SP# 254, DISABLED GUN# 35, NEW VOLUME 5200 CU IN
SP# 109, DISABLES GUN# 25, NEW VOLUME 4735 CU IN

BOL HEADING = 203.4, SP 702 NEW HEADING = 202.7, SP 209 NEW HEADING 202.5
CABLE FEATHERING ANGLE CALCULATED FROM COMPASS HEADINGS

Observer SIMONTON,SMITH,PROBERT,CASEY

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259281

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

07/26/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127173	S92A-117A	777	695	1	83	1	1
127174	S92A-117A	694	610	84	168	1	2
127175	S92A-117A	609	525	169	253	1	1
127176	S92A-117A	524	440	254	338	1	2
127177	S92A-117A	439	355	339	423	1	1
127178	S92A-117A	354	270	424	508	1	2
127179	S92A-117A	269	185	509	593	1	1
127180	S92A-117A	184	100	594	678	1	2
127181	S92A-117A	99	41	679	737	1	1

259282

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P

3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-118 Line Seq.: 15 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	118 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000013 DAY: 212 Date: 07/30/92 Data Shipment #: 1

FSP: 552- GMT Time: 2:59 FSID: 44803 Drift (S/P): 552 / 3.2

SP: 41- GMT Time: 4:28 FSID: 45314 Drift (S/P): 41 / -2.0

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET==90.23 METERS

GENERAL INFORMATION

	SOL		EOL
Feathering Angle	3.2 Deg.	STBD	-2.0 Deg. PORT
Cable Noise	4.0 uBAR		7.5 uBAR
Noise Strip File	9996		513
Dummy Files	9997-0000		
Wind Dir/Speed	NNW @ 10 KTS		NW @ 25 KTS
Sea State	MODERATE		MODERATE
Waterbreak	0.0 ms		0.0 ms
Water Depth	72.0		64.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

NAVIGATION INFORMATION

LINE NAME: S92A-118 Status: ACC Nav Reel: P116-0078 Record: 000013

Julian Day 212 Heading 288.00 FSP 552 - GMT Time: 2:59 FSID 44803 DRD 15906

Shipment # 1 Residual 1.70 LSP 41 - GMT Time: 4:28 FSID 45314 DRD 16418

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

GSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :GEIGENMILLER,KOLESKE,JACOBS
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
161	161	392	392	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- ----- QUANTITATIVE INFORMATION ----------

Total Kilometers:	13.650	Prime Km :	13.650	2D Overlap Km :	0.000
ejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	512
Accepted Km	13.650	Reshoot Km:	0.000	Shot Spacing:	26.660

---------- -----GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME
DI 7 DISABLED AT BOL
CABLE TARGET DEPTH 10 METERS
BOL GUN VOL==5400 CUBIC INCHES

Observer GREGORY, MIEARS, DONNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259285

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS -
PARTY : 116

CLIENT : SAGASCO

07/30/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F. file	Last file	BOX #	Deck #
127245	S92A-118	552	473	1	80	4	1
127246	S92A-118	472	388	81	165	4	2
127247	S92A-118	387	303	166	250	4	1
127248	S92A-118	302	218	251	335	4	2
127249	S92A-118	217	133	336	420	4	1
127250	S92A-118	132	41	421	512	4	2

259286

---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO PARTY: 116

AREA: BASS BASIN BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-119 Line Seq.: 38 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	119 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000036 DAY: 216 Date: 08/03/92 Data Shipment #: 1

FSP: 101- GMT Time: 3: 8 FSID: 45071 Drift (S/P): 101 / 0.3

LSP: 985- GMT Time: 5:37 FSID: 45955 Drift (S/P): 985 / 3.6

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==90.34

---------- GENERAL INFORMATION ----------

	SOL		EOL
Feathering Angle	0.3 Deg.	PORT	3.6 Deg. PORT
Cable Noise	3.1 uBAR		3.1 uBAR
Noise Strip File	9996		884
Dummy Files	9997-0000		
Wind Dir/Speed	W @ 10 KTS		W @ 10 KTS.
Sea State	SLIGHT		SLIGHT
Waterbreak	0.0 ms		0.0 ms
Water Depth	73.0		78.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

NAVIGATION INFORMATION

LINE NAME: S92A-119 Status: ACC Nav Reel: P116-0080 Record: 000036

Julian Day 216 Heading 14.90 FSP 101 - GMT Time: 3: 8 FSID 45071 DRD 6971

Shipment # 1 Residual 1.20 LSP 985 - GMT Time: 5:37 FSID 45955 DRD 7856

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators : GEIGENMILLER, JACOBS, KOLESKE
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
278	281	178	179	20	(Missed Shot Se
790	790	688	688	2000	(Sync/Autofire)
822	822	720	720	2000	(Sync/Autofire)
824	824	722	722	2000	(Sync/Autofire)
825	825	723	723	2000	(Sync/Autofire)
931	931	829	829	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259288

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	23.594	Prime Km :	23.594	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	885
Accepted Km	23.594	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME--DI 7 OUT AT BOL--CABLE TARGET DEPTH 35 FEET
BOL GUN VOL==5400 CUBIC INCHES
L/UP LOST SPS,278-280 FILE 178
SPS,101-793 HEADING OF 014.9
SPS,794-985 HEADING OF 014.4

Observer GREGORY,MIEARS,DONNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259289

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

08/03/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127438	S92A-119	101	180	1	80	14	2
127439	S92A-119	181	265	81	165	14	1
127440	S92A-119	266	353	166	251	14	2
127441	S92A-119	354	438	252	336	14	1
127442	S92A-119	439	523	337	421	14	2
127443	S92A-119	524	608	422	506	14	1
127444	S92A-119	609	693	507	591	14	2
127445	S92A-119	694	778	592	676	14	1
127446	S92A-119	779	863	677	761	14	2
127447	S92A-119	864	948	762	846	14	1
127448	S92A-119	949	985	847	883	14	2

259290

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE — VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO — PARTY: 116

AREA: BASS BASIN — BLOCKS: T/25P — SD: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-120 — Line Seq.: 16 — Status: ACCEPTED — Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	120 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000014 — DAY: 212 — Date: 07/30/92 — Data Shipment #: 1

FSP: 101- GMT Time:10:36 — FSID: 680 — Drift (S/P): 101 / 0.0

LSP: 611- GMT Time:12: 4 — FSID: 1190 — Drift (S/P): 611 / 0.6

OSP: 0- (Mid-Line Alfa) — Mean (S/P): 0.00 / 0.00

Comment: OFFSET==89.48 METERS

GENERAL INFORMATION

	SOL		EOL
Feathering Angle	0.0 Deg.	0	0.6 Deg. STBD
Cable Noise	19.2 uBAR		8.8 uBAR
Noise Strip File	9996		509
Dummy Files	9997-0000		
Wind Dir/Speed	W @ 23 KTS.		W @ 23 KTS
Sea State	3 METER SWELL		3 METER SWELL
Waterbreak	0.0 ms		0.0 ms
Water Depth	69.0		76.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

---------- NAVIGATION INFORMATION ----------

LINE NAME: S92A-120 Status: ACC Nav Reel: R116-0079 Record: 000014

Julian Day 212 Heading 108.00 FSP 101 - GMT Time:10:36 FSID 680 DRD 893

Shipment # 1 Residual 0.00 LSP 611 - GMT Time:12: 4 FSID 1190 DRD 1404

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or N/A
ATB:

Fill-in: N/A

Compass COMPASS 12 INTERMITTENT

Navigators :STOREY,GEIGENMILLER,JACOBS
Comment:

---------- SIGNIFICANT EDITS ----------

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
102	102	2	2	2000	(Sync/Autofire)
139	139	39	39	2000	(Sync/Autofire)
195	195	95	95	2000	(Sync/Autofire)
198	199	98	98	20	(Missed Shot Se
200	200	99	99	20	(Array Tape Err
222	222	121	121	2000	(Sync/Autofire)
304	304	203	203	2000	(Sync/Autofire)
388	388	287	287	20	(Other Cause).
517	519	416	416	20	(Missed Shot Se
584	584	481	481	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	13.623	Prime Km :	13.623	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	511
Accepted Km	13.623	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME
DI 7 DISABLED AT BOL
CABLE TARGET DEPTH 35 FEET
BOL GUN VOL==5400 CUBIC INCHES
L/UP==SP,197 FILE 97 RECORDED TWICE,LOST SPS,198,199,FILE 98
SP 388,FILE 287 GUNS OFF FOR NOISE STRIP(CLIENTS REQUEST) NOISE==8./ UBAR
L/UP LOST SPS,517,518,519 FILE 416

Observer GREGORY,CASEY,MIEARS,DONNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259293

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

07/30/92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127251	S92A-120	101	180	1	80	5	1
127252	S92A-120	181	266	81	165	5	2
127253	S92A-120	267	351	166	250	5	1
127254	S92A-120	352	436	251	435	5	2
127255	S92A-120	437	524	436	421	5	1
127256	S92A-120	525	609	422	506	5	2
127257	S92A-120	610	611	507	508	5	1

259294

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE VESSEL: R/V WESTERN ATLAS

_IENT: SAGASCO PARTY: 116

AREA: BASS BASIN BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-121 Line Seq.: 37 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	121 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000035 DAY: 215 Date: 08/02/92 Data Shipment #: 1

FSP: 924- GMT Time: 23:14 FSID: 35118 Drift (S/P): 924 / 6.1

3P: 41- GMT Time: 1:43 FSID: 36001 Drift (S/P): 41 / -0.4

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==87.23 METERS

GENERAL INFORMATION

	SOL		EOL
Feathering Angle	6.1 Deg.	PORT	-0.4 Deg. STBD
Cable Noise	3.6 uBAR		4.1 uBAR
Noise Strip File	0000		884
Dummy Files			
Wind Dir/Speed	SW @ 18-20 KTS.		SW @ 18-20 KTS.
Sea State	2 METER SWELL		2 MWTER SWELL
Waterbreak	0.0 ms		0.0 ms
Water Depth	78.0		74.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

```
---------------------------- NAVIGATION INFORMATION ----------------------------

LINE NAME: S92A-121          Status: ACC    Nav Reel: P116-0080    Record: 000035

Julian Day 215  Heading 193.00 FSP   924 -   GMT Time:23:14 FSID 35118   DRD  5801

Shipment # 1  Residual   1.20 LSP    41 -   GMT Time: 1:43 FSID 36001   DRD  6685


General:  TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.


SSTS or   N/A
ATB:


Fill-in:  N/A

Compass

Navigators :COWIN.HEEPS,GEIGENMILLER,JACOBS,KOLESKE
Comment:


----------------------------- SIGNIFICANT EDITS -----------------------------
0 = No Edit
1 = Edit (Requires Reshoot)                  S0 = Stbd Source
2 = Edit (No Reshoot)                        S1 = Port Source
                                             C0 = Stbd Cable
                                             C1 = Port Cable

-EDIT RANGE-      -FILE RANGE-        -EDIT STATUS WORD-        -REASON-
 FSP  LSP         FIRST   LAST          (S0 S1  C0 C1)

 165   164         760     760               20              (Missed Shot Se
 163   163         761     761               20              (Array Sys. Err
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
   0     0           0       0                0
```

259296

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers: 23.567 Prime Km : 23.567 2D Overlap Km : 0.000

ejected Km: 0.000 Fill Km: 0.000 Total Shot Points: 884

Accepted Km 23.567 Reshoot Km: 0.000 Shot Spacing: 26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME--DI 7 OUT AT BOL --CABLE TARGET DEPTH 35 FEET
BOL GUN VOL==5400 CUBIC INCHES
SPS,924-804 ON HEADING OF 193.8
SPS,803-41 ON HEADING OG 194.3
L/UP LOST SPS, 165,164 FILE 760

Observer GREGORY,MIEARS,DONNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259297

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

08/03/92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127427	S92A-121	924	841	1	84	13	1
127428	S92A-121	840	756	85	169	13	2
127429	S92A-121	755	671	170	254	13	1
127430	S92A-121	670	586	255	339	13	2
127431	S92A-121	585	501	340	424	14	1
127432	S92A-121	500	416	425	509	14	2
127433	S92A-121	415	331	510	594	14	1
127434	S92A-121	330	246	595	679	14	2
127435	S92A-121	245	159	680	765	14	1
127436	S92A-121	158	74	766	850	14	2
127437	S92A-121	73	41	851	883	14	1

259298

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

IENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-122 Line Seq.: 14 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	122 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000012 DAY: 212 Date: 07/30/92 Data Shipment #: 1

FSP: 101- GMT Time: 0: 7 FSID: 37103 Drift (S/P): 101 / 1.2

LSP: 612- GMT Time: 1:31 FSID: 37514 Drift (S/P): 512 / 0.3

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET==90.97 METERS

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	1.2 Deg. PORT	0.3 Deg. PORT
Cable Noise	4.2 uBAR	4.0 uBAR
Noise Strip File	0097	513
Dummy Files	9996,9998-0000	
Wind Dir/Speed	NE @ 15 KTS	NE @ 15 KTS
Sea State	2 METER SWELL	2 METER SWELL
Waterbreak	0.0 ms	0.0 ms
Water Depth	70.0	75.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: S92A-122 Status: ACC Nav Reel: P116-0078 Record: 000012

ilian Day 212 Heading 107.00 FSP 101 - GMT Time: 0: 7 FSID 37103 DRD 15117

Shipment # 1 Residual 1.30 LSP 612 - GMT Time: 1:31 FSID 37514 DRD 15629

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :GEIGENMILLER, KOLESKR, JACOBS
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
353	353	253	253	2000	(Sync/Autofire)
354	354	254	254	2000	(Sync/Autofire)
355	355	255	255	2000	(Sync/Autofire)
559	559	459	459	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259300

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	13.650	Prime Km :	13.650	2D Overlap Km :	0.000
ejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	512
Accepted Km	13.650	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME
CASBLE TARGET DEPTH 10 METERS
BOL GUN VOL==5400 CUBIC INCHES
DI # 7 DISABLED
SP 356 FILE 256 GUN 33 DISABLED-NEW VOL==4935 CUBIC INCHES

Observer GREGORY,MIEARS,DONNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259301

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

07/30/92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127239	S92A-122	101	180	1	80	4	1
127240	S92A-122	181	285	81	185	4	2
127241	S92A-122	286	350	186	250	4	1
127242	S92A-122	351	435	251	335	4	2
127243	S92A-122	436	520	336	420	4	1
127244	S92A-122	521	612	421	512	4	2

259302

---------- GENERAL SURVEY INFORMATION ----------
---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE VESSEL: R/V WESTERN ATLAS

CLIENT: BABASCO PARTY: 116

AREA: BASS BASIN BLOCKS: T/25P 3D:

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :892A-123 Line Seq.: 36 Status: ACCEPTED Classification:

Cable / Source	LINE - TYPE				
Stbd / Stbd	123 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000034 DAY: 215 Date: 08/02/92 Data Shipment #: 1

FSP: 101- GMT Time: 19:22 FSID: 24623 Drift (S/P): 101 / 0.7

LSP: 800- GMT Time: 21:21 FSID: 25322 Drift (S/P): 800 / 2.2

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET = 89.4m.

---------- GENERAL INFORMATION ----------

	SOL	EOL
Feathering Angle	0.7 Deg. STBD	2.2 Deg. STBD
Cable Noise	3.3 uBAR	3.5 uBAR
Noise Strip File	0000	696
Dummy Files	N/A	N/A
Wind Dir/Speed	SW @ 18 KNOTS.	SW @ 18 KNOTS.
Sea State	MODERATE / LOW SWELL.	MODERATE /LOW SWELL.
Waterbreak	0.0 ms	0.0 ms
Water Depth	73.0	77.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

```
---------------------------- NAVIGATION INFORMATION ----------------------------

LINE NAME: 592A-123          Status: ACC    Nav Reel: P115-0080    Record: 000034

Julian Day 215  Heading  14.00 FSP  101 -  GMT Time:19:22 FSID 24623  DRD  4808

Shipment # [illegible] Residual  0.00 LSP  800 -  GMT Time:21:21 FSID 25322  DRD  5508


General:  TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.


SSTS or  N/A
ATB:


Fill-in:  N/A

Compass

Navigators :COWIN,HEEPS,KOLESKI
Comment:


----------------------------- SIGNIFICANT EDITS -----------------------------
0 = No Edit
1 = Edit (Requires Reshoot)                  S0 = Stbd Source
2 = Edit (No Reshoot)                        S1 = Port Source
                                             C0 = Stbd Cable
                                             C1 = Port Cable

EDIT RANGE-       -FILE RANGE-        -EDIT STATUS WORD-        -REASON-
FSP  LSP          FIRST  LAST          (S0 S1  C0 C1)

440   450          339    346                 20             (Missed Shot Se
549   549          445    445               2000             (Sync/Autofire)
559   559          455    455               2000             (Sync/Autofire)
590   590          486    486               2000             (Sync/Autofire)
674   675          569    569                 20             (Missed Shot Se
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
  0     0            0      0                  0
```

259304

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	18.662	Prime Km :	18.662	2D Overlap Km :	0.000
Rejected Km.	0.000	Fill Km:	0.000	Total Shot Points:	700
Accepted Km	18.662	Reshoot Km:	0.000	Shot Spacing:	26.660

---- ----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
DIS ', DISABLED.
CABLE DEPTH @ 35 FEET @ CLIENT REQUEST.
DO NOT PROCESS TAPES 127420 & 127421, D/T TAPE DECK PROBLEMS. NO DATA ON TAPES.

Observer SIMONTON, SMITH, PROBERT

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259305

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

REEL #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127416	S92A-123	101	184	1	84	13	2
127417	S92A-123	185	269	85	169	13	1
127418	S92A-123	270	354	170	254	13	2
127419	S92A-123	355	439	255	339	13	1
127420	S92A-123	0	0	0	0	13	2
127421	S92A-123	0	0	0	0	14	1
127422	S92A-123	451	535	347	431	14	2
127423	S92A-123	536	620	432	516	14	1
127424	S92A-123	621	707	517	602	14	2
127425	S92A-123	708	792	603	687	14	1
127426	S92A-123	793	800	688	695	14	2

---------- GENERAL SURVEY INFORMATION ----------259306

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-125 Line Seq.: 35 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	125 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000033 DAY: 215 Date: 08/02/92 Data Shipment #: 1

FSP: 701- GMT Time:16: 2 FSID: 15545 Drift (S/P): 701 / 0.2

LSP: 41- GMT Time:17:53 FSID: 16205 Drift (S/P): 41 / 0.7

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET = 88.09

---------- GENERAL INFORMATION ----------

	SOL	EOL
Feathering Angle	0.2 Deg. STBD	0.7 Deg. STBD
Cable Noise	3.9 uBAR	4.2 uBAR
Noise Strip File	0000	661
Dummy Files		
Wind Dir/Speed	SW AT 17-21 KNOTS	SW AT 17-21 KNOTS
Sea State	MODERATE/ROUGH	MODERATE/ROUGH
Waterbreak	0.0 ms	0.0 ms
Water Depth	77.0	74.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: S92A-125 Status: ACC Nav Reel: P116-0080 Record: 000033

Julian Day 215 Heading 194.00 FSP 701 - GMT Time: 16: 2 FSID 15545 DRD 3897

Shipment # 1 Residual 0.00 LSP 41 - GMT Time: 17:53 FSID 16205 DRD 4558

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or
ATB:

Fill-in:

Compass

Navigators : COWIN, HEEPS, STOREY
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
611	611	89	89	2000	(Sync/Autofire)
580	580	122	122	2000	(Sync/Autofire)
569	569	133	133	2000	(Sync/Autofire)
523	523	179	179	2000	(Sync/Autofire)
521	521	181	181	2000	(Sync/Autofire)
519	519	183	183	2000	(Sync/Autofire)
477	477	224	224	2000	(Sync/Autofire)
475	475	226	226	2000	(Sync/Autofire)
473	473	228	228	2000	(Sync/Autofire)
434	434	267	267	2000	(Sync/Autofire)
432	432	269	269	2000	(Sync/Autofire)
430	430	271	271	2000	(Sync/Autofire)
391	391	310	310	2000	(Sync/Autofire)
387	387	314	314	2000	(Sync/Autofire)
383	383	318	318	2000	(Sync/Autofire)
353	353	348	348	2000	(Sync/Autofire)
311	311	390	390	2000	(Sync/Autofire)
309	309	392	392	2000	(Sync/Autofire)
307	307	394	394	2000	(Sync/Autofire)
265	264	436	437	2000	(Sync/Autofire)
261	261	440	440	2000	(Sync/Autofire)
230	230	471	471	2000	(Sync/Autofire)
228	228	473	473	2000	(Sync/Autofire)
194	194	507	507	2000	(Sync/Autofire)
192	192	509	509	2000	(Sync/Autofire)
117	117	584	584	2000	(Sync/Autofire)
0	0	0	0	0	

259308

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	17.622	Prime Km :	17.622	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	661
Accepted Km	17.622	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL
TAILBOUY FEATHERING ANGLE CALCULATED FROM COMPASS AVERAGES
CABLE DI#7 IS DISABLED
CABLE TARGET DEPTH = 35 FT

SP 115, GUN #41 DISABLED, NEW VOLUME = 4935 CU.IN.

Observer SIMONTON, CASEY, PROBERT, SMITH

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259309

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

08/02/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127408	S92A-125	701	618	1	84	12	2
127409	S92A-125	617	533	85	169	12	1
127410	S92A-125	532	446	170	255	12	2
127411	S92A-125	445	361	256	340	13	1
127412	S92A-125	360	276	341	425	13	2
127413	S92A-125	275	191	426	510	13	1
127414	S92A-125	190	106	511	595	13	2
127415	S92A-125	105	41	596	660	13	1

259310

---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO PARTY: 116

AREA: BASS BASIN BLOCKS: T/25P 3D: -

PARAMETER RECORD #: 2

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-127 Line Seq.: 34 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	127 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000032 DAY: 215 Date: 08/02/92 Data Shipment #: 1

FSP: 101- GMT Time: 12:12 FSID: 4803 Drift (S/P): 101 / 5.0

LSP: 726- GMT Time: 13:55 FSID: 5428 Drift (S/P): 726 / 0.8

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET 87.6

---------- GENERAL INFORMATION ----------

	SOL	EOL
Feathering Angle	5.0 Deg. STBD	0.8 Deg. STBD
Cable Noise	3.9 uBAR	3.7 uBAR
Noise Strip File	0000	626
Dummy Files		
Wind Dir/Speed	SW@ 20KNTS	SW@ 20KNTS
Sea State	MOD / 1-2 METRE SWELL	MOD / 1-2 METRE SWELL
Waterbreak	0.0 ms	0.0 ms
Water Depth	75.0	79.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: S92A-127 Status: ACC Nav Reel: P116-0080 Record: 000032

Julian Day 215 Heading 15.00 FSP 101 - GMT Time: 12:12 FSID 4803 DRD 2940

Shipment # 1 Residual 0.00 LSP 726 - GMT Time: 13:55 FSID 5428 DRD 3566

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators : COWIN, HEEPS, STOREY.
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
254	254	154	154	2000	(Sync/Autofire)
261	261	161	161	2000	(Sync/Autofire)
482	485	382	485	2000	(Gun Autofire)
614	616	514	515	20	(Missed Shot Se
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	16.689	Prime Km :	16.689	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	626
Accepted Km	16.689	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
CABLE DEPTH 11 METRES AS PER CLIENT.
DI# 7 DISABLED.
SP# 486 GUN 9 DISABLED.NEW VOL 4935cuin

Observer SIMONTON, SMITH, CASEY, PROBERT.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259313

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

08/02/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127400	S92A-127	101	12740	1	84	12	2
127401	S92A-127	185	269	85	169	12	1
127402	S92A-127	270	354	170	254	12	2
127403	S92A-127	355	439	255	339	12	1
127404	S92A-127	440	524	340	424	12	2
127405	S92A-127	525	609	425	509	12	1
127406	S92A-127	610	696	510	595	12	2
127407	S92A-127	697	726	596	625	12	1

259314

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P

PARAMETER RECORD #: 2

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :392A-129 Line Seq.: 32 Status: ACCEPTED Classification:

Cable / Source	LINE - TYPE				
Stbd / Stbd	129 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	N
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000030 DAY: 215 Date: 08/02/92 Data Shipment #: 1

FSP: 516- GMT Time: 7: 3 FSID: 55923 Drift (S/P): 516 / 3.0

LSP: 338- GMT Time: 7:33 FSID: 56101 Drift (S/P): 338 / 1.3

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET=87.97

GENERAL INFORMATION

	SOL		EOL
Feathering Angle	3.0 Deg.	PORT	1.3 Deg. PORT
Cable Noise	6.4 uBAR		3.9 uBAR
Noise Strip File	9996		180
Dummy Files	9997-0000		
Wind Dir/Speed	SW @ 20 KTS.		SW @ 20 KTS.
Sea State	MODERATE		MODERATE
Waterbreak	0.0 ms		0.0 ms
Water Depth	75.0		74.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

NAVIGATION INFORMATION

LINE NAME: S92A-129 Status: ACC Nav Reel: R116-008 Record: 000030

Julian Day 215 Heading 195.00 FSP 516 - GMT Time: 7: 3 FSID 55923 DRD 1750

Shipment # 1 Residual 1.60 LSP 338 - GMT Time: 7:33 FSID 56101 DRD 1894

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators : STOREY, GEIGENMILLER, JACOBS

Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
401	401	116	116	20	(Missed Shot Se
400	400	117	117	20	(Array Sys. Err
346	346	171	171	2000	(Sync/Autofire)
344	344	173	173	2000	(Sync/Autofire)
342	342	175	175	2000	(Sync/Autofire)
341	341	176	176	2000	(Sync/Autofire)
340	340	177	177	2000	(Sync/Autofire)
339	339	178	178	2000	(Sync/Autofire)
338	338	179	179	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259316

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	4.772	Prime Km :	4.772	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	179
Accepted Km	4.772	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME --DI 7 OUT AT BOL--CABLE TARGET DEPTH 35 FEET
BOL GUN VOL==5400 CUBIC INCHES
L/UP LOST SP 401 FILE 116

EARLY EOL DO/TO COMPRESSOR FAILURE--LAST GOOD SP 351

Observer GREGORY,MIEARS,DONNISON,CASEY

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259317

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS

PARTY : 116

CLI N. : SASA000

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Ree #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127392	S92A-129	516	437	1	80	12	2
127393	S92A-129	436	351	81	166	12	1
127394	S92A-129	350	338	167	179	12	2

259318

---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 2

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-129A Line Seq.: 33 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	129 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	N

Record No.: 000031 DAY: 215 Date: 04/16/92 Data Shipment #: 1

FSP: 410- GMT Time: 9:50 FSID: 63192 Drift (S/P): 410 / 1.3

LSP: 41- GMT Time: 10:51 FSID: 311 Drift (S/P): 41 / 3.1

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==87.20 METERS

---------- GENERAL INFORMATION ----------

	SOL		EOL
Feathering Angle	1.3 Deg.	PORT	3.1 Deg. PORT
Cable Noise	4.0 uBAR		3.9 uBAR
Noise Strip File	9996		371
Dummy Files	9997-0000		
Wind Dir/Speed	SW @ 23 KTS		SW @ 23 KTS.
Sea State	2 METER SWELL		2 METER SWELL
Waterbreak	0.0 ms		0.0 ms
Water Depth	75.0		74.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

---------- NAVIGATION INFORMATION ----------

LINE NAME: S92A-129A Status: ACC Nav Reel: P116-0080 Record: 000031

Julian Day 215 Heading 195.00 FSP 410 - GMT Time: 9:50 FSID 63192 DRD 2285

Shipment # 1 Residual 1.80 LSP 41 - GMT Time:10:51 FSID 311 DRD 2655

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :STOREY,GEIGENMILLER,JACOBS
Comment:

---------- SIGNIFICANT EDITS ----------

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

259320

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	9.864	Prime Km :	9.864	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	370
Accepted Km	9.864	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME--DI 7 OUT AT BOL--CABLE TARGET DEPTH 35 FEET
BOL GUN VOL==5400 CUBIC INCHES

SPS,410-351 ARE A SPS,

Observer GREGORY,MIEARS,DONNISON,CASEY

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259321

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO 08/02/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127395	S92A-129A	410	331	1	80	12	1
127396	S92A-129A	330	246	81	165	12	2
127397	S92A-129A	245	161	166	250	12	1
127398	S92A-129A	160	76	251	335	12	2
127399	S92A-129A	75	41	336	370	12	1

259322

---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 2

GENERAL SURVEY METHOD.

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-131 Line Seq.: 31 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	131 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000029 DAY: 215 Date: 08/02/92 Data Shipment #: 1

FSP: 101- GMT Time: 4:21 FSID: 48460 Drift (S/P): 101 / 2.6

LSP: 575- GMT Time: 5:40 FSID: 48934 Drift (S/P): 575 / -0.6

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET==88.72 METERS

---------- GENERAL INFORMATION ----------

	SOL		EOL
Feathering Angle	2.6 Deg.	STBD	-0.6 Deg. PORT
Cable Noise	3.2 uBAR		3.5 uBAR
Noise Strip File	9996		476
Dummy Files	9997-0000		
Wind Dir/Speed	WSW @ 18 KTS.		WSW@ 18 KTS.
Sea State	MODERATE		MODERATE
Waterbreak	0.0 ms		0.0 ms
Water Depth	75.0		76.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

NAVIGATION INFORMATION

LINE NAME: S92A-131 Status: ACC Nav Reel: R116-0080 Record: 000029

Julian Day 215 Heading 15.00 FSP 101 - GMT Time: 4:2[illegible] FSID 48460 DRI 981

Shipment # 1 Residual 1.30 LSP 575 - GMT Time: 5:40 FSID 48934 DRI 1456

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATD: N/A

Fill-in: N/A

Compass

Navigators :GEIGENMILLER, JACOBS, KOLESKE
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
147	147	47	47	2000	(Sync/Autofire)
312	312	212	212	2000	(Sync/Autofire)
353	353	253	253	2000	(Sync/Autofire)
362	362	262	262	2000	(Sync/Autofire
417	417	317	317	2000	(Sync/Autofire)
465	465	365	365	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	12.664	Prime Km :	12.664	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	475
Accepted Km	12.664	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME--DI 7 OUT AT BOL--CABLE TARGET DEPTH 35 FEET
BOL GUN VOL==5400 CUBIC INCHES
SP,466 FILE 366 GUN 9 DISABLED, NEW VOL==4935 CUBIC INCHES

Observer GREGORY,MIEARS,DUNNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259325

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

08/02/92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127386	S92A-131	101	180	1	80	11	2
127387	S92A-131	181	265	81	165	11	1
127388	S92A-131	266	350	166	250	11	2
127389	S92A-131	351	435	251	335	11	1
127390	S92A-131	436	520	336	420	11	2
127391	S92A-131	521	575	421	475	12	1

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P

3D: F

PARAMETER RECORD #: 2

GENERAL SURVEY METHOD.

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-133 Line Seq.: 30 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	133 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	N

Record No.: 000028 DAY: 215 Date: 08/02/92 Data Shipment #: 1

FSP: 514- GMT Time: 1:36 FSID: 41369 Drift (S/P): 514 / -0.3

LSP: 41- GMT Time: 2:56 FSID: 41842 Drift (S/P): 41 / 3.2

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==88.36 METERS

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	-0.3 Deg. PORT	3.2 Deg. STBD
Cable Noise	4.4 uBAR	3.9 uBAR
Noise Strip File	9996	475
Dummy Files	9997-0000	
Wind Dir/Speed	WSW @ 15-18 KTS.	WSW @ 15-18 KTS.
Sea State	MODERATE	MODERATE
Waterbreak	0.0 ms	0.0 ms
Water Depth	78.0	76.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

--- NAVIGATION INFORMATION ---

LINE NAME: S92A-133   Status: ACC   Nav Reel: R116-0080   Record: 000028

Julian Day 215 Heading 194.00 FSP 514 - GMT Time: 1:36 FSID 41369 DRD 226

Shipment # 1 Residual 1.40 LSP 41 - GMT Time: 2:56 FSID 41842 DRD 700

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators : GEIGENMILLER, JACOBS, KOLESKE
Comment:

--- SIGNIFICANT EDITS ---

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE-		-FILE RANGE-		-EDIT STATUS WORD-	-REASON-
FSP	LSP	FIRST	LAST	(S0 S1 C0 C1)	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	12.637	Prime Km :	12.637	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	474
Accepted Km	12.637	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES IN LOCAL TIME--DI 7 OUT AT BOL--CABLE TARGET DEPTH 35 FEET
BOL GUN VOL==5400 CUBIC INCHES

Observer GREGORY,MIEARS,DONNISON

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259329

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

8/02/9?

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.File	Last file	BOX #	Deck #
127380	S92A-133	514	435	1	80	11	2
127381	S92A-133	434	350	81	165	11	1
127382	S92A-133	349	265	166	250	11	2
127383	S92A-133	264	180	251	335	11	1
127384	S92A-133	179	95	336	420	11	2
127385	S92A-133	94	41	421	474	11	1

259330

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P

3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-135 Line Seq.: 29 Status: ACCEPTED Classification: 2

Cable / Source	LINE - TYPE				
Stbd / Stbd	135 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000027 DAY: 214 Date: 08/01/92 Data Shipment #: 1

FSP: 101- GMT Time: 22:48 FSID: 33668 Drift (S/P): 101 / 3.3

LSP: 576- GMT Time: 24: 0 FSID: 34143 Drift (S/P): 576 / -1.8

DSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET = 87.20

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	3.3 Deg. STBD	-1.8 Deg. PORT
Cable Noise	4.0 uBAR	3.5 uBAR
Noise Strip File	0000	472
Dummy Files		
Wind Dir/Speed	W AT 20-25 KNOTS	W AT 20-25 KNOTS
Sea State	MODERATE	MODERATE
Waterbreak	0.0 ms	0.0 ms
Water Depth	75.0	78.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: S92A-135 Status: ACC Nav Reel: P116-0079 Record: 000027

Julian Day 214 Heading 15.00 FSP 101 - GMT Time: 22:48 FSID 33668 DRD 15847

Shipment # 1 Residual 2.10 LSP 576 - GMT Time: 24: 0 FSID 34143 DRD 16323

General: TAILBOUY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators : EEPS, KOLESKE, COWIN
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
259	259	159	159	20	(Array Tape Err
510	510	410	410	2000	(Sync/Autofire)
511	511	411	411	2000	(Sync/Autofire)
512	512	412	412	2000	(Sync/Autofire)
530	533	430	433	20	(Missed Shot Se
535	539	434	436	20	(Missed Shot Se
542	543	0	0	20	
0	0	0	0	0	MISSED SHOT Se.
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

QUANTITATIVE INFORMATION

Total Kilometers:	12.690	Prime Km :	12.690	2D Overlap Km ;	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	476
Accepted Km	12.690	Reshoot Km:	0.000	Shot Spacing:	26.660

GENERAL COMMENTS

ALL TIMES LOGGED LOCAL
TAILBOUY FEATHERING ANGLE CALCULATED FROM COMPASS AVERAGES
CABLE TARGET DEPTH = 35 FT
CABLE DI #7 DISABLED
BOL GUN VOL==5400 CUBIC INCHES
SP 513, FILE 413 DISABLED GUN 19, NEW GUN VOL==5200 CUBIC INCHES
SP, 529 FILE 429 RECORDED TWICE, LOST SPS, 530-533 FILES 430-432
L/UP RESET, LOST SPS, 535-539 FILES 434-436
L/UP LOST SPS, 542, 543 NO FILES

Observer: SIMONTON, SMITH, PROBERT

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259333

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

08/02 92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127374	S92A-135	101	184	1	84	11	2
127375	S92A-135	185	269	85	169	11	1
127376	S92A-135	270	354	170	254	11	2
127377	S92A-135	355	439	255	339	11	1
127378	S92A-135	440	524	340	424	11	2
127379	S92A-135	525	576	425	471	11	1

259334

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92A-137 Line Seq.: 28 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	137 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	N

Record No.: 000026 DAY: 214 Date: 08/01/92 Data Shipment #: 1

FSP: 515- GMT Time:20: 0 FSID: 26241 Drift (S/P): 515 / 6.3

LSP: 41- GMT Time:21:18 FSID: 26715 Drift (S/P): 41 / 2.8

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00

Comment: OFFSET 8.8 METRES

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	6.3 Deg. PORT	2.8 Deg. PORT
Cable Noise	4.5 uBAR	4.2 uBAR
Noise Strip File	0000	476
Dummy Files		
Wind Dir/Speed	W/N 25KNTS	W/N 25KNTS
Sea State	ROUGH 1-2M SWELL	ROUGH 1-2M SWELL
Waterbreak	0.0 ms	0.0 ms
Water Depth	76.0	74.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

```
---------------------------- NAVIGATION INFORMATION ---------------------------

LINE NAME: S92A-137          Status: ACC    Nav Reel: P116-0079    Record: 000026

Julian Day 214  Heading 194.00 FSP   515 -   GMT Time:20: 0 FSID 26241   DRD 15100

Shipment # 1  Residual   0.00 LSP    41 -   GMT Time:21:18 FSID 26715   DRD 15575


General:  TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.


SSTS or    N/A
ATB:


Fill-in:  N/A

Compass

Navigators :COWIN, HEEPS,KOLESKE.
Comment:


----------------------------- SIGNIFICANT EDITS -----------------------------
0 = No Edit                                      S0 = Stbd Source
1 = Edit (Requires Reshoot)                      S1 = Port Source
2 = Edit (No Reshoot)                            C0 = Stbd Cable
                                                 C1 = Port Cable

-EDIT RANGE-       -FILE RANGE-         -EDIT STATUS WORD-        -REASON-
 FSP  LSP          FIRST   LAST           (S0 S1  C0 C1)

   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
   0     0            0      0                  0
```

259336

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	12.664	Prime Km :	12.664	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	475
Accepted Km	12.664	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
DI# 7 DISABLED.
INTERMITENT SEA NOISE ON RECORD.
CABLE DEPTH 11 METRES CLIENT REQUEST.

Observer SIMONTON, SMITH, PROBERT.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259337

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

08/01/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127368	S92A-137	515	432	1	84	10	2
127369	S92A-137	431	347	85	169	10	1
127370	S92A-137	346	262	170	254	10	2
127371	S92A-137	261	177	255	339	10	1
127372	S92A-137	176	92	340	424	10	2
127373	S92A-137	91	41	425	475	10	1

259338

---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO PARTY: 116

AREA: BASS BASIN BLOCKS: T/25P 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92A-139 Line Seq.: 27 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	139 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000025 DAY: 214 Date: 08/01/92 Data Shipment #: 1

FSP: 101- GMT Time: 17: 7 FSID: 18356 Drift (S/P): 101 / 8.7

LSP: 575- GMT Time: 18:32 FSID: 18830 Drift (S/P): 575 / 3.4

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET = 87.8m.

---------- GENERAL INFORMATION ----------

	SOL	EOL
Feathering Angle	8.7 Deg. STBD	3.4 Deg. STBD
Cable Noise	6.3 uBAR	5.5 uBAR
Noise Strip File	0000	476
Dummy Files	N/A	N/A
Wind Dir/Speed	WNW @ 20 KNOTS.	WNW @ 20 KNOTS.
Sea State	MODERATE / 2m SWELL.	MODERATE / 2m SWELL.
Waterbreak	0.0 ms	0.0 ms
Water Depth	77.0	76.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

259339

---------- NAVIGATION INFORMATION ----------

LINE NAME: S92A-139 Status: ACC Nav Reel: P116-0079 Record: 000025

Julian Day 214 Heading 14.00 FSP 101 - GMT Time:17: 7 FSID 18356 DRD 14369

Shipment # 1 Residual 0.00 LSF 575 - GMT Time:18:32 FSID 18830 DRD 14844

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :COWIN,HEEPS,KOLESKI
Comment:

---------- SIGNIFICANT EDITS ----------

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
117	117	17	17	2000	(Sync/Autofire)
119	119	19	19	2000	(Sync/Autofire)
124	126	24	26	2000	(Sync/Autofire)
130	130	30	30	2000	(Sync/Autofire)
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	

QUANTITATIVE INFORMATION

Total Kilometers:	12.664	Prime Km :	12.664	2D Overlap Km	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points.	475
Accepted Km	12.664	Reshoot Km:	0.000	Shot Spacing	26.660

GENERAL COMMENTS

ALL TIMES LOGGED LOCAL.
DI# 7. DISABLED.
CABLE DEPTHS @ 11m, 35ft, PER CLIENT REQUEST.
INTERMITTENT SEA NOISE ON RECORDS.
SP# 131. GUN# 34, DISABLED. NEW TOTAL VOLUME 5120cid.

obs-rver SIMONTON. SMITH. PROBERT, CASEY

RF Factor 0.0000 (Portion of accepted data that is Reshoot Feedback Code.

Number of shotpoints on line not chargeable 0

259341

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

08/01/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127362	S92A-139	101	184	1	84	10	2
127363	S92A-139	185	269	85	169	10	1
127364	S92A-139	270	354	170	254	10	2
127365	S92A-139	355	439	255	339	10	1
127366	S92A-139	440	524	340	424	10	2
127367	S92A-139	525	575	425	475	10	1

259342

---------- GENERAL SURVEY INFORMATION ----------
----- ---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO PARTY: 116

AREA: BASS BASIN BLOCKS: T/25P, T/RL1 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92B-101 Line Seq.: 41 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	101 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000039 DAY: 216 Date: 04/17/92 Data Shipment #: 1

FSP: 101- GMT Time: 16:42 FSID: 17474 Drift (S/P): 101 / 0.1

LSP: 716- GMT Time: 18:24 FSID: 18089 Drift (S/P): 716 / -2.3

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET = 87.6m

---------- GENERAL INFORMATION ----------

	SOL		EOL
Feathering Angle	0.1 Deg.	STBD	-2.3 Deg. PORT
Cable Noise	4.1 uBAR		3.5 uBAR
Noise Strip File	0000		617
Dummy Files	N/A		N/A
Wind Dir/Speed	SW @ 17 KNOTS.		SW @ 17 KNOTS.
Sea State	MODERATE		MODERATE
Waterbreak	0.0 ms		0.0 ms
Water Depth	81.0		80.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

259343

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---------------------------- NAVIGATION INFORMATION ----------------------------

LINE NAME: S92B-101          Status: ACC   Nav Reel: P116-0081   Record: 000039

Julian Day 216  Heading  24.00 FSP   101 -   GMT Time:16:42 FSID 17474   DRD  2303

Shipment #  1  Residual   0.00 LSP   716 -   GMT Time:18:24 FSID 18089   DRD  2919


General:  TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.


SSTS or   N/A
ATB:


Fill-in:  N/A

Compass

Navigators :COWIN,HEEPS,KOLESKI
Comment:


---------------------------- SIGNIFICANT EDITS -----------------------------
0 = No Edit                                     S0 = Stbd Source
1 = Edit (Requires Reshoot)                     S1 = Port Source
2 = Edit (No Reshoot)                           C0 = Stbd Cable
                                                C1 = Port Cable

-EDIT RANGE-       -FILE RANGE-        -EDIT STATUS WORD-        -REASON-
 FSP  LSP          FIRST   LAST          (S0 S1  C0 C1)

 623   623          523    523              2000            (Sync/Autofire)
 625   625          525    525              2000            (Sync/Autofire)
 630   632          530    532              2000            (Sync/Autofire)
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
   0     0            0      0                 0
```

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	16.423	Prime Km :	16.423	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	616
Accepted Km	16.423	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
DI# 7, DISABLED.
SP# 633, GUN# 41, DISABLED. NEW TOTAL VOLUME 4935cid.
LAST PLOTTED SP 537, LINE EXTENDED PER CLIENT REQUEST. SPS 538-716, ARE TEST SPS, CABLE DEPTH 6m, 20 FEET.

Observer STMONTON, SMITH, PROBERT, CASEY.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259345

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

08/03/92

CLIENT : GAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127464	S92B-101	101	184	1	84	15	2
127465	S92B-101	185	269	85	169	15	1
127466	S92B-101	270	354	170	254	15	2
127467	S92B-101	355	439	255	339	15	1
127468	S92B-101	440	524	340	424	15	2
127469	S92B-101	525	537	425	437	15	1
127470	S92B-101	538	622	438	522	15	2
127471	S92B-101	623	707	523	607	16	1
127472	S92B-101	708	716	608	616	16	2

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P, T/RL1 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92B-103 Line Seq.: 43 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	103 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	N

Record No.: 000041 DAY: 216 Date: 08/03/92 Data Shipment #: 1

FSP: 101- GMT Time: 22:23 FSID: 32876 Drift (S/P): 101 / 0.6

LSP: 537- GMT Time: 23:41 FSID: 33312 Drift (S/P): 537 / 0.4

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET = 87.34

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	0.6 Deg. STBD	0.4 Deg. STBD
Cable Noise	3.4 uBAR	4.0 uBAR
Noise Strip File	FILE 0000	FILE 438
Dummy Files		
Wind Dir/Speed	SW AT 18-20 KNOTS	SW AT 18 - 20 KNOTS
Sea State	MODERATE	MODERATE
Waterbreak	0.0 ms	0.0 ms
Water Depth	79.0	79.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

NAVIGATION INFORMATION

LINE NAME: S92B-103 Status: ACC Nav Reel: P116-0081 Record: 000041

Julian Day 216 Heading 24.00 FSP 101 - GMT Time:22:23 FSID 32876 DRD 3825

Shipment # 1 Residual 0.00 LSP 537 - GMT Time:23:41 FSID 33312 DRD 4262

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or
ATB:

Fill-in:

Compass

Navigators :HEEPS,COWIN,KOLESKE
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE-		-FILE RANGE-		-EDIT STATUS WORD-	-REASON-
FSP	LSP	FIRST	LAST	(S0 S1 C0 C1)	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	
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---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	11.650	Prime Km :	11.650	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	437
Accepted Km	11.650	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL
TAILBOUY FEATHERING ANGLE CALCULATED FROM COMPASS AVERAGES
CABLE DI# 7 IS DISABLED AT BOL

Observer SIMONTON,PROBERT,SMITH

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259349

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

08/04/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127479	S92B-103	1	184	101	84	16	1
127480	S92B-103	185	269	85	169	16	2
127481	S92B-103	270	354	170	254	16	1
127482	S92B-103	355	439	255	339	16	2
127483	S92B-103	440	524	340	424	16	1
127484	S92B-103	525	531	425	431	16	2
127485	S92B-103	532	537	432	437	16	1

---------- GENERAL SURVEY INFORMATION ----------
---------- GENERAL SURVEY INFORMATION ----------

DIVISION: SINGAPORE VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO PARTY: 116

AREA: BASS BASIN BLOCKS: T/RL1 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

---------- LINE INFORMATION ----------

LINE :S92B-105 Line Seq.: 40 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	105 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	N

Record No.: 000038 DAY: 216 Date: 08/03/92 Data Shipment #: 1

FSP: 656- GMT Time: 13:30 FSID: 8510 Drift (S/P): 656 / 5.4

LSP: 41- GMT Time: 15:15 FSID: 9125 Drift (S/P): 41 / 0.5

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET 87.23 METRES

---------- GENERAL INFORMATION ----------

	SOL	EOL
Feathering Angle	5.4 Deg. PORT	0.5 Deg. STBD
Cable Noise	7.0 uBAR	0.0 uBAR
Noise Strip File	0	438
Dummy Files	0	0
Wind Dir/Speed	WSW 12-15 KNOTS	WSW 12-15 KNOTS
Sea State	SLIGHT	SLIGHT
Waterbreak	0.0 ms	0.0 ms
Water Depth	85.0	82.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

259351

NAVIGATION INFORMATION

LINE NAME: S92B-105 Status: ACC Nav Reel: P116-0081 Record: 000038

Julian Day 216 Heading 204.00 FSP 656 - GMT Time:13:30 FSID 8510 DRD 1450

Shipment # 1 Residual 0.00 LSP 41 - GMT Time:15:15 FSID 9125 DRD 2066

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or ATB: N/A

Fill-in: N/A

Compass

Navigators :STOREY,HEEPS,COWIN.
Comment:

SIGNIFICANT EDITS

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE-		-FILE RANGE-		-EDIT STATUS WORD-	-REASON-
FSP	LSP	FIRST	LAST	(S0 S1 C0 C1)	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	16.423	Prime Km :	16.423	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	616
Accepted Km	16.423	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
DI#7 DISABLED. INTERMITTENT SEA NOISE ON RECORDS.
* SP:656-488 TOTAL GUN VOLUME 2700 CU INS. SP:487-478 WARM UP 5400 CU INS.
SP:478-EOL. TOTAL VOLUME 5400 CU INS. SP:477 FIRST PLOTTED SP ON LINE.
SPS 656-478, WERE TEST SPS DONE @ CLIENT REQUEST.

Observer SIMONTON, SMITH, PROBERT, CASEY.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259353

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

08/03/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127455	S92B-105	656	573	1	84	15	1
127456	S92B-105	572	545	85	112	15	2
127457	S92B-105	544	478	113	0	15	1
127458	S92B-105	477	393	1	85	15	2
127459	S92B-105	392	308	86	170	15	1
127460	S92B-105	307	223	171	255	15	2
127461	S92B-105	222	138	256	340	15	1
127262	S92B-105	137	53	341	425	15	2
127263	S92B-105	52	41	426	437	15	1

259354

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE

VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO

PARTY: 116

AREA: BASS BASIN

BLOCKS: T/25P. T/RL1 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER. SINGLE LRS 16A SYSTEM. USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92B-107 Line Seq.: 42 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	107 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	GSTS	N	Edits	N

Record No.: 000040 DAY: 216 Date: 08/03/92 Data Shipment #: 1

FSP: 477 - GMT Time: 19:44 FSID: 25521 Drift (S/P): 477 / 2.1

LSP: 41 - GMT Time: 20:56 FSID: 25957 Drift (S/P): 41 / 3.1

OSP: 0 - (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET 86.85

GENERAL INFORMATION

	SOL		EOL
Feathering Angle	2.1 Deg.	STBD	3.1 Deg. STBD
Cable Noise	4.1 uBAR		4.1 uBAR
Noise Strip File	0000		438
Dummy Files			
Wind Dir/Speed	S/W @ 17KNTS		S/W @ 17KNTS
Sea State	MOD		MOD
Waterbreak	0.0 ms		0.0 ms
Water Depth	80.0		79.0
Cable Separation	0.0		0.0
Gun Separation STBD	0.0		0.0
Gun Separation PORT	0.0		0.0

---------- NAVIGATION INFORMATION ----------

LINE NAME: S92B-107 Status: ACC Nav Reel: P116-0081 Record: 000040

Julian Day 21[illegible] Heading 205.00 FSP 477 - GMT Time: 19:44 FSID 25521 DRD 3151

Shipment # 1 Residual 0.00 LSP 41 - GMT Time: 20:56 FSID 25957 DRD 2588

General: TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.

SSTS or AFB: N/A

Fill-in: N/A

Compass

Navigators : COWIN, HEEPS, KOLESKE.
Comment:

---------- SIGNIFICANT EDITS ----------

0 = No Edit
1 = Edit (Requires Reshoot)
2 = Edit (No Reshoot)

S0 = Stbd Source
S1 = Port Source
C0 = Stbd Cable
C1 = Port Cable

-EDIT RANGE- FSP	LSP	-FILE RANGE- FIRST	LAST	-EDIT STATUS WORD- (S0 S1 C0 C1)	-REASON-
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
0	0	0	0	0	
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0	0	0	0	0	

259356

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	11.650	Prime Km :	11.650	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	437
Accepted Km	11.650	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

ALL TIMES LOGGED LOCAL.
DI # / DISABLED.

Observer SIMONTON, SMITH, PROBERT.

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259357

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

CLIENT : SAGASCO

08/03/92

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127473	S92B-107	477	384	1	84	16	1
127474	S92B-107	393	309	85	169	16	2
127475	S92B-107	308	224	170	254	16	1
127476	S92B-107	223	139	255	339	16	2
127477	S92B-107	138	54	340	424	16	1
127478	S92B-107	53	41	425	437	16	2

259358

GENERAL SURVEY INFORMATION

DIVISION: SINGAPORE
VESSEL: R/V WESTERN ATLAS

CLIENT: SAGASCO
PARTY: 116

AREA: BASS BASIN
BLOCKS: T/RL1 3D: F

PARAMETER RECORD #: 1

GENERAL SURVEY METHOD:

SINGLE STREAMER, SINGLE LRS 16A SYSTEM, USING LITTON LOW PRESSURE AIRGUNS.
NOTE: CENTER OF SOURCE TO CENTER OF NEAR GROUP IS 93.70 METRES.

LINE INFORMATION

LINE :S92B-109 Line Seq.: 39 Status: ACCEPTED Classification: 2D

Cable / Source	LINE - TYPE				
Stbd / Stbd	109 - 2D	2 Cable	N	Process	Y
Stbd / Port	0 -	2 Source	N	Complete	Y
Port / Stbd	0 -	2 Boat	N	Test	N
Port / Port	0 -	SSTS	N	Edits	Y

Record No.: 000037 DAY: 216 Date: 08/03/92 Data Shipment #: 1

FSP: 101- GMT Time: 10:16 FSID: 103 Drift (S/P): 101 / 3.6

LSP: 537- GMT Time: 11:32 FSID: 539 Drift (S/P): 537 / 2.1

OSP: 0- (Mid-Line Alfa) Mean (S/P): 0.00 / 0.00
Comment: OFFSET==87.6 METERS

GENERAL INFORMATION

	SOL	EOL
Feathering Angle	3.6 Deg. STBD	2.1 Deg. STBD
Cable Noise	3.3 uBAR	4.2 uBAR
Noise Strip File	9996	437
Dummy Files	9997,9998,9999,0000	
Wind Dir/Speed	SW @ 15 KTS.	SW @ 15 KTS.
Sea State	MOD.	MODERATE
Waterbreak	0.0 ms	0.0 ms
Water Depth	79.0	80.0
Cable Separation	0.0	0.0
Gun Separation STBD	0.0	0.0
Gun Separation PORT	0.0	0.0

```
--------------------------- NAVIGATION INFORMATION ----------------------------

LINE NAME: S92B-109          Status: ACC    Nav Reel: P116-0081    Record: 000037

Julian Day 216  Heading  25.00 FSP   101 -   GMT Time:10:16 FSID  103   DRD   681

Shipment #  1  Residual   0.00 LSP   537 -   GMT Time:11:32 FSID  539   DRD  1118


General:  TAILBUOY DRIFT COMPUTED BY COMPASS AVERAGING.


SSTS or   N/A
ATB:


Fill-in:  N/A

Compass

Navigators :STOREY,GEIGENMILLER,JACOBS
Comment:


----------------------------- SIGNIFICANT EDITS -----------------------------
0 = No Edit                                  S0 = Stbd Source
1 = Edit (Requires Reshoot)                  S1 = Port Source
2 = Edit (No Reshoot)                        C0 = Stbd Cable
                                             C1 = Port Cable

-EDIT RANGE-        -FILE RANGE-          -EDIT STATUS WORD-         -REASON-
 FSP  LSP           FIRST   LAST            (S0 S1  C0 C1)

 141   142             41     41                  20              (Missed Shot Se
 143   143             42     42                  20              (Array Sys. Err
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
   0     0              0      0                   0
```

---------- QUANTITATIVE INFORMATION ----------

Total Kilometers:	11.650	Prime Km :	11.650	2D Overlap Km :	0.000
Rejected Km:	0.000	Fill Km:	0.000	Total Shot Points:	437
Accepted Km	11.650	Reshoot Km:	0.000	Shot Spacing:	26.660

----------GENERAL COMMENTS ----------

D.I. 7 OUT @ BOL
CABLE TARGET DEPTH 10 METERS----------33 FEET
ALL TIMES IN LOCAL TIME
BOL GUN VOL==5400 CUBIC INCHES
AREA---T/RL1
L/UP LOST SPS,141,142 FILE 41

Observer GREGORY,MIEARS,DONNISON,CASEY

RF Factor 0.0000 (Portion of accepted data that is Reshoot.) Feedback Code

Number of shotpoints on line not chargeable 0

259361

WESTERN GEOPHYSICAL COMPANY

R/V WESTERN ATLAS
PARTY : 116

08/03/92

CLIENT : SAGASCO

SEISMIC REEL LOG FOR - ARRAY DATA RECORDING

Reel #	LINE NO.	FSP	LSP	F.file	Last file	BOX #	Deck #
127449	S92B-109	101	181	1	80	14	01
127450	S92B-109	182	266	81	165	14	02
127451	S92B-109	267	351	166	250	15	01
127452	S92B-109	352	436	251	335	15	02
127453	S92B-109	437	521	336	420	15	1
127454	S92B-109	522	537	421	436	15	2

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DIGITAL PROCESSING REPORT

OF

BASS BASIN T/25P AND T/RL1

FOR

SAGASCO RESOURCES LTD

BY

WESTERN GEOPHYSICAL COMPANY

SINGAPORE DIGITAL CENTRE

1992

WGC Project No : 1409

Western Atlas International

WESTERN GEOPHYSICAL

TABLE OF CONTENTS

List of Appendices and Figures

I INTRODUCTION

The processing of 641.67 kms of seismic data for Sagasco Resources Ltd. recorded offshore Bass Basin T/25P and T/RL1 was conducted in the Singapore Digital Centre of Western Geophysical Company during August 1992 to October 1992.

The procedure and programs utilized in processing the data are described in the following pages in the order in which they were applied. Final processing parameters were selected by Mr Doug Roberts of Sagasco Resources Ltd after studying tests and recommendations submitted to him in or from Singapore.

II PRODUCTION PROCESSING

II.1 Format Conversion

The 240 trace demultiplexed array formed data, in SEG-D format, was converted to WGC Code 4 format. Full word, 32 bit floating point data at geophone amplitude was maintained.

Shot records, giving 100% coverage, and a single trace section were displayed to aid in quality control.

II.2 Subsample

Data was subsampled from 2ms to 4ms. A zero phase anti-alias filter of 3/4 Nyquist frequency was applied.

II.3 Shot Domain F-K Filter

This process uses a two dimensional filter to pass/reject dipping events on seismic data.

The filter is designed and applied in the frequency - wavenumber (F-K) domain.

An acceptance fan of +/-5ms/trace, with tapers of 10ms/trace, was applied to the shot records.

II.4 Adjacent Trace Sum

The 240 trace demultiplexed files were adjacent trace summed to 120 trace files.

Normal moveout was applied prior to summing using an average area velocity function as follows :

Time (ms)	Velocity (m/sec)
0	1500
80	1500
430	1630
880	1950
1170	2310
1640	2620
2160	2980
2540	3230
2800	3300
4180	3710
4970	3790
6000	3900

The effective group interval was doubled to 26.66m after adjacent trace summing.

II.5 Minimum Phase Low-Cut Filter

A minimum phase low-cut filter of 6Hz and 6dB/oct slope was applied to the seismic data pre-deconvolution. This is used to control any anomalous amplitudes in the very low frequency range outside the seismic band.

II.6 Amplitude Recovery

To correct for spherical spreading, the inverse of the amplitude decay factor (A) was applied to the data where A = 1/(T*(V**2)), T being 2 way time and V being RMS velocity. The velocity function used for the whole survey was :

Time (ms)	Velocity (m/sec)
4	1500
80	1500
430	1630
880	1950
1170	2310
1640	2620
2160	2980
2540	3230
2800	3300
4180	3710
4970	3790
6000	3900

II.7 Deconvolution Before Stack

A Wiener-Levinson least squares minimum phase inverse filter was applied to all data. A unique operator was designed from the autocorrelation of each trace, and applied to each trace.

Following are the relevant design and application parameters:

A/C Window number :	1
Near trace start time (ms)	100
Near trace stop time (ms)	3500
Stop/start time velocity (m/sec)	3500
Minimum prediction Lag (ms)	16
Autocorrelation length (ms)	240
Operator Length (ms)	228
White light	.1%

After deconvolution each trace was normalized to 2000 RMS. The normalizer was stored in the trace headers.

Before and after deconvolution, autocorrelations were generated and displayed to monitor the deconvolution process.

A deconvolved near trace section was also output to assist in the subsequent placing and picking of velocity analyses.

II.8 Velocity Analysis

Vertical RMS velocity analysis was performed in the VELAN program on the deconvolved common depth point ordered data. Two adjacent CDP families were used per analysis.

Each trace in a CDP family was NMO corrected at a particular velocity, had first arrival energy muted, and was divided into gates of 32ms. The corresponding gates for all combinations of traces of the CDP family were then correlated and the resulting product-sums summed for both CDP families to produce a correlation value for the centre time of the gate and the velocity used.

The process is repeated for a range of velocities starting at 1400m/sec and increasing by 40m/sec to a maximum of 6000m/sec, and a correlation trace representing the center time values is produced.

The graphic display was RMS velocity versus two-way time with the correlation traces normalized (maximum value in each gate plotted at uniform amplitude) and the normalizing constant displayed as a 'relative maximum correlation' trace.

For display purposes the correlations were smoothed with a 1-2-1 weighted 3 point operator in both the time and velocity directions.

Analyses were identified by the shotpoint number of the 2nd CDP family. Velocity analyses were chosen at 4 kilometer interval.

II.9 F-K Multiple Attenuation Filter (MAFK)

In this area severe long period multiples were interfering with the primary reflections. To alleviate this problem, a multiple attenuation filter was employed after DBS.

MAFK involves three major steps.

Normal moveout (NMO) correction is applied to the data using a velocity function that lies between the velocity of the multiples and the primaries. This results in primary reflections being over-corrected and the multiple reflections being under-corrected.

The MAFK velocity for this survey was designed using the scaled stacking velocity with the following :

Time (ms)	Velocity percentage (%)
0	85
3800	80
6000	70

After NMO the data is transformed into the F-K domain which results in the primary and the multiple dips being mapped on opposite sides of the zero wavenumber axis. A filter which zeros out the side of the F-K domain associated with multiple dips is then applied. After filter application the data are transformed back into the T-X domain. Finally, inverse NMO is applied using the same velocity function as was used in the NMO. This restores the primary events to their original positions for subsequent processing.

II.10 Dip-Moveout (DMO)

Imaging of steep events on seismic data presents severe problems for the traditional processing methods.

Dip-Moveout correction (DMO), also known as "prestack partial migration", is a processing step that is performed on each set of common-offset data after an NMO correction has been applied to the data and before the data are stacked. DMO is a wave-theoretical process that converts the NMO-corrected data recorded at any non-zero offset, to true zero offset, independent of the dips that are present. After DMO, all dipping events stack coherently and will be properly imaged by post-stack migration. Application of post-stack migration to data that have had DMO applied thus produces the same result as a full time-migration before stack.

Since DMO converts NMO-corrected data to true zero-offset, its action is two-fold. First, it moves finite-offset events downdip to their true reflection points and therefore removes reflection-point smear. Second, it removes the dip-dependence of the stacking velocities.

One helpful side effect is the dispersion of unwanted coherent noise.

To achieve optimum results, anti-alias filters were used.

II.11 DMO Velocity Analysis

Dip-moveout (DMO) simplifies the interpretation of the velocities by removing the effects of dip. Before DMO, because of differing dips, seismic events may be characterized by a range of stacking velocities. After DMO, these events coalesce in the velocity analyses to give a more readily interpretable and reliable estimate of the stacking (and migration) velocities.

Vertical RMS velocity analysis was performed in the VELAN program on the deconvolved DMO'ed output gathers. Two CDF gathers were used per analysis and common offset traces within any one CDF were summed.

Each trace in a CDP family was NMO corrected at a particular velocity, had first arrival energy muted, and was divided into gates of 32ms. The corresponding gates for all combinations of traces of the CDP family were then correlated and the resulting product-sums summed for both CDP families to produce a correlation value for the centre time of the gate and the velocity used.

The process is repeated for a range of velocities starting at 1400m/sec and increasing by 40m/sec to a maximum of 6000m/sec, and a correlation trace representing the center time values is produced.

The graphic display was RMS velocity versus two-way time with the correlation traces normalized (maximum value in each gate plotted at uniform amplitude) and the normalizing constant displayed as a 'relative maximum correlation' trace.

For display purposes the correlations were smoothed with a 1-2-1 weighted 3 point operator in both the time and velocity directions.

On the graphic display was also plotted a sweep of 9 pre-defined velocity functions which were used in applying moveout corrections to two additional panels of displays. The first consists of a 'family' from the VELAN location, displayed 10 times, once with no moveout applied, and the rest NMO corrected with the 9 velocity functions.

The second panel contains a set of mini-stacks of 21 families centered around the velocity location, stacked with each of the 9 velocity functions.

Analyses were identified by the shotpoint number of the second CDP family. Velocity analyses were chosen at a 1 kilometer interval.

II.12 Normal Moveout Application And CDP Stacking

The normal moveout corrections for the final sections were computed from the velocity functions generated for each line. The calculations were performed independently for each trace using a straight ray computation method.

After NMO corrections, muting was applied to remove first arrivals, early refracted energy and excessive stretch, following which, the traces in each CDP were horizontally stacked to produce the stack output.

The mute pattern was designed as follows:

Far trace mute :	Offset (m)	Mute stop time (ms)
	101-235	not muted
	236	300
	3274	2400

Quality control of the velocity functions used was aided by the display of 'stack monitor sections'. These sections consisted of one moveout corrected, muted, common depth family from each 75th stack output trace. With each CDP family was displayed an 'applied velocity trace' which by means of large pips (500m/sec) and smaller pips (100m/sec) show the RMS velocity versus two-way time applied.

Using the preliminary stack section, stack monitor section, and picked velocity analyses the processing analyst was able to check the data for any necessary residual velocity adjustments before the final stack was run. A further stacking monitor was displayed with the final stack to verify the residual velocity corrections made.

II.13 Gun/Cable Statics Correction

The gun & cable depth corrections were applied as follows:

Datum plane: Sea level

Gun Correction	+ 4ms
Cable Correction	+ 7ms
Total Correction	+ 11ms

II.14 Residual Amplitude Compensation

Although geometric spreading compensation was applied to the shot records pre-stack, it is also necessary for further compensation post stack to account for the amplitude decay in a section due to stacking of data with poorer signal-to-noise ratio.

In this program the user specifies multipliers to be applied at specific times. From these specified times, the gain curve is constructed by linear interpolation.

Multipliers are derived by running an amplitude decay analysis on a typical line and then applying the resulting multipliers to all lines in the area to preserve relative amplitude throughout.

The times and multipliers used for the prospect are:

Time (ms)	Multiplier
4	2.5
2000	2.5
3000	5.5
4400	7.0
6000	8.0

II.15 Deconvolution After Stack

A Wiener-Levinson least squares minimum phase inverse filter was applied to the stacked, gained data. A unique operator was designed from the autocorrelation of each trace, and applied to each trace.

Following are the relevant design and application parameters:

Window:	1
Trace Start Time (ms)	200
Trace Stop Time (ms)	4000

Minimum Prediction Distance	48ms
Maximum Prediction Distance	240ms
Operator Length	196ms
White Light	.1%

Before and after deconvolution, autocorrelations were generated and displayed to monitor the deconvolution process.

II.16 Amplitude Taper

To reduce migration artifacts a pre-migration scaling of T**(-2) starting at 2000ms was used prior to migrating the data.

II.17 Modified Residual Migration

To handle the steep dips in the data efficiently a two-pass approach to the migration was used:

The first pass is the application of an Extended Stolt Migration with a single minimum velocity function. This function is derived by scanning all input velocities of the line for the minimum value at each time interval.

After the Extended Stolt Migration, this process is then followed by a 'Residual' Finite Difference Migration with residual migration velocities.

Post migration time variant filtering and post stack gain are identical to those applied to the unmigrated sections.

II.18 Amplitude Recovery

After migration the amplitudes of the data were restored to their original value by scaling the data with T**(2) starting at 2000ms.

II.19 F-K Filter

This process uses a two dimensional filter to pass/reject dipping events on seismic data.

The filter is designed and applied in the frequency - wavenumber (F-K) domain.

An acceptance fan of +/-5ms/trace, with tapers of 10ms/trace, was applied to the stacked traces.

II.20 Time Variant Filtering

Zero phase, time variant digital filtering was applied to the data. The filter pass-bands were selected on the basis of filter test panels run on data from several points in the survey.

The filter pass-bands and times of application used for T/25P prospect were:

Time (ms)	Low cut	High cut
0	12 Hz	70 Hz
1000	12 Hz	70 Hz
2000	10 Hz	60 Hz
3000	8 Hz	40 Hz
5000	6 Hz	35 Hz

The filter pass-bands and times of application used for T/RL1 prospect were:

Time (ms)	Low cut	High cut
0	12 Hz	75 Hz
1000	12 Hz	75 Hz
2000	10 Hz	65 Hz
3000	8 Hz	40 Hz
5000	6 Hz	35 Hz

Low and high slopes of 18 and 36dB per octave respectively, were used in all filter applications.

II.21 Post Stack Gain (Cascaded AGC Gain)

This consists of two passes of the gain algorithm.

In the first pass, automatic gain control (AGC) was applied to the data. A gain computation zone of 1000ms was used. An average absolute amplitude is computed for the zone, and this value divided into the desired average amplitude (2000 RMS) gives a multiplier that is applied at the midpoint of the gain zone.

The zone is then moved down the trace, one sample at a time and the computation repeated so that a multiplier is derived for each sample.

From the center of the first gain zone back to the start of data and from the centre of the last gain zone to the end of the trace, a constant value was applied.

The second pass is the same as the first except that multipliers are computed only for amplitudes which are lower than the new reference averaged amplitude of 1400 RMS. Computation window used are as follows :

Time (ms)	Gate (ms)
0	50
2000	50
3000	1000

II.22 Final Display

The final output was displayed on film with the following parameters:

Filtered migration	1:25,000
Vertical	3.75 in per second
Horizontal	48 traces per in.
Filtered stack	1:25,000
Vertical	3.75 in per second
Horizontal	48 traces per in.
Filtered migration	1:50,000
Vertical	3.75 in per second
Horizontal	96 traces per in.
Filtered stack	1:50,000
Vertical	3.75 in per second
Horizontal	96 traces per in.
Display polarity	Positive numbers on tape displayed as troughs

Original films and five blackline prints of each processed line were despatched to Sagasco Resources Limited.

II.23 Tape Disposition

A Field tapes

Total 315 field tapes were shipped to Sagasco Resources Ltd for storage.

B Processing Tape copies

The following final tape products for Bass Basin survey were produced for Sagasco Resources Ltd:

1. SEG-Y transcription of unfiltered stacks and migrations, for both areas (T/25P and T/RL1).
   (Total: 4 Exabyte tapes)

2. SEG-Y transcription of filtered stacks and migrations, for both areas (T/25P and T/RL1).
   (Total: 4 Exabyte tapes)

3. Stacking velocities.
   (Total: 1 3 1/2" floppy disk)

III TESTING

Prior to any production processing being started a comprehensive set of tests was undertaken. The test lines are S92A-117A and S92B-105, and the tests included the following:

III.1 Pre-stack F-K Filter Tests

The following F-K filter parameters were tested on selected shot records of the 2 test lines:

	Low dip cutoff	Taper	High dip cutoff	Taper
a)	-3	6	3	6
b)	-4	8	4	8
c)	-5	10	5	10

(all values in ms per trace)

F-K noise plots before and after shot F-K filter application were produced (see Figures 1a-1d, 2a-2d).

Stack sections, with and without DMO applied, were produced with +/-4ms/tr and +/-5ms/tr acceptance fans to help determine the optimum parameters.

In addition, stack sections, with and without DMO applied, were produced with two passes of F-K filter namely shot domain F-K of +/-5ms/tr acceptance fan and receiver domain F-K of +/-10ms/tr acceptance fan.

III.2 Geometric Spreading Tests

Geometric spreading compensation was applied to selected shot records of the 2 test lines and compared to the input shot records to verify that the velocity function used was suitable for this survey.

III.3 Deconvolution Before Stack

The following deconvolution parameters were tested.

Trace by trace deconvolution with 6Hz low cut
Prediction Distances (ms)

Minimum	Maximum	Operator length	Number of windows
4	240	240	2
12	240	232	2
16	240	228	2
24	240	220	2
36	240	208	2
16	240	228	1

For comparison purposes a stack without deconvolution was also produced.

Also tested were the following deconvolution parameters on the data which has the designature process applied:
Prediction Distances (ms)

Minimum	Maximum	Operator length	Number of windows
48	240	196	1
60	240	184	1

Trace Averaged Deconvolution with a running average over 120 traces was also tested with the following parameters:
Prediction Distances (ms)

Minimum	Maximum	Operator length	Number of windows
16	240	228	2

III.4 Multiple Attenuation

F-K multiple attenuation tests were carried out to remove multiples before dip moveout as follows :
MAFK velocity with the following stacking velocity scaling :

Time (ms)	Velocity percentage (%)
4	85
3800	80
6000	70

Multiple attenuation in the tau-p domain using the Generalised Radon Transform filter was also tested.

III.5 Dip Moveout (DMO)

DMO was run with/without high order operator applied to help determine the optimum parameters.

III.6 Mute Tests

To assist in the selection of the near and far trace mute pattern, a set of mute tests was carried out.

III.7 Deconvolution After Stack Tests

Trace by trace post stack deconvolution tests were carried out on stack data.

Prediction Distances (ms)

Minimum	Maximum	Operator length	Number of windows
24	240	220	1
36	240	208	1
48	240	196	1
60	240	184	1

Time Variant Spectral Whitening:
Frequency band 0 - 90 Hz; 4 equal trapezoidal filters.

In addition, Trace Averaged Deconvolution with a running average over 240 traces was tested.

III.8 Random Noise Attenuator (RNA)

RNA tests were run on lines S92A-117A and S92B-105 in an attempt to attenuate nonlinear noise and increase continuity of events.

III.9 Coherency Filter

Coherency filter tests were run on both test lines using dip ranges with fan edges of +/-7ms/trace and the following percentages of unfiltered trace returned:

1. 50 %
2. 65 %
3. 75 %

III.10 Migration Tests

Modified residual migration was tested on line S92B-105 with the following stacking velocities:

1. 100 % DMO stacking velocities - with/without T**(-2) amplitude taper applied.

2. 105 % DMO stacking velocities

Modified residual migration was tested on line S92A-117A with the following stacking velocities:

1. 100 % DMO stacking velocities - with/without T**(-2) amplitude taper applied.

Also tested were the Stolt migration , the Finite Difference migration and Kirchhoff summation migration (on both lines).

An extensive effort was made to ensure that the steep events were correctly treated in the migration with minimal migration noise.

III.11 Filter Tests

Filter test panels of the following passbands were run:

Low cut	Hi cut	(Hz)
0	10	
7	14	
10	20	
14	28	
20	40	
28	56	
40	80	
56	112	
60	120	
70	140	
80	160	
90	180	
100	200	

III.12 Post-stack F-K Filter Tests

The following F-K filter parameters were tested on pre-migrated stack data of the 2 test lines :

Low dip cutoff	Taper	High dip cutoff	Taper
-2	4	2	4
-3	6	3	6
-4	8	4	8

(all values in ms per trace)

The following F-K filter parameters were tested on post-migrated stack data of the 2 test lines:

Low dip cutoff	Taper	High dip cutoff	Taper
-2	4	2	4
-3	6	3	6
-4	8	4	8
-5	10	5	10
-6	12	6	12

(all values in ms per trace)

III.13 Dephase Tests

An operator to convert the data to nominal zero phase was designed and applied to the stacked data.

III.14 Post Stack Gain Tests

Automatic Gain Control (AGC) of various window lengths versus Cascaded instantaneous AGC with various gate lengths were tested.

III.15 Final Display Tests

Films displayed at various 'dB' levels were displayed and compared.

IV COMMENTS

Data quality in this area was generally good. There was however a shallow zone where the events were broken up by dipping noise which was generally attributed to the volcanic present. The dipping noise was attenuated to a certain extent by the application of post stack F-K filter in the processing sequence. No particular problems occurred in the duration of the processing. The accuracy and quality of the data were closely monitored by the client's representatives and marine quality control supervisors.

V **SIGNATURE PAGE**

Chia Chor Keing
Senior Processing Geophysicist

Raymon Ford
Data Processing Supervisor

Charlie Har
Marine Processing Manager

Appendix 1

Acquisition Parameters

CONTRACTOR

Western Geophysical

BOAT

Western Atlas	M/V party 116

GENERAL INFORMATION

Format	SEG-D, 8024
Groups	240 per cable
Sample interval	2ms
Record length	6 sec
S.P. Interval	26.66m
Group interval	13.33m
Fold coverage	60

SOURCE

Type	Air Guns
Air gun volume	5400 cu in
Air gun pressure	1800 psi.
Number of guns	28 (active)
Gun depth	6m +/-0.5m
Pop interval	26.66m
Shooting rate	37.5 pops/km.

INSTRUMENTS

System	LRS-16A
Filters	6Hz - 188Hz
Filter slopes	18 - 156dB/oct
Polarity	Compression negative (normal SEG convention)

CABLE

Streamer	3200m
Lead in	94m
Cable depth	10m +/- 1.5m

NAVIGATION

Primary	Racal Syrvey Skyfix -DGPS
Back-up	Racal Syrvey Skyfix -DGPS
Shotpoint locations	CDP position

Appendix 2

Summary of lines processed

LINE NO	SP TO SP	NO OF SP	REEL TO	REEL
S92A-117A	777 - 41	737	127173	127181
S92A-115A	101 - 640	540	127184	127190
S92A-109	477 - 41	437	127191	127196
S92A-105	101 - 536	436	127197	127202
S92A-113A	514 - 41	474	127205	127210
S92A-107	101 - 613	513	127211	127217
S92A-111	101 - 650	550	127218	127224
S92A-103	541 - 41	501	127225	127230
S92A-101	101 - 330	230	127231	127233
S92A-101A	240 - 611	372	127234	127238
S92A-122	101 - 612	512	127239	127244
S92A-118	552 - 41	512	127245	127250
S92A-120	101 - 611	506	127251	127257
S92A-116	551 - 41	507	127258	127263
S92A-110	101 - 906	804	127264	127273
S92A-112	547 - 41	507	127274	127279
S92A-108	101 - 1659	1558	127280	127298
S92A-114	1448- 242	1206	127299	127313
S92A-114A	319 - 41	279	127314	127317
S92A-108A	101 - 391	289	127318	127321
S92A-106	101 - 1281	1178	127322	127335
S92A-104	1222- 41	1174	127336	127349
S92A-102	101 - 1097	997	127350	127361
S92A-139	101 - 575	475	127362	127367
S92A-137	515 - 41	475	127368	127373
S92A-135	101 - 576	465	127374	127379
S92A-133	514 - 41	474	127380	127385
S92A-131	101 - 575	475	127386	127391
S92A-129	516 - 338	178	127392	127394
S92A-129A	410 - 41	370	127395	127399
S92A-127	101 - 726	623	127400	127407
S92A-125	701 - 41	661	127408	127415
S92A-123	101 - 800	687	127416	127426
S92A-121	924 - 41	882	127427	127437
S92A-119	101 - 985	881	127438	127448
S92B-109	101 - 537	435	127449	127454
S92B-105	656 - 41	616	127455	127463
S92B-101	101 - 716	616	127464	127472
S92B-107	477 - 41	437	127473	127478
S92B-103	101 - 537	437	127479	127485

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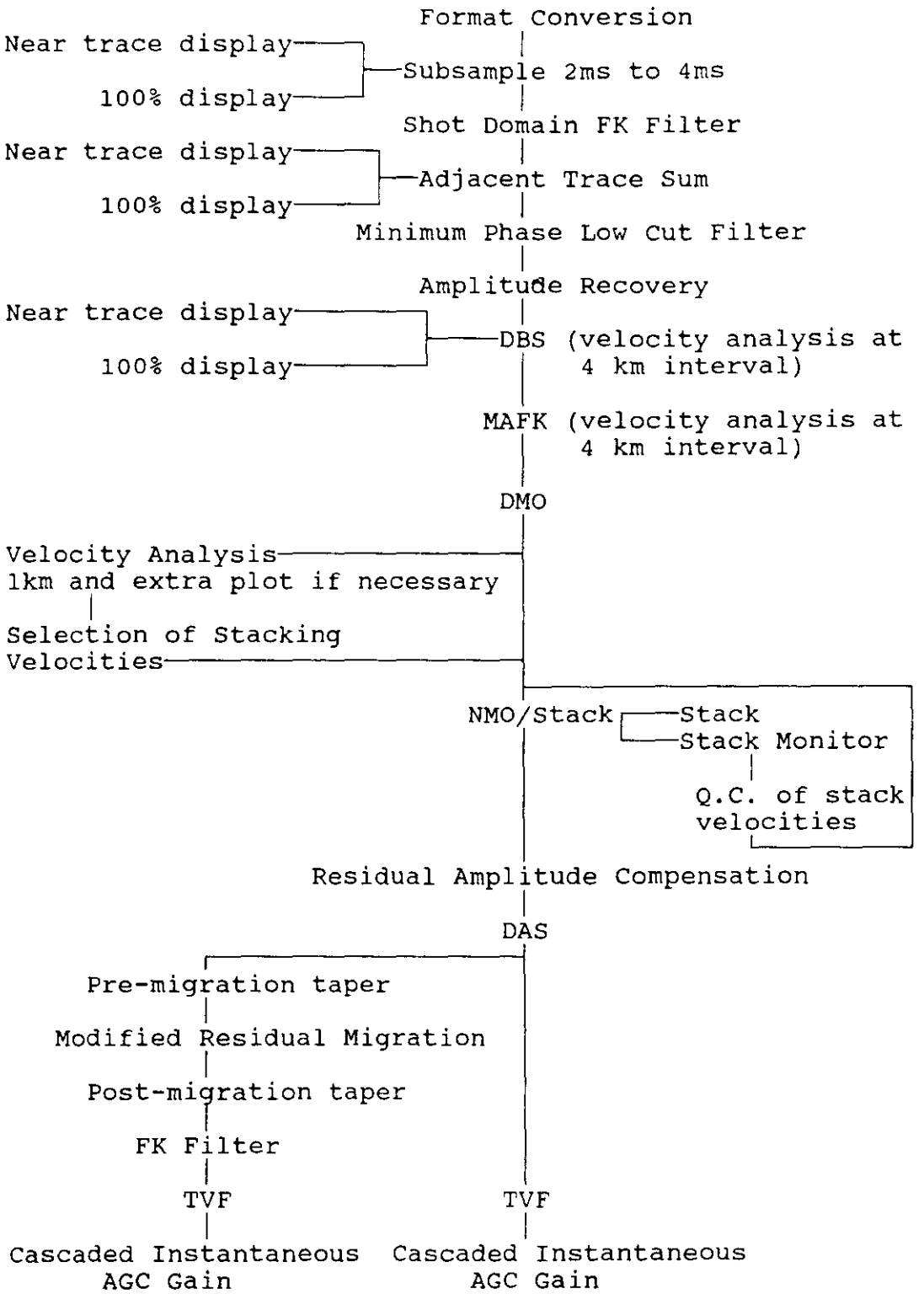
Figure 1

Sagasco Resources Ltd (Bass Basin) 1992 Data Processing Flowchart



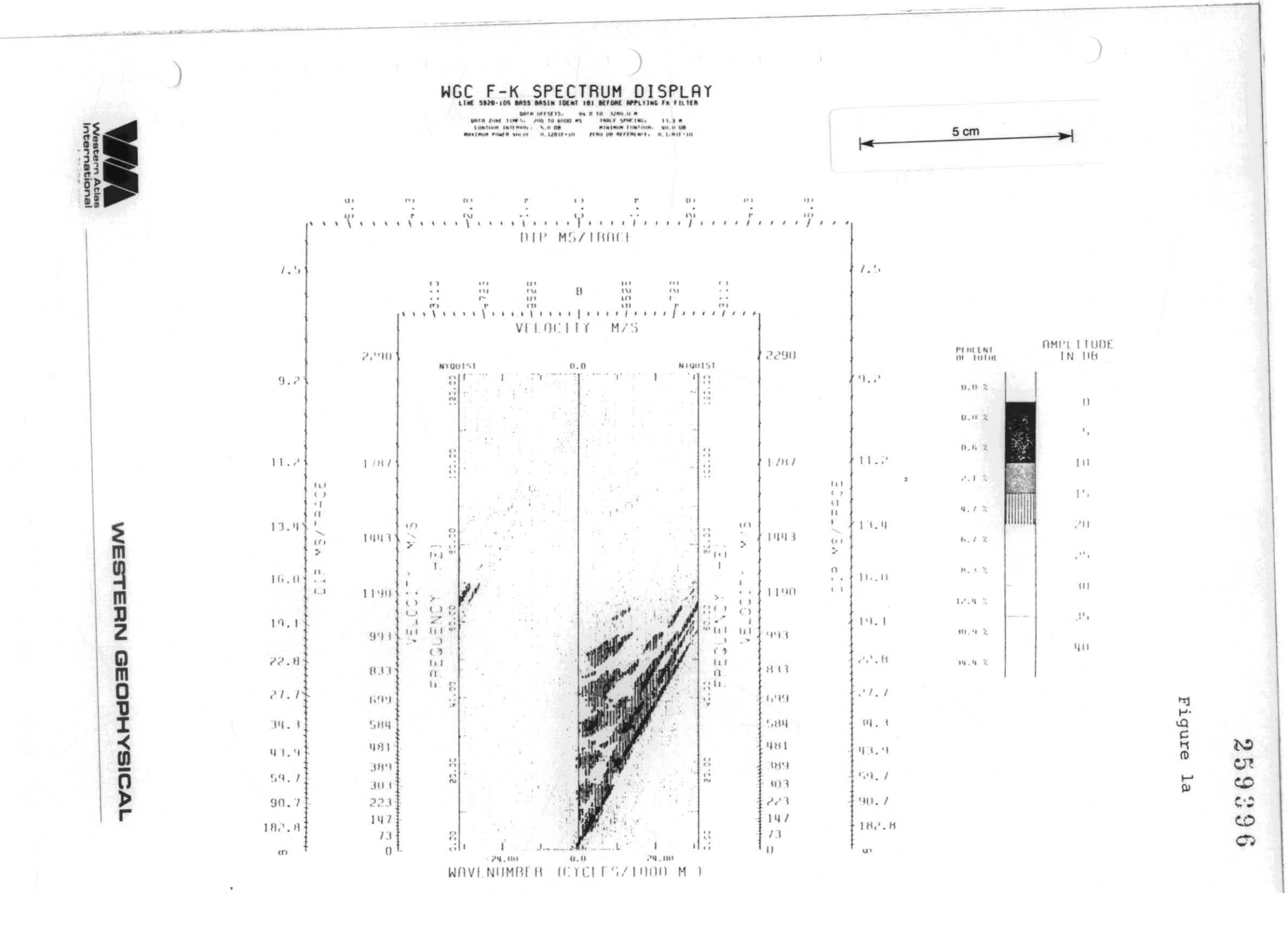


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Figure 1a

Figure 1b

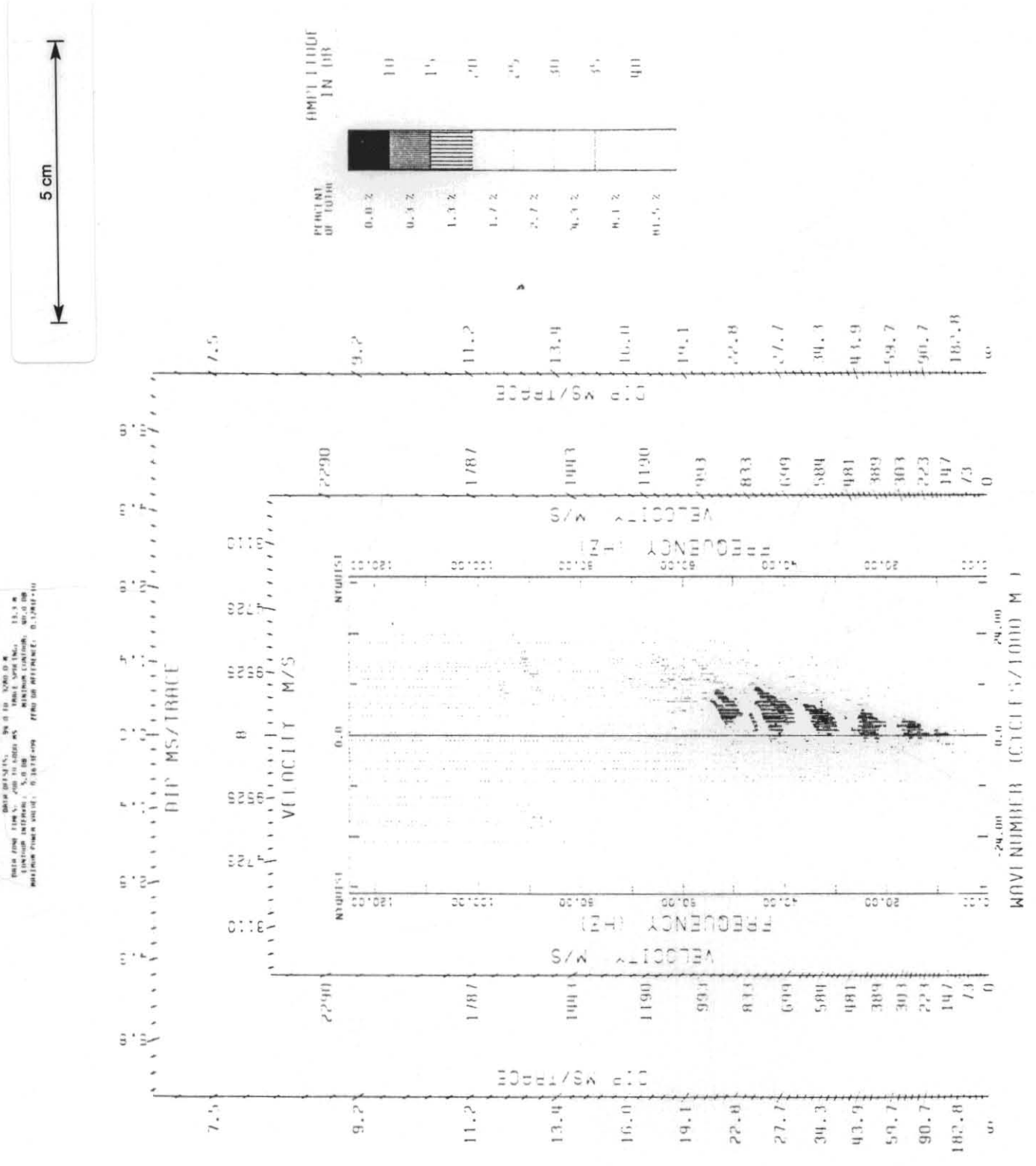

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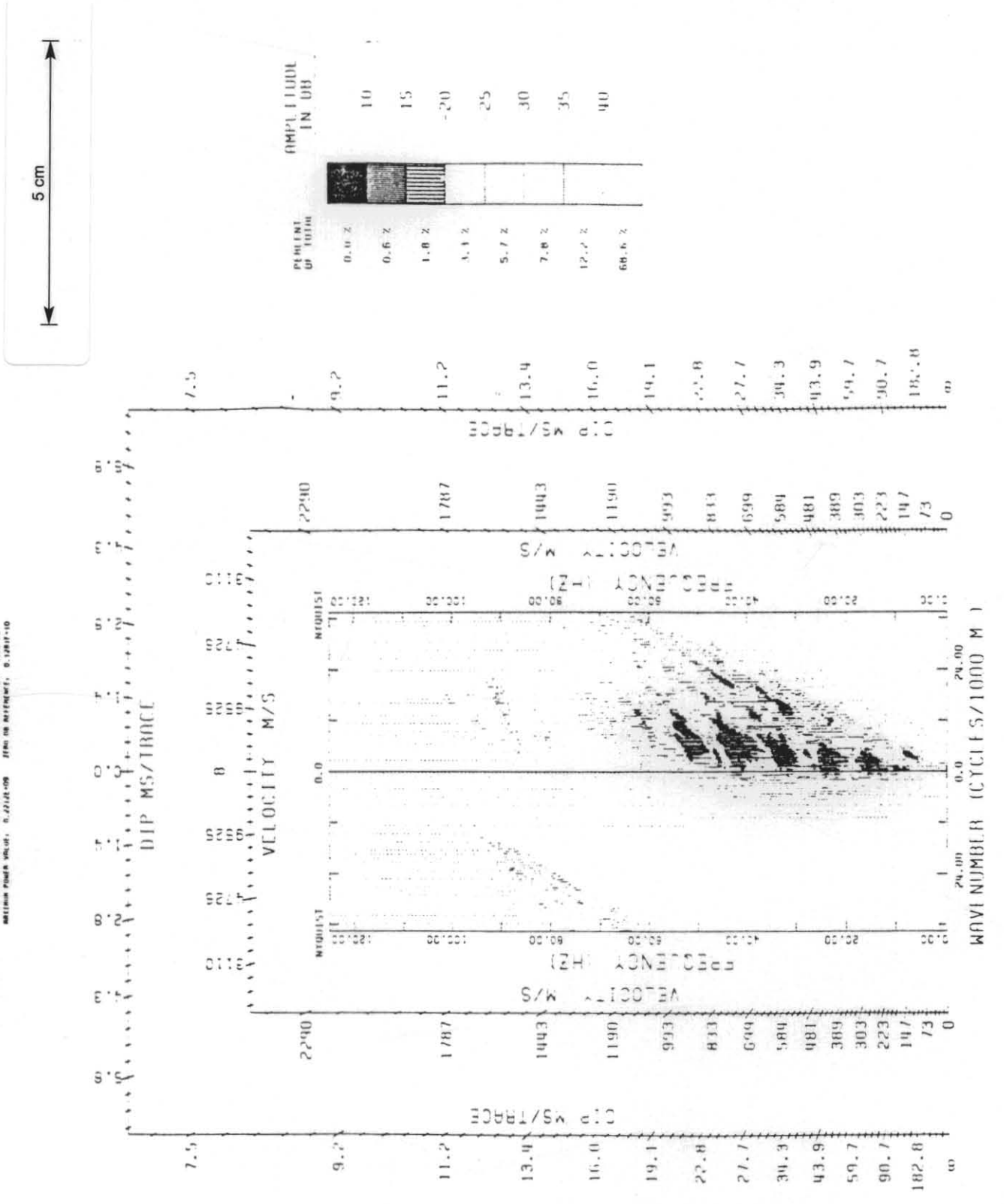
Figure 1c

Figure 1d



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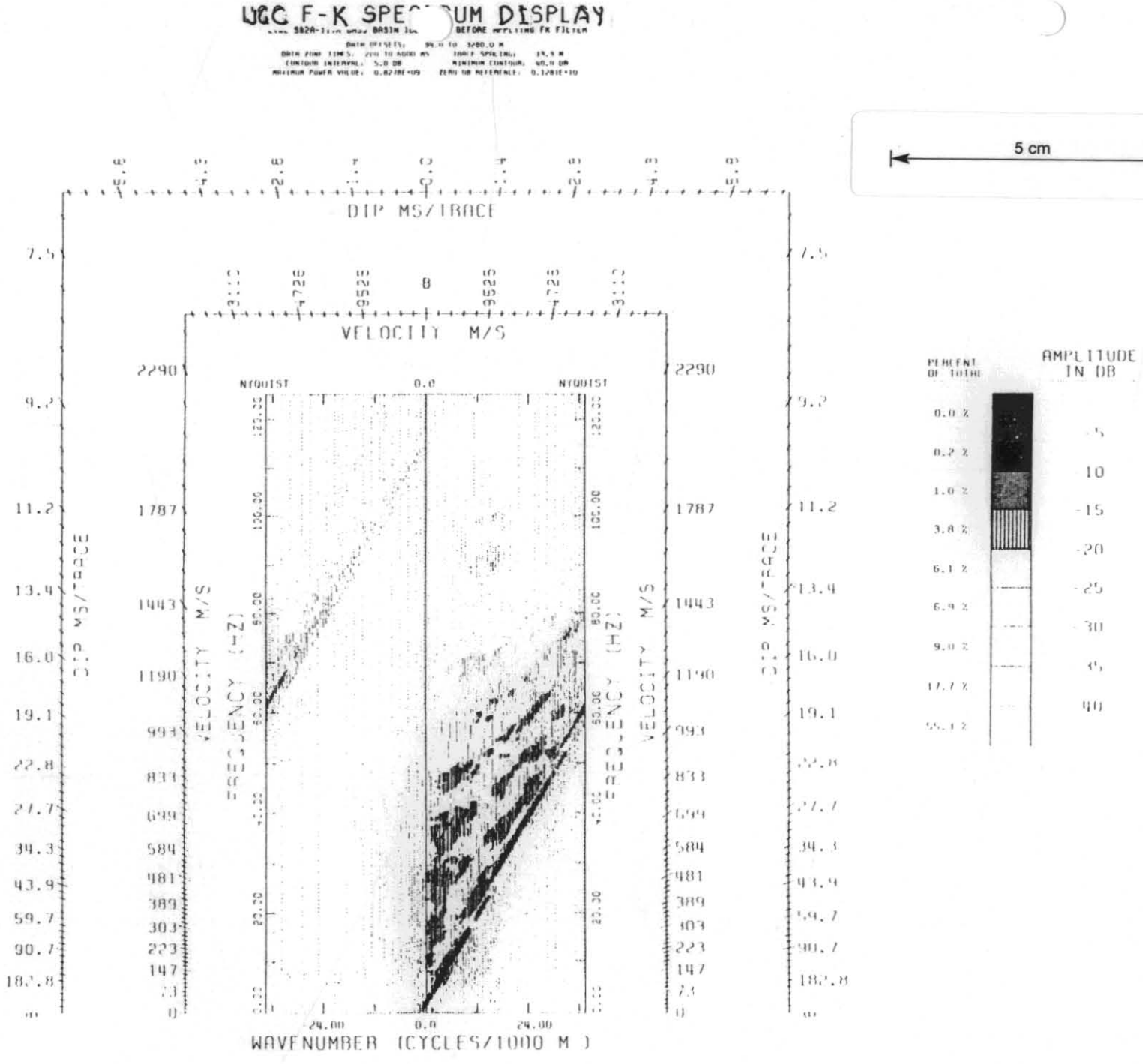

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Figure 2a

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259401

Figure 2b

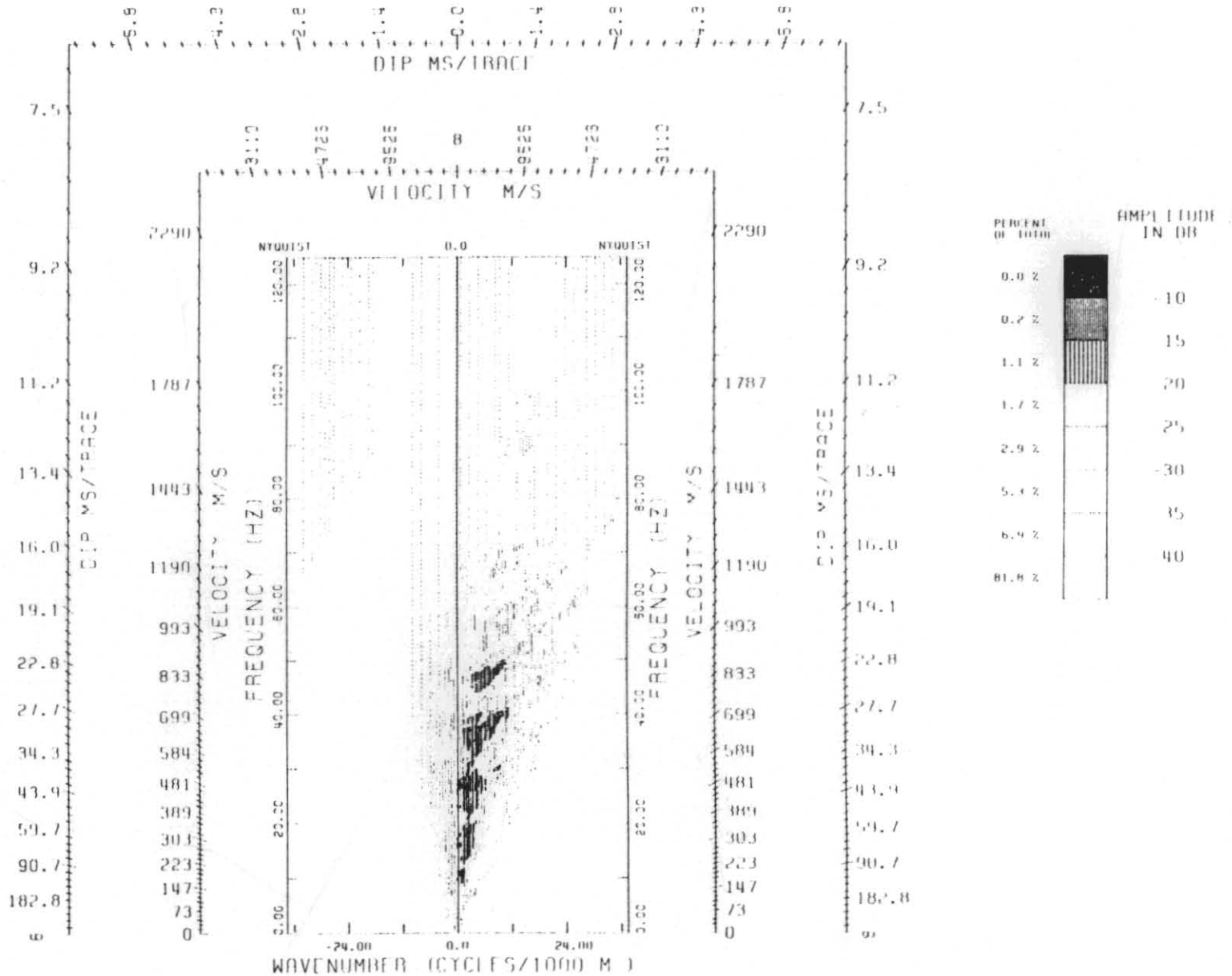

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Figure 2c

WGC F-K SPECTRUM DISPLAY

LINE 592A-117A BASS BASIN IDENT 581 WITH FK +/- 5 MS/TR

DATA OFFSETS: 94.0 TO 3240.0 M
DATA ZONE TIME S: 200 TO 4000 MS TRACE SPACING: 12.5 M
CONTOUR INTERVAL: 5.0 DB MINIMUM CONTOUR: 40.0 DB
MAXIMUM POWER VALUE: 0.2472E+09 ZERO DB REFERENCE: 0.1281E+10

5 cm

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Figure 2d