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T/18P & T/25P

BASS BASIN, TASMANIA

1994 ROCKY CAPE MARINE SEISMIC SURVEY

FINAL REPORT

PART A - DATA ACQUISITION AND PROCESSING

OR_397A

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CONTENTS

		Page No
1	**INTRODUCTION**	1
2	**ACQUISITION**	1
	2.1 Magnetic Tapes	2
	2.2 Summary	2
3	**PROCESSING**	3

TABLES

1	T/18P & T/25P Participating Interests	1
2	Rocky Cape Seismic Survey Acquisition Parameters	2

FIGURES

1 Survey Location Map
2 Tectonic Elements

ENCLOSURES

1 Shotpoint and Water Depth Map (Refer Appendix 4)

APPENDICES

1 Field Tape Listings
2 Field Supervision Report
3 Acquisition Contractors' Operations Report
4 Navigation Report
5 Data Processing Report 1994 Rocky Cape Seismic Survey

1 INTRODUCTION

The Rocky Cape Seismic Survey comprised 839.425 kilometres of 2D data and was acquired between 17 March 1994 and 24 March 1994 in permit areas T/18P and T/25P, Bass Strait, off the northern coast of Tasmania (Figure 1). Western Geophysical Company was engaged to carry out the acquisition and the data were processed by Western Geophysical Inc., Melbourne.

The T/18P and T/25P Joint Venture is operated by SAGASCO Resources Limited. The current participants are listed in Table 1.

Table 1

T/18P Participating Interests	
SAGASCO Resources Limited	85%
Cultus Petroleum (Aust) NL	15%
T/25P Participating Interests	
SAGASCO Resources Limited	45%
AMPOLEX Limited	25%
Bridge Oil Limited	20%
GRE Resources Ltd	10%

The objectives of the Rocky Cape Seismic Survey in T/25P were to detail leads adjacent to the Pelican Trough namely the Tourville, Actaoen and Warrego tilted fault blocks and the Clarke lowside fault play which straddled the T/18P permit boundary (Figure 2). In T/18P the survey was designed to provide detailed coverage over the Aroo North and Aroo East prospects and infill grids over the trefoil, Robbins and Bass 3 flank leads.

2 ACQUISITION

The Rocky Cape Seismic Survey totalled 839.425 kilometres as surface seismic line coverage (Figure 1) using the Western Geophysical seismic vessel MV Western Atlas. The acquisition parameters for the survey are summarised in Table 2, and fully listed in the Western Geophysical Acquisition Report (Appendix 3).

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SAGASCO Resources Ltd.

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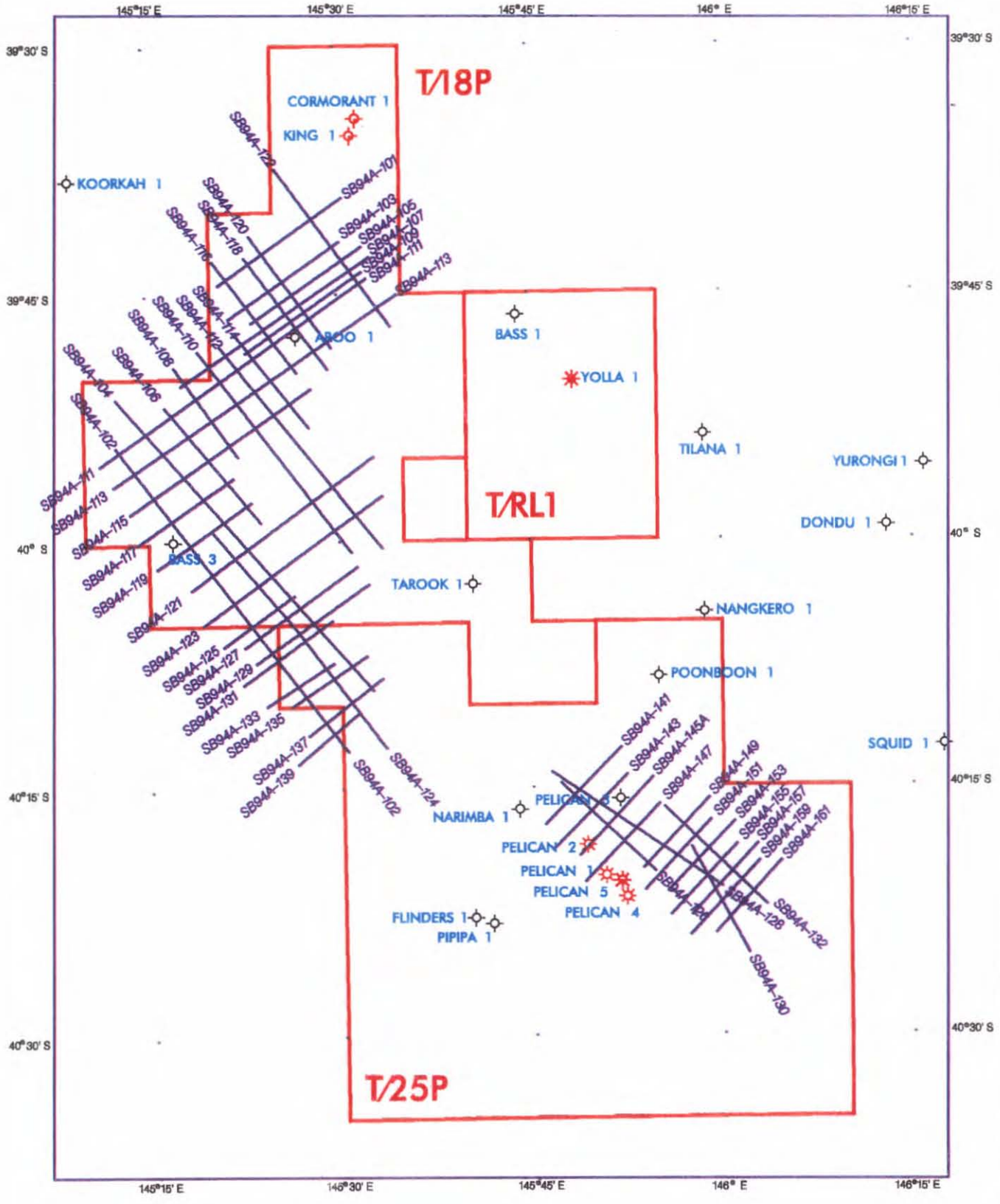

BASS BASIN TASMANIA

LOCATION MAP
1994 ROCKY CAPE
MARINE SEISMIC SURVEY

12374.0994 FIG. 1

Austral Geophysical Consultants Ltd were contracted by SAGASCO to supervise and report on the data acquisition operations performed by the MV Western Atlas. The Rocky Cape Survey Field Supervision Report by Frank Renton (Appendix 2) should be referred to in conjunction with the Western Geophysical report.

The seismic data and positioning data were independently monitored and quality controlled by using two systems. Odergaard and Danneskiold-Samsoe supplied a Ramesses real time seismic processing system and Austral Geophysical Consultants supplied an Acumen real time positioning data processing system. Racal Multifix DGPS, supplied and maintained by Racal Survey Australia was used as the primary navigation system.

2.1 Magnetic Tapes

A concise listing of the field tapes is contained in Appendix 1.

2.2 Summary

The acquisition contractor performed well with an average production rate of 105.19 kilometres per day. The survey was completed with 10 hours of down time recorded and no weather time. There were no lost time injuries or environmental incidents experienced during the survey.

Table 2

Rocky Cape Seismic Survey Acquisition Parameters	
Vessel	MV Western Atlas
Streamer Type	WG-24 Digital Telemetry
Number of Groups	240
Group Interval	240 x 12.5 metres
Active Streamer Length	3000 metres
Shotpoint Interval	25 metres
Fold	60 (nominal)
Sample Rate	2 milliseconds
Record Length	6 seconds
High Cut Filter	196 Hz/214 dB per Octave
Low Cut Filter	6 Hz/18dB per Octave
Cable Depth	10 metres
Cable Offset	285 metres
Airgun Array Volume	3305 cubic inches
Airgun Array Depth	6 metres
Streamer Tracking	9 compasses

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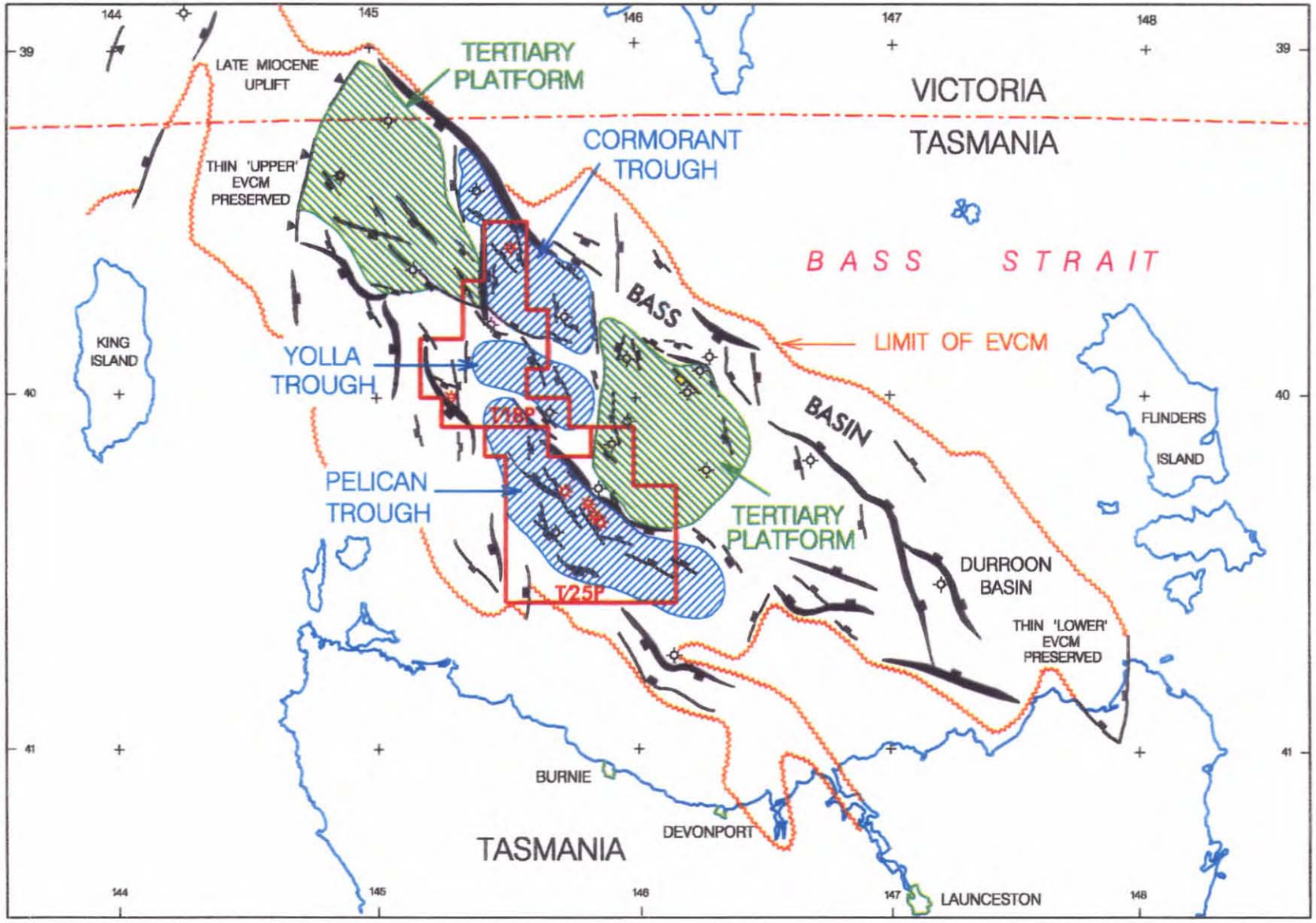

0 20 40 60
Kilometres

BASS BASIN – TASMANIA

TECTONIC ELEMENTS & LOCATION MAP

No: BAS10821.0794 FIG.2

3 PROCESSING

Rocky Cape Processing and Results

The Rocky Cape Seismic Survey was processed by Digicon's Brisbane Centre between May and July of 1994. There it was supervised by S Jestico and processed by T Folkers. S Jestico was also supervising the T/RL1 Yolla 3D survey and there was considerable synergy of tests on the two projects.

Approximately 198 km of older data were reprocessed in conjunction with this new survey. 1569 km of earlier seismic stack data were remigrated to obtain digital data from interpretation.

Processing parameter tests were mainly carried out on Lines SB94A-121 and 161. The objective of the tests was to verify that parameters determined for the neighbouring Yolla 3D survey were optimum for this 2D. Details of tests can be found in the Processor's report (Appendix 5). Special attention was given to

1 The FK filter design
2 The style of and deconvolution processing
3 Pre-stack Mute design - inner and outer
4 Migration velocity field
5 Post-stack noise attenuator
6 Spectral shaping methods and scaling

The final processing sequence can be summarised as follows:

1 Transcription of SEGD
2 Resample
3 Amplitude Recovery, Gain Function = T*V**2
4 F-K Filter with NMO, Pass Zone ± 2000m/s without NMO. Taper: Full bell cosine
5 Trace Summation - Two to one trace
6 Designative Deconvolution - Zerophase 6-70 Hz output wavelet.
7 Bulk Static Correlation - Static correction of +10.7ms to correct for gun and cable depth
8 Gapped predictive deconvolution - 248 ms length, 48 ms gap.
9 Velocity Analysis - First pass velocities were run at 2 kilometre intervals
10 F-K Demultiple - 90% VELS
11 DMO Kirchoff-type DMO
12 Velocity Analysis - Second pass velocity analysis at 1 kilometre intervals
13 Mutes - Inner and outer mutes
14 CDP Stack
15 Modified Residual Migration
16 TV Bandpass Filter
17 Scaling
18 Final Film Displays - Filtered scaled stack, migrated sections, 1:25000, 3.75 ips/sec, Field polarity maintained, Negative numbers plotted as a trough

SAGASCO monitored the processing results at intermediate stages and inspected all the velocity interpretations.

The final seismic image quality of this survey was good. This result was achieved despite non-application of post-stack noise attenuation such as Tau-P processing.

Magnetic Tapes

The following data stages were archived on separate exabyte tapes in a SEGY format.

1) DMO-stack - raw, without spectral whitening or Tau-P
2) DMO-stack - filtered and scaled, without spectral whitening or Tau-P
3) Migration - raw, with spectral whitening before mig, without Tau-P
4) Migration - filtered and scaled, with spectral whitening and Tau-P

Stacking velocity information was provided on a DOS diskette

Contractor Performance

Digicon completed the processing project and in a reasonably professional manner. The operator feels the 2D schedule was compromised due to the resources consumed by the concurrent Yolla 3D project.

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APPENDIX 1

FIELD TAPE LISTING

This appendix comprises a listing of seismic line, field tape and shotpoint ranges.

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ROCKY CAPE SEISMIC SURVEY - FIELD TAPE LISTING

LINE	SP	SP	TAPE	TAPE	BOX	COMMENT
SB94A-132	111	750	4881	4891	1	SOL - EOL
SB94A-130	575	41	4892	4900	1	SOL - CONTD
SB94A-130	40	31	4901	4901	2	CONTD - EOL
SB94A-161	473	31	4902	4909	2	SOL - EOL
SB94A-159	111	572	4910	4917	2	SOL - EOL
SB94A-157	469	295	4918	4920	2	SOL - CONTD
SB94A-157	294	31	4921	4925	3	CONTD - EOL
SB94A-155	469	31	4926	4933	3	SOL - EOL
SB94A-153	111	525	4934	4940	3	SOL - CONTD
SB94A-153	526	549	4941	4941	4	CONTD - EOL
SB94A-151	468	31	4942	4949	4	SOL - EOL
SB94A-149	111	549	4950	4957	4	SOL - EOL
SB94A-147	519	345	4958	4960	4	SOL - CONTD
SB94A-147	344	31	4961	4966	5	CONTD - EOL
SB94A-145	111	300	4967	4970	5	SOL - EOL
SB94A-145A	240	596	4971	4976	5	SOL - EOL
SB94A-143	511	257	4977	4980	5	SOL - CONTD
SB94A-143	256	31	4981	4984	6	CONTD - EOL
SB94A-141	111	601	4985	4993	6	SOL - EOL
SB94A-128	111	525	4994	5000	6	SOL - CONTD
SB94A-128	526	1034	5001	5010	7	CONTD - EOL
SB94A-126	613	57	5011	5020	7	SOL - CONTD
SB94A-126	56	31	5021	5021	8	CONTD - EOL
SB94A-104	1777	643	5022	5040	8	SOL - CONTD
SB94A-104	642	31	5041	5051	9	CONTD - EOL
SB94A-102	111	644	5052	5060	9	SOL - CONTD
SB94A-102	645	1831	5061	5080	10	CONTD - EOL
SB94A-124	1274	80	5081	5100	11	SOL - CONTD
SB94A-124	79	31	5101	5101	12	CONTD - EOL
SB94A-108	529	31	5102	5110	12	SOL - EOL
SB94A-106	111	698	5111	5120	12	SOL - CONTD
SB94A-106	699	790	5121	5122	13	CONTD - EOL
SB94A-125	427	31	5123	5129	13	SOL - EOL
SB94A-129	111	733	5130	5140	13	SOL - EOL
SB94A-133	394	31	5141	5147	14	SOL - EOL
SB94A-137	111	536	5148	5154	14	SOL - EOL
SB94A-139	399	45	5155	5160	14	SOL - CONTD
SB94A-139	44	31	5161	5161	15	CONTD - EOL
SB94A-135	111	519	5164	5170	15	SOL - EOL

LINE	SP	SP	TAPE	TAPE	BOX	COMMENT
SB94A-131	529	31	5171	5179	15	SOL - EOL
SB94A-127	111	165	5180	5180	15	SOL - CONTD
SB94A-127	166	737	5181	5190	16	CONTD - EOL
SB94A-110	1172	578	5191	5200	16	SOL - CONTD
SB94A-110	577	31	5201	5210	17	CONTD - EOL
SB94A-112	111	705	5211	5220	17	SOL - CONTD
SB94A-112	706	1279	5221	5230	18	CONTD - EOL
SB94A-123	1025	431	5231	5240	18	SOL - CONTD
SB94A-123	430	31	5241	5247	19	CONTD - EOL
SB94A-121	111	824	5249	5260	19	SOL - CONTD
SB94A-121	825	1128	5261	5266	20	CONTD - EOL
SB94A-119	554	31	5267	5275	20	SOL - EOL
SB94A-115	111	405	5276	5280	20	SOL - CONTD
SB94A-115	406	1102	5281	5292	21	CONTD - EOL
SB94A-117	557	162	5293	5300	21	SOL - CONTD
SB94A-17	161	31	5301	5303	22	CONTD - EOL
SB94A-113	111	1125	5304	5320	22	SOL - CONTD
SB94A-113	1126	1647	5321	5329	23	CONTD - EOL
SB94A-111	1494	840	5330	5340	23	SOL - CONTD
SB94A-111	839	31	5341	5354	24	CONTD - EOL
SB94A-107	111	465	5355	5360	24	SOL - CONTD
SB94A-107	466	1138	5361	5372	25	CONTD - EOL
SB94A-109	670	216	5373	5380	25	SOL - CONTD
SB94A-109	215	31	5381	5384	26	CONTD - EOL
SB94A-105	111	717	5385	5395	26	SOL - EOL
SB94A-103	640	346	5396	5400	26	SOL - CONTD
SB94A-103	345	31	5401	5406	27	CONTD - EOL
SB94A-101	111	798	5407	5418	27	SOL - EOL
SB94A-122	111	224	5419	5420	27	SOL - CONTD
SB94A-122	225	988	5421	5433	28	CONTD - EOL
SB94A-120	657	243	5434	5440	28	SOL - CONTD
SB94A-120	242	31	5441	5444	29	CONTD - EOL
SB94A-118	111	737	5445	5455	29	SOL - EOL
SB94A-116	659	365	5456	5460	29	SOL - CONTD
SB94A-116	364	31	5461	5466	30	CONTD - EOL
SB94A-114	111	642	5467	5475	30	SOL - EOL

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APPENDIX 2

FIELD SUPERVISION REPORT

This appendix comprises the Consultant's field supervision report.

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FIELD SUPERVISION REPORT

FOR

SAGASCO RESOURCES LTD.

PROJECT

1994 ROCKY CAPE 2D MARINE SEISMIC SURVEY

PERMIT AREAS T/18P & T/25P

BASS BASIN - BASS STRAIT

DATES MARCH 17th TO MARCH 24th, 1994

CONTRACTOR WESTERN GEOPHYSICAL COMPANY

VESSEL M.V. WESTERN ATLAS

AUTHOR Frank Renton

CONTENTS 498014

1 INTRODUCTION 4
1.1 GENERAL 4
1.2 SURVEY PARAMETERS 6
1.3 SURVEY STATISTICS 6

2 PERFORMANCE AND CONCLUSIONS 7
2.1 WG24 RECORDING SYSTEM 7
2.2 STREAMER 7
2.3 ENERGY SOURCE 7
2.4 NAVIGATION SYSTEM 7
2.5 ANCILLARY QC SYSTEMS 8
2.6 GENERAL SAFETY 8

3 MISCELLANEOUS 9
3.1 WEATHER 9
3.2 TIDES 10
3.3 MISCELLANEOUS 10

4 PERSONNEL 11
4.1 PERSONNEL LISTING 11
4.1.1 SEISMIC CREW PERSONNEL 11
4.1.2 MARINE CREW PERSONNEL 11

5 VESSEL AND SAFETY 12
5.1 VESSEL SPECIFICATIONS 12
5.2 VESSEL SAFETY 13
5.2.1 FIRE FIGHTING SYSTEMS 13
5.2.2 LIFESAVING EQUIPMENT 15
5.2.3 FIRST AID 17
5.2.4 GENERAL SAFETY EQUIPMENT 17
5.3 SAFETY MEETING MINUTES 17
19

6 SEISMIC RECORDING SYSTEM 20
6.1 SEISMIC RECORDING SYSTEM SUMMARY 20
6.1.1 WG-24 RECORDING SYSTEM SPECIFICATIONS 20
6.2 STREAMER CABLE ELECTRONICS 21
6.3 ON BOARD RECORDING SYSTEM 22
6.4 SYSTEM CONFIGURATION OPTIONS 23
6.5 WG-24 INSTRUMENT/STREAMER TESTS 24
MISSING — 6.6 RAMESSES FIELD PROCESSING SYSTEM 25

7 STREAMER CABLE 26
7.1 STREAMER SPECIFICATIONS 26
7.2 STREAMER DESCRIPTION 26
7.3 STREAMER QUALITY CONTROL 29

498015

8 ENERGY SOURCE 30
8.1 ENERGY SOURCE DETAILS 30
8.2 ENERGY SOURCE SUMMARY 30
8.2.1 AIR GUN THEORY OF OPERATION 31
8.2.2 ENERGY SOURCE ARRAY DESCRIPTION 32
8.3 ENERGY SOURCE QUALITY CONTROL 34
8.3.1 LRS-100 SYNCHRONISER 34
8.3.2 ARRAY DEPTH/PRESSURE MONITORING SYSTEMS 35
8.3.3 SOURCE LOCATION SYSTEM 35

9 POSITIONING SYSTEMS 36
9.1 POSITIONING SYSTEMS DETAILS 36
9.1.1 RADIO POSITIONING SYSTEMS DETAILS 37
9.1.2 MAPPING PARAMETERS 37
9.2 MULTIFIX DGPS DESCRIPTION 38
9.3 NAVIGATION SYSTEM CALIBRATION 39
9.4 BATHYMETRY 39
9.5 WISDOM-II SYSTEM INTRODUCTION 39
9.5.1 WISDOM-II DESCRIPTION 40
9.5.2 NAVIGATION INTERFACE UNIT 41
9.6 DIGICOURSE ACOUSTIC/COMPASS SYSTEM 42
9.6.1 STREAMER COMPASS/DEPTH MEASUREMENT 42
9.6.2 DIGICOURSE 293BSX OPERATOR STATION 42
9.6.3 DIGICOURSE 5011 COMPASS BIRD 43
9.7 ACUMEN QUALITY CONTROL SYSTEM 43

10 SURVEY LOGS AND LINE STATISTICS 45
10.1 DAILY DIARY 45
10.2 DAILY PRODUCTION FIGURES 48
10.3 QA LINE LOGS 50
10.4 LINE END COORDINATE LISTING 76

FIGURES

1. SURVEY LOCATION DIAGRAM
2. SURVEY LINE DIAGRAM
3. STREAMER CABLE ELECTRONICS BLOCK DIAGRAM
4. WG-24 SYSTEM BLOCK DIAGRAM
5. *MISSING*
6. WG-24 STREAMER CABLE CONFIGURATION
7. WG-24 STREAMER CABLE SECTION & HYDROPHONE LAYOUT
8. AIR GUN FIRING CYCLE
9. 3305 ci SOURCE ARRAY CONFIGUATION
10. ELEVATION OF TYPICAL GUN STRINGS
11. ANTENNA LOCATION & OFFSET
12. MULTIFIX SYSTEM BLOCK DIAGRAM
13. THE WISDOM-II SYSTEM CONFIGURATION
14. ACUMENT QC SYSTEM

TABLES

3.1 BEAUFORT WIND & SEA SCALES

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1 INTRODUCTION

1.1 GENERAL

This report covers the marine seismic data acquisition operation conducted by Sagasco Resources Ltd. in the offshore exploration permit areas T/18P and T/25P. The permit areas are located in the Bass Strait, off the northern coast of Tasmania. Survey operations covered in this document were conducted between March 17 and March 24, 1994.

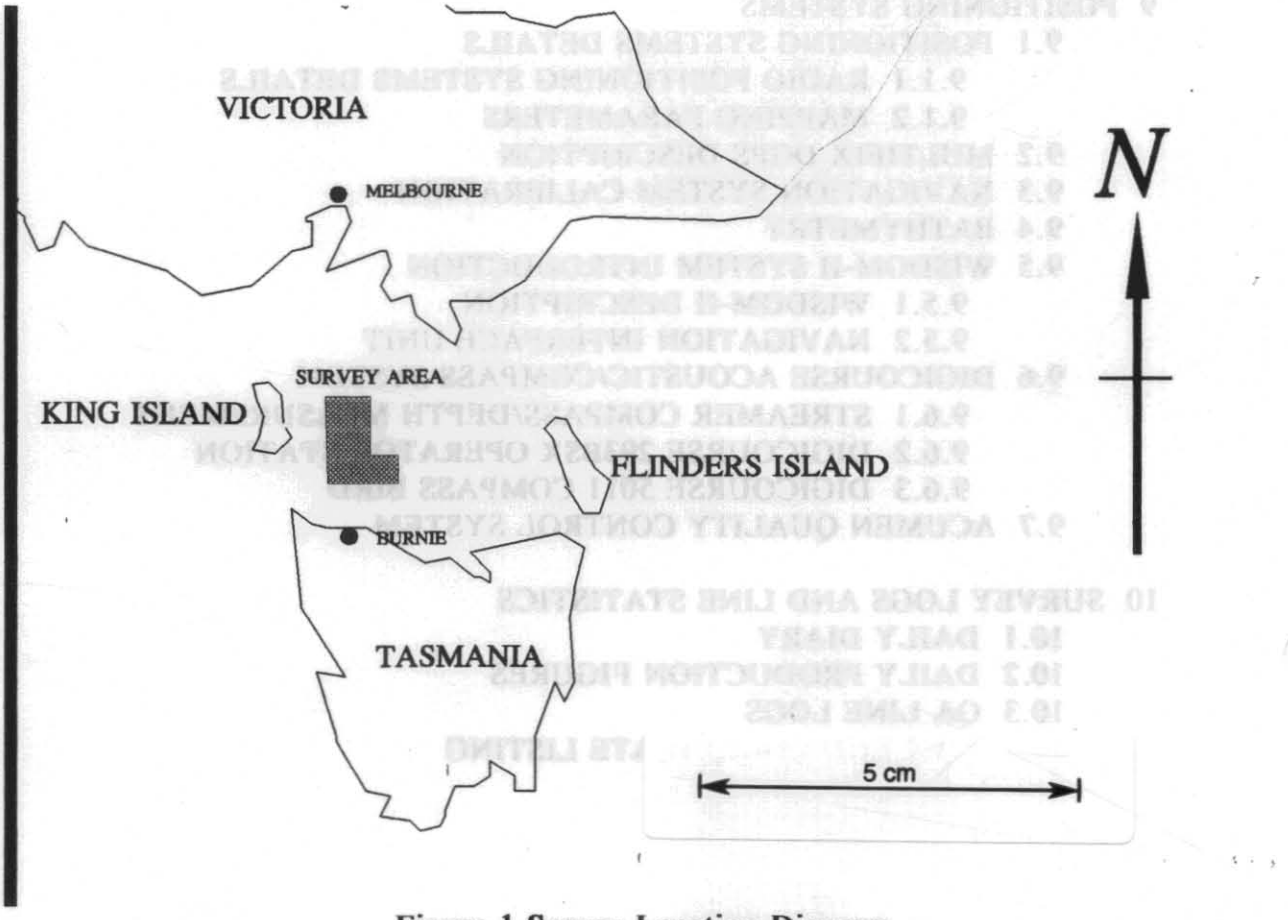

Figure 1 Survey Location Diagram

The survey, titled Rocky Cape 2D Marine Seismic Survey encompassed 839.425 surface kilometres, made up of 46 survey lines. Data collection technique involved the use of single continuous tow streamer cable, with an active length of 3000 metres, and single air gun energy source with the capacity of 3305 cubic inches.

Western Geophysical Company was chosen as the contractor to carry out the survey operations. They supplied the survey vessel M.V. Western Atlas, marine/seismic crew and the equipment for the data acquisition phase of the survey. Racal Multifix DGPS was used as the navigation system with a direct injection system as a second system. Racal Survey provided and maintained the systems during the course of the survey but had no personnel present on the survey vessel. Digicourse Ltd. were the manufacturers of the Digicourse 5000 Series compass/depth controllers used on the streamer for the survey. The system was owned, supplied and operated by Western Geophysical Company.

Austral Geophysical Consultants Pty. Ltd. supervised and reported on the data acquisition operations and monitored data quality during the survey. The seismic and positioning data were both completely independently monitored and quality controlled using two systems. ØDEGAARD & DANNESKIOLD-SAMSØE, supplied a Ramesses real-time seismic processing system. A single velocity function was supplied by the client. Austral Geophysical Consultants supplied the ACUMEN real time positioning data processing system developed by The QSEA Company. Both of these systems were used by Austral personnel for the duration of the survey.

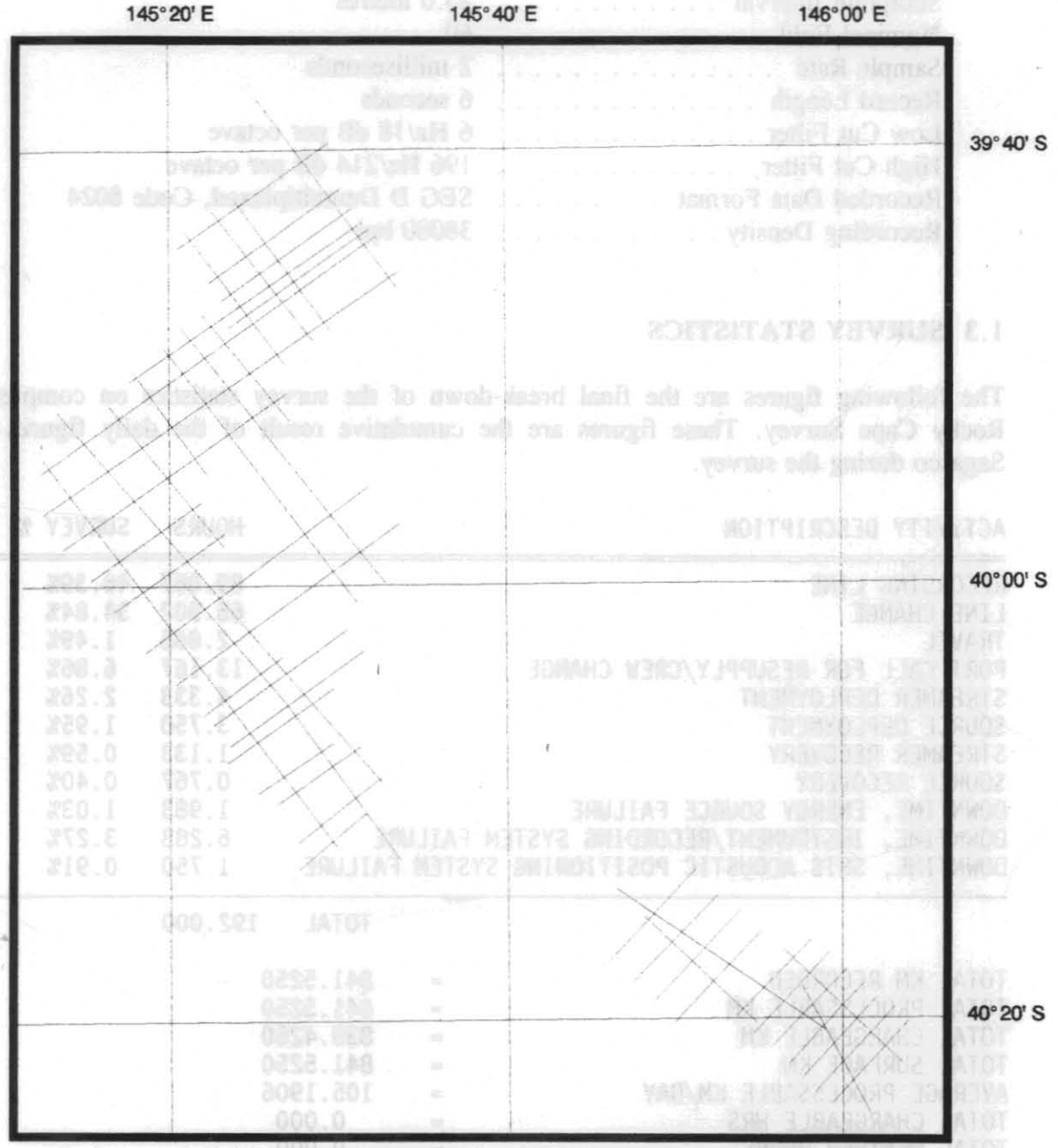

Figure 2 Survey Line Diagram

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1.2 SURVEY PARAMETERS

Survey Line Coverage	839.425 kilometres
Streamer Configuration	Single 240 Trace, 3000 metres active length
Source Configuration	Single Airgun Array
Capacity	3305 cubic inches
Streamer Depth	10 metres
Source Depth	6 metres
Trace Interval	12.5 metres
Shotpoint Interval	25.0 metres
Nominal Fold	60
Sample Rate	2 milliseconds
Record Length	6 seconds
Low Cut Filter	6 Hz/18 dB per octave
High Cut Filter	196 Hz/214 dB per octave
Recorded Data Format	SEG D Demultiplexed, Code 8024
Recording Density	38000 bpi

1.3 SURVEY STATISTICS

The following figures are the final break-down of the survey statistics on completion of the Rocky Cape Survey. These figures are the cumulative result of the daily figures relayed to Sagasco during the survey.

ACTIVITY DESCRIPTION	HOURS	SURVEY %
RECORDING LINE	89.067	46.39%
LINE CHANGE	66.902	34.84%
TRAVEL	2.865	1.49%
PORT CALL FOR RESUPPLY/CREW CHANGE	13.167	6.86%
STREAMER DEPLOYMENT	4.333	2.26%
SOURCE DEPLOYMENT	3.750	1.95%
STREAMER RECOVERY	1.133	0.59%
SOURCE RECOVERY	0.767	0.40%
DOWNTIME, ENERGY SOURCE FAILURE	1.983	1.03%
DOWNTIME, INSTRUMENT/RECORDING SYSTEM FAILURE	6.283	3.27%
DOWNTIME, SSTS ACOUSTIC POSITIONING SYSTEM FAILURE	1.750	0.91%
TOTAL	192.000	

TOTAL KM RECORDED	=	841.5250
TOTAL PROCESSABLE KM	=	841.5250
TOTAL CHARGEABLE KM	=	839.4250
TOTAL SURFACE KM	=	841.5250
AVERAGE PROCESSABLE KM/DAY	=	105.1906
TOTAL CHARGEABLE HRS	=	0.000
TOTAL WEATHER HOURS	=	0.000
TOTAL RECORDED 2D PROGRAM KM	=	841.5250
TOTAL PROCESSABLE 2D PROGRAM KM	=	841.5250
TOTAL CHARGEABLE 2D PROGRAM KM	=	839.4250
TOTAL COMPLETED 2D PROGRAM LINES	=	47

2 PERFORMANCE AND CONCLUSIONS

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2.1 WG24 RECORDING SYSTEM

Unfortunately the instruments were responsible for the largest portion of down time accumulated during the survey. As can be seen from the survey statistics in the first section of this report, over 6 hours were lost due to instrument faults. These occurred at fairly random intervals throughout the survey on the 21st, 22nd and 24th of March. On no occasion was it possible for the fault of the problem to be isolated as, after system reset, normal functioning of the instruments was restored. These instruments are still a relatively new installation on board this survey vessel, and operator experience is also very limited. Taking both of these points into account, the failure rate of the WG24 was within acceptable limits, but it would have to be hoped that the near future should produce a further improvement in performance levels.

2.2 STREAMER

Streamer ballasting, set from the start of the job, was fairly good. A total of nine depth controller/compasses were used on the streamer. Throughout the survey start and end of line noise levels averaged at between 2.7 and 4.5 μbars. The only exception to this was at the end of line 103, shot on the 23rd of March, when just over 6 μbars was measured. At first this was attributed to another ship which had been in the vicinity at the end of line. However the characteristics of the noise was not that normally seen from ship noise and after some discussion with both watches it was discovered that some unexplained events had been noted on the streamer on line changes the previous evening. It is the guess of this author that there was some sort of random seismic activity, possibly earth tremors, sourcing from Antarctica.

2.3 ENERGY SOURCE

The overall performance of the source was acceptable, with downtime well within expected limits for such a survey. The only instance of lost time due to source failure was on the 19th when an air hose ruptured on line 145. This caused a termination and circle, but was the only instance of such lost time during the whole survey. There were however a number of other more minor, but more consistent problems with the source. By far the majority of the lines shot suffered from some sort of source misfires, but of these a fairly large proportion were the result of internal time breaks and shots at which only half the array was fired. The logging of those misfires, where only half of the array was firing, was not done particularly efficiently. On a number of lines the misfire had not been noted in the initial logs and only after being prompted to look at the Ramesses output and the LRS-100 printout was the fault noted by the contractor. The entire source, from LRS-100 controller, to the type of airgun deployed by this vessel, are far from being the latest technology and it is to be hoped that the contractor will at least update to sleeve guns in the near future.

2.4 NAVIGATION SYSTEMS

The Multifix system performed well, with the exception of a period early every evening when coverage was limited to 4 SVs and some problems were encountered by the helmsman in trying to steer the line. The pseudo range corrections were generally below 1 metre, and all stations were within three metres of the derived position.

The shot spacing was generally within a few centimetres of 25 metres when averaging along a whole line. The standard deviation observed for the mean of those values varied between 0.8 to 2 metres. The variation seen is directly related to the reliability of the positioning systems used and is smoothed both in Acumen and the Wisdom systems. The use of a combination of Multifix

and Direct Injection DGPS proved a reasonable balance for this survey. The performance of the compasses was generally very good with compass standard deviation often below 1 metre. All compass/birds conformed to compass specifications. The only degradation seen, was the depth keeping reliability due to reduced battery charge, something which all birds suffer from. Compass performance was generally within a 2 metre standard deviation. The fathometer underwent a calibration check, while alongside in Portland on the 19th of January 1994. Th fathometer performed to within manufacturers specifications. Data was collected on all lines, with paper data recordings produced for the lines. The seabed was generally flat and featureless, with average depths between 56 metres and 80 metres, over the entire prospect area.

The WISDOM system operated without fault for the entire survey. The only problem of any kind related to the system was an initial confusion concerning the shot numbering convention which led to lines 132, 130, 157, 159 and 161 being numbered opposite to the convention requested. All of the remaining survey was shot such that shotpoint at the western end of the line was numbered 101.

2.5 ANCILLARY QC SYSTEMS

The Ramesses system was operated by contractor personnel and output used to assist the survey QC. The system was used for all but the first few lines of the survey when operator problems resulted in some lines being missed. There were continuing problems related to the WG24 sending erroneous code for seismic record type. This would typically result in a number of shots being missed at the start of line when the record type code in the parameters was changed from an 8 to a 2 or vice versa. For the vast majority of the survey, stacked sections were produced. Noise and signal response for most lines was examined, and saved to tape.

The Acumen system was used to collect data on all of the lines shot on the survey. As such the system was used primarily as a QC tool using the position data from both Multifix and Direc Injection DGPS. Basic streamer shaping was also done using the Digicourse compass inputs. This data was then in turn processed to P190 format and recorded to tape. Some minor problems were experienced with the system but 99% of the positioning data was processed and recorded to tape.

2.6 GENERAL SAFETY

There were no problems experienced in this area during the survey. One minor back pain was reported by a compressor mechanic. A possible cause of the pain was assigned to work the mechanic had been performing during compressor maintenance. Safety meetings and drills were held regularly even though the survey was of relatively short duration. The assignment of a full time safety officer to this crew has provided some impetus to the safety management function on board.

3 MISCELLANEOUS

3.1 WEATHER

Weather forecasting was received via coastal radio stations on a standard set of radio frequencies. In addition to this forecast a synoptic weather map was received on the ships weather facsimile on an irregular basis (generally 12 hour intervals). This was supplied by the bureau of meteorology on a standard set of facsimile radio frequencies. A daily weather forecast was received aboard the vessel from the Bureau of Meteorology, Victorian branch under an arrangement with SAGASCO Resources Ltd.

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

TABLE 3.1 BEAUFORT WIND AND SEA SCALES

WIND SCALE

Beaufort Number	Descriptive Term	Mean Wind Speed Knots - m/sec	Probable Wave Height in Metres
0	Calm	< 1 - 0.0-0.2	
1	Light Air	1-3 - 0.3-1.5	0.1
2	Light Breeze	4-6 - 1.6-3.3	0.2
3	Gentle Breeze	7-10 - 3.4-5.4	0.6
4	Moderate Breeze	11-16 - 5.5-7.9	1-1.5
5	Fresh Breeze	17-21 - 8.0-10.7	2-2.5
6	Strong Breeze	22-27 - 10.8-13.8	3-4
7	Near Gale	28-33 - 13.9-17.1	4-5.5
8	Gale	34-40 - 17.2-20.7	5.5-7.5
9	Strong Gale	41-47 - 20.8-24.4	7-10
10	Storm	48-55 - 24.5-28.4	9-12.5
11	Violent Storm	56-63 - 28.5-32.6	11.5-16
12	Hurricane	64 + - 32.7 +	14

SEA STATE

	SEA	SWELL	VISIBILITY
0	Glassy	No Swell	>27 Miles
1	Rippled	Very Slight	11 Miles
2	Wavelets	Slight	5.4 Miles
3	Slight	Low	2.2 Miles
4	Moderate	Moderate	1.1 Miles
5	Rough	Fairly Heavy	0.5 Miles
6	Very Rough	Heavy	0.3 Miles
7	High	Very Heavy	0.1 Miles
8	Very High	Phenomenal	0.03 Miles
9	Phenomenal		>0.03 Miles

The following weather observations are taken from the Q.A.Line Logs and give a clear picture of the weather and sea conditions experienced during the survey.

TIME	LINE	WIND	SEA STATE	SWELL
DATE 18/03/94				
00:33	SB94A-132	FORCE 3-4 SE	SLIGHT	<1 M
03:43	SB94A-130	FORCE 3-4 SE	SLIGHT	<1 M
06:52	SB94A-161	FORCE 3-4 SSE	SLIGHT	<1 M
09:15	SB94A-159	FORCE 3-4 NE	SLIGHT	<1 M
11:44	SB94A-157	FORCE 3-4 SSW	SLIGHT	<1 M
14:05	SB94A-155	LIGHT AIRS	SLIGHT	<1 M
16:22	SB94A-153	LIGHT AIRS	SLIGHT	<1 M
18:40	SB94A-151	LIGHT AIRS	SLIGHT	<1 M
21:04	SB94A-149	FORCE 2-3 SE	SLIGHT	<1 M
23:26	SB94A-147	FORCE 2-3 NE	SLIGHT	<1 M
DATE 19/03/94				
01:55	SB94A-145	FORCE 2-3 N	SLIGHT	<1 M
04:24	SB94A-145A	FORCE 2-3 SE	SLIGHT	<1 M
06:40	SB94A-143	LIGHT AIRS	SLIGHT	<1 M
09:13	SB94A-141	FORCE 2-3 SE	SLIGHT	<1 M
12:43	SB94A-128	FORCE 2-3 E	SLIGHT	<1 M
16:24	SB94A-126	FORCE 2-3 E	SLIGHT	<1 M
20:20	SB94A-104	FORCE 2-3 NE	SLIGHT	<1 M
DATE 20/03/94				
02:02	SB94A-102	FORCE 4-5 SE	SLIGHT	<1 M
08:13	SB94A-124	FORCE 3-4 NE	SLIGHT	<1 M
12:56	SB94A-108	FORCE 6-7 ENE	MODERATE	<1 M
15:27	SB94A-106	FORCE 4-5 E	MODERATE	<1 M
18:54	SB94A-125	FORCE 5-6 E	MODERATE	<1 M
21:17	SB94A-129	FORCE 5-6 NE	MODERATE	<1 M

TIME	LINE	WIND	SEA STATE	SWELL
DATE 21/03/94				
00:25	SB94A-133	FORCE 5-6 NE	MODERATE	<1 M
02:47	SB94A-137	FORCE 5-6 NE	MODERATE	<1 M
04:46	SB94A-139	FORCE 5-6 NE	MODERATE	<1 M
09:15	SB94A-135	FORCE 4 NE	MODERATE	<1 M
11:51	SB94A-131	FORCE 3 ENE	SLIGHT	<1 M
14:23	SB94A-127	FORCE 2-3 NE	SLIGHT	<1 M
17:29	SB94A-110	FORCE 2 VAR.	SLIGHT	<1 M
21:43	SB94A-112	FORCE 2 VAR.	SLIGHT	<1 M
DATE 22/03/94				
02:24	SB94A-123	FORCE 3 SW	SLIGHT	<1 M
06:40	SB94A-121	FORCE 1-2 VAR.	SLIGHT	<1 M
11:23	SB94A-119	FORCE 1-2 VAR.	SLIGHT	<1 M
16:26	SB94A-115	FORCE 1-2 VAR.	SLIGHT	<1 M
20:47	SB94A-117	FORCE 1-2 VAR.	SLIGHT	<1 M
23:41	SB94A-113	FORCE 1-2 VAR.	SLIGHT	<1 M
DATE 23/03/94				
05:04	SB94A-111	FORCE 1-2 VAR.	SLIGHT	<1 M
10:37	SB94A-107	FORCE 3 E	SLIGHT	<1 M
14:29	SB94A-109	FORCE 5-6 E	MODERATE	<1 M
17:17	SB94A-105	FORCE 5-6 ENE	MODERATE	<1 M
20:25	SB94A-103	FORCE 5-6 ENE	MODERATE	<1 M
23:02	SB94A-101	FORCE 4-5 E	MODERATE	1 M
DATE 24/03/94				
05:09	SB94A-122	FORCE 5-6 E	MODERATE	1 M
08:54	SB94A-120	FORCE 4 E	MODERATE	1 M
11:55	SB94A-118	FORCE 5-6 E	MODERATE	1 M
14:50	SB94A-116	FORCE 5-6 E	MODERATE	<1 M
17:51	SB94A-114	FORCE 5 ENE	MODERATE	<1 M

3.2 TIDES

The tide tables which follow are for Stanley (Circular Head) on the north coast of Tasmania. This is the nearest tidal station to the survey area, approximately 110 kilometres south of the centre of the survey area. The Geographical location of the tide station is:-

Latitude 40° 46' South Longitude 145° 18' East

Date	Time	Height	Date	Time	Height	Date	Time	Height
17 Mar	0315	3.3	18 mar	0350	3.4	19 Mar	0425	3.4
	0949	0.9		1024	0.9		1100	0.9
	1546	3.3		1623	3.4		1700	3.3
	2203	1.2		2239	1.2		2315	1.2
20 Mar	0459	3.4	21 Mar	0533	3.4	22 Mar	0031	1.2
	1137	0.9		1215	0.9		0611	3.4
	1737	3.3		1815	3.3		1258	0.9
	2352	1.2					1856	3.3
23 Mar	0115	1.3	24 Mar	0203	1.3	25 Mar	0300	1.2
	0654	3.4		0744	3.4		0843	3.4
	1344	0.9		1436	0.9		1534	0.9
	1943	3.3		2033	3.3		2130	3.3

3.3 MISCELLANEOUS

There were no natural navigation hazards in the area and scouting operations were not required for this survey. There was only minimal external seismic interference encountered during the course of the survey. and this is not expected to present any problems with processing of the data. Shipping and fishing movements in the area were virtually non existent. Communications to/from the client were by facsimile transmitted via the vessels Marisat terminal.If necessary telephone communications via the Marisat terminal were available. A mobile phone was available, but did not always work due to the range to the nearest transmitting cell.

4 PERSONNEL

4.1 PERSONNEL LISTING

4.1.1 SEISMIC CREW PERSONNEL

Co-ordinators	B. Williams
	R. Chow
Assistant Co-ordinators	W. Simonton
	B. Bromwich
Technicians	E. Dale
	G. Knight
Observers	B. Vernon
	D. Coutts
	J. Miears
	M. Donnison
	M. Cunningham
	A. Norris
Navigators	B. Cole
	H. McMenamin
	R. Libke
	A. Evans
	N. Meyers
	D. Lindley
Gun Mechanics	P. Cobby
	S. French
	B. Higgins
	D. Orton
	T. Means
Compressor Mechanics	A. Powell
	G. Hieb
Geophysical QC Personnel	E. Karlsen
Safety Officer	L. Cowin
SAGASCO Representative	F.Renton (Austral)

4.1.2 MARINE CREW PERSONNEL

Master	M. Currie
Chief Mate	B. Payne
Second Mate	N. Wade
Chief Engineer	J. Mclean
Second Engineer	R. Egan
Third Engineer	Y. Sang Lee
Able Seaman	D. Lutey
Able Seaman	S. Hoogerwaard
Able Seaman	B. Wilson
Able Seaman	F. Ball
Cook	L. Saunders
Cook	G. Zalmastra
Steward	R. Ward
Steward	G. Ernst

5 VESSEL AND SAFETY

5.1 VESSEL SPECIFICATIONS

Vessel Name	:	M.V. Western Atlas
Registry	:	Panama
Home Port	:	Panama
Owner	:	Western Sea Services, Panama
Operator	:	Western Geophysical Company.
Trade	:	Foreign Going Seismic Exploration.
Survey Register	:	ABS
Australian Status	:	Imported (Temporary).
Call Sign	:	HP 4862
Official Number	:	18058-88
Length Over All	:	80.8 metres
Beam	:	17.9 metres
Draft	:	4.3 metres
Load Line	:	Panamanian
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	:	322,000 litres
Watermaker Capacity	:	10 Tonnes/24 Hrs
Endurance	:	40 days Full Power, 20% Reserve.
Speed	:	12 Knots
Berths	:	63 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.
Gyro Compass	:	Sperry Mk 23 Mod. 4.

Helicopter Landing Site	:	18.3 x 18.3 Metres.
Helicopter Rating	:	S76, 212, and Super Puma Helicopters.

Communication Equipment

Marisat	:	JRC JHE-45A Mk II voice,telex, fax.
Radios	:	Dancom HF 1200 SSB ICOM IC-M200 SSB Robertson 100X VHF ICOM IC-MSS VHF Regency Polaris NC7200 VHF Skanti SSB TRP5000 ICOM IC-M700TY MF/HF JRC-NCH-700 MF/HF 2 x Sailor compact VHF RT 2048 Collins 250S Aircraft VHF AM Spilsburry Communications LWX-100A Helicopter Homing Beacon.

5.2 VESSEL SAFETY

5.2.1 FIRE FIGHTING SYSTEMS

FIRE DETECTION

A Kidde Automated KDR-1000 Fire Alarm System is installed on the vessel. This system is fitted throughout the vessel with the central control panel located on the bridge. The detection system consists of 133 photo electric smoke detectors, eight ionisation and six thermal detectors, supplemented by 11 "Break glass/Push button" manual alarms, that are situated throughout the ship. Smoke detectors are fitted in all closed areas including accommodation and recreation areas, recording room, engine room, compressor room, propulsion room/workshop and tank tops. These are combined in higher risk areas with thermal detectors. The central alarm control panel is located on the vessel bridge.

There are 12 general alarm bells and nine Klaxon fire alarm sirens around the ship which, when sounded, are audible throughout the vessel, including areas of high noise level such as the engine room and propulsion room. The engine and propulsion rooms are equipped with an air horn siren and halon alarms.

FIRE FIGHTING DEVICES

There are five fixed automatic systems in high risk areas- Halon systems are installed in the engine room, compressor room/workshop,recording room, paint locker and the incinerator room.

The helicopter landing deck is protected by two foam branch monitors situated above the recording room overlooking the heliport, each with a capacity of 25 c. metres/hour. The monitors are supplemented by a spare foam tank, two 50kg. powder extinguisher (trolley mounted) and two 9 kg. CO2 extinguishers. Additional cutting and prying equipment is located at the adjacent fire station behind the recording room and immediately forward of the helideck.

The vessel is equipped with eight breathing apparatus situated in three fire station areas; the engine room (main deck) , the shelter deck and the new forecastle deck behind the recording room. There are seven rechargeable spare breathing apparatus bottles, with the recharging unit situated in the shelter deck fire station. The vessel is equipped with eight fire suits and two leader suits, these being dispersed through out the three fire stations, along with general equipment such as fire axe, safety rope and safety flashlight.

Fire Protection	:	2 Leader suits 8 Fire suits
Breathing Apparatus	:	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 (portable on wheels) 8 x 9.0 Kg Dry Chemical Powder 15 x 5.5 Kg B.C.F. (Halon) 3 x 6.8 Kg CO2 4 x 9.0 Lt.2 Foam 2 x 9.0 Kg Lithex.
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 Foam Branch Monitors for Helideck.
Main Fire Pumps	:	2 Fire/Ballast pumps electrically driven, located in engine room.
Emergency Fire Pump	:	Capacity = 25 cubic metres/Hour Make = Mohn Power = Petter Diesel Engine Location = Port Side Aft in Compressor Room.
Fire Axes	:	6 Fire Axes Throughout Alleyways. 3 Fire Hatchets Throughout Alleyways.
Smoke/Fire Detectors	:	1 in every Cabin, Alleyway, Messroom, and Work Areas.
Alarm Bells/Klaxon Sirens	:	12 Throughout Vessel
Fire Blankets	:	1 Outside Galley 1 Spare in Safety Equipment Locker

Fixed Foam Systems	:	Cable Deck over cable reels. Also on Helideck through Foam Branch Monitors.
Emergency Lighting	:	24 VDC System in Throughout Vessel.

Emergency start/stop of fire pumps,fuel oil pumps, main engines and vents are controlled from the bridge. Remote closure of fuel oil valves and watertight doors is controlled from the store on the shelter deck.

5.2.2 LIFESAVING EQUIPMENT

LIFE BOATS AND MAN OVERBOARD RESCUE BOATS

The vessel is equipped with two Jorgensen & Vik totally enclosed self-righting, 30 man, powered lifeboats and two 5 metre Zodiac inflatables that are used for M.O.B. and work boats.

The lifeboats are designed to be launched from the davits normally from the deck, or in an emergency, without ships power manually from within the lifeboat. Moulded in one piece from fire retardant fibreglass, each boat has a double skinned hull, enclosing polyurethane foam for buoyancy, and is powered by a 2 cylinder SAAB diesel engine. Each lifeboat is fully equipped with emergency supplies of food and drinking water, radio and signalling equipment,including a radio, and basic first aid kits.

A Zodiac Mark V heavy duty inflatable launch is maintained in a ready to use condition for Man Over Board rescue work. The Zodiac is powered by a 36 horsepower diesel out board motor and is usually crewed by two to three people. It is capable of carrying up 15 people if necessary and measures 5.8 metres in length. Diesel outboards are used on the Zodiac as they are able to use the vessels' diesel supply as fuel and this eliminates the need to carry and store petrol as would be the case with the more common 2 stroke petrol out board motors. This is an added safety bonus in itself. However there is a disadvantage with the diesel out board, and that is the speed of the launch through the water. Diesel out boards are slower then their petrol driven cousins and the launch could not genuinely be described as a fast rescue vessel.

A second Zodiac is available as a back up rescue vessel and is powered by a 27 HP diesel outboard motor and is slightly slower than the first Zodiac due to the difference in engine power. This vessel is normally used as a working craft however, in an emergency it can be mobilised as a second rescue vessel.

LIFERAFTS

There are six self-inflating 20 man Viking liferafts, and two 10 man Viking liferafts, situated on the new bridge deck, four on each side of the vessel, each liferaft is attached to the deck by a hydrostatic releases as per Solas requirements. Designed to be thrown from the deck, or to float free should the vessel sink, the rafts inflate when an attached rope is jerked with sufficient force -as when thrown from the deck or floating free from a sinking ship.

A further one man self-inflating "Jon Buoy" liferaft is located at the stern of the vessel on the core decking aft railing of the gun deck. Similar in operation but small and fast in deployment they are situated for an immediate response should a crew member lose footing and fall

overboard during gun or cable operations at the stern of the vessel.

MAN OVERBOARD

Rescue Craft	:	Inflatable Zodiac Mark V, Fitted with 36 HP Yanmar diesel outboard motor.
Backup Rescue Craft	:	Inflatable Zodiac Mark V, Fitted with 27 HP Yanmar 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.

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.
Liferafts	:	2 x 10 Man Viking Inflatable Liferafts 6 x 20 Man Viking Inflatable Life Rafts All fitted with hydrostatic release
Emergency Position Indicating Radio (EPIRB's)	:	8 One In each life raft, 2 in wheelhouse
	:	2 on Bridge Deck Aft, 2 One in Each Life Beacons 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	:	13 Immersion Suits, contained in a float free cabinet aft of wheelhouse.
Emergency Radio	:	2 x Skanti TRP (1 in each lifeboat).
Pyrotechnics	:	12 x Red Parachute Flares in Wheelhouse.

5.2.3 FIRST AID

Five first aid kits are located in various work areas throughout the vessel. One each is located in the ships hospital, galley, recording room, gun shack and engine room. In addition eyewash stations are located forward on the gun deck, port cable deck, starboard cable deck and in the engine room.

There are two trauma packs, situated in the wheelhouse which are mobilised to the scene of an accident. Four stretchers are stationed throughout the vessel and a resuscitation unit is kept in the hospital.

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 stowed on back deck. Also used in Rescue boat and Work boat.
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 gun deck.
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 power tools

5.3 SAFETY MEETING MINUTES

The following listings are the minutes from the safety meetings held during this survey.

Date: 18-March-1994
Time: 13:00 hrs.
Location: TV room.
Conducted by: Lyall Cowin.

The vessel was in production on the Rocky Cape 2D seismic survey in Bass Strait for Sagasco.

The minutes of the previous safety meeting held on 4-March-1994 were read out.

The meeting was reminded of Sagasco policy of no smoking in enclosed areas. This will remain in force until we have finished working for Sagasco.

The drug and alcohol policy statement sent out to the crew in January was read out to remind the crew of the interpretation of the policy regarding travel on Company time and port calls.

Fire control and emergency action. The meeting was informed that this has been changed slightly during the last 5 weeks and all personnel are to familiarise themselves with their duties and the procedures to be followed.

All personnel were asked to check the lighting in their work areas and report or repair any lights which are out.

A recent accident involving a gunner getting his hand caught under a gun was discussed, the accident was caused by a kinked chain suddenly coming un-kinked. Personnel lifting items with chains are to beware of this. All personnel were warned to report all accidents as soon as they happen.

All personnel working in the gun tray are to wear a safety harness and the meeting was reminded of the permanent hard hat areas which are the gun deck aft of the gun bundle reels and the core decking except for the cable decks.

A message of congratulations from area safety supervisor Geoff Wood to all crews was passed on regarding the latest safety performance statistics report from Houston. This division had the best performance for man hours worked for all W.G.C. Divisions world wide.

A point arising from the latest safety performance statistics regarding a fatal accident in Malta was brought to the crews attention. No one is to cross from the ship to the wharf or to another vessel unless there is a gangway rigged. If a person has to cross for an urgent reason a retractable safety line block and harness can be rigged and the person can cross under the supervision of experienced crew members.

The Master reminded the meeting of regulations governing disposal of garbage at sea. Only food scraps are to be discharged overboard, all other garbage or waste is to be either burnt or retained onboard for disposal ashore. High penalties exist for not complying with MARPOL regulations.

The Master reminded all zodiac drivers to keep the bridge informed at all times of their intentions when operating close to the ship. The zodiac operator must obtain permission from the bridge before approaching the ship.

There being no further business to discuss the meeting was closed at 13:15 hrs.

REPORT OF EMERGENCY MUSTER.

An emergency muster was conducted immediately after the safety meeting all crew were asked to wear the life jackets from their cabins.
The alarm was sounded and all crew not required on shift mustered at the muster stations. All life jackets were checked for whistles and lights and any other defects. After the head count had been taken the crew was dismissed from the muster station at 13:25 hours. No problems or defective equipment were encountered.

REPORT OF FIRE AND ABANDON SHIP DRILL.

Date: 22-March-1994
Time: 13:00 hrs.

The vessel was in production on the Rocky Cape 2D seismic survey for Sagasco in Bass Strait, Australia.

The general alarm was sounded and all personnel not required on shift mustered at the muster stations where a head count was taken.
Personnel at the muster were informed that there was a fire on the heli-deck.
Before going to the fire stations all personnel in fire teams were briefed by the chief mate and the 2nd mate on what their duties are, the main purpose of the drill was to ensure that all fire team members know their jobs and the procedures to be followed.
When all teams were in position and the B.A. Teams dressed, instruction was given by the mates on procedures and operation of fire fighting equipment.
The peripheral cooling teams laid out hoses underneath the helideck for cooling.
The teams were then sent back to the muster area life jackets were donned and checked for defects, another head count was taken, when all personnel were accounted for everyone boarded their life boats and were given instruction on boarding and launching procedures by the mates.
No problems were encountered with equipment. Some minor changes will be made to numbers of personnel for some tasks. Procedures on the ships bill and the fire control and emergency action plan will be clarified to make it easier for people to understand.
The drill was concluded at 13:25 hrs.

498032

6.1 SEISMIC RECORDING SYSTEM SUMMARY

The WG-24 Marine Telemetry System is the latest system designed and developed by Western Geophysical for the acquisition of marine seismic data. The system uses delta sigma 24 bit A/D converters which provide an instantaneous dynamic range to > 114 db, thus eliminating the need for any gain ranging and floating point amplifier. The use of fibre optic digital telemetry, with greatly reduced transmission error rates, provides a path capable of operating in streamer cables up to 10,000 metres long. The system can record up to 1024 channels of demultiplexed data and can acquire data from up to four streamers simultaneously.

Though the digital streamer cables are separate from the recording instruments by nature of their deployed environment, they are considered to be part of the recording system. The majority of raw data processing is carried out by electronic modules installed in the cable. For the purposes of this report a description of the cable electronics and their functions will be included with the recording system report. A following section in this report will deal with the physical characteristics of the cables.

6.1.1 WG-24 RECORDING SYSTEM SPECIFICATIONS

Recording Sample Rates . . . . . :	1,2 or 4 msec
Cable Telemetry Rate . . . . . :	0.5 or 1 millisecond
Low Cut Filters . . . . . :	IN 2 Hz @ 12 db/octave IN 6 Hz @ 18 db/octave OUT 2.5 Hz @ 6 db/octave
High Cut Filters . . . . . :	Using 0.5 ms Telemetry Rate 392 Hz @ 214 db/octave 192 Hz @ 190 db/octave
High Cut Filters . . . . . :	Using 1.0 ms Telemetry Rate 196 Hz @ 214 db/octave 96 Hz @ 190 db/octave
Maximum Number of Streamers . . . . . :	4
Maximum Number of Recorded Channels . :	1024 demultiplexed
Tape Format . . . . . :	SEG D 8042 4-byte Demux
A/D Converter . . . . . :	24 bit (No Gain Ranging)
Instantaneous Dynamic Range . . . . . :	114 db
Harmonic Distortion . . . . . :	-106 db
Channel to Channel Similarity . . . . . :	± 1%
Streamer Test Functions . . . . . :	With or Without Phones
Shipboard Auxiliary Channels . . . . . :	16
Recording Medium . . . . . :	½ inch tape cartridges
Operator Interface . . . . . :	Sun Sparc 2 work station

6.2 STREAMER CABLE ELECTRONICS

Acquisition of the seismic data is via the streamer cables hydrophones, and electronic modules which are controlled by the WG-24 ship board electronics. The WG-24 cable has the streamer electronics distributed between the Streamer Module and the section itself. Four Marine Remote Units (MRU) are built into the live section with each MRU handling the initial data processing for two hydrophone groups.

The signal/data flow in the streamer starts at the output of the individual hydrophone groups. This data signal is fed into one of the two channels of the MRU where a preselected level of preamplifier gain is applied. Anti-alias filtering is applied to the data which is converted from analog to digital data form by a 24 bit Delta-Sigma Analogue to Digital (A/D)converter. The digital data from the A/D converter is then transmitted to the MRU output control for transmission on the MRU data bus to the streamer module. Figure 6.1 clearly illustrates the data flow through the cable electronics.

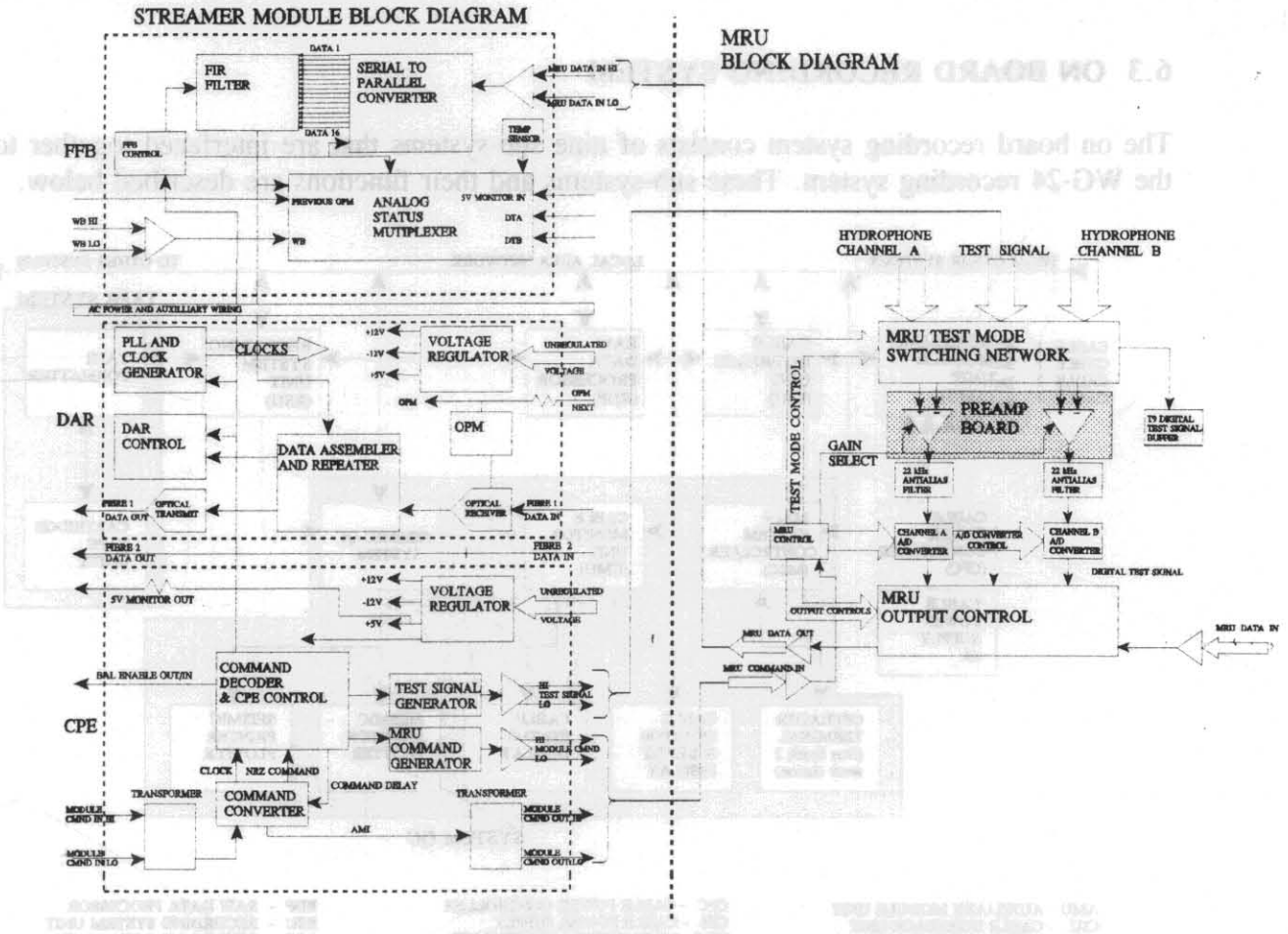

Figure 3 STREAMER CABLE ELECTRONICS BLOCK DIAGRAM

The Streamer Module handles data from eight MRU units (16 hydrophone groups). Each streamer module consists of three basic functional blocks. The FIR filter board (FFB), the data assembler and repeater board (DAR) and the control, power and enhanced delta modulator decoder board (CPE).

The CPE board decodes the command signals from the shipboard system and generates the control logic signals for the DAR and FFB boards. The CPE also generates MRU commands and test signals for both the MRU and the Streamer Module.

The DAR board assembles the data to be transmitted by the module, receives and repeats the data from downstream modules and generates the system clocks for the streamer module.

The FFB board demultiplexes the serialised MRU data into parallel channels, then converts the oversampled MRU channels into data samples at the selected telemetry rate, i.e. 0.5 or 1.0 milliseconds. The FFB also receives analogue status channel inputs and converts them to digital information through a simple 12 bit A/D converter. The digital data are then inserted into the digital data stream coming from the modules down stream and transmitted by the DAR board to the ship via the optical fibres with each streamer module acting as a repeater for data coming from astern.

The cable head module is a non regenerative repeater that receives optical data from the streamer and sends it to the on board recording system via the reel assembly and lead in. It receives optical commands from the ship board electronics, converts them to electrical commands, then sends them down the cable to the streamer modules.

6.3 ON BOARD RECORDING SYSTEM

The on board recording system consists of nine sub-systems that are interfaced together to form the WG-24 recording system. These sub-systems and their functions are described below.

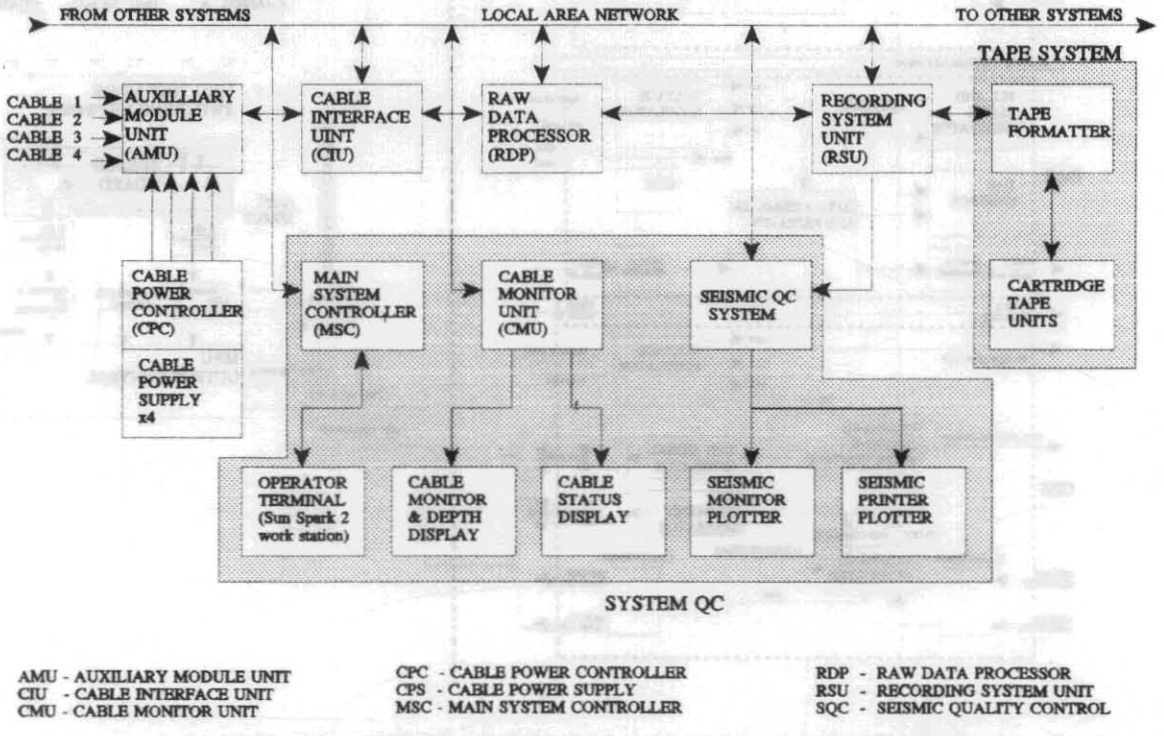

Figure 4 WG-24 SYSTEM BLOCK DIAGRAM

The Main System Controller (MSC) provides system level controls and receives status and error messages from all other sub-systems. The MSC builds a tape header for each seismic file on tape and contains the primary operator interface.

The Auxiliary Module Unit (AMU) can accommodate up to four streamers and provides for both optical to electrical conversion for incoming seismic data, and electrical to optical for outgoing commands. It monitors the cable power supply levels and provides facilities for

shipboard auxiliary channels.

The Cable Interface Unit (CIU) interfaces the streamers to the recording system and provides the test capabilities for the system as a whole. In normal acquisition the CIU multiplexes the received seismic data from up to four streamers. It also receives commands from the RDP (see the following paragraph), and sends them on to the streamer(s). In test mode, the CIU functions as a data simulator for testing the recording system without the streamer, or as a stand alone cable controller for testing a single streamer without the recording system. The test signal generator is contained in the CIU.

The Raw Data Processor (RDP) performs the following front end data processing functions, adjacent channel summing (optional), error detection and correction, low cut filtering and anti-alias filtering. Recording system timing, and streamer cable commands for normal seismic data acquisition are generated in the RDP.

The Recording System Unit (RSU) demultiplexes the seismic and gun signature data, stores the header data and controls the CTU subsystem (see the following paragraph). The RSU contains a read after write interface that sends data to the SQC (see the paragraph after CTU) for monitoring and analysis.

The Cartridge Tape Unit (CTU) records the demultiplexed data onto cartridge tapes. The CTU subsystem consists of eight drives mounted into two racks. Four drives are used in normal recording configuration. However if duplicate tapes are required, the other four tape units are utilised to record the second or duplicate tape with two tape units recording the same file simultaneously. Also in the system are two formatter units, only one of which is used, the other being kept as a spare.

The Seismic Quality Control (SQC) provides basic quality control of the seismic data monitoring by monitoring the read after write data from the RSU. The data is presented for shot records as individual trace amplitude plotted against time. The SQC subsystem also outputs header data to the plotter and a separate printer as a further QC function.

The Cable Monitor Unit (CMU) provides quality assurance for the streamer data by monitoring status and telemetry errors. The CMU drives three high resolution colour monitors to display the status, telemetry error information and multiple streamer depth profiles. The CMU subsystem calibrates the streamer depth signals, displays them on the monitors and sends them to the MSC for inclusion in the external header.

Operator interface to the WG-24 is via a Sun Spark 2 work station terminal. All areas and functions of the system can be accessed via this terminal. The operator/observer has full control over the systems parameters and functions.

6.4 SYSTEM CONFIGURATION OPTIONS

Numerous combinations of cable length, number of cables and recording options are available through the WG-24 recording system. Listed below are a sample of some options. Others options are available that are not listed here, but theoretically any recording combination is possible up to the limits of the recording system.

NUMBER OF STREAMERS	CHANNEL SUMMING	CHANNELS/ STREAMER	TOTAL CHS	RECORDED CHS	STREAMER LENGTH (m.)
1	No	416	416	416	5200
1	Yes	416	416	208	5200
2	No	256	512	512	3200
2	Yes	416	832	416	5200
2	No	512	1024	1024	6400
3	No	160	480	480	2000
3	Yes	192	384	192	2400
3	No	240	720	720	3000**
4	No	128	512	512	1600
4	Yes	192	768	384	2400
4	No	256	1024	1024	3200
4	Yes	416	1664	832	5200

** As used on this survey

6.5 WG-24 INSTRUMENT/STREAMER TESTS

0		Used for normal recording operation
1	Analog Loopback	Tests the preamplifier and A/D converter dynamic range and the harmonic distortion with the phones out.
2	Analog Loopback	Same as Test 1 with test signal attenuated by 18db.
3	Analog Loopback	As Test 1 with phones in.
4	Analog Loopback	As Test 2 with phones in.
5	Preamplifier Noise	Tests the preamplifier and A/D converter noise with preamplifier inputs shorted.
6	Analog Impulse	Tests the system filters with the phones out.
7	Analog Impulse	As test 6 with the phones in.
8		Reserved for future use.
9	Digital Loopback	Tests the MRU to streamer module telemetry.
10	CMR	Tests the preamplifier common mode rejection.
11		Reserved for future use.
12		Reserved for future use.
13	Module Loopback	Checks the streamer module FIR filter and the module to shipboard telemetry.
14	Alternate Channel	Digital loopback tests the streamer module FIR filter and data assembler.
15		Reserved for future use.

7 STREAMER CABLE

7.1 STREAMER SPECIFICATIONS

Number of Cables	:	3 in use, (4 maximum)
Streamer Type	:	WG-24 Digital Telemetry
Active Streamer Length	:	3000 metres
Active Section Length	:	100 metres
Skin Type	:	PVC
No. Active sections	:	30
No. Streamer Electronic Modules	:	15
No. Connector Modules	:	15
No. of Groups per Section	:	8
Total No. Of Groups	:	240
Group Interval	:	12.5 metres
Group Length	:	15.52 metres
No Hydrophones Per Group	:	16
Hydrophone Spacing	:	Centre weighted tapered array. 21% overlap on adjacent groups.
Hydrophone Type	:	LRS-2510 Acceleration cancelling
Hydrophone Model	:	WM1-018
Cable Sensitivity	:	49.5 μVolts/μBar
Depth Transducers	:	30
Waterbreak Detectors	:	31

7.2 STREAMER DESCRIPTION

This section of the report deals with the physical configuration of the digital streamer cable. The electronic components of the cable and their operations have already been discussed in the previous section of the report. The cable is made up of several differing elements. Each element has a purpose in the make up of the cable and will be discussed as separate entities. Three components, the active sections, streamer electronic modules and connector modules form the majority of the cable. The other five components are used only once or twice in the cable and carry out a specialised function. These are the cable lead in, head stretch section, cable head section, terminator module and the tail stretch section. Each of the three cables are identical in configuration so the description that follows can be applied to each cable.

The cable is attached to the vessel by the Lead In, which is used to tow the entire cable from the vessel or the paravane. It is 285 metres long and is reinforced with steel armour to minimise damage as the Lead In is the section of the cable that endures the roughest usage. The reinforcing serves to sink the Lead In and consequently the head of the cable. This assists in bringing the cable down to the desired operating depth. There are no active elements in the lead in and its internal wiring serves as a carrier for the data from the cable to the vessel.

Between the Lead In and the active sections of the cable, 80 metre elastic Head Stretch sections are installed. These sections serve two functions. The first of these is to act as an electrical isolation section between the vessels' ground and the active cable sections and their electronic components. The stress members of these sections are made of heavy duty nylon rope. As this rope has a degree of elasticity, it provides the second function of the stretch section. That is to act as a damper between the vessels'/paravanes' motion and the active sections. This helps to attenuate front end noise on the cable. Naturally the more stretch sections used, the greater the dampening effect. Normally two stretch sections are installed at the head of each cable. However, due to the lack of sections aboard the vessel, only one stretch section was installed during the Rocky Cape survey.

An eight metre Cable Head section is installed immediately forward of the first active section of the cable. This section contains a several sensors that are used to position the head of the cable as well as a waterbreak phone, and a tension transducer to measure the amount of tow strain the cable is under. A 3.5 kHz acoustic receiver and a 12 kHz acoustic transmitter/receiver are installed in the section. They are part of the SSTS acoustic system and are used to acoustically measure the cable offset and cross cable separation.

The main body of the cable is made up of 30 active sections that are connected by alternate Streamer Modules and Connector Modules. These electronic modules not only process the seismic data in the cable, they also serve as electrical and physical stress member connectors to join the cable sections. Sections following the Streamer Modules are called "A" sections and sections following the Connector Modules are called "B" sections. The 8 groups in the "A" section are connected directly to the Streamer Module. As every Streamer Module can process data from 16 hydrophone groups, the Connector Module serves to relay the hydrophone data from the 8 groups in the "B" section to the Streamer Module. Figure 7.1 illustrates the cable configuration.

Each active section contains seven complete hydrophone groups and two half groups. These half groups are located at the head and tail of each section. When the sections are connected, either by the Streamer Module or the Connector Module, the half group in the tail of the section is joined to the half group in the head of the following section, thus making one complete group. This arrangement is utilised to minimise the flow noise of water over the module connections as the cable is towed through the water. The tail stretch section contains half a hydrophone group in the head of the section. These hydrophones are connected to the half group in the tail of the last active section installed in the cable when the sections are joined. This completes the last group in the cable, which in this instance is group 240.

There are 128 LRS-2510, model WM1-018 hydrophones, in each active section. Sixteen of these hydrophones are used make one hydrophone group, or trace. Trace interval is 12.5 metres centre to centre in an overlapping tapered array. Each hydrophone array is a centrally weighted tapered array 15.51 metres in length and overlaps its adjacent groups by a ratio of 21% (3.02 metres). This arrangement of hydrophones and groups helps to attenuate the noise levels on each trace making the cable less susceptible to swell noise generated by the sea. The arrangement of the groups in a section is illustrated in Figure 7.

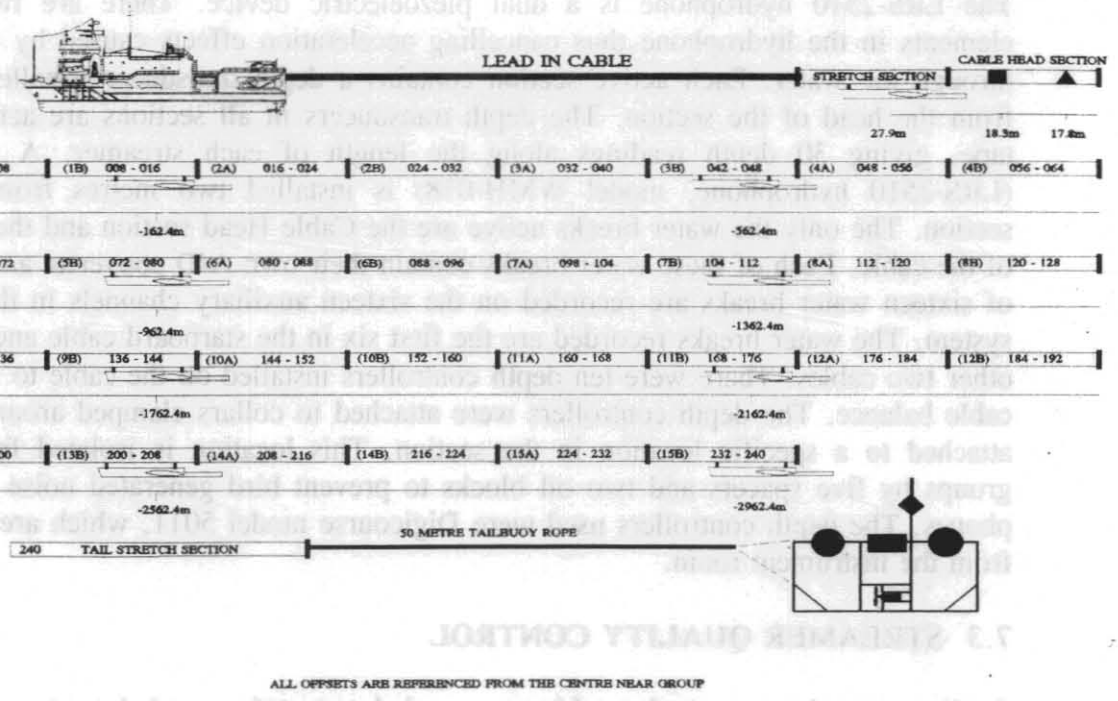

Figure 6 WG-24 STREAMER CABLE CONFIGURATION

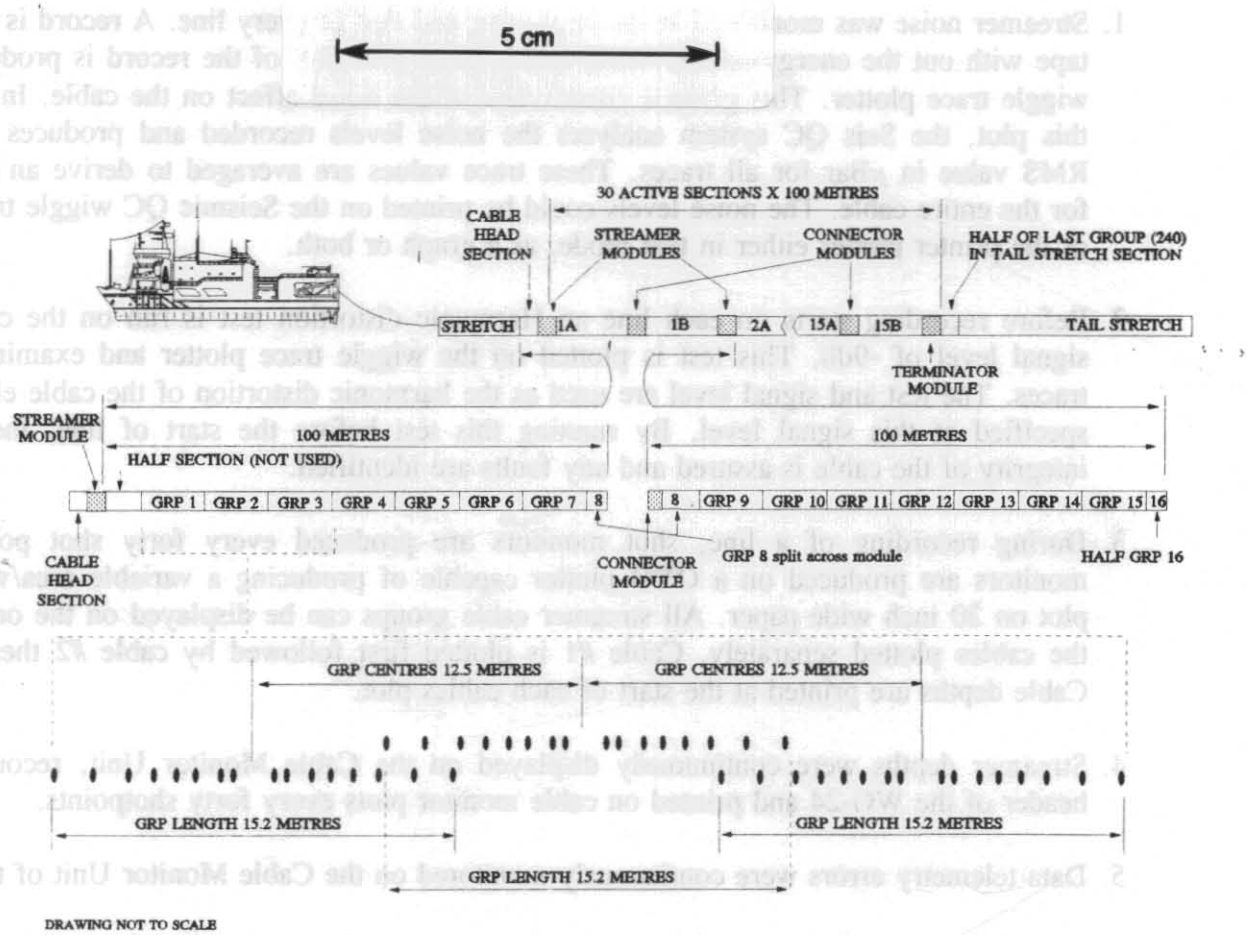

Figure 7 WG-24 STREAMER CABLE SECTION AND HYDROPHONE LAYOUT

The LRS-2510 hydrophone is a dual piezoelectric 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 installed about two metres from the head of the section. The depth transducers in all sections are active and recorded to tape, giving 30 depth readings along the length of each streamer. A waterbreak detector (LRS-2510 hydrophone, model WMH-018) is installed two metres from the tail of every section. The only the water breaks active are the Cable Head section and the active "B" sections of the cable. Each of these water breaks contain their own A/D converter and the peak pick time of sixteen water breaks are recorded on the sixteen auxiliary channels in the WG-24 recording system. The water breaks recorded are the first six in the starboard cable and the first five in the other two cables. 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 Digicourse model 5011, which are remotely controlled from the instrument room.

7.3 STREAMER QUALITY CONTROL

Quality control tests on the cable are carried out and recorded to tape with the recording instrument tests. These tests have been discussed in the previous section of the report. The following on line quality control aids on performance of the streamer were performed on a line by line basis and most are real time quality control used during data gathering on line.

1. Streamer noise was monitored at the beginning and end of every line. A record is recorded to tape with out the energy source firing and a fixed gain plot of the record is produced on the wiggle trace plotter. This gives a visual view of the noise affect on the cable. In addition to this plot, the Seis QC system analyses the noise levels recorded and produces an average RMS value in μBar for all traces. These trace values are averaged to derive an RMS value for the entire cable. The noise levels could be printed on the Seismic QC wiggle trace plotter, or the printer plotter either in text mode, as a graph or both.

2. Before recording starts on each line an Harmonic distortion test is run on the cable with a signal level of -9db. This test is plotted on the wiggle trace plotter and examined for bad traces. The test and signal level are used as the harmonic distortion of the cable electronics is specified at this signal level. By running this test before the start of line, the electronic integrity of the cable is assured and any faults are identified.

3. During recording of a line, shot monitors are produced every forty shot points. These monitors are produced on a OYO plotter capable of producing a variable area/wiggle trace plot on 20 inch wide paper. All streamer cable groups can be displayed on the one plot with the cables plotted separately. Cable #1 is plotted first followed by cable #2 then cable #3. Cable depths are printed at the start of each cables plot.

4. Streamer depths were continuously displayed on the Cable Monitor Unit, recorded on the header of the WG-24 and printed on cable monitor plots every forty shotpoints.

5. Data telemetry errors were continuously monitored on the Cable Monitor Unit of the WG-24.

6. 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.

8 ENERGY SOURCE

8.1 ENERGY SOURCE DETAILS

Type	:	LLP Airgun
Manufacturer	:	Western Geophysical Company
Source Configuration	:	Single array
Timing Control	:	LRS-100 Airgun Controller
Array Configuration	:	4 Gun Strings (Sub Arrays)
Sub Array Length	:	18 Metres
Sub Array Spread	:	40 metres (10 m x 20 m x 10 m)
Total Number Of Guns	:	28
Number Of Active Guns	:	19
Number Of Spare Guns	:	9
Operating Volume	:	3305 in^3
Spare Volume	:	2095 in^3
Array Output	:	80.9 Barmetres
Primary:Bubble	:	11.3
Operating Pressure	:	1800 psi. +/- 100 psi
Operating Depth	:	6 Metres
Air Supply Compressors	:	3 x CHERCO Compressors
Compressor Capacity	:	3 x 1800 cfm
Compressor Drive	:	Caterpillar 3516DI Diesel Engines

8.2 ENERGY SOURCE SUMMARY

The energy source used for this survey was a tuned array of Western Geophysical LLP air guns. The primary array was composed of four sub arrays 18 metres long with a separation of 10, 20 and 10 metres between the sub arrays. The air gun source arrays are designed to generate a discrete acoustic pulse of known characteristics, into the water when electrically commanded. Subsequently the characteristics of the reflected acoustic returns can be recognised when recorded on the towed streamers.

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8.2.1 AIR GUN 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. An acoustic energy pulse is generated when high pressure air, stored in a reservoir in the air gun, is released into the water through 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 high-pressure air needed to operate the air guns is supplied by the compressors via the high pressure hose bundles 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, sealing both the reservoir and the top housing to the ingress of water. A small orifice in the shuttle allows passage of air through the shuttle into the reservoir.

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 rapidly 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 acoustic 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 fire. Figure 8.1 illustrates the firing sequence of a typical airgun.

The air supply to the guns is supplied by 3 Cherco WBF-74XHD compressors. Each compressor supplies air at the rate of 1800 cubic feet per minute at the required 2000 psi. Two compressors are on line during normal operations and the third compressor is on stand by 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.

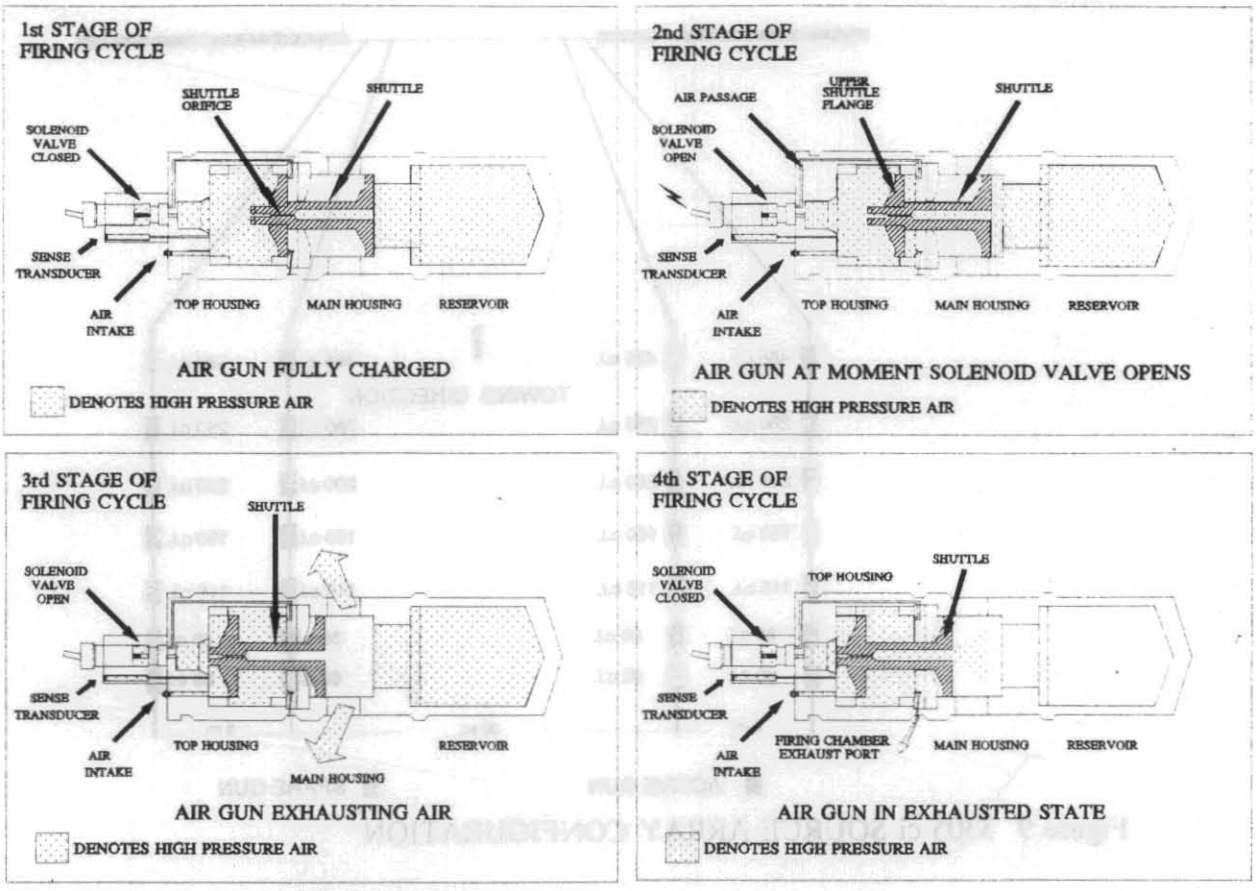

Figure 8 AIR GUN FIRING CYCLE

8.2.2 ENERGY SOURCE ARRAY DESCRIPTION

A single source array was utilised for the survey. The air guns were configured as four strings of air guns. On each gun string there are a combination of seven guns of varying sizes giving a total of twenty eight available guns. Of these twenty eight guns only nineteen were active to form the 3305 in^3 energy source. The remaining nine guns were kept in reserve as spare guns that could be substituted if one of the active guns failed during recording of a line. This redundancy of spare guns ensured that the full operating volume of the array could be maintained during production.

Individual guns were set at specific intervals along the gun string, to ensure a correctly tuned acoustic pulse, when fired. The towing arrangement and composition of the energy source is illustrated in figure 9.

The hose bundles for the gun strings are suspended from a sausage shaped flotation tube by chains that are measured to allow the guns to stream at the desired depth. Each gun is suspended from the hose bundle and is towed one metre deeper than the hose bundle. An elevation of a gun string and its flotation tube is shown in figure 8.3. Depth transducers are attached to the hose bundles and it is the depth of the hose bundle that is relayed to the operators on the GMU. Because the guns are suspended deeper than the depth transducer, one metre has to added to the depth displayed on the GMU. The depth data and the air pressure are only displayed at the observer and gun mechanics work stations and are monitored by these people during recording. There is no hard copy made of the data to QC after a line is recorded. Therefore, a certain amount of trust must be given in the monitoring of these parameters for the energy source.

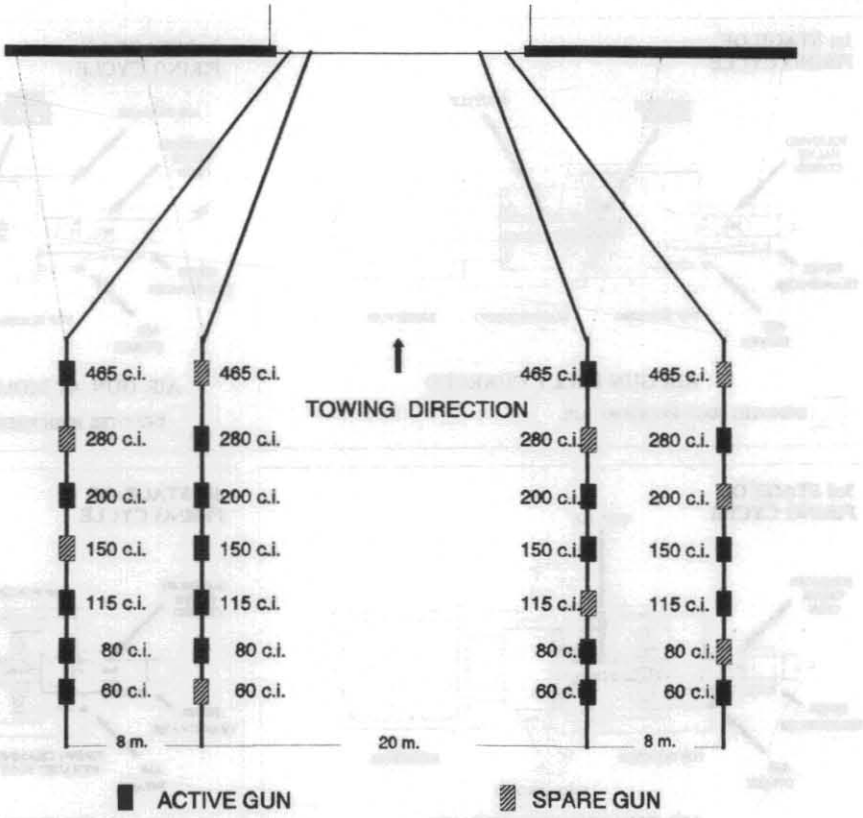

Figure 9 3305 ci SOURCE ARRAY CONFIGURATION

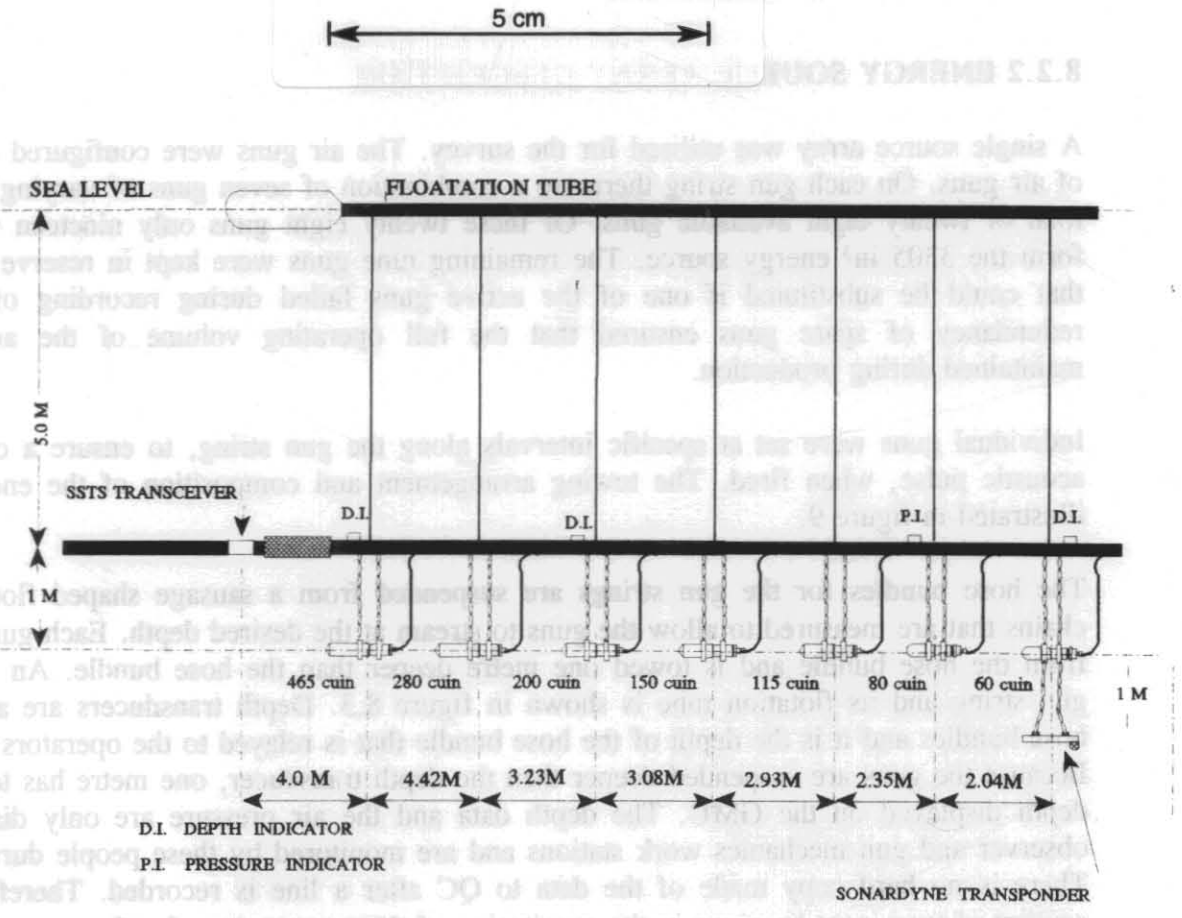

Figure 10 ELEVATION OF TYPICAL GUN STRING

8.3.1 LRS-100 SYNCHRONISER

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 energy source. The cycle is started by a shot request initiated by the Wisdom II navigation system, which determines the shotpoint position based on the shotpoint interval and the primary navigation fix position. When the Navigation Interface Unit (NIU) receives the shot point closure from the Wisdom II it provides the WG-24 with a system start. The system start is also sent to the LRS-100 to set up the fire table in the synchroniser. Delays in the fire table are calculated from an average of the sync errors of the last eight shots. Upon receipt of the NIU system start the WG-24 prepares to receive and record seismic data, and when ready issues the fire command to the LRS-100. The NIU can control alternate boat firing, alternate array firing or combinations of both.

The heart of the LRS-100 is the 16-Gun Controller Module (GCM). Up to four modules may be installed in the LRS-100 to provide synchronisation of up to 64 guns, though two LRS-100 units can operate in tandem should more air guns be needed. The 16-GCM accepts fire commands from the NIU 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. Field Timebreak (Time "0") is issued when the LRS-100 detects that 62.5 % of the array volume has been fired. After each firing the 16-GCM forwards the firing data to the Display Controller Module (DCM) and the Gun Monitor Unit (GMU).

As well as the basic individual gun timing control, the system also has data registers which can be used to display and record no-fires, auto fires and any guns which fire outside a selectable timing window. For this survey this window was set at ± 1 ms. Displays available include a single LED for each gun status on a shot, an oscilloscope to monitor the condition of the analogue signals and a control panel display.

Although capable of operating in a full stand alone mode the LRS-100 was interfaced to a VT220 terminal and an AT computer which allow for the collection and display of source performance data via CRT monitors and a line printer on a shot by shot basis, enhancing the displays available as quality control indicators. Gun firing times, array volume, gun depth and array pressure are all written to tape in the expanded header of the WG-24 recording system.

All 64 channels in the system work in an identical fashion using time controlled fire pulses to the gun solenoids. Because the delay in firing air guns is a mechanical function it is impossible for the LRS-100 to fire the gun at the instant it receives the fire command from the NIU. Therefore, a constant firing delay has to be aimed for, to allow all the guns to fire at exactly the same time. In the case of the LRS-100 this delay is set at 128 mSecs after firing is requested. The counter used is a device which starts counting down from 128 msecs and on reaching zero resets itself to 128 and continues to count down again. A fire command is issued when the count down reaches zero.

When the WG-24 recording system requests the gun to be fired the counter starts counting down from 128 msecs and when the counter is zero the LRS-100 then signals the air gun to fire and the counter starts counting from 128 msecs. After the mechanical delay the return signal resets the LRS-100 and this stops the counter. The next time a shot is required the counter resumes

counting from the count it was stopped at on the previous shot. A time which is equal to 128 msecs minus the first delay measured, thus firing the gun at a fixed delay of 128 msecs.

This process is repeated shot after shot on all channels, with the average delay of the previous eight shots used as the applied delay for the forthcoming shot. The applied delay is updated in this manner for each shot using a constantly revised, "first in last out", rolling average.

8.3.2 ARRAY DEPTH/PRESSURE MONITORING SYSTEMS

The source depth/pressure monitoring devices used by the contractor were LRS model 2527B seawater depth/pressure transducers. The transducers operated within a range of 0-50 metres, and had an over-range limit of 70.4 metres. The indicators were pressure sensitive devices that indicated seawater depth or hose-air pressure. Both indicators used a transducer which produced an output voltage proportional to input pressure. The depth/pressure indicators performed voltage-to-frequency conversion on the transducer output voltage. The digital output signal had a variable pulse repetition frequency that varied from 2-4 kHz and indicates depth or air pressure variations. The depth indicator used a scale of 1 Hz/cm to indicate depth changes. The pressure indicator used a scale of 1 Hz/psi to indicate air pressure changes. The transducers were calibrated to indicate zero depth or pressure at 2 kHz.

A total of 12 transducers were active at any one time during the survey, configured 3 per string on the four active strings. Four pressure transducers were used during the survey, with one transducer per string. Depth and pressure data was output to the GDU via the Gun Monitor Unit (GMU), and was also displayed on CRT monitors as a quality assurance tool.

8.3.3 SOURCE LOCATION SYSTEM

A Streamer / Source Tracking System II (SSTS II) was used initially to locate the source arrays relative to the other elements of the outboard configuration. The head of each source string had an SSTS phone attached and was an integral part of the triangulation network by which the WISDOM II positioning system calculated the position of each source string and cable head, relative to the Navigation Reference Point. Once source/streamer geometry was established the system was shut down.

9 POSITIONING SYSTEMS

9.1 POSITIONING SYSTEMS DETAILS

Vessel Positioning

Primary . . . . . Multifix DGPS
Secondary . . . . . Direct Injection DGPS

Cable Positioning

Compasses . . . . . Digicourse Model 5011 Compass/Depth Controllers

Antenna/Transducer Positioning with respect to Navigation Reference Point

Antenna	+Fore/-aft	-Port/+Stbd	Height
NRP	0.00m	0.00m	18.00m
Direct Injection Trimble	0.15m	0.84m	18.25m
Multifix Trimble	0.15m	0.55m	18.25m
Depth Sounder Transducer	9.60m	-1.70m	-4.30m

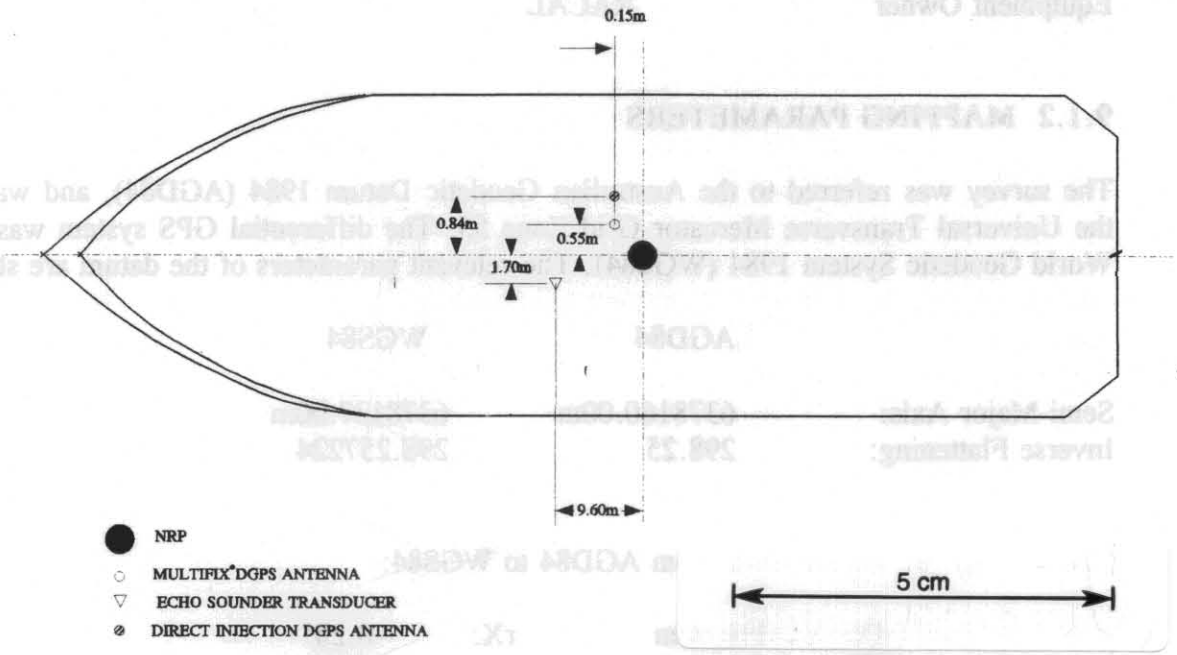

Figure 11 ANTENNA LOCATION AND OFFSETS

9.1.1 RADIO POSITIONING SYSTEMS DETAILS

MULTIFIX

Operating Platform	Compaq 486 33Mhz computer with 4 Mb ram, maths co-processor, VGA display and an 8 Channel Intelligent Digiboard COM/8i.
Operating System	Multifix Ver. 1.8
Satellite Receiver	Trimble 4000DL GPS Receivers.
Satellite Data Demodulator	DDM2400/2
Satellite Data Decoder	Type 90909
Differential Data Link	Racal Skydome with Antenna Control Unit
Equipment Owner	RACAL

DIRECT INJECTION DGPS

Satellite Receiver	Trimble 4000DL GPS Receivers.
Satellite Data Demodulator	DDM2400/2
Satellite Data Decoder	Type 90909
Differential Data Link	Racal Skydome with Antenna Control Unit
Equipment Owner	RACAL

9.1.2 MAPPING PARAMETERS

The survey was referred to the Australian Geodetic Datum 1984 (AGD84), and was plotted on the Universal Transverse Mercator Grid Zone 55. The differential GPS system was operated in World Geodetic System 1984 (WGS84). The relevant parameters of the datum are shown below:

	AGD84	WGS84
Semi-Major Axis:	6378160.00m	6378137.00m
Inverse Flattening:	298.25	298.257224

Seven-Parameter Datum Shift from AGD84 to WGS84:

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

UTM ZONE 55

Latitude Origin	: 0° 00' 00.0" South
Longitude Origin	: 147° 00' 00.0" East
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 55, unless otherwise noted.

9.2 MULTIFIX DGPS DESCRIPTION

MULTIFIX is a multiple reference station, differential GPS mobile user system. A number of GPS reference stations are permanently installed at various locations in the area and data from all of these stations is sent via satellite up-link to the Inmarsat communications satellite system. A Multifix system on board a vessel then receives this data which is constantly available, the content of the data being a function of the area of operations. The Multifix system then calculates a position for each one, together with a network solution, using the entire data set, and this position is passed on to the contractor's navigation system. For this project three reference stations were used, Adelaide, Melbourne and Sydney, all of them part of the permanent chain of reference stations operated by Racal. Temporarily installed reference stations can also be used where the correction data is transmitted to the vessel via an RF link (Delta-Fix). The system is configured as shown in Figure 9.4 below.

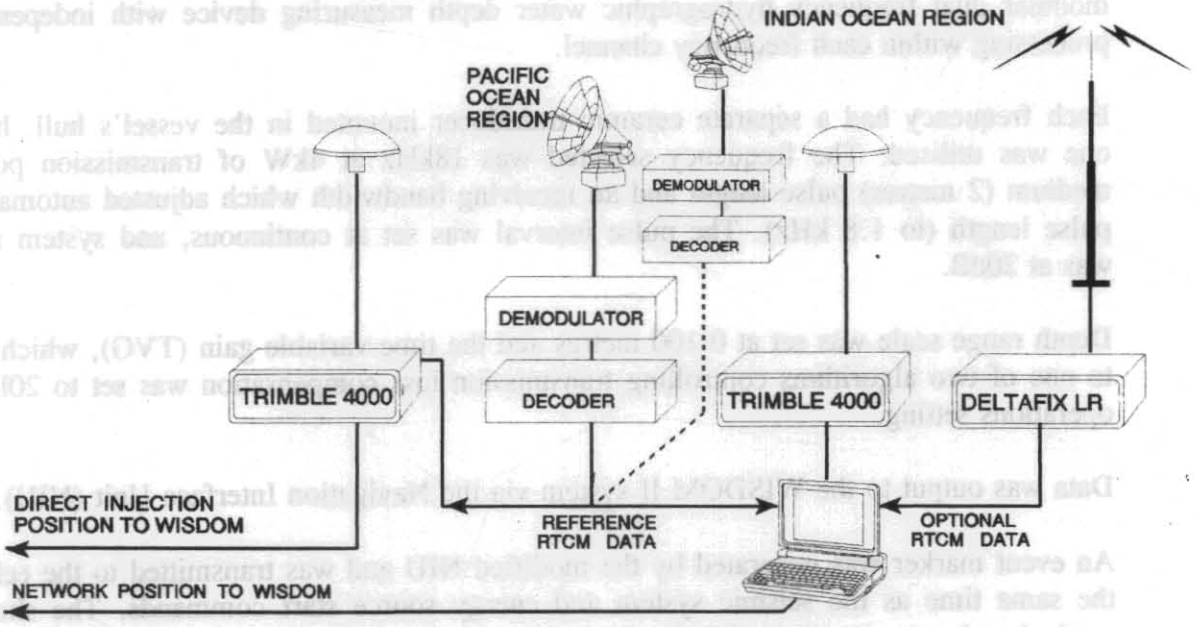

Figure 12 MULTIFIX SYSTEM BLOCK DIAGRAM

The system was appropriately equipped with spare units and the sub-contractor responsible installed a second Inmarsat terminal to be used in the event of a failure in the uploading of data to the Pacific satellite. This is shown as the spare unit in the diagram and tracked the Indian Ocean Satellite.

MULTIFIX is able to produce time series plots for three main areas of interest, namely the code carrier filters, the pseudorange corrections and the network solutions obtained. MULTIFIX can also replay its logged data, either file by file, or in a batch mode for post survey data evaluation.

The following major equipment units were provided for this project,

498050

Quantity	Description
3	Compaq 486 33Mhz computer with 4 Mb ram, maths co-processor, VGA display and an 8 Channel Intelligent Digiboard COM/8i.
2	Satellite Data Demodulator, DDM2400/2
2	Satellite Data Decoder, Type 90909
1	Racal Skydome with Antenna Control Unit
3	Trimble 4000DL GPS Receivers, Antennae, I/O Boxes

9.3 NAVIGATION SYSTEM CALIBRATION

There were no navigation calibration procedures carried out during the time period of this report. Reference should be made to the procedures carried out during the Yolla 3D and Crayfish 2D surveys in the respective reports.

9.4 BATHYMETRY

A SIMRAD EA200 echo sounder was used throughout the survey. The instrument was a modular dual frequency hydrographic water depth measuring device with independent parallel processing within each frequency channel.

Each frequency had a separate ceramic transducer mounted in the vessel's hull, however only one was utilised. The frequency selected was 18kHz at 4kW of transmission power, with a medium (2 metres) pulse length and an receiving bandwidth which adjusted automatically to the pulse length (to 1.8 kHz). The pulse interval was set at continuous, and system noise margin was at 20dB.

Depth range scale was set at 0-100 metres and the time variable gain (TVG), which could be set to one of two algorithms controlling transmission loss compensation was set to 20logR, normal operations setting.

Data was output to the WISDOM II system via the Navigation Interface Unit (NIU).

An event marker was generated by the modified NIU and was transmitted to the echosounder at the same time as the seismic system and energy source start commands. The shot event was marked and sent, together with the depth data, to the NIU where it was recorded on WISDOM II tape, as well as on the seismic header information.

Velocity of sound through seawater was set at 1512 m/sec at the start of the survey. As this velocity was continuously computed by the SSTS velocimeter and recorded on WISDOM II tape together with the echogram data, any significant change in sound velocity was adjusted at the post processing stage.

9.5 WISDOM-II SYSTEM INTRODUCTION

The Western Integrated Survey Data Onboard Management System-II (WISDOM-II) is the latest navigation QC package from Western Geophysical. The WISDOM-II is a quality control tool used to monitor all external devices, acoustic positioning systems, and source positions with respect to the vessel. The system acquires data from a variety of sensors and from this data it processes position data, real-time displays of system performance, and navigation position data

quality. The operator has over all control of the system operation, and can control eventing output and process control.

The WISDOM-II provides the same features as available in previous systems except that it has an expanded position sensor capability, for 3-D seismic surveys. Figure 9.6 shows a block diagram of the system.

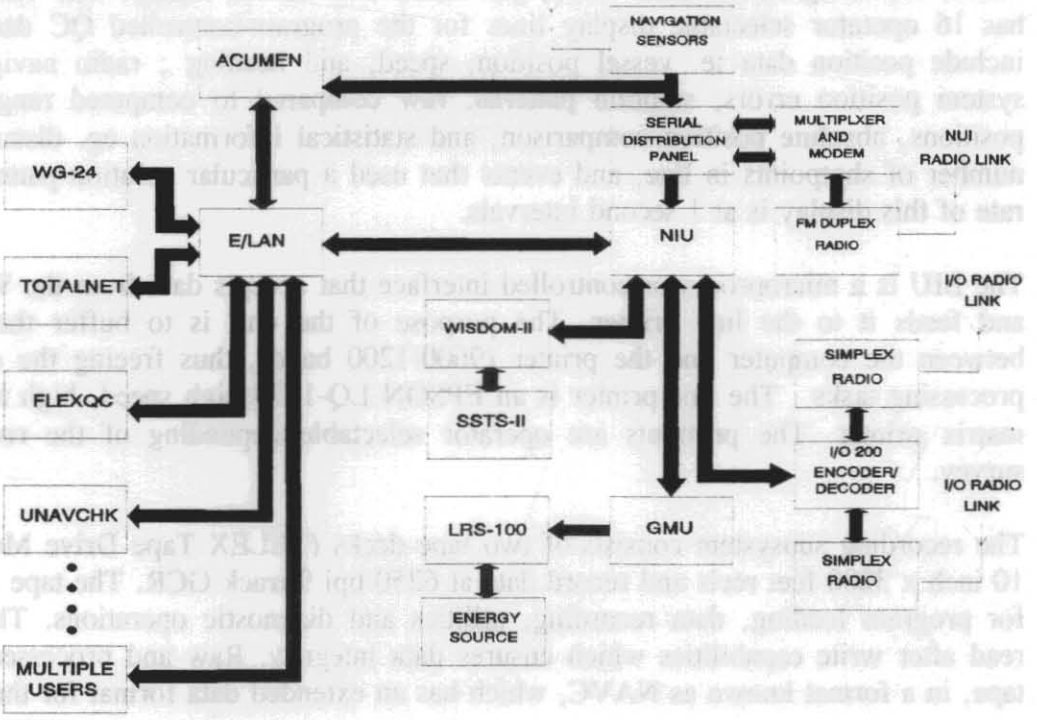

Figure 13 THE WISDOM-II SYSTEM CONFIGURATION

9.5.1 WISDOM-II DESCRIPTION

The WISDOM-II system is based on the general purpose HP 1000 Series F mini-computer with variable memory size. The computer processes the data received from the operator or if using the interface, indirectly from the external sensors. Data processing programs and data are stored in the main memory section. Parameters, status, commands, and computer results (data) are exchanged with the external peripherals via I/O interfaces. Connected to computer is the Floating Point Processor (FPP), video monitors, HP 2648A graphics terminal (operation terminal), Buffer/Interface Unit (BIU) and Epson line printer. An optional plotter can be used for onboard post-plotting if required. These units comprise the heart of the QC system.

The WISDOM computer receives data from the Navigation Interface Unit (NIU), and or operator terminal; processes it, then outputs the raw and processed data to tape. Hard copy data is output to the printer and all other information (operator selectable) is displayed on the video monitors through out the ship, or passed onto the various interface units.

The operator terminal consists of a HP2684A graphics terminal with keyboard which connects to the WISDOM computer and allows the operator to enter and display data, request actions and call for graphics displays. The operator terminal has cartridge tape drives for software and diagnostics accessing to the WISDOM computer.

The FPP provides the WISDOM computer with high speed dedicated logic for performing floating-point arithmetic operations. The FPP uses single precision (32-bit) and extended (48-bit) arithmetic to facilitate execution and accuracy in the WISDOM operations.

The video monitors are placed at strategic locations around the vessel so that the monitor displays are available for those who need it. The main locations for these displays are the wheel-house, recording room, cable deck, gun shack and various cabins. The video monitor display has 16 operator selectable display lines for the program-controlled QC data. The data fields include position data ie. vessel position, speed, and heading ; radio navigation synopsis ie. system position errors, solution patterns, raw compared to computed ranges ; vessel source positions, absolute position comparison, and statistical information eg. distance to end of line, number of shotpoints in line, and events that used a particular solution pattern etc. The update rate of this display is at 1 second intervals.

The BIU is a microprocessor-controlled interface that accepts data from the WISDOM computer and feeds it to the line printer. The purpose of the unit is to buffer the speed differences between the computer and the printer (9600/1200 baud), thus freeing the computer for other processing tasks . The line printer is an EPSON LQ-1170 high speed, high resolution serial dot matrix printer. The printouts are operator selectable depending of the requirements for the survey.

The recording subsystem consists of two tape decks (TELEX Tape Drive Model 9271) that use 10 inch x 3200 feet reels and record data at 6250 bpi 9 track GCR. The tape system can be used for program loading, data recording, utilities and diagnostic operations. The tape system has read after write capabilities which ensures data integrity. Raw and processed data is stored on tape, in a format known as NAVC, which has an extended data format for the 3-D surveying.

NAVC data format consists of six logical record types which consist of header, time, shot, transit, error, and common records. Also recorded are complete header records which appear at the beginning and end of tape and at the start of a line and end of a line. There is enough information on tape to recompute the system position and diagnose the sensor integrity. All system positioning information is recorded relative to time or shot event. Pop scan data is recorded to tape at operator selectable intervals. While recording 3-D data, positioning is recorded at every shotpoint with a shot identifier for seismic/navigation data matching.

9.5.2 NAVIGATION INTERFACE UNIT

The NIU is based on 68000 Microprocessor VME architecture, consisting of a CPU board, RAM disk, a General-Purpose Interface Bus (GPIB) board, four VCOM8 serial communication interface boards, a Navigation Timing Control (NTC) board, a Timing Distribution Unit (TDU) board, and a Ethernet Board.

The MVME147 CPU board provides a serial interface to the operator terminal, controls the VME bus, memory, and real time clock. The CPU board also contains a Standard Small Computer System Interface (SCSI) for the disk drive subsystem. The disk subsystem consists of a 360-Kbyte, 5.25 in. low density floppy disk drive, which provides the system with software load/save capability.

The MM6702C RAM disk board provides the system with 8-megabyte memory. A GPIB board provides the high speed interface between the NIU and the WISDOM computer. There are four VCOM8 boards present in the system, which provide serial communications interfacing for external devices. The NIU has the capability of 32 external serial devices each with an

individual configuration. A new addition to the system is an ethernet datalink which now provides access to the new TOTALNET and FLEXQC systems.

The NIU has the capability of interfacing a Frequency Modulated (FM) duplex radio transceiver with multiplexer and modem used for dual-vessel operations. It provides external closures to the onboard systems via the Timing Distribution Unit (TDU) which interfaces to the WG 24 recording system, LRS-100 gun system, Digicourse system, SSTS II and the Acumen QC system.

These external devices are interfaced via the Serial Distribution Panel which provides the entire Wisdom II System with absolute and relative positioning devices, including Digicourse compass and acoustics, Multifix, Argo and Skypod positions.

Navigation and recording system data transfers are now done via the ethernet token ring data link, which link the Master System Controller (MSC) in the WG-24 and the Source Synchronisation System (SSS).

9.6 DIGICOURSE ACOUSTIC/COMPASS SYSTEM

9.6.1 STREAMER COMPASS/DEPTH MEASUREMENT

The system performs two basic functions concurrently, control of the Digicourse cable level devices and control of the Digicourse echo modules. The functions of the cable level operations are such that three functions are executed by this system firstly, to control the depth of the streamers, secondly to measure the running depth of the streamers and thirdly to measure the heading of the streamer at a number of points to allow a streamer shape to be derived. The function of the echo module operation is to calculate the ranges relative to each echo other pod, perform two-way ranging at differing frequencies and to set up and calculate, from the pod network ranges, the relative position of the each of the node points.

The acoustic system employed for the survey was a DigiSCAN system designed and manufactured by DIGICOURSE Inc. This is a flexible system which allows the implementation of any of the manufacturer's streamer cable sensors. The following units were used on the streamers during the survey.

9.6.2 DIGICOURSE 293BSX OPERATOR STATION

The Model 293BSX Operator Station is a 16-bit 386 mini-computer working in an MSDOS environment. Equipped with 3.5"/ 5.25" floppy disk drives, 40 Mbyte hard disk, 1 Mbytes of memory, four serial ports, one parallel port and a 12" monochrome monitor, this unit acts as the system controller for communications with the contractors WISDOM-II computer, the transmission line and the graphic display. The software operates with high level language commands and is menu driven for easy operator control and access. The modem board is an independent, microprocessor-based unit that is located physically within the Operator Station. The board can function in two ways, in the 293BSX mode where it is transparent on the transmission line or in the modem-control mode where it is used as an intermediate data collection and storage device. This second function is used during the regular data collection cycle, when the modem polls the streamer sensors for data and, on reception, stores it in it's own non-volatile memory for recovery by the main CPU. This allows the main CPU to conduct

other tasks during the data acquisition period. Initialisation procedures and diagnostics are run with the modem in 293BSX mode.

The sensors used for this set up were the Series 5011 Digicourse bird (cable control devices), and also used were the Concurrent Multichannel Transceiver (CMX) model 4011 echo pods. All of these devices are designed to attach to marine seismic streamers using standard "collars". Communications to the unit from the vessel is achieved using a single twisted pair of wires as a transmission line and coils to inductively couple signals through sea water. The coils are located within each streamer section, thus dictating the positions at which the devices could be attached. Communications utilises serial FSK (frequency shift keying) data at a frequency of 27 kHz and a data rate of 2400 Bits/second.

9.6.3 DIGICOURSE 5011 COMPASS BIRD

The 5011 compass bird is the combination of a micro-processor based depth control device and a heading sensor in a single mechanical package. The unit uses wings which are capable of providing a raising or lowering force of 35 pounds at 5 knots. The overall mechanical design encompasses the need to minimise flow noise and by using non-corroding materials such as stainless steel and urethane, maintenance is kept to a minimum. Powered by either Lithium batteries the unit performs several functions including:-

*Depth sensing from 0 - 400 feet ($\pm$ 0.5)
*Adjusting wing angles to maintain a set running depth
*Reporting current depth and heading
*Reporting wing angle to a resolution of 0.3 $\pm$ 0.5°
*Emergency dive and surface

In operation the system display can be selected to illustrate several performance indicators, streamer shape, depth or a combination of both. Careful use of the wing angle data is also very useful in the initial stages of a survey when balancing the streamers.

9.7 ACUMEN QUALITY CONTROL SYSTEM

ACUMEN is a navigation/positioning data processing system, which provides a means of total quality control for positioning in highly complex 3D surveys using modern technologies. The use of powerful SUNSPARC workstations as the hardware platform and UNIX as the operating system, results in a system which can process data from all navigation sensors in real time and produce binning plots very efficiently and concisely making "complete" real time QC possible. The system will interface to all presently utilised positioning systems including but not limited to MARS Laser system, Digicourse compass and acoustic systems, Sonardyne acoustic systems, Western Geophysical SSTS acoustic systems, Sercel Syledis and Geoloc radio positioning systems, Racal Microfix and Hyperfix radio positioning systems, Cubic Western ARGO radio positioning systems, Sercel/Trimble/Racal GPS/DPGS receivers, Offshore Navigation SPOT systems, Motorola Miniranger systems.It is possible for the system to work up to the maxima of 30 Radio and Long Baseline acoustic patterns, 10 Radio and Long Baseline acoustic receivers, 10 DGPS/GPS receivers, 50 Laser and Short Baseline acoustic nodes (up to 2500 ranges and bearings), 10 separate seismic streamers, 10 sources, 24 compasses per streamer.

ACUMEN produces statistics and time plots for Raw value and mean raw values, Current and mean residuals, Standard deviation and delta standard deviation, Rate of change, Number of rejections, and will compute and/or display on line Contractors vessel position, Vessel course/speed made good, Lines of Position for all radio positioning systems, Position, shape and feather angles for all individual streamers, Position, shape and active indicator for all individual sources, Error ellipses for navigation reference point, sources and any selected streamer groups, Completely independent CMP binning displays for coverage comparison and infill decisions.

ACUMEN can process all navigation/positioning data acquired during the survey, position the entire vessel/source/streamer spread as a single integrated system and reject all spurious observations in real time using a proven mathematical model. The system uses industry standard data recording formats i.e., Raw data is recorded in standard UKOOA P2/86 or P2/91 format, Processed data is recorded in standard UKOOA P1/84 or P1/90 format. ACUMEN has several other essential functions such as a full suite of geodetic computations and calibration routines, the ability to produce CMP binning displays based on processed data from any source, a statistical package for the comparison of pairs of UKOOA format files, the ability to transmit data using available, non exclusive, data links to any other location and the system can also be located and used in house by the client to make infill decisions.

The system is configured on SUN SPARC stations, were selected for their inherent computational power, and because of the manufacturing standards of the hardware also ensure reliable performance in the typical marine acquisition environment. Interfacing to all other systems is easily and efficiently achieved by utilising a standard SUN serial/parallel controller. This gives multiplexed access to 1 parallel and 8 serial ports, sufficient capability for any present contractor configuration. It should also be noted that the hardware platform can be specified according to the application. For this survey the system was configured as shown in Figure 14

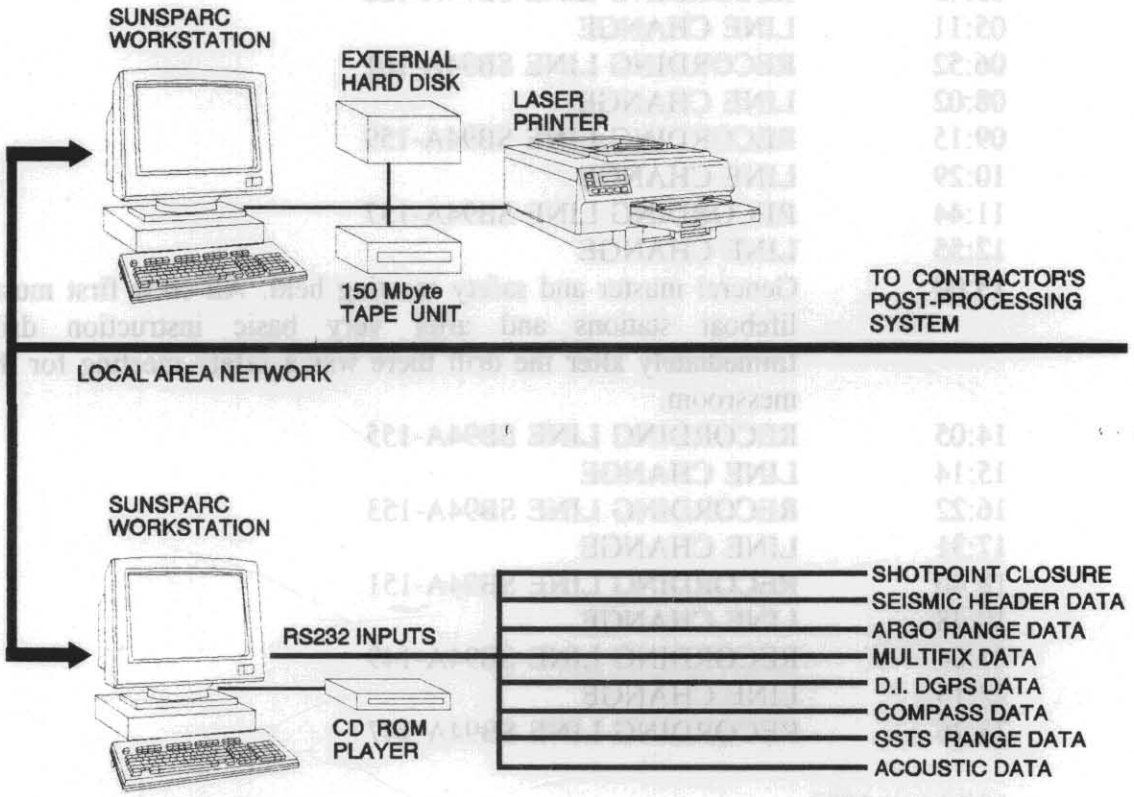

Figure 14 ACUMEN QC SYSTEM

For the Rocky Cape survey the basic processing flow was as follows:

a) Read and process positioning data, display vessel, source, streamer and compare with contractor's vessel position taken from header data.
b) Record P286 file and store to disk.
c) Process P286 through to P190 and store to disk.

10 SURVEY LOGS AND LINE STATISTICS

10.1 DAILY DIARY

17 March 1994

00:00	VESSEL AT STANDBY OFF BURNIE FOR PORT CALL
06:03	PORT CALL FOR RESUPPLY/CREW CHANGE
10:00	TRAVEL TO STREAMER DEPLOYMENT STATION
13:10	STREAMER DEPLOYMENT
17:30	SOURCE DEPLOYMENT
21:15	DOWNTIME, SSTS ACOUSTIC POSITIONING SYSTEM FAILURE Having successfully measured the offset to the near group, problems with gun phones and SSTS causing delays to survey start.
23:00	RUN IN TO LINE SB94A-132

18 March 1994

00:00	RUN IN TO LINE SB94A-132
00:33	RECORDING LINE SB94A-132
02:16	LINE CHANGE
03:43	RECORDING LINE SB94A-130
05:11	LINE CHANGE
06:52	RECORDING LINE SB94A-161
08:02	LINE CHANGE
09:15	RECORDING LINE SB94A-159
10:29	LINE CHANGE
11:44	RECORDING LINE SB94A-157
12:55	LINE CHANGE
13:00	General muster and safety meeting held. All crew first mustered at their correct lifeboat stations, and after very basic instruction drill was terminated. Immediately after the drill there was a safety meeting for the entire crew in the messroom.
14:05	RECORDING LINE SB94A-155
15:14	LINE CHANGE
16:22	RECORDING LINE SB94A-153
17:31	LINE CHANGE
18:40	RECORDING LINE SB94A-151
19:48	LINE CHANGE
21:04	RECORDING LINE SB94A-149
22:15	LINE CHANGE
23:26	RECORDING LINE SB94A-147

19 March 1994

00:00	RECORDING LINE SB94A-147
00:44	LINE CHANGE
01:55	RECORDING LINE SB94A-145
02:25	DOWNTIME, AIRLINE RUPTURE, CIRCLING TO RESUME Line terminated after an airline on string 3 ruptured. Circling to resume line with 60 SP overlap.
04:24	RECORDING LINE SB94A-145A

19 March 1994

05:22	LINE CHANGE
06:40	RECORDING LINE SB94A-143
07:56	LINE CHANGE
09:13	RECORDING LINE SB94A-141
10:31	LINE CHANGE
12:43	RECORDING LINE SB94A-128
15:09	LINE CHANGE
16:24	RECORDING LINE SB94A-126
17:54	LINE CHANGE
20:20	RECORDING LINE SB94A-104

20 March 1994

00:00	RECORDING LINE SB94A-104
00:57	LINE CHANGE
02:02	RECORDING LINE SB94A-102
06:37	LINE CHANGE
08:13	RECORDING LINE SB94A-124
	Dogleg to 320° taken at SP 614 on line.
11:28	LINE CHANGE
12:56	RECORDING LINE SB94A-108
14:15	LINE CHANGE
15:27	RECORDING LINE SB94A-106
17:18	LINE CHANGE
18:54	RECORDING LINE SB94A-125
19:56	LINE CHANGE
21:17	RECORDING LINE SB94A-129
22:57	LINE CHANGE

21 March 1994

00:00	LINE CHANGE
00:25	RECORDING LINE SB94A-133
01:54	LINE CHANGE
02:47	RECORDING LINE SB94A-137
03:54	LINE CHANGE
04:46	RECORDING LINE SB94A-139
05:44	LINE CHANGE
07:06	RECORDING LINE SB94A-135
07:17	LINE TERMINATED, DATA SCRATCHED. INSTRUMENT FAULT
	At SP 180 line terminated after WG24 RDP system hung up. No hardware failure, instruments reset and system up. Circling to restart the line.
09:15	RECORDING LINE SB94A-135
10:18	LINE CHANGE
11:51	RECORDING LINE SB94A-131
13:10	LINE CHANGE
14:23	RECORDING LINE SB94A-127
16:01	LINE CHANGE
17:29	RECORDING LINE SB94A-110
20:28	LINE CHANGE
21:43	RECORDING LINE SB94A-112

22 March 1994

00:00	RECORDING LINE SB94A-112
00:48	LINE CHANGE
02:24	RECORDING LINE SB94A-123
05:24	LINE CHANGE
06:40	RECORDING LINE SB94A-121
09:20	LINE CHANGE
11:23	RECORDING LINE SB94A-119
12:40	Informed by the contractor's safety officer that one of the compressor mechanics, Galen Hieb has reported a back pain on the 22 March. The only possible reason for this symptom is suggested to be the work Galeb has been doing on compressor. Mild pain killers have been prescribed. Signed the Sagasco accident report form and will forward it to the client by fax this evening.
12:45	LINE CHANGE
13:00	Fire drill and emergency drill held. Some personnel a little vague about the procedures, mainly newly joined crew members.
14:22	RECORDING LINE SB94A-115
14:33	TERMINATION, INSTRUMENT FAULT. CIRCLE TO RESTART Line stopped after instruments suffered some sort of failure in the data flow to the tape decks. Syatem completely recovered after reset and reloading of parameters.
16:26	RECORDING LINE SB94A-115
19:02	LINE CHANGE
20:47	RECORDING LINE SB94A-117
22:08	LINE CHANGE
23:41	RECORDING LINE SB94A-113

23 March 1994

00:00	RECORDING LINE SB94A-113
03:40	LINE CHANGE
05:04	RECORDING LINE SB94A-111
08:52	LINE CHANGE
10:37	RECORDING LINE SB94A-107
13:17	LINE CHANGE
14:29	RECORDING LINE SB94A-109
16:11	LINE CHANGE
17:17	RECORDING LINE SB94A-105
18:53	LINE CHANGE
20:25	RECORDING LINE SB94A-103
21:40	LINE CHANGE
23:02	RECORDING LINE SB94A-101

24 March 1994

00:00	RECORDING LINE SB94A-101
00:49	LINE CHANGE
03:05	RECORDING LINE SB94A-122
03:11	TERMINATION, INSTRUMENT FAULT. CIRCLE TO RESTART Line started but missed multiple shots after WG24 locked up completely. Reset and all faults removed. Circle and restart the line.

05:09	RECORDING LINE SB94A-122
07:29	LINE CHANGE
08:54	RECORDING LINE SB94A-120
10:33	LINE CHANGE
11:55	RECORDING LINE SB94A-118
13:35	LINE CHANGE
14:50	RECORDING LINE SB94A-116
16:30	LINE CHANGE
17:51	RECORDING LINE SB94A-114
19:14	TURNING FAIR SEAS AND RECOVERING STREAMER
20:00	STREAMER RECOVERY
21:08	DEPART SURVEY AREA EN ROUTE TO NEXT SURVEY

10.2 DAILY PRODUCTION FIGURES

Line	Azm	Overall SP Range	Process SP Range	Process Kilometres	Charge SP Range	Charge Kilometres	Stat
Date 18/03/94							
SB94A-132	314	111-750	111-750	16.0000	111-750	16.0000	COM
SB94A-130	152	575-31	575-31	13.6250	575-31	13.6250	COM
SB94A-161	043	473-31	473-31	11.0750	473-31	11.0750	COM
SB94A-159	223	111-572	111-572	11.5500	111-572	11.5500	COM
SB94A-157	043	469-31	469-31	10.9750	469-31	10.9750	COM
SB94A-155	223	469-31	469-31	10.9750	469-31	10.9750	COM
SB94A-153	044	111-549	111-549	10.9750	111-549	10.9750	COM
SB94A-151	224	468-31	468-31	10.9500	468-31	10.9500	COM
SB94A-149	044	111-549	111-549	10.9750	111-549	10.9750	COM
SB94A-147	224	519-308	519-308	5.3000	519-308	5.3000	MSP
Subtotal				112.4000		112.4000	
Date 19/03/94							
SB94A-147	224	307-31	307-31	6.9250	307-31	6.9250	COM
SB94A-145	043	111-323	111-323	5.3250	111-300	4.7500	TBC
SB94A-145A	043	240-596	240-596	8.9250	301-596	7.4000	COM
SB94A-143	225	511-31	511-31	12.0250	511-31	12.0250	COM
SB94A-141	045	111-601	111-601	12.2750	111-601	12.2750	COM
SB94A-128	124	111-1034	111-1034	23.1000	111-1034	23.1000	COM
SB94A-126	314	613-31	613-31	14.5750	613-31	14.5750	COM
SB94A-104	319	1777-392	1777-392	34.6500	1777-392	34.6500	MSP
Subtotal				117.8000		115.7000	
Date 20/03/94							
SB94A-104	319	391-31	391-31	9.0250	391-31	9.0250	COM
SB94A-102	143	111-1831	111-1831	43.0250	111-1831	43.0250	COM
SB94A-124	324	1274-31	1274-31	31.1000	1274-31	31.1000	COM
SB94A-108	325	529-31	529-31	12.4750	529-31	12.4750	COM
SB94A-106	141	111-790	111-790	17.0000	111-790	17.0000	COM
SB94A-125	235	427-31	427-31	9.9250	427-31	9.9250	COM
SB94A-129	056	111-733	111-733	15.5750	111-733	15.5750	COM
Subtotal				138.1250		138.1250	

Date 21/03/94							
SB94A-133	238	394-31	394-31	9.1000	394-31	9.1000	COM
SB94A-137	053	111-536	111-536	10.6500	111-536	10.6500	COM
SB94A-139	230	399-31	399-31	9.2250	399-31	9.2250	COM
SB94A-135	056	111-519	111-519	10.2250	111-519	10.2250	COM
SB94A-131	235	529-31	529-31	12.4750	529-31	12.4750	COM
SB94A-127	055	111-737	111-737	15.6750	111-737	15.6750	COM
SB94A-110	323	1172-31	1172-31	28.5500	1172-31	28.5500	COM
SB94A-112	142	111-970	111-970	21.5000	111-970	21.5000	MSP
Subtotal				117.4000		117.4000	
Date 22/03/94							
SB94A-112	142	971-1279	971-1279	7.7250	971-1279	7.7250	COM
SB94A-123	235	1025-31	1025-31	24.8750	1025-31	24.8750	COM
SB94A-121	054	111-1128	111-1128	25.4500	111-1128	25.4500	COM
SB94A-119	235	554-31	554-31	13.1000	554-31	13.1000	COM
SB94A-115	056	111-1102	111-1102	24.8000	111-1102	24.8000	COM
SB94A-117	236	557-31	557-31	13.1750	557-31	13.1750	COM
SB94A-113	057	111-228	111-228	2.9500	111-228	2.9500	MSP
Subtotal				112.0750		112.0750	
Date 23/03/94							
SB94A-113	057	229-1647	229-1647	35.4750	229-1647	35.4750	COM
SB94A-111	235	1494-31	1494-31	36.6000	1494-31	36.6000	COM
SB94A-107	056	111-1138	111-1138	25.7000	111-1138	25.7000	COM
SB94A-109	235	670-31	670-31	16.0000	670-31	16.0000	COM
SB94A-105	056	111-717	111-717	15.1750	111-717	15.1750	COM
SB94A-103	236	640-31	640-31	15.2500	640-31	15.2500	COM
SB94A-101	055	111-477	111-477	9.1750	111-477	9.1750	MSP
Subtotal				153.3750		153.3750	
Date 24/03/94							
SB94A-101	055	478-798	478-798	8.0250	478-798	8.0250	COM
SB94A-122	144	111-988	111-988	21.9500	111-988	21.9500	COM
SB94A-120	324	657-31	657-31	15.6750	657-31	15.6750	COM
SB94A-118	144	111-737	111-737	15.6750	111-737	15.6750	COM
SB94A-116	323	659-31	659-31	15.7250	659-31	15.7250	COM
SB94A-114	142	111-642	111-642	13.3000	111-642	13.3000	COM
Subtotal				90.3500		90.3500	
Total				841.5250		839.4250	

10.3 QA LINE LOGS

Sail Line: SB94A-101 Azm: 055 Status: COM Date: 23/03/94

Line - : 101

Total SP Range: 111-798
Process Range : 111-798
Charge Range : 111-798
Total CMP Km : 17.2000
Process CMP Km: 17.2000
Charge CMP Km : 17.2000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	23:02	5407	70.0 M	FORCE 4-5 E	MODERATE	1 M	131.0 M
EOL	00:49	5418	76.0 M	FORCE 5-6 E	MODERATE	1 M	131.0 M

Streamer Noise (uB) SOL #1 4.9 Feather 1.1P
EOL #1 4.5 Feather 0.7S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Sea noise increasing with weather again.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: SP 296 gun 17 off 25 on. SP 482 gun 25 off 41 on.
Comments: SPs 294, 295, 297, 479, 480, 481 all misfires.

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 6 source misfires as above

Acumen Line Statistics

Statistics for line SB94A-101

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	686	0	28.18	19.41	24.09	1.11	0.68	2.17
GPS 1 Bearing	686	0	312.08	297.67	304.70	-0.10	0.61	1.08
GPS 2 Range	686	0	36.70	22.09	28.56	-4.43	2.49	2.78
GPS 2 Bearing	686	0	306.18	289.73	297.94	0.46	2.02	1.26
Compass 1-1	686	0	46.00	41.80	43.53	-0.16	0.30	0.41
Compass 1-2	686	0	45.40	41.80	43.53	-0.87	0.76	0.43
Compass 1-3	686	0	45.10	42.50	43.81	-0.47	0.97	0.35
Compass 1-4	686	0	45.10	42.20	43.59	-0.39	0.83	0.40
Compass 1-5	686	0	45.90	42.50	43.90	0.86	0.64	0.41
Compass 1-6	686	0	44.80	42.30	43.66	0.86	0.65	0.39
Compass 1-7	686	0	45.00	41.50	43.57	-0.29	0.80	0.46
Compass 1-8	686	0	45.40	42.70	43.95	-1.39	0.69	0.44
Compass 1-9	686	0	47.70	43.90	45.38	0.77	0.55	0.55
Distance Off	686	0	9.38	-9.11	0.12	0.00	4.24	0.51
Course Made Good	686	0	59.05	54.66	55.13	0.00	0.21	0.03
Speed Made Good	686	0	2.77	2.45	2.47	0.00	0.01	0.00
Drift	686	0	0.00	-6.18	-3.56	0.00	0.81	0.17
Shot Spacing	686	0	28.79	20.95	24.98	0.00	0.96	1.61
Shot Timing	686	0	11.00	9.00	9.41	0.00	0.49	0.81
Event Time	686	0	14.83	13.04	13.94	0.00	0.52	0.00
Diff X	686	0	0.49	-5.43	-2.62	0.00	1.05	1.16
Diff Y	686	0	0.33	-3.82	-1.81	0.00	0.80	0.82
Streamer 1 Feather	686	0	2.77	-2.00	-1.15	0.00	0.35	0.19
Gyro	682	0	61.51	55.28	58.67	0.37	0.40	0.43

Sail Line: SB94A-102 Azm: 143 Status: COM Date: 20/03/94

Line - : 102

Total SP Range: 111-1831
Process Range : 111-1831
Charge Range : 111-1831
Total CMP Km : 43.0250
Process CMP Km: 43.0250
Charge CMP Km : 43.0250

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	02:02	5052	59.0 M	FORCE 4-5 SE	SLIGHT	< 1 M	131.0 M
EOL	06:37	5080	67.0 M	FORCE 3-4 SE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.0 Feather 5.4P
EOL #1 3.3 Feather 1.6S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Noise levels generally higher.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: SP 1718 gun 28 misfired

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 1718

Acumen Line Statistics

Statistics for line SB94A-102

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	1718	0	44.47	19.92	24.25	0.56	0.63	1.95
GPS 1 Bearing	1718	1	220.79	207.12	214.78	-0.69	0.72	1.16
GPS 2 Range	1718	0	51.37	20.51	28.63	-2.32	1.91	2.42
GPS 2 Bearing	1718	1	225.22	209.29	216.28	2.68	2.51	1.09
Compass 1-1	1718	0	135.50	127.00	131.00	-0.14	0.24	0.31
Compass 1-2	1718	0	135.60	127.20	131.03	-0.82	0.54	0.30
Compass 1-3	1718	0	135.90	127.60	131.33	-0.32	0.74	0.27
Compass 1-4	1718	0	136.10	127.40	131.17	0.06	0.62	0.28
Compass 1-5	1718	0	136.10	127.40	131.12	0.30	0.54	0.32
Compass 1-6	1718	0	136.20	127.50	131.24	0.54	0.52	0.27
Compass 1-7	1718	0	136.80	126.70	131.18	-0.32	0.56	0.30
Compass 1-8	1718	0	138.30	127.30	131.72	-0.58	0.61	0.32
Compass 1-9	1718	0	139.40	127.80	132.55	0.35	0.47	0.38
Distance Off	1718	0	9.70	-7.94	0.74	0.00	3.42	0.56
Course Made Good	1718	0	145.20	142.75	143.29	0.00	0.28	0.02
Speed Made Good	1718	0	2.50	2.47	2.48	0.00	0.00	0.00
Drift	1718	0	11.18	-0.00	7.52	0.00	1.75	0.08
Shot Spacing	1718	0	Inf	22.86	Inf	0.00	NaN	Inf
Shot Timing	1718	0	19.00	9.00	9.60	0.00	0.54	0.89
Event Time	1718	0	20.62	16.04	18.32	0.00	1.32	0.00
Diff X	1718	0	0.81	-4.34	-1.67	0.00	0.90	0.80
Diff Y	1718	0	6.55	-0.68	2.89	0.00	1.16	1.06
Streamer 1 Feather	1718	0	2.85	-4.26	-0.48	0.00	2.16	0.10
Gyro	1714	0	140.97	131.27	135.74	0.34	0.34	0.34

Sail Line: SB94A-103 Azm: 236 Status: COM Date: 23/03/94

Line - : 103

Total SP Range: 640-31
Process Range : 640-31
Charge Range : 640-31
Total CMP Km : 15.2500
Process CMP Km: 15.2500
Charge CMP Km : 15.2500

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	20:25	5396	77.0 M	FORCE 5-6 ENE	MODERATE	< 1 M	131.0 M
EOL	21:40	5406	71.0 M	FORCE 5-6 ENE	MODERATE	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.6 Feather 2.3P
EOL #1 6.3 Feather 0.4S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Noticeable ship noise from passing vessel on EOL noise record.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-103

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	605	0	30.03	19.93	24.56	-0.35	0.56	2.44
GPS 1 Bearing	605	0	132.22	115.21	122.28	-0.39	0.52	2.29
GPS 2 Range	605	0	35.46	17.88	27.09	1.40	2.25	2.97
GPS 2 Bearing	605	0	136.72	97.11	124.32	1.54	2.06	2.45
Compass 1-1	605	0	224.10	221.50	222.85	0.03	0.19	0.29
Compass 1-2	605	0	223.50	221.10	222.40	-0.44	0.65	0.28
Compass 1-3	605	0	224.30	221.50	222.60	-0.37	0.77	0.28
Compass 1-4	605	0	224.80	221.50	222.53	-0.53	0.61	0.31
Compass 1-5	605	0	226.80	221.30	223.05	0.76	0.47	0.30
Compass 1-6	605	0	226.00	221.60	222.90	0.81	0.52	0.29
Compass 1-7	605	0	226.60	221.50	222.99	0.07	0.56	0.29
Compass 1-8	605	0	226.70	221.60	223.11	-1.68	0.49	0.28
Compass 1-9	605	0	229.40	222.70	224.86	0.84	0.41	0.31
Distance Off	605	0	24.76	-10.14	0.70	0.00	3.65	1.56
Course Made Good	605	0	235.99	234.02	235.52	0.00	0.17	0.03
Speed Made Good	605	0	2.81	2.50	2.78	0.00	0.02	0.00
Drift	605	0	5.36	0.00	2.89	0.00	0.63	0.18
Shot Spacing	605	0	28.53	19.13	25.00	0.00	1.37	2.29
Shot Timing	605	0	11.00	8.00	9.40	0.00	0.50	0.83
Event Time	605	0	11.68	10.10	10.90	0.00	0.45	0.00
Diff X	605	0	6.14	-0.42	3.33	0.00	1.16	1.45
Diff Y	605	0	6.22	-5.55	2.39	0.00	0.96	1.17
Streamer 1 Feather	605	0	0.92	-3.54	0.08	0.00	0.75	0.16
Gyro	601	0	234.09	230.15	232.63	0.10	0.08	0.27

Sail Line: SB94A-104 Azm: 319 Status: COM Date: 19/03/94

Line - : 104

Total SP Range: 1777-31
Process Range : 1777-31
Charge Range : 1777-31
Total CMP Km : 43.6750
Process CMP Km: 43.6750
Charge CMP Km : 43.6750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	20:20	5022	73.0 M	FORCE 2-3 NE	SLIGHT	< 1 M	131.0 M
EOL	00:57	5051	61.0 M	FORCE 2-3 NE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.6 Feather 2.4S
EOL #1 3.1 Feather 1.2S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47 throughout line.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: SP 607 23 misfired

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 607

Acumen Line Statistics

Statistics for line SB94A-104

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	1765	0	50.45	17.68	24.90	-0.05	0.72	2.13
GPS 1 Bearing	1765	0	61.47	28.58	39.16	0.09	0.85	1.13
GPS 2 Range	1764	0	48.99	12.86	25.46	-0.11	2.14	2.71
GPS 2 Bearing	1764	0	78.15	26.37	38.70	-0.65	2.72	1.19
Compass 1-1	1765	0	308.10	304.50	306.42	0.00	0.20	0.25
Compass 1-2	1765	0	307.70	304.30	306.29	-0.11	0.43	0.24
Compass 1-3	1765	0	307.10	304.70	306.01	-0.48	0.54	0.23
Compass 1-4	1765	0	307.20	304.30	305.92	-0.79	0.53	0.23
Compass 1-5	1765	0	307.70	304.20	306.53	0.93	0.41	0.25
Compass 1-6	1765	0	307.40	303.40	306.17	0.83	0.44	0.23
Compass 1-7	1765	0	307.60	303.00	306.23	-0.10	0.47	0.24
Compass 1-8	1765	0	308.00	302.80	306.54	-1.44	0.46	0.21
Compass 1-9	1765	0	309.70	304.10	308.12	0.74	0.43	0.28
Distance Off	1765	0	8.39	-9.87	0.30	0.00	3.48	0.46
Course Made Good	1765	0	321.42	308.72	318.82	0.00	1.08	0.03
Speed Made Good	1765	0	2.77	2.46	2.48	0.00	0.00	0.00
Drift	1765	0	-0.00	-11.11	-3.46	0.00	1.19	0.05
Shot Spacing	1765	0	35.25	0.01	24.97	0.00	1.06	1.62
Shot Timing	1765	0	30.00	8.00	9.54	0.00	0.75	1.06
Event Time	1765	0	14.98	10.30	12.61	0.00	1.35	0.00
Diff X	1765	0	4.72	-3.48	2.07	0.00	1.05	0.92
Diff Y	1765	0	4.51	-7.01	-2.51	0.00	1.22	1.10
Streamer 1 Feather	1765	0	4.75	-8.25	-0.06	0.00	0.90	0.09
Gyro	1761	0	324.37	319.08	322.25	0.24	0.22	0.22

Sail Line: SB94A-105 Azm: 056 Status: COM Date: 23/03/94

Line - : 105

Total SP Range: 111-717
Process Range : 111-717
Charge Range : 111-717
Total CMP Km : 15.1750
Process CMP Km: 15.1750
Charge CMP Km : 15.1750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	17:17	5385	73.0 M	FORCE 5-6 ENE	MODERATE	< 1 M	131.0 M
EOL	18:53	5395	78.0 M	FORCE 5-6 ENE	MODERATE	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.5 Feather 6.2S
EOL #1 3.3 Feather 1.7S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Higher sea noise with increased sea conditions
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : SP 279-280 NDRs

Acumen Line Statistics

Statistics for line SB94A-105

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	605	0	28.91	16.21	24.01	0.99	0.62	2.48
GPS 1 Bearing	605	0	308.62	295.67	303.06	0.34	0.61	1.08
GPS 2 Range	605	0	36.72	20.40	29.18	-3.96	2.46	2.80
GPS 2 Bearing	605	0	315.52	287.67	301.11	-1.38	2.46	1.20
Compass 1-1	605	0	42.40	37.60	40.04	-0.27	0.25	0.38
Compass 1-2	605	0	42.30	38.00	40.11	-1.34	0.81	0.39
Compass 1-3	605	0	43.20	38.30	40.48	-0.51	0.98	0.38
Compass 1-4	605	0	41.90	38.30	40.01	-0.12	0.80	0.36
Compass 1-5	605	0	42.50	37.50	40.05	1.06	0.78	0.38
Compass 1-6	605	0	41.50	36.30	39.47	0.26	0.73	0.40
Compass 1-7	605	0	42.30	35.80	39.77	-0.02	0.82	0.43
Compass 1-8	605	0	42.80	34.50	39.81	-1.29	0.72	0.38
Compass 1-9	605	0	44.50	34.50	41.23	0.69	0.57	0.51
Distance Off	605	0	8.26	-15.11	-1.41	0.00	4.90	0.57
Course Made Good	605	0	57.90	55.05	55.68	0.00	0.23	0.03
Speed Made Good	605	0	2.78	2.45	2.49	0.00	0.02	0.00
Drift	605	0	1.07	-4.71	-1.27	0.00	1.05	0.30
Shot Spacing	605	0	29.37	18.35	25.02	0.00	1.35	2.34
Shot Timing	605	0	11.00	8.00	9.57	0.00	0.50	0.86
Event Time	605	0	8.90	7.29	8.09	0.00	0.46	0.00
Diff X	605	0	1.05	-5.82	-2.72	0.00	1.24	1.54
Diff Y	605	0	1.84	-3.74	-1.32	0.00	0.86	1.07
Streamer 1 Feather	605	0	8.32	1.29	3.18	0.00	0.96	0.18
Gyro	601	0	60.44	54.21	56.95	0.14	0.14	0.42

Sail Line: SB94A-106 Azm: 141 Status: COM Date: 20/03/94

Line - : 106

Total SP Range: 111-790
Process Range : 111-790
Charge Range : 111-790
Total CMP Km : 17.0000
Process CMP Km: 17.0000
Charge CMP Km : 17.0000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	15:27	5111	63.0 M	FORCE 4-5 E	MODERATE	< 1 M	131.0 M
EOL	17:18	5122	68.0 M	FORCE 5 E	MODERATE	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.9 Feather 3.7P
EOL #1 2.9 Feather 0.4S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Noise levels generally higher.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-106

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	678	0	28.67	18.49	24.12	0.69	0.65	1.75
GPS 1 Bearing	678	0	224.27	208.92	217.45	-0.83	0.72	1.91
GPS 2 Range	678	0	36.99	20.23	29.50	-2.66	2.04	2.08
GPS 2 Bearing	678	0	225.07	208.21	218.12	3.45	2.45	1.51
Compass 1-1	678	0	132.30	125.50	128.84	-0.22	0.35	0.51
Compass 1-2	678	0	132.10	126.10	129.03	-1.27	0.79	0.47
Compass 1-3	678	0	132.70	126.70	129.64	-0.38	1.02	0.42
Compass 1-4	678	0	131.70	127.00	129.47	0.45	0.77	0.36
Compass 1-5	678	0	131.40	127.10	129.16	0.32	0.74	0.37
Compass 1-6	678	0	132.30	127.10	129.28	0.30	0.69	0.38
Compass 1-7	678	0	132.50	126.90	129.27	-0.47	0.86	0.39
Compass 1-8	678	0	133.40	127.50	129.86	-0.32	0.69	0.41
Compass 1-9	678	0	135.00	127.30	130.44	0.28	0.62	0.60
Distance Off	678	0	12.65	-11.62	-0.51	0.00	5.14	1.01
Course Made Good	678	0	144.79	129.75	140.46	0.00	0.51	0.03
Speed Made Good	678	0	2.78	2.50	2.77	0.00	0.00	0.00
Drift	678	0	14.62	0.00	11.24	0.00	1.77	0.23
Shot Spacing	678	0	27.82	20.80	25.01	0.00	0.70	1.09
Shot Timing	678	0	11.00	9.00	9.78	0.00	0.46	0.69
Event Time	678	0	7.30	5.46	6.37	0.00	0.53	0.00
Diff X	678	0	0.95	-4.19	-1.66	0.00	0.96	0.85
Diff Y	678	0	6.28	-0.06	2.73	0.00	1.13	1.05
Streamer 1 Feather	678	0	1.09	-14.52	-1.39	0.00	1.28	0.15
Gyro	674	0	135.49	124.25	129.15	0.65	0.59	0.70

Sail Line: SB94A-107 Azm: 056 Status: COM Date: 23/03/94

Line - : 107

Total SP Range: 111-1138
Process Range : 111-1138
Charge Range : 111-1138
Total CMP Km : 25.7000
Process CMP Km: 25.7000
Charge CMP Km : 25.7000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	10:37	5355	64.0 M	FORCE 3 E	SLIGHT	< 1 M	131.0 M
EOL	13:17	5372	78.0 M	FORCE 3 E	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.3 Feather 4.6P
EOL #1 3.3 Feather 1.2P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some refelected ship noise on near traces.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: SP 774 ITB, misfire

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 774

Acumen Line Statistics

Statistics for line SB94A-107

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	1027	0	28.83	18.42	24.05	1.24	0.70	1.81
GPS 1 Bearing	1027	0	311.29	278.75	304.02	-0.21	0.73	0.70
GPS 2 Range	1027	0	39.01	22.44	28.90	-4.61	2.47	2.55
GPS 2 Bearing	1027	0	305.80	282.05	297.24	0.24	2.25	0.97
Compass 1-1	1027	0	48.40	43.30	46.08	-0.21	0.23	0.35
Compass 1-2	1027	0	48.40	43.30	45.98	-1.24	0.57	0.38
Compass 1-3	1027	0	48.40	44.40	46.44	-0.66	0.63	0.29
Compass 1-4	1027	0	48.30	44.10	46.28	0.04	0.45	0.30
Compass 1-5	1027	0	48.50	43.90	46.32	1.01	0.81	0.38
Compass 1-6	1027	0	48.30	43.70	45.97	0.42	0.54	0.39
Compass 1-7	1027	0	48.30	43.90	46.12	-0.48	0.75	0.42
Compass 1-8	1027	0	48.90	44.20	46.66	-0.85	0.71	0.39
Compass 1-9	1027	0	50.10	44.80	47.68	0.55	0.45	0.46
Distance Off	1027	0	14.29	-7.89	0.67	0.00	3.07	0.89
Course Made Good	1027	0	70.04	55.76	56.52	0.00	1.33	0.03
Speed Made Good	1027	0	2.77	2.46	2.47	0.00	0.01	0.00
Drift	1027	0	3.44	-5.42	-3.06	0.00	1.38	0.06
Shot Spacing	1027	0	27.13	21.48	25.01	0.00	0.68	1.01
Shot Timing	1027	0	10.00	8.00	9.30	0.00	0.46	0.75
Event Time	1027	0	3.28	0.63	1.95	0.00	0.76	0.00
Diff X	1027	0	4.38	-2.45	0.87	0.00	1.18	1.12
Diff Y	1027	0	5.25	-3.02	0.40	0.00	0.84	0.76
Streamer 1 Feather	1027	0	9.41	-4.21	-2.26	0.00	1.33	0.19
Gyro	1023	0	61.87	55.76	59.61	0.17	0.23	0.17

Sail Line: SB94A-108 Azm: 325 Status: COM Date: 20/03/94

Line - : 108

Total SP Range: 529-31
Process Range : 529-31
Charge Range : 529-31
Total CMP Km : 12.4750
Process CMP Km: 12.4750
Charge CMP Km : 12.4750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	12:56	5102	67.0 M	FORCE 6-7 ENE	MODERATE	< 1 M	131.0 M
EOL	14:15	5110	64.0 M	FORCE 6 ENE	MODERATE	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.2 Feather 1.3P
EOL #1 3.4 Feather 0.7S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Noise levels generally higher.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: SP 520 gun 28 misfired.

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 520

Acumen Line Statistics

Statistics for line SB94A-108

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	496	0	28.00	20.22	24.65	0.01	0.67	1.94
GPS 1 Bearing	496	0	40.70	26.86	33.86	0.35	0.80	2.11
GPS 2 Range	496	0	34.89	17.03	26.05	-0.12	2.19	2.62
GPS 2 Bearing	496	0	41.65	22.35	32.08	-1.38	2.91	2.17
Compass 1-1	496	0	313.90	310.00	312.11	-0.09	0.27	0.40
Compass 1-2	496	0	313.20	310.00	311.81	-0.89	0.73	0.41
Compass 1-3	496	0	313.20	310.40	312.12	-0.71	0.99	0.38
Compass 1-4	496	0	313.50	310.70	312.11	-0.35	0.69	0.32
Compass 1-5	496	0	314.10	311.20	312.55	1.16	0.61	0.37
Compass 1-6	496	0	313.90	310.70	312.28	0.81	0.61	0.33
Compass 1-7	496	0	314.30	310.70	312.46	-0.41	0.69	0.36
Compass 1-8	496	0	315.10	311.20	313.11	-1.47	0.52	0.33
Compass 1-9	496	0	317.60	313.00	314.83	0.84	0.49	0.45
Distance Off	496	0	12.73	-27.29	1.42	0.00	4.58	1.93
Course Made Good	496	0	325.29	323.73	324.73	0.00	0.23	0.03
Speed Made Good	496	0	2.78	2.48	2.49	0.00	0.01	0.00
Drift	496	0	0.00	-8.98	-6.63	0.00	1.21	0.17
Shot Spacing	496	0	27.01	22.77	24.99	0.00	0.69	1.11
Shot Timing	496	0	10.00	9.00	9.54	0.00	0.50	0.88
Event Time	496	0	4.26	2.95	3.61	0.00	0.38	0.00
Diff X	496	0	4.24	-0.97	2.05	0.00	0.83	0.84
Diff Y	496	0	0.38	-5.59	-2.75	0.00	1.13	1.11
Streamer 1 Feather	496	0	0.85	-2.44	-0.27	0.00	0.49	0.15
Gyro	492	0	335.24	326.82	331.35	0.61	0.59	0.66

Sail Line: SB94A-109 Azm: 235 Status: COM Date: 23/03/94

Line - : 109

Total SP Range: 670-31
Process Range : 670-31
Charge Range : 670-31
Total CMP Km : 16.0000
Process CMP Km: 16.0000
Charge CMP Km : 16.0000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	14:29	5373	78.0 M	FORCE 5-6 E	MODERATE	< 1 M	131.0 M
EOL	16:11	5384	71.0 M	FORCE 5-6 E	MODERATE	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 4.0 Feather 1.2P
EOL #1 4.0 Feather 4.7P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Higher sea noise with increased sea conditions
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-109

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	637	0	29.08	20.08	24.61	-0.07	0.58	2.50
GPS 1 Bearing	637	0	125.26	117.45	121.71	-0.55	0.51	1.38
GPS 2 Range	637	0	35.81	18.44	26.50	0.28	2.31	2.79
GPS 2 Bearing	637	0	133.39	120.24	127.03	2.21	2.05	1.38
Compass 1-1	637	0	230.00	224.70	227.01	0.01	0.21	0.32
Compass 1-2	637	0	229.30	224.80	226.93	0.32	0.76	0.25
Compass 1-3	637	0	228.30	224.40	226.33	-0.28	0.96	0.31
Compass 1-4	637	0	228.40	224.50	226.26	-0.59	0.79	0.33
Compass 1-5	637	0	229.70	224.30	226.57	0.46	0.57	0.37
Compass 1-6	637	0	228.40	224.00	226.33	0.67	0.64	0.31
Compass 1-7	637	0	228.20	223.50	226.21	0.18	0.57	0.33
Compass 1-8	637	0	228.30	222.90	226.10	-1.26	0.46	0.29
Compass 1-9	637	0	229.70	223.30	227.27	0.58	0.40	0.34
Distance Off	637	0	8.84	-35.37	-0.28	0.00	3.69	2.02
Course Made Good	637	0	235.76	234.51	235.39	0.00	0.16	0.02
Speed Made Good	637	0	2.82	2.50	2.78	0.00	0.02	0.00
Drift	637	0	0.00	-5.50	-3.22	0.00	1.00	0.21
Shot Spacing	637	0	28.71	20.82	24.99	0.00	1.38	2.34
Shot Timing	637	0	11.00	9.00	9.57	0.00	0.50	0.83
Event Time	637	0	6.18	4.49	5.34	0.00	0.49	0.00
Diff X	637	0	4.26	-3.32	0.06	0.00	1.28	1.58
Diff Y	637	0	2.55	-3.37	-0.20	0.00	1.02	1.11
Streamer 1 Feather	637	0	-1.79	-5.22	-3.57	0.00	0.87	0.17
Gyro	633	0	241.14	235.80	238.63	0.10	0.10	0.29

Sail Line: SB94A-110 Azm: 323 Status: COM Date: 21/03/94

Line - : 110

Total SP Range: 1172-31
Process Range : 1172-31
Charge Range : 1172-31
Total CMP Km : 28.5500
Process CMP Km: 28.5500
Charge CMP Km : 28.5500

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	17:29	5191	76.0 M	FORCE 2 VAR.	SLIGHT	< 1 M	131.0 M
EOL	20:28	5210	67.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.8 Feather 2.3S
EOL #1 3.0 Feather 1.3P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-110

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	1140	0	34.63	16.84	24.66	0.05	0.46	2.47
GPS 1 Bearing	1140	0	41.85	31.21	35.71	0.46	0.60	1.85
GPS 2 Range	1140	0	35.60	13.77	26.45	-0.20	1.83	2.92
GPS 2 Bearing	1140	0	44.20	23.12	32.98	-1.85	2.39	2.03
Compass 1-1	1140	0	312.80	308.80	310.56	0.03	0.19	0.27
Compass 1-2	1140	0	312.70	308.90	310.54	0.25	0.34	0.28
Compass 1-3	1140	0	312.10	308.70	310.18	-0.41	0.52	0.27
Compass 1-4	1140	0	312.50	308.80	310.35	-0.44	0.48	0.27
Compass 1-5	1140	0	313.00	309.00	310.72	0.80	0.42	0.30
Compass 1-6	1140	0	312.20	308.30	310.24	0.21	0.40	0.25
Compass 1-7	1140	0	312.50	308.10	310.31	-0.33	0.45	0.27
Compass 1-8	1140	0	312.70	307.30	310.55	-0.33	0.39	0.24
Compass 1-9	1140	0	313.20	307.40	310.82	0.23	0.30	0.30
Distance Off	1140	0	24.29	-7.24	0.39	0.00	3.13	1.18
Course Made Good	1140	0	323.40	321.92	323.11	0.00	0.23	0.02
Speed Made Good	1140	0	2.82	2.50	2.79	0.00	0.02	0.00
Drift	1140	0	1.94	-1.65	0.22	0.00	0.76	0.13
Shot Spacing	1140	0	33.01	17.29	24.99	0.00	1.36	2.32
Shot Timing	1140	0	11.00	8.00	9.41	0.00	0.50	0.84
Event Time	1140	0	10.47	7.49	8.99	0.00	0.86	0.00
Diff X	1140	0	5.72	-1.50	2.31	0.00	0.96	1.20
Diff Y	1140	0	3.59	-8.06	-2.69	0.00	1.33	1.56
Streamer 1 Feather	1140	0	1.63	-1.58	0.23	0.00	0.89	0.11
Gyro	1136	0	324.80	321.08	322.89	0.07	0.06	0.21

Sail Line: SB94A-111 Azm: 235 Status: COM Date: 23/03/94

Line - : 111

Total SP Range: 1494-31
Process Range : 1494-31
Charge Range : 1494-31
Total CMP Km : 36.6000
Process CMP Km: 36.6000
Charge CMP Km : 36.6000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	05:04	5330	79.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M
EOL	08:52	5354	58.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.7 Feather 2.9P
EOL #1 3.2 Feather 4.1S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some random sea noise throughout line
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: SP 429 ITB, misfire

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 429

Acumen Line Statistics

Statistics for line SB94A-111

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	1462	0	28.64	19.72	24.46	-0.36	0.74	1.96
GPS 1 Bearing	1462	0	127.05	118.45	122.37	-0.50	0.58	0.77
GPS 2 Range	1462	0	36.09	19.10	27.39	1.46	2.54	2.59
GPS 2 Bearing	1462	0	133.72	118.35	125.41	2.01	1.98	0.93
Compass 1-1	1462	0	224.80	217.90	221.44	-0.11	0.19	0.23
Compass 1-2	1462	0	225.00	218.40	221.88	-0.13	0.57	0.22
Compass 1-3	1462	0	225.00	217.60	221.69	-0.74	0.70	0.27
Compass 1-4	1462	0	225.50	218.30	222.02	-0.34	0.56	0.25
Compass 1-5	1462	0	226.30	218.50	222.39	0.88	0.49	0.31
Compass 1-6	1462	0	226.30	218.20	222.17	0.62	0.47	0.25
Compass 1-7	1462	0	226.30	218.30	222.29	-0.25	0.47	0.25
Compass 1-8	1462	0	227.10	218.80	222.67	-1.08	0.41	0.25
Compass 1-9	1462	0	228.60	219.50	223.84	0.60	0.30	0.24
Distance Off	1462	0	25.01	-4.24	1.52	0.00	2.67	0.95
Course Made Good	1462	0	236.32	233.45	235.25	0.00	0.11	0.01
Speed Made Good	1462	0	2.80	2.50	2.78	0.00	0.01	0.00
Drift	1462	0	5.58	-1.97	1.76	0.00	2.33	0.04
Shot Spacing	1462	0	26.82	22.33	24.99	0.00	0.63	0.96
Shot Timing	1462	0	11.00	8.00	9.36	0.00	0.48	0.84
Event Time	1462	0	22.87	19.07	20.97	0.00	1.10	0.00
Diff X	1462	0	3.03	-3.21	-0.23	0.00	1.15	1.44
Diff Y	1462	0	2.30	-2.18	-0.18	0.00	0.80	1.01
Streamer 1 Feather	1462	0	4.13	-4.71	0.58	0.00	2.00	0.11
Gyro	1458	0	237.31	229.52	233.45	0.15	0.16	0.14

Sail Line: SB94A-112 Azm: 142 Status: COM Date: 21/03/94

Line - : 112

Total SP Range: 111-1279
Process Range : 111-1279
Charge Range : 111-1279
Total CMP Km : 29.2250
Process CMP Km: 29.2250
Charge CMP Km : 29.2250

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	21:43	5211	68.0 M	FORCE 2 VAR.	SLIGHT	< 1 M	131.0 M
EOL	00:48	5230	76.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.8 Feather 2.0S
EOL #1 2.6 Feather 2.1P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Passsing ship noise SOL-250.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: SP 1171 sync. error gun 38, misfire

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 1171

Acumen Line Statistics

Statistics for line SB94A-112

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	1171	0	37.38	17.18	24.01	0.54	0.45	2.64
GPS 1 Bearing	1171	0	225.83	210.43	216.72	-0.88	0.70	1.79
GPS 2 Range	1171	0	42.43	20.30	29.13	-2.15	1.78	3.05
GPS 2 Bearing	1171	0	222.35	208.22	216.46	3.50	2.79	1.35
Compass 1-1	1171	0	132.10	128.10	130.14	-0.13	0.19	0.30
Compass 1-2	1171	0	131.70	128.40	130.12	-0.68	0.41	0.27
Compass 1-3	1171	0	131.80	128.00	130.22	-0.42	0.55	0.27
Compass 1-4	1171	0	131.70	127.60	129.95	-0.34	0.49	0.27
Compass 1-5	1171	0	131.90	127.50	130.14	0.78	0.43	0.29
Compass 1-6	1171	0	131.70	126.80	129.73	0.54	0.41	0.26
Compass 1-7	1171	0	131.50	126.00	129.66	-0.20	0.48	0.29
Compass 1-8	1171	0	131.70	125.60	129.81	-0.98	0.40	0.28
Compass 1-9	1171	0	132.70	125.60	130.73	0.53	0.32	0.31
Distance Off	1171	0	9.43	-7.76	0.11	0.00	3.60	0.60
Course Made Good	1171	0	142.58	141.19	141.66	0.00	0.16	0.02
Speed Made Good	1171	0	2.77	2.45	2.50	0.00	0.02	0.00
Drift	1171	0	2.19	-2.34	0.10	0.00	0.60	0.15
Shot Spacing	1171	0	36.93	0.24	25.01	0.00	1.45	2.47
Shot Timing	1171	0	11.00	8.00	9.53	0.00	0.52	0.87
Event Time	1171	0	14.81	11.71	13.26	0.00	0.89	0.00
Diff X	1171	0	2.25	-4.52	-1.28	0.00	1.18	1.23
Diff Y	1171	0	6.64	-10.16	2.15	0.00	1.55	1.67
Streamer 1 Feather	1171	0	2.83	-2.20	-0.80	0.00	0.89	0.11
Gyro	1167	0	144.03	139.75	141.55	0.07	0.07	0.21

Sail Line: SB94A-113 Azm: 057 Status: COM Date: 22/03/94

Line - : 113

Total SP Range: 111-1647
Process Range : 111-1647
Charge Range : 111-1647
Total CMP Km : 38.4250
Process CMP Km: 38.4250
Charge CMP Km : 38.4250

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	23:41	5304	57.9 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M
EOL	03:40	5329	79.4 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.9 Feather 1.2P
EOL #1 3.1 Feather 3.4S Ave Depth (M): 10 Qual 1:4

Bad Grps: None
Comments: Reflected ship noise on near traces.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : None

Acumen Line Statistics
Statistics for line SB94A-113

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	1534	0	29.85	14.12	24.23	0.97	0.80	2.04
GPS 1 Bearing	1534	0	328.59	298.31	303.13	0.01	0.66	1.25
GPS 2 Range	1534	0	37.40	20.14	28.46	-3.88	2.75	2.65
GPS 2 Bearing	1534	0	305.56	270.56	298.45	-0.06	2.28	1.07
Compass 1-1	1534	0	46.00	39.40	42.42	-0.12	0.16	0.26
Compass 1-2	1534	0	46.10	39.50	42.43	-0.72	0.46	0.23
Compass 1-3	1534	0	46.50	39.90	42.64	-0.34	0.57	0.23
Compass 1-4	1534	0	46.30	39.60	42.47	-0.05	0.44	0.24
Compass 1-5	1534	0	46.10	39.60	42.60	0.82	0.38	0.28
Compass 1-6	1534	0	46.10	39.00	42.18	-0.01	0.41	0.25
Compass 1-7	1534	0	46.10	39.20	42.49	-0.36	0.40	0.26
Compass 1-8	1534	0	46.60	39.60	42.89	-0.28	0.37	0.24
Compass 1-9	1534	0	47.50	39.80	43.41	0.25	0.29	0.32
Distance Off	1534	0	14.85	-12.60	0.66	0.00	3.37	0.33
Course Made Good	1534	0	57.74	55.30	56.22	0.00	0.16	0.02
Speed Made Good	1534	0	2.78	2.48	2.50	0.00	0.00	0.00
Drift	1534	0	5.23	-1.60	1.91	0.00	1.78	0.07
Shot Spacing	1534	0	27.32	21.49	25.00	0.00	0.67	1.03
Shot Timing	1534	0	11.00	8.00	9.35	0.00	0.48	0.78
Event Time	1534	0	17.68	13.69	15.68	0.00	1.15	0.00
Diff X	1534	0	0.81	-6.06	-2.73	0.00	1.13	1.17
Diff Y	1534	0	1.47	-12.64	-1.64	0.00	1.04	0.88
Streamer 1 Feather	1534	0	3.83	-2.13	1.21	0.00	1.81	0.16
Gyro	1530	0	59.98	50.74	54.28	0.23	0.33	0.20

Sail Line: SB94A-114 Azm: 142 Status: COM Date: 24/03/94
Line - : 114

Total SP Range: 111-642
Process Range : 111-642
Charge Range : 111-642
Total CMP Km : 13.3000
Process CMP Km: 13.3000
Charge CMP Km : 13.3000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	17:51	5467	71.0 M	FORCE 5 ENE	MODERATE	<1 M	131.0 M
EOL	19:14	5475	77.0 M	FORCE 5 ENE	MODERATE	<1 M	131.0 M

Streamer Noise (uB) SOL #1 3.2 Feather 2.1P
EOL #1 3.2 Feather 0.6P Ave Depth (M): 10 Qual 1:4

Bad Grps: None
Comments: Sea noise decreases slightly, side seas moderating
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: SP 605 ITB, misfire

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : SP 605

Acumen Line Statistics
Statistics for line SB94A-114

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	529	0	50.40	19.49	24.49	0.62	0.71	2.42
GPS 1 Bearing	529	0	221.56	206.65	215.79	-0.44	0.74	1.45
GPS 2 Range	529	0	51.25	17.92	28.10	-2.64	2.16	2.83
GPS 2 Bearing	529	0	227.57	204.46	219.23	1.65	2.25	1.42
Compass 1-1	529	0	132.50	128.80	130.41	-0.03	0.28	0.40
Compass 1-2	529	0	132.20	127.70	130.06	-0.84	0.69	0.37
Compass 1-3	529	0	132.40	129.50	130.81	0.14	0.88	0.33
Compass 1-4	529	0	132.50	129.10	130.56	0.19	0.67	0.33
Compass 1-5	529	0	132.30	128.80	130.54	-0.06	0.62	0.35
Compass 1-6	529	0	132.50	129.20	130.78	0.15	0.63	0.31
Compass 1-7	529	0	132.40	129.10	130.77	-0.22	0.69	0.39
Compass 1-8	529	0	132.90	129.50	131.13	-0.02	0.66	0.35
Compass 1-9	529	0	133.00	129.60	131.34	0.07	0.51	0.44
Distance Off	529	0	10.00	-7.95	1.52	0.00	4.45	0.84
Course Made Good	529	0	144.81	141.51	141.94	0.00	0.21	0.02
Speed Made Good	529	0	2.78	2.50	2.77	0.00	0.00	0.00
Drift	529	0	10.63	0.00	8.29	0.00	0.80	0.11
Shot Spacing	529	0	26.57	23.12	25.02	0.00	0.56	0.86
Shot Timing	529	0	18.00	9.00	9.45	0.00	0.62	0.99
Event Time	529	0	9.25	7.86	8.56	0.00	0.40	0.00
Diff X	529	0	1.18	-5.00	-1.78	0.00	1.02	0.80
Diff Y	529	0	7.03	0.88	3.38	0.00	1.11	1.02
Streamer 1 Feather	529	0	0.97	-2.30	-1.16	0.00	0.56	0.14
Gyro	525	0	136.78	131.04	133.71	0.55	0.45	0.53

Sail Line: SB94A-115 Azm: 056 Status: COM Date: 22/03/94

Line - : 115

Total SP Range: 111-1102
Process Range : 111-1102
Charge Range : 111-1102
Total CMP Km : 24.8000
Process CMP Km: 24.8000
Charge CMP Km : 24.8000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	16:26	5276	59.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M
EOL	19:02	5292	77.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.6 Feather 1.8S
EOL #1 3.0 Feather 0.4P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Some slight swell noise also.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-115

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	989	0	29.58	20.25	24.19	0.94	0.69	1.95
GPS 1 Bearing	989	0	310.84	297.88	303.63	0.05	0.57	0.82
GPS 2 Range	989	0	36.89	17.13	28.31	-3.75	2.54	2.61
GPS 2 Bearing	989	0	305.54	290.30	299.29	-0.18	1.92	1.00
Compass 1-1	989	0	44.00	39.00	42.02	-0.17	0.17	0.28
Compass 1-2	989	0	43.90	39.40	42.05	-0.80	0.44	0.25
Compass 1-3	989	0	43.90	39.60	42.08	-0.78	0.61	0.25
Compass 1-4	989	0	44.00	39.80	42.18	0.37	0.49	0.25
Compass 1-5	989	0	43.50	39.20	41.77	0.42	0.41	0.27
Compass 1-6	989	0	43.70	39.60	41.83	0.57	0.43	0.24
Compass 1-7	989	0	43.40	39.10	41.67	-0.39	0.43	0.28
Compass 1-8	989	0	44.00	39.80	42.15	-0.69	0.44	0.24
Compass 1-9	989	0	45.40	40.20	42.98	0.43	0.34	0.33
Distance Off	989	0	10.21	-15.45	-1.26	0.00	3.67	0.84
Course Made Good	989	0	57.35	55.21	55.67	0.00	0.21	0.02
Speed Made Good	989	0	2.78	2.48	2.49	0.00	0.01	0.00
Drift	989	0	3.86	-3.83	-0.84	0.00	2.06	0.09
Shot Spacing	989	0	27.67	22.59	24.99	0.00	0.72	1.16
Shot Timing	989	0	10.00	9.00	9.42	0.00	0.49	0.86
Event Time	989	0	9.03	6.45	7.73	0.00	0.75	0.00
Diff X	989	0	0.43	-5.89	-2.84	0.00	1.00	1.20
Diff Y	989	0	0.60	-4.08	-1.74	0.00	0.76	0.85
Streamer 1 Feather	989	0	3.56	-0.47	1.19	0.00	1.09	0.16
Gyro	985	0	60.37	52.13	56.56	0.20	0.40	0.23

Sail Line: SB94A-116 Azm: 323 Status: COM Date: 24/03/94

Line - : 116

Total SP Range: 659-31
Process Range : 659-31
Charge Range : 659-31
Total CMP Km : 15.7250
Process CMP Km: 15.7250
Charge CMP Km : 15.7250

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	14:50	5456	74.5 M	FORCE 5-6 E	MODERATE	<1 M	131.0 M
EOL	16:30	5466	69.6 M	FORCE 5-6 E	MODERATE	<1 M	131.0 M

Streamer Noise (uB) SOL #1 3.1 Feather 0.6S
EOL #1 3.2 Feather 0.3S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Sea noise decreases slightly, side seas moderating
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-116

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	628	0	33.95	15.14	24.56	0.12	0.87	2.06
GPS 1 Bearing	628	0	46.51	27.32	35.95	0.54	0.96	1.61
GPS 2 Range	628	0	42.33	18.27	26.32	-0.48	2.38	2.65
GPS 2 Bearing	628	0	41.83	18.74	32.34	-1.94	3.00	1.54
Compass 1-1	628	0	312.50	308.30	310.17	-0.08	0.26	0.36
Compass 1-2	628	0	311.90	308.60	310.11	-0.53	0.79	0.33
Compass 1-3	628	0	311.40	309.00	310.19	-0.70	1.01	0.33
Compass 1-4	628	0	311.50	309.10	310.33	-0.21	0.74	0.32
Compass 1-5	628	0	311.70	309.50	310.53	0.89	0.60	0.35
Compass 1-6	628	0	311.70	309.20	310.25	0.60	0.68	0.33
Compass 1-7	628	0	311.70	309.10	310.27	-0.31	0.69	0.36
Compass 1-8	628	0	312.10	309.40	310.60	-1.03	0.54	0.31
Compass 1-9	628	0	313.40	310.30	311.64	0.58	0.46	0.37
Distance Off	628	0	14.50	-8.75	0.66	0.00	4.83	0.85
Course Made Good	628	0	330.73	317.58	323.22	0.00	0.28	0.03
Speed Made Good	628	0	2.50	2.47	2.49	0.00	0.01	0.00
Drift	628	0	0.00	-9.04	-6.28	0.00	1.08	0.12
Shot Spacing	628	0	28.60	21.05	24.98	0.00	0.66	0.94
Shot Timing	628	0	11.00	8.00	9.57	0.00	0.52	0.76
Event Time	628	0	6.51	4.84	5.68	0.00	0.48	0.00
Diff X	628	0	5.54	-0.63	2.52	0.00	0.91	0.83
Diff Y	628	0	1.11	-6.97	-2.66	0.00	1.15	1.11
Streamer 1 Feather	628	0	8.24	-5.17	0.37	0.00	0.26	0.15
Gyro	624	0	333.47	325.36	329.46	0.59	0.58	0.56

Sail Line: SB94A-117 Azm: 236 Status: COM Date: 22/03/94

Line - : 117

Total SP Range: 557-31
Process Range : 557-31
Charge Range : 557-31
Total CMP Km : 13.1750
Process CMP Km: 13.1750
Charge CMP Km : 13.1750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	20:47	5293	66.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M
EOL	22:08	5303	58.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.0 Feather 1.8S
EOL #1 2.7 Feather 2.7S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Reflected ship noise on near traces.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: SP 291 gun 27 off 43 on.
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 302 source misfire

Acumen Line Statistics

Statistics for line SB94A-117

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	518	0	32.72	6.05	24.53	-0.38	0.68	2.22
GPS 1 Bearing	518	0	188.43	119.58	122.43	-0.39	0.52	4.17
GPS 2 Range	524	0	38.12	11.01	27.18	1.54	2.44	3.18
GPS 2 Bearing	524	0	150.58	118.26	124.17	1.51	1.86	1.97
Compass 1-1	524	0	221.70	220.00	220.84	0.10	0.13	0.19
Compass 1-2	524	0	221.40	219.80	220.71	0.42	0.33	0.16
Compass 1-3	524	0	221.10	219.50	220.41	-0.20	0.44	0.19
Compass 1-4	524	0	221.60	220.00	220.65	-0.24	0.34	0.17
Compass 1-5	524	0	221.90	220.30	220.90	0.31	0.28	0.19
Compass 1-6	524	0	221.80	220.10	220.80	0.17	0.30	0.17
Compass 1-7	524	0	221.90	219.90	220.81	-0.26	0.32	0.20
Compass 1-8	524	0	222.40	220.30	221.11	-0.03	0.30	0.21
Compass 1-9	524	0	222.70	220.10	221.19	0.07	0.24	0.24
Distance Off	524	0	13.53	-6.64	0.30	0.00	3.98	0.96
Course Made Good	524	0	235.84	231.77	235.52	0.00	0.22	0.02
Speed Made Good	524	0	2.81	2.50	2.76	0.00	0.01	0.00
Drift	524	0	5.45	0.00	4.58	0.00	0.51	0.06
Shot Spacing	524	0	35.08	5.42	24.99	0.00	1.32	2.14
Shot Timing	524	0	12.00	8.00	9.26	0.00	0.47	0.74
Event Time	524	0	12.14	10.79	11.47	0.00	0.39	0.00
Diff X	524	0	18.70	-1.12	3.40	0.00	1.30	1.77
Diff Y	524	0	6.92	-0.15	2.35	0.00	0.88	0.93
Streamer 1 Feather	524	0	2.94	-2.04	2.29	0.00	0.38	0.10
Gyro	520	0	232.59	229.87	230.93	0.14	0.14	0.15

Sail Line: SB94A-118 Azm: 144 Status: COM Date: 24/03/94

Line - : 118

Total SP Range: 111-737
Process Range : 111-737
Charge Range : 111-737
Total CMP Km : 15.6750
Process CMP Km: 15.6750
Charge CMP Km : 15.6750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	11:55	5445	73.0 M	FORCE 5-6 E	MODERATE	1 M	131.0 M
EOL	13:35	5455	76.0 M	FORCE 5-6 E	MODERATE	1 M	131.0 M

Streamer Noise (uB) SOL #1 3.5 Feather 3.9S
EOL #1 3.3 Feather 1.5S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Sea noise decreases slightly, side seas.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.
Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-118

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	623	0	29.65	17.84	24.05	0.67	0.68	1.99
GPS 1 Bearing	623	0	227.57	201.18	214.61	-0.95	0.92	1.74
GPS 2 Range	623	0	38.68	19.49	29.77	-2.75	1.99	2.40
GPS 2 Bearing	623	0	228.05	206.16	215.53	3.70	2.79	1.41
Compass 1-1	623	0	131.40	124.50	128.42	-0.07	0.30	0.44
Compass 1-2	623	0	130.20	125.10	127.67	-1.36	0.83	0.39
Compass 1-3	623	0	130.60	126.50	128.42	-0.55	0.95	0.31
Compass 1-4	623	0	130.40	126.30	128.25	0.29	0.76	0.33
Compass 1-5	623	0	130.50	126.20	127.93	0.41	0.67	0.38
Compass 1-6	623	0	130.30	126.20	127.85	0.41	0.67	0.30
Compass 1-7	623	0	130.10	125.90	127.71	-0.20	0.76	0.36
Compass 1-8	623	0	130.30	126.20	127.85	-0.65	0.60	0.36
Compass 1-9	623	0	131.00	126.90	128.45	0.36	0.54	0.46
Distance Off	623	0	15.61	-11.15	-0.98	0.00	5.96	0.64
Course Made Good	623	0	144.70	143.17	143.67	0.00	0.29	0.03
Speed Made Good	623	0	2.78	2.49	2.50	0.00	0.01	0.00
Drift	623	0	17.57	0.00	12.54	0.00	1.12	0.18
Shot Spacing	623	0	27.58	22.59	24.99	0.00	0.65	0.96
Shot Timing	623	0	12.00	8.00	9.53	0.00	0.54	0.87
Event Time	623	0	3.58	1.93	2.76	0.00	0.48	0.00
Diff X	623	0	1.79	-4.30	-1.58	0.00	0.90	0.92
Diff Y	623	0	8.78	-0.81	2.97	0.00	1.26	1.30
Streamer 1 Feather	623	0	4.98	1.23	3.21	0.00	0.99	0.15
Gyro	619	0	139.01	119.60	131.19	0.65	0.89	0.73

Sail Line: SB94A-119 Azm: 235 Status: COM Date: 22/03/94

Line - : 119

Total SP Range: 554-31
Process Range : 554-31
Charge Range : 554-31
Total CMP Km : 13.1000
Process CMP Km: 13.1000
Charge CMP Km : 13.1000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	11:23	5267	66.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M
EOL	12:45	5275	56.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.7 Feather 1.7S
EOL #1 2.8 Feather 2.0P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 143-140 NDRs MSC system hang up.

Acumen Line Statistics

Statistics for line SB94A-119

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	522	0	28.92	20.45	24.49	-0.31	0.56	2.30
GPS 1 Bearing	522	0	125.17	118.96	122.34	-0.48	0.60	0.84
GPS 2 Range	522	0	36.67	20.13	27.16	1.25	2.24	3.04
GPS 2 Bearing	522	0	132.37	118.63	125.36	1.91	2.39	0.77
Compass 1-1	522	0	226.10	221.70	223.52	-0.06	0.12	0.19
Compass 1-2	522	0	225.60	221.50	223.34	-0.27	0.30	0.16
Compass 1-3	522	0	225.30	221.10	222.99	-0.81	0.43	0.17
Compass 1-4	522	0	225.30	221.10	223.12	-0.16	0.36	0.18
Compass 1-5	522	0	225.60	221.20	223.07	0.69	0.30	0.18
Compass 1-6	522	0	224.60	221.00	222.89	0.88	0.29	0.17
Compass 1-7	522	0	224.40	221.00	222.62	-0.28	0.32	0.17
Compass 1-8	522	0	224.50	221.00	222.88	-1.29	0.28	0.17
Compass 1-9	522	0	225.70	222.10	224.07	0.70	0.24	0.17
Distance Off	522	0	8.38	-5.52	-1.06	0.00	2.47	0.64
Course Made Good	522	0	235.52	233.67	235.24	0.00	0.13	0.02
Speed Made Good	522	0	2.78	2.47	2.51	0.00	0.02	0.00
Drift	522	0	0.53	-5.47	-1.94	0.00	1.24	0.16
Shot Spacing	522	0	28.41	22.13	25.02	0.00	1.28	2.22
Shot Timing	522	0	10.00	9.00	9.41	0.00	0.49	0.86
Event Time	522	0	2.75	1.39	2.07	0.00	0.39	0.00
Diff X	522	0	6.10	0.21	3.14	0.00	1.12	1.40
Diff Y	522	0	4.36	-2.24	2.05	0.00	0.82	1.03
Streamer 1 Feather	522	0	1.25	-2.21	-0.33	0.00	0.95	0.09
Gyro	518	0	240.73	234.68	237.19	0.08	0.08	0.21

Sail Line: SB94A-120 Azm: 324 Status: COM Date: 24/03/94

Line - : 120

Total SP Range: 657-31
Process Range : 657-31
Charge Range : 657-31
Total CMP Km : 15.6750
Process CMP Km: 15.6750
Charge CMP Km : 15.6750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	08:54	5434	75.0 M	FORCE 4 E	MODERATE	1 M	131.0 M
EOL	10:33	5444	73.0 M	FORCE 4 E	MODERATE	1 M	131.0 M

Streamer Noise (uB) SOL #1 3.4 Feather 2.3P
EOL #1 4.2 Feather 6.1P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Sea noise decreases slightly, side seas.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: SP 261 gun 17 off, 25 on.
Comments: SPs 264, 263, 262 misfires. SP 108 bad volume misfire.

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 264, 263, 262, 108 source misfires

Acumen Line Statistics

Statistics for line SB94A-120

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	625	0	32.68	16.75	24.57	0.08	0.69	2.02
GPS 1 Bearing	625	0	44.65	28.13	34.91	0.43	0.77	2.09
GPS 2 Range	625	0	38.12	17.83	26.19	-0.38	2.18	2.50
GPS 2 Bearing	625	0	42.16	23.70	31.95	-1.72	2.66	2.05
Compass 1-1	625	0	320.50	313.90	316.86	-0.11	0.29	0.43
Compass 1-2	625	0	320.20	314.00	316.62	-0.60	0.87	0.44
Compass 1-3	625	0	318.90	313.90	316.31	-0.60	1.09	0.35
Compass 1-4	625	0	318.90	313.90	315.99	-0.26	0.79	0.37
Compass 1-5	625	0	318.30	314.20	316.00	0.90	0.60	0.39
Compass 1-6	625	0	317.70	313.40	315.56	0.61	0.64	0.36
Compass 1-7	625	0	317.80	313.00	315.62	-0.04	0.71	0.38
Compass 1-8	625	0	318.40	312.00	315.74	-1.51	0.55	0.37
Compass 1-9	625	0	320.00	312.50	317.34	0.79	0.52	0.46
Distance Off	625	0	41.14	-9.98	0.37	0.00	5.66	2.42
Course Made Good	625	0	326.68	323.23	324.00	0.00	0.30	0.03
Speed Made Good	625	0	2.79	2.76	2.77	0.00	0.01	0.00
Drift	625	0	0.00	-18.12	-13.99	0.00	1.75	0.15
Shot Spacing	625	0	30.51	21.00	25.03	0.00	0.76	1.14
Shot Timing	625	0	11.00	9.00	9.43	0.00	0.50	0.72
Event Time	625	0	24.00	0.00	15.81	0.00	10.90	0.96
Diff X	625	0	5.79	0.16	2.40	0.00	0.84	0.85
Diff Y	625	0	0.52	-5.96	-2.71	0.00	1.13	1.06
Streamer 1 Feather	625	0	-0.11	-6.50	-4.63	0.00	0.91	0.15
Gyro	621	0	343.71	333.53	338.05	0.54	0.49	0.56

Sail Line: SB94A-121 Azm: 054 Status: COM Date: 22/03/94

Line - : 121

Total SP Range: 111-1128
Process Range : 111-1128
Charge Range : 111-1128
Total CMP Km : 25.4500
Process CMP Km: 25.4500
Charge CMP Km : 25.4500

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	06:40	5249	58.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M
EOL	09:20	5266	78.0 M	FORCE 1-2 VAR.	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.9 Feather 2.4P
EOL #1 2.6 Feather 3.4P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-121

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	1016	0	28.83	20.06	24.19	0.89	0.70	1.87
GPS 1 Bearing	1016	0	307.70	302.04	305.24	0.05	0.52	0.73
GPS 2 Range	1016	0	37.77	20.32	28.18	-3.66	2.58	2.63
GPS 2 Bearing	1016	0	306.23	293.98	300.90	-0.22	1.89	0.80
Compass 1-1	1016	0	45.90	43.70	44.69	-0.22	0.17	0.23
Compass 1-2	1016	0	46.10	44.30	45.18	-0.60	0.42	0.20
Compass 1-3	1016	0	46.30	44.60	45.46	0.30	0.55	0.20
Compass 1-4	1016	0	45.80	43.90	44.86	-0.43	0.40	0.19
Compass 1-5	1016	0	46.10	44.20	45.26	0.40	0.38	0.21
Compass 1-6	1016	0	46.00	43.70	44.97	0.16	0.36	0.21
Compass 1-7	1016	0	46.10	42.80	45.02	-0.26	0.37	0.23
Compass 1-8	1016	0	46.40	42.80	45.37	-0.09	0.41	0.19
Compass 1-9	1016	0	46.80	42.80	45.63	0.10	0.30	0.24
Distance Off	1016	0	8.19	-7.30	0.33	0.00	3.59	0.49
Course Made Good	1016	0	57.97	53.35	53.98	0.00	0.20	0.01
Speed Made Good	1016	0	3.13	2.27	2.52	0.00	0.01	0.00
Drift	1016	0	0.00	-5.64	-3.88	0.00	0.84	0.03
Shot Spacing	1016	0	27.08	21.27	24.99	0.00	0.69	1.06
Shot Timing	1016	0	11.00	8.00	9.41	0.00	0.50	0.83
Event Time	1016	0	23.33	20.68	22.02	0.00	0.77	0.00
Diff X	1016	0	0.94	-5.60	-2.42	0.00	1.21	1.25
Diff Y	1016	0	0.85	-3.88	-1.64	0.00	0.85	0.92
Streamer 1 Feather	1016	0	1.66	-4.21	-3.58	0.00	0.26	0.11
Gyro	1012	0	59.93	56.38	57.86	0.11	0.12	0.10

Sail Line: SB94A-122 Azm: 144 Status: COM Date: 24/03/94

Line - : 122

Total SP Range: 111-988
Process Range : 111-988
Charge Range : 111-988
Total CMP Km : 21.9500
Process CMP Km: 21.9500
Charge CMP Km : 21.9500

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	05:09	5419	74.0 M	FORCE 5-6 E	MODERATE	1 M	131.0 M
EOL	07:29	5433	80.0 M	FORCE 5-6 E	MODERATE	1 M	131.0 M

Streamer Noise (uB) SOL #1 3.7 Feather 2.9P
EOL #1 3.3 Feather 1.8S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Sea noise decreases slightly, side seas.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: SP 686 gun 23 misfired.

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.
Edited Shotpoints : 686

Acumen Line Statistics

Statistics for line SB94A-122

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	875	0	27.61	19.60	24.25	0.63	0.72	1.76
GPS 1 Bearing	875	0	222.38	205.56	213.69	-0.73	0.77	1.93
GPS 2 Range	875	0	37.70	20.53	28.99	-2.66	1.96	2.35
GPS 2 Bearing	875	0	225.69	207.29	215.80	2.81	2.45	1.57
Compass 1-1	875	0	136.10	128.30	131.62	-0.16	0.37	0.60
Compass 1-2	875	0	135.90	127.10	131.28	-1.68	1.00	0.50
Compass 1-3	875	0	135.90	129.40	132.50	0.14	1.21	0.45
Compass 1-4	875	0	135.00	128.80	131.72	-0.35	0.94	0.41
Compass 1-5	875	0	135.50	129.30	132.06	0.40	0.71	0.42
Compass 1-6	875	0	135.50	129.40	132.03	0.73	0.75	0.38
Compass 1-7	875	0	134.60	129.10	131.86	-0.18	0.86	0.42
Compass 1-8	875	0	135.70	129.50	132.20	-0.91	0.71	0.41
Compass 1-9	875	0	138.10	130.20	133.20	0.47	0.64	0.57
Distance Off	875	0	38.95	-13.88	0.75	0.00	6.43	2.26
Course Made Good	875	0	148.60	143.66	144.31	0.00	0.34	0.03
Speed Made Good	875	0	2.51	2.48	2.49	0.00	0.01	0.00
Drift	875	0	14.38	-0.00	11.25	0.00	1.11	0.16
Shot Spacing	875	0	26.70	22.73	25.01	0.00	0.59	0.91
Shot Timing	875	0	11.00	8.00	9.56	0.00	0.52	0.85
Event Time	875	0	21.48	19.16	20.32	0.00	0.67	0.00
Diff X	875	0	0.79	-5.30	-1.90	0.00	0.92	0.85
Diff Y	875	0	7.63	1.08	3.73	0.00	1.11	1.12
Streamer 1 Feather	875	0	2.10	-2.53	-0.14	0.00	1.19	0.19
Gyro	871	0	137.64	129.40	133.04	0.72	0.57	0.69

Sail Line: SB94A-123 Azm: 235 Status: COM Date: 22/03/94

Line - : 123

Total SP Range: 1025-31
Process Range : 1025-31
Charge Range : 1025-31
Total CMP Km : 24.8750
Process CMP Km: 24.8750
Charge CMP Km : 24.8750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	02:24	5231	77.0 M	FORCE 3 SW	SLIGHT	< 1 M	131.0 M
EOL	05:24	5247	57.0 M	FORCE 2 SW	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.8 Feather 4.1P
EOL #1 2.7 Feather 0.7P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: SP 640 gun 38 off, 46 on.
Comments: SP 638, 639 source misfires gun 38.

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 638, 639

Acumen Line Statistics

Statistics for line SB94A-123

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	992	0	28.67	13.38	24.55	-0.23	0.71	1.92
GPS 1 Bearing	992	0	127.07	117.36	123.17	-0.44	0.57	0.84
GPS 2 Range	992	0	35.44	19.48	26.75	0.93	2.60	2.63
GPS 2 Bearing	992	0	135.28	115.55	126.33	1.71	2.00	1.51
Compass 1-1	992	0	226.70	222.70	224.95	0.10	0.13	0.22
Compass 1-2	992	0	226.00	222.40	224.62	0.18	0.28	0.17
Compass 1-3	992	0	225.90	222.30	224.46	-0.12	0.42	0.20
Compass 1-4	992	0	225.90	222.20	224.57	-0.11	0.38	0.19
Compass 1-5	992	0	225.90	222.40	224.69	0.11	0.31	0.21
Compass 1-6	992	0	226.20	222.50	224.76	0.15	0.30	0.18
Compass 1-7	992	0	226.80	222.60	224.84	-0.07	0.33	0.20
Compass 1-8	992	0	227.70	222.90	225.10	-0.13	0.31	0.19
Compass 1-9	992	0	228.20	223.20	225.43	0.07	0.24	0.22
Distance Off	992	0	6.58	-14.67	1.59	0.00	2.18	0.71
Course Made Good	992	0	234.65	232.97	234.40	0.00	0.13	0.01
Speed Made Good	992	0	2.78	2.50	2.77	0.00	0.01	0.00
Drift	992	0	0.30	-3.55	-1.59	0.00	0.93	0.05
Shot Spacing	992	0	27.60	20.89	24.99	0.00	0.64	0.98
Shot Timing	992	0	10.00	8.00	9.40	0.00	0.49	0.87
Event Time	992	0	19.41	16.82	18.12	0.00	0.75	0.00
Diff X	992	0	6.23	-0.07	2.84	0.00	1.10	1.14
Diff Y	992	0	4.58	-0.73	1.85	0.00	0.85	0.82
Streamer 1 Feather	992	0	-0.69	-5.38	-2.83	0.00	0.89	0.10
Gyro	988	0	238.73	233.88	235.97	0.19	0.23	0.20

Sail Line: SB94A-124 Azm: 324 Status: COM Date: 20/03/94

Line - : 124

Total SP Range: 1274-31
Process Range : 1274-31
Charge Range : 1274-31
Total CMP Km : 31.1000
Process CMP Km: 31.1000
Charge CMP Km : 31.1000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	08:13	5081	71.0 M	FORCE 3-4 NE	SLIGHT	< 1 M	131.0 M
EOL	11:28	5101	62.0 M	FORCE 3-4 NE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.0 Feather 3.9P
EOL #1 3.3 Feather 2.0P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Noise levels generally higher.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: SP 517 misfire mutiple guns did not fire.
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics. Dogleg to 320° at SP 614

Edited Shotpoints : 517

Acumen Line Statistics

Statistics for line SB94A-124-1

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	582	0	28.56	20.67	24.69	0.17	0.71	1.91
GPS 1 Bearing	582	0	49.68	31.75	39.15	0.38	0.80	1.48
GPS 2 Range	582	0	33.73	17.83	25.64	-0.09	1.89	2.38
GPS 2 Bearing	582	0	46.89	30.66	37.44	-0.98	2.31	1.42
Compass 1-1	582	0	314.00	307.90	309.79	-0.15	0.26	0.35
Compass 1-2	582	0	313.90	308.30	309.80	-0.83	0.66	0.31
Compass 1-3	582	0	313.90	308.70	310.06	-0.65	0.92	0.32
Compass 1-4	582	0	313.90	308.40	309.99	-0.53	0.63	0.30
Compass 1-5	582	0	314.50	308.90	310.51	1.06	0.58	0.31
Compass 1-6	582	0	313.90	308.30	310.28	0.98	0.56	0.29
Compass 1-7	582	0	313.90	308.50	310.34	-0.29	0.64	0.33
Compass 1-8	582	0	314.20	309.10	310.88	-1.58	0.51	0.29
Compass 1-9	582	0	316.40	310.50	312.62	0.85	0.45	0.37
Distance Off	582	0	11.80	-29.19	3.99	0.00	5.16	1.83
Course Made Good	582	0	333.35	319.38	320.20	0.00	0.82	0.03
Speed Made Good	582	0	2.79	2.50	2.78	0.00	0.00	0.00
Drift	582	0	0.00	-12.16	-9.16	0.00	1.11	0.12
Shot Spacing	582	0	26.96	23.33	24.98	0.00	0.56	0.87
Shot Timing	582	0	10.00	9.00	9.51	0.00	0.50	0.88
Event Time	582	0	24.00	0.00	1.58	0.00	4.30	1.00
Diff X	582	0	5.93	-0.65	2.34	0.00	0.89	0.85
Diff Y	582	0	0.45	-5.00	-2.35	0.00	1.01	0.98
Streamer 1 Feather	582	0	7.50	-5.07	-2.67	0.00	0.51	0.12
Gyro	578	0	332.74	326.44	329.33	0.61	0.49	0.53

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Statistics for line SB94A-124-2

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	660	0	29.65	20.52	24.62	-0.06	0.44	2.36
GPS 1 Bearing	660	0	39.01	31.01	34.73	0.26	0.64	1.23
GPS 2 Range	660	0	36.09	18.64	25.89	0.22	1.76	2.88
GPS 2 Bearing	660	0	40.13	29.87	34.26	-1.03	2.55	1.14
Compass 1-1	660	0	314.90	312.10	313.53	-0.18	0.27	0.33
Compass 1-2	660	0	314.70	312.40	313.62	-0.66	0.48	0.31
Compass 1-3	660	0	314.60	312.60	313.51	-0.65	0.72	0.28
Compass 1-4	660	0	314.20	311.70	313.32	-0.55	0.51	0.27
Compass 1-5	660	0	314.50	313.10	313.69	0.96	0.49	0.28
Compass 1-6	660	0	314.60	312.50	313.39	0.90	0.46	0.26
Compass 1-7	660	0	315.30	312.50	313.44	-0.17	0.49	0.28
Compass 1-8	660	0	317.20	313.10	313.89	-1.47	0.50	0.26
Compass 1-9	660	0	320.20	314.00	315.59	0.75	0.42	0.37
Distance Off	660	0	11.69	-11.67	-0.39	0.00	4.46	0.67
Course Made Good	660	0	334.28	322.86	323.80	0.00	0.32	0.03
Speed Made Good	660	0	2.78	2.39	2.43	0.00	0.03	0.00
Drift	660	0	0.00	-11.94	-9.61	0.00	0.93	0.29
Shot Spacing	660	0	28.80	21.36	24.98	0.00	1.29	2.22
Shot Timing	660	0	10.00	8.00	9.39	0.00	0.49	0.81
Event Time	660	0	23.94	22.22	23.08	0.00	0.50	0.00
Diff X	660	0	4.83	-1.68	2.13	0.00	1.01	0.95
Diff Y	660	0	1.87	-6.32	-2.90	0.00	1.26	1.25
Streamer 1 Feather	660	0	7.06	-4.57	-2.37	0.00	0.22	0.11
Gyro	656	0	335.83	330.03	333.42	0.15	0.13	0.40

Sail Line: SB94A-125 Azm: 235 Status: COM Date: 20/03/94

Line - : 125

Total SP Range: 427-31
Process Range : 427-31
Charge Range : 427-31
Total CMP Km : 9.9250
Process CMP Km: 9.9250
Charge CMP Km : 9.9250

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	18:54	5123	69.0 M	FORCE 5-6 E	MODERATE	< 1 M	131.0 M
EOL	19:56	5129	57.0 M	FORCE 5 E	MODERATE	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.5 Feather 2.7S
EOL #1 3.3 Feather 1.4S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Noise levels generally higher.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-125

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	394	0	27.30	21.81	24.44	-0.38	0.60	1.81
GPS 1 Bearing	394	0	125.77	120.56	123.39	-0.48	0.49	0.95
GPS 2 Range	394	0	33.64	20.88	27.12	1.35	2.25	2.63
GPS 2 Bearing	394	0	132.07	120.09	125.85	1.73	1.99	0.85
Compass 1-1	394	0	221.20	219.40	220.35	-0.13	0.16	0.25
Compass 1-2	394	0	221.70	219.70	220.78	-0.14	0.37	0.20
Compass 1-3	394	0	221.40	219.50	220.37	-0.60	0.49	0.23
Compass 1-4	394	0	221.50	219.70	220.42	-0.38	0.40	0.25
Compass 1-5	394	0	221.60	219.90	220.68	0.84	0.37	0.26
Compass 1-6	394	0	221.20	218.90	220.35	0.55	0.35	0.25
Compass 1-7	394	0	221.50	218.60	220.51	-0.04	0.39	0.27
Compass 1-8	394	0	221.80	217.50	220.67	-1.29	0.42	0.25
Compass 1-9	394	0	223.80	217.40	222.09	0.68	0.32	0.33
Distance Off	394	0	6.03	-30.58	0.41	0.00	3.65	2.31
Course Made Good	394	0	234.58	231.69	234.32	0.00	0.15	0.01
Speed Made Good	394	0	2.78	2.50	2.76	0.00	0.01	0.00
Drift	394	0	3.65	-0.03	2.52	0.00	0.51	0.05
Shot Spacing	394	0	26.47	23.40	24.97	0.00	0.68	1.07
Shot Timing	394	0	10.00	9.00	9.39	0.00	0.49	0.86
Event Time	394	0	9.94	8.91	9.43	0.00	0.30	0.00
Diff X	394	0	5.01	0.40	2.92	0.00	0.80	0.93
Diff Y	394	0	3.91	0.20	1.93	0.00	0.57	0.70
Streamer 1 Feather	394	0	2.16	-0.03	1.23	0.00	0.24	0.15
Gyro	390	0	233.11	230.12	231.79	0.18	0.13	0.19

Sail Line: SB94A-126 Azm: 314 Status: COM Date: 19/03/94

Line - : 126

Total SP Range: 613-31
Process Range : 613-31
Charge Range : 613-31
Total CMP Km : 14.5750
Process CMP Km: 14.5750
Charge CMP Km : 14.5750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	16:24	5011	79.0 M	FORCE 2-3 E	SLIGHT	< 1 M	131.0 M
EOL	17:54	5021	78.0 M	FORCE 2-3 E	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.4 Feather 0.1P
EOL #1 2.6 Feather 1.3S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47 throughout line.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: SP 492 33 off 41 on.
Comments: 495-493 misfires

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics. Missed start of line Acumen operator error.

Edited Shotpoints : 495-493

Acumen Line Statistics

Statistics for line SB94A-126

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	464	0	29.10	20.67	24.76	-0.01	0.52	2.08
GPS 1 Bearing	464	0	48.60	41.89	45.21	0.37	0.66	0.87
GPS 2 Range	464	0	34.59	16.35	26.09	0.02	1.99	2.64
GPS 2 Bearing	464	0	51.99	37.56	43.18	-1.44	2.53	1.29
Compass 1-1	464	0	303.00	298.90	300.90	-0.00	0.14	0.20
Compass 1-2	464	0	302.90	298.80	300.88	-0.09	0.43	0.20
Compass 1-3	464	0	302.60	298.80	300.88	-0.21	0.55	0.18
Compass 1-4	464	0	302.60	298.60	300.84	-0.77	0.48	0.18
Compass 1-5	464	0	303.20	299.30	301.65	0.80	0.38	0.18
Compass 1-6	464	0	302.90	299.20	301.48	0.65	0.42	0.19
Compass 1-7	464	0	303.30	299.50	301.74	-0.08	0.43	0.20
Compass 1-8	464	0	303.80	300.10	302.18	-1.15	0.39	0.18
Compass 1-9	464	0	305.30	301.20	303.64	0.59	0.32	0.25
Distance Off	464	0	13.76	-4.86	1.98	0.00	2.01	0.95
Course Made Good	464	0	317.30	312.41	313.57	0.00	0.10	0.01
Speed Made Good	464	0	2.77	2.46	2.48	0.00	0.01	0.00
Drift	464	0	1.06	-4.01	-1.19	0.00	1.30	0.08
Shot Spacing	464	0	27.73	21.71	25.03	0.00	0.98	1.63
Shot Timing	464	0	10.00	9.00	9.32	0.00	0.47	0.80
Event Time	464	0	7.91	6.71	7.32	0.00	0.35	0.00
Diff X	464	0	4.87	0.12	2.78	0.00	0.88	1.01
Diff Y	464	0	0.01	-4.71	-2.34	0.00	0.92	0.98
Streamer 1 Feather	464	0	3.23	-1.85	-0.41	0.00	0.80	0.08
Gyro	460	0	317.58	311.86	314.70	0.15	0.17	0.18

Sail Line: SB94A-127 Azm: 055 Status: COM Date: 21/03/94

Line - : 127

Total SP Range: 111-737
Process Range : 111-737
Charge Range : 111-737
Total CMP Km : 15.6750
Process CMP Km: 15.6750
Charge CMP Km : 15.6750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	14:23	5180	59.0 M	FORCE 2-3 NE	SLIGHT	< 1 M	131.0 M
EOL	16:01	5190	75.0 M	FORCE 2-3 NE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.0 Feather 8.5S
EOL #1 3.0 Feather 3.1S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Streamer noise decreasing
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: SP 660 strings 3 & 4 did not shoot, low volume

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 660

Acumen Line Statistics

Statistics for line SB94A-127

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	624	0	29.06	19.50	24.65	0.67	0.71	1.97
GPS 1 Bearing	624	0	309.90	298.95	304.63	-0.17	0.57	0.82
GPS 2 Range	624	0	37.35	18.20	27.02	-2.52	2.55	2.87
GPS 2 Bearing	624	0	307.41	293.20	300.34	0.38	2.11	1.02
Compass 1-1	624	0	39.90	33.80	37.54	-0.20	0.19	0.26
Compass 1-2	624	0	39.80	34.30	37.52	-0.83	0.47	0.25
Compass 1-3	624	0	39.80	34.90	37.59	-0.48	0.65	0.20
Compass 1-4	624	0	39.80	34.80	37.34	0.21	0.48	0.23
Compass 1-5	624	0	39.50	33.90	36.95	0.51	0.41	0.24
Compass 1-6	624	0	39.10	33.20	36.55	0.14	0.47	0.23
Compass 1-7	624	0	39.10	32.50	36.41	-0.21	0.47	0.28
Compass 1-8	624	0	39.20	31.90	36.37	-0.40	0.38	0.26
Compass 1-9	624	0	39.10	31.20	36.58	0.26	0.33	0.31
Distance Off	624	0	6.54	-9.80	0.03	0.00	3.07	0.70
Course Made Good	624	0	59.16	52.28	54.98	0.00	0.64	0.02
Speed Made Good	624	0	2.80	2.50	2.79	0.00	0.01	0.00
Drift	624	0	9.28	-0.00	4.92	0.00	1.09	0.09
Shot Spacing	624	0	26.93	19.66	25.02	0.00	0.73	1.13
Shot Timing	624	0	10.00	9.00	9.40	0.00	0.49	0.84
Event Time	624	0	6.02	4.39	5.21	0.00	0.47	0.00
Diff X	624	0	0.70	-5.41	-2.31	0.00	1.20	1.22
Diff Y	624	0	0.74	-4.01	-1.62	0.00	0.96	0.89
Streamer 1 Feather	624	0	12.99	3.12	5.60	0.00	1.85	0.11
Gyro	620	0	52.29	46.74	50.07	0.18	0.27	0.20

Sail Line: SB94A-128 Azm: 124 Status: COM Date: 19/03/94

Line - : 128

Total SP Range: 111-1034
Process Range : 111-1034
Charge Range : 111-1034
Total CMP Km : 23.1000
Process CMP Km: 23.1000
Charge CMP Km : 23.1000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	12:43	4994	77.0 M	FORCE 2-3 E	SLIGHT	< 1 M	131.0 M
EOL	15:09	5010	78.0 M	FORCE 2-3 E	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.7 Feather 0.9P
EOL #1 2.3 Feather 0.6S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47 throughout line.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-128

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	924	0	35.67	11.54	23.95	0.87	0.70	2.30
GPS 1 Bearing	924	0	239.32	225.56	234.01	-0.76	0.57	1.02
GPS 2 Range	925	0	38.43	20.48	29.66	-3.46	2.40	2.69
GPS 2 Bearing	925	0	238.45	226.75	233.60	3.03	1.89	0.81
Compass 1-1	925	0	113.10	108.50	111.20	-0.18	0.15	0.20
Compass 1-2	925	0	113.30	109.50	111.36	-0.83	0.63	0.20
Compass 1-3	925	0	113.60	110.10	111.67	0.10	0.81	0.17
Compass 1-4	925	0	112.90	109.70	111.12	-0.17	0.57	0.18
Compass 1-5	925	0	113.10	109.60	111.25	0.22	0.42	0.22
Compass 1-6	925	0	113.10	109.70	111.29	0.46	0.46	0.18
Compass 1-7	925	0	113.10	109.30	111.23	-0.26	0.51	0.22
Compass 1-8	925	0	114.30	109.90	111.74	-0.43	0.37	0.21
Compass 1-9	925	0	115.80	110.00	112.48	0.27	0.38	0.27
Distance Off	925	0	12.83	-188.78	-0.08	0.00	7.28	8.76
Course Made Good	925	0	125.64	119.36	124.37	0.00	0.18	0.02
Speed Made Good	925	0	2.78	2.50	2.76	0.00	0.01	0.00
Drift	925	0	7.57	0.00	4.80	0.00	1.06	0.12
Shot Spacing	925	0	32.07	0.24	25.02	0.00	0.95	1.54
Shot Timing	925	0	10.00	9.00	9.44	0.00	0.50	0.88
Event Time	925	0	5.15	2.72	3.93	0.00	0.70	0.00
Diff X	925	0	2.74	-7.44	-1.91	0.00	1.36	1.32
Diff Y	925	0	6.01	-1.52	1.72	0.00	1.04	0.94
Streamer 1 Feather	925	0	1.69	-5.77	0.49	0.00	0.78	0.07
Gyro	921	0	123.44	115.38	119.57	0.24	0.44	0.27

Sail Line: SB94A-129 Azm: 056 Status: COM Date: 20/03/94

Line - : 129

Total SP Range: 111-733
Process Range : 111-733
Charge Range : 111-733
Total CMP Km : 15.5750
Process CMP Km: 15.5750
Charge CMP Km : 15.5750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	21:17	5130	56.0 M	FORCE 5-6 NE	MODERATE	< 1 M	131.0 M
EOL	22:57	5140	73.0 M	FORCE 5-6 NE	MODERATE	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.7 Feather 4.0P
EOL #1 3.1 Feather 0.4P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. High energy returns at SOL.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.
Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-129

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	620	0	45.34	17.62	24.45	0.89	0.56	3.12
GPS 1 Bearing	620	0	329.87	252.06	304.41	-0.25	0.86	5.52
GPS 2 Range	620	0	47.61	20.73	27.66	-3.53	2.23	2.97
GPS 2 Bearing	620	0	319.33	262.14	297.48	1.01	3.39	3.31
Compass 1-1	620	0	45.80	41.20	43.66	-0.15	0.28	0.39
Compass 1-2	620	0	45.20	41.60	43.42	-1.31	0.77	0.40
Compass 1-3	620	0	45.50	42.10	44.06	-0.71	0.84	0.33
Compass 1-4	620	0	46.20	42.20	44.04	0.19	0.73	0.32
Compass 1-5	620	0	46.60	41.80	43.96	0.66	0.76	0.37
Compass 1-6	620	0	46.80	42.10	44.06	0.89	0.72	0.38
Compass 1-7	620	0	47.30	41.80	43.92	-0.48	0.79	0.43
Compass 1-8	620	0	49.00	42.40	44.54	-1.25	0.89	0.40
Compass 1-9	620	0	52.10	43.20	45.91	0.74	0.63	0.62
Distance Off	620	0	24.07	-17.18	-0.10	0.00	6.14	1.54
Course Made Good	620	0	56.39	54.07	55.16	0.00	0.31	0.07
Speed Made Good	620	0	2.54	2.42	2.49	0.00	0.03	0.00
Drift	620	0	2.33	-3.99	-1.00	0.00	1.13	0.28
Shot Spacing	620	0	41.86	14.99	24.98	0.00	1.75	2.88
Shot Timing	620	0	13.00	8.00	9.67	0.00	0.64	0.94
Event Time	620	0	12.95	11.29	12.12	0.00	0.48	0.00
Diff X	620	0	1.45	-7.72	-2.98	0.00	1.22	1.31
Diff Y	620	0	14.92	-10.86	-1.05	0.00	3.14	1.57
Streamer 1 Feather	620	0	0.42	-3.72	-1.41	0.00	0.72	0.16
Gyro	616	0	59.20	52.95	56.14	0.14	0.12	0.38

Sail Line: SB94A-130 Azm: 152 Status: COM Date: 18/03/94

Line - : 130

Total SP Range: 575-31
Process Range : 575-31
Charge Range : 575-31
Total CMP Km : 13.6250
Process CMP Km: 13.6250
Charge CMP Km : 13.6250

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	03:43	4892	79.1 M	FORCE 3-4 SE	SLIGHT	< 1 M	131.0 M
EOL	05:11	4901	77.8 M	FORCE 3-4 SE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.2 Feather 1.5S
EOL #1 2.5 Feather 1.7S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Slight screw noise at head of streamer
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-130

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	539	0	32.97	18.92	24.30	0.36	0.54	2.12
GPS 1 Bearing	539	0	208.98	200.63	206.11	-0.68	0.96	0.93
GPS 2 Range	544	0	35.76	20.30	28.07	-1.55	1.61	2.26
GPS 2 Bearing	544	0	214.84	203.05	207.31	2.59	3.12	0.82
Compass 1-1	544	0	138.00	135.70	136.93	-0.11	0.18	0.29
Compass 1-2	544	0	138.00	136.10	136.97	-0.61	0.34	0.24
Compass 1-3	544	0	138.10	136.30	137.17	-0.20	0.54	0.20
Compass 1-4	544	0	137.70	136.00	136.84	-0.59	0.43	0.23
Compass 1-5	544	0	138.40	136.30	137.40	0.96	0.41	0.28
Compass 1-6	544	0	137.90	135.90	136.92	0.42	0.43	0.23
Compass 1-7	544	0	138.30	135.90	137.08	-0.35	0.47	0.27
Compass 1-8	544	0	138.90	136.20	137.54	-0.69	0.35	0.29
Compass 1-9	544	0	140.00	136.80	138.41	0.42	0.28	0.34
Distance Off	544	0	8.26	-12.09	0.86	0.00	3.14	1.10
Course Made Good	544	0	152.84	148.89	152.07	0.00	0.22	0.01
Speed Made Good	544	0	2.79	2.50	2.77	0.00	0.00	0.00
Drift	544	0	5.10	0.00	3.75	0.00	0.46	0.04
Shot Spacing	544	0	29.01	22.52	25.01	0.00	0.69	1.01
Shot Timing	544	0	11.00	9.00	9.74	0.00	0.45	0.70
Event Time	544	0	19.20	17.73	18.46	0.00	0.42	0.00
Diff X	544	0	3.93	-1.15	1.11	0.00	0.94	0.60
Diff Y	544	0	2.90	-7.83	-1.08	0.00	1.69	1.06
Streamer 1 Feather	544	0	3.01	-1.49	2.42	0.00	0.27	0.11
Gyro	540	0	149.69	146.95	148.32	0.18	0.17	0.18

Sail Line: SB94A-131 Azm: 235 Status: COM Date: 21/03/94

Line - : 131

Total SP Range: 529-31
Process Range : 529-31
Charge Range : 529-31
Total CMP Km : 12.4750
Process CMP Km: 12.4750
Charge CMP Km : 12.4750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	11:51	5171	71.0 M	FORCE 3 ENE	SLIGHT	< 1 M	131.0 M
EOL	13:10	5179	55.0 M	FORCE 3 ENE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.8 Feather 1.1P
EOL #1 2.9 Feather 3.6P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Streamer noise decreasing
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: 26 off and 18 on at SOL
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.
Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-131

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	495	0	27.56	19.46	24.35	-0.28	0.70	1.88
GPS 1 Bearing	495	0	136.15	119.66	122.62	-0.70	0.56	1.09
GPS 2 Range	495	0	36.39	20.98	27.60	1.15	2.31	2.53
GPS 2 Bearing	495	0	135.70	114.00	127.77	2.81	2.11	0.86
Compass 1-1	495	0	227.80	221.80	224.49	-0.06	0.14	0.22
Compass 1-2	495	0	227.30	221.50	224.27	-0.21	0.48	0.18
Compass 1-3	495	0	226.50	221.70	223.88	-0.66	0.66	0.20
Compass 1-4	495	0	226.30	221.70	223.83	-0.44	0.49	0.25
Compass 1-5	495	0	226.10	222.00	224.03	0.90	0.35	0.21
Compass 1-6	495	0	225.50	221.70	223.62	0.88	0.45	0.22
Compass 1-7	495	0	225.40	221.70	223.39	-0.25	0.43	0.22
Compass 1-8	495	0	225.60	221.90	223.59	-1.42	0.35	0.20
Compass 1-9	495	0	227.10	223.10	224.86	0.77	0.32	0.23
Distance Off	495	0	39.10	-10.31	-1.67	0.00	3.54	2.60
Course Made Good	495	0	234.90	232.20	234.53	0.00	0.15	0.01
Speed Made Good	495	0	2.78	2.49	2.50	0.00	0.00	0.00
Drift	495	0	0.00	-7.01	-2.93	0.00	1.46	0.07
Shot Spacing	495	0	26.44	22.54	24.99	0.00	0.65	1.07
Shot Timing	495	0	10.00	9.00	9.53	0.00	0.50	0.89
Event Time	495	0	3.17	1.86	2.51	0.00	0.38	0.00
Diff X	495	0	5.30	0.37	2.93	0.00	1.05	1.27
Diff Y	495	0	5.51	-0.09	1.63	0.00	0.73	0.93
Streamer 1 Feather	495	0	-0.23	-3.82	-1.87	0.00	1.00	0.12
Gyro	491	0	242.59	234.85	237.53	0.19	0.28	0.22

Sail Line: SB94A-132 Azm: 314 Status: COM Date: 18/03/94

Line - : 132

Total SP Range: 111-750
Process Range : 111-750
Charge Range : 111-750
Total CMP Km : 16.0000
Process CMP Km: 16.0000
Charge CMP Km : 16.0000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	00:33	4881	78.2 M	FORCE 3-4 SE	SLIGHT	< 1 M	131.0 M
EOL	02:16	4891	79.3 M	FORCE 3-4 SE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.4 Feather 3.1P
EOL #1 2.1 Feather 2.2P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Slight screw noise at head of streamer
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-132

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	637	0	52.26	19.03	24.87	-0.06	0.54	2.93
GPS 1 Bearing	637	0	46.48	40.70	44.03	0.15	0.51	1.12
GPS 2 Range	637	0	50.21	17.87	25.58	0.19	2.14	3.24
GPS 2 Bearing	637	0	48.92	39.60	43.91	-0.59	2.03	1.09
Compass 1-1	637	0	305.20	302.50	303.96	0.05	0.21	0.28
Compass 1-2	637	0	305.20	302.80	304.03	0.49	0.60	0.26
Compass 1-3	637	0	304.60	302.30	303.48	-0.28	0.83	0.24
Compass 1-4	637	0	305.10	302.70	303.68	-0.41	0.57	0.24
Compass 1-5	637	0	305.50	303.00	304.09	0.50	0.45	0.22
Compass 1-6	637	0	305.50	303.00	303.93	0.15	0.51	0.23
Compass 1-7	637	0	306.20	303.20	304.31	0.12	0.52	0.23
Compass 1-8	637	0	306.40	303.30	304.48	-0.64	0.42	0.23
Compass 1-9	637	0	308.00	303.90	305.43	0.31	0.39	0.29
Distance Off	637	0	10.63	-9.16	1.02	0.00	3.88	0.67
Course Made Good	637	0	314.54	310.66	314.14	0.00	0.31	0.02
Speed Made Good	637	0	2.78	2.31	2.41	0.00	0.05	0.00
Drift	637	0	1.46	-2.04	-0.40	0.00	0.65	0.18
Shot Spacing	637	0	28.84	20.39	24.97	0.00	1.35	2.37
Shot Timing	637	0	20.00	8.00	9.60	0.00	0.65	1.06
Event Time	637	0	16.27	14.57	15.42	0.00	0.49	0.00
Diff X	637	0	2.91	-3.88	-0.21	0.00	1.03	0.82
Diff Y	637	0	2.95	-2.35	0.30	0.00	1.01	0.81
Streamer 1 Feather	637	0	-1.60	-6.38	-2.42	0.00	0.49	0.11
Gyro	633	0	316.28	312.59	314.53	0.08	0.08	0.24

Sail Line: SB94A-133 Azm: 238 Status: COM Date: 21/03/94

Line - : 133

Total SP Range: 394-31
Process Range : 394-31
Charge Range : 394-31
Total CMP Km : 9.1000
Process CMP Km: 9.1000
Charge CMP Km : 9.1000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	00:25	5141	69.0 M	FORCE 5-6 NE	MODERATE	< 1 M	131.0 M
EOL	01:23	5147	58.0 M	FORCE 5-6 NE	MODERATE	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.1 Feather 1.7P
EOL #1 3.5 Feather 3.3P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Weather and sea noise decreasing
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.
Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-133

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	361	0	32.24	21.52	24.46	-0.30	0.71	2.02
GPS 1 Bearing	361	0	125.03	116.37	120.00	-0.53	0.50	1.34
GPS 2 Range	361	0	36.17	18.06	27.29	1.46	2.51	2.60
GPS 2 Bearing	361	0	130.32	117.47	123.30	1.94	1.78	1.28
Compass 1-1	361	0	229.30	226.70	227.76	-0.16	0.17	0.26
Compass 1-2	361	0	229.30	226.80	227.83	-0.56	0.45	0.24
Compass 1-3	361	0	229.00	226.70	227.66	-0.13	0.56	0.28
Compass 1-4	361	0	228.00	225.80	226.95	-1.13	0.60	0.32
Compass 1-5	361	0	229.20	226.40	227.78	1.01	0.79	0.31
Compass 1-6	361	0	228.70	225.40	227.25	0.78	0.85	0.32
Compass 1-7	361	0	228.70	225.90	227.56	0.33	0.49	0.30
Compass 1-8	361	0	228.90	226.40	227.68	-1.80	0.54	0.29
Compass 1-9	361	0	231.40	228.30	229.85	0.82	0.41	0.36
Distance Off	361	0	26.17	-6.37	-0.51	0.00	2.91	2.05
Course Made Good	361	0	237.92	235.66	237.21	0.00	0.39	0.02
Speed Made Good	361	0	2.80	2.50	2.78	0.00	0.01	0.00
Drift	361	0	0.00	-6.55	-4.46	0.00	0.59	0.08
Shot Spacing	361	0	28.56	22.69	25.02	0.00	0.75	1.26
Shot Timing	361	0	10.00	8.00	9.56	0.00	0.50	0.89
Event Time	361	0	15.38	14.42	14.90	0.00	0.28	0.00
Diff X	361	0	6.00	-0.14	2.99	0.00	1.23	1.39
Diff Y	361	0	5.08	-0.63	1.58	0.00	0.86	0.95
Streamer 1 Feather	361	0	-1.56	-3.84	-3.01	0.00	0.27	0.18
Gyro	357	0	244.40	240.17	241.70	0.24	0.23	0.25

Sail Line: SB94A-135 Azm: 056 Status: COM Date: 21/03/94

Line - : 135

Total SP Range: 111-519
Process Range : 111-519
Charge Range : 111-519
Total CMP Km : 10.2250
Process CMP Km: 10.2250
Charge CMP Km : 10.2250

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	09:15	5164	63.0 M	FORCE 4 NE	MODERATE	< 1 M	131.0 M
EOL	10:18	5170	73.0 M	FORCE 4 NE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.4 Feather 4.6P
EOL #1 2.8 Feather 3.1P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Streamer noise decreasing
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: SP 167 gun 26 off 18 on
Comments: Gun 26 misfired three times. SP 174 low volume.

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 160, 164, 167, 174

Acumen Line Statistics

Statistics for line SB94A-135

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	407	0	27.98	20.14	24.37	0.73	0.73	1.98
GPS 1 Bearing	407	0	306.26	299.43	302.82	-0.02	0.51	0.73
GPS 2 Range	407	0	35.91	20.51	27.51	-2.94	2.45	2.59
GPS 2 Bearing	407	0	306.82	293.52	299.16	0.02	1.75	0.82
Compass 1-1	407	0	49.10	46.10	47.54	-0.21	0.19	0.32
Compass 1-2	407	0	49.20	46.10	47.62	-1.17	0.69	0.31
Compass 1-3	407	0	49.70	46.80	48.23	0.04	0.90	0.26
Compass 1-4	407	0	49.00	46.00	47.62	-0.30	0.75	0.29
Compass 1-5	407	0	49.30	46.10	47.94	0.67	0.50	0.28
Compass 1-6	407	0	49.00	45.70	47.70	0.45	0.67	0.30
Compass 1-7	407	0	49.20	46.10	47.84	-0.06	0.67	0.32
Compass 1-8	407	0	49.30	46.00	48.03	-1.19	0.55	0.30
Compass 1-9	407	0	50.80	47.30	49.36	0.65	0.45	0.37
Distance Off	407	0	6.42	-7.42	-0.00	0.00	3.87	0.71
Course Made Good	407	0	60.53	55.93	56.34	0.00	0.22	0.02
Speed Made Good	407	0	2.51	2.49	2.50	0.00	0.00	0.00
Drift	407	0	-0.00	-4.80	-3.66	0.00	0.59	0.05
Shot Spacing	407	0	26.85	23.00	25.01	0.00	0.69	1.07
Shot Timing	407	0	11.00	8.00	9.31	0.00	0.54	0.87
Event Time	407	0	24.00	0.00	16.82	0.00	10.65	1.19
Diff X	407	0	-0.36	-5.94	-2.82	0.00	1.11	1.21
Diff Y	407	0	0.22	-4.41	-1.80	0.00	0.91	0.83
Streamer 1 Feather	407	0	-0.27	-5.05	-4.04	0.00	0.64	0.12
Gyro	403	0	61.36	58.74	59.99	0.19	0.17	0.18

Sail Line: SB94A-137 Azm: 053 Status: COM Date: 21/03/94

Line - : 137

Total SP Range: 111-536
Process Range : 111-536
Charge Range : 111-536
Total CMP Km : 10.6500
Process CMP Km: 10.6500
Charge CMP Km : 10.6500

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	02:47	5148	63.0 M	FORCE 5-6 NE	MODERATE	< 1 M	131.0 M
EOL	03:54	5155	75.0 M	FORCE 5-6 NE	MODERATE	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 4.0 Feather 2.4S
EOL #1 3.9 Feather 2.0S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Weather and sea noise decreasing
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-137

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	424	0	29.18	19.80	24.45	0.69	0.80	2.23
GPS 1 Bearing	424	0	311.82	299.81	306.49	0.09	0.59	1.14
GPS 2 Range	424	0	35.83	21.49	27.62	-2.84	2.16	2.37
GPS 2 Bearing	424	0	310.21	296.32	303.50	-0.41	1.77	1.10
Compass 1-1	424	0	39.70	35.10	37.21	-0.19	0.20	0.35
Compass 1-2	424	0	39.10	35.60	37.08	-1.14	0.63	0.34
Compass 1-3	424	0	39.20	36.50	37.47	-0.20	0.64	0.29
Compass 1-4	424	0	38.50	35.90	36.92	-0.23	0.70	0.31
Compass 1-5	424	0	38.50	36.20	37.04	0.46	0.60	0.31
Compass 1-6	424	0	38.20	36.00	37.02	0.80	0.69	0.34
Compass 1-7	424	0	39.90	35.40	36.91	-0.15	0.76	0.43
Compass 1-8	424	0	39.30	36.20	37.33	-1.15	0.88	0.37
Compass 1-9	424	0	41.40	37.10	38.73	0.59	0.59	0.58
Distance Off	424	0	8.95	-10.58	0.32	0.00	2.84	1.15
Course Made Good	424	0	53.75	49.56	52.49	0.00	0.12	0.02
Speed Made Good	424	0	2.80	2.77	2.79	0.00	0.00	0.00
Drift	424	0	4.39	-1.12	1.80	0.00	0.88	0.14
Shot Spacing	424	0	27.11	22.64	25.01	0.00	0.77	1.18
Shot Timing	424	0	11.00	8.00	9.53	0.00	0.53	0.78
Event Time	424	0	17.91	16.79	17.34	0.00	0.33	0.00
Diff X	424	0	1.57	-5.02	-2.11	0.00	1.24	1.22
Diff Y	424	0	2.18	-4.08	-1.46	0.00	0.96	0.95
Streamer 1 Feather	424	0	3.79	-0.72	2.79	0.00	0.32	0.13
Gyro	420	0	55.18	47.00	50.75	0.44	0.52	0.48

Sail Line: SB94A-139 Azm: 230 Status: COM Date: 21/03/94

Line - : 139

Total SP Range: 399-31
Process Range : 399-31
Charge Range : 399-31
Total CMP Km : 9.2250
Process CMP Km: 9.2250
Charge CMP Km : 9.2250

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	04:46	5155	71.0 M	FORCE 5-6 NE	MODERATE	< 1 M	131.0 M
EOL	05:44	5161	61.0 M	FORCE 5-6 NE	MODERATE	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.9 Feather 0.5S
EOL #1 3.3 Feather 1.8S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47. Weather and sea noise decreasing
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: SP 102 28 off 20 on. SP 46 20 off 28 on. SP 44 28 off 20 on.
Comments: 3 source misfires

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics.

Edited Shotpoints : 359, 360, 361 source sync errors

Acumen Line Statistics

Statistics for line SB94A-139

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	367	0	31.48	20.04	24.61	0.00	0.87	2.02
GPS 1 Bearing	367	0	141.49	119.66	126.53	-0.74	0.69	1.03
GPS 2 Range	367	0	35.48	20.67	27.00	1.04	2.38	2.61
GPS 2 Bearing	367	0	143.60	122.61	130.16	1.80	2.34	1.58
Compass 1-1	367	0	219.60	215.50	217.15	0.20	0.26	0.24
Compass 1-2	367	0	219.10	215.20	216.85	0.16	0.69	0.20
Compass 1-3	367	0	218.80	215.20	216.90	-0.03	0.79	0.21
Compass 1-4	367	0	218.50	215.00	216.81	-0.84	0.60	0.22
Compass 1-5	367	0	219.50	215.60	217.60	0.67	0.43	0.25
Compass 1-6	367	0	218.80	215.60	217.24	0.39	0.49	0.23
Compass 1-7	367	0	219.40	215.80	217.44	0.20	0.53	0.24
Compass 1-8	367	0	218.80	215.90	217.32	-1.09	0.49	0.22
Compass 1-9	367	0	220.70	216.70	218.38	0.50	0.42	0.33
Distance Off	367	0	6.89	-58.07	2.64	0.00	3.84	4.33
Course Made Good	367	0	232.27	222.87	229.39	0.00	1.40	0.03
Speed Made Good	367	0	2.78	2.50	2.77	0.00	0.00	0.00
Drift	367	0	2.87	-7.31	0.56	0.00	2.65	0.07
Shot Spacing	367	0	28.45	22.60	25.01	0.00	0.68	1.12
Shot Timing	367	0	11.00	8.00	9.47	0.00	0.56	1.02
Event Time	367	0	19.74	18.77	19.26	0.00	0.28	0.00
Diff X	367	0	5.73	0.61	2.90	0.00	1.04	1.13
Diff Y	367	0	5.40	-1.24	1.60	0.00	1.09	0.96
Streamer 1 Feather	367	0	2.56	-7.07	-0.33	0.00	1.86	0.14
Gyro	363	0	232.52	226.92	228.61	0.25	0.28	0.20

Sail Line: SB94A-141 Azm: 045 Status: COM Date: 19/03/94

Line - : 141

Total SP Range: 111-601
Process Range : 111-601
Charge Range : 111-601
Total CMP Km : 12.2750
Process CMP Km: 12.2750
Charge CMP Km : 12.2750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	09:13	4985	76.0 M	FORCE 2-3 SE	SLIGHT	< 1 M	131.0 M
EOL	10:31	4993	76.7 M	FORCE 2-3 SE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.9 Feather 2.7P
EOL #1 2.9 Feather 0.7P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47 throughout line.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-141

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	495	0	30.92	18.07	24.18	1.08	0.71	1.83
GPS 1 Bearing	495	0	321.60	306.96	314.78	0.06	0.87	0.99
GPS 2 Range	495	0	38.13	19.72	28.33	-3.21	2.09	2.39
GPS 2 Bearing	495	0	317.64	301.84	311.34	-1.42	2.27	0.80
Compass 1-1	495	0	36.10	32.10	33.94	-0.31	0.22	0.21
Compass 1-2	495	0	36.40	32.60	34.30	-1.14	0.53	0.20
Compass 1-3	495	0	36.40	32.80	34.68	-0.68	0.68	0.17
Compass 1-4	495	0	36.40	32.60	34.60	-0.14	0.46	0.18
Compass 1-5	495	0	36.30	32.60	34.79	0.94	0.41	0.21
Compass 1-6	495	0	35.90	32.40	34.60	0.73	0.41	0.20
Compass 1-7	495	0	36.00	32.30	34.70	-0.23	0.48	0.23
Compass 1-8	495	0	36.30	32.70	35.10	-1.39	0.32	0.18
Compass 1-9	495	0	38.00	34.00	36.63	0.75	0.32	0.22
Distance Off	495	0	9.20	-7.86	0.43	0.00	4.05	0.78
Course Made Good	495	0	59.79	44.76	45.97	0.00	2.04	0.04
Speed Made Good	495	0	2.78	2.74	2.75	0.00	0.01	0.00
Drift	495	0	4.97	-3.41	-0.95	0.00	1.68	0.06
Shot Spacing	495	0	29.18	0.23	25.00	0.00	0.70	1.05
Shot Timing	495	0	11.00	8.00	9.54	0.00	0.51	0.70
Event Time	495	0	24.00	0.00	14.59	0.00	11.36	1.08
Diff X	495	0	1.17	-4.97	-2.26	0.00	1.10	0.90
Diff Y	495	0	1.40	-5.83	-2.87	0.00	0.92	0.94
Streamer 1 Feather	495	0	12.45	-2.91	-1.22	0.00	1.96	0.09
Gyro	491	0	49.79	45.19	47.00	0.20	0.21	0.13

Sail Line: SB94A-143 Azm: 225 Status: COM Date: 19/03/94

Line - : 143

Total SP Range: 511-31
Process Range : 511-31
Charge Range : 511-31
Total CMP Km : 12.0250
Process CMP Km: 12.0250
Charge CMP Km : 12.0250

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	06:40	4977	79.0 M	LIGHT AIRS	SLIGHT	< 1 M	131.0 M
EOL	07:56	4984	76.0 M	LIGHT AIRS	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.3 Feather 1.5S
EOL #1 2.9 Feather 3.0S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47 throughout line.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-143

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	478	0	27.77	20.31	24.50	-0.32	0.61	1.85
GPS 1 Bearing	478	0	142.80	127.78	132.79	-0.47	0.61	0.86
GPS 2 Range	478	0	36.56	20.02	27.27	1.35	2.28	2.64
GPS 2 Bearing	478	0	147.04	127.71	134.49	1.78	2.28	0.81
Compass 1-1	478	0	211.70	207.20	210.21	-0.01	0.15	0.22
Compass 1-2	478	0	211.30	208.30	209.82	-0.61	0.62	0.16
Compass 1-3	478	0	211.30	208.60	209.90	-0.73	0.83	0.17
Compass 1-4	478	0	211.50	209.00	209.99	-0.21	0.55	0.17
Compass 1-5	478	0	211.70	209.10	210.15	0.74	0.41	0.18
Compass 1-6	478	0	212.00	209.00	210.01	0.57	0.47	0.18
Compass 1-7	478	0	212.10	209.10	210.20	-0.02	0.50	0.19
Compass 1-8	478	0	212.60	209.20	210.51	-1.16	0.41	0.17
Compass 1-9	478	0	215.10	210.30	211.92	0.57	0.37	0.20
Distance Off	478	0	5.68	-14.82	0.14	0.00	3.69	0.39
Course Made Good	478	0	225.25	222.48	225.00	0.00	0.23	0.02
Speed Made Good	478	0	2.78	2.50	2.50	0.00	0.00	0.00
Drift	478	0	8.33	-0.13	2.71	0.00	1.13	0.15
Shot Spacing	478	0	26.59	22.58	24.99	0.00	0.70	1.13
Shot Timing	478	0	11.00	9.00	9.46	0.00	0.50	0.83
Event Time	478	0	21.93	20.67	21.30	0.00	0.36	0.00
Diff X	478	0	6.32	0.74	2.93	0.00	1.00	1.10
Diff Y	478	0	4.88	0.36	2.43	0.00	0.89	1.09
Streamer 1 Feather	478	0	3.41	-0.71	2.30	0.00	0.53	0.08
Gyro	474	0	225.00	212.76	222.25	0.28	0.59	0.38

Sail Line: SB94A-145 Azm: 043 Status: TBC Date: 19/03/94

Line - : 145

Total SP Range: 111-323
Process Range : 111-323
Charge Range : 111-300
Total CMP Km : 5.3250
Process CMP Km: 5.3250
Charge CMP Km : 4.7500

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	01:55	4967	77.0 M	FORCE 2-3 N	SLIGHT	< 1 M	131.0 M
EOL	02:25	4970	78.0 M	FORCE 2-3 N	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.8 Feather 0.4S
EOL #1 2.6 Feather 0.9P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47 throughout line.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: Line terminated for broken airline on string 3

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics
Edited Shotpoints : None
Segment Edits : 301-323

Acumen Line Statistics

Statistics for line SB94A-145

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	210	0	28.00	20.87	24.47	1.01	0.65	2.13
GPS 1 Bearing	210	0	319.39	313.59	316.46	-0.20	0.71	0.83
GPS 2 Range	210	0	34.63	21.83	27.70	-4.14	2.09	2.27
GPS 2 Bearing	210	0	315.10	301.62	307.94	0.69	2.39	1.21
Compass 1-1	210	0	32.10	30.70	31.40	-0.18	0.14	0.21
Compass 1-2	210	0	32.40	31.20	31.72	-0.59	0.37	0.18
Compass 1-3	210	0	32.40	31.40	31.78	-0.42	0.50	0.17
Compass 1-4	210	0	32.30	31.30	31.66	-0.16	0.39	0.16
Compass 1-5	210	0	32.40	31.10	31.76	0.69	0.33	0.18
Compass 1-6	210	0	32.00	30.30	31.48	0.50	0.36	0.19
Compass 1-7	210	0	32.10	29.50	31.42	-0.25	0.37	0.22
Compass 1-8	210	0	32.50	29.30	31.61	-0.99	0.35	0.18
Compass 1-9	210	0	33.50	29.40	32.54	0.58	0.25	0.20
Distance Off	210	0	6.98	-2.80	0.82	0.00	2.17	0.24
Course Made Good	210	0	44.86	43.52	43.68	0.00	0.11	0.01
Speed Made Good	210	0	2.78	2.50	2.50	0.00	0.00	0.00
Drift	210	0	1.47	-0.88	-0.01	0.00	0.47	0.06
Shot Spacing	210	0	26.96	23.04	25.02	0.00	0.68	1.16
Shot Timing	210	0	10.00	9.00	9.53	0.00	0.50	0.88
Event Time	210	0	16.49	15.93	16.21	0.00	0.16	0.00
Diff X	210	0	3.21	-0.60	1.14	0.00	0.89	1.19
Diff Y	210	0	2.45	-2.09	0.26	0.00	0.92	1.20
Streamer 1 Feather	210	0	1.76	-0.78	-0.43	0.00	0.27	0.06
Gyro	206	0	44.72	41.54	43.67	0.16	0.23	0.17

Sail Line: SB94A-145A Azm: 043 Status: COM Date: 19/03/94

Line - : 145A

Total SP Range: 240-596
Process Range : 240-596
Charge Range : 301-596
Total CMP Km : 8.9250
Process CMP Km: 8.9250
Charge CMP Km : 7.4000

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	04:24	4971	78.0 M	FORCE 2-3 SE	SLIGHT	< 1 M	131.0 M
EOL	05:22	4976	79.2 M	FORCE 2-3 SE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 3.3 Feather 1.8P
EOL #1 2.6 Feather 2.2P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47 throughout line.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: SP 374 45 off 37 on.
Comments: SP 370-374 source misfires

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : SPs 543-546 have like File numbers. Operator error.
Segment Edits : SP 370-374

Acumen Line Statistics

Statistics for line SB94A-145a

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	354	0	28.87	20.12	24.61	0.44	0.61	2.26
GPS 1 Bearing	354	0	317.65	312.71	315.17	0.03	0.74	1.00
GPS 2 Range	354	0	35.76	16.71	26.30	-1.75	2.45	2.67
GPS 2 Bearing	354	0	318.89	303.92	312.43	-0.09	2.97	1.11
Compass 1-1	354	0	34.90	32.20	33.46	-0.11	0.19	0.21
Compass 1-2	354	0	34.40	32.10	33.30	-0.67	0.61	0.20
Compass 1-3	354	0	34.50	32.10	33.34	-0.63	0.84	0.16
Compass 1-4	354	0	34.50	31.90	33.28	-0.18	0.55	0.19
Compass 1-5	354	0	34.50	31.80	33.37	0.80	0.47	0.22
Compass 1-6	354	0	34.40	31.60	33.15	0.76	0.53	0.19
Compass 1-7	354	0	34.50	31.30	33.05	-0.32	0.52	0.23
Compass 1-8	354	0	34.90	31.40	33.41	-1.26	0.42	0.20
Compass 1-9	354	0	36.50	31.70	34.68	0.71	0.37	0.22
Distance Off	354	0	5.40	-16.29	-1.08	0.00	3.62	1.43
Course Made Good	354	0	45.73	43.51	43.64	0.00	0.06	0.01
Speed Made Good	354	0	2.78	2.50	2.75	0.00	0.02	0.00
Drift	354	0	0.00	-4.48	-2.38	0.00	0.97	0.11
Shot Spacing	354	0	29.37	21.06	24.96	0.00	1.28	2.12
Shot Timing	354	0	10.00	9.00	9.69	0.00	0.46	0.76
Event Time	354	0	19.37	18.42	18.90	0.00	0.27	0.00
Diff X	354	0	4.09	-4.03	0.34	0.00	1.86	1.09
Diff Y	354	0	4.00	-4.77	0.27	0.00	2.00	1.11
Streamer 1 Feather	354	0	0.33	-2.85	-2.21	0.00	0.40	0.07
Gyro	350	0	48.22	44.20	46.03	0.04	0.06	0.15

Sail Line: SB94A-147 Azm: 224 Status: COM Date: 18/03/94

Line - : 147

Total SP Range: 519-31
Process Range : 519-31
Charge Range : 519-31
Total CMP Km : 12.2250
Process CMP Km: 12.2250
Charge CMP Km : 12.2250

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	23:26	4958	77.7 M	FORCE 2-3 NE	SLIGHT	< 1 M	131.0 M
EOL	00:44	4966	76.0 M	FORCE 2-3 NE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.3 Feather 1.7P
EOL #1 2.4 Feather 0.8P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47 throughout line.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics
Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-147

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	496	0	48.44	21.74	24.66	0.18	0.94	2.39
GPS 1 Bearing	496	0	148.38	123.41	132.27	-0.77	0.82	0.82
GPS 2 Range	496	0	56.34	17.66	27.02	0.84	2.27	2.99
GPS 2 Bearing	496	0	150.65	127.28	136.22	1.92	2.10	0.83
Compass 1-1	496	0	215.10	211.40	212.80	0.03	0.25	0.18
Compass 1-2	496	0	215.10	211.60	212.90	-0.08	0.96	0.15
Compass 1-3	496	0	214.80	211.50	212.71	-0.65	1.30	0.16
Compass 1-4	496	0	214.80	211.80	213.00	-0.20	0.86	0.17
Compass 1-5	496	0	215.10	212.10	213.23	0.73	0.61	0.18
Compass 1-6	496	0	215.00	211.90	213.10	0.48	0.76	0.15
Compass 1-7	496	0	215.40	211.80	213.29	-0.14	0.74	0.18
Compass 1-8	496	0	215.60	211.70	213.58	-1.14	0.57	0.18
Compass 1-9	496	0	217.30	212.90	214.87	0.64	0.57	0.20
Distance Off	496	0	10.06	-71.96	-0.43	0.00	5.19	4.58
Course Made Good	496	0	225.07	215.93	223.52	0.00	1.66	0.04
Speed Made Good	496	0	2.78	2.49	2.50	0.00	0.00	0.00
Drift	496	0	0.09	-7.94	-2.18	0.00	1.97	0.06
Shot Spacing	496	0	29.99	0.05	24.55	0.00	3.28	1.39
Shot Timing	496	0	19.00	8.00	9.56	0.00	0.66	1.11
Event Time	496	0	14.73	13.42	14.08	0.00	0.38	0.00
Diff X	496	0	3.90	-2.88	-0.02	0.00	1.20	1.13
Diff Y	496	0	6.60	-5.73	-1.32	0.00	1.15	1.16
Streamer 1 Feather	496	0	-0.63	-10.09	-2.17	0.00	1.70	0.08
Gyro	492	0	228.01	223.82	225.60	0.32	0.29	0.19

Sail Line: SB94A-149 Azm: 044 Status: COM Date: 18/03/94

Line - : 149

Total SP Range: 111-549
Process Range : 111-549
Charge Range : 111-549
Total CMP Km : 10.9750
Process CMP Km: 10.9750
Charge CMP Km : 10.9750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	21:04	4950	77.0 M	FORCE 2-3 SE	SLIGHT	< 1 M	131.0 M
EOL	22:15	4957	78.2 M	FORCE 2-3 SE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.6 Feather 1.5P
EOL #1 2.4 Feather 0.6P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47 throughout line.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: No source failures or misfires

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-149

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	447	0	27.87	19.15	24.14	0.82	0.44	2.34
GPS 1 Bearing	447	0	317.56	312.68	315.16	0.42	0.51	0.96
GPS 2 Range	447	0	36.33	21.81	28.55	-3.28	1.74	2.46
GPS 2 Bearing	447	0	316.31	308.26	312.85	-1.68	2.02	0.86
Compass 1-1	447	0	33.00	29.80	31.36	-0.30	0.18	0.20
Compass 1-2	447	0	33.60	30.90	32.09	-0.81	0.40	0.18
Compass 1-3	447	0	33.60	31.10	32.26	-0.41	0.56	0.17
Compass 1-4	447	0	33.40	31.10	32.10	-0.06	0.48	0.18
Compass 1-5	447	0	33.30	31.10	32.11	0.50	0.33	0.20
Compass 1-6	447	0	33.20	30.90	32.03	0.53	0.38	0.18
Compass 1-7	447	0	33.10	30.90	31.96	-0.26	0.42	0.22
Compass 1-8	447	0	33.40	30.80	32.31	-0.77	0.34	0.19
Compass 1-9	447	0	34.40	31.00	33.19	0.45	0.29	0.21
Distance Off	447	0	7.42	-40.77	0.33	0.00	4.11	2.79
Course Made Good	447	0	46.80	43.34	43.83	0.00	0.36	0.02
Speed Made Good	447	0	2.78	2.46	2.50	0.00	0.01	0.00
Drift	447	0	0.60	-2.65	-1.12	0.00	0.55	0.11
Shot Spacing	447	0	28.48	0.20	24.97	0.00	1.71	2.75
Shot Timing	447	0	10.00	9.00	9.70	0.00	0.46	0.75
Event Time	447	0	12.25	11.05	11.65	0.00	0.35	0.00
Diff X	447	0	3.76	-2.60	0.56	0.00	1.09	1.14
Diff Y	447	0	4.24	-2.67	0.44	0.00	1.10	1.20
Streamer 1 Feather	447	0	2.27	-1.45	-0.73	0.00	0.40	0.07
Gyro	443	0	46.27	43.62	44.93	0.05	0.05	0.14

Sail Line: SB94A-151 Azm: 224 Status: COM Date: 18/03/94

Line - : 151

Total SP Range: 468-31
Process Range : 468-31
Charge Range : 468-31
Total CMP Km : 10.9500
Process CMP Km: 10.9500
Charge CMP Km : 10.9500

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	18:40	4942	79.5 M	LIGHT AIRS	SLIGHT	< 1 M	131.0 M
EOL	19:48	4949	77.0 M	LIGHT AIRS	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.2 Feather 0.2S
EOL #1 2.4 Feather 1.6S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Some reflected noise on traces 34-47 throughout line.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-151

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	444	0	28.82	20.91	24.48	-0.39	0.64	2.05
GPS 1 Bearing	444	0	137.58	130.37	134.39	-0.42	0.62	0.85
GPS 2 Range	444	0	33.26	20.33	27.36	1.61	1.93	2.23
GPS 2 Bearing	444	0	146.23	126.91	135.16	1.63	1.90	0.92
Compass 1-1	444	0	210.30	208.70	209.46	0.02	0.15	0.22
Compass 1-2	444	0	209.80	208.60	209.20	-0.21	0.34	0.17
Compass 1-3	444	0	209.70	208.40	209.10	-0.56	0.45	0.20
Compass 1-4	444	0	210.30	208.70	209.27	-0.27	0.43	0.19
Compass 1-5	444	0	210.50	208.80	209.50	0.55	0.31	0.19
Compass 1-6	444	0	210.90	208.70	209.44	0.51	0.35	0.17
Compass 1-7	444	0	211.60	208.70	209.57	-0.08	0.41	0.19
Compass 1-8	444	0	213.20	208.80	209.92	-0.81	0.35	0.19
Compass 1-9	444	0	215.90	209.80	210.97	0.40	0.28	0.20
Distance Off	444	0	37.00	-6.11	1.36	0.00	3.46	2.51
Course Made Good	444	0	224.02	221.72	223.68	0.00	0.20	0.01
Speed Made Good	444	0	2.81	2.50	2.79	0.00	0.01	0.00
Drift	444	0	2.03	-0.67	1.14	0.00	0.37	0.05
Shot Spacing	444	0	26.93	0.05	25.01	0.00	0.68	1.09
Shot Timing	444	0	10.00	9.00	9.37	0.00	0.48	0.85
Event Time	444	0	9.81	8.65	9.23	0.00	0.33	0.00
Diff X	444	0	7.78	-2.42	1.13	0.00	1.94	1.00
Diff Y	444	0	6.37	-2.79	0.73	0.00	1.81	1.03
Streamer 1 Feather	444	0	2.22	-1.81	1.67	0.00	0.50	0.08
Gyro	440	0	223.52	221.43	222.51	0.20	0.19	0.19

Sail Line: SB94A-153 Azm: 044 Status: COM Date: 18/03/94

Line - : 153

Total SP Range: 111-549
Process Range : 111-549
Charge Range : 111-549
Total CMP Km : 10.9750
Process CMP Km: 10.9750
Charge CMP Km : 10.9750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	16:22	4934	79.0 M	LIGHT AIRS	SLIGHT	< 1 M	131.0 M
EOL	17:31	4941	80.0 M	LIGHT AIRS	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.6 Feather 0.2S
EOL #1 2.2 Feather 2.4P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Autopilot failure at EOL (SP 500) off line max 40 metres on run out
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: No failures

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-153

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	438	0	28.73	19.34	24.07	0.91	0.47	2.39
GPS 1 Bearing	438	0	321.17	308.66	314.66	0.42	0.58	1.07
GPS 2 Range	438	0	38.89	22.41	28.86	-3.66	1.88	2.82
GPS 2 Bearing	438	0	318.03	303.66	311.76	-1.69	2.32	1.06
Compass 1-1	438	0	36.30	31.70	32.88	-0.21	0.21	0.25
Compass 1-2	438	0	36.10	32.10	33.27	-0.49	0.90	0.20
Compass 1-3	438	0	35.30	31.80	33.09	-0.57	1.06	0.19
Compass 1-4	438	0	34.90	31.80	33.04	0.08	0.77	0.20
Compass 1-5	438	0	34.30	31.40	32.76	0.37	0.47	0.23
Compass 1-6	438	0	34.00	31.40	32.63	0.60	0.67	0.22
Compass 1-7	438	0	33.80	30.30	32.35	0.01	0.61	0.23
Compass 1-8	438	0	33.80	29.60	32.19	-1.23	0.50	0.20
Compass 1-9	438	0	35.30	29.60	33.17	0.63	0.41	0.24
Distance Off	438	0	40.45	-37.81	3.26	0.00	9.31	2.67
Course Made Good	438	0	46.05	43.93	44.28	0.00	0.34	0.03
Speed Made Good	438	0	2.78	2.50	2.52	0.00	0.01	0.00
Drift	438	0	6.15	-8.35	-0.57	0.00	1.71	0.54
Shot Spacing	438	0	28.78	20.68	25.01	0.00	1.30	2.22
Shot Timing	438	0	10.00	9.00	9.36	0.00	0.48	0.76
Event Time	438	0	7.52	6.38	6.94	0.00	0.33	0.00
Diff X	438	0	1.09	-5.20	-2.18	0.00	1.13	1.27
Diff Y	438	0	0.55	-6.03	-2.46	0.00	1.12	1.34
Streamer 1 Feather	438	0	2.43	-2.22	-0.94	0.00	0.46	0.09
Gyro	434	0	55.05	38.83	44.87	0.14	0.32	0.63

Sail Line: SB94A-155 Azm: 223 Status: COM Date: 18/03/94

Line - : 155

Total SP Range: 469-31
Process Range : 469-31
Charge Range : 469-31
Total CMP Km : 10.9750
Process CMP Km: 10.9750
Charge CMP Km : 10.9750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	14:05	4926	79.0 M	LIGHT AIRS	SLIGHT	< 1 M	131.0 M
EOL	15:14	4933	78.0 M	LIGHT AIRS	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 4.7 Feather 1.9P
EOL #1 2.1 Feather 0.3S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: SOL noise record taken with some turn noise still in tail.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: None
Comments: None

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-155

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	444	0	27.86	21.09	24.48	-0.34	0.48	2.35
GPS 1 Bearing	444	0	137.12	132.23	134.62	-0.39	0.50	1.09
GPS 2 Range	444	0	34.82	20.78	27.08	1.37	1.92	3.03
GPS 2 Bearing	444	0	139.03	130.21	135.64	1.56	2.03	0.99
Compass 1-1	444	0	211.80	209.90	210.78	0.06	0.18	0.23
Compass 1-2	444	0	211.30	209.60	210.38	-0.08	0.77	0.19
Compass 1-3	444	0	211.60	209.70	210.33	-0.35	1.09	0.17
Compass 1-4	444	0	212.50	209.80	210.50	-0.15	0.82	0.22
Compass 1-5	444	0	213.00	209.80	210.71	0.34	0.62	0.21
Compass 1-6	444	0	213.20	209.90	210.82	0.47	0.73	0.22
Compass 1-7	444	0	213.60	209.80	211.05	0.34	0.74	0.20
Compass 1-8	444	0	213.80	209.50	210.97	-1.43	0.62	0.20
Compass 1-9	444	0	216.60	210.50	212.57	0.67	0.53	0.28
Distance Off	444	0	15.82	-8.11	0.54	0.00	3.59	1.18
Course Made Good	444	0	223.79	221.29	223.43	0.00	0.16	0.02
Speed Made Good	444	0	2.80	2.77	2.79	0.00	0.01	0.00
Drift	444	0	0.00	-3.16	-1.16	0.00	0.59	0.12
Shot Spacing	444	0	28.31	0.05	25.00	0.00	1.26	2.26
Shot Timing	444	0	10.00	9.00	9.46	0.00	0.50	0.90
Event Time	444	0	5.23	4.07	4.65	0.00	0.34	0.00
Diff X	444	0	5.38	0.04	3.13	0.00	1.02	1.27
Diff Y	444	0	5.24	-0.97	2.79	0.00	1.14	1.38
Streamer 1 Feather	444	0	0.91	-4.00	0.13	0.00	0.60	0.09
Gyro	440	0	226.55	223.45	224.60	0.05	0.06	0.17

Sail Line: SB94A-157 Azm: 043 Status: COM Date: 18/03/94

Line - : 157

Total SP Range: 469-31
Process Range : 469-31
Charge Range : 469-31
Total CMP Km : 10.9750
Process CMP Km: 10.9750
Charge CMP Km : 10.9750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	11:44	4918	77.0 M	FORCE 3-4 SSW	SLIGHT	< 1 M	131.0 M
EOL	12:55	4925	79.0 M	FORCE 3-4 SSW	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.3 Feather 1.7S
EOL #1 2.9 Feather 1.0S Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Line shot with SP numbering reversed to convention.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: SOL gun 43 in in place of 19. SP 455 19 off 43 on.
Comments: Volume at 3305 ci throughout line

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : None

Acumen Line Statistics

Statistics for line SB94A-157

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	431	0	28.03	19.10	24.10	1.00	0.49	2.20
GPS 1 Bearing	431	0	318.23	313.86	316.09	0.34	0.53	0.85
GPS 2 Range	431	0	37.67	20.86	28.84	-3.98	1.93	2.62
GPS 2 Bearing	431	0	316.07	306.29	311.76	-1.34	2.15	0.86
Compass 1-1	431	0	30.10	27.70	29.00	-0.22	0.18	0.22
Compass 1-2	431	0	30.30	27.80	29.36	-0.67	0.72	0.21
Compass 1-3	431	0	30.60	28.40	29.55	0.29	0.89	0.19
Compass 1-4	431	0	29.90	27.80	28.80	-0.59	0.69	0.21
Compass 1-5	431	0	30.40	28.30	29.33	0.73	0.45	0.21
Compass 1-6	431	0	30.20	27.90	28.87	0.37	0.57	0.22
Compass 1-7	431	0	30.40	27.90	28.95	-0.22	0.56	0.25
Compass 1-8	431	0	30.70	28.10	29.21	-0.84	0.44	0.20
Compass 1-9	431	0	31.70	28.70	30.17	0.50	0.40	0.24
Distance Off	431	0	6.08	-10.63	0.31	0.00	3.56	0.87
Course Made Good	431	0	44.93	42.72	43.14	0.00	0.17	0.02
Speed Made Good	431	0	2.52	2.47	2.50	0.00	0.02	0.00
Drift	431	0	2.01	-0.53	0.80	0.00	0.61	0.13
Shot Spacing	431	0	27.86	20.03	25.01	0.00	1.26	2.11
Shot Timing	431	0	11.00	8.00	9.69	0.00	0.56	0.95
Event Time	431	0	2.92	1.77	2.34	0.00	0.33	0.00
Diff X	431	0	0.16	-4.40	-2.10	0.00	0.88	1.09
Diff Y	431	0	0.16	-5.00	-2.73	0.00	0.92	1.14
Streamer 1 Feather	431	0	3.98	0.71	1.49	0.00	0.32	0.08
Gyro	427	0	43.61	41.14	42.35	0.06	0.06	0.18

Sail Line: SB94A-159 Azm: 223 Status: COM Date: 18/03/94

Line - : 159

Total SP Range: 111-572
Process Range : 111-572
Charge Range : 111-572
Total CMP Km : 11.5500
Process CMP Km: 11.5500
Charge CMP Km : 11.5500

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	09:15	4910	77.0 M	FORCE 3-4 NE	SLIGHT	< 1 M	131.0 M
EOL	10:29	4917	75.5 M	FORCE 3-4 NE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.2 Feather 0.9S
EOL #1 2.1 Feather 0.1P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Shotpoints numbered from east to west rather than as requested.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4
Dropouts: 35 off and 43 on at SOL
Comments:

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : SP 363 NDR

Acumen Line Statistics

Statistics for line SB94A-159

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	460	0	29.64	12.59	24.58	-0.24	0.51	2.54
GPS 1 Bearing	460	0	138.06	130.36	134.39	-0.42	0.88	1.09
GPS 2 Range	460	0	37.31	16.60	26.96	0.96	2.04	2.88
GPS 2 Bearing	460	0	142.30	123.21	136.14	1.69	3.50	1.09
Compass 1-1	461	0	212.30	209.40	210.61	0.05	0.18	0.24
Compass 1-2	461	0	211.80	209.10	210.27	0.20	0.50	0.23
Compass 1-3	461	0	211.30	208.60	209.75	-0.21	0.68	0.22
Compass 1-4	461	0	211.10	208.30	209.62	-0.41	0.54	0.20
Compass 1-5	461	0	211.10	208.70	209.81	0.29	0.42	0.25
Compass 1-6	461	0	210.80	208.50	209.72	0.53	0.46	0.22
Compass 1-7	461	0	210.80	208.60	209.66	-0.00	0.50	0.24
Compass 1-8	461	0	211.40	208.70	209.90	-0.70	0.45	0.25
Compass 1-9	461	0	212.40	209.70	210.79	0.33	0.37	0.29
Distance Off	461	0	30.98	-7.93	-2.26	0.00	2.60	2.09
Course Made Good	461	0	223.57	221.63	223.37	0.00	0.13	0.01
Speed Made Good	461	0	2.88	2.50	2.82	0.00	0.04	0.00
Drift	461	0	2.50	-0.57	1.30	0.00	0.68	0.17
Shot Spacing	461	0	Inf	13.59	NaN	0.00	NaN	NaN
Shot Timing	461	0	19.00	9.00	9.62	0.00	0.65	1.06
Event Time	461	0	24.00	0.00	14.15	0.00	11.48	1.12
Diff X	461	0	4.70	-1.99	0.80	0.00	1.20	1.44
Diff Y	461	0	4.44	-2.98	0.18	0.00	1.54	1.49
Streamer 1 Feather	461	0	1.57	-0.49	0.96	0.00	0.33	0.09
Gyro	457	0	224.23	220.53	222.07	0.08	0.08	0.23

Sail Line: SB94A-161 Azm: 043 Status: COM Date: 18/03/94

Line - : 161

Total SP Range: 473-31
Process Range : 473-31
Charge Range : 473-31
Total CMP Km : 11.0750
Process CMP Km: 11.0750
Charge CMP Km : 11.0750

	Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL	06:52	4902	77.0 M	FORCE 3-4 SSE	SLIGHT	< 1 M	131.0 M
EOL	08:02	4909	78.0 M	FORCE 3-4 SSE	SLIGHT	< 1 M	131.0 M

Streamer Noise (uB) SOL #1 2.5 Feather 1.8P
EOL #1 2.4 Feather 2.1P Ave Depth (M): 10 Qual 1:4
Bad Grps: None
Comments: Shotpoints numbered from east to west rather than as requested.
SOL Source Vol (in3) : #1 3305 Pressure (psi): 1800
Ave Source Depths (M): #1 6 Qual #1 4Dropouts: SP 257 gun 28 out 20 in.
Comments: Source misfires at SPs 262 and 260

Nav Systems - Primary: MULTIFIX Secondary: DIR. INJECT.
Active Tailbuoys - Type: None Nav Qual 3
Compasses: All in use
Acoustics: None
Comments : See Acumen statistics

Edited Shotpoints : 262, 260

Acumen Line Statistics

Statistics for line SB94A-161

Element	Total	Rejects	Max Raw	Min Raw	Mean Raw	Mean Res.	Std.Dev.	Delta SD
GPS 1 Range	442	0	26.65	21.29	24.17	0.84	0.64	1.75
GPS 1 Bearing	442	0	321.53	311.81	316.47	0.28	0.61	0.91
GPS 2 Range	442	0	38.04	22.08	28.09	-3.30	2.30	2.44
GPS 2 Bearing	442	0	319.82	306.79	312.89	-1.09	2.14	0.92
Compass 1-1	442	0	33.80	31.30	32.47	-0.16	0.24	0.25
Compass 1-2	442	0	33.70	31.30	32.36	-0.89	0.59	0.23
Compass 1-3	442	0	33.70	31.40	32.56	-0.44	0.80	0.21
Compass 1-4	442	0	33.50	31.20	32.20	-0.36	0.56	0.21
Compass 1-5	442	0	33.70	31.40	32.45	1.05	0.42	0.20
Compass 1-6	442	0	33.30	30.80	31.89	0.51	0.50	0.21
Compass 1-7	442	0	33.40	30.70	31.89	-0.45	0.49	0.22
Compass 1-8	442	0	34.20	31.10	32.27	-0.89	0.42	0.19
Compass 1-9	442	0	35.40	31.70	33.17	0.56	0.35	0.23
Distance Off	442	0	30.57	-5.04	0.76	0.00	3.67	2.14
Course Made Good	442	0	46.35	42.40	42.65	0.00	0.15	0.02
Speed Made Good	442	0	2.78	2.49	2.50	0.00	0.00	0.00
Drift	442	0	0.00	-5.79	-3.79	0.00	0.77	0.06
Shot Spacing	442	0	26.61	23.52	24.98	0.00	0.54	0.86
Shot Timing	442	0	10.00	9.00	9.48	0.00	0.50	0.94
Event Time	442	0	22.05	20.88	21.47	0.00	0.34	0.00
Diff X	442	0	3.11	-1.42	0.89	0.00	0.80	1.04
Diff Y	442	0	2.90	-1.52	0.52	0.00	0.92	1.13
Streamer 1 Feather	442	0	2.28	-2.83	-2.11	0.00	0.38	0.09
Gyro	438	0			49.07	44.75	46.41	0.30 0.29 0.23

10.4 LINE END COORDINATE LISTING

SB94A-101	0394427.000S	1452037.130E	5599680.10	358076.99
	0393938.020S	1452938.380E	5608817.03	370810.30
SB94A-103	0394558.110S	1452225.020E	5596918.07	360696.03
	0394147.980S	1453021.720E	5604827.49	371909.80
SB94A-105	0394644.510S	1452312.940E	5595508.10	361861.99
	0394236.550S	14531 7.830E	5603348.24	373032.74
SB94A-107	0395028.620S	1451737.080E	5588450.16	354003.94
	0394314.720S	1453143.140E	5602185.27	373892.88
SB94A-109	03948 2.330S	1452341.520E	5593120.98	362584.91
	0394337.650S	14532 3.730E	5601486.34	374394.66
SB94A-111	0395445.310S	14512 9.400E	5580383.08	346374.90
	03944 1.710S	1453225.370E	5600752.95	374921.92
SB94A-113	0395632.110S	1451213.560E	5577092.10	346539.95
	0394531.720S	1453347.910E	5598009.59	376931.23
SB94A-115	0395812.560S	1451329.800E	5574031.13	348411.01
	03951 9.970S	14527 1.690E	5587419.61	367445.50
SB94A-117	0395934.240S	14515 1.970E	5571555.89	350647.02
	03956 2.620S	1452148.570E	5578263.89	360169.97
SB94A-119	04001 2.660S	1451631.750E	5568871.12	352828.97
	0395730.400S	1452314.100E	5575594.37	362249.00
SB94A-121	0400253.760S	1451813.570E	5565491.89	355308.06
	0395520.810S	1453152.200E	5579802.27	374476.19
SB94A-102	03954 2.330S	1451227.750E	5581717.04	346783.99
	04012 4.400S	1452948.360E	5548809.74	372058.95
SB94A-104	0395149.450S	1451315.990E	5585837.01	347847.98
	04009 5.830S	1453234.380E	5554381.12	375893.75
SB94A-106	0395137.980S	1451621.340E	5586277.05	352245.09
	03958 7.620S	1452311.850E	5574445.81	362216.38
SB94A-108	0394959.540S	1451748.740E	5589352.05	354264.00
	0395450.670S	1452212.460E	5580492.67	360696.51

SB94A-110	03949 0.140S	1451941.240E	5591233.95	356903.95
	0400043.760S	1453059.380E	5569824.22	373387.93
SB94A-112	03948 0.880S	1452042.340E	5593088.07	358322.88
	0395947.570S	1453241.950E	5571596.80	375791.39
SB94A-114	0394721.080S	1452159.650E	5594348.96	360139.06
	0395222.600S	14527 3.390E	5585180.98	367524.71
SB94A-116	0394336.420S	1452056.570E	5601248.10	358510.98
	0394946.160S	1452652.150E	5589999.70	367173.94
SB94A-118	0394240.110S	1452246.220E	5603031.87	361090.05
	0394850.570S	1452836.900E	5591756.45	369634.82
SB94A-120	03942 6.310S	1452352.010E	5604102.13	362638.05
	0394818.880S	1452938.890E	5592758.45	371092.30
SB94A-122	0393719.320S	1452516.770E	5612986.15	364501.02
	0394618.350S	1453334.840E	5596566.93	376643.34
SB94A-124-1	0395959.450S	1452047.680E	5570935.11	358860.10
	0400518.580S	1452634.500E	5561243.54	367256.26
SB94A-124-2	0401237.390S	1453331.440E	5547880.04	377349.68
	0400518.580S	1452634.500E	5561243.54	367256.26
SB94A-125	0400549.080S	1452140.370E	5560177.99	360307.98
	0400311.350S	1452629.370E	5565164.31	367066.07
SB94A-127	0400624.020S	1452220.210E	5559117.99	361271.08
	04002 0.590S	1453029.090E	5567443.35	372709.48
SB94A-129	0400722.520S	1452315.000E	5557337.87	362601.00
	04003 4.030S	1453123.330E	5565508.75	374027.46
SB94A-131	04008 8.500S	14523 9.940E	5555917.97	362506.97
	0400443.740S	1452927.640E	5562388.43	371338.33
SB94A-133	0400930.100S	14525 0.740E	5553449.13	365173.96
	0400718.770S	1452931.140E	5557609.78	371502.29
SB94A-135	04010 0.700S	14526 1.540E	5552531.12	366629.00
	0400725.070S	14531 8.070E	5557454.11	373799.89
SB94A-137	0401148.670S	1452716.450E	5549233.06	368458.93
	0400849.300S	1453223.130E	5554886.42	375619.20

SB94A-139	0401258.270S	1452718.680E	5547087.95	368549.02
	0401019.260S	1453129.640E	5552091.75	374399.61
SB94A-141	0401720.320S	1454550.410E	5539419.92	394940.01
	0401314.100S	1455112.360E	5547113.87	402443.61
SB94A-143	0401815.560S	1454714.300E	5537744.06	396944.11
	0401415.080S	1455228.840E	5545256.83	404275.10
SB94A-145	0401914.030S	1454831.510E	5535965.96	398791.02
	04015 4.880S	1455342.120E	5543743.11	406025.81
SB94A-147	0402010.440S	1454945.320E	5534249.88	400555.99
	04016 2.100S	14555 1.670E	5542002.04	407926.70
SB94A-149	04020 1.850S	1455333.640E	5534584.07	405939.92
	0401620.010S	14558 9.640E	5541503.00	412372.80
SB94A-151	0402042.300S	1455428.930E	5533353.06	407259.93
	04017 1.320S	14559 4.620E	5540244.00	413685.87
SB94A-153	0402126.590S	1455529.180E	5532004.85	408697.95
	0401746.570S	14600 7.760E	5538865.77	415192.53
SB94A-155	0402212.990S	1455631.460E	5530591.89	410184.10
	0401830.110S	14601 6.160E	5537538.70	416586.17
SB94A-126	0401521.270S	1454757.410E	5543131.87	397888.96
	0402012.670S	1455438.000E	5534269.29	407462.66
SB94A-128	04014 3.830S	1454622.590E	5545488.92	395615.97
	0402038.410S	1455856.790E	5533548.33	413577.90
SB94A-130	0401839.670S	1455724.310E	5537184.07	411352.94
	0402425.590S	1460126.160E	5526583.27	417179.19
SB94A-132	0401651.420S	14556 6.620E	5540499.93	409479.03
	0402218.150S	1460326.750E	5530543.54	419979.63
SB94A-123	0400429.290S	14520 6.540E	5562596.92	358040.12
	0395711.310S	1453329.620E	5576433.03	376843.92
SB94A-157	0402252.540S	1455723.590E	5529387.02	411427.88
	04019 8.640S	1460156.920E	5536363.89	417797.32
SB94A-159	0402327.630S	14558 2.710E	5528315.90	412362.94
	0401931.170S	1460254.200E	5535683.87	419156.65

SB94A-161	0402359.730S	1455916.040E	5527346.13	414103.09
	0402011.570S	1460349.650E	5534452.16	420478.38

APPENDIX 3

CONTRACTOR'S OPERATIONS REPORT

This appendix comprises the acquisition Contractor's Operations Summary.

498092

VOLUME 1 OF 1

FINAL OPERATIONS REPORT

SAGASCO RESOURCES LIMITED

ROCKY CAPE 2D SEISMIC SURVEY

17 MARCH TO 24 MARCH 1994

BY
WESTERN GEOPHYSICAL COMPANY
R/V WESTERN ATLAS
PARTY 116

498093

VOLUME 1 OF 1

CONTENTS

		PAGE
1.	INTRODUCTION AND LOCALITY/LINE MAP	1
2.	DESCRIPTION OF SURVEY AREA	2
2.1	Weather	2
2.2	Tides	2
2.3	Currents	2
2.4	Feathering/Infill	3
2.5	Bathymetry	3
3.	GENERAL INFORMATION	4
3.1	Location of Offices	4
3.2	Communications	5
3.3	Key Field Personnel	5
3.4	Disposition of Data	6
3.5	Instrument Test	6
3.6	Miscellaneous	7
4.	HEALTH, SAFETY AND ENVIRONENT	9
5.	VESSEL SPECIFICATIONS	10
6.	DESCRIPTION OF EQUIPMENT	19
6.1	WG-24 Marine Data Acquisition System	19
6.2	WG-24 Digital Telemetry System Tape Format	-
6.3	Streamer Cable	20
6.4	Energy Source	28
7.	BOAT GEOMETRY	-
8.	PARAMETER REPORT	-
9.	STATISTICAL SUMMARY AND SEISMIC TAPE SHIPPING LIST	-

CONTENTS (cont.)

APPENDIX A - NAVIGATION

1. Navigation Report

2. Navigation Contractor's Report - Racal Suvey Australia (under separate cover)

3. Navigation Reel Reports

APPENDIX B - LOGS

1. Coordinators' Daily Logs

2. Observers' Logs

6.1 FIGURES

1. WG-24 STREAMER CABLE
2. WG-24 RECORDING SYSTEM BLOCK DIAGRAM

6.2 FIGURES

1. GENERAL HEADER
2. CHANNEL SET DESCRIPTOR
3. WG-24 EXTENDED HEADER, VERSION 1, BLOCK 1 DEFINITION
4. WG-24 EXTENDED HEADER, VERSION 1, BLOCK 2 DEFINITION
5. WG-24 EXTENDED HEADER, VERSION 1, BLOCK 3 DEFINITION
6. WG-24 EXTENDED HEADER, VERSION 1, BLOCK 4 THROUGH (3+*N*) DEFINITION, WHERE *N* = NO. OF CABLES
7. WG-24 EXTENDED HEADER, VERSION 1, BLOCK (4+*N*) THROUGH (3+*N*+*M*) DEFINITION, WHERE *N* = NO. OF CABLES & *M* = NO. OF CHANNELS SETS
8. WG-24 EXTENDED HEADER, VERSION 2, BLOCK 1 DEFINITION
9. WG-24 EXTENDED HEADER, VERSION 2, BLOCK 2 DEFINITION
10. WG-24 EXTENDED HEADER, VERSION 2, BLOCK 3 DEFINITION
11. WG-24 EXTENDED HEADER, VERSION 2, BLOCK 4 DEFINITION
12. WG-24 EXTENDED HEADER, VERSION 2, BLOCK 5 THROUGH (4+*N*) DEFINITION, WHERE *N* = NO. OF CABLES
13. WG-24 EXTENDED HEADER, VERSION 2, BLOCK (5+*N*) THROUGH (4+*N*+*M*) DEFINITION, WHERE *N* = NO. OF CABLES & *M* = NO. OF CHANNELS SETS
14. WG-24 EXTENDED HEADER CABLE DEPTH BLOCKS
15. WG-24 EXTENDED HEADER CABLE STATUS BLOCKS
16. WG-24 EXTERNAL HEADER, VERSION 3 (USER HEADER)
17. WG-24 EXTERNAL HEADER, VERSION 4 (USER HEADER)
18. WG-24 EXTERNAL HEADER, VERSION 6 (USER HEADER)
19. WG-24 EXTERNAL HEADER, VERSION 6 (USER HEADER)
20. WG-24 EXTERNAL HEADER, VERSION 6 (USER HEADER)
21. WG-24 EXTERNAL HEADER, VERSION (USER HEADER)
22. WG-24 EXTERNAL HEADER, VERSION 6 (USER HEADER)
23. DEMULTIPLEXED DATA BODY

6.3 FIGURES

1. WG-24 PHONE GROUP DETAILS
2. MARINE REMOTE UNIT DIAGRAM
3. STREAMER MODULE BLOCK DIAGRAM
4. STREAMER CABLE DIAGRAM

6.4 FIGURES

1. WESTERN ATLAS PART #116 – 3305 CU IN GUN ARRAY

7 FIGURES

1. BOAT GEOMETRY
2. ANTENNA OFFSETS

498096

1. INTRODUCTION AND LOCALITY/LINE MAP

498097

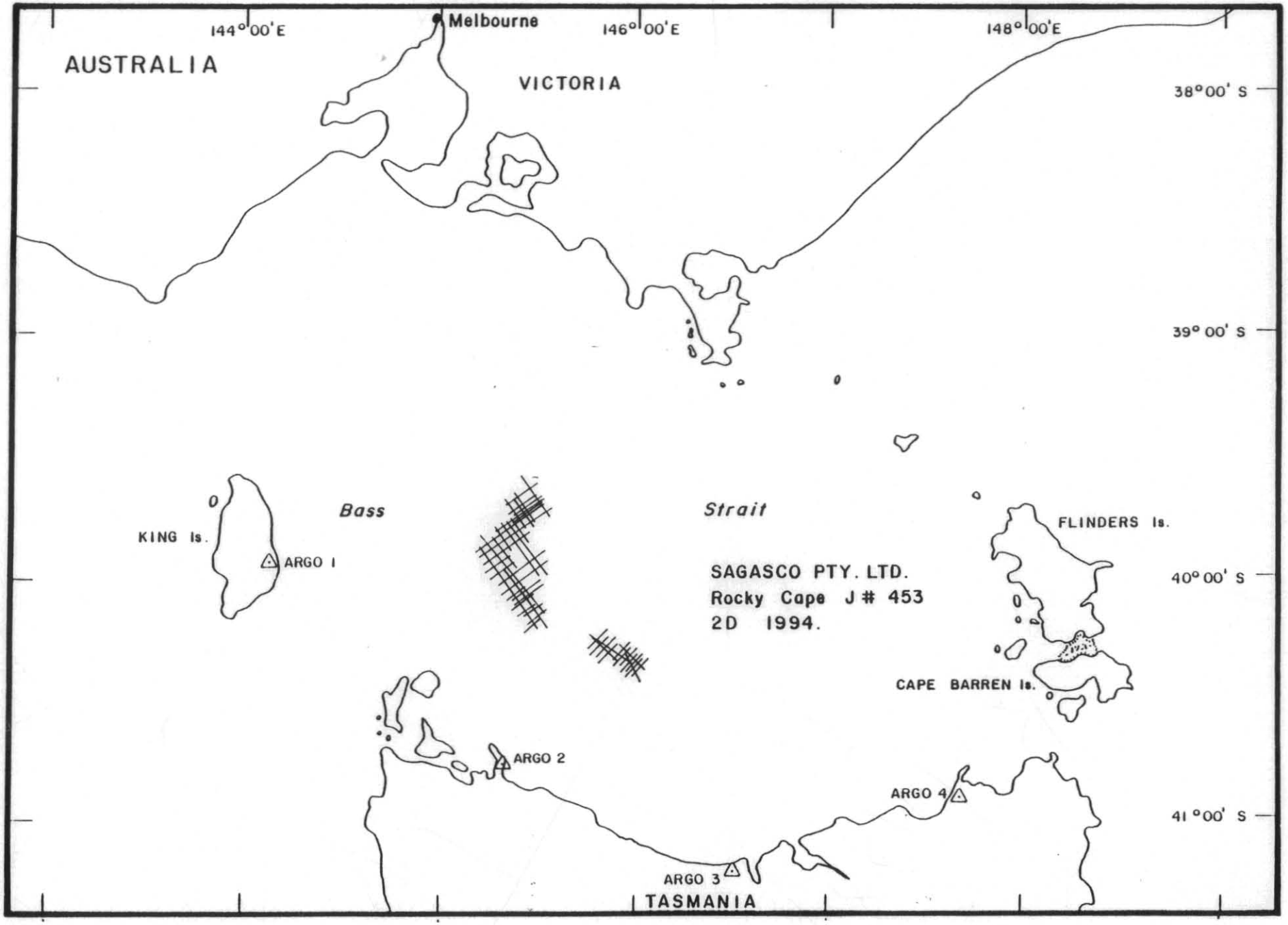
1. INTRODUCTION AND LOCALITY/LINE MAP

This is the final report for the marine geophysical 2D survey conducted in the Bass Strait by WESTERN GEOPHYSICAL COMPANY (WESTERN), utilizing the survey vessel R/V Western Atlas, contracted by SAGASCO RESOURCES LIMITED (SAGASCO).

In this report are details of the survey area, general information, vessel specifications and descriptions of the equipment used in the survey. A statistical summary, Coordinator's daily logs and Observers' line logs are also included in this report.

The navigation positioning system was provided by Racal Survey Australia Limited, using Differential GPS as a stand-alone system.

The Rocky Cape 2D survey commenced on March 17, 1994 and concluded on March 24, 1994. A total of 839.450 kilometres were acquired during eight days of acquisition.


144°00'E
Melbourne
146°00'E
148°00'E
AUSTRALIA
VICTORIA
38°00' S
39°00' S
40°00' S
41°00' S
5 cm
KING Is.
ARGO 1
Bass
Strait
FLINDERS Is.
SAGASCO PTY. LTD.
Rocky Cape J # 453
2D 1994.
CAPE BARREN Is.
ARGO 2
ARGO 4
ARGO 3
TASMANIA

4980698

2. DESCRIPTION OF SURVEY AREA

2. DESCRIPTION OF SURVEY AREA

The 2D survey was in the T/18P and T/25P blocks which comprised approximately 840 kilometres. The survey centre was located 130 kilometres east of King Island and 120 kilometres North of Burnie, Tasmania.

The approximate boundaries of the survey were:

Latitude	40° 20′ S to 39° 35′ S
Longitude	146° 05′ E to 145° 10′ E

2.1 WEATHER

The survey's overall weather conditions were fine, with seas that averaged 1 metre. Visibility was excellent for most of the survey. Barometer readings averaged 1018 millibars, while temperature stabilized around approximately 18°C. Weather downtime was reduced, because the prospect area was protected by mainland Tasmania and King Island.

2.2 TIDES

The tidal chart used was generated from the Burnie tidal corrections that display a dual symmetrical daily peak of approximately 3.0 metres, ranging from 1.0 - 3.0 metres in total. From the commencement of the survey, general tidal flow was from the northeast. This was dependant upon prevailing winds and sea conditions.

2.3 CURRENTS

Ocean currents did not cause a problem during acquisition.

2.4 FEATHERING/INFILL

Cable feathering was minimal throughout the survey.

2.5 BATHYMETRY

Water depths for this survey averaged around 80 metres. The general marine seabed for the entire block was sandy bottom.

3. GENERAL INFORMATION

3.0 GENERAL INFORMATION

3.1 LOCATION OF OFFICES

SAGASCO RESOURCES LIMITED's registered office is located at the following address:

3rd Floor Hospitality House
60 Hindmarsh Square
Adelaide S.A. 5000
Telephone (08) 235 3737
Facsimile (08) 223 1851

WESTERN GEOPHYSICAL COMPANY's Perth office is located at:

2nd Level Sheraton Court
207 Adelaide Terrace
East Perth W.A. 6004
Telephone (09) 268 2682
Facsimile (09) 268 2600

WESTERN's head office is at:

10,001 Richmond Avenue
Houston Texas 77042
U.S.A.

The survey detailed in this report was conducted under the supervision of WESTERN's Perth office, located as above.

A temporary field office was set up for the Party Manager at:

Shoreline Building
Trawlers Wharf
Portland Victoria 3305
Telephone (055) 236 178
Facsimile (055) 233 790

3.2 COMMUNICATIONS

All communications with the vessel were made via Marisat and mobile phone. The facsimile machine and telephone were used for communications between the boat, SAGASCO's office and WESTERN's Perth office.

3.3 KEY FIELD PERSONNEL

SAGASCO RESOURCES LIMITED

Exploration Manager	Doug Roberts
Onboard Representative	F. Renton

WESTERN GEOPHYSICAL COMPANY

Operations Supervisor	Terry Leighton
Party Manager	Tom Meyer
Coordinator	D. Chow/W. Williams
Asst Coordinator	B. Bromwich
Observer	W. Simonton
Observer	J. Miears

WESTERN GEOPHYSICAL COMPANY (cont.)

Observer	M. Donnison
Airgun Mechanic	S. French
Airgun Mechanic	T. Means
Instrument Technician	B. Dale
Navigator	A. Evans
Navigator	H. McMenamin
Compressor Mechanic	G. Hieb
Compressor Mechanic	A. Powell
Navigation Analyst.	E. Karlsen

3.4 DISPOSITION OF DATA

Marine seismic data was sent to SAGASCO's elected processing centre, Digital Exploration Limited, situated in Brisbane, Queensland. The data shipment was offloaded in Port Lincoln on April 1. The data failed to arrive at the processing Centre until April 8, due to transport delays during Easter.

The navigation data tapes were sent by courier to WESTERN's Houston office. The processing was done in WESTERN's Perth office.

3.5 INSTRUMENT TEST

All instrument tests were conducted during the survey.

3.6 MISCELLANEOUS

Local Agent/Supplier Descriptions:

Agents for bunkering:	Shell Fuel, supplied by Rowan's John Dewitt Telephone: 086-822307 A/H : 086-823679 500,000 litres of fuel loaded April 1
Shipping Agent:	Barwil Agency Shoreline Building Trawlers Wharf Telephone: 055-233372 Facsimile: 055-233790
Agent for food supplies:	Haebich Provedoring Daryl Blythman Telephone: 055-233372 Facsimile: 055-233790
Agent for hardware:	Haebich Provedoring Daryl Blythman Telephone: 055-233372 Facsimile: 055-233790
Agent for fresh food supplies:	North West Provedores Geoff Roberts Telephone: 004-312988 Facsimile: 004-314020

Travel Agent:	Portland Travel Pty Ltd Roy Barker Air Freight Telephone: 055-233332 A/H: 055-233428 Mobile: 018-527212 Airport: 055-2652558
Agent for Transportation:	Kwikasair Express 34 Pearl Street Wivenhoe, Tasmania 7320
Support Vessels:	None Required
Helicopter Operator:	Lloyds Helicopter Company Sale Victoria Dave Sullivan Telephone: 051-761288 A/H: 051-480485 Mobile: 018-178246 Facsimile: 051-744403
Ambulance Service:	Air Ambulance Service of Victoria South Eastern Region Operations Manager Allan Kennedy Telephone: 051-200254 Direct Telephone: 051-200252 Facsimile: 051-200270

A formal crew change was conducted before the survey commenced on March 17, 1994. It was conducted in Burnie, Tasmania, due to the time and prospect location.

498105

4. HEALTH, SAFETY AND ENVIRONMENT

498106

4.0 HEALTH, SAFETY AND ENVIRONMENT

Safety meetings were held on a regular basis during the course of the survey. These included both general and committee meetings as well as abandon ship and lifeboat drills. A general safety meeting, which included 32 crew members, was held on March 18. Lifeboat, abandon ship and fire drills were conducted on March 22.

All minutes of general and committee meetings were kept and distributed to WESTERN's supervisory staff, onboard Client Representatives and to SAGASCO's office in Adelaide.

M/V Western Atlas H.S.E. Statistics:

	Exposure Hrs	LTI	RWC
Western Geophysical	8,064	0	0
Sagasco Resources	192	0	0
Contractors	0	0	0
Total	8,256	0	0

The following list gives details of safety training courses that have been completed by members of the crew (WESTERN employees only):

	Total crew members	Percentage of total crew
Sea Survival Course	42	100%
Helicopter Underwater Escape Training	21	50%
First Aid	13	31%
Site Emergency Response	19	45%
Helicopter fire/landing.	3	7%
Crane operator	7	17%
Rigging and Slinging	3	7%
Fast rescue craft	6	14%
Driving Defensive	1	2%
Supervisor safety/reporting	8	19%
Accredited Auditors	2	5%

498108

5. VESSEL SPECIFICATIONS

5. VESSEL SPECIFICATIONS

Owner	Western Sea Services of Panama Inc
Flag	Republic of Panama
Official Number	18058-88
Call Sign	HP4862
Port of Registry	Panama
Classification	A.B.S.
Date Built	1982
Date Refitted	1988
Length	80.77 metres
Beam	17.98 metres
Loadline	4.43 metres
Load Draft	4.3 metres
Light Draft	3.2 metres
Molded Depth	7.1 metres
Hull	Steel
Gross Tonnage	3,390 tons
Net Tonnage	1,017 tons
Cruising Speed	12 knots
Speed (Maximum)	15 knots
Cruising Range	60 days (Average 20 Tons/Day)

Main Engines	2 x Wartsila Nohab Polars F312V (2282 Kz each, Total 6,120 BHP)
Propellors	2 x Controllable pitch propellors
Bow Thruster	2 x 800 HP C.P.P. Electric
Stern Thruster	2 x 800 HP C.P.P. Electric
Main Generators	2 x 1,250 Kw driven by Wartsila Nohab Polars F38
Generators (Instrument)	2 x Westinghouse Life-line T AC Drive Motor, 60 Hz, 3-Phase
Fresh Water Capacity	322,788 litres (85,272 gallons)
Fresh Water Endurance	Unlimited (Water Makers onboard)
Fresh Water Maker	1 x Atlas AFGU 1S-15 Type 1 x Village - Reverse Osmosis Type
Fuel Capacity	1,354,897 litres (357,926 gallons)
Fuel Endurance	60 days (Average 20 tons per day)
Ballast	1,271,000 litres
Cable Oil Capacity	17,454 litres (4,611 gallons)
Heliport	18.3 x 18.3 metres Rated for S76, 212 and Super Puma 19,000 lbs
Accommodation	54 + 3 hospital

Navigation	1 x Furono GP70 GPS Receiver 2 x Kelvin Hughes 3000A Radar 1 x Tokimek 3400M Radar 1 x Anschutz/Kiel STD 12 Gyro 2 x Sperry MK23 Model 4 Gyro 1 x Koden KS540K MF Direction Finder 1 x Spilsbury LWX 100A NDB Direction Finder 1 x Furuno DFAX Weather Fax
Communication	2 x Sailor RT2048 Transceivers 1 x Skanti WR6000 2182 KHz Receiver 1 x ICOM ICM7OOTY HF SSB 1 x Collins COMM VHF Ground/Air 1 x Polaris Regency VHF Transceiver/DF 1 x JRC JSS 710 HF SSB Transceiver 1 x JRC JUE45A MKII Phone/Telex/Fax Inmarsat System 3 x ICOM H16 Handheld VHF
Radar	1 x Tokimek 3400 M 1 x Kelvin Hughes HR 3000A 1 x Kelvin Hughes HR 3000R
Auto Pilot	1 x Anschutz/Kiel
Life Boats	2 x 30 person
Life Rafts	6 x 20 person inflatable rafts 2 x 10 person inflatable rafts
Fire Detection System	Kidde Automated KDR-1000 Fire Alarm System
Fire Fighting Equipment	
AFFF Foam	Streamer Reels and Streamer Spares, Storage Area
Halon	Compressor Room, Instrument/Recording Room, Tape Storage Room, Engine Room, Paint Lockers and Incinerator Room

SEISMIC EQUIPMENT SPECIFICATIONS

A) Recording Instrument

Type of Instrumentation	WG-24 Marine Data Acquisition System
Recording Capacity	Single Cable Mode: 480 Multi Cable Mode: 960
Recording Format	4 Byte SEG-D, Demux, Code 8048
Maximum Record Length	Memory double-buffered Can record 960 channels 2 m/s, 12 sec records
Tape Decks	4 x 3480 Compatible Cartridge Tape Units, ANSI standard tapes
Sample Rate	1, 2 or 4 m/s
Array Forming Capability	Adjacent Trace Sum
Filter Selection (includes cable and shipboard)	
Low cut	-3 dB @ 2.5Hz, 12 dB/Octave -3 dB @ 6 Hz, 18 dB/Octave (digital FIR filters shipboard)
High Cut	1 m/s = -3 dB @ 392 Hz, 214 dB/Octave 2 m/s = -3 dB @ 196 Hz, 214 dB/Octave 4 m/s = -3 dB @ 96 Hz, 190 dB/Octave (digital FIR filters)
Seismic QC	All QC data, full read-after-write QC plots - AGC or fixed gain; harmonic distortion analysis; noise analysis; spectral analysis; frequency/phase response analysis; real-time display cable seis and depth data; colour graphics - cable electronics status and seismic data display

B) Energy Source

Source Type	LRS-7000 Low Pressure Airgun System
String Configuration	8 sub-arrays of 7 guns each
Source Volume	Various, up to 10,800 cu. in.
Source Pressure	2,000 psi
Compressors	3 x Cherco WBF74HXD driven by 3 x Cat 3516DI Compressor Engines (Total 4,800 SCFM)
GMU	64 Gun Unit, capable of displaying near field signatures and gun depth

C) Streamer Cable

Type	WG-24 Western Geophysical
No. of Cables	Up to four
Group Interval	12.5 metres
Maximum Number of Groups	960 (for Quad 3,000 m Cable Configuration)
Maximum Length	6,000 m (Single or Dual Cable Configuration)
Section Length	100 metres
Groups Per Section	8
Group Spacing	12.5 metre centre
Phones per Group	16 (12.5 metre)
Array Type	Tapered array, centre weighted, 15.2 metre overall length, 21% overlap adjacent groups

Section Configuration	8 seismic channels 1 waterbreak channel 1 depth transducer
Data Telemetry	Dual Optical Fiber
Operating Temperature	-20° to 65° C
Maximum Depth (electronics)	2,000 ft
Maximum Depth (phones aux equipment)	200 ft or as specified by manufacturer
Operating Time on Reel:	Unlimited
Instantaneous Dynamic Range	>114 dB
Resolution (including sign)	24 bits
THD @ Maximum Input	<0.0005%
Pre-Amp Gain (selectable from vessel)	0 dB + 12 dB
Maximum Input Signal, Rms	5.793V, 117 mbar @ 0 dB preamp gain 1.448V, 28 mbar @ 12 dB preamp gain
Input Noise, Rms (input shorted)	11.6 μV 0.24μbar @ 0 dB preamp gain 2.9μV 0.06μbar @ 12 dB preamp gain
Group Sensitivity	49.45 V/bar
Channel-to-channel Gain Accuracy	±1%
Low-Cut Filter (due to hydrophone)	-3 dB @ 2.5 Hz, 6 dB/Octave

D) Navigation

WISDOM II™ Integrated Navigation System consists of:

Hewlett Packard HP2117F Mini Computer

Hewlett Packard HP2649 Graphics Terminal

Epson LQ1170 Printer

Sony VM4515 Video Monitor

Telex Shamrock 9270 1600/6250 bpi Tape Deck

WESTERN's Navigation Interface Unit (NIU)

E) Ancillary Equipment (optional)

FLEXQC℠ Real-Time 3-D Binning System

SSTS Phase II Acoustic Positioning System

DIGIRANGE Acoustic Positioning System

TOTALNET Realtime Navigation Processing

UNAVCHK℠ Onboard Navigation/QC Processing

OMEGA™ Onboard Seismic/QC Processing

DART™ (DGPS Automatic Remote Tracking) Tailbuoy Positioning System

F) Ancillary Equipment

OYO Plotter GS-624

WESTERN Micro Computer Header Expander System

Simrad EA200 Fathometer, 0 to 5,000 metre range

Simrad ED162 Fathometer

G) Test Equipment Specifications

Tektronix 2430A Digital Oscilloscope

Tektronix 2445B Oscilloscope

There is also an adequate stock of spare parts and all operating supplies for the above equipment.

6. DESCRIPTION OF EQUIPMENT

6. DESCRIPTION OF EQUIPMENT

6.1 WG24 MARINE DATA ACQUISITION SYSTEM

The WG24 Seismic Recording System is a new generation data acquisition system. It employs advanced technology to provide high resolution/low distortion seismic data recording previously unobtainable with conventional systems. The streamer cable has been designed for tow noise levels at 12.5m group centres that have previously only been obtainable utilizising 25m group centres.

The system provides:-

- New, low noise cable section design, featuring tapered overlapping arrays of 12.5m group centres.
- Individual channel analog/digital converters with digitizer at the hydrophone array location.
- Instantaneous dynamic range >114db using sigma delta modulation A/D techniques, without floating point amplifiers.
- Fibre optic data telemetry.
- Telemetry paths designed for streamers up to 10000m.
- Extensive test facilities for cable fault isolation.
- Up to 1024 seismic channels, demultiplexed in SEGD 8048 format.
- Up to four streamer cable recording.
- Data recorded on IBM3480 compatible cartridge tapes.

<u>System Description</u>

The system can be divided into two main parts.

1. The Streamer Cable.

2. The Shipboard Electronics.

These are shown in block diagrams Fig.1 and Fig.2.

WG-24 STREAMER CABLE

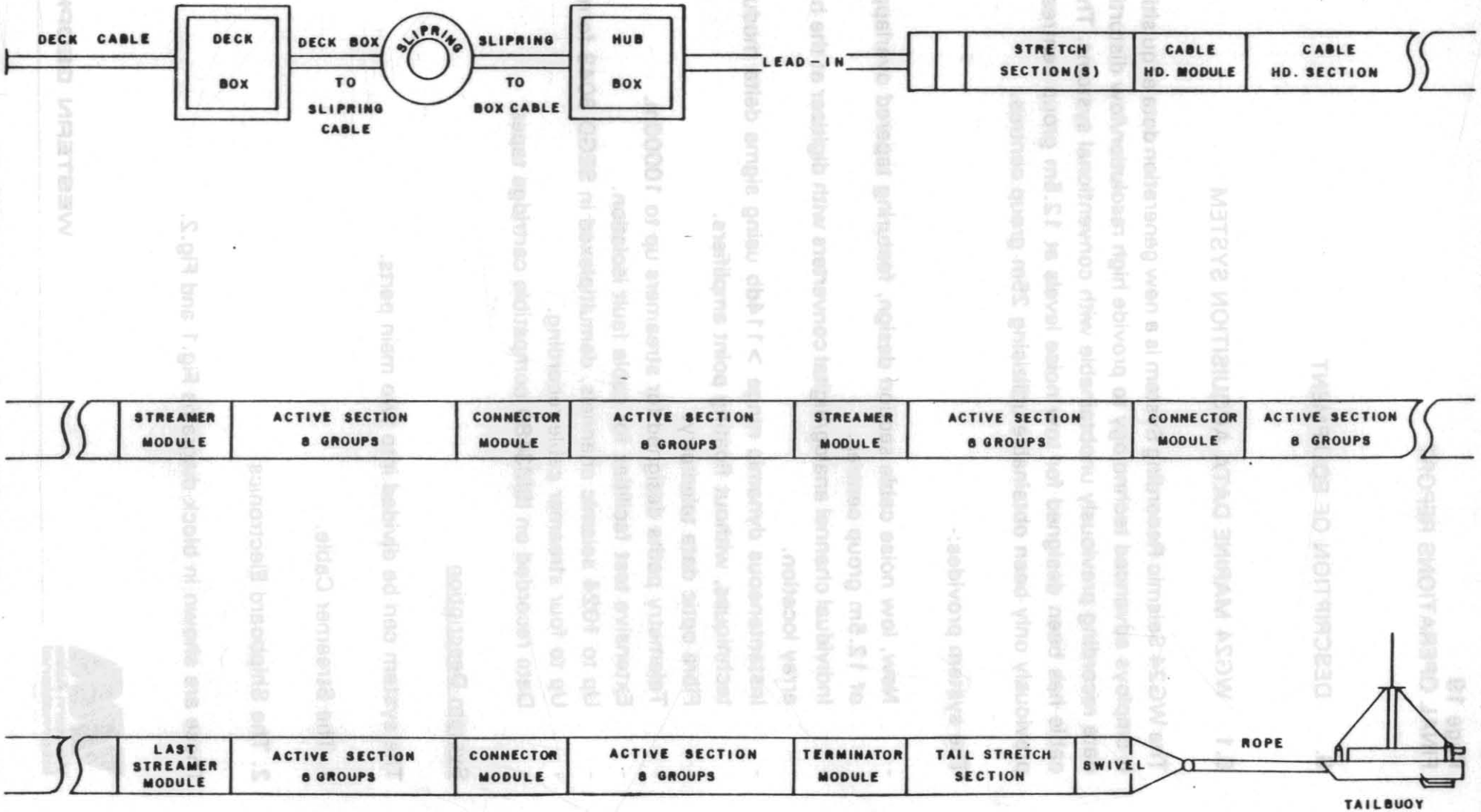
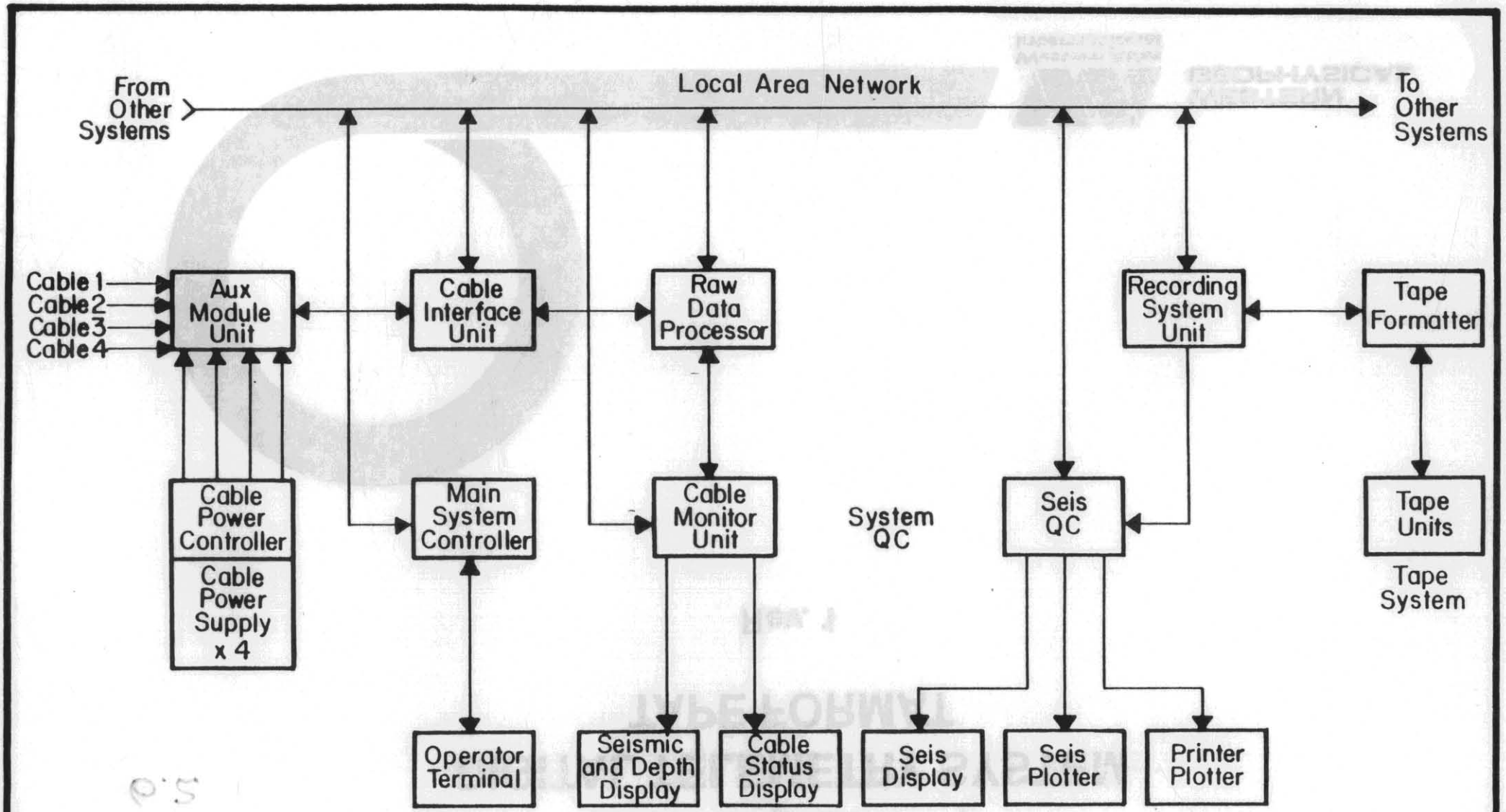


FIGURE 1



WG-24 RECORDING SYSTEM BLOCK DIAGRAM

FIGURE 2

498121

6.2

WG-24
DIGITAL TELEMETRY SYSTEM
TAPE FORMAT

Rev. 1

Western Atlas International

WESTERN GEOPHYSICAL

498122

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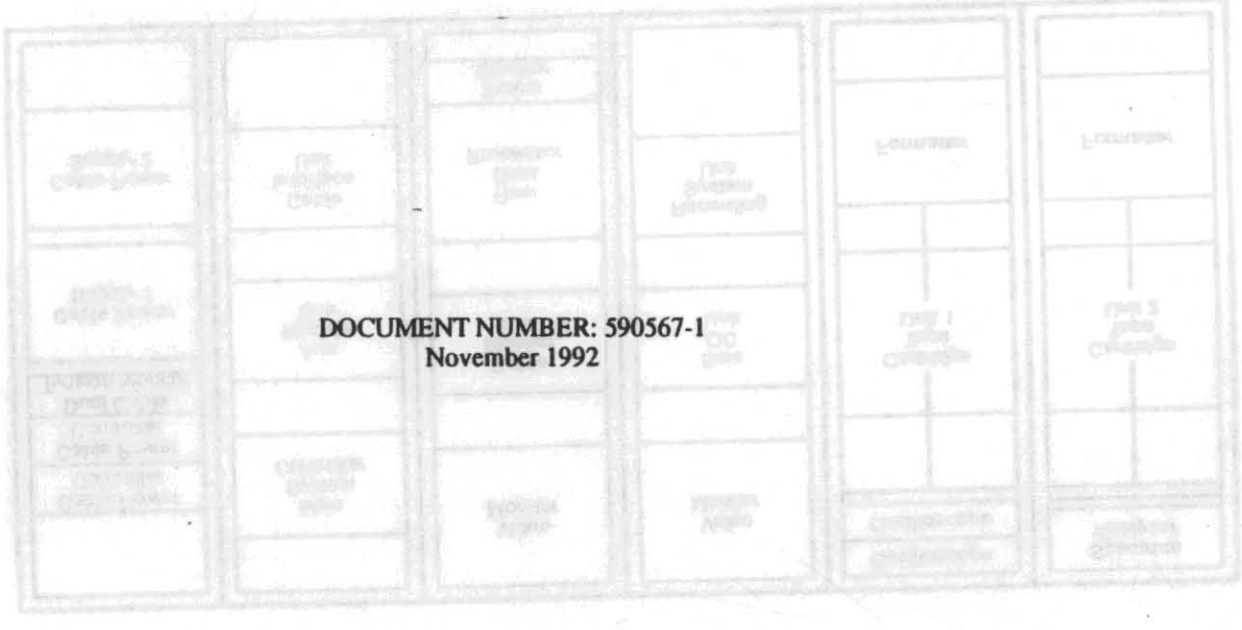
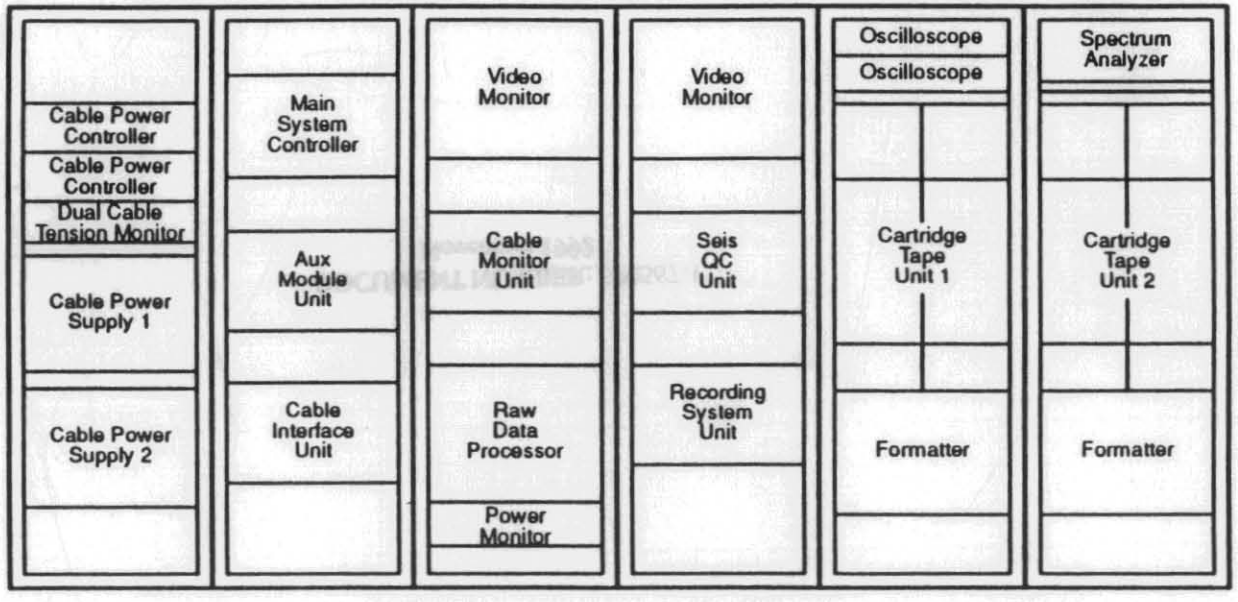


DOCUMENT NUMBER: 590567-1
November 1992

498123

WG-24 Marine Data Acquisition System

The WG-24 System is a marine digital seismic data acquisition system featuring a state-of-the-art high-resolution digital streamer cable and a shipboard recording system with unparalleled quality control features. The system blends the use of 24-bit resolution data acquisition, fiber optic data telemetry, large channel capacity, and extended cable lengths to provide exceptional data quality and recording features. The WG-24 System has been designed with the geophysicist in mind.



FEATURES

Cable

- Instantaneous dynamic range to >114 dB using Enhanced Delta Modulated Encoder (EDME) with no floating point amplifier.
- Fiber optic data telemetry with multiple fiber paths. Increases bandwidth, eliminates transmission errors.
- Data/Command telemetry path designed for cable lengths >10,000 meters.
- Extensive instrument and diagnostic tests for fault isolation of section problems.
- Individual A/D converter per channel with digitizer at phone group.
- New low-noise section design featuring tapered phone groups with standard 12.5-meter spacing.

Shipboard (Basic Configuration*)

- Can record more than 1000 channels in a demultiplexed SEG-D format.
- Can acquire up to four (4) cables simultaneously.
- All data are recorded on 3480 or compatible cartridge tape drives.
- Improved seismic quality control (QC) functions, faster plotting, AGC gained plots, distortion, noise, spectral analysis.
- Improved digital FIR antialias filters and IIR low-cut filters.
- Extensive use of color graphics monitors for cable functions/status, as well as seismic displays on a shot-by-shot basis.

* System expandable in multiples of 4 streamer cables.

498124

SPECIFICATIONS

Streamer Cable

Section length	100 meters
Groups per section	8
Group spacing	12.5 meter center
Phones per group	16 (12.5 meter)
Array type	Tapered array, center weighted, 15.5 meter overall length, 21% overlap adjacent groups
Section configuration	8 seismic channels 1 waterbreak channel 1 depth transducer
Data telemetry	Dual optical fiber

Environmental

Operating temperature	–20 to +50°C
Maximum depth (electronics)	2000 ft
Maximum depth (phones, aux equipment)	200 ft or as specified by manufacturer
Operating time on reel	Unlimited

Streamer Electronics

Instantaneous dynamic range	>114 dB	
Resolution (including sign)	24 bits	
THD @ maximum input	<0.0005%	
Pre-amp gain (selectable from vessel)	0 dB	+12 dB
Max. input signal, rms	5.793 V 117 mbar	1.448 V 29 mbar
Input noise, rms (input shorted)	11.6 µV 0.24 µbar	2.9 µV 0.06 µbar
Group sensitivity	49.45 V/bar	
Channel-to-channel gain accuracy	±1%	
Low-cut filter (due to hydrophone)	–3 dB @ 2.5 Hz, 6 dB/octave	

SPECIFICATIONS (Basic Configuration*)

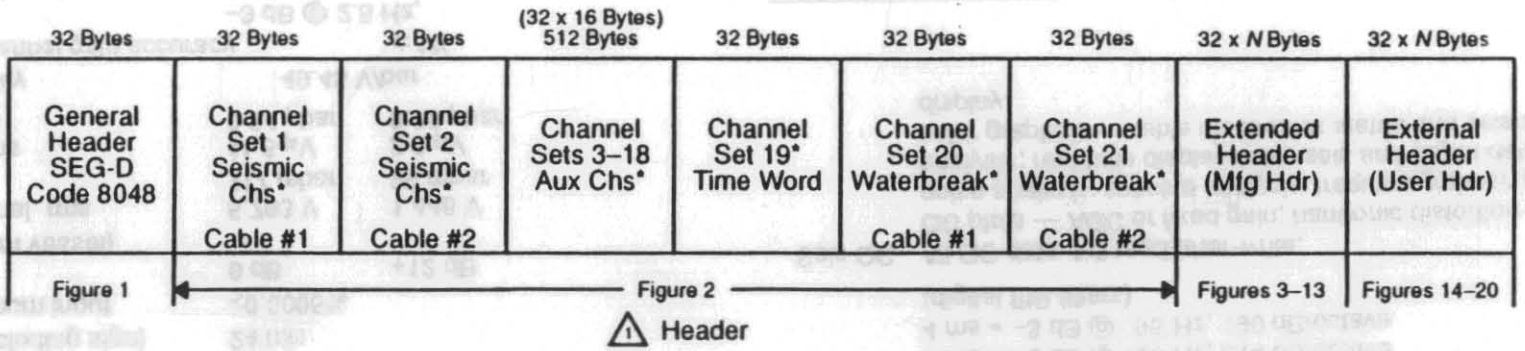
Recording capacity	1024 seis channels 16 waterbreak channels 16 auxiliary channels 1 timing word
Recording format	4-byte SEG-D, demultiplexed data format code 8048
Max. record length	Memory double-buffered. Example: Can record 960 channels 2 ms, 12-s record
Recording system	3480-compatible cartridge tape drives, ANSI standard tapes
Array forming	Adjacent channels combined digitally (2 × 12.5 m) = 25 m.

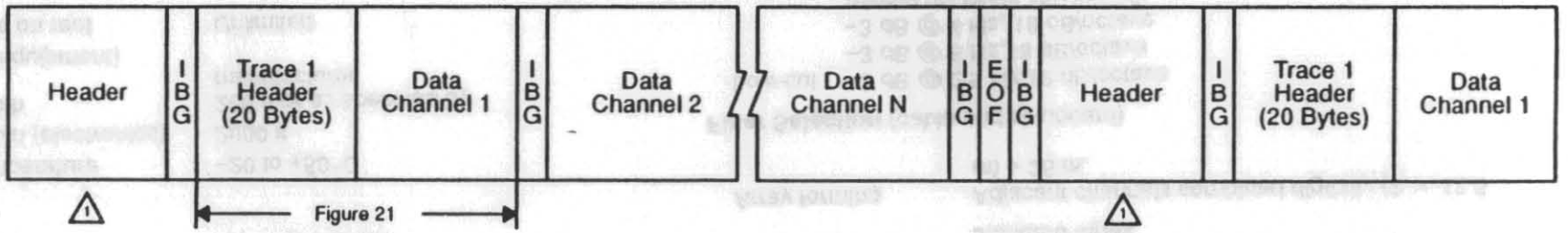
Filter Selection (cable and shipboard)

Low-cut	–3 dB @ 2.5 Hz,12 dB/octave –3 dB @ 6 Hz,18 dB/octave –3 dB @ 4 Hz, 18 dB/octave (digital IIR filters shipboard)
High-cut	1 ms = –3 dB @392 Hz, 214 dB/octave 2 ms = –3 dB @ 196 Hz, 214 dB/octave 4 ms = –3 dB @ 96 Hz, 190 dB/octave (digital FIR filters)
Seis QC	All QC data, full read-after-write; QC plots — AGC or fixed gain; harmonic distortion analysis; noise analysis; spectral analysis; frequency/phase response analysis; real-time display cable seis and depth data; color graphics — cable electronics status and seismic data display.

* System expandable in multiples of 4 streamer cables.

498125





Data are Recorded on 3480 Cartridges at 38000 bpi (18 Tracks)

NOTES

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

* Channel sets for seismic channels and waterbreak may change depending on the number of cables on the system.

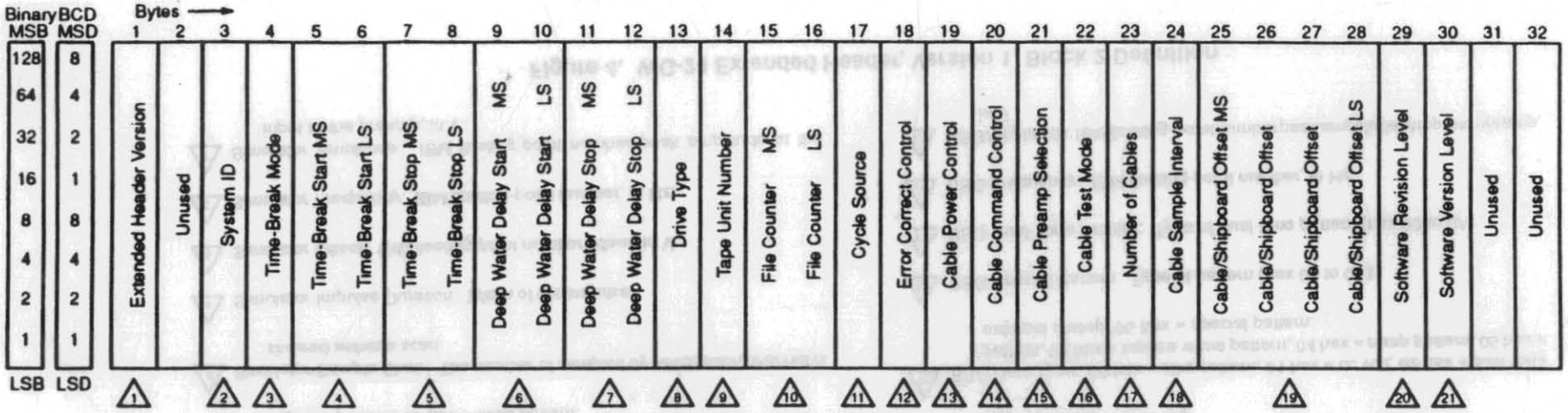
498126

BCD Value MSD	8	4	2	1	8	4	2	1	LSD
Description	**Byte**								**Comments**
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	1	0	0	0	0	0	0	0	
	4	0	1	0	0	1	0	0	0	
General Constants	5	K_1	K_1	K_1	K_1	K_2	K_2	K_2	K_2	
	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}	
Polarity (P) Scans/Block Exponent (SB_x)	24	P	P	P	P	SB_{X3}	SB_{X2}	SB_{X1}	SB_{X0}	
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	
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 1. General Header

BCD Value MSD		8	4	2	1	8	4	2	1	LSD	
Description	Byte										Comments
Scan-Type Number	1	ST_1	ST_1	ST_1	ST_1	ST_2	ST_2	ST_2	ST_2		
Channel Set Number	2	ST_3	ST_3	ST_3	ST_3	ST_4	ST_4	ST_4	ST_4		
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_5	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)	12	SC	SC	SC	SC	J	J	J	J		
Channel Gain (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		
	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		
	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

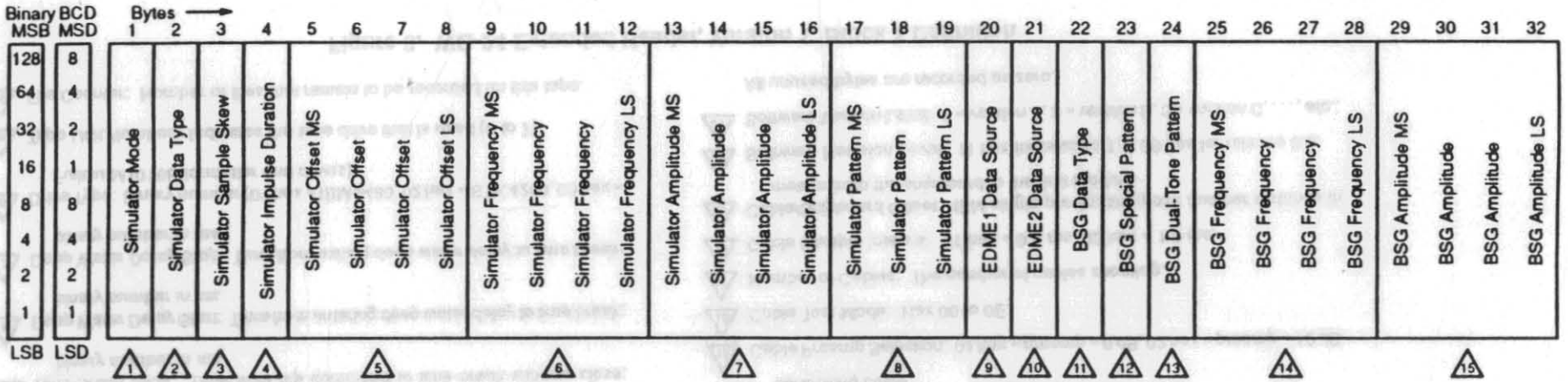


NOTES

1. Extended Header Version: Binary number (01 hex)
2. System ID: Binary number (04 hex).
3. Time-Break Mode: Binary number, where 01 = external, 02 = local, 03 = local (sweep).
4. Time-Break Start: Time from fire command to time-break window open; binary number in ms.
5. Time-Break Stop: Time from fire command to time-break window close; binary number in ms.
6. Deep Water Delay Start: Time from entering deep water delay to time break; binary number in ms.
7. Deep Water Delay Stop: Time from exiting deep water delay to time break; binary number in ms.
8. Drive Type: Binary number (01 hex = IBM 9480, 02 hex = STK 4280, 03 hex = Fujitsu M1016B formatter and drives).
9. Tape Unit Number: Indicates the tape drive that is used (0 to 7).
10. File Counter: Number of files that remain to be recorded on this tape.
11. Cycle Source: 01 hex = internal manual, 02 hex = internal auto, 03 hex = external.
12. Error Correct Control: 00 hex = disabled, 01 hex = enabled.
13. Cable Power Control/Status: 00 hex = cable power off/cable power not ok, 01 hex = cable power off/cable power ok, 10 hex = cable power on/cable power not ok, 11 hex = cable power on/cable power ok.
14. Cable Command Control: 00 hex = CIU controlling cable, 01 hex = RDP controlling cable.
15. Cable Preamp Selection: 01 hex = preamp = 0 dB, 02 hex = preamp = 12 dB.
16. Cable Test Mode: Hex 00 to 0E.
17. Number of Cables: The number of cables shooting.
18. Cable Sample Interval: 01 hex = 0.5 ms, 02 hex = 1.0 ms.
19. Cable/Shipboard Offset: IBM single pre-floating-point number distance in meters from the shipboard to the first module.
20. Software Revision Level: 11 hex for release 1.1, 30 hex for release 3.0.
21. Software Version Level: 1 = version A, 2 = version B, 3 = version C, . . . , etc..

All unused bytes are recorded as zero.

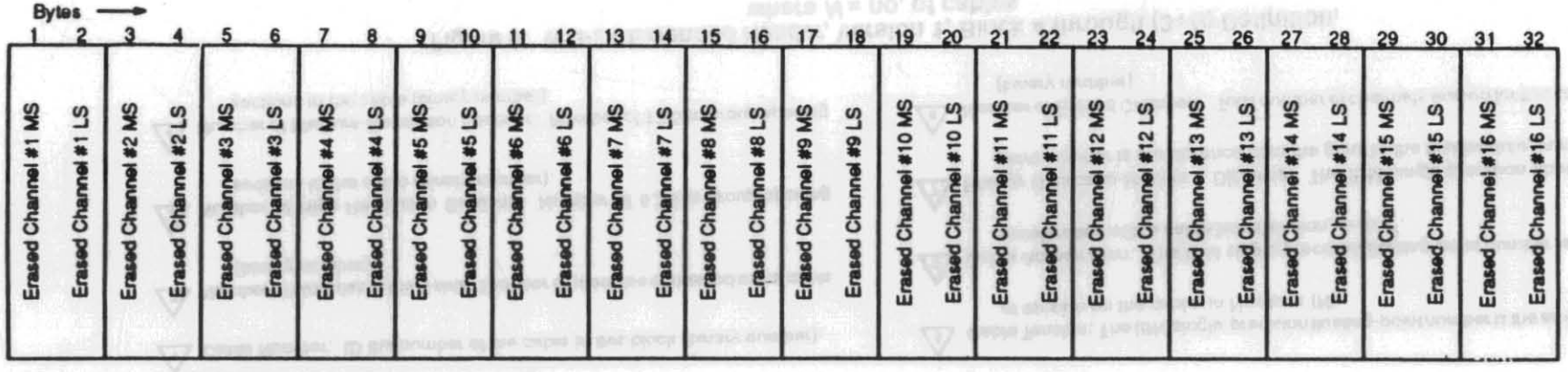
Figure 3. WG-24 Extended Header, Version 1, Block 1 Definition



NOTES

1. Simulator Mode: 00 hex = simulator off (bytes 2–19 are meaningless), 01 hex = simulator on/RAM mode, 02 hex = simulator on/RAM mode forcing errors, 03 hex = simulator on/aux duplicate, 04 hex = simulator on/aux duplicate forcing errors.
2. Simulator Data Type: 00 hex = sine pattern, 01 hex = ramp pattern, 02 hex = impulse pattern, 03 hex = fixed pattern.
3. Simulator Sample Skew: The number of samples by which each channel is skewed within a scan.
4. Simulator Impulse Duration: Width of the impulse.
5. Simulator Offset: IBM floating-point number offset, in V.
6. Simulator Frequency: IBM floating-point number, in Hz.
7. Simulator Amplitude: IBM floating-point number peak amplitude at the input to the preamp, in V.
8. Simulator Pattern: Pattern used on all channels.
9. EDME1 Data Source: 00 hex = off, 01 hex = bit stream generator (BSG), 02 hex = external converter board (first EDME bit).
10. EDME2 Data Source: 00 hex = off, 01 hex = BSG, 02 hex = external converter board (second EDME bit).
11. BSG Data Type: 00 hex = sine pattern, 01 hex = dc volt, 02 hex = dual-tone pattern, 03 hex = square-wave pattern, 04 hex = ramp pattern, 05 hex = external sweep, 06 hex = special pattern.
12. BSG Special Pattern: Type of pattern (hex 00 to 0E).
13. BSG Dual-Tone Pattern: Type of dual-tone pattern (hex 00 to 0A).
14. BSG Frequency: IBM floating-point number, in Hz.
15. BSG Amplitude: IBM floating-point number peak amplitude at input to preamp, in V.

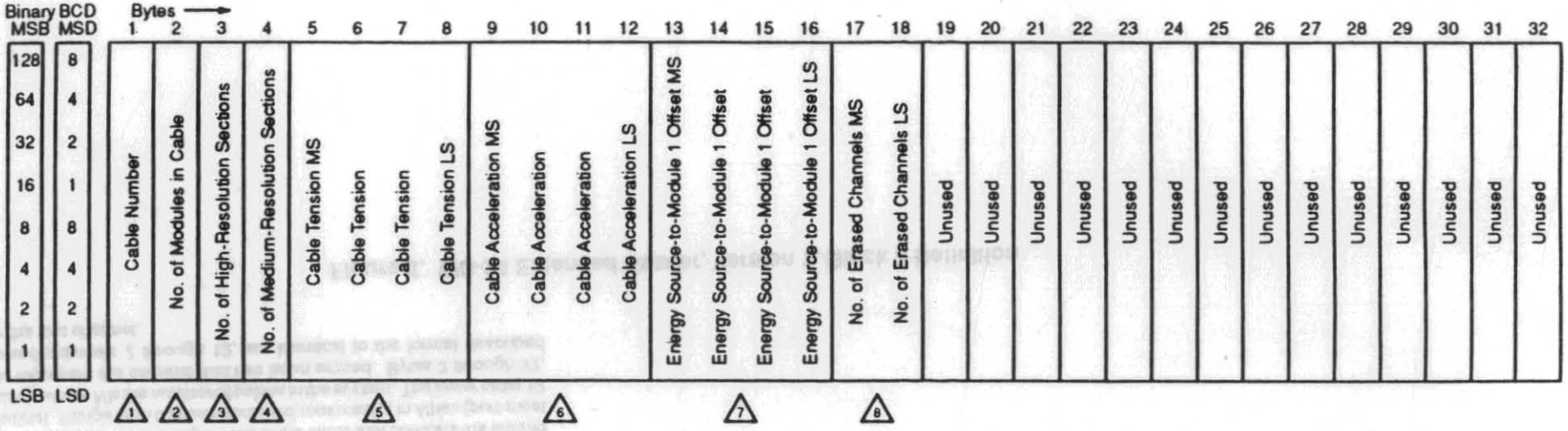
Figure 4. WG-24 Extended Header, Version 1, Block 2 Definition



NOTE

Erased Channel No. 1: The high 4 bits is the cable that contains the erased channel. Range from 01 hex (starboard-most cable) to *N*hex (port-most cable), where *N* is the number of cables in the system. The lower order 12 bits represent the channel that has been erased. Bytes 3 through 32, erased channels 2 through 12, are identical to the format described for the first channel.

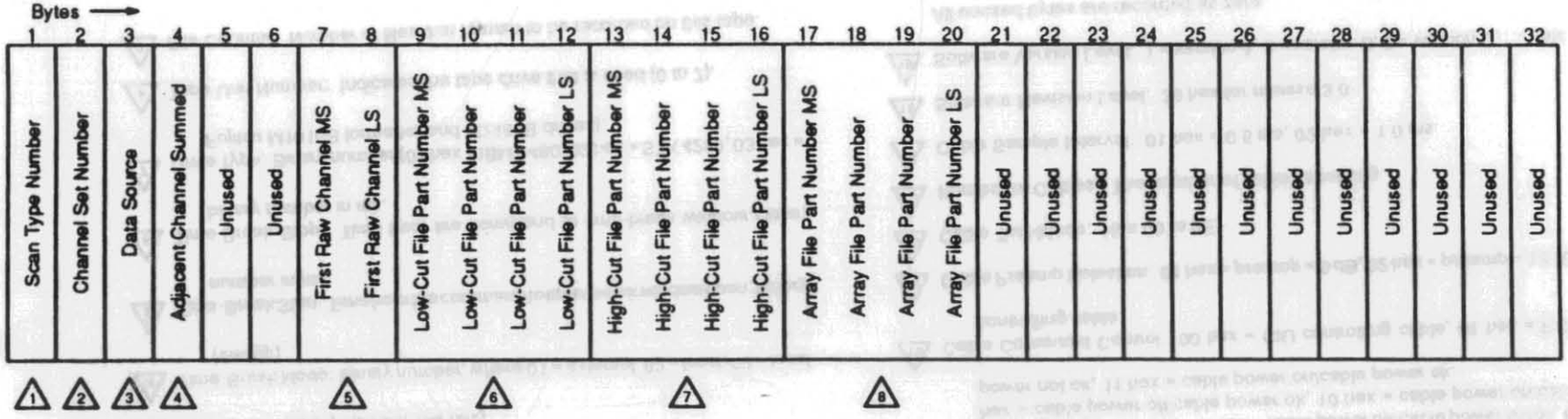
Figure 5. WG-24 Extended Header, Version 1, Block 3 Definition



NOTES

1. Cable Number: ID the number of the cable in this block (binary number).
2. Number of Modules in the Cable: Number of modules contained in the cable (binary number).
3. Number of High-Resolution Sections: Number of 6.25-m group spacing sections in the cable (binary number).
4. Number of Medium-Resolution Sections: Number of 12.5-m group spacing sections in the cable (binary number).
5. Cable Tension: The IBM single-precision floating-point number is the amount of tension on the cable, in Newtons (N).
6. Cable Acceleration: The IBM single-precision floating-point number is the acceleration at the cable head section, in m/s^2.
7. Energy Source-to-Module 1 Distance: The IBM single-precision floating-point number is the distance from the guns to the first module, in m.
8. Number of Erased Channels: Total number of channels erased for this cable (binary number).

Figure 6. WG-24 Extended Header, Version 1, Block 4 through (3+*N*) Definition, where *N* = no. of cables



NOTES

1. Scan Type Number: The BCD number ID of the scan type to which this channel set belongs, always recorded as a 1.

2. Channel Set Number: This byte and byte 1 tags this block with the same ID used in the channel set descriptor to uniquely identify both 32-byte blocks that describe the channel set.

3. Data Source: 00 hex = aux channel source AMU,
   01 hex = seismic channel cable 1 (starboard-most cable),
   02 hex = seismic channel cable 2,
   03 hex = seismic channel cable 3,
   04 hex = seismic channel cable 4 (port-most cable),
   05 to FD = unused,
   FE = timing word,
   FF = gun channel, Source Synchronizer System (SSS).

4. Adjacent Channel Summed Flag: 0 = no adjacent channel summing has been performed for this channel set, 1 = channel summing.

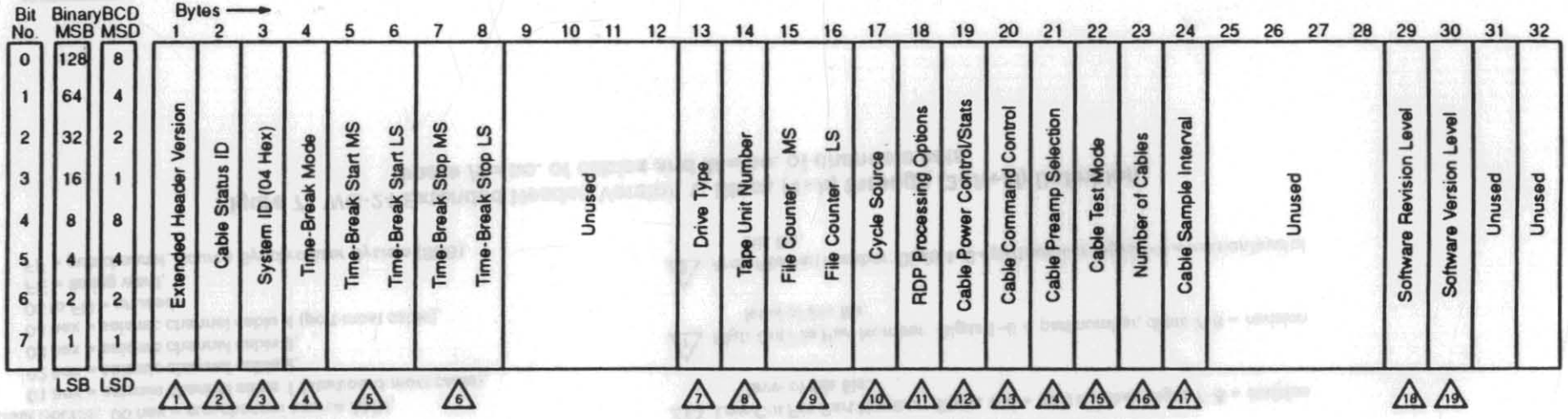
5. First Raw Channel: First channel that is used to form this channel set. Each cable is channel 1 and increments by 1.

6. Low-Cut File Part Number: Digits 1–6 = part number, digits 7–8 = revision level of this file.

7. High-Cut File Part Number: Digits 1–6 = part number, digits 7–8 = revision level of this file.

8. Array File Part Number: Digits 1–6 = part number, digits 7–8 = revision level of this file.

Figure 7. WG-24 Extended Header, Version 1, Block (4+*M*) through (3+*N*+*M*) Definition, where *N* = no. of cables and *M* = no. of channels sets

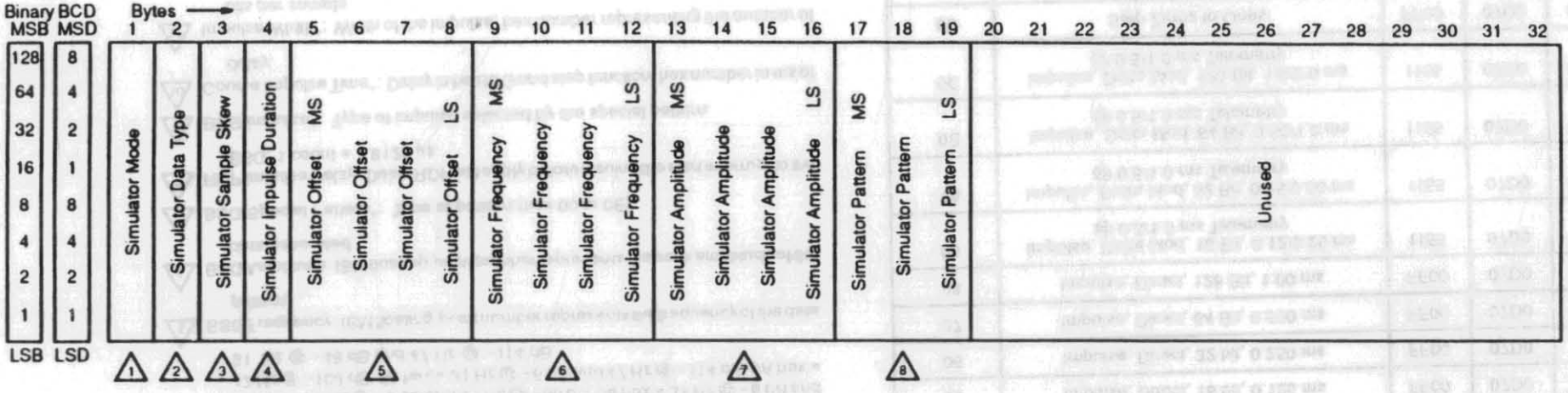


NOTES

1. Extended Header Version: Binary number (02 hex)
2. Cable Status ID: 02 hex = internal temperature in deg C, 04 hex = peak optic power received in μW, 05 hex = +5 V, 06 hex = +12 V, 07 hex = −12 V, 08 hex = +6 V, 09 hex = +15 V, 0A hex = −15 V, 0B hex = VCO control V, 0C hex = SPS +6 V, 0D hex = SPS +15 V, 0E hex = peak optic power from previous module μW, 0F hex = seaside module internal +5 V.
3. System ID: Binary number (04 hex).
4. Time-Break Mode: Binary number, where 01 = external, 02 = local, 03 = local (sweep).
5. Time-Break Start: Time from fire command to time-break window open; binary number in ms.
6. Time-Break Stop: Time from fire command to time-break window close; binary number in ms.
7. Drive Type: Binary number (01 hex = IBM 9480, 02 hex = STK 4280, 03 hex = Fujitsu M1016B formatter and M2481B drives).
8. Tape Unit Number: Indicates the tape drive that is used (0 to 7).
9. File Counter: Number of files that remain to be recorded on this tape.
10. Cycle Source: 01 hex = internal manual, 02 hex = internal auto, 03 hex= external.
11. RDP Processing Options, decoded as follows: bit 0 = spike detect, bit 1 = error correct, bit 2 = high-cut filter, bit 3 = low-cut filter, bit 4 = de-glitch, bit 5 = offset removal, bit 6 = MP correction, bit 7 = unused.
12. Cable Power Control/Status: 00 hex = cable power off/cable power not ok, 01 hex = cable power off/cable power ok, 10 hex = cable power on/cable power not ok, 11 hex = cable power on/cable power ok.
13. Cable Command Control: 00 hex = CIU controlling cable, 01 hex = RDP controlling cable.
14. Cable Preamp Selection: 01 hex = preamp = 0 dB, 02 hex = preamp = 12 dB.
15. Cable Test Mode: Hex 00 to 0E.
16. Number of Cables: The number of cables shooting.
17. Cable Sample Interval: 01 hex = 0.5 ms, 02 hex = 1.0 ms.
18. Software Revision Level: 30 hex for release 3.0.
19. Software Version Level: 1 = version A, 2 = version B, 3 = version C, . . . , etc.

All unused bytes are recorded as zero.

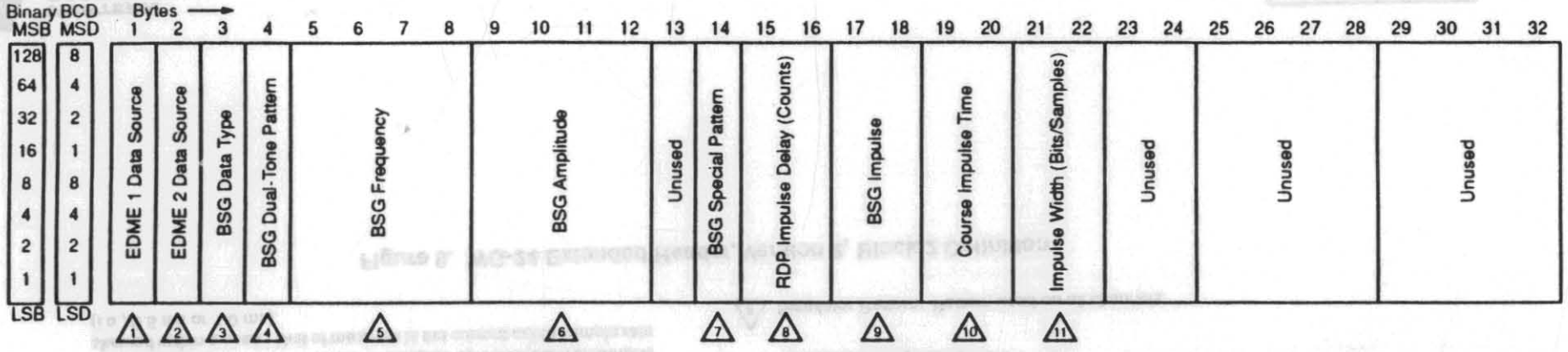
Figure 8. WG-24 Extended Header, Version 2, Block 1 Definition



NOTES

1. Simulator Mode: 00 hex = simulator off (bytes 2–19 are meaningless),
   01 hex = simulator on/RAM mode,
   02 hex = simulator on/RAM mode forcing errors,
   03 hex = simulator on/aux duplicate,
   04 hex = simulator on/aux duplicate forcing errors.
2. Simulator Data Type: 00 hex = sine pattern, 01 hex = ramp pattern,
   02 hex = impulse pattern, 03 hex = fixed pattern.
3. Simulator Sample Skew: The number of samples by which each channel is skewed within a scan. Unit of measure is the current cable sample rate (i.e., 0.5 ms or 1.0 ms).
4. Simulator Impulse Duration: Width of the impulse, 500 µs increments.
5. Simulator Offset: IBM floating-point number offset, in V.
6. Simulator Frequency: IBM floating-point number, in Hz.
7. Simulator Amplitude: IBM floating-point number peak amplitude at the input to the preamp, in V.
8. Simulator Pattern: Pattern used on all channels.

Figure 9. WG-24 Extended Header, Version 2, Block 2 Definition



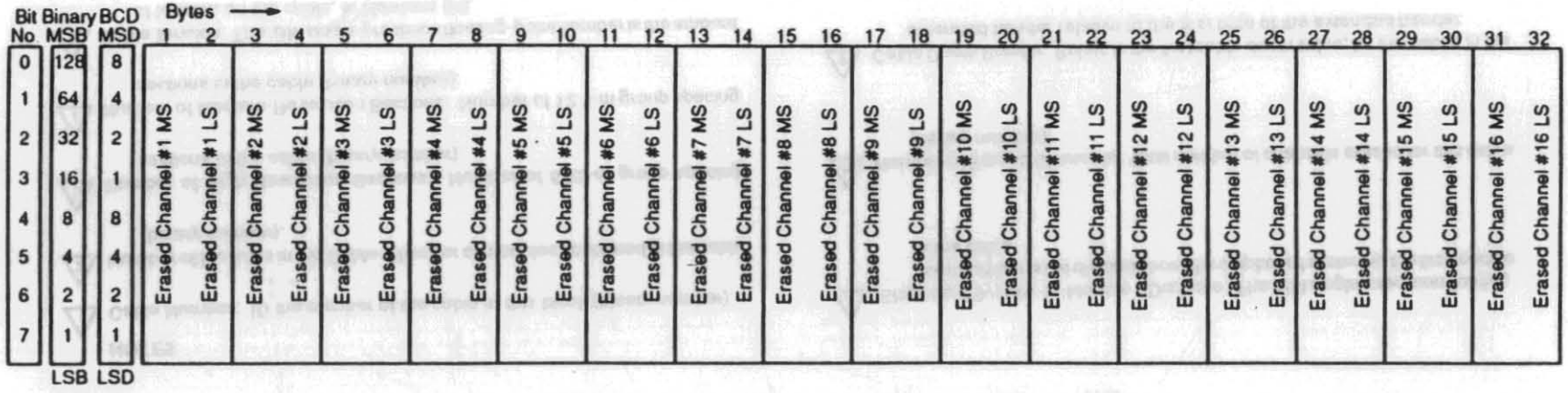
NOTES

1. EDME 1 Data Source: 00 hex = off, 01 hex = BSG, 02 hex = external converter board.
2. EDME 2 Data Source: 00 hex = off, 01 hex = BSG, 02 hex = external converter board.
3. BSG Data Type: 00 hex = sine pattern, 01 hex = dc Volt, 02 hex = dual tone, 03 hex = square sine, 04 hex = ramp, 05 hex = external sweep, 06 hex = special pattern.
4. BSG Dual-Tone Pattern: Type of dual-tone pattern; 00 hex = 156 Hz @ –6 dB and 172 Hz @ –6 dB, 01 hex = 156.3 Hz @ –6 dB, 02 hex = 172 Hz @ –6 dB, 03 hex = 164 Hz @ –6 dB and 180 Hz @ –6 dB, 04 hex = 164 Hz @ –6 dB, 05 hex = 163.9 Hz @ –6 dB, 06 hex = 31 Hz @ –6 dB and 47 Hz @ –6 dB, 07 hex = 31 Hz @ –6 dB and 44 Hz @ –66 dB, 08 hex = 31 Hz @ –6 dB and 47 Hz @ –108 dB, 09 hex = 31 Hz @ –6 dB and 47 Hz @ –114 dB, 0A hex = 31 Hz @ –48 dB and 47 Hz @ –114 dB.
5. BSG Frequency: IBM floating-point number represents the frequency of the data pattern.
6. BSG Amplitude: IBM floating-point number represents the peak amplitude of the data generated.
7. BSG Special Pattern*: Type of pattern (hex 00 to 0E).
8. RDP Impulse Delay: Delay RDP will apply before issuing the start interrupt to the BSG, 1 count = 7.8125 µs.
9. BSG Impulse*: Type of impulse selected by the special pattern.
10. Course Impulse Time*: Delay in he BSG and step function, hex number in ms of delay.
11. Impulse Width*: Width of the impulse, hex number representing the number of bits per sample.

7 * Type of Pattern

Hex Value	Description	Impulse Field Defaults		
		BSG (9)	Course (10)	Width (11)
00	Constant Bit Pattern, all zeros	0000	0000	0000
01	Constant Bit Pattern, 25% ones	0011	0000	0000
02	Constant Bit Pattern, 50% ones	0055	0000	000
03	Constant Bit Pattern, 75% ones	0077	0000	0000
04	Constant Bit Pattern, all ones	00FF	0000	0000
05	Impulse, Direct, 16 bit, 0.125 ms	FF00	07D0	0010
06	Impulse, Direct, 32 bit, 0.250 ms	FF00	07D0	0020
07	Impulse, Direct, 64 Bit, 0.500 ms	FF00	07D0	0040
08	Impulse, Direct, 128 Bit, 1.00 ms	FF00	07D0	0080
09	Impulse, Delta Mod, 16 Bit, 0.12/0.25 ms @ 0.5/1.0 ms Telemetry	1155	07D0	0010
0A	Impulse, Delta Mod, 32 Bit, 0.25/0.50 ms @ 0.5/1.0 ms Telemetry	1155	07D0	0020
0B	Impulse, Delta Mod, 64 Bit, 0.50/1.0 ms @ 0.5/1.0 ms Telemetry	1155	07D0	0040
0C	Impulse, Delta Mod, 128 Bit, 1.0/2.0 ms @ 0.5/1.0 ms Telemetry	1155	07D0	0080
0D	Step Zeros to Ones	FF00	07D0	0000
0E	Step Ones to Zeros	00FF	07D0	0000

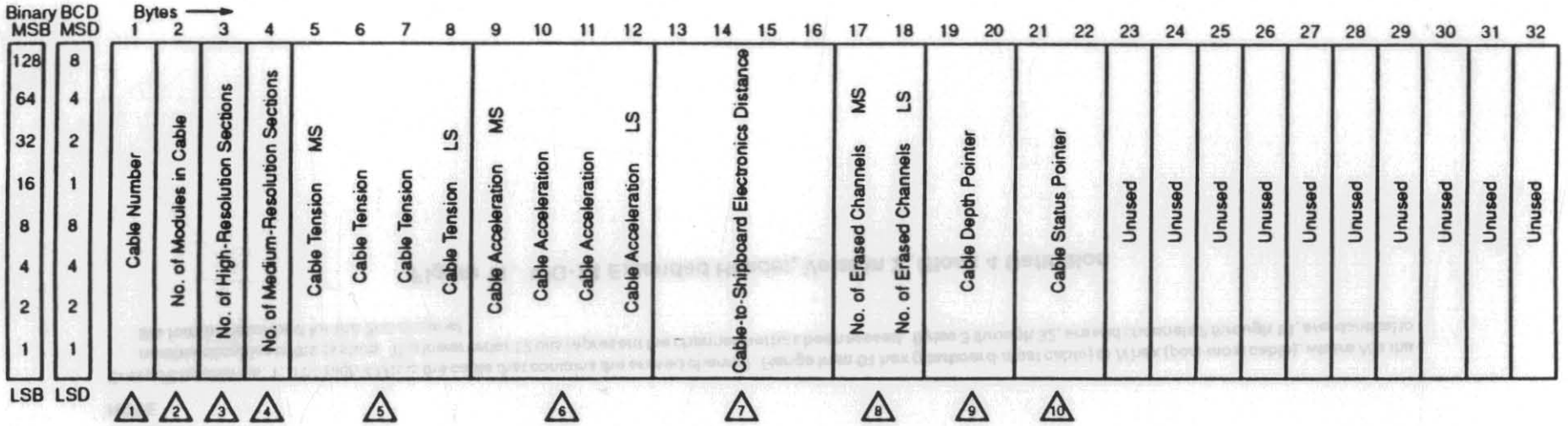
Figure 10. WG-24 Extended Header, Version 2, Block 3 Definition



NOTE

Erased Channel No. 1: The high 4 bits is the cable that contains the erased channel. Range from 01 hex (starboard-most cable) to *N* hex (port-most cable), where *N* is the number of cables in the system. The lower order 12 bits represent the channel that has been erased. Bytes 3 through 32, erased channels 2 through 16, are identical to the format described for the first channel.

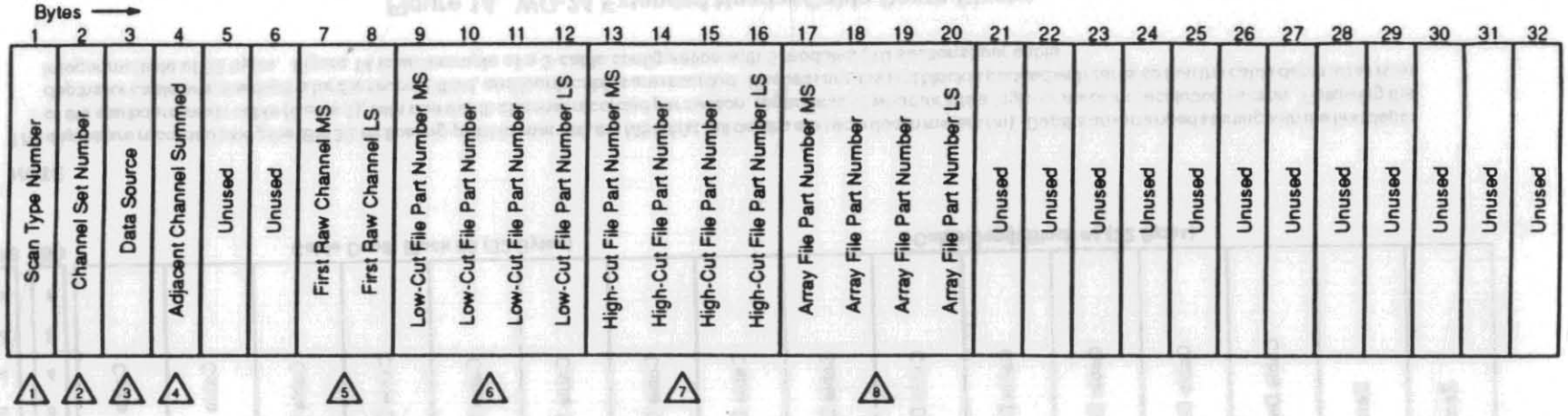
Figure 11. WG-24 Extended Header, Version 2, Block 4 Definition



NOTES

1. Cable Number: ID the number of the cable in this block (binary number).
2. Number of Modules in the Cable: Number of modules contained in the cable (binary number).
3. Number of High-Resolution Sections: Number of 6.25-m group spacing sections in the cable (binary number).
4. Number of Medium-Resolution Sections: Number of 12.5-m group spacing sections in the cable (binary number).
5. Cable Tension: The IBM single-precision floating-point number is the amount of tension on the cable, in Newtons (N).
6. Cable Acceleration: The IBM single-precision floating-point number is the acceleration at the cable head section, in m/s^2.
7. Shipboard System-to-Module 1 Distance: The IBM single-precision floating-point number is the distance from the shipboard system to the first module in the cable.
8. Number of Erased Channels: Total number of channels erased for this cable (binary number).
9. Cable Depth Pointer: Points to the first cable depth value, for this cable, in the extended header relative to the first byte of the extended header.
10. Cable Status Pointer: Points to the first status value, for this cable, in the extended header relative to the first byte of the extended header.

Figure 12. WG-24 Extended Header, Version 2, Block 5 through (4+*N*) Definition, where *N* = no. of cables



NOTES

1. Scan Type Number: The BCD number ID of the scan type to which this channel set belongs, always recorded as a 1.

2. Channel Set Number: This byte and byte 1 tags this block with the same ID used in the channel set descriptor to uniquely identify both 32-byte blocks that describe the channel set.

3. Data Source: 00 hex = aux channel source AMU,
   01 hex = seismic channel cable 1 (starboard-most cable),
   02 hex = seismic channel cable 2,
   03 hex = seismic channel cable 3,
   04 hex = seismic channel cable 4 (port-most cable),
   06 to FD = unused,
   FE = timing word,
   FF = gun channel, Source Synchronizer System (SSS).

4. Adjacent Channel Summed Flag: 0 = no adjacent channel summing has been performed for this channel set, 1 = channel summing.

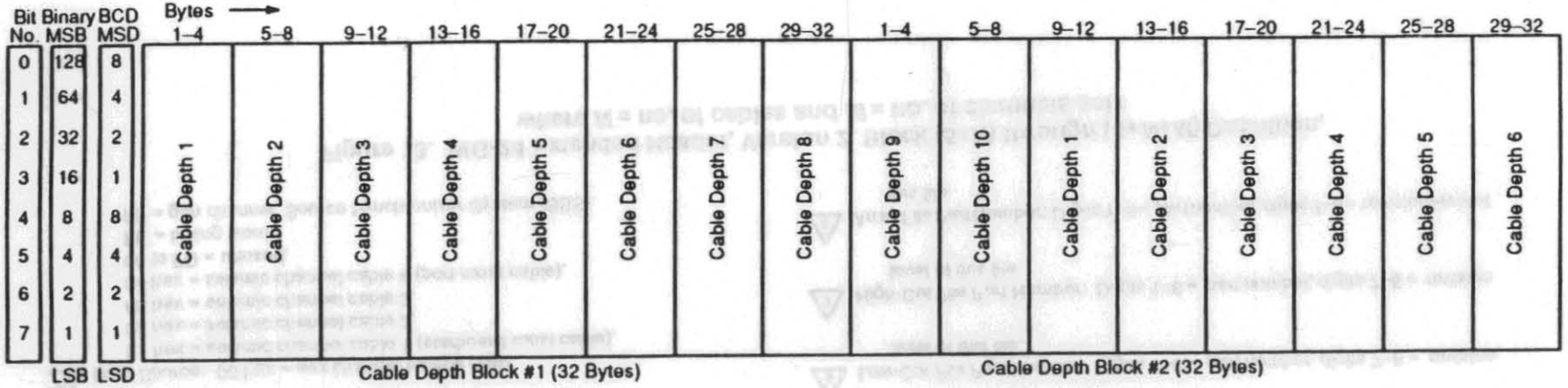
5. First Raw Channel: First channel that is used to form this channel set. Each cable is channel 1 and increments by 1.

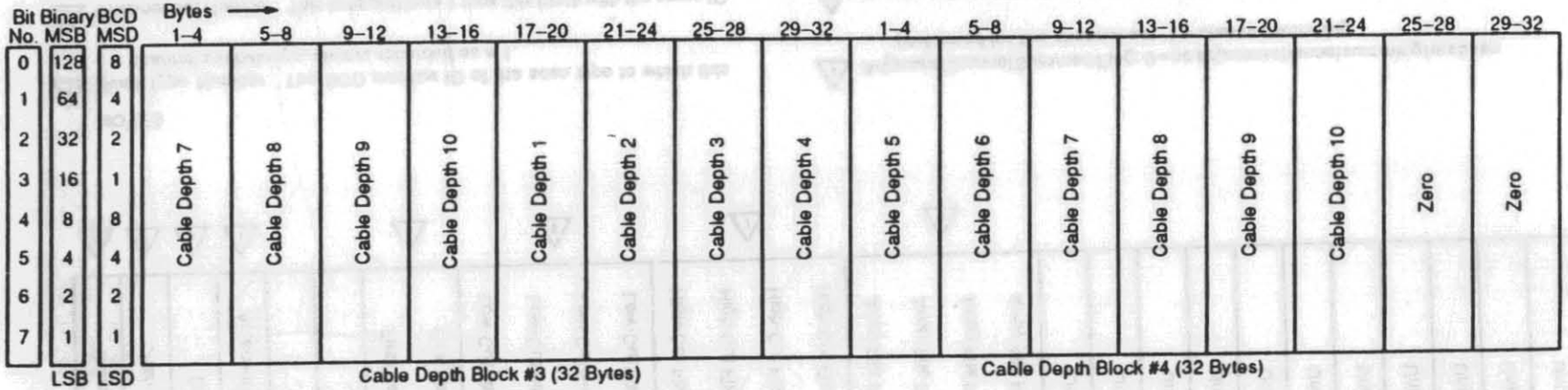
6. Low-Cut File Part Number: Digits 1–6 = part number, digits 7–8 = revision level of this file.

7. High-Cut File Part Number: Digits 1–6 = part number, digits 7–8 = revision level of this file.

8. Array File Part Number: Digits 1–6 = part number, digits 7–8 = revision level of this file.

Figure 13. WG-24 Extended Header, Version 2, Block (5+*N*) through (4+*N*+*M*) Definition, where *N* = no. of cables and *M* = no. of channels sets

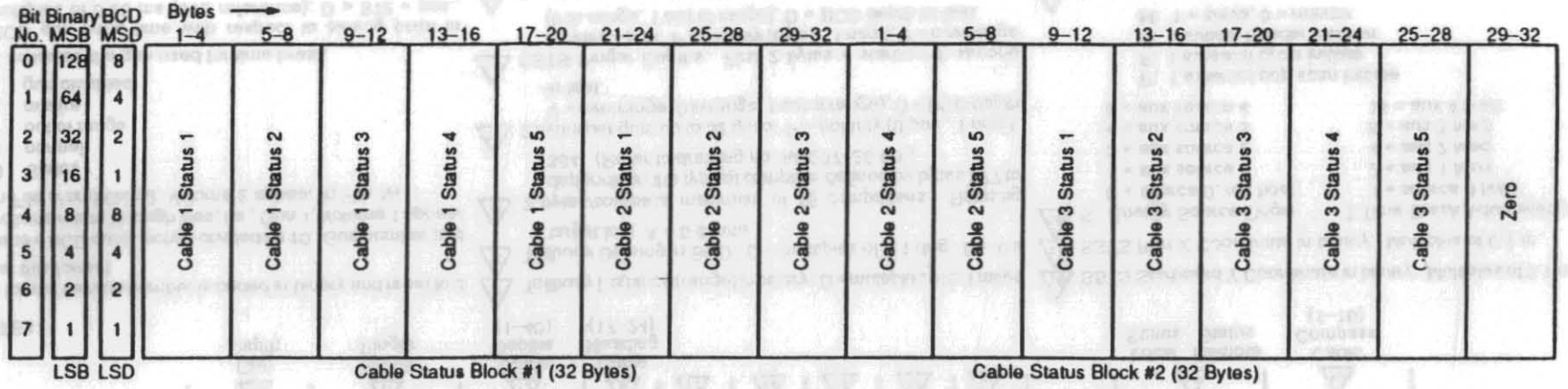




NOTE

The depths are recorded using the IBM 32-bit floating-point format with the MSB first. All depths are recorded in meters (m). Depths are arranged starting with the first depth of the starboard-most cable (Cable 1), with one depth channel recorded per section, regardless of whether it is a high- or medium-resolution section. Following the depths for cable one, the depths for the second, third, and fourth cables are recorded. If necessary, the last block is padded with zeros so that the cable depth array is an integer multiple of 32 bytes. Figure 14 is an example of a 3-cable configuration with 5 modules (10 sections) per cable.

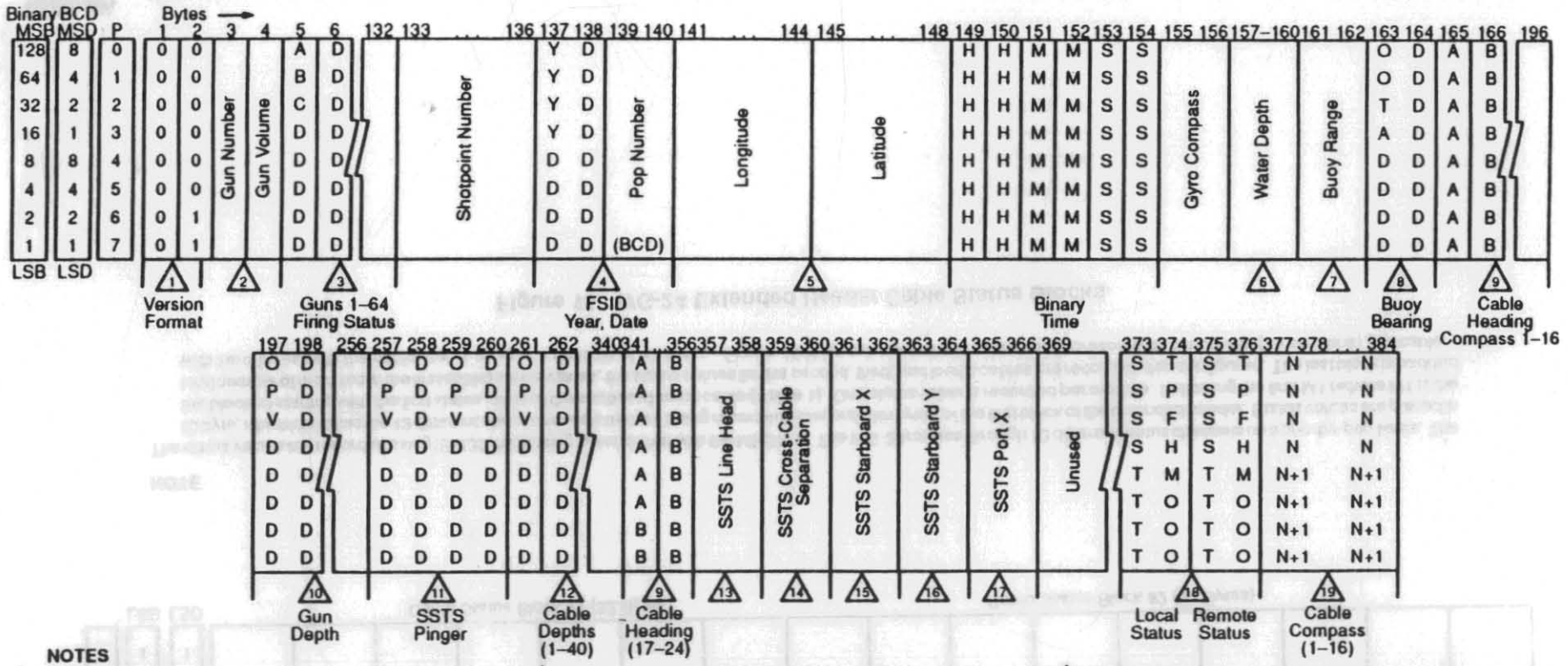
Figure 14. WG-24 Extended Header Cable Depth Blocks



NOTE

The status values are recorded using IBM 32-bit floating-point format with the MSB first. The WG-24 rotates through 13 different status channels on a pop-by-pop basis. The ID byte, which identifies the 13 different status channels that are being recorded, is recorded in byte 2 of the first block of the extended header. Status values are placed in the block(s) starting with the first status value of the starboard-most cable (Cable 1). One status value is recorded per module. Following the first M1 (where M1 is the total number of modules in the first cable) status values, the status values for the second, third, and fourth cables are recorded, if so configured. The last block is padded with zero bytes until the cable status array is a multiple of 32 bytes. Figure 15 is an example of a 3-cable configuration with 5 modules (10 sections) per cable.

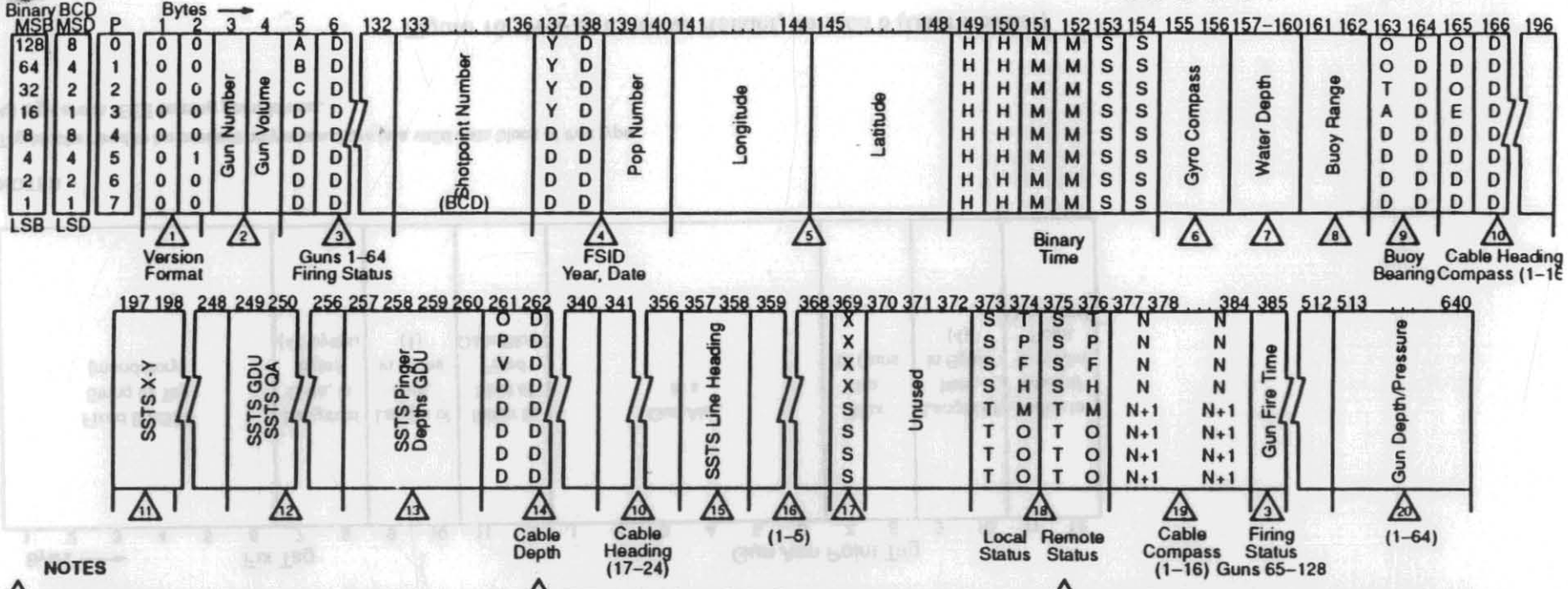
Figure 15. WG-24 Extended Header Cable Status Blocks



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 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 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 binary: D = multiples of 0.1 miles
8. Tailbuoy Bearing in BCD: D = multiples of 0.1 deg, 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 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 deg.
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
    0 = source 0, rec 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
    1 = Digicourse 290, 0.35 deg
    2 = Digicourse 290, 1.0 deg
    3 = Digicourse 292, 0.35 deg
    4 = Digicourse 292, 1.0 deg
    5 = Syntron CUS 8101, 0.1 deg
    N+1: Secondary compass code (if used).

Figure 16. WG-24 External Header, Version 3 (User 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* 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 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 year 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 deg; to obtain degrees in range 0 to 359.995 deg, use (no. x 360.0)/65536.0.
7. Water Depth in binary: Least-significant bit represents 0.1 m.
8. Tailbuoy Distance (range) in binary: D = multiples of 0.1 miles
9. Tailbuoy Bearing in BCD: D = multiples of 0.1 deg, T = 0 if target lost, A = 0 if auto.
10. 2 bytes/compass maximum of 16 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 deg.
11. 1 to 13 pairs of X-Y coordinates from the SSTS. 4-byte binary of 0.1 m 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 deg to 100%.
13. SSTS Pinger Depths in BCD: Least-significant digit represents 0.1 ft. 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 in binary: Multiples of 0.1 deg.
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 = cross-cable separations recorded (0 to 15 separations).
18. S: Energy Source Origin
    0 = source 0, rec 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
    1 = Digicourse 290, 0.35 deg
    2 = Digicourse 290, 1.0 deg
    3 = Digicourse 292, 0.35 deg
    4 = Digicourse 292, 1.0 deg
    5 = Syntron CUS 8101, 0.1 deg
    N+1: Secondary compass code (if used).
20. Gun Depth/Pressure (1–64): 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 is unused. Pressure readings are in psi; depth readings are in 0.1 ft.

Figure 17. WG-24 External Header, Version 4 (User Header)

498143

Identification Block

Bytes → 1 2	3 4	5 6	7 8	9 10	11 12	13 14	15 16 17 18	19 20 21 22 23 24 25 26 27 28	29 30 31 32
Version 6	Header Length, in Bytes	No. of Cables in System	No. of Gun Strings	Max. No. of Guns per String	No. of Tag Blocks This Header	No. of Bytes per Tag Block	4-Character ASCII WG-24 Version 2.1A	10-Character ASCII Nav System (left justified); e.g., WISDOM-II	4-Character ASCII Nav Program Version (40.F)

NOTE

All fields are 16-bit binary.

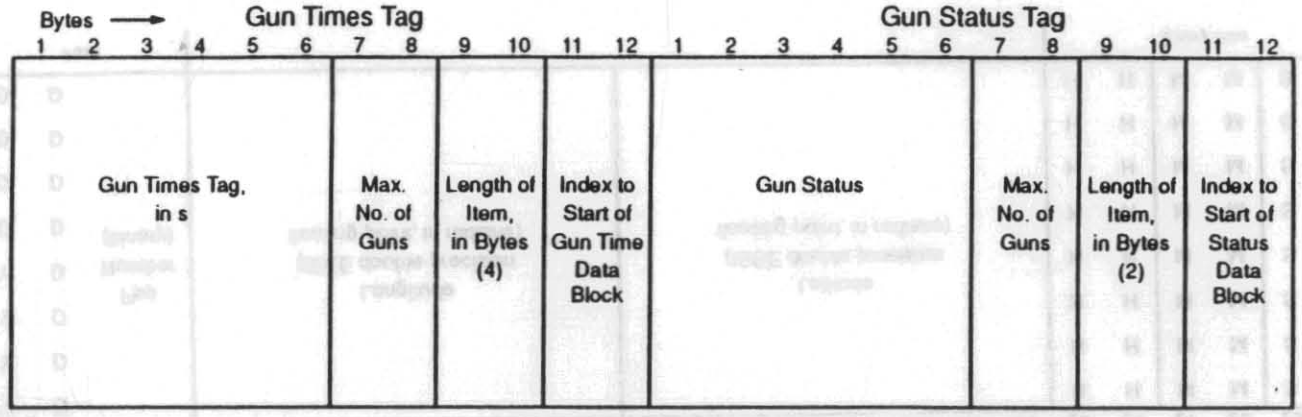
Bytes →	Fix Tag				Gun Aim Point Tag				
1 2 3 4 5 6	7 8	9 10	11 12	1 2 3 4 5 6	7 8	9 10	11 12		
Fixed B ASCII String ID Tag (mandatory)	Length of Data, in Bytes (44 bytes)	Length of Item, in Bytes (1)	Index to Start of Fixed Data Block	Gun Aim, in s	Max. No. of Guns	Length of Item, in Bytes (4)	Index to Start of Gun Aim Point Data Block		

NOTES

Tag blocks need to be present only when there is a valid data block of that type.

All tags are in IEEE floating point format.

Figure 18. WG-24 External Header, Version 6 (User Header)



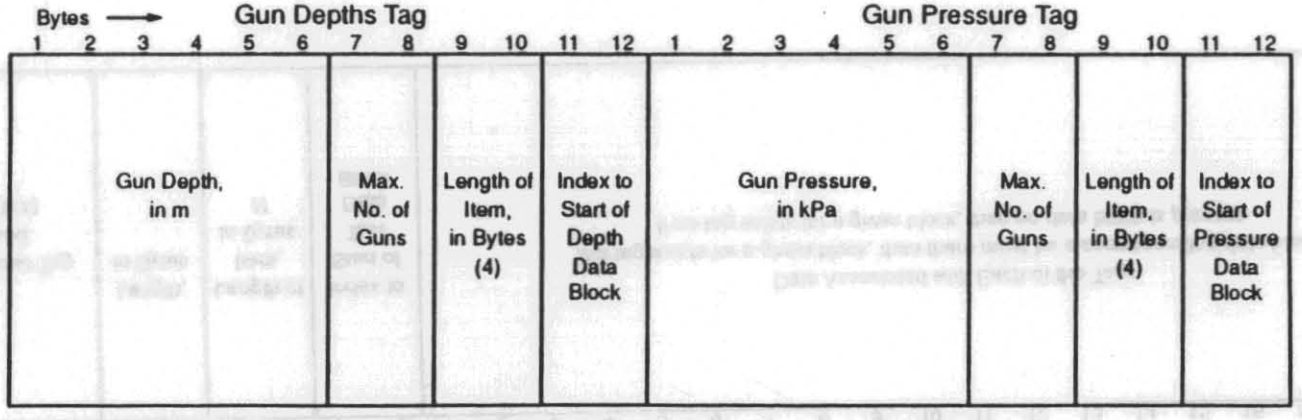
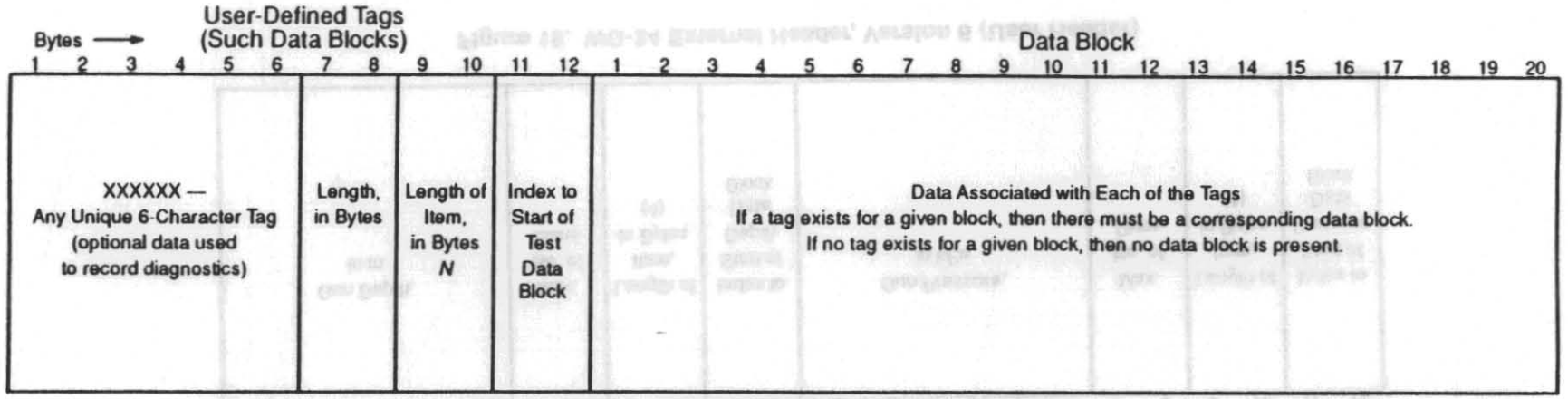


Figure 19. WG-24 External Header, Version 6 (User Header)

498145



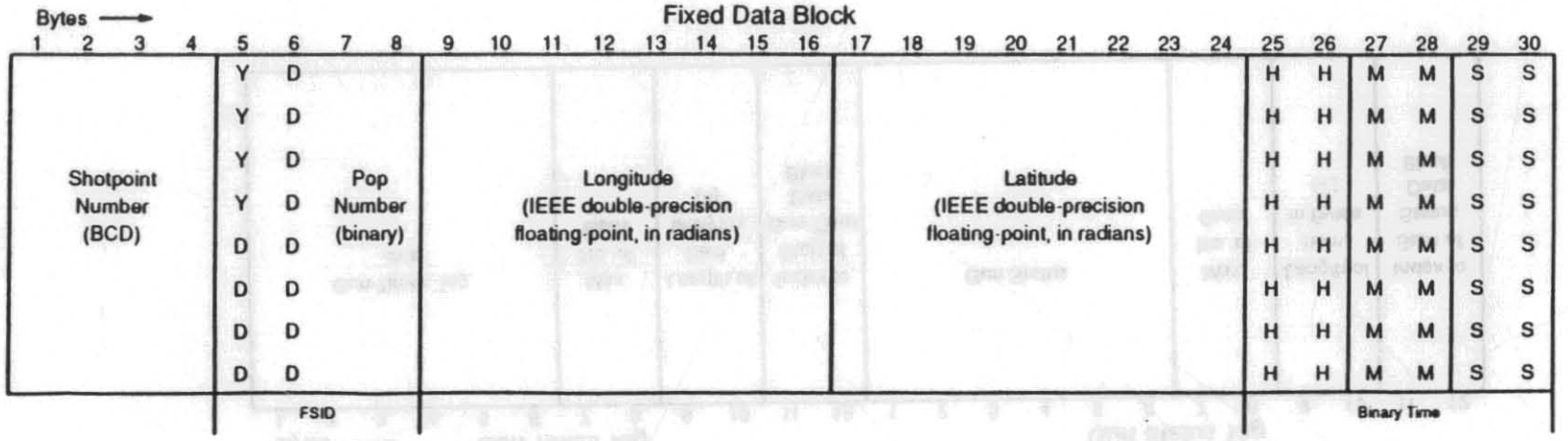
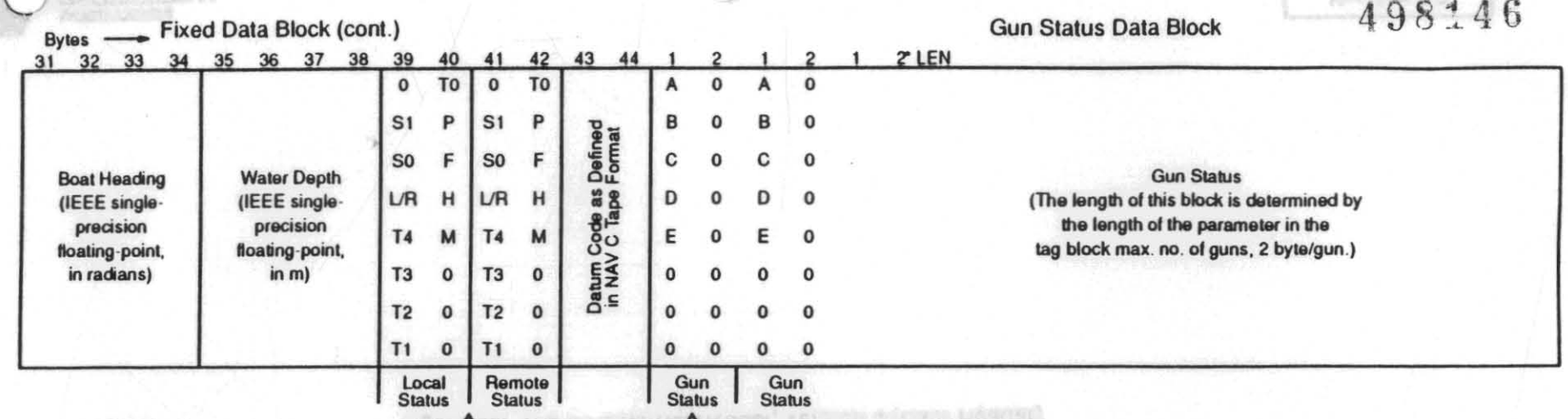


Figure 20. WG-24 External Header, Version 6 (User Header)



Gun Status Data Block

NOTES

1 S: Energy Source Origin
- 0 = Source 1
- 1 = Source 2
- 2 = Source 3
- 3 = Source 4

L/R:
- 1 = Local
- 0 = Remote

T: Time-Break Acknowledge
- 0 = Source 0 fired
- 1 = Aux 1 fired
- 2 = Aux 2 fired
- 3 = Aux 3 fired
- 4 = Aux 4 fired

P:
- 1 = External pop scan initiate

F:
- 1 = External cycle initiate

H:
- 1 = Initiate header transfer

M:
- 1 = Slave
- 0 = Master

2 AB: Status
- 00 = Normal
- 01 = Out of range
- 10 = Misfire
- 11 = Gun disabled

C: Code
- 0 = Gun not used for time break
- 1 = Gun used for time break

D: Code
- 0 = No auto fire
- 1 = Auto fire

E: Code
- 0 = Gun did not double pop
- 1 = Gun did double pop

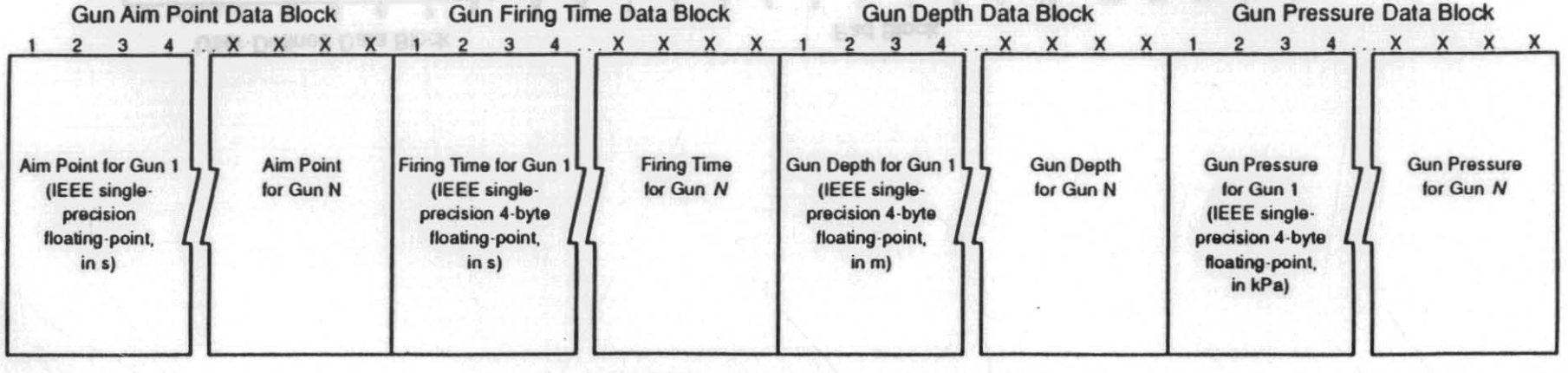


Figure 21. WG-24 External Header, Version (User Header)

498147

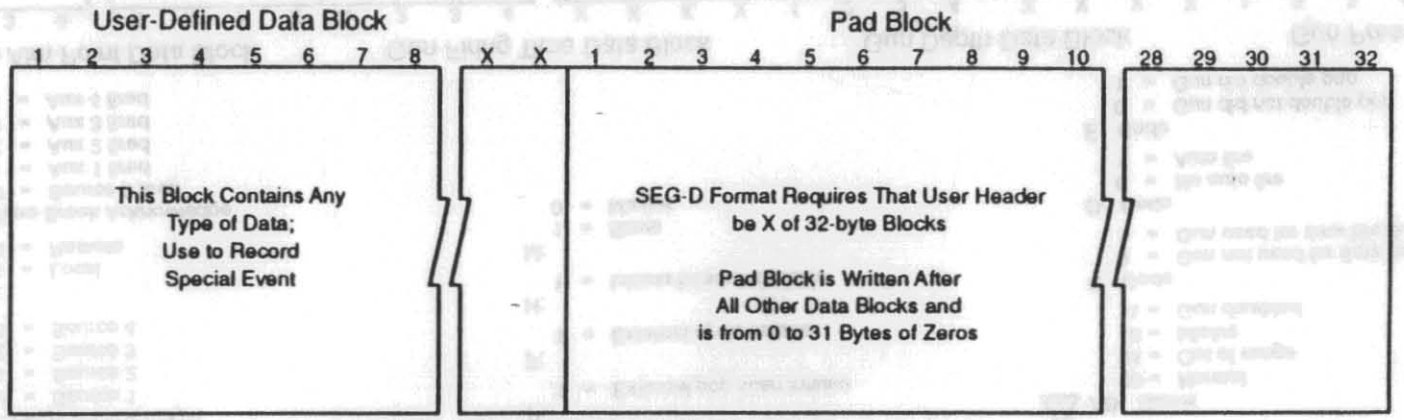
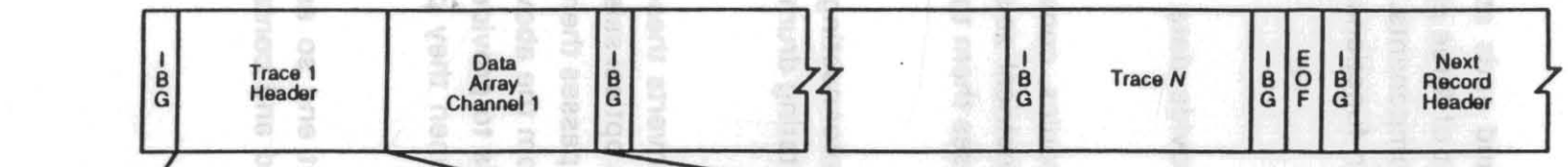


Figure 22. WG-24 External Header, Version 6 (User Header)



P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
0	F_1	F_3	0	CN_1	TN_1	TN_3	T_{15}	T_7	T_{-1}	0	0	0	TW_{15}	TW_7	TW_{-1}	0	0	0	0	0	S	Q_{-1}	Q_{-9}	Q_{-17}	S	Q_{-1}	Q_{-9}	Q_{-17}
1	F_1	F_3	0	CN_1	TN_1	TN_3	T_{14}	T_6	T_{-2}	0	0	0	TW_{14}	TW_6	TW_{-2}	0	0	0	0	0	C_6	Q_{-2}	Q_{-10}	Q_{-18}	C_6	Q_{-2}	Q_{-10}	Q_{-18}
2	F_1	F_3	0	CN_1	TN_1	TN_3	T_{13}	T_5	T_{-3}	0	0	0	TW_{13}	TW_5	TW_{-3}	0	0	0	0	0	C_5	Q_{-3}	Q_{-11}	Q_{-19}	C_5	Q_{-3}	Q_{-11}	Q_{-19}
3	F_1	F_3	0	CN_1	TN_1	TN_3	T_{12}	T_4	T_{-4}	0	0	0	TW_{12}	TW_4	TW_{-4}	0	0	0	0	0	C_4	Q_{-4}	Q_{-12}	Q_{-20}	C_4	Q_{-4}	Q_{-12}	Q_{-20}
4	F_2	F_4	0	CN_2	TN_2	TN_4	T_{11}	T_3	T_{-5}	0	0	0	TW_{11}	TW_3	TW_{-5}	0	0	0	0	0	C_3	Q_{-5}	Q_{-13}	Q_{-21}	C_3	Q_{-5}	Q_{-13}	Q_{-21}
5	F_2	F_4	0	CN_2	TN_2	TN_4	T_{10}	T_2	T_{-6}	0	0	0	TW_{10}	TW_2	TW_{-6}	0	0	0	0	0	C_2	Q_{-6}	Q_{-14}	Q_{-22}	C_2	Q_{-6}	Q_{-14}	Q_{-22}
6	F_2	F_4	0	CN_2	TN_2	TN_4	T_9	T_1	T_{-7}	0	0	0	TW_9	TW_1	TW_{-7}	0	0	0	0	0	C_1	Q_{-7}	Q_{-15}	Q_{-23}	C_1	Q_{-7}	Q_{-15}	Q_{-23}
7	F_2	F_4	1	CN_2	TN_2	TN_4	T_8	T_0	T_{-8}	0	0	0	TW_8	TW_0	TW_{-8}	0	0	0	0	0	C_0	Q_{-8}	Q_{-16}	Q_0	C_0	Q_{-8}	Q_{-16}	Q_0

File Number (1) | Scan Type | Channel Set (2) | Trace Number (3) | First Timing Word (4) | Sample Skew | Time-Break Window End | Sample 1 (5) | Last Sample

NOTES

1. Same as bytes 1 and 2 of the General Header (Figure 1).
2. As shown in Figure 2, byte 2.
3. Sequential trace no. 1 to trace *N* in channel set order.
4. Time break or time-break override in ms from start-of-timing-word counter.
5. S = Sign Bit, where 1 is a negative number.

   C = Excess, 64 hexadecimal exponent $16^{(CCCCCCC-64)}$, where CCCCCCC = values from 0 to 127.

   Q = 1–23, magnitude fraction, values from $1-2^{-23}$ to $-1+2^{-23}$, input signal, MVP = S.QQQQ,QQQQ,QQQQ,QQQQ,QQQQ,QQQ $\times 16^{(CCCCCCC-64)} \times 2^{MP}$ (millivolts peak).

Figure 23. Demultiplexed Data Body

6.3 STREAMER CABLE

The streamer(s) begins at the input of the shipboard system and ends at the tailbuoy. There may be up to four physical streamers. They consist of three parts, the head components, the active sections/modules, and the tail components. The folllowing provides an overview of the components and their main functions.

Head Components

Deck Cable Two 75m cables, one optical, one electrical, provide data and command paths from the Recording Room to the reel.

Deck Box Receives optical commands from the Shipboard electronics, converts these to electrical and passes them to the slipring. Receives electrical seismic signals from the slipring, converts these to optical signals and passes them to the deck cable.

Slipring Enables the streamer to be reeled in and out without disconnecting the deck cable; it maintains a sliding contact between the fixed and rotating drums as the reel turns. The slipring contains no optical fibres.

Hub Box Receives electrical commands from the slipring and converts these to optical signals for transmission down the streamer cable. Receives optical seismic data from the streamer cable and converts these to electrical and passes them to the slipring. The hub box is located inside the drum of the reel. From the above it can be seen that the main function of the Deck/Slipring/Hub box is to provide an opto-electrical conversion path so all the signals are electrical when they pass through the slipring.

Lead In Tows the streamer and weights it down near the boat end so as to achieve the proper operating depth. This cable is steel reinforced and contains electrical wires and optical fibres.

Head Elastic Section Isolates the active sections from the boat to reduce tow noise. The elasticity is provided by a single nylon rope connected to three steel stress members at the head and tail of the section. These sections are 80m in length and there may be more than one connected.

Cable Head Module A repeater module that receives optical seismic data from the streamer modules and sends it upstream to the other head components. Receives optical commands, converts them to electrical signals, then sends them to the streamer modules. These module commands are now electrical for the whole streamer.

Cable Head Section This is a short (8m) section that houses a variety of sensors used to locate the head of the streamer.

They are -

- A tension transducer that sends tension information to a display in the Recording Room.
- A wideband acoustic receiver that amplifies signals received from transmitters associated with the Streamer Source Tracking System(SSTS).
- A Waterbreak Hydrophone.
- A 12khz SSTS Cross Cable transmitter that may be activated or deactivated from the Recording Room.

Active Sections/Modules

The active section and module assemblies form the central and major part of the streamer. Each active section is 100m long and are all identical and interchangeable. There are two different functioning modules, the Streamer, and the Connector.

The whole active streamer may be looked at as interconnected sub assemblies, each containing the following components:-

(a) A Streamer Module.
(b) An Active Section, designated the "A" section.
(c) A Connector Module.
(d) An Active Section, designated the "B" section.

These sub-assemblies are then connected end to end up to a maximum of 6000m. Although the design of the system allows telemetry to 10000m lengths, current mechanical limitations allow a maximum of 6000m streamers. The streamer cable has design features that minimize noise levels due to bulkhead obstructions and the movement of ballast oil within the section.

Following is a description of the functions of each component, starting from the hydrophone arrays towards the streamer module.

Each 100m section contains seven complete hydrophone arrays each of 15.52m length on group centres of 12.5m. The arrays have sixteen hydrophones configured in a centre weighted overlapping scheme as shown in Fig.3. At the tail of the section an array of eight hydrophones forms half of the eighth group in the section. The other part of the array is connected via the connector module and is contained within the next downstream section. This arrangement helps reduce noise at the module boundaries and maintains uniformity of the arrays throughout the streamer. The hydrophone arrays connect to electronic modules (Marine Remote Units, MRU) that are within the cable section. The MRU's perform dual channel seismic data acquisition near the hydrophone location,provides A/D conversion and transmits the digital data to the streamer module. There are thus four MRU's per cable section to handle eight channels. Associated with the MRU's is one Section Power Supply (SPS), located at the head of the cable section, it provides dc power for the Streamer Module, the MRU's and the Connector Module. The power for the SPS is provided from the Shipboard Electronics on a pair of wires down the length of the streamer.

WG24 24-bit converter technology

The conversion technique used can be described as a sigma delta converter, which can be contrasted against classical A/D conversion techniques such as successive approximation or dual slope integration.

The 24-bit sigma delta approach used in the WG24 can be subdivided into two major blocks. The first block,the sigma delta modulator is an over sampled, single bit A/D converter.

The second block is a digital filter. In the WG24, the sigma delta modulator is located in the MRU, the digital filter is in two stages, the first within the Streamer module and the second located in the Shipboard Recording System. At the output of the first stage of the filter in the streamer module, the data has 24bits per sample with about 20 of these bits being effective. This gives an instantaneous dynamic range of at least 114db. The sampling rate in the MRU is 15.6uS with the digital filter in the Shipboard System decimating this to 1, 2 or 4mS for recording.

Connector Module

Connects two identical active sections to support one streamer module. Other auxiliary functions are to buffer the MRU commands from the Streamer Moduleto the MRU's in the B section and to provide power to the depth transducer in the B section.

Streamer Module

Collects data from the MRU's in the A and B sections, passes this data through the digital filter then converts it to optical signals for transmission on the fibre optic link to the Shipboard Electronics. The optical section of the module also receives optical data from the modules downstream and buffers and repeats this data.

The Streamer Module receives and decodes commands from the Shipboard System that controls the MRU's. These commands also control the test functions that are generated in this module, then passed to the MRU's.

A conventional 12 bit A/D converter digitizes the depth transducer data in both the A and B sections, digitizes the water break detector in the B section and monitors the voltages supplied by the Section Power Supply. Also monitored are the optical signals from the previous module, its own optic signals and the temperature of the module.

Tail Components

These components consist of the Terminator Module, the Tail Elastic section, and the Tailbuoy.

Terminator Module

Ends the streamer cable and provides proper termination for the MRU and Module commands. It also provides through connection for the hydrophones for half of the last array which are contained in the tail elastic section.

Tail Elastic Section

Isolates the tailbuoy towing noise from the active sections. Terminates the power lines for the streamer. Provides a swivel at the tail end for connection of the tailbuoy rope. As mentioned above, contains the hydrophones for the last array in the streamer cable.

Tailbuoy

Typically an active buoy that provides a radio location position of the buoy, a strobe light, a radar reflector and acoustic transceivers to support tail-end networks.

The Shipboard System

The WG24 Recording System enables streamer data acquisition, processing, recording, and quality control. The system consists of the following subsystems:

Main System Controller (MSC)
Auxiliary Module Unit (AMU)
Cable Interface Unit (CIU)
Raw Data Processor (RDP)
Recording System Unit (RSU)
Cartridge Tape Unit (CTU)
Seismic Quality Control (SQC)
Cable Monitor Unit (CMU)

Block diagram Fig 2 shows the interconnection of these units.

The subsystems are based on VME bus chassis running under a multi-tasking real time operating system. Following is a brief description of each subsystem's function.

Main System Controller (MSC)

Provides system-level controls and receives status and error messages from all other subsystems. The MSC builds the tape header for each seismic file on tape and contains the primary operator interface. The Wisdom navigation system interfaces to this subsystem, providing navigation header data and system start commands.

The MSC in turn controls the firing of the energy source via the LRS100 Synchronizer.

Auxiliary Module Unit (AMU)

Accomodates up to four streamers and provides optical to electrical conversion for incoming seismic data and electrical to optic conversion for outgoing commands. The unit contains a MRU and SPS identical to those in the active sections. Auxiliary channels may be connected to the system in this way. It also provides a means by which MRU's and SPS's can be tested on board.

Cable Interface Unit (CIU)

Interfaces the streamers to the recording system and provides test capabilities for both. In normal acquisition mode, the CIU multiplexes the received seismic data from up to four streamers. It also receives commands from the RDP and sends them to the streamers.

In test mode, the CIU functions as a data simulator for testing the recording system without the streamer or as a stand alone cable controller for testing a single streamer without the recording system. The CIU contains a test signal generator for testing the streamer cables.

Raw Data Processor (RDP)

Performs the following optional front end data processing functions:

- Adjacent trace summing.
- Error detection and correction.
- Low cut filtering.
- Anti aliasing filtering.
- The channel capacity of the system is established in this unit. Eight processor boards handle 128 channels each, which gives a maximum of 1024 seismic channels.
- The antialiasing filters are for 1,2 or 4mS sample rates and employ a 75 coefficient FIR filter.
- The low cut filter is an IIR type digital filter and can be switched in or out. In the out position the low cut filter is entirely due to the capacitance effect of the hydrophones.

- Adjacent trace summing may be employed to effectively reduce the number of channels ,eg: four cables 6000m long will yield 1664 channels, with trace summing this can be reduced to 832 which is within the system capability.
- The RDP generates the recording system timing and streamer commands for normal seismic data acquisition.

Recording System Unit (RSU)

Demultiplexes the seismic data, stores header data, and controls the CTU sub system. It contains a Read After Write interface that sends data to the SQC for monitoring and analysis.

Cartridge Tape Unit

Records demultiplexed data onto IBM compatable 3480 cartridge tapes. The subsystem consists of four IBM 9840 drive units with one tape formatter.

Seismic QC (SQC)

Provides quality assurance and Read after Write monitoring of the seismic data recorded on tape. The SQC runs data analysis routines to qualify the recording system and data stored to tape. Data provided to the display plotter is rasterized within this subsystem and also line printer data is output on a per shot basis for operator QC.

Cable Monitor Unit (CMU)

Provides quality assurance for the streamer data by monitoring status and telemetry errors. The CMU drives three high resolution colour monitors: one shows the the status and telemetry error information, while the other two show depth profiles for up to four streamers.

Cable depths are also sent to the MSC where they are merged into the tape header for recording on tape.

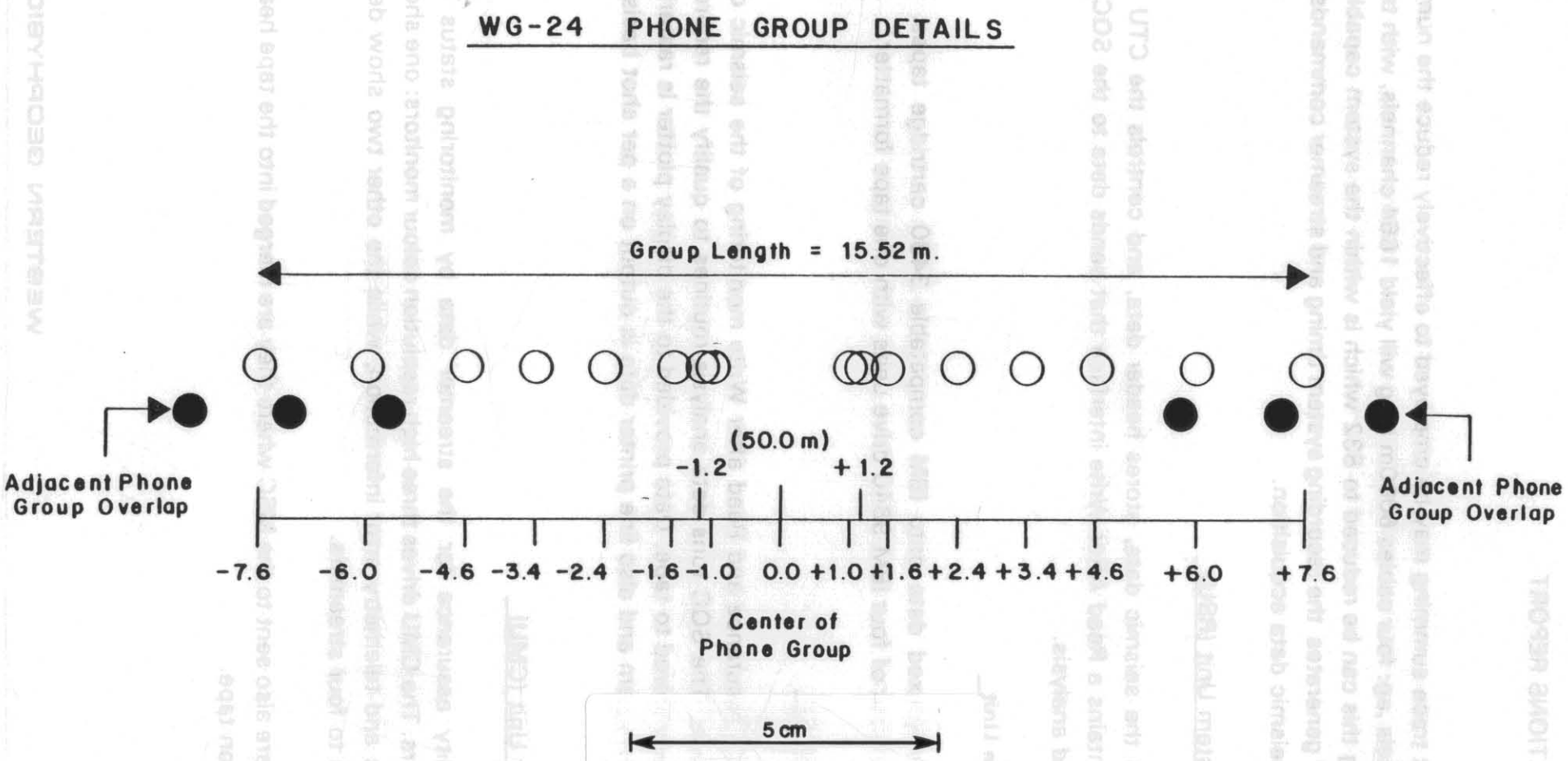
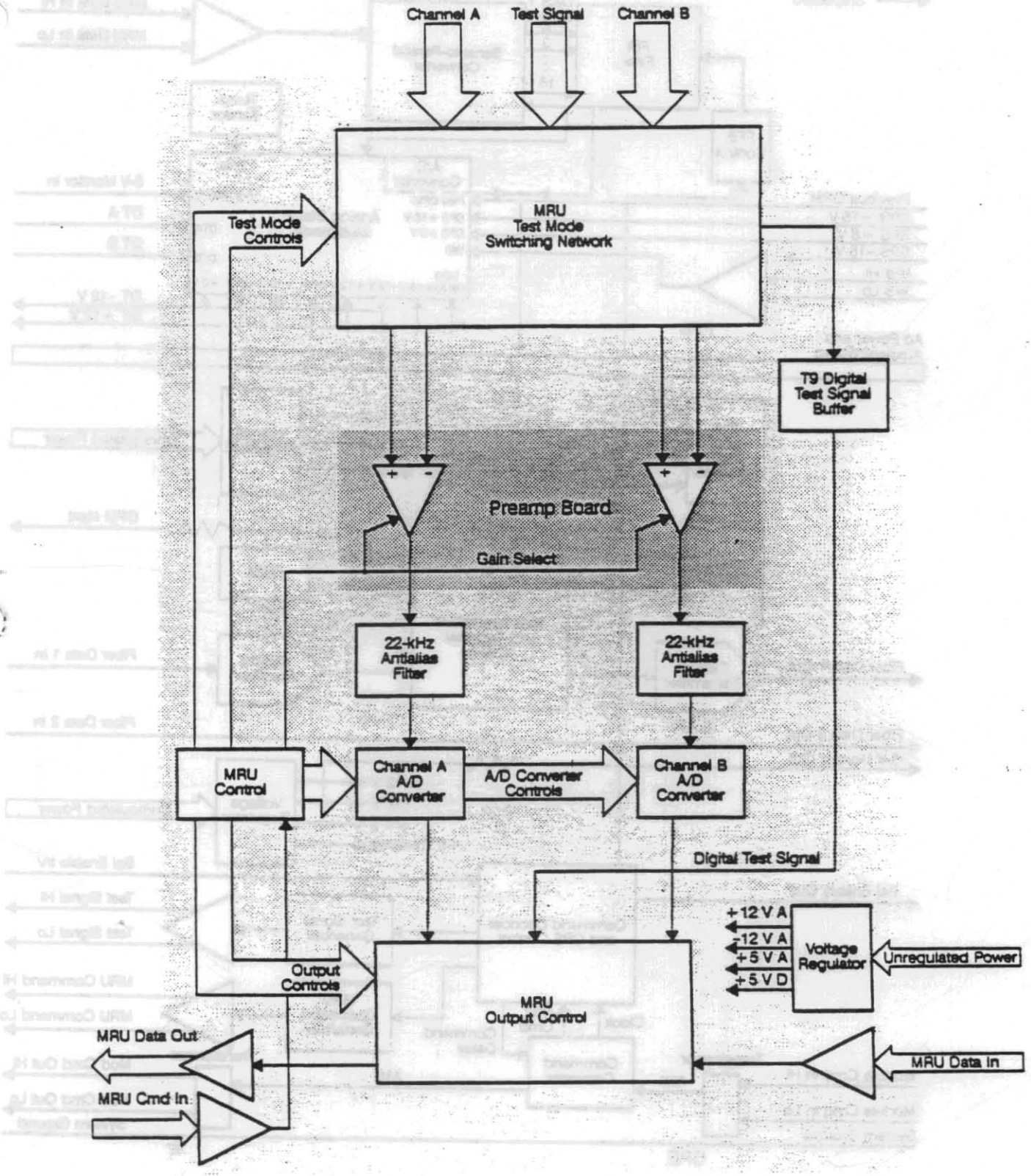

WG-24 PHONE GROUP DETAILS
Group Length = 15.52 m.
Adjacent Phone Group Overlap
(50.0 m)
-1.2
+1.2
Adjacent Phone Group Overlap
-7.6 -6.0 -4.6 -3.4 -2.4 -1.6 -1.0 0.0 +1.0 +1.6 +2.4 +3.4 +4.6 +6.0 +7.6
Center of Phone Group
5 cm

FIGURE 1



MARINE REMOTE UNIT BLOCK DIAGRAM

Fig. 2

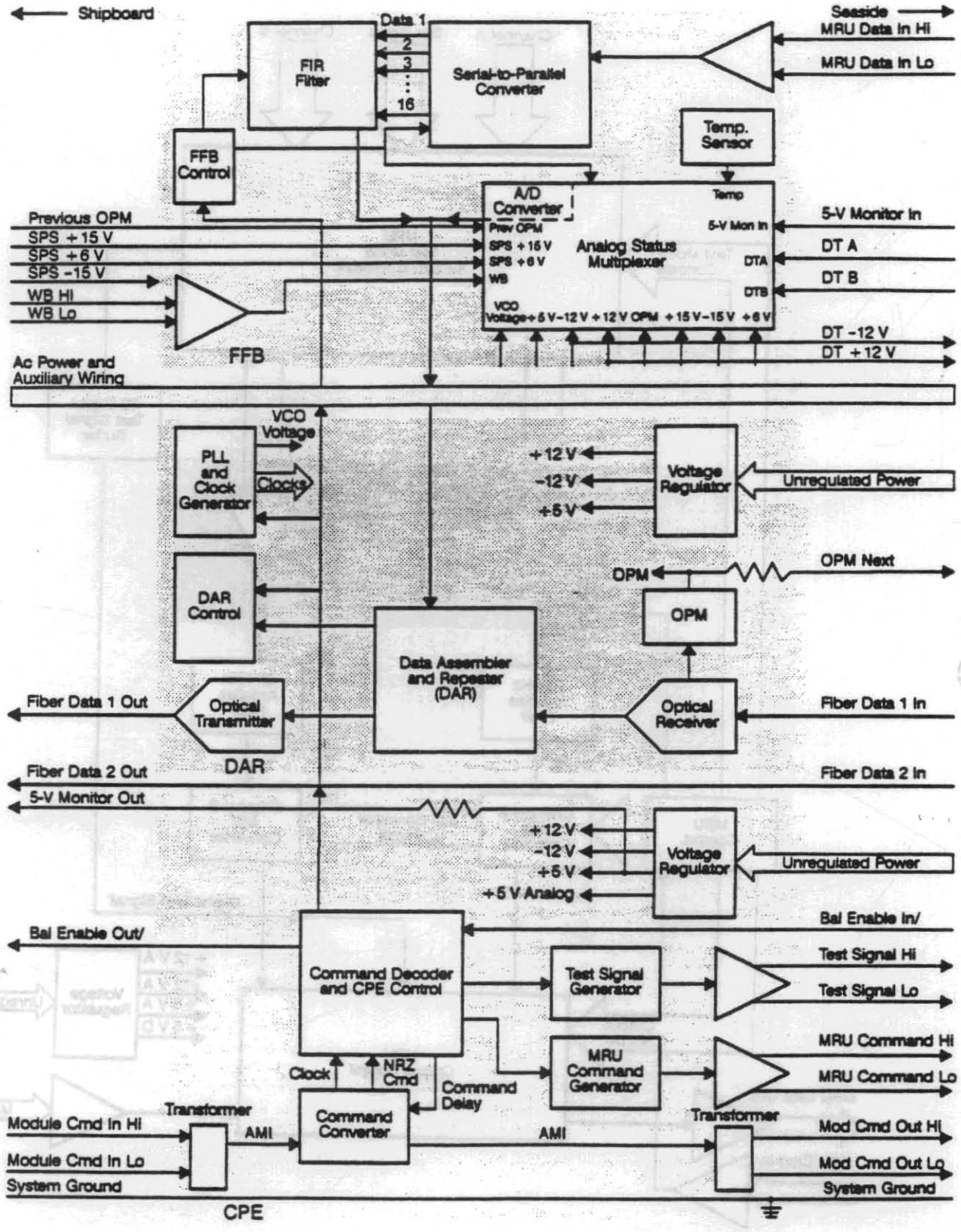


Fig. 3 STREAMER MODULE BLOCK DIAGRAM

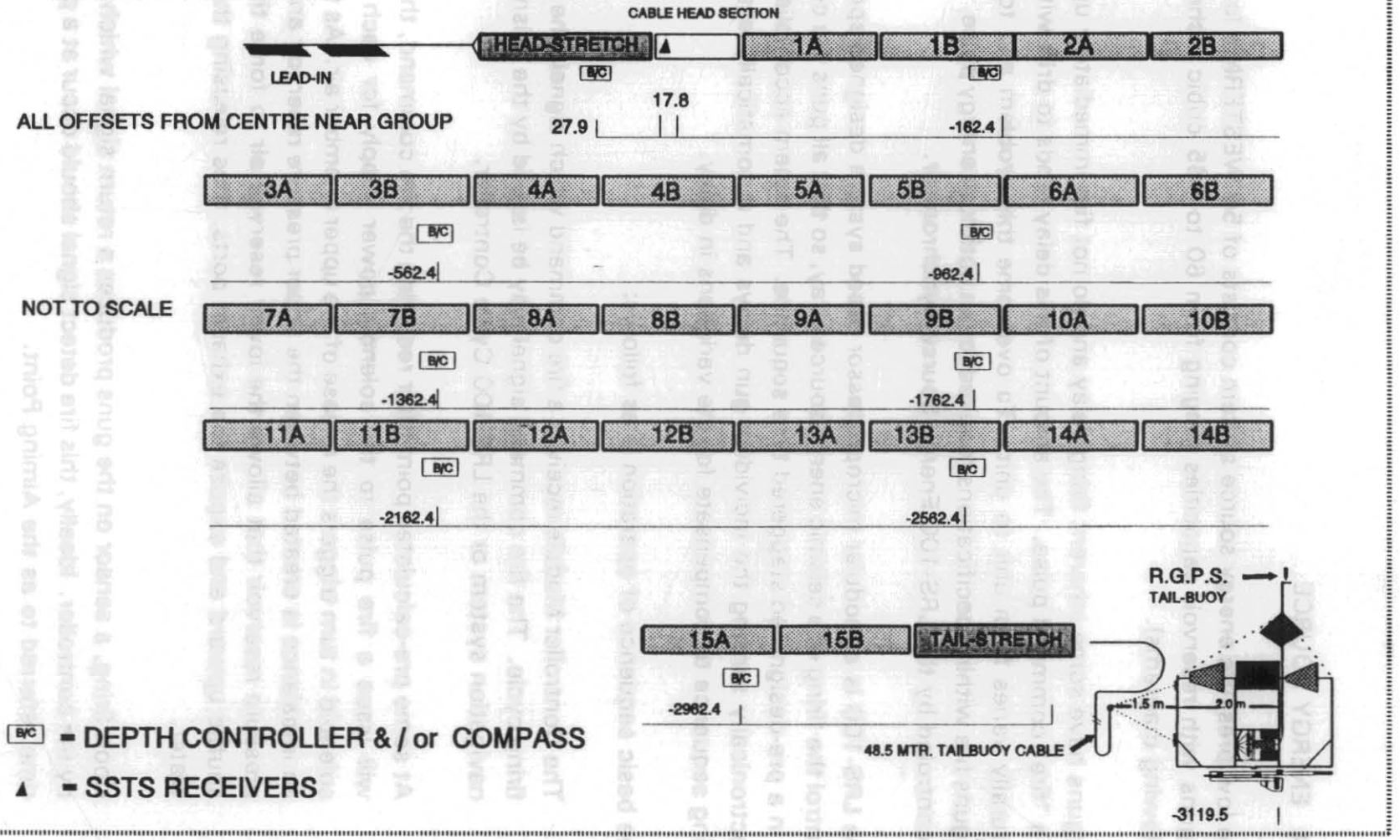
498160

Fig 4.

CLIENT : SAGASCO

AREA : ROCKY CAPE 2 D SURVEY

STREAMER CABLE DIAGRAM 240 Channels



B/C = DEPTH CONTROLLER & / or COMPASS

▲ = SSTS RECEIVERS

5 cm

6.4 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 the following diagrams).

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 specifications required for an optimum energy pulse, the system is controled 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 sytem accomplishes 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 synchroniser 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.

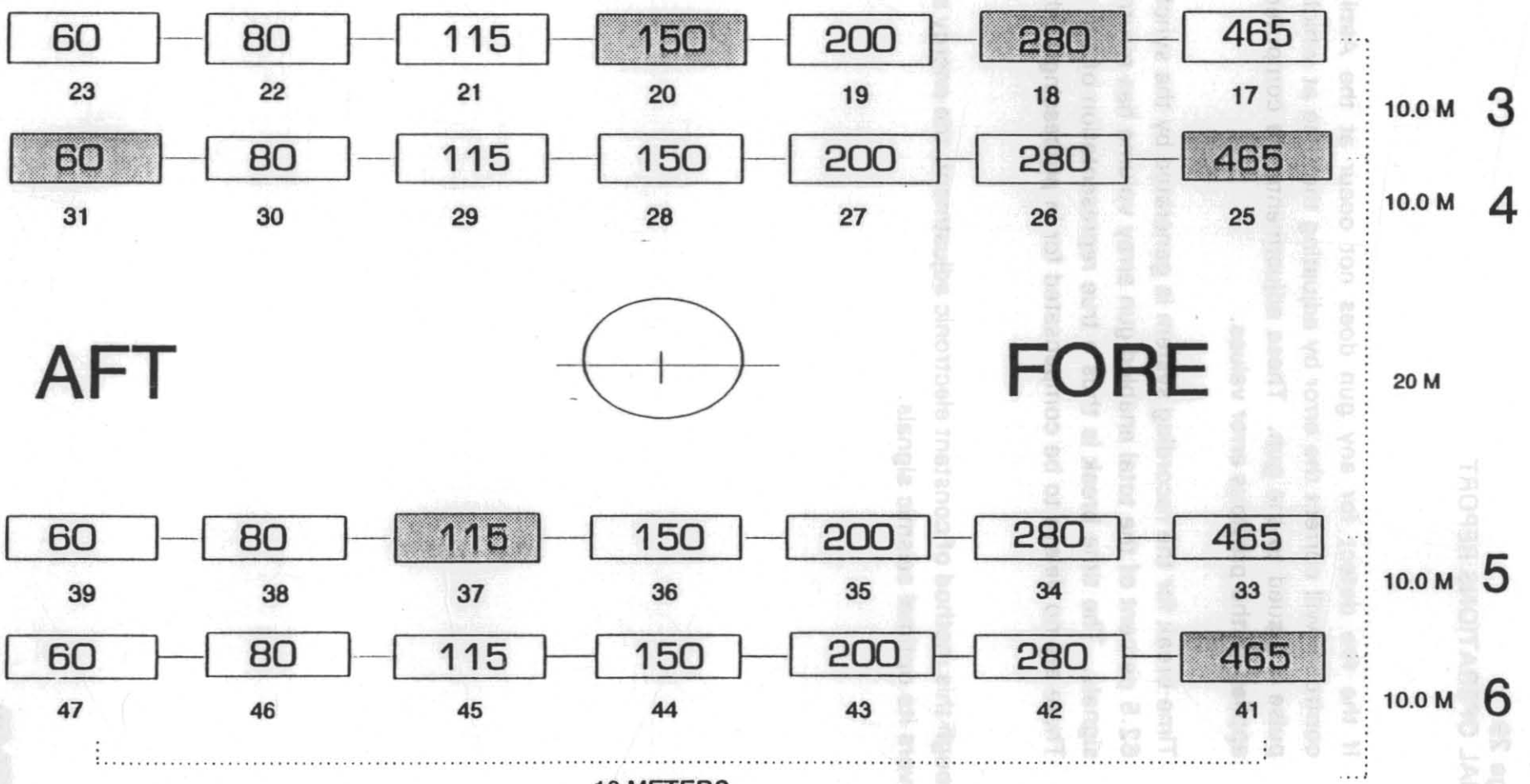
Through this method of constant electronic adjustment, the energy source system delivers its optimal seismic signals.

Fig 1.

498163

WESTERN ATLAS PARTY #116

3305 CU IN GUN ARRAY



ENERGY SOURCE ARRAY

498164

7. BOAT GEOMETRY

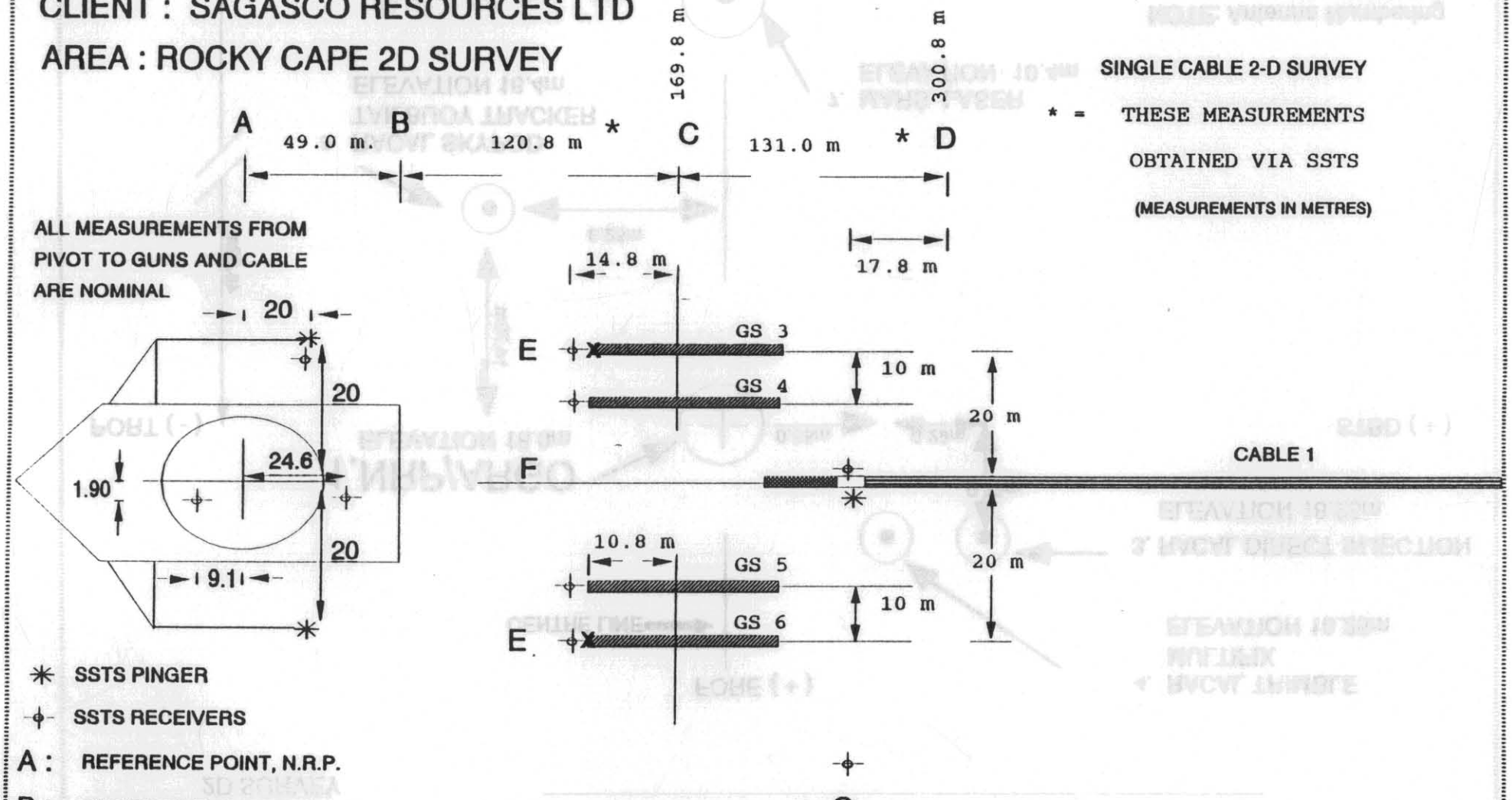
498165

Fig 1.

PARTY # 116 : M/V WESTERN ATLAS

CLIENT : SAGASCO RESOURCES LTD

AREA : ROCKY CAPE 2D SURVEY



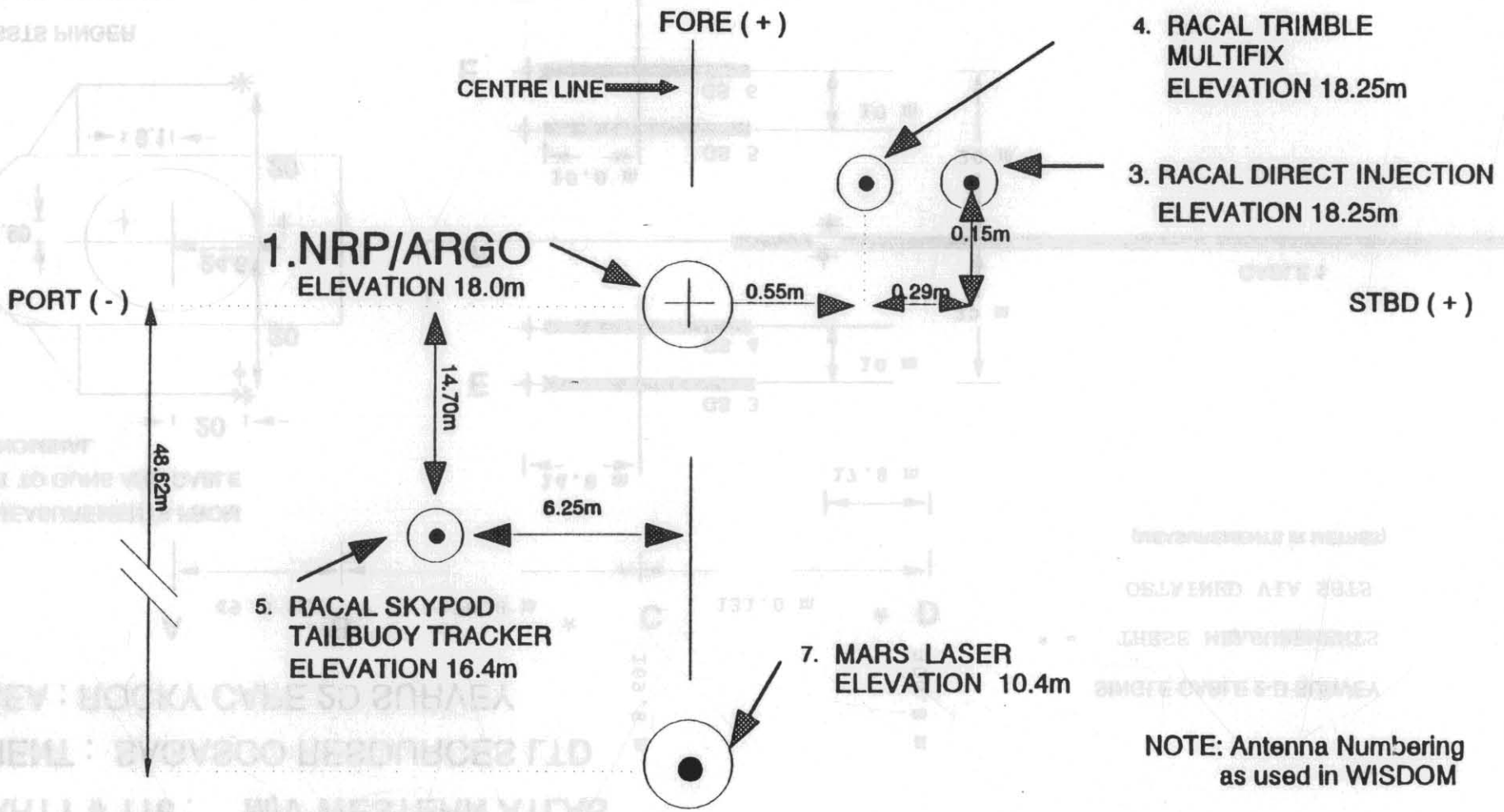
BOAT GEOMETRY

Fig 2.

498166

CLIENT : SAGASCO
AREA : ROCKY CAPE
2D SURVEY

ANTENNA OFFSETS MV WESTERN ATLAS



ANTENNA C SETS

498167

8. PARAMETER REPORT

498168

PARAMETER REPORT

ROCKY CAPE 2D SEISMIC SURVEY
MARCH 17 TO MARCH 24

Survey : Rocky Cape 2D
Area : Bass Basin, Australia
Vessel : Western Atlas, P116
Client : SAGASCO RESOURCES LTD

PREPARED BY : Eric Karlsen B.(surv)

498169

1.0 TABLE OF CONTENTS

		PAGE
SECTION 1	DATA ACQUISITION EQUIPMENT CONFIGURATION	3
	1.1 LINE NAMING CONVENTION	3
	1.2 VESSEL & PERSONNEL	3
	1.3 RECORDING SYSTEM	4
	1.4 VESSEL NAVIGATION	4
SECTION 2	GEODETIC PARAMETERS	5
	2.1 SPHEROID	5
	2.2 PROJECTION	5
SECTION 3	REFERENCE OFFSET PARAMETERS	6
	3.1 NAVIGATION ANTENNAS	6
	3.2 SURVEY CONFIGUATION	7
SECTION 4	ENERGY SOURCE	8
	4.1 ENERGY SOURCE ELEMENT DESCRIPTION	9
SECTION 5	STREAMER CABLES & PARAMETERS	11
	5.1 COMPASS OFFSETS & MAG. DECLINATION	12

TABLE OF FIGURES

1.	ANTENNA CONFIGURATION	6
2.	NOMINAL SURVEY CONFIGURATION	7
3.	GUN STRING PROFILE	8
4.	SOURCE ARRAY	10

SECTION 1 DATA ACQUISITION EQUIPMENT CONFIGURATION

1.1 LINE NAMING CONVENTION

The sail line naming convention adopted for the Rocky Cape 2D seismic survey followed the general format of, **SB94A-###*** where:

SB94A = Prefix denoting the Rocky Cape 2D seismic survey.
= Line number
* = Indicates number of attempts at shooting

EXAMPLE: For instance;

A) SB94A-001, designated the prime line 001
C) SB94A-002B, indicates second attempt at reshooting the line 002.

NOTE: Any additional attempts at reshoots to complete a prime line is indicated by a C,D,E,F.... etc.

1.2 VESSEL AND PERSONNEL

PARTY No. : P-116

VESSEL : M.V. WESTERN ATLAS (PANAMANIAN FLAG)

CLIENT : SAGASCO RESOURCES LIMITED

AREA : YOLLA 2D, ROCKY CAPE, T/RL1 BLOCK, BASS BASIN, AUSTRALIA

CLIENT REP : FRANK RENTON (AUSTRAL)

SAFETY OFFICER : LYALL COWAN

CO-ORDINATORS : DICKIE CHOW , BILL WILLIAMS

QUALITY CONTROL: ERIC KARLSEN

TECHNICIANS : GRAHAM KNIGHT , ERNEST DALE

NAVIGATORS : BARRY COLE , HUGH MCMENAMIN

OBSERVERS : BARRY BROMWICH , WINN SIMONTON

GUNNERS : TOMMY MEANS , STEVE FRENCH

COMP. MECHANIC : GALEN HIEB , ANDY POWELL

1.3 RECORDING SYSTEM

Recording System Type	:	1 x WG-24, S/N #14
Number of Streamer Modules	:	1 x 15
Number of Connector Modules	:	1 x 15
Time Break	:	Volume
Filters,		
: Hi Cut	:	196 Hz / 214 dB/octave
: Lo Cut	:	6 Hz / 18 dB/octave
Record Length	:	6 seconds
Sample Rate	:	2 milliseconds
Tape Speed/Density	:	2 m/s / 38000 BPI
SEG Format/Code	:	4-byte SEG D,Demultiplexed 8048
Tape Deck Type / Model	:	3480 Compatible Cartridge Tape Unit, ANSI Standard Tapes.
Header Format	:	Variable Byte, Version 6.
Auxiliary Channels	:	16 Auxiliary channels.

1.4 VESSEL NAVIGATION

WISDOM Version	:	50
Primary Navigation	:	Racal Multifix
Secondary Navigation	:	Racal Direct Injection
Gyrocompass Alignment	:	-0.3°
Depth of Transducer	:	4.3 metres
Draft Compensation	:	Compensated for on tape and paper by the SIMRAD EA 200 fathometer.
Sound Propagation Velocity	:	1500 m/s
Calibrated Velocity	:	1512 m/s

(Velocity was <u>not</u> compensated for on tape or paper)

SECTION 2 GEODETIC PARAMETERS

2.1 SPHEROID

Spheroid	:	Australian National
Length of semi-major axis	:	6378160
Inversed Flattening (1/f)	:	0.003352892
Flattening	:	298.25
Local Datum	:	AGD 84
Datum Shift (7 Parameter)	:	From WGS-84 to Local
X- shift	:	+ 116.00 metres
Y- shift	:	+ 50.47 metres
Z- shift	:	- 141.69 metres
R_x	:	1.1150710 rad
R_y	:	1.8907730 rad
R_z	:	1.6677590 rad
Sc	:	- 0.0983 ppm
Geoid - Spheroid Separation	:	-1.00 m

2.2 PROJECTION

Projection	:	UTM SOUTH , ZONE 55
False Origin Latitude (WISDOM)	:	0° 00.0000 North
Longitude of Origin	:	147° 00.0000 East
True Origin Longitude (WISDOM)	:	147° 00.0000 East
Scale Factor at Origin	:	0.9996
False Easting at Origin	:	500 000 metres
False Northing at Origin	:	10 000 000 metres

SECTION 3 REFERENCE OFFSET PARAMETERS

3.1 NAVIGATION ANTENNAS

OFFSETS REFERENCED FROM NRP:	ELEV (+) DEPTH (-)	FORE (+) AFT (-)	STBD (+) PORT (-)
Antenna 1 Type - ARGO :	18.00m	0.00 m	0.00m
Antenna 4 Type - RACAL MULTIFIX:	18.25m	0.15 m	0.55m
Antenna 3 Type - RACAL SKYFIX :	18.25m	0.15 m	0.84m
Antenna 7 Type - MARS LASER :	10.40m	-48.62 m	0.00m

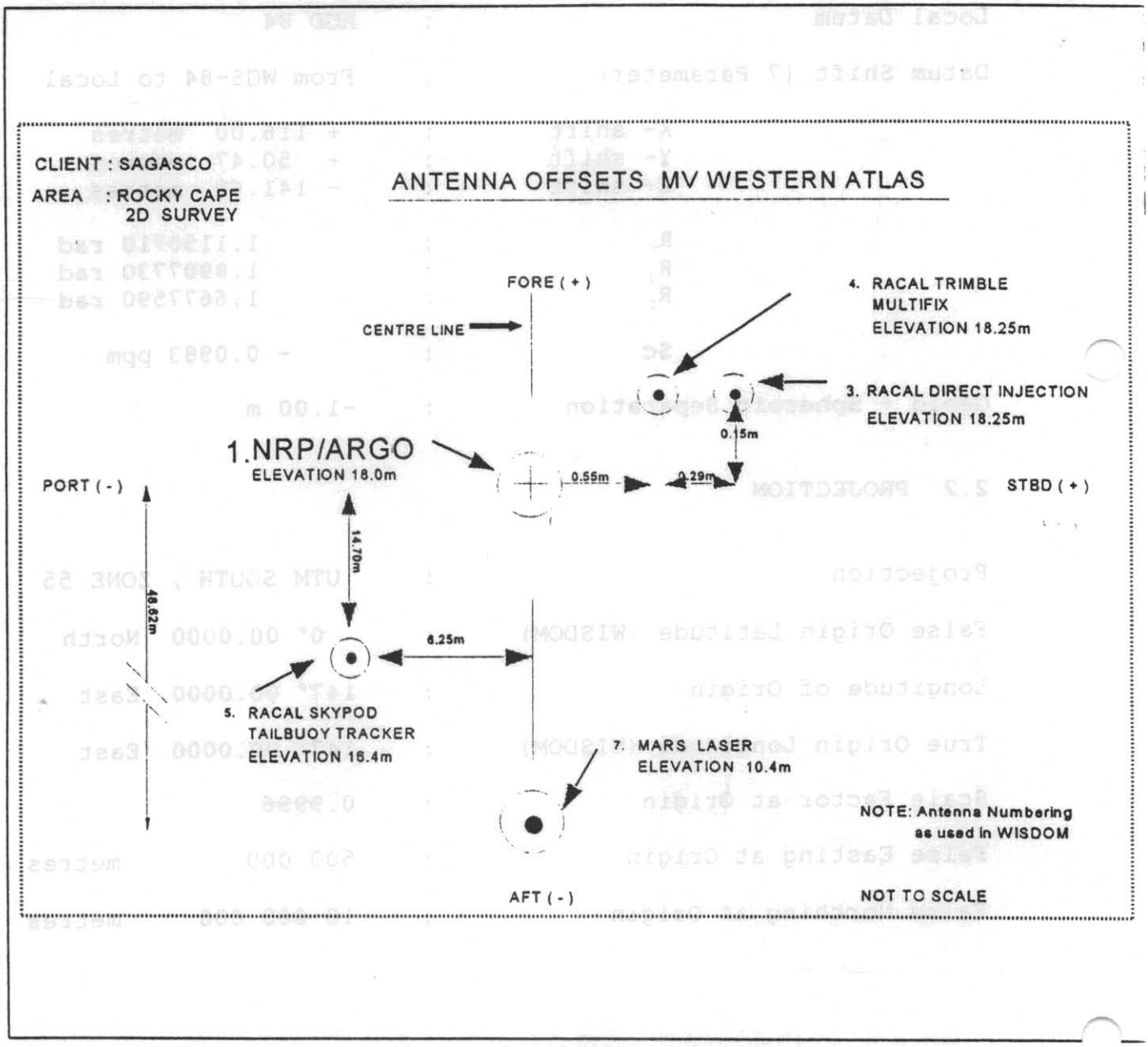


Figure 1 ANTENNA OFFSETS

3.2 SURVEY CONFIGURATION

OFFSETS REFERENCED FROM NRP:	ELEV (+) DEPTH (-)	FORE (+) AFT (-)	STBD (+) PORT (-)
Centre Near Group, Cable 1	- 10.0 m	- 300.8 m	0 m
Single Source	- 6.0 m	- 169.8 m	0 m
Pivot Point to Head Stretch	- 10.0 m	- 145.0 m	0 m
Fathometer 1	- 4.3 m	9.6 m	- 1.7 m

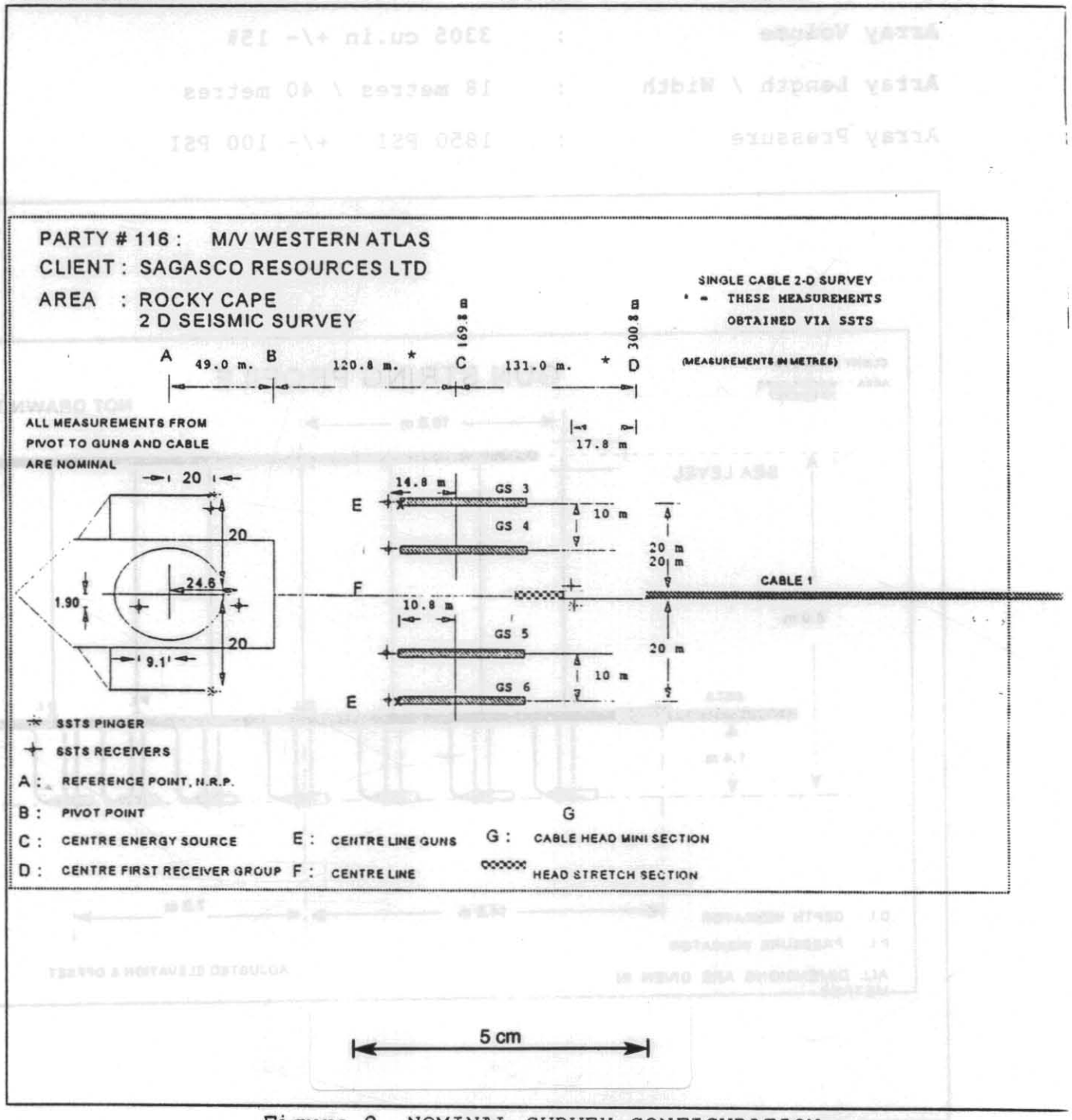


Figure 2 NOMINAL SURVEY CONFIGURATION

SECTION 4 ENERGY SOURCE

Configuration	:	Single Source
Type	:	Litton Low Pressure
No. of Guns	:	28
No. of Guns / Sub Array	:	19 active , 7 per sub array
Array Volume	:	3305 cu.in +/- 15%
Array Length / Width	:	18 metres / 40 metres
Array Pressure	:	1850 PSI +/- 100 PSI

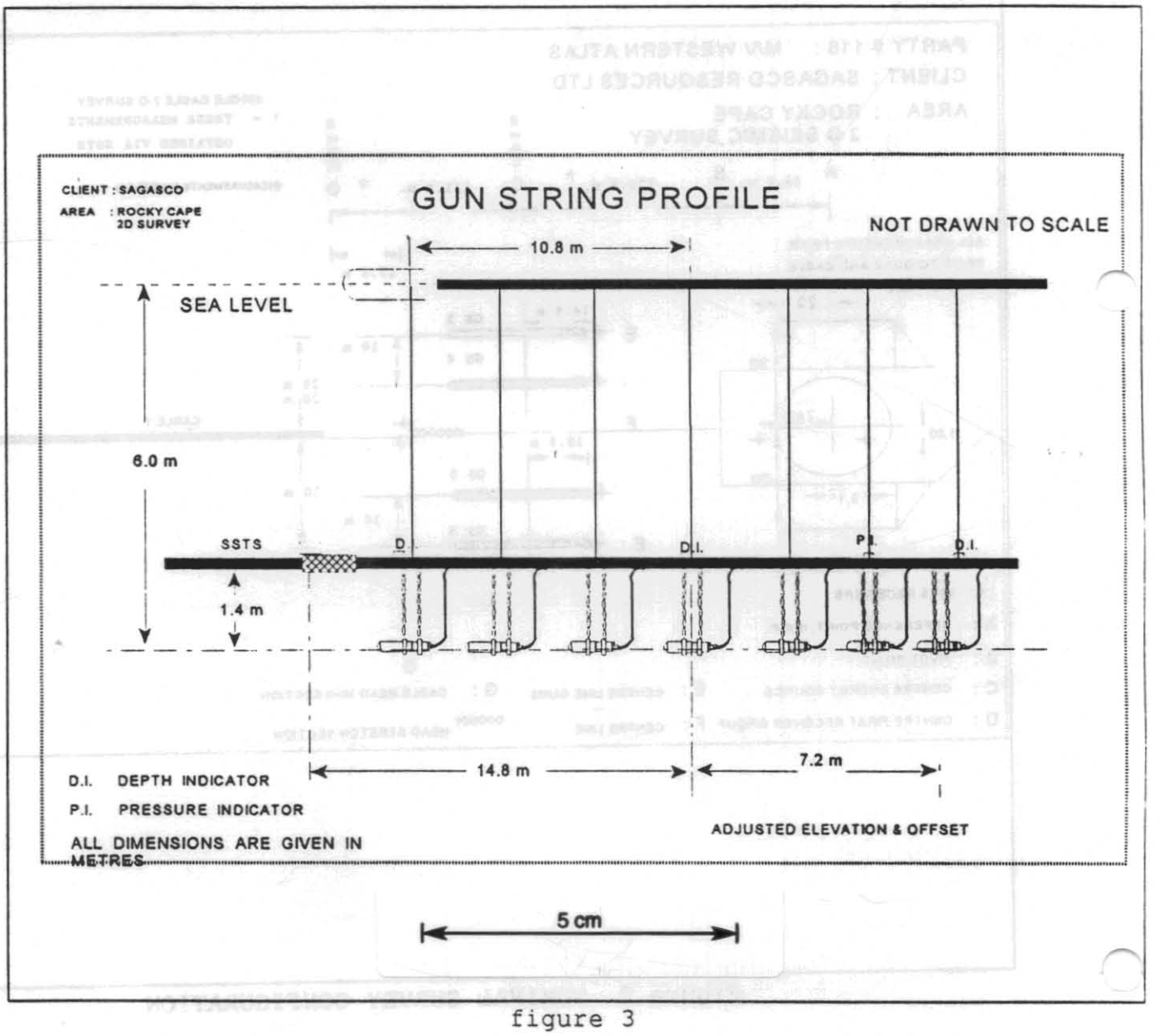


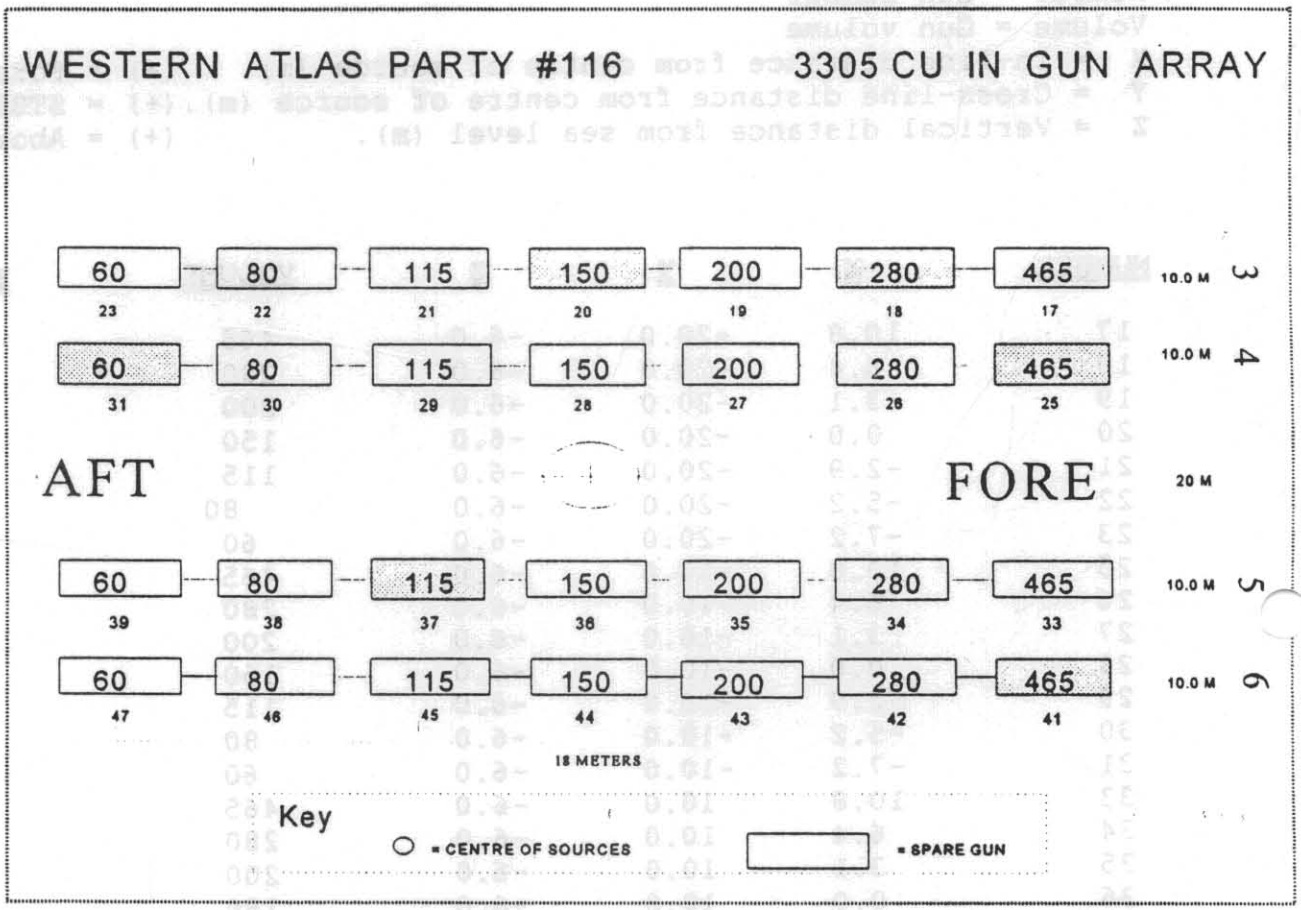
figure 3

Operating Depth : 6.0m +/- 1.5m
shotpoint Interval : 25.0 metres/shot
Nominal Fold : 30

4.1 ENERGY SOURCE ELEMENT DESCRIPTION

Number = Gun number
Volume = Gun volume
X = In-line distance from centre of source (m). (+) = Fore, (-) = Aft
Y = Cross-line distance from centre of source (m). (+) = STBD, (-) = PORT
Z = Vertical distance from sea level (m). (+) = Above, (-)=Below

NUMBER	X	Y	Z	VOLUME	SOURCE No.
17	10.8	-20.0	-6.0	465	1
18	6.4	-20.0	-6.0	280	1
19	3.1	-20.0	-6.0	200	1
20	0.0	-20.0	-6.0	150	1
21	-2.9	-20.0	-6.0	115	1
22	-5.2	-20.0	-6.0	80	1
23	-7.2	-20.0	-6.0	60	1
25	10.8	-10.0	-6.0	465	1
26	6.4	-10.0	-6.0	280	1
27	3.1	-10.0	-6.0	200	1
28	0.0	-10.0	-6.0	150	1
29	-2.9	-10.0	-6.0	115	1
30	-5.2	-10.0	-6.0	80	1
31	-7.2	-10.0	-6.0	60	1
33	10.8	10.0	-6.0	465	1
34	6.4	10.0	-6.0	280	1
35	3.1	10.0	-6.0	200	1
36	0.0	10.0	-6.0	150	1
37	-2.9	10.0	-6.0	115	1
38	-5.2	10.0	-6.0	80	1
39	-7.2	10.0	-6.0	60	1
41	10.8	20.0	-6.0	465	1
42	6.4	20.0	-6.0	280	1
43	3.1	20.0	-6.0	200	1
44	0.0	20.0	-6.0	150	1
45	-2.9	20.0	-6.0	115	1
46	-5.2	20.0	-6.0	80	1
47	-7.2	20.0	-6.0	60	1



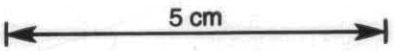


FIGURE 4 SOURCE ARRAY

SECTION 5 STREAMER CABLE PARAMETERS

Type	:	WG-24
Digital	:	yes
Series	:	2
Cable Length	:	1 x 3000 metres
Cable depth	:	10.0 metres +/- 1.5m .
No. Groups	:	240
Group Interval	:	12.5 metres
Group Length	:	15.5 metres
Group (Array) Type	:	Tapered array, centre weighted, 21% overlap on adjacent groups
Hydrophone Type	:	LRS
Hydrophone Model	:	WM-018
Hydrophone Sensitivity	:	49.45 volt/bar
No. Hydrophones/Array Grp.	:	16
No. Compass/Depth Controllers	:	1 x 9
Type of Compass/Depth Cntrl	:	DigiCOURSE 5011/03
No. Depth Indicators	:	1 x 30
DI's At Head of Groups	:	1,9,17,25,33,41,49,57,65,73,81,89,97, 105,113,121,129,137,145,153,161,169, 177,185,193,201,209,217,225,233
Compass/Bird Locations	:	Head Stretch Sections-Cables 1 Groups: 14, 46,78,110,142,174,206,222

5.1 COMPASS OFFSETS & MAGNETIC DECLINATION

All offsets are referenced to the first active near group.

COMPASS #	RU # ID	SECTION #	OFFSET (m)
1	2	HS	27.9
2	3	1B	-162.4
3	4	3B	-562.4
4	5	5B	-962.4
5	6	7B	-1362.4
6	7	9B	-1762.4
7	8	11B	-2162.4
8	9	13B	-2562.4
9	10	15A	-2962.4

MAGNETIC DECLINATION used for the prospect area was 12.67° East . The source of information was derived onboard from the WORLD MAGNETIC MODEL 1990, using 30th January 1994 for computations.

498180

9. STATISTICAL SUMMARY AND SEISMIC TAPE SHIPPING LIST

PRIME 2D LINE SUMMARY REPORT PAGE NO: 1
P116 M.V. WESTERN ATLAS April 08, 94
SAGASCO RESOURCES LTD - CONTRACT NO: WPT9310129-SGR

Line No	Dir	Fsp	Lsp	Sps	Ncsp	Kms
March 18, 94						
B94A-132	314	111	750	640	0	16.000
B94A-130	152	575	31	545	0	13.625
B94A-161	43	473	31	443	0	11.075
B94A-159	223	111	572	462	0	11.550
B94A-157	43	469	31	439	0	10.975
B94A-155	223	469	31	439	0	10.975
B94A-153	44	111	549	439	0	10.975
B94A-151	224	468	31	438	0	10.950
B94A-149	44	111	549	439	0	10.975
B94A-147	224	519	308	212	0	5.300
** Day Total **				4496	0	112.400
March 19, 94						
B94A-147	224	307	31	277	0	6.925
B94A-145	43	111	300	190	0	4.750
B94A-145A	43	301	596	296	0	7.400
B94A-143	225	511	31	481	0	12.025
B94A-141	45	111	601	491	0	12.275
B94A-128	124	111	1034	924	0	23.100
B94A-126	314	613	31	583	0	14.575
B94A-104	319	1777	392	1386	0	34.650
** Day Total **				4628	0	115.700
March 20, 94						
B94A-104	319	391	31	361	0	9.025
B94A-102	143	111	1831	1721	0	43.025
B94A-124	324	1274	31	1244	0	31.100
B94A-108	325	529	31	499	0	12.475
B94A-106	141	111	790	680	0	17.000
B94A-125	235	427	31	397	0	9.925
B94A-129	56	111	733	623	0	15.575
** Day Total **				5525	0	138.125
March 21, 94						
B94A-133	238	394	31	364	0	9.100
B94A-137	53	111	536	426	0	10.650
B94A-139	230	399	31	369	0	9.225
B94A-135	56	111	519	409	0	10.225
B94A-131	235	529	31	499	0	12.475
B94A-127	55	111	737	627	0	15.675
B94A-110	323	1172	31	1142	0	28.550
B94A-112	142	111	970	860	0	21.500
** Day Total **				4696	0	117.400

STATISTICAL PRIME 2D LINE SUMMARY REPORT PAGE NO: 2
P116 M.V. WESTERN ATLAS April 08, 94
SAGASCO RESOURCES LTD - CONTRACT NO: WPT9310129-SGR

Line No	Dir	Fsp	Lsp	Sps	Ncsp	Kms
March 22, 94						
B94A-112	142	971	1279	309	0	7.725
B94A-123	235	1025	31	995	0	24.875
B94A-121	54	111	1128	1018	0	25.450
B94A-119	235	554	31	524	0	13.100
B94A-115	56	111	1102	992	0	24.800
B94A-117	57	557	30	528	0	13.200
B94A-113	57	111	228	118	0	2.950
** Day Total **				4484	0	112.100
March 23, 94						
B94A-113	57	229	1647	1419	0	35.475
B94A-111	235	1494	31	1464	0	36.600
B94A-107	56	111	1138	1028	0	25.700
B94A-109	235	670	31	640	0	16.000
B94A-105	56	111	717	607	0	15.175
B94A-103	236	640	31	610	0	15.250
B94A-101	55	111	477	367	0	9.175
** Day Total **				6135	0	153.375
March 24, 94						
B94A-101	55	478	798	321	0	8.025
B94A-122	144	111	988	878	0	21.950
B94A-120	324	657	31	627	0	15.675
B94A-118	144	111	737	627	0	15.675
B94A-116	323	659	31	629	0	15.725
B94A-114	323	111	642	532	0	13.300
** Day Total **				3614	0	90.350

*** Total ***	33578	0	839.450

Western Atlas International
A Litton/Dresser Company

498183

WESTERN GEOPHYSICAL

DATA REEL SHIPPING LIST
SAGASCO
ROCKY CAPE 2D, BASS BASIN
SHIPMENT #: P-116-OB116-04-94

DESCRIPTION OF TAPES:

Descrip.	Value	Comment
Type	CARTRIDGE	3480 COMPATIABLE
Density	38,000 BPI	1/2", .656' LENGTH
Brand	ROYAL GUARD	3M
Year of manufacture		1993

DESCRIPTION OF DATA:

Descrip.	Value	Comment
Survey	ROCKY CAPE 2D	BLOCK SB94A
Year	1994	MARCH
Type	2D	SINGLE VESSEL/SINGLE SOURCE/1 STREAMER
Format	4-Byte SEG D	
Category		
Data Type	DEMULTIPLEXED 8024	

Data Produced By	Western Geophysical Company
Acquisition Crew	Party 116, WESTERN ATLAS

Comment:

Prepared By: Mark Dorrison Date: 24-03-94

Received By: _____ Date: _____

498184

SEQ	LINE	SP - SP	TAPE - TAPE	BOX	DATE	COMMENTS
1	SB94A-132	111- 750	4881- 4891	1	18/03/94	SOL -EOL
2	SB94A-130	575- 41	4892- 4900	1	18/03/94	SOL -CONT
"	"	40- 31	4901- 4901	2	"	CONT-EO
3	SB94A-161	473- 31	4902- 4909	2	18/03/94	SOL -EOL
4	SB94A-159	111- 572	4910- 4917	2	18/03/94	SOL -EOL
5	SB94A-157	469- 295	4918- 4920	2	18/03/94	SOL -CONT
"	"	294- 31	4921- 4925	3	"	CONT-EOL
6	SB94A-155	469- 31	4926- 4933	3	18/03/94	SOL -EOL
7	SB94A-153	111- 525	4934- 4940	3	18/03/94	SOL -CONT
"	"	526- 549	4941- 4941	4	"	CONT-EOL
8	SB94A-151	468- 31	4942- 4949	4	18/03/94	SOL -EOL
9	SB94A-149	111- 549	4950- 4957	4	18/03/94	SOL -EOL
10	SB94A-147	519- 345	4958- 4960	4	18/03/94	SOL -CONT
"	"	344- 31	4961- 4966	5	"	CONT-EOL
11	SB94A-145	111- 300	4967- 4970	5	19/03/94	SOL -EOL
12	SB94A-145A	240- 596	4971- 4976	5	19/03/94	SOL -EOL
13	SB94A-143	511- 257	4977- 4980	5	19/03/94	SOL -CONT
"	"	256- 31	4981- 4984	6	"	CONT-EOL
14	SB94A-141	111- 601	4985- 4993	6	19/03/94	SOL -EOL
15	SB94A-128	111- 525	4994- 5000	6	19/03/94	SOL -CONT
"	"	526-1034	5001- 5010	7	"	CONT-EOL
16	SB94A-126	613- 57	5011- 5020	7	19/03/94	SOL -CONT
"	"	56- 31	5021- 5021	8	"	CONT-EOL
17	SB94A-104	1777- 643	5022- 5040	8	19/03/94	SOL -CONT
"	"	642- 31	5041- 5051	9	"	CONT-EOL
18	SB94A-102	111- 644	5052- 5060	9	20/03/94	SOL -CONT
"	"	645-1831	5061- 5080	10	20/03/94	CONT-EOL
19	SB94A-124	1274- 80	5081- 5100	11	20/03/94	SOL -CO
"	"	79- 31	5101- 5101	12	"	CONT-EOL
20	SB94A-108	529- 31	5102- 5110	12	20/03/94	SOL -EOL
21	SB94A-106	111- 698	5111- 5120	12	20/03/94	SOL -CONT
"	"	699- 790	5121- 5122	13	"	CONT-EOL
22	SB94A-125	427- 31	5123- 5129	13	20/03/94	SOL -EOL
23	SB94A-129	111- 733	5130- 5140	13	20/03/94	SOL -EOL
24	SB94A-133	394- 31	5141- 5147	14	21/03/94	SOL -EOL
25	SB94A-137	111- 536	5148- 5154	14	21/03/94	SOL -EOL
26	SB94A-139	399- 45	5155- 5160	14	21/03/94	SOL -CONT
"	"	44- 31	5161- 5161	15	"	CONT-EOL
27	SCRATCHED	0- 0	5162- 5163	15	21/03/94	SOL -EOL
27	SB94A-135	111- 519	5164- 5170	15	21/03/94	SOL -EOL
28	SB94A-131	529- 31	5171- 5179	15	21/03/94	SOL -EOL
29	SB94A-127	111- 165	5180- 5180	15	21/03/94	SOL -CONT
"	"	166- 737	5181- 5190	16	"	CONT-EOL
30	SB94A-110	1172- 578	5191- 5200	16	21/03/94	SOL -CONT
"	"	577- 31	5201- 5210	17	"	CONT-EOL
31	SB94A-112	111- 705	5211- 5220	17	21/03/94	SOL -CONT
"	"	706-1279	5221- 5230	18	"	CONT-EOL
32	SB94A-123	1025- 431	5231- 5240	18	22/03/94	SOL -CONT
"	"	430- 31	5241- 5247	19	"	CONT-EOL
32	SCRATCHED	0- 0	5248- 5248	19	22/03/94	SOL -EOL
33	SB94A-121	111- 824	5249- 5260	19	22/03/94	SOL -CONT
"	"	825-1128	5261- 5266	20	"	CONT-EO
34	SB94A-119	554- 31	5267- 5275	20	22/03/94	SOL -EO
35	SB94A-115	111- 405	5276- 5280	20	22/03/94	SOL -CONT
"	"	406-1102	5281- 5292	21	"	CONT-EOL
36	SB94A-117	557- 162	5293- 5300	21	22/03/94	SOL -CONT
"	"	161- 31	5301- 5303	22	"	CONT-EOL
37	SB94A-113	111-1125	5304- 5320	22	22/03/94	SOL -CONT

498185

EQ	LINE	SP - SP	TAPE - TAPE	BOX	DATE	COMMENTS
3	SB94A-113	1126-1647	5321- 5329	23	22/03/94	CONT-EOL
	SB94A-111	1494- 840	5330- 5340	23	23/03/94	SOL -CONT
	"	839- 31	5341- 5354	24	"	CONT-EOL
3	SB94A-107	111- 465	5355- 5360	24	23/03/94	SOL -CONT
	"	466-1138	5361- 5372	25	"	CONT-EOL
40	SB94A-109	670- 216	5373- 5380	25	23/03/94	SOL -CONT
"	"	215- 31	5381- 5384	26	"	CONT-EOL
4	SB94A-105	111- 717	5385- 5395	26	23/03/94	SOL -EOL
42	SB94A-103	640- 346	5396- 5400	26	23/03/94	SOL -CONT
"	"	345- 31	5401- 5406	27	"	CONT-EOL
43	SB94A-101	111- 798	5407- 5418	27	23/03/94	SOL -EOL
44	SB94A-122	111- 224	5419- 5420	27	24/03/94	SOL -CONT
"	"	225- 988	5421- 5433	28	"	CONT-EOL
45	SB94A-120	657- 243	5434- 5440	28	24/03/94	SOL -CONT
	"	242- 31	5441- 5444	29	"	CONT-EOL
46	SB94A-118	111- 737	5445- 5455	29	24/03/94	SOL -EOL
47	SB94A-116	659- 365	5456- 5460	29	24/03/94	SOL -CONT
	"	364- 31	5461- 5466	30	"	CONT-EOL
48	SB94A-114	111- 642	5467- 5475	30	"	SOL -EOL

498186

APPENDIX A - NAVIGATION

1. NAVIGATION REPORT

498187

WESTERN GEOPHYSICAL

NAVIGATION REPORT

SAGASCO RESOURCES LIMITED

YOLLA, BASS BASIN

ROCKY CAPE 2D SURVEY

PARTY : P116
VESSEL : WESTERN ATLAS
CLIENT : SAGASCO RESOURCES LIMITED
AREA : BASS BASIN, AUSTRALIA
PROSPECT : ROCKY CAPE 2D SURVEY

DATES
17 MAR. 1994 to 24 MAR. 1994

CLIENT REPS : FRANK RENTON.

COORDINATORS : D. CHOW, B. WILLIAMS.

NAVIGATORS : H. McMENAMIN, A. EVANS, R. LIBKE.
B. COLE, N. MEYERS, D. LINDLEY.

PARTY MANAGER: TOM MEYER.

498189

TABLE OF CONTENTS

GENERAL INFORMATION 4

NAVIGATION INFORMATION 5

GEODESIC PARAMETERS 6

WISDOM PARAMETERS 7

EVENT LOG 12

GENERAL INFORMATION

AREA : The YOLLA 2D prospect consists of four blocks in the Bass Basin Rocky Cape area of South Eastern Australia.

SHOOTING : Shotpoints start at 101 increasing in the easterly direction and decreasing in the westerly direction.

PARAMETERS : One cable : 3000 MTRS/240 Channels with 25 m. shot point spacing.

SOURCE : Single source: 3305 cu in. Array using 4 strings.

CABLE LOCATION: 9 Digicourse combined BIRDS AND COMPASS.

MAGNETIC VARIATION: 12.67° (Derived by the Q.C.'s On board and confirmed by Western, Perth.)

STEPBACK : Shotpoints are referenced from the NRP to the CMP. NRP (main Argo mast) to centre of near group (300.8). NRP to centre of source (169.8). Centre source to centre near group (131.0). 300.8-169.8=131 m. Then (131/2)+169.5 = 235.0 m. 235.0/25.00 = 9.4 (10) shotpoints. Therefore the first shotpoint is 111 and shotpoint reference for the first waypoint is 101.

GYRO CALIBRATION : A pre-survey gyro check and MULTIFIX verification was carried out on 10 and 11 of January, 1994 by A. Evans and W. Maxted of Western Geophysical. Correction entered into the WISDOM system: **-0•30°**

498191

NAVIGATION INFORMATION

RACAL MULTIFIX:

Primary navigation was RACAL MULTIFIX supplied and installed by RACAL Survey Australia. This is a Differential GPS Networking system using the TRIMBLE 4000DL receiver. Networked stations used were Adelaide, Sydney, and Melbourne.

RACAL SKYFIX:

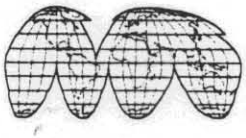
Secondary (backup) navigation was RACAL SKYFIX (Direct Injection) supplied and installed by RACAL Survey Australia. This Differential GPS system uses only one reference station to determin differential corrections. Melbourne station was used for this survey.

VELOCITY OF SOUND IN WATER: NOMINAL 1512.0 metres/second. This figure was determined by a T/S DIP in the centre of the area. The VALEPORT MARINE series 600 MKII temperature, depth and salinity meter, serial # 9509 was used for the measurements. These measurements were then applied to the Wilson formula for the calculation.

DEPTH:	AVERAGE: TEMPERATURE	/ SALINITY
0 to 20 metres	**16.42°**	**35.05 ppm**
COMPUTED AVERAGE: WILSON metres/second		**1511.73**

1512 m/s entered into the WISDOM navigation computer. This figure being derived from the monitored value by a velocimeter on the port pinger, during the offset verification and the computation (Wilson).

498192



GEODESIC PARAMETERS

SPHEROID:	AUSTRALIAN NATIONAL	
PROJECTION:	U.T.M.	
SEMIMAJOR AXIS:	6378160.000	
FLATTENING:	0.003352892	
LOCAL DATUM:	AGD-84	
GEOID-SPHEROID SEPARATION:	-1 Metre	
X-SHIFT:	116.00	}
Y-SHIFT:	50.47	}
Z-SHIFT:	-141.69	}
X-ROTATION:	1.11507 RAD 10^{-6}	} FROM W.G.S. 84
Y-ROTATION:	1.89077 RAD 10^{-6}	}
Z-ROTATION:	1.66776 RAD 10^{-6}	}
SCALE FACTOR:	-0.0983 PPM	}
CENTRAL MERIDIAN:	147 0.0000 EAST	
FALSE EASTING:	500000.00	
FALSE NORTHING:	10000000	
ORIGIN OF LATITUDE:	0 0.0	
ZONE NUMBER:	55	
GRID UNIT:	METERS	
UTM SCALE FACTOR:	0.9996	
CONVERSION FACTOR:	1.00000000	

WISDOM PARAMETERS

498193

General Definitions
Master Vessel
8:35 PM SUN., 20 MAR., 1994

	Year	Day	Minute	Sec*100	Format	Ver	Project Id	Project name and starting date
1	1994	79	1185	4619	NAVC:2.1	50	YOLLA	BASS BASIN ROCKY CAPE 2D SURVEY 17031994

	Project description, type of survey and location	Client
1	1 CABLE 1 SOURCE 2D SEISMIC SURVEY BASS BASIN	SAGASCO RESOURCES LIMITED

	Geophysical contractor	Position contractor
1	Western Geophysical.	Western Geophysical.

Col. M Time Record interval (0.01 second counts)
Col. Q Number of Radionavigation Pattern Channels
Col. R Maximum number of relative acoustic ranges/shot
Col. S Maximum number of satellites per lat/lon device
Col. T Maximum number of LOPs per radio solution
Col. U SSTS target ID number offset

	Col. M	Vessels	Active Cables	Active Source	Col. Q	Col. R	Col. S	Col. T	Col. U
1	1000	1	10000000	10000000	32	128	4	6	10004

Geodetic Definitions
Master Vessel
8:35 PM SUN., 20 MAR., 1994

Col. A Spheroid code

	Col. A	Spheroid name	Local datum name	X Shift	Y Shift	Z Shift	X Rotation	Y Rototion	Z Rotation	Scale Factor
1	17	AUSTRALIAN NAT.	AGD 84	116.00	50.47	-141.69	1.1150710	1.8907730	1.6677590000	-.0983000000

Col. N Geoid-spheroid separation (meters)
Col. P Magnetic declination (degrees)

	Semi-major	Semi-minor	Flattening	Col. N	Date and source of magnetic declination	Col. P
1	6378160.000	6356774.719	.003352892	-1.00	CCMAIL FROM CARL WINNEFELD, PERTH DTD 20 DEC 1993	12.67

Projection Definition
Master Vessel
8:35 PM SUN., 20 MAR., 1994

Col. A Projection type code

	Col. A	Projection type and name	Grid unit name	Conv. Factor
1	2	UTM SOUTH ZONE 55	METERS	1.00000

Col. K Latitude of scale factor definition (Degrees)
Col. L Longitude of scale factor definition (Degrees)

	Origin Lat	Origin Lon	False East	False North	C. Meridian	Scale Factor	Col. K	Col. L
1	0 0.0000	147 0.0000 E	500000.	.100000E+08	147 0.0000 E	.999600	0 0.0000	147 0.0000 E

Col. M Latitude of 1st standard parallel (Degrees)
Col. N Latitude of 2nd standard parallel (Degrees)
Col. O Latitude of start point (Degrees)
Col. P Longitude of start point (Degrees)
Col. Q Latitude of end point (Degrees)
Col. R Longitude of end point (Degrees)
Col. S Circular bearing of initial line of projection
Col. T Angle from skew to rectified grid (Degrees)

	Col. M	Col. N	Col. O	Col. P	Col. Q	Col. R	Col. S	Col. T
1	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0 0.0000	0.000000	0.000000

Line Definitions
Master Vessel
8:35 PM SUN., 20 MAR., 1994

Col. H Pops/shotpoint or shotpoints/closure
Col. I Shotpoint sequence flag [?/Increment/Decrement]

	Name	From Lat	From Lon	To Lat	To Lon	Length (M)	Azimuth	Col. H	Col. I	First shot#
1	SB94A-135	40 10.0117 S	145 26.0257 E	40 7.4178 S	145 31.1346 E	8700.0	56.539	1	Incre	111.00

Col. M Fire control [?/Distance/Time/Extern/Manual]
Col. O Time Fire Interval (0.01 second counts)
Col. P Minimum cycle time (0.01 second counts)
Col. Q Maximum cycle time (0.01 second counts)
Col. R Use maximum cycle time ? [Yes/No]
Col. T Shotpoint number control [?/Internal/External]
Col. U External closure indicator [?/Pop/Shot]
Col. V Popscan control [?/Fire/External]
Col. W Popscan delay (0.01 second counts)
Col. X User header transfer mode [?/Internal/External]
Col. Y User header transfer delay (0.01 second counts)

	BOL shot #	EOL shot #	Col. M	Meters/Pop	Col. O	Col. P	CoCol. R	SP Vel Filtr	Col. T	Col. U	Col. V	Col. W	Col.Col. Y
1	101.00	449.000	Distan	25.0000	1000	800	3000No	1.00000	Intern	Shot	Extern	0	Int 0

Vessel Definition
Master Vessel
8:35 PM SUN., 20 MAR., 1994

Vessel name and description

1 WESTERN ATLAS, P-116

Description of onboard processing system

1 WISDOM 50, FLEX 4.0N, NIU 1.1 TOTALNET 1.11B

Description of vessel steering point

1 MAIN NAVIGATION MAST SHOTPOINT IS CDP POSITION

Description of vessel reference point

1 DIRECTLY BELOW MAIN NAVIGATION MAST AT WATERLINE

	+Fore/-Aft	-Port/+Stbd	Above sea level	Draft	Length	Width	Time diff
1	49.0000	0.00000	0.00000	4.30000	80.0000	18.0000	-10

Lat/Lon Device Definition
Master Vessel
8:35 PM SUN., 20 MAR., 1994

	Device	Device description		
1	TR02	TRIMBLE 4000A		NOT IN USE (SHUT OFF)
2	TR01	RACAL TRIMBLE		DIRECT INJECTION
3	DN01	RACAL MULTIFIX		NETWORK SOLUTION
4	MM01	MARINE MACHINE	(SHUT OFF)	WESTERN'S DGPS NOT IN USE

Col. M Time Corr to UTC (Sec*10)

	Device	Filter	Lat Var	Lon Var	Hgt Var	VelE Var	VelN Var	VelZ Var	Lat Bias	Lon Bias	Col. M	Ant #
1	TR02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2
2	TR01	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3
3	DN01	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4
4	MM01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6

Antenna Definitions
Master Vessel
8:35 PM SUN., 20 MAR., 1994

	No.	Antenna Descriptor		+Fore/-Aft	-Port/+Stbd	Elevation
1	3	RACAL DIRECT INJECTION		.150000	.840000	18.2500
2	4	RACAL MULTIFIX NETWORK SOLUTION		.150000	.550000	18.2500
3	6	MARINE MACHINE	WESTERN'S DGPS NETWORK NOT IN USE	.200000	-7.57000	16.0000

Gyro Definitions
Master Vessel
8:35 PM SUN., 20 MAR., 1994

	Gyro Description		Use	+Fore/-Aft	-Port/+Stbd	Elevation	Correction
1	SPERRY MK23 C-3 SER NO. 3155	CALIBRATED 11 JAN 1994	Yes	0.00000	0.00000	0.00000	-.30000

Fathometer Definition
Master Vessel
8:35 PM SUN., 20 MAR., 1994

Col. F Sound Propagation Velocity(m/s) Col. G Calibrated Vel Of Prop (m/s)

	Fathometer Description		Type	+For-Aft	-Prt+Stb	Elev	Col. F	Col. G	Ref
1	SIMRAD EA 200	CAL ON 23 FEB 1993 CHECKED ON 19 JAN 1994 IN PORTLAND	2	9.60	-1.70	-4.30	1500.00	1512.00	Sea

Cable General Definitions
Master Vessel
8:35 PM SUN., 20 MAR., 1994

Col. A Number of receiver groups
Col. D Number of receiver groups for binning
Col. E Group interval for binning
Col. F Center of near group offset for binning
Col. H Offset layback angle [Gyro/Track/Line]
Col. I Point to center of nearest Rx Group +Fore/-Aft
Col. J Point to center of nearest Rx Group -Port/+Stbd

	Col. A	Group Int	Group Length	Col. D	Col. E	Col. F	Manual	Col. H	Col. I	Col. J
1	240	12.5000	15.5000	240	12.5000	0.00000	Yes	Gyro	-300.800	0.00000

Col. K Point to center of nearest Rx Group Elevation
Col. L Number of active cable sections
Col. M Active cable section length
Col. N Cable Head Section Length
Col. O Nominal head stretch length
Col. P Nomianl tail stretch length
Col. Q End of cable to tailbuoy reference point
Col. R Nominal cable depth

	Col. K	Col. L	Col. M	Col. N	Col. O	Col. P	Col. Q	Col. R
1	-10.0000	30	100.000	8.00000	87.3000	80.0000	52.0000	10.0000

Cable Compass Definitions
Master Vessel
8:35 PM SUN., 20 MAR., 1994

Col. F Compass Type Code [Fluxgate/Rot card]

	RU No	Type	Serial #	Use	Cable#	Col. F	Ofset	Spike Limit
1	2	DIGI	8661	Yes	1	Rot ca	27.9000	60.0000
2	3	DIGI	8489	Yes	1	Rot ca	-162.400	60.0000
3	4	DIGI	8679	Yes	1	Rot ca	-562.400	60.0000
4	5	DIGI	8853	Yes	1	Rot ca	-962.400	60.0000
5	6	DIGI	8690	Yes	1	Rot ca	-1362.40	60.0000
6	7	DIGI	8880	Yes	1	Rot ca	-1762.40	60.0000
7	8	DIGI	8749	Yes	1	Rot ca	-2162.40	60.0000
8	9	DIGI	7215	Yes	1	Rot ca	-2562.40	60.0000
9	10	DIGI	8829	Yes	1	Rot ca	-2962.40	60.0000

Col. I Number of bias corrections

	Col. I	Heading #1	Bias #1	Heading #2	Bias #2	Heading #3	Bias #3	Heading #4	Bias #4
1	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Source General Definitions
Master Vessel
8:35 PM SUN., 20 MAR., 1994

Col. C Layback ref angle [Gyro/Track/Line]

	Source array description		Manual	Col. C	+Fore/-Aft	-Port/+Stbd	Elevation	Nom Depth
1	SINGLE SOURCE	STRINGS 3,4,5, & 6	Yes	Gyro	-169.800	0.00000	-6.00000	6.00000

Towfish Pinger Definitions
Master Vessel
8:35 PM SUN., 20 MAR., 1994

Col. C Offset layback angle flag

	Towfish Pinger Description	Manual	Col. C	+Fore/-Aft	-Port/+Stbd	Elevation
1	STBD PINGER	No	0	-20.0000	20.0000	-12.5000
2	PORT PINGER	No	0	-20.0000	-20.0000	-12.5000

Absolute Position Definitions
Master Vessel
8:35 PM SUN., 20 MAR., 1994

Col. C Shotpoint Control ? [No/Yes] Col. D Lat/Lon Device No Col. E Relative Position No

	Use	Description	Col. C	Col. D	Col. E	Pat #1	Pat #2	Pat #3	Pat #4	Pat #5	Pat #6
1	Yes	RACAL MULTIFIX	No	3	0	0	0	0	0	0	0
2	Yes	RACAL DIRECT INJ	No	2	0	0	0	0	0	0	0
3	No		No	0	0	0	0	0	0	0	0
4	No		No	0	0	0	0	0	0	0	0
5	No		No	0	0	0	0	0	0	0	0
6	No		No	0	0	0	0	0	0	0	0
7	No		No	0	0	0	0	0	0	0	0
8	No		No	0	0	0	0	0	0	0	0
9	No		No	0	0	0	0	0	0	0	0
10	No		No	0	0	0	0	0	0	0	0
11	No		No	0	0	0	0	0	0	0	0
12	No		No	0	0	0	0	0	0	0	0

Relative Position Definitions
Master Vessel
8:36 PM UN., 20 MAR., 1994

Col. D Bearing reference [North/Gyro/Line/Grid North]

	ID No.	Relative position description	Ant	Col. D	Range Cor	Brg Cor	Rng Wind	Brg Wind
1	10002	PORT PINGER	0	North	0.0000	0.0000	0.000	0.000
2	10003	STBD PINGER	0	North	0.0000	0.0000	0.000	0.000
3	10008	CABLE 1	0	North	0.0000	0.0000	0.000	0.000
4	10012	GUN STRING 3	0	North	0.0000	0.0000	0.000	0.000
5	10013	GUN STRING 4	0	North	0.0000	0.0000	0.000	0.000
6	10014	GUN STRING 5	0	North	0.0000	0.0000	0.000	0.000
7	10015	GUN STRING 6	0	North	0.0000	0.0000	0.000	0.000

Vessel Position Definition
Master Vessel
8:36 PM SUN., 20 MAR., 1994

	Vessel	Ves MD	Pos Tp	Pos No
1	1	SYS	Absolute	1
2	1	BAK	Absolute	2

Cable Position Definition
Master Vessel
8:36 PM SUN., 20 MAR., 1994

	Cable#	Ref Pt	Pos Type	Pos No	+Fore/-Aft	-Port/+Stbd	Elevation
1	1	No	Relative	10008	17.8000	0.00000	0.00000

Source Position Definition
Master Vessel
8:36 PM SUN., 20 MAR., 1994

	Source	Ref Pt	Pos Type	Pos No	+Fore/-Aft	-Port/+Stbd	Elevation
1	1	No	Relative	10012	14.8000	20.0000	1.40000
2	1	No	Relative	10013	14.8000	10.0000	1.40000
3	1	No	Relative	10014	14.8000	-10.0000	1.40000
4	1	No	Relative	10015	14.8000	-20.0000	1.40000

Towfish Pinger Position Definitions
Master Vessel
8:36 PM SUN., 20 MAR., 1994

Col. A Towfish pinger number for this position Col. C Position type [Absolute/Relative]
Col. B Use Towfish pinger reference ? [Yes/No] Col. D Absolute or relative ID position number

	Col. A	Col. B	Col. C	Col. D
1	1	Yes	Relative	10003
2	2	Yes	Relative	10002

Acoustic Sensor Definitions
Master Vessel
8:36 PM SUN., 20 MAR., 1994

Col. E Cable or source number

	ID	Use	Type	Ref	Col. E	+Fore/-Aft	-Port/+Stbd	Elevation	Tx Delay	Rx Delay	Re-Tx Delay	Vel Prop m/s
1	1	Yes	Dig	Source	1	-11.4000	20.0000	-1.50000	0.00000	0.00000	0.00000	1512.00
2	2	Yes	Dig	Source	1	-11.4000	10.0000	-1.50000	0.00000	0.00000	0.00000	1512.00
3	3	Yes	Dig	Source	1	-11.4000	-10.0000	-1.50000	0.00000	0.00000	0.00000	1512.00
4	4	Yes	Dig	Source	1	-11.4000	-20.0000	-1.50000	0.00000	0.00000	0.00000	1512.00
5	10002	Yes	SSTS	Towfish	2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1512.00
6	10003	Yes	SSTS	Towfish	1	0.00000	0.00000	0.00000	420.000	0.00000	0.00000	1512.00
7	10005	Yes	SSTS	Vessel	1	9.10000	-1.90000	-4.30000	0.00000	2670.00	0.00000	1512.00
8	10006	Yes	SSTS	Vessel	1	-24.6000	-1.80000	-4.30000	0.00000	2670.00	0.00000	1512.00
9	10007	Yes	SSTS	Towfish	1	-20.0000	20.0000	-12.5000	0.00000	3280.00	0.00000	1512.00
10	10008	Yes	SSTS	Cable	1	17.8000	0.00000	0.00000	0.00000	2620.00	0.00000	1512.00
11	10012	Yes	SSTS	Source	1	14.8000	0.00000	0.00000	0.00000	3280.00	0.00000	1512.00
12	10013	Yes	SSTS	Source	1	14.8000	-10.0000	0.00000	0.00000	3280.00	0.00000	1512.00
13	10014	Yes	SSTS	Source	2	14.8000	10.0000	0.00000	0.00000	3280.00	0.00000	1512.00
14	10015	Yes	SSTS	Source	2	14.8000	0.00000	0.00000	0.00000	3280.00	0.00000	1512.00

Miscellaneous Comments Definitions
Master Vessel
8:36 PM SUN., 20 MAR., 1994

	User comments
1	OPERATORS:
2	00:01-12:00 B. COLE, D. LINDLEY, N. MEYERS
3	12:01-00:00 H. MCMENAMIN, R. LIBKE, A. EVANS
4	
5	1 CABLES, SINGLE SOURCE
6	

Cable Tension Monitor Parameters
Master Vessel
8:36 PM SUN., 20 MAR., 1994

Col. C CTM Fore/Aft Offset (Meters) Col. D CTM Correction (Klbs)

	CTM #	CTM Description	Col. C	Col. D
1	1	CABLE #1	16.3500	0.00000
2	3	CABLE #3 (PORT) IS MONITOR #4	16.3500	0.00000
3	4		0.00000	0.00000

EVENT LOG

DATE	TIME	EVENT
17/3	11:00	Depart Burnie, Tasmania for prospect area.
17/3	15:30	SSTS Transducers down.
17/3	17:30	Cable Deployed.
17/3	17:45	SSTS deployed, working on gun/cable offsets.
17/3	22:55	All guns out, separations good.
17/3	23:39	BOT P116-0252 (Nav Reel).
18/3	00:33	SOL SB94A-132.
18/3	02:16	EOL SB94A-132.
18/3	03:42	Source Layback Offset changed fron -167 to -169.8m.
18/3	03:43	SOL SB94A-130.
18/3	05:11	EOL SB94A-130.
18/3	06:52	SOL SB94A-161.
18/3	08:02	EOL SB94A-161.
18/3	08:45	SSTS Pingers on board. (10:15 Transducers up and sea gates closed)
18/3	09:15	SOL SB94A-159.
18/3	10:29	EOL SB94A-159.
18/3	11:44	SOL SB94A-157.
18/3	12:55	EOL SB94A-157.
18/3		Seq. 1,3,4 & 5 SP's numbered incorrectly.
18/3	14:05	SOL SB94A-155.
18/3	15:14	EOL SB94A-155.
18/3	16:22	SOL SB94A-153.
18/3	17:31	EOL SB94A-153.
18/3	18:40	SOL SB94A-151.
18/3	19:48	EOL SB94A-151.
18/3	21:04	SOL SB94A-149.
18/3	22:15	EOL SB94A-149.
18/3	23:26	SOL SB94A-147.
19/3	00:44	EOL SB94A-147.
19/3	01:55	SOL SB94A-145.
19/3	02:25	EEOL SB94A-145. (Guns problem).

19/3	04:24	SOL SB94A-145A.
19/3	05:22	EOL SB94A-145A.
19/3	06:40	SOL SB94A-143.
19/3	07:56	EOL SB94A-143.
19/3	09:13	SOL SB94A-141.
19/3	10:31	EOL SB94A-141.
19/3	12:43	SOL SB94A-128.
19/3	15:09	EOL SB94A-128.
19/3	16:24	SOL SB94A-126.
19/3	17:54	EOL SB94A-126.
19/3	20:20	SOL SB94A-104.
20/3	00:57	EOL SB94A-104.
20/3	02:02	SOL SB94A-102.
20/3	06:37	EOL SB94A-102.
20/3	08:13	SOL SB94A-124.
20/3	09:56	DogLeg at SP 614.
20/3	11:28	EOL SB94A-124.
20/3	12:56	SOL SB94A-108.
20/3	14:15	EOL SB94A-108.
20/3	15:27	SOL SB94A-106.
20/3	17:18	EOL SB94A-106.
20/3	18:54	SOL SB94A-125.
20/3	19:56	EOL SB94A-125.
20/3	21:17	SOL SB94A-129.
20/3	22:57	EOL SB94A-129.
20/3	23:20	End of Nav Reel P116-0252.
20/3	23:28	Start of Nav Reel P116-0253.
21/3	00:25	SOL SB94A-133.
21/3	01:23	EOL SB94A-133.
21/3	02:47	SOL SB94A-137.
21/3	03:54	EOL SB94A-137.
21/3	04:46	SOL SB94A-139.
21/3	05:44	EOL SB94A-139.
21/3	07:06	SOL SB94A-135.
21/3	07:17	Line Aborted/Data Scratched. Seis Problem.
21/3	09:15	SOL SB94A-135.
21/3	10:18	EOL SB94A-135.

21/3	11:51	SOL SB94A-131.
21/3	13:10	EOL SB94A-131.
21/3	14:23	SOL SB94A-127.
21/3	16:01	EOL SB94A-127.
21/3	17:29	SOL SB94A-110.
21/3	20:28	EOL SB94A-110.
21/3	21:43	SOL SB94A-112
22/3	00:48	SOL SB94A-112
22/3	02:48	SOL SB94A-123
22/3	05:24	SOL SB94A-123
22/3	06:40	SOL SB94A-121.
22/3	09:20	EOL SB94A-121.
22/3	11:23	SOL SB94A-119.
22/3	12:45	EOL SB94A-119.
22/3	14:22	SOL SB94A-115.
22/3	14:33	Line Aborted/Data Scratched. Seis Problem.
22/3	16:26	SOL SB94A-115.
22/3	19:02	EOL SB94A-115.
22/3	20:47	SOL SB94A-117.
22/3	22:08	EOL SB94A-117.
22/3	23:41	SOL SB94A-113.
23/3	03:40	SOL SB94A-113.
23/3	05:04	SOL SB94A-111.
23/3	08:52	EOL SB94A-111.
23/3	10:37	SOL SB94A-107.
23/3	13:17	EOL SB94A-107.
23/3	14:29	SOL SB94A-109.
23/3	16:11	EOL SB9AA-109.
23/3	16:15	Received Co-ords foe new 2D block, EPP24.
23/3	17:17	SOL SB94A-105.
23/3	18:53	EOL SB94A-105.
23/3	20:25	SOL SB94A-103.
23/3	21:40	EOL SB94A-103.
23/3	23:02	SOL SB94A-101.
24/3	00:49	EOL SB94A-101.
24/3	01:05	END NAV REEL P116-0253.
24/3	01:15	NEW NAV REEL P116-0254.

24/3	03:11	Line aborted due to siesmic hang up. All data scratched.
24/3	05:09	SOL SB94A-122.
24/3	07:29	EOL SB94A-122.
24/3	08:54	SOL SB94A-120.
24/3	10:33	EOL SB94A-120.
24/3	11:55	SOL SB94A-118.
24/3	13:35	EOL SB94A-118.
24/3	14:50	SOL SB94A-116.
24/3	16:30	EOL SB94A-116.
24/3	17:51	SOL SB94A-114.
24/3	19:14	EOL SB94A-114.
24/3	19:16	END NAV REEL P116-0254.

END OF PROSPECT

APPENDIX A – NAVIGATION

1. NAVIGATION REPORT

498204

POSITIONING CONTROL

FOR

WESTERN GEOPHYSICAL CO LTD

AND

SAGASCO

SUBJECT	:	**SKYFIX POSITIONING**
VESSEL	:	**WESTERN ATLAS**
LOCATION	:	**ROCKY CAPE 2D SEISMIC SURVEY, BASS BASIN**
DATE	:	**17th - 24th MARCH 1994**
REFERENCE	:	**2179B**

CONTENTS

		Page No.
1.	Abstract	3
2.	SkyFix Differential GPS	4
3.	Equipment	11
4.	Geodetic Parameters	12
5.	Adelaide, Melbourne and Sydney Reference Station Descriptions	13
6.	Distribution	14

1. ABSTRACT

RACAL SURVEY AUSTRALIA LIMITED (Racal) were contracted by WESTERN GEOPHYSICAL CO LTD (Westerns) to supply "Skyfix" DGPS as positioning for seismic work onboard the "Western Atlas" in the Rocky Cape 2D Seismic Survey, Bass Basin prospect for Sagasco.

The work was carried out in the field between the 17th - 24th March 1994.

2. GLOBAL POSITIONING SYSTEM (GPS)

2.1 SYSTEM DESCRIPTION

The NAVSTAR GPS (Navigational Satellite Timing and Ranging Global Positioning System) is an USA Military all- weather, space-based positioning system that transmits signals from a constellation of satellites orbiting the Earth. It is capable of providing suitably equipped users worldwide with accurate three dimensional positions on, or near, the Earths' surface. The accuracy of these determined positions can vary from a few millimetres to 100 metres depending on the method of data acquisition and processing. System design consists of three integrated parts: the Ground Control Segment, the Space Segment and the User Segment.

The operational space segment consists of 21 production satellites and 3 active spares; the term Space Vehicle (SV) is used as a synonym for satellite. The satellites are in high orbits, at approximately 20,200km, having an orbit period of 12 hours. They are arranged in 6 orbital planes, inclined at 55 degrees with near circular orbits. The configuration provides complete 4 satellite (3D) coverage worldwide.

The current configuration consists of both Block I (testing) and Block II satellites orbiting and transmitting healthy data. GPS Constellation history and status as of March 1994 is as follows:

Navstar#	SVN/PRN	Launch	Slot	Operational	Nav Lost	Reason for Failure	Months Operational
I-1	1/4	22/02/78	**	29/03/78	25/01/80	Clock	20
I-2	2/7	13/03/78	**	14/07/78	30/07/80	Clock	25
I-3	3/6	06/10/78	**	09/11/78	19/04/92	Clock	161
I-4	4/8	11/12/78	**	08/01/79	27/10/86	Clock	93
I-5	5/5	09/02/80	**	27/02/80	28/11/83	Wheel	45
I-6	6/9	26/04/80	**	16/05/80	10/12/90	Wheel	127
I-7	7/	18/12/81	**			Booster	0
I-8	8/11	14/7/83	**	10/08/83	04/05/93	EPS Degr.	116
I-9	9/13	13/06/84	C4	19/07/84	Operating		11
I-10	10/12	08/09/84	A1	03/10/84	Operating		112
I-11	11/3	09/10/84	C1	30/10/85	Operating		100
II-1	14/14	14/02/89	E1	14/04/89	Operating		58
II-2	13/2	10/06/89	B3	12/07/89	Operating		55
II-3	16/16	17/08/89	E3	13/09/89	Operating		53
II-4	19/19	21/10/89	A4	14/11/89	Operating		51
II-5	17/17	11/03/89	D3	11/01/90	Operating		49
II-6	18/18	24/01/90	F3	14/02/90	Operating		48
II-7	20/20	25/03/90	B2	19/04/90	Operating		46
II-8	21/21	02/08/90	E2	31/08/90	Operating		42
II-9	15/15	01/10/90	D2	20/10/90	Operating		40
II-10	23/23	26/11/90	E4	10/12/90	Operating		38
II-11	24/24	03/07/91	D1	30/08/91	Operating		30
II-12	25/25	23/02/92	A2	24/03/92	Operating		23
II-13	28/28	10/04/92	C2	25/04/92	Operating		22
II-14	26/26	07/07/92	F2	23/07/92	Operating		19
II-15	27/27	09/09/92	A3	30/09/92	Operating		16
II-16	32/1	22/11/92	F1	11/12/92	Operating		14
II-17	29/29	18/12/92	F4	05/01/93	Operating		13
II-18	22/22	03/02/93	B1	04/04/93	Operating		10
II-19	31/31	30/03/93	C3	13/04/93	Operating		10
II-20	37/7	13/05/93	C4	12/07/93	Operating		8
II-21	39/9	26/06/93	A1	20/07/93	Operating		7
II-22	35/5	30/08/93	B4	28/09/93	Operating		5
II-23	34/4	26/10/93	D4	29/11/93	Operating		?
II-24	36/6	10/03/94	C1	28/03/94	Operating		0

Projected Launch Dates (Net Date)

(Note: SVN 38 & 33 Launch Projected for FY '94,
SVN 40 & 30 Launch Projected for FY '95,
Actual Launches will be 'Launch on Need').

The amount of coverage that the satellite configuration provides depends upon the geographical position of the user. It should be noted that available coverage does not represent actual useable 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 and individual satellites can be obtained from one of the USA based GPS Bulletin Board Services. Prior to a project commencing, Racal Australia download by modem, the current status and almanac file, usually from the US Coast Guard Bulletin Board. In addition the Racal Survey Ltd office in Great Yarmouth, England monitor the GPS status daily and fax to all Racal operating companies any Notice Advisory to NAVSTAR Users (NANU's) that may affect the operational capabilities of the system.

2.2 GPS OBSERVATIONS

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

Pseudo-range and Carrier phase.

Carrier phase is sometimes also referred to as carrier beat phase. Pseudo-range techniques are generally used for navigation e.g. Deltanav or Multifix. 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).

Pseudo-ranges

The pseudo-range 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 (pseudo-range) to differ from the geometric distance.

In offshore applications, where instantaneous positions are required, Pseudo-range 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 pseudo-ranges. 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 pseudo-ranges measured simultaneously to four GPS satellites.

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.

2.3 DIFFERENTIAL GPS (DGPS)

As the GPS is primarily a USA Defence system and the navigation accuracy to the civil user is degraded to about 100 metres standard deviation (Standard Position Service -SPS), as specified in the USA 1990 Federal Radio Navigation Plan. The means by which the USA Military degrade GPS is with the use of Selective Availability (SA) to control the accuracy of Pseudo-range measurements. Essentially, the user is given a false Pseudo-range for each satellite so that the resulting measurement is in error by a controlled amount.

DGPS is a means by which the civil user can overcome Selective Availability. It requires a receiver be located at a precisely known point from which Pseudo-range corrections for each satellite can be determined and monitored. These Pseudo-range corrections are then communicated by means of a telecommunications link to users at unknown locations. The DGPS technique has proven to be particularly effective and can improve the accuracy figure to 5 metres or better with or without Selective Availability activated. In the relative mode, most of the important systematic errors common to the known station and at the unknown location cancel out to improve the accuracy of the computed position.

2.4 "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 broadca 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 Australian network commenced operation in January 1991, and now comprises reference stations at Dampier, Broome, Perth, Adelaide, Melbourne, 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 version 2 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 hydrocarbo 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 are received over the SkyFix satellite data link.

The monitor system that has been developed by Racal Survey 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, 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 Version 2 DGPS data protocol, the reference station, monitoring and user infrastructure have been shown, through a growing body of project trials experience to provide a Differentially GPS operating environment consistently capable or providing position accuracy's of 5 metres or better.

The SkyFix scheme 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. Additional data were also obtained from AUSLIG for Darwin, Karratha and Tidbinbilla fiducial sites and included in the "SkyFix" adjustment. Trimble 4000 SST geodetic receivers were used to simultaneously obtain phase data which were then post processed to derive the vectors between sites. These vector results were entered into "Geolab" 3D adjustment software, to obtain adjusted values for the reference stations.

2.5 TRIMBLE 4000DLII GPS RECEIVER

The Trimble 4000DLII 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 Pseudo-ranges
- Rate of change of Pseudo-range
- Integrated Carrier

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 triangulation.

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.

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.

3. EQUIPMENT

Skyfix System	Serial Number
1 x "Skyfix" Radome	36
2 x Demodulators and Cables	2269/172, 2078/009
2 x Trimble 4000 DL	1531, 756
2 x Trimble 4000 DL antenna	
1 x Antenna Control Unit	176
1 x Compaq 486	317
1 x Compaq 486 prolinea	51671

4. GEODETIC PARAMETERS

The location co-ordinates are defined on Australian Geodetic Datum 1984 (AGD 84).

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

4.1 DATUMS

Datum	:	**Australian Geodetic Datum 1984**
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	:	51
Central Meridian (C.M.)	:	123° 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 84 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).

5. ADELAIDE, MELBOURNE AND SYDNEY REFERENCE STATION DESCRIPTIONS

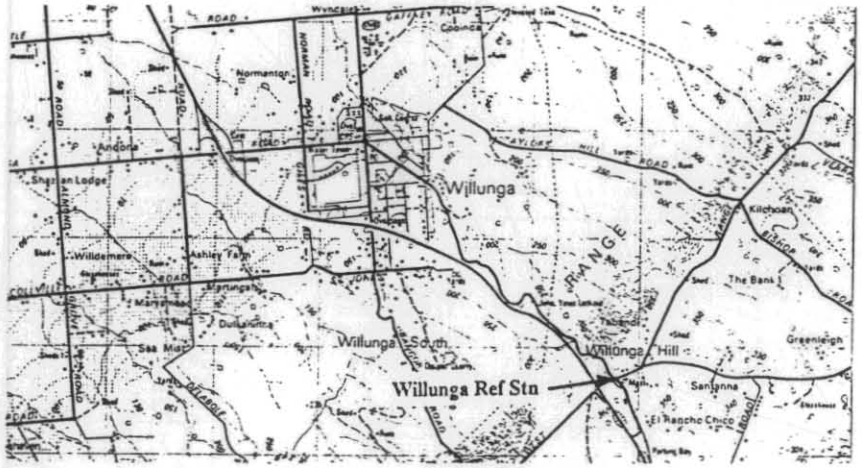
RACAL SURVEY AUSTRALIA

STATION SUMMARY

498217

CLIENT SkyFix JOB NO. 2029	STATION NAME/NUMBER Willunga Hill SkyFix Control Point ORDER 1
LOCATION Corner of Meadows Road and Old Victor Harbor Road, Willunga, S.A.	DATUM WGS 84 a: 6 378 137.000 metres 1/f: 298.257 223 563
ORIGINAL STATION ESTABLISHED BY Racal Survey Australia DATE 12/02/93	LATITUDE: 35° 17' 30.559" South LONGITUDE: 138° 34' 48.914" East
EXISTING STATION ESTABLISHED BY DATE	U.T.M. ZONE EASTING NORTHING
MAP REFERENCE PHOTO REFERENCE	Height 368.04 metres

LOCALITY AND ACCESS DIAGRAM



REMARKS

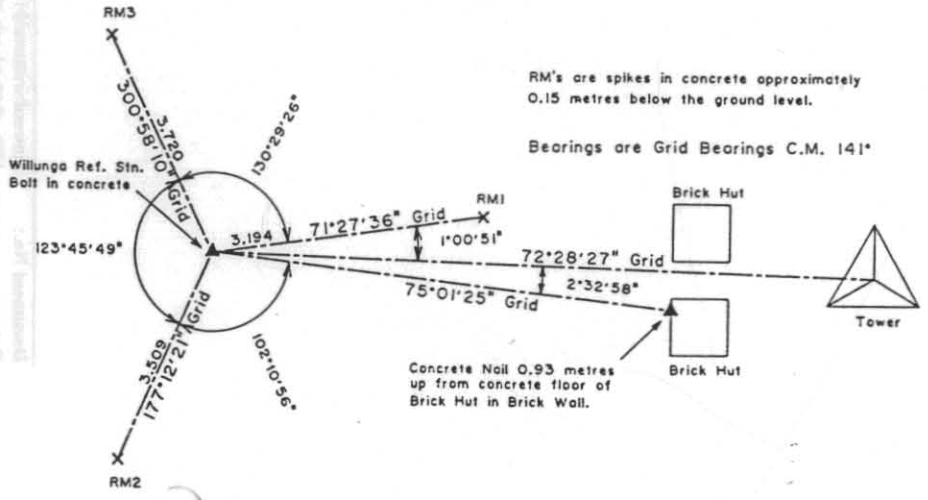
Willunga Hill Control Point was established by GPS survey. The mark is situated on council land on the south east corner of the intersection of the Old Victor Harbor Road and Meadows Road. The mark is approximately 42 metres to the west of the tower.

Access by vehicle with travelling time of approximately one hour from the Adelaide CBD.

Power (240 volts) and telephone (085 564 031) is available on site. Water is available from the service station opposite the tower.

SIGNED Anthony Kerr

STATION DIAGRAM



STATION DESCRIPTION

The station mark consists of a 0.300 metre long bolt set in concrete, with a star iron picket hammered into the ground adjacent to the mark. There are three reference marks concreted round the mark. These reference marks are approximately 0.150 metres below the surface of the ground.

Access

From the Adelaide CBD travel south west along the Anzac Highway. Turn left and travel south along Main South Road. Turn left into the Victor Harbor Road (Noarlunga - Victor Harbor Road) and travel south for 16.9 km past the McLaren Vale turnoff, past the Willunga turnoff and turn left into the old Victor Harbor Road. Travel for 0.7 km until the intersection of the old Victor Harbor Road and Meadows Road.

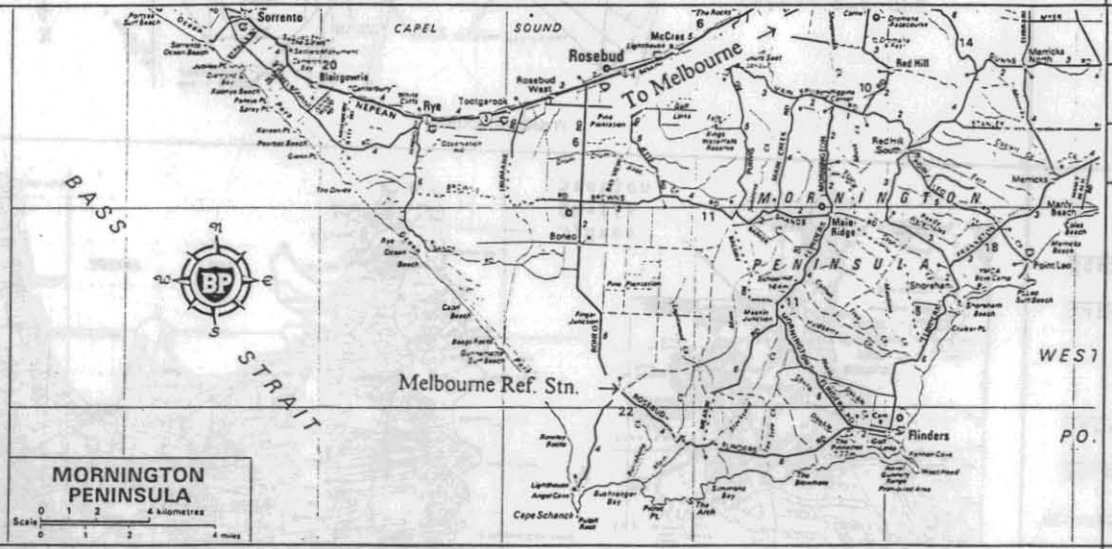
5 cm

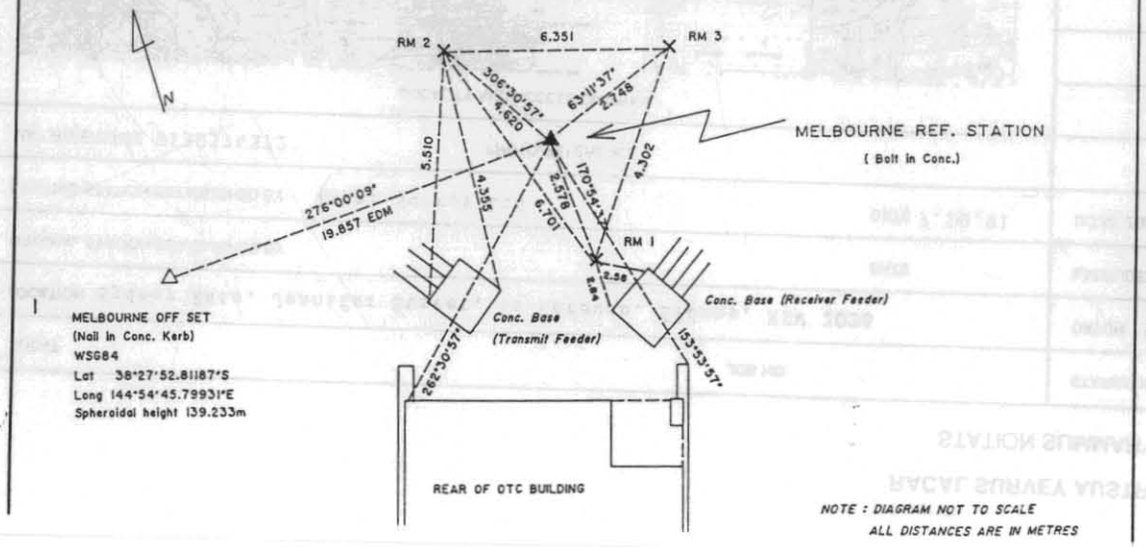
RACAL SURVEY AUSTRALIA

498218

STATION SUMMARY

CLIENT	SkyFix	JOB NO.	A2188	STATION NAME/NUMBER	Melbourne SkyFix Control Point	ORDER 1
LOCATION	OTC Melbourne Radio Station, Cape Schanck Victoria			DATUM WGS 84	a: 6 378 137.000m	1/f: 298.257 223 563
ORIGINAL STATION ESTABLISHED BY	Racal Survey Australia	DATE	January 1994	LATITUDE: 38° 27' 52.89374 South	LONGITUDE: 144° 54' 46.61192" East	
EXISTING STATION ESTABLISHED BY		DATE		U.T.M ZONE	EASTING	NORTHING
MAP REFERENCE	PHOTO REFERENCE			Height	= 139.192m (Spheroidal)	





REMARKS

Melbourne Control Point was established by GPS survey. The mark is situated in the rear yard of the OTC Melbourne Radio Station which is private property. Permission for access to the Station should be sought from the Manager, OTC Melbourne Radio Station, Cape Schanck Victoria. Phone (059) 886 261.

Access is available by 2 wheel drive vehicle with travelling time of approximately 1½ hours from the Melbourne CBD.

Power (240 volts) and telephone is available on site.

SIGNED

STATION DESCRIPTION

The station mark consists of 0.300 metre long bolt set in concrete, with a brass plaque set in the concrete indicating the property of Racal Survey Australia Limited. Three iron spike reference marks have been concreted around the mark, approximately 0.150 metres below the surface of the ground.

ACCESS

From the Melbourne GPO head South East using the South Eastern Arterial (Route 1), Springvale Road (Route 40) and the Mornington Peninsula Freeway/Mooroodue Road (Route 11) for approximately 85 kilometres until the end of the Mornington Peninsula Freeway is reached. At the roundabout turn left and head south along Boneo Road (Route 67) passing straight through another roundabout and past the turn off to Cape Schanck for 10.7 kilometres until OTC is reached on the left.

5 cm

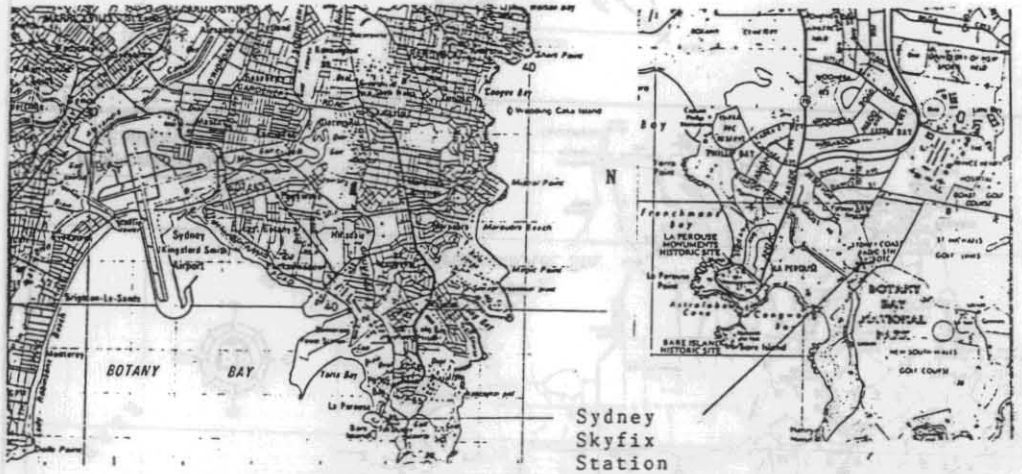
RACAL SURVEY AUSTRALIA

STATION SUMMARY

498219

CLIENT	JOB NO.	STATION NAME/NUMBER Sydney OTC	ORDER 1
LOCATION Sydney Raio, Jennifer Street, La Perouse, Sydney, NSW 2036		DATUM WGS 84 a: 6 378 137.000m 1/f: 298.257223563	
ORIGINAL STATION ESTABLISHED BY	DATE	LATITUDE: 33° 59' 12.38163" S LONGITUDE: 151° 14' 24.71470" E	Sph ht. 70.212m
EXISTING STATION ESTABLISHED BY Racal Survey Ltd	DATE 7.10.91	U.T.M. ZONE EASTING NORTHING	
MAP REFERENCE 9130374372	PHOTO REFERENCE		

LOCALITY AND ACCESS DIAGRAM



REMARKS

Access: Contact station Manager prior to visit. Tel: 311 0626 Fx: 311 3455.

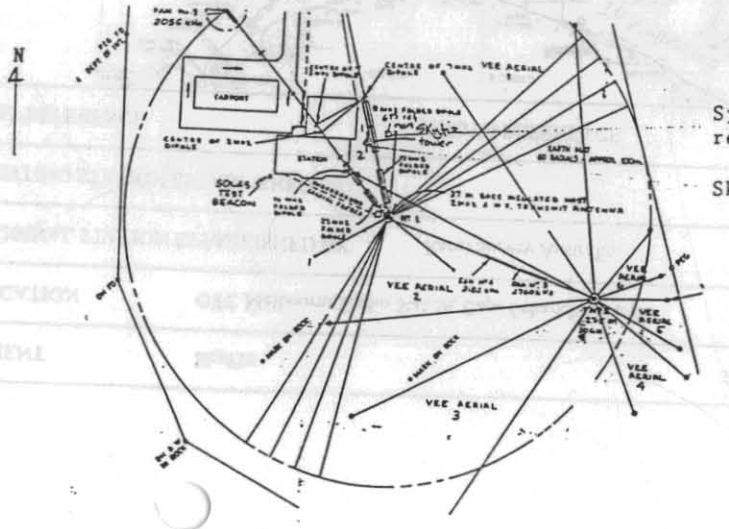
Survey Method: Sydney OTC GPS reference marker was positoned by static dual frequency phase differential GPS relative to Fleurs 7279, Watsons Bay (P) 7282 and the transportable SLR site, Perth, W.A.

Satellite Visibility: Good.

Equipment Requirements: Tripod over mark, 30m cable run to 240V power supp.

SIGNED M. Tuch

STATION DIAGRAM



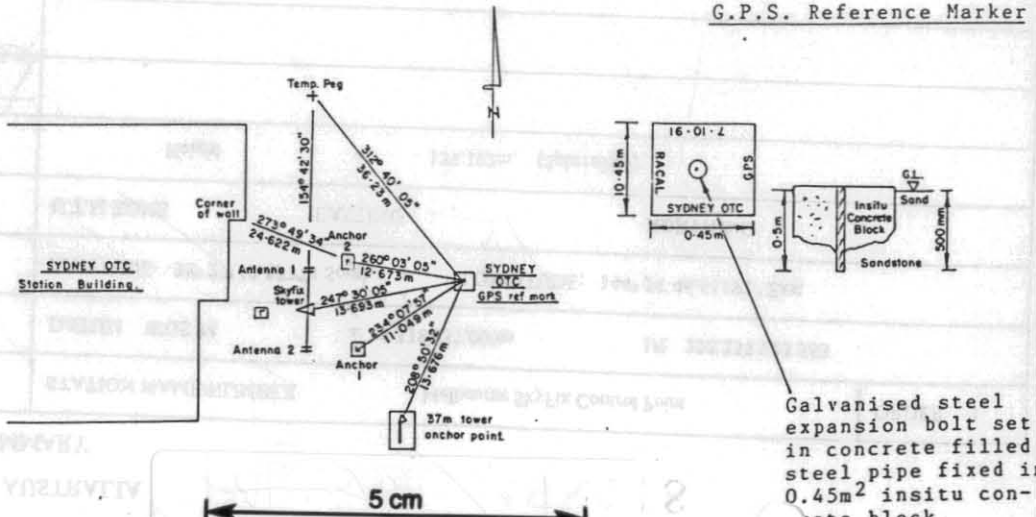
Sydney OTC GPS reference mark.

Skyfix antenna

Sydney RAdio
La Perouse, Sydney
N.S.W.

STATION DESCRIPTION

G.P.S. Reference Marker



Galvanised steel expansion bolt set in concrete filled steel pipe fixed in 0.45m² insitu concrete block.

6. DISTRIBUTION

Copies of this report have been distributed as follows:

Western Geophysical Co. Limited Attn: Mr. Bluey Dean	:	2 copies
Racal Survey Australia Limited	:	1 copy

Gareth Jones
Area Surveyor

498221

APPENDIX A - NAVIGATION

2. NAVIGATION CONTRACTOR'S REPORT - RACAL SURVEY AUSTRALIA

(under separate cover)

498222

APPENDIX A - NAVIGATION

3. NAVIGATION REEL REPORT

498223

Western Atlas International

REEL/LINE REPORT

Client SAGASCO RESOURCES LIMITED
AREA BASS BASIN ROCKY CAPE 2D SURVEY Julian Day 076 To 079

Gravity	___ Yes	√ No	Reel Number	P116-0252		
Magnetics	___ Yes	√ No	Tape Density	6250		BPI
3-D	___ Yes	√ No	WISDOM Version	50		
Triple Streamer	___ Yes	√ No	Start-of-Reel	076	13:39	8
SSTS	___ Yes	√ No	End-of-Reel	079	13:20	26555
Digicourse	___ Yes	√ No		Jul Day	UTC	NVTIME
			EOF on Tape	YES		
					(if no, give reason)	

Jul Day	Prime System	Prime Soln.	Circle Code	Line Number	Start of Line			End of Line		
					FSP	Time	Nvtime	LSP	Time	Nvtime
076	MULTIFIX	DN01		SB94A-132	111	14:33	327	750	16:16	968
076	MULTIFIX	DN01		SB94A-130	575	17:43	1493	31	19:11	2039
076	MULTIFIX	DN01		SB94A-161	473	20:52	2647	31	22:02	3091
076	MULTIFIX	DN01		SB94A-159	111	23:15	3529	572	00:29	3992
077	MULTIFIX	DN01		SB94A-157	469	01:44	4450	31	02:55	4890
077	MULTIFIX	DN01		SB94A-155	469	04:05	5308	31	05:14	5748
077	MULTIFIX	DN01		SB94A-153	111	06:22	6164	549	07:31	6604
077	MULTIFIX	DN01		SB94A-151	468	08:40	7020	31	09:48	7459
077	MULTIFIX	DN01		SB94A-149	111	11:04	7911	549	12:15	8351
077	MULTIFIX	DN01		SB94A-147	519	13:26	8777	31	14:44	9267
077	MULTIFIX	DN01	4	SB94A-145	111	15:55	9700	300	16:25	9890
077	MULTIFIX	DN01		SB94A-145A	240	18:24	10606	596	19:22	10964
077	MULTIFIX	DN01		SB94A-143	511	20:40	11434	31	21:56	11916
077	MULTIFIX	DN01		SB94A-141	111	23:13	12384	601	00:31	12876
078	MULTIFIX	DN01		SB94A-128	111	02:43	13675	1034	05:09	14600

CIRCLING CODES:

1 Other Crews Shooting
2 Cable Trim
3 Seismic Equipment Failure
4 Gun Failure
5 Power Problem
6 Navigation Problem
7 Other Vessel On Line
8 Operator Error
9 Weather or Sea Noise
10 Boat Noise
11 Early EOL - Obstruction
12 Early EOL - Shallow water

COMMENTS:

498224

Western Atlas International

REEL/LINE REPORT

Client SAGASCO RESOURCES LIMITED

AREA BASS BASIN ROCKY CAPE 2D SURVEY Julian Day 076 To ~~XXX~~ 077

Gravity	___ Yes	√ No	Reel Number	P116-0252		
Magnetics	___ Yes	√ No	Tape Density	6250		BPI
3-D	___ Yes	√ No	WISDOM Version	50		
Triple Streamer	___ Yes	√ No	Start-of-Reel	076	13:39	8
SSTS	___ Yes	√ No	End-of-Reel	079	13:20	26555
Digicourse	___ Yes	√ No		Jul Day	UTC	NVTIME
			EOF on Tape	YES		
					(if no, give reason)	

Jul Day	Prime System	Prime Soln.	Circle Code	Line Number	Start of Line			End of Line		
					FSP	Time	Nvtime	LSP	Time	Nvtime
078	MULTIFIX	DN01		SB94A-126	613	06:24	15652	31	07:54	15636
078	MULTIFIX	DN01		SB94A-104	1777	10:20	16516	31	14:58	18264
078	MULTIFIX	DN01		SB94A-102	111	16:02	18650	1831	20:37	20372
078	MULTIFIX	DN01		SB94A-124	1274	22:13	20950	31	01:28	22195
079	MULTIFIX	DN01		SB94A-108	529	02:56	22724	31	04:15	23224
079	MULTIFIX	DN01		SB94A-106	111	05:27	23654	790	07:18	24335
079	MULTIFIX	DN01		SB94A-125	427	08:54	24913	31	09:56	25[illegible]1
079	MULTIFIX	DN01		SB94A-129	111	11:17	25797	733	12:57	26421

CIRCLING CODES:

1 Other Crews Shooting
2 Cable Trim
3 Seismic Equipment Failure
4 Gun Failure
5 Power Problem
6 Navigation Problem
7 Other Vessel On Line
8 Operator Error
9 Weather or Sea Noise
10 Boat Noise
11 Early EOL - Obstruction
12 Early EOL - Shallow Water

COMMENTS:

498225

Western Atlas International

REEL/LINE REPORT

Client SAGASCO RESOURCES LIMITED
AREA BASS BASIN ROCKY CAPE 2D SURVEY Julian Day 079 To 082

Gravity	___ Yes	√ No	Reel Number	P116-0253		
Magnetics	___ Yes	√ No	Tape Density	6250		BPI
3-D	___ Yes	√ No	WISDOM Version	50		
Triple Streamer	___ Yes	√ No	Start-of-Reel	079	1328	8
SSTS	___ Yes	√ No	End-of-Reel	082	15:05	27520
Digicourse	___ Yes	√ No		Jul Day	UTC	NVTIME
			EOF on Tape	YES		
					(if no, give reason)	

Jul Day	Prime System	Prime Soln.	Circle Code	Line Number	Start of Line			End of Line		
					FSP	Time	Nvtime	LSP	Time	Nvtime
079	MULTIFIX	DNO1		SB94A-133	394	14:25	346	31	15:22	711
079	MULTIFIX	DNO1		SB94A-137	111	16:47	1224	536	17:54	1651
079	MULTIFIX	DNO1		SB94A-139	399	18:46	1961	31	19:44	2331
079	MULTIFIX	DNO1		SB94A-135	111	23:15	3602	519	00:18	4012
080	MULTIFIX	DNO1		SB94A-131	529	01:51	4572	31	03:10	5072
080	MULTIFIX	DNO1		SB94A-127	111	04:23	5510	737	06:01	6138
080	MULTIFIX	DNO1		SB94A-110	1172	07:29	6668	31	10:28	7811
080	MULTIFIX	DNO1		SB94A-112	111	11:43	8265	1279	14:48	9435
080	MULTIFIX	DNO1		SB94A-123	1025	16:48	10157	31	19:24	11153
080	MULTIFIX	DNO1		SB94A-121	111	20:40	11611	1128	23:20	12630
081	MULTIFIX	DNO1		SB94A-119	554	01:23	13369	31	02:45	13894
081	MULTIFIX	DNO1		SB94A-115	111	06:26	15237	1102	09:02	16230
081	MULTIFIX	DNO1		SB94A-117	557	10:47	16866	31	12:08	17394
081	MULTIFIX	DNO1		SB94A-113	111	13:41	17956	1647	17:40	19494
081	MULTIFIX	DNO1		SB94A-111	1494	19:04	1996	31	22:52	21461

CIRCLING CODES:

1 Other Crews Shooting
2 Cable Trim
3 Seismic Equipment Failure
4 Gun Failure
5 Power Problem
6 Navigation Problem
7 Other Vessel On Line
8 Operator Error
9 Weather or Sea Noise
10 Boat Noise
11 Early EOL - Obstruction
12 Early EOL - Shallow water

COMMENTS:

498226

Western Atlas International

REEL/LINE REPORT

Client SAGASCO RESOURCES LIMITED
AREA BASS BASIN ROCKY CAPE 2D SURVEY Julian Day 079 To 082

Gravity	___ Yes	√ No	Reel Number	P116-0253		
Magnetics	___ Yes	√ No	Tape Density	6250		BPI
3-D	___ Yes	√ No	WISDOM Version	50		
Triple Streamer	___ Yes	√ No	Start-of-Reel	079	13:28	8
SSTS	___ Yes	√ No	End-of-Reel	082	15:05	27520
Digicourse	___ Yes	√ No		Jul Day	UTC	NVTIME
			EOF on Tape	YES		
					(if no, give reason)	

Jul Day	Prime System	Prime Soln.	Circle Code	Line Number	Start of Line			End of Line		
					FSP	Time	Nvtime	LSP	Time	Nvtime
082	MULTIFIX	DNO1		SB94A-107	111	00:37	22096	1138	03:17	23125
082	MULTIFIX	DNO1		SB94A-109	670	04:29	23561	31	06:11	24202
082	MULTIFIX	DNO1		SB94A-105	111	07:17	24606	717	18:54	25214
082	MULTIFIX	DNO1		SB94A-103	640	10:05	25643	31	11:40	26254
082	MULTIFIX	DNO1		SB94A-101	111	13:02	26742	798	14:49	27431

CIRCLING CODES:

1 Other Crews Shooting
2 Cable Trim
3 Seismic Equipment Failure
4 Gun Failure
5 Power Problem
6 Navigation Problem
7 Other Vessel On Line
8 Operator Error
9 Weather or Sea Noise
10 Boat Noise
11 Early EOL - Obstruction
12 Early EOL - Shallow water

COMMENTS:

498227

Western Atlas International

REEL/LINE REPORT

WESTERN ATLAS
P-116

Client SAGASCO RESOURCES LIMITED
AREA BASS BASIN ROCKY CAPE 2D SURVEY Julian Day 082 To 083

Gravity	___ Yes	√ No	Reel Number	P116-0254		
Magnetics	___ Yes	√ No	Tape Density	6250 BPI		
3-D	___ Yes	√ No	WISDOM Version	50		
Triple Streamer	___ Yes	√ No	Start-of-Reel	082	15:15	0008
SSTS	___ Yes	√ No	End-of-Reel	083	09:16	6670
Digicourse	___ Yes	√ No		Jul Day	UTC	NVTIME
			EOF on Tape	YES		
					(if no, give reason)	

Jul Day	Prime System	Prime Soln.	Circle Code	Line Number	Start of Line			End of Line		
					FSP	Time	Nvtime	LSP	Time	Nvtime
082	MULTIFIX	DN01		SB94A-122	111	19:09	1411	988	21:29	2290
082	MULTIFIX	DN01		SB94A-120	657	22:54	2806	31	00:33	3434
083	MULTIFIX	DN01		SB94A-118	111	01:55	3930	737	03:35	4558
083	MULTIFIX	DN01		SB94A-116	659	04:50	5011	31	06:30	5641
083	MULTIFIX	DN01		SB94A-114	111	07:51	6131	642	09:14	6664

CIRCLING CODES:

1 Other Airgun Shooting
2 Cable Tilt
3 Seismic Equipment Failure
4 Gun Failure
5 Power Problem
6 Navigation Problem
7 Other Vessel On Line
8 Operator Error
9 Weather or Sea Noise
10 Boat Noise
11 Early EOL - Obstruction
12 Early EOL - Shallow water

COMMENTS:

498228

APPENDIX B - LOGS

1. COORDINATORS' DAILY LOGS

498229

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 17, 94 | PAGE NO : 1
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

CABLE TYPE : WG24 | GUN TYPE : LLP

		SAIL KMS	MAG KMS	GRAV KMS
NOS CABLES : 1				
CABLE LENGTH: 3,000 Mtrs	SOURCE VOLUME: 3,305 cu.in.	KMS DAY : 0.000	0.000	0.000
GROUP INTV : 12.50 Mtrs	SHOT INTERVAL: 25.000 Mtrs	KMS MONTH : 0.000	0.000	0.000
TOTAL GROUPS: 240	FOLD COVERAGE: 60.00%	KMS SURVEY : 0.000	0.000	0.000
VSL DRAFT : 4.50 Mtrs	SOUND VEL : 1,500 Mtrs/Sec	KMS REMAINING: 850.000		
PERSONNEL: WESTERN = 42	CLIENT = 1 CONTRACTORS = 0			

TIME - TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
0000 0602												0000hrs AT ANCHOR OFF BURNIE. 0602hrs ALONGSIDE BURNIE.
0602 1000												SEISMIC & MARINE CREW CHANGE. OFFLOADED SEIS & NAV DATA, SECTIONS FOR REPAIR & LAUNDRY. LOADED FOODSTORES & WATER. 1000hrs DEPART FOR PROSPECT.
1000 1310												ENROUTE TO PROSPECT.
1310 1730												1310hrs COMMENCE DEPLOYMENT OF STBD CABLE. 1530hrs STBD CABLE DEPLOYED.CHECKING BALANCE. 1630hrs RET L/IN TO ADJUST FRONT END BALANCE. 1730hrs STBD CABLE DEPLOYED.
1730 2300												STBD CABLE CHECK GOOD. DEPLOY PORT GUNS & SSTS. 1930hrs PORT GUNS DEPLOYED. SEPARATION CHECKED GOOD./ DEPLOYING STBD GUNS. 2300 GUNS DEPLOYED.
2300 2400												ALL GEAR DEPLOYED, HEADING TOWARDS LINE TESTING EQUIPMENT.

Recorded Tapes | Scratch Tapes | Tape | Survey Average L/C Time

498230

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 18, 94 | PAGE NO : 1

COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D

P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

					SAIL KMS	MAG KMS	GRAV KMS
CABLE TYPE : WG24	GUN TYPE : LLP			KMS DAY :	112.400	0.000	0.000
NOS CABLES : 1	NO OF GUNS : 28			KMS MONTH :	112.400	0.000	0.000
CABLE LENGTH: 3,000 Mtrs	SOURCE VOLUME: 3,305 cu.in.			KMS SURVEY :	112.400	0.000	0.000
GROUP INTV : 12.50 Mtrs	SHOT INTERVAL: 25.000 Mtrs			KMS REMAINING:	737.600		
TOTAL GROUPS: 240	FOLD COVERAGE: 60.00%						
VSL DRAFT : 4.50 Mtrs	SOUND VEL : 1,500 Mtrs/Sec						
PERSONNEL: WESTERN = 42	CLIENT = 1	CONTRACTORS = 0					

TIME	- TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
0000	0033												HEADING TOWARDS LINE TESTING EQUIPMENT.
0033	0216	B94A-132			314	111	750	640	0	16.000	0.000	0.000	SOL / EOL.
0216	0343												LINE CHANGE.
0343	0511	B94A-130			152	575	31	545	0	13.625	0.000	0.000	SOL / EOL.
0511	0652												LINE CHANGE.
0652	0802	B94A-161			43	473	31	443	0	11.075	0.000	0.000	SOL / EOL.
0802	0915												LINE CHANGE.
0915	1029	B94A-159			223	111	572	462	0	11.550	0.000	0.000	SOL / EOL.
1029	1144												LINE CHANGE.
1144	1255	B94A-157			43	469	31	439	0	10.975	0.000	0.000	SOL/EOL.
1255	1405												LINE CHANGE. 1300 HRS SAFETY MEETING & GENERAL MUSTER.
1405	1514	B94A-155			223	469	31	439	0	10.975	0.000	0.000	SOL / EOL.

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 18, 94 | PAGE NO : 2
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

CABLE TYPE : WG24 | GUN TYPE : LLP

		SAIL KMS	MAG KMS	GRAV KMS
NOS CABLES : 1	NO OF GUNS : 28	KMS DAY : 112.400	0.000	0.000
CABLE LENGTH: 3,000 Mtrs	SOURCE VOLUME: 3,305 cu.in.	KMS MONTH : 112.400	0.000	0.000
GROUP INTV : 12.50 Mtrs	SHOT INTERVAL: 25.000 Mtrs	KMS SURVEY : 112.400	0.000	0.000
TOTAL GROUPS: 240	FOLD COVERAGE: 60.00%	KMS REMAINING: 737.600		
VSL DRAFT : 4.50 Mtrs	SOUND VEL : 1,500 Mtrs/Sec			

PERSONNEL: WESTERN = 42 CLIENT = 1 CONTRACTORS = 0

TIME	TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
1514	1622												LINE CHANGE.
1622	1731	B94A-153			44	111	549	439	0	10.975	0.000	0.000	SOL / EOL.
1731	1840												LINE CHANGE.
1840	1948	B94A-151			224	468	31	438	0	10.950	0.000	0.000	SOL / EOL.
1948	2104												LINE CHANGE.
2104	2215	B94A-149			44	111	549	439	0	10.975	0.000	0.000	SOL/EOL.
2215	2326												LINE CHANGE.
2326	2400	B94A-147			224	519	308	212	0	5.300	0.000	0.000	SOL / LASP OF THE DAY.

Recorded Tapes			Scratch Tapes			Tape	Survey Average L/C Time		
Day	Month	Survey	Day	Month	Survey	Balance	Western	Client	Total
82	82	82	0	0	0	1,018	1.28	0.00	1.28

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 19, 94 | PAGE NO : 1
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

				SAIL KMS	MAG KMS	GRAV KMS
CABLE TYPE : WG24	GUN TYPE : LLP					
NOS CABLES : 1	NO OF GUNS : 28	KMS DAY :		115.700	0.000	0.000
CABLE LENGTH: 3,000 Mtrs	SOURCE VOLUME: 3,305 cu.in.	KMS MONTH :		228.100	0.000	0.000
GROUP INTV : 12.50 Mtrs	SHOT INTERVAL: 25.000 Mtrs	KMS SURVEY :		228.100	0.000	0.000
TOTAL GROUPS: 240	FOLD COVERAGE: 60.00%	KMS REMAINING:		621.900		
VSL DRAFT : 4.50 Mtrs	SOUND VEL : 1,500 Mtrs/Sec					
PERSONNEL: WESTERN = 42	CLIENT = 1	CONTRACTORS = 0				

TIME	TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
0000	0044	B94A-147			224	307	31	277	0	6.925	0.000	0.000	FSP OF THE DAY / EOL.
0044	0155												LINE CHANGE.
0155	0225	B94A-145			43	111	300	190	0	4.750	0.000	0.000	SOL / LGSP, EOL INCOMPLETE D/T GUNS. (BLOWN HIGH PRESSURE LINE)
0225	0434												CIRCLING D/T GUNS.
0434	0522	B94A-145A			43	301	596	296	0	7.400	0.000	0.000	SOL / EOL. SPs 240 - 300 = "A" SPs.
0522	0640												LINE CHANGE.
0640	0756	B94A-143			225	511	31	481	0	12.025	0.000	0.000	SOL / EOL.
0756	0913												LINE CHANGE.
0913	1031	B94A-141			45	111	601	491	0	12.275	0.000	0.000	SOL / EOL.
1031	1243												LINE CHANGE.
1243	1509	B94A-128			124	111	1034	924	0	23.100	0.000	0.000	SOL / EOL.

498233

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 19, 94 | PAGE NO : 2
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

					SAIL KMS	MAG KMS	GRAV KMS
CABLE TYPE : WG24	GUN TYPE : LLP			KMS DAY :	115.700	0.000	0.000
NOS CABLES : 1	NO OF GUNS : 28			KMS MONTH :	228.100	0.000	0.000
CABLE LENGTH: 3,000 Mtrs	SOURCE VOLUME: 3,305 cu.in.			KMS SURVEY :	228.100	0.000	0.000
GROUP INTV : 12.50 Mtrs	SHOT INTERVAL: 25.000 Mtrs			KMS REMAINING:	621.900		
TOTAL GROUPS: 240	FOLD COVERAGE: 60.00%						
VSL DRAFT : 4.50 Mtrs	SOUND VEL : 1,500 Mtrs/Sec						
PERSONNEL: WESTERN = 42	CLIENT = 1	CONTRACTORS = 0					

TIME	- TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
1509	1624												LINE CHANGE.
1624	1754	B94A-126			314	613	31	583	0	14.575	0.000	0.000	SOL / EOL.
1754	2020												LINE CHANGE.
2020	2400	B94A-104			319	1777	392	1,386	0	34.650	0.000	0.000	SOL / LSP OF THE DAY.

Recorded Tapes			Scratch Tapes			Tape	Survey Average L/C Time		
Day	Month	Survey	Day	Month	Survey	Balance	Western	Client	Total
84	166	166	0	0	0	934	1.61	0.00	1.61

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 20, 94 | PAGE NO : 1
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

CABLE TYPE : WG24 | GUN TYPE : LLP

	SAIL KMS	MAG KMS	GRAV KMS
NOS CABLES : 1	KMS DAY : 138.125	0.000	0.000
CABLE LENGTH: 3,000 Mtrs	NO OF GUNS : 28	KMS MONTH : 366.225	0.000	0.000
GROUP INTV : 12.50 Mtrs	SOURCE VOLUME: 3,305 cu.in.	KMS SURVEY : 366.225	0.000	0.000
TOTAL GROUPS: 240	SHOT INTERVAL: 25.000 Mtrs	KMS REMAINING: 483.775		
VSL DRAFT : 4.50 Mtrs	FOLD COVERAGE: 60.00%			
PERSONNEL: WESTERN = 42	SOUND VEL : 1,500 Mtrs/Sec			
	CLIENT = 1 CONTRACTORS = 0			

TIME	TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
0000	0057	B94A-104			319	391	31	361	0	9.025	0.000	0.000	FSP OF THE DAY / EOL.
0057	0202												LINE CHANGE.
0202	0637	B94A-102			143	111	1831	1,721	0	43.025	0.000	0.000	SOL / EOL.
0637	0813												LINE CHANGE.
0813	1129	B94A-124			324	1274	31	1,244	0	31.100	0.000	0.000	SOL / EOL. SP 614 DOGLEG TO HDG 320.
1129	1256												LINE CHANGE.
1256	1415	B94A-108			325	529	31	499	0	12.475	0.000	0.000	SOL / EOL.
1415	1527												LINE CHANGE.
1527	1718	B94A-106			141	111	790	680	0	17.000	0.000	0.000	SOL / EOL.
1718	1854												LINE CHANGE.
1854	1956	B94A-125			235	427	31	397	0	9.925	0.000	0.000	SOL / EOL.
1956	2117												LINE CHANGE.

498235

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 20, 94 | PAGE NO : 2
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

CABLE TYPE : WG24 | GUN TYPE : LLP | SAIL KMS | MAG KMS | GRAV KMS
NOS CABLES : 1 | NO OF GUNS : 28 | KMS DAY : 138.125 | 0.000 | 0.000
CABLE LENGTH: 3,000 Mtrs | SOURCE VOLUME: 3,305 cu.in. | KMS MONTH : 366.225 | 0.000 | 0.000
GROUP INTV : 12.50 Mtrs | SHOT INTERVAL: 25.000 Mtrs | KMS SURVEY : 366.225 | 0.000 | 0.000
TOTAL GROUPS: 240 | FOLD COVERAGE: 60.00% | KMS REMAINING: 483.775
VSL DRAFT : 4.50 Mtrs | SOUND VEL : 1,500 Mtrs/Sec
PERSONNEL: WESTERN = 42 | CLIENT = 1 | CONTRACTORS = 0

TIME	- TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
2117	2257	B94A-129			56	111	733	623	0	15.575	0.000	0.000	SOL / EOL.
2257	2400												LINE CHANGE.

Recorded Tapes			Scratch Tapes			Tape	Survey Average L/C Time		
Day	Month	Survey	Day	Month	Survey	Balance	Western	Client	Total
95	261	261	0	0	0	839	1.33	0.00	1.33

498235

498236

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 21, 94 | PAGE NO : 1
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

CABLE TYPE : WG24 | GUN TYPE : LLP

NOS CABLES : 1 | NO OF GUNS : 28

CABLE LENGTH: 3,000 Mtrs | SOURCE VOLUME: 3,305 cu.in.

GROUP INTV : 12.50 Mtrs | SHOT INTERVAL: 25.000 Mtrs

TOTAL GROUPS: 240 | FOLD COVERAGE: 60.00%

VSL DRAFT : 4.50 Mtrs | SOUND VEL : 1,500 Mtrs/Sec

PERSONNEL: WESTERN = 42 | CLIENT = 1 | CONTRACTORS = 0

	SAIL KMS	MAG KMS	GRAV KMS
KMS DAY :	117.400	0.000	0.000
KMS MONTH :	483.625	0.000	0.000
KMS SURVEY :	483.625	0.000	0.000
KMS REMAINING:	366.375		

TIME	TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
0000	0024												LINE CHANGE.
0024	0122	B94A-133			238	394	31	364	0	9.100	0.000	0.000	SOL / EOL.
0122	0247												LINE CHANGE.
0247	0354	B94A-137			53	111	536	426	0	10.650	0.000	0.000	SOL / EOL.
0354	0446												LINE CHANGE.
0446	0544	B94A-139			230	399	31	369	0	9.225	0.000	0.000	SOL / EOL.
0544	0706												LINE CHANGE.
0706	0717	B94A-135			56	0	0	0	0	0.000	0.000	0.000	SOL / LINE ABORTED AND SCRATCHED D/T INSTRUMENTS (RSU MALFUNCTION).
0717	0915												CIRCLING D/T INSTRUMENTS.
0915	1018	B94A-135			56	111	519	409	0	10.225	0.000	0.000	SOL / EOL.
1018	1151												LINE CHANGE.

498237

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 21, 94 | PAGE NO : 2
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

CABLE TYPE : WG24 | GUN TYPE : LLP | SAIL KMS | MAG KMS | GRAV KMS
NOS CABLES : 1 | NO OF GUNS : 28 | KMS DAY : 117.400 | 0.000 | 0.000
CABLE LENGTH: 3,000 Mtrs | SOURCE VOLUME: 3,305 cu.in. | KMS MONTH : 483.625 | 0.000 | 0.000
GROUP INTV : 12.50 Mtrs | SHOT INTERVAL: 25.000 Mtrs | KMS SURVEY : 483.625 | 0.000 | 0.000
TOTAL GROUPS: 240 | FOLD COVERAGE: 60.00% | KMS REMAINING: 366.375
VSL DRAFT : 4.50 Mtrs | SOUND VEL : 1,500 Mtrs/Sec
PERSONNEL: WESTERN = 42 | CLIENT = 1 | CONTRACTORS = 0

TIME	- TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
1151	1310	B94A-131			235	529	31	499	0	12.475	0.000	0.000	SOL / EOL.
1310	1423												LINE CHANGE.
1423	1601	B94A-127			55	111	737	627	0	15.675	0.000	0.000	SOL / EOL.
1601	1729												LINE CHANGE.
1729	2028	B94A-110			323	1172	31	1,142	0	28.550	0.000	0.000	SOL / EOL.
2028	2143												LINE CHANGE.
2143	2400	B94A-112			142	111	970	860	0	21.500	0.000	0.000	SOL / LSP OF THE DAY.

Recorded Tapes			Scratch Tapes			Tape -	Survey Average L/C Time		
Day	Month	Survey	Day	Month	Survey	Balance	Western	Client	Total
82	343	343	3	3	3	754	1.19	0.00	1.19

498238

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 22, 94 | PAGE NO : 1
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

CABLE TYPE : WG24 | GUN TYPE : LLP

	SAIL KMS	MAG KMS	GRAV KMS
NOS CABLES : 1	KMS DAY : 112.100	0.000	0.000
CABLE LENGTH: 3,000 Mtrs	SOURCE VOLUME: 3,305 cu.in.	KMS MONTH : 595.725	0.000	0.000
GROUP INTV : 12.50 Mtrs	SHOT INTERVAL: 25.000 Mtrs	KMS SURVEY : 595.725	0.000	0.000
TOTAL GROUPS: 240	FOLD COVERAGE: 60.00%	KMS REMAINING: 254.275		
VSL DRAFT : 4.50 Mtrs	SOUND VEL : 1,500 Mtrs/Sec			

PERSONNEL: WESTERN = 42 CLIENT = 1 CONTRACTORS = 0

TIME	TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
0000	0048	B94A-112			142	971	1279	309	0	7.725	0.000	0.000	FSP OF THE DAY / EOL.
0048	0248												LINE CHANGE.
0248	0524	B94A-123			235	1025	31	995	0	24.875	0.000	0.000	SOL / EOL.
0524	0640												LINE CHANGE.
0640	0920	B94A-121			54	111	1128	1,018	0	25.450	0.000	0.000	SOL / EOL.
0920	1123												LINE CHANGE.
1123	1245	B94A-119			235	554	31	524	0	13.100	0.000	0.000	SOL / EOL.
1245	1422												LINE CHANGE. 1300 HRS FIRE DRILL AND EMERGENCY MUSTER.
1422	1433	B94A-115			56	0	0	0	0	0.000	0.000	0.000	SOL / ABORT DUE TO WG24 HANG UP, ALL DATA SCRATCHED.
1433	1626												CIRCLE TO SOL SB94A-115.
1626	1902	B94A-115			56	111	1102	992	0	24.800	0.000	0.000	SOL / EOL.
1902	2047												LINE CHANGE.

498239

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 22, 94 | PAGE NO : 2
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

CABLE TYPE : WG24 | GUN TYPE : LLP

		SAIL KMS	MAG KMS	GRAV KMS
NOS CABLES : 1	NO OF GUNS : 28	KMS DAY : 112.100	0.000	0.000
CABLE LENGTH: 3,000 Mtrs	SOURCE VOLUME: 3,305 cu.in.	KMS MONTH : 595.725	0.000	0.000
GROUP INTV : 12.50 Mtrs	SHOT INTERVAL: 25.000 Mtrs	KMS SURVEY : 595.725	0.000	0.000
TOTAL GROUPS: 240	FOLD COVERAGE: 60.00%	KMS REMAINING: 254.275		
VSL DRAFT : 4.50 Mtrs	SOUND VEL : 1,500 Mtrs/Sec			

PERSONNEL: WESTERN = 42 CLIENT = 1 CONTRACTORS = 0

TIME	- TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
2047	2208	B94A-117			57	557	30	528	0	13.200	0.000	0.000	SOL / EOL.
2208	2341												LINE CHANGE.
2341	2400	B94A-113			57	111	228	118	0	2.950	0.000	0.000	SOL / LSP OF THE DAY.

Recorded Tapes			Scratch Tapes			Tape	Survey Average L/C Time		
Day	Month	Survey	Day	Month	Survey	Balance	Western	Client	Total
78	421	421	1	4	4	675	1.71	0.00	1.71

498240

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 23, 94 | PAGE NO : 1
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

CABLE TYPE : WG24 | GUN TYPE : LLP | SAIL KMS | MAG KMS | GRAV KMS
NOS CABLES : 1 | NO OF GUNS : 28 | KMS DAY : 153.375 | 0.000 | 0.000
CABLE LENGTH: 3,000 Mtrs | SOURCE VOLUME: 3,305 cu.in. | KMS MONTH : 749.100 | 0.000 | 0.000
GROUP INTV : 12.50 Mtrs | SHOT INTERVAL: 25.000 Mtrs | KMS SURVEY : 749.100 | 0.000 | 0.000
TOTAL GROUPS: 240 | FOLD COVERAGE: 60.00% | KMS REMAINING: 100.900
VSL DRAFT : 4.50 Mtrs | SOUND VEL : 1,500 Mtrs/Sec
PERSONNEL: WESTERN = 42 | CLIENT = 1 | CONTRACTORS = 0

TIME	- TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
0000	0340	B94A-113			57	229	1647	1,419	0	35.475	0.000	0.000	FSP OF THE DAY / EOL.
0340	0504												LINE CHANGE.
0504	0852	B94A-111			235	1494	31	1,464	0	36.600	0.000	0.000	SOL / EOL.
0852	1037												LINE CHANGE.
1037	1317	B94A-107			56	111	1138	1,028	0	25.700	0.000	0.000	SOL / EOL.
1317	1429												LINE CHANGE.
1429	1611	B94A-109			235	670	31	640	0	16.000	0.000	0.000	SOL / EOL.
1611	1717												LINE CHANGE.
1717	1853	B94A-105			56	111	717	607	0	15.175	0.000	0.000	SOL / EOL.
1853	2005												LINE CHANGE.
2005	2140	B94A-103			236	640	31	610	0	15.250	0.000	0.000	SOL / EOL.
2140	2302												LINE CHANGE.

498241

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 23, 94 | PAGE NO : 2
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

CABLE TYPE : WG24 | GUN TYPE : LLP

		SAIL KMS	MAG KMS	GRAV KMS
NOS CABLES : 1	NO OF GUNS : 28	KMS DAY : 153.375	0.000	0.000
CABLE LENGTH: 3,000 Mtrs	SOURCE VOLUME: 3,305 cu.in.	KMS MONTH : 749.100	0.000	0.000
GROUP INTV : 12.50 Mtrs	SHOT INTERVAL: 25.000 Mtrs	KMS SURVEY : 749.100	0.000	0.000
TOTAL GROUPS: 240	FOLD COVERAGE: 60.00%	KMS REMAINING: 100.900		
VSL DRAFT : 4.50 Mtrs	SOUND VEL : 1,500 Mtrs/Sec			

PERSONNEL: WESTERN = 42 CLIENT = 1 CONTRACTORS = 0

TIME	- TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
2302	2400	B94A-101			55	111	477	367	0	9.175	0.000	0.000	SOL / FSP OF THE DAY.

Recorded Tapes			Scratch Tapes			Tape	Survey Average L/C Time		
Day	Month	Survey	Day	Month	Survey	Balance	Western	Client	Total
107	528	528	0	4	4	568	1.34	0.00	1.34

498242

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 24, 94 | PAGE NO : 1
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

				SAIL KMS	MAG KMS	GRAV KMS
CABLE TYPE : WG24	GUN TYPE : LLP		KMS DAY :	90.350	0.000	0.000
NOS CABLES : 1	NO OF GUNS : 28		KMS MONTH :	839.450	0.000	0.000
CABLE LENGTH: 3,000 Mtrs	SOURCE VOLUME: 3,305 cu.in.		KMS SURVEY :	839.450	0.000	0.000
GROUP INTV : 12.50 Mtrs	SHOT INTERVAL: 25.000 Mtrs		KMS REMAINING:	10.550		
TOTAL GROUPS: 240	FOLD COVERAGE: 60.00%					
VSL DRAFT : 4.50 Mtrs	SOUND VEL : 1,500 Mtrs/Sec					
PERSONNEL: WESTERN = 42	CLIENT = 1	CONTRACTORS = 0				

TIME	- TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
0000	0149	B94A-101			55	478	798	321	0	8.025	0.000	0.000	FSP OF THE DAY / EOL.
0149	0305												LINE CHANGE.
0305	0311	B94A-122			144	0	0	0	0	0.000	0.000	0.000	ABORTED LINE D/T WG-24 LOCK-UP. ALL DATA SCRATCHED.
0311	0509												CIRCLING D/T INSTRUMENTS.
0509	0729	B94A-122			144	111	988	878	0	21.950	0.000	0.000	SOL / EOL.
0729	0854												LINE CHANGE.
0854	1032	B94A-120			324	657	31	627	0	15.675	0.000	0.000	SOL / EOL.
1032	1155												LINE CHANGE.
1155	1335	B94A-118			144	111	737	627	0	15.675	0.000	0.000	SOL / EOL.
1335	1450												LINE CHANGE.
1450	1630	B94A-116			323	659	31	629	0	15.725	0.000	0.000	SOL / EOL.
1630	1751												LINE CHANGE.

WESTERN GEOPHYSICAL COMPANY | CLIENT : SAGASCO RESOURCES LTD | DATE : March 24, 94 | PAGE NO : 2
COORDINATORS DAILY LOG | COORDINATOR : D.CHOW / W.WILLIAMS | NAVIGATION CONTRACTOR | PROSPECT : ROCKY CAPE 2D
P116 M.V. WESTERN ATLAS | CLIENT REP : FRANK RENTON | W.G.C. | NAV TYPE : DGPS

					SAIL KMS	MAG KMS	GRAV KMS
CABLE TYPE : WG24	GUN TYPE : LLP		KMS DAY :		90.350	0.000	0.000
NOS CABLES : 1	NO OF GUNS : 28		KMS MONTH :		839.450	0.000	0.000
CABLE LENGTH: 3,000 Mtrs	SOURCE VOLUME: 3,305 cu.in.		KMS SURVEY :		839.450	0.000	0.000
GROUP INTV : 12.50 Mtrs	SHOT INTERVAL: 25.000 Mtrs		KMS REMAINING:		10.550		
TOTAL GROUPS: 240	FOLD COVERAGE: 60.00%						
VSL DRAFT : 4.50 Mtrs	SOUND VEL : 1,500 Mtrs/Sec						
PERSONNEL: WESTERN = 42	CLIENT = 1	CONTRACTORS = 0					

TIME	TIME	LINE NO	MAG	GRAV	DIR	FSP	LSP	SPS	NCSP	SAIL KMS	MAG KMS	GRAV KMS	REMARKS
1751	1914	B94A-114			323	111	642	532	0	13.300	0.000	0.000	SOL / EOL. ROCKY CAPE 2D PROSPECT COMPLETE.
1914	1930												TURNING FAIR SEAS.
1930	2000												RETRIEVING GUNS.
2000	2100												RETRIEVING STREAMER.
2100	2400												ALL EQUIPMENT ONBOARD, HEADING FOR NEW BLOCK (CRAYFISH PROSPECT EPP 24).

Recorded Tapes			Scratch Tapes			Tape	Survey Average L/C Time		
Day	Month	Survey	Day	Month	Survey	Balance	Western	Client	Total
69	597	597	1	5	5	498	1.33	0.00	1.33

498244

APPENDIX B - LOGS

2. OBSERVERS' LOGS

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	YOLLA 2D
Line Number	SB94A-132
Party Number	116
Operator(s)	B.VERNON
Weather	SE @ FORCE 3
Seas	SLIGHT
Heading	314

OVERVIEW

SEQ- #1

:SP ON THIS LINE INCREMENTING.

:SLIGHT SCREW NOISE SEEN ON HEAD OF CABLE.

CLIENT: SAGASCO PROSPECT: YOLLA 2D LINE: SB94A-132 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000332	004882	00	4076 34554	13:19:57			BOR; DSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS TEST.
0107	00000332	004882	00	4076 34554	13:19:57			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	SOL-NOISE ANALYSISN TEST.
0108	00000332	004881	00	4076 34554	13:19:57			BOR; DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	NOISE ANALYSIS TEST.
0111	00000111	004881	00	4076 38542	14:33:52			NSP; BOL;	
0166	00000166	004882	01	4076 38597	14:42:36			BOR;	
0226	00000226	004883	02	4076 38657	14:52:12			BOR;	
0286	00000286	004884	03	4076 38717	15:01:50			BOR;	
0346	00000346	004885	00	4076 38777	15:11:30			BOR;	
0406	00000406	004886	01	4076 38837	15:21:10			BOR;	
0466	00000466	004887	02	4076 38897	15:30:52			BOR;	
0526	00000526	004888	03	4076 38957	15:40:29			BOR;	
0536	00000536	004888	03	4076 38967	15:42:04			GDU Hdr Sze Err;	
0586	00000586	004889	00	4076 39017	15:50:01			BOR;	
0646	00000646	004890	01	4076 39077	15:59:37			BOR;	
0706	00000706	004891	02	4076 39137	16:09:06			BOR;	
0750	00000750	004891	02	4076 39181	16:16:01			EOL;	LAST SHOTPOINT . EOL
0751	00000750	004891	02	4076 39181	16:16:01			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL- NOISE ANALYSIS TEST.

498247

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE
Line Number	SB94A-130
Party Number	116
Operator(s)	B.VERNON
Weather	SE @ FORCE 3
Seas	SLIGHT
Heading	152

OVERVIEW

SEQ #2

:SHOT POINTS ON THIS LINE DECREMENTING.

:SLIGHT SCREW NOISE SEEN AT HEAD OF CABLE.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE LINE: SB94A-130 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0001	00000750	004892	00	4076 39181	16:16:01			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION
0002	00000750	004892	00	4076 39181	16:16:01			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	NOISE ANALYSIS
0006	00000575	004892	00	4076 47066	17:43:30			NSP; BOL;	
0061	00000520	004893	01	4076 47121	17:52:25			BOR;	
0121	00000460	004894	02	4076 47181	18:02:11			BOR;	
0181	00000400	004895	03	4076 47241	18:11:56			BOR;	
0241	00000340	004896	00	4076 47301	18:21:35			BOR; ITB;	INTERNAL TIME BREAK
0301	00000280	004897	01	4076 47361	18:31:20			BOR;	
0361	00000220	004898	02	4076 47421	18:41:08			BOR;	
0381	00000200	004898	02	4076 47441	18:44:24			COR1: 17;	
0421	00000160	004899	03	4076 47481	18:50:55			BOR;	
0481	00000100	004900	00	4076 47541	19:00:41			BOR;	
0539	00000042	004900	00	4076 47599	19:10:06			COR1: 14;	
0540	00000041	004900	00	4076 47600	19:10:16			COR1: 16;	
0541	00000040	004901	01	4076 47601	19:10:26			BOR;	
0550	00000031	004901	01	4076 47610	19:11:54			EOL;	EOL.
0551	00000031	004901	01	4076 47610	19:11:54			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL- NOISE ANALYSIS TEST.

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-161
Party Number	116
Operator(s)	B.VERNON
Weather	SSE @ FORCE 4
Seas	SLIGHT
Heading	043

OVERVIEW

LINE SEQ# 3

:SHOT POINTS ON THIS LINE DECREMENTING, SHOULD HAVE BEEN INCREMENTING

:SHOT POINTS 262 &260 MISFIRES.

:SP 257 GUN 28 DISABLED GUN 20 ENABLED.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-161 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0001	00000031	004902	00	4076 47610	19:11:54			DSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS TEST.
0002	00000079	004902	00	4076 55542	20:40:25			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL- NOISE ANALYSIS TEST.
0006	00000473	004902	00	4076 55621	20:52:53			NSP; BOL;	
0061	00000418	004903	01	4076 55676	21:01:35			BOR;	
0121	00000358	004904	02	4076 55736	21:11:03			BOR;	
0181	00000298	004905	03	4076 55796	21:20:32			BOR;	
0241	00000238	004906	00	4076 55856	21:30:00			BOR;	
0301	00000178	004907	01	4076 55916	21:39:29			BOR;	
0361	00000118	004908	02	4076 55976	21:49:01			BOR;	
0421	00000058	004909	03	4076 56036	21:58:31			BOR;	
0448	00000031	004909	03	4076 56063	22:02:46			EOL;	LSP- EOL
0449	00000031	004909	03	4076 56063	22:02:46			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL- NOISE ANALYSIS TEST.

498251

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-159
Party Number	116
Operator(s)	A.NORRIS
Weather	NE @ FORCE 3
Seas	SLIGHT
Heading	223

OVERVIEW

LINE SEQ # 4.

SHOT POINTS INCREMENTING ON THIS LINE, SHOULD HAVE BEEN DECREMENTING

PREVIOUS TO SOL GUN 35 WAS DISABLED AND GUN 43 ENABLED.

DISREGARD PRINTOUT MISFIRES FOR SHOTS 280, 285 AND 287

SHOT POINT 133 MISFIRE

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-159 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0105	00000031	004910	00	4076 56063	22:02:46			BOR; NSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS TEST.
0106	00000073	004910	00	4076 61941	23:04:02			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL- NOISE ANALYSIS TEST
0111	00000111	004910	00	4076 62014	23:15:45			NSP; BOL;	SOL.
0133	00000133	004910	00	4076 62036	23:19:16				MISFIRE
0165	00000165	004911	01	4076 62068	23:24:22			BOR;	
0225	00000225	004912	02	4076 62128	23:33:57			BOR;	
0285	00000285	004913	03	4076 62188	23:43:40			BOR;	
0345	00000345	004914	00	4076 62248	23:53:17			BOR;	
0363	00000362	004914	00	4076 62265	23:56:01			DSP; NFSID; GDU Intf Err;	SHOT POINT 362 RECORDED TWICE . SHOT POINT 363 NOT RECORDED . SYSTEM LOCK-UP
0364	00000364	004914	00	4076 62267	23:56:20			NSP; NFSID;	
0387	00000387	004914	00	4077 00001	00:00:01			NFSID;	FIRST SHOT OF GMT DAY
0405	00000405	004915	01	4077 00019	00:02:53			BOR;	
0465	00000465	004916	02	4077 00079	00:12:29			BOR;	
0525	00000525	004917	03	4077 00139	00:22:06			BOR;	
0560	00000560	004917	03	4077 00174	00:27:42			Parm chg;	
0561	00000561	004917	03	4077 00175	00:27:51			Parm chg;	
0572	00000572	004917	03	4077 00186	00:29:37			EOL;	LSP- EOL
0573	00000572	004917	03	4077 00186	00:29:37			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL- NOISE ANALYSIS TEST.

498253

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-157
Party Number	116
Operator(s)	B.VERNON
Weather	SSW @FORCE 3
Seas	SLIGHT
Heading	043

OVERVIEW

LINE SEQ # 5

:SHOT POINTS ON THIS LINE DECREMENTING. SHOULD HAVE BEEN INCREMENTING.

: SOL GUN 43 ENABLED GUN 19 DISABLED.

: SHOT POINT 455 GUN 19 ENABLED GUN 43 DISABLED. TOTAL VOL 3305.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-157 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0001	00000096	004918	00	4077 03850	01:29:27			BOR; NSP; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION ANALYSIS TEST.
0002	00000084	004918	00	4077 03862	01:31:24			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL- NOISE ANALYSIS TEST.
0061	00000414	004919	01	4077 04001	01:53:45			BOR;	
0121	00000354	004920	02	4077 04061	02:03:27			BOR;	
0181	00000294	004921	03	4077 04121	02:13:08			BOR;	
0241	00000234	004922	00	4077 04181	02:22:47			BOR;	
0299	00000176	004922	00	4077 04239	02:32:06			BLKER;	
0301	00000174	004923	01	4077 04241	02:32:25			BOR;	
0361	00000114	004924	02	4077 04301	02:42:07			BOR;	
0421	00000054	004925	03	4077 04361	02:51:50			BOR;	
0443	00000032	004925	03	4077 04383	02:55:24			EOL;	
0444	00000031	004925	03	4077 04384	02:55:34			NSP; BOL;	LAST PRODUCTION SHOT POINT.
0444	00000031	004925	03	4077 04384	02:55:34			Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.
0445	00000031	004925	03	4077 04384	02:55:34			DSP; NFSID; ITB;	

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	YOLLA 2D
Line Number	SB94A-155
Party Number	116
Operator(s)	M.DONNISON
Weather	LIGHT AIR.
Seas	SLIGHT
Heading	223

OVERVIEW

SEQUENCE #6

THIS LINE SH0T POINTS ARE DECREMENTING.

498256

CLIENT: SAGASCO PROSPECT: YOLLA 2D LINE: SB94A-155 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0026	00000100	004926	00	4077 10112	03:49:01			BOR; NSP; NF#; NFSID; ITB; Local start;	HARMONIC DISTORTION.
0027	00000066	004926	00	4077 10146	03:54:26			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS.
0031	00000469	004926	00	4077 10212	04:04:59			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0086	00000414	004927	01	4077 10267	04:13:31			BOR;	
0146	00000354	004928	02	4077 10327	04:22:54			BOR;	
0206	00000294	004929	03	4077 10387	04:32:28			BOR;	
0266	00000234	004930	00	4077 10447	04:42:03			BOR;	
0326	00000174	004931	01	4077 10507	04:51:32			BOR;	
0386	00000114	004932	02	4077 10567	05:01:00			BOR;	
0446	00000054	004933	03	4077 10627	05:10:28			BOR;	
0469	00000031	004933	03	4077 10650	05:14:07			EOL;	LAST PRODUCTION FILE
0470	00000031	004933	03	4077 10650	05:14:07			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	END OF LINE NOISE ANALYSIS

498257

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	YOLLA 2D
Line Number	SB94A-153
Party Number	116
Operator(s)	M.DONNISON
Weather	LIGHT AIR.
Seas	SLIGHT
Heading	44

OVERVIEW

LINE SEQUENCE #7

CLIENT: SAGASCO PROSPECT: YOLLA 2D LINE: SB94A-153 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000092	004934	00	4077 16330	06:08:23			BOR; NSP; NF#; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION.
0107	00000092	004934	00	4077 16330	06:08:23			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	SOL NOISE ANALYSIS.
0111	00000111	004934	00	4077 16422	06:22:45			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0166	00000166	004935	01	4077 16477	06:31:14			BOR;	
0226	00000226	004936	02	4077 16537	06:40:26			BOR;	
0286	00000286	004937	03	4077 16597	06:49:36			BOR;	
0346	00000346	004938	00	4077 16657	06:58:47			BOR;	
0406	00000406	004939	01	4077 16717	07:08:19			BOR;	
0466	00000466	004940	02	4077 16777	07:17:50			BOR;	
0526	00000526	004941	03	4077 16837	07:27:27			BOR;	
0549	00000549	004941	03	4077 16860	07:31:07			EOL;	LAST PRODUCTION SHOT POINT.
0550	00000549	004941	03	4077 16860	07:31:07			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

WG-24 REEL LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	YOLLA 2D
Line Number	SB94A-153
Party Number	116
Operator(s)	M.DONNISON
Weather	LIGHT AIR.
Seas	SLIGHT
Heading	44

OVERVIEW

LINE SEQUENCE #7

CLIENT: SAGASCO PROSPECTS: YOLLA 2D LINE: SB94A-153

Reel No	Tape Unit	Shots	Start File	Start SP	Start FSID	Start Time
			End File	End SP	End FSID	End Time
004934	00	60	00000106	00000092	4077 16330	06:08:23
			00000165	00000165	4077 16476	06:31:05
004935	01	60	00000166	00000166	4077 16477	06:31:14
			00000225	00000225	4077 16536	06:40:17
004936	02	60	00000226	00000226	4077 16537	06:40:26
			00000285	00000285	4077 16596	06:49:26
004937	03	60	00000286	00000286	4077 16597	06:49:36
			00000345	00000345	4077 16656	06:58:37
004938	00	60	00000346	00000346	4077 16657	06:58:47
			00000405	00000405	4077 16716	07:08:09
004939	01	60	00000406	00000406	4077 16717	07:08:19
			00000465	00000465	4077 16776	07:17:41
004940	02	60	00000466	00000466	4077 16777	07:17:50
			00000525	00000525	4077 16836	07:27:18
004941	03	25	00000526	00000526	4077 16837	07:27:27
			00000550	00000549	4077 16860	07:31:07

498261

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	YOLLA 2D
Line Number	SB94A-151
Party Number	116
Operator(s)	M.DONNISON
Weather	LIGHT AIR.
Seas	SLIGHT
Heading	224

OVERVIEW

LINE SEQUENCE #8

CLIENT: SAGASCO PROSPECT: YOLLA 2D LINE: SB94A-151 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0027	00000097	004942	00	4077 22537	08:24:55			BOR; NSP; NF#; NFSID; ITB; Local start;	HARMONIC DISTORTION ANALYSIS
0028	00000058	004942	00	4077 22576	08:31:08			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS
0032	00000468	004942	00	4077 22634	08:40:20			NSP; BOL;	FIRST PRODUCTION SHOT POINT
0087	00000413	004943	01	4077 22689	08:49:02			BOR;	
0147	00000353	004944	02	4077 22749	08:58:30			BOR;	
0207	00000293	004945	03	4077 22809	09:07:53			BOR;	
0267	00000233	004946	00	4077 22869	09:17:16			BOR;	
0327	00000173	004947	01	4077 22929	09:26:38			BOR;	
0387	00000113	004948	02	4077 22989	09:35:58			BOR;	
0447	00000053	004949	03	4077 23049	09:45:14			BOR;	
0469	00000031	004949	03	4077 23071	09:48:38			EOL;	LAST PRODUCTION SHOP POINT
0470	00000031	004949	03	4077 23071	09:48:38			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS

498263

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	YOLLA 2D
Line Number	SB94A-149
Party Number	116
Operator(s)	M.DONNISON
Weather	SE. F1-2
Seas	SLIGHT
Heading	44

OVERVIEW

LINE SEQUENCE #9

CLIENT: SAGASCO PROSPECT: YOLLA 2D LINE: SB94A-149 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000031	004950	00	4077 23071	09:48:38			BOR; DSP; NF#; NFSID; ITB; Local start; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS TEST
0107	00000076	004950	00	4077 29154	10:52:02			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS TEST
0111	00000111	004950	00	4077 29230	11:04:24			NSP; BOL;	SOL FIRST PRODUCTION SHOT POINT
0166	00000166	004951	01	4077 29285	11:13:20			BOR;	
0226	00000226	004952	02	4077 29345	11:23:05			BOR;	
0286	00000286	004953	03	4077 29405	11:32:49			BOR;	
0346	00000346	004954	00	4077 29465	11:42:33			BOR;	
0406	00000406	004955	01	4077 29525	11:52:14			BOR;	
0466	00000466	004956	02	4077 29585	12:01:56			BOR;	
0486	00000486	004956	02	4077 29605	12:05:08			COR1: 23;	
0526	00000526	004957	03	4077 29645	12:11:34			BOR;	
0549	00000549	004957	03	4077 29668	12:15:16			EOL;	EOL LAST PRODUCTION SHOT POINT
0550	00000549	004957	03	4077 29668	12:15:16			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS

498265

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	YOLLA 2D
Line Number	SB94A-147
Party Number	116
Operator(s)	M.DONNISON.
Weather	NE FORCE 3
Seas	SLIGHT
Heading	224

OVERVIEW

SEQ # 10

LINE HAS DECREMENTING SHOT POINTS

CLIENT: SAGASCO PROSPECT: YOLLA 2D LINE: SB94A-147 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0076	00000549	004958	00	4077 29668	12:15:16			DSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS
0077	00000549	004958	00	4077 29668	12:15:16			DSP; NFSID; ITB; Parm chg; Local start; Fireout suppressed; GDU HDR TO;	SOL NOISE ANALYSIS
0081	00000519	004958	00	4077 35348	13:26:15			NSP; BOL;	SOL FIRST SHOT POINT
0136	00000464	004959	01	4077 35403	13:35:09			BOR;	
0196	00000404	004960	02	4077 35463	13:44:45			BOR;	
0256	00000344	004961	03	4077 35523	13:54:14			BOR;	
0316	00000284	004962	00	4077 35583	14:03:46			BOR;	
0376	00000224	004963	01	4077 35643	14:13:18			BOR;	
0420	00000180	004963	01	4077 35687	14:20:17			GDU Hdr Sze Err;	
0436	00000164	004964	02	4077 35703	14:22:49			BOR;	
0496	00000104	004965	03	4077 35763	14:32:23			BOR;	
0556	00000044	004966	00	4077 35823	14:41:54			BOR;	
0570	00000031	004966	00	4077 35836	14:43:57			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANANLYSIS

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE
Line Number	SB94A-145
Party Number	116
Operator(s)	E. SIMONTON
Weather	NE @ FORCE 2
Seas	SLIGHT
Heading	43

OVERVIEW

SEQ # 11

SHOT POINTS INCREMENTING ON THIS LINE.

LINE STOPPED EARLY DUE TO AIR LEAK ON STRING # 3

LAST GOOD SHOT POINT # 300 FILE # 289

CLIENT: SAGASCO PROSPECT: ROCKY CAPE LINE: SB94A-145 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0096	00000031	004967	00	4077 35836	14:43:57			BOR; DSP; NF#; NFSID; ITB; Local start; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS
0097	00000065	004967	00	4077 42165	15:45:28			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS
0101	00000111	004967	00	4077 42230	15:55:40			NSP; BOL;	SOL FIRST SHOT POINT
0111	00000122	004967	00	4077 42241	15:57:25			NSP; NFSID;	SHOT POINT 121 NOT RECORDED. SYSTEM LOCK-UP
0156	00000167	004968	01	4077 42286	16:04:28			BOR;	
0216	00000227	004969	02	4077 42346	16:14:02			BOR;	
0276	00000287	004970	03	4077 42406	16:23:39			BOR;	
0313	00000323	004970	03	4077 42442	16:29:25			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS
0289	00000300	004970	03	4077 42419	16:25:44				LAST GOOD SHOT POINT

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-145A
Party Number	116
Operator(s)	A. NORRIS
Weather	SE @ FORCE 1-2
Seas	SLIGHT
Heading	43

OVERVIEW

SEQ # 12

THIS LINE HAS INCREMENTING SHOT POINTS

SPS 240 TO 300 ARE OVERLAP SHOT POINTS TO TIE IN LINE.

SP 374 GUN 45 DISABLED AND GUN 37 ENABLED TOTAL VOLUME 3305 CU. IN.

FILE #S 543 AND 544 HAVE BEEN REPREATED D/T ADDING 5 EXTRA FILES ON TAPE. SHOT POINT NUMBERS ARE CONSECUTIVE AND CORRECT.

CLIENT: SAGASCO PROSPECT: YOLLA 3D LINE: YOL00703 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0234	00000323	004971	00	4077 42442	16:29:25			BOR; DSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	DUMMY FILE. DO NOT PROCESS
0235	00000049	004971	00	4077 48950	18:16:58			NSP; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION ANALYSIS
0236	00000040	004971	00	4077 48959	18:18:25			NSP; NFSID; ITB; EOL; Parm chg; Local start; Fireout suppressed;	SOL NOISE ANALYSIS
0240	00000240	004971	00	4077 48999	18:24:53			NSP; BOL;	SOL FIRST SHOT POINT
0294	00000294	004972	01	4077 49053	18:33:42			BOR;	
0301	00000301	004972	01	4077 49060	18:34:51				FIRST PRODUCTION SHOT POINT
0354	00000354	004973	02	4077 49113	18:43:25			BOR;	
0370	00000370	004973	02	4077 49129	18:45:59				MISFIRE
0371	00000371	004973	02	4077 49130	18:46:08				MISFIRE
0372	00000372	004973	02	4077 49131	18:46:18				MISFIRE
0373	00000373	004973	02	4077 49132	18:46:27				MISFIRE
0374	00000374	004973	02	4077 49133	18:46:37				MISFIRE
0414	00000414	004974	03	4077 49173	18:53:03			BOR;	
0474	00000474	004975	00	4077 49233	19:02:45			BOR;	
0534	00000534	004976	01	4077 49293	19:12:26			BOR;	
0543	00000543	004976	01	4077 49302	104:44:-			Parm chg;	CHANGED FILES ON TAPE FROM 60 TO 65. TO ACCOMADATE FOR EOL.
0543	00000545	004976	01	4077 49304	19:14:13			NF#;	
0594	00000596	004976	01	4077 49355	19:22:28			EOL;	
0594	00000596	004976	01	4077 49355	19:22:28			EOL;	LAST SHOT POINT
0595	00000596	004976	01	4077 49355	19:22:28			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANANLYSIS

498271

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-143
Party Number	116
Operator(s)	A. NORRIS
Weather	LIGHT AIR
Seas	SLIGHT
Heading	225

OVERVIEW

LINE SEQ #13

THIS LINE HAS DECREMENTING SHOT POINTS

CLIENT: SAGASCO PROSPECT: ROCKY CAOE 2D LINE: SB94A-143 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0001	00000079	004977	00	4077 54960	20:27:52			BOR; NSP; NFSID; ITB; Local start;	HARMONIC DISTORTION ANALYSIS TEST
0002	00000070	004977	00	4077 54969	20:29:17			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL- NOISE ANALYSIS TEST
0006	00000511	004977	00	4077 55039	20:40:12			NSP; BOL;	FIRST SHOT POINT
0066	00000451	004978	01	4077 55099	20:49:32			BOR;	
0131	00000386	004979	02	4077 55164	20:59:38			BOR;	
0196	00000321	004980	03	4077 55229	21:09:54			BOR;	
0261	00000256	004981	00	4077 55294	21:20:19			BOR;	
0326	00000191	004982	01	4077 55359	21:30:55			BOR;	
0391	00000126	004983	02	4077 55424	21:41:07			BOR;	
0456	00000061	004984	03	4077 55489	21:51:15			BOR;	
0486	00000031	004984	03	4077 55519	21:55:55			EOL;	LAST SHOT POINT
0487	00000031	004984	03	4077 55519	21:55:55			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS

498273

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB949-128
Party Number	116
Operator(s)	M. DONNISON
Weather	EASTERLY F x 2
Seas	SLIGHT
Heading	124°

OVERVIEW

SEQUENCE #15.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000112	004994	00	4078 06475	02:26:22			NSP; NF#; NFSID; ITB; Parm chg; Local start; Fireout suppressed;	HARMONIC DISTORTION.
0107	00000051	004994	00	4078 06536	02:35:52			NSP; NFSID; ITB; Parm chg; Local start; Fireout suppressed;	SOL NOISE ANALYSIS.
0111	00000111	004994	00	4078 06587	02:43:47			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0166	00000166	004995	01	4078 06642	02:52:20			BOR;	
0226	00000226	004996	02	4078 06702	03:01:37			BOR;	
0286	00000286	004997	03	4078 06762	03:10:52			BOR;	
0346	00000346	004998	00	4078 06822	03:20:06			BOR;	
0406	00000406	004999	01	4078 06882	03:29:29			BOR;	
0466	00000466	005000	02	4078 06942	03:38:58			BOR;	
0526	00000526	005001	03	4078 07002	03:48:28			BOR;	
0586	00000586	005002	00	4078 07062	03:58:00			BOR;	
0646	00000646	005003	01	4078 07122	04:07:33			BOR;	
0706	00000706	005004	02	4078 07182	04:17:08			BOR;	
0724	00000724	005004	02	4078 07200	04:20:01			RET1: 1;	
0729	00000729	005005	03	4078 07205	04:20:48			BOR;	
0789	00000789	005006	00	4078 07265	04:30:23			BOR;	
0849	00000849	005007	01	4078 07325	04:39:57			BOR;	
0903	00000903	005007	01	4078 07379	04:48:28			COR1: 11;	
0909	00000909	005008	02	4078 07385	04:49:26			BOR;	
0969	00000969	005009	03	4078 07445	04:58:55			BOR;	
1029	00001029	005010	00	4078 07505	05:08:20			BOR;	
1034	00001034	005010	00	4078 07510	05:09:07			EOL;	LAST PRODUCTION SHOT POINT.
1035	00001034	005010	00	4078 07510	05:09:07			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498275

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-126
Party Number	116
Operator(s)	M.CUNNINGHAM
Weather	EAST FORCE 2-3
Seas	SLIGHT
Heading	314

OVERVIEW

SEQUENCE #16

SP492 GUN #33 DISABLED, GUN #41 ENABLED. ARRAY VOLUME 3305 CUBIC INCHES.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-126 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0082	00001034	005011	00	4078 07510	05:09:07			BOR; NSP; NF#; NFSID; ITB; Local start; GDU HDR TO;	HARMONIC DISTORTION.
0083	00000122	005011	00	4078 16328	06:04:46			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS.
0087	00000613	005011	00	4078 16450	06:24:08			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0142	00000558	005012	01	4078 16505	06:32:50			BOR;	
0202	00000498	005013	02	4078 16565	06:42:17			BOR;	
0205	00000495	005013	02	4078 16568	06:42:46				GUN #33 ERROR.
0206	00000494	005013	02	4078 16569	06:42:55				GUN #33 ERROR.
0207	00000493	005013	02	4078 16570	06:43:05				GUN #33 ERROR.
0208	00000492	005013	02	4078 16571	06:43:14				GUN #33 DISABLED. GUN #41 ENABLED.
0262	00000438	005014	03	4078 16625	06:51:43			BOR;	
0322	00000378	005015	00	4078 16685	07:01:04			BOR;	
0342	00000358	005015	00	4078 16705	07:04:12			COR1: 121;	
0343	00000357	005015	00	4078 16706	07:04:22			COR1: 255;	
0344	00000356	005016	01	4078 16707	07:04:31			BOR;	
0404	00000296	005017	02	4078 16767	07:13:54			BOR;	
0464	00000236	005018	03	4078 16827	07:23:15			BOR;	
0524	00000176	005019	00	4078 16887	07:32:33			BOR;	
0584	00000116	005020	01	4078 16947	07:41:49			BOR;	
0644	00000056	005021	02	4078 17007	07:51:04			BOR;	
0669	00000031	005021	02	4078 17032	07:54:54			EOL;	LAST PRODUCTION SHOT POINT.
0670	00000031	005021	02	4078 17032	07:54:54			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	DUMMY FILE.
0671	00000031	005021	02	4078 17032	07:54:54			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498277

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-104
Party Number	116
Operator(s)	M.DONNISON
Weather	NE FORCE 2-3
Seas	SLIGHT
Heading	319

OVERVIEW

SEQUENCE #17

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-104 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0118	00000031	005022	00	4078 17032	07:54:54			BOR; NSP; NF#; NFSID; ITB; Local start; GDU HDR TO;	HARMONIC DISTORTION.
0119	00000031	005022	00	4078 17032	07:54:54			DSP; NFSID; ITB; Parm chg; Local start; Fireout suppressed; GDU HDR TO;	SOL NOISE ANALYSIS.
0123	00001777	005022	00	4078 27114	10:20:37			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0178	00001722	005023	01	4078 27169	10:29:08			BOR;	
0238	00001662	005024	02	4078 27229	10:38:25			BOR;	
0298	00001602	005025	03	4078 27289	10:47:42			BOR;	
0358	00001542	005026	00	4078 27349	10:56:57			BOR;	
0418	00001482	005027	01	4078 27409	11:06:14			BOR;	
0478	00001422	005028	02	4078 27469	11:15:30			BOR;	
0538	00001362	005029	03	4078 27529	11:24:48			BOR;	
0598	00001302	005030	00	4078 27589	11:34:07			BOR;	
0658	00001242	005031	01	4078 27649	11:43:27			BOR;	
0718	00001182	005032	02	4078 27709	11:52:54			BOR;	
0746	00001154	005032	02	4078 27737	11:57:20			BLKER;	
0778	00001122	005033	03	4078 27769	12:02:23			BOR;	
0838	00001062	005034	00	4078 27829	12:11:52			BOR;	
0898	00001002	005035	01	4078 27889	12:21:23			BOR;	
0958	00000942	005036	02	4078 27949	12:30:57			BOR;	
1018	00000882	005037	03	4078 28009	12:40:32			BOR;	
1078	00000822	005038	00	4078 28069	12:50:13			BOR;	
1138	00000762	005039	01	4078 28129	12:59:57			BOR;	
1198	00000702	005040	02	4078 28189	13:09:45			BOR;	
1205	00000695	005040	02	4078 28196	13:10:53			BLKER;	
1258	00000642	005041	03	4078 28249	13:19:28			BOR;	
1293	00000607	005041	03	4078 28284	13:25:09				GUN #23 MISFIRE.
1318	00000582	005042	00	4078 28309	13:29:11			BOR;	
1378	00000522	005043	01	4078 28369	13:38:55			BOR;	

498279

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-104 PARTY: 116 ObLog P-2

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
1438	00000462	005044	02	4078 28429	13:48:40			BOR;	
1498	00000402	005045	03	4078 28489	13:58:21			BOR;	
1558	00000342	005046	00	4078 28549	14:08:06			BOR;	
1618	00000282	005047	01	4078 28609	14:17:58			BOR;	
1678	00000222	005048	02	4078 28669	14:27:42			BOR;	
1738	00000162	005049	03	4078 28729	14:37:12			BOR;	
1739	00000161	005049	03	4078 28730	14:37:21			GDU Hdr Sze Err;	
1798	00000102	005050	00	4078 28789	14:46:41			BOR;	
1858	00000042	005051	01	4078 28849	14:56:09			BOR;	
1870	00000031	005051	01	4078 28860	14:57:53			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL CABLE NOISE FILE
1869	00000031	005051	01	4078 28860	14:57:53				EOL COMPLETE

498280

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-102
Party Number	116
Operator(s)	J.MIEARS
Weather	SE @ FX 5
Seas	SLIGHT
Heading	143

OVERVIEW

LINE SEQ. 18

SCREW NOISE VISIBLE @ HEAD OF CABLE

SHOTPOINTS ON THIS LINE INCREMENTING

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-102 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0105	00000078	005052	00	4078 42466	15:49:49			BOR; NSP; NF#; NFSID; ITB; Local start; Fireout suppressed;	SOL HARMONIC DISTORTION
0106	00000065	005052	00	4078 42479	15:51:54			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL CABLE NOISE FILE
0111	00000111	005052	00	4078 42544	16:02:17			NSP; BOL;	
0165	00000165	005053	01	4078 42598	16:10:57			BOR;	
0225	00000225	005054	02	4078 42658	16:20:28			BOR;	
0285	00000285	005055	03	4078 42718	16:30:01			BOR;	
0345	00000345	005056	00	4078 42778	16:39:34			BOR;	
0405	00000405	005057	01	4078 42838	16:48:59			BOR;	
0465	00000465	005058	02	4078 42898	16:58:21			BOR;	
0525	00000525	005059	03	4078 42958	17:07:45			BOR;	
0585	00000585	005060	00	4078 43018	17:17:11			BOR;	
0645	00000645	005061	01	4078 43078	17:26:40			BOR;	
0705	00000705	005062	02	4078 43138	17:36:12			BOR;	
0765	00000765	005063	03	4078 43198	17:45:47			BOR;	
0825	00000825	005064	00	4078 43258	17:55:18			BOR;	
0885	00000885	005065	01	4078 43318	18:04:53			BOR;	
0945	00000945	005066	02	4078 43378	18:14:25			BOR;	
1005	00001005	005067	03	4078 43438	18:23:52			BOR;	
1063	00001063	005067	03	4078 43496	18:33:03			COR1: 13;	
1064	00001064	005067	03	4078 43497	18:33:13			COR1: 16;	
1065	00001065	005068	00	4078 43498	18:33:22			BOR;	
1085	00001085	005068	00	4078 43518	18:36:39			GDU Hdr Sze Err;	
1125	00001125	005069	01	4078 43558	18:43:07			BOR;	
1185	00001185	005070	02	4078 43618	18:52:50			BOR;	
1205	00001205	005070	02	4078 43638	18:56:04			BLKER;	
1208	00001208	005070	02	4078 43641	18:56:33			COR1: 35;	
1209	00001209	005070	02	4078 43642	18:56:43			COR1: 22;	

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-102 PARTY: 116 ObLog P-2

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
1245	00001245	005071	03	4078 43678	19:02:30			BOR;	
1273	00001273	005071	03	4078 43706	19:07:00			COR1: 18;	
1305	00001305	005072	00	4078 43738	19:12:06			BOR;	
1365	00001365	005073	01	4078 43798	19:21:47			BOR;	
1425	00001425	005074	02	4078 43858	19:31:33			BOR;	
1485	00001485	005075	03	4078 43918	19:41:23			BOR;	
1545	00001545	005076	00	4078 43978	19:51:18			BOR;	
1577	00001577	005076	00	4078 44010	19:56:35			RET1: 1;	
1605	00001605	005077	01	4078 44038	20:01:10			BOR;	
1665	00001665	005078	02	4078 44098	20:10:47			BOR;	
1682	00001682	005078	02	4078 44115	20:13:28			BLKER;	
1718	00001718	005078	02	4078 44151	20:19:12				MISFIRE - GUN 28
1725	00001725	005079	03	4078 44158	20:20:18			BOR;	
1785	00001785	005080	00	4078 44218	20:29:55			BOR;	
1832	00001831	005080	00	4078 44264	20:37:12			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL CABLE NOISE
1831	00001831	005080	00	4078 44264	20:37:12				EOL COMPLETE

498282

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-124
Party Number	116
Operator(s)	J.MIEARS
Weather	NE @ FX 3
Seas	LIGHT
Heading	324

OVERVIEW

SEQ. 19 SHOT POINTS ARE DECREMENTING

AT SP 614 HEADING CHANGES FROM 324 TO 320 D/T PRE-PLOTTED DOGLEG

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-124 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0006	00000066	005081	00	4078 59152	22:02:36			NSP; NF#; NFSID; ITB; Parm chg; Local start; Fireout suppressed;	SOL HARMONIC DISTORTION
0007	00000044	005081	00	4078 59174	22:06:06			NSP; NFSID; ITB; Parm chg; Local start; Fireout suppressed;	SOL CABLE NOISE FILE
0008	00000003	005081	00	4078 59215	22:12:42			Parm chg;	DUMMY FILE
0011	00001274	005081	00	4078 59218	22:13:11			NSP; BOL;	SOL
0066	00001219	005082	01	4078 59273	22:21:59			BOR;	
0096	00001189	005082	01	4078 59303	22:26:29			BLKER;	
0126	00001159	005083	02	4078 59333	22:31:04			BOR;	
0186	00001099	005084	03	4078 59393	22:40:28			BOR;	
0246	00001039	005085	00	4078 59453	22:49:55			BOR;	
0306	00000979	005086	01	4078 59513	22:59:24			BOR;	
0366	00000919	005087	02	4078 59573	23:08:58			BOR;	
0426	00000859	005088	03	4078 59633	23:18:28			BOR;	
0486	00000799	005089	00	4078 59693	23:28:02			BOR;	
0546	00000739	005090	01	4078 59753	23:37:18			BOR;	
0606	00000679	005091	02	4078 59813	23:46:30			BOR;	
0666	00000619	005092	03	4078 59873	23:55:45			BOR;	
0671	00000614	005092	03	4078 59878	23:56:31				HEADING CHANGE TO 320
0694	00000591	005092	03	4079 00001	00:00:05			NFSID;	
0726	00000559	005093	00	4079 00033	00:05:03			BOR;	
0768	00000517	005093	00	4079 00075	00:11:34				BAD SHOT. STRING 3 & 4 DID NOT SHOOT.
0786	00000499	005094	01	4079 00093	00:14:23			BOR;	
0846	00000439	005095	02	4079 00153	00:23:51			BOR;	
0906	00000379	005096	03	4079 00213	00:33:24			BOR;	
0966	00000319	005097	00	4079 00273	00:42:59			BOR;	
1026	00000259	005098	01	4079 00333	00:52:31			BOR;	
1086	00000199	005099	02	4079 00393	01:02:04			BOR;	
1146	00000139	005100	03	4079 00453	01:11:40			BOR;	

498284

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-124 PARTY: 116 ObLog P-2

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
1206	00000079	005101	00	4079 00513	01:21:15			BOR;	
1255	00000031	005101	00	4079 00561	-77:-63:			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL CABLE NOISE

498285

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-108
Party Number	116
Operator(s)	D.COUTTS
Weather	ENE F6-7
Seas	SLIGHT-MOD.
Heading	325

OVERVIEW

LINE SEQUENCE #20

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-108 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0066	00000118	005102	00	4079 07074	02:37:59			BOR; NSP; NF#; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION ANALYSIS
0067	00000118	005102	00	4079 07074	02:37:59			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	SOL NOISE ANALYISIS
0071	00000529	005102	00	4079 07192	02:56:44			NSP; BOL;	SOL FIRST PRODUCTION SHOT POINT
0080	00000520	005102	00	4079 07201	02:58:10				GUN #28 MISFIRE
0126	00000474	005103	01	4079 07247	03:05:32			BOR;	
0186	00000414	005104	02	4079 07307	03:15:05			BOR;	
0221	00000379	005104	02	4079 07342	03:20:43			BLKER;	
0246	00000354	005105	03	4079 07367	03:24:41			BOR;	
0306	00000294	005106	00	4079 07427	03:34:07			BOR;	
0311	00000289	005106	00	4079 07432	03:34:55			BLKER;	
0366	00000234	005107	01	4079 07487	03:43:41			BOR;	
0426	00000174	005108	02	4079 07547	03:53:09			BOR;	
0442	00000158	005108	02	4079 07563	03:55:46			BLKER;	
0486	00000114	005109	03	4079 07607	04:02:49			BOR;	
0546	00000054	005110	00	4079 07667	04:12:19			BOR;	
0569	00000031	005110	00	4079 07690	04:15:53			EOL;	LAST PRODUCTION SHOT POINT
0570	00000031	005110	00	4079 07690	04:15:53			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS

498287

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-106
Party Number	116
Operator(s)	D.COUTTS
Weather	EAST F4-5
Seas	MODERATE
Heading	141

OVERVIEW

LINE SEQUENCE #21

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-106 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000104	005111	00	4079 13896	05:10:48			BOR; NSP; NF#; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION.
0107	00000071	005111	00	4079 13929	05:16:09			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS.
0111	00000111	005111	00	4079 14000	05:27:29			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0166	00000166	005112	01	4079 14055	05:36:17			BOR;	
0226	00000226	005113	02	4079 14115	05:45:57			BOR;	
0276	00000276	005113	02	4079 14165	05:53:55			RET1: 1; GAP1: 1:	
0279	00000279	005114	03	4079 14168	05:54:24			BOR;	
0339	00000339	005115	00	4079 14228	06:04:07			BOR;	
0399	00000399	005116	01	4079 14288	06:13:45			BOR;	
0453	00000453	005116	01	4079 14342	06:22:30			BLKER;	
0459	00000459	005117	02	4079 14348	06:23:28			BOR;	
0519	00000519	005118	03	4079 14408	06:33:16			BOR;	
0579	00000579	005119	00	4079 14468	06:43:12			BOR;	
0639	00000639	005120	01	4079 14528	06:53:08			BOR;	
0699	00000699	005121	02	4079 14588	07:03:04			BOR;	
0759	00000759	005122	03	4079 14648	07:13:01			BOR;	
0790	00000790	005122	03	4079 14679	07:18:08			EOL;	LAST PRODUCTION SHOT POINT.
0791	00000790	005122	03	4079 14679	07:18:08			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498289

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-125
Party Number	116
Operator(s)	M.S.CUNNINGHAM.
Weather	N-E FORCE 6.
Seas	1.5 M SEA.
Heading	235

OVERVIEW

LINE SEQUENCE #22

498290

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-125 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0068	00000107	005123	00	4079 23033	08:36:59			BOR; NSP; NF#; NFSID; ITB; Local start;	HARMONIC DISTORTION ANALYSIS.
0069	00000087	005123	00	4079 23053	08:40:24			NSP; NFSID; ITB; Local start; Fireout suppressed;	DUMMY FILE.
0070	00000087	005123	00	4079 23053	08:40:24			DSP; NFSID; ITB; Parm chg; Local start; Fireout suppressed; GDU HDR TO;	SOL NOISE ANALYSIS.
0073	00000427	005123	00	4079 23140	08:54:28			NSP; BOL;	SOL FIRST PRODUCTION SHOT.
0128	00000372	005124	01	4079 23195	09:03:14			BOR;	
0188	00000312	005125	02	4079 23255	09:12:41			BOR;	
0248	00000252	005126	03	4079 23315	09:22:03			BOR;	
0308	00000192	005127	00	4079 23375	09:31:26			BOR;	
0368	00000132	005128	01	4079 23435	09:40:48			BOR;	
0428	00000072	005129	02	4079 23495	09:50:09			BOR;	
0469	00000031	005129	02	4079 23536	09:56:34			EOL;	LAST PRODUCTION SHOT POINT.
0470	00000031	005129	02	4079 23536	09:56:34			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498291

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-129
Party Number	116
Operator(s)	M.DONNISON
Weather	NE FORCE 5-6
Seas	MODERATE
Heading	056

OVERVIEW

SEQUENCE #23

498292

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-129 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000119	005130	00	4079 29420	10:58:18			BOR; NSP; NF#; NFSID; ITB; Local start;	HARMONIC DISTORTION.
0107	00000065	005130	00	4079 29474	11:06:44			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS.
0111	00000111	005130	00	4079 29539	11:17:04			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0158	00000158	005130	00	4079 29586	11:24:52			RET1: 1;	
0161	00000161	005131	01	4079 29589	11:25:21			BOR;	
0221	00000221	005132	02	4079 29649	11:35:09			BOR;	
0281	00000281	005133	03	4079 29709	11:44:52			BOR;	
0341	00000341	005134	00	4079 29769	11:54:27			BOR;	
0401	00000401	005135	01	4079 29829	12:03:55			BOR;	
0461	00000461	005136	02	4079 29889	12:13:33			BOR;	
0521	00000521	005137	03	4079 29949	12:23:03			BOR;	
0581	00000581	005138	00	4079 30009	12:32:42			BOR;	
0641	00000641	005139	01	4079 30069	12:42:32			BOR;	
0701	00000701	005140	02	4079 30129	12:52:08			BOR;	
0733	00000733	005140	02	4079 30161	12:57:19			EOL;	LAST PRODUCTION SHOT POINT.
0734	00000733	005140	02	4079 30161	12:57:19			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498293

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-133
Party Number	116
Operator(s)	B.VERNON
Weather	NE FORCE 5-6
Seas	MODERATE
Heading	238

OVERVIEW

SEQUENCE #24. SHOTPOINTS ON THIS LINE ARE DECREMENTING.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-133 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0002	00000733	005141	00	4079 30161	12:57:19			BOR; NSP; NF#; NFSID; ITB; Local start; GDU HDR TO;	HARMONIC DISTORTION TEST
0003	00000733	005141	00	4079 30161	12:57:19			DSP; NFSID; ITB; Local start, Fireout suppressed; GDU HDR TO;	DUMMY
0004	00000733	005141	00	4079 30161	12:57:19			DSP; NFSID; ITB; Parm chg; Local start; Fireout suppressed; GDU HDR TO;	NOISE ANALYSIS TEST
0008	00000394	005141	00	4079 38157	14:24:57			NSP; BOL;	
0062	00000340	005142	01	4079 38211	14:33:31			BOR;	
0122	00000280	005143	02	4079 38271	14:43:10			BOR;	
0182	00000220	005144	03	4079 38331	14:52:46			BOR;	
0242	00000160	005145	00	4079 38391	15:02:23			BOR;	
0302	00000100	005146	01	4079 38451	15:11:50			BOR;	
0362	00000040	005147	02	4079 38511	15:21:16			BOR;	
0372	00000031	005147	02	4079 38520	15:22:42			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498295

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-137
Party Number	116
Operator(s)	E. SIMONTON
Weather	NE FORCE 6
Seas	MODERATE
Heading	53

OVERVIEW

SEQ. # 25 SHOTPOINTS ARE INCREMENTING.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-137 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0105	00000031	005148	00	4079 38520	15:22:42			BOR; DSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS.
0106	00000050	005148	00	4079 44541	16:39:40			NSP; NFSID; ITB; Local start; Fireout suppressed;	BOL NOISE ANALYSIS.
0111	00000111	005148	00	4079 44591	16:47:11			NSP; BOL;	
0165	00000165	005149	01	4079 44645	16:55:14			BOR;	
0225	00000225	005150	02	4079 44705	17:04:40			BOR;	
0285	00000285	005151	03	4079 44765	17:14:22			BOR;	
0345	00000345	005152	00	4079 44825	17:24:06			BOR;	
0405	00000405	005153	01	4079 44885	17:33:39			BOR;	
0465	00000465	005154	02	4079 44945	17:43:17			BOR;	
0525	00000525	005155	03	4079 45005	17:52:54			BOR;	
0530	00000530	005155	03	4079 45010	17:53:44			BLKER;	SQC LOCKUP / ALL FILES RECORDED O.K.
0537	00000536	005155	03	4079 45016	17:54:41			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498297

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-139
Party Number	116
Operator(s)	E. SIMONTON
Weather	NE @ FORCE 6
Seas	MODERATE
Heading	230

OVERVIEW

SEQ. # 26 SHOT POINTS ARE DECREMENTING ON THIS LINE.

SHOT POINT 102 GUN 28 DISABLED AND GUN 20 ENABLED, TOTAL VOLUME 3305 CU. IN.

SHOT POINT 46 GUN 20 DISABLED AND GUN 28 ENABLED, TOTAL VOLUME 3305 CU. IN.

SHOT POINT 44 GUN 28 DISABLED AND GUN 20 ENABLED, TOTAL VOLUME 3305 CU. IN.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-139 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0001	00000077	005155	00	4079 49819	18:34:02			BOR; NSP; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION ANALYSIS.
0002	00000066	005155	00	4079 49830	18:35:48			NSP; NFSID; ITB; Local start; Fireout suppressed;	BOL NOISE ANALYSIS.
0006	00000399	005155	00	4079 49896	18:46:19			NSP; BOL;	FIRST SHOT POINT
0061	00000344	005156	01	4079 49951	18:55:03			BOR;	
0121	00000284	005157	02	4079 50011	19:04:34			BOR;	
0181	00000224	005158	03	4079 50071	19:14:04			BOR;	
0241	00000164	005159	00	4079 50131	19:23:32			BOR;	
0301	00000104	005160	01	4079 50191	19:32:58			BOR;	
0359	00000046	005160	01	4079 50249	19:42:07				SYNC ERROR GUN #28.
0360	00000045	005160	01	4079 50250	19:42:16				SYNC ERROR GUN #28.
0361	00000044	005161	02	4079 50251	19:42:26			BOR;	
0361	00000044	005161	02	4079 50251	19:42:26			BOR;	SYNC ERROR GUN #28.
0375	00000031	005161	02	4079 50264	19:44:28			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	
0375	00000031	005161	02	4079 50264	19:44:28			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-135
Party Number	116
Operator(s)	E. SIMONTON
Weather	NE @ FORCE 4
Seas	SLIGHT - MODERATE
Heading	56

OVERVIEW

SEQ # 27

THIS LINE HAS INCREMENTING SHOT POINTS.
SCREW NOISE AT HEAD OF CABLE.
SP 167 GUN 26 DISABLED - GUN 18 ENABLED - NO VOLUME CHANGE

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-135 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000088	005164	00	4079 61930	23:00:54			BOR; NSP; NF#; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION ANALYSIS.
0107	00000088	005164	00	4079 61930	23:00:54			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	SOL CABLE NOISE ANALYSIS.
0111	00000111	005164	00	4079 62018	23:15:05			NSP; BOL;	FIRST SHOT POINT.
0119	00000119	005164	00	4079 62026	23:16:23			BLKER;	
0160	00000160	005164	00	4079 62067	23:22:45				MISFIRE - GUN 26
0164	00000164	005164	00	4079 62071	23:23:23				MISFIRE - GUN 26
0166	00000166	005165	01	4079 62073	23:23:40			BOR;	MISFIRE - GUN 26
0167	00000167	005165	01	4079 62074	23:23:51				GUN 26 DISABLED - GUN 18 ENABLED
0174	00000174	005165	01	4079 62081	23:24:54				BAD SHOT STRING 3 & 4 DID NOT SHOOT.
0226	00000226	005166	02	4079 62133	23:32:58			BOR;	
0286	00000286	005167	03	4079 62193	23:42:12			BOR;	
0346	00000346	005168	00	4079 62253	23:51:32			BOR;	
0401	00000401	005168	00	4080 00001	00:00:03			NFSID;	GMT DAY CHANGED.
0406	00000406	005169	01	4080 00006	00:00:50			BOR;	
0466	00000466	005170	02	4080 00066	00:10:09			BOR;	
0520	00000519	005170	02	4080 00119	00:18:22			DSP; NFSID; ITB; BOL; Local start; Fireout suppressed; GDU HDR TO;	EOL CABLE NOISE FILE

498301

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-131
Party Number	116
Operator(s)	M. DONNISON
Weather	ENE @ FORCE 3
Seas	SLIGHT
Heading	235

OVERVIEW

SEQ # 28

THIS LINE HAS DECREMENTING SHOT POINTS.

LINE STARTED WITH GUN 26 DISABLED AND GUN 18 ENABLED. TOTAL VOLUME 3305 CU. IN.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-131 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0001	00000519	005171	00	4080 00119	00:18:22			BOR; NSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS.
0002	00000519	005171	00	4080 00119	00:18:22			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	CABLE NOISE ANALYSIS.
0006	00000529	005171	00	4080 04259	01:51:04			NSP; BOL;	FIRST SHOT POINT.
0009	00000526	005171	00	4080 04262	01:51:31			COR1: 22;	
0061	00000474	005172	01	4080 04314	01:59:37			BOR;	
0121	00000414	005173	02	4080 04374	02:09:01			BOR;	
0181	00000354	005174	03	4080 04434	02:18:30			BOR;	
0241	00000294	005175	00	4080 04494	02:28:00			BOR;	
0301	00000234	005176	01	4080 04554	02:37:34			BOR;	
0361	00000174	005177	02	4080 04614	02:47:10			BOR;	
0421	00000114	005178	03	4080 04674	02:56:52			BOR;	
0481	00000054	005179	00	4080 04734	03:06:29			BOR;	
0504	00000031	005179	00	4080 04757	03:10:11			EOL;	LAST PRODUCTION SHOT POINT.
0505	00000031	005179	00	4080 04757	03:10:11			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498303

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-127
Party Number	116
Operator(s)	M.DONNISON
Weather	NE FORCE 2-3
Seas	SLIGHT
Heading	055

OVERVIEW

SEQUENCE #29

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-127 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000031	005180	00	4080 04757	03:10:11			BOR; NSP; NF#; NFSID; ITB; Local start; GDU HDR TO;	HARMONIC DISTORTION.
0107	00000031	005180	00	4080 04757	03:10:11			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	SOL NOISE ANALYSIS.
0111	00000111	005180	00	4080 11038	04:23:05			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0166	00000166	005181	01	4080 11093	04:31:50			BOR;	
0226	00000226	005182	02	4080 11153	04:41:26			BOR;	
0286	00000286	005183	03	4080 11213	04:50:52			BOR;	
0346	00000346	005184	00	4080 11273	05:00:19			BOR;	
0406	00000406	005185	01	4080 11333	05:09:41			BOR;	
0466	00000466	005186	02	4080 11393	05:19:01			BOR;	
0526	00000526	005187	03	4080 11453	05:28:24			BOR;	
0586	00000586	005188	00	4080 11513	05:37:43			BOR;	
0646	00000646	005189	01	4080 11573	05:47:02			BOR;	
0660	00000660	005189	01	4080 11587	05:49:13				BAD SHOT STRING 3 & 4 DID NOT SHOOT.
0706	00000706	005190	02	4080 11633	05:56:25			BOR;	
0737	00000737	005190	02	4080 11664	06:01:15			EOL;	LAST PRODUCTION SHOT POINT.
0738	00000737	005190	02	4080 11664	06:01:15			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498305

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-110
Party Number	116
Operator(s)	M.DONNISON
Weather	LIGHT, VARIABLE
Seas	RIPPLED SEAS
Heading	323

OVERVIEW

LINE SEQUENCE #30

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-110 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0023	00000081	005191	00	4080 19339	07:16:31			BOR; NSP; NF#; NFSID; ITB; Local start;	HARMONIC DISTORTION.
0024	00000069	005191	00	4080 19351	07:18:25			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS.
0025	00000003	005191	00	4080 19417	07:28:44			Parm chg;	
0028	00001172	005191	00	4080 19420	07:29:12			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0083	00001117	005192	01	4080 19475	07:37:40			BOR;	
0143	00001057	005193	02	4080 19535	07:47:15			BOR;	
0203	00000997	005194	03	4080 19595	07:56:54			BOR;	
0263	00000937	005195	00	4080 19655	08:06:31			BOR;	
0323	00000877	005196	01	4080 19715	08:16:05			BOR;	
0383	00000817	005197	02	4080 19775	08:25:35			BOR;	
0426	00000774	005197	02	4080 19818	08:32:23			GDU Hdr Sze Err;	
0443	00000757	005198	03	4080 19835	08:35:04			BOR;	
0503	00000697	005199	00	4080 19895	08:44:33			BOR;	
0563	00000637	005200	01	4080 19955	08:54:03			BOR;	
0623	00000577	005201	02	4080 20015	09:03:33			BOR;	
0683	00000517	005202	03	4080 20075	09:12:59			BOR;	
0743	00000457	005203	00	4080 20135	09:22:22			BOR;	
0803	00000397	005204	01	4080 20195	09:31:42			BOR;	
0863	00000337	005205	02	4080 20255	09:41:02			BOR;	
0923	00000277	005206	03	4080 20315	09:50:17			BOR;	
0983	00000217	005207	00	4080 20375	09:59:27			BOR;	
1043	00000157	005208	01	4080 20435	10:08:38			BOR;	
1103	00000097	005209	02	4080 20495	10:17:48			BOR;	
1163	00000037	005210	03	4080 20555	10:27:03			BOR;	
1169	00000031	005210	03	4080 20561	10:27:58			EOL;	LAST PRODDUCTION SHOT POINT.
1170	00000031	005210	03	4080 20561	10:27:58			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

WG-24 REEL LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-110
Party Number	116
Operator(s)	M.DONNISON
Weather	LIGHT, VARIABLE
Seas	RIPPLED SEAS
Heading	323

OVERVIEW

LINE SEQUENCE #30

CLIENT: SAGASCO PROSPECTS: ROCKY CAPE 2D LINE: SB94A-110

Reel No	Tape Unit	Shots	Start File / End File	Start SP / End SP	Start FSID / End FSID	Start Time / End Time
005191	00	60	00000023	00000081	4080 19339	07:16:31
			00000082	00001118	4080 19474	07:37:31
005192	01	60	00000083	00001117	4080 19475	07:37:40
			00000142	00001058	4080 19534	07:47:05
005193	02	60	00000143	00001057	4080 19535	07:47:15
			00000202	00000998	4080 19594	07:56:44
005194	03	60	00000203	00000997	4080 19595	07:56:54
			00000262	00000938	4080 19654	08:06:21
005195	00	60	00000263	00000937	4080 19655	08:06:31
			00000322	00000878	4080 19714	08:15:56
005196	01	60	00000323	00000877	4080 19715	08:16:05
			00000382	00000818	4080 19774	08:25:26
005197	02	60	00000383	00000817	4080 19775	08:25:35
			00000442	00000758	4080 19834	08:34:55
005198	03	60	00000443	00000757	4080 19835	08:35:04
			00000502	00000698	4080 19894	08:44:23
005199	00	60	00000503	00000697	4080 19895	08:44:33
			00000562	00000638	4080 19954	08:53:54
005200	01	60	00000563	00000637	4080 19955	08:54:03
			00000622	00000578	4080 20014	09:03:23
005201	02	60	00000623	00000577	4080 20015	09:03:33
			00000682	00000518	4080 20074	09:12:50
005202	03	60	00000683	00000517	4080 20075	09:12:59
			00000742	00000458	4080 20134	09:22:12

CLIENT: SAGASCO PROSPECTS: ROCKY CAPE 2D LINE: SB94A-110

Reel No	Tape Unit	Shots	Start File	Start SP	Start FSID	Start Time
			End File	End SP	End FSID	End Time
005203	00	60	00000743	00000457	4080 20135	09:22:22
			00000802	00000398	4080 20194	09:31:33
005204	01	60	00000803	00000397	4080 20195	09:31:42
			00000862	00000338	4080 20254	09:40:53
005205	02	60	00000863	00000337	4080 20255	09:41:02
			00000922	00000278	4080 20314	09:50:08
005206	03	60	00000923	00000277	4080 20315	09:50:17
			00000982	00000218	4080 20374	09:59:18
005207	00	60	00000983	00000217	4080 20375	09:59:27
			00001042	00000158	4080 20434	10:08:28
005208	01	60	00001043	00000157	4080 20435	10:08:38
			00001102	00000098	4080 20494	10:17:39
005209	02	60	00001103	00000097	4080 20495	10:17:48
			00001162	00000038	4080 20554	10:26:53
005210	03	8	00001163	00000037	4080 20555	10:27:03
			00001170	00000031	4080 20561	10:27:58

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-112
Party Number	116
Operator(s)	M.DONNISON
Weather	VARIABLE WINDS
Seas	SLIGHT.
Heading	142

OVERVIEW

SEQUENCE 31

SCREW NOISE CAUSED BY PASSING VESSEL,SOL-SHOT POINT #250.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-112 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000097	005211	00	4080 30770	11:27:59			NSP; NF#; NFSID; ITB; System aborted; Parm chg; Local start; Fireout suppressed;	HARMONIC DISTORTION ANALYSIS.
0107	00000066	005211	00	4080 30801	11:32:52			NSP; NFSID; ITB; Parm chg; Local start; Fireout suppressed;	SOL NOISE ANALYSIS.
0111	00000111	005211	00	4080 30867	11:43:19			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0166	00000166	005212	01	4080 30922	11:52:00			BOR;	
0226	00000226	005213	02	4080 30982	12:01:28			BOR;	
0286	00000286	005214	03	4080 31042	12:10:56			BOR;	
0323	00000323	005214	03	4080 31079	12:16:50			BLKER;	
0334	00000334	005214	03	4080 31090	12:18:35			BLKER;	
0346	00000346	005215	00	4080 31102	12:20:27			BOR;	
0406	00000406	005216	01	4080 31162	12:29:58			BOR;	
0466	00000466	005217	02	4080 31222	12:39:30			BOR;	
0526	00000526	005218	03	4080 31282	12:49:03			BOR;	
0586	00000586	005219	00	4080 31342	12:58:40			BOR;	
0646	00000646	005220	01	4080 31402	13:08:24			BOR;	
0706	00000706	005221	02	4080 31462	13:18:02			BOR;	
0766	00000766	005222	03	4080 31522	13:27:38			BOR;	
0826	00000826	005223	00	4080 31582	13:37:10			BOR;	
0886	00000886	005224	01	4080 31642	13:46:42			BOR;	
0946	00000946	005225	02	4080 31702	13:56:09			BOR;	
1006	00001006	005226	03	4080 31762	14:05:33			BOR;	
1066	00001066	005227	00	4080 31822	14:14:51			BOR;	
1126	00001126	005228	01	4080 31882	14:24:04			BOR;	
1171	00001171	005228	01	4080 31927	14:31:19				SYNC ERROR ON GUN 38.
1186	00001186	005229	02	4080 31942	14:33:44			BOR;	
1246	00001246	005230	03	4080 32002	14:43:23			BOR;	
1280	00001279	005230	03	4080 32035	14:48:41			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498312

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-112 PARTY: 116 ObLog P-2

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT

498313

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE
Line Number	SB94A-123
Party Number	0116
Operator(s)	A. NORRIS
Weather	SW @ FORCE 3
Seas	SLIGHT
Heading	235°

OVERVIEW

SEQ # 32.

THIS LINE HAS DECREMENTING SHOT POINTS.

498314

CLIENT: PROSPECT: LINE: PARTY: 0 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0001	00000069	005231	00	4080 44552	16:37:43			BOR; NSP; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION ANALYSIS.
0002	00000069	005231	00	4080 44552	16:37:43			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	CABLE NOISE ANALYSIS.
0006	00001025	005231	00	4080 44621	16:48:44			NSP; BOL;	SOL FIRST SHOT POINT.
0061	00000970	005232	01	4080 44676	16:57:30			BOR;	
0121	00000910	005233	02	4080 44736	17:07:00			BOR;	
0136	00000895	005233	02	4080 44751	17:09:23			COR1: 109;	
0137	00000894	005233	02	4080 44752	17:09:33			COR1: 47;	
0181	00000850	005234	03	4080 44796	17:16:31			BOR;	
0241	00000790	005235	00	4080 44856	17:26:00			BOR;	
0301	00000730	005236	01	4080 44916	17:35:32			BOR;	
0361	00000670	005237	02	4080 44976	17:45:02			BOR;	
0379	00000652	005237	02	4080 44994	17:47:53			COR1: 28;	
0421	00000610	005238	03	4080 45036	17:54:30			BOR;	
0481	00000550	005239	00	4080 45096	18:03:57			BOR;	
0541	00000490	005240	01	4080 45156	18:13:25			BOR;	
0601	00000430	005241	02	4080 45216	18:22:53			BOR;	
0638	00000393	005241	02	4080 45253	18:28:42				MISFIRE - GUN 38
0639	00000392	005241	02	4080 45254	18:28:52				MISFIRE - GUN 38
0640	00000391	005241	02	4080 45255	18:29:01				GUN 38 DISABLED - GUN 46 ENABLED NO VOLUME CHANGE
0661	00000370	005242	03	4080 45276	18:32:19			BOR;	
0711	00000320	005242	03	4080 45326	18:40:10			BLKER;	
0721	00000310	005243	00	4080 45336	18:41:44			BOR;	
0781	00000250	005244	01	4080 45396	18:51:04			BOR;	
0841	00000190	005245	02	4080 45456	19:00:23			BOR;	
0883	00000148	005245	02	4080 45498	19:06:51			BLKER;	
0901	00000130	005246	00	4080 45516	19:09:37			BOR;	

498315

CLIENT: PROSPECT: LINE: PARTY: 0 ObLog P-2

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0961	00000070	005247	01	4080 45576	19:18:42			BOR;	
1001	00000031	005247	01	4080 45615	19:24:36			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498316

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-121
Party Number	116
Operator(s)	A. NORRIS
Weather	LIGHT AIRS SE
Seas	CALM
Heading	54

OVERVIEW

SEQ # 33

THIS LINE SHOT WITH INCREMENTING SHOT POINTS.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-121 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0000	00000000	000000	00	0000 00000	00:00:00			EOL; Parm chg; Local start; Fireout suppressed; GDU HDR TO; Parm chg; Local star	HARMONIC DISTORTION ANALYSIS.
0000	00000000	000000	00	0000 00000	00:00:00			EOL; Parm chg; Local start; Fireout suppressed; GDU HDR TO; Parm chg; Local star	CABLE NOISE ANALYSIS.
0111	00000111	005249	00	4080 55038	20:40:45			NSP; BOL;	FIRST SHOT POINT.
0114	00000114	005249	00	4080 55041	20:41:14			BOL;	
0165	00000165	005250	01	4080 55092	20:49:35			BOR;	
0225	00000225	005251	02	4080 55152	20:59:18			BOR;	
0285	00000285	005252	03	4080 55212	21:08:50			BOR;	
0345	00000345	005253	00	4080 55272	21:18:23			BOR;	
0405	00000405	005254	01	4080 55332	21:27:49			BOR;	
0465	00000465	005255	02	4080 55392	21:37:15			BOR;	
0525	00000525	005256	03	4080 55452	21:46:42			BOR;	
0540	00000540	005256	03	4080 55467	21:49:03			BLKER;	
0585	00000585	005257	00	4080 55512	21:56:09			BOR;	
0645	00000645	005258	01	4080 55572	22:05:34			BOR;	
0705	00000705	005259	02	4080 55632	22:14:57			BOR;	
0765	00000765	005260	03	4080 55692	22:24:18			BOR;	
0825	00000825	005261	00	4080 55752	22:33:40			BOR;	
0885	00000885	005262	01	4080 55812	22:42:59			BOR;	
0945	00000945	005263	02	4080 55872	22:52:14			BOR;	
0957	00000957	005263	02	4080 55884	22:54:04			COR1: 27; BLKER;	
1005	00001005	005264	03	4080 55932	23:01:26			BOR;	
1065	00001065	005265	00	4080 55992	23:10:37			BOR;	
1125	00001125	005266	01	4080 56052	23:19:47			BOR;	
1129	00001128	005266	01	4080 56055	23:20:14			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL CABLE NOISE ANALYSIS.

498318

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-119
Party Number	116
Operator(s)	A. NORRIS
Weather	LIGHT AIRS
Seas	CALM
Heading	235

OVERVIEW

SEQ # 34

THIS LINE HAS DECREMENTING SHOT POINTS.

SHOT POINTS 143-140 & FILES 417-418 MISSED DUE TO MSC SYSTEM HANG UP.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-119 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0001	00001128	005267	00	4080 56055	23:20:14			BOR; NSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	DUMMY FILE.
0002	00000106	005267	00	4081 02887	01:06:38			NSP; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION ANALYSIS.
0003	00000085	005267	00	4081 02908	01:09:54			NSP; NFSID; ITB; EOL; EOL; EOL; Parm chg; Local start; Fireout suppressed;	CABLE NOISE ANALYSIS.
0006	00000554	005267	00	4081 02993	01:23:11			NSP; BOL;	FIRST SHOT POINT.
0061	00000499	005268	01	4081 03048	01:31:49			BOR;	
0121	00000439	005269	02	4081 03108	01:41:19			BOR;	
0181	00000379	005270	03	4081 03168	01:50:52			BOR;	
0196	00000364	005270	03	4081 03183	01:53:16			COR1: 13; GDU Hdr Sze Err;	
0241	00000319	005271	00	4081 03228	02:00:19			BOR;	
0301	00000259	005272	01	4081 03288	02:09:34			BOR;	
0361	00000199	005273	02	4081 03348	02:18:53			BOR;	
0419	00000139	005273	02	4081 03408	02:28:15			BOR; NSP; NF#; NFSID;	
0422	00000136	005274	03	4081 03411	02:28:43			BOR; Parm chg; System aborted;	MSC LOCK UP. SYSTEM RESET.
0482	00000076	005275	00	4081 03471	02:38:07			BOR;	
0512	00000046	005275	00	4081 03501	02:42:52			BLKER;	
0527	00000031	005275	00	4081 03516	02:45:15			EOL;	LAST PRODUCTION SHOT POINT.
0528	00000031	005275	00	4081 03516	02:45:15			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

498320

WG-24 REEL LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-115
Party Number	116
Operator(s)	M.DONNISON.
Weather	LIGHT AIRS
Seas	CALM
Heading	056

OVERVIEW

SEQUENCE #35.

CLIENT: SAGASCO PROSPECTS: ROCKY CAPE 2D LINE: SB94A-115

Reel No	Tape Unit	Shots	Start File	Start SP	Start FSID	Start Time
			End File	End SP	End FSID	End Time
~~005277~~ 5276	00	1	00000106	00000127	4081 16395	06:06:37
			00000106	00000127	4081 16395	06:06:37
005276	00	59	00000107	00000051	4081 16471	06:18:32
			00000165	00000165	4081 16576	06:34:45
005277	01	60	00000166	00000166	4081 16577	06:34:55
			00000225	00000225	4081 16636	06:44:00
005278	02	60	00000226	00000226	4081 16637	06:44:09
			00000285	00000285	4081 16696	06:53:17
005279	03	60	00000286	00000286	4081 16697	06:53:26
			00000345	00000345	4081 16756	07:02:39
005280	00	60	00000346	00000346	4081 16757	07:02:48
			00000405	00000405	4081 16816	07:12:06
005281	01	60	00000406	00000406	4081 16817	07:12:16
			00000465	00000465	4081 16876	07:21:30
005282	02	60	00000466	00000466	4081 16877	07:21:40
			00000525	00000525	4081 16936	07:30:58
005283	03	60	00000526	00000526	4081 16937	07:31:08
			00000585	00000585	4081 16996	07:40:30
005284	00	60	00000586	00000586	4081 16997	07:40:39
			00000645	00000645	4081 17056	07:49:58
005285	01	60	00000646	00000646	4081 17057	07:50:08
			00000705	00000705	4081 17116	07:59:26
005286	02	60	00000706	00000706	4081 17117	07:59:35
			00000765	00000765	4081 17176	08:08:43

CLIENT: SAGASCO PROSPECTS: ROCKY CAPE 2D LINE: SB94A-115

Reel No	Tape Unit	Shots	Start File	Start SP	Start FSID	Start Time
			End File	End SP	End FSID	End Time
005287	03	60	00000766	00000766	4081 17177	08:08:52
			00000825	00000825	4081 17236	08:18:15
005288	00	60	00000826	00000826	4081 17237	08:18:24
			00000885	00000885	4081 17296	08:27:51
005289	01	60	00000886	00000886	4081 17297	08:28:01
			00000945	00000945	4081 17356	08:37:29
005290	02	60	00000946	00000946	4081 17357	08:37:39
			00001005	00001005	4081 17416	08:46:58
005291	03	60	00001006	00001006	4081 17417	08:47:08
			00001065	00001065	4081 17476	08:56:16
005292	00	38	00001066	00001066	4081 17477	08:56:26
			00001103	00001102	4081 17513	09:02:02

498323

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-115
Party Number	116
Operator(s)	M.DONNISON.
Weather	LIGHT AIRS
Seas	CALM
Heading	056

OVERVIEW

SEQUENCE #35.

SLIGHT SEA NOISE EVIDENT ON CABLE SOL-EOL.

DI SECTION 1A SOME TIMES RUNNING SLIGHTLY DEEP.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-115 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000127	005277	00	4081 16395	06:06:37			NSP; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION ANALYSIS.
0107	00000051	005276	00	4081 16471	06:18:32			BOR; NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS.
0111	00000111	005276	00	4081 16522	06:26:24			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0166	00000166	005277	01	4081 16577	06:34:55			BOR;	
0196	00000196	005277	01	4081 16607	06:39:33			COR1: 23;	
0226	00000226	005278	02	4081 16637	06:44:09			BOR;	
0286	00000286	005279	03	4081 16697	06:53:26			BOR;	
0346	00000346	005280	00	4081 16757	07:02:48			BOR;	
0406	00000406	005281	01	4081 16817	07:12:16			BOR;	
0466	00000466	005282	02	4081 16877	07:21:40			BOR;	
0526	00000526	005283	03	4081 16937	07:31:08			BOR;	
0586	00000586	005284	00	4081 16997	07:40:39			BOR;	
0646	00000646	005285	01	4081 17057	07:50:08			BOR;	
0706	00000706	005286	02	4081 17117	07:59:35			BOR;	
0766	00000766	005287	03	4081 17177	08:08:52			BOR;	
0823	00000823	005287	03	4081 17234	08:17:55			COR1: 12;	
0824	00000824	005287	03	4081 17235	08:18:05			COR1: 12;	
0825	00000825	005287	03	4081 17236	08:18:15			COR1: 16;	
0826	00000826	005288	00	4081 17237	08:18:24			BOR;	
0886	00000886	005289	01	4081 17297	08:28:01			BOR;	
0946	00000946	005290	02	4081 17357	08:37:39			BOR;	
1006	00001006	005291	03	4081 17417	08:47:08			BOR;	
1066	00001066	005292	00	4081 17477	08:56:26			BOR;	
1102	00001102	005292	00	4081 17513	09:02:02			EOL;	LAST PRODUCTION SHOT POINT.
1103	00001102	005292	00	4081 17513	09:02:02			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-117
Party Number	116
Operator(s)	D.COUTTS
Weather	LIGHT & VARIABLE
Seas	RIPPLED SEA
Heading	236

OVERVIEW

LINE SEQUENCE #36

498326

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-117 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0038	00001102	005293	00	4081 17513	09:02:02				HARMONIC DISTORTION ANALYSIS
0039	00000124	005293	00	4081 28256	10:28:05			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS
0043	00000557	005293	00	4081 28380	10:47:10				SOL FIRST PRODUCTION SHOT POINT
0158	00000442	005295	02	4081 28495	11:04:56			BOR;	
0218	00000382	005296	03	4081 28555	11:14:17			BOR;	
0278	00000322	005297	00	4081 28615	11:23:37			BOR;	
0298	00000302	005297	00	4081 28635	11:26:42				GUN #27 M/FIRE
0309	00000291	005297	00	4081 28646	11:28:24				GUN #27 OUT, GUN #43 IN. TOTAL VOLUME 3305 cu.in.
0338	00000262	005298	01	4081 28675	11:32:52			BOR;	
0346	00000254	005298	01	4081 28683	11:34:05			BLKER;	
0347	00000253	005298	01	4081 28684	11:34:15			RET1: 2; GAP1: 2: BOR; NSP; NF#; NFSID; ITB; Local start; GDU HDR TO;	
0353	00000247	005299	02	4081 28690	11:35:10			BOR;	
0379	00000221	005300	03	4081 28716	11:39:14			BOR;	
0439	00000161	005301	00	4081 28776	11:48:27			BOR;	
0499	00000101	005302	01	4081 28836	11:57:41			BOR;	
0559	00000041	005303	02	4081 28896	12:06:53			BOR;	
0568	00000032	005303	02	4081 28905	12:08:16			EOL;	NOT EOL
0569	00000031	005303	02	4081 28906	12:08:25			NSP; BOL;	NOT BOL.
0569	00000031	005303	02	4081 28906	12:08:25			Local start; Fireout suppressed; GDU HDR TO;	EOL LAST PRODUCTION SHOT POINT
0570	00000031	005303	02	4081 28906	12:08:25			DSP; NFSID; ITB; BOR;	EOL NOISE ANALYSIS

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-113
Party Number	116
Operator(s)	D.COUTTS
Weather	VARIABLE
Seas	RIPPLED
Heading	057

OVERVIEW

SEQUENCE #37.

THIS LINE HAS INCREMENTING SHOT POINTS.

498328

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-113 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000031	005304	00	4081 28906	12:08:25			BOR; DSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS.
0107	00000064	005304	00	4081 36028	13:31:12			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS.
0111	00000111	005304	00	4081 36092	13:41:21			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0166	00000166	005305	01	4081 36147	13:50:06			BOR;	
0226	00000226	005306	02	4081 36207	13:59:39			BOR;	
0286	00000286	005307	03	4081 36267	14:09:01			BOR;	
0346	00000346	005308	00	4081 36327	14:18:14			BOR;	
0406	00000406	005309	01	4081 36387	14:27:29			BOR;	
0466	00000466	005310	02	4081 36447	14:36:42			BOR;	
0526	00000526	005311	03	4081 36507	14:45:56			BOR;	
0586	00000586	005312	00	4081 36567	14:55:08			BOR;	
0646	00000646	005313	01	4081 36627	15:04:15			BOR;	
0706	00000706	005314	02	4081 36687	15:13:19			BOR;	
0766	00000766	005315	03	4081 36747	15:22:19			BOR;	
0826	00000826	005316	00	4081 36807	15:31:37			BOR;	
0886	00000886	005317	01	4081 36867	15:41:15			BOR;	
0946	00000946	005318	02	4081 36927	15:50:32			BOR;	
1006	00001006	005319	03	4081 36987	15:59:59			BOR;	
1066	00001066	005320	00	4081 37047	16:09:28			BOR;	
1126	00001126	005321	01	4081 37107	16:18:58			BOR;	
1186	00001186	005322	02	4081 37167	16:28:25			BOR;	
1246	00001246	005323	03	4081 37227	16:37:47			BOR;	
1306	00001306	005324	00	4081 37287	16:47:17			BOR;	
1366	00001366	005325	01	4081 37347	16:56:51			BOR;	
1426	00001426	005326	02	4081 37407	17:06:20			BOR;	
1486	00001486	005327	03	4081 37467	17:15:47			BOR;	
1546	00001546	005328	00	4081 37527	17:25:08			BOR;	

498329

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-113 PARTY: 116 ObLog P-2

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
1606	00001606	005329	01	4081 37587	17:34:24			BOR;	
1648	00001647	005329	01	4081 37628	17:40:41			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	CABLE NOISE ANALYSIS.

498330

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-111
Party Number	116
Operator(s)	B.VERNON
Weather	LIGHT AIRS
Seas	RIPLLED
Heading	235

OVERVIEW

SEQ # 38.

THIS LINE HAS DECREMENTING SHOT POINTS.
INTERMITTENT SEA NOISE FROM SOL - EOL.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-111 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0001	00001647	005330	00	4081 37628	17:40:41			BOR; NSP; NFSID; ITB; Local start; GDU HDR TO;	SOL HARMONIC DISTORTION
0002	00001647	005330	00	4081 37628	17:40:41			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	SOL CABLE NOISE
0006	00001494	005330	00	4081 50714	19:04:00			NSP; BOL;	FIRST PRODUCTION SP
0061	00001439	005331	01	4081 50769	19:12:31			BOR;	
0121	00001379	005332	02	4081 50829	19:21:46			BOR;	
0181	00001319	005333	03	4081 50889	19:31:08			BOR;	
0241	00001259	005334	00	4081 50949	19:40:29			BOR;	
0301	00001199	005335	01	4081 51009	19:49:53			BOR;	
0361	00001139	005336	02	4081 51069	19:59:21			BOR;	
0421	00001079	005337	03	4081 51129	20:08:50			BOR;	
0481	00001019	005338	00	4081 51189	20:18:11			BOR;	
0541	00000959	005339	01	4081 51249	20:27:30			BOR;	
0601	00000899	005340	02	4081 51309	20:37:01			BOR;	
0661	00000839	005341	03	4081 51369	20:46:35			BOR;	
0697	00000803	005341	03	4081 51405	20:52:17			RET1: 1;	
0721	00000779	005342	00	4081 51429	20:56:03			BOR;	
0750	00000750	005342	00	4081 51458	21:00:37			BLKER;	
0781	00000719	005343	01	4081 51489	21:05:29			BOR;	
0841	00000659	005344	02	4081 51549	21:14:52			BOR;	
0901	00000599	005345	03	4081 51609	21:24:07			BOR;	
0961	00000539	005346	00	4081 51669	21:33:27			BOR;	
1021	00000479	005347	01	4081 51729	21:42:53			BOR;	
1071	00000429	005347	01	4081 51779	21:50:42			ITB;	INTERNAL TIME BREAK. BAD SHOT.
1081	00000419	005348	02	4081 51789	21:52:15			BOR;	
1141	00000359	005349	03	4081 51849	22:01:31			BOR;	
1201	00000299	005350	00	4081 51909	22:10:52			BOR;	
1261	00000239	005351	01	4081 51969	22:20:15			BOR;	

498332

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-111 PARTY: 116 ObLog P-2

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
1321	00000179	005352	02	4081 52029	22:29:37			BOR;	
1368	00000132	005352	02	4081 52076	22:36:54			BLKER;	
1381	00000119	005353	03	4081 52089	22:38:55			BOR;	
1441	00000059	005354	00	4081 52149	22:48:06			BOR;	
1470	00000031	005354	00	4081 52177	22:52:24			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS. LAST SHOT POINT.

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-107
Party Number	116
Operator(s)	A. NORRIS
Weather	E @ FORCE 3
Seas	SLIGHT
Heading	56

OVERVIEW

SHOT POINTS ON THIS LINE INCREMENTING. LINE SEQ. 39 FSP 111-121 ON TAPE 5355 RECORDED AS TAPE 5356

498334

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-107 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0006	00000031	005356	00	4081 52177	22:52:24			BOR; DSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS
0007	00000112	005356	00	4082 00829	00:20:11			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS
0011	00000111	005356	00	4082 00941	00:37:40			NSP; BOL;	FIRST PRODUCTION SHOT POINT
0021	00000121	005356	00	4082 00951	00:39:14			Parm chg;	
0022	00000122	005355	00	4082 00952	00:39:23			BOR;	
0066	00000166	005356	01	4082 00996	00:46:12			BOR;	
0126	00000226	005357	02	4082 01056	00:55:29			BOR;	
0186	00000286	005358	03	4082 01116	01:04:46			BOR;	
0246	00000346	005359	00	4082 01176	01:14:06			BOR;	
0306	00000406	005360	01	4082 01236	01:23:23			BOR;	
0366	00000466	005361	02	4082 01296	01:32:33			BOR;	
0426	00000526	005362	03	4082 01356	01:41:43			BOR;	
0486	00000586	005363	00	4082 01416	01:50:52			BOR;	
0524	00000624	005363	00	4082 01454	01:56:40			GDU Hdr Sze Err;	
0542	00000642	005363	00	4082 01472	01:59:24			COR1: 11;	
0543	00000643	005363	00	4082 01473	01:59:33			COR1: 14;	
0544	00000644	005363	00	4082 01474	01:59:42			COR1: 16;	
0546	00000646	005364	01	4082 01476	02:00:00			BOR;	
0551	00000651	005364	01	4082 01481	02:00:46			COR1: 10;	
0606	00000706	005365	02	4082 01536	02:09:01			BOR;	
0666	00000766	005366	03	4082 01596	02:18:37			BOR;	
0674	00000774	005366	03	4082 01604	02:19:51			ITB;	MISFIRE
0701	00000801	005366	03	4082 01631	02:24:04			RET1: 1; GAP1: 1:	
0702	00000802	005366	03	4082 01632	02:24:14			RET1: 1;	
0705	00000805	005367	00	4082 01635	02:24:42			BOR;	
0765	00000865	005368	01	4082 01695	02:34:02			BOR;	
0825	00000925	005369	02	4082 01755	02:43:24			BOR;	

498335

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-107 PARTY: 116 ObLog P-2

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0885	00000985	005370	03	4082 01815	02:52:51			BOR;	
0945	00001045	005371	00	4082 01875	03:02:18			BOR;	
1005	00001105	005372	01	4082 01935	03:11:46			BOR;	
1038	00001138	005372	01	4082 01968	03:16:56			EOL;	
1038	00001138	005372	01	4082 01968	03:16:56			EOL;	LAST PRODUCTION SHOT POINT
1039	00001138	005372	01	4082 01968	03:16:56			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS

498336

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-109
Party Number	116
Operator(s)	D.COUTTS
Weather	EAST F6
Seas	MODERATE
Heading	235

OVERVIEW

LINE SEQUENCE #40

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-109 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0025	00001138	005373	00	4082 01968	03:16:56			BOR; DSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS
0026	00001138	005373	00	4082 01968	03:16:56			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	SOL NOISE ANALYSIS
0030	00000670	005373	00	4082 11443	04:29:11			NSP; BOL;	
0079	00000621	005373	00	4082 11492	04:37:07			BLKER;	
0085	00000615	005374	01	4082 11498	04:38:06			BOR;	
0145	00000555	005375	02	4082 11558	04:47:46			BOR;	
0205	00000495	005376	03	4082 11618	04:57:22			BOR;	
0265	00000435	005377	00	4082 11678	05:07:07			BOR;	
0325	00000375	005378	01	4082 11738	05:16:40			BOR;	
0385	00000315	005379	02	4082 11798	05:26:20			BOR;	
0422	00000278	005379	02	4082 11835	05:32:16			RET1: 2; GAP1: 1:	
0425	00000275	005380	03	4082 11838	05:32:45			BOR;	
0485	00000215	005381	00	4082 11898	05:42:19			BOR;	
0545	00000155	005382	01	4082 11958	05:51:42			BOR;	
0605	00000095	005383	02	4082 12018	06:01:03			BOR;	
0665	00000035	005384	03	4082 12078	06:10:28			BOR;	
0669	00000031	005384	03	4082 12082	06:11:06			EOL;	LAST PRODUCTION SHOT POINT
0670	00000031	005384	03	4082 12082	06:11:06			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS

ABREVIATION LIST
BLKER: Block Error
BOL: Beginning of Line
BOR: Beginning of Reel
BYP: Tape is in Bypass Mode
COR1: Corrected Errors on Primary Tape Unit
COR2: Corrected Errors on Secondary Tape Unit
DF#: Duplicate File Number
DSP: Duplicate Shot Point
EOL: End of Line
GAP1: Gap Errors on Primary Tape Unit
GAP2: Gap Errors on Secondary Tape Unit
ITB: Internal Timebreak
NFSID: Non-sequential FSID
NSP: Non-sequential Shot Point
NSF#: Skipped File
RET1: Primary Tape Unit Retries
RET2: Secondary Tape Unit Retries
SSSBC: SSS Gun Data Byte Count Error
Parm Chg: System Parameters are changed in the subsystem(s)
Local start: RDP generated the system start locally
Start suppressed: System Start is suppressed
Fireout suppressed: Fire Command is suppressed
Local TBK: Local Timebreak
TBK suppressed: Timebreak is suppressed
Late TBK: Late Timebreak
Early TBK: Early Timebreak
No fire interrupt: No fire interrupt confirmation
No confirmed timebreak from RDP
GDU HDR TO: GDU header is not received within time limit
No end of acq. from RDP: RDP did not confirm end of acquisition
No end of acq. from RSU: RSU did not confirm end of acquisition
System aborted
GDU Intf Err: GDU Hardware interface error
GDU Cksum Err: GDU header checksum error
GDU Hdr Sze Err: GDU header size error
SSS HDR TO: Gun Data information is not received from SSS within time limit
NIU HDR TO: Navigation Information is not received from NIU within time limit

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-105
Party Number	116
Operator(s)	D.COUTTS
Weather	ENE. F6
Seas	MODERATE
Heading	56

OVERVIEW

LINE SEQUENCE #41

INTERMITTENT SEA NOISE ON RECORDS SOL-EOL.

SP279-280, FILE 279-280 NOT RECORDED D/T SYSTEM HANG UP.

498340

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-105 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0000	00000000	000000	00	0000 00000					TAPE ERROR. BAD SHOT.
0106	00000083	005385	00	4082 18690	07:04:34			BOR; NSP; NF#; NFSID; ITB; Local start;	HARMONIC DISTORTION ANALYSIS
0107	00000083	005385	00	4082 18690	07:04:34			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	SOL NOISE ANALYSIS
0111	00000111	005385	00	4082 18773	07:17:25			NSP; BOL;	SOL FIRST PRODUCTION SHOT POINT
0166	00000166	005386	01	4082 18828	07:25:58			BOR;	
0226	00000226	005387	02	4082 18888	07:35:23			BOR;	
0278	00000278	005387	02	4082 18940	07:43:38			COR1: 14;	
0281	00000281	005388	03	4082 18943	07:44:07			BOR; NSP; NF#; NFSID;	
0341	00000341	005389	00	4082 19003	07:53:39			BOR;	
0401	00000401	005390	01	4082 19063	08:03:09			BOR;	
0461	00000461	005391	02	4082 19123	08:12:44			BOR;	
0521	00000521	005392	03	4082 19183	08:22:28			BOR;	
0581	00000581	005393	00	4082 19243	08:32:05			BOR;	
0641	00000641	005394	01	4082 19303	08:41:47			BOR;	
0701	00000701	005395	02	4082 19363	08:51:25			BOR;	
0717	00000717	005395	02	4082 19379	-71:123:			EOL;	LAST PRODUCTION SHOT POINT
0718	00000717	005395	02	4082 19379	08:53:59			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS

498341

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-103
Party Number	116
Operator(s)	D.COUTTS
Weather	ENE. F6
Seas	MODERATE
Heading	236

OVERVIEW

LINE SEQUENCE #42

498342

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-103 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0055	00000117	005396	00	4082 26339	09:46:44			BOR; NSP; NF#; NFSID; ITB; Local start; Fireout suppressed;	HARMONIC DISTORTION ANALYSIS
0056	00000075	005396	00	4082 26381	09:53:15			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS
0060	00000640	005396	00	4082 26456	10:05:26			NSP; BOL;	SOL FIRST PRODUCTION SHOT POINT
0108	00000592	005396	00	4082 26504	10:13:10			BLKER;	
0115	00000585	005397	01	4082 26511	10:14:19			BOR;	
0175	00000525	005398	02	4082 26571	10:23:53			BOR;	
0235	00000465	005399	03	4082 26631	10:33:23			BOR;	
0295	00000405	005400	00	4082 26691	10:42:48			BOR;	
0355	00000345	005401	01	4082 26751	10:52:10			BOR;	
0415	00000285	005402	02	4082 26811	11:01:27			BOR;	
0475	00000225	005403	03	4082 26871	11:10:46			BOR;	
0535	00000165	005404	00	4082 26931	11:20:02			BOR;	
0595	00000105	005405	01	4082 26991	11:29:22			BOR;	
0655	00000045	005406	02	4082 27051	11:38:40			BOR;	
0669	00000031	005406	02	4082 27065	11:40:50			EOL;	LAST PRODUCTION SHOT POINT
0670	00000031	005406	02	4082 27065	11:40:50			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS

498343

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-101
Party Number	116
Operator(s)	D.COUTTS
Weather	EAST
Seas	MODERATE
Heading	55

OVERVIEW

LINE SEQUENCE #43 SHOT POINTS ON THIS LINE ARE INCREMENTING

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-101 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000031	005407	00	4082 27065	11:40:50			DSP; NF#; NFSID; ITB; Parm chg; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS
0107	00000080	005407	00	4082 34346	12:49:18			NSP; NFSID; ITB; Parm chg; Local start; Fireout suppressed;	SOL NOISE ANALYSIS
0111	00000111	005407	00	4082 34426	13:02:07			NSP; BOL;	SOL FIRST PRODUCTION
0166	00000166	005408	01	4082 34481	13:10:48			BOR;	
0226	00000226	005409	02	4082 34541	13:20:22			BOR;	
0286	00000286	005410	03	4082 34601	13:29:56			BOR;	
0294	00000294	005410	03	4082 34609	13:31:16				GUN 17 M/FIRE.
0295	00000295	005410	03	4082 34610	13:31:26				GUN 17 M/FIRE
0296	00000296	005410	03	4082 34611	13:31:36				GUN 17 OUT, GUN 25 IN. T/V 3305 cu.in
0297	00000297	005410	03	4082 34612	13:31:45				GUN 25 M/FIRE
0346	00000346	005411	00	4082 34661	13:39:25			BOR;	
0406	00000406	005412	01	4082 34721	13:48:50			BOR;	
0412	00000412	005412	01	4082 34727	13:49:48			COR1: 17;	
0466	00000466	005413	02	4082 34781	13:58:14			BOR;	
0479	00000479	005413	02	4082 34794	14:00:19				MISFIRE - GUN 25
0480	00000480	005413	02	4082 34795	14:00:29				MISFIRE - GUN 25
0481	00000481	005413	02	4082 34796	14:00:38				MISFIRE - GUN 25
0482	00000482	005413	02	4082 34797	14:00:47				GUN 25 DISABLED - GUN 41 ENABLED NO VOLUME CHANGE
0526	00000526	005414	03	4082 34841	14:07:44			BOR;	
0580	00000580	005414	03	4082 34895	14:16:05			COR1: 10;	
0586	00000586	005415	00	4082 34901	14:17:02			BOR;	
0646	00000646	005416	01	4082 34961	14:26:24			BOR;	
0706	00000706	005417	02	4082 35021	14:35:43			BOR;	
0766	00000766	005418	03	4082 35081	14:44:58			BOR;	
0798	00000798	005418	03	4082 35113	14:49:52			DSP; NF#; NFSID;	EOL COMPLETE
0799	00000798	005418	03	4082 35113	14:49:52			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL CABLE NOISE

498345

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-101 PARTY: 116 ObLog P-2

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0799	00000798	005418	03	4082 35113	14:49:52			DSP; NFSID;	DUMMY FILE

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-122
Party Number	116
Operator(s)	B.VERNON
Weather	E @ FORCE 5-6
Seas	MODERATE
Heading	144

OVERVIEW

LINE SEQ # 44

THIS LINE HAS INCREMENTING SHOT POINTS.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-122 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0105	00000142	005419	00	4082 45465	17:10:49			BOR; NSP; NF#; NFSID; ITB; Parm chg; Local start; Fireout suppressed; GDU HDR TO	HARMONIC DISTORTION ANALYSIS TEST.
0106	00000099	005419	00	4082 50865	18:53:40			NSP; NFSID; ITB; Parm chg;	DUMMY
0107	00000098	005419	00	4082 50866	18:53:50			ITB; Parm chg; System aborted;	DUMMY
0108	00000098	005419	00	4082 50866	18:53:50			DSP; NFSID; ITB; Parm chg; Local start; Fireout suppressed; GDU HDR TO;	SOL-NOISE ANALYSIS TEST
0111	00000111	005419	00	4082 50964	19:09:18			NSP; BOL;	SOL
0165	00000165	005420	01	4082 51018	19:17:54			BOR;	
0225	00000225	005421	02	4082 51078	19:27:29			BOR;	
0277	00000277	005421	02	4082 51130	19:35:52			RET1: 1;	
0285	00000285	005422	03	4082 51138	19:37:14			BOR;	
0345	00000345	005423	00	4082 51198	19:46:48			BOR;	
0405	00000405	005424	01	4082 51258	19:56:23			BOR;	
0465	00000465	005425	02	4082 51318	20:05:58			BOR;	
0525	00000525	005426	03	4082 51378	20:15:32			BOR;	
0585	00000585	005427	00	4082 51438	20:25:13			BOR;	
0645	00000645	005428	01	4082 51498	20:34:41			BOR;	
0686	00000686	005428	01	4082 51539	20:41:04				MISFIRE- GUN 23
0705	00000705	005429	02	4082 51558	20:44:05			BOR;	
0765	00000765	005430	03	4082 51618	20:53:40			BOR;	
0773	00000773	005430	03	4082 51626	20:54:56			BLKER;	
0825	00000825	005431	00	4082 51678	21:03:14			BOR;	
0885	00000885	005432	01	4082 51738	21:12:39			BOR;	
0945	00000945	005433	02	4082 51798	21:22:09			BOR;	
0984	00000984	005433	02	4082 51837	21:28:24			BLKER;	
0989	00000988	005433	02	4082 51841	21:29:01			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL CABLE NOISE ANALYSIS.

498348

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-120
Party Number	116
Operator(s)	E. SIMONTON
Weather	E @ FORCE 4
Seas	MODERATE
Heading	324

OVERVIEW

SEQ. #45

SHOTPOINTS ARE DECREMENTING.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-120 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0001	00000110	005434	00	4082 61003	22:37:24			BOR; NSP; NFSID; ITB; Local start;	HARMONIC DISTORTION ANALYSIS
0002	00000110	005434	00	4082 61003	22:37:24			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	BOL NOISE ANALYSIS
0006	00000657	005434	00	4082 61113	22:54:33			NSP; BOL;	
0061	00000602	005435	01	4082 61168	23:02:57			BOR;	
0096	00000567	005435	01	4082 61203	23:08:21			COR1: 34;	
0121	00000542	005436	02	4082 61228	23:12:10			BOR;	
0181	00000482	005437	03	4082 61288	23:21:21			BOR;	
0241	00000422	005438	00	4082 61348	23:30:29			BOR;	
0301	00000362	005439	01	4082 61408	23:39:57			BOR;	
0361	00000302	005440	02	4082 61468	23:49:41			BOR;	
0382	00000281	005440	02	4082 61489	23:53:07			GDU Hdr Sze Err;	
0383	00000280	005440	02	4082 61490	23:53:17			GDU Hdr Sze Err;	
0399	00000264	005440	02	4082 61506	23:55:46				MISFIRE GUN #17
0400	00000263	005440	02	4082 61507	23:55:55				MISFIRE GUN #17
0401	00000262	005440	02	4082 61508	23:56:05				MISFIRE GUN #17
0402	00000261	005440	02	4082 61509	23:56:14				DISABLED GUN #17 / ENABLED GUN #25 NO VOL. CHANGE.
0421	00000242	005441	03	4082 61528	23:59:12			BOR;	
0427	00000236	005441	03	4083 00001	00:00:07			NFSID;	GMT DAY CHANGE
0481	00000182	005442	00	4083 00055	00:08:47			BOR;	
0541	00000122	005443	01	4083 00115	00:18:26			BOR;	
0555	00000108	005443	01	4083 00129	00:20:41				BAD VOLUME.
0601	00000062	005444	02	4083 00175	00:28:07			BOR;	
0632	00000031	005444	02	4083 00206	00:32:56			EOL;	EOL
0633	00000031	005444	02	4083 00206	00:32:56			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS

498350

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-118
Party Number	116
Operator(s)	E. SIMONTON
Weather	E @ FORCE 5-6
Seas	MODERATE
Heading	144

OVERVIEW

SEQ. #46

SHOT POINTS ARE INCREMENTING.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-118 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0106	00000031	005445	00	4083 00206	00:32:56			DSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	DUMMY FILE
0106	00000031	005445	00	4083 00206	00:32:56			Parm chg; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS
0107	00000031	005445	00	4083 00206	00:32:56			DSP; NFSID; ITB; BOR; NSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU	BOL NOISE ANALYSIS
0111	00000111	005445	00	4083 04419	01:55:26			NSP; BOL;	
0165	00000165	005446	01	4083 04473	02:04:00			BOR;	
0225	00000225	005447	02	4083 04533	02:13:42			BOR;	
0285	00000285	005448	03	4083 04593	02:23:19			BOR;	
0345	00000345	005449	00	4083 04653	02:32:51			BOR;	
0405	00000405	005450	01	4083 04713	02:42:24			BOR;	
0465	00000465	005451	02	4083 04773	02:52:11			BOR;	
0525	00000525	005452	03	4083 04833	03:01:46			BOR;	
0585	00000585	005453	00	4083 04893	03:11:18			BOR;	
0645	00000645	005454	01	4083 04953	03:20:43			BOR;	
0705	00000705	005455	02	4083 05013	03:30:02			BOR;	
0737	00000737	005455	02	4083 05045	03:34:55			EOL;	LAST PRODUCTION SHOT POINT.
0738	00000737	005455	02	4083 05045	03:34:55			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL NOISE ANALYSIS.

ABREVIATION LIST
BLKER: Block Error
BOL: Beginning of Line
BOR: Beginning of Reel
BYP: Tape is in Bypass Mode
COR1: Corrected Errors on Primary Tape Unit
COR2: Corrected Errors on Secondary Tape Unit
DF#: Duplicate File Number
DSP: Duplicate Shot Point
EOL: End of Line
GAP1: Gap Errors on Primary Tape Unit
GAP2: Gap Errors on Secondary Tape Unit
ITB: Internal Timebreak
NFSID: Non-sequential FSID
NSP: Non-sequential Shot Point
NSF#: Skipped File
RET1: Primary Tape Unit Retries
RET2: Secondary Tape Unit Retries
SSSBC: SSS Gun Data Byte Count Error
Parm Chg: System Parameters are changed in the subsystem(s)
Local start: RDP generated the system start locally
Start suppressed: System Start is suppressed
Fireout suppressed: Fire Command is suppressed
Local TBK: Local Timebreak
TBK suppressed: Timebreak is suppressed
Late TBK: Late Timebreak
Early TBK: Early Timebreak
No fire interrupt: No fire interrupt confirmation
No confirmed timebreak from RDP
GDU HDR TO: GDU header is not received within time limit
No end of acq. from RDP: RDP did not confirm end of acquisition
No end of acq. from RSU: RSU did not confirm end of acquisition
System aborted
GDU Intf Err: GDU Hardware interface error
GDU Cksum Err: GDU header checksum error
GDU Hdr Sze Err: GDU header size error
SSS HDR TO: Gun Data information is not received from SSS within time limit
NIU HDR TO: Navigation Information is not received from NIU within time limit

WG-24 OBSERVER LOG -- Version 3.2

LINE INFORMATION	
Client	SAGASCO
Prospect	ROCKY CAPE 2D
Line Number	SB94A-116
Party Number	116
Operator(s)	M.CUNNINGHAM.
Weather	FORCE 6 EASTERLY
Seas	MODERATE
Heading	323

OVERVIEW

SEQUENCE #47.

CLIENT: SAGASCO PROSPECT: ROCKY CAPE 2D LINE: SB94A-116 PARTY: 116 ObLog P-1

FILE	SHOT	REEL	TU	FSID	TIME	CUST 1	CUST 2	EXCEPTION	COMMENT
0036	00000737	005456	00	4083 05045	03:34:55			BOR; DSP; NF#; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	HARMONIC DISTORTION ANALYSIS.
0037	00000053	005456	00	4083 12193	04:41:47			NSP; NFSID; ITB; Local start; Fireout suppressed;	SOL NOISE ANALYSIS.
0041	00000659	005456	00	4083 12246	04:50:18			NSP; BOL;	FIRST PRODUCTION SHOT POINT.
0096	00000604	005457	01	4083 12301	04:59:14			BOR;	
0156	00000544	005458	02	4083 12361	05:09:04			BOR;	
0214	00000486	005458	02	4083 12419	05:18:35			BLKER;	
0216	00000484	005459	03	4083 12421	05:18:55			BOR;	
0276	00000424	005460	00	4083 12481	05:28:52			BOR;	
0306	00000394	005460	00	4083 12511	05:33:35			RET1: 1;	
0336	00000364	005461	01	4083 12541	05:38:16			BOR;	
0396	00000304	005462	02	4083 12601	05:47:42			BOR;	
0453	00000247	005462	02	4083 12658	05:56:39			COR1: 13;	
0456	00000244	005463	03	4083 12661	05:57:07			BOR;	
0516	00000184	005464	00	4083 12721	06:06:31			BOR;	
0545	00000155	005464	00	4083 12750	06:11:03			RET1: 1; BLKER;	
0576	00000124	005465	01	4083 12781	06:15:53			BOR;	
0636	00000064	005466	02	4083 12841	06:25:13			BOR;	
0669	00000031	005466	02	4083 12874	06:30:24			EOL;	LAST PRODUCTION SHOT POINT.
0670	00000031	005466	02	4083 12874	06:30:24			DSP; NFSID; ITB; Local start; Fireout suppressed; GDU HDR TO;	EOL CABLE NOISE ANALYSIS.

498355

OBSERVER/REEL LOG

CLIENT.....SAGASCO
PROSPECT.....ROCKY CAPE 2D
LINE NUMBER.....SB94A-114
PARTY NUMBER.....116
OPERATOR.....M.CUNNINGHAM
WEATHER.....ENE FORCE 5
SEAS.....MODERATE
HEADING.....142°

OVERVIEW

SEQUENCE #48

TAPE #	FILE #	SHOTPOINT #	COMMENT
5467	106	31	HARMONIC DISTORTION.
5467	107	31	SOL NOISE ANALYSIS.
5467	111	111	SOL.
5467	165	165	EOT; TAPE UNIT 00.
5468	166	166	BOT; TAPE UNIT 01.
5468	225	225	EOT;
5469	226	226	BOT; TAPE UNIT 02.
5469	285	285	EOT;
5470	286	286	BOT; TAPE UNIT 03.
5470	345	345	EOT;
5471	346	346	BOT; TAPE UNIT 00.
5471	405	405	EOT;
5472	406	406	BOT; TAPE UNIT 01.
5472	465	465	EOT;
5473	466	466	BOT; TAPE UNIT 02.
5473	525	525	EOT;
5474	526	526	BOT; TAPE UNIT 03.
5474	585	585	EOT;
5475	586	586	BOT; TAPE UNIT 00.
5475	605	605	INTERNAL TIME BREAK.
5475	642	642	EOL;
5475	643	642	EOL NOISE ANALYSIS.

APPENDIX 4

NAVIGATION REPORT

This appendix comprises the Contractor's Navigation report.

498358

NAVIGATION DATA PROCESSING REPORT

SAGASCO RESOURCES LIMITED.

ROCKY CAPE 2D SEISMIC SURVEY
BASS BASIN, AUSTRALIA.

17 MARCH TO 24 MARCH 1994

BY
WESTERN GEOPHYSICAL COMPANY
M/V WESTERN ATLAS
PARTY 116

498359

CONTENTS

A. PROCESSING OF DATA

B. MAPPING

C. POSTPLOT SUMMARY

D. DISTRIBUTION ?

E. APPENDIX I

Maps 1 to 8 - water depth

498360

NAVIGATION DATA PROCESSING/MAPPING

A. PROCESSING OF DATA

THE PROCESSING OF THE DGPS NAVIGATION DATA WAS COMPLETED BY WESTERN GEOPHYSICAL'S PERTH NAVIGATION PROCESSING DEPARTMENT.

GEODETIC INFORMATION

SPHERIOD	: AUSTRALIAN NATIONAL.
SEMI-MAJOR AXIS	: 6378160.000 METRES.
SEMI-MINOR AXIS	: 6356774.719 METRES.
INVERSE FLATTENING	: 0.00335289187
LOCAL DATUM	: AGD-84.
PROJECTION	: UNIVERSAL TRANSVERSE MERCATOR.
CENTRAL MERIDIAN	: 147 00 00.0 DEGREES EAST.
FALSE NORTHING	: 10,000,000.0 METRES AT 0 DEGREES LATITUDE.
FALSE EASTING	: 500,000.0 METRES AT THE CENTRAL MERIDIAN.
SCALE FACTOR	: 0.9996 ON THE CENTRAL MERIDIAN.

BASE STATION COORDINATES USED IN THE RACAL SURVEY NAVIGATION SYSTEM.

DGPS BASE STATION	LATITUDE (SOUTH) DEG.	MIN.			LONGITUDE (EAST) DEG.	MIN.			STATION HEIGHT(M)
ADELAIDE 1	35	17	30.165	S	138	34	50.577	E	399.7
ADELAIDE 2	35	17	30.183	S	138	34	50.501	E	399.7
MELBOURNE 1	38	27	52.924	S	144	54	46.661	E	145.47
MELBOURNE 2	38	27	52.867	S	144	54	46.563	E	145.47
SYDNEY 1	33	59	12.506	S	151	14	24.200	E	74.52
SYDNEY 2	33	59	12.594	S	151	14	24.249	E	74.52

B. MAPPING

OFFSETS

1. N.R.P TO MULTIFIX ANTENNA IS 0.15M FORE & 0.55M STARBOARD.
2. N.R.P TO SKYFIX ANTENNA IS 0.15M FORE & 0.55M STARBOARD.

PLOTTING PARAMETERS

SHOTPOINT MAPS OF SOURCE POSITION

SCALE	PLOT INTERVALS	LABEL INTERVAL
1:25,000	SMALL CIRCLE AT EVERY 10TH SP LARGE CIRCLE AT EVERY 100TH SP	EVERY 100TH SP

LINE NAMES ARE PLACED AT THE START AND END OF LINES.
A GRID TICK INTERVAL OF 10,000 METRES WITH A HEIGHT OF 0.5 INCH.
A GEOGRAPHIC TICK INTERVAL OF 5 MINUTES WITH A HEIGHT OF 0.2 INCH.

THE MAP CORNERS WERE SUPPLIED BY WESTERN GEOPHYSICAL AND ARE AS FOLLOWS :

MAP 1 OF 8
LATITUDE 39 DEGREES 45 MINUTES TO 39 DEGREES 35 MINUTES SOUTH
LONGITUDE 145 DEGREES 10 MINUTES TO 145 DEGREES 36 MINUTES EAST

MAP 2 OF 8
LATITUDE 39 DEGREES 55 MINUTES TO 39 DEGREES 45 MINUTES SOUTH
LONGITUDE 145 DEGREES 10 MINUTES TO 145 DEGREES 20 MINUTES EAST

MAP 3 OF 8
LATITUDE 39 DEGREES 55 MINUTES TO 39 DEGREES 45 MINUTES SOUTH
LONGITUDE 145 DEGREES 20 MINUTES TO 145 DEGREES 36 MINUTES EAST

MAP 4 OF 8
LATITUDE 40 DEGREES 05 MINUTES TO 39 DEGREES 55 MINUTES SOUTH
LONGITUDE 145 DEGREES 10 MINUTES TO 145 DEGREES 20 MINUTES EAST

MAP 5 OF 8
LATITUDE 40 DEGREES 05 MINUTES TO 39 DEGREES 55 MINUTES SOUTH
LONGITUDE 145 DEGREES 20 MINUTES TO 145 DEGREES 36 MINUTES EAST

MAP 6 OF 8
LATITUDE 40 DEGREES 15 MINUTES TO 40 DEGREES 05 MINUTES SOUTH
LONGITUDE 145 DEGREES 20 MINUTES TO 145 DEGREES 36 MINUTES EAST

MAP 7 OF 8

LATITUDE	40	DEGREES	20	MINUTES	TO	40	DEGREES	10	MINUTES SOUTH
LONGITUDE	145	DEGREES	45	MINUTES	TO	146	DEGREES	05	MINUTES EAST

MAP 8 OF 8

LATITUDE	40	DEGREES	30	MINUTES	TO	40	DEGREES	20	MINUTES SOUTH
LONGITUDE	145	DEGREES	45	MINUTES	TO	146	DEGREES	05	MINUTES EAST

WATER DEPTH MAPS

SCALE	PLOT INTERVALS	LABEL INTERVAL
1:25,000	CIRCLE AT EVERY 10TH SP	EVERY 100TH SP WATER DEPTH EVERY 10TH SP

LINE NAMES ARE PLACED AT THE START AND END OF LINES.
A GRID TICK INTERVAL OF 10,000 METRES WITH A HEIGHT OF 0.5 INCH.
A GEOGRAPHIC TICK INTERVAL OF 5 MINUTES WITH A HEIGHT OF 0.2 INCH.

THE MAP CORNERS WERE SUPPLIED BY WESTERN GEOPHYSICAL AND ARE AS FOLLOWS :

MAP 1 OF 8

LATITUDE	39	DEGREES	45	MINUTES	TO	39	DEGREES	35 MINUTES SOUTH
LONGITUDE	145	DEGREES	10	MINUTES	TO	145	DEGREES	36 MINUTES EAST

MAP 2 OF 8

LATITUDE	39	DEGREES	55	MINUTES	TO	39	DEGREES	45 MINUTES SOUTH
LONGITUDE	145	DEGREES	10	MINUTES	TO	145	DEGREES	20 MINUTES EAST

MAP 3 OF 8

LATITUDE	39	DEGREES	55	MINUTES	TO	39	DEGREES	45 MINUTES SOUTH
LONGITUDE	145	DEGREES	20	MINUTES	TO	145	DEGREES	36 MINUTES EAST

MAP 4 OF 8

LATITUDE	40	DEGREES	05	MINUTES	TO	39	DEGREES	55 MINUTES SOUTH
LONGITUDE	145	DEGREES	10	MINUTES	TO	145	DEGREES	20 MINUTES EAST

MAP 5 OF 8

LATITUDE	40	DEGREES	05	MINUTES	TO	39	DEGREES	55 MINUTES SOUTH
LONGITUDE	145	DEGREES	20	MINUTES	TO	145	DEGREES	36 MINUTES EAST

MAP 6 OF 8

LATITUDE	40	DEGREES	15	MINUTES	TO	40	DEGREES	05 MINUTES SOUTH
LONGITUDE	145	DEGREES	20	MINUTES	TO	145	DEGREES	36 MINUTES EAST

MAP 7 OF 8

LATITUDE	40	DEGREES	20	MINUTES	TO	40	DEGREES	10 MINUTES SOUTH
LONGITUDE	145	DEGREES	45	MINUTES	TO	146	DEGREES	05 MINUTES EAST

MAP 8 OF 8

LATITUDE	40	DEGREES	30	MINUTES	TO	40	DEGREES	20 MINUTES SOUTH
LONGITUDE	145	DEGREES	45	MINUTES	TO	146	DEGREES	05 MINUTES EAST

C. POST PLOT SUMMARY

THE FOLLOWING DATUM SHIFT PARAMETERS WERE USED IN THE WISDOM FIELD SYSTEM.

WGS 1984 DATUM TO AGD-84 DATUM

DX = 116.00 METRES DY = 50.47 METRES DZ = -141.69 METRES
RX = 0.00000111507 RAD RY = 0.00000189077 RAD RZ = 0.00000166776 RAD
S = -0.0983 PARTS PER MILLION

THE FATHOMETER DATA WAS PROCESSED USING A CALIBRATED VELOCITY OF SOUND IN WATER OF 1512.00 METRES PER SECOND AND A VESSEL DRAFT OF 4.3 METRES.

TIDAL HEIGHTS WERE DERIVED USING A PC BASED PROGRAM CALLED NP159A, THE ADMIRALTY SIMPLIFIED HARMONIC METHOD OF TIDAL PREDICTION. THIS PROGRAM IS THE WORK OF THE HYDROGRAPHIC OFFICE OF THE BRITISH NAVY. USING THE PROGRAM, TIDAL HEIGHTS WERE GENERATED AT PORT BURNIE WHICH IS THE NEAREST PORT TO THE SURVEY AREA WITH TIDAL INFORMATION. LOCAL TIME WAS ADJUSTED TO GMT. THE TIDAL HEIGHTS WERE THEN APPLIED TO THE FATHOMETER DATA ON THE P1/90 UKOOA DATASET BASED ON TIME AND DATE. SEE APPENDIX I FOR TIDE CORRECTION INFORMATION.

THE GYRO HULL ALIGNMENT CORRECTION WAS -0.300 DEGREES. THE GYRO WAS CALIBRATED ON THE 11TH JANUARY 1994 AT THE PORT OF FREMANTLE, WESTERN AUSTRALIA. THIS VALUE WAS USED IN THE WISDOM NAVIGATION SYSTEM.

ALL LINES WERE PROCESSED USING THE MULTIFIX DGPS NAVIGATION SYSTEM WITH THE FOLLOWING STANDARD WINDOW MEAN DESPIKE, THRESHOLD AND COSINE WEIGHTED AVERAGING SMOOTHING PARAMETERS UNLESS OTHERWISE STATED :

GYROCOMPASS	:DESPIKE OPERATOR LENGTH OF 3 SAMPLES, THRESHOLD VALUE OF 2.0 DEGREES,
FATHOMETER DATA	:DESPIKE OPERATOR LENGTH OF 7 SAMPLES, THRESHOLD VALUE OF 1.5 METRES, SMOOTHING OPERATOR LENGTH OF 5 SAMPLES
COMPASSES	:DESPIKE OPERATOR LENGTH OF 9 SAMPLES, THRESHOLD VALUE OF 1.5 DEGREES, SMOOTHING OPERATOR LENGTH OF 11 SAMPLES
VESSEL POSITION	:DESPIKE OPERATOR LENGTH OF 11 SAMPLES, THRESHOLD VALUE OF 2.5 METRES, SMOOTHING OPERATOR LENGTH OF 7 SAMPLES
CLIPPING	:THE NAVCHK PROGRAM HAS AN OPTION WHICH ALLOWS THE USER TO "CLIP" OUTLIERS IN THE DATA PRIOR TO THE USE OF REGULAR SMOOTHING AND DESPIKING ALGORITHMS. THE USER CAN SET LIMITS, BOTH OVER AND UNDER, ON THE DATA BEING EDITED. THE PROGRAM THEN "CLIPS" THE DATA. ALL VALUES EXCEEDING THE USER INPUT LIMITS ARE REMOVED AND LINEAR INTERPOLATION IS PERFORMED BETWEEN THE REMAINING VALUES.

LINE	SHOTPOINT RANGE	SEQUENCE NUMBER
SB94-132	111 TO 750	1
SB94-130	575 TO 31	2
SB94-161	473 TO 31	3
SB94-159	111 TO 572	4
GYROCOMPASS: SPIKES IN DATA.		
SB94-157	469 TO 31	5
GYROCOMPASS: SPIKES IN DATA.		

LINE	SHOTPOINT RANGE	SEQUENCE NUMBER
SB94-155	469 TO 31	6
GYROCOMPASS: SPIKES IN DATA. DESPIKE OPERATOR LENGTH OF 7 SAMPLES.		
SB94-153	111 TO 549	7
GYROCOMPASS: SPIKES IN DATA. DESPIKE OPERATOR LENGTH OF 7 SAMPLES.		
SB94-151	468 TO 31	8
GYROCOMPASS: SPIKES IN DATA.		
SB94-149	111 TO 549	9
SB94-147	519 TO 31	10
GYROCOMPASS: SPIKES IN DATA. DESPIKE OPERATOR LENGTH OF 7 SAMPLES.		
SB94-145	111 TO 300	11
GYROCOMPASS: SPIKES IN DATA.		
SB94-145A	240 TO 596	12
SB94-143	511 TO 31	13
GYROCOMPASS: SPIKES IN DATA.		
SB94-141	111 TO 601	14
SB94-128	111 TO 1034	15
SB94-126	613 TO 31	16
GYROCOMPASS: SPIKES IN DATA.		

LINE	SHOTPOINT RANGE	SEQUENCE NUMBER
SB94-104	1777 TO 31	17
NAVIGATION:	DESPIKE OPERATOR LENGTH OF 15 SAMPLES. THRESHOLD VALUE OF 1.5 METRES. SMOOTHING OPERATOR LENGTH OF 9 SAMPLES.	
SB94-102	111 TO 1831	18
GYROCOMPASS:	SPIKES IN DATA. DESPIKE OPERATOR LENGTH OF 7 SAMPLES.	
FATHOMETER:	CLIP ABOVE, BETWEEN SHOTPOINTS 298 TO 521 AT DATA VALUE -60.5.	
SB94-124	1274 TO 31	19
SB94-108	529 TO 31	20
SB94-106	111 TO 790	21
SB94-125	427 TO 31	22
SB94-129	111 TO 733	23
NAVIGATION:	CHANGE FROM MULTIFIX TO SKYFIX BETWEEN SHOTPOINTS 454 TO 733.	
SB94-133	394 TO 31	24
NAVIGATION:	CHANGE FROM MULTIFIX TO SKYFIX BETWEEN SHOTPOINTS 70 TO 31.	
SB94-137	111 TO 536	25
SB94-139	399 TO 31	26
SB94-135	111 TO 519	27
SB94-131	529 TO 31	28

LINE	SHOTPOINT RANGE	SEQUENCE NUMBER
SB94-127	111 TO 737	29
SB94-110	1172 TO 31	30
NAVIGATION:	DESPIKE OPERATOR LENGTH OF 15 SAMPLES. THRESHOLD VALUE OF 1.5 METRES. SMOOTHING OPERATOR LENGTH OF 9 SAMPLES. SKY FIX USED FOR THE ENTIRE LINE.	
SB94-112	111 TO 1279	31
NAVIGATION:	DESPIKE OPERATOR LENGTH OF 17 SAMPLES. THRESHOLD VALUE OF 1.5 METRES. SMOOTHING OPERATOR LENGTH OF 13 SAMPLES.	
SB94-123	1025 TO 31	32
SB94-121	111 TO 1128	33
SB94-119	554 TO 31	34
SB94-115	111 TO 1102	35
NAVIGATION:	DESPIKE OPERATOR LENGTH OF 15 SAMPLES. THRESHOLD VALUE OF 1.5 METRES. SMOOTHING OPERATOR LENGTH OF 9 SAMPLES.	
SB94-117	557 TO 31	36
SB94-113	111 TO 1647	37
NAVIGATION:	SKYFIX USED FOR THE ENTIRE LINE.	
SB94-111	1494 TO 31	38
SB94-107	111 TO 1138	39
SB94-109	670 TO 31	40

LINE	SHOTPOINT RANGE	SEQUENCE NUMBER
SB94-105	111 TO 717	41
SB94-103	640 TO 31	42

NAVIGATION: CHANGE FROM MULTIFIX TO SKYFIX BETWEEN SHOTPOINTS 475 TO 390.

SB94-101	111 TO 798	43
SB94-122	111 TO 988	44

GYROCOMPASS: SPIKES IN DATA.
DESPIKE OPERATOR LENGTH OF 7 SAMPLES.

SB94-120	657 TO 31	45
SB94-118	111 TO 737	46

GYROCOMPASS: SPIKES IN DATA.
DESPIKE OPERATOR LENGTH OF 7 SAMPLES.
NAVIGATION: CHANGE FROM MULTIFIX TO SKYFIX BETWEEN SHOTPOINTS 394 TO 620.

SB94-116	659 TO 31	47

NAVIGATION: DESPIKE OPERATOR LENGTH OF 15 SAMPLES.
THRESHOLD VALUE OF 1.5 METRES.
SMOOTHING OPERATOR LENGTH OF 9 SAMPLES.
CHANGE FROM MULTIFIX TO SKYFIX BETWEEN SHOTPOINTS 367 TO 264.

SB94-114	111 TO 642	48

GYROCOMPASS: SPIKES IN DATA.
DESPIKE OPERATOR LENGTH OF 7 SAMPLES.
CLIP BELOW, BETWEEN SHOTPOINTS 430 TO 536 AT DATA VALUE 110.0 DEGREES.

498270

QR-0897A

REVISIONS		SAGASCO RESOURCES LTD
DATE	BY	
		ROCKY CAPE 2D 1994 SURVEY
		WATER DEPTH
		SCALE: 1 : 25,000
		GRID SYSTEM: UTM ZONE 55S GRID UNIT: METRES
		PROJECTION: TRANSVERSE MERCATOR SPHEROID: AUSTRALIAN NAT. CENT. MERIDIAN: 147°00' 00.000" E SCALE FACTOR ON CENTRAL MERIDIAN: 0.9996000000 FALSE NORTHING: 10,000,000.00 FALSE EASTING: 500,000.00 FALSE ORIGIN AT C.M. AND LATITUDE: 0°00' 00.000" N
SHOT BY PARTY 116		GEODETIC DATUM: AGD 84
WESTERN GEOPHYSICAL		DATE (DD/MM/YY): 17- 5-94 MAP NO.: 1 OF 8

5 cm

KILOMETRES

STATUTE MILES

NAUTICAL MILES

145°20 145°25 145°30 145°35 145°36

39°35 39°40 39°45

5,610,000 5,600,000

360,000 370,000

S894A-122

S894A-120

S894A-118

S894A-116

S894A-101

S894A-103

S894A-105

S894A-107

S894A-109

S894A-111

OR 0397A

REVISIONS		SAGASCO RESOURCES LTD
DATE	BY	ROCKY CAPE 2D 1994 SURVEY
		WATER DEPTH
		SCALE: 1 : 25,000
		PROJECTION: TRANSVERSE MERCATOR SPHEROID: AUSTRALIAN NAT. CENT. MERIDIAN: 147°00' 00.000" E SCALE FACTOR ON CENTRAL MERIDIAN: 0.9996000000
		GRID SYSTEM: UTM ZONE 55S GRID UNIT: METRES FALSE NORTHING: 10,000,000.00 FALSE EASTING: 500,000.00 FALSE ORIGIN AT C.M. AND LATITUDE: 0°00' 00.000" N GEODETIC DATUM: AGD 84
SHOT BY PARTY 116		
WESTERN GEOPHYSICAL	DATE (DD/MM/YY): 17- 5-94	MAP NO.: 2 OF 8

49807A

5 cm

KILOMETRES

STATUTE MILES

NAUTICAL MILES

145°10 145°15 145°20 39°45 39°50 39°55

5,590,000 5,580,000 350,000

SB94A-110 SB94A-107 SB94A-108 SB94A-104 SB94A-106 SB94A-102 SB94A-111 SB94A-113 SB94A-115

OR-0397 A

REVISIONS		SAGASCO RESOURCES LTD
DATE	BY	
		ROCKY CAPE 2D 1994 SURVEY
		WATER DEPTH
		SCALE: 1 : 25,000
		GRID SYSTEM: UTM ZONE 55S GRID UNIT: METRES
		PROJECTION: TRANSVERSE MERCATOR SPHEROID: AUSTRALIAN NAT. CENT. MERIDIAN: 147°00' 00.000" E SCALE FACTOR ON CENTRAL MERIDIAN: 0.9996000000 FALSE NORTHING: 10,000,000.00 FALSE EASTING: 500,000.00 FALSE ORIGIN AT C.M. AND LATITUDE 07°00' 00.000" N
SHOT BY PARTY 116		GEODETIC DATUM: AGD 84
WESTERN GEOPHYSICAL	DATE (DD/MM/YY): 17- 5-94	MAP NO.: 3 OF 8

498272

5 cm

KILOMETRES

STATUTE MILES

NAUTICAL MILES

145°20 145°25 145°30 145°35 145°36

39°45 39°50 39°55

5,590,000

360,000 370,000 380,000

SB94A-103 SB94A-104 SB94A-105 SB94A-106 SB94A-107 SB94A-108 SB94A-109 SB94A-110 SB94A-111 SB94A-112 SB94A-113 SB94A-114 SB94A-115 SB94A-116 SB94A-117 SB94A-118 SB94A-119 SB94A-120 SB94A-121 SB94A-122 SB94A-123

3

OR-0397 A

REVISIONS		SAGASCO RESOURCES LTD
DATE	BY	ROCKY CAPE 2D 1994 SURVEY
		WATER DEPTH
		SCALE: 1 : 25,000
		PROJECTION: TRANSVERSE MERCATOR SPHEROID: AUSTRALIAN NAT. CENT. MERIDIAN: 147° 00' 00.000" E SCALE FACTOR ON CENTRAL MERIDIAN: 0.9996000000
SHOT BY PARTY 116		
WESTERN GEOPHYSICAL		DATE (DD/MM/YY): 17- 5-94

GRID SYSTEM: UTM ZONE 55S
GRID UNIT: METRES
FALSE NORTHING: 10,000,000.00
FALSE EASTING: 500,000.00
FALSE ORIGIN AT C.M. AND LATITUDE: 0° 00' 00.000" N
GEODETIC DATUM: AGD 84

MAP NO.: 4 OF 8

498373

5 cm

KILOMETRES

STATUTE MILES

NAUTICAL MILES

145°10
145°15
145°20
39°55
40°00
40°05
5,570,000
350,000
S894A-111
S894A-113
S894A-115
S894A-117
S894A-119
S894A-121
S894A-123

OR-0391A

REVISIONS		SAGASCO RESOURCES LTD
DATE	BY	
		ROCKY CAPE 2D 1994 SURVEY
		WATER DEPTH
		SCALE: 1 : 25,000
		PROJECTION: TRANSVERSE MERCATOR SPHEROID: AUSTRALIAN NAT. CENT. MERIDIAN:147°00' 00.000" E SCALE FACTOR ON CENTRAL MERIDIAN: 0.9996000000
SHOT BY PARTY 116		
WESTERN GEOPHYSICAL		DATE (DD/MM/YY):17- 5-94

GRID SYSTEM: UTM ZONE 55S
GRID UNIT: METRES
FALSE NORTHING: 10,000,000.00
FALSE EASTING: 500,000.00
FALSE ORIGIN AT C.M. AND LATITUDE: 40°00' 00.000" S

GEODETIC DATUM: AGD 84

MAP NO.: 5 OF 8

498974

5 cm

KILOMETRES

STATUTE MILES

NAUTICAL MILES

145°20 145°25 145°30 145°35 145°36

39°55

40°00

40°05

5,580,000

5,570,000

360,000 370,000 380,000

SB94A-117 SB94A-119 SB94A-121 SB94A-123 SB94A-125 SB94A-127 SB94A-129 SB94A-131

SB94A-106 SB94A-108 SB94A-110 SB94A-112

5

380,000
370,000
360,000
5,550,000
5,560,000
40°15
40°10
40°05
145°36
145°35
145°30
145°25
145°20

SBBAA-139
SBBAA-137
SBBAA-135
SBBAA-133
SBBAA-131
SBBAA-129
SBBAA-127
SBBAA-125
SBBAA-123
SBBAA-121
SBBAA-119
SBBAA-117
SBBAA-115
SBBAA-113
SBBAA-111
SBBAA-109
SBBAA-107
SBBAA-105
SBBAA-103
SBBAA-101

NAUTICAL MILES
STATUTE MILES
KILOMETERS
5 cm

4985/5

REVISIONS		
	DATE	BY

SAGASCO RESOURCES LTD

ROCKY CAPE 2D 1994 SURVEY

WATER DEPTH

SCALE: 1 : 25,000

PROJECTION: TRANSVERSE MERCATOR
SPHEROID: AUSTRALIAN NAT.
CENT. MERIDIAN/47°00' 00.000" E
SCALE FACTOR ON CENTRAL
MERIDIAN: 0.9996000000

SHOT BY PARTY 116

DATE (DD/MM/YY)12/5-94

WESTERN GEOPHYSICAL

SHEET NO.: 6 OF 8

GRID SYSTEM: UTM ZONE 55S
GRID UNIT: METRES
FALSE NORTHING: 10,000,000.00
FALSE EASTING: 500,000.00
FALSE ORIGIN AT C.M. 145°00' 00.000" E
0°00' 00.000" N

GEODETIC DATUM: AGD 84

MAP

QR-03937.0

CR-0397A

REVISIONS		SAGASCO RESOURCES LTD
DATE	BY	
		ROCKY CAPE 2D 1994 SURVEY
		WATER DEPTH
		SCALE: 1 : 25,000
		GRID SYSTEM: UTM ZONE 55S SPHEROID: AUSTRALIAN 1965 FALSE NORTHING: 10,000,000.00 FALSE EASTING: 500,000.00 FALSE ORIGIN AT C.M. AND LATITUDE: 0°00' 00.000" S
		PROJECTION: TRANSVERSE MERCATOR DATUM: AUSTRALIAN NAT. CENTRAL MERIDIAN: 145.000° E SCALE FACTOR ON CENTRAL MERIDIAN: 0.99960000000
SHOT BY PARTY 116		GEODETIC DATUM: AGD 66
WESTERN GEOPHYSICAL		DATE (DD/MM/YY): 17- 5-94
		MAP NO.: 7 OF 8

4555.6

5 cm

KILOMETRES

STATUTE MILES

NAUTICAL MILES

145°45 145°50 145°55 146°00 146°05 40°10 40°15 40°20

5,550,000 5,540,000

400,000 410,000 420,000

SHOT BY PARTY 116

OR-0397A

REVISIONS		SAGASCO RESOURCES LTD
DATE	BY	
		ROCKY CAPE 2D 1994 SURVEY
		WATER DEPTH
		SCALE: 1 : 25,000
		GRID SYSTEM: MGA ZONE 55
		PROJECTION: TRANSVERSE MERCATOR
		SPHEROID: AUSTRALIAN NAT.
		CENT. MERIDIAN: 147°00'00.000"E
SHOT BY PARTY 316		MERIDIAN SCALE: 0.99960000000
WESTERN GEOPHYSICAL		DATE: DD/MM/YY 11/7- 5-94

AGD 66
FALSE NORTHING: 10,000,000.00
FALSE EASTING: 500,000.00
FALSE ORIGIN AT CM, AND LAT: 0°
0°00' 00.000"E
0°00' 00.000" N
GEODETIC DATUM: AGD 84
MAP NO.: 8 OF 8

485000

5 cm
KILOMETRES
STATUTE MILES
NAUTICAL MILES

145°45 145°50 145°55 146°00 146°05

40°20 40°25 40°30

5,530,000 5,520,000

400,000 410,000 420,000

8

APPENDIX 1

SAGASCO RESOURCES LTD.
ROCKY CAPE 2D SURVEY 1994.
TIDE CORRECTION INFORMATION.

LINE NAME	SHOTPOINT	JULIAN DAY	G.M.T. HHMMSS	INPUT WATER DEPTH	TIDE HEIGHTS	OUTPUT WATER DEPTH
SB94A-132	120	76	143519	78.8000	2.0532	76.7468
SB94A-132	130	76	143654	78.8000	2.0688	76.7312
SB94A-132	140	76	143830	78.7000	2.0850	76.6150
SB94A-132	150	76	144006	78.9000	2.1010	76.7990
SB94A-132	160	76	144141	78.9000	2.1167	76.7833
SB94A-132	170	76	144316	78.8000	2.1325	76.6675
SB94A-132	180	76	144452	78.8000	2.1487	76.6513
SB94A-132	190	76	144627	78.9000	2.1645	76.7355
SB94A-132	200	76	144804	78.7000	2.1807	76.5193
SB94A-132	210	76	144940	78.8000	2.1965	76.6035
SB94A-132	220	76	145117	78.8000	2.2128	76.5872
SB94A-132	230	76	145253	79.0000	2.2287	76.7713
SB94A-132	240	76	145428	79.0000	2.2447	76.7553
SB94A-132	250	76	145604	78.9000	2.2607	76.6393
SB94A-132	260	76	145741	79.0000	2.2768	76.7232
SB94A-132	270	76	145917	79.1000	2.2927	76.8073
SB94A-132	280	76	150055	79.0000	2.3075	76.6925
SB94A-132	290	76	150231	79.1000	2.3210	76.7790
SB94A-132	300	76	150408	79.1000	2.3343	76.7657
SB94A-132	310	76	150546	79.1000	2.3479	76.7521
SB94A-132	320	76	150722	79.3000	2.3614	76.9386
SB94A-132	330	76	150859	79.3000	2.3749	76.9251
SB94A-132	340	76	151035	79.2000	2.3882	76.8118
SB94A-132	350	76	151211	79.2000	2.4014	76.7986
SB94A-132	360	76	151349	79.3000	2.4150	76.8850
SB94A-132	370	76	151525	79.5000	2.4285	77.0715
SB94A-132	380	76	151701	79.2000	2.4417	76.7583
SB94A-132	390	76	151838	79.3000	2.4551	76.8449
SB94A-132	400	76	152015	79.3000	2.4688	76.8313
SB94A-132	410	76	152152	79.3000	2.4822	76.8178
SB94A-132	420	76	152329	79.5000	2.4956	77.0044
SB94A-132	430	76	152505	79.5000	2.5090	76.9910
SB94A-132	440	76	152642	79.5000	2.5224	76.9776
SB94A-132	450	76	152819	79.5000	2.5358	76.9642
SB94A-132	460	76	152956	79.5000	2.5494	76.9506
SB94A-132	470	76	153133	79.6000	2.5629	77.0371
SB94A-132	480	76	153311	79.7000	2.5765	77.1235
SB94A-132	490	76	153448	79.5000	2.5899	76.9101
SB94A-132	500	76	153623	79.6000	2.6032	76.9968
SB94A-132	510	76	153759	79.6000	2.6165	76.9835
SB94A-132	520	76	153934	79.5000	2.6296	76.8704
SB94A-132	530	76	154109	79.7000	2.6428	77.0572
SB94A-132	540	76	154245	80.0000	2.6562	77.3438
SB94A-132	550	76	154420	79.8000	2.6694	77.1306
SB94A-132	560	76	154555	79.8000	2.6825	77.1175
SB94A-132	570	76	154732	79.7000	2.6961	77.0039
SB94A-132	580	76	154907	79.6000	2.7092	76.8908
SB94A-132	590	76	155042	79.9000	2.7224	77.1776
SB94A-132	600	76	155218	79.9000	2.7358	77.1642
SB94A-132	610	76	155354	80.1000	2.7490	77.3510

SB94A-132	620	76	155531	79.9000	2.7626	77.1374
SB94A-132	630	76	155707	79.8000	2.7758	77.0242
SB94A-132	640	76	155842	79.9000	2.7892	77.1108
SB94A-132	650	76	160018	80.0000	2.8015	77.1985
SB94A-132	660	76	160152	80.0000	2.8093	77.1907
SB94A-132	670	76	160327	80.1000	2.8172	77.2828
SB94A-132	680	76	160503	79.9000	2.8252	77.0748
SB94A-132	690	76	160637	79.8000	2.8330	76.9670
SB94A-132	700	76	160811	79.8000	2.8408	76.9592
SB94A-132	710	76	160947	80.0000	2.8489	77.1511
SB94A-132	720	76	161121	80.2000	2.8568	77.3432
SB94A-132	730	76	161256	79.9000	2.8647	77.0353
SB94A-132	740	76	161429	79.8000	2.8723	76.9277
SB94A-132	750	76	161604	80.1000	2.8803	77.2197
SB94A-130	570	76	174421	79.9000	3.0261	76.8739
SB94A-130	560	76	174558	79.9000	3.0234	76.8766
SB94A-130	550	76	174735	79.9000	3.0207	76.8793
SB94A-130	540	76	174914	80.0000	3.0179	76.9821
SB94A-130	530	76	175051	79.9000	3.0152	76.8848
SB94A-130	520	76	175228	79.8000	3.0126	76.7874
SB94A-130	510	76	175405	79.8000	3.0099	76.7901
SB94A-130	500	76	175543	79.8000	3.0072	76.7928
SB94A-130	490	76	175720	79.7000	3.0044	76.6955
SB94A-130	480	76	175858	79.7000	3.0017	76.6983
SB94A-130	470	76	180036	79.7000	2.9970	76.7030
SB94A-130	460	76	180213	79.7000	2.9889	76.7111
SB94A-130	450	76	180351	79.6000	2.9808	76.6192
SB94A-130	440	76	180529	79.6000	2.9726	76.6274
SB94A-130	430	76	180706	79.7000	2.9646	76.7354
SB94A-130	420	76	180844	79.6000	2.9564	76.6436
SB94A-130	410	76	181021	79.6000	2.9483	76.6517
SB94A-130	400	76	181158	79.4000	2.9402	76.4598
SB94A-130	390	76	181334	79.5000	2.9323	76.5677
SB94A-130	380	76	181511	79.3000	2.9242	76.3758
SB94A-130	370	76	181648	79.5000	2.9160	76.5840
SB94A-130	360	76	181824	79.4000	2.9081	76.4919
SB94A-130	350	76	182001	79.3000	2.8999	76.4001
SB94A-130	340	76	182138	79.3000	2.8918	76.4082
SB94A-130	330	76	182315	79.4000	2.8838	76.5162
SB94A-130	320	76	182453	79.2000	2.8757	76.3243
SB94A-130	310	76	182630	79.3000	2.8676	76.4324
SB94A-130	300	76	182808	79.2000	2.8594	76.3406
SB94A-130	290	76	182946	79.2000	2.8512	76.3487
SB94A-130	280	76	183123	79.2000	2.8431	76.3569
SB94A-130	270	76	183301	79.1000	2.8349	76.2651
SB94A-130	260	76	183438	79.1000	2.8268	76.2732
SB94A-130	250	76	183617	79.0000	2.8186	76.1814
SB94A-130	240	76	183754	79.0000	2.8105	76.1895
SB94A-130	230	76	183932	79.1000	2.8023	76.2977
SB94A-130	220	76	184111	79.1000	2.7941	76.3059
SB94A-130	210	76	184248	78.9000	2.7860	76.1140
SB94A-130	200	76	184427	79.0000	2.7778	76.2223
SB94A-130	190	76	184605	78.9000	2.7696	76.1304
SB94A-130	180	76	184743	78.8000	2.7614	76.0386
SB94A-130	170	76	184920	78.8000	2.7533	76.0467
SB94A-130	160	76	185058	78.7000	2.7452	75.9548
SB94A-130	150	76	185235	78.7000	2.7372	75.9628
SB94A-130	140	76	185412	78.6000	2.7291	75.8709
SB94A-130	130	76	185551	78.7000	2.7208	75.9792
SB94A-130	120	76	185729	78.6000	2.7127	75.8873

SB94A-130	110	76	185906	78.6000	2.7046	75.8954
SB94A-130	100	76	190044	78.6000	2.6940	75.9060
SB94A-130	90	76	190224	78.5000	2.6800	75.8200
SB94A-130	80	76	190400	78.4000	2.6668	75.7332
SB94A-130	70	76	190537	78.4000	2.6532	75.7468
SB94A-130	60	76	190714	78.5000	2.6397	75.8603
SB94A-130	50	76	190851	78.5000	2.6264	75.8736
SB94A-130	40	76	191028	78.3000	2.6129	75.6871
SB94A-161	470	76	205323	77.6000	1.5772	76.0228
SB94A-161	460	76	205458	77.8000	1.5587	76.2413
SB94A-161	450	76	205633	77.5000	1.5403	75.9597
SB94A-161	440	76	205808	77.6000	1.5220	76.0780
SB94A-161	430	76	205943	77.7000	1.5035	76.1965
SB94A-161	420	76	210118	77.8000	1.4893	76.3107
SB94A-161	410	76	210252	77.7000	1.4763	76.2237
SB94A-161	400	76	210427	77.8000	1.4629	76.3371
SB94A-161	390	76	210602	77.8000	1.4497	76.3503
SB94A-161	380	76	210737	77.9000	1.4365	76.4635
SB94A-161	370	76	210912	77.9000	1.4235	76.4765
SB94A-161	360	76	211046	78.0000	1.4104	76.5896
SB94A-161	350	76	211220	77.8000	1.3972	76.4028
SB94A-161	340	76	211356	77.9000	1.3840	76.5160
SB94A-161	330	76	211531	78.0000	1.3707	76.6293
SB94A-161	320	76	211705	77.9000	1.3578	76.5422
SB94A-161	310	76	211839	77.9000	1.3447	76.5553
SB94A-161	300	76	212015	78.0000	1.3312	76.6687
SB94A-161	290	76	212150	78.0000	1.3181	76.6819
SB94A-161	280	76	212325	77.9000	1.3050	76.5950
SB94A-161	270	76	212501	77.8000	1.2915	76.5085
SB94A-161	260	76	212636	78.0000	1.2783	76.7217
SB94A-161	250	76	212810	78.2000	1.2653	76.9347
SB94A-161	240	76	212944	78.1000	1.2522	76.8478
SB94A-161	230	76	213117	78.2000	1.2394	76.9606
SB94A-161	220	76	213251	78.1000	1.2264	76.8736
SB94A-161	210	76	213426	78.0000	1.2132	76.7868
SB94A-161	200	76	213601	78.0000	1.2000	76.8000
SB94A-161	190	76	213736	78.2000	1.1867	77.0133
SB94A-161	180	76	213911	78.2000	1.1735	77.0265
SB94A-161	170	76	214047	78.2000	1.1603	77.0397
SB94A-161	160	76	214223	78.2000	1.1468	77.0532
SB94A-161	150	76	214359	78.3000	1.1336	77.1664
SB94A-161	140	76	214534	78.3000	1.1204	77.1796
SB94A-161	130	76	214709	78.3000	1.1071	77.1929
SB94A-161	120	76	214844	78.4000	1.0939	77.3061
SB94A-161	110	76	215019	78.4000	1.0807	77.3193
SB94A-161	100	76	215154	78.3000	1.0676	77.2324
SB94A-161	90	76	215329	78.5000	1.0544	77.4456
SB94A-161	80	76	215504	78.5000	1.0412	77.4587
SB94A-161	70	76	215639	78.5000	1.0279	77.4721
SB94A-161	60	76	215814	78.4000	1.0147	77.3853
SB94A-161	50	76	215948	78.5000	1.0017	77.4983
SB94A-161	40	76	220123	78.6000	.9908	77.6092
SB94A-159	120	76	231713	78.0000	.6000	77.4000
SB94A-159	130	76	231849	77.9000	.6000	77.3000
SB94A-159	140	76	232025	77.9000	.6000	77.3000
SB94A-159	150	76	232200	77.7000	.6000	77.1000
SB94A-159	160	76	232337	77.7000	.6000	77.1000
SB94A-159	170	76	232512	77.7000	.6000	77.1000
SB94A-159	180	76	232648	77.7000	.6000	77.1000
SB94A-159	190	76	232823	77.6000	.6000	77.0000

SB94A-159	200	76	232958	77.6000	.6000	77.0000
SB94A-159	210	76	233133	77.7000	.6000	77.1000
SB94A-159	220	76	233311	77.5000	.6000	76.9000
SB94A-159	230	76	233448	77.5000	.6000	76.9000
SB94A-159	240	76	233625	77.5000	.6000	76.9000
SB94A-159	250	76	233803	77.5000	.6000	76.9000
SB94A-159	260	76	233940	77.3000	.6000	76.7000
SB94A-159	270	76	234117	77.5000	.6000	76.9000
SB94A-159	280	76	234254	77.4000	.6000	76.8000
SB94A-159	290	76	234431	77.3000	.6000	76.7000
SB94A-159	300	76	234606	77.2000	.6000	76.6000
SB94A-159	310	76	234743	77.2000	.6000	76.6000
SB94A-159	320	76	234918	77.3000	.6000	76.7000
SB94A-159	330	76	235055	77.3000	.6000	76.7000
SB94A-159	340	76	235231	77.2000	.6000	76.6000
SB94A-159	350	76	235407	77.1000	.6000	76.5000
SB94A-159	360	76	235544	77.1000	.6000	76.5000
SB94A-159	370	76	235720	77.2000	.6000	76.6000
SB94A-159	380	76	235856	77.1000	.6000	76.5000
SB94A-159	390	77	32	77.0000	.6018	76.3982
SB94A-159	400	77	207	77.0000	.6071	76.3929
SB94A-159	410	77	343	76.9000	.6123	76.2877
SB94A-159	420	77	519	76.9000	.6177	76.2823
SB94A-159	430	77	655	76.9000	.6230	76.2770
SB94A-159	440	77	831	76.9000	.6284	76.2716
SB94A-159	450	77	1007	76.8000	.6337	76.1663
SB94A-159	460	77	1143	76.7000	.6391	76.0609
SB94A-159	470	77	1319	76.6000	.6443	75.9557
SB94A-159	480	77	1455	76.6000	.6497	75.9503
SB94A-159	490	77	1631	76.7000	.6550	76.0450
SB94A-159	500	77	1807	76.7000	.6604	76.0396
SB94A-159	510	77	1944	76.7000	.6657	76.0343
SB94A-159	520	77	2120	76.6000	.6711	75.9289
SB94A-159	530	77	2256	76.4000	.6764	75.7236
SB94A-159	540	77	2432	76.4000	.6818	75.7182
SB94A-159	550	77	2608	76.4000	.6871	75.7129
SB94A-159	560	77	2744	76.4000	.6924	75.7076
SB94A-159	570	77	2920	76.3000	.6978	75.6022
SB94A-157	460	77	14621	77.3000	1.1861	76.1139
SB94A-157	450	77	14758	77.2000	1.1996	76.0004
SB94A-157	440	77	14935	77.4000	1.2132	76.1868
SB94A-157	430	77	15112	77.5000	1.2267	76.2733
SB94A-157	420	77	15248	77.5000	1.2400	76.2600
SB94A-157	410	77	15425	77.5000	1.2535	76.2465
SB94A-157	400	77	15603	77.4000	1.2671	76.1329
SB94A-157	390	77	15740	77.6000	1.2804	76.3196
SB94A-157	380	77	15916	77.5000	1.2939	76.2061
SB94A-157	370	77	20053	77.6000	1.3088	76.2912
SB94A-157	360	77	20230	77.8000	1.3248	76.4752
SB94A-157	350	77	20407	77.8000	1.3410	76.4590
SB94A-157	340	77	20544	77.9000	1.3573	76.5427
SB94A-157	330	77	20721	77.8000	1.3735	76.4265
SB94A-157	320	77	20858	78.0000	1.3895	76.6105
SB94A-157	310	77	21035	78.1000	1.4058	76.6942
SB94A-157	300	77	21212	78.0000	1.4220	76.5780
SB94A-157	290	77	21349	78.1000	1.4380	76.6620
SB94A-157	280	77	21526	78.3000	1.4542	76.8458
SB94A-157	270	77	21702	78.2000	1.4703	76.7297
SB94A-157	260	77	21838	78.3000	1.4862	76.8138
SB94A-157	250	77	22015	78.2000	1.5025	76.6975

SB94A-157	240	77	22152	78.1000	1.5187	76.5813
SB94A-157	230	77	22328	78.4000	1.5347	76.8653
SB94A-157	220	77	22505	78.4000	1.5508	76.8492
SB94A-157	210	77	22642	78.5000	1.5668	76.9332
SB94A-157	200	77	22818	78.5000	1.5830	76.9170
SB94A-157	190	77	22954	78.6000	1.5988	77.0012
SB94A-157	180	77	23130	78.5000	1.6150	76.8850
SB94A-157	170	77	23307	78.6000	1.6312	76.9688
SB94A-157	160	77	23443	78.8000	1.6472	77.1528
SB94A-157	150	77	23620	78.7000	1.6633	77.0367
SB94A-157	140	77	23757	78.9000	1.6793	77.2207
SB94A-157	130	77	23934	79.1000	1.6955	77.4045
SB94A-157	120	77	24111	79.0000	1.7118	77.2882
SB94A-157	110	77	24248	78.9000	1.7280	77.1720
SB94A-157	100	77	24425	79.1000	1.7440	77.3560
SB94A-157	90	77	24603	79.0000	1.7603	77.2397
SB94A-157	80	77	24740	79.1000	1.7765	77.3235
SB94A-157	70	77	24917	79.2000	1.7928	77.4072
SB94A-157	60	77	25054	79.2000	1.8090	77.3910
SB94A-157	50	77	25231	79.3000	1.8250	77.4750
SB94A-157	40	77	25409	79.3000	1.8413	77.4587
SB94A-155	460	77	40624	79.7000	2.5427	77.1573
SB94A-155	450	77	40758	79.8000	2.5531	77.2469
SB94A-155	440	77	40931	79.6000	2.5633	77.0367
SB94A-155	430	77	41104	79.7000	2.5738	77.1262
SB94A-155	420	77	41237	79.5000	2.5841	76.9159
SB94A-155	410	77	41410	79.8000	2.5943	77.2057
SB94A-155	400	77	41544	79.8000	2.6048	77.1952
SB94A-155	390	77	41717	79.6000	2.6152	76.9848
SB94A-155	380	77	41850	79.6000	2.6254	76.9746
SB94A-155	370	77	42024	79.5000	2.6359	76.8641
SB94A-155	360	77	42159	79.5000	2.6464	76.8536
SB94A-155	350	77	42334	79.5000	2.6571	76.8429
SB94A-155	340	77	42509	79.5000	2.6677	76.8323
SB94A-155	330	77	42644	79.5000	2.6782	76.8218
SB94A-155	320	77	42820	79.4000	2.6888	76.7112
SB94A-155	310	77	42956	79.5000	2.6996	76.8004
SB94A-155	300	77	43132	79.4000	2.7101	76.6899
SB94A-155	290	77	43308	79.4000	2.7209	76.6791
SB94A-155	280	77	43444	79.4000	2.7314	76.6686
SB94A-155	270	77	43620	79.3000	2.7422	76.5578
SB94A-155	260	77	43755	79.3000	2.7528	76.5472
SB94A-155	250	77	43932	79.3000	2.7636	76.5364
SB94A-155	240	77	44108	79.2000	2.7741	76.4259
SB94A-155	230	77	44243	79.1000	2.7847	76.3153
SB94A-155	220	77	44418	79.0000	2.7952	76.2048
SB94A-155	210	77	44553	79.1000	2.8059	76.2941
SB94A-155	200	77	44727	79.1000	2.8163	76.2837
SB94A-155	190	77	44902	79.1000	2.8269	76.2731
SB94A-155	180	77	45037	79.1000	2.8374	76.2626
SB94A-155	170	77	45212	79.0000	2.8479	76.1521
SB94A-155	160	77	45347	79.1000	2.8584	76.2416
SB94A-155	150	77	45521	79.0000	2.8689	76.1311
SB94A-155	140	77	45656	79.0000	2.8794	76.1206
SB94A-155	130	77	45831	78.9000	2.8900	76.0100
SB94A-155	120	77	50005	79.0000	2.9002	76.0998
SB94A-155	110	77	50140	78.9000	2.9056	75.9944
SB94A-155	100	77	50315	78.9000	2.9108	75.9892
SB94A-155	90	77	50450	79.0000	2.9161	76.0839
SB94A-155	80	77	50625	78.9000	2.9213	75.9787

SB94A-155	70	77	50759	78.9000	2.9266	75.9734
SB94A-155	60	77	50934	78.8000	2.9318	75.8682
SB94A-155	50	77	51109	78.7000	2.9371	75.7629
SB94A-155	40	77	51244	78.8000	2.9424	75.8576
SB94A-153	120	77	62411	79.1000	3.0194	76.0806
SB94A-153	130	77	62544	79.2000	3.0143	76.1857
SB94A-153	140	77	62716	79.3000	3.0091	76.2909
SB94A-153	150	77	62849	79.3000	3.0040	76.2960
SB94A-153	160	77	63021	79.3000	2.9988	76.3012
SB94A-153	170	77	63153	79.3000	2.9938	76.3062
SB94A-153	180	77	63325	79.3000	2.9887	76.3113
SB94A-153	190	77	63457	79.6000	2.9835	76.6165
SB94A-153	200	77	63629	79.4000	2.9784	76.4216
SB94A-153	210	77	63801	79.6000	2.9733	76.6267
SB94A-153	220	77	63933	79.5000	2.9682	76.5318
SB94A-153	230	77	64105	79.5000	2.9631	76.5369
SB94A-153	240	77	64237	79.5000	2.9579	76.5421
SB94A-153	250	77	64409	79.6000	2.9528	76.6472
SB94A-153	260	77	64541	79.7000	2.9478	76.7522
SB94A-153	270	77	64712	79.6000	2.9427	76.6573
SB94A-153	280	77	64843	79.8000	2.9377	76.8623
SB94A-153	290	77	65015	79.7000	2.9325	76.7675
SB94A-153	300	77	65147	79.9000	2.9274	76.9726
SB94A-153	310	77	65318	79.8000	2.9224	76.8776
SB94A-153	320	77	65449	79.9000	2.9173	76.9827
SB94A-153	330	77	65620	79.9000	2.9123	76.9877
SB94A-153	340	77	65752	79.8000	2.9071	76.8929
SB94A-153	350	77	65928	80.0000	2.9018	77.0982
SB94A-153	360	77	70103	79.9000	2.8931	77.0069
SB94A-153	370	77	70239	79.9000	2.8823	77.0177
SB94A-153	380	77	70414	80.0000	2.8718	77.1282
SB94A-153	390	77	70549	80.1000	2.8613	77.2387
SB94A-153	400	77	70724	80.0000	2.8508	77.1492
SB94A-153	410	77	70859	80.2000	2.8401	77.3599
SB94A-153	420	77	71034	80.0000	2.8296	77.1704
SB94A-153	430	77	71210	80.1000	2.8190	77.2810
SB94A-153	440	77	71345	80.0000	2.8084	77.1916
SB94A-153	450	77	71520	80.2000	2.7978	77.4022
SB94A-153	460	77	71655	80.1000	2.7872	77.3128
SB94A-153	470	77	71830	80.2000	2.7767	77.4233
SB94A-153	480	77	72005	80.3000	2.7662	77.5338
SB94A-153	490	77	72140	80.2000	2.7557	77.4443
SB94A-153	500	77	72315	80.3000	2.7451	77.5549
SB94A-153	510	77	72452	80.5000	2.7343	77.7657
SB94A-153	520	77	72631	80.1000	2.7233	77.3767
SB94A-153	530	77	72808	80.4000	2.7126	77.6874
SB94A-153	540	77	72944	80.4000	2.7018	77.6982
SB94A-151	460	77	84138	79.8000	2.1532	77.6468
SB94A-151	450	77	84314	79.7000	2.1397	77.5603
SB94A-151	440	77	84449	79.8000	2.1265	77.6735
SB94A-151	430	77	84624	79.7000	2.1135	77.5865
SB94A-151	420	77	84758	79.5000	2.1004	77.3996
SB94A-151	410	77	84933	79.8000	2.0872	77.7128
SB94A-151	400	77	85107	79.5000	2.0742	77.4258
SB94A-151	390	77	85241	79.4000	2.0611	77.3389
SB94A-151	380	77	85417	79.3000	2.0478	77.2522
SB94A-151	370	77	85551	79.3000	2.0347	77.2653
SB94A-151	360	77	85726	79.2000	2.0214	77.1786
SB94A-151	350	77	85900	79.2000	2.0085	77.1915
SB94A-151	340	77	90034	79.2000	1.9945	77.2055

SB94A-151	330	77	90208	79.1000	1.9788	77.1212
SB94A-151	320	77	90342	79.1000	1.9632	77.1368
SB94A-151	310	77	90516	79.1000	1.9475	77.1525
SB94A-151	300	77	90650	79.1000	1.9317	77.1683
SB94A-151	290	77	90824	78.8000	1.9160	76.8840
SB94A-151	280	77	90958	78.9000	1.9003	76.9997
SB94A-151	270	77	91132	78.8000	1.8847	76.9153
SB94A-151	260	77	91305	78.8000	1.8693	76.9307
SB94A-151	250	77	91438	78.8000	1.8537	76.9463
SB94A-151	240	77	91613	78.7000	1.8380	76.8620
SB94A-151	230	77	91746	78.6000	1.8223	76.7777
SB94A-151	220	77	91920	78.6000	1.8067	76.7933
SB94A-151	210	77	92054	78.5000	1.7910	76.7090
SB94A-151	200	77	92228	78.4000	1.7755	76.6245
SB94A-151	190	77	92401	78.4000	1.7600	76.6400
SB94A-151	180	77	92535	78.4000	1.7442	76.6558
SB94A-151	170	77	92709	78.2000	1.7285	76.4715
SB94A-151	160	77	92842	78.2000	1.7130	76.4870
SB94A-151	150	77	93015	78.2000	1.6977	76.5023
SB94A-151	140	77	93149	78.1000	1.6820	76.4180
SB94A-151	130	77	93322	78.1000	1.6663	76.4337
SB94A-151	120	77	93455	78.0000	1.6510	76.3490
SB94A-151	110	77	93628	77.9000	1.6353	76.2647
SB94A-151	100	77	93801	77.9000	1.6198	76.2802
SB94A-151	90	77	93933	77.8000	1.6045	76.1955
SB94A-151	80	77	94106	77.7000	1.5890	76.1110
SB94A-151	70	77	94239	77.8000	1.5737	76.2263
SB94A-151	60	77	94412	77.7000	1.5580	76.1420
SB94A-151	50	77	94545	77.6000	1.5427	76.0573
SB94A-151	40	77	94718	77.6000	1.5272	76.0728
SB94A-149	120	77	110554	77.5000	.9803	76.5197
SB94A-149	130	77	110732	77.5000	.9749	76.5251
SB94A-149	140	77	110910	77.5000	.9694	76.5306
SB94A-149	150	77	111048	77.6000	.9640	76.6360
SB94A-149	160	77	111225	77.7000	.9587	76.7413
SB94A-149	170	77	111402	77.7000	.9533	76.7467
SB94A-149	180	77	111540	77.6000	.9478	76.6522
SB94A-149	190	77	111717	77.6000	.9424	76.6576
SB94A-149	200	77	111854	77.7000	.9371	76.7629
SB94A-149	210	77	112031	77.7000	.9317	76.7683
SB94A-149	220	77	112209	77.7000	.9262	76.7738
SB94A-149	230	77	112346	77.9000	.9208	76.9792
SB94A-149	240	77	112523	77.9000	.9154	76.9846
SB94A-149	250	77	112701	77.9000	.9099	76.9901
SB94A-149	260	77	112839	77.9000	.9045	76.9955
SB94A-149	270	77	113016	77.9000	.8992	77.0008
SB94A-149	280	77	113153	77.9000	.8938	77.0062
SB94A-149	290	77	113331	78.0000	.8883	77.1117
SB94A-149	300	77	113508	78.1000	.8829	77.2171
SB94A-149	310	77	113645	78.1000	.8775	77.2225
SB94A-149	320	77	113823	78.2000	.8721	77.3279
SB94A-149	330	77	114000	78.2000	.8667	77.3333
SB94A-149	340	77	114137	78.2000	.8613	77.3387
SB94A-149	350	77	114314	78.4000	.8559	77.5441
SB94A-149	360	77	114451	78.2000	.8505	77.3495
SB94A-149	370	77	114628	78.3000	.8452	77.4548
SB94A-149	380	77	114805	78.3000	.8397	77.4603
SB94A-149	390	77	114942	78.5000	.8343	77.6657
SB94A-149	400	77	115120	78.6000	.8289	77.7711
SB94A-149	410	77	115255	78.5000	.8236	77.6764

SB94A-149	420	77	115432	78.6000	.8182	77.7818
SB94A-149	430	77	115610	78.6000	.8128	77.7872
SB94A-149	440	77	115746	78.6000	.8075	77.7925
SB94A-149	450	77	115923	78.7000	.8021	77.8979
SB94A-149	460	77	120100	78.7000	.8033	77.8967
SB94A-149	470	77	120237	78.7000	.8087	77.8913
SB94A-149	480	77	120413	78.8000	.8141	77.9859
SB94A-149	490	77	120549	78.8000	.8193	77.9807
SB94A-149	500	77	120726	78.8000	.8248	77.9752
SB94A-149	510	77	120903	78.9000	.8302	78.0698
SB94A-149	520	77	121039	78.8000	.8354	77.9646
SB94A-149	530	77	121216	78.8000	.8409	77.9591
SB94A-149	540	77	121353	78.8000	.8463	77.9537
SB94A-147	510	77	132746	78.4000	1.1850	77.2150
SB94A-147	500	77	132924	78.4000	1.1959	77.2041
SB94A-147	490	77	133100	78.3000	1.2067	77.0933
SB94A-147	480	77	133237	78.3000	1.2173	77.0827
SB94A-147	470	77	133414	78.2000	1.2282	76.9718
SB94A-147	460	77	133551	78.1000	1.2390	76.8610
SB94A-147	450	77	133728	78.1000	1.2497	76.8503
SB94A-147	440	77	133903	78.2000	1.2603	76.9397
SB94A-147	430	77	134039	78.1000	1.2709	76.8291
SB94A-147	420	77	134215	78.1000	1.2817	76.8183
SB94A-147	410	77	134350	78.1000	1.2922	76.8078
SB94A-147	400	77	134525	78.0000	1.3028	76.6972
SB94A-147	390	77	134700	78.0000	1.3132	76.6868
SB94A-147	380	77	134835	78.0000	1.3238	76.6762
SB94A-147	370	77	135010	78.0000	1.3343	76.6657
SB94A-147	360	77	135145	77.9000	1.3450	76.5550
SB94A-147	350	77	135320	77.9000	1.3556	76.5444
SB94A-147	340	77	135455	78.0000	1.3661	76.6339
SB94A-147	330	77	135630	77.7000	1.3766	76.3234
SB94A-147	320	77	135804	77.9000	1.3870	76.5130
SB94A-147	310	77	135939	77.9000	1.3976	76.5024
SB94A-147	300	77	140114	77.9000	1.4122	76.4878
SB94A-147	290	77	140250	77.7000	1.4283	76.2717
SB94A-147	280	77	140425	77.9000	1.4440	76.4560
SB94A-147	270	77	140600	77.8000	1.4598	76.3402
SB94A-147	260	77	140735	77.9000	1.4757	76.4243
SB94A-147	250	77	140911	77.8000	1.4918	76.3082
SB94A-147	240	77	141047	77.7000	1.5077	76.1923
SB94A-147	230	77	141222	77.5000	1.5235	75.9765
SB94A-147	220	77	141358	77.5000	1.5397	75.9603
SB94A-147	210	77	141534	77.5000	1.5555	75.9445
SB94A-147	200	77	141709	77.5000	1.5715	75.9285
SB94A-147	190	77	141844	77.3000	1.5873	75.7127
SB94A-147	180	77	142019	77.4000	1.6032	75.7968
SB94A-147	170	77	142154	77.4000	1.6188	75.7812
SB94A-147	160	77	142330	77.2000	1.6350	75.5650
SB94A-147	150	77	142505	77.2000	1.6508	75.5492
SB94A-147	140	77	142641	77.1000	1.6667	75.4333
SB94A-147	130	77	142817	77.1000	1.6828	75.4172
SB94A-147	120	77	142952	77.1000	1.6987	75.4013
SB94A-147	110	77	143128	77.1000	1.7145	75.3855
SB94A-147	100	77	143303	77.0000	1.7303	75.2697
SB94A-147	90	77	143439	77.0000	1.7465	75.2535
SB94A-147	80	77	143614	76.8000	1.7622	75.0378
SB94A-147	70	77	143749	76.9000	1.7780	75.1220
SB94A-147	60	77	143924	76.8000	1.7938	75.0062
SB94A-147	50	77	144100	76.8000	1.8100	74.9900

SB94A-147	40	77	144234	76.8000	1.8257	74.9743
SB94A-145	120	77	155708	77.8000	2.4761	75.3239
SB94A-145	130	77	155843	77.9000	2.4893	75.4107
SB94A-145	140	77	160016	78.0000	2.5017	75.4983
SB94A-145	150	77	160151	78.1000	2.5123	75.5877
SB94A-145	160	77	160325	78.2000	2.5227	75.6773
SB94A-145	170	77	160459	78.2000	2.5331	75.6669
SB94A-145	180	77	160634	78.3000	2.5438	75.7562
SB94A-145	190	77	160810	78.3000	2.5543	75.7457
SB94A-145	200	77	160945	78.4000	2.5649	75.8351
SB94A-145	210	77	161121	78.4000	2.5757	75.8243
SB94A-145	220	77	161257	78.4000	2.5862	75.8138
SB94A-145	230	77	161433	78.5000	2.5970	75.9030
SB94A-145	240	77	161609	78.6000	2.6076	75.9924
SB94A-145	250	77	161745	78.7000	2.6182	76.0818
SB94A-145	260	77	161921	78.7000	2.6290	76.0710
SB94A-145	270	77	162057	78.7000	2.6396	76.0604
SB94A-145	280	77	162234	78.7000	2.6503	76.0497
SB94A-145	290	77	162410	78.7000	2.6611	76.0389
SB94A-145	300	77	162547	78.7000	2.6718	76.0282
SB94A-145A	240	77	182456	79.0000	3.0585	75.9415
SB94A-145A	250	77	182633	79.1000	3.0557	76.0443
SB94A-145A	260	77	182811	79.1000	3.0530	76.0470
SB94A-145A	270	77	182949	79.2000	3.0503	76.1497
SB94A-145A	280	77	183127	79.2000	3.0476	76.1524
SB94A-145A	290	77	183305	79.2000	3.0449	76.1551
SB94A-145A	300	77	183444	79.1000	3.0421	76.0579
SB94A-145A	310	77	183622	79.2000	3.0394	76.1606
SB94A-145A	320	77	183759	79.2000	3.0367	76.1633
SB94A-145A	330	77	183936	79.3000	3.0340	76.2660
SB94A-145A	340	77	184113	79.4000	3.0313	76.3687
SB94A-145A	350	77	184249	79.4000	3.0286	76.3714
SB94A-145A	360	77	184425	79.4000	3.0260	76.3740
SB94A-145A	370	77	184601	79.4000	3.0233	76.3767
SB94A-145A	380	77	184737	79.6000	3.0207	76.5793
SB94A-145A	390	77	184914	79.5000	3.0179	76.4821
SB94A-145A	400	77	185050	79.5000	3.0153	76.4847
SB94A-145A	410	77	185227	79.6000	3.0126	76.5874
SB94A-145A	420	77	185404	79.6000	3.0099	76.5901
SB94A-145A	430	77	185541	79.7000	3.0072	76.6928
SB94A-145A	440	77	185717	79.7000	3.0046	76.6954
SB94A-145A	450	77	185854	79.7000	3.0018	76.6982
SB94A-145A	460	77	190031	79.8000	2.9957	76.8043
SB94A-145A	470	77	190208	79.7000	2.9824	76.7176
SB94A-145A	480	77	190345	79.6000	2.9688	76.6312
SB94A-145A	490	77	190523	79.7000	2.9553	76.7447
SB94A-145A	500	77	190659	79.8000	2.9419	76.8581
SB94A-145A	510	77	190836	79.7000	2.9285	76.7715
SB94A-145A	520	77	191013	79.9000	2.9149	76.9851
SB94A-145A	530	77	191149	80.0000	2.9017	77.0983
SB94A-145A	540	77	191327	80.1000	2.8881	77.2119
SB94A-145A	550	77	191503	80.0000	2.8746	77.1254
SB94A-145A	560	77	191640	80.0000	2.8611	77.1389
SB94A-145A	570	77	191817	79.9000	2.8478	77.0522
SB94A-145A	580	77	191954	79.9000	2.8343	77.0657
SB94A-145A	590	77	192132	79.6000	2.8207	76.7793
SB94A-143	510	77	204023	79.3000	2.0962	77.2038
SB94A-143	500	77	204157	79.3000	2.0805	77.2195
SB94A-143	490	77	204330	79.2000	2.0652	77.1348
SB94A-143	480	77	204503	79.1000	2.0495	77.0505

SB94A-141	280	77	233929	76.6000	.6026	75.9974
SB94A-141	290	77	234100	76.6000	.5950	76.0050
SB94A-141	300	77	234232	76.4000	.5874	75.8126
SB94A-141	310	77	234406	76.8000	.5796	76.2204
SB94A-141	320	77	234539	76.9000	.5717	76.3283
SB94A-141	330	77	234712	77.0000	.5641	76.4359
SB94A-141	340	77	234848	77.1000	.5560	76.5440
SB94A-141	350	77	235024	77.1000	.5481	76.5519
SB94A-141	360	77	235200	77.2000	.5400	76.6600
SB94A-141	370	77	235337	77.1000	.5320	76.5680
SB94A-141	380	77	235514	77.2000	.5239	76.6761
SB94A-141	390	77	235650	77.2000	.5158	76.6842
SB94A-141	400	77	235827	77.3000	.5078	76.7922
SB94A-141	410	78	5	77.4000	.5001	76.8999
SB94A-141	420	78	143	77.5000	.5028	76.9972
SB94A-141	430	78	320	77.5000	.5055	76.9945
SB94A-141	440	78	458	77.5000	.5082	76.9918
SB94A-141	450	78	637	77.5000	.5110	76.9890
SB94A-141	460	78	814	77.6000	.5137	77.0863
SB94A-141	470	78	953	77.5000	.5164	76.9836
SB94A-141	480	78	1131	77.4000	.5192	76.8808
SB94A-141	490	78	1309	77.4000	.5219	76.8781
SB94A-141	500	78	1447	77.4000	.5246	76.8754
SB94A-141	510	78	1625	77.5000	.5273	76.9727
SB94A-141	520	78	1803	77.5000	.5301	76.9699
SB94A-141	530	78	1942	77.4000	.5328	76.8672
SB94A-141	540	78	2120	77.3000	.5356	76.7645
SB94A-141	550	78	2259	77.2000	.5383	76.6617
SB94A-141	560	78	2437	77.2000	.5410	76.6590
SB94A-141	570	78	2616	77.3000	.5437	76.7563
SB94A-141	580	78	2755	77.2000	.5465	76.6535
SB94A-141	590	78	2934	77.2000	.5493	76.6507
SB94A-141	600	78	3112	77.2000	.5520	76.6480
SB94A-128	120	78	24514	77.4000	1.3523	76.0477
SB94A-128	130	78	24647	77.6000	1.3677	76.2323
SB94A-128	140	78	24820	77.3000	1.3832	75.9168
SB94A-128	150	78	24953	77.5000	1.3988	76.1012
SB94A-128	160	78	25127	77.6000	1.4145	76.1855
SB94A-128	170	78	25300	77.6000	1.4298	76.1702
SB94A-128	180	78	25434	77.6000	1.4455	76.1545
SB94A-128	190	78	25607	77.5000	1.4612	76.0388
SB94A-128	200	78	25740	77.7000	1.4765	76.2235
SB94A-128	210	78	25912	77.5000	1.4920	76.0080
SB94A-128	220	78	30045	77.6000	1.5073	76.0927
SB94A-128	230	78	30217	77.6000	1.5228	76.0772
SB94A-128	240	78	30349	77.7000	1.5380	76.1620
SB94A-128	250	78	30521	77.6000	1.5533	76.0467
SB94A-128	260	78	30654	77.6000	1.5688	76.0312
SB94A-128	270	78	30826	77.7000	1.5842	76.1158
SB94A-128	280	78	30959	77.5000	1.5997	75.9003
SB94A-128	290	78	31131	77.8000	1.6150	76.1850
SB94A-128	300	78	31303	77.9000	1.6305	76.2695
SB94A-128	310	78	31435	77.9000	1.6457	76.2543
SB94A-128	320	78	31608	78.0000	1.6613	76.3387
SB94A-128	330	78	31741	78.0000	1.6767	76.3233
SB94A-128	340	78	31914	78.1000	1.6923	76.4077
SB94A-128	350	78	32046	78.1000	1.7075	76.3925
SB94A-128	360	78	32219	78.1000	1.7232	76.3768
SB94A-128	370	78	32352	78.2000	1.7387	76.4613
SB94A-128	380	78	32526	78.1000	1.7542	76.3458

SB94A-128	390	78	32701	78.2000	1.7702	76.4298
SB94A-128	400	78	32835	78.3000	1.7858	76.5142
SB94A-128	410	78	33009	78.2000	1.8013	76.3987
SB94A-128	420	78	33145	78.2000	1.8175	76.3825
SB94A-128	430	78	33320	78.2000	1.8332	76.3668
SB94A-128	440	78	33454	78.3000	1.8488	76.4512
SB94A-128	450	78	33629	78.3000	1.8647	76.4353
SB94A-128	460	78	33804	78.4000	1.8805	76.5195
SB94A-128	470	78	33939	78.3000	1.8965	76.4035
SB94A-128	480	78	34114	78.4000	1.9123	76.4877
SB94A-128	490	78	34249	78.5000	1.9282	76.5718
SB94A-128	500	78	34424	78.4000	1.9438	76.4562
SB94A-128	510	78	34559	78.5000	1.9597	76.5403
SB94A-128	520	78	34734	78.6000	1.9755	76.6245
SB94A-128	530	78	34909	78.5000	1.9915	76.5085
SB94A-128	540	78	35044	78.5000	2.0073	76.4927
SB94A-128	550	78	35219	78.6000	2.0232	76.5768
SB94A-128	560	78	35355	78.6000	2.0390	76.5610
SB94A-128	570	78	35530	78.7000	2.0550	76.6450
SB94A-128	580	78	35706	78.3000	2.0708	76.2292
SB94A-128	590	78	35841	78.6000	2.0867	76.5133
SB94A-128	600	78	40016	78.7000	2.1025	76.5975
SB94A-128	610	78	40151	78.7000	2.1185	76.5815
SB94A-128	620	78	40327	78.8000	2.1343	76.6657
SB94A-128	630	78	40503	78.8000	2.1503	76.6497
SB94A-128	640	78	40638	78.7000	2.1663	76.5337
SB94A-128	650	78	40814	78.8000	2.1822	76.6178
SB94A-128	660	78	40950	78.8000	2.1983	76.6017
SB94A-128	670	78	41126	78.9000	2.2142	76.6858
SB94A-128	680	78	41301	78.9000	2.2300	76.6700
SB94A-128	690	78	41437	78.9000	2.2462	76.6538
SB94A-128	700	78	41613	78.9000	2.2620	76.6380
SB94A-128	710	78	41749	78.9000	2.2782	76.6218
SB94A-128	720	78	41925	78.9000	2.2940	76.6060
SB94A-128	730	78	42101	78.9000	2.3100	76.5900
SB94A-128	740	78	42237	79.1000	2.3262	76.7738
SB94A-128	750	78	42412	79.2000	2.3418	76.8582
SB94A-128	760	78	42548	79.1000	2.3580	76.7420
SB94A-128	770	78	42724	79.0000	2.3738	76.6262
SB94A-128	780	78	42900	79.0000	2.3898	76.6102
SB94A-128	790	78	43036	79.1000	2.4060	76.6940
SB94A-128	800	78	43212	79.1000	2.4218	76.6782
SB94A-128	810	78	43348	79.1000	2.4380	76.6620
SB94A-128	820	78	43524	79.1000	2.4538	76.6462
SB94A-128	830	78	43659	79.1000	2.4697	76.6303
SB94A-128	840	78	43834	79.1000	2.4857	76.6143
SB94A-128	850	78	44009	79.1000	2.5015	76.5985
SB94A-128	860	78	44144	79.1000	2.5173	76.5827
SB94A-128	870	78	44319	79.2000	2.5330	76.6670
SB94A-128	880	78	44453	79.2000	2.5487	76.6513
SB94A-128	890	78	44628	79.2000	2.5645	76.6355
SB94A-128	900	78	44802	79.2000	2.5802	76.6198
SB94A-128	910	78	44938	79.2000	2.5963	76.6037
SB94A-128	920	78	45112	79.3000	2.6120	76.6880
SB94A-128	930	78	45247	79.3000	2.6278	76.6722
SB94A-128	940	78	45422	79.2000	2.6437	76.5563
SB94A-128	950	78	45557	79.2000	2.6593	76.5407
SB94A-128	960	78	45732	79.2000	2.6752	76.5248
SB94A-128	970	78	45907	79.2000	2.6910	76.5090
SB94A-128	980	78	50041	79.2000	2.7033	76.4967

SB94A-128	990	78	50215	79.3000	2.7112	76.5888
SB94A-128	1000	78	50349	79.1000	2.7190	76.3810
SB94A-128	1010	78	50523	79.2000	2.7268	76.4732
SB94A-128	1020	78	50657	79.2000	2.7348	76.4652
SB94A-128	1030	78	50832	79.2000	2.7426	76.4574
SB94A-126	610	78	62439	79.1000	3.0411	76.0589
SB94A-126	600	78	62614	79.2000	3.0437	76.1563
SB94A-126	590	78	62750	79.1000	3.0464	76.0536
SB94A-126	580	78	62925	79.1000	3.0490	76.0510
SB94A-126	570	78	63059	79.2000	3.0516	76.1484
SB94A-126	560	78	63233	79.2000	3.0542	76.1458
SB94A-126	550	78	63408	79.2000	3.0569	76.1431
SB94A-126	540	78	63542	79.2000	3.0595	76.1405
SB94A-126	530	78	63716	79.2000	3.0621	76.1379
SB94A-126	520	78	63851	79.2000	3.0647	76.1353
SB94A-126	510	78	64026	79.3000	3.0674	76.2326
SB94A-126	500	78	64200	79.3000	3.0700	76.2300
SB94A-126	490	78	64335	79.2000	3.0726	76.1274
SB94A-126	480	78	64510	79.2000	3.0753	76.1247
SB94A-126	470	78	64644	79.3000	3.0779	76.2221
SB94A-126	460	78	64819	79.3000	3.0805	76.2195
SB94A-126	450	78	64953	79.3000	3.0831	76.2169
SB94A-126	440	78	65127	79.4000	3.0857	76.3143
SB94A-126	430	78	65301	79.4000	3.0884	76.3116
SB94A-126	420	78	65434	79.3000	3.0909	76.2091
SB94A-126	410	78	65607	79.3000	3.0935	76.2065
SB94A-126	400	78	65740	79.3000	3.0961	76.2039
SB94A-126	390	78	65914	79.3000	3.0987	76.2013
SB94A-126	380	78	70047	79.3000	3.0961	76.2039
SB94A-126	370	78	70221	79.3000	3.0882	76.2118
SB94A-126	360	78	70355	79.1000	3.0804	76.0196
SB94A-126	350	78	70530	79.1000	3.0725	76.0275
SB94A-126	340	78	70703	79.2000	3.0647	76.1352
SB94A-126	330	78	70837	79.2000	3.0570	76.1430
SB94A-126	320	78	71011	79.1000	3.0492	76.0508
SB94A-126	310	78	71145	79.2000	3.0413	76.1587
SB94A-126	300	78	71319	79.1000	3.0335	76.0665
SB94A-126	290	78	71452	79.1000	3.0257	76.0743
SB94A-126	280	78	71625	79.1000	3.0180	76.0820
SB94A-126	270	78	71759	79.2000	3.0102	76.1898
SB94A-126	260	78	71932	79.1000	3.0023	76.0977
SB94A-126	250	78	72107	79.3000	2.9945	76.3055
SB94A-126	240	78	72239	79.2000	2.9868	76.2132
SB94A-126	230	78	72413	79.1000	2.9790	76.1210
SB94A-126	220	78	72547	79.1000	2.9712	76.1288
SB94A-126	210	78	72720	79.1000	2.9633	76.1367
SB94A-126	200	78	72853	79.1000	2.9556	76.1444
SB94A-126	190	78	73026	79.0000	2.9479	76.0521
SB94A-126	180	78	73158	78.9000	2.9402	75.9598
SB94A-126	170	78	73331	79.0000	2.9325	76.0675
SB94A-126	160	78	73504	79.1000	2.9247	76.1753
SB94A-126	150	78	73637	78.9000	2.9170	75.9830
SB94A-126	140	78	73809	78.9000	2.9093	75.9908
SB94A-126	130	78	73941	78.8000	2.9017	75.8983
SB94A-126	120	78	74114	78.7000	2.8938	75.8062
SB94A-126	110	78	74247	78.9000	2.8862	76.0138
SB94A-126	100	78	74420	78.8000	2.8783	75.9217
SB94A-126	90	78	74552	78.9000	2.8707	76.0293
SB94A-126	80	78	74724	78.9000	2.8630	76.0370
SB94A-126	70	78	74857	78.9000	2.8553	76.0447

SB94A-126	60	78	75029	78.9000	2.8476	76.0524
SB94A-126	50	78	75201	78.8000	2.8400	75.9600
SB94A-126	40	78	75334	78.8000	2.8322	75.9678
SB94A-104	1770	78	102144	73.3000	1.5190	71.7810
SB94A-104	1760	78	102317	73.4000	1.5060	71.8940
SB94A-104	1750	78	102449	73.3000	1.4933	71.8067
SB94A-104	1740	78	102623	73.3000	1.4803	71.8197
SB94A-104	1730	78	102756	73.1000	1.4672	71.6328
SB94A-104	1720	78	102928	73.0000	1.4546	71.5454
SB94A-104	1710	78	103101	73.1000	1.4415	71.6585
SB94A-104	1700	78	103234	73.1000	1.4288	71.6712
SB94A-104	1690	78	103407	72.9000	1.4158	71.4842
SB94A-104	1680	78	103540	73.0000	1.4028	71.5972
SB94A-104	1670	78	103713	72.8000	1.3900	71.4100
SB94A-104	1660	78	103846	72.6000	1.3769	71.2231
SB94A-104	1650	78	104018	72.5000	1.3643	71.1357
SB94A-104	1640	78	104151	72.5000	1.3513	71.1488
SB94A-104	1630	78	104324	72.4000	1.3383	71.0617
SB94A-104	1620	78	104457	72.4000	1.3256	71.0744
SB94A-104	1610	78	104630	72.1000	1.3125	70.7875
SB94A-104	1600	78	104802	72.1000	1.2999	70.8001
SB94A-104	1590	78	104935	72.1000	1.2868	70.8132
SB94A-104	1580	78	105107	72.0000	1.2742	70.7258
SB94A-104	1570	78	105240	72.0000	1.2611	70.7389
SB94A-104	1560	78	105412	71.9000	1.2485	70.6515
SB94A-104	1550	78	105545	71.8000	1.2354	70.5646
SB94A-104	1540	78	105718	71.7000	1.2226	70.4774
SB94A-104	1530	78	105850	71.6000	1.2097	70.3903
SB94A-104	1520	78	110024	71.6000	1.1980	70.4020
SB94A-104	1510	78	110156	71.5000	1.1903	70.3097
SB94A-104	1500	78	110329	71.4000	1.1826	70.2174
SB94A-104	1490	78	110502	71.2000	1.1749	70.0251
SB94A-104	1480	78	110635	71.2000	1.1671	70.0329
SB94A-104	1470	78	110808	70.9000	1.1594	69.7406
SB94A-104	1460	78	110940	70.9000	1.1517	69.7483
SB94A-104	1450	78	111112	70.7000	1.1441	69.5559
SB94A-104	1440	78	111245	70.6000	1.1363	69.4637
SB94A-104	1430	78	111418	70.4000	1.1286	69.2714
SB94A-104	1420	78	111551	70.4000	1.1208	69.2792
SB94A-104	1410	78	111724	70.3000	1.1130	69.1870
SB94A-104	1400	78	111857	70.1000	1.1053	68.9947
SB94A-104	1390	78	112030	69.9000	1.0975	68.8025
SB94A-104	1380	78	112203	69.7000	1.0898	68.6102
SB94A-104	1370	78	112336	69.6000	1.0821	68.5179
SB94A-104	1360	78	112509	69.4000	1.0742	68.3258
SB94A-104	1350	78	112642	69.4000	1.0666	68.3334
SB94A-104	1340	78	112815	69.3000	1.0588	68.2412
SB94A-104	1330	78	112948	69.2000	1.0510	68.1490
SB94A-104	1320	78	113121	69.3000	1.0433	68.2567
SB94A-104	1310	78	113254	69.1000	1.0355	68.0645
SB94A-104	1300	78	113428	69.1000	1.0277	68.0723
SB94A-104	1290	78	113601	68.9000	1.0200	67.8800
SB94A-104	1280	78	113734	68.8000	1.0122	67.7878
SB94A-104	1270	78	113908	68.7000	1.0044	67.6956
SB94A-104	1260	78	114041	68.6000	.9966	67.6034
SB94A-104	1250	78	114214	68.4000	.9889	67.4111
SB94A-104	1240	78	114348	68.2000	.9811	67.2189
SB94A-104	1230	78	114522	68.2000	.9732	67.2267
SB94A-104	1220	78	114657	67.9000	.9653	66.9347
SB94A-104	1210	78	114832	67.7000	.9574	66.7426

SB94A-104	1200	78	115006	67.5000	.9496	66.5504
SB94A-104	1190	78	115141	67.2000	.9417	66.2583
SB94A-104	1180	78	115315	67.1000	.9338	66.1662
SB94A-104	1170	78	115451	67.0000	.9257	66.0742
SB94A-104	1160	78	115625	66.9000	.9179	65.9821
SB94A-104	1150	78	115800	66.8000	.9100	65.8900
SB94A-104	1140	78	115935	66.6000	.9022	65.6978
SB94A-104	1130	78	120110	66.5000	.9000	65.6000
SB94A-104	1120	78	120244	66.2000	.9000	65.3000
SB94A-104	1110	78	120419	65.9000	.9000	65.0000
SB94A-104	1100	78	120554	66.0000	.9000	65.1000
SB94A-104	1090	78	120729	65.9000	.9000	65.0000
SB94A-104	1080	78	120903	65.7000	.9000	64.8000
SB94A-104	1070	78	121038	65.5000	.9000	64.6000
SB94A-104	1060	78	121213	65.5000	.9000	64.6000
SB94A-104	1050	78	121347	65.4000	.9000	64.5000
SB94A-104	1040	78	121523	65.3000	.9000	64.4000
SB94A-104	1030	78	121658	65.2000	.9000	64.3000
SB94A-104	1020	78	121833	65.3000	.9000	64.4000
SB94A-104	1010	78	122008	65.1000	.9000	64.2000
SB94A-104	1000	78	122144	65.2000	.9000	64.3000
SB94A-104	990	78	122320	65.0000	.9000	64.1000
SB94A-104	980	78	122455	65.2000	.9000	64.3000
SB94A-104	970	78	122631	65.5000	.9000	64.6000
SB94A-104	960	78	122806	65.0000	.9000	64.1000
SB94A-104	950	78	122942	65.3000	.9000	64.4000
SB94A-104	940	78	123118	65.1000	.9000	64.2000
SB94A-104	930	78	123254	64.9000	.9000	64.0000
SB94A-104	920	78	123429	64.9000	.9000	64.0000
SB94A-104	910	78	123606	65.1000	.9000	64.2000
SB94A-104	900	78	123741	64.7000	.9000	63.8000
SB94A-104	890	78	123918	64.8000	.9000	63.9000
SB94A-104	880	78	124054	64.7000	.9000	63.8000
SB94A-104	870	78	124230	64.8000	.9000	63.9000
SB94A-104	860	78	124407	64.8000	.9000	63.9000
SB94A-104	850	78	124544	64.8000	.9000	63.9000
SB94A-104	840	78	124721	64.9000	.9000	64.0000
SB94A-104	830	78	124858	64.6000	.9000	63.7000
SB94A-104	820	78	125035	64.8000	.9000	63.9000
SB94A-104	810	78	125212	64.5000	.9000	63.6000
SB94A-104	800	78	125349	64.7000	.9000	63.8000
SB94A-104	790	78	125526	64.6000	.9000	63.7000
SB94A-104	780	78	125704	64.4000	.9000	63.5000
SB94A-104	770	78	125841	64.4000	.9000	63.5000
SB94A-104	760	78	130019	64.2000	.9010	63.2990
SB94A-104	750	78	130157	64.0000	.9064	63.0936
SB94A-104	740	78	130334	63.9000	.9119	62.9881
SB94A-104	730	78	130512	63.9000	.9173	62.9827
SB94A-104	720	78	130651	63.7000	.9228	62.7772
SB94A-104	710	78	130829	63.7000	.9282	62.7718
SB94A-104	700	78	131007	63.9000	.9337	62.9663
SB94A-104	690	78	131144	63.6000	.9391	62.5609
SB94A-104	680	78	131323	63.5000	.9446	62.5554
SB94A-104	670	78	131500	63.3000	.9500	62.3500
SB94A-104	660	78	131636	63.3000	.9553	62.3447
SB94A-104	650	78	131813	63.0000	.9607	62.0393
SB94A-104	640	78	131950	63.1000	.9661	62.1339
SB94A-104	630	78	132127	62.9000	.9715	61.9285
SB94A-104	620	78	132304	63.0000	.9768	62.0232
SB94A-104	610	78	132442	62.6000	.9823	61.6177

SB94A-104	600	78	132619	62.8000	.9877	61.8123
SB94A-104	590	78	132759	62.9000	.9933	61.9067
SB94A-104	580	78	132933	62.7000	.9985	61.7015
SB94A-104	570	78	133110	62.8000	1.0038	61.7962
SB94A-104	560	78	133248	62.7000	1.0093	61.6907
SB94A-104	550	78	133425	62.9000	1.0147	61.8853
SB94A-104	540	78	133602	62.6000	1.0201	61.5799
SB94A-104	530	78	133740	62.3000	1.0256	61.2744
SB94A-104	520	78	133917	62.2000	1.0309	61.1691
SB94A-104	510	78	134055	62.0000	1.0363	60.9637
SB94A-104	500	78	134232	62.1000	1.0417	61.0583
SB94A-104	490	78	134409	61.9000	1.0472	60.8528
SB94A-104	480	78	134546	62.0000	1.0526	60.9474
SB94A-104	470	78	134724	61.9000	1.0580	60.8420
SB94A-104	460	78	134902	61.7000	1.0634	60.6366
SB94A-104	450	78	135038	61.7000	1.0687	60.6313
SB94A-104	440	78	135215	61.8000	1.0742	60.7258
SB94A-104	430	78	135351	61.7000	1.0794	60.6206
SB94A-104	420	78	135528	62.0000	1.0848	60.9152
SB94A-104	410	78	135706	61.8000	1.0903	60.7097
SB94A-104	400	78	135843	61.9000	1.0957	60.8043
SB94A-104	390	78	140021	61.9000	1.1029	60.7971
SB94A-104	380	78	140159	61.6000	1.1165	60.4835
SB94A-104	370	78	140336	61.7000	1.1300	60.5700
SB94A-104	360	78	140513	61.9000	1.1433	60.7567
SB94A-104	350	78	140650	61.8000	1.1569	60.6431
SB94A-104	340	78	140828	62.0000	1.1706	60.8294
SB94A-104	330	78	141007	61.8000	1.1842	60.6158
SB94A-104	320	78	141145	61.7000	1.1978	60.5022
SB94A-104	310	78	141324	61.8000	1.2117	60.5883
SB94A-104	300	78	141502	61.9000	1.2253	60.6747
SB94A-104	290	78	141642	61.8000	1.2390	60.5610
SB94A-104	280	78	141821	61.8000	1.2528	60.5472
SB94A-104	270	78	141959	61.8000	1.2664	60.5336
SB94A-104	260	78	142138	61.8000	1.2803	60.5197
SB94A-104	250	78	142316	61.7000	1.2939	60.4061
SB94A-104	240	78	142452	61.5000	1.3071	60.1929
SB94A-104	230	78	142628	61.5000	1.3206	60.1794
SB94A-104	220	78	142803	61.6000	1.3338	60.2662
SB94A-104	210	78	142939	61.9000	1.3469	60.5531
SB94A-104	200	78	143114	62.0000	1.3601	60.6399
SB94A-104	190	78	143248	61.9000	1.3732	60.5268
SB94A-104	180	78	143424	61.9000	1.3867	60.5133
SB94A-104	170	78	143558	61.6000	1.3997	60.2003
SB94A-104	160	78	143733	62.1000	1.4129	60.6871
SB94A-104	150	78	143908	62.1000	1.4260	60.6740
SB94A-104	140	78	144043	61.8000	1.4392	60.3608
SB94A-104	130	78	144218	62.2000	1.4524	60.7476
SB94A-104	120	78	144353	62.1000	1.4657	60.6343
SB94A-104	110	78	144528	62.1000	1.4789	60.6211
SB94A-104	100	78	144703	62.1000	1.4921	60.6079
SB94A-104	90	78	144837	62.2000	1.5051	60.6949
SB94A-104	80	78	145012	62.1000	1.5183	60.5817
SB94A-104	70	78	145146	62.3000	1.5314	60.7686
SB94A-104	60	78	145321	62.1000	1.5444	60.5556
SB94A-104	50	78	145456	61.6000	1.5576	60.0424
SB94A-104	40	78	145630	61.9000	1.5707	60.3293
SB94A-102	120	78	160346	60.4000	2.2313	58.1688
SB94A-102	130	78	160522	60.4000	2.2447	58.1553
SB94A-102	140	78	160659	60.6000	2.2581	58.3419

SB94A-102	150	78	160835	60.3000	2.2715	58.0285
SB94A-102	160	78	161011	60.8000	2.2847	58.5153
SB94A-102	170	78	161147	60.3000	2.2982	58.0018
SB94A-102	180	78	161324	60.6000	2.3117	58.2883
SB94A-102	190	78	161500	60.4000	2.3250	58.0750
SB94A-102	200	78	161634	60.6000	2.3381	58.2619
SB94A-102	210	78	161809	60.6000	2.3511	58.2489
SB94A-102	220	78	161943	60.7000	2.3643	58.3357
SB94A-102	230	78	162117	60.9000	2.3774	58.5226
SB94A-102	240	78	162251	61.0000	2.3904	58.6096
SB94A-102	250	78	162425	61.1000	2.4035	58.6965
SB94A-102	260	78	162601	61.1000	2.4167	58.6833
SB94A-102	270	78	162738	61.1000	2.4303	58.6697
SB94A-102	280	78	162915	61.3000	2.4438	58.8563
SB94A-102	290	78	163053	61.0000	2.4574	58.5426
SB94A-102	300	78	163229	61.1000	2.4706	58.6294
SB94A-102	310	78	163406	61.4000	2.4842	58.9158
SB94A-102	320	78	163544	61.3000	2.4978	58.8022
SB94A-102	330	78	163719	61.3000	2.5110	58.7890
SB94A-102	340	78	163851	61.4000	2.5236	58.8764
SB94A-102	350	78	164023	61.3000	2.5365	58.7635
SB94A-102	360	78	164154	61.3000	2.5492	58.7508
SB94A-102	370	78	164329	61.3000	2.5624	58.7376
SB94A-102	380	78	164504	61.4000	2.5754	58.8246
SB94A-102	390	78	164639	61.3000	2.5886	58.7114
SB94A-102	400	78	164814	61.2000	2.6018	58.5982
SB94A-102	410	78	164949	61.2000	2.6151	58.5849
SB94A-102	420	78	165123	61.5000	2.6282	58.8718
SB94A-102	430	78	165257	61.6000	2.6411	58.9589
SB94A-102	440	78	165430	61.3000	2.6540	58.6460
SB94A-102	450	78	165604	61.3000	2.6672	58.6328
SB94A-102	460	78	165737	61.6000	2.6801	58.9199
SB94A-102	470	78	165911	61.4000	2.6931	58.7069
SB94A-102	480	78	170045	61.3000	2.7049	58.5951
SB94A-102	490	78	170219	61.3000	2.7153	58.5847
SB94A-102	500	78	170352	61.2000	2.7258	58.4742
SB94A-102	510	78	170527	61.3000	2.7362	58.5638
SB94A-102	520	78	170701	61.2000	2.7467	58.4533
SB94A-102	530	78	170835	61.0000	2.7572	58.2428
SB94A-102	540	78	171009	60.7000	2.7677	57.9323
SB94A-102	550	78	171143	60.8000	2.7781	58.0219
SB94A-102	560	78	171317	60.9000	2.7886	58.1114
SB94A-102	570	78	171451	60.9000	2.7990	58.1010
SB94A-102	580	78	171626	60.7000	2.8096	57.8904
SB94A-102	590	78	171801	60.6000	2.8201	57.7799
SB94A-102	600	78	171936	61.0000	2.8306	58.1694
SB94A-102	610	78	172110	61.0000	2.8411	58.1589
SB94A-102	620	78	172245	60.8000	2.8516	57.9484
SB94A-102	630	78	172420	60.7000	2.8621	57.8379
SB94A-102	640	78	172556	60.9000	2.8729	58.0271
SB94A-102	650	78	172730	61.1000	2.8833	58.2167
SB94A-102	660	78	172906	61.1000	2.8939	58.2061
SB94A-102	670	78	173041	61.0000	2.9044	58.0956
SB94A-102	680	78	173217	61.1000	2.9152	58.1848
SB94A-102	690	78	173353	61.0000	2.9258	58.0742
SB94A-102	700	78	173527	61.2000	2.9362	58.2638
SB94A-102	710	78	173703	60.9000	2.9470	57.9530
SB94A-102	720	78	173838	61.2000	2.9576	58.2424
SB94A-102	730	78	174014	61.1000	2.9681	58.1319
SB94A-102	740	78	174150	61.2000	2.9789	58.2211

SB94A-102	750	78	174326	61.2000	2.9894	58.2106
SB94A-102	760	78	174502	61.2000	3.0002	58.1998
SB94A-102	770	78	174637	61.3000	3.0108	58.2892
SB94A-102	780	78	174812	61.3000	3.0213	58.2787
SB94A-102	790	78	174948	61.5000	3.0319	58.4681
SB94A-102	800	78	175123	61.5000	3.0426	58.4574
SB94A-102	810	78	175257	61.8000	3.0529	58.7471
SB94A-102	820	78	175433	61.9000	3.0637	58.8363
SB94A-102	830	78	175608	62.2000	3.0741	59.1259
SB94A-102	840	78	175744	62.0000	3.0849	58.9151
SB94A-102	850	78	175919	62.0000	3.0954	58.9046
SB94A-102	860	78	180054	62.1000	3.1000	59.0000
SB94A-102	870	78	180230	62.0000	3.1000	58.9000
SB94A-102	880	78	180407	62.1000	3.1000	59.0000
SB94A-102	890	78	180544	62.3000	3.1000	59.2000
SB94A-102	900	78	180720	62.1000	3.1000	59.0000
SB94A-102	910	78	180857	62.3000	3.1000	59.2000
SB94A-102	920	78	181033	62.3000	3.1000	59.2000
SB94A-102	930	78	181207	62.4000	3.1000	59.3000
SB94A-102	940	78	181341	62.6000	3.1000	59.5000
SB94A-102	950	78	181515	62.3000	3.1000	59.2000
SB94A-102	960	78	181650	62.5000	3.1000	59.4000
SB94A-102	970	78	181824	62.4000	3.1000	59.3000
SB94A-102	980	78	181958	62.5000	3.1000	59.4000
SB94A-102	990	78	182132	62.4000	3.1000	59.3000
SB94A-102	1000	78	182307	62.7000	3.1000	59.6000
SB94A-102	1010	78	182442	62.5000	3.1000	59.4000
SB94A-102	1020	78	182616	62.4000	3.1000	59.3000
SB94A-102	1030	78	182750	62.9000	3.1000	59.8000
SB94A-102	1040	78	182924	62.7000	3.1000	59.6000
SB94A-102	1050	78	183100	62.9000	3.1000	59.8000
SB94A-102	1060	78	183236	62.8000	3.1000	59.7000
SB94A-102	1070	78	183414	62.8000	3.1000	59.7000
SB94A-102	1080	78	183553	63.2000	3.1000	60.1000
SB94A-102	1090	78	183730	63.4000	3.1000	60.3000
SB94A-102	1100	78	183907	63.1000	3.1000	60.0000
SB94A-102	1110	78	184044	63.2000	3.1000	60.1000
SB94A-102	1120	78	184221	63.0000	3.1000	59.9000
SB94A-102	1130	78	184359	63.4000	3.1000	60.3000
SB94A-102	1140	78	184536	63.5000	3.1000	60.4000
SB94A-102	1150	78	184713	63.7000	3.1000	60.6000
SB94A-102	1160	78	184850	63.7000	3.1000	60.6000
SB94A-102	1170	78	185027	63.7000	3.1000	60.6000
SB94A-102	1180	78	185204	63.6000	3.1000	60.5000
SB94A-102	1190	78	185341	63.7000	3.1000	60.6000
SB94A-102	1200	78	185518	64.0000	3.1000	60.9000
SB94A-102	1210	78	185655	64.0000	3.1000	60.9000
SB94A-102	1220	78	185832	63.8000	3.1000	60.7000
SB94A-102	1230	78	190008	64.2000	3.0994	61.1006
SB94A-102	1240	78	190145	64.1000	3.0912	61.0087
SB94A-102	1250	78	190321	64.1000	3.0833	61.0167
SB94A-102	1260	78	190458	64.3000	3.0752	61.2248
SB94A-102	1270	78	190634	64.4000	3.0672	61.3328
SB94A-102	1280	78	190810	64.5000	3.0592	61.4408
SB94A-102	1290	78	190946	64.4000	3.0512	61.3488
SB94A-102	1300	78	191121	64.4000	3.0432	61.3568
SB94A-102	1310	78	191256	64.6000	3.0353	61.5647
SB94A-102	1320	78	191432	64.8000	3.0274	61.7726
SB94A-102	1330	78	191609	64.7000	3.0193	61.6807
SB94A-102	1340	78	191747	64.9000	3.0112	61.8888

SB94A-102	1350	78	191924	65.1000	3.0030	62.0970
SB94A-102	1360	78	192101	65.0000	2.9950	62.0050
SB94A-102	1370	78	192238	65.0000	2.9869	62.0131
SB94A-102	1380	78	192415	65.5000	2.9787	62.5213
SB94A-102	1390	78	192553	65.3000	2.9706	62.3294
SB94A-102	1400	78	192731	65.4000	2.9624	62.4376
SB94A-102	1410	78	192909	65.5000	2.9542	62.5457
SB94A-102	1420	78	193047	65.6000	2.9461	62.6539
SB94A-102	1430	78	193224	65.6000	2.9380	62.6620
SB94A-102	1440	78	193402	65.7000	2.9298	62.7702
SB94A-102	1450	78	193540	65.9000	2.9217	62.9783
SB94A-102	1460	78	193719	65.7000	2.9134	62.7866
SB94A-102	1470	78	193858	65.7000	2.9052	62.7947
SB94A-102	1480	78	194036	65.9000	2.8971	63.0029
SB94A-102	1490	78	194214	66.0000	2.8889	63.1111
SB94A-102	1500	78	194353	66.1000	2.8806	63.2194
SB94A-102	1510	78	194532	66.1000	2.8723	63.2277
SB94A-102	1520	78	194712	65.9000	2.8641	63.0359
SB94A-102	1530	78	194852	65.9000	2.8557	63.0443
SB94A-102	1540	78	195031	66.0000	2.8475	63.1525
SB94A-102	1550	78	195211	66.0000	2.8391	63.1609
SB94A-102	1560	78	195351	66.0000	2.8308	63.1692
SB94A-102	1570	78	195529	66.1000	2.8227	63.2773
SB94A-102	1580	78	195707	66.0000	2.8145	63.1855
SB94A-102	1590	78	195845	66.0000	2.8063	63.1937
SB94A-102	1600	78	200023	65.9000	2.7969	63.1031
SB94A-102	1610	78	200200	66.1000	2.7835	63.3165
SB94A-102	1620	78	200336	66.2000	2.7700	63.4300
SB94A-102	1630	78	200512	66.4000	2.7567	63.6433
SB94A-102	1640	78	200648	66.2000	2.7435	63.4565
SB94A-102	1650	78	200825	66.3000	2.7300	63.5700
SB94A-102	1660	78	201001	66.6000	2.7165	63.8835
SB94A-102	1670	78	201137	66.5000	2.7033	63.7967
SB94A-102	1680	78	201312	66.7000	2.6901	64.0099
SB94A-102	1690	78	201447	66.9000	2.6769	64.2231
SB94A-102	1700	78	201623	66.8000	2.6635	64.1365
SB94A-102	1710	78	201758	67.0000	2.6504	64.3496
SB94A-102	1720	78	201934	67.2000	2.6369	64.5630
SB94A-102	1730	78	202108	67.3000	2.6240	64.6760
SB94A-102	1740	78	202244	67.3000	2.6106	64.6894
SB94A-102	1750	78	202421	67.5000	2.5971	64.9029
SB94A-102	1760	78	202557	67.7000	2.5839	65.1161
SB94A-102	1770	78	202733	67.7000	2.5706	65.1294
SB94A-102	1780	78	202909	67.8000	2.5571	65.2429
SB94A-102	1790	78	203045	67.9000	2.5439	65.3561
SB94A-102	1800	78	203219	67.8000	2.5308	65.2692
SB94A-102	1810	78	203355	67.7000	2.5174	65.1826
SB94A-102	1820	78	203530	67.6000	2.5042	65.0958
SB94A-102	1830	78	203705	67.5000	2.4911	65.0089
SB94A-124	1270	78	221352	71.9000	1.5615	70.3385
SB94A-124	1260	78	221527	71.8000	1.5457	70.2543
SB94A-124	1250	78	221704	71.8000	1.5295	70.2705
SB94A-124	1240	78	221840	71.7000	1.5133	70.1867
SB94A-124	1230	78	222017	71.7000	1.4973	70.2027
SB94A-124	1220	78	222152	71.6000	1.4813	70.1187
SB94A-124	1210	78	222322	71.6000	1.4665	70.1335
SB94A-124	1200	78	222452	71.7000	1.4515	70.2485
SB94A-124	1190	78	222622	71.5000	1.4363	70.0637
SB94A-124	1180	78	222753	71.5000	1.4213	70.0787
SB94A-124	1170	78	222923	71.4000	1.4062	69.9938

SB94A-124	1160	78	223057	71.3000	1.3905	69.9095
SB94A-124	1150	78	223230	71.4000	1.3752	70.0248
SB94A-124	1140	78	223403	71.5000	1.3595	70.1405
SB94A-124	1130	78	223536	71.1000	1.3440	69.7560
SB94A-124	1120	78	223712	71.2000	1.3282	69.8718
SB94A-124	1110	78	223847	71.1000	1.3123	69.7877
SB94A-124	1100	78	224021	71.0000	1.2967	69.7033
SB94A-124	1090	78	224156	71.0000	1.2808	69.7192
SB94A-124	1080	78	224330	70.8000	1.2652	69.5348
SB94A-124	1070	78	224504	70.7000	1.2495	69.4505
SB94A-124	1060	78	224638	70.8000	1.2338	69.5662
SB94A-124	1050	78	224813	70.7000	1.2180	69.4820
SB94A-124	1040	78	224948	70.6000	1.2022	69.3978
SB94A-124	1030	78	225123	70.6000	1.1862	69.4138
SB94A-124	1020	78	225257	70.6000	1.1707	69.4293
SB94A-124	1010	78	225431	70.6000	1.1550	69.4450
SB94A-124	1000	78	225606	70.5000	1.1390	69.3610
SB94A-124	990	78	225741	70.3000	1.1232	69.1768
SB94A-124	980	78	225917	70.1000	1.1073	68.9927
SB94A-124	970	78	230053	69.9000	1.0926	68.8074
SB94A-124	960	78	230228	69.8000	1.0794	68.7206
SB94A-124	950	78	230405	70.0000	1.0660	68.9340
SB94A-124	940	78	230540	69.6000	1.0528	68.5472
SB94A-124	930	78	230715	69.6000	1.0396	68.5604
SB94A-124	920	78	230851	69.3000	1.0264	68.2736
SB94A-124	910	78	231026	69.3000	1.0132	68.2868
SB94A-124	900	78	231201	69.3000	.9999	68.3001
SB94A-124	890	78	231336	69.1000	.9867	68.1133
SB94A-124	880	78	231511	69.1000	.9736	68.1264
SB94A-124	870	78	231646	69.0000	.9604	68.0396
SB94A-124	860	78	231821	69.0000	.9472	68.0528
SB94A-124	850	78	231957	68.9000	.9338	67.9663
SB94A-124	840	78	232133	68.5000	.9206	67.5794
SB94A-124	830	78	232310	68.4000	.9071	67.4929
SB94A-124	820	78	232445	68.4000	.8939	67.5061
SB94A-124	810	78	232622	68.4000	.8803	67.5197
SB94A-124	800	78	232755	68.5000	.8674	67.6326
SB94A-124	790	78	232928	68.5000	.8546	67.6454
SB94A-124	780	78	233101	68.5000	.8415	67.6585
SB94A-124	770	78	233233	68.1000	.8289	67.2711
SB94A-124	760	78	233405	68.4000	.8160	67.5840
SB94A-124	750	78	233538	68.2000	.8032	67.3968
SB94A-124	740	78	233711	68.1000	.7901	67.3099
SB94A-124	730	78	233843	68.1000	.7775	67.3225
SB94A-124	720	78	234014	68.0000	.7649	67.2351
SB94A-124	710	78	234146	67.8000	.7519	67.0481
SB94A-124	700	78	234318	67.6000	.7392	66.8608
SB94A-124	690	78	234450	67.6000	.7265	66.8735
SB94A-124	680	78	234623	67.5000	.7135	66.7865
SB94A-124	670	78	234756	67.3000	.7007	66.5993
SB94A-124	660	78	234929	67.1000	.6878	66.4122
SB94A-124	650	78	235101	67.2000	.6750	66.5250
SB94A-124	640	78	235233	67.0000	.6621	66.3379
SB94A-124	630	78	235406	66.6000	.6493	65.9507
SB94A-124	620	78	235538	66.8000	.6364	66.1636
SB94A-124	610	78	235711	66.6000	.6236	65.9764
SB94A-124	600	78	235843	66.4000	.6107	65.7893
SB94A-124	590	79	17	66.6000	.5995	66.0005
SB94A-124	580	79	151	66.1000	.5969	65.5031
SB94A-124	570	79	323	66.2000	.5944	65.6056

SB94A-124	560	79	456	66.1000	.5918	65.5082
SB94A-124	550	79	628	65.8000	.5892	65.2108
SB94A-124	540	79	801	65.9000	.5866	65.3134
SB94A-124	530	79	934	65.8000	.5841	65.2159
SB94A-124	520	79	1109	65.6000	.5814	65.0186
SB94A-124	510	79	1242	65.5000	.5788	64.9212
SB94A-124	500	79	1416	65.4000	.5762	64.8238
SB94A-124	490	79	1549	65.3000	.5736	64.7264
SB94A-124	480	79	1723	65.3000	.5711	64.7290
SB94A-124	470	79	1859	65.4000	.5684	64.8316
SB94A-124	460	79	2034	65.2000	.5658	64.6342
SB94A-124	450	79	2209	64.9000	.5631	64.3369
SB94A-124	440	79	2344	64.8000	.5605	64.2395
SB94A-124	430	79	2518	64.7000	.5579	64.1421
SB94A-124	420	79	2653	64.7000	.5552	64.1448
SB94A-124	410	79	2829	64.5000	.5525	63.9475
SB94A-124	400	79	3005	64.4000	.5499	63.8501
SB94A-124	390	79	3141	64.2000	.5472	63.6528
SB94A-124	380	79	3317	64.3000	.5446	63.7554
SB94A-124	370	79	3452	64.1000	.5419	63.5581
SB94A-124	360	79	3629	64.0000	.5392	63.4608
SB94A-124	350	79	3804	63.6000	.5366	63.0634
SB94A-124	340	79	3940	63.9000	.5339	63.3661
SB94A-124	330	79	4117	63.6000	.5312	63.0688
SB94A-124	320	79	4252	63.6000	.5286	63.0714
SB94A-124	310	79	4427	63.5000	.5259	62.9741
SB94A-124	300	79	4602	63.4000	.5233	62.8767
SB94A-124	290	79	4738	63.3000	.5206	62.7794
SB94A-124	280	79	4914	63.5000	.5179	62.9821
SB94A-124	270	79	5048	63.3000	.5153	62.7847
SB94A-124	260	79	5223	63.5000	.5127	62.9873
SB94A-124	250	79	5359	63.4000	.5100	62.8900
SB94A-124	240	79	5534	63.6000	.5074	63.0926
SB94A-124	230	79	5710	63.8000	.5048	63.2952
SB94A-124	220	79	5845	63.1000	.5021	62.5979
SB94A-124	210	79	10021	63.5000	.5006	62.9994
SB94A-124	200	79	10157	63.4000	.5032	62.8968
SB94A-124	190	79	10333	63.5000	.5059	62.9941
SB94A-124	180	79	10509	63.4000	.5086	62.8914
SB94A-124	170	79	10645	63.1000	.5113	62.5887
SB94A-124	160	79	10820	63.2000	.5139	62.6861
SB94A-124	150	79	10957	63.3000	.5166	62.7834
SB94A-124	140	79	11133	63.2000	.5192	62.6808
SB94A-124	130	79	11309	63.3000	.5219	62.7781
SB94A-124	120	79	11445	62.9000	.5246	62.3754
SB94A-124	110	79	11621	63.1000	.5272	62.5728
SB94A-124	100	79	11757	63.1000	.5299	62.5701
SB94A-124	90	79	11933	63.2000	.5326	62.6674
SB94A-124	80	79	12108	63.0000	.5352	62.4648
SB94A-124	70	79	12243	62.6000	.5379	62.0621
SB94A-124	60	79	12417	62.8000	.5404	62.2596
SB94A-124	50	79	12552	62.5000	.5431	61.9569
SB94A-124	40	79	12727	62.3000	.5458	61.7542
SB94A-108	520	79	25813	67.0000	1.0851	65.9149
SB94A-108	510	79	25949	66.9000	1.0985	65.8015
SB94A-108	500	79	30124	66.8000	1.1138	65.6862
SB94A-108	490	79	30301	66.9000	1.1302	65.7698
SB94A-108	480	79	30438	66.6000	1.1463	65.4537
SB94A-108	470	79	30613	66.2000	1.1622	65.0378
SB94A-108	460	79	30749	66.5000	1.1780	65.3220

SB94A-108	450	79	30924	66.3000	1.1938	65.1062
SB94A-108	440	79	31059	66.5000	1.2098	65.2902
SB94A-108	430	79	31234	66.1000	1.2257	64.8743
SB94A-108	420	79	31410	65.8000	1.2415	64.5585
SB94A-108	410	79	31546	65.8000	1.2577	64.5423
SB94A-108	400	79	31722	65.8000	1.2735	64.5265
SB94A-108	390	79	31859	65.8000	1.2898	64.5102
SB94A-108	380	79	32036	65.9000	1.3060	64.5940
SB94A-108	370	79	32211	65.7000	1.3218	64.3782
SB94A-108	360	79	32346	65.3000	1.3377	63.9623
SB94A-108	350	79	32522	65.5000	1.3535	64.1465
SB94A-108	340	79	32655	65.7000	1.3690	64.3310
SB94A-108	330	79	32830	65.6000	1.3848	64.2152
SB94A-108	320	79	33004	65.7000	1.4005	64.2995
SB94A-108	310	79	33139	65.4000	1.4163	63.9837
SB94A-108	300	79	33313	65.3000	1.4320	63.8680
SB94A-108	290	79	33448	65.5000	1.4478	64.0522
SB94A-108	280	79	33624	65.5000	1.4640	64.0360
SB94A-108	270	79	33800	65.3000	1.4798	63.8202
SB94A-108	260	79	33936	65.5000	1.4960	64.0040
SB94A-108	250	79	34111	65.2000	1.5118	63.6882
SB94A-108	240	79	34246	65.1000	1.5275	63.5725
SB94A-108	230	79	34421	65.2000	1.5433	63.6567
SB94A-108	220	79	34556	65.0000	1.5592	63.4408
SB94A-108	210	79	34731	65.0000	1.5752	63.4248
SB94A-108	200	79	34904	65.0000	1.5905	63.4095
SB94A-108	190	79	35038	64.7000	1.6062	63.0938
SB94A-108	180	79	35213	65.0000	1.6220	63.3780
SB94A-108	170	79	35351	65.0000	1.6383	63.3617
SB94A-108	160	79	35529	64.8000	1.6547	63.1453
SB94A-108	150	79	35706	64.7000	1.6708	63.0292
SB94A-108	140	79	35841	64.5000	1.6867	62.8133
SB94A-108	130	79	40017	65.2000	1.7028	63.4972
SB94A-108	120	79	40154	64.7000	1.7188	62.9812
SB94A-108	110	79	40329	64.9000	1.7348	63.1652
SB94A-108	100	79	40504	64.5000	1.7507	62.7493
SB94A-108	90	79	40638	64.0000	1.7663	62.2337
SB94A-108	80	79	40814	64.0000	1.7822	62.2178
SB94A-108	70	79	40949	64.2000	1.7980	62.4020
SB94A-108	60	79	41125	64.1000	1.8142	62.2858
SB94A-108	50	79	41300	64.5000	1.8300	62.6700
SB94A-108	40	79	41432	64.2000	1.8452	62.3548
SB94A-106	120	79	52857	63.8000	2.5895	61.2105
SB94A-106	130	79	53034	63.7000	2.6055	61.0945
SB94A-106	140	79	53210	63.9000	2.6217	61.2783
SB94A-106	150	79	53348	63.8000	2.6380	61.1620
SB94A-106	160	79	53523	64.0000	2.6537	61.3463
SB94A-106	170	79	53658	64.3000	2.6695	61.6305
SB94A-106	180	79	53834	64.5000	2.6857	61.8143
SB94A-106	190	79	54010	63.7000	2.7015	60.9985
SB94A-106	200	79	54149	64.6000	2.7180	61.8820
SB94A-106	210	79	54329	64.2000	2.7348	61.4652
SB94A-106	220	79	54504	64.2000	2.7505	61.4495
SB94A-106	230	79	54638	64.7000	2.7662	61.9338
SB94A-106	240	79	54814	64.9000	2.7822	62.1178
SB94A-106	250	79	54950	64.6000	2.7983	61.8017
SB94A-106	260	79	55124	65.0000	2.8140	62.1860
SB94A-106	270	79	55259	64.8000	2.8298	61.9702
SB94A-106	280	79	55436	64.9000	2.8460	62.0540
SB94A-106	290	79	55614	65.3000	2.8623	62.4377

SB94A-106	300	79	55749	65.4000	2.8782	62.5218
SB94A-106	310	79	55924	65.5000	2.8938	62.6062
SB94A-106	320	79	60103	65.7000	2.9034	62.7966
SB94A-106	330	79	60241	65.4000	2.9089	62.4911
SB94A-106	340	79	60419	65.5000	2.9143	62.5857
SB94A-106	350	79	60555	65.5000	2.9197	62.5803
SB94A-106	360	79	60733	65.7000	2.9252	62.7748
SB94A-106	370	79	60912	65.5000	2.9306	62.5694
SB94A-106	380	79	61047	65.6000	2.9359	62.6641
SB94A-106	390	79	61222	65.6000	2.9412	62.6588
SB94A-106	400	79	61357	65.7000	2.9465	62.7535
SB94A-106	410	79	61531	65.7000	2.9517	62.7483
SB94A-106	420	79	61711	65.7000	2.9572	62.7428
SB94A-106	430	79	61849	66.0000	2.9627	63.0373
SB94A-106	440	79	62026	66.0000	2.9681	63.0319
SB94A-106	450	79	62204	65.9000	2.9736	62.9264
SB94A-106	460	79	62341	65.8000	2.9789	62.8211
SB94A-106	470	79	62519	66.0000	2.9844	63.0156
SB94A-106	480	79	62657	66.5000	2.9898	63.5102
SB94A-106	490	79	62835	66.3000	2.9953	63.3047
SB94A-106	500	79	63014	66.1000	3.0008	63.0992
SB94A-106	510	79	63152	66.4000	3.0062	63.3938
SB94A-106	520	79	63328	66.2000	3.0115	63.1885
SB94A-106	530	79	63506	66.9000	3.0169	63.8831
SB94A-106	540	79	63645	66.5000	3.0225	63.4775
SB94A-106	550	79	63824	66.8000	3.0280	63.7720
SB94A-106	560	79	64004	66.9000	3.0335	63.8665
SB94A-106	570	79	64145	67.3000	3.0391	64.2609
SB94A-106	580	79	64324	66.8000	3.0447	63.7553
SB94A-106	590	79	64505	67.4000	3.0502	64.3498
SB94A-106	600	79	64645	67.5000	3.0558	64.4442
SB94A-106	610	79	64824	67.4000	3.0613	64.3387
SB94A-106	620	79	65001	67.6000	3.0667	64.5333
SB94A-106	630	79	65140	67.5000	3.0722	64.4278
SB94A-106	640	79	65321	67.4000	3.0778	64.3222
SB94A-106	650	79	65501	67.9000	3.0834	64.8166
SB94A-106	660	79	65641	67.9000	3.0889	64.8111
SB94A-106	670	79	65819	67.9000	3.0943	64.8057
SB94A-106	680	79	65958	68.0000	3.0998	64.9002
SB94A-106	690	79	70139	68.0000	3.0973	64.9027
SB94A-106	700	79	70317	68.2000	3.0946	65.1054
SB94A-106	710	79	70454	68.2000	3.0919	65.1081
SB94A-106	720	79	70631	68.1000	3.0891	65.0109
SB94A-106	730	79	70810	68.3000	3.0864	65.2136
SB94A-106	740	79	70950	68.2000	3.0836	65.1164
SB94A-106	750	79	71131	68.4000	3.0808	65.3192
SB94A-106	760	79	71313	68.6000	3.0780	65.5220
SB94A-106	770	79	71451	69.1000	3.0752	66.0247
SB94A-106	780	79	71631	69.1000	3.0725	66.0275
SB94A-106	790	79	71811	69.5000	3.0697	66.4303
SB94A-125	420	79	85538	69.6000	2.7218	66.8782
SB94A-125	410	79	85716	69.2000	2.7137	66.4863
SB94A-125	400	79	85852	68.8000	2.7057	66.0943
SB94A-125	390	79	90027	68.5000	2.6957	65.8043
SB94A-125	380	79	90201	68.1000	2.6800	65.4200
SB94A-125	370	79	90336	67.8000	2.6640	65.1360
SB94A-125	360	79	90510	67.6000	2.6485	64.9515
SB94A-125	350	79	90645	67.2000	2.6325	64.5675
SB94A-125	340	79	90819	67.1000	2.6168	64.4832
SB94A-125	330	79	90953	66.7000	2.6013	64.0987

SB94A-125	320	79	91129	66.5000	2.5852	63.9148
SB94A-125	310	79	91303	66.1000	2.5695	63.5305
SB94A-125	300	79	91437	65.9000	2.5538	63.3462
SB94A-125	290	79	91611	65.6000	2.5382	63.0618
SB94A-125	280	79	91745	65.4000	2.5227	62.8773
SB94A-125	270	79	91918	65.1000	2.5072	62.5928
SB94A-125	260	79	92051	64.7000	2.4915	62.2085
SB94A-125	250	79	92224	64.3000	2.4762	61.8238
SB94A-125	240	79	92358	64.4000	2.4605	61.9395
SB94A-125	230	79	92531	63.9000	2.4448	61.4552
SB94A-125	220	79	92705	63.4000	2.4292	60.9708
SB94A-125	210	79	92839	63.2000	2.4135	60.7865
SB94A-125	200	79	93013	63.0000	2.3978	60.6022
SB94A-125	190	79	93147	62.7000	2.3823	60.3177
SB94A-125	180	79	93321	62.5000	2.3667	60.1333
SB94A-125	170	79	93455	62.2000	2.3510	59.8490
SB94A-125	160	79	93629	61.9000	2.3353	59.5647
SB94A-125	150	79	93802	61.8000	2.3197	59.4803
SB94A-125	140	79	93935	61.5000	2.3043	59.1957
SB94A-125	130	79	94109	61.2000	2.2887	58.9113
SB94A-125	120	79	94243	60.9000	2.2730	58.6270
SB94A-125	110	79	94417	60.5000	2.2573	58.2427
SB94A-125	100	79	94550	60.5000	2.2417	58.2583
SB94A-125	90	79	94724	59.9000	2.2260	57.6740
SB94A-125	80	79	94857	59.5000	2.2107	57.2893
SB94A-125	70	79	95031	59.0000	2.1950	56.8050
SB94A-125	60	79	95204	58.7000	2.1793	56.5207
SB94A-125	50	79	95338	58.1000	2.1637	55.9363
SB94A-125	40	79	95513	57.5000	2.1478	55.3522
SB94A-129	120	79	111833	61.3000	1.4454	59.8546
SB94A-129	130	79	112011	61.5000	1.4318	60.0682
SB94A-129	140	79	112152	61.8000	1.4178	60.3822
SB94A-129	150	79	112334	62.1000	1.4036	60.6964
SB94A-129	160	79	112513	62.5000	1.3899	61.1101
SB94A-129	170	79	112656	62.8000	1.3757	61.4243
SB94A-129	180	79	112835	62.7000	1.3618	61.3382
SB94A-129	190	79	113015	63.1000	1.3481	61.7519
SB94A-129	200	79	113154	63.2000	1.3343	61.8657
SB94A-129	210	79	113329	63.5000	1.3210	62.1790
SB94A-129	220	79	113502	63.7000	1.3082	62.3918
SB94A-129	230	79	113636	63.9000	1.2951	62.6049
SB94A-129	240	79	113812	64.6000	1.2817	63.3183
SB94A-129	250	79	113951	64.6000	1.2679	63.3321
SB94A-129	260	79	114130	65.0000	1.2543	63.7457
SB94A-129	270	79	114307	65.1000	1.2407	63.8593
SB94A-129	280	79	114444	65.5000	1.2272	64.2728
SB94A-129	290	79	114621	65.9000	1.2139	64.6861
SB94A-129	300	79	114756	66.1000	1.2007	64.8993
SB94A-129	310	79	114932	66.4000	1.1872	65.2128
SB94A-129	320	79	115109	66.5000	1.1738	65.3262
SB94A-129	330	79	115244	66.7000	1.1606	65.5394
SB94A-129	340	79	115421	67.2000	1.1471	66.0529
SB94A-129	350	79	115554	67.5000	1.1343	66.3657
SB94A-129	360	79	115729	68.0000	1.1211	66.8789
SB94A-129	370	79	115906	68.4000	1.1076	67.2924
SB94A-129	380	79	120039	68.6000	1.0978	67.5022
SB94A-129	390	79	120214	69.0000	1.0926	67.9074
SB94A-129	400	79	120349	69.5000	1.0873	68.4127
SB94A-129	410	79	120529	69.6000	1.0817	68.5183
SB94A-129	420	79	120708	69.7000	1.0762	68.6238

SB94A-129	430	79	120841	70.1000	1.0711	69.0289
SB94A-129	440	79	121015	70.4000	1.0659	69.3341
SB94A-129	450	79	121149	70.6000	1.0607	69.5393
SB94A-129	460	79	121326	70.8000	1.0553	69.7447
SB94A-129	470	79	121501	71.3000	1.0500	70.2500
SB94A-129	480	79	121634	71.3000	1.0448	70.2552
SB94A-129	490	79	121812	71.8000	1.0393	70.7607
SB94A-129	500	79	121946	71.7000	1.0341	70.6659
SB94A-129	510	79	122120	72.1000	1.0289	71.0711
SB94A-129	520	79	122256	72.2000	1.0236	71.1764
SB94A-129	530	79	122436	72.2000	1.0180	71.1820
SB94A-129	540	79	122614	72.5000	1.0126	71.4874
SB94A-129	550	79	122751	72.6000	1.0072	71.5928
SB94A-129	560	79	122922	72.9000	1.0021	71.8979
SB94A-129	570	79	123101	72.9000	.9966	71.9034
SB94A-129	580	79	123235	72.9000	.9914	71.9086
SB94A-129	590	79	123414	73.2000	.9859	72.2141
SB94A-129	600	79	123553	73.1000	.9804	72.1196
SB94A-129	610	79	123730	73.2000	.9750	72.2250
SB94A-129	620	79	123908	73.4000	.9696	72.4304
SB94A-129	630	79	124048	73.2000	.9640	72.2360
SB94A-129	640	79	124225	73.3000	.9587	72.3413
SB94A-129	650	79	124402	73.4000	.9533	72.4467
SB94A-129	660	79	124539	73.4000	.9478	72.4522
SB94A-129	670	79	124717	73.3000	.9424	72.3576
SB94A-129	680	79	124852	72.9000	.9371	71.9629
SB94A-129	690	79	125026	72.8000	.9319	71.8681
SB94A-129	700	79	125201	73.2000	.9267	72.2733
SB94A-129	710	79	125337	73.4000	.9213	72.4787
SB94A-129	720	79	125513	73.4000	.9159	72.4841
SB94A-129	730	79	125652	73.8000	.9105	72.8895
SB94A-133	390	79	142537	70.2000	1.0708	69.1292
SB94A-133	380	79	142712	69.9000	1.0813	68.8187
SB94A-133	370	79	142848	69.1000	1.0919	68.0081
SB94A-133	360	79	143023	68.6000	1.1024	67.4976
SB94A-133	350	79	143158	68.6000	1.1131	67.4869
SB94A-133	340	79	143334	68.4000	1.1238	67.2762
SB94A-133	330	79	143510	68.0000	1.1343	66.8657
SB94A-133	320	79	143646	67.5000	1.1451	66.3549
SB94A-133	310	79	143822	67.2000	1.1557	66.0443
SB94A-133	300	79	143958	66.9000	1.1664	65.7336
SB94A-133	290	79	144136	66.6000	1.1773	65.4227
SB94A-133	280	79	144313	66.0000	1.1881	64.8119
SB94A-133	270	79	144448	65.8000	1.1987	64.6013
SB94A-133	260	79	144623	65.5000	1.2092	64.2908
SB94A-133	250	79	144800	65.2000	1.2200	63.9800
SB94A-133	240	79	144936	65.2000	1.2306	63.9694
SB94A-133	230	79	145112	65.1000	1.2413	63.8587
SB94A-133	220	79	145248	64.9000	1.2520	63.6480
SB94A-133	210	79	145424	64.6000	1.2626	63.3374
SB94A-133	200	79	145600	64.4000	1.2733	63.1267
SB94A-133	190	79	145737	64.0000	1.2841	62.7159
SB94A-133	180	79	145915	63.9000	1.2950	62.6050
SB94A-133	170	79	150051	63.8000	1.3069	62.4931
SB94A-133	160	79	150226	63.5000	1.3201	62.1799
SB94A-133	150	79	150401	63.1000	1.3333	61.7667
SB94A-133	140	79	150535	63.0000	1.3464	61.6536
SB94A-133	130	79	150710	62.8000	1.3596	61.4404
SB94A-133	120	79	150844	62.4000	1.3726	61.0274
SB94A-133	110	79	151018	62.2000	1.3857	60.8143

SB94A-133	100	79	151153	61.8000	1.3989	60.4011
SB94A-133	90	79	151328	61.7000	1.4122	60.2878
SB94A-133	80	79	151502	61.1000	1.4253	59.6747
SB94A-133	70	79	151636	60.7000	1.4382	59.2618
SB94A-133	60	79	151808	60.5000	1.4511	59.0489
SB94A-133	50	79	151943	60.2000	1.4643	58.7357
SB94A-133	40	79	152118	59.6000	1.4774	58.1226
SB94A-137	120	79	164835	63.9000	2.2857	61.6143
SB94A-137	130	79	165004	64.1000	2.3007	61.7993
SB94A-137	140	79	165133	64.5000	2.3153	62.1847
SB94A-137	150	79	165301	64.7000	2.3302	62.3698
SB94A-137	160	79	165432	65.0000	2.3453	62.6547
SB94A-137	170	79	165601	65.2000	2.3600	62.8400
SB94A-137	180	79	165734	65.3000	2.3757	62.9243
SB94A-137	190	79	165910	65.7000	2.3915	63.3085
SB94A-137	200	79	170045	65.9000	2.4061	63.4939
SB94A-137	210	79	170220	66.3000	2.4194	63.8806
SB94A-137	220	79	170356	66.8000	2.4326	64.3674
SB94A-137	230	79	170529	67.0000	2.4457	64.5543
SB94A-137	240	79	170702	67.4000	2.4585	64.9415
SB94A-137	250	79	170841	68.0000	2.4724	65.5276
SB94A-137	260	79	171022	68.3000	2.4863	65.8138
SB94A-137	270	79	171159	68.7000	2.4997	66.2003
SB94A-137	280	79	171335	69.2000	2.5132	66.6868
SB94A-137	290	79	171512	69.5000	2.5265	66.9735
SB94A-137	300	79	171651	70.0000	2.5404	67.4596
SB94A-137	310	79	171830	70.1000	2.5542	67.5458
SB94A-137	320	79	172006	70.6000	2.5674	68.0326
SB94A-137	330	79	172145	70.8000	2.5813	68.2188
SB94A-137	340	79	172321	71.2000	2.5944	68.6056
SB94A-137	350	79	172457	71.5000	2.6079	68.8921
SB94A-137	360	79	172631	71.9000	2.6208	69.2792
SB94A-137	370	79	172806	72.1000	2.6342	69.4658
SB94A-137	380	79	172942	72.3000	2.6474	69.6526
SB94A-137	390	79	173117	72.7000	2.6606	70.0394
SB94A-137	400	79	173253	73.0000	2.6740	70.3260
SB94A-137	410	79	173429	73.2000	2.6872	70.5128
SB94A-137	420	79	173607	73.4000	2.7008	70.6992
SB94A-137	430	79	173742	73.3000	2.7140	70.5860
SB94A-137	440	79	173919	74.0000	2.7275	71.2725
SB94A-137	450	79	174057	74.0000	2.7411	71.2589
SB94A-137	460	79	174233	74.1000	2.7544	71.3456
SB94A-137	470	79	174408	74.2000	2.7678	71.4322
SB94A-137	480	79	174545	74.5000	2.7811	71.7189
SB94A-137	490	79	174722	74.8000	2.7946	72.0054
SB94A-137	500	79	174856	75.0000	2.8076	72.1924
SB94A-137	510	79	175032	75.0000	2.8210	72.1790
SB94A-137	520	79	175208	75.2000	2.8344	72.3656
SB94A-137	530	79	175346	75.3000	2.8481	72.4520
SB94A-139	390	79	184747	71.9000	3.0592	68.8408
SB94A-139	380	79	184922	71.6000	3.0645	68.5355
SB94A-139	370	79	185057	71.4000	3.0698	68.3302
SB94A-139	360	79	185233	71.2000	3.0752	68.1248
SB94A-139	350	79	185409	70.8000	3.0804	67.7196
SB94A-139	340	79	185544	70.5000	3.0857	67.4143
SB94A-139	330	79	185719	70.2000	3.0911	67.1089
SB94A-139	320	79	185854	69.9000	3.0963	66.8037
SB94A-139	310	79	190029	69.4000	3.1000	66.3000
SB94A-139	300	79	190205	69.2000	3.1000	66.1000
SB94A-139	290	79	190340	68.8000	3.1000	65.7000

SB94A-139	280	79	190516	68.4000	3.1000	65.3000
SB94A-139	270	79	190651	68.2000	3.1000	65.1000
SB94A-139	260	79	190826	67.7000	3.1000	64.6000
SB94A-139	250	79	191000	67.3000	3.1000	64.2000
SB94A-139	240	79	191135	67.0000	3.1000	63.9000
SB94A-139	230	79	191310	66.5000	3.1000	63.4000
SB94A-139	220	79	191445	66.2000	3.1000	63.1000
SB94A-139	210	79	191619	65.7000	3.1000	62.6000
SB94A-139	200	79	191754	65.2000	3.1000	62.1000
SB94A-139	190	79	191929	65.2000	3.1000	62.1000
SB94A-139	180	79	192103	65.4000	3.1000	62.3000
SB94A-139	170	79	192238	65.0000	3.1000	61.9000
SB94A-139	160	79	192412	64.9000	3.1000	61.8000
SB94A-139	150	79	192547	64.6000	3.1000	61.5000
SB94A-139	140	79	192721	64.3000	3.1000	61.2000
SB94A-139	130	79	192855	64.1000	3.1000	61.0000
SB94A-139	120	79	193029	63.6000	3.1000	60.5000
SB94A-139	110	79	193203	63.3000	3.1000	60.2000
SB94A-139	100	79	193338	63.1000	3.1000	60.0000
SB94A-139	90	79	193513	63.2000	3.1000	60.1000
SB94A-139	80	79	193648	63.1000	3.1000	60.0000
SB94A-139	70	79	193822	62.9000	3.1000	59.8000
SB94A-139	60	79	193957	62.8000	3.1000	59.7000
SB94A-139	50	79	194131	62.5000	3.1000	59.4000
SB94A-139	40	79	194305	61.9000	3.1000	58.8000
SB94A-135	120	79	231635	63.7000	1.3343	62.3657
SB94A-135	130	79	231810	64.1000	1.3185	62.7815
SB94A-135	140	79	231943	64.3000	1.3028	62.9972
SB94A-135	150	79	232115	64.5000	1.2877	63.2123
SB94A-135	160	79	232248	64.3000	1.2720	63.0280
SB94A-135	170	79	232420	64.4000	1.2568	63.1432
SB94A-135	180	79	232553	64.7000	1.2412	63.4588
SB94A-135	190	79	232726	64.9000	1.2257	63.6743
SB94A-135	200	79	232859	65.1000	1.2103	63.8897
SB94A-135	210	79	233031	65.3000	1.1948	64.1052
SB94A-135	220	79	233205	65.5000	1.1793	64.3207
SB94A-135	230	79	233339	65.7000	1.1637	64.5363
SB94A-135	240	79	233512	66.0000	1.1480	64.8520
SB94A-135	250	79	233644	66.4000	1.1328	65.2672
SB94A-135	260	79	233816	66.7000	1.1173	65.5827
SB94A-135	270	79	233949	67.1000	1.1020	65.9980
SB94A-135	280	79	234120	67.4000	1.0868	66.3132
SB94A-135	290	79	234251	67.7000	1.0717	66.6283
SB94A-135	300	79	234424	67.9000	1.0562	66.8438
SB94A-135	310	79	234558	68.4000	1.0403	67.3597
SB94A-135	320	79	234732	68.8000	1.0247	67.7753
SB94A-135	330	79	234906	69.3000	1.0090	68.2910
SB94A-135	340	79	235039	69.5000	.9937	68.5063
SB94A-135	350	79	235212	69.8000	.9782	68.8218
SB94A-135	360	79	235346	70.1000	.9623	69.1377
SB94A-135	370	79	235520	70.3000	.9467	69.3533
SB94A-135	380	79	235652	70.8000	.9315	69.8685
SB94A-135	390	79	235824	71.0000	.9160	70.0840
SB94A-135	400	79	235957	71.1000	.9007	70.1993
SB94A-135	410	80	130	71.4000	.8900	70.5100
SB94A-135	420	80	304	71.8000	.8796	70.9204
SB94A-135	430	80	436	72.1000	.8694	71.2306
SB94A-135	440	80	609	72.3000	.8590	71.4410
SB94A-135	450	80	744	72.6000	.8484	71.7516
SB94A-135	460	80	917	72.7000	.8382	71.8618

SB94A-135	470	80	1050	72.8000	.8279	71.9721
SB94A-135	480	80	1223	73.1000	.8174	72.2826
SB94A-135	490	80	1356	73.2000	.8072	72.3928
SB94A-135	500	80	1527	73.5000	.7971	72.7029
SB94A-135	510	80	1700	73.9000	.7868	73.1132
SB94A-131	520	80	15230	71.1000	.5000	70.6000
SB94A-131	510	80	15403	71.1000	.5000	70.6000
SB94A-131	500	80	15536	70.8000	.5000	70.3000
SB94A-131	490	80	15709	70.5000	.5000	70.0000
SB94A-131	480	80	15843	70.4000	.5000	69.9000
SB94A-131	470	80	20017	70.1000	.5009	69.5991
SB94A-131	460	80	20150	70.0000	.5061	69.4939
SB94A-131	450	80	20324	69.6000	.5113	69.0887
SB94A-131	440	80	20458	69.3000	.5165	68.7835
SB94A-131	430	80	20633	68.9000	.5218	68.3782
SB94A-131	420	80	20807	68.7000	.5270	68.1730
SB94A-131	410	80	20941	68.6000	.5322	68.0678
SB94A-131	400	80	21116	68.2000	.5375	67.6625
SB94A-131	390	80	21250	67.7000	.5427	67.1573
SB94A-131	380	80	21425	67.5000	.5480	66.9520
SB94A-131	370	80	21600	66.8000	.5533	66.2467
SB94A-131	360	80	21735	66.6000	.5586	66.0414
SB94A-131	350	80	21910	66.1000	.5639	65.5361
SB94A-131	340	80	22045	65.7000	.5691	65.1309
SB94A-131	330	80	22220	65.7000	.5744	65.1256
SB94A-131	320	80	22356	65.1000	.5798	64.5202
SB94A-131	310	80	22531	65.0000	.5851	64.4149
SB94A-131	300	80	22705	64.8000	.5903	64.2097
SB94A-131	290	80	22841	64.5000	.5956	63.9044
SB94A-131	280	80	23015	64.2000	.6008	63.5992
SB94A-131	270	80	23152	64.0000	.6062	63.3938
SB94A-131	260	80	23327	63.6000	.6114	62.9886
SB94A-131	250	80	23503	63.5000	.6168	62.8832
SB94A-131	240	80	23639	63.1000	.6222	62.4778
SB94A-131	230	80	23815	62.6000	.6274	61.9726
SB94A-131	220	80	23951	62.6000	.6328	61.9672
SB94A-131	210	80	24126	62.6000	.6381	61.9619
SB94A-131	200	80	24302	61.9000	.6434	61.2566
SB94A-131	190	80	24438	61.9000	.6488	61.2512
SB94A-131	180	80	24614	61.4000	.6541	60.7459
SB94A-131	170	80	24751	61.2000	.6594	60.5406
SB94A-131	160	80	24928	61.0000	.6649	60.3351
SB94A-131	150	80	25105	61.0000	.6703	60.3297
SB94A-131	140	80	25243	60.3000	.6757	59.6243
SB94A-131	130	80	25420	59.8000	.6811	59.1189
SB94A-131	120	80	25557	59.2000	.6864	58.5136
SB94A-131	110	80	25733	58.8000	.6918	58.1082
SB94A-131	100	80	25908	58.4000	.6971	57.7029
SB94A-131	90	80	30045	57.9000	.7073	57.1927
SB94A-131	80	80	30220	57.3000	.7233	56.5767
SB94A-131	70	80	30357	56.9000	.7393	56.1607
SB94A-131	60	80	30533	56.7000	.7555	55.9445
SB94A-131	50	80	30710	55.9000	.7715	55.1285
SB94A-131	40	80	30847	55.5000	.7877	54.7123
SB94A-127	120	80	42432	60.2000	1.5453	58.6547
SB94A-127	130	80	42608	60.7000	1.5612	59.1388
SB94A-127	140	80	42743	61.3000	1.5770	59.7230
SB94A-127	150	80	42919	61.8000	1.5932	60.2068
SB94A-127	160	80	43055	61.8000	1.6090	60.1910
SB94A-127	170	80	43231	62.2000	1.6252	60.5748

SB94A-127	180	80	43406	62.5000	1.6410	60.8590
SB94A-127	190	80	43543	62.8000	1.6572	61.1428
SB94A-127	200	80	43719	62.9000	1.6732	61.2268
SB94A-127	210	80	43854	63.1000	1.6888	61.4112
SB94A-127	220	80	44031	63.3000	1.7052	61.5948
SB94A-127	230	80	44207	63.5000	1.7210	61.7790
SB94A-127	240	80	44342	63.9000	1.7370	62.1630
SB94A-127	250	80	44517	64.2000	1.7528	62.4472
SB94A-127	260	80	44651	64.5000	1.7685	62.7315
SB94A-127	270	80	44825	64.7000	1.7840	62.9160
SB94A-127	280	80	44959	65.1000	1.7997	63.3003
SB94A-127	290	80	45133	65.3000	1.8153	63.4847
SB94A-127	300	80	45308	65.7000	1.8312	63.8688
SB94A-127	310	80	45443	66.4000	1.8472	64.5528
SB94A-127	320	80	45617	66.4000	1.8628	64.5372
SB94A-127	330	80	45751	66.7000	1.8783	64.8217
SB94A-127	340	80	45925	66.9000	1.8940	65.0060
SB94A-127	350	80	50059	67.3000	1.9097	65.3903
SB94A-127	360	80	50233	67.7000	1.9253	65.7747
SB94A-127	370	80	50407	68.0000	1.9410	66.0590
SB94A-127	380	80	50540	68.3000	1.9567	66.3433
SB94A-127	390	80	50714	68.7000	1.9723	66.7277
SB94A-127	400	80	50847	69.2000	1.9877	67.2123
SB94A-127	410	80	51020	69.6000	2.0033	67.5967
SB94A-127	420	80	51152	69.9000	2.0185	67.8815
SB94A-127	430	80	51327	70.2000	2.0343	68.1657
SB94A-127	440	80	51501	70.5000	2.0500	68.4500
SB94A-127	450	80	51634	70.6000	2.0657	68.5343
SB94A-127	460	80	51807	70.4000	2.0812	68.3188
SB94A-127	470	80	51941	70.6000	2.0967	68.5033
SB94A-127	480	80	52115	71.1000	2.1123	68.9877
SB94A-127	490	80	52248	71.7000	2.1280	69.5720
SB94A-127	500	80	52423	71.9000	2.1437	69.7563
SB94A-127	510	80	52557	72.2000	2.1593	70.0407
SB94A-127	520	80	52730	72.4000	2.1750	70.2250
SB94A-127	530	80	52904	72.2000	2.1907	70.0093
SB94A-127	540	80	53037	72.2000	2.2060	69.9940
SB94A-127	550	80	53210	72.2000	2.2217	69.9783
SB94A-127	560	80	53343	72.3000	2.2370	70.0630
SB94A-127	570	80	53516	72.6000	2.2525	70.3475
SB94A-127	580	80	53649	72.5000	2.2682	70.2318
SB94A-127	590	80	53823	72.9000	2.2838	70.6162
SB94A-127	600	80	53956	72.7000	2.2992	70.4008
SB94A-127	610	80	54130	72.6000	2.3148	70.2852
SB94A-127	620	80	54303	73.6000	2.3305	71.2695
SB94A-127	630	80	54436	73.3000	2.3458	70.9542
SB94A-127	640	80	54609	73.4000	2.3613	71.0387
SB94A-127	650	80	54742	74.0000	2.3770	71.6230
SB94A-127	660	80	54915	74.2000	2.3923	71.8077
SB94A-127	670	80	55049	74.3000	2.4080	71.8920
SB94A-127	680	80	55224	74.7000	2.4238	72.2762
SB94A-127	690	80	55358	74.9000	2.4395	72.4605
SB94A-127	700	80	55532	75.0000	2.4552	72.5448
SB94A-127	710	80	55704	74.9000	2.4707	72.4293
SB94A-127	720	80	55838	75.3000	2.4862	72.8138
SB94A-127	730	80	60011	75.6000	2.5014	73.0986
SB94A-110	1170	80	72933	76.2000	3.0492	73.1507
SB94A-110	1160	80	73106	76.1000	3.0518	73.0482
SB94A-110	1150	80	73238	76.4000	3.0544	73.3456
SB94A-110	1140	80	73409	76.4000	3.0569	73.3431

SB94A-110	1130	80	73543	76.1000	3.0595	73.0405
SB94A-110	1120	80	73715	76.1000	3.0621	73.0379
SB94A-110	1110	80	73847	76.0000	3.0646	72.9354
SB94A-110	1100	80	74023	76.4000	3.0673	73.3327
SB94A-110	1090	80	74159	76.2000	3.0699	73.1301
SB94A-110	1080	80	74335	75.9000	3.0726	72.8274
SB94A-110	1070	80	74512	76.3000	3.0753	73.2247
SB94A-110	1060	80	74649	76.2000	3.0780	73.1220
SB94A-110	1050	80	74824	76.3000	3.0806	73.2194
SB94A-110	1040	80	75001	76.5000	3.0834	73.4166
SB94A-110	1030	80	75138	76.3000	3.0861	73.2140
SB94A-110	1020	80	75315	75.9000	3.0887	72.8113
SB94A-110	1010	80	75451	76.3000	3.0914	73.2086
SB94A-110	1000	80	75627	76.4000	3.0941	73.3059
SB94A-110	990	80	75803	76.0000	3.0968	72.9033
SB94A-110	980	80	75940	76.5000	3.0994	73.4006
SB94A-110	970	80	80116	76.1000	3.0958	73.0042
SB94A-110	960	80	80252	76.1000	3.0905	73.0095
SB94A-110	950	80	80428	76.1000	3.0851	73.0149
SB94A-110	940	80	80604	75.9000	3.0798	72.8202
SB94A-110	930	80	80740	76.0000	3.0744	72.9256
SB94A-110	920	80	80916	75.9000	3.0692	72.8308
SB94A-110	910	80	81052	75.9000	3.0638	72.8362
SB94A-110	900	80	81228	75.7000	3.0585	72.6415
SB94A-110	890	80	81404	75.9000	3.0531	72.8469
SB94A-110	880	80	81539	75.7000	3.0478	72.6522
SB94A-110	870	80	81714	75.7000	3.0426	72.6574
SB94A-110	860	80	81849	75.6000	3.0373	72.5627
SB94A-110	850	80	82024	75.4000	3.0321	72.3679
SB94A-110	840	80	82159	75.7000	3.0268	72.6732
SB94A-110	830	80	82334	75.7000	3.0214	72.6786
SB94A-110	820	80	82509	75.6000	3.0162	72.5838
SB94A-110	810	80	82644	75.9000	3.0109	72.8891
SB94A-110	800	80	82819	75.5000	3.0057	72.4943
SB94A-110	790	80	82954	75.2000	3.0004	72.1996
SB94A-110	780	80	83129	75.2000	2.9951	72.2049
SB94A-110	770	80	83303	75.1000	2.9899	72.1101
SB94A-110	760	80	83438	75.0000	2.9846	72.0154
SB94A-110	750	80	83613	74.9000	2.9793	71.9207
SB94A-110	740	80	83748	74.9000	2.9740	71.9260
SB94A-110	730	80	83922	74.8000	2.9688	71.8312
SB94A-110	720	80	84057	74.8000	2.9636	71.8364
SB94A-110	710	80	84232	74.5000	2.9583	71.5417
SB94A-110	700	80	84407	74.7000	2.9530	71.7470
SB94A-110	690	80	84542	74.4000	2.9477	71.4523
SB94A-110	680	80	84718	74.3000	2.9424	71.3576
SB94A-110	670	80	84853	74.2000	2.9371	71.2629
SB94A-110	660	80	85028	74.1000	2.9318	71.1682
SB94A-110	650	80	85203	74.1000	2.9265	71.1735
SB94A-110	640	80	85338	73.9000	2.9212	70.9788
SB94A-110	630	80	85512	73.9000	2.9160	70.9840
SB94A-110	620	80	85647	73.9000	2.9107	70.9893
SB94A-110	610	80	85822	73.5000	2.9054	70.5946
SB94A-110	600	80	85956	73.8000	2.9002	70.8998
SB94A-110	590	80	90131	73.4000	2.8900	70.5100
SB94A-110	580	80	90307	73.6000	2.8792	70.7208
SB94A-110	570	80	90441	73.2000	2.8689	70.3311
SB94A-110	560	80	90616	73.0000	2.8582	70.1418
SB94A-110	550	80	90751	73.0000	2.8477	70.1523
SB94A-110	540	80	90926	73.1000	2.8371	70.2629

SB94A-110	530	80	91100	72.8000	2.8267	69.9733
SB94A-110	520	80	91233	72.5000	2.8164	69.6836
SB94A-110	510	80	91407	72.4000	2.8060	69.5940
SB94A-110	500	80	91541	72.6000	2.7956	69.8044
SB94A-110	490	80	91715	72.3000	2.7851	69.5149
SB94A-110	480	80	91848	72.3000	2.7747	69.5253
SB94A-110	470	80	92022	72.0000	2.7642	69.2358
SB94A-110	460	80	92156	71.9000	2.7538	69.1462
SB94A-110	450	80	92330	71.8000	2.7433	69.0567
SB94A-110	440	80	92503	71.5000	2.7331	68.7669
SB94A-110	430	80	92637	71.4000	2.7227	68.6773
SB94A-110	420	80	92810	71.4000	2.7122	68.6878
SB94A-110	410	80	92943	71.2000	2.7020	68.4980
SB94A-110	400	80	93117	71.0000	2.6916	68.3084
SB94A-110	390	80	93250	70.9000	2.6811	68.2189
SB94A-110	380	80	93423	70.6000	2.6709	67.9291
SB94A-110	370	80	93556	70.3000	2.6606	67.6395
SB94A-110	360	80	93730	70.3000	2.6500	67.6500
SB94A-110	350	80	93903	70.1000	2.6397	67.4603
SB94A-110	340	80	94036	70.3000	2.6294	67.6706
SB94A-110	330	80	94209	70.1000	2.6190	67.4810
SB94A-110	320	80	94342	69.8000	2.6087	67.1913
SB94A-110	310	80	94514	69.7000	2.5984	67.1016
SB94A-110	300	80	94647	69.5000	2.5882	66.9118
SB94A-110	290	80	94820	69.5000	2.5779	66.9221
SB94A-110	280	80	94952	69.2000	2.5677	66.6323
SB94A-110	270	80	95123	69.5000	2.5574	66.9426
SB94A-110	260	80	95256	69.0000	2.5472	66.4528
SB94A-110	250	80	95428	69.0000	2.5369	66.4631
SB94A-110	240	80	95559	68.8000	2.5268	66.2732
SB94A-110	230	80	95731	68.7000	2.5166	66.1834
SB94A-110	220	80	95903	68.4000	2.5064	65.8936
SB94A-110	210	80	100034	68.4000	2.4954	65.9046
SB94A-110	200	80	100205	68.2000	2.4828	65.7172
SB94A-110	190	80	100337	68.2000	2.4699	65.7301
SB94A-110	180	80	100509	68.0000	2.4572	65.5428
SB94A-110	170	80	100641	68.2000	2.4444	65.7556
SB94A-110	160	80	100812	67.9000	2.4317	65.4683
SB94A-110	150	80	100944	68.1000	2.4189	65.6811
SB94A-110	140	80	101116	67.8000	2.4062	65.3938
SB94A-110	130	80	101248	67.8000	2.3933	65.4067
SB94A-110	120	80	101420	67.6000	2.3806	65.2194
SB94A-110	110	80	101550	67.4000	2.3681	65.0319
SB94A-110	100	80	101723	67.5000	2.3553	65.1447
SB94A-110	90	80	101854	67.2000	2.3426	64.8574
SB94A-110	80	80	102025	67.3000	2.3299	64.9701
SB94A-110	70	80	102158	67.2000	2.3171	64.8829
SB94A-110	60	80	102331	67.2000	2.3040	64.8960
SB94A-110	50	80	102504	67.0000	2.2912	64.7087
SB94A-110	40	80	102637	67.4000	2.2783	65.1217
SB94A-112	120	80	114446	68.9000	1.5525	67.3475
SB94A-112	130	80	114621	68.8000	1.5367	67.2633
SB94A-112	140	80	114756	69.0000	1.5208	67.4792
SB94A-112	150	80	114931	69.4000	1.5048	67.8952
SB94A-112	160	80	115106	69.7000	1.4890	68.2110
SB94A-112	170	80	115241	69.5000	1.4733	68.0267
SB94A-112	180	80	115416	69.4000	1.4575	67.9425
SB94A-112	190	80	115550	69.9000	1.4418	68.4582
SB94A-112	200	80	115724	69.9000	1.4262	68.4738
SB94A-112	210	80	115859	70.1000	1.4103	68.6897

SB94A-112	220	80	120033	70.0000	1.3964	68.6036
SB94A-112	230	80	120208	70.4000	1.3859	69.0141
SB94A-112	240	80	120343	70.1000	1.3753	68.7247
SB94A-112	250	80	120517	70.3000	1.3649	68.9351
SB94A-112	260	80	120653	70.3000	1.3541	68.9459
SB94A-112	270	80	120827	70.5000	1.3437	69.1563
SB94A-112	280	80	121002	70.6000	1.3331	69.2669
SB94A-112	290	80	121137	70.6000	1.3227	69.2773
SB94A-112	300	80	121313	70.6000	1.3119	69.2881
SB94A-112	310	80	121449	70.9000	1.3012	69.5988
SB94A-112	320	80	121625	70.7000	1.2907	69.4093
SB94A-112	330	80	121759	71.1000	1.2802	69.8198
SB94A-112	340	80	121934	71.3000	1.2696	70.0304
SB94A-112	350	80	122108	71.6000	1.2592	70.3408
SB94A-112	360	80	122243	71.9000	1.2486	70.6514
SB94A-112	370	80	122418	71.6000	1.2380	70.3620
SB94A-112	380	80	122553	72.0000	1.2274	70.7726
SB94A-112	390	80	122728	72.0000	1.2170	70.7830
SB94A-112	400	80	122903	72.1000	1.2064	70.8936
SB94A-112	410	80	123040	72.2000	1.1957	71.0043
SB94A-112	420	80	123216	72.1000	1.1850	70.9150
SB94A-112	430	80	123350	72.5000	1.1746	71.3254
SB94A-112	440	80	123524	72.6000	1.1641	71.4359
SB94A-112	450	80	123659	72.7000	1.1536	71.5464
SB94A-112	460	80	123833	72.8000	1.1431	71.6569
SB94A-112	470	80	124009	72.5000	1.1323	71.3677
SB94A-112	480	80	124145	73.0000	1.1218	71.8782
SB94A-112	490	80	124320	73.1000	1.1112	71.9888
SB94A-112	500	80	124455	73.3000	1.1006	72.1994
SB94A-112	510	80	124635	73.1000	1.0896	72.0104
SB94A-112	520	80	124809	73.4000	1.0791	72.3209
SB94A-112	530	80	124945	73.6000	1.0683	72.5317
SB94A-112	540	80	125120	73.8000	1.0578	72.7422
SB94A-112	550	80	125259	73.6000	1.0468	72.5532
SB94A-112	560	80	125433	74.0000	1.0363	72.9637
SB94A-112	570	80	125609	74.0000	1.0258	72.9742
SB94A-112	580	80	125745	73.9000	1.0150	72.8850
SB94A-112	590	80	125920	73.9000	1.0044	72.8956
SB94A-112	600	80	130056	73.8000	.9985	72.8015
SB94A-112	610	80	130235	74.0000	.9957	73.0043
SB94A-112	620	80	130413	74.1000	.9930	73.1070
SB94A-112	630	80	130550	74.6000	.9903	73.6097
SB94A-112	640	80	130728	74.6000	.9876	73.6124
SB94A-112	650	80	130905	74.4000	.9849	73.4151
SB94A-112	660	80	131041	74.6000	.9822	73.6178
SB94A-112	670	80	131218	74.9000	.9795	73.9205
SB94A-112	680	80	131354	74.8000	.9768	73.8232
SB94A-112	690	80	131530	74.8000	.9742	73.8258
SB94A-112	700	80	131707	74.5000	.9715	73.5285
SB94A-112	710	80	131843	75.0000	.9688	74.0312
SB94A-112	720	80	132020	75.0000	.9661	74.0339
SB94A-112	730	80	132156	75.0000	.9634	74.0366
SB94A-112	740	80	132333	75.2000	.9608	74.2392
SB94A-112	750	80	132508	75.1000	.9581	74.1419
SB94A-112	760	80	132644	75.1000	.9554	74.1446
SB94A-112	770	80	132820	75.3000	.9528	74.3472
SB94A-112	780	80	132956	75.4000	.9501	74.4499
SB94A-112	790	80	133131	75.6000	.9475	74.6525
SB94A-112	800	80	133306	75.6000	.9449	74.6551
SB94A-112	810	80	133441	75.7000	.9422	74.7578

SB94A-112	820	80	133616	75.6000	.9396	74.6604
SB94A-112	830	80	133751	75.9000	.9369	74.9631
SB94A-112	840	80	133926	76.0000	.9343	75.0657
SB94A-112	850	80	134102	75.7000	.9316	74.7684
SB94A-112	860	80	134236	75.8000	.9290	74.8710
SB94A-112	870	80	134412	75.9000	.9263	74.9737
SB94A-112	880	80	134547	75.6000	.9237	74.6763
SB94A-112	890	80	134722	75.6000	.9211	74.6789
SB94A-112	900	80	134857	75.5000	.9184	74.5816
SB94A-112	910	80	135032	75.3000	.9158	74.3842
SB94A-112	920	80	135206	75.2000	.9132	74.2868
SB94A-112	930	80	135341	75.3000	.9105	74.3895
SB94A-112	940	80	135515	75.3000	.9079	74.3921
SB94A-112	950	80	135649	75.4000	.9053	74.4947
SB94A-112	960	80	135824	75.5000	.9027	74.5973
SB94A-112	970	80	135958	75.5000	.9001	74.5999
SB94A-112	980	80	140133	75.6000	.9026	74.6974
SB94A-112	990	80	140307	75.8000	.9052	74.8948
SB94A-112	1000	80	140440	76.0000	.9077	75.0922
SB94A-112	1010	80	140614	76.1000	.9104	75.1896
SB94A-112	1020	80	140747	76.2000	.9130	75.2870
SB94A-112	1030	80	140920	76.2000	.9155	75.2845
SB94A-112	1040	80	141054	76.3000	.9181	75.3819
SB94A-112	1050	80	141226	76.3000	.9207	75.3793
SB94A-112	1060	80	141359	76.2000	.9233	75.2767
SB94A-112	1070	80	141531	75.7000	.9259	74.7741
SB94A-112	1080	80	141704	76.0000	.9284	75.0716
SB94A-112	1090	80	141836	75.6000	.9310	74.6690
SB94A-112	1100	80	142007	76.0000	.9335	75.0665
SB94A-112	1110	80	142139	76.1000	.9361	75.1639
SB94A-112	1120	80	142311	76.0000	.9386	75.0614
SB94A-112	1130	80	142444	76.1000	.9412	75.1588
SB94A-112	1140	80	142621	76.2000	.9439	75.2561
SB94A-112	1150	80	142758	76.1000	.9466	75.1534
SB94A-112	1160	80	142934	76.2000	.9493	75.2507
SB94A-112	1170	80	143111	76.1000	.9520	75.1480
SB94A-112	1180	80	143248	76.3000	.9546	75.3454
SB94A-112	1190	80	143425	76.2000	.9573	75.2427
SB94A-112	1200	80	143602	75.9000	.9601	74.9399
SB94A-112	1210	80	143739	75.9000	.9627	74.9373
SB94A-112	1220	80	143915	76.5000	.9654	75.5346
SB94A-112	1230	80	144052	76.3000	.9681	75.3319
SB94A-112	1240	80	144228	76.6000	.9707	75.6292
SB94A-112	1250	80	144404	76.6000	.9734	75.6266
SB94A-112	1260	80	144541	76.4000	.9761	75.4239
SB94A-112	1270	80	144717	76.7000	.9788	75.7212
SB94A-123	1020	80	164935	78.3000	1.8958	76.4042
SB94A-123	1010	80	165111	78.2000	1.9117	76.2883
SB94A-123	1000	80	165246	78.0000	1.9275	76.0725
SB94A-123	990	80	165422	78.0000	1.9437	76.0563
SB94A-123	980	80	165557	77.8000	1.9593	75.8407
SB94A-123	970	80	165732	77.9000	1.9752	75.9248
SB94A-123	960	80	165908	77.7000	1.9913	75.7087
SB94A-123	950	80	170043	77.7000	2.0072	75.6928
SB94A-123	940	80	170218	77.8000	2.0228	75.7772
SB94A-123	930	80	170354	77.5000	2.0388	75.4612
SB94A-123	920	80	170528	77.5000	2.0545	75.4455
SB94A-123	910	80	170703	77.7000	2.0705	75.6295
SB94A-123	900	80	170838	77.3000	2.0863	75.2137
SB94A-123	890	80	171013	77.1000	2.1022	74.9978

SB94A-123	880	80	171149	76.9000	2.1180	74.7820
SB94A-123	870	80	171324	76.8000	2.1340	74.6660
SB94A-123	860	80	171459	76.5000	2.1498	74.3502
SB94A-123	850	80	171633	76.6000	2.1655	74.4345
SB94A-123	840	80	171808	76.7000	2.1813	74.5187
SB94A-123	830	80	171942	76.3000	2.1970	74.1030
SB94A-123	820	80	172117	76.3000	2.2128	74.0872
SB94A-123	810	80	172252	76.2000	2.2285	73.9715
SB94A-123	800	80	172427	76.0000	2.2443	73.7557
SB94A-123	790	80	172603	76.3000	2.2605	74.0395
SB94A-123	780	80	172738	76.0000	2.2763	73.7237
SB94A-123	770	80	172913	75.7000	2.2920	73.4080
SB94A-123	760	80	173049	75.6000	2.3082	73.2918
SB94A-123	750	80	173225	75.4000	2.3242	73.0758
SB94A-123	740	80	173400	75.3000	2.3398	72.9602
SB94A-123	730	80	173534	74.9000	2.3555	72.5445
SB94A-123	720	80	173710	74.3000	2.3715	71.9285
SB94A-123	710	80	173845	74.2000	2.3875	71.8125
SB94A-123	700	80	174020	74.2000	2.4033	71.7967
SB94A-123	690	80	174155	74.0000	2.4190	71.5810
SB94A-123	680	80	174330	73.6000	2.4348	71.1652
SB94A-123	670	80	174505	73.7000	2.4507	71.2493
SB94A-123	660	80	174640	73.6000	2.4667	71.1333
SB94A-123	650	80	174815	73.6000	2.4825	71.1175
SB94A-123	640	80	174949	73.6000	2.4982	71.1018
SB94A-123	630	80	175123	73.4000	2.5138	70.8862
SB94A-123	620	80	175258	73.2000	2.5297	70.6703
SB94A-123	610	80	175432	73.1000	2.5453	70.5547
SB94A-123	600	80	175606	72.7000	2.5610	70.1390
SB94A-123	590	80	175741	72.5000	2.5768	69.9232
SB94A-123	580	80	175915	72.3000	2.5925	69.7075
SB94A-123	570	80	180050	72.1000	2.6056	69.4944
SB94A-123	560	80	180224	71.9000	2.6160	69.2840
SB94A-123	550	80	180359	71.6000	2.6266	68.9734
SB94A-123	540	80	180534	71.3000	2.6370	68.6630
SB94A-123	530	80	180709	70.9000	2.6476	68.2524
SB94A-123	520	80	180845	70.3000	2.6583	67.6417
SB94A-123	510	80	181019	70.1000	2.6688	67.4312
SB94A-123	500	80	181153	69.6000	2.6791	66.9209
SB94A-123	490	80	181328	69.4000	2.6898	66.7102
SB94A-123	480	80	181502	69.1000	2.7002	66.3998
SB94A-123	470	80	181636	68.8000	2.7106	66.0894
SB94A-123	460	80	181811	68.4000	2.7212	65.6788
SB94A-123	450	80	181947	68.4000	2.7318	65.6682
SB94A-123	440	80	182121	67.7000	2.7423	64.9577
SB94A-123	430	80	182255	67.7000	2.7528	64.9472
SB94A-123	420	80	182429	67.3000	2.7632	64.5368
SB94A-123	410	80	182604	67.1000	2.7738	64.3262
SB94A-123	400	80	182738	66.8000	2.7842	64.0158
SB94A-123	390	80	182913	66.5000	2.7947	63.7053
SB94A-123	380	80	183047	66.4000	2.8052	63.5948
SB94A-123	370	80	183222	66.1000	2.8157	63.2843
SB94A-123	360	80	183356	66.0000	2.8261	63.1739
SB94A-123	350	80	183531	65.7000	2.8367	62.8633
SB94A-123	340	80	183704	65.3000	2.8471	62.4529
SB94A-123	330	80	183839	65.0000	2.8576	62.1424
SB94A-123	320	80	184013	64.8000	2.8681	61.9319
SB94A-123	310	80	184147	64.7000	2.8786	61.8214
SB94A-123	300	80	184320	64.5000	2.8888	61.6112
SB94A-123	290	80	184453	64.2000	2.8991	61.3009

SB94A-123	280	80	184627	63.9000	2.9097	60.9903
SB94A-123	270	80	184800	64.0000	2.9200	61.0800
SB94A-123	260	80	184934	63.6000	2.9304	60.6696
SB94A-123	250	80	185107	63.7000	2.9407	60.7593
SB94A-123	240	80	185240	63.2000	2.9511	60.2489
SB94A-123	230	80	185413	62.8000	2.9613	59.8387
SB94A-123	220	80	185547	62.8000	2.9718	59.8282
SB94A-123	210	80	185720	62.5000	2.9822	59.5178
SB94A-123	200	80	185852	62.2000	2.9923	59.2077
SB94A-123	190	80	190025	61.9000	3.0007	58.8993
SB94A-123	180	80	190158	61.7000	3.0033	58.6967
SB94A-123	170	80	190330	61.5000	3.0058	58.4942
SB94A-123	160	80	190503	61.1000	3.0084	58.0916
SB94A-123	150	80	190635	60.8000	3.0110	57.7890
SB94A-123	140	80	190807	60.6000	3.0135	57.5865
SB94A-123	130	80	190939	60.3000	3.0161	57.2839
SB94A-123	120	80	191111	60.3000	3.0186	57.2814
SB94A-123	110	80	191243	59.9000	3.0212	56.8788
SB94A-123	100	80	191413	59.5000	3.0237	56.4763
SB94A-123	90	80	191544	59.3000	3.0262	56.2738
SB94A-123	80	80	191714	58.9000	3.0287	55.8713
SB94A-123	70	80	191845	58.7000	3.0312	55.6688
SB94A-123	60	80	192015	58.4000	3.0338	55.3663
SB94A-123	50	80	192147	58.0000	3.0363	54.9637
SB94A-123	40	80	192317	57.8000	3.0388	54.7612
SB94A-121	120	80	204215	59.2000	3.0296	56.1704
SB94A-121	130	80	204354	59.3000	3.0268	56.2732
SB94A-121	140	80	204532	59.5000	3.0241	56.4759
SB94A-121	150	80	204710	59.9000	3.0214	56.8786
SB94A-121	160	80	204849	60.2000	3.0187	57.1813
SB94A-121	170	80	205028	60.5000	3.0159	57.4841
SB94A-121	180	80	205206	60.7000	3.0132	57.6868
SB94A-121	190	80	205344	61.0000	3.0105	57.9895
SB94A-121	200	80	205521	61.5000	3.0078	58.4922
SB94A-121	210	80	205657	61.5000	3.0051	58.4949
SB94A-121	220	80	205833	61.7000	3.0024	58.6976
SB94A-121	230	80	210008	61.9000	2.9992	58.9008
SB94A-121	240	80	210144	62.1000	2.9884	59.1116
SB94A-121	250	80	210320	62.3000	2.9779	59.3221
SB94A-121	260	80	210455	62.7000	2.9673	59.7327
SB94A-121	270	80	210630	63.0000	2.9568	60.0432
SB94A-121	280	80	210805	63.3000	2.9461	60.3539
SB94A-121	290	80	210941	63.6000	2.9356	60.6644
SB94A-121	300	80	211116	63.9000	2.9250	60.9750
SB94A-121	310	80	211251	64.3000	2.9144	61.3856
SB94A-121	320	80	211427	64.6000	2.9037	61.6963
SB94A-121	330	80	211603	64.8000	2.8931	61.9069
SB94A-121	340	80	211738	65.0000	2.8824	62.1176
SB94A-121	350	80	211913	65.2000	2.8719	62.3281
SB94A-121	360	80	212048	65.4000	2.8613	62.5387
SB94A-121	370	80	212223	65.5000	2.8509	62.6491
SB94A-121	380	80	212357	65.7000	2.8403	62.8597
SB94A-121	390	80	212531	66.0000	2.8299	63.1701
SB94A-121	400	80	212705	66.2000	2.8194	63.3806
SB94A-121	410	80	212839	66.2000	2.8090	63.3910
SB94A-121	420	80	213013	66.5000	2.7986	63.7014
SB94A-121	430	80	213147	66.6000	2.7882	63.8118
SB94A-121	440	80	213322	66.7000	2.7776	63.9224
SB94A-121	450	80	213456	67.1000	2.7671	64.3329
SB94A-121	460	80	213631	67.1000	2.7566	64.3434

SB94A-121	470	80	213805	67.3000	2.7461	64.5539
SB94A-121	480	80	213940	67.5000	2.7356	64.7644
SB94A-121	490	80	214114	67.7000	2.7251	64.9749
SB94A-121	500	80	214248	67.9000	2.7147	65.1853
SB94A-121	510	80	214422	68.3000	2.7042	65.5958
SB94A-121	520	80	214557	68.5000	2.6937	65.8063
SB94A-121	530	80	214731	68.9000	2.6832	66.2168
SB94A-121	540	80	214906	69.3000	2.6727	66.6273
SB94A-121	550	80	215040	69.7000	2.6622	67.0378
SB94A-121	560	80	215214	70.1000	2.6518	67.4482
SB94A-121	570	80	215349	70.5000	2.6412	67.8588
SB94A-121	580	80	215524	70.7000	2.6307	68.0693
SB94A-121	590	80	215659	71.1000	2.6202	68.4798
SB94A-121	600	80	215833	71.3000	2.6098	68.6902
SB94A-121	610	80	220007	71.8000	2.5986	69.2014
SB94A-121	620	80	220141	72.1000	2.5804	69.5196
SB94A-121	630	80	220315	72.3000	2.5621	69.7379
SB94A-121	640	80	220449	72.6000	2.5438	70.0562
SB94A-121	650	80	220623	72.8000	2.5255	70.2745
SB94A-121	660	80	220758	72.9000	2.5071	70.3929
SB94A-121	670	80	220932	73.2000	2.4888	70.7112
SB94A-121	680	80	221105	73.2000	2.4709	70.7291
SB94A-121	690	80	221238	73.4000	2.4526	70.9474
SB94A-121	700	80	221412	73.6000	2.4343	71.1657
SB94A-121	710	80	221546	73.7000	2.4161	71.2839
SB94A-121	720	80	221719	74.0000	2.3982	71.6018
SB94A-121	730	80	221853	74.1000	2.3799	71.7201
SB94A-121	740	80	222026	74.2000	2.3616	71.8384
SB94A-121	750	80	222200	74.5000	2.3433	72.1567
SB94A-121	760	80	222334	74.7000	2.3251	72.3749
SB94A-121	770	80	222507	74.9000	2.3072	72.5928
SB94A-121	780	80	222641	75.1000	2.2889	72.8111
SB94A-121	790	80	222815	75.3000	2.2706	73.0294
SB94A-121	800	80	222949	75.4000	2.2521	73.1479
SB94A-121	810	80	223122	75.5000	2.2341	73.2659
SB94A-121	820	80	223255	75.6000	2.2162	73.3838
SB94A-121	830	80	223429	76.0000	2.1979	73.8021
SB94A-121	840	80	223602	76.2000	2.1796	74.0204
SB94A-121	850	80	223736	76.2000	2.1613	74.0387
SB94A-121	860	80	223909	76.3000	2.1434	74.1566
SB94A-121	870	80	224042	76.0000	2.1252	73.8748
SB94A-121	880	80	224215	76.3000	2.1071	74.1929
SB94A-121	890	80	224348	76.3000	2.0892	74.2108
SB94A-121	900	80	224520	76.1000	2.0711	74.0289
SB94A-121	910	80	224653	76.1000	2.0532	74.0468
SB94A-121	920	80	224826	76.3000	2.0349	74.2651
SB94A-121	930	80	224958	76.6000	2.0173	74.5827
SB94A-121	940	80	225130	76.9000	1.9994	74.9006
SB94A-121	950	80	225302	76.5000	1.9813	74.5187
SB94A-121	960	80	225434	76.5000	1.9636	74.5364
SB94A-121	970	80	225606	76.2000	1.9455	74.2545
SB94A-121	980	80	225738	76.1000	1.9276	74.1724
SB94A-121	990	80	225910	76.5000	1.9099	74.5901
SB94A-121	1000	80	230043	76.6000	1.8928	74.7072
SB94A-121	1010	80	230214	77.0000	1.8777	75.1223
SB94A-121	1020	80	230346	77.5000	1.8625	75.6375
SB94A-121	1030	80	230518	78.0000	1.8470	76.1530
SB94A-121	1040	80	230650	78.2000	1.8317	76.3683
SB94A-121	1050	80	230822	78.0000	1.8165	76.1835
SB94A-121	1060	80	230954	78.1000	1.8010	76.2990

SB94A-121	1070	80	231125	78.2000	1.7858	76.4142
SB94A-121	1080	80	231257	78.2000	1.7707	76.4293
SB94A-121	1090	80	231429	78.3000	1.7553	76.5447
SB94A-121	1100	80	231601	78.4000	1.7398	76.6602
SB94A-121	1110	80	231732	78.5000	1.7247	76.7753
SB94A-121	1120	80	231904	78.4000	1.7095	76.6905
SB94A-119	550	81	12352	66.6000	.6807	65.9193
SB94A-119	540	81	12525	66.5000	.6730	65.8270
SB94A-119	530	81	12700	66.1000	.6651	65.4349
SB94A-119	520	81	12834	65.8000	.6572	65.1428
SB94A-119	510	81	13009	65.9000	.6493	65.2507
SB94A-119	500	81	13143	65.7000	.6415	65.0585
SB94A-119	490	81	13317	65.4000	.6337	64.7663
SB94A-119	480	81	13452	65.4000	.6258	64.7743
SB94A-119	470	81	13626	65.0000	.6179	64.3821
SB94A-119	460	81	13801	64.9000	.6099	64.2901
SB94A-119	450	81	13936	64.8000	.6020	64.1980
SB94A-119	440	81	14112	64.2000	.5941	63.6059
SB94A-119	430	81	14247	64.3000	.5862	63.7138
SB94A-119	420	81	14422	64.4000	.5782	63.8218
SB94A-119	410	81	14558	64.3000	.5702	63.7298
SB94A-119	400	81	14733	64.2000	.5623	63.6377
SB94A-119	390	81	14909	63.9000	.5543	63.3458
SB94A-119	380	81	15045	63.7000	.5463	63.1537
SB94A-119	370	81	15221	63.4000	.5383	62.8618
SB94A-119	360	81	15357	63.2000	.5303	62.6698
SB94A-119	350	81	15532	62.9000	.5224	62.3776
SB94A-119	340	81	15705	62.6000	.5146	62.0854
SB94A-119	330	81	15839	62.3000	.5067	61.7933
SB94A-119	320	81	20012	62.0000	.5000	61.5000
SB94A-119	310	81	20145	61.5000	.5000	61.0000
SB94A-119	300	81	20318	61.2000	.5000	60.7000
SB94A-119	290	81	20450	60.9000	.5000	60.4000
SB94A-119	280	81	20623	60.6000	.5000	60.1000
SB94A-119	270	81	20755	60.3000	.5000	59.8000
SB94A-119	260	81	20928	60.1000	.5000	59.6000
SB94A-119	250	81	21101	59.7000	.5000	59.2000
SB94A-119	240	81	21234	59.6000	.5000	59.1000
SB94A-119	230	81	21407	59.6000	.5000	59.1000
SB94A-119	220	81	21540	59.6000	.5000	59.1000
SB94A-119	210	81	21713	59.2000	.5000	58.7000
SB94A-119	200	81	21847	59.1000	.5000	58.6000
SB94A-119	190	81	22020	58.4000	.5000	57.9000
SB94A-119	180	81	22153	58.5000	.5000	58.0000
SB94A-119	170	81	22327	58.2000	.5000	57.7000
SB94A-119	160	81	22501	58.3000	.5000	57.8000
SB94A-119	150	81	22634	57.8000	.5000	57.3000
SB94A-119	140	81	22808	57.9000	.5000	57.4000
SB94A-119	130	81	22941	57.9000	.5000	57.4000
SB94A-119	120	81	23115	57.7000	.5000	57.2000
SB94A-119	110	81	23249	57.7000	.5000	57.2000
SB94A-119	100	81	23423	57.6000	.5000	57.1000
SB94A-119	90	81	23557	57.3000	.5000	56.8000
SB94A-119	80	81	23732	57.2000	.5000	56.7000
SB94A-119	70	81	23906	57.3000	.5000	56.8000
SB94A-119	60	81	24042	57.1000	.5000	56.6000
SB94A-119	50	81	24217	57.1000	.5000	56.6000
SB94A-119	40	81	24352	56.9000	.5000	56.4000
SB94A-115	120	81	62750	59.5000	2.3318	57.1682
SB94A-115	130	81	62922	59.6000	2.3447	57.2553

SB94A-115	140	81	63055	59.9000	2.3575	57.5425
SB94A-115	150	81	63228	59.8000	2.3706	57.4294
SB94A-115	160	81	63402	60.2000	2.3836	57.8164
SB94A-115	170	81	63534	60.2000	2.3962	57.8037
SB94A-115	180	81	63707	60.5000	2.4093	58.0907
SB94A-115	190	81	63840	60.5000	2.4221	58.0779
SB94A-115	200	81	64012	60.9000	2.4350	58.4650
SB94A-115	210	81	64144	60.9000	2.4478	58.4522
SB94A-115	220	81	64317	61.2000	2.4607	58.7393
SB94A-115	230	81	64449	61.3000	2.4735	58.8265
SB94A-115	240	81	64622	61.3000	2.4864	58.8136
SB94A-115	250	81	64755	61.8000	2.4992	59.3008
SB94A-115	260	81	64928	61.5000	2.5122	58.9878
SB94A-115	270	81	65100	61.6000	2.5249	59.0751
SB94A-115	280	81	65233	61.8000	2.5379	59.2621
SB94A-115	290	81	65406	61.9000	2.5507	59.3493
SB94A-115	300	81	65539	62.3000	2.5636	59.7364
SB94A-115	310	81	65712	62.2000	2.5767	59.6233
SB94A-115	320	81	65846	62.3000	2.5897	59.7103
SB94A-115	330	81	70020	62.3000	2.6022	59.6978
SB94A-115	340	81	70154	62.7000	2.6126	60.0874
SB94A-115	350	81	70329	62.8000	2.6232	60.1768
SB94A-115	360	81	70503	62.9000	2.6336	60.2664
SB94A-115	370	81	70638	63.0000	2.6442	60.3558
SB94A-115	380	81	70813	63.0000	2.6548	60.3452
SB94A-115	390	81	70947	63.2000	2.6652	60.5348
SB94A-115	400	81	71122	63.3000	2.6758	60.6242
SB94A-115	410	81	71256	63.6000	2.6862	60.9138
SB94A-115	420	81	71429	63.8000	2.6964	61.1036
SB94A-115	430	81	71603	63.8000	2.7069	61.0931
SB94A-115	440	81	71737	64.0000	2.7173	61.2827
SB94A-115	450	81	71911	64.2000	2.7278	61.4722
SB94A-115	460	81	72045	64.4000	2.7382	61.6618
SB94A-115	470	81	72220	64.9000	2.7488	62.1512
SB94A-115	480	81	72355	65.0000	2.7593	62.2407
SB94A-115	490	81	72530	65.2000	2.7700	62.4300
SB94A-115	500	81	72704	65.1000	2.7804	62.3196
SB94A-115	510	81	72839	65.3000	2.7910	62.5090
SB94A-115	520	81	73014	65.7000	2.8016	62.8984
SB94A-115	530	81	73148	65.8000	2.8120	62.9880
SB94A-115	540	81	73323	66.0000	2.8226	63.1774
SB94A-115	550	81	73459	66.0000	2.8331	63.1669
SB94A-115	560	81	73634	66.3000	2.8438	63.4562
SB94A-115	570	81	73810	66.4000	2.8543	63.5457
SB94A-115	580	81	73945	66.5000	2.8649	63.6351
SB94A-115	590	81	74120	66.7000	2.8754	63.8246
SB94A-115	600	81	74255	67.0000	2.8861	64.1139
SB94A-115	610	81	74430	66.6000	2.8967	63.7033
SB94A-115	620	81	74605	66.9000	2.9072	63.9928
SB94A-115	630	81	74740	67.3000	2.9177	64.3823
SB94A-115	640	81	74914	67.5000	2.9282	64.5718
SB94A-115	650	81	75048	68.0000	2.9387	65.0613
SB94A-115	660	81	75223	68.1000	2.9491	65.1509
SB94A-115	670	81	75357	68.2000	2.9597	65.2403
SB94A-115	680	81	75531	68.6000	2.9701	65.6299
SB94A-115	690	81	75705	68.5000	2.9806	65.5194
SB94A-115	700	81	75840	68.8000	2.9911	65.8089
SB94A-115	710	81	80016	69.4000	3.0004	66.3996
SB94A-115	720	81	80151	69.6000	3.0031	66.5969
SB94A-115	730	81	80324	69.9000	3.0056	66.8944

SB94A-115	740	81	80457	70.5000	3.0082	67.4918
SB94A-115	750	81	80628	70.6000	3.0108	67.5892
SB94A-115	760	81	80759	71.0000	3.0133	67.9867
SB94A-115	770	81	80933	71.5000	3.0159	68.4841
SB94A-115	780	81	81108	71.7000	3.0185	68.6815
SB94A-115	790	81	81243	71.9000	3.0212	68.8788
SB94A-115	800	81	81418	72.4000	3.0238	69.3762
SB94A-115	810	81	81554	72.6000	3.0265	69.5735
SB94A-115	820	81	81729	72.7000	3.0291	69.6709
SB94A-115	830	81	81906	72.9000	3.0318	69.8682
SB94A-115	840	81	82041	73.4000	3.0345	70.3655
SB94A-115	850	81	82217	73.5000	3.0371	70.4629
SB94A-115	860	81	82353	73.6000	3.0398	70.5602
SB94A-115	870	81	82529	73.7000	3.0424	70.6576
SB94A-115	880	81	82705	74.2000	3.0451	71.1549
SB94A-115	890	81	82842	74.3000	3.0478	71.2522
SB94A-115	900	81	83018	74.6000	3.0505	71.5495
SB94A-115	910	81	83156	75.1000	3.0532	72.0468
SB94A-115	920	81	83331	75.0000	3.0558	71.9442
SB94A-115	930	81	83507	75.4000	3.0585	72.3415
SB94A-115	940	81	83644	75.4000	3.0612	72.3388
SB94A-115	950	81	83820	75.7000	3.0639	72.6361
SB94A-115	960	81	83957	75.8000	3.0666	72.7334
SB94A-115	970	81	84133	75.9000	3.0692	72.8307
SB94A-115	980	81	84307	76.2000	3.0719	73.1281
SB94A-115	990	81	84441	76.3000	3.0745	73.2255
SB94A-115	1000	81	84614	76.6000	3.0770	73.5230
SB94A-115	1010	81	84747	76.7000	3.0796	73.6204
SB94A-115	1020	81	84920	76.7000	3.0822	73.6178
SB94A-115	1030	81	85053	76.9000	3.0848	73.8152
SB94A-115	1040	81	85226	77.1000	3.0874	74.0126
SB94A-115	1050	81	85359	77.1000	3.0900	74.0100
SB94A-115	1060	81	85532	77.1000	3.0925	74.0075
SB94A-115	1070	81	85705	77.3000	3.0951	74.2049
SB94A-115	1080	81	85839	77.5000	3.0977	74.4023
SB94A-115	1090	81	90012	77.6000	3.0991	74.5009
SB94A-115	1100	81	90146	77.8000	3.0912	74.7088
SB94A-117	550	81	104818	66.8000	2.4780	64.3220
SB94A-117	540	81	104951	66.4000	2.4678	63.9322
SB94A-117	530	81	105123	66.4000	2.4574	63.9426
SB94A-117	520	81	105256	66.3000	2.4472	63.8528
SB94A-117	510	81	105428	66.0000	2.4369	63.5631
SB94A-117	500	81	105601	65.9000	2.4267	63.4733
SB94A-117	490	81	105730	65.9000	2.4167	63.4833
SB94A-117	480	81	105905	65.9000	2.4061	63.4939
SB94A-117	470	81	110037	65.6000	2.3940	63.2060
SB94A-117	460	81	110210	65.3000	2.3783	62.9217
SB94A-117	450	81	110344	65.2000	2.3627	62.8373
SB94A-117	440	81	110517	65.1000	2.3473	62.7527
SB94A-117	430	81	110650	65.0000	2.3317	62.6683
SB94A-117	420	81	110824	64.5000	2.3160	62.1840
SB94A-117	410	81	110957	64.3000	2.3005	61.9995
SB94A-117	400	81	111131	64.1000	2.2850	61.8150
SB94A-117	390	81	111305	64.0000	2.2693	61.7307
SB94A-117	380	81	111438	63.8000	2.2537	61.5463
SB94A-117	370	81	111612	63.0000	2.2380	60.7620
SB94A-117	360	81	111745	63.6000	2.2227	61.3773
SB94A-117	350	81	111919	63.4000	2.2070	61.1930
SB94A-117	340	81	112051	63.3000	2.1915	61.1085
SB94A-117	330	81	112225	62.9000	2.1758	60.7242

SB94A-117	320	81	112357	62.8000	2.1605	60.6395
SB94A-117	310	81	112530	62.9000	2.1450	60.7550
SB94A-117	300	81	112703	62.5000	2.1297	60.3703
SB94A-117	290	81	112835	61.9000	2.1142	59.7858
SB94A-117	280	81	113008	61.8000	2.0988	59.7012
SB94A-117	270	81	113140	61.7000	2.0833	59.6167
SB94A-117	260	81	113313	61.3000	2.0680	59.2320
SB94A-117	250	81	113445	61.1000	2.0525	59.0475
SB94A-117	240	81	113618	61.0000	2.0372	58.9628
SB94A-117	230	81	113750	60.8000	2.0217	58.7783
SB94A-117	220	81	113923	60.6000	2.0063	58.5937
SB94A-117	210	81	114055	60.2000	1.9910	58.2090
SB94A-117	200	81	114227	60.0000	1.9755	58.0245
SB94A-117	190	81	114400	59.7000	1.9602	57.7398
SB94A-117	180	81	114532	59.7000	1.9447	57.7553
SB94A-117	170	81	114705	59.4000	1.9293	57.4707
SB94A-117	160	81	114838	59.4000	1.9138	57.4862
SB94A-117	150	81	115011	59.4000	1.8982	57.5018
SB94A-117	140	81	115144	59.2000	1.8828	57.3172
SB94A-117	130	81	115316	58.9000	1.8673	57.0327
SB94A-117	120	81	115449	58.7000	1.8520	56.8480
SB94A-117	110	81	115621	58.7000	1.8365	56.8635
SB94A-117	100	81	115753	58.5000	1.8213	56.6787
SB94A-117	90	81	115925	58.7000	1.8060	56.8940
SB94A-117	80	81	120057	58.4000	1.7921	56.6079
SB94A-117	70	81	120228	58.5000	1.7794	56.7206
SB94A-117	60	81	120400	58.0000	1.7668	56.2332
SB94A-117	50	81	120532	58.3000	1.7540	56.5460
SB94A-117	40	81	120705	58.2000	1.7411	56.4589
SB94A-113	120	81	134249	58.6000	1.0146	57.5854
SB94A-113	130	81	134425	58.9000	1.0040	57.8960
SB94A-113	140	81	134601	59.1000	.9932	58.1068
SB94A-113	150	81	134736	59.3000	.9827	58.3173
SB94A-113	160	81	134911	59.4000	.9722	58.4278
SB94A-113	170	81	135047	59.5000	.9614	58.5386
SB94A-113	180	81	135223	59.6000	.9509	58.6491
SB94A-113	190	81	135358	59.9000	.9403	58.9597
SB94A-113	200	81	135534	59.9000	.9296	58.9704
SB94A-113	210	81	135709	60.1000	.9190	59.1810
SB94A-113	220	81	135845	60.3000	.9084	59.3916
SB94A-113	230	81	140019	60.4000	.9000	59.5000
SB94A-113	240	81	140153	60.5000	.9000	59.6000
SB94A-113	250	81	140327	60.5000	.9000	59.6000
SB94A-113	260	81	140501	60.4000	.9000	59.5000
SB94A-113	270	81	140634	60.4000	.9000	59.5000
SB94A-113	280	81	140807	60.7000	.9000	59.8000
SB94A-113	290	81	140940	60.7000	.9000	59.8000
SB94A-113	300	81	141112	60.8000	.9000	59.9000
SB94A-113	310	81	141244	60.8000	.9000	59.9000
SB94A-113	320	81	141416	60.9000	.9000	60.0000
SB94A-113	330	81	141549	60.9000	.9000	60.0000
SB94A-113	340	81	141721	61.4000	.9000	60.5000
SB94A-113	350	81	141853	61.3000	.9000	60.4000
SB94A-113	360	81	142026	61.4000	.9000	60.5000
SB94A-113	370	81	142159	61.6000	.9000	60.7000
SB94A-113	380	81	142331	61.7000	.9000	60.8000
SB94A-113	390	81	142504	61.8000	.9000	60.9000
SB94A-113	400	81	142636	62.0000	.9000	61.1000
SB94A-113	410	81	142808	62.5000	.9000	61.6000
SB94A-113	420	81	142940	62.3000	.9000	61.4000

SB94A-113	430	81	143112	62.5000	.9000	61.6000
SB94A-113	440	81	143245	62.7000	.9000	61.8000
SB94A-113	450	81	143416	62.8000	.9000	61.9000
SB94A-113	460	81	143549	63.1000	.9000	62.2000
SB94A-113	470	81	143721	63.3000	.9000	62.4000
SB94A-113	480	81	143853	63.5000	.9000	62.6000
SB94A-113	490	81	144025	63.5000	.9000	62.6000
SB94A-113	500	81	144158	63.7000	.9000	62.8000
SB94A-113	510	81	144330	63.7000	.9000	62.8000
SB94A-113	520	81	144503	63.8000	.9000	62.9000
SB94A-113	530	81	144635	64.1000	.9000	63.2000
SB94A-113	540	81	144808	64.1000	.9000	63.2000
SB94A-113	550	81	144939	64.3000	.9000	63.4000
SB94A-113	560	81	145112	64.4000	.9000	63.5000
SB94A-113	570	81	145244	64.3000	.9000	63.4000
SB94A-113	580	81	145415	64.4000	.9000	63.5000
SB94A-113	590	81	145547	64.6000	.9000	63.7000
SB94A-113	600	81	145719	64.8000	.9000	63.9000
SB94A-113	610	81	145850	65.0000	.9000	64.1000
SB94A-113	620	81	150022	65.1000	.9012	64.1988
SB94A-113	630	81	150152	65.3000	.9062	64.3938
SB94A-113	640	81	150323	65.3000	.9113	64.3887
SB94A-113	650	81	150454	65.5000	.9163	64.5837
SB94A-113	660	81	150625	65.6000	.9213	64.6787
SB94A-113	670	81	150756	65.8000	.9264	64.8736
SB94A-113	680	81	150926	65.9000	.9314	64.9686
SB94A-113	690	81	151057	66.2000	.9364	65.2635
SB94A-113	700	81	151227	66.5000	.9415	65.5585
SB94A-113	710	81	151357	66.7000	.9465	65.7535
SB94A-113	720	81	151527	67.1000	.9514	66.1486
SB94A-113	730	81	151658	67.3000	.9566	66.3434
SB94A-113	740	81	151828	67.7000	.9615	66.7385
SB94A-113	750	81	151955	67.9000	.9663	66.9337
SB94A-113	760	81	152127	68.4000	.9715	67.4285
SB94A-113	770	81	152258	68.4000	.9766	67.4234
SB94A-113	780	81	152428	68.8000	.9816	67.8185
SB94A-113	790	81	152559	69.1000	.9866	68.1134
SB94A-113	800	81	152729	69.4000	.9916	68.4084
SB94A-113	810	81	152905	69.6000	.9969	68.6031
SB94A-113	820	81	153041	69.8000	1.0022	68.7978
SB94A-113	830	81	153218	70.2000	1.0076	69.1924
SB94A-113	840	81	153355	70.5000	1.0131	69.4869
SB94A-113	850	81	153531	70.8000	1.0183	69.7817
SB94A-113	860	81	153708	71.1000	1.0238	70.0762
SB94A-113	870	81	153844	71.3000	1.0291	70.2710
SB94A-113	880	81	154020	71.6000	1.0344	70.5656
SB94A-113	890	81	154156	72.1000	1.0397	71.0603
SB94A-113	900	81	154330	71.8000	1.0449	70.7551
SB94A-113	910	81	154502	72.4000	1.0501	71.3499
SB94A-113	920	81	154635	72.5000	1.0552	71.4448
SB94A-113	930	81	154807	72.7000	1.0604	71.6396
SB94A-113	940	81	154939	72.7000	1.0655	71.6345
SB94A-113	950	81	155112	72.9000	1.0707	71.8293
SB94A-113	960	81	155247	73.0000	1.0759	71.9241
SB94A-113	970	81	155421	73.3000	1.0812	72.2188
SB94A-113	980	81	155556	73.4000	1.0864	72.3136
SB94A-113	990	81	155731	73.9000	1.0917	72.8083
SB94A-113	1000	81	155905	73.7000	1.0969	72.6031
SB94A-113	1010	81	160040	74.1000	1.1043	72.9957
SB94A-113	1020	81	160214	74.3000	1.1149	73.1851

SB94A-113	1030	81	160349	74.5000	1.1253	73.3747
SB94A-113	1040	81	160523	74.6000	1.1358	73.4642
SB94A-113	1050	81	160658	75.0000	1.1463	73.8537
SB94A-113	1060	81	160833	75.0000	1.1569	73.8431
SB94A-113	1070	81	161008	75.3000	1.1676	74.1324
SB94A-113	1080	81	161145	75.2000	1.1782	74.0218
SB94A-113	1090	81	161319	75.7000	1.1887	74.5113
SB94A-113	1100	81	161454	75.7000	1.1992	74.5008
SB94A-113	1110	81	161629	76.0000	1.2099	74.7901
SB94A-113	1120	81	161804	75.9000	1.2204	74.6796
SB94A-113	1130	81	161939	75.9000	1.2310	74.6690
SB94A-113	1140	81	162114	76.5000	1.2414	75.2586
SB94A-113	1150	81	162248	76.4000	1.2520	75.1480
SB94A-113	1160	81	162423	76.7000	1.2624	75.4376
SB94A-113	1170	81	162557	76.6000	1.2729	75.3271
SB94A-113	1180	81	162732	76.9000	1.2834	75.6166
SB94A-113	1190	81	162906	77.1000	1.2939	75.8061
SB94A-113	1200	81	163040	77.0000	1.3043	75.6957
SB94A-113	1210	81	163214	76.9000	1.3149	75.5851
SB94A-113	1220	81	163348	76.8000	1.3253	75.4747
SB94A-113	1230	81	163521	76.9000	1.3356	75.5644
SB94A-113	1240	81	163654	77.3000	1.3459	75.9541
SB94A-113	1250	81	163827	77.5000	1.3563	76.1437
SB94A-113	1260	81	164000	77.7000	1.3666	76.3334
SB94A-113	1270	81	164134	77.7000	1.3770	76.3230
SB94A-113	1280	81	164310	77.8000	1.3878	76.4122
SB94A-113	1290	81	164446	77.7000	1.3983	76.3017
SB94A-113	1300	81	164622	78.0000	1.4091	76.5909
SB94A-113	1310	81	164759	78.1000	1.4198	76.6802
SB94A-113	1320	81	164935	78.0000	1.4306	76.5694
SB94A-113	1330	81	165111	78.1000	1.4411	76.6589
SB94A-113	1340	81	165246	78.2000	1.4517	76.7483
SB94A-113	1350	81	165421	78.3000	1.4623	76.8377
SB94A-113	1360	81	165556	78.3000	1.4729	76.8271
SB94A-113	1370	81	165731	78.5000	1.4834	77.0166
SB94A-113	1380	81	165907	78.6000	1.4940	77.1060
SB94A-113	1390	81	170042	78.6000	1.5070	77.0930
SB94A-113	1400	81	170216	78.8000	1.5225	77.2775
SB94A-113	1410	81	170351	78.7000	1.5385	77.1615
SB94A-113	1420	81	170525	78.7000	1.5542	77.1458
SB94A-113	1430	81	170701	79.0000	1.5700	77.4300
SB94A-113	1440	81	170837	78.9000	1.5860	77.3140
SB94A-113	1450	81	171012	78.9000	1.6020	77.2980
SB94A-113	1460	81	171146	79.1000	1.6177	77.4823
SB94A-113	1470	81	171320	79.0000	1.6332	77.3668
SB94A-113	1480	81	171453	79.1000	1.6487	77.4513
SB94A-113	1490	81	171627	79.4000	1.6645	77.7355
SB94A-113	1500	81	171801	79.5000	1.6802	77.8198
SB94A-113	1510	81	171934	79.3000	1.6957	77.6043
SB94A-113	1520	81	172108	79.4000	1.7112	77.6888
SB94A-113	1530	81	172241	79.4000	1.7267	77.6733
SB94A-113	1540	81	172414	79.5000	1.7423	77.7577
SB94A-113	1550	81	172547	79.5000	1.7577	77.7423
SB94A-113	1560	81	172720	79.5000	1.7733	77.7267
SB94A-113	1570	81	172853	79.6000	1.7888	77.8112
SB94A-113	1580	81	173026	79.8000	1.8042	77.9958
SB94A-113	1590	81	173158	79.9000	1.8197	78.0803
SB94A-113	1600	81	173330	79.9000	1.8350	78.0650
SB94A-113	1610	81	173502	79.9000	1.8502	78.0498
SB94A-113	1620	81	173634	79.7000	1.8657	77.8343

SB94A-113	1630	81	173805	79.7000	1.8808	77.8192
SB94A-113	1640	81	173938	79.7000	1.8962	77.8038
SB94A-111	1490	81	190440	79.5000	2.7233	76.7767
SB94A-111	1480	81	190614	79.6000	2.7311	76.8689
SB94A-111	1470	81	190748	79.6000	2.7390	76.8610
SB94A-111	1460	81	190921	79.5000	2.7468	76.7533
SB94A-111	1450	81	191053	79.5000	2.7544	76.7456
SB94A-111	1440	81	191224	79.4000	2.7619	76.6381
SB94A-111	1430	81	191356	79.3000	2.7696	76.5304
SB94A-111	1420	81	191528	79.0000	2.7773	76.2227
SB94A-111	1410	81	191701	79.3000	2.7850	76.5150
SB94A-111	1400	81	191834	79.4000	2.7928	76.6072
SB94A-111	1390	81	192007	79.2000	2.8006	76.3994
SB94A-111	1380	81	192140	79.3000	2.8082	76.4918
SB94A-111	1370	81	192313	79.1000	2.8161	76.2839
SB94A-111	1360	81	192446	78.8000	2.8238	75.9762
SB94A-111	1350	81	192620	79.0000	2.8316	76.1684
SB94A-111	1340	81	192753	78.9000	2.8393	76.0607
SB94A-111	1330	81	192927	78.8000	2.8472	75.9528
SB94A-111	1320	81	193101	78.7000	2.8551	75.8449
SB94A-111	1310	81	193235	79.0000	2.8629	76.1371
SB94A-111	1300	81	193409	78.5000	2.8707	75.6292
SB94A-111	1290	81	193542	78.6000	2.8784	75.7216
SB94A-111	1280	81	193715	78.5000	2.8863	75.6137
SB94A-111	1270	81	193848	78.5000	2.8939	75.6061
SB94A-111	1260	81	194023	78.5000	2.9019	75.5981
SB94A-111	1250	81	194157	78.0000	2.9097	75.0902
SB94A-111	1240	81	194330	77.6000	2.9174	74.6826
SB94A-111	1230	81	194505	77.6000	2.9253	74.6747
SB94A-111	1220	81	194638	77.5000	2.9331	74.5669
SB94A-111	1210	81	194812	77.7000	2.9410	74.7590
SB94A-111	1200	81	194946	77.6000	2.9488	74.6512
SB94A-111	1190	81	195120	77.7000	2.9567	74.7433
SB94A-111	1180	81	195255	77.7000	2.9646	74.7354
SB94A-111	1170	81	195429	77.5000	2.9724	74.5276
SB94A-111	1160	81	195605	77.5000	2.9803	74.5197
SB94A-111	1150	81	195740	77.6000	2.9883	74.6117
SB94A-111	1140	81	195914	77.4000	2.9961	74.4039
SB94A-111	1130	81	200049	77.1000	3.0014	74.0986
SB94A-111	1120	81	200224	77.4000	3.0040	74.3960
SB94A-111	1110	81	200359	77.2000	3.0066	74.1934
SB94A-111	1100	81	200534	77.2000	3.0092	74.1908
SB94A-111	1090	81	200710	77.0000	3.0119	73.9881
SB94A-111	1080	81	200843	77.1000	3.0145	74.0855
SB94A-111	1070	81	201017	76.7000	3.0171	73.6829
SB94A-111	1060	81	201150	76.9000	3.0197	73.8803
SB94A-111	1050	81	201324	76.8000	3.0223	73.7777
SB94A-111	1040	81	201458	76.3000	3.0249	73.2751
SB94A-111	1030	81	201631	76.2000	3.0275	73.1725
SB94A-111	1020	81	201804	76.0000	3.0301	72.9699
SB94A-111	1010	81	201937	75.9000	3.0327	72.8673
SB94A-111	1000	81	202111	75.9000	3.0353	72.8647
SB94A-111	990	81	202244	75.4000	3.0379	72.3621
SB94A-111	980	81	202417	75.2000	3.0404	72.1596
SB94A-111	970	81	202550	75.1000	3.0430	72.0570
SB94A-111	960	81	202723	75.0000	3.0456	71.9544
SB94A-111	950	81	202857	74.7000	3.0482	71.6517
SB94A-111	940	81	203032	74.5000	3.0509	71.4491
SB94A-111	930	81	203207	74.3000	3.0535	71.2465
SB94A-111	920	81	203342	74.0000	3.0561	70.9439

SB94A-111	910	81	203518	73.9000	3.0588	70.8412
SB94A-111	900	81	203654	73.8000	3.0615	70.7385
SB94A-111	890	81	203830	73.6000	3.0642	70.5358
SB94A-111	880	81	204005	73.2000	3.0668	70.1332
SB94A-111	870	81	204141	72.8000	3.0694	69.7306
SB94A-111	860	81	204317	72.6000	3.0721	69.5279
SB94A-111	850	81	204452	72.4000	3.0748	69.3252
SB94A-111	840	81	204628	72.2000	3.0774	69.1226
SB94A-111	830	81	204803	72.1000	3.0801	69.0199
SB94A-111	820	81	204939	71.4000	3.0827	68.3173
SB94A-111	810	81	205114	71.5000	3.0854	68.4146
SB94A-111	800	81	205248	71.2000	3.0880	68.1120
SB94A-111	790	81	205422	71.4000	3.0906	68.3094
SB94A-111	780	81	205556	71.1000	3.0932	68.0068
SB94A-111	770	81	205731	70.6000	3.0959	67.5041
SB94A-111	760	81	205905	70.5000	3.0985	67.4015
SB94A-111	750	81	210039	70.0000	3.0978	66.9022
SB94A-111	740	81	210214	69.5000	3.0926	66.4074
SB94A-111	730	81	210348	69.3000	3.0873	66.2127
SB94A-111	720	81	210522	68.9000	3.0821	65.8179
SB94A-111	710	81	210656	68.8000	3.0769	65.7231
SB94A-111	700	81	210831	68.4000	3.0716	65.3284
SB94A-111	690	81	211005	68.2000	3.0664	65.1336
SB94A-111	680	81	211138	67.9000	3.0613	64.8387
SB94A-111	670	81	211312	67.8000	3.0561	64.7439
SB94A-111	660	81	211445	67.7000	3.0508	64.6492
SB94A-111	650	81	211617	67.1000	3.0458	64.0542
SB94A-111	640	81	211750	67.2000	3.0406	64.1594
SB94A-111	630	81	211923	67.0000	3.0354	63.9646
SB94A-111	620	81	212055	66.8000	3.0303	63.7697
SB94A-111	610	81	212228	66.7000	3.0252	63.6748
SB94A-111	600	81	212400	66.7000	3.0200	63.6800
SB94A-111	590	81	212533	66.5000	3.0149	63.4851
SB94A-111	580	81	212705	66.5000	3.0097	63.4903
SB94A-111	570	81	212838	66.0000	3.0046	62.9954
SB94A-111	560	81	213011	65.8000	2.9994	62.8006
SB94A-111	550	81	213145	65.4000	2.9942	62.4058
SB94A-111	540	81	213320	65.5000	2.9889	62.5111
SB94A-111	530	81	213454	65.5000	2.9837	62.5163
SB94A-111	520	81	213629	65.6000	2.9784	62.6216
SB94A-111	510	81	213804	65.3000	2.9732	62.3268
SB94A-111	500	81	213938	65.1000	2.9679	62.1321
SB94A-111	490	81	214112	64.8000	2.9627	61.8373
SB94A-111	480	81	214246	64.7000	2.9575	61.7425
SB94A-111	470	81	214420	64.5000	2.9522	61.5478
SB94A-111	460	81	214554	64.6000	2.9470	61.6530
SB94A-111	450	81	214728	64.6000	2.9418	61.6582
SB94A-111	440	81	214901	64.4000	2.9367	61.4633
SB94A-111	430	81	215035	64.0000	2.9314	61.0686
SB94A-111	420	81	215208	64.1000	2.9262	61.1738
SB94A-111	410	81	215341	64.1000	2.9211	61.1789
SB94A-111	400	81	215515	63.8000	2.9159	60.8841
SB94A-111	390	81	215648	64.0000	2.9107	61.0893
SB94A-111	380	81	215820	63.4000	2.9056	60.4944
SB94A-111	370	81	215952	63.7000	2.9004	60.7996
SB94A-111	360	81	220124	63.7000	2.8908	60.8092
SB94A-111	350	81	220256	63.7000	2.8806	60.8194
SB94A-111	340	81	220430	63.3000	2.8701	60.4299
SB94A-111	330	81	220603	63.3000	2.8598	60.4402
SB94A-111	320	81	220737	63.4000	2.8492	60.5508

SB94A-111	310	81	220911	63.1000	2.8388	60.2612
SB94A-111	300	81	221045	63.0000	2.8283	60.1717
SB94A-111	290	81	221219	62.6000	2.8179	59.7821
SB94A-111	280	81	221353	62.4000	2.8074	59.5926
SB94A-111	270	81	221527	62.5000	2.7971	59.7029
SB94A-111	260	81	221701	62.4000	2.7867	59.6133
SB94A-111	250	81	221835	62.3000	2.7762	59.5238
SB94A-111	240	81	222009	62.2000	2.7658	59.4342
SB94A-111	230	81	222143	62.0000	2.7553	59.2447
SB94A-111	220	81	222316	61.5000	2.7449	58.7551
SB94A-111	210	81	222450	61.6000	2.7344	58.8656
SB94A-111	200	81	222623	61.6000	2.7242	58.8758
SB94A-111	190	81	222757	61.4000	2.7138	58.6862
SB94A-111	180	81	222931	61.3000	2.7033	58.5967
SB94A-111	170	81	223104	61.2000	2.6929	58.5071
SB94A-111	160	81	223238	60.9000	2.6824	58.2176
SB94A-111	150	81	223411	60.5000	2.6722	57.8278
SB94A-111	140	81	223543	60.5000	2.6619	57.8381
SB94A-111	130	81	223716	60.9000	2.6517	58.2483
SB94A-111	120	81	223848	60.9000	2.6414	58.2586
SB94A-111	110	81	224021	60.3000	2.6311	57.6689
SB94A-111	100	81	224152	60.2000	2.6210	57.5790
SB94A-111	90	81	224324	60.0000	2.6107	57.3893
SB94A-111	80	81	224456	59.8000	2.6004	57.1996
SB94A-111	70	81	224628	59.8000	2.5903	57.2097
SB94A-111	60	81	224800	59.7000	2.5800	57.1200
SB94A-111	50	81	224932	59.5000	2.5698	56.9302
SB94A-111	40	81	225104	59.3000	2.5597	56.7403
SB94A-107	120	82	3907	64.3000	1.4088	62.8912
SB94A-107	130	82	4039	64.3000	1.3937	62.9063
SB94A-107	140	82	4213	64.6000	1.3778	63.2222
SB94A-107	150	82	4346	64.6000	1.3623	63.2377
SB94A-107	160	82	4519	64.8000	1.3470	63.4530
SB94A-107	170	82	4652	65.0000	1.3313	63.6687
SB94A-107	180	82	4825	65.0000	1.3160	63.6840
SB94A-107	190	82	4958	65.1000	1.3005	63.7995
SB94A-107	200	82	5130	65.4000	1.2852	64.1148
SB94A-107	210	82	5303	65.5000	1.2697	64.2303
SB94A-107	220	82	5436	65.9000	1.2540	64.6460
SB94A-107	230	82	5608	65.8000	1.2388	64.5612
SB94A-107	240	82	5741	66.1000	1.2232	64.8768
SB94A-107	250	82	5914	66.3000	1.2078	65.0922
SB94A-107	260	82	10047	66.6000	1.1935	65.4065
SB94A-107	270	82	10219	66.8000	1.1808	65.6192
SB94A-107	280	82	10352	66.8000	1.1678	65.6322
SB94A-107	290	82	10526	67.3000	1.1547	66.1453
SB94A-107	300	82	10659	67.3000	1.1419	66.1581
SB94A-107	310	82	10832	67.9000	1.1290	66.7710
SB94A-107	320	82	11006	68.0000	1.1158	66.8842
SB94A-107	330	82	11140	68.3000	1.1028	67.1972
SB94A-107	340	82	11313	68.6000	1.0899	67.5101
SB94A-107	350	82	11446	69.0000	1.0771	67.9229
SB94A-107	360	82	11618	69.0000	1.0643	67.9357
SB94A-107	370	82	11751	69.1000	1.0514	68.0486
SB94A-107	380	82	11925	69.4000	1.0383	68.3617
SB94A-107	390	82	12058	69.5000	1.0253	68.4747
SB94A-107	400	82	12230	70.0000	1.0125	68.9875
SB94A-107	410	82	12403	70.0000	.9996	69.0004
SB94A-107	420	82	12535	70.3000	.9868	69.3132
SB94A-107	430	82	12707	70.3000	.9742	69.3258

SB94A-107	440	82	12838	70.4000	.9615	69.4385
SB94A-107	450	82	13010	70.8000	.9486	69.8514
SB94A-107	460	82	13141	71.0000	.9360	70.0640
SB94A-107	470	82	13312	71.4000	.9233	70.4767
SB94A-107	480	82	13443	71.6000	.9107	70.6893
SB94A-107	490	82	13615	71.6000	.8981	70.7019
SB94A-107	500	82	13747	71.9000	.8851	71.0149
SB94A-107	510	82	13919	72.5000	.8725	71.6275
SB94A-107	520	82	14051	72.8000	.8597	71.9403
SB94A-107	530	82	14222	73.2000	.8471	72.3529
SB94A-107	540	82	14354	73.1000	.8342	72.2658
SB94A-107	550	82	14525	73.4000	.8215	72.5785
SB94A-107	560	82	14657	73.4000	.8089	72.5911
SB94A-107	570	82	14828	73.5000	.7962	72.7038
SB94A-107	580	82	15000	73.9000	.7833	73.1167
SB94A-107	590	82	15131	74.0000	.7707	73.2293
SB94A-107	600	82	15303	74.3000	.7581	73.5419
SB94A-107	610	82	15435	74.1000	.7453	73.3547
SB94A-107	620	82	15606	74.4000	.7325	73.6675
SB94A-107	630	82	15738	74.3000	.7197	73.5803
SB94A-107	640	82	15909	74.9000	.7071	74.1929
SB94A-107	650	82	20039	74.9000	.6978	74.2022
SB94A-107	660	82	20210	74.9000	.6928	74.2072
SB94A-107	670	82	20341	75.2000	.6877	74.5123
SB94A-107	680	82	20511	75.1000	.6827	74.4173
SB94A-107	690	82	20641	75.3000	.6778	74.6222
SB94A-107	700	82	20810	75.3000	.6728	74.6272
SB94A-107	710	82	20940	75.4000	.6678	74.7322
SB94A-107	720	82	21116	75.5000	.6625	74.8375
SB94A-107	730	82	21253	75.5000	.6571	74.8429
SB94A-107	740	82	21430	75.5000	.6517	74.8483
SB94A-107	750	82	21608	75.5000	.6462	74.8538
SB94A-107	760	82	21742	75.9000	.6410	75.2590
SB94A-107	770	82	21916	75.8000	.6358	75.1642
SB94A-107	780	82	22050	75.9000	.6306	75.2694
SB94A-107	790	82	22224	75.9000	.6254	75.2746
SB94A-107	800	82	22358	76.1000	.6202	75.4798
SB94A-107	810	82	22532	76.2000	.6149	75.5851
SB94A-107	820	82	22705	76.4000	.6097	75.7903
SB94A-107	830	82	22839	76.6000	.6045	75.9955
SB94A-107	840	82	23012	76.7000	.5994	76.1006
SB94A-107	850	82	23145	76.6000	.5942	76.0058
SB94A-107	860	82	23319	76.3000	.5889	75.7111
SB94A-107	870	82	23452	76.3000	.5838	75.7162
SB94A-107	880	82	23625	76.6000	.5787	76.0213
SB94A-107	890	82	23759	76.4000	.5734	75.8266
SB94A-107	900	82	23932	76.3000	.5682	75.7318
SB94A-107	910	82	24105	76.4000	.5631	75.8369
SB94A-107	920	82	24240	76.3000	.5578	75.7422
SB94A-107	930	82	24414	76.7000	.5526	76.1474
SB94A-107	940	82	24548	76.7000	.5474	76.1526
SB94A-107	950	82	24722	77.0000	.5422	76.4578
SB94A-107	960	82	24857	76.9000	.5369	76.3631
SB94A-107	970	82	25032	77.4000	.5316	76.8684
SB94A-107	980	82	25207	77.4000	.5263	76.8737
SB94A-107	990	82	25342	77.3000	.5210	76.7790
SB94A-107	1000	82	25516	77.3000	.5158	76.7842
SB94A-107	1010	82	25650	76.9000	.5106	76.3894
SB94A-107	1020	82	25825	77.4000	.5053	76.8947
SB94A-107	1030	82	25959	77.5000	.5001	76.9999

SB94A-107	1040	82	30133	77.7000	.5026	77.1974
SB94A-107	1050	82	30307	77.8000	.5052	77.2948
SB94A-107	1060	82	30441	77.8000	.5078	77.2922
SB94A-107	1070	82	30616	77.9000	.5104	77.3896
SB94A-107	1080	82	30751	77.9000	.5131	77.3869
SB94A-107	1090	82	30926	78.0000	.5157	77.4843
SB94A-107	1100	82	31102	77.9000	.5184	77.3816
SB94A-107	1110	82	31237	78.1000	.5210	77.5790
SB94A-107	1120	82	31412	78.3000	.5237	77.7763
SB94A-107	1130	82	31545	78.1000	.5262	77.5738
SB94A-109	670	82	42913	78.0000	.7947	77.2053
SB94A-109	660	82	43046	78.5000	.8051	77.6949
SB94A-109	650	82	43223	78.2000	.8158	77.3842
SB94A-109	640	82	43402	78.4000	.8269	77.5731
SB94A-109	630	82	43540	77.9000	.8378	77.0622
SB94A-109	620	82	43719	78.2000	.8488	77.3512
SB94A-109	610	82	43859	78.1000	.8599	77.2401
SB94A-109	600	82	44037	78.0000	.8708	77.1292
SB94A-109	590	82	44213	77.9000	.8814	77.0186
SB94A-109	580	82	44349	77.3000	.8920	76.4080
SB94A-109	570	82	44525	77.5000	.9028	76.5972
SB94A-109	560	82	44701	77.7000	.9133	76.7867
SB94A-109	550	82	44836	78.0000	.9240	77.0760
SB94A-109	540	82	45011	77.7000	.9346	76.7654
SB94A-109	530	82	45148	77.6000	.9452	76.6548
SB94A-109	520	82	45324	77.5000	.9560	76.5440
SB94A-109	510	82	45458	77.9000	.9664	76.9336
SB94A-109	500	82	45635	77.4000	.9772	76.4228
SB94A-109	490	82	45813	77.6000	.9881	76.6119
SB94A-109	480	82	45949	76.9000	.9988	75.9012
SB94A-109	470	82	50129	76.5000	1.0124	75.4876
SB94A-109	460	82	50306	76.3000	1.0257	75.2743
SB94A-109	450	82	50443	76.8000	1.0393	75.7607
SB94A-109	440	82	50623	76.7000	1.0532	75.6468
SB94A-109	430	82	50757	76.4000	1.0661	75.3339
SB94A-109	420	82	50933	76.4000	1.0796	75.3204
SB94A-109	410	82	51108	76.3000	1.0926	75.2074
SB94A-109	400	82	51244	76.3000	1.1061	75.1939
SB94A-109	390	82	51420	76.2000	1.1194	75.0806
SB94A-109	380	82	51554	76.3000	1.1325	75.1675
SB94A-109	370	82	51730	76.7000	1.1457	75.5543
SB94A-109	360	82	51906	76.6000	1.1592	75.4408
SB94A-109	350	82	52043	76.5000	1.1726	75.3274
SB94A-109	340	82	52220	76.6000	1.1860	75.4140
SB94A-109	330	82	52357	76.3000	1.1996	75.1004
SB94A-109	320	82	52534	76.2000	1.2131	74.9869
SB94A-109	310	82	52711	76.1000	1.2264	74.8736
SB94A-109	300	82	52846	76.2000	1.2397	74.9603
SB94A-109	290	82	53022	75.7000	1.2529	74.4471
SB94A-109	280	82	53159	75.5000	1.2665	74.2335
SB94A-109	270	82	53335	75.9000	1.2797	74.6203
SB94A-109	260	82	53511	76.0000	1.2932	74.7068
SB94A-109	250	82	53647	75.6000	1.3064	74.2936
SB94A-109	240	82	53822	75.3000	1.3196	73.9804
SB94A-109	230	82	53959	75.2000	1.3331	73.8669
SB94A-109	220	82	54135	74.9000	1.3465	73.5535
SB94A-109	210	82	54309	74.9000	1.3594	73.5406
SB94A-109	200	82	54442	74.9000	1.3724	73.5276
SB94A-109	190	82	54616	74.8000	1.3856	73.4144
SB94A-109	180	82	54750	74.7000	1.3986	73.3014

SB94A-109	170	82	54925	74.7000	1.4117	73.2883
SB94A-109	160	82	55058	74.1000	1.4247	72.6753
SB94A-109	150	82	55230	73.9000	1.4375	72.4625
SB94A-109	140	82	55404	73.6000	1.4506	72.1494
SB94A-109	130	82	55538	73.6000	1.4636	72.1364
SB94A-109	120	82	55711	73.3000	1.4764	71.8236
SB94A-109	110	82	55844	73.1000	1.4893	71.6107
SB94A-109	100	82	60019	72.9000	1.5035	71.3965
SB94A-109	90	82	60153	72.7000	1.5218	71.1782
SB94A-109	80	82	60327	72.6000	1.5401	71.0599
SB94A-109	70	82	60500	72.5000	1.5583	70.9417
SB94A-109	60	82	60633	72.4000	1.5762	70.8238
SB94A-109	50	82	60806	71.7000	1.5945	70.1055
SB94A-109	40	82	60942	71.3000	1.6130	69.6870
SB94A-105	120	82	71852	73.4000	2.3572	71.0428
SB94A-105	130	82	72025	74.0000	2.3701	71.6299
SB94A-105	140	82	72158	74.0000	2.3829	71.6171
SB94A-105	150	82	72332	74.5000	2.3960	72.1040
SB94A-105	160	82	72505	74.5000	2.4090	72.0910
SB94A-105	170	82	72637	74.8000	2.4217	72.3783
SB94A-105	180	82	72811	74.9000	2.4349	72.4651
SB94A-105	190	82	72943	75.3000	2.4475	72.8525
SB94A-105	200	82	73118	75.4000	2.4607	72.9393
SB94A-105	210	82	73254	75.4000	2.4742	72.9258
SB94A-105	220	82	73429	75.7000	2.4872	73.2128
SB94A-105	230	82	73604	76.0000	2.5004	73.4996
SB94A-105	240	82	73739	76.1000	2.5136	73.5864
SB94A-105	250	82	73913	76.0000	2.5267	73.4733
SB94A-105	260	82	74048	76.1000	2.5400	73.5600
SB94A-105	270	82	74223	75.9000	2.5532	73.3468
SB94A-105	280	82	74400	76.0000	2.5665	73.4335
SB94A-105	290	82	74536	76.4000	2.5800	73.8200
SB94A-105	300	82	74711	76.2000	2.5931	73.6069
SB94A-105	310	82	74845	76.3000	2.6063	73.6938
SB94A-105	320	82	75021	76.4000	2.6194	73.7806
SB94A-105	330	82	75156	76.5000	2.6328	73.8672
SB94A-105	340	82	75332	76.8000	2.6460	74.1540
SB94A-105	350	82	75507	77.1000	2.6592	74.4408
SB94A-105	360	82	75643	77.0000	2.6726	74.3274
SB94A-105	370	82	75818	77.1000	2.6858	74.4142
SB94A-105	380	82	75953	77.1000	2.6989	74.4011
SB94A-105	390	82	80127	77.3000	2.7073	74.5928
SB94A-105	400	82	80302	77.6000	2.7151	74.8849
SB94A-105	410	82	80437	77.4000	2.7230	74.6770
SB94A-105	420	82	80613	77.6000	2.7311	74.8689
SB94A-105	430	82	80749	77.9000	2.7390	75.1610
SB94A-105	440	82	80925	78.1000	2.7471	75.3529
SB94A-105	450	82	81101	78.1000	2.7550	75.3450
SB94A-105	460	82	81236	78.1000	2.7629	75.3371
SB94A-105	470	82	81413	78.2000	2.7710	75.4290
SB94A-105	480	82	81551	78.2000	2.7792	75.4208
SB94A-105	490	82	81729	78.6000	2.7873	75.8127
SB94A-105	500	82	81906	78.4000	2.7955	75.6045
SB94A-105	510	82	82042	78.6000	2.8034	75.7966
SB94A-105	520	82	82221	78.5000	2.8117	75.6882
SB94A-105	530	82	82357	78.4000	2.8198	75.5803
SB94A-105	540	82	82533	77.7000	2.8277	74.8723
SB94A-105	550	82	82710	77.4000	2.8358	74.5643
SB94A-105	560	82	82847	77.4000	2.8439	74.5561
SB94A-105	570	82	83022	76.8000	2.8518	73.9482

SB94A-105	580	82	83157	77.2000	2.8597	74.3403
SB94A-105	590	82	83335	76.8000	2.8678	73.9322
SB94A-105	600	82	83512	76.9000	2.8760	74.0240
SB94A-105	610	82	83650	77.4000	2.8842	74.5158
SB94A-105	620	82	83826	77.6000	2.8921	74.7079
SB94A-105	630	82	84001	77.9000	2.9001	74.9999
SB94A-105	640	82	84139	78.1000	2.9083	75.1917
SB94A-105	650	82	84317	78.1000	2.9164	75.1836
SB94A-105	660	82	84452	78.3000	2.9243	75.3757
SB94A-105	670	82	84629	78.3000	2.9324	75.3676
SB94A-105	680	82	84806	78.1000	2.9404	75.1596
SB94A-105	690	82	84942	78.4000	2.9485	75.4515
SB94A-105	700	82	85117	78.7000	2.9564	75.7436
SB94A-105	710	82	85254	78.5000	2.9645	75.5355
SB94A-103	640	82	100528	77.8000	2.9818	74.8182
SB94A-103	630	82	100705	77.5000	2.9764	74.5236
SB94A-103	620	82	100843	77.5000	2.9710	74.5290
SB94A-103	610	82	101019	77.5000	2.9656	74.5344
SB94A-103	600	82	101156	77.4000	2.9603	74.4397
SB94A-103	590	82	101332	77.9000	2.9549	74.9451
SB94A-103	580	82	101509	77.8000	2.9496	74.8504
SB94A-103	570	82	101645	78.1000	2.9442	75.1558
SB94A-103	560	82	101822	77.7000	2.9388	74.7612
SB94A-103	550	82	101957	77.8000	2.9335	74.8665
SB94A-103	540	82	102133	78.0000	2.9282	75.0718
SB94A-103	530	82	102308	77.7000	2.9229	74.7771
SB94A-103	520	82	102443	77.3000	2.9176	74.3824
SB94A-103	510	82	102616	77.3000	2.9125	74.3875
SB94A-103	500	82	102752	77.3000	2.9071	74.3929
SB94A-103	490	82	102926	77.4000	2.9019	74.4981
SB94A-103	480	82	103102	77.1000	2.8966	74.2034
SB94A-103	470	82	103236	77.1000	2.8913	74.2087
SB94A-103	460	82	103411	77.1000	2.8861	74.2139
SB94A-103	450	82	103546	77.2000	2.8808	74.3192
SB94A-103	440	82	103722	77.6000	2.8754	74.7246
SB94A-103	430	82	103854	77.5000	2.8704	74.6296
SB94A-103	420	82	104029	77.5000	2.8651	74.6349
SB94A-103	410	82	104203	77.4000	2.8599	74.5401
SB94A-103	400	82	104337	76.9000	2.8547	74.0453
SB94A-103	390	82	104511	77.2000	2.8494	74.3506
SB94A-103	380	82	104644	77.0000	2.8442	74.1558
SB94A-103	370	82	104817	77.0000	2.8391	74.1609
SB94A-103	360	82	104951	76.8000	2.8339	73.9661
SB94A-103	350	82	105125	77.1000	2.8287	74.2713
SB94A-103	340	82	105258	76.5000	2.8234	73.6766
SB94A-103	330	82	105431	76.5000	2.8183	73.6817
SB94A-103	320	82	105604	76.4000	2.8131	73.5869
SB94A-103	310	82	105737	75.9000	2.8079	73.0921
SB94A-103	300	82	105910	76.0000	2.8028	73.1972
SB94A-103	290	82	110043	76.1000	2.7940	73.3060
SB94A-103	280	82	110216	75.8000	2.7812	73.0188
SB94A-103	270	82	110350	75.5000	2.7682	72.7318
SB94A-103	260	82	110523	75.5000	2.7553	72.7447
SB94A-103	250	82	110656	75.3000	2.7422	72.5578
SB94A-103	240	82	110829	75.1000	2.7294	72.3706
SB94A-103	230	82	111002	75.3000	2.7164	72.5836
SB94A-103	220	82	111135	75.0000	2.7035	72.2965
SB94A-103	210	82	111307	74.9000	2.6907	72.2093
SB94A-103	200	82	111440	74.5000	2.6779	71.8221
SB94A-103	190	82	111612	74.4000	2.6650	71.7350

SB94A-103	180	82	111745	74.5000	2.6522	71.8478
SB94A-103	170	82	111917	74.3000	2.6393	71.6607
SB94A-103	160	82	112051	73.8000	2.6263	71.1738
SB94A-103	150	82	112225	73.8000	2.6132	71.1868
SB94A-103	140	82	112359	73.1000	2.6001	70.4999
SB94A-103	130	82	112532	72.9000	2.5874	70.3126
SB94A-103	120	82	112705	72.7000	2.5743	70.1257
SB94A-103	110	82	112838	72.4000	2.5615	69.8385
SB94A-103	100	82	113010	72.1000	2.5486	69.5514
SB94A-103	90	82	113144	71.8000	2.5356	69.2645
SB94A-103	80	82	113317	71.7000	2.5228	69.1772
SB94A-103	70	82	113450	71.6000	2.5097	69.0903
SB94A-103	60	82	113623	71.7000	2.4968	69.2032
SB94A-103	50	82	113756	71.2000	2.4840	68.7160
SB94A-103	40	82	113928	71.0000	2.4711	68.5289
SB94A-101	120	82	130334	70.3000	1.6703	68.6297
SB94A-101	130	82	130510	70.6000	1.6571	68.9429
SB94A-101	140	82	130642	70.8000	1.6442	69.1558
SB94A-101	150	82	130817	71.1000	1.6310	69.4690
SB94A-101	160	82	130954	71.2000	1.6175	69.5825
SB94A-101	170	82	131128	71.2000	1.6044	69.5956
SB94A-101	180	82	131304	71.7000	1.5913	70.1087
SB94A-101	190	82	131438	71.8000	1.5781	70.2219
SB94A-101	200	82	131614	72.0000	1.5649	70.4351
SB94A-101	210	82	131751	72.3000	1.5514	70.7486
SB94A-101	220	82	131927	72.5000	1.5379	70.9621
SB94A-101	230	82	132104	72.8000	1.5246	71.2754
SB94A-101	240	82	132240	73.2000	1.5111	71.6889
SB94A-101	250	82	132416	73.3000	1.4979	71.8021
SB94A-101	260	82	132553	73.6000	1.4843	72.1157
SB94A-101	270	82	132728	73.6000	1.4713	72.1287
SB94A-101	280	82	132901	74.0000	1.4582	72.5418
SB94A-101	290	82	133039	74.1000	1.4446	72.6554
SB94A-101	300	82	133216	74.2000	1.4313	72.7687
SB94A-101	310	82	133350	74.2000	1.4182	72.7818
SB94A-101	320	82	133523	74.4000	1.4053	72.9947
SB94A-101	330	82	133657	74.6000	1.3921	73.2079
SB94A-101	340	82	133831	74.8000	1.3790	73.4210
SB94A-101	350	82	134005	75.0000	1.3660	73.6340
SB94A-101	360	82	134136	75.1000	1.3533	73.7467
SB94A-101	370	82	134310	75.2000	1.3403	73.8597
SB94A-101	380	82	134443	75.0000	1.3275	73.6725
SB94A-101	390	82	134619	75.2000	1.3140	73.8860
SB94A-101	400	82	134755	75.3000	1.3008	73.9992
SB94A-101	410	82	134931	75.4000	1.2874	74.1126
SB94A-101	420	82	135107	75.4000	1.2742	74.1258
SB94A-101	430	82	135238	75.4000	1.2615	74.1385
SB94A-101	440	82	135411	75.3000	1.2485	74.0515
SB94A-101	450	82	135547	75.1000	1.2353	73.8647
SB94A-101	460	82	135721	75.0000	1.2222	73.7778
SB94A-101	470	82	135854	75.3000	1.2092	74.0908
SB94A-101	480	82	140031	75.5000	1.1974	74.3026
SB94A-101	490	82	140205	75.7000	1.1897	74.5103
SB94A-101	500	82	140340	75.5000	1.1817	74.3183
SB94A-101	510	82	140515	75.7000	1.1738	74.5262
SB94A-101	520	82	140650	75.9000	1.1658	74.7342
SB94A-101	530	82	140824	76.0000	1.1580	74.8420
SB94A-101	540	82	140957	76.2000	1.1503	75.0497
SB94A-101	550	82	141129	76.2000	1.1426	75.0574
SB94A-101	560	82	141301	76.4000	1.1350	75.2650

SB94A-101	570	82	141435	76.1000	1.1272	74.9728
SB94A-101	580	82	141607	76.0000	1.1195	74.8805
SB94A-101	590	82	141742	75.5000	1.1115	74.3885
SB94A-101	600	82	141914	75.3000	1.1038	74.1962
SB94A-101	610	82	142048	74.9000	1.0960	73.8040
SB94A-101	620	82	142222	74.8000	1.0882	73.7118
SB94A-101	630	82	142357	74.8000	1.0803	73.7197
SB94A-101	640	82	142531	75.2000	1.0724	74.1276
SB94A-101	650	82	142703	75.5000	1.0648	74.4352
SB94A-101	660	82	142836	76.1000	1.0570	75.0430
SB94A-101	670	82	143009	76.6000	1.0493	75.5507
SB94A-101	680	82	143144	76.6000	1.0413	75.5587
SB94A-101	690	82	143317	76.6000	1.0337	75.5663
SB94A-101	700	82	143450	76.5000	1.0258	75.4742
SB94A-101	710	82	143623	76.3000	1.0181	75.2819
SB94A-101	720	82	143756	76.4000	1.0104	75.3896
SB94A-101	730	82	143927	75.8000	1.0028	74.7972
SB94A-101	740	82	144059	76.0000	.9951	75.0049
SB94A-101	750	82	144232	76.2000	.9874	75.2126
SB94A-101	760	82	144404	76.6000	.9797	75.6203
SB94A-101	770	82	144537	76.6000	.9720	75.6280
SB94A-101	780	82	144709	76.6000	.9642	75.6357
SB94A-101	790	82	144841	76.5000	.9566	75.5434
SB94A-122	120	82	191048	75.5000	2.2900	73.2100
SB94A-122	130	82	191222	76.1000	2.3029	73.7971
SB94A-122	140	82	191354	76.0000	2.3158	73.6842
SB94A-122	150	82	191530	76.5000	2.3290	74.1710
SB94A-122	160	82	191709	76.8000	2.3429	74.4571
SB94A-122	170	82	191846	77.2000	2.3563	74.8438
SB94A-122	180	82	192025	76.0000	2.3701	73.6299
SB94A-122	190	82	192203	76.3000	2.3837	73.9163
SB94A-122	200	82	192337	77.1000	2.3967	74.7033
SB94A-122	210	82	192512	76.6000	2.4100	74.1900
SB94A-122	220	82	192645	76.6000	2.4228	74.1772
SB94A-122	230	82	192821	76.6000	2.4362	74.1637
SB94A-122	240	82	192959	77.1000	2.4499	74.6501
SB94A-122	250	82	193135	76.6000	2.4631	74.1369
SB94A-122	260	82	193310	76.7000	2.4763	74.2237
SB94A-122	270	82	193446	76.8000	2.4897	74.3103
SB94A-122	280	82	193624	76.9000	2.5033	74.3967
SB94A-122	290	82	193805	76.6000	2.5174	74.0826
SB94A-122	300	82	193939	77.1000	2.5304	74.5696
SB94A-122	310	82	194114	77.0000	2.5436	74.4564
SB94A-122	320	82	194250	76.9000	2.5568	74.3432
SB94A-122	330	82	194426	77.1000	2.5703	74.5297
SB94A-122	340	82	194602	76.4000	2.5835	73.8165
SB94A-122	350	82	194738	76.6000	2.5969	74.0031
SB94A-122	360	82	194915	75.8000	2.6103	73.1897
SB94A-122	370	82	195051	76.3000	2.6237	73.6763
SB94A-122	380	82	195225	76.0000	2.6368	73.3632
SB94A-122	390	82	195359	75.6000	2.6499	72.9501
SB94A-122	400	82	195536	75.9000	2.6632	73.2368
SB94A-122	410	82	195713	76.5000	2.6768	73.8232
SB94A-122	420	82	195850	76.4000	2.6903	73.7097
SB94A-122	430	82	200027	77.2000	2.7022	74.4978
SB94A-122	440	82	200202	77.2000	2.7102	74.4898
SB94A-122	450	82	200338	77.1000	2.7181	74.3819
SB94A-122	460	82	200514	77.2000	2.7262	74.4738
SB94A-122	470	82	200647	77.1000	2.7338	74.3662
SB94A-122	480	82	200825	77.3000	2.7420	74.5580

SB94A-122	490	82	201002	77.5000	2.7502	74.7498
SB94A-122	500	82	201138	77.7000	2.7581	74.9419
SB94A-122	510	82	201313	77.7000	2.7661	74.9339
SB94A-122	520	82	201448	78.0000	2.7740	75.2260
SB94A-122	530	82	201622	78.1000	2.7818	75.3182
SB94A-122	540	82	201757	77.3000	2.7898	74.5103
SB94A-122	550	82	201931	76.9000	2.7976	74.1024
SB94A-122	560	82	202109	76.9000	2.8058	74.0943
SB94A-122	570	82	202248	77.1000	2.8140	74.2860
SB94A-122	580	82	202426	76.9000	2.8222	74.0778
SB94A-122	590	82	202605	76.5000	2.8303	73.6697
SB94A-122	600	82	202739	77.0000	2.8382	74.1618
SB94A-122	610	82	202912	76.7000	2.8460	73.8540
SB94A-122	620	82	203046	77.1000	2.8538	74.2462
SB94A-122	630	82	203219	77.1000	2.8615	74.2385
SB94A-122	640	82	203356	78.6000	2.8696	75.7304
SB94A-122	650	82	203531	78.6000	2.8775	75.7225
SB94A-122	660	82	203705	78.1000	2.8853	75.2147
SB94A-122	670	82	203839	78.9000	2.8932	76.0068
SB94A-122	680	82	204011	79.2000	2.9008	76.2992
SB94A-122	690	82	204144	79.1000	2.9087	76.1913
SB94A-122	700	82	204320	79.4000	2.9166	76.4834
SB94A-122	710	82	204455	79.8000	2.9246	76.8754
SB94A-122	720	82	204633	79.5000	2.9327	76.5673
SB94A-122	730	82	204809	79.7000	2.9407	76.7593
SB94A-122	740	82	204945	79.8000	2.9488	76.8512
SB94A-122	750	82	205120	79.6000	2.9567	76.6433
SB94A-122	760	82	205255	79.9000	2.9646	76.9354
SB94A-122	770	82	205430	79.8000	2.9724	76.8276
SB94A-122	780	82	205605	79.9000	2.9803	76.9197
SB94A-122	790	82	205742	80.1000	2.9885	77.1115
SB94A-122	800	82	205916	80.1000	2.9963	77.1037
SB94A-122	810	82	210051	80.0000	3.0014	76.9986
SB94A-122	820	82	210227	80.1000	3.0041	77.0959
SB94A-122	830	82	210404	80.1000	3.0068	77.0932
SB94A-122	840	82	210539	80.2000	3.0094	77.1906
SB94A-122	850	82	210715	80.3000	3.0121	77.2879
SB94A-122	860	82	210850	80.0000	3.0147	76.9853
SB94A-122	870	82	211022	80.3000	3.0173	77.2828
SB94A-122	880	82	211155	79.9000	3.0198	76.8802
SB94A-122	890	82	211329	80.2000	3.0225	77.1775
SB94A-122	900	82	211506	80.1000	3.0252	77.0748
SB94A-122	910	82	211642	80.1000	3.0278	77.0722
SB94A-122	920	82	211815	80.0000	3.0304	76.9696
SB94A-122	930	82	211951	80.5000	3.0331	77.4669
SB94A-122	940	82	212124	80.6000	3.0357	77.5643
SB94A-122	950	82	212259	80.7000	3.0383	77.6617
SB94A-122	960	82	212435	80.2000	3.0409	77.1590
SB94A-122	970	82	212613	80.4000	3.0437	77.3563
SB94A-122	980	82	212748	80.6000	3.0463	77.5537
SB94A-120	650	82	225540	78.6000	2.9145	75.6855
SB94A-120	640	82	225712	78.5000	2.9093	75.5907
SB94A-120	630	82	225843	78.6000	2.9043	75.6957
SB94A-120	620	82	230015	78.4000	2.8981	75.5019
SB94A-120	610	82	230146	78.3000	2.8854	75.4146
SB94A-120	600	82	230318	78.2000	2.8725	75.3275
SB94A-120	590	82	230451	78.4000	2.8597	75.5403
SB94A-120	580	82	230624	78.2000	2.8467	75.3533
SB94A-120	570	82	230756	78.3000	2.8340	75.4660
SB94A-120	560	82	230928	77.8000	2.8211	74.9789

SB94A-120	550	82	231100	78.2000	2.8083	75.3917
SB94A-120	540	82	231231	78.1000	2.7957	75.3043
SB94A-120	530	82	231403	77.5000	2.7831	74.7169
SB94A-120	520	82	231534	77.3000	2.7704	74.5296
SB94A-120	510	82	231706	77.2000	2.7575	74.4425
SB94A-120	500	82	231839	77.4000	2.7447	74.6553
SB94A-120	490	82	232011	77.7000	2.7318	74.9682
SB94A-120	480	82	232142	78.0000	2.7192	75.2808
SB94A-120	470	82	232313	77.6000	2.7065	74.8935
SB94A-120	460	82	232444	77.8000	2.6939	75.1061
SB94A-120	450	82	232616	77.8000	2.6813	75.1188
SB94A-120	440	82	232747	77.4000	2.6686	74.7314
SB94A-120	430	82	232919	77.3000	2.6557	74.6443
SB94A-120	420	82	233050	77.0000	2.6431	74.3569
SB94A-120	410	82	233221	77.0000	2.6304	74.3696
SB94A-120	400	82	233355	76.9000	2.6174	74.2826
SB94A-120	390	82	233532	76.8000	2.6040	74.1960
SB94A-120	380	82	233708	76.2000	2.5906	73.6094
SB94A-120	370	82	233843	76.4000	2.5775	73.8225
SB94A-120	360	82	234019	76.3000	2.5640	73.7360
SB94A-120	350	82	234155	76.3000	2.5508	73.7492
SB94A-120	340	82	234333	76.2000	2.5372	73.6628
SB94A-120	330	82	234509	76.3000	2.5239	73.7761
SB94A-120	320	82	234647	76.3000	2.5103	73.7897
SB94A-120	310	82	234825	76.2000	2.4967	73.7033
SB94A-120	300	82	235003	76.5000	2.4831	74.0169
SB94A-120	290	82	235142	76.1000	2.4692	73.6308
SB94A-120	280	82	235319	76.1000	2.4557	73.6443
SB94A-120	270	82	235453	76.2000	2.4428	73.7572
SB94A-120	260	82	235626	76.5000	2.4299	74.0701
SB94A-120	250	82	235759	76.2000	2.4168	73.7832
SB94A-120	240	82	235933	75.9000	2.4038	73.4963
SB94A-120	230	83	106	76.2000	2.3892	73.8108
SB94A-120	220	83	240	76.1000	2.3735	73.7265
SB94A-120	210	83	415	75.8000	2.3577	73.4423
SB94A-120	200	83	552	75.9000	2.3413	73.5587
SB94A-120	190	83	731	75.8000	2.3250	73.4750
SB94A-120	180	83	909	75.5000	2.3087	73.1913
SB94A-120	170	83	1047	75.8000	2.2923	73.5077
SB94A-120	160	83	1223	75.8000	2.2762	73.5238
SB94A-120	150	83	1400	75.3000	2.2602	73.0398
SB94A-120	140	83	1536	75.2000	2.2440	72.9560
SB94A-120	130	83	1712	75.2000	2.2282	72.9718
SB94A-120	120	83	1848	75.0000	2.2120	72.7880
SB94A-120	110	83	2024	74.9000	2.1962	72.7038
SB94A-120	100	83	2201	75.1000	2.1800	72.9200
SB94A-120	90	83	2338	75.2000	2.1637	73.0363
SB94A-120	80	83	2515	75.0000	2.1477	72.8523
SB94A-120	70	83	2654	74.7000	2.1310	72.5690
SB94A-120	60	83	2828	74.5000	2.1153	72.3847
SB94A-120	50	83	3002	74.5000	2.0997	72.4003
SB94A-120	40	83	3135	74.4000	2.0843	72.3157
SB94A-118	120	83	15654	73.3000	1.2310	72.0690
SB94A-118	130	83	15829	73.5000	1.2152	72.2848
SB94A-118	140	83	20003	73.5000	1.1996	72.3004
SB94A-118	150	83	20139	73.5000	1.1864	72.3136
SB94A-118	160	83	20314	73.5000	1.1732	72.3268
SB94A-118	170	83	20451	73.7000	1.1597	72.5403
SB94A-118	180	83	20626	74.1000	1.1465	72.9535
SB94A-118	190	83	20803	73.8000	1.1331	72.6669

SB94A-118	200	83	20940	73.9000	1.1194	72.7806
SB94A-118	210	83	21122	74.2000	1.1053	73.0947
SB94A-118	220	83	21258	74.3000	1.0921	73.2079
SB94A-118	230	83	21433	74.2000	1.0788	73.1212
SB94A-118	240	83	21608	74.2000	1.0656	73.1344
SB94A-118	250	83	21744	74.3000	1.0524	73.2476
SB94A-118	260	83	21920	74.1000	1.0389	73.0611
SB94A-118	270	83	22056	74.2000	1.0257	73.1743
SB94A-118	280	83	22233	74.2000	1.0121	73.1879
SB94A-118	290	83	22410	74.1000	.9986	73.1014
SB94A-118	300	83	22546	74.0000	.9854	73.0146
SB94A-118	310	83	22720	74.2000	.9722	73.2278
SB94A-118	320	83	22856	74.4000	.9590	73.4410
SB94A-118	330	83	23031	74.2000	.9457	73.2543
SB94A-118	340	83	23206	74.5000	.9325	73.5675
SB94A-118	350	83	23341	74.7000	.9193	73.7807
SB94A-118	360	83	23517	74.7000	.9061	73.7939
SB94A-118	370	83	23653	74.9000	.8926	74.0074
SB94A-118	380	83	23828	75.0000	.8794	74.1206
SB94A-118	390	83	24003	75.2000	.8664	74.3336
SB94A-118	400	83	24139	75.1000	.8529	74.2471
SB94A-118	410	83	24316	75.2000	.8396	74.3604
SB94A-118	420	83	24455	75.4000	.8257	74.5743
SB94A-118	430	83	24629	75.2000	.8126	74.3874
SB94A-118	440	83	24806	75.5000	.7993	74.7007
SB94A-118	450	83	24947	75.5000	.7853	74.7147
SB94A-118	460	83	25126	75.6000	.7715	74.8285
SB94A-118	470	83	25301	75.7000	.7582	74.9418
SB94A-118	480	83	25437	75.8000	.7449	75.0551
SB94A-118	490	83	25614	75.7000	.7314	74.9686
SB94A-118	500	83	25749	75.4000	.7182	74.6818
SB94A-118	510	83	25926	75.7000	.7047	74.9953
SB94A-118	520	83	30101	76.0000	.6966	75.3034
SB94A-118	530	83	30237	76.1000	.6913	75.4087
SB94A-118	540	83	30414	76.0000	.6859	75.3141
SB94A-118	550	83	30546	76.0000	.6808	75.3192
SB94A-118	560	83	30721	76.2000	.6755	75.5245
SB94A-118	570	83	30857	75.8000	.6702	75.1298
SB94A-118	580	83	31033	75.9000	.6649	75.2351
SB94A-118	590	83	31208	76.0000	.6596	75.3404
SB94A-118	600	83	31343	76.2000	.6543	75.5457
SB94A-118	610	83	31518	76.5000	.6490	75.8510
SB94A-118	620	83	31652	76.6000	.6438	75.9562
SB94A-118	630	83	31825	76.4000	.6387	75.7613
SB94A-118	640	83	31959	76.6000	.6334	75.9666
SB94A-118	650	83	32132	76.4000	.6283	75.7717
SB94A-118	660	83	32306	76.4000	.6230	75.7770
SB94A-118	670	83	32441	76.7000	.6178	76.0822
SB94A-118	680	83	32615	76.9000	.6125	76.2875
SB94A-118	690	83	32747	76.5000	.6074	75.8926
SB94A-118	700	83	32919	76.8000	.6023	76.1977
SB94A-118	710	83	33050	76.5000	.5972	75.9028
SB94A-118	720	83	33222	76.6000	.5922	76.0078
SB94A-118	730	83	33354	76.4000	.5871	75.8129
SB94A-116	650	83	45149	75.2000	.5864	74.6136
SB94A-116	640	83	45327	75.2000	.5891	74.6109
SB94A-116	630	83	45504	75.0000	.5918	74.4082
SB94A-116	620	83	45642	74.8000	.5945	74.2055
SB94A-116	610	83	45819	75.1000	.5972	74.5028
SB94A-116	600	83	45955	74.7000	.5999	74.1001

SB94A-116	590	83	50134	74.8000	.6104	74.1896
SB94A-116	580	83	50313	74.8000	.6213	74.1787
SB94A-116	570	83	50450	74.8000	.6322	74.1678
SB94A-116	560	83	50628	74.5000	.6431	73.8569
SB94A-116	550	83	50808	74.5000	.6541	73.8459
SB94A-116	540	83	50945	74.6000	.6649	73.9351
SB94A-116	530	83	51123	74.3000	.6758	73.6242
SB94A-116	520	83	51301	74.3000	.6867	73.6133
SB94A-116	510	83	51440	74.0000	.6977	73.3023
SB94A-116	500	83	51619	74.1000	.7088	73.3912
SB94A-116	490	83	51758	73.9000	.7197	73.1803
SB94A-116	480	83	51937	74.2000	.7307	73.4693
SB94A-116	470	83	52117	74.0000	.7419	73.2581
SB94A-116	460	83	52256	73.7000	.7528	72.9472
SB94A-116	450	83	52436	73.7000	.7640	72.9360
SB94A-116	440	83	52615	73.8000	.7750	73.0250
SB94A-116	430	83	52755	73.7000	.7861	72.9139
SB94A-116	420	83	52934	73.5000	.7971	72.7029
SB94A-116	410	83	53109	73.1000	.8076	72.2924
SB94A-116	400	83	53241	73.0000	.8178	72.1822
SB94A-116	390	83	53414	73.2000	.8282	72.3718
SB94A-116	380	83	53548	73.1000	.8387	72.2613
SB94A-116	370	83	53722	72.9000	.8491	72.0509
SB94A-116	360	83	53856	72.6000	.8596	71.7404
SB94A-116	350	83	54032	72.9000	.8701	72.0299
SB94A-116	340	83	54207	72.7000	.8807	71.8193
SB94A-116	330	83	54342	72.3000	.8913	71.4087
SB94A-116	320	83	54516	72.0000	.9017	71.0983
SB94A-116	310	83	54649	72.2000	.9120	71.2880
SB94A-116	300	83	54822	72.2000	.9224	71.2775
SB94A-116	290	83	54958	71.8000	.9330	70.8670
SB94A-116	280	83	55129	71.7000	.9431	70.7569
SB94A-116	270	83	55302	71.8000	.9536	70.8465
SB94A-116	260	83	55440	71.6000	.9644	70.6356
SB94A-116	250	83	55613	71.6000	.9747	70.6253
SB94A-116	240	83	55747	71.6000	.9851	70.6149
SB94A-116	230	83	55921	71.6000	.9956	70.6044
SB94A-116	220	83	60056	71.3000	1.0092	70.2908
SB94A-116	210	83	60230	71.0000	1.0248	69.9752
SB94A-116	200	83	60403	70.9000	1.0405	69.8595
SB94A-116	190	83	60537	70.7000	1.0562	69.6438
SB94A-116	180	83	60711	70.9000	1.0718	69.8282
SB94A-116	170	83	60845	71.0000	1.0875	69.9125
SB94A-116	160	83	61019	70.6000	1.1032	69.4968
SB94A-116	150	83	61153	70.9000	1.1187	69.7813
SB94A-116	140	83	61326	70.6000	1.1342	69.4658
SB94A-116	130	83	61500	71.0000	1.1500	69.8500
SB94A-116	120	83	61633	71.0000	1.1655	69.8345
SB94A-116	110	83	61806	70.8000	1.1808	69.6192
SB94A-116	100	83	61939	70.4000	1.1965	69.2035
SB94A-116	90	83	62111	70.8000	1.2117	69.5883
SB94A-116	80	83	62245	70.2000	1.2273	68.9727
SB94A-116	70	83	62420	70.5000	1.2432	69.2568
SB94A-116	60	83	62553	70.5000	1.2588	69.2412
SB94A-116	50	83	62728	70.0000	1.2745	68.7255
SB94A-116	40	83	62902	69.9000	1.2902	68.6098
SB94A-114	120	83	75259	71.4000	2.1298	69.2702
SB94A-114	130	83	75434	71.4000	2.1455	69.2545
SB94A-114	140	83	75609	71.6000	2.1613	69.4387
SB94A-114	150	83	75744	71.3000	2.1773	69.1227

SB94A-114	160	83	75918	71.5000	2.1928	69.3072
SB94A-114	170	83	80053	71.5000	2.2074	69.2926
SB94A-114	180	83	80228	72.2000	2.2206	69.9794
SB94A-114	190	83	80402	71.9000	2.2336	69.6664
SB94A-114	200	83	80538	72.1000	2.2468	69.8532
SB94A-114	210	83	80712	72.4000	2.2599	70.1401
SB94A-114	220	83	80847	72.5000	2.2731	70.2269
SB94A-114	230	83	81023	73.0000	2.2865	70.7135
SB94A-114	240	83	81158	72.9000	2.2997	70.6003
SB94A-114	250	83	81332	73.1000	2.3128	70.7872
SB94A-114	260	83	81505	73.1000	2.3256	70.7744
SB94A-114	270	83	81638	73.4000	2.3385	71.0615
SB94A-114	280	83	81814	73.3000	2.3518	70.9482
SB94A-114	290	83	81948	73.2000	2.3649	70.8351
SB94A-114	300	83	82120	73.2000	2.3778	70.8222
SB94A-114	310	83	82253	73.6000	2.3906	71.2094
SB94A-114	320	83	82426	73.5000	2.4036	71.0964
SB94A-114	330	83	82559	73.7000	2.4165	71.2835
SB94A-114	340	83	82732	73.7000	2.4293	71.2707
SB94A-114	350	83	82907	74.1000	2.4425	71.6575
SB94A-114	360	83	83041	74.1000	2.4556	71.6444
SB94A-114	370	83	83214	74.3000	2.4686	71.8314
SB94A-114	380	83	83346	74.4000	2.4813	71.9188
SB94A-114	390	83	83519	74.6000	2.4943	72.1057
SB94A-114	400	83	83652	74.5000	2.5072	71.9928
SB94A-114	410	83	83825	75.0000	2.5200	72.4800
SB94A-114	420	83	84001	75.0000	2.5335	72.4665
SB94A-114	430	83	84134	74.9000	2.5463	72.3538
SB94A-114	440	83	84307	75.1000	2.5593	72.5407
SB94A-114	450	83	84442	75.1000	2.5724	72.5276
SB94A-114	460	83	84616	75.3000	2.5856	72.7144
SB94A-114	470	83	84749	75.3000	2.5985	72.7015
SB94A-114	480	83	84923	75.8000	2.6114	73.1886
SB94A-114	490	83	85057	75.8000	2.6244	73.1756
SB94A-114	500	83	85231	75.8000	2.6375	73.1625
SB94A-114	510	83	85405	75.8000	2.6506	73.1494
SB94A-114	520	83	85538	75.9000	2.6636	73.2364
SB94A-114	530	83	85711	75.9000	2.6764	73.2236
SB94A-114	540	83	85845	75.9000	2.6894	73.2106
SB94A-114	550	83	90019	76.0000	2.7015	73.2985
SB94A-114	560	83	90153	76.3000	2.7093	73.5907
SB94A-114	570	83	90327	76.4000	2.7172	73.6828
SB94A-114	580	83	90501	76.6000	2.7251	73.8749
SB94A-114	590	83	90636	76.6000	2.7329	73.8671
SB94A-114	600	83	90812	76.4000	2.7410	73.6590
SB94A-114	610	83	90948	76.7000	2.7489	73.9511
SB94A-114	620	83	91124	77.0000	2.7569	74.2431
SB94A-114	630	83	91300	76.9000	2.7650	74.1350
SB94A-114	640	83	91436	77.1000	2.7729	74.3271

APPENDIX 5

SEISMIC DATA PROCESSING REPORT

This appendix comprises the Contractor's data processing report.

498434

SEISMIC DATA PROCESSING REPORT

FOR
SAGASCO RESOURCES LTD.

1994 ROCKY CAPE 2D SURVEY
T/18P,T/25P REPROCESSING

BASS BASIN
AUSTRALIA
PERMITS: T/18P, T/25P

BY

DIGITAL EXPLORATION LIMITED
(A DIGICON COMPANY)
QUEENSLAND CENTRE FOR ADVANCED TECHNOLOGIES
2643 MOGGILL ROAD PINJARRA HILLS
P.O. BOX 984
KENMORE QUEENSLAND 4069B

GEOPHYSICIST: TERRENCE FOLKERS OCTOBER 1994

498435

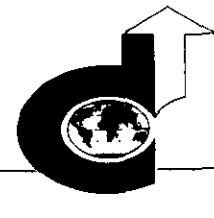
TABLE OF CONTENTS

1.0 INTRODUCTION

2.0 FIELD ACQUISITION
- 2.1 1994 DATA - ROCKY CAPE 2D SEISMIC SURVEY
- 2.2 1985 DATA - TQH5 SEISMIC SURVEY
- 2.3 1984 DATA - TNK4 SEISMIC SURVEY
- 2.4 1977 DATA - HB77A SEISMIC SURVEY
- 2.5 1972 DATA - B72A SEISMIC SURVEY
- 2.6 1971 DATA - B71A SEISMIC SURVEY
- 2.7 1970 DATA - B70A SEISMIC SURVEY

3.0 PROCESSING SEQUENCE
- 3.1 TRANSCRIPTION AND RESAMPLE
- 3.2 TRUE AMPLITUDE RECOVERY
- 3.3 SHOT DOMAIN VELOCITY FILTER WITH NMO APPLICATION
- 3.4 DATA REDUCTION
- 3.5 TRACE EQUALISATION
- 3.6 WAVELET DECONVOLUTION
- 3.7 STATIC CORRECTIONS
- 3.8 COMMON MID POINT (CMP) GATHER
- 3.9 PREDICTIVE DECONVOLUTION
- 3.10 FIRST PASS VELOCITIES
- 3.11 FK TRANSFORM MULTIPLE ATTENUATION (ZMULT)
- 3.12 DIP MOVEOUT CORRECTION (DMO)
- 3.13 SECOND PASS VELOCITY ANALYSIS
- 3.14 NORMAL MOVEOUT CORRECTION (NMO)
- 3.15 PRE STACK MUTE
- 3.16 COMMON MID POINT STACK
- 3.17 MIGRATION
- 3.18 TIME VARIANT BANDPASS FILTER
- 3.19 TRACE EQUALIZATION
- 3.20 DISPLAY PARAMETERS
- 3.21 ARCHIVING
- 3.22 PROCESSING SEQUENCE FOR THE RE-MIGRATED SECTIONS

4.0 PARAMETER TESTING
- 4.1 F-K FILTER BEFORE STACK
- 4.2 DECONVOLUTION BEFORE STACK
- 4.3 KIRCHHOFF DMO
- 4.4 PRE-STACK MUTES
  - 4.4.1 INNER TRACE MUTE
  - 4.4.2 OUTER TRACE MUTE

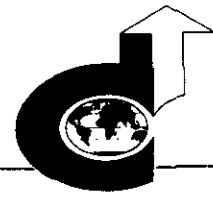


498436

4.5 MIGRATION
4.6 POST STACK TESTING
4.6.1 SPECTRAL WHITENING (AGF)
4.6.2 TAU-P FILTER
4.6.3 ZERO PHASE DECONVOLUTION AFTER STACK (DAS)
4.6.4 PREDICTIVE DECONVOLUTION AFTER STACK (DAS)
4.7 FILTER
4.8 SCALING

5.0 DATA PROCESSING SYSTEM

APPENDIX I - LINE SUMMARY
APPENDIX II - FIELD TAPE LISTING
APPENDIX III - EXABYTE ARCHIVING SUMMARY



498437

1.0 INTRODUCTION

This report presents an account of the sequence and techniques used to process the seismic data acquired in permits T/18P, T/25P in the Bass Basin for SAGASCO RESOURCES LTD. Processing was carried out between May and July 1994 on approximately 840km of seismic data from the ROCKY CAPE Seismic survey.

Also approximately 1569km of seismic data was reprocessed from a variety of surveys in this area. 198km were fully reprocessed from field data, 1371km were re-migrated from final stacks. The acquisition parameters used for the above are described in Section 2.0.

The processing parameters, such as choice of optimum filters (deconvolution and band-pass), mutes, velocity analyses, post stack scaling etc. were established by DIGITAL EXPLORATION in collaboration with SAGASCO. These tests are described in section 4.0. Some of these parameters had been previously established in the adjacent YOLLA 3D survey and were not re-tested. The processing sequence and parameters used are given in Section 3.0.

Key personnel assigned to this processing were;

- Steve Jestico - supervising geophysicist
- Terry Folkers - processing geophysicist
- Amanda van Wyk - input geophysicist

498438

2.0 FIELD ACQUISITION

2.1 1994 DATA - ROCKY CAPE 2D SEISMIC SURVEY

The data was recorded by Western Geophysical using the seismic vessel M/V WESTERN ATLAS, during March 1994. A brief summary of the acquisition parameters are as follows:

INSTRUMENT

Type	: WG-24
Filter	: 6/18 - 196/214 dB/oct
Record Length	: 6.0 seconds
Sample Interval	: 2.0 msec.
Tape Format	: SEG-D 4 byte demultiplexed 8048 3480 compatible cartridges

SOURCE

Type	: Airgun array - 28 array, 19 are active operating 3305 cu.in. at 1850 P.S.I.
Source Interval	: 25.0 metres 1 pop per shotpoint
Source Depth	: 6.0 metres
Source Delay	: 0.0 milliseconds
Source to Antenna	: 169.8 metres

CABLE

Type	:WG - 24
No. of Channels	: 240
Group Interval	: 12.5 metres
Streamer Length	: 3000 metres
Configuration	: OFF-END
Near Offset	: 131.0 metres
Streamer Depth	: 10.0 metres average

NAVIGATION

Primary	:RACAL MULTIFIX
Secondary	:RACAL DIRECT INJECTION

2.2 1985 DATA - TQH5 SEISMIC SURVEY

The data was recorded by G.S.I. using the seismic vessel EUGENE MCDERMOTT II, party no. 2931 during October 1985. A brief summary of the acquisition and processing parameters are as follows:

INSTRUMENT

Filter	: 8/18 - 128/72 dB/oct
Record Length	: 6.0 seconds
Sample Interval	: 2.0 msec.
Tape Format	: SEG-D 6250 b.p.i.

SOURCE

Type	: Airgun array - operating 4075 cu.in. at 1800 P.S.I.
Source Interval	: 30.0 metres (1 pop per shotpoint)
Source Depth	: 10.0 metres
Source Delay	: 51.2 milliseconds

CABLE

No. of Channels	: 240
Group Interval	: 15.0 metres
Streamer Length	: 3600 metres
Configuration	: OFF-END
Near Offset	: 396.0 metres
Streamer Depth	: 13.0 metres average

NAVIGATION

Primary	:ARGO
Secondary	:SYLEDIS

2.3 1984 DATA - TNK4 SEISMIC SURVEY

The data was recorded by G.S.I. using the seismic vessel EUGENE MCDERMOTT II, party no. 2931 during December 1984. A brief summary of the acquisition and processing parameters are as follows:

INSTRUMENT

Filter	: 8/18 - 128/72 dB/oct
Record Length	: 6.0 seconds
Sample Interval	: 2.0 msec.
Tape Format	: SEG-D 6250 b.p.i.

SOURCE

Type	: Airgun array - operating 4075 cu.in. at 1900 P.S.I.
Source Interval	: 30.0 metres (1 pop per shotpoint)
Source Depth	: 10.0 metres
Source Delay	: 51.0 milliseconds

CABLE

No. of Channels	: 240
Group Interval	: 15.0 metres
Streamer Length	: 3600 metres
Configuration	: OFF-END
Near Offset	: 386.0 metres
Streamer Depth	: 13.0 metres average

NAVIGATION

Primary	:ARGO
Secondary	:SYLEDIS

2.4 1977 DATA - HB77A SEISMIC SURVEY

The data was recorded by G.S.I. using the seismic vessel EUGENE MCDERMOTT II, party no. 2931 during December 1977. A brief summary of the acquisition and processing parameters are as follows:

INSTRUMENT

Type	: DFS IV
Filter	: 8/18 - 62/72 dB/oct
Record Length	: 5.0 seconds
Sample Interval	: 4.0 msec.

SOURCE

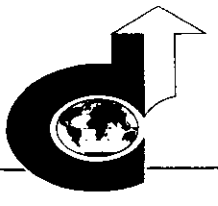
Type	: Airgun array - operating at 1450 cu.in.
Source Interval	: 25.0 metres (1 pop per shotpoint)
Source Depth	: 7.5 metres
Source Delay	: 0.0 milliseconds

CABLE

No. of Channels	: 96
Group Interval	: 25.0 metres
Streamer Length	: 2375 metres
Configuration	: OFF-END
Near Offset	: 269.0 metres
Streamer Depth	: 11.0 metres average

NAVIGATION

Primary	:GEONAV



2.5 1972 DATA - B72A SEISMIC SURVEY

The data was recorded by G.S.I. using the seismic vessel EUGENE MCDERMOTT II during September 1972. A brief summary of the acquisition and processing parameters are as follows:

INSTRUMENT

Type	: DFS III
Filter	: 8/18 - 62/72 dB/oct
Record Length	: 5.0 seconds
Sample Interval	: 4.0 msec.

SOURCE

Type	: Airgun array - operating at 1200 cu.in.
Source Interval	: 66.0 metres (1 pop per shotpoint)
Source Depth	: 9.0 metres
Source Delay	: 0.0 milliseconds

CABLE

No. of Channels	: 48
Group Interval	: 66.0 metres
Streamer Length	: 3102 metres
Configuration	: OFF-END
Near Offset	: 247.0 metres
Streamer Depth	: 11.0 metres average

NAVIGATION

Primary	:SHORAN

2.6 1971 DATA - B71A SEISMIC SURVEY

The data was recorded by G.S.I. using the seismic vessel R.C. DUNLAP (party no. 909) during December 1971. A brief summary of the acquisition and processing parameters are as follows:

INSTRUMENT

Type	: DFS III
Filter	: 8/18 - 62/72 dB/oct
Record Length	: 5.0 seconds
Sample Interval	: 4.0 msec.

SOURCE

Type	: Airgun array - operating at 1300 cu.in.
Source Interval	: 50.0 metres (4 pops per shotpoint)
Source Depth	: 7.5 metres
Source Delay	: 0.0 milliseconds

CABLE

No. of Channels	: 48
Group Interval	: 50.0 metres
Streamer Length	: 2350 metres
Configuration	: OFF-END
Near Offset	: 278.0 metres
Streamer Depth	: 17.0 metres average

NAVIGATION

Primary	:GEONAV

2.7 1970 DATA - B70A SEISMIC SURVEY

The data was recorded by G.S.I. using the seismic vessel R.C. DUNLAP and the EUGENE MCDERMOTT II (party no. 931) during December 1970. A brief summary of the acquisition and processing parameters are as follows:

INSTRUMENT

Type	: DFS III
Filter	: 8/18 - 62/72 dB/oct
Record Length	: 5.0 seconds
Sample Interval	: 4.0 msec.

SOURCE

Type	: Airgun array - operating at 860 cu.in.
Source Interval	: 50.0 metres (1 pop per shotpoint)
Source Depth	: 9.0 metres
Source Delay	: 0.0 milliseconds

CABLE

No. of Channels	: 48
Group Interval	: 50.0 metres
Streamer Length	: 2350 metres
Configuration	: OFF-END
Near Offset	: 295.0 metres (variable)
Streamer Depth	: 13.5 metres average

NAVIGATION

Primary	:GEONAV

3.0 PROCESSING SEQUENCE

A brief description of the processes used in the processing sequence follows. The lines that were fully processed from field tapes were;

- All Rocky Cape lines (SB94A vintage)
- TNK4-85
- B70A -4, 5, 9.

The other reprocessing lines were processed from final stack (provided by SAGASCO) and the sequence for these lines is described in section 3.22.

3.1 TRANSCRIPTION AND RESAMPLE

The field data was converted to Digicon's internal trace sequential format. The output for the B70A lines were 5.0 second traces at a 4 msec sample interval while the Rocky Cape and TNK4 lines were 6.0 second traces at a 4 msec sample interval. The data for the Rocky Cape/TNK4 surveys were resampled from 2 msec to 4msec with a 0 - 100 hz minimum phase anti-alias filter applied prior to resampling to avoid temporal aliasing of the seismic data.

3.2 TRUE AMPLITUDE RECOVERY

The process of true amplitude recovery consists of the following basic steps.

a) Restoration
Restoration of the 32 bit floating data from 4 byte SEGD.

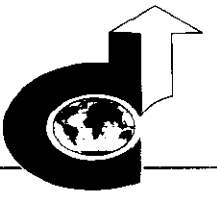
b) Correction for amplitude losses was made
These losses are due to the spherical spreading of the wavefront. Thus, as the amplitude of the recorded trace varies inversely with the radius of the advancing wavefront, each trace was multiplied by a function "V**2*T", where V is the seismic wave velocity and T is the two-way time.

3.3 SHOT DOMAIN F-K VELOCITY FILTER

The F-K filter was designed to preserve data in the range of -2.0 km/sec to 2.0 km/sec. No nmo was applied. The dip range for each vintage was;

- 1994 Rocky Cape survey : -6.25 to 6.25 msec/trace
- 1984 TNK4 survey : -7.50 to 7.50 msec/trace
- 1970 B70A survey : -25.0 to 25.0 msec/trace

A full-bell cosine taper was applied in the F-K domain between these 100% reject velocities. AGC was applied before and removed after filtering. A low frequency protection of 8 hz was also used.



3.4 DATA REDUCTION

a) 1994 Rocky Cape survey

A 2:1 adjacent trace summation was performed after the application of nmo. The input was 240 channel at 12.5m with the output being 120 channel at 25.0m. The nmo correction was then removed from the data.

b) 1984 TNK4 survey

A 2:1 adjacent trace summation was performed after the application of nmo. The input was 240 channel at 15.0m with the output being 120 channel at 30.0m. The nmo correction was then removed from the data.

3.5 TRACE EQUALISATION

A single gate trace equalisation was performed on the shots. The design gate for each vintage varied as follows;

-1994 Rocky Cape survey	near offset	: 400 - 3500 msec
	far offset	: 2400 - 4500 msec
-1984 TNK4 survey	near offset	: 450 - 3500 msec
	far offset	: 2650 - 4650 msec
-1970 B70A survey	near offset	: 400 - 3400 msec
	far offset	: 2000 - 4400 msec

3.6 WAVELET DECONVOLUTION

The routine maybe considered as operating in two stages for each shot gather namely:

a) Estimation of the source wavelet.

The program makes use of a series of averaged autocorrelation functions derived from specified time-gates for its estimate of the source wavelet's amplitude spectrum. The source wavelet is assumed to have a minimum phase spectrum. The low and high frequency ends of the spectrum are then amortised using imposed roll-off values.

b) Design and application of a shaping filter

The user specifies a zero-phase Butterworth 'output' wavelet. A filter is then designed to shape the estimated source wavelet to this desired output. The last stage in the process is the application of the filters to the field record.

For these data, a single operator per field record was designed ~~on an~~ offset dependence. A single design gate was determined from examination of selected field

records to include the good signal to noise ratio portions of the data excluding first arrival energy from refractions. Amortisation of the estimated source spectrum was performed using tapers of 16 dB/oct below 6 hz and 62 dB/oct above 100 hz.

The desired output from the Wavelet Deconvolution was a zero phase wavelet with the frequency range 6 hz at 18 dB/oct to 70 hz at 60 dB/oct. The design gate of the Wavelet Deconvolution for each vintage varied as follows;

-1994 Rocky Cape survey	near offset	: 400 - 3500 msec
	far offset	: 2400 - 4500 msec
-1984 TNK4 survey	near offset	: 450 - 3500 msec
	far offset	: 2650 - 4650 msec
-1970 B70A survey	near offset	: 400 - 3400 msec
	far offset	: 2000 - 4400 msec

The deconvolution filters for all data were applied to the whole seismic trace.

3.7 STATIC CORRECTIONS - SOURCE/STREAMER DELAY

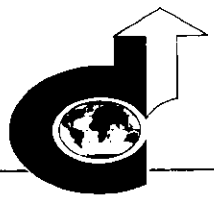
A static correction was applied for the source and streamer depths and gun delay, thus referencing the data to mean sea level. For these data the combined source/streamer/gun static correction applied for each vintage was;

- 1994 Rocky Cape survey - +10.66 msec,
- 1984 TNK4 survey - -35.67 msec,
- 1970 B70A survey - +15.00 msec.

3.8 COMMON MID POINT (CMP) GATHER

In this process the seismic traces along a line are sorted into a primary key sequence on the basis of common-mid-point and a secondary key of increasing offset distance within each 'CMP' group. The maximum fold for each vintage varied as follows;

- Rocky Cape survey - 60,
- TNK4 survey - 60,
- B70A survey - 24.



3.9 PREDICTIVE DECONVOLUTION

Gapped predictive deconvolution was applied to reduce reverberation and short path multiple energies. The gap length between the start time and the onset of the filter was determined so as to attenuate the multiple energy while preserving the main zero-phase pulse of the input wavelet. Operations were designed and applied on a trace by trace basis.

For these data the following parameters were selected from a range of initial tests (see Parameter Testing);

Operator Length (include. gap)	: 248 msec.
Gap Length	: 48 msec.
Percentage White Noise	: 0.1 %
Number of Design Gates	: 1

The design gate of the deconvolution for each vintage varied as follows;

-1994 Rocky Cape survey	near offset	: 400 - 3500 msec
	far offset	: 2400 - 4500 msec
-1984 TNK4 survey	near offset	: 450 - 3500 msec
	far offset	: 2650 - 4650 msec
-1970 B70A survey	near offset	: 400 - 3400 msec
	far offset	: 2000 - 4400 msec

The deconvolution filters for all data were applied to the whole seismic trace.

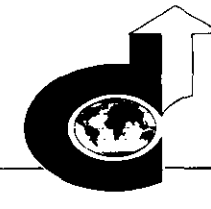
3.10 FIRST PASS VELOCITIES

TANGO "DIVAN" was used in the velocity analysis and is a comprehensive velocity determination package. At each velocity analysis location the CDP gather records are normal move-out corrected with a range of velocities specified by the user. These gathers are then summed to observe the stack response. The module provides a display of the selected velocity control depth points showing;

a) Central CMP gather before correction for normal move-out.

b) Normal move-out corrected central CMP gathers associated with their respective velocity fan functions.

c) Display of the stack associated with the suite of selected velocity fan functions.



A semblance function is computed across the stacked panels and displayed in graphical form for user reference. Based on the semblance values the program provides optional time-velocity picks which are displayed as a numerical listing and also imposed on the velocity time graph. This is positioned to the right of the actual data. Offset information displayed above each gather trace can be used to determine the required prestack mute pattern. The mute pattern used for the analysis is displayed on each normal move-out corrected gather record. For these data the above analyses were conducted every 2.0 Km using 21 alternate CMP gathers and 11 velocity functions.

F-K demultiple (ZMULT see section 3.11) using 90% of a specific regional velocity function was applied to the data to aid the first pass velocity interpretation.

First pass velocities were used in four ways;

1) F-K transform multiple attenuation (section 3.11) to provided separation between multiple and primary energy.

2) NMO prior to dip moveout compensation (section 3.12) to remove offset effects from CMP gathers.

3) To provide an approximate velocity field for generating a quality control Dip Moveout (DMO) stack.

3.11 F-K TRANSFORM MULTIPLE ATTENUATION (ZMULT)

ZMULT is a multiple attenuation process which is based on the separation of primary events from multiples utilising the F-K domain transform on common midpoint gathered data. Application of a normal moveout curve, which over corrects the primaries and under corrects the multiples, will move these events into different quadrants of the F-K domain. By zeroing the "multiple" quadrant, inverse transforming the data and removing the over correction velocity, the multiples are attenuated. Velocity analyses can be considerably improved by the application of this process.

For the program to attenuate multiples, an appropriate NMO correction must be applied prior to the application of ZMULT. The NMO over correction applied was a constant percentage of the initial velocity field and is given below;

Time (ms)	% Percentage Velocity
0 - 6000	90

3.12 DIP MOVEOUT CORRECTION (DMO)

A partial migration before stack was achieved with a Kirchhoff algorithm. The anti-alias measures were switched and the maximum dip parameter was;

for the Rocky Cape 2D data +/- 6 msec/trace
for the TNK4 data +/- 7.2 msec/trace
for the B70A data +/- 12 msec/trace

3.13 SECOND PASS VELOCITY ANALYSIS

A second pass of velocity analyses using Digicon's TANGO DIVAN routine were produced at 1.0 Km intervals, using 15 alternate CMP gathers and 9 velocity functions. Separation between functions was reduced from the first pass to provide more accurate velocity interpretation.

Digital Exploration's geoscientists interpreted the velocity analyses on a horizon consistent basis. Quality control for the final stacking velocities was provided by SAGASCO. The improved data quality at this stage produced a more accurate velocity interpretation than in the first pass. These stacking velocities were then used for normal moveout correcting the seismic data (section 3.14) to produce the final stack.

Final stacking velocities for these data were displayed above the final stack and migrated films. A listing of the stacking velocities was also provided on a diskette in "Western" format to SAGASCO.

3.14 NORMAL MOVEOUT

The stacking velocity functions derived from the final velocity analysis were used to compute the normal moveout (NMO) corrections to be applied to the traces in the final CMP gathers. The NMO is performed assuming that the energy travels in a straight raypath and utilizes the following equation :

$$TT = (T0^{**}2 + (X^{**}2/V^{**}2))^{**}0.5$$

where: TT = Total recorded travel time in seconds
X = Offset
T0 = Time of reflector at zero offset in seconds
V = RMS velocity
**N = raise to the power N

Velocity-time knee points are honoured on adjacent control points prior to interpolation of the temporal velocity field. The space variant velocity function is then derived by linear interpolation between control points.

3.15 PRE-STACK MUTE

A front-end mute (or ramp) was applied to the shallow and far offset data to remove undesirable stretching after NMO application. A near trace mute was also applied to remove any residual multiple energy left after the F-K multiple attentuation. The mute pattern was determined from comparative prestack mute tests and from NMO corrected gather displays. The pre-stack mute pattern applied to these data is described below;

a) 1994 Rocky Cape Survey

Outer Trace Mute

Offset (m)	: 300	425	1650	3120	
Time (msec)	: 0	450	1300	2200	

Inner Trace Mute

Offset (m)	: 0	131	750	1000	1050
Time (msec)	:1500	1500	2000	2500	6000

b) 1984 TNK4 Survey

Outer Trace Mute

Offset (m)	: 386	500	1650	3956	
Time (msec)	: 0	250	1300	2700	

Inner Trace Mute

Offset (m)	: 0	386	750	1000	1050
Time (msec)	:1500	1500	2000	2500	6000

c) 1970 B70A Survey

Outer Trace Mute

Offset (m)	: 255	600	895	1295	2595
Time (msec)	: 0	450	1000	2000	3300

Inner Trace Mute

Offset (m)	: 0	295	750	1000	1050
Time (msec)	:1500	1500	2000	2500	5000

3.16 COMMON MID POINT STACK

Stack is the summation of traces within each CMP producing a single stacked trace for each input gather record. The stack is normalised and mute zone compensated to account for the smaller number of live traces in the mute zone and for uneven fold of coverage. The maximum fold coverage for each vintage was;

- 1994 Rocky Cape data - 60
- 1984 TNK4 data - 60
- 1970 B70A data - 24

3.17 MIGRATION

Unfiltered final stack traces were the input to the migration step. For these data, high order finite difference migration was performed using a layer thickness of 20 msec with 100 percent of the smoothed stacking velocities.

3.18 TIME VARIANT BANDPASS FILTER

Application of a time variant filter to remove unwanted noise lying outside the frequency range of the desired reflection data was performed with a series of zero-phase bandpass filters. These following filters were selected from a series of filter test panels:

Time (msec)	Low freq/slope	High freq/slope
0	8/12	100/72
500	5/12	100/72
1000	5/12	90/60
2000	5/12	80/60
3000	5/12	50/48
6000	5/12	40/36

3.19 TRACE EQUALIZATION

For display purposes, a multi-gated balance was applied to the data after filtering to bring the data to the desired amplitude level. The average absolute value (AABS) of the gate is computed and a scalar is applied to the centre point of the gate. This is repeated for each gate with the scalar interpolated between gate centres.

Gate Times		Gate Times	
Start(msec)	End(msec)	Start(msec)	End(msec)
50	100	1600	2200
75	125	1900	2500
100	150	2200	3200
125	200	2700	3700
150	300	3200	4200
200	600	3700	4700
400	900	4200	5200
700	1300	4700	5700
1000	1600	5200	6000
1300	1900		

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3.20 DISPLAY PARAMETERS

The final stack and migrated data were plotted on film with the following parameters :

1) Vertical scale : 3.75 inches/sec.

2) Horizontal scale : 1994 Rocky Cape survey
20.0 traces per cm (1:25,000)
50.8 traces per inch.
: 1984 TNK84 Survey
16.67 traces per cm (1:25,000)
42.33 traces per inch.
: 1970 B70A Survey
10.0 traces per cm (1:25,000)
25.4 traces per inch.

3) Display mode : Wiggle trace variable area

4) Display gain : 85% for 1:25,000

5) Polarity : Black Peak-positive sample.
(Field polarity maintained throughout processing)

6) Shotpoint Annotation: Source Position

3.21 ARCHIVING

4 sets of stacked data were supplied to SAGASCO on exabyte tape in SEG-Y format. The sets supplied were:

- raw final stacks
- filtered and scaled final stacks
- raw migrated stacks
- filtered and scaled migrated stacks

A summary of the exabyte tapes used and the tape listings for each is given in Appendix III.Stacking velocity information was archived on diskette in a "Western" format

3.22 PROCESSING SEQUENCE FOR THE RE-MIGRATED SECTIONS

Approximately 1371km of stacked data was supplied to DIGITAL EXPLORATION along with the final stack plots of the lines to be processed. These lines were migrated and the processing sequence followed is given below.

1) **TRANSCRIPTION** - The stacked data was transcribed from SEG-Y exabyte tape to Digicon's internal format. All data was at a 4 msec sample rate, most at a data length of 5 sec but some were 6 sec.

2) **VELOCITIES** - Velocity fields were entered from the annotated sections provided by SAGASCO and smoothed so that they may be used in the migration process.

3) **MIGRATION** - Finite difference migration was applied to the data as described in section 3.17.

4) **DISPLAYS** - QC paper plots of each of the filtered and scaled lines, before and after migration were supplied to SAGASCO (1:25000 scale, 10cm/sec, filtering and scaling as in sections 3.18 and 3.19).

5) **ARCHIVING** - The raw migrated stacks and the filtered and scaled migrated stacks were supplied to SAGASCO on exabyte tape in SEG-Y format along with the velocities on diskette in a "Western" format.

4.0 PARAMETER TESTING

Testing of the processing parameters for the ROCKY CAPE 2D survey and associated REPROCESSING often relied on the testing performed on the T/RL1 YOLLA 3D survey. Testing was usually carried out to see if these parameters could be refined for Rocky Cape. However it was often found that the YOLLA 3D parameters were optimum.

4.1 F-K FILTER BEFORE STACK

Using information from the T/RL1 YOLLA 3D survey several stack tests were carried out to test the shot F-K filter. The lines tested were SB94A-121 and SB94A-161. Both of these lines were taken through to stack for several different F-K filters. (Velocities were picked for both of these lines)

The following tests were executed:

1) RESAMPLE, GAIN (v**2*t), no F-K, 2:1 SUM, STATICS, BALANCE, SIG.DECON (6-70 hz), STACK.

2) RESAMPLE, GAIN (v**2*t), F-K +/- 2000m/s, 2:1 SUM, STATICS, BALANCE, SIG.DECON (6-70 hz), STACK.

3) RESAMPLE, GAIN (v**2*t), F-K +/- 2500m/s, 2:1 SUM, STATICS, BALANCE, SIG.DECON (6-70 hz), STACK.

Test (2) was selected (F-K +/- 2000m/sec) and apply to all data within the Rocky Cape seismic survey and reprocessing.

Also several post stack dip filters (pass range of +/-10 msec/trace and +/- 5 msec/trace) were applied to this data to see what could be achieved post-stack in comparison to pre-stack. Linear noise trains that come from offline diffractions and other noise sources were especially under investigation. It became difficult to attenuate these noise trains at all without creating a wormy appearance to the section.

4.2 DECONVOLUTION BEFORE STACK

Both lines SB94A-121 and SB94A-161 were taken through to stack in the tests described below.

1) RESAMPLE, GAIN (v**2*t), F-K +/- 2000m/s, 2:1 SUM, BALANCE, SIG.DECON (6-70 hz), SPIKING DECON, STACK.

2) RESAMPLE, GAIN (v**2*t), F-K +/- 2000m/s, 2:1 SUM, BALANCE, SIG.DECON (6-70 hz), GAP DECON. (48 msec, STACK.

This test verified the performance of the gapped predictive deconvolution as a useful de-reverberation process after designature. After comparison of the spiking deconvolution with the designature stack of 4.1 (2) and a close inspection of their signal quality and continuity, it was concluded that there was no reason apparent not to proceed with designature. Designature received preference due to it's zero phase theoretical output and good performance in the neighboring permit.

4.3 KIRCHHOFF DMO

2 tests were performed on line SB94A-161 (full CDP range) to find the optimum dip pass range for the Kirchhoff DMO. The tests include;

1) Full processing up to and including DMO (maximum dip +/- 6 msec/trace)

2) Full processing up to and including DMO (maximum dip +/-12msec/trace)

These tests were stacked and compared. The 6 msec/trace dip was seen to be the better.

4.4 PRESTACK MUTES AFTER NMO

Both inner and outer trace mute panel tests were performed on lines SB94A-121 and B70A-04. After analyses it was decided to use the mute described in section 3.14. (This was the same mute as used in the T/RL1 YOLLA 3D survey).

4.4.1 INNER TRACE MUTE

A fairly severe inside mute to 1000 metres at 4000 msec helped to attenuate the main primary multiple of the coaly section at about half that time. 7 panels were used in the test and the ranges of the offsets that were cut for each is given below;

1) 0 - 181 m (2 fold)
2) 0 - 281 m (4 fold)
3) 0 - 431 m (7 fold)
4) 0 - 581 m (10 fold)
5) 0 - 831 m (15 fold)
6) 0 - 1081 m (20 fold)
7) No inner trace mute

4.4.2 OUTER TRACE MUTE

17 panels were used in the test and the ranges of the offsets that were stacked for each is given below;

1) 0 - 181 m (2 fold)
2) 0 - 281 m (4 fold)
3) 0 - 381 m (6 fold)
4) 0 - 481 m (8 fold)
5) 0 - 581 m (10 fold)
6) 0 - 731 m (13 fold)
7) 0 - 881 m (16 fold)
8) 0 - 1031 m (19 fold)
9) 0 - 1181 m (22 fold)
10) 0 - 1331 m (25 fold)
11) 0 - 1581 m (30 fold)
12) 0 - 1831 m (35 fold)
13) 0 - 2081 m (40 fold)
14) 0 - 2331 m (45 fold)
15) 0 - 2581 m (50 fold)
16) 0 - 2831 m (55 fold)
17) Full offset (60 fold)

4.5 MIGRATION

Several variations of the smoothed velocity field were tested on line SB94A-161. Tests included;

1) F.D. migration using 90% of the smoothed velocity field

2) F.D. migration using 100% of the smoothed velocity field

3) F.D. migration using 110% of the smoothed velocity field

Test 2) was chosen (100% velocities)

4.6 POST STACK TESTING

Several different tests were run on the migrated data to see if the spectral content or the signal/noise ratio could be improved. SAGASCO did not find any improvement in the data which would aid in their interpretation due to the processes tested. These tests are summarised below.

4.6.1 SPECTRAL WHITENING (AGF)

A frequency panel spectral balance test was performed on 2 sections of line SB94A-121 (CDPs 360 to 940 and CDPs 1500 to 1800). This approach allowed a time variant analysis of the spectral whitening. The frequency bands tested were;

1) No spectral balancing
2) 3 - 100 hz
3) 3 - 90 hz
4) 3 - 80 hz
5) 3 - 70 hz
6) 3 - 60 hz
7) 3 - 50 hz
8) 3 - 40 hz
9) 3 - 30 hz
10) 3 - 20 hz
11) 3 - 10 hz

4.6.2 TAU-P FILTER

TAU-P filters were tested on line SB94A-121 (CDPs 360 to 940) after a provisional 6 - 70 hz spectral balance was applied to the data. Tests include;

- No TAU-P
- TAU-P with a 65% addback
- TAU-P with a 80% addback

4.6.3 ZERO PHASE DECONVOLUTION AFTER STACK (DAS)

2 zero phase DAS tests were performed on a section of line SB94A-145 (CDP 400 to 800). The tests were;

1) single gate ; 100 - 5000 msec
2) overlapping gates ; 100 - 1800 msec
; 1400 - 5000 msec

4.6.4 PREDICTIVE DECONVOLUTION AFTER STACK (DAS)

Several different predictive deconvolution gaps were tested on a section of line SB94A-145 (CDP 400 to 800). For each gap 2 tests were performed;

1) single gate ; 100 - 5000 msec
2) overlapping gates ; 100 - 1800 msec
; 1400 - 5000 msec

The deconvolution gaps tested were;

1) 8 msec
2) 16 msec
3) 24 msec
4) 36 msec
5) 48 msec

4.7 FILTER

2 zero phase band pass filter panel tests were performed on the migrated stack of line SB94A-121 CDP range 1500 to 1800. The first test was upon a raw migration, the second had a 6 - 70 hz spectral balance applied.

- Scaling prior to filtering (AGC 1000)

Bandpass ranges used in this filter panel tests were:

1) OUT-OUT
2) OUT - 10 HZ
3) 7.5 - 15 HZ
4) 10 - 20 HZ
5) 15 - 30 HZ
6) 20 - 40 HZ
7) 25 - 50 HZ
8) 30 - 60 HZ
9) 40 - 80 HZ
10) 50 - 100 HZ
11) 60 - OUT HZ
12) 70 - OUT HZ
13) 80 - OUT HZ
14) 90 - OUT HZ
15) 100 - OUT HZ

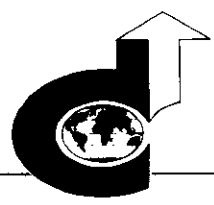
From these tests the time variant filter given in section 3.17 was selected.

4.8 SCALING

A scaling panel test was performed on the migrated stack of line SB94A-121 CDP range 1500 to 1800. Scaling gates tested were;

1) no scaling
2) balance, 1 gate = 6000 ms
3) balance, 3 gate = 3000 ms, 50% overlap
4) balance, 5 gate = 2000 ms, 50% overlap
5) balance, 11 gate = 1000 ms, 50% overlap
6) balance, 23 gate = 500 ms, 50% overlap
7) balance, 47 gate = 250 ms, 50% overlap

From these tests the time variant multigate balance given in section 3.18 was selected.



5.0 THE DATA PROCESSING SYSTEM

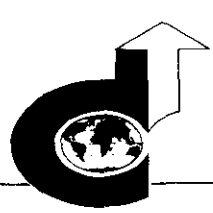
At the time that this survey was processed, Digicon's installation in Brisbane was based on an 8 node HP META SERIES, two CONVEX C220 supercomputers, 3 HP712 workstations and two Digital Equipment Corporation's VAX 8650's. A brief description of the VAX computers and their peripheral devices is given below as well as a hardware and network configuration of the META SERIES, CONVEX computers and the HP712 workstations:-

1) System 1 (VAX1)- 1 unit 8650 CPU
- 32 Mbyte physical memory
- 4 x 1.23 Gbyte SABRE disk drives
- 4 x FPS 100 Array Processor
- 2 x Numerix Vector Processor(*)
- 16 x Telex tri-density tape drives
- 1 x high speed line printer
- 1 x 2.5/5.0 Gbyte Exabyte drive.

2) System 2 (VAX2)- 1 unit 8650 CPU
- 32 Mbyte physical memory
- 2 x 1.23 Gbyte SABRE disk drives
- 4 x 400 Mbyte Fujitsu disk drives
- 4 x FPS 100 Array Processor
- 1 x Numerix Vector Processor(*)
- 16 x Telex tri-density tape drives
- 1 x high speed line printer
- 1 x 2.5/5.0 Gbyte Exabyte drive.

3) Additional Hardware
- 1 x 22" Benson electrostatic plotter
- 1 x 36" thermal plotter.
- 1 x 36" Versatec electrostatic plotter
- 1 x GEOSPACE high resolution (508 dots/inch) film plotter
- 2 x Summagraphic digitizer tables
- 1 x Sun Sparc Station 1
- 1 x Sun Sparc Station 2

(*) The Numerix Vector Processor has 16 Mbyte memory and offers computation power of 30 Mflops.



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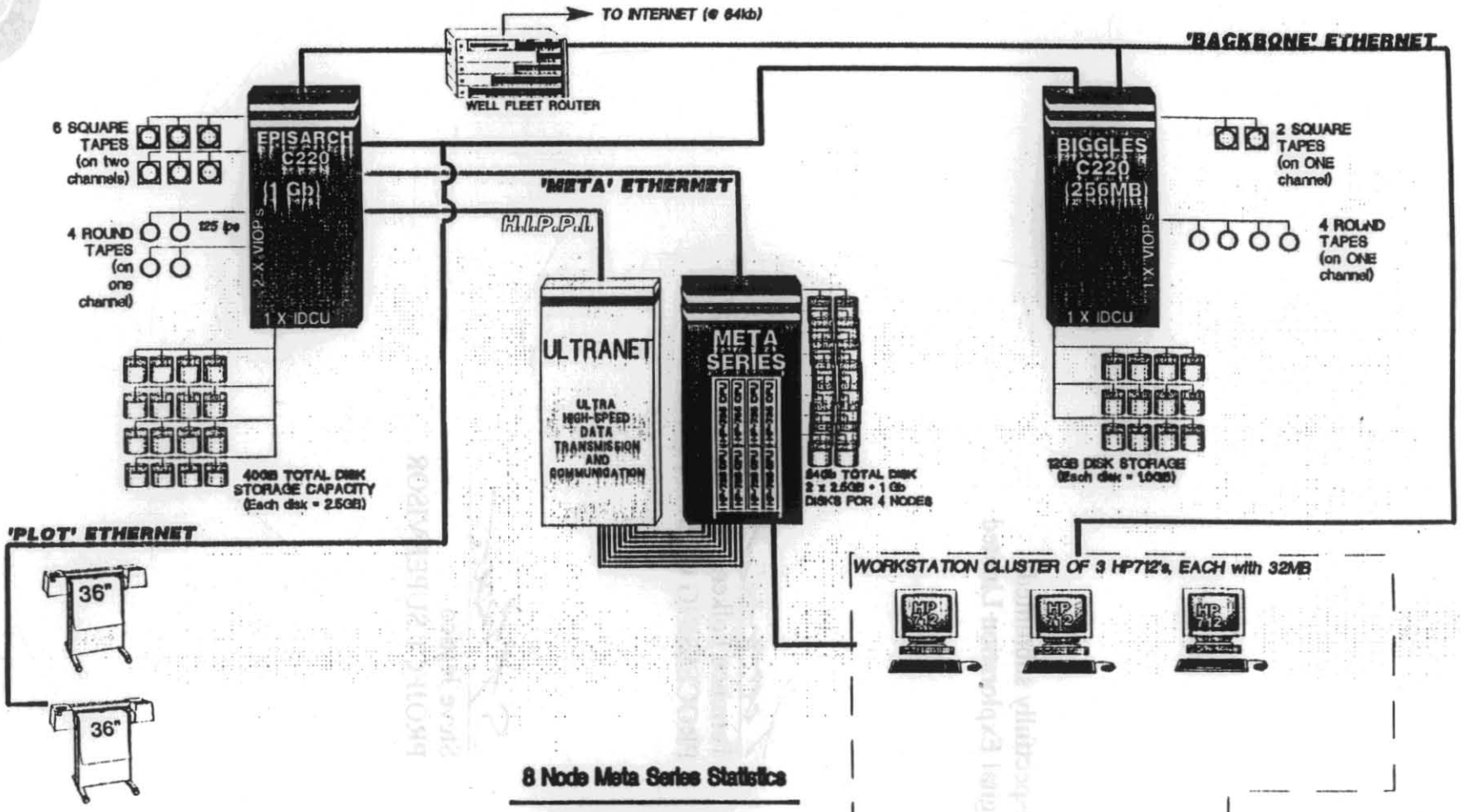
SeismicTANGO HARDWARE & NETWORK CONFIGURATION



8 Node Meta Series Statistics

Each Node Consists of:
144 Mb Main Memory
6 Gb Fast/Wide SCSI Disk
200 Megaflops Power

DP_BRS

DIGICON BRISBANE

The TANGO system was used to process the data and is Digicon's internal software and database management system. The seismic data processing software is modular by design and therefore completely flexible allowing the user to control the number and sequence of operations performed in any job.

Respectfully submitted,
Digital Exploration Limited

Terrence Folkers
PROCESSING GEOPHYSICIST

Steve Jestico
PROJECT SUPERVISOR

APPENDIX I - LINE SUMMARY

A) ROCKY CAPE 2D

Area 1

LINE	SHOTS	KMS
SB94A-126	613 - 31	14.575
SB94A-128	111 -1034	23.100
SB94A-130	575 - 31	13.625
SB94A-132	111 - 750	16.000
SB94A-141	111 - 601	12.275
SB94A-143	511 - 31	12.025
SB94A-145	111 - 596	12.150
SB94A-147	519 - 31	12.225
SB94A-149	111 - 549	10.975
SB94A-151	468 - 31	10.950
SB94A-153	111 - 549	10.975
SB94A-155	469 - 31	10.975
SB94A-157	414 - 31	9.6000
SB94A-159	111 - 572	11.550
SB94A-161	473 - 31	11.075
	Total	193.450

Area 2

LINE	SHOTS	KMS
SB94A-102	111 -1831	43.025
SB94A-104	1777- 31	43.675
SB94A-110	1172- 31	28.550
SB94A-112	111 -1279	29.225
SB94A-121	111 -1128	25.450
SB94A-123	1025- 31	24.875
SB94A-124	1274- 31	31.100
SB94A-125	427 - 31	9.925
SB94A-127	111 - 737	15.675
SB94A-129	111 - 733	15.575
SB94A-131	529 - 31	12.475
SB94A-133	394 - 31	9.100
SB94A-135	111 - 519	10.225
SB94A-137	111 - 524	10.350
SB94A-139	399 - 31	9.225
	Total	318.750

Area 3

LINE	SHOTS	KMS
SB94A-101	111 - 798	17.200
SB94A-103	640 - 31	15.250
SB94A-105	111 - 717	15.175
SB94A-106	111 - 790	17.000
SB94A-107	111 -1138	25.700
SB94A-108	529 - 31	12.475
SB94A-109	670 - 31	16.000
SB94A-111	1494- 31	36.600
SB94A-113	111 -1647	38.425
SB94A-114	111 - 642	13.300
SB94A-115	111 -1102	24.800
SB94A-116	659 - 31	15.725
SB94A-117	557 - 31	13.175
SB94A-118	111 - 737	15.675
SB94A-119	554 - 31	13.100
SB94A-120	657 - 31	15.675
SB94A-122	111 - 988	21.950
	Total	327.225

TOTAL KM'S 837.750

B) T18/T25 REPROCESSING

Full reprocessing lines

LINE	SHOTS	KMS
B70A -04	3204-3492	57.800
B70A -05	3048-3203	31.150
B70A -09	3990-4375	77.200
TNK4-85	1 -1043	31.290
	Total	197.440

Lines remigrated from final stack

LINE	SHOTS	KMS
B70A-01	7804-8084	56.200
B70A-02	7566-7787	44.400
B70A-06A	2515-2365	30.200
B70A-06B	2663-2515	29.800
B70A-06C	2344-2215	26.000
B70A-07	3493-3683	38.200
B70A-08	3684-3989	61.200
B70A-11	4376-4647	54.400

LINE	SHOTS	KMS
B70A-16	423 - 667	49.000
B70A-19	1843-2219	75.400
B70A-21A	5155-5647	98.600
B70A-21B	5623-5887	53.000
B71A-63	3980-4117	27.600
B72A-101	5797-5951	40.920
B72A-102	5952-6007	14.784
B72A-103	6008-6075	17.952
B72A-104	6539-6708	44.880
B72A-106	5215-5385	45.144
B72A-107	5386-5511	33.264
B72A-111	5098-5214	30.888
B72A-112	6161-6262	26.928
B72A-113	6076-6160	22.440
HB77A-331	1 - 346	8.650
HB77A-332	1 - 376	9.400
HB77A-333	1 - 283	7.075
HB77A-334	1 - 513	12.825
HB77A-335	1 - 505	12.625
HB77A-336	1 - 513	12.825
HB77A-337	1 - 587	14.675
HB77A-339	1 - 664	16.600
HB77A-340	1 - 513	12.825
HB77A-341	1 - 561	14.025
HB77A-342	1 - 708	17.700
HB77A-343	1 - 605	15.125
HB77A-344	1 - 432	10.800
HB77A-345	1 - 628	15.700
HB77A-346	1 - 560	14.000
HB77A-347	1 - 497	12.425
HB77A-348	1 - 428	10.700
HB77A-349	1 - 543	13.575
HB77A-350	1 - 529	13.225
HB77A-351	1 - 462	11.550
HB77A-352	1 - 388	9.700
HB77A-354	1 - 381	9.525
HB77A-356	1 - 302	7.550
HB77A-358	1 - 300	7.500
HB77A-361	1 - 328	8.200

LINE	SHOTS		KMS
TQH5-74	1	-1152	34.560
TQH5-76	1	-1303	39.090
TQH5-80	1	-1033	30.990
TQH5-117	1	- 902	27.060
TQH5-119	1	- 902	27.060
TQH5-121	1	- 873	26.190
TQH5-123	1	- 873	26.190
TQH5-125	1	- 862	25.860
		Total	1371.000

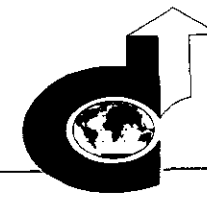
TOTAL KM'S 1568.440

APPENDIX II - FIELD TAPE LISTINGS

A) ROCKY CAPE 2D

BOX	LINE	TAPES	SHOT POINTS
3000A	SB94A-132	4881-4891	111 - 750
3000A	SB94A-130	4892-4900	575 - 41
3001B	SB94A-130	4901	40 - 31
3001B	SB94A-161	4902-4909	473 - 31
3001B	SB94A-159	4910-4917	111 - 572
3001B	SB94A-157	4918-4920	469 - 295
3002C	SB94A-157	4921-4925	294 - 31
3002C	SB94A-155	4926-4933	469 - 31
3002C	SB94A-153	4934-4940	111 - 525
3003A	SB94A-153	4941	526 - 549
3003A	SB94A-151	4942-4949	468 - 31
3003A	SB94A-149	4950-4957	111 - 549
3003A	SB94A-147	4958-4960	519 - 345
3004B	SB94A-147	4961-4966	344 - 31
3004B	SB94A-145	4967-4970	111 - 300
3004B	SB94A-145A	4971-4976	240 - 596
3004B	SB94A-143	4977-4980	511 - 257
3005C	SB94A-143	4981-4984	256 - 31
3005C	SB94A-141	4985-4993	111 - 601
3005C	SB94A-128	4994-5000	111 - 525
3006A	SB94A-128	5001-5010	526 -1034
3006A	SB94A-126	5011-5020	613 - 57
3007B	SB94A-126	5021	56 - 31
3007B	SB94A-104	5022-5040	1777- 643
3008C	SB94A-104	5041-5051	642 - 31
3008C	SB94A-102	5052-5060	111 - 644
3009A	SB94A-102	5061-5080	645 -1831
3010B	SB94A-124	5081-5100	1274- 80
3011C	SB94A-124	5101	79 - 31
3011C	SB94A-108	5102-5110	529 - 31
3011C	SB94A-106	5111-5120	111 - 698
3012A	SB94A-106	5121-5122	699 - 790
3012A	SB94A-125	5123-5129	427 - 31
3012A	SB94A-129	5130-5140	111 - 733
3013B	SB94A-133	5141-5147	394 - 31
3013B	SB94A-137	5148-5154	111 - 536
3013B	SB94A-139	5155-5160	399 - 45
3014C	SB94A-139	5161-5161	44 - 31
3014C	SB94A-139	5162-5163	DNP.

BOX	LINE	TAPES	SHOT POINTS
3014C	SB94A-135	5164-5170	111 - 519
3014C	SB94A-131	5171-5179	529 - 31
3014C	SB94A-127	5180	111 - 165
3015A	SB94A-127	5181-5190	166 - 737
3015A	SB94A-110	5191-5200	1172- 578
3016B	SB94A-110	5201-5210	577 - 31
3016B	SB94A-112	5211-5220	111 - 705
3017C	SB94A-112	5221-5230	706 -1279
3017C	SB94A-123	5231-5240	1025- 431
3018A	SB94A-123	5241-5247	430 - 31
3018A	SB94A-	5248	DNP.
3018A	SB94A-121	5249-5260	111 - 824
3019B	SB94A-121	5261-5266	825 -1128
3019B	SB94A-119	5267-5275	554 - 31
3019B	SB94A-115	5276-5280	111 - 405
3020C	SB94A-115	5281-5292	406 -1102
3020C	SB94A-117	5293-5300	557 - 162
3021A	SB94A-117	5301-5303	161 - 31
3021A	SB94A-113	5304-5320	111 -1125
3022B	SB94A-113	5321-5329	1126-1647
3022B	SB94A-111	5330-5340	1494- 840
3023C	SB94A-111	5341-5354	839 - 31
3023C	SB94A-107	5355-5360	111 - 465
3200A	SB94A-107	5361-5372	466 -1138
3200A	SB94A-109	5373-5380	670 - 216
3201B	SB94A-109	5381-5384	215 - 31
3201B	SB94A-105	5385-5395	111 - 717
3201B	SB94A-103	5396-5400	640 - 346
3202C	SB94A-103	5401-5406	345 - 31
3202C	SB94A-101	5407-5418	111 - 798
3202C	SB94A-122	5419-5420	111 - 224
3203A	SB94A-122	5421-5433	225 - 988
3203A	SB94A-120	5434-5440	657 - 243
3204B	SB94A-120	5441-5444	242 - 31
3204B	SB94A-118	5445-5455	111 - 737
3204B	SB94A-116	5456-5460	659 - 365
3205C	SB94A-116	5461-5466	364 - 31
3205C	SB94A-114	5467-5475	111 - 642



B) T18/T25 REPROCESSING

BOX	LINE	TAPES	SHOTS	RECORDS	TYPE
3806	B70A-5-NE	SR-1001	3179-3203	4050-4213	EVEN
3806	B70A-4-SW	SR-1001	3204-3231	4221-4400	EVEN
3806	B70A-4-SW	SR-1002	3232-3246	4401-4474	EVEN
3806	B70A-4-SW	SR-1002	3247-3285	4475-4730	ODD
3806	B70A-5-NE	SR-1003	3195-3203	4150-4213	ODD
3806	B70A-4-SW	SR-1003	3204-3246	4221-4474	ODD
3806	B70A-4-SW	SR-1004	3286-3340	4731-5264	ODD
3806	B70A-4-SW	SR-1005	3247-3298	4475-5014	EVEN
3806	B70A-4-SW	SR-1006	3299-3340	5015-5264	EVEN
3806	B70A-4-SW	SR-1006	3341-3352	5265-5344	ODD
3806	B70A-4-SW	SR-1007	3394-3406	5611-5674	EVEN
3806	B70A-4-SW	SR-1007	3407-3445	5675-6130	ODD
3806	B70A-4-SW	SR-1008	3353-3406	3645-5674	ODD
3806	B70A-4-SW	SR-1009	3341-3393	5265-5605	EVEN
3806	B70A-4-SW	SR-1010	3407-3459	5675-6220	EVEN
3806	B70A-4-SW	SR-1011	3446-3492	6131-6424	ODD
3806	B70A-4-SW	SR-1012	3460-3492	6221-6424	EVEN
3806	B70A-7-NE	SR-1012	3493-3509	6450-6553	ODD
3806	B70A-3-SW	SR-1013	3015-3047	2624-3027	?
3806	B70A-5-NE	SR-1013	3048-3070	3035-3166	EVEN
3806	B70A-3-SW	SR-1014	3034-3047	2741-3027	?
3806	B70A-5-NE	SR-1014	3048-3086	3035-3270	ODD
3806	B70A-5-NE	SR-1015	3070-3086	3170-3270	EVEN
3806	B70A-5-NE	SR-1015	3087-3125	3271-3523	ODD
3806	B70A-5-NE	SR-1016	3126-3178	3524-4047	ODD
3806	B70A-5-NE	SR-1017	3087-3141	3271-3623	EVEN
3806	B70A-5-NE	SR-1018	3142-3178	3624-4047	EVEN
3806	B70A-5-NE	SR-1018	3079-3194	4050-4147	ODD
3806	B70A-9-NE	SR-1019	3990-4043	2370-2717	ODD
3806	B70A-8-SW	SR-1020	3973-3989	2256-2361	EVEN
3806	B70A-9-NE	SR-1020	3990-4025	2370-2607	EVEN
3806	B70A-9-NE	SR-1021	4026-4043	2610-2717	EVEN
3806	B70A-9-NE	SR-1021	4044-4079	2720-3137	ODD
3806	B70A-9-NE	SR-1022	4044-4097	2720-3247	EVEN
3806	B70A-9-NE	SR-1023	4080-4132	3140-3463	ODD
3806	B70A-9-NE	SR-1024	4098-4132	3250-3463	EVEN
3806	B70A-9-NE	SR-1024	4133-4151	3464-3577	ODD
3806	B70A-9-NE	SR-1025	4133-4186	3464-4013	EVEN
3806	B70A-9-NE	SR-1026	4152-4205	3600-4127	ODD
3806	B70A-9-NE	SR-1027	4187-4205	4014-4127	EVEN
3806	B70A-9-NE	SR-1027	4206-4240	4130-4343	ODD
3806	B70A-9-NE	SR-1028	4206-4257	4130-4447	EVEN
3806	B70A-9-NE	SR-1029	4241-4293	4344-4667	ODD

BOX	LINE	TAPES	SHOTS	RECORDS	TYPE
3806	B70A-9-NE	SR-1030	4258-4293	4450-4667	EVEN
3806	B70A-9-NE	SR-1030	4294-4317	4670-4777	ODD
3806	B70A-9-NE	SR-1031	4294-4347	4670-5217	EVEN
3806	B70A-9-NE	SR-1032	4312-4364	5000-5323	ODD
3806	B70A-9-NE	SR-1033	4348-4364	5220-5323	EVEN
3806	B70A-9-NE	SR-1033	4365-4375	5324-5377	ODD
3806	B70A-11-SW	SR-1033	4376-4398	0021-0154	ODD
3806	B70A-9-NE	SR-1034	4365-4375	5324-5377	EVEN
3806	B70A-11-SW	SR-1034	4376-4414	0021-0254	
3806	TNK4-85	SR-018	1 - 115		
3806	TNK4-85	SR-019	116 - 245		
3806	TNK4-85	SR-020	246 - 375		
3806	TNK4-85	SR-021	376 - 505		
3806	TNK4-85	SR-022	506 - 635		
3806	TNK4-85	SR-023	636 - 765		
3806	TNK4-85	SR-024	766 - 895		
3806	TNK4-85	SR-025	896 -1025		
3806	TNK4-85	SR-026	1026-1044		

APPENDIX III - EXABYTE ARCHIVING SUMMARY

TAPE NO.	CONTENT DESCRIPTION
EXA-1606	Filtered and scaled migrations - area 1
EXA-1624	Filtered and scaled migrations - area 2
EXA-1632	Filtered and scaled migrations - area 3
EXA-1633	Raw migrations - all SB94A lines
EXA-1634	Raw final stacks - all SB94A lines
EXA-1635	Filtered and scaled final stacks - all SB94A lines
EXA-1610	Filtered and scaled migrations -lines remigrated only (A)
EXA-1631	Filtered and scaled migrations -lines remigrated only (B)
EXA-1612	Raw migrations -lines remigrated only
EXA-1680	Filtered and scaled migrations -lines fully reprocessed from field tapes
EXA-1687	Raw migrations -lines fully reprocessed from field tapes
EXA-1889	Raw final stacks -lines fully reprocessed from field tapes
EXA-1890	Filtered and scal. final stacks -lines fully reprocessed from field tapes

Data were archived in SEGY format with an EOF marker separating lines and at 5.0 Gbytes density.

SEGY ARCHIVE LISTING OF THE FILTERED AND SCALED MIGRATIONS

498473

CLIENT : SAGASCO
AREA : ROCKY CAPE 2D SURVEY - AREA 1

FORMAT : SEG-Y
DENSITY : 5·ϕ GBYTES
DATA LENGTH : 6 SEC
SAMPLE RATE : 4 MS

SHOTPOINTS ANNOTATED TO SOURCE POSITION
NOTE: [1] CDP-SP RELATIONSHIP FOR NORMAL LINES : CDP = (2 * SP) + 123
REVERSE LINES : CDP = 4125 - (2 * SP)

[2] THE CDP'S AFTER THE "/" CORRESPONDS THE SP AS REFERENCED TO SOURCE POSITION. CDP'S BEFORE THE "/" CORRESPONDS TO THE TAPERING IN.

EG: CDPS : 221/345 - 2186
SPS : 49/111 - 1031

1) CPT 1606: FILTERED AND SCALED MIGRATIONS

FILE NO	LINE	REELTRC	SP	CDP
1	SB94A - 126	1 - 1284	675 / 613 - 34	2775 / 2899 - 4058
2	- 128	1285 - 3250	49 / 111 - 1031	221 / 345 - 2186
3	- 130	3251 - 4457	637 / 575 - 34	2851 / 2975 - 4058
4	- 132	4458 - 5855	49 / 111 - 747	221 / 345 - 1618
5	- 141	5856 - 6955	49 / 111 - 598	221 / 345 - 1320
6	- 143	6956 - 8035	573 / 511 - 34	2979 / 3103 - 4058
7	- 145	8036 - 9125	49 / 111 - 593	221 / 345 - 1310
8	- 147	9126 - 10221	581 / 519 - 34	2963 / 3087 - 4058
9	- 149	10222 - 11217	49 / 111 - 546	221 / 345 - 1216
10	- 151	11218 - 12211	530 / 468 - 34	3065 / 3189 - 4058
11	- 153	12212 - 13207	49 / 111 - 546	221 / 345 - 1216
12	- 155	13208 - 14203	531 / 469 - 34	3063 / 3187 - 4058
13	- 157	14204 - 15089	476 / 414 - 34	3173 / 3297 - 4058
14	- 159	15090 - 16131	49 / 111 - 569	221 / 345 - 1262
15	- 161	16132 - 17135	535 / 473 - 34	3055 / 3179 - 4058

GEOS068B:JMM

498474

SEG-Y ARCHIVE LISTING OF THE FILTERED AND SCALED MIGRATIONS

CLIENT : SAGASCO
AREA : ROCKY CAPE 2D SURVEY - AREA 2

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 6 SEC
SAMPLE RATE : 4 MS

SHOTPOINTS ANNOTATED TO SOURCE POSITION
NOTE: [1] CDP-SP RELATIONSHIP FOR NORMAL LINES : CDP = (2 * SP) + 123
REVERSE LINES : CDP = 4125 - (2 * SP)

[2] THE CDP'S AFTER THE "/" CORRESPONDS THE SP AS REFERENCED TO SOURCE POSITION. CDP'S BEFORE THE "/" CORRESPONDS TO THE TAPERING IN.

EG: CDPS : 221/345 - 2186
SPS : 49/111 - 1031

.) CPT 1624: FILTERED AND SCALED MIGRATIONS

FILE NO	LINE	REELTRC	SP	CDP
1	SB94A - 102	1 - 3560	49 / 111 - 1828	221 / 345 - 3780
2	- 104	3561 - 7172	1839 / 1777 - 34	447 / 571 - 4058
3	- 110	7173 - 9574	1234 / 1172 - 34	1657 / 1781 - 4058
4	- 112	9575 - 12030	49 / 111 - 1276	221 / 345 - 2676
5	- 121	12031 - 14184	49 / 111 - 1225	221 / 345 - 2374
6	- 123	14185 - 16292	1087 / 1025 - 34	1951 / 2075 - 4058
7	- 124	16293 - 18898	1336 / 1274 - 34	1453 / 1577 - 4058
8	- 125	18899 - 19810	489 / 427 - 34	3147 / 3271 - 4058
9	- 127	19811 - 21182	49 / 111 - 734	221 / 345 - 1592
10	- 129	21183 - 22546	49 / 111 - 730	221 / 345 - 1584
11	- 131	22547 - 23662	591 / 529 - 34	2943 / 3067 - 4058
12	- 133	23663 - 24508	456 / 394 - 34	3213 / 3337 - 4058
13	- 135	24509 - 25444	49 / 111 - 516	221 / 345 - 1156
14	- 137	25445 - 26390	49 / 111 - 521	221 / 345 - 1166
15	- 139	26391 - 27246	46/ / 399 - 34	3203 / 3327 - 4058

GEOS068B:JMM

SEGY ARCHIVE LISTING OF THE FILTERED AND SCALED MIGRATIONS

498475

CLIENT : SAGASCO
AREA : ROCKY CAPE 2D SURVEY - AREA 3

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 6 SEC
SAMPLE RATE : 4 MS

SHOTPOINTS ANNOTATED TO SOURCE POSITION
NOTE: [1] CDP-SP RELATIONSHIP FOR NORMAL LINES : CDP = (2 * SP) + 123
REVERSE LINES : CDP = 4125 - (2 * SP)

[2] THE CDP'S AFTER THE "/" CORRESPONDS THE SP AS REFERENCED TO SOURCE POSITION. CDP'S BEFORE THE "/" CORRESPONDS TO THE TAPERING IN.

EG: CDPS : 221/345 - 2186
SPS : 49/111 - 1031

1) CPT 1632: FILTERED AND SCALED MIGRATIONS

FILE NO	LINE	REELTRC	SP	CDP
1	SB94A - 101	1 - 1494	49 / 111 - 795	221 / 345 - 1714
2	- 103	1495 - 2832	702 / 640 - 34	2721 / 2845 - 4058
3	- 105	2833 - 4164	49 / 111 - 714	221 / 345 - 15[illegible]
4	- 106	4165 - 5642	49 / 111 - 787	221 / 345 - 16[illegible]
5	- 107	5643 - 7816	49 / 111 - 1135	221 / 345 - 2394
6	- 108	7817 - 8932	59 / 529 - 34	2943 / 3067 - 4058
7	- 109	8933 - 10330	732 / 670 - 34	2661 / 2785 - 4058
8	- 111	10331 - 13376	1556 / 1494 - 34	1013 / 1137 - 4058
9	- 113	13377 - 16568	49 / 111 - 1644	221 / 345 - 3412
10	- 114	16569 - 17750	49 / 111 - 639	221 / 345 - 1402
11	- 115	17751 - 19852	49 / 111 - 1099	221 / 345 - 2322
12	- 116	19853 - 21228	721 / 659 - 34	2683 / 2807 - 4058
13	- 117	21229 - 22400	619 / 557 - 34	2887 / 3011 - 4058
14	- 118	22401 - 23772	49 / 111 - 734	221 / 345 - 1592
15	- 119	23773 - 24938	616 / 554 - 34	2893 / 3017 - 4058
16	- 120	24939 - 26310	719 / 657 - 34	2687 / 2811 - 4058
17	- 122	26311 - 28184	49 / 111 - 985	221 / 345 - 2094
18	- 121	28185 - 30338	49 / 111 - 1225	221 / 345 - 2374

GEOS068B:JMM

SEGY ARCHIVE LISTING OF THE RAW MIGRATIONS

498476

CLIENT : SAGASCO
AREA : ROCKY CAPE 2D SURVEY

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 6 SEC
SAMPLE RATE : 4 MS

SHOTPOINTS ANNOTATED TO SOURCE POSITION
NOTE: [1] CDP-SP RELATIONSHIP FOR NORMAL LINES : CDP = (2 * SP) + 123
REVERSE LINES : CDP = 4125 - (2 * SP)

[2] THE CDP'S AFTER THE "/" CORRESPONDS THE SP AS REFERENCED TO SOURCE POSITION. CDP'S BEFORE THE "/" CORRESPONDS TO THE TAPERING IN.

EG: CDPS : 221/345 - 2186
SPS : 49/111 - 1031

1) CPT 1633: RAW MIGRATIONS

FILE NO	LINE	REELTRC	SP	CDP
1	SB94A - 126	1 - 1284	675 / 613 - 34	2775 / 2899 - 4058
2	- 128	1285 - 3250	49 / 111 - 1031	221 / 345 - 2186
3	- 130	3251 - 4457	637 / 575 - 34	2851 / 2975 - 4058
4	- 132	4458 - 5855	49 / 111 - 747	221 / 345 - 1618
5	- 141	5856 - 6955	49 / 111 - 598	221 / 345 - 1320
6	- 143	6956 - 8035	573 / 511 - 34	2979 / 3103 - 4058
7	- 145	8036 - 9125	49 / 111 - 593	221 / 345 - 1310
8	- 147	9126 - 10221	581 / 519 - 34	2963 / 3087 - 4058
9	- 149	10222 - 11217	49 / 111 - 546	221 / 345 - 1216
10	- 151	11218 - 12211	530 / 468 - 34	3065 / 3189 - 4058
11	- 153	12212 - 13207	49 / 111 - 546	221 / 345 - 1216
12	- 155	13208 - 14203	531 / 469 - 34	3063 / 3187 - 4058
13	- 157	14204 - 15089	476 / 414 - 34	3173 / 3297 - 4058
14	- 159	15090 - 16131	49 / 111 - 569	221 / 345 - 1262
15	- 161	16132 - 17135	535 / 473 - 34	3055 / 3179 - 4058
16	- 102	17136 - 20695	49 / 111 - 1828	221 / 345 - 3780
17	- 104	20696 - 24307	1839 / 1777 - 34	447 / 571 - 4058
18	- 110	24308 - 26709	1234 / 1172 - 34	1657 / 1781 - 4058
19	- 112	26710 - 29165	49 / 111 - 1276	221 / 345 - 2676
20	- 121	29166 - 31319	49 / 111 - 1225	221 / 345 - 2374
21	- 123	31320 - 33427	1087 / 1025 - 34	1951 / 2075 - 4058
22	- 124	33428 - 36033	1336 / 1274 - 34	1453 / 1577 - 4058
23	- 125	36034 - 36945	489 / 427 - 34	3147 / 3271 - 4058
24	- 127	36946 - 38317	49 / 111 - 734	221 / 345 - 1592
25	- 129	38318 - 39681	49 / 111 - 730	221 / 345 - 1584
26	- 131	39682 - 40797	591 / 529 - 34	2943 / 3067 - 4058
27	- 133	40798 - 41643	456 / 394 - 34	3213 / 3337 - 4058
28	- 135	41644 - 42579	49 / 111 - 516	221 / 345 - 1156
29	- 137	42580 - 43525	49 / 111 - 521	221 / 345 - 1166

FILE NO	LINE	REKLTRC	SP	CDP
30	SB94A - 139	42526 - 44381	461 / 399 - 34	3203 / 3327 - 4058
31	- 101	44382 - 45875	49 / 111 - 795	221 / 345 - 1714
32	- 103	45876 - 47213	702 / 640 - 34	2721 / 2845 - 4058
33	- 105	47214 - 48545	49 / 111 - 714	221 / 345 - 15[illegible]
34	- 106	48546 - 50023	49 / 111 - 787	221 / 345 - 1698
35	- 107	50024 - 52197	49 / 111 - 1135	221 / 345 - 2394
36	- 108	52198 - 53313	59 / 529 - 34	2943 / 3067 - 4058
37	- 109	53314 - 54711	732 / 670 - 34	2661 / 2785 - 4058
38	- 111	54712 - 57757	1556 / 1494 - 34	1013 / 1137 - 4058
39	- 113	57758 - 60949	49 / 111 - 1644	221 / 345 - 3412
40	- 114	60950 - 62131	49 / 111 - 639	221 / 345 - 1402
41	- 115	62132 - 64233	49 / 111 - 1099	221 / 345 - 2322
42	- 116	64234 - 65609	721 / 659 - 34	2683 / 2807 - 4058
43	- 117	65610 - 66781	619 / 557 - 34	2887 / 3011 - 4058
44	- 118	66782 - 68153	49 / 111 - 734	221 / 345 - 1592
45	- 119	68154 - 69319	616 / 554 - 34	2893 / 3017 - 4058
46	- 120	69320 - 70691	719 / 657 - 34	2687 / 2811 - 4058
47	- 122	70692 - 72565	49 / 111 - 985	221 / 345 - 2094

SEGY ARCHIVE LISTING OF THE RAW FINAL STACKS

: NO

498478

CLIENT : SAGASCO
AREA : ROCKY CAPE 2D SURVEY

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 6 SEC
SAMPLE RATE : 4 MS

SHOTPOINTS ANNOTATED TO SOURCE POSITION
NOTE: [1] CDP-SP RELATIONSHIP FOR NORMAL LINES : CDP = (2 * SP) + 123
REVERSE LINES : CDP = 4125 - (2 * SP)

[2] THE CDP'S AFTER THE "/" CORRESPONDS THE SP AS REFERENCED TO SOURCE POSITION. CDP'S BEFORE THE "/" CORRESPONDS TO THE TAPERING IN.

EG: CDPS : 221/345 - 2186
SPS : 49/111 - 1031

1) CPT 1634: RAW FINAL STACKS

FILE NO	LINE	REELTRC	SP	CDP
1	SB94A - 126	1 - 1284	675 / 613 - 34	2775 / 2899 - 4058
2	- 128	1285 - 3250	49 / 111 - 1031	221 / 345 - 2186
3	- 130	3251 - 4458	637 / 575 - 34	2851 / 2975 - 4058
4	- 132	4459 - 5856	49 / 111 - 747	221 / 345 - 1618
5	- 141	5857 - 6956	49 / 111 - 598	221 / 345 - 1320
6	- 143	6957 - 8036	573 / 511 - 34	2979 / 3103 - 4058
7	- 145	8037 - 9126	49 / 111 - 593	221 / 345 - 1310
8	- 147	9127 - 10222	581 / 519 - 34	2963 / 3087 - 4058
9	- 149	10223 - 11218	49 / 111 - 546	221 / 345 - 121E
10	- 151	11219 - 12212	530 / 468 - 34	3065 / 3189 - 405E
11	- 153	12213 - 13208	49 / 111 - 546	221 / 345 - 121E
12	- 155	13209 - 14204	531 / 469 - 34	3063 / 3187 - 405E
13	- 157	14205 - 15090	476 / 414 - 34	3173 / 3297 - 405E
14	- 159	15091 - 16132	49 / 111 - 569	221 / 345 - 1262
15	- 161	16133 - 17136	535 / 473 - 34	3055 / 3179 - 405E
16	- 102	17137 - 20696	49 / 111 - 1828	221 / 345 - 378(
17	- 104	20697 - 24308	1839 / 1777 - 34	447 / 571 - 405E
18	- 110	24309 - 26710	1234 / 1172 - 34	1657 / 1781 - 405E
19	- 112	26711 - 29166	49 / 111 - 1276	221 / 345 - 267
20	- 121	29167 - 31320	49 / 111 - 1225	221 / 345 - 237
21	- 123	31321 - 33428	1087 / 1025 - 34	1951 / 2075 - 405
22	- 124	33429 - 36034	1336 / 1274 - 34	1453 / 1577 - 405
23	- 125	36035 - 36946	489 / 427 - 34	3147 / 3271 - 405
24	- 127	36947 - 38318	49 / 111 - 734	221 / 345 - 159
25	- 129	38319 - 39682	49 / 111 - 730	221 / 345 - 158
26	- 131	39683 - 40798	591 / 529 - 34	2943 / 3067 - 405
27	- 133	40799 - 41644	456 / 394 - 34	3213 / 3337 - 405
28	- 135	41645 - 42580	49 / 111 - 516	221 / 345 - 115
29	- 137	42581 - 43526	49 / 111 - 521	221 / 345 - 116

FILE NO	LINE	REELTRC	SP	CDP
				498479
30	SB94A - 139	42527 - 44382	461 / 399 - 34	3203 / 3327 - 4058
31	- 101	44383 - 45876	49 / 111 - 795	221 / 345 - 1714
32	- 103	45877 - 47214	702 / 640 - 34	2721 / 2845 - 4058
33	- 105	47215 - 48546	49 / 111 - 714	221 / 345 - 1552
34	- 106	48547 - 50024	49 / 111 - 787	221 / 345 - 16[illegible]
35	- 107	50025 - 52198	49 / 111 - 1135	221 / 345 - 23[illegible]
36	- 108	52199 - 53314	59 / 529 - 34	2943 / 3067 - 4058
37	- 109	53315 - 54712	732 / 670 - 34	2661 / 2785 - 4058
38	- 111	54713 - 57758	1556 / 1494 - 34	1013 / 1137 - 4058
39	- 113	57759 - 60950	49 / 111 - 1644	221 / 345 - 3412
40	- 114	60951 - 62132	49 / 111 - 639	221 / 345 - 1402
41	- 115	62133 - 64234	49 / 111 - 1099	221 / 345 - 2322
42	- 116	64235 - 65610	721 / 659 - 34	2683 / 2807 - 4058
43	- 117	65611 - 66782	619 / 557 - 34	2887 / 3011 - 4058
44	- 118	66783 - 68154	49 / 111 - 734	221 / 345 - 1592
45	- 119	68155 - 69320	616 / 554 - 34	2893 / 3017 - 4058
46	- 120	69321 - 70692	719 / 657 - 34	2687 / 2811 - 4058
47	- 122	70693 - 72566	49 / 111 - 985	221 / 345 - 2094

SEGY ARCHIVE LISTING OF THE FILTERED AND SCALED ...

498480

CLIENT : SAGASCO
AREA : ROCKY CAPE 2D SURVEY

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 6 SEC
SAMPLE RATE : 4 MS

SHOTPOINTS ANNOTATED TO SOURCE POSITION
NOTE: [1] CDP-SP RELATIONSHIP FOR NORMAL LINES : CDP = (2 * SP) + 123
REVERSE LINES : CDP = 4125 - (2 * SP)

[2] THE CDP'S AFTER THE "/" CORRESPONDS THE SP AS REFERENCED TO SOURCE POSITION. CDP'S BEFORE THE "/" CORRESPONDS TO THE TAPERING IN.

EG: CDPS : 221/345 - 2186
SPS : 49/111 - 1031

1) CPT 1635: FILTERED AND SCALED FINAL STACKS

FILE NO	LINE	REELTRC	SP	CDP
1	SB94A - 126	1 - 1284	675 / 613 - 34	2775 / 2899 - 4058
2	- 128	1285 - 3250	49 / 111 - 1031	221 / 345 - 2186
3	- 130	3251 - 4458	637 / 575 - 34	2851 / 2975 - 4058
4	- 132	4459 - 5856	49 / 111 - 747	221 / 345 - 1618
5	- 141	5857 - 6956	49 / 111 - 598	221 / 345 - 1320
6	- 143	6957 - 8036	573 / 511 - 34	2979 / 3103 - 4058
7	- 145	8037 - 9126	49 / 111 - 593	221 / 345 - 1310
8	- 147	9127 - 10222	581 / 519 - 34	2963 / 3087 - 4058
9	- 149	10223 - 11218	49 / 111 - 546	221 / 345 - 1216
10	- 151	11219 - 12212	530 / 468 - 34	3065 / 3189 - 4058
11	- 153	12213 - 13208	49 / 111 - 546	221 / 345 - 1216
12	- 155	13209 - 14204	531 / 469 - 34	3063 / 3187 - 4058
13	- 157	14205 - 15090	476 / 414 - 34	3173 / 3297 - 4058
14	- 159	15091 - 16132	49 / 111 - 569	221 / 345 - 1262
15	- 161	16133 - 17136	535 / 473 - 34	3055 / 3179 - 4058
16	- 102	17137 - 20696	49 / 111 - 1828	221 / 345 - 3780
17	- 104	20697 - 24308	1839 / 1777 - 34	447 / 571 - 4058
18	- 110	24309 - 26710	1234 / 1172 - 34	1657 / 1781 - 4058
19	- 112	26711 - 29166	49 / 111 - 1276	221 / 345 - 2676
20	- 121	29167 - 31320	49 / 111 - 1225	221 / 345 - 2374
21	- 123	31321 - 33428	1087 / 1025 - 34	1951 / 2075 - 4058
22	- 124	33429 - 36034	1336 / 1274 - 34	1453 / 1577 - 4058
23	- 125	36035 - 36946	489 / 427 - 34	3147 / 3271 - 4058
24	- 127	36947 - 38318	49 / 111 - 734	221 / 345 - 1592
25	- 129	38319 - 39682	49 / 111 - 730	221 / 345 - 1584
26	- 131	39683 - 40798	591 / 529 - 34	2943 / 3067 - 4058
27	- 133	40799 - 41644	456 / 394 - 34	3213 / 3337 - 4058
28	- 135	41645 - 42580	49 / 111 - 516	221 / 345 - 1156
29	- 137	42581 - 43526	49 / 111 - 521	221 / 345 - 1166

FILE NO	LINE	REELTRC	SP	CDP
30	SB94A - 139	42527 - 44382	461 / 399 - 34	3203 / 3327 - 4058
31	- 101	44383 - 45876	49 / 111 - 795	221 / 345 - 1714
32	- 103	45877 - 47214	702 / 640 - 34	2721 / 2845 - 4058
33	- 105	47215 - 48546	49 / 111 - 714	221 / 345 - 1552
34	- 106	48547 - 50024	49 / 111 - 787	221 / 345 - 169
35	- 107	50025 - 52198	49 / 111 - 1135	221 / 345 - 239
36	- 108	52199 - 53314	59 / 529 - 34	2943 / 3067 - 4058
37	- 109	53315 - 54712	732 / 670 - 34	2661 / 2785 - 4058
38	- 111	54713 - 57758	1556 / 1494 - 34	1013 / 1137 - 4058
39	- 113	57759 - 60950	49 / 111 - 1644	221 / 345 - 3412
40	- 114	60951 - 62132	49 / 111 - 639	221 / 345 - 1402
41	- 115	62133 - 64234	49 / 111 - 1099	221 / 345 - 2322
42	- 116	64235 - 65610	721 / 659 - 34	2683 / 2807 - 4058
43	- 117	65611 - 66782	619 / 557 - 34	2887 / 3011 - 4058
44	- 118	66783 - 68154	49 / 111 - 734	221 / 345 - 1592
45	- 119	68155 - 69320	616 / 554 - 34	2893 / 3017 - 4058
46	- 120	69321 - 70692	719 / 657 - 34	2687 / 2811 - 4058
47	- 122	70693 - 72566	49 / 111 - 985	221 / 345 - 2094

SEGY ARCHIVE LISTING OF THE FILTERED AND SCALED MIGRATIONS

498482

CLIENT : SAGASCO
AREA : T25 REPROCESSING

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 6 SECS
SAMPLE RATE : 4 MSEC

1) CPT 1610: FILTERED AND SCALED MIGRATIONS

FILE NO	LINE	REELTRC	CDPS	SP
1	B70A - 1	1 - 2292	56 - 2347	7804 - 8084
2	- 2	2293 - 4114	54 - 1875	7566 - 7787
3	- 7	4115 - 5687	54 - 1626	3493 - 3683
4	- 8	5688 - 8180	54 - 2546	3684 - 3989
5	- 11	8181 - 10402	53 - 2274	4376 - 4647
6	- 16	10403 - 12408	54 - 2059	423 - 667
7	- 19	12409 - 15486	53 - 3130	1843 - 2219
8	- 21A	15487 - 19474	55 - 4042	5155 - 5647
9	- 21B	19475 - 21640	53 - 2218	5623 - 5887
10	B71A - 63	21641 - 22790	54 - 1203	3980 - 4117
11	B72A - 101	22791 - 24076	52 - 1337	5797 - 5951
12	- 102	24077 - 24570	52 - 545	5952 - 6007
13	- 103	24571 - 25159	51 - 640	6008 - 6075
14	- 104	25160 - 26517	2 - 1359	6539 - 6708
15	- 111	26518 - 27499	52 - 1033	5098 - 5214
16	- 112	27500 - 28361	52 - 913	6161 - 6262
17	- 113	28362 - 29087	52 - 777	6076 - 6160
18	HB77A - 331	29088 - 29873	107 - 892	1 - 346
19	- 332	29874 - 30719	107 - 952	1 - 376
20	- 333	30720 - 31379	107 - 766	1 - 283
21	- 334	31380 - 32499	107 - 1226	1 - 513
22	- 335	32500 - 33603	107 - 1210	1 - 505
23	- 336	33604 - 34723	107 - 1226	1 - 513
24	- 337	34724 - 35991	107 - 1374	1 - 587
25	- 339	35992 - 37413	107 - 1528	1 - 664
26	- 340	37414 - 38533	107 - 1226	1 - 513
27	- 341	38534 - 39749	107 - 1322	1 - 561
28	- 342	39750 - 41258	107 - 1615	1 - 708
29	- 343	41259 - 42562	107 - 1410	1 - 605
30	- 344	42563 - 43520	107 - 1064	1 - 432
31	- 345	43521 - 44870	107 - 1456	1 - 628
32	- 346	44871 - 46084	107 - 1320	1 - 560
33	- 347	46085 - 47172	107 - 1194	1 - 497
34	- 348	47173 - 48122	107 - 1056	1 - 428
35	- 349	48123 - 49301	107 - 1286	1 - 543

498483

FILE NO	LINE	REELTRC	CDPS	SP
36	HB77A - 350	49302 - 50453	107 - 1258	1 - 529
37	- 351	50454 - 51471	107 - 1124	1 - 462
38	- 352	51472 - 52341	107 - 976	1 - 388
39	- 354	52342 - 53197	107 - 962	1 - 381
40	- 356	53198 - 53895	107 - 804	1 - 302
41	- 358	53896 - 54589	107 - 800	1 - 300
42	- 361	54590 - 55350	1 - 761	1 - 328
43	TQH5 - 74	55351 - 57772	1001 - 3422	1 - 1152
44	- 76	57773 - 60496	1001 - 3724	1 - 1303
45	- 80	60497 - 62680	1001 - 3184	1 - 1033
46	- 117	62681 - 64602	1001 - 2922	1 - 902
47	- 119	64603 - 66524	1001 - 2922	1 - 902
48	- 121	66525 - 68388	1001 - 2864	1 - 873
49	- 123	68389 - 70252	1001 - 2864	1 - 873
50	- 125	70253 - 72094	1001 - 2842	1 - 862

GEOS069B:DS

SEGY ARCHIVE LISTING OF THE FILTERED AND SCALED MIGRATIONS

498484

CLIENT : SAGASCO
AREA : T25 REPROCESSING

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 5 SECS
SAMPLE RATE : 4 MSEC

1) CPT 1031: FILTERED AND SCALED MIGRATIONS

FILE NO	LINE	REELTRC	CDPS	SP
1	B70A - 6A	1 - 1202	1 - 1202	2515 - 2365
2	- 6B	1203 - 2382	1 - 1180	2663 - 2515
3	- 6C	2383 - 3414	1 - 1032	2344 - 2215
4	B72A - 106	3415 - 4828	52 - 1465	5215 - 5385
5	- 107	4829 - 5882	52 - 1105	5386 - 5511
6	HB77A - 351	5883 - 6899	108 - 1124	1 - 462

GEOS069B:DS

SEGY ARCHIVE LISTING OF THE RAW MIGRATIONS

498485

CLIENT : SAGASCO
AREA : T18/T25 REPROCESSING

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 5 SECS
SAMPLE RATE : 4 MSEC

1) CPT 1612: RAW MIGRATIONS

FILE NO	LINE	REELTRC	CDPS	SP
1	B70A - 1	1 - 2292	56 - 2347	7804 - 8084
2	- 2	2293 - 4114	54 - 1875	7566 - 7787
3	- 7	4115 - 5687	54 - 1626	3493 - 2683
4	- 8	5688 - 8180	54 - 2546	3684 - 3989
5	- 11	8181 - 10402	53 - 2274	4376 - 4647
6	- 16	10403 - 12408	54 - 2059	423 - 667
7	- 19	12409 - 15485	53 - 3130	1843 - 2219
8	- 21A	15487 - 19473	55 - 4042	5155 - 5647
9	- 21B	19474 - 21639	53 - 2218	5623 - 5887
10	B71A - 63	21640 - 22789	54 - 1203	3980 - 4117
11	B72A - 101	22790 - 24075	52 - 1337	5797 - 5951
12	- 102	24076 - 24569	52 - 545	5952 - 6007
13	- 103	24570 - 25158	51 - 640	6008 - 6075
14	- 104	25159 - 26516	2 - 1359	6539 - 6708
15	- 111	26517 - 27498	52 - 1033	5098 - 5214
16	- 112	27499 - 28360	52 - 913	6161 - 6262
17	- 113	28361 - 29086	52 - 777	6076 - 6260
18	HB77A - 331	29087 - 29872	107 - 892	1 - 346
19	- 332	29873 - 30718	107 - 952	1 - 376
20	- 333	30719 - 31378	107 - 766	1 - 283
21	- 334	31379 - 32498	107 - 1226	1 - 513
22	- 335	32499 - 33602	107 - 1210	1 - 505
23	- 336	33603 - 34722	107 - 1226	1 - 513
24	- 337	34723 - 35990	107 - 1374	1 - 587
25	- 339	35991 - 37412	107 - 1528	1 - 664
26	- 340	37413 - 38532	107 - 1226	1 - 513
27	- 341	38533 - 39748	107 - 1322	1 - 561
28	- 342	39749 - 41257	107 - 1615	1 - 708
29	- 343	41258 - 42561	107 - 1410	1 - 605
30	- 344	42562 - 43519	107 - 1064	1 - 432
31	- 345	43520 - 44869	107 - 1456	1 - 628
32	- 346	44870 - 46083	107 - 1320	1 - 560
33	- 347	46084 - 47171	107 - 1194	1 - 497
34	- 348	47172 - 48121	107 - 1056	1 - 428
35	- 349	48122 - 49300	107 - 1286	1 - 543

FILE NO	LINE	REELTRC	CDPS	SP
36	HB77A - 350	49301 - 50452	107 - 1258	1 - 529
37	- 351	50453 - 51470	107 - 1124	1 - 462
38	- 352	51471 - 52340	107 - 976	1 - 388
39	- 354	52341 - 53196	107 - 962	1 - 381
40	- 356	53197 - 53894	107 - 804	1 - 302
41	- 358	53895 - 54588	107 - 800	1 - 300
42	- 361	54589 - 55349	1 - 761	1 - 328
43	TQH5 - 74	55350 - 57771	1001 - 3422	1 - 1152
44	- 76	57772 - 60495	1001 - 3724	1 - 1303
45	- 80	60496 - 62679	1001 - 3184	1 - 1033
46	- 117	62680 - 64601	1001 - 2922	1 - 902
47	- 119	64602 - 66523	1001 - 2922	1 - 902
48	- 121	66524 - 68387	1001 - 2864	1 - 873
49	- 123	68388 - 70251	1001 - 2864	1 - 873
50	- 125	70252 - 72093	1001 - 2842	1 - 862
51	B70A - 6A	72094 - 73295	1 - 1202	2515 - 2365
52	- 6B	73296 - 74475	1 - 1180	2663 - 2515
53	- 6C	74476 - 75507	1 - 1032	2344 - 2215
54	B72A - 106	75508 - 76921	52 - 1465	5215 - 5385
55	- 107	76922 - 77975	52 - 1105	5386 - 5511

GEOS069B:DS

SEGY ARCHIVE LISTING OF THE FILTERED AND SCALED MIGRATIONS

498487

CLIENT : SAGASCO
AREA : T18/T25 REPROCESSING

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 6 SECS
SAMPLE RATE : 4 MSEC

1) CPT 1680: FILTERED AND SCALED MIGRATIONS

FILE NO	LINE	REELNRC	CDPS	SP
1	B70A - 04	1 - 2358	4333 - 6690	3204 - 3492
2	- 05	2359 - 3650	3077 - 4368	3048 - 3203
3	- 09	3651 - 6784	2492 - 5625	3990 - 4375
4	TNK4 - 85	6785 - 8988	1870 - 4073	1 - 1043

GEOS069B:DS

SEGY ARCHIVE LISTING OF THE RAW MIGRATIONS

498488

CLIENT : SAGASCO
AREA : T18/T25 REPROCESSING

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 6 SECS
SAMPLE RATE : 4 MSEC

1) CPT 1687: RAW MIGRATIONS

FILE NO	LINE	REELTRC	CDPS	SP
1	B70A - 04	1 - 2358	4333 - 6690	3204 - 3492
2	- 05	2359 - 3650	3077 - 4368	3048 - 3203
3	- 09	3651 - 6784	2492 - 5625	3990 - 4375
4	TNK4 - 85	6785 - 8988	1870 - 4073	1 - 1043

GEOS069B:DS

SEGY ARCHIVE LISTING OF THE RAW FINAL STACKS

498489

CLIENT : SAGASCO
AREA : T18/T25 REPROCESSING

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 6 SECS
SAMPLE RATE : 4 MSEC

1) CPT 1889: RAW FINAL STACKS

FILE NO	LINE	REELTRC	CDPS	SP
1	B70A - 04	1 - 2358	4333 - 6690	3204 - 3492
2	- 05	2359 - 3650	3077 - 4368	3048 - 3203
3	- 09	3651 - 6784	2492 - 5625	3990 - 4375
4	TNK4 - 85	6785 - 8988	1870 - 4073	1 - 1043

GEOS069B:DS

SEGY ARCHIVE LISTING OF THE FILTERED AND SCALED FINAL STACKS

498490

CLIENT : SAGASCO
AREA : T18/T25 REPROCESSING

FORMAT : SEG-Y
DENSITY : 5.0 GBYTES
DATA LENGTH : 6 SECS
SAMPLE RATE : 4 MSEC

1) CPT 1890: FILTERED AND SCALED FINAL STACKS

FILE NO	LINE	REELTRC	CDPS	SP
1	B70A - 04	1 - 2358	4333 - 6690	3204 - 3492
2	- 05	2359 - 3650	3077 - 4368	3048 - 3203
3	- 09	3651 - 6784	2492 - 5625	3990 - 4375
4	TNK4 - 85	6785 - 8988	1870 - 4073	1 - 1043

GEOS069B:DS