

KAIREI CRUISE (KR01-10)

Seismic Survey

off Boso at Japan and Izu-Ogasawara Trenches

(2001年 房総沖)

Cruise Report

(July 3, 2001 - July 17, 2001)

July 17, 2001

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Institute for Frontier Research on Earth Evolution(IFREE)

CONTENTS

Summary

1. Survey outline
 - 1.1 Survey Area
 - 1.2 Time schedule
 - 1.3 Weather and sea status
 - 1.4 Participants
2. Observation system
3. Survey specifications
4. MCS onboard processing result

List of Tables and Figures

Table 1. Time schedule

Table 2. Participants in KR01-10 cruise

Table 3. Specification of MCS data acquisition

Figure 1. Survey area and seismic lines

Figure 2. Onboard processing example of MCS data of the line BS103

Attachments

Attachment 1 Observation systems in the MCS reflection survey

Attachment 2 Noise analysis

Attachment 3 PS converted wave observation experiment

Attachment 4 Data Sheets of the MCS reflection survey

Attachment 5 SeaBeam bathymetry maps

Attachment 7 Shot time recording

Summary

The KR01-10 cruise was conducted as a part of the following researches:

- (1) Frontier research on earth evolution,
- (2) Ocean floor dynamics research,

which are being carried out by Japan Marine Science and Technology Center (JAMSTEC).

Main objective of the cruise is to make geophysical and geological observations of subduction zone at the southernmost Japan trench region and the northernmost Izu-Ogasawara Trench region, in support of revealing the mechanism of subduction zone earthquakes.

During the cruise we used the R/V "KAIREI" of JAMSTEC to conduct a multichannel reflection seismic (MCS) survey off Boso from 3 July to 17 July, 2001.

We acquired total 1027 km of MCS data on 5 lines by a 156-channel digital streamer cable. Eight 1500 cubic inch air-guns were used as the seismic energy source. The study area and survey lines are shown in Figure 1. An onboard-processing result of the line BS103 was shown in Figure 2.

Finally, thanks are due to Captain Ukekura, Seismic Party Chief Katayama, scientific support staffs and the crew of the R/V KAIREI for their support on board.

1. Survey outline

1.1 Survey area

The survey area of KR01-10 cruise is located east off the Chiba and Ibaragi prefectures, as shown in Figure 1. During the survey, the following five survey lines were planned and observed.

<u>Line Name</u>	<u>Direction</u>	<u>Length planned</u>	<u>Length observed</u>
BS101	NW-SE	180 km	188.3 km
BS102	NW-SE	184 km	146.8 km
BS102_2	NW-SE		74.7 km
PS102	NW-SE		121.5 km
BS103	NW-SE	166 km	155.4 km
BS201	NE-SW	140 km	144.4 km
PS201	NE-SW		51.8 km
BS202	NE-SW	140 km	144.6 km
Total Line Length		950 km	1027.5 km

BS***: Standard observation line

PS***: PS converted wave line

1.2 Time schedule

The R/V KAIREI has left the JAMSTEC Natsushima port on 3 July 2001, and has come back to the Uruga port on 17 July 2001 in this cruise.

During the cruise, we conducted some examinations of our MCS data acquisition system such as a data telemetry testing of the lead-in-cable and streamer-cable.

A detailed time schedule is shown in Table 1.

1.3 Weather and sea status

Weather in the area was almost fine excluding two days when more than 15 m wind blew.

1.4 Participants

Participants on KR01-10 cruise are as follows:

1) Researchers

Tetsuro TSURU, IFREE/JAMSTEC (**Chief scientist**)

Seiichi MIURA, IFREE/JAMSTEC

2) Scientific support staffs who operate the MCS data acquisition and processing system

3) Crews who operate the vessel

All of the participants are listed in Table 2.

2. Observation system

The observation systems for the MCS survey are as follows:

Streamer cable: Syntron 24-bit digital streamer

Air gun: Bolt par airgun Model 1500

Recording system: Syntron SYNTRAK 960

Navigation system: Concept SPECTRA

Processing software: JGI iXL

Detailed information of the above systems are shown in the Attachment 1.

Furthermore, we used the following systems for observing geoscience data.

Shipboard three component magnetometer: Tierra Technica, SFG-11214

Proton precession magnet meter: Kawasaki Geological Engineering Co., LTD,
PRT10 magnetometer

Gravity meter: BODENSEEWERK, KSS31 marine gravity meter

Multi-narrow beam : SeaBeem Instruments, SEA BEAM 2112

3. Survey specifications

The specifications of MCS reflection data acquisition are shown in Table 3.

4. MCS onboard-processing result

We have carried out onboard processing of MCS data by the iXL software. Figure 2 shows a CDP stacked section of the line BS103. From this figure, we can recognize continuous reflections coming from the base of sedimentary layer and the plate boundary.

Table 1. 調査日程

月 日	時 刻	作 業 項 目	備 考
7/3	15:00	センター出港	
		BS201の南端で金目漁の漁具の視認、 XTB実施	漁具は見当たらず
7/4	09:00 13:00 15:30 18:18	エアガン/ストリーマー投入開始 作業終了、BS103東端へ回頭 左舷側よりエア漏れ発生 ストリーマーを右舷に寄せて、左舷側のガン のみ揚収し、交換。 BS103東端より観測開始	原因はエアガン本体のOリン グ
7/5	06:05 17:02	等走時ノイズ発生。 観測を中断し、原因を究明。 交換用のリードインが届くまで観測を続行す ることとした。 BS103東端より観測開始 等走時ノイズの振幅が弱くなった。	原因はリードインケーブル 原因は不明
7/6	12:40 18:15	BS103の観測終了。 BS102の西端に向かう。 BS102西端より観測開始。 テレメトリエラーのため132chで観測する。	
7/7	15:57 19:30	BS102の観測終了。 エアガン/ストリーマー投入開始 作業終了、センターへ向けて回航	海溝軸を越えた場所で終 了。
7/8	08:00 16:15 16:25 17:00	リードインを受け取り、発航。 BS202南端で円形回転方式を試みるが断念。通 常の8の字を行なう。 夜間シービームを実施。	海況は6-7mの風、1-2ノットの 潮流
7/9	06:00 09:40 13:55 21:05	エアガン/ストリーマー投入開始 作業終了 リードイン交換開始 バード不調、原因究明作業を開始。 取り付け位置を変えて対処する。 BS101東端より観測開始。	この間、ストリーマーの揚 収/投入作業有り

	22:48	ケーブルがやや浮き気味であったので、この測線のみ深度15mで観測した。 探鉱機故障によりミスショット	約40ショット分
7/10	21:05	BS101の観測終了、南へ回頭。	
7/11	01:50 14:00 17:30	BS102の観測開始。 記録長を15秒にした。ケーブル深度を20mに戻す。 BS102の観測終了。 エアガン/ストリーマー投入開始 作業終了	
7/12	05:56 08:00 16:00	BS202北端で8の字航走。 エアガン/ストリーマー投入開始 作業終了 測位システムがDGPS補正データを受信できず。船のDGPSの受信チャンネルを切り換えると、正常に戻る。この管、ミスショット。	ケーブル2本交換 40ショット分
7/13	09:55 14:06	BS202の観測終了。西へ回頭。 BS201の南端から観測開始。	
7/14	06:18 10:26 19:40 20:34	BS201の観測終了。 発振ビームおよびPS変換波取得実験の準備を開始する。 発振ビーム実験開始。 shot delay: 2, 4, 6, 8, 10, 12 msec PS201を観測開始。 PS201の観測終了、東へ回頭。 PS102の観測開始。	ケーブル4本追加、エアガンを縦列配置にする shot delayは8msecに固定
7/15	14:00 18:00	PS102の観測を終了、全ての観測を無事終了。 エアガン・ストリーマー揚収作業開始 作業終了 通常MCSデータ船上処理を終了。 夜間シービーム実施。	
7/16		MCS測定システムのメンテナンス作業実施。 MCSデータ一次処理*の一部を船上にて実施。 *:昨年度までは陸上にて入札で実施していた。	コネクター導通試験等
7/17	9:00	下船	@浦賀市住友重工ドック

Table 2. Participants in KR01-10 cruise

総端艇部署表 LIFEBOAT STATION


1号艇(右舷) No.1 lifeboat (starb'd)				2号艇(左舷) No.2 lifeboat (port)			
職名 Rank	氏名 Name	任務 Duty	携行品 Goods	職名 Rank	氏名 Name	任務 Duty	携行品 Goods
船長 Captain	請蔵 栄孝 Ukekura	総指揮 General Com.	重要書類 双眼鏡 時計 Important Brief, Binocular, Clock	一航士 C/O	折田 行徳 Orita	艇指揮 Boat Com.	重要書類 双眼鏡 時計 Important Brief, Binocular, Clock
二航士 2/O	青木 高文 Aoki	艇長 Skipper	双方向無線電話 海図 航海日誌 航海用具 Transceiver, Chart, Log-book, Nav'equip.	次席二航士 J2/O	矢野 健二 Yano	一航士補佐 Assistant C/O	重要書類 双眼鏡 時計 Important Brief, Binocular, Clock
機関長 C/E	木村 敏廣 Kimura	船長補佐 Assistant Capt.	重要書類 機関日誌 応急用具チエック Important Brief, Eng'log-book	三航士 3/O	佐々木大輔 Sasaki	艇長 Skipper	双方向無線電話 海図 航海用具 信号用具 Transceiver, Chart, Nav'&Signal Equip.
二機士 2/E	古藤 一馬 Koto	艇機関始動 Starting Eng.	応急用具 Emergency Tools	一機士 1/E	塚田 実 Tukada	艇指揮補佐 Assist. Com.	重要書類 応急用具チエック Important Brief
電士長 C/Op	那須東輝登 Nasu	通信連絡 Radio Operation	重要書類 レーダー・トランスホンダ Important Brief, SART	三機士 3/E	永井 智宣 Nagai	艇機関始動 Starting Eng.	応急用具 Emergency Tools
三電士 3/Op	石川 暁久 Isikawa	電子長補佐 Assistant C/Op	重要書類 救急医薬品 Important Brief, Medical Goods, SART	二電士 2/Op	井上 翼一 Inoue	通信連絡 Radio Operation	重要書類 救急医薬品 レーダー・トランスホンダ Important Brief, Medical Goods, SART
甲板長 Boatswain	中村眞喜男 Nakamura	降下準備指揮 S/B Lowering Boat Leader	遭難信号煙 ポートコンパス Distress Signals, Boat Compass	甲板手 Able Seaman	佐々木 栄 Sasaki	降下準備指揮 S/B Lowering Boat Leader	救命策発射器 毛布2枚 Line Throwing Appliance, 2 Blankets
甲板手 Able Seaman	安部 正市 Abe	降下準備 S/B Lowering Boat	ライフブイ 毛布2枚 Life Buoy, 2 Blankets	甲板手 Able Seaman	細川 清次 Hosokawa	降下準備 S/B Lowering Boat	ライフブイ 毛布2枚 Life Buoy, 2 Blankets
甲板手 Able Seaman	角口 国治 Kadoguti	降下準備 S/B Lowering Boat	手旗 国旗 信号用具 毛布2枚 Signal Equip., National Flag, 2 Blankets	甲板員 Ord. Seaman	吉野 勇希 Yosino	降下準備 S/B Lowering Boat	手旗 国旗 信号用具 メガホン 毛布2枚 Signal Equip., National Flag, 2 Blankets
甲板員 Ord. Seaman	遠藤 勝輝 Endo	降下準備 S/B Lowering Boat	メガホン 毛布2枚 Megaphon, 2 Blankets	操機手 Oiler	北野 勝 Kitano	艇機関始動補助 Starting Eng. Assistant	応急用具 艇機関燃料積込 毛布2枚 Emergency Tools, F.O, 2 Blankets
操機長 No1 Oiler	松田 誠一 Matuda	艇機関始動補助 Starting Eng. Assistant	応急用具 艇機関燃料積込 毛布2枚 Emergency Tools, F.O, 2 Blankets	操機手 Oiler	中井 和明 Nakai	降下準備 S/B Lowering Boat	応急用具 毛布2枚 Emergency Tools, 2 Blankets
操機手 Oiler	福原 猛 Fukubara	降下準備 S/B Lowering Boat	応急用具 毛布2枚 Emergency Tools, 2 Blankets	機関員 Oiler	山元 浩 Yamamoto	降下準備 S/B Lowering Boat	応急用具 毛布2枚 Emergency Tools, 2 Blankets
司厨長 C/ S	鈴木 洋一 Suzuki	食料積込指揮 Loading Foods Leader	食料 救急医薬品 毛布2枚 Foods, Medical Goods, 2 Blankets	司厨手 Cook	平山 恭一 Hirayama	食料積込 Loading Foods	食料 救急医薬品 毛布2枚 Foods, Medical Goods, 2 Blankets
司厨手 Cook	中原 秀利 Nakahara	食料積込 Loading Foods	食料 毛布2枚 Foods, 2 Blankets	司厨手 Cook	本多 成二 Honda	食料積込 Loading Foods	食料 毛布2枚 Foods, 2 Blankets
司厨手 Cook	佐藤 健 Sato	食料積込 Loading Foods	食料 毛布2枚 Foods, 2 Blankets				

• No.1 crews 15

• 乗組員 crews : 29per

• No.2 crews 14

3rd Jul. 2001

Master 

研究者等 Scientist etc

1号艇(右舷) No.1 lifeboat (starb'd)				2号艇(左舷) No.2 lifeboat (port)			
職名Rankあ		任務Duty	携行品Goods	職名Rank		任務Duty	携行品Goods
海洋センター	鶴 哲郎 Turu	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets	海洋センター	三浦 誠一 Miura	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets
日海事	片山 健 Katayama	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets	日海事	細谷 慎一 Hosoya	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets
日海事	野 徹雄 No	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets	日海事	佃 薫 Tukuda	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets
日海事	清水 賢 shimizu	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets	日海事	橋本 結 Hasimoto	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets
日海事	寺田 育正 Terada	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets	日海事	柴田 英紀 Shibata	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets
日海事	鈴木 啓吾 Suzuki	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets	日海事	佐野 守 Sano	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets
日海事	多田羅公子 Tatara	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets	地球科学総合研究所	奥田 裕康 Okuda	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets
研修船員	林 雅樹 Hayasi	乗艇待機 Board'g&Wait'g	重要データ、毛布2枚 Important Data、2 Blankets				

- ・研究者等 Scientists 15
- ・1号艇 No.1 lifeboat 23
- ・総員 Total 43

3rd Jul. 2001

・2号艇 No.2 lifeboat 21

Master 

Table 3. Specification of MCS data acquisition

Shot interval	50 m
Group interval	25 m
Total channel number	156 ch
Minimum offset	200 m (standard)
Maximum offset	4200 m (standard)
Source type	Airgun, 8 × 1500 cu.in., 2000 psi
Receiver type	Hydrophone, 24 bit digital streamer
Source depth	10 m (standard)
Receiver depth	20 m (standard)
Record length	15.36 sec
Sampling interval	4 msec
Water delay	0sec, 1sec @1000m, 2sec @2000m
Recording system	Syntrak 960
Filter @ recording	Low cut 3 Hz (6dB/Oct.), High cut 102 Hz (209 dB/Oct.)
Output tape format	SEG-D
Navigation	Differential GPS

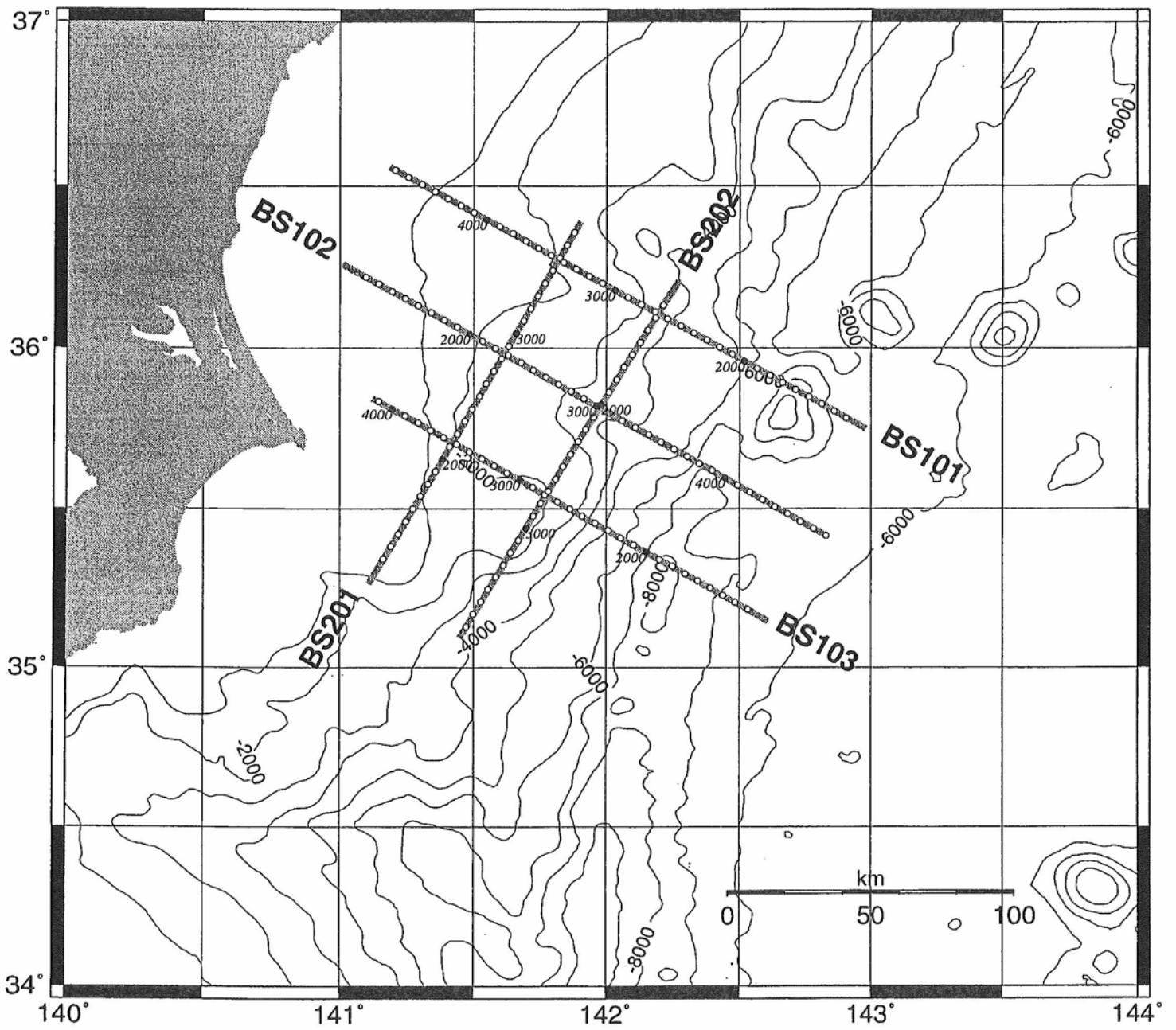


Figure 1. Survey area and Seismic Lines

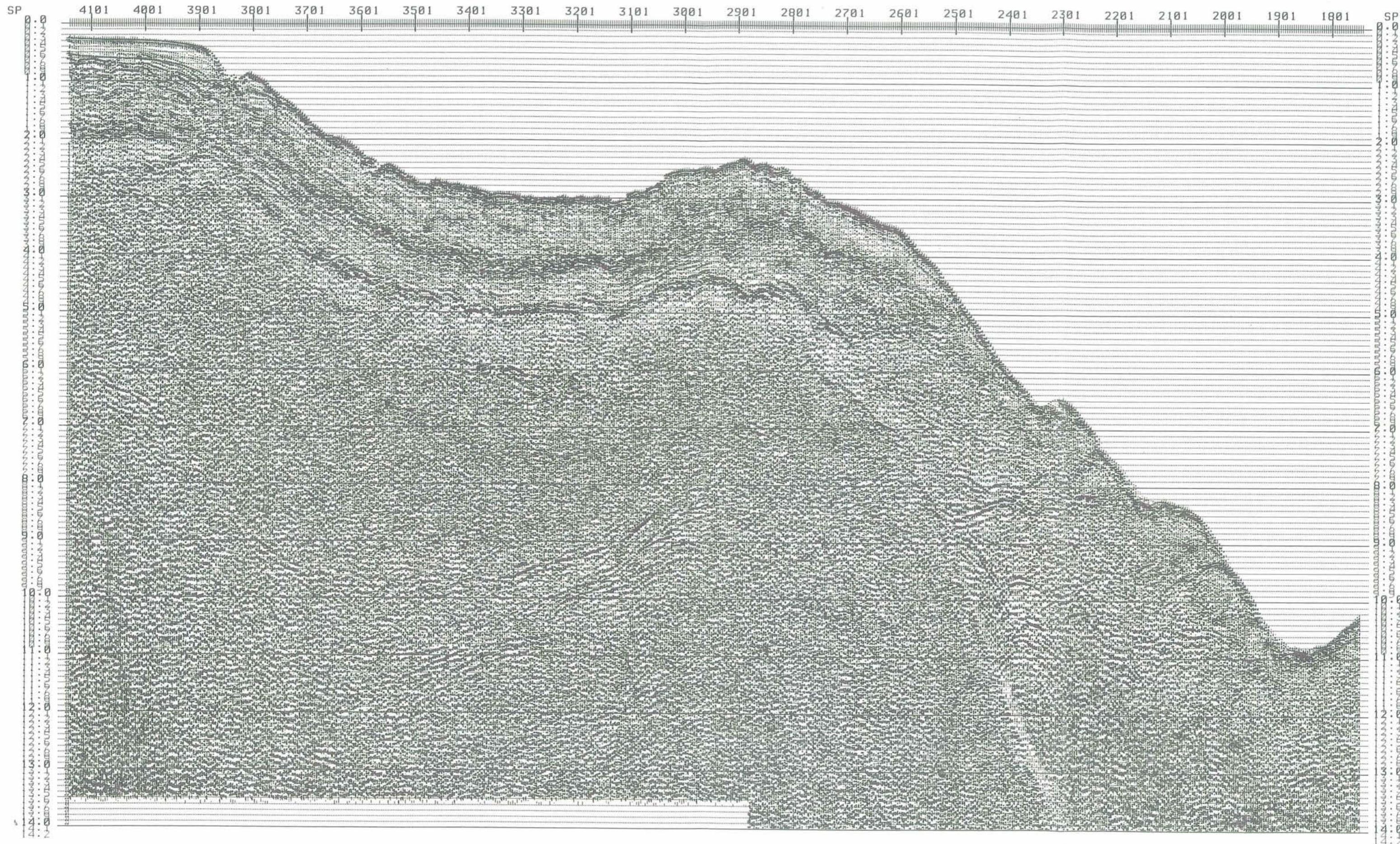


Figure 2 Onboard-processing example
of MCS data of the line BS103

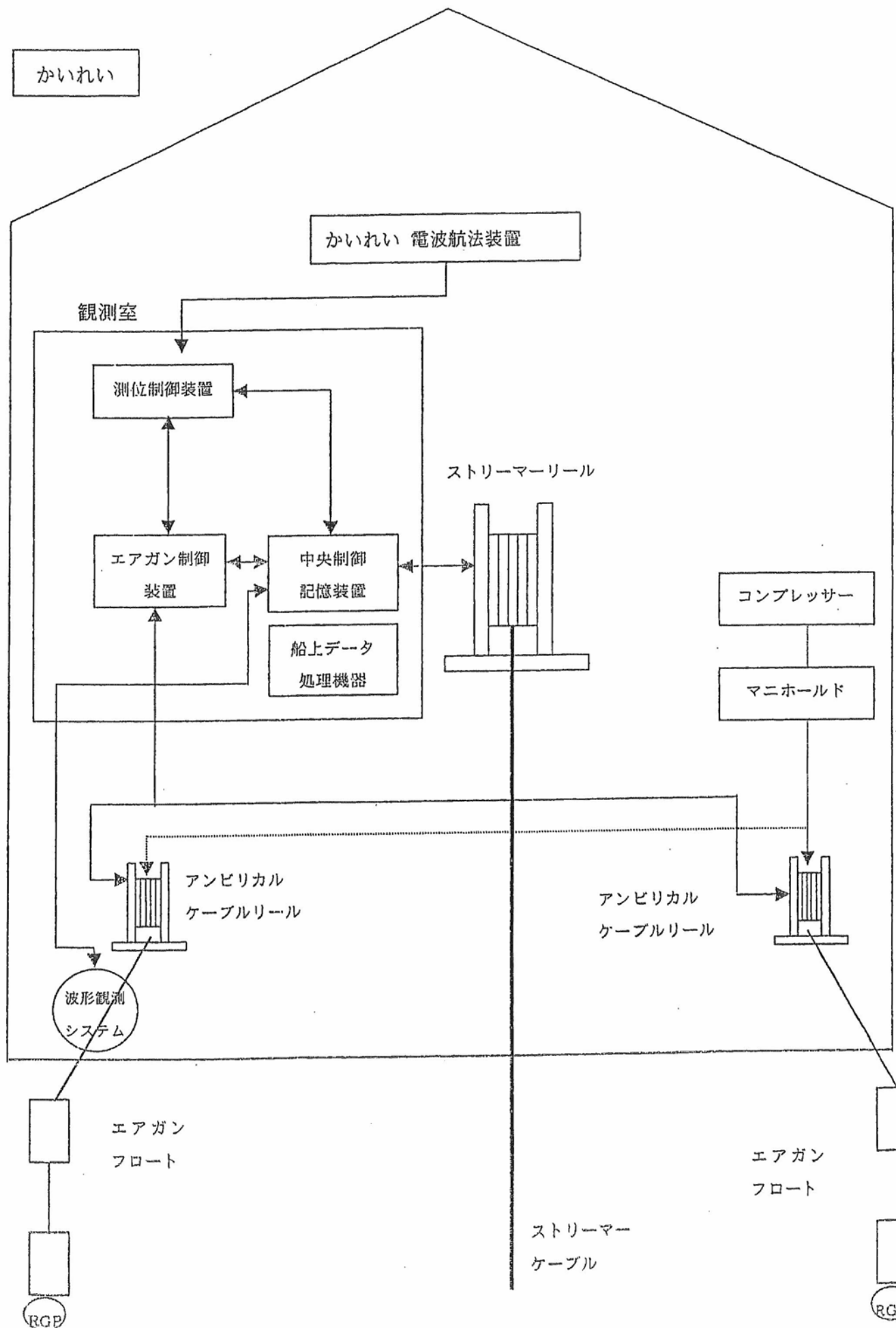
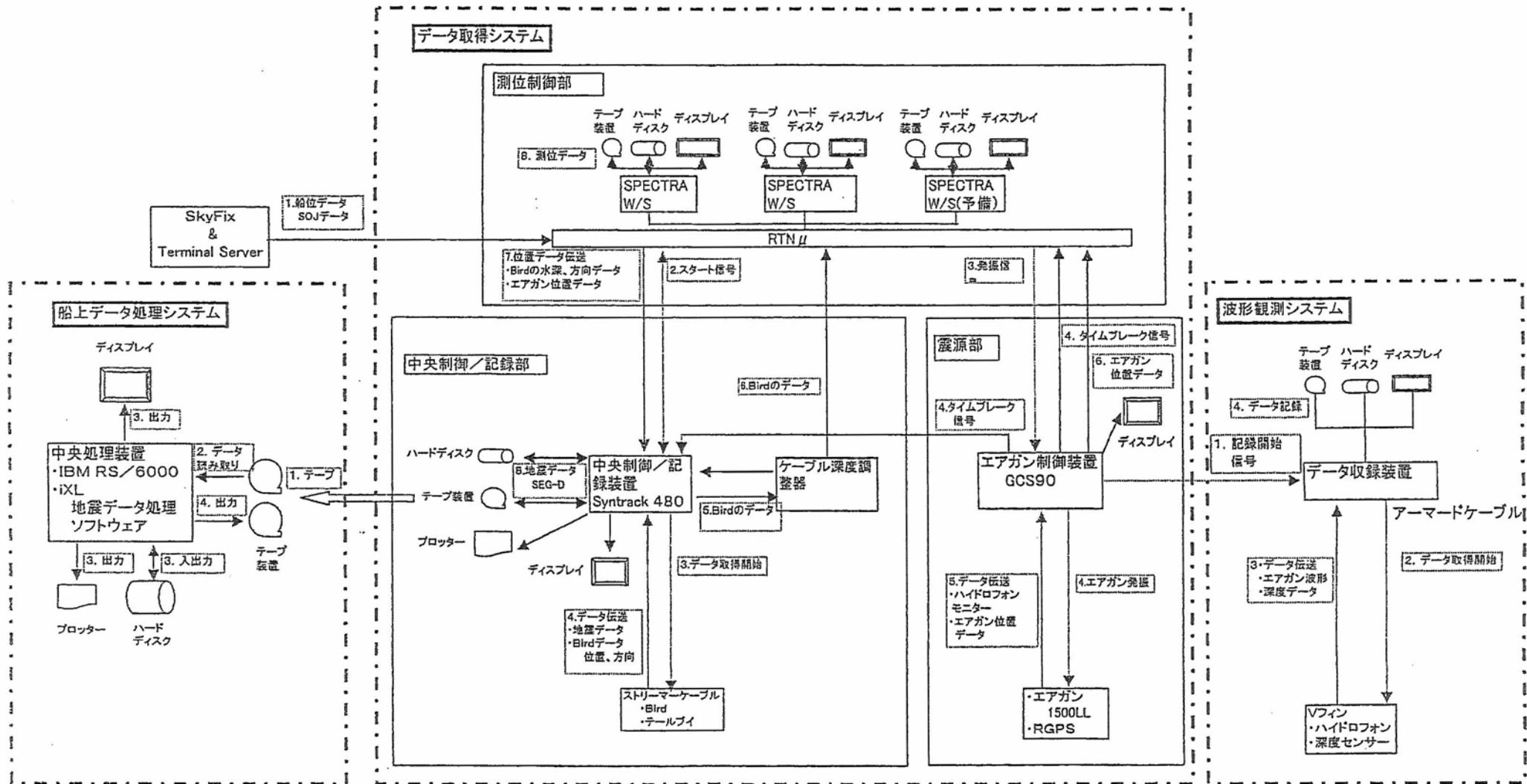


図-1 機器接続図 (かいいい)



入力データ
 1) データ取得システムのテープ
 2) 測位システムのテープ

注-1) 番号は流れの順番
 注-2) データフォーマット
 SEG-D 別紙-1参照
 SOJ 別紙-2参照

----- コマンドの流れ
 ————— データの流れ

図-2 システム構成図(かいいい)

等走時ノイズ（同位相ノイズ）について

2001年7月

1. 発生源

白のフェザリング付きのリードインケーブルが発生源。

なお、両端のコネクターを開けて導通テスト等を行ったが、当方では、不良箇所を特定できない。メーカーに修理に出す必要あり。

2. 現象

1999年 等走時ノイズは見当たらなかった。

2000年4月青森沖にて、等走時ノイズが発生。観測を継続。

2000年6月北海道南東沖にて、発生源がリードインであることを確認。

この時は、海側のコネクター部を水面から浮かせれば、ノイズが発生しなかったため、この方法で暫定的に観測を継続。

その後、予備のリードインを取り寄せ、交換。

白のフェザリング付きリードインをメーカーに修理に出す。

2001年5月東海沖にて、一部の測線（TK-3）で時折発生（*1）。観測を継続。

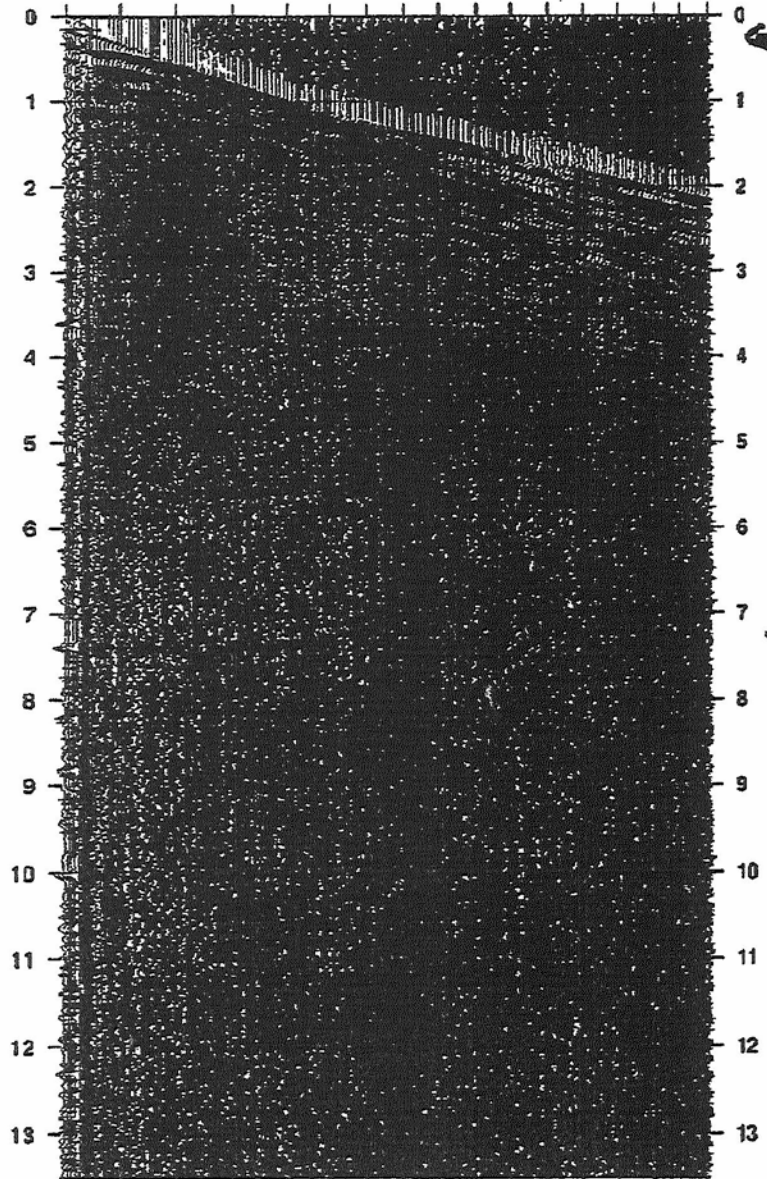
2001年7月房総沖にて、ノイズが大きくなり（*2）、至急予備のリードインを取り寄せ、交換。

以上

UI- / - 5:11:45 ;
UNUS OF 0503
07

SHOT GATHER TK-3 FFID 358 (AGC 600ms)

163 149 135 121 107 96 87 78 69 60 51 42 33 24 15 8 1



163 149 135 121 107 96 87 78 69 60 51 42 33 24 15 8 1

52/3

P.03

77%

0468 67 3409

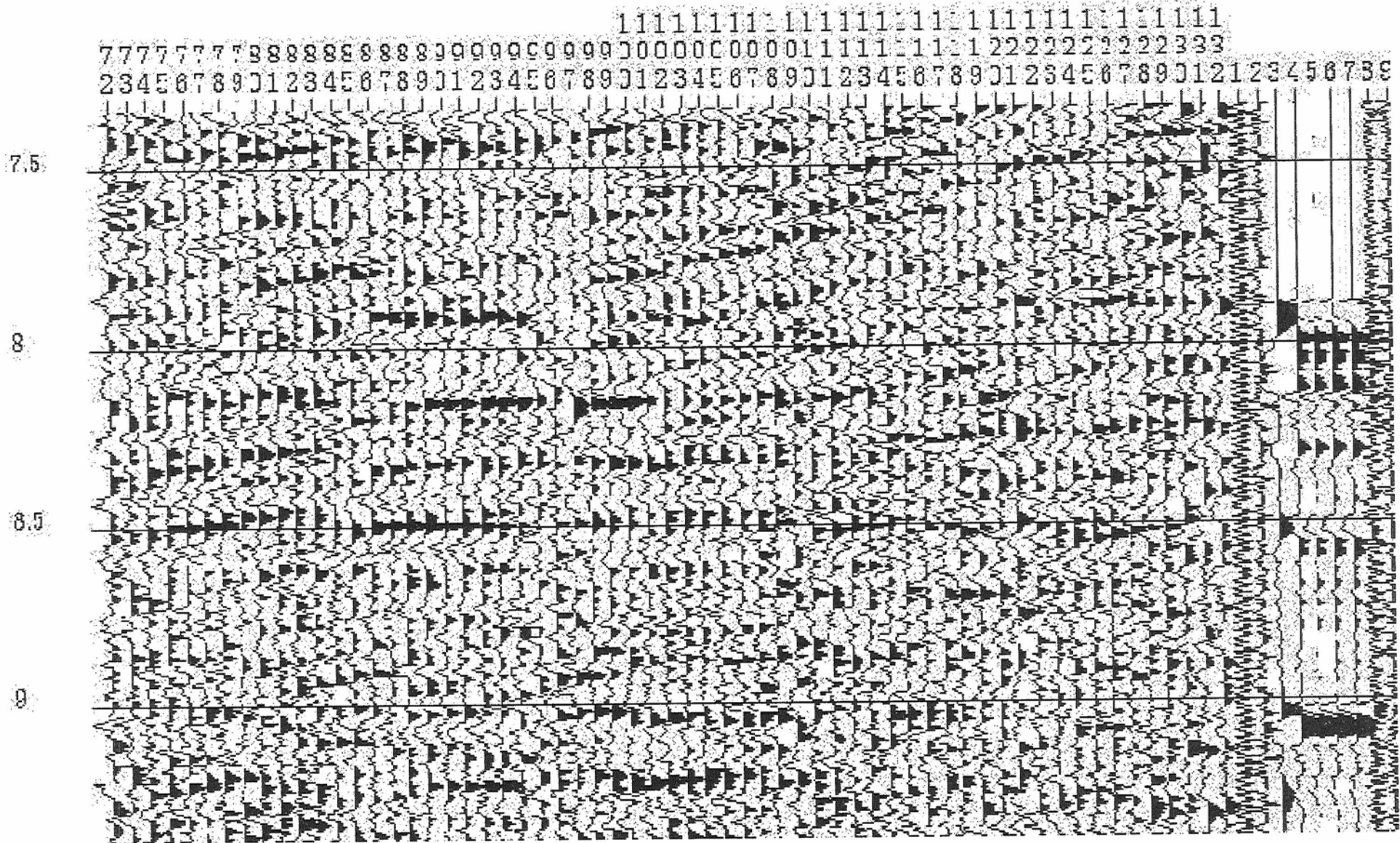
14:04

2001-07-05

BSY02

Field File Number 155

Field File Trace Number



2001.07.14

P S 変換波受信実験

1. 通常の MCS 探査時と比べて以下の3点について変更をお願いします。

1-1. 左右アンビリカルケーブル巻き出し長の変更 (別図参照)

右舷側：船尾からターミネーションハウジングまで 54m (-42m)

左舷側：船尾からターミネーションハウジングまで 102m (+16m)

(左右どちらでも構いません)

1-2. ストリーマーケーブル長の変更

ケーブル長延長のためアクティブセクション4本(300m)追加

リードインケーブルの巻き出し (100m?)

+90m

1-3. エアガン発震時の変更

エアガンはトーイングフレームの2基を1組と考える。

船側のエアガン1組から後ろへ1組ずつ発震時を遅らせる (beam delay)。

Beam delay の値は本実験直前の beam delay test によって決定する。

Beam delay test は 0,2,4,6,8,10,12 msec の各値に対し、それぞれ10ショット

ずつデータ収録を行い、その結果をみて本実験の値を決定する。

Water delay はかけない。

尚、本実験の値を検討する間、各 beam delay に対し50ショットずつデータを収録する。

2. 実施測線は BS201 測線

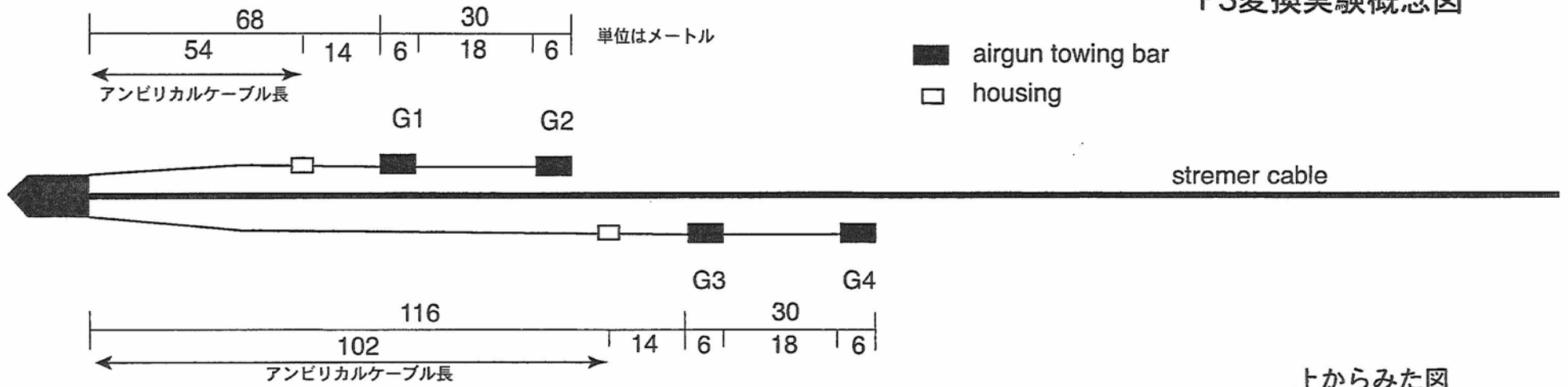
水深の浅い部分(測線北部分)でのデータ取得が望ましいので、通常 MCS 探査後、余裕をもって北にぬけてください。

本実験は BS201 測線の北端から BS102 測線との交点まで。

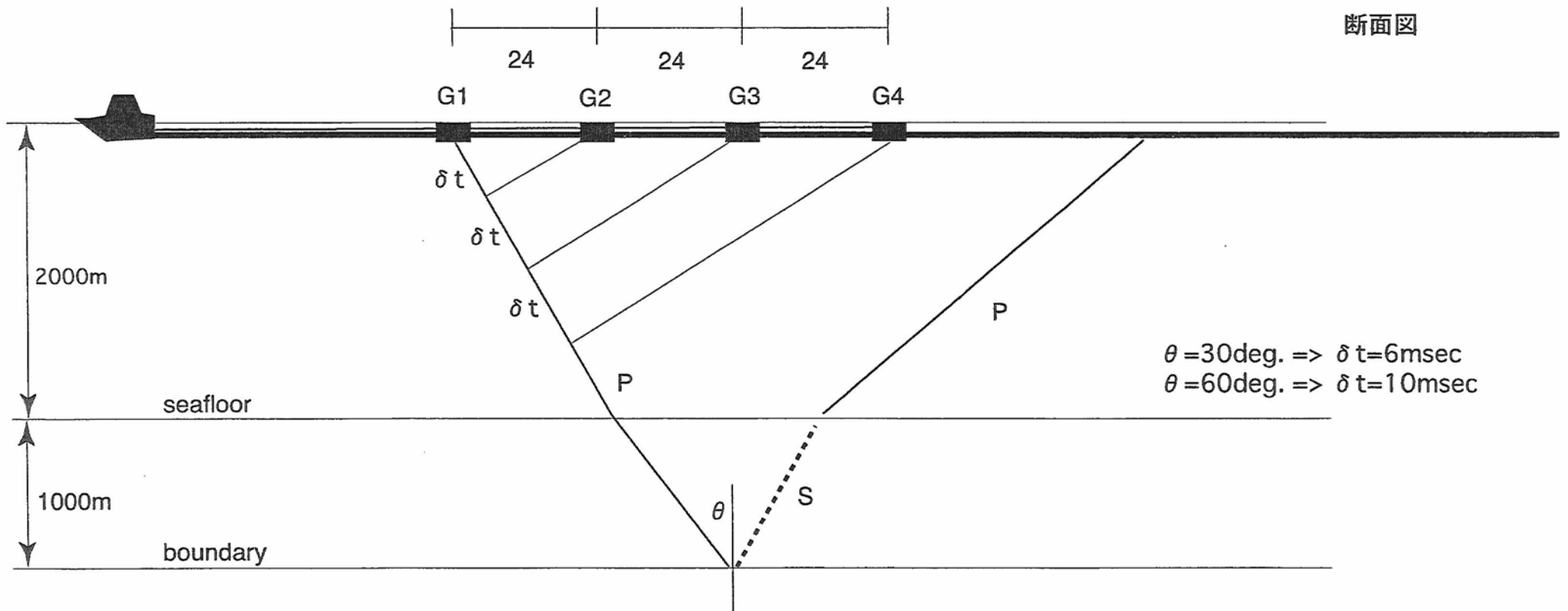
その後 BS102 測線の東部分に移動。

以上、よろしくお願いいたします。

PS変換実験概念図



上からみた図



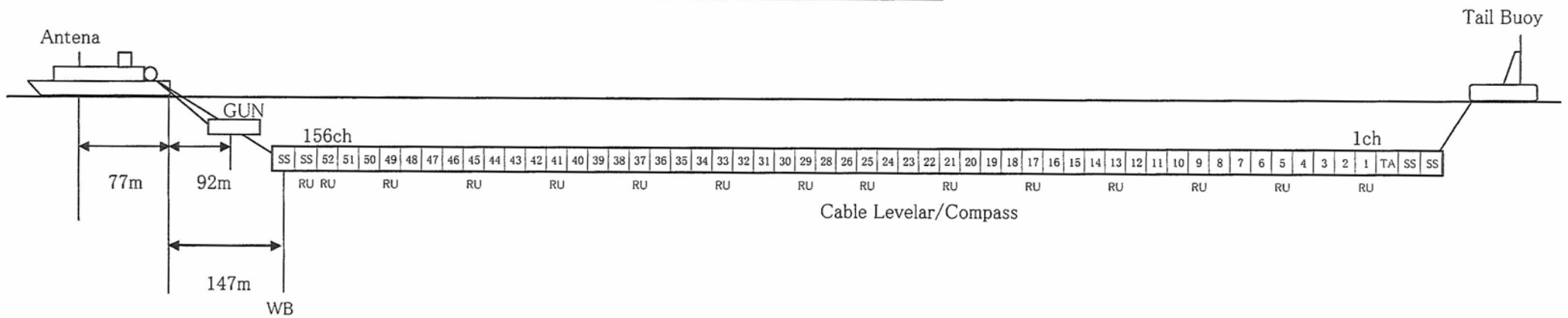
MALTICHANNEL SEISMIC SURVEY GENERAL INFORMATION

GENERAL		RECORDING		NAVIGATION	
CLIENT	JAMSTEC	INSTRUMENT		PRIMARY	D-GPS
PROSPECT	KR01-10	SYNTRAK960-24 Digital Streamer System		SHOT MODE	DISTANCE
AREA	OFF BOSO	MultiTRAK Streamer Cable Utility System		REMARKS	
LINE	BS103	GCS90 Gun Controller System			
DIRECTION	ESE → WNW (300.3°)	GS624 Thermal Plotter		•CABLE NOISE	
DATE	2001/7/4	RECORDING		S.O.L TAPE No.1 FILE No.0	
WEATHER	o	SAMPLE RATE	4msec	E.O.L TAPE No.1 FILE No.824	
WIND	SW 5	RECORDING RENGTH	13500msec	•NOISE TEST RECORD	
SEA CONDITION	sea slight	DIGITAL LOW CUT FILTER	3Hz 6dB/oct.	TAPE No.7-11 FILE No..529-843	
FIRST SHOT POINT	SP No. 1001	ANALOG LOW CUT FILTER	3Hz 6dB/oct.	•NOISE	
	FILE No. 1	DIGITAL HIGH CUT FILTER	102Hz 209dB/oct.	Trouble of Tow Reader	
	TIME 2001/7/4 18:17:58	PRE AMPLIFIRE GAIN	12dB		
LAST SHOT POINT	SP No. 1529	GAIN CONTROL	24bit Fixed		
	FILE No. 528	TAPE FORMAT			
	TIME 2001/7/4 21:36:40	DIGITAL TAPE FORMAT			
FIRST GOOD SHOT POINT	SP No. 1002	RECORDING FORMAT			
	FILE No. 2	AUX CH CONTENT			
	TIME 2001/7/4 18:18:20	AUX 1			
NUMBER OF CHANNEL	156	AUX 2			
CHANNEL INTERVAL	25m	AUX 3			
SHOT POINT INTERVAL	50m	AUX 4			
CDP FOLD	3900%	AUX 5			
CABLE DEPTH	20m	AUX 6			
SOURCE		AUX 7			
GUN TYPE	Par AIR GUN	TRACE			
SHOT TYPE	STIMURATE	MONITOR TRACE		Fixed 64dB	
NUMBER OF STRINGS	8	SINGLE TRACE		156ch Fixed 64dB	
CONFIGUATION	1500cu.in × 8				
TOTAL VOLUME	12000cu.in				
GUN DEPTH	10m				
GUN SEPARATION	65.0m				
AIR PRESSURE	2000PSI				
OBSERVER	HOSOYA, TSUKUDA, SHIMIZU	FIERD TAPE No.	TAPE No.1-11		

LAYOUT OF STREAMER CABLE

LINE : BS103

Servey Vessel : KAIREI
Guard Boat : No.2 HAYASHIO



STREMER CABLE SPECIFICATION	
ACTIVE SECTION 75m (3ch/section)	×52
FRONT STRECH SECTION 50m (SS)	×2
TAIL STRECH SECTION 50m (SS)	×2
TAIL ACTIVE SECTION 4m (TA)	×1
TWO READER LENGTH	100m
HYDROPHON TYPE	BENTHOS Geopoint
SENSITIVITY	-194dBre1V/ μ Pa (20V/Bar)
No.OF HYDRPHON IN GROUP	32

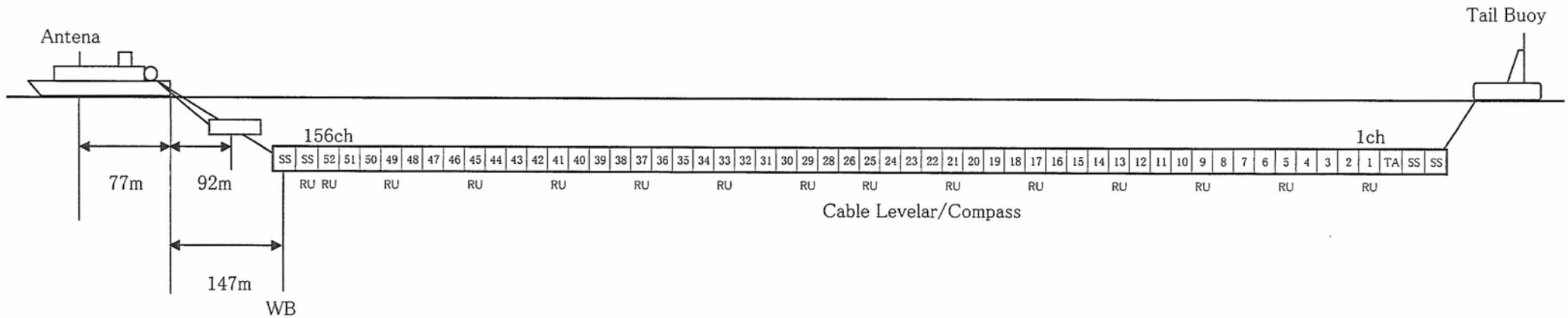
MALTICHANNEL SEISMIC SURVEY GENERAL INFORMATION

GENERAL		RECORDING		NAVIGATION	
CLIENT	JAMSTEC	INSTRUMENT		PRIMARY	D-GPS
PROSPECT	KR01-10	SYNTRAK960-24 Digital Streamer System		SHOT MODE	DISTANCE
AREA	OFF BOSO	MultiTRAK Streamer Cable Utility System		REMARKS	
LINE	BS103-1	GCS90 Gun Controller System			
DIRECTION	ESE → WNW (300.3°)	GS624 Thermal Plotter		CABLE NOISE	
DATE	2001/7/5-6	RECORDING		E.O.L TAPE No. 51 FILE No.3036	
WEATHER	bc→o	SAMPLE RATE	4msec	•NOISE	
WIND	SSE 3 → NW 3	RECORDING RENGTH	13500msec	Trouble of Tow Reader	
SEA CONDITION	sea smooth	DIGITAL LOW CUT FILTER	3Hz 6dB/oct.	•LOST SHOT	
FIRST SHOT POINT	SP No.1040	ANALOG LOW CUT FILTER	3Hz 6dB/oct.	SP No.1336,1338,1340,1346,1348,1350,	
	FILE No. 1	DIGITAL HIGH CUT FILTER	102Hz 209dB/oct.	1352,1354,1356,1358,1360,1362,1364,	
	TIME 2001/7/5 17:02:14	PRE AMPLIFIRE GAIN	12dB	1366,1368,1370	
LAST SHOT POINT	SP No.4149	GAIN CONTROL	24bit Fixed		
	FILE No.3035	TAPE FORMAT			
	TIME 2001/7/6 12:40:40	DIGITAL TAPE FORMAT	8048SEG-D		
FIRST GOOD SHOT POINT	SP No.1096	RECORDING FORMAT	Double Density, GCR		
	FILE No. 57	AUX CH CONTENT			
	TIME 2001/7/5 17:25:26	AUX 1	System Time Breake		
NUMBER OF CHANNEL	156	AUX 2	GCS Time Breake		
CHANNEL INTERVAL	25m	AUX 3	Water Breake		
SHOT POINT INTERVAL	50m	AUX 4	Gun P 1-2 Monitor Hydrophone		
CDP FOLD	3900%	AUX 5	Gun P 3-4 Monitor Hydrophone		
CABLE DEPTH	20m	AUX 6	Gun S 1-2 Monitor Hydrophone		
SOURCE		AUX 7	Gun P 3-4 Monitor Hydrophone		
GUN TYPE	Par AIR GUN	TRACE			
SHOT TYPE	STIMURATE	MONITOR TRACE	Fixed 64dB		
NUMBER OF STRINGS	8	SINGLE TRACE	156ch Fixed 64dB		
CONFIGUATION	1500cu.in × 8				
TOTAL VOLUME	12000cu.in				
GUN DEPTH	10m				
GUN SEPARATION	65.1m				
AIR PRESSURE	2000PSI				
OBSERVER	HOSOYA, TSUKUDA, SHIMIZU	FIERD TAPE No.	TAPE No.12-51		

LAYOUT OF STREAMER CABLE

LINE : BS103-1

Survey Vessel : KAIREI
Guard Boat : No.2 HAYASHIO



STREAMER CABLE SPECIFICATION	
ACTIVE SECTION 75m (3ch/section)	× 52
FRONT STRECH SECTION 50m (SS)	× 2
TAIL STRECH SECTION 50m (SS)	× 2
TAIL ACTIVE SECTION 4m (TA)	× 1
TWO READER LENGTH	100m
HYDROPHON TYPE	BENTHOS Geopoint
SENSITIVITY	-194dBre1V/ μ Pa (20V/Bar)
No.OF HYDRPHON IN GROUP	32

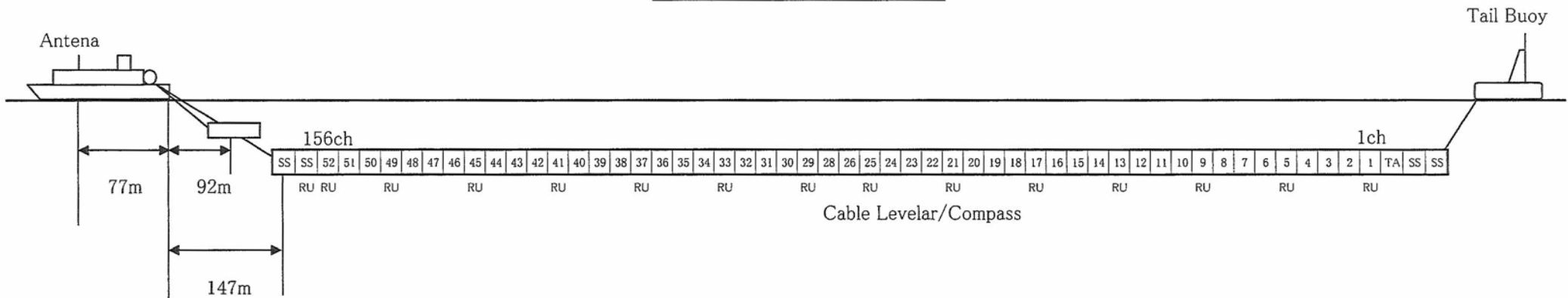
MULTICHANNEL SEISMIC SURVEY GENERAL INFORMATION

GENERAL		RECORDING		NAVIGATION	
CLIENT	JAMSTEC	INSTRUMENT		PRIMARY	D-GPS
PROSPECT	KR01-10	SYNTRAK960-24 Digital Streamer System		SHOT MODE	DISTANCE
AREA	OFF BOSO	MultiTRAK Streamer Cable Utility System		REMARKS	
LINE	BS102	GCS90 Gun Controller System			
DIRECTION	WNW → ESE (119.22°)	GS624 Thermal Plotter		•CABLE NOISE	
DATE	2001/7/6-7	RECORDING		E.O.L TAPE No.85 FILE No.2934	
WEATHER	o→bc	SAMPLE RATE	4msec	•NOISE	
WIND	SSE 3 → NE 4	RECORDING RENGTH	13500msec	File No.befor and after 1540 Ship Noi	
SEA CONDITION	sea smooth → sea slight	DIGITAL LOW CUT FILTER	3Hz 6dB/oct.	Trouble of Two Reader	
FIRST SHOT POINT	SP No. 1022 FILE No. 1	ANALOG LOW CUT FILTER	3Hz 6dB/oct.	•SYNTRAK ERROR	
	TIME 2001/7/6 18:15:42	DIGITAL HIGH CUT FILTER	102Hz 209dB/oct.	SP No.2252-2254Lost	
LAST SHOT POINT	SP No. 3957 FILE No. 2933	PRE AMPLIFIRE GAIN	12dB		
	TIME 2001/7/7 15:57:26	GAIN CONTROL	24bit Fixed		
FIRST GOOD SHOT POINT	SP No. 1079 FILE No. 58	TAPE FORMAT			
	TIME 2001/7/6 18:36:14	DIGITAL TAPE FORMAT	8048SEG-D		
NUMBER OF CHANNEL	132		4Byte Hexadacimal		
CHANNEL INTERVAL	25m	RECORDING FORMAT	Double Density, GCR		
SHOT POINT INTERVAL	50m	AUX CH CONTENT			
CDP FOLD	3300%	AUX 1	System Time Breake		
CABLE DEPTH	20m	AUX 2	GCS Time Breake		
SOURCE		AUX 3	Water Breake		
GUN TYPE	Par AIR GUN	AUX 4	Gun P 1-2 Monitor Hydrophone		
SHOT TYPE	STIMURATE	AUX 5	Gun P 3-4 Monitor Hydrophone		
NUMBER OF STRINGS	8	AUX 6	Gun S 1-2 Monitor Hydrophone		
CONFIGUATION	1500cu.in × 8	AUX 7	Gun P 3-4 Monitor Hydrophone		
TOTAL VOLUME	12000cu.in	TRACE			
GUN DEPTH	10m	MONITOR TRACE	Fixed 64dB		
GUN SEPARATION	65.5m	SINGLE TRACE	156ch Fixed 64dB		
AIR PRESSURE	2000PSI				
OBSERVER	HOSOYA, TSUKUDA, SHIMIZU	FIERD TAPE No.	TAPE No.52-85		

LAYOUT OF STREAMER CABLE

LINE : BS102

Survey Vessel : KAIREI
Guard Boat : No.2 HAYASHIO



STREAMER CABLE SPECIFICATION	
ACTIVE SECTION 75m (3ch/section)	×52
FRONT STRECH SECTION 50m (SS)	×2
TAIL STRECH SECTION 50m (SS)	×2
TAIL ACTIVE SECTION 4m (TA)	×1
TWO READER LENGTH	100m
HYDROPHON TYPE	BENTHOS Geopoint
SENSITIVITY	-194dBre1V/ μ Pa (20V/Bar)
No.OF HYDRPHON IN GROUP	32

MULTICHANNEL SEISMIC SURVEY GENERAL INFORMATION

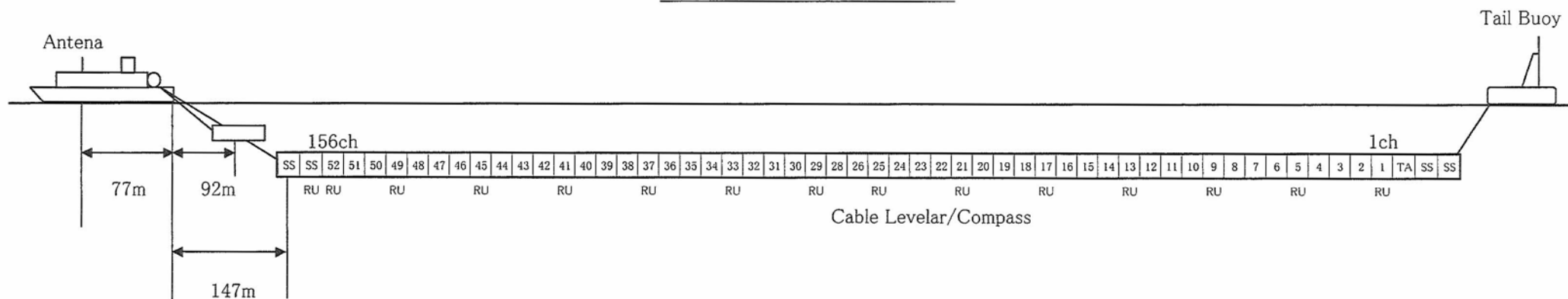
GENERAL		RECORDING		NAVIGATION	
CLIENT	JAMSTEC	INSTRUMENT		PRIMARY	D-GPS
PROSPECT	KR01-10	SYNTRAK960-24 Digital Streamer System		SHOT MODE	DISTANCE
AREA	OFF BOSO	MultiTRAK Streamer Cable Utility System		REMARKS	
LINE	BS101	GCS90 Gun Controller System			
DIRECTION	ESE → WNW (299.6°)	GS624 Thermal Plotter		•CABLE NOISE	
DATE	2001/7/9-10	RECORDING		TAPE No.135 FILE No.3694	
WEATHER	o	SAMPLE RATE	4msec	•NOISE	
WIND	NNE 3→SSE3	RECORDING RENGTH	13500msec	FIRE No.1999-2187 Ship Noise	
SEA CONDITION	sea slight	DIGITAL LOW CUT FILTER	3Hz 6dB/oct.	•SYNTRAK SYSTEM STOP	
FIRST SHOT POINT	SP No. 977	ANALOG LOW CUT FILTER	3Hz 6dB/oct.	SP No.1265-1316, 1332-1345 Lost	
	TIME	DIGITAL HIGH CUT FILTER	102Hz 209dB/oct.	•LOST SHOT	
LAST SHOT POINT	SP No.4742	PRE AMPLIFIRE GAIN	12dB	SP No.992, 995, 1016, 1018, 1934,	
	TIME	GAIN CONTROL	24bit Fixed	3417, 3418 Lost	
FIRST GOOD SHOT POINT	SP No.1045	FILE No. 65			
NUMBER OF CHANNEL	8	TAPE FORMAT			
CHANNEL INTERVAL	25m	DIGITAL TAPE FORMAT	8048SEG-D		
SHOT POINT INTERVAL	50m		4Byte Hexadacimal		
CDP FOLD	3900%	RECORDING FORMAT	Double Density, GCR		
CABLE DEPTH	20m	AUX CH CONTENT			
SOURCE		AUX 1	System Time Breake		
GUN TYPE	Par AIR GUN	AUX 2	GCS Time Breake		
SHOT TYPE	STIMURATE	AUX 3	Water Breake		
NUMBER OF STRINGS	8	AUX 4	Gun P 1-2 Monitor Hydrophone		
CONFIGUATION	1500cu.in × 8	AUX 5	Gun P 3-4 Monitor Hydrophone		
TOTAL VOLUME	12000cu.in	AUX 6	Gun S 1-2 Monitor Hydrophone		
GUN DEPTH	10m	AUX 7	Gun P 3-4 Monitor Hydrophone		
GUN SEPARATION	71.1m	TRACE			
AIR PRESSURE	2000PSI	MONITOR TRACE	Fixed 64dB		
		SINGLE TRACE	156ch Fixed 64dB		
OBSERVER	HOSOYA, TSUKUDA, SHIMIZU	FIERD TAPE No.	TAPE No.86-135		

LAYOUT OF STREAMER CABLE

LINE : BS101

Servey Vessel : KAIREI

Guard Boat : No.2 HAYASHIO



STREAMER CABLE SPECIFICATION	
ACTIVE SECTION 75m (3ch/section)	× 52
FRONT STRECH SECTION 50m (SS)	× 2
TAIL STRECH SECTION 50m (SS)	× 2
TAIL ACTIVE SECTION 4m (TA)	× 1
TWO READER LENGTH	100m
HYDROPHON TYPE	BENTHOS Geopoint
SENSITIVITY	-194dBre1V/ μ Pa (20V/Bar)
No.OF HYDRPHON IN GROUP	32

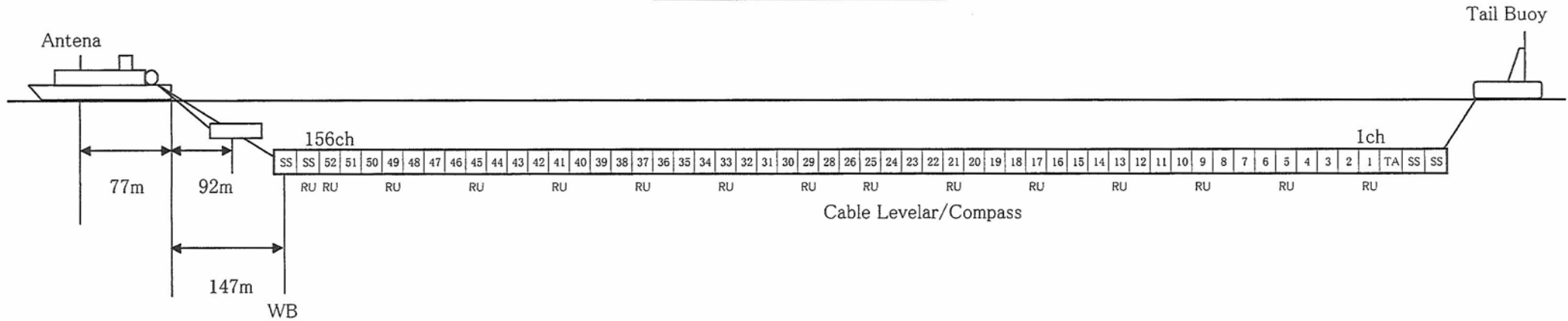
MULTICHANNEL SEISMIC SURVEY GENERAL INFORMATION

GENERAL		RECORDING		NAVIGATION	
CLIENT	JAMSTEC	INSTRUMENT		PRIMARY	D-GPS
PROSPECT	KR01-10	SYNTRAK960-24 Digital Streamer System		SHOT MODE	DISTANCE
AREA	OFF BOSO	MultiTRAK Streamer Cable Utility System		REMARKS	
LINE	BS102-1	GCS90 Gun Controller System			
DIRECTION	WNW → ESE (119.2°)	GS624 Thermal Plotter		•CABLE NOISE	
DATE	2001/7/11	RECORDING		S.O.L TAPE No.136 FILE No.0	
WEATHER	o	SAMPLE RATE	4msec	•RU#4 No response	
WIND	SSW 5	RECORDING RENGTH	15000msec		
SEA CONDITION	sea mod	DIGITAL LOW CUT FILTER	3Hz 6dB/oct.		
FIRST SHOT POINT	SP No.1028	ANALOG LOW CUT FILTER	3Hz 6dB/oct.		
	FILE No. 1	DIGITAL HIGH CUT FILTER	102Hz 209dB/oct.		
	TIME 2001/7/11 1:50:12	PRE AMPLIFIRE GAIN	12dB		
LAST SHOT POINT	SP No. 2522	GAIN CONTROL	24bit Fixed		
	FILE No.1495	TAPE FORMAT			
	TIME 2001/7/11 13:59:40	DIGITAL TAPE FORMAT	8048SEG-D		
FIRST GOOD SHOT POINT	SP No.1157	RECORDING FORMAT	Double Density, GCR		
	FILE No. 130	AUX CH CONTENT			
	TIME 2001/7/11 2:45:52	AUX 1	System Time Breake		
NUMBER OF CHANNEL	156	AUX 2	GCS Time Breake		
CHANNEL INTERVAL	25m	AUX 3	Water Breake		
SHOT POINT INTERVAL	50m	AUX 4	Gun P 1-2 Monitor Hydrophone		
CDP FOLD	3900%	AUX 5	Gun P 3-4 Monitor Hydrophone		
CABLE DEPTH	20m	AUX 6	Gun S 1-2 Monitor Hydrophone		
SOURCE		AUX 7	Gun P 3-4 Monitor Hydrophone		
GUN TYPE	Par AIR GUN	TRACE			
SHOT TYPE	STIMURATE	MONITOR TRACE	Fixed 64dB		
NUMBER OF STRINGS	8	SINGLE TRACE	156ch Fixed 64dB		
CONFIGUATION	1500cu.in × 8				
TOTAL VOLUME	12000cu.in				
GUN DEPTH	10m				
GUN SEPARATION	72.2m				
AIR PRESSURE	2000PSI				
OBSERVER	HOSOYA, TSUKUDA, SHIMIZU	FIERD TAPE No.	TAPE No.136-157		

LAYOUT OF STREAMER CABLE

LINE : BS102-1

Survey Vessel : KAIREI
Guard Boat : No.2 HAYASHIO



STREAMER CABLE SPECIFICATION	
ACTIVE SECTION 75m (3ch/section)	× 52
FRONT STRECH SECTION 50m (SS)	× 2
TAIL STRECH SECTION 50m (SS)	× 2
TAIL ACTIVE SECTION 4m (TA)	× 1
TWO READER LENGTH	100m
HYDROPHON TYPE	BENTHOS Geopoint
SENSITIVITY	-194dBre1V/ μ Pa (20V/Bar)
No.OF HYDRPHON IN GROUP	32

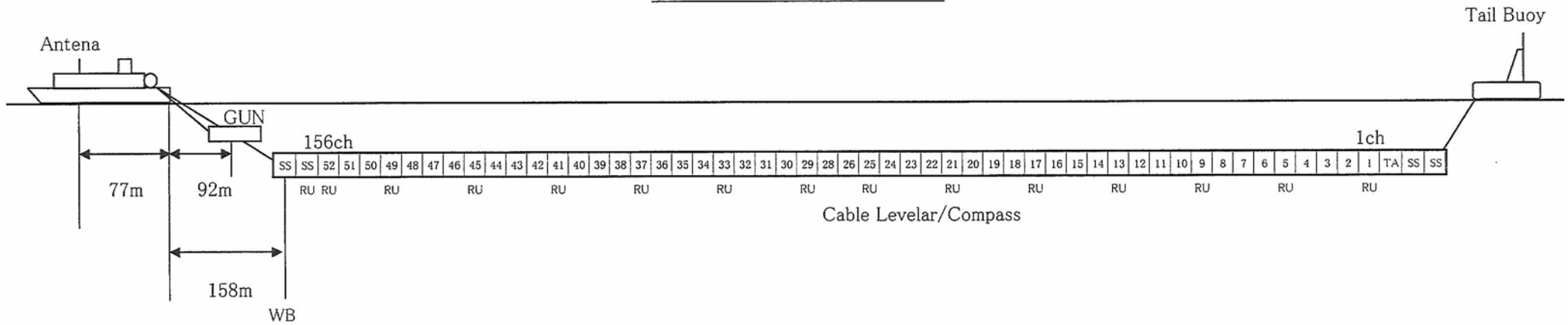
MALTICHANNEL SEISMIC SURVEY GENERAL INFORMATION

GENERAL		RECORDING		NAVIGATION	
CLIENT	JAMSTEC	INSTRUMENT		PRIMARY	D-GPS
PROSPECT	KR01-10	SYNTRAK960-24 Digital Streamer System		SHOT MODE	DISTANCE
AREA	OFF BOSO	MultiTRAK Streamer Cable Utility System			
LINE	BS202	GCS90 Gun Controller System		REMARKS	
DIRECTION	NNE → SSW (211.5°)	GS624 Thermal Plotter			
DATE	2001/7/12-13				
WEATHER	o	RECORDING		•CABLE NOISE	
WIND	SSW 7 → SW 6	SAMPLE RATE	4msec	TAPE No. 158 FILE No.0	
SEA CONDITION	sea mod → sea slight	RECORDING LENGTH	13500msec	TAPE No. 196 FILE No.2856	
FIRST SHOT POINT	SP No.1001	DIGITAL LOW CUT FILTER	3Hz 6dB/oct.		
	FILE No. 1	ANALOG LOW CUT FILTER	3Hz 6dB/oct.	•NAV SYSTEM GPS ERROR	
	TIME 2001/7/12 13:05:59	DIGITAL HIGH CUT FILTER	102Hz 209dB/oct.	SP No.1328-1367, 2749 Lost	
LAST SHOT POINT	SP No.2855	PRE AMPLIFIRE GAIN	12dB		
	FILE No.3893	GAIN CONTROL	24bit Fixed	•TAPE ERROR	
	TIME 2001/7/13 9:55:05			SP No.3470 Lost	
FIRST GOOD SHOT POINT	SP No.1002	TAPE FORMAT			
	FILE No.2	DIGITAL TAPE FORMAT	8048SEG-D		
	TIME 2001/7/12 13:06:33	RECORDING FORMAT	4Byte Hexadacimal		
NUMBER OF CHANNEL	156	AUX CH CONTENT	Double Density, GCR		
CHANNEL INTERVAL	25m	AUX 1	System Time Breake		
SHOT POINT INTERVAL	50m	AUX 2	GCS Time Breake		
CDP FOLD	3900%	AUX 3	Water Breake		
CABLE DEPTH	20m	AUX 4	Gun P 1-2 Monitor Hydrophone		
SOURCE		AUX 5	Gun P 3-4 Monitor Hydrophone		
GUN TYPE	Par AIR GUN	AUX 6	Gun S 1-2 Monitor Hydrophone		
SHOT TYPE	STIMURATE	AUX 7	Gun P 3-4 Monitor Hydrophone		
NUMBER OF STRINGS	8				
CONFIGUATION	1500cu.in × 8	TRACE			
TOTAL VOLUME	12000cu.in	MONITOR TRACE	Fixed 64dB		
GUN DEPTH	10m	SINGLE TRACE	156ch Fixed 64dB		
GUN SEPARATION	71.5m				
AIR PRESSURE	2000PSI				
OBSERVER	HOSOYA, TSUKUDA, SHIMIZU	FIERD TAPE No.	TAPE No.158-196		

LAYOUT OF STREAMER CABLE

LINE : BS202

Servey Vessel : KAIREI
Guard Boat : No.2 HAYASHIO



STREAMER CABLE SPECIFICATION	
ACTIVE SECTION 75m (3ch/section)	× 52
FRONT STRECH SECTION 50m (SS)	× 2
TAIL STRECH SECTION 50m (SS)	× 2
TAIL ACTIVE SECTION 4m (TA)	× 1
TWO READER LENGTH	110m
HYDROPHON TYPE	BENTHOS Geopoint
SENSITIVITY	-194dBre1V/ μ Pa (20V/Bar)
No.OF HYDRPHON IN GROUP	32

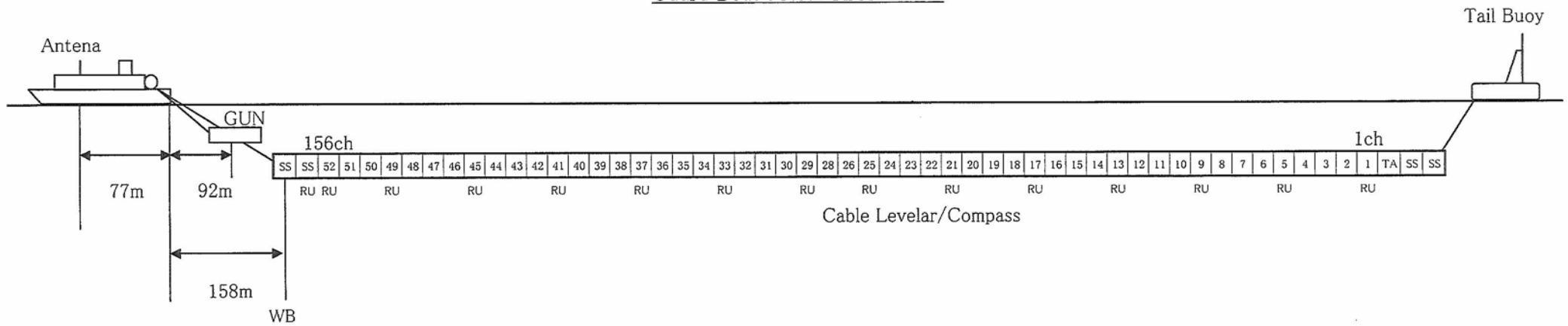
MULTICHANNEL SEISMIC SURVEY GENERAL INFORMATION

GENERAL		RECORDING		NAVIGATION	
CLIENT	JAMSTEC	INSTRUMENT		PRIMARY	D-GPS
PROSPECT	KR01-10	SYNTRAK960-24 Digital Streamer System		SHOT MODE	DISTANCE
AREA	OFF BOSO	MultiTRAK Streamer Cable Utility System		REMARKS	
LINE	BS201	GCS90 Gun Controller System			
DIRECTION	SSW → NNE (30.2°)	GS624 Thermal Plotter		•CABLE NOISE	
DATE	2001/7/13-14	RECORDING		S.O.L TAPE No.197 FILE No.0	
WEATHER	o	SAMPLE RATE	4msec	E.O.L TAPE No. 235 FILE No.2889	
WIND	SW 6 → WSW 3	RECORDING RENGTH	13500msec	•RU	
SEA CONDITION	sea slight	DIGITAL LOW CUT FILTER	3Hz 6dB/oct.	RU#10 No Response	
FIRST SHOT POINT	SP No.1001	ANALOG LOW CUT FILTER	3Hz 6dB/oct.		
	FILE No. 1	DIGITAL HIGH CUT FILTER	102Hz 209dB/oct.		
	TIME 2001/7/13 14:06:41	PRE AMPLIFIRE GAIN	12dB		
LAST SHOT POINT	SP No. 3888	GAIN CONTROL	24bit Fixed		
	FILE No. 2888	TAPE FORMAT			
	TIME 2001/7/14 6:18:46	DIGITAL TAPE FORMAT	8048SEG-D		
FIRST GOOD SHOT POINT	SP No.1076	RECORDING FORMAT	Double Density, GCR		
	FILE No. 76	AUX CH CONTENT			
	TIME 2001/7/13 14:33:09	AUX 1	System Time Breake		
NUMBER OF CHANNEL	156	AUX 2	GCS Time Breake		
CHANNEL INTERVAL	25m	AUX 3	Water Breake		
SHOT POINT INTERVAL	50m	AUX 4	Gun P 1-2 Monitor Hydrophone		
CDP FOLD	3900%	AUX 5	Gun P 3-4 Monitor Hydrophone		
CABLE DEPTH	20m	AUX 6	Gun S 1-2 Monitor Hydrophone		
		AUX 7	Gun P 3-4 Monitor Hydrophone		
SOURCE		TRACE			
GUN TYPE	Par AIR GUN	MONITOR TRACE	Fixed 64dB		
SHOT TYPE	STIMURATE	SINGLE TRACE	156ch Fixed 64dB		
NUMBER OF STRINGS	8				
CONFIGUATION	1500cu.in × 8				
TOTAL VOLUME	12000cu.in				
GUN DEPTH	10m				
GUN SEPARATION	71.9m				
AIR PRESSURE	2000PSI				
OBSERVER	HOSOYA, TSUKUDA, SHIMIZU	FIERD TAPE No.	TAPE No.197-235		

LAYOUT OF STREAMER CABLE

LINE : BS201

Servey Vessel : KAIREI
Guard Boat : No.2 HAYASHIO



STREAMER CABLE SPECIFICATION	
ACTIVE SECTION 75m (3ch/section)	× 52
FRONT STRECH SECTION 50m (SS)	× 2
TAIL STRECH SECTION 50m (SS)	× 2
TAIL ACTIVE SECTION 4m (TA)	× 1
TWO READER LENGTH	110m
HYDROPHON TYPE	BENTHOS Geopoint
SENSITIVITY	-194dBre1V/ μ Pa (20V/Bar)
No.OF HYDRPHON IN GROUP	32

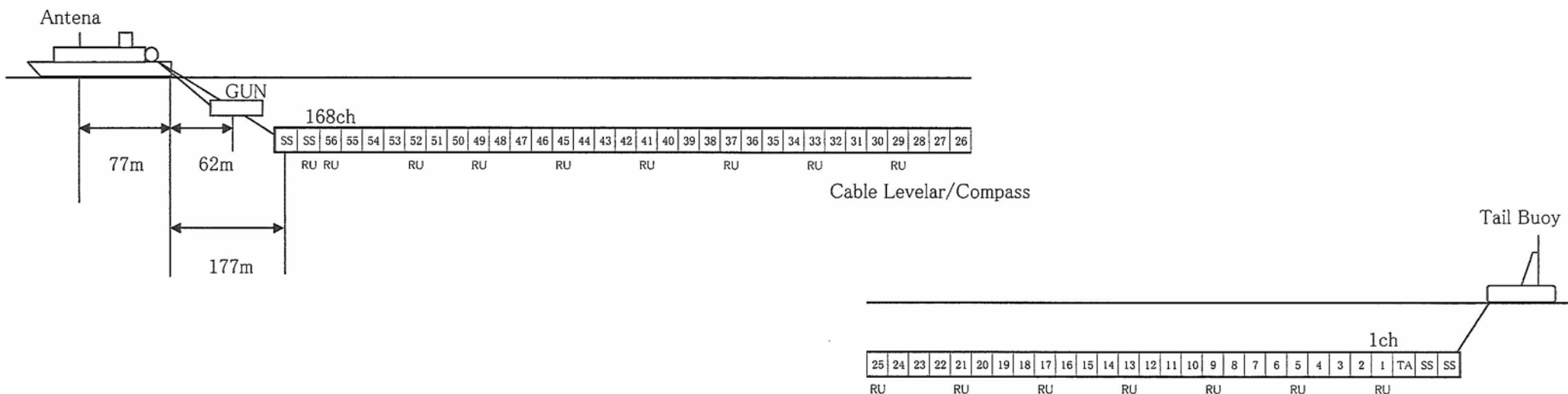
MALTICHANNEL SEISMIC SURVEY GENERAL INFORMATION

GENERAL		RECORDING		NAVIGATION	
CLIENT	JAMSTEC	INSTRUMENT		PRIMARY	D-GPS
PROSPECT	KR01-10	SYNTRAK960-24 Digital Streamer System		SHOT MODE	DISTANCE
AREA	OFF BOSO	MultiTRAK Streamer Cable Utility System		REMARKS	
LINE	Beam Test and PS201	GCS90 Gun Controller System			
DIRECTION	NNE → SSW (210.2°)	GS624 Thermal Plotter		• CABLE NOISE	
DATE	2001/7/14	RECORDING		S.O.L TAPE No. 237 FILE No. 0	
WEATHER	o	SAMPLE RATE	4msec	E.O.L TAPE No.254 FILE No.978	
WIND	WS 7	RECORDING RENGTH	13500msec	• CABLE DEPTH	
SEA CONDITION	sea slight	DIGITAL LOW CUT FILTER	3Hz 6dB/oct.	All Shot ch168-156 Depth 30-25m	
FIRST SHOT POINT	SP No.3880 FILE No. 1	ANALOG LOW CUT FILTER	3Hz 6dB/oct.	• Gun Delta	
(BEAM TEST)	TIME 2001/7/14	DIGITAL HIGH CUT FILTER	102Hz 209dB/oct.	Gun Delta 14msec	
LAST SHOT POINT	SP No. 2842 FILE No. 1039	PRE AMPLIFIRE GAIN	12dB	S-1,2=0msec S-3,4=14msec	
(PS201)	TIME	GAIN CONTROL	24bit Fixed	P-1,2=24msec S-3,4=36msec	
FIRST GOOD SHOT POINT	SP No.2387 FILE No. 481	TAPE FORMAT		Gun Delta 12msec	
(PS201)		DIGITAL TAPE FORMAT	8048SEG-D	S-1,2=0msec S-3,4=12msec	
NUMBER OF CHANNEL	168		4Byte Hexadacimal	P-1,2=24msec P-3,4=36msec	
CHANNEL INTERVAL	25m	RECORDING FORMAT	Double Density, GCR	Gun Delta 10msec	
SHOT POINT INTERVAL	50m	AUX CH CONTENT		S-1,2=0msec S-3,4=10msec	
CDP FOLD	4200%	AUX 1	System Time Breake	S-1,2=20msec S-3,4=30msec	
CABLE DEPTH	20m	AUX 2	GCS Time Breake	Gun Delta 8msec	
SOURCE		AUX 3	Water Breake	S-1,2=0msec S-3,4=8msec	
GUN TYPE	Par AIR GUN	AUX 4	Gun P 1-2 Monitor Hydrophone	S-1,2=16msec S-3,4=24msec	
SHOT TYPE	STIMURATE	AUX 5	Gun P 3-4 Monitor Hydrophone	Gun Delta 6msec	
NUMBER OF STRINGS	8	AUX 6	Gun S 1-2 Monitor Hydrophone	S-1,2=0msec S-3,4=6msec	
CONFIGUATION	1500cu.in × 8	AUX 7	Gun P 3-4 Monitor Hydrophone	P-1,2=12msec P-3,4=18msec	
TOTAL VOLUME	12000cu.in			Gun Delta 4msec	
GUN DEPTH	10m			S-1,2=0msec S-3,4=4msec	
GUN SEPARATION	65m	TRACE		P-1,2=8msec P-3,4=12msec	
AIR PRESSURE	2000PSI	MONITOR TRACE	Fixed 64dB	Gun Delta 2msec	
		SINGLE TRACE	156ch Fixed 64dB	S-1,2=0msec S-3,4=2msec	
				P-1,2= 4msec P-3,4=6msec	
				Gun Delta 0msec	
				All Gun=0msec	
OBSERVER	HOSOYA, TSUKUDA, SHIMIZU	FIERD TAPE No.·	TAPE No. 237-254		

LAYOUT OF STREAMER CABLE

LINE : PS201

Servey Vessel : KAIREI
Guard Boat : No.2 HAYASHIO



STREMER CABLE SPECIFICATION	
ACTIVE SECTION 75m (3ch/section)	× 56 (168ch)
FRONT STRECH SECTION 50m (SS)	× 2
TAIL STRECH SECTION 50m (SS)	× 2
TAIL ACTIVE SECTION 4m (TA)	× 1
TWO READER LENGTH	180m
HYDROPHON TYPE	BENTHOS Geopoint
SENSITIVITY	-194dBre1V/ μ Pa (20V/Bar)
No.OF HYDRPHON IN GROUP	32

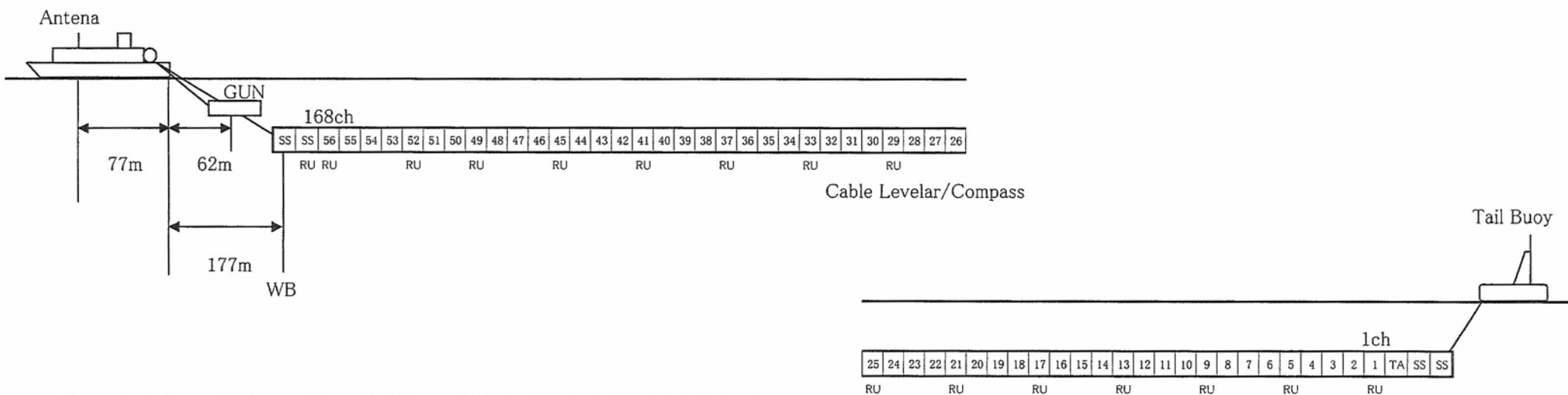
MULTICHANNEL SEISMIC SURVEY GENERAL INFORMATION

GENERAL		RECORDING		NAVIGATION	
CLIENT	JAMSTEC	INSTRUMENT		PRIMARY	D-GPS
PROSPECT	KR01-10	SYNTRAK960-24 Digital Streamer System		SHOT MODE	DISTANCE
AREA	OFF BOSO	MultiTRAK Streamer Cable Utility System		REMARKS	
LINE	PS102	GCS90 Gun Controller System			
DIRECTION	WNW → ESE (119.8°)	GS624 Thermal Plotter		•CABLE NOISE	
DATE	2001/7/14-15	RECORDING		S.O.L TAPE No. 255 FILE No. 0	
WEATHER	o	SAMPLE RATE	4msec	• NOISE	
WIND	WS 3	RECORDING RENGTH	13500msec	FILE No.443-531 Ship Noise	
SEA CONDITION	sea slight	DIGITAL LOW CUT FILTER	3Hz 6dB/oct.	FILE No.1225-1297 Ship Noise	
FIRST SHOT POINT	SP No.2371	ANALOG LOW CUT FILTER	3Hz 6dB/oct.	•CABLE DEPTH	
	FILE No. 1	DIGITAL HIGH CUT FILTER	102Hz 209dB/oct.	All Shot ch168-156 Depth 30-25m	
	TIME 2001/7/14 20:34:07	PRE AMPLIFIRE GAIN	12dB	•Gun Delta	
LAST SHOT POINT	SP No. 4802	GAIN CONTROL	24bit Fixed	Gun Delta 8msec	
	FILE No. 2432	TAPE FORMAT		S-1,2=0msec S-3,4=8msec	
	TIME 2001/7/15 13:56:45	DIGITAL TAPE FORMAT		S-1,2=0msec S-3,4=8msec	
FIRST GOOD SHOT POINT	SP No.2387	RECORDING FORMAT		Gun Delta 6msec	
	FILE No. 17	AUX CH CONTENT		S-1,2=0msec S-3,4=6msec	
	TIME 2001/7/14 20:41:27	AUX 1	System Time Breake	P-1,2=12msec P-3,4=18msec	
NUMBER OF CHANNEL	168	AUX 2	GCS Time Breake	Gun Delta 4msec	
CHANNEL INTERVAL	25m	AUX 3	Water Breake	S-1,2=0msec S-3,4=4msec	
SHOT POINT INTERVAL	50m	AUX 4	Gun P 1-2 Monitor Hydrophone	P-1,2=8msec P-3,4=12msec	
CDP FOLD	4200%	AUX 5	Gun P 3-4 Monitor Hydrophone	Gun Delta 2msec	
CABLE DEPTH	20m	AUX 6	Gun S 1-2 Monitor Hydrophone	S-1,2=0msec S-3,4=2msec	
SOURCE		AUX 7	Gun P 3-4 Monitor Hydrophone	P-1,2= 4msec P-3,4=6msec	
GUN TYPE	Par AIR GUN	TRACE		Gun Delta 0msec	
SHOT TYPE	STIMURATE	MONITOR TRACE	Fixed 64dB	All Gun=0msec	
NUMBER OF STRINGS	8	SINGLE TRACE	156ch Fixed 64dB		
CONFIGUATION	1500cu.in × 8	OBSERVER		HOSOYA, TSUKUDA, SHIMIZU	
TOTAL VOLUME	12000cu.in	FIERD TAPE No.		REEL No. 277-289	
GUN DEPTH	10m				
GUN SEPARATION	78.6m				
AIR PRESSURE	2000PSI				

LAYOUT OF STREAMER CABLE

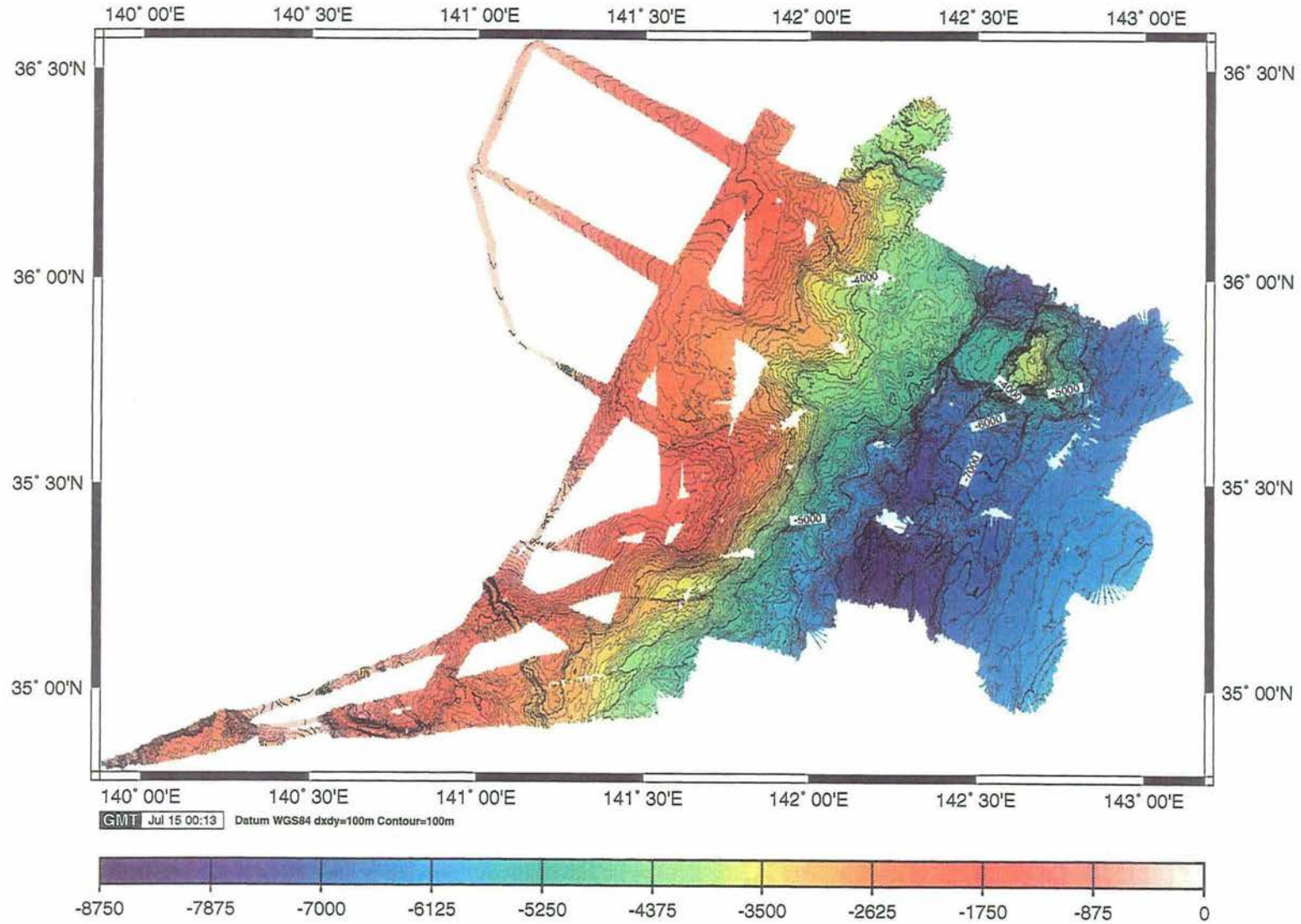
LINE : PS102

Survey Vessel : KAIREI
Guard Boat : No.2 HAYASHIO



STREAMER CABLE SPECIFICATION	
ACTIVE SECTION 75m (3ch/section)	× 56 (168ch)
FRONT STRECH SECTION 50m (SS)	× 2
TAIL STRECH SECTION 50m (SS)	× 2
TAIL ACTIVE SECTION 4m (TA)	× 1
TWO READER LENGTH	180m
HYDROPHON TYPE	BENTHOS Geopoint
SENSITIVITY	-194dBre1V/ μ Pa (20V/Bar)
No.OF HYDRPHON IN GROUP	32

MCS in Boso Offshore



Attachment 5

Shot Time Recording

1999年のエアガン増強に伴い、他機関から Shot Time に関する情報が欲しいとの依頼があった。このような依頼に対し、これまでは、海底地震計調査時に使用する True Time system の出力ファイルを渡すことで対応してきた。

本来は、MCS 測位システム (SPECTRA) による出力ファイル UKOOA を渡せば良いはずであるが、従来 MCS では Shot Time の正確な絶対値は必要がないため、その最小桁が秒の単位である。一方、先方のニーズはミリ秒の単位である。

本年度バージョンアップされた SPECTRA では、下記のオプションを使用すれば、小数点以下 8 桁秒までの Shot Time を記録できるようになった。

設定するオプション：

User defined observation パラメータの中の、

Chennel name を Time Break

Interface name を GN-V-TRIGGERS

とする。

出力された UKOOA-P2 ファイルの中から、以下の情報を取り出す：

水深 --- T14101 の行の 7-12 コラム

SP 番号 --- E1000 の行の 24-31 コラム

日付 --- E1000 の行の 50-57 コラム

Shot Time (整数部分) --- E1000 の行の 59-64 コラム

Shot Time (小数点および小数部分) --- T7010 の行の 31-39 コラム

緯度経度 --- E1210010013 の行の 14-36 コラム

なお、詳細は別紙参照。

以 上

202001810361232.820N1421610.440E	-2.70	0204070
T621200181	21.50	04070
T141014178.00407022		
T6204002120361232.202N1421610.134E	0	04070
T621400212	20.00	04070
T6202001810361232.760N1421610.440E	-2.80	0204070
T621200181	21.50	04070
T141014178.00407031		
T6204002120361232.166N1421610.086E	0	04070
T621400212	20.00	04070
T52010005148.100000	0407036	
T52010007146.500000	0407036	
T5211000610.2420000	0407036	
T5211000838.1090000	0407036	
T6202001810361232.700N1421610.440E	-2.30	0204070
T621200181	21.50	04070
T141014178.00407042		
T52110013209.200000	0407042	
T6204002120361232.124N1421610.038E	0	04070
T621400212	20.00	04070
T6202001810361232.700N1421610.440E	-1.80	0204070
T621200181	21.50	04070
T141014178.00407051		
T52110013209.000000	0407051	
T6204002120361232.076N1421610.008E	0	04070
T621400212	20.00	04070
T6202001810361232.640N1421610.440E	-1.70	0204070
T621200181	21.50	04070
T141014178.00407062		
T52110013209.200000	0407062	
T6204002120361232.034N1421609.996E	0	04070
T621400212	20.00	04070
T6202001810361232.580N1421610.380E	-2.10	0204070
T621200181	21.50	04070
T141014178.00407072		
T52110013209.500000	0407072	
T6204002120361231.998N1421609.984E	0	04070
T621400212	20.00	04070
T52010005148.800000	0407075	
T52010007146.600000	0407075	
T5211000611.0090000	0407075	
T5211000838.8750000	0407075	
T6202001810361232.520N1421610.320E	-2.50	0204070
T621200181	21.50	04070
T141014179.00407082		
T52110013209.400000	0407082	
T6204002120361231.962N1421609.978E	0	04070
T621400212	20.00	04070
T7010 1 1 00407082994910828.29868603		
E1000 BS202 00001003 0000000000001003 20010712 040708.3 301		
E121001001000361232.001N1421609.968E207.710 V		
E121001001800361232.522N1421610.369E207.710		
E121001002100361232.522N1421610.369E207.710 A		
E121001002000361233.584N1421611.153E207.710		
E121001001600361231.538N1421609.641E207.710		
E121001001300361237.320N1421613.185E200.320 S		
E121001001900361238.208N1421612.232E200.320		
E121001001700361237.249N1421614.714E200.320		
E121001001100361240.460N1421615.570E205.480		
E121001001200361434.827N1421738.890E205.470 T		
E121001002200361234.162N1421611.491E207.710		
E22102011115210.8 1114213.4 1113214.7 1112215.7		
E22102011111216.7 1109207.9 1108219.1 1107220.9		
E221020111106208.8 1105220.0 1104220.2 1103221.6		

20E
 user defined observation 0204070
 (15M1) 04070
 channel name & Time of Interface Name & GNSS TR365000 04070
 0204070 04070

水深(m)
 shot point 番号
 0204070 04070
 04070 04070

shot time
 04時07分08.29868603秒
 (世界時)

shot position

UK00A P2 ファイルから { T7010 E1000 E1210010013 } の行から { shot time shot position } を取り出す