

GEOPHYSICAL STUDIES AT ASAU AND
SALELOLOGA HARBOURS, SAVAII,
WESTERN SAMOA

by

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INTROOUCTION

Geophysical surveys were conducted in Sava'ii, Western Samoa during 10-16 June 1985 as part of the CCOP/SOPAC Work Programme, Project CCSP/WS.5 - "Coastal Zone Management Survey for Landfill, Construction Materials and Harbour construction". The objectives of the survey were to collect baseline geophysical data at Asau and Salelologa harbours to aid Western Samoa in its efforts to improve the coastal harbours of Sava'ii. At the request of the Government of Western Samoa all geophysical records collected during the survey were duplicated and sent to Western Samoa's National Representative to CCOP/SOPAC for his country's use. Therefore this report is only intended to document the field programme.

No further analysis of the data is intended unless specifically requested by the Government of Western Samoa. All original records are stored at the CCOP/SOPAC Technical Secretariat in Suva, Fiji.

PARTICIPATING PERSONNEL

SALELOLOGA

Bruce Richmond	-	Marine Geologist, CCOP/SOPAC
Ed Saphore	-	Electronics Technician, CCOP/SOPAC
Bernie Zavala	-	US Peace Corps Volunteer
Faatoia Malele	-	Apia Observatory
Vao Welesana	-	Apia Observatory
Natu leane	-	Apia Observatory
Onesemo Feo	-	George Meredith & Associates (Surveyors)

Tino Ieione	-	George Meredith & Associates
		(Surveyors)
Fuiava Matatupa	-	" " "
Filimaua (Boat Operator)		

ASAU

Bruce Richmond	-	Marine Geologist, CCOP/SOPAC
Ed Saphore	-	Electronics Technician, CCOP/SOPAC
Bernie Zavala	-	US Peace Corps Volunteer
Faatoia Malele	-	Apia Observatory
Vao Welesana	-	Apia Observatory
Natu Ioane	-	Apia Observatory
Evan Leeta	-	" "
Onesemo Feo	-	George Meredith & Associates
		(Surveyors)
Tino Ieione	-	" " "
Fuiava Matatupa	-	" " "
Peter Trevor	-	" " "
Lee Hastings	-	" " "
Filimaua (Boat Operator)		

EQUIPMENT AND FACILITIES

The following Items of CCOP/SOPAC equipment were used on this survey :

- Del Norte Trisponder Navigation System
- Raytheon DE 719B Fathometer
- High Resolution Boomer
- Benthos 268 Hydrophone Cable
- EG&G Power Supply and Capacitor Banks
- Klein model SA-350A sidescan sonar transceiver
and high resolution 500 kHz towfish
- EPC 4600 and 3200 graphic recorder

[4]

Krohn Nite 3700 Bandpass Filters
Yamaha 600W and 3000W generators
Compass Telescope
Sampling Equipment
Spares and accessories for above equipment.

Logistic support was provided by the Apia Observatory and included equipment storage, transport and arrangements for boats. The Superintendent and staff of the Apia Observatory are gratefully acknowledged for their assistance and support.

SURVEY LOG

Date

- | | |
|---------|---|
| June 10 | Logistics preparation for Sava'ii survey |
| 11 | Equipment shipped to Sava'ii |
| 12 | High-resolution continuous seismic
profiling, side-scan sonar imaging, and bathymetric profiling at
Salelologa. |
| 13 | Transit to Asau - start side-scan sonar imaging and bathymetric
profiling. |
| 14 | Asau - continuous seismic profiling, side-scan sonar imaging,
bathymetric profiling. |
| 15 | Asau - continuous seismic profiling, side-scan sonar imaging,
bathymetric profiling. |
| 16 | Pack gear, transit to Apia. |

RESULTS

The geophysical tracklines of the field surveys are shown in the following figures:

Figure 1 - Salelologa Harbour, side-scan sonar tracklines.

Figure 2 - Salelologa Harbour, high-resolution seismic tracklines.

Figure 3 - Asau Harbour, side-scan sonar tracklines.

Figure 4 - Asau Harbour, high-resolution seismic tracklines.

Continuous echosounder profiles were collected during both the side-scan sonar and seismic surveys and is available for all tracklines shown. Appendix 1 lists all the start and end times for the survey tracklines. Appendix 2 lists the recorder settings for the Asau Harbour seismic survey.

APPENDICES

APPENDIX I

Trackline start and end times for Asau and Salelologa geophysical surveys, 1985.

ASAU HARBOUR SEISMIC LINES, JUNE 1985

<u>LINE</u>	<u>DATE</u>	<u>START TIME</u>	<u>END TIME</u>
A	14.06.85	1315	1320
B		1320	1332
C		1332	1346
D		1347	1404
E		1409	1425
F		1427	1446
G		1448	1453
H		1455	1502
I		1503	1508
M		1051	1057
N		1057	1126
O		1128	1136
P		1136	1210
Q		1240	1255
R		1255	1308
A1		0850	0909
B1		0911	0941
C1		0944	1017
D1		1017	1047
E1		1047	1105
F1	15.06.85	1110	1121
G1		1123	1132
H1		1132	1155
I1		1155	1204
J1		1204	1213
K1		1213	1226

ASAU HARBOUR, SIDE-SCAN SONAR LINES, JUNE 1985

<u>LINE</u>	<u>DATE</u>	<u>START TIME</u>	<u>END TIME</u>
S1	15.06.85	1324	1337
S2		1339	1351
S3		1358	1411
S4		1415	1435
S5		1436	1446
S6		1447	1454
S7		1457	1511
S8		1537	1547
S9		1550	1601
S10		1605	1620
S11		1621	1629
S12		1631	1641
S13		1641	1647
S14	13.06.85	1630	1645
S15		1645	1650
S16		1654	1706
Manu		1706	1724
S17		1724	1728
S18		1731	1737
S19		1739	1744
S20		1746	1750
S21		1751	1756
S22		1758	1804
S23		1804	1816
S24		1816	1830

SALELOLOGA HARBOUR, SEISMIC AND SIDE-SCAN SONAR LINES

<u>LINE</u>	<u>START TIME</u>	<u>END TIME</u>
A	1117	1120
B	1120	1125
C	1125	1142
D	1142	1147
E	1147	1200
F	1201	1222
G	1222	1233
H	1234	1248
I	1248	1307
J	1307	1313
K	1313	1315
J	1315	1322
1	1510	1521
2	1523	1530
3	1530	1540
4	1540	1602
5	1604	1620
6	1620	1630
7	1630	1635
8	1635	1656

APPENDIX II

*RECORDER SETTINGS ASAU HARBOUR SEISMIC SURVEY

Scale lines - 10 ms

Filters - 14-4 kHz

Full gain (20 db)

$\frac{1}{4}$ sec. sweep

Amplifier - linear (full gain)

Assuming a velocity of 1500m/sec
and the sweep speed of 250 ms ($\frac{1}{4}$
sec sweep) each 10 ms gradation
represents 7.5m depth.

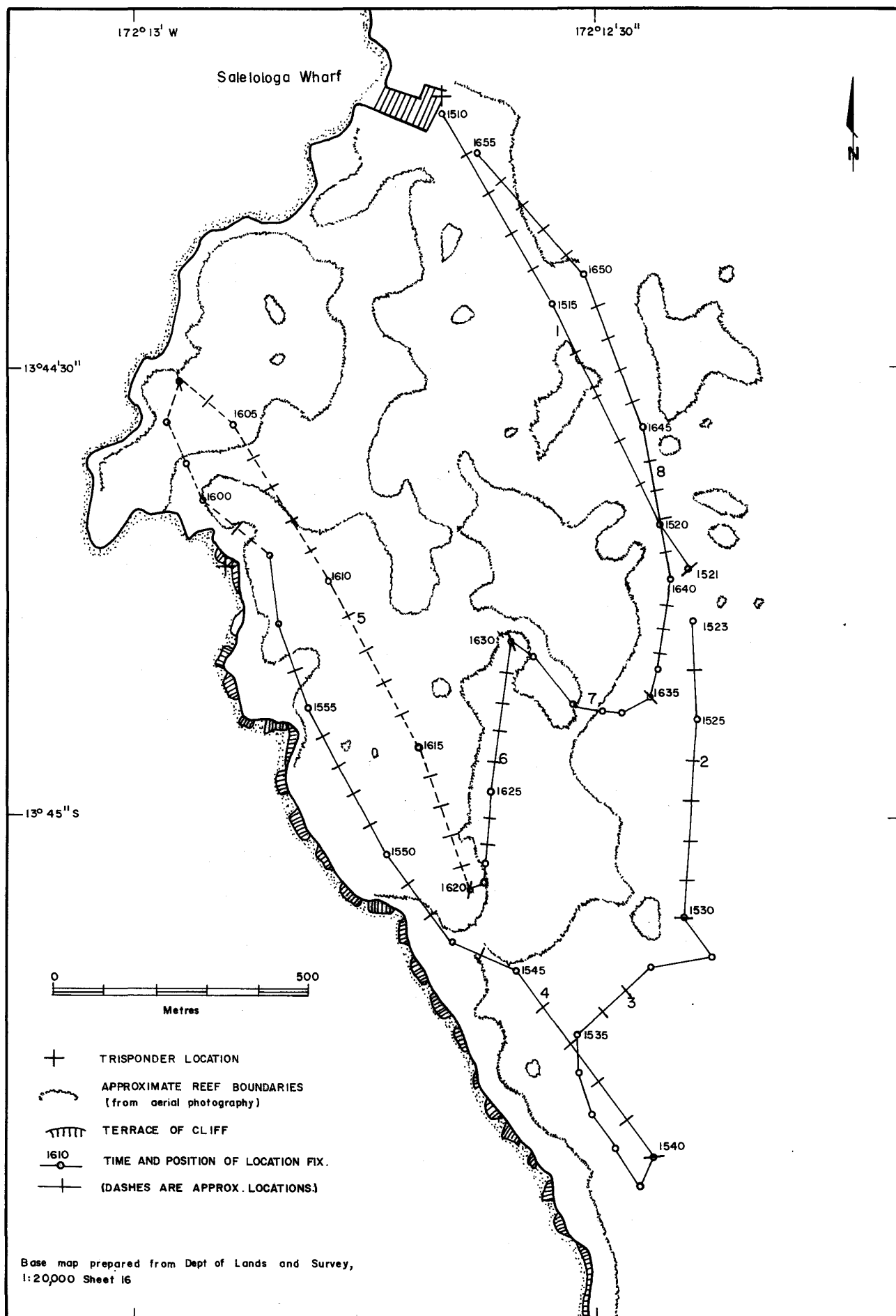
Abbreviations used on records:

SOL - Start of Line

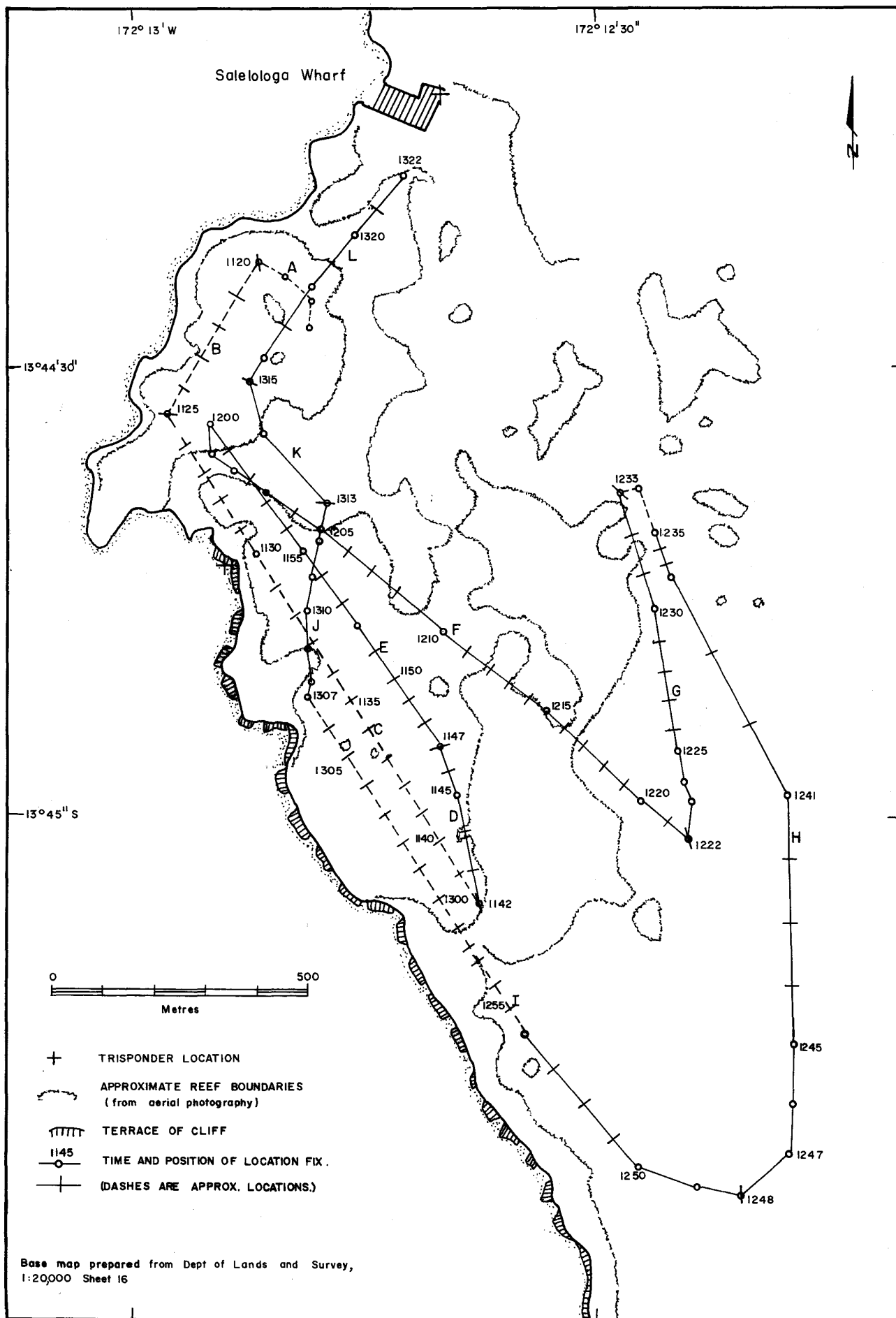
EOL - End of Line

SOR - Start of Roll

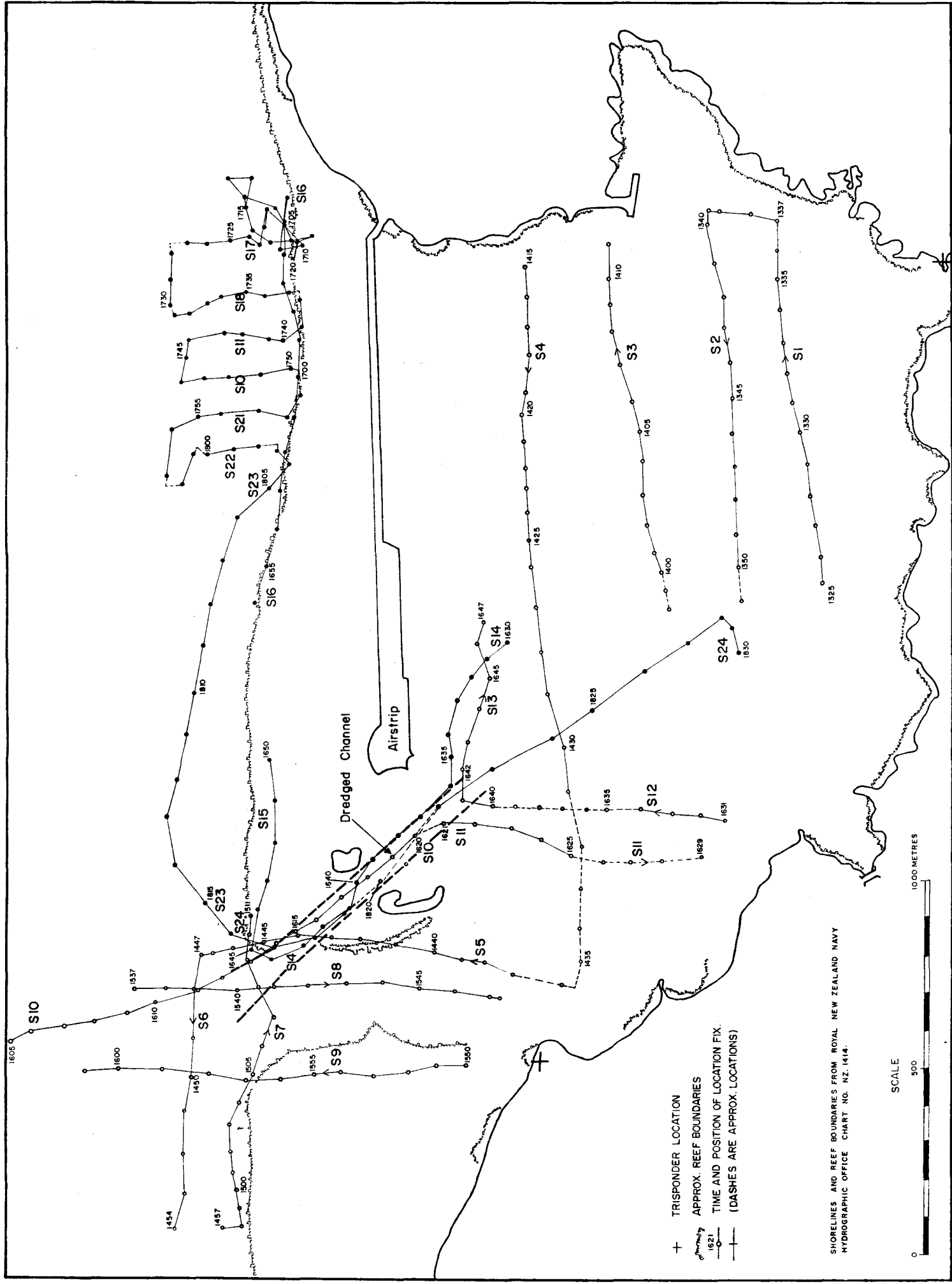
EOR - End of Roll



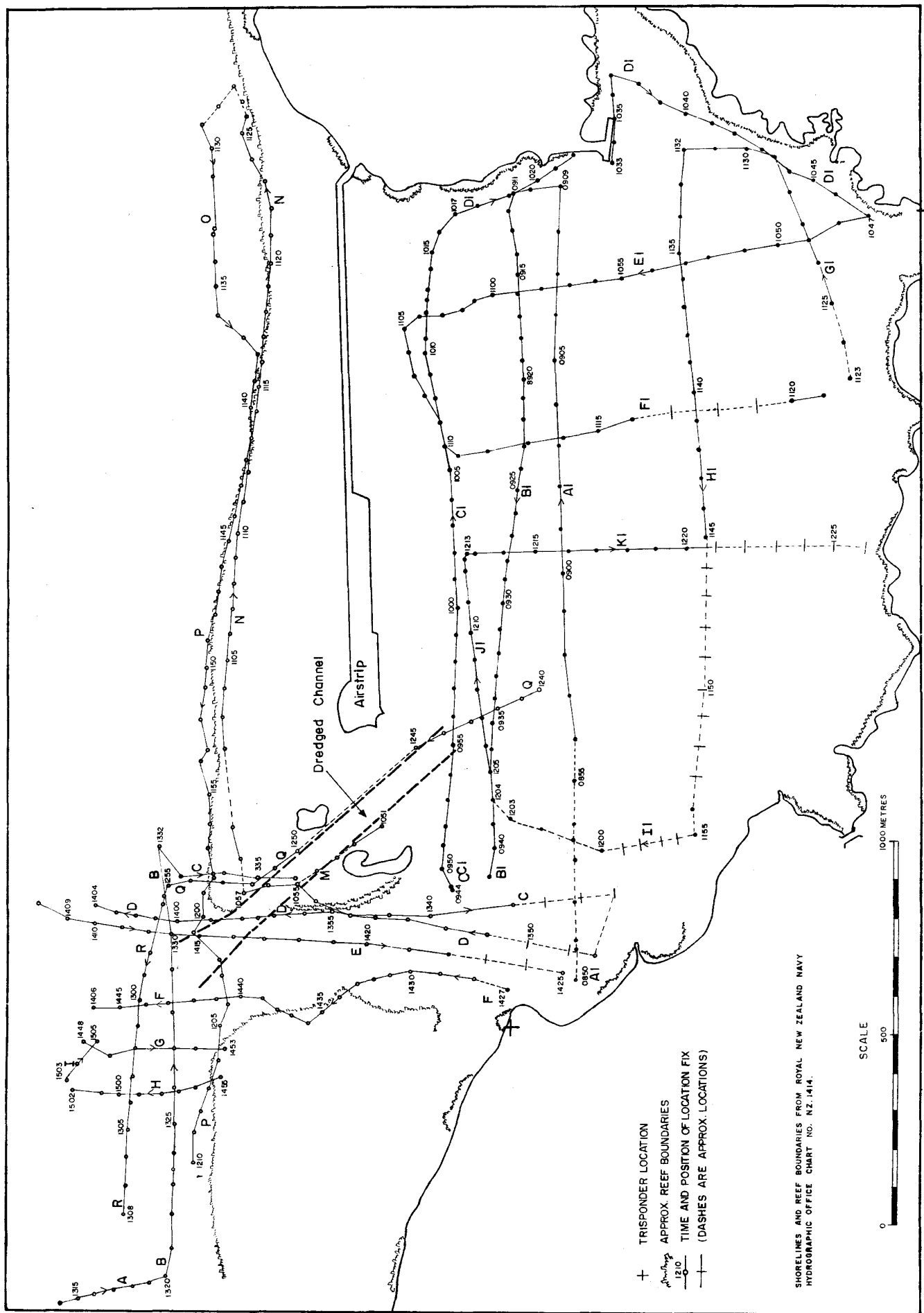
SALELOLOGA HARBOUR, SIDE-SCAN SONAR TRACKLINES.



SALELOLOGA HARBOUR, HIGH-RESOLUTION SEISMIC TRACKLINES



* FIGURE 3 ASAU HARBOUR, SIDE - SCAN SONAR TRACKLINES



ASAU HARBOUR, HIGH-RESOLUTION SEISMIC TRACKLINES

FIGURE 4