International Council for the Exploration of the Sea

C.M.1986/C:30
Hydrography Committee

HYDROGRAPHER'S REPORT

1) The process of re-organising the Service Hydrographique Data Bank has proceeded somewhat fitfully, mainly because of priorities in other areas, and because of the delays associated with the transition from Jan Szaron to Kai Jancke, who commenced work in the Secretariat at the start of the year. One of the tangible consequences of the present poor state of the data bank is the very long time it takes to process most requests for data. Requests, which arrive at the rate of 2 or 3 per month, are taking up to 9 months before data can be delivered. However, fortunately, there are exceptions. For example a telephone request was made for data from the Oresund (between the Danish Island of Zealand on which Copenhagen stands and Sweden) for the period May to July 1984. Using a combination of ROSCOP data base enquiries and summaries from well-organised parts of the data bank the requested data were transmitted within 3 hours.

A number of utilities have now been prepared which make it possible to undertake many of the data bank activities on the Secretariat's mini-computer. This has resulted in a marked increase in performance, and also considerable financial savings because of the lower usage of the University's computer.

Using these utilities, considerable progress has been made in identifying and sorting the Norwegian holdings of data. Some of this data had been prepared in computer compatible form (punch cards) some time ago at both the Norwegian Data Centre and the Service Hydrographique, but it was noted with some concern that none of the many errors that had been flagged by the Service Hydrographique had been corrected in the holdings at the Norwegian Data Centre.

A very useful utility has been developed to facilitate extracting sections from geo-sorted data, which has been a very time consuming, and often inaccurate, process. This involves the rotational transformation of coordinates, using a technique that Kai Jancke adapted from his numerical modelling days. Figures 1a, and 1b, demonstrate the operation of this utility. Figure 1a shows a broad array of data, and Figure 1b shows the position of stations on a specified section which were extracted from this data array. All that has to be specified are the section ends and the "window" normal to the section, in nautical miles. It is hoped that this new capability is a satisfactory reponse to a suggestion made at the MDM meeting (CM1986/C:27, section 5.3.1.1) that "ICES should identify sections by an appropriate flag in the master record", which should no longer be necessary.

Several data sets have been submitted for incorporation into the data bank, within the last year. Notable amongst these is all the hydro-chemistry stations worked by the Aberdeen Laboratory from 1960 until early this year. Other data sets submitted include Netherlands (KNMI), Sweden, Denmark (Greenland), German Democratic Republic, Norway (Geophysics Institut) and UK (IOS). The hydrographic, chemical, and biological data collected in the Baltic Monitoring Programme from 1979 to 1984 has been submitted

by the Finnish Data Centre, on behalf of HELCOM. These data can be made available only with the approval of HELCOM. It is intended to use these data in connection with the validation of the PEX data sets (see (3)).

2) The work on the Soviet Sections/OWS'C' data sets is now virtually complete, though final banking is being delayed due to a problem in developing a standard depth interpolation computer program.

Figures 2a and 2b show the monthly means of temperature and salinity from 'C' at some depth horizons, using the data available at the Service Hydrographique. Figure 3 is a chart showing the positions of the 'Sections' data and Figure 4 is a list summarising the contents of the 'Section' file. The total number of stations in these data sets is almost 10,000 in approximately 1 million 'ICES' records. Approximately 70% of these stations include oxygen, phosphate and pH data. It is hoped to receive more of the data in connection with this and related programmes as soon as it becomes available.

3) In the coming months the Service Hydrographique will be fairly heavily committed to acting as the data centre for PEX. The field phase of the experiment was undertaken in April and was very successful (see E3a). The observations have already been summarised in a document, based on ROSCOP returns, and distributed to participants. Approximately 1,500 stations measuring or collecting samples for up to 20 physical, chemical and biological parameters were worked. A wide variety of other types of data, including current measurements, were also obtained. The Service Hydrographique's activities will be focussed on collation, correction, quality control and graphics.

4) In connection with MDM's term of reference to design a "blueprint" for reporting data within ICES, which originated from C.Res. 1984/4:20, the Service Hydrographique made proposals which are shown schematically on page 19 of the group's report (CM1986/C:27). MDM has adopted this schema as the basis for further development, which it will be doing inter-sessionally.

A "blueprint" is primarily being designed to enable the Secretariat to handle submission of very varied data sets within a common structure, but is also intended to help the supplier of data to adapt his reporting to meet his specific needs. It is closely allied to GF3, and although not intended as a substitute to GF3, it can be used with greater ease especially for data sets supplied on manuscript, or if the originator has only access to a microcomputer, for example. This 'blueprint' provides a vehicle for reporting, economically, data sets containing up to several thousand different parameters, and can accommodate most data types (e.g., continuous horizontal/vertical recording, tow-yos, yo-yos, time series, rosettes within CTD profiles etc). Once this "blueprint" is fully developed there can be no more excuses for not submitting data sets of all types to data centres.

5) The UK national data centre (MIAS) has reached agreement with IOC with regard to support it can give the Service Hydrographique as RNODC (FORMATS). This support is related mainly to technical aspects of the development and

implementation of GF3. As part of its RNODC(FORMATS) activity, a review of the ROSCOP form has been prepared (see C.Res. 1985/4:6 pt 7) and submitted to IOC for consideration at the forthcoming IODE meeting in Moscow. This review is attached in full at the end of this report to enable ICES members to submit their reactions to the Hydrographer prior to discussion at the IODE meeting. In making proposals for a revision of the form, account of the negative attitude of many ICES scientists was duly noted.

It is hoped that this revision, which is based primarily on Service Hydrographique experiences in processing ROSCOP information, will remove the formal nature of the existing form, and thus encourage a more positive attitude to its completion, as well as a more widespread completion of the form, which at present covers less than 70% of cruises. At present every ICES country submits ROSCOP information in one way or another either to a national centre or to ICES, except Denmark (Faroe), Ireland, Spain and Portugal.

6) In the past year a significant amount of the Hydrographer's time has been engaged in participating in, and writing and editing the reports of PEX meetings at Tallinn and Gdansk (E.3), the Shelf Seas Working Group, and Scapins sub group (C.28), the Marine Data Management Working Group (C.27), the IREP Steering Group (editing and partial writing - Gen.7) and the JPOTS editorial panel on a "Manual on Processing of Oceanographic Station Data", which was held in Moscow in June. This latter report will be reproduced in the UNESCO series 'MARINF', which will be obtainable from the Hydrographer on request. In addition, the Hydrographer participated in the Oceanic Hydrography working group meeting (C.29).

country 26

ships: all

dates :

start

9830103

end

9831220

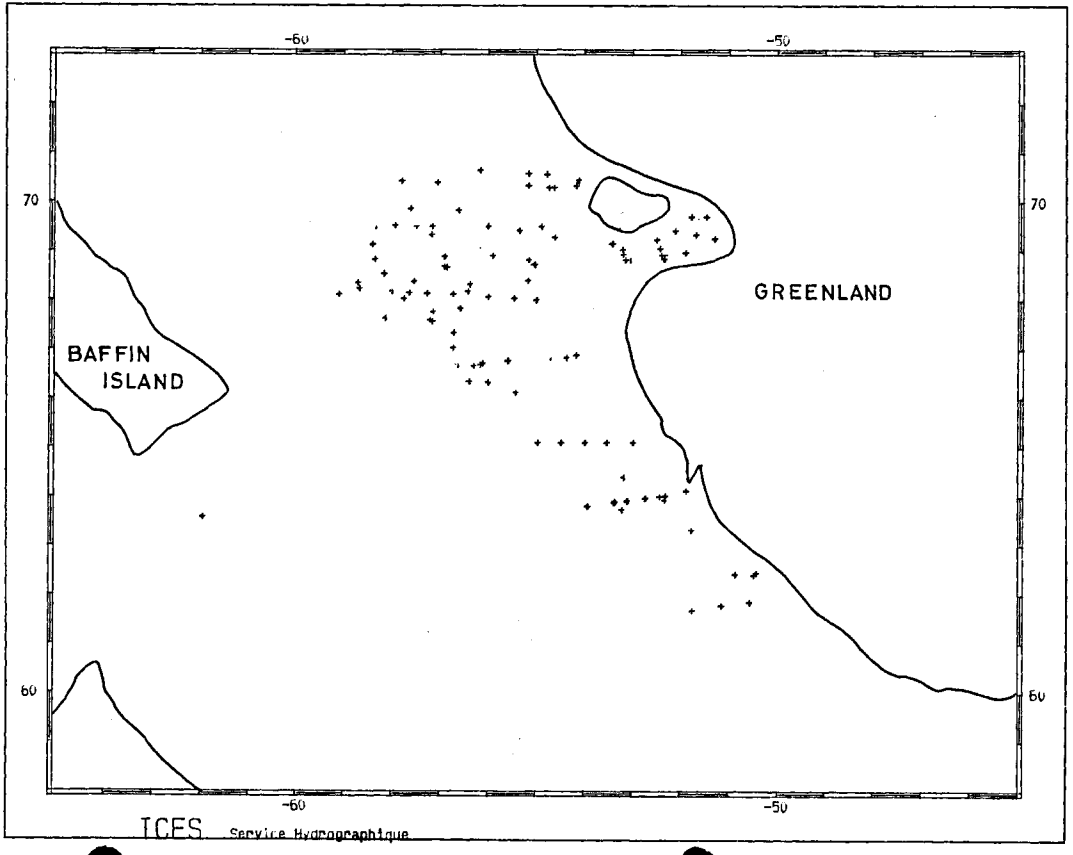


FIGURE Ia

country 26

ships: all

dates :

start

9830104

end

9831031

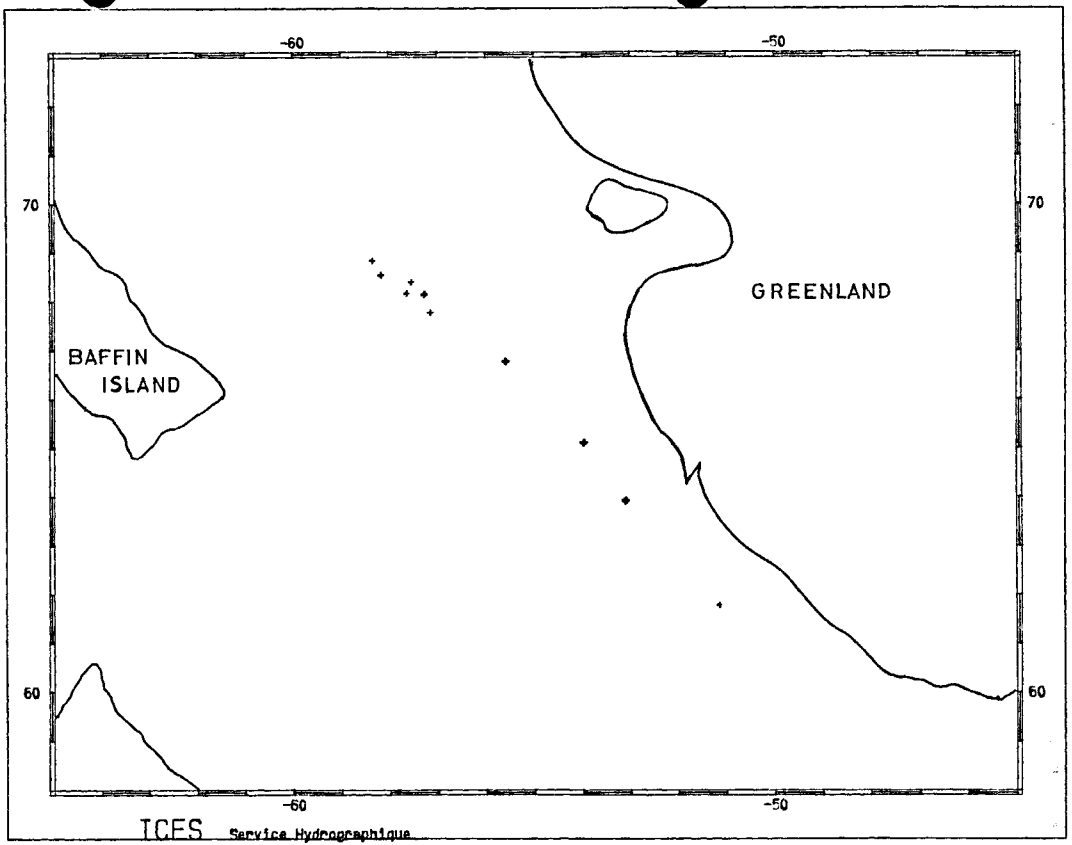


FIGURE 1b

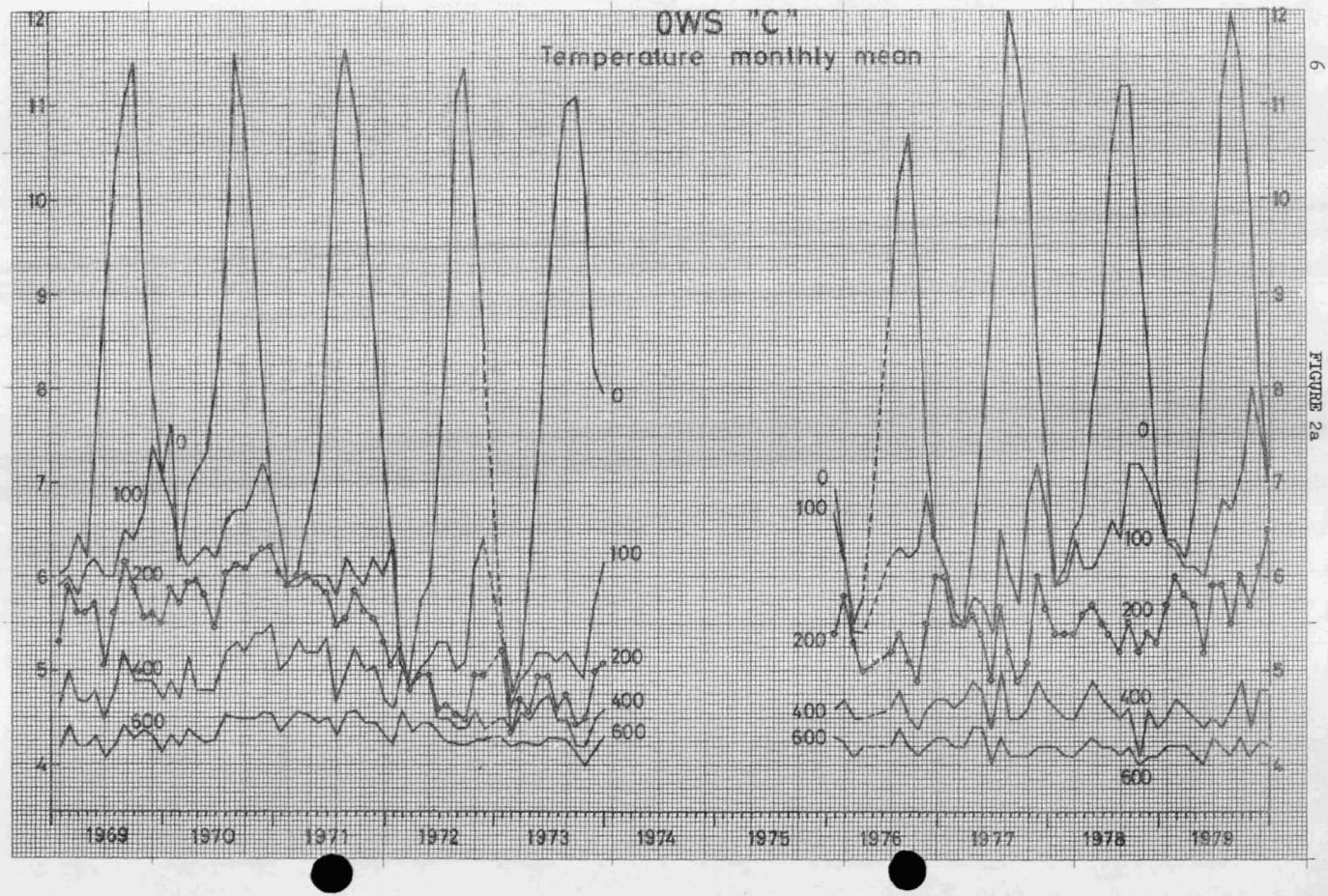

OWS "C"
Temperature monthly mean
12
11
10
9
8
7
6
5
4
0
100
200
400
600
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979

FIGURE 2a

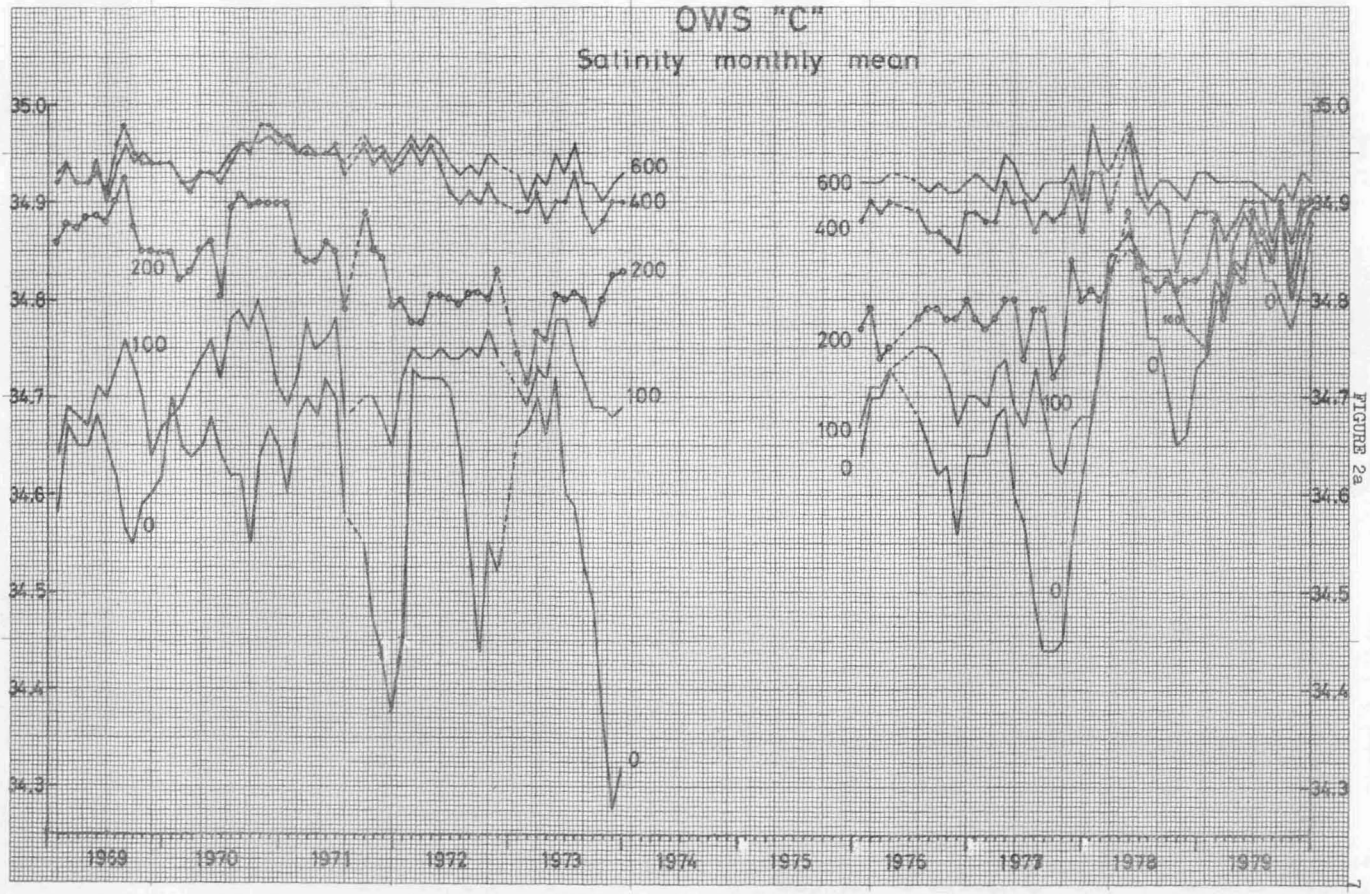

OWS "C"
Salinity monthly mean
35.0
34.9
34.8
34.7
34.6
34.5
34.4
34.3
600
400
200
100
0
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979

FIGURE 2a

FIGURE 3

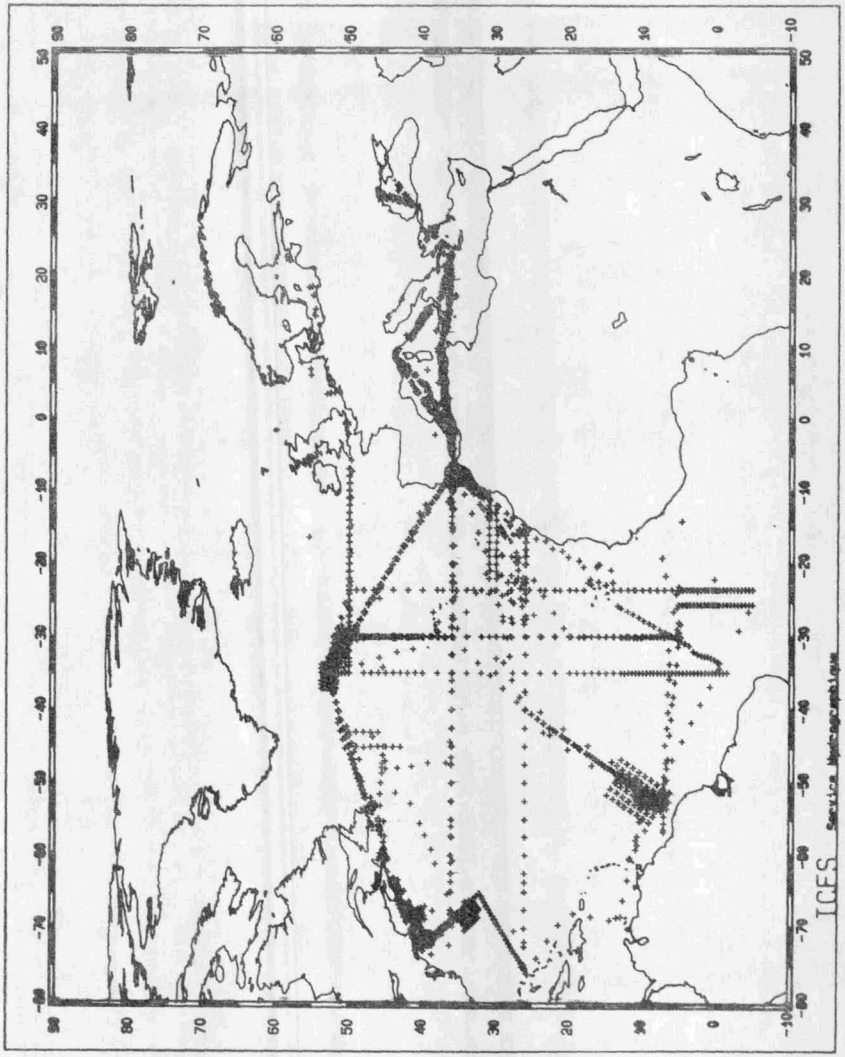


FIGURE 4

Summary of Soviet North Atlantic "Sections" Data held at Service Hydrographique

CO/SH	STATION NOs	PERIOD yymmdd	NUMBER a	b
90 39	0600-0677	9751126-9751228	78	69
90 39	0001-0257	9760126-9760902	257	188
90 48	0500-0511	9751225-9751231	12	9
90 48	0001-0688	9760101-9761022	203	171
90 37	0001-0038	9761009-9761128	38	36
90 38	0001-0196	9760728-9761230	182	153
90 41	0001-0628	9760207-9761220	92	79
90 41	0001-0649	9770201-9771221	102	81
90 37	0200-0338	9770106-9770312	139	131
90 48	0001-0239	9770406-9770910	126	120
90 38	0011-0115	9770521-9771117	95	80
90 39	0001-0313	9770202-9771121	313	238
90 38	0116-0135	9771122-9771129	20	19
90 38	0001-0162	9780101-9780513	162	102
90 39	0500-0704	9780714-9781020	205	101
90 38	0163-0356	9780622-9781221	194	107
90 37	0301-0514	9780318-9780830	191	74
90 48	0001-0527	9780115-9781231	234	121
90 48	0001-0075	9790101-9790205	75	54
90 39	0801-0816	9781220-9781230	16	13
90 39	0001-0005	9790202-9790207	5	5
90 38	0003-0274	9790115-9791019	269	130
90 37	0001-0240	9790213-9791220	195	107
90 39	0500-0803	9790313-9791219	267	184
90 48	0501-0551	9790715-9790909	51	38
90 48	0101-0803	9790327-9791129	194	118
90 48	0001-0020	9800101-9800116	20	10
90 41	0001-0032	9791216-9791229	32	0
90 41	0001-0338	9800210-9800809	242	111
90 39	0001-0503	9800304-9801021	429	190
90 38	0001-0207	9800223-9800619	204	116
90 37	0001-0165	9800113-9800420	165	99
90 48	0100-0223	9800207-9800510	124	66
90 39	0801-0988	9811020-9811231	188	116
90 39	0001-0078	9820101-9820128	78	52

Total Number of stations Σ(col a) = 5197
Total Number of stations with chemistry Σ(col b) = 3288

Review of the ROSCOP form

Proposals of ICES Hydrographer

1 Introduction

Following discussion at the third session of the Group of Experts on Format Development, during which an on-line demonstration of computerised ROSCOP files was provided, the Group requested that the ICES Hydrographer conduct a review of the ROSCOP form with the following terms of reference:-

1) Examine current experiences with the use of the ROSCOP form.

2) Analyse the problems encountered in the use of the form and

3) prepare a draft proposal for revising the form.

Furthermore the Group requested the Secretary IOC to ask data centres in the IODE community to submit comments to ICES, which is RNODC (Formats), which should be taken into consideration in the review.

2 Current experiences in the use of the ROSCOP form

2.1 Comments from Data Centres

The Secretary IOC wrote to all National Coordinators for IODE in accordance with the above instructions, on 27 January 1986. The following is a brief synthesis of the replies.

1) Australian Oceanographic Data Center (B. Searle)- The AODC, whilst appreciating the aims of a possible revision, could suggest no changes to the structure of the forms.

2) Japanese Oceanographic Data Center (T. Mori) - JODC would rather not change the ROSCOP form, because the form is fairly familiar to reporters of ROSCOP in Japan. They would, however, welcome the possibility of allowing the reporter to give the localisation in latitude and longitude instead of the 10-degree square system.

3) Centro Argentino de Datos Oceanograficos (A. Villaneuva) - were reasonably content with the present form but would like to see, clearly defined, three levels of information viz General Information, Geographic Area, and Observations Collected. They would also like to see a clearer distinction between fixed stations and area observations.

4) National Institute of Oceanography, Goa (J. Sarupria) - Have no difficulty in the completion of the forms but favoured the replacement of the 10 degree square system by the range of latitude and longitude for the whole cruise. They also requested the incorporation of depth information, the replacement of alpha-numeric parameter codes with numeric ones, and the close alignment of these codes with GF3. Some suggestions with regard to additional parameters were also made.

5) National Oceanographic Data Centre, Washington (G. Withee) - Reaffirmed previous comments that only a fine tuning was necessary. They recognised the need to revise the parameter fields, but did not wish the form to be made more unwieldy by adding additional pages. The reporting of satellite data should also be considered. They strongly opposed initiatives to replace the 10-degree square system for reporting location.

In addition to the above comments I had access to comments received via the ICES Marine Data Management Working Group which had been collated from several ICES Member countries. These consisted mainly of comments concerning parameter fields with regard to the structure of the part of the form dealing with

time series data. There was also a significant minority favouring the abandonment of the 10 - degree square system in favour of the latitude and longitude range. In addition I had my own views, acquired from my sea-going days, and also now from my responsibities with regard to the collation of ROSCOP information from the 18 ICES member countries. In the following sections I deal with a review of these experiences, describe how ROSCOP information is handled in ICES, and present a brief statistical review of what is currently completed on the ROSCOP form.

2.1.1 ICES experiences with ROSCOP

Since the late 1960s until 1983 ICES has produced, annually, a publication detailing cruise information submitted on ROSCOP II, or its predecessors. Because of a substantial increase in volume the publication was produced in microfiche from 1976 onwards. Although these publications very closely reflected the information contained on the ROSCOP form, some important changes were made from the beginning. These included the use of the Marsden square to record location, with no breakdown with regard to parameter type (see A10 on ROSCOP II). The cessation of publication from 1983 was approved by the Marine Data Management Working Group because it considered that reproduction in microfiche was inappropriate and because information was more readily accessible from 1984 by means of the ICES computer files of ROSCOP information. Appendix I is an example of a printout from one ROSCOP form. Using its computer files ICES can readily provide selected printouts and statistics, by searching on any of the ROSCOP fields, eg all the cruises during which CTD (H10) stations were worked in a certain Marsden Square (10^0, 5^0 or 1^0) by country, chief scientist, ship, institute etc. In addition, since the file is in free format, there is no problem in including data types not currently catered for in the ROSCOP parameter list. It is of course important to be consistent with regard to the description of these parameters.

ICES currently receives ROSCOP forms from Belgium, Canada,

Denmark, Finland, France, Federal Republic of Germany, German Democratic Republic, Iceland, Norway, Sweden, Poland, and the United Kingdom, in total approximately 450 forms each year. The completion of these forms is very heterogeneous and considerable work is entailed in reducing them to a uniform format. With regard to the forms submitted to ICES, and related discussion with the scientists concerned, the following points may be noted:

- Position information may be provided by track chart only (in one case a track chart is submitted in lieu of a form), by latitude and longitude limits, in 10^0,5^0 or 1^0 resolution or, in the case of two countries, maximum resolution occasionally by parameter.

- DNP is rarely included, and when it is, is variously interpreted.

- The form is rarely completed by a scientist involved in the cruise but centrally, either at the National Data Centre, or Institute responsible for the cruise.

- There is some ambiguity in the current parameter list which occasionally involves that same activity being reported more than once, or incorrectly eg reporting of H03, H04, H07, H08 is often included in addition to H09. Similarly the stations reported in eg B14 and B19 is summed in B65.

- Chemical and biological observations collected as part of an oceanographic station are often incorrectly given as number of samples (instead of number of stations).

- In the case of some (most) countries less than 50% of scientific cruises are not reported. Physical Oceanographic cruises are however well represented, suggesting that there is not a general realisation that ROSCOP covers all marine research activities.

- There is a strong consensus amongst the scientific community that the ROSCOP form serves no useful purpose and therefore there is a generally marked reluctance to cooperate. This view is confirmed by the lack of reaction by scientists to the service ICES can provide with regard to ROSCOP information. It is undoubtedly, however, a very valuable tool for the data manager.

2.1.2 Analyses of ICES ROSCOP information

In order to facilitate this review, a detailed analysis of the parameter fields acquired from all ROSCOP forms submitted to ICES for the years 1975, 1981-1984 has been conducted, based on material received up to June 1985. (The information for other years has not yet been digitised.) This analysis, which is attached as Appendix II, lists the number of forms used for each parameter type and describes those parameters entered as "other measurements" and for which no ROSCOP parameter has been allocated.

Except for a relatively few parameters, the frequency of use of many of the parameters is quite high, the highest being for the oceanographic station parameters (H09 or H10). Every parameter has however been utilised at least once, although it is quite possible that many of the low scores are just mistakes. Examples of very low scores (say 1 form) are P08, G13, G34, B15, B29, and B67. On the other hand the list of "other parameters" is considerably longer than the list of low scores. Thus it is clear that in order to represent all interests, and taking into account additional parameters suggested in connection with this review, a considerable expansion of the ROSCOP form is desired unless a radical new approach is adopted.

Although the idea of a radical new approach is inconsistent with the wishes of the Group of Experts who considered that only a fine tuning was necessary, and is also inconsistent with the views of those data centres that are quite happy with the

present ROSCOP form, there are clearly several aspects of the present form that are so unsatisfactory that no amount of fine tuning can accommodate. It is quite clear that the present form is very unpopular with the scientific community, mainly because parts of it are too complicated to fill in without cross-referencing, and in the case of position fixing, a bit of study is required before hand.

I am of the view that since so many data centres are now entering the ROSCOP information into computerised data bases, the ROSCOP form, which is never or rarely consulted in its own right, should be remodelled as a reporting form, concentrating on simplicity to the form completer, and leaving perhaps a bit of hard conversion/standardisation work to the data centres. Indeed a primary aim of the review should be to reduce the amount of conversion/standardisation currently expected of the data centres. Taking this approach does not necessarily entail any significant change to the information currently supplied, except those parts where simplification is desirable.(see eg section 2.1.1)

3 Proposal for revised ROSCOP form

3.1 Introduction

In considering a revised layout for the form a major consideration was how to take into account all of the comments and suggestions made to me in the course of this review, many of which were conflicting. The conflict lay primarily in two areas, viz (1) the determination of location of the cruise and (2) An expanded parameter list, but not an expanded form. The solving of these conflicting needs provided the basis for this review.

3.2 General Layout

A proposed revised schema for ROSCOP is attached as Appendix III. This schema consists of 2 pages and a map(s), details of which are as follows:

3.3 Page 1

It is proposed that this first page replace the corresponding page on ROSCOP II, ie the general cruise details (A) and geographical details (B). The layout has been simplified to a great extent, but most of the existing information has been retained. In order to provide complete flexibility, the user may freely complete each entry in any way he thinks fit.

Specific details are:-

Heading. Here I have described the form as "Oceanography and Fisheries" to remove any doubts about the entire purpose of the form.

(A1) This is the country(ies) responsible for the cruise.

(A2) I propose dropping the need to specify platform type, which may be described if considered necessary.

(A3) As in ROSCOP II.

(A4) As in ROSCOP II, except include more than one name if necessary.

(A5) As in ROSCOP II.

(A6) This is optional, and is required if the cruise is part of a cooperative programme (national or international).

(A7) This specifies the name of the programme, which may be an acronym. Complete only if (6) is completed.

(A8) The "Enquiries to" and "data held" column rarely differ in submissions using ROSCOP II. I therefore propose dropping the latter, and discourage the use of personal names in "Enquiries to".

(B1) This is latitude and longitude of any fixed station. Provision has been made for up to 4 positions.

(B2) As in ROSCOP II, but there should be no insistance on using the IHB's list. (This list should however be used when information is transferred into computer files at a data centre, as part of its standardisation procedures).

(B2) Information concerning the localisation of the cruise is perhaps one of the biggest deterrents in completing ROSCOP II. I do not agree with the view that latitude and longitude range is more appropriate. Both this and the $10^0 x 10^0$ index will, and do, create a lot of conversion work for the data centre, and are unsuitable for data base searches. Problems are compounded if the information is broken down by parameter. My proposal is to attach a series of maps as on page III-5, and ask for the appropriate square to be marked. The data centre may then enter the information to its files (lat & long range, $10^0 x 10^0$, or Marsden square). This does not allow for greater detail than $5^0 x 5^0$ squares which is better dealt with by description (eg if it is an embayment, then name it), or by track chart. At present ICES maintains a book of track charts cross-referenced with its computer files, but less than 30% of forms are supplied with charts, not counting the charts that are supplied without forms.

3.4 Page 2

In order to overcome the problem of keeping the ROSCOP form as short as possible, yet coping with an ever-increasing list of ROSCOP parameters, I have removed altogether the parameter list from the ROSCOP form, and propose that these lists need not necessarily accompany each ROSCOP form. This is because of the observation that most ROSCOP forms are now actually completed at a national centre, or institute, normally by only one person. I also suggest that the ROSCOP parameter code is not obligatory at the reporting stage.

I have identified two types of measurement that require quite different information, and should be dealt with separately. These are (C) Non time-series data and (D) time series data.

3.5 C. Measurement Detail (NON time series data)

This section provides for the reporting of up to 40 different parameters, but this amount is considerably reduced if there are lengthy descriptions (DE). Four items are required for each parameter, viz :- (1) ROSCOP parameter as at present, which I do not consider to be obligatory at this (reporting) stage, (2) Number of stations (or distance for continuous observations), (3) Enquiries information and (4) extra information, which may extend over adjacent fields to accommodate as much information as is desired. This information may simply be the data type which should be described if the RP is not known, or if none is available. Here may be included a comment on the data availability, should this be restricted.

I have removed two items from this part of the form, viz "data held" and "Format". I do not consider the latter to be useful information, especially as anyone interested in receiving data is rarely influenced by the way in which it is stored.

3.6 D. Measurement Detail (Time Series Data)

ROSCOP II is particularly unsatisfactory for the reporting of time series data and already some data centres have unilaterally modified this part of the form. I propose that this section is completed only on the cruise in which the instrumentation has been recovered, and these may include anchored as well as drifting stations (eg SOFAR floats). Provision has been made for recording the number of instruments, deployment period and the positiom (Latitude and Longitude) of the mooring. When the instruments are current meters, the appropriate ROSCOP parameter, slightly redefined, should be DO1. Otherwise the general layout and specification is similar to part C.

3.7 The Map

The series of maps attached to the proposal serves to illustrate the scale that would be required in order to cover large sectors of the world oceans. In this illustration the maps are divided into Marsden squares, but it is not strictly necessary at the reporting stage to show the values of the squares. It may look more pleasing if only faint square boundaries, without the numbering, is shown.

3.8 Example of completed Section C and D

Appendix IV is an example of how sections C and D of the proposed revised form should be completed using the information given in Appendix I.

3.9 General Considerations

In the proposals made in the preceding sections I have aimed at seeking a compromise between flexibility to the person completing the form and the inclusion of as much detail as required to meet the needs of a first level inventory. Indeed the level of detail has been reduced, when considered in relation to what is demanded on ROSCOP II. I consider this to be a sacrifice worth making, particularly as this will facilitate completion of the form, and also the work of the Data Centre responsible for collating the information. I have removed entries that are consistently reported wrong, for example the information as to whether the cruise is a "Declared National Programme". If a Data Centre considers that it requires this information, then it should consult the IOC list of cruise programmes.

3.10 Parameter Lists

In this review I have avoided consideration of how the parameter lists should be extended. My proposals do however provide some flexibility in reporting what is appropriate without the need

for a ROSCOP parameter. To satisfy immediate needs I consider that a most convenient course is to create, where necessary, ROSCOP parameters for frequently used data items for which no code presently exists (on the basis of the information presented in Appendix II, this is a very short list). Data centres concerned with the compilation of ROSCOP information should consult with each other, and agree on what parameters should be coded, and where appropriate, a redefinition of existing parameter codes eg DO6 could be generalised to " acoustic floats", with an encouragement to supply additional details under "description", eg SOFAR. As in the case of the GF3 parameter codes, it is an appropriate task for RNODC (Formats) to be responsible for this list.

The above extension to the list is consistent with the current requirement for a "fine tuning". There is however a need for a more fundamental change in the structure of the parameter list, which may become even more necessary in order to meet the needs of forthcoming international projects. Apart from their current inadequacy, a major problem is that they do not fully describe the type of measurement. For example there is at present a possibility to report surface continuous temperature and salinity, but there is no facility for similar observations from autoanalysers and fluorometers. As a result the latter are often reported, misleadingly, as station data. Overcoming this and similar problems may require a fundamentally different approach to the parameter list, perhaps by associating parameter types with instrumentation, as has been done in distinguishing classical stations from CTD stations (H09 and H10). This suggests the need for a complete overhaul of the parameter list, possibly taking into account the needs of forthcoming international projects such as GOFS, WOCE and TTO. This parameter list should be designed in such a way that the data type is clear and be drawn up by a small group of people with the appropriate ranges of expertise.

Printout of one CRUISE from ICES ROSCOP data base

ICES REF NUMBER 86 90 002 0 0 0 0 Project:ICES PEX '86
COUNTRY USSR DATE 17 Apr 07 May
AREA MSQ 215;468 215;469
OPERATOR:- Academy of Sciences of Estonian SSR (ASE)
SHIP Arnold Veimer (UWEP) DESIGNATION Nr. 10
CHIEF SC:- J Elken
QUERIES ADDRESS:-
a J. Elken (ASE)
b T. Poder (ASE), M. Simm (ASE)
DATA HELD AT:-
a Inst of Thermophysics and Electrophysics

PARAMETERS MEASURED WERE:-

M06 150 a a 17	
H10 150 a a 17 with Oxygen sensor	
H80 700km a a 7 towed CTD 0-80m	
H21 143 b a 1	H22 143 b a 17
H23 143 b a 17	H24 143 b a 17
H25 143 b a 17	H26 143 b a 17
D01 5 a a 7	D02 15d a a 7
B01 72 c a 17	B02 145 c a 17
B08 145 c a 17	B09 125 c a 17

B80 700km a a 7 surface particle counting, fluores, t,s, lidar.

ROSCOP Parameter Summary 1975 & 1981-1984

M - METEOROLOGY

	1975	1981	1982	1983	1984
	401	485	457	406	346 (FORMS)
M01	1	16	15	7	13
M02	2	14	9	9	11
M03	3	6	3	8	3
M04	4	1	0	3	5
M05	26	13	15	12	2
M06	67	91	88	80	77
M90	5	14	5	6	6

M90

1975 Mean of true wind; mercury; air particulates.

1981 HNO3; lidar; data buoy; atmospheric particulates; anemometer.

1982 Atmospheric CO2(1); lidar(1).

1983 Anemometer; air chemistry; air quality; air chemistry lidar/sodar

1984 Cont. wind record; satellite refs.

H - HYDROGRAPHY

	1975	1981	1982	1983	1984
	401	485	457	406	346 (FORMS)
H01	72	101	63	68	63
H02	43	51	31	44	23
H03	121	85	78	74	56
H04	116	81	73	76	51
H05	4	2	4	2	1
H06	2	0	2	4	0
H07	40	35	49	32	26
H08	38	34	53	31	30
H09	117	77	85	82	85
H10	63	166	157	150	137
H11	3	12	6	7	6
H12	60	26	30	11	16
H13	19	34	33	38	22
H14	7	6	9	3	5
H15	3	1	4	1	1
H16	74	15	22	16	21
H17	16	21	18	16	16
H18	3	2	2	0	1
H80	16	22	21	16	28

H80

1975 Attenuance; batfish; daylight/quanta thermistor chain; temp by netsonde backscattering; STD test; fluoremeter chlorophyll; secchi disc; turbidity profiles.

1981 Visual range; TS sonde Eil; delphin tows; thermistor chains; nephelometer; colour.

1982 Subsurface t,s; visual range; secchi disc; infra red temp; light attenuation; nephelometry; boundary layer studies; colour; particle counting.

1983 Microstructure profiles; directional waves; secchi depth; rhodamine; bathysonde; total suspended matter; Gerard barrels, batfish.

1984 Acoustic current profiles; thermistor chain; secchi depth; batfish (CTDV); light profile;deep sea moorings, CTD, currents.

ROSCOP Parameter Summary 1975 & 1981-1984

H - HYDROGRAPHY (ctd)

	1975	1981	1982	1983	1984
	401	485	457	406	346 (FORMS)
H21	90	83	98	87	94
H22	111	79	85	77	71
H23	52	39	28	42	41
H24	103	84	94	81	74
H25	76	59	66	67	55
H26	97	69	73	57	44
H27	12	11	11	13	17
H28	39	21	43	40	48
H29	9	4	18	1	2
H30	25	3	15	9	2
H31	19	12	23	22	19
H32	6	5	8	4	8
H33	14	13	14	10	29
H90	54	53	52	44	50

H90

1975 Suspended solids; Total N; NH-4; oxygen profiles; Chlorophyll; organic N.

1981 NH4; Total-N; O2-profiles; Total soluble nitrogen; continuous surface chlorophyll.

1982 Surface CO2; SO4; NH4; Total-N; O2 profiles; aluminium; H2S; Cont surface chlorophyll.

1983 NH4; H2S; CO2; O2-profiles; Total-N chlorophyll (1). tritium, helium, freon (1)

1984 Ice cores for nutrients; NH4; O2-profiles; autoanalyser; Total-N; cont chlorophyll; fluorocarbons; sulphide sulphate; cyanide.

P - POLLUTION

	1975	1981	1982	1983	1984
	401	485	457	406	346 (FORMS)
P01	28	15	13	15	14
P02	38	22	31	23	19
P03	29	22	19	14	15
P04	17	15	14	10	12
P05	9	7	10	10	11
P06	1	3	3	0	0
P07	0	1	2	3	4
P08	0	0	1	0	0
P09	2	3	3	0	0
P10	3	0	2	0	0
P11	0	3	3	5	9
P12	10	4	7	5	3
P13	4	21	13	8	9
P90	17	8	5	9	4

P90

1975 Iron; chemical oxygen demand; turbidity mercury; Cs-137; ash residues; radio- activity; air particulates.

1981 Particulate organic material; fish diseases; floating pollutants.

1982 Particulate iron, testing survey tracking equipment; sediment samples; radio-caesium monitoring; atmospheric particulate & heavy metals.

1983 Surface film; particulates; NH4; particle size measurements.

1984 SCRPI; aerosols; baseline study of contaminants in fish.

ROSCOP Parameter Summary 1975 & 1981-1984

G - GEOLOGY

	1975	1981	1982	1983	1984
	401	485	457	406	346 (FORMS)
G01	24	10	9	15	11
G02	41	41	36	31	26
G03	9	3	2	4	2
G04	29	32	38	27	27
G05	3	3	0	2	1
G06	0	9	2	1	1
G07	5	2	1	3	2
G08	5	14	12	17	12
G09	4	1	2	4	3
G10	4	0	5	2	6
G11	8	0	5	1	1
G12	1	0	0	0	1
G13	0	0	0	0	1
G14	5	2	8	0	2
G70	5	10	5	9	7

G70

1975 Organic carbon in sediments, sediment transport; earthquake TV-film

1981 Video obs; iron; pore water; pumped suspended sediment samples; seismic refraction; sediment traps.

1982 Particle counting; e-m waves; heat flow probe; pore water samples.

1983 Petroleum residues in sediment; phosphate in pore water; e-m waves; underwater photography; testing gear; bedload sediment trap, digital pop-up seisometer testing.

1984 Heat flow; electromagnetic waves; densimeter, heat flow.

G - GEOLOGY (ctd)

	1975	1981	1982	1983	1984
	401	485	457	406	346 (FORMS)
G21	2	8	4	4	2
G22	19	28	29	20	11
G23	10	24	20	16	18
G24	14	32	25	21	17
G25	27	25	27	21	17
G26	6	1	8	6	3
G27	7	12	12	15	8
G28	17	19	24	17	10
G80	7	18	11	11	9

G80

1975 Sediment-echography; gamma probe Angus

1981 Seabeam; high resolution seismics; underwater TV; seismic analogue paper recorder; sonobuoys.

1982 Seabeam; boomer; sparker;seismic; sea-bed gamma ray spectrometer.

1983 Seabeam; testing gear; neutron interaction; sparker; airgun. 3.5 Khz echosounder; dual scan; deep tow sparker.

1984 3.5 KHz echosounder; wreck search; pore water; airgun.

G - Geology (ctd)

	1975	1981	1982	1983	1984
	401	485	457	406	346 (FORMS)
G31	34	12	11	13	7
G32	27	13	18	13	9
G33	1	1	3	1	2
G34	1	0	0	0	0
G35	9	4	4	2	0
G36	2	0	1	0	0
G37	4	4	3	3	0
G38	0	1	1	1	1
G39	1	1	3	4	3
G90	4	2	3	1	6

G90

1975 Size spectrum of susp sed.; radioactive sediment tracer.

1981 Magnetic susceptibility (1).

1982 Chemical analysis of pore water; geological structure.

1983 Geological structure.

1984 Sidescan; sediment flux; pore water; bathymetry.

ROSCOP Parameter Summary 1975 & 1981-1984

D -DYNAMICS

	1975	1981	1982	1983	1984
	401	485	457	406	346 (FORMS)
D01	66	83	68	64	53
D02	36	47	40	33	29
D03	7	1	1	2	0
D04	0	4	2	1	3
D05	8	9	4	12	5
D06	2	1	1	3	0
D07	4	0	0	0	1
D08	6	1	0	0	0
D09	8	7	7	8	3
D10	15	6	6	1	5
D90	20	20	13	16	14

D90

1975 Temp microstructure; Thermistor chains current profiler; surface current; cyclosonde; drogues; waves; anchored ship; shear velocity; EM current (turbulence; beach profiles).

1981 Sediment traps; current profiles; turbulence; em cm's; corrosion potential cm's;

1982 Doppler current profiles; surface current; vertical current profiles; drogues; DRCM; bottom boundary layer turbulence measurements.

1983 Current profiler (acoustic, doppler); thermistor chain; radar photo; DRCM; pressure guage; drogues, sea state spectra by radar photography, bottom mounted e-m cms

1984 (Doppler) current profiler; thermistor chain; octuprobe; sofar floats; Argos buoy.

B - BIOLOGY

	1975	1981	1982	1983	1984	
	401	485	457	406	346	(FORMS)
B01	41	35	44	31	34	
B02	60	56	56	52	40	
B03	6	9	16	8	6	
B04	18	26	24	13	9	
B05	8	13	12	9	6	
B06	3	12	10	6	3	
B07	29	26	30	35	30	
B08	82	81	88	70	69	
B09	74	84	77	71	75	
B10	7	5	8	9	4	
B11	4	3	6	2	2	
B12	4	3	6	3	2	
B13	44	28	35	34	26	
B14	50	71	70	73	63	
B15	0	0	1	0	0	
B16	5	5	8	3	2	
B17	1	5	3	1	2	
B18	37	48	39	27	29	
B19	50	104	108	86	75	
B20	6	8	11	12	12	
B21	8	9	10	9	9	
B22	0	2	3	2	3	
B23	1	0	2	2	3	
B24	0	1	2	1	1	
B25	2	5	2	4	1	
B26	1	8	4	3	4	
B27	1	1	3	0	0	
B28	13	15	15	13	10	
B29	0	0	0	0	1	
B30	0	0	1	1	3	
B31	0	0	0	1	1	
B32	3	4	5	2	3	
B33	2	5	5	9	3	
B34	0	1	6	2	1	
B35	0	4	8	3	3	
B36	0	1	1	1	0	
B37	19	21	8	6	4	
B80	8	28	24	15	10	

B80

1975 Cod blood group; benthic sampling with dredge; tow-net calibration; O-Group Survey; trace elements & organochlorines in zooplankton.

1981 Particulate organic carbon; decomposition activity; enzymology; biochemistry of fish; electron transfer system, squid, beach seine, deep sea fish traps; migrating salmon radionuclides; amphipod traps.

1982 Epibenthos; particulate organic P; nitrogen fixation;

enzymology; sediment traps; peterson grab; particle counter profiles; van veen grab; nutrients; beach seine stations; acoustically tagged fish tracking; stomach content; enzyme activity.

1983 Enzymes; chlorophyll; radioactivity; squid; Argos Buoy; Mocness; petersen grab; deep sea fish tray; nutrients. sauerstoff; system ecology.

1984 Bottom sediment samples; Mocness; Juday net; squid jigging.

B - BIOLOGY (ctd)

	1975	1981	1982	1983	1984	
	401	485	457	406	346	(FORMS)
B51	47	45	46	26	25	
B52	49	75	61	43	37	
B53	16	33	21	23	21	
B54	33	41	43	24	23	
B55	20	32	23	17	22	
B56	5	15	12	12	3	
B57	39	40	26	21	25	
B58	42	61	45	34	29	
B59	13	20	18	7	13	
B60	9	7	6	7	1	
B61	23	12	9	6	2	
B62	2	7	8	8	9	
B63	0	1	2	4	5	
B64	27	15	7	7	4	
B65	46	44	56	46	45	
B66	8	12	9	3	5	
B67	1	0	0	0	0	
B90	3	21	11	4	8	

B90

1975 Length age; radiopasteurisation.

1981 Enzymatic activities; ecophysiology; fish diseases; handlining; nutrient cycling; migration studies.

1982 Sole stocks(1); fish disease(1)

1983 Taste Panel queens; reproduction.

1984 Live fish collection; system-ecology; enclosure experiments; sulphide biome.

ROSCOP (Draft Proposal)

ROSCOP (draft)	Leave Blank (data centre use)
OCEANOGRAPHY & FISHERIES	

A. CRUISE DETAILS

1. Country_____
2. Name of ship/platform_____
3. Responsible organisation_____
4. Chief Scientist_____
5. Dates of cruise_____Cruise No/name_____
6. Coordinating Body (if applicable)_____
7. Name of project/expedition (if applicable)_____
8. Enquiries concerning data to be addressed to:
   a_____
   b_____
   c_____
   d_____
   e_____

B. GEOGRAPHICAL DETAILS

1. Co-ordinates of fixed stations (if applicable)

a._____N/S _____E/W b._____N/S _____E/W

c._____N/S _____E/W d._____N/S _____E/W

2. Geographical name of area_____

INSERT X's on maps on Page 3 to indicate cruise location.

C. MEASUREMENT DETAIL (NON time series data)

RP:- ROSCOP parameter (consult attached sheets eg H28 = pH)
NO:- No of stations (or otherwise - see RP list)
EN:- Enquiries information (see question 10 on P 1 ie a,b,c,d,e)
DE:- Description (extra information eg to describe measurements not covered RP list) If exchange restricted details should be given here. Information may extend over adjacent fields.

RP	NO	EN	DE	RP	NO	EN	DE	RP	NO	EN	DE	RP	NO	EN	DE

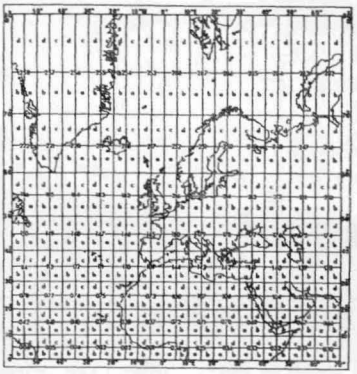
D. MEASUREMENT DETAIL (Time Series data)

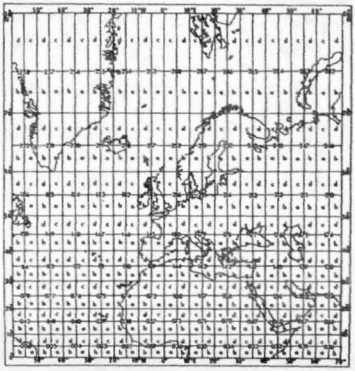
This section to be completed on recovery cruise only.
One entry for each unit (mooring) recovered.

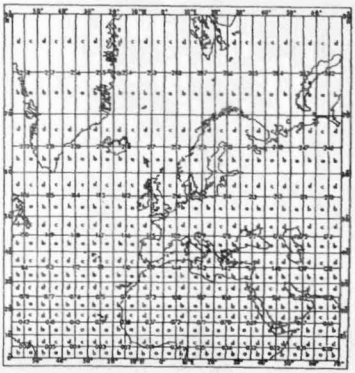
RP, EN, DE are as in section C
NO:- Number of Instruments.
DP:- Deployment period (in days).
PO:- Position (lat and long of unit (mooring))

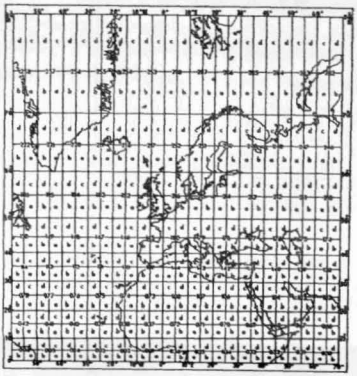
RP	NO	EN	PO	DE	RP	NO	EN	PO	DE

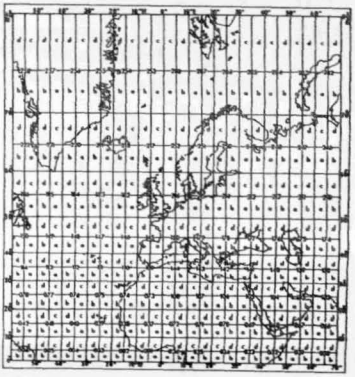
MAP Layout











Illustrative Example

C. MEASUREMENT DETAIL (NON time series data)

RP:- ROSCOP parameter (consult attached sheets eg H28 = pH)
NO:- No of stations (or otherwise - see RP list)
EN:- Enquiries information (see question 10 on P 1 ie a,b,c,d,e)
DE:- Description (extra information eg to describe measurements not covered RP list) If exchange restricted details should be given here. Information may extend over adjacent fields.

RP	NO	EN	DE	RP	NO	EN	DE	RP	NO	EN	DE	RP	NO	EN	DE
M06	150	a		H10	150	a	with oxygen sensor								
H80	700km	a	towed CTD 0-80m	H21	143	b		H22	143	b					
H23	143	b		H24	143	b		H25	143	b		H26	143	b	
B01	72	c		B02	145	c		B08	145	c		B09	125	c	
B80	700km	a	surface particle counting, fluorecence, t, s, lidar												

D. MEASUREMENT DETAIL (Time Series data)

This section to be completed on recovery cruise only.
One entry for each unit (mooring) recovered.

RP, EN, DE are as in section C
NO:- Number of instruments.
DP:- Deployment period (in days).
PO:- Position (lat and long of unit (mooring))

RP	NO	DP	EN	PO	DE	RP	NO	DP	EN	PO	DE
D01	5	15	a	56 23N 19 00E		D01	5	15	a	56 14N 19 27E	
D01	5	15	a	56 19N 18 56E		D01	5	15	a	56 30N 18 55E	
D01	5	15	a	56 23N 18 53E							