INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

Second Session of the Group of Experts on Format Development
of the IOC Working Committee on International Oceanographic Data Exchange
Institute of Oceanographic Sciences, Wormley, U.K., 7-10 June, 1983

SUMMARY REPORT
1. OPENING OF THE SESSION

The meeting was opened by the Chairman of the Group, Mr. J. Crease, who introduced the Director of the Institute of Oceanographic Sciences, Dr. A.S. Laughton. Dr. Laughton welcomed the participants and expressed his pleasure that the Group was able to meet at Womley. In describing the activities of IOS he also drew attention to the Marine Information and Advisory Service (MIAS) with its Advisory and Enquiry Service at Womley and its Data Banking Service at Bidston. He was particularly pleased to identify a number of activities within IOS that were aimed specifically at serving the international community: the RMDC (Raves), PSMSL and the Standard Seawater Service. Dr. Laughton stated that these activities were now well integrated within the Institute's programme of work, and in particular he recognized the importance of sea level data to studies in relation to the World Climate Programme.

As the SCOR representative on the IOC/IHO/Guiding Committee, Dr. Laughton informed the Group of the Ninth Session of the Guiding Committee at Womley and especially on the decision of the Session to ensure the coordinated flow of bathymetric data from the two main traditional sources - the scientific community and the hydrographic community. There was a need to develop a cross fertilization between the different approaches of these two communities and for this purpose the Guiding Committee had established a Subcommittee on the Exchange of Digital Data. Dr. Laughton looked forward to a contribution from the Group of Experts on Format Development in this work. Dr. Laughton extended his good wishes for a successful meeting.

Mr. Crease expressed his regrets that the Soviet members of the Group had been unable to attend the meeting, particularly as they represented an important section of the oceanographic community. He also informed the Group that Dr. R. Wilson was also unable to attend due to medical reasons. The Group would miss his valuable contribution and expressed their good wishes to him for a speedy recovery. The List of Participants is given in Annex II.

2. ADMINISTRATIVE ARRANGEMENTS FOR THE SESSION

The Agenda was adopted as given in Annex I. Mr. D.R. Hamilton and Dr. M.T. Jones volunteered to act as rapporteurs.

3. INTERSESSIONAL ACTIVITIES

3.1 REVIEW OF ACTIVITIES OF THE GROUP

The Chairman, in reviewing the activities of the Group during the inter sessional period, stated that the Format had reached the stage where it could be widely used for data exchange. He further referred to the implementation of Recommendations of the First Session of the Group and to the Terms of Reference of the Group. He was pleased to note that most of them had been accomplished.

- the final draft of Part III of SF-3 "A User's Guide" had been written and was submitted for the Group's comments;
considerable software development had occurred at several centres, particularly within MIAS, and GF-3 software user's guide was submitted for the Group's consideration;

- subsets of GF-3 for unique data types had been proposed and would be submitted for review by the Group at this Second session.

In reviewing future trends, the Chairman noted that portable software would aid other centres in developing GF-3 capabilities.

It was agreed that the Group would be responsible for coordinating a review of the ROSCOP form. However, it was recognized that the ICES Working Group on Marine Data Management and the IOCDE Task Team on Review of DNPS/NORP Announcements were both collecting information on problems with the form. Progress on these activities would be reported to the Eleventh Session of the IOC Working Committee on IOCDE.

3.2 STATUS REPORT OF RNODC-FORMATS

A number of activities were reported. Copies of the GF-3 Manual, Parts 1 and 2 had been distributed to the members of the ICES Hydrography Committee. An additional 20 copies of Part 1 and 30 copies of Part 2 were, upon request, sent to marine scientists in 5 countries (Denmark, South Africa, Spain, Sweden, USSR, Yugoslavia). A few copies of documents on the exchange of CID data in the GF-3 format were supplied on request. A couple of requests for sample tapes to test GF-3 software have been referred to the Marine Information and Advisory Service of the UK.

The Group received with interest information on utilization of GF-3 in National Oceanographic Data Centres and agreed to include the compilation of the NODC reports relevant to that activity as Annex III to the Summary Report.

3.3 STATE OF IMPLEMENTATION OF RECOMMENDATIONS OF THE FIRST SESSION OF THE GROUP OF EXPERTS ON FORMAT DEVELOPMENT AND RESOLUTIONS OF THE IOC WORKING COMMITTEE ON IOCDE AND IOC GOVERNING BODIES RELEVANT TO THE GROUP OF EXPERTS' ACTIVITIES

A detailed report was made on the state of implementation of these recommendations. Though the Group noted with satisfaction progress which had been made during the intersessional period it was also noted that some tasks identified in the recommendations were still awaiting implementation. More effort should be made in organizing training in GF-3, in the preparation of a popular brochure in GF-3 and in some other fields. It was agreed to consider thoroughly the drawbacks in the Group's activities under relevant agenda items.

The Chairman urged each member of the Group and requested the IOC Secretariat to invite IOCDE National Co-ordinators to make the achievements in the development and implementation of GF-3 known to national meteorological officers.

4. DISCUSSION OF FUTURE DEVELOPMENT OF GF-3

Before examining individual standard subsets of GF-3, the Group considered mechanisms for standardizing parameter codes and subsets. It was agreed that new parameter codes would be allocated only in response to externally stated requirements, or as the Group anticipated a real need for such codes. Likewise, new subsets would only be generated in response to perceived needs for active data exchange. Up-to-date lists of standard
parameter codes and subsets would be maintained by RNOOC-Formats and would be available through this Centre. It was anticipated that with a view to saving time, the Chairman of the Group would be responsible for the approval of new parameter codes on behalf of the Group and that new subsets would be approved by the Group as a whole. Between revisions of the GF-3 manual users would be informed of the creation of new parameter codes and subsets through the RNOOC-Formats Newsletter.

4.1 PROGRESS WITH AND APPROVAL OF STANDARD DISCIPLINE-ORIENTED SUBSETS WITHIN GF-3 FOR THE RECORDING OF MORE COMMON DATA

The layout for standard discipline-oriented subsets requested in accordance with the Group’s Terms of Reference was submitted for consideration and approval. The Group felt that the layout provided a suitable means for defining such subsets. It suggested that suitably annotated sample listings of the user-formatted areas of each subset would provide a useful addition.

As a general guideline the Group agreed that parameters would only be included in the user defined areas of a subset if it was required for automatic processing. If required solely for information, it should be included in plain language records.

a) Moored Current Meter Data - The subset proposal was approved with minor changes.

b) CTD Data - In reviewing the proposed subset, the Group felt that there should be allowances for additional parameters, such as oxygen and sound velocity. In some cases pressure may be replaced by depth, or salinity by conductivity. Furthermore, calibration data may not always be available. The Group approved the subset subject to changes being made to accommodate these points.

c) Drifting Bopy Data - The subset was approved without amendment.

d) Mean Sea Level Data - The Group approved the GF-3 subset being used by PSMSL for output from its global base of monthly mean data. It recognized the potential of this subset for other studies but identified an additional need for the development of a standard subset for higher resolution sea level data (e.g. hourly readings). PSMSL was to be asked to assist.

e) Wave Data Subsets - Draft subsets were presented for digital wave data, short term wave statistics, and non-directional and directional wave spectra. The Group agreed in principle to the drafts, but requested the Chairman of the Group to liaise with Dr. Wilson and with some other experts who have experience in wave measurements with a view to producing approved subsets. It expressed some urgency in the finalizing of subsets for short-term wave statistics and non-directional wave spectra, but recognized that the other two may take longer to complete.
f) XBT/NBT Data - The Group gave detailed consideration to the draft proposed by a BT subset. However, as it generated considerable discussion which could not be completed during the meeting, the Group agreed to set up a small sub-group to complete this work by correspondence. Mr. J. Raillard agreed to chair the sub-group, with the membership of Mr. U. Kohnke and Mr. D. Hamilton. The Chairman of the Group of Experts would be kept informed. The Group decided to invite the Chairman of the IGOSS sub-Group of Experts on Operations and Technical Applications to take part in the study. The sub-group was requested to formulate a suitable subset taking into account the activities of IGOSS and of the major national collectors of BT data.

g) Water Bottle Data - The Group thanks Dr. Bhargava for his provisional draft subset, but recognized that further work was required. As the ICES Working Group on Marine Data Management was actively involved in considering this issue, the Group decided to await the outcome of their work. The Chairman of the ICES Working Group, Dr. M.T. Jones, agreed to keep all members of the Group informed of the progress.

The Group invited Dr. M. Jones to revise standard discipline-oriented subsets taking into account comments made by the Group and to submit the revised version to the RNCDC-Formats before 1991.

4.2 ESTABLISHMENT OF STANDARD SUBSETS FOR GEOLOGICAL AND GEOPHYSICAL DATA

There was considerable discussion on a wide range of aspects concerning the exchange of marine geological and geophysical data. The Group recognized many problems associated with geological data and agreed to await advice from the Task Team on Data on Non-Living Resources in the Oceans before further consideration of formats for marine geological data exchange.

The Group also discussed the use and scope of the shortcomings of the NGD77 format, and noted the need for the development of a format for the exchange of SEA-BEAM data. It also noted the relevance of the planned activities of the GEBCO Sub-Committee on the Exchange of Digital Data with regard to the exchange of sounding and contoured bathymetric data within the IOC and UHO communities. The Group was optimistic that advances could be made promoting the exchange of marine geophysical data and felt that it had sufficient information and background from which to initiate the development of a GF-3 subset for marine geophysical data (e.g. bathymetry, magnetics, gravity).

In order to expedite progress with the development of a GF-3 subset for marine geophysical data exchange, the Group invited Dr. M.T. Jones to assist in initiating this work. In particular, he was requested to:

a) collaborate with the Chairman of the Task Team on Data on Non-Living Resources in the Oceans;

b) consider the primary requirements for the subset;
c) draft an appropriate subset

d) solicit comments on this draft from scientists in the major data collecting laboratories.

It was hoped that the work would be completed before IODE-XI.

4.3 PROGRESS WITH SOFTWARE FOR READING AND WRITING GF-3

The Group was informed of the activities of the MIAS, UK in the development of a portable software package 'GF-3 Proc' for reading and writing GF-3 tapes. The software is being designed specifically for international use and once completed will be made freely available to members of the international community. It was planned to distribute four documents:

- a User Guide;
- an Installation Guide (which will advise the user on the installation of the software on his own particular machine);
- a Maintenance Guide (documentation on the internal workings of the software);
- the software itself which will be made available on a magnetic tape.

A draft copy of the User Guide for 'GF-3 Proc' was submitted for the consideration of the meeting. The Group was impressed by the nature of the software being developed, and urged the IOE Secretariat to distribute copies of the draft to centres actively interested in GF-3 with the request to provide comments on the potential application of the software in their centres; such comments were to be submitted to Dr. M. T. Jones by the end of July, 1983.

The Group concluded by commending Mr. T. Sankey (the author of 'GF-3 Proc', MIAS, UK) on his achievements to date.

4.4 FUTURE TRENDS IN GF-3

The Group approved in principle a document containing proposals aimed at the simplification of the GF-3 format. It felt that the proposals would allow a more speedy development of the portable software and would also increase the effectiveness of the format. Details of the amendments would be presented to IOE-XI in the report of the Chairman of the Group of Experts.

In considering problems relating to the writing of the test character in GF-3, the Group agreed that it should be replaced by the character 'A' for use in the Test File. The Group also agreed that the 7 track 556 b.p.i. standard for GF-3 tapes was now obsolescent and the use of it should be actively discouraged. The Group recognized the increased use of 9 track 1600 b.p.i. and encouraged its use together with a continued use of 9 track 600 b.p.i. In future the use of 9 track 6250 b.p.i. should also be considered.

5. CONSIDERATION OF THE VALUE OF GF-3 FOR WIDER CLASSES OF ENVIRONMENTAL DATA

The Group considered a report, submitted by the Chairman of the IOE Task Team on Marine Biological Data, Mr. H. Jones, which proposed a means of recording taxonomic information and included a list of parameters of potential value for exchanging data.
It was agreed that parameter lists are best considered when they are set in the context of a scientific programme or in an exchangeable data set. The Group further agreed that the specification of taxa should be at the data level, rather than at the data definition level.

A subgroup was established to consider ways of mapping biological data into GF-3. The subgroup members were Mr. D. Kohnke, Dr. J. Raillard, and Dr. D. Hamilton (Chairmen); the assistance of Mr. H. Jones was sought.

6. PUBLICATIONS RELEVANT TO THE GROUP OF EXPERTS' ACTIVITIES

6.1 CONSIDERATION OF PART III OF GF-3 - A USER'S GUIDE

The Group requested the IOC Secretariat to cooperate with Dr. R. Wilson to take the necessary action for the publication of the Guide before IODE-XI taking into account comments and amendments provided by the Group at the Session.

The Group appreciated the efforts made by Dr. R. Wilson (Canada) in the preparation of a final draft of a GF-3 User's Guide which was available for comment.

6.2 NEWSLETTER OF THE RNODC-FORMAS

The Group agreed on the procedure of preparation of the Newsletter and identified the following contents of the first issue and authors of articles to be published:

- Introduction by D. Kohnke
- The Need for General Formats in Scientific context by J. Crease
- A Brief Description of GF-3 by N. Fleming and D. Hamilton
- Announcement of GF-3 Publications by J. Smed
- Introduction to GF-3 Standards by M. Zupan

The Group requested its Chairman in cooperation with the Chairman of the NC/IODE and IOC and the Service Hydrographique Secretariats to find a proper title for the Newsletter before October.

The Group received with appreciation the kind offer of the ICES observer to take the responsibility for the publication of the first issue. The Group requested the above authors to submit their inputs to the Newsletter to the Service Hydrographique of ICES before October, so as to make the publication available to IODE-XI. An editorial board was established consisting of Messrs. J. Smed, D. Kohnke and J. Crease. The Group invited IOC to consider the possibility of sharing distribution expenses with ICES and recommended that copies of the Newsletter should be directed to IODE national coordinators in appropriate numbers and to other interested parties such as WMO, ECDA, SCOR etc. IODE National coordinators would be responsible for the distribution of copies to their national institutions.
6.3 GF-3 BROCHURE

The Group was reminded of the recommendation of its First Session to publish a brochure to publicize GF-3 and was informed on the status of its preparation. The director of MIAS, Dr. N. Fleming, and Mr. D. Hamilton agreed to cooperate in the preparation of the mock-up copy and to submit it to the IOC Secretariat the Chairman of the Group of Experts and the Chairman of the WC/IOCDE before IOCDE-XI.

7. TRAINING IN GF-3

The Group paid special attention to the importance of the organization of training courses in data management for staff from national oceanographic data centres, particularly in those data management aspects that contribute to the preparation of good quality GF-3 data sets. The Group requested the IOC Secretariat to investigate the possibility of arranging a training course bearing in mind that it should be at a national data centre in one of the developing countries with good computer facilities and with experience in GF-3 utilization. The Chairman of the Group was requested to provide the IOC Secretariat with the draft programme of the training course with the identification of aims and benefits of such an event for the improvement of data management systems particularly in developing countries.

The Group expressed some concern at the proposal made by the Third Session of the IOC Consultative Meeting (24-27 January, 1983) to organize a meeting of a group of GF-3 users in conjunction with IOCDE-XI. The Group believed that the meeting would be both premature and administratively inconvenient. It was recommended that this objective be brought urgently to the attention of the Chairman of the Working Committee on IOCDE and of the IOC Secretariat.

8. DISCUSSION OF THE DRAFT ACTION PLAN FOR 1984-1985

The Action Plan of the work of the Group for 1984-85 was adopted as it stands in Annex IV.

9. ADOPTION OF THE SUMMARY REPORT

The Group adopted the Summary Report.

10. DATE AND PLACE OF THE NEXT SESSION

The Group recommended that the next session take place at the end of 1983 and requested the IOC Secretariat to investigate the possibility of holding this session in one of the countries interested in and having experience of the utilization of GF-3.

11. CLOSURE OF THE SESSION

The Session closed on 10 June, 1983.
ANNEX I

AGENDA

1. Opening of the Session

2. Administrative Arrangements for the Session

3. Intersessional Activities
   3.1 Review of the Activities of the Group
   3.2 Status Report of RNODC-Formats
   3.3 State of Implementation of Recommendations of the First Session of the Group of Experts on Format Development and Resolution of the IOC Working Committee on IOCDE and IOC Governing Bodies Relevant to the Group of Experts' Activities

4. Discussion of Future Development of GF-3
   4.1 Progress with and Approval of Standard Discipline-oriented Subsets within GF-3 for the Recording of More Common Data
   4.2 Establishment of Standard Subsets for Geological and Geophysical Data
   4.3 Progress with Software for Reading and Writing GF-3
   4.4 Future Trends in GF-3

5. Consideration of Value of GF-3 for Wider Classes of Environmental Data

6. Publications Relevant to the Group of Experts' Activities
   6.1 Consideration of Part III of GF-3 "A User's Guide"
   6.2 Newsletter of the RNODC Formats
   6.3 GF-3 Brochure

7. Training in GF-3


9. Adoption of the Summary Report

10. Date and Place of the Next Session

11. Closure of the Session
ANNEX II

LIST OF PARTICIPANTS

1. Members of the Group of Experts

   Chairman: Mr. James Crease
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   United Kingdom

   Mr. R.M.S. Bhargava
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   Mr. D. Hamilton
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2. Invited Experts

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   Dr. J. Raillard
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   29273 Brest Cedex
   France

   By Mr. [Signature]
3. **Representatives of Organizations**

   Mr. J. Smed  
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   1261 Copenhagen K  
   Denmark

4. **IDC Secretariat**

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   Intergovernmental Oceanographic Commission  
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ANNEX III

UTILIZATION OF GF-3 IN NATIONAL OCEANOGRAPHIC DATA CENTRES

Introduction

By the Circular Letter of March 11, 1983 Heads of NODCs and DNAs were "kindly requested to provide the IOC Secretariat with a short status report on the utilization of GF-3" in their centres before May, 1983. This document presents the reports of the centres. At the time of preparation of this document 19 National Oceanographic Data Centres submitted responses to the IOC Secretariat. There is broad agreement with the views expressed earlier by the Tenth Session of the IOC Working Committee on International Oceanographic Data Exchange and with the Resolutions of the IOC Governing Bodies relevant to the usage of GF-3 on the value and usefulness of this format for the improvement of the international oceanographic data management systems. All data centres with the exception of Spain expressed their readiness to use GF-3 for handling different types of oceanographic data. Some centres stressed the importance of training in GF-3 and that the publication of a User's Guide on GF-3 would be highly useful to promote GF-3 and its underlying philosophy at the national level. Specific comments on the utilization of GF-3 follow below.

Argentina

In 1978 the Argentine Oceanographic Data Center (CEADO) tested sets of data using the GF-2 format (latest version), and then putting these data on magnetic tapes. The experts at the Centre faced no specific problems in carrying out this job. Later the updating of GF-3 was studied but its application was not continued. The CEADO is presently prepared to use GF-3 at any time whenever necessary (for example in the case of becoming an RNOCC/SCC).

Brazil

In 1982 the test in reading and writing data in GF-3 format was successfully implemented and the Centre is ready to submit data for the international exchange of magnetic tapes in GF-3 format.

Canada

In Canada, the traditional methods of oceanographic data collection and submission to the National Data Centre are being somewhat altered. As much as one-half of the ocean data being collected in Canada is collected by industry for environmental studies related to hydrocarbon exploration or large marine construction projects. The parameters collected are many and varied, with only a few being provided for in the traditional data bases. Physical and chemical data for which no archiving standards exist.

The requirement is, therefore, to acquire all the data in a format we can deal with and then strip from the dataset and archive in the traditional data bases those parameters for which data bases exist.
We have reached the conclusion that it would be advantageous to adopt GF-3 the format in which these project datasets are submitted to the national data centre (MEDS). This would enable us to deal with datasets with varied content using the automatically processing features of GF-3. It would also enable us to use the growing body of available GF-3 software to full advantage.

The difficulty is, of course, that GF-3 is of sufficient complexity that companies and their consultants cannot all be expected to programme from first principles. We have, therefore, adopted for use nationally exactly the principles adopted internationally. Specifically, we are developing appropriate national standard subsets and sharing software. Companies are thus provided with the definition of a suitable standard subset and whatever software we have available which would be of use to them.

During the Spring of 1983, we contracted a consulting company with experience in oceanography and in computing to take some project data and create GF-3 tapes. They were provided with a "Standard Subset" of our design. We received from them ten tapes of GF-3 data and comments on their experience with GF-3. Their comments were that although it was frustrating at times to attempt to provide all of the information required by GF-3, the resulting product was definitely an extremely well documented data set. They felt that GF-3 provided the guidance, opportunity and flexibility to do an excellent job of archiving such project datasets and strongly supported our intention to use GF-3 in the manner described.

In regard to programming GF-3, MDS has assigned a programmer full time to the task. We are in the final stages of testing code to load data into the "Basic" and "Spectral" wave data subsets. Upon completion of that task, we will move on to subsets associated with CTD, BOTTLE, BT and Current Meter Data. We hope to be dealing with CTD, BOTTLE and BT Data in GF-3 by November of this year.

Chile

In the middle of 1983 the Centre will be ready to provide data for the international exchange of magnetic tapes in GF-3.

China

All existing GF-3 documents (Technical specifications and GF-3 code tables) have been translated into Chinese and disseminated to all the institutions concerned. Some meetings have been arranged with the aim of introducing the new format. Owing to the computer problems no formal utilization of GF-3 format has been made.

Columbia

There are plans for submission of data on magnetic tapes in GF-3 format, as soon as the magnetic tape unit is established. The purchase of the unit is planned for this year by using the funds provided by the Organization of American States (OAS).
France

Having had good experiences in the GATE exchange format and having made some tests with GF-2, the BNDO considered with interest the development of GF-3 format.

Two tape inspection programmes (Summary Programme and Selective Listing Programmes) have been prepared by MIAS and received by the BNDO on magnetic tapes. Due to the high level of documentation included in the programmes, adapting them to BNDO system caused no problem. The programmes can be successfully and easily used for reading a received tape or for checking the tapes prepared by BNDO before sending them.

As an RNDOC-FOY prepared a GF-3 subset for XBT data. An amount of 256 log sheets from three American cruises was received by the BNDO and digitized by the French Hydrographic Service (EPSHOM). The BNDO developed programmes for transcoding the data from EPSHOM format to GF-3 format. A tape was prepared, checked with the inspection programmes and sent to NODC.

Comments on this experience are:

- The time devoted to the analyses of GF-3 documentation was fairly long. It took around 5 weeks for a programmer to simplify the GF-3 format to adapt it at the simplicity and little volume of XBT data.

- The programmer encountered some difficulties in understanding exactly the definition of contents in some fields.

- A lot of information required in tape header record or series header record are to be found here and there and introduced "by hard" in the files. This is due to a very general problem of lack of relations between the measurements at sea and the information required for a good archiving.

- Some parameters were not coded (or found) and we invented them:

  Nebulosity  NEDU  octas
  Weather    WERT  ICES code
  Ice        ICEV  ICES code
  SWELL DIRECTION  SWDV  Degrees
  SWELL PERIOD   SWPV  Seconds
  Visual height of Swell  SEAV  ICES code

This last point has to be carefully revised.

The BNDO is ready to use the GF-3 format more intensively if the other centres do the same. While developing a new archiving format for STD/CTD data at BNDO, one of our major requirements was that this new format should be as easy to transcode in GF-3 format as possible.

**FAQ**

Software which has been developed by MIAS for analysing a GF-3 formatted tape has been implemented on the Deutsches Hydrographisches Institut computer. The first tape, prepared by MIAS, has been successfully read. An oceanographic data centre is generally being prepared to use the GF-3 format for exchange of
oceanographic data. Due to limited personnel capacities the development of software for converting data into GF-3 will take some time. It would be useful if portable software written by one of the data centres could also be used by the RKG data centre.

Highest priority is given by the national oceanographic data centre to the organization of its data bank in a data bank management system.

India

The national data centre utilized the general magnetic tape format (GF-3). A GF-3 subset for Nansen cast data has been prepared and data from few cruises have been coded in this format. The subset is still incomplete and will be revised.

The Centre also acquired a tape containing GF-3 subsets for drifting buoys, wave spectra and CTD data from MIAS, U.K. This tape was read and processed and was found compatible and suitable for the INODC computer system. Through this tape a number of "silent features" of GF-3 were elaborated for the implementation of GF-3.

A systems document was also received from MIAS containing the FORTRAN Programme for summarizing and listing the contents in GF-3 tape format. The system was suitably modified and successfully implemented on Computer TDC-316.

The Centre has initiated the transfer of the data on GF-3 giving the first priority to the transformation of the physical oceanographic data collected during the International Indian Ocean Expedition.

Netherlands

The Netherlands centre for oceanographic data (NCOO) is able, in principle, to read and provide oceanographic data in GF-3 format. Among the data holders in the country only the royal meteorological institute is able to provide data in GF-3 format directly. Up to now, only the test tapes from MIAS were handled.

It is planned that GF-3 format will be used as the official format for the exchange of oceanographic data in the framework of the Dutch-Indonesian project Snellius-II in 1984-85.

For the future development of GF-3 biological and pollution data deserve primary attention. For geological data, from the point of view of NCOO, a format exists that seems to work well.

Implementation of GF-3 in programmes like NCP will be extremely useful and effective.

The use of GF-3 format for satellite derived data deserves special attention, because:

- this type of data will become of great importance in the next few years;
- of the special character of the data.
Norway

The Norwegian Oceanographic Data Centre (NODC) has run the test tapes for GF-3 with very few problems. Computer used by the Centre is UNIVAC 1100/82. The tape inspection programmes were read with FORTRAN-routine. A few modifications were made: a change in I/O No. for the tape unit and adding a define file statement to the two main programmes in order to be able to read the file format. The modification permitted the reading of the sample CTD tape successfully.

At the moment NODC handles only compressed CTD data.

Yugoslavia

GF-3 has been utilized by the national oceanographic data centre only for data exchanged during the MEDALPEX. Software for reading and writing oceanographic data in GF-3 is being developed.

United Kingdom

1. **GF-3 Code Tables (and Addenda and Corrigenda to GF-3)**

   a) Draft versions circulated for comments to Group of Experts on Format Development and other experts on 22 November and 10 November, 1981.

   b) Final version submitted to IOC on 5 December, 1981 in form or camera ready copy.

   c) Early 1982, published by IOC and IOC Manuals and Guides No. 9, Annex I, Part E.

2. **GF-3 Software**

   Two portable tape inspection utilities GFSUMM AND GFLIST were completed immediately prior to IOCE-X, both written in FORTRAN. These two programmes are designed to provide the recipient of a GF-3 tape with sufficient information about its organization and contents so that he is able to process the tape in an effective manner. The summary programme GFSUMM provides a report on the organization of a GF-3 tape, while the selective listing programme GFLIST enables records to be listed out on a selective basis. Both programmes were updated in September 1981 to accommodate a minor change in GF-3 brought about by the Addenda and Corrigenda to GF-3 agreed in Hamburg. Copies of the programmes are available either as listings or on magnetic tape.

3. **CTD subset of GF-3**

   A revised version of the CTD was created following discussions held during IOCE-X by the Group of Experts on Format Development. Documentation for this subset is available in the form of an annotated listing (produced using the utility GFLIST) of a GF-3 magnetic tape containing a sample CTD series complete with comprehensive data documentation. This document, dated 7 May 1982, constitutes a draft proposal for a standard CTD data exchange format and has been circulated for comment to members of SCOR W.G. 51, the Group of Experts on Format Development, the Task Team on Standard Criteria for Physical Oceanographic Data and ICES Working Group on Marine Data Management. Copies of the sample magnetic tape are available on request.
4. Drifting buoy subsets of GF-3

Demonstration tapes of the use of GF-3 for drifting buoy data have been prepared using sample data from the level IIIB data sets resulting from the First GARP Global Experiment. A sample tape was first produced in November 1981 to act as the basis of a document prepared for the WMP Meeting on Agreed Joint Tariff Agreement, Geneva, 7-11 December, 1981. This document, dated 26 November 1981, entitled 'GF-3 and its Application to the Exchange and Archival of Drifting Buoy Data' in addition to annotated listings also contained an introductory guide to the GF-3 format. Further work on the drifting buoy subset resulted in a sample tape that included full data documentation. An annotated listing of this tape using utility GFLIST resulted in a document, dated 7 May, 1982, entitled "Demonstration of the use of the GF-3 Format for the exchange of drifting buoy data". Copies of this document were circulated for comment to members of the Group of Experts on Format Development, and to other experts interested in the exchange of drifting buoy data.

5. Other Subsets of GF-3

Further work is planned by MIAS on the development of GF-3 subsets for sea level and moored current meter data.

6. Distribution of GF-3 Material

In order to promote the use of GF-3 for international data exchange, MIAS is prepared to make available copies of the sample GF-3 tape of CTD data and the two tape inspection programmes GFSUMM and GFLIST. This offer was first made at IOC-X and has since been made through IES Newsletter No. 30, and to members of SCOR W.G. 31 and the IODE Working Group on Marine Data Management.

In June 1982 copies of the GF-3 magnetic tape of CTD were sent to about 20 individuals.

Each tape was sent out specifically in response to a request and was accompanied by a covering letter, including the statement "this tape is being sent to you free of charge on the understanding that, in due course, you will make available to us (i.e., MIAS) comments on your experiences in handling the tape and its contents, including information on the computer system used". Copies of the tape inspection utilities were also sent to the individuals on request - nine of which were supplied on magnetic tape.

7. The MIAS Data Bank and GF-3

A simple software interface has already been developed to output data from the MIAS data bank to GF-3, although further developments are planned in order to make this interface fully operational.
MIAS is currently engaged on banking data from INOUT phase of the JONSDAP 76 project, with a view to making the complete data set available in GF-3 format by the end of 1982.

MIAS has recently commenced a two year project for banking data from the JASIN 78 experiment in the region of the Rockall Trough. This data set covers a wide range of physical oceanographic and meteorological data types including for example: CTD, BT, Nansen cast, Bafish, SST, thermistor chain, moored current meter, profiling current meter, drifting float, directional wave spectra, hourly met, radiopence, tethered balloon and aircraft data. It is planned that these data should be made available from the data bank in GF-3 format.

USA

Two generalized computer programmes, developed at MIAS, UK, for printing all or parts of GF-3 tapes are in use. The National Oceanographic Data Centre is now able to accept and extract data from GF-3 tapes containing XBT data on CTD data. GF-3 tapes containing XBT can also be created. Software is now being developed to create GF-3 tapes of CTD data, hydrocast bottle data and current meter data. It is expected that these capabilities will exist before September of this year.

Japan

The Japanese Oceanographic Data Centre (JODC) considers GF-3 to be too complex in its structure for common data exchange. This may be a psychological obstacle. At the present time no data has been exchanged by the Centre in GF-3.

Finland

The Institute of Marine Research acting as DNA for international oceanographic data exchange has not used the format GF-3 because of:

- "small scale" data exchange at the international level;
- the exchange of the Helcom-data (Helsinki Commission) is based on modified format of ICES-Punch Card Code;
- in cases of discrete data of certain parameters, such as ice, waves, water level, currents and so on, the formats are discussed for each concrete case.

In the future the institute is ready to adopt the GF-3 code. At present, the system is considered in practice too heavy for discrete purposes.