Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

IODE Group of Experts on Technical Aspects of Data Exchange

Seventh Session

Dublin, Ireland
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UNESCO

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SUMMARY REPORT

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1. ORGANIZATION OF THE SESSION

1.1 OPENING OF THE SESSION

The Seventh Session of the IODE Group of Experts on Technical Aspects of Data Exchange was called to order at Dublin Castle in Dublin at 09:00 on Monday 20 October 1997 under the chairmanship of Mr. J. R. Keeley. The participants were welcomed by Ms. Bronwyn Cahill, Director of the Irish Marine Data Centre and Mr. John Withrow on behalf of Dr. Kullenberg, Executive Secretary of the Intergovernmental Oceanographic Commission (IOC). The Chairman noted that the meeting would be relatively short and that there was much to cover in the time. He noted that some of the agenda items were more informational and designed to keep the committee up to date on the various data streams being handled while others would require detailed discussion and action by the group. He also noted that all of the agenda items were related in some way to each other and that a way to approach the conduct of the meeting would be to have all the documents presented and then have a framework discussion whereby the committee could take an integrated view of the agenda and see the interrelationships. This approach would help identify high priority areas for discussion and permit similar items to be discussed and acted upon together. The Chairman noted the presence of the representative of the ICES Group of Experts on Marine Data Management and emphasized the close historical relationship between these two groups.

The List of Participants in the Session is given in Annex II.

1.2 ADOPTION OF THE AGENDA

The Group adopted the Agenda for the Session as reproduced in Annex I.

1.3 WORKING ARRANGEMENTS

Ms. Bronwyn Cahill, Director of the Irish Marine Data Centre, speaking on behalf of the local organizing committee informed the Session of local arrangements and stressed that the local organizing committee would make every effort to ensure the success of the Meeting.

1.4 CHAIRMAN'S REPORT

The last GE/TADE meeting was held in Geneva in 1994 in conjunction with the IGOSS Operations and Technical Applications (OTA) group. It was useful to hold a joint meeting since there were issues in common, however, it was not possible to arrange for such a meeting this time.

Action items from that meeting, and new work given to the committee at IODE XV constitute the agenda for this meeting. In the course of the meeting these items will be reviewed to continue the work or to modify it as appropriate. A brief summary of progress is given below for those action items relating directly to GE/TADE.

1.4.1 GE/TADE VI Action Item Review

Codes

The action items relating to BUFR will be discussed at this meeting.

The action item concerning the finalization of CREX has not been completed. A meeting to finalize CREX for meteorological use was held in June of this year. Developments in BUFR had to proceed before a contribution could be made. Further action will be discussed at this meeting.

It was decided at the IGOSS meeting that there is no international requirement for a sea level code. The impetus for this code form was from the Sea Level Centre in Hawaii. They have developed their own measures to acquire the data.

GTSPP

The GTSPP continues to work at acquiring the real-time and delayed mode data. This is an ongoing activity with no support from GE/TADE required at this time.

One item of concern is the acquisition of thermosalinograph (TSG) data. It is only recently that measurements from such instruments have proven to be stable and reliable. This topic will be addressed in more detail when discussing SOOP.

IGOSS Data Monitoring

The Chairpersons of GE/TADE, IOC Secretariat, and RNODC-Formats were asked to look into how SOOP data could be represented in CSRs. No progress has been made on this. This relates to the issue of metadata which will be discussed at this meeting.

OceanPC

The status and future of OceanPC will be discussed at this meeting.

Instrumentation

Acoustic Doppler Current Profiler (ADCP) data in both Canada and the US are managed using the software developed for this purpose by the University of Hawaii. A GF3 subset was prepared for submission of these data to MEDS in Canada. In mid 1997 MEDS received a submission on 4mm tape. The format was not exactly as requested and so some programming is required to read the file. This has not yet been done.

Remote Sensing

The Chairman was to respond to a request from the Committee on Earth Observation Satellites Auxiliary Data Sub-group to review a document. This document was not received and so no response made. The Auxiliary Data Sub-Group was subsequently dissolved.

Modern Formats

So far, only one use of the format is known. Software to write the format was prepared by Russia and to read the format by MEDS. An attempt was made to exchange Russian navy data within GTSPP, however, after difficulties in communications, this attempt stopped.

General Format Issues

Members were requested to inform the Chairman of software sharing between centres. No information was received.

The review of netCDF and ODBMS were to be performed by a member who subsequently left the group to work in the private sector. No information was received.

Metadata Management

The work that was to be carried out here was not done. However, metadata management continues to be an important issue and will be discussed at this meeting.

Ocean Data Management

The data management policy was taken up by the chairs of both the IGOSS-OTA and GE/TADE committees. The result was combined with work by the Chairman of IODE and a working document for this meeting was produced.

Joint Global Ocean Flux Study (JGOFS)

A number of IODE members support the JGOFS programmes in their own countries. Part of the work proposed was to extend GF3 tables to accommodate variables collected within JGOFS. Information was received from BODC concerning their data dictionary at the same time that work was being done on BUFR tables. At present, no extensions have been made. This item should be discussed further in the agenda item on data dictionaries at this meeting.

Ocean Data Workshop

The Workshop took place this past week. It was very successful and produced a number of recommendations, some of which will be considered at this meeting.

General Format 3 (GF3)

The format guidelines document was completed and is posted on the WWW server at RNODC-Formats. Other documents on specific data types were not completed.

Extensions to Code Tables

Action to remove any inconsistencies between ROSCOP and GF3 tables was to be undertaken by RNODC-Formats.

The digital ship file purchased from Lloyds by NODC was a commercial product and could not be shared.

Ocean Network

An electronic conference was not set up between NODCs because the person responsible left the group and insufficient resources were available to reassign this task.

A number of members have services provided over the Internet. Such services were the basis of a demonstration given to other IODE member states at IODE XV.

Software Inventory

The questionnaire was distributed, results compiled and presented to IODE XV. The meeting will be informed about progress in posting the inventory by AODC.

Thermosalinograph Data

This will be discussed at this meeting as previously noted.

1.4.2   IODE XV Review

A recommendation was made at IODE XV for the further enhancements of OceanPC. GE/TADE was not charged with any particular task, but since OceanPC falls under this committee, this issue will be discussed at this meeting.

A pilot Project for MEDI was started. GE/TADE is involved in this exercise and hence the agenda item at this meeting.

A recommendation for IOC to set up a web server was made. GE/TADE has no particular task in this, however, suggestions were made in the recommendation about what sort of information should be provided on each NODC server to point to IOC.

GE/TADE was instructed to look into how to improve the handling of NOPs and to investigate the offer from University of Delaware to host such information. This will be discussed at this meeting under metadata.

GE/TADE was instructed to continue to pursue a convergence of formats so that NODCs will have fewer rather than more to deal with. This is an important issue, that will arise in the item on BUFR and data dictionaries at this meeting.

New Terms of Reference were developed for GE/TADE and are contained in Annex IV.

1.4.3   Symposium on Ocean Data Management

The Chairman read through the recommendations of the recently completed Symposium on Ocean Data Management (Dublin, 15-18 October 1997) noting the relevance of these recommendations to the work of the group. The Recommendations are contained in Annex IV.

1.5   IGOSS/IODE Data Management Plan

Mr. Ben Searle introduced this agenda item and reviewed the IGOSS/IODE Data Management Strategy. He noted that in the context of IODE as well as the emerging GOOS, there is a need to heighten GE/TADE's profile and translate its decisions into actions more expeditiously. The user community needs to know there are groups like GE/TADE working to resolve technical issues. The group noted that, because of the limited number of members and in order to be effective, it would need to focus on one or two issues that are achievable while listing others for later work. In addition, GE/TADE must take into account the data management goals and maximize the use of data that is collected.

The Chairman noted, as an initial priority, the G3OS joint metadata project and the participation of GE/TADE in this activity especially with regard to the technical aspects of catalogue interoperability. Other priorities would be OceanPC, and the formats issue. The group noted the close relation between

GE/TADE and GE/MIM, especially with regard to the G3OS metadata project and the need for close coordination in the provision of a distributed system capability. National MEDI directories must be tied together to form an international system. The group recommended that in order to facilitate coordination between the two groups that a back to back meeting of GE/TADE and GE/MIM should be arranged or, should that not be feasible, that the Chairmen attend both meetings.

2.   DATA FORMATS/DICTIONARY

The group noted that formats continue to be a serious problem where little progress appears to have been made. The group remarked that data delivery is a concern of both the data user and supplier. IODE and GE/TADE can improve exchange by providing information, and establishing a framework to enhance data and information exchange.

The group considered that there is no single way to overcome this problem. One approach is to continue to publish manuals and guides that describe data management procedures. The group recommended that the GE/TADE format be more widely available so that users interested in knowing how to format data would receive some guidance. It was also noted that the distinction should be clearly made between an exchange format and a data management format. The medium for providing this information should be through GE/TADE WWW pages (see agenda item 5).

The group observed that improved data flow between centres could be accomplished by implementing fewer data exchange format standards and increasing the flow of information and products. One member noted that one way to reduce the number of formats might be to introduce an IODE accreditation system. The group recognized that new formats generally come about in three ways:

(i)   an organization with a lot money mandates a certain format;
(ii)   a very successful product uses a particular format;
(iii)   the use of a particular format gets a level of recognition in the users sphere of interest.

The third item illustrates a de facto accreditation system in the sense that good and useful formats tend to be used more widely. It was suggested that format accreditation could be signified by systems such as "gold, silver, bronze" or "3 star, 2 star", etc. It was suggested that NODCs would be the accreditation bodies. There was not general agreement on how such an accreditation system could work even though the idea was attractive.

The group noted that rather than try to dictate a standard format, it may be better to choose a more pragmatic solution. It was noted that at any one time, there are likely only a few formats that are used widely. IODE, through GE/TADE, should adopt this suite of formats as 'operating standards'. The group requested the Chairman, with the cooperation of the IOC Secretariat and Dr. Brown, to poll data centres and users to determine which formats are most widely used, including field descriptions and available format converters, and have desirable features for international data exchange. The Chairman was asked to compile these results and make them available on a GE/TADE WWW page (see agenda item 5). The results would show which formats are widely used and by which centres.

The group began the discussion on BUFR noting that this format is used extensively on the GTS by WMO data centres. The IODE must be interested in its development especially with regard to the Ocean Tables. BUFR will also play a key role in the Distributed Data Base system (DDB), being developed by the WMO. Because of this, IODE must be able to provide and accept data in BUFR. GE/TADE, through its participation in the CBS Working Group on Data Management, has been responsible for developing a new set of BUFR master tables designed to handle oceanographic data. The group noted that the BUFR

code is machine independent but that bit manipulation is required to read it. Because of this, there is a significant effort required to learn and manipulate data in BUFR and, consequently, the user community outside of data centres may be limited. However, because of the strong movement of WMO toward this format, the group observed that it was important that GE/TADE continue to be active in the CBS Working Group on Data Management and in particular in the development of the Oceanographic Tables for BUFR. The group recommended that MEDS continue to participate in this work as well as in its development of a Distributed Data Base System. In addition the group supported the offer by MEDS to provide data from GTSPP to the WMO DDB. GE/TADE recommended that IODE request a data centre or data centres to act as focal points for development of this code and to support the conversion of data to and from that format in support of IODE programs and interests.

The discussion of BUFR brought the group's attention to the need for information on data dictionaries in addition to formats. The group noted that there are a number of data dictionaries and code lists in use and this could be a ready source of confusion to users. It decided to approach this issue by compiling a list of data dictionaries in use. The group noted the MDM data dictionary comparison project and decided to offer cooperation in this work to the ICES MDM. The group suggested that as soon as the WMO BUFR tables are complete they should be incorporated in the comparison. The purpose is to create standardized reference that corresponds to pick lists in EDMED and Blue Pages. The results would be referenced or placed on the TADE WWW pages.

## 3.	DATA TRACKING AND INVENTORIES

NOPs are very valuable for data tracking. The group noted that NOPs are simply the first stage in the development of metadata followed by Cruise Summary Reports (CSRs) and MEDI. All of these attempt to track cruise information from cruise planning through data availability. There is however, no one to one linkage between the information about the data represented in each of these systems. The group also noted that while the development and submission of NOPs is relatively simple, the actual submission is a policy matter that cannot be solved by the GE/TADE.

Noting the history of MEDI and NOPs the group decided that the project should focus on MEDI. The group also noted that there was very little difference between systems implemented by Australia, Ireland and UK as far as high level metadata fields. One of the important aspects of the project would be data capture. This would be facilitated by free software that is easy to use, a good data retrieval system that is easy to get into and navigate and a mapping of fields to other information systems such as FGDC, etc.

The group decided that the project should provide a NOPs view in the front end, a CSR view and MEDI view. The project needed to be available on the Internet but with the capability to export the entire system to data centres which did not have access to the Internet. The group decided that the different systems needed alignment of the theme and parameter search capabilities. The search capability needed to take into account metadata and geographic search functions. There must be an active connection between data and metadata.

The group noted the previous offer by the WOCE Data and Information Unit to host the NOPs. The group was also informed of the activities undertaken by the Joint Data and Information Panel (JDIMP), to unify MEDI type information for all data systems. It was suggested that GE/TADE could work with the JDIMP panel subgroup to try to unify the information contained in the information they are compiling. This would ensure a broad based system that would unify information across many disciplines. The first step was to compare the information content requested by the DIMP to see if the information content of NOPs, CSRs and MEDI could be reconciled. Members of GE/TADE were requested to undertake this work immediately, and to forward their analysis to Mr. Searle for coordination (since he is leading the work for the DIMP).

Mr. Searle also agreed to write the information management plan and to keep GE/TADE informed. Details of the actions are given in Annex III.

Finally, the Secretariat noted that CEOS had carried out a substantial amount of work relating to data dictionaries and cataloguing. The meeting requested the secretariat to look into how data dictionaries and MEDI might fit into a CEOS proposal.

4. DATA ARCHIVE AND INFORMATION ACCESS

Many data centres and others are now making data and information available on CD-ROMs. However, it was noted that CD-ROMs may not be state of the art by the next GE/TADE meeting. There is real competition developing with DVD technology. The group expressed concern regarding the readability of CDs in the future. This illustrated the need to look at both ends of the technological spectrum in considering data and information exchange. It is clear that IODE needs to keep up with the leading edge of technology while continuing to support the needs of the trailing edge.

The group noted that it needed a focussed way of looking at how technology develops and how this can be used in the IODE system. There is a need to examine the varied level of technology throughout IODE and how it affects data accessibility among IODE members. The group felt that one of the functions of GE/TADE is to try to provide expertise for solutions to the problems of members. The group recommended a poll of IODE members to determine their present technological capabilities and that the resulting information be made available in the TADE Section of the IODE home page. The group requested that the Chairman with the assistance of the IOC Secretariat undertake this activity.

The group noted that the advent of data publishing will increase the profile of IODE and data management in general. It would encourage the production of atlases and data collections. The group discussed the need for a guideline document on electronic data publishing. The document would describe how to generate products on data and information. Guidelines are technology independent and in order to produce them you need to understand the science, the uses for the data and the objectives and the constraints. The group noted that an example guidelines document is present on the Irish Data Centre's ISMARE, WWW home page. The group recommended that this be linked to the TADE home page.

5. ISSUES RELATED TO THE WWW

The group recognized that the WWW is becoming the default medium for the exchange of information and data. However, there are a variety of ways that this communications system can be used. At the moment there are a variety of protocols used including FTP for file transfer, HTTP for common browsers and WAIS (and the newer Z39.50 protocols) for information exchange. The most successful present and future systems are:

NEDI: in this freeware system all data stays in native format;
I-Site: will be the successor to NEDI and incorporate both data browse and access;
MEL: provides both browse and access to compatible data sets. In addition it does some basic housekeeping activities.

The group noted with interest the progress being made with MARC/Metadata integration which will be an area of interest to both GE/TADE and MIM. MARC is being integrated into FGDC to provide for reference to both data bases and literature. This represents the convergence between GE/TADE and GE/MIM missions and activities.

The group discussed some of the relative merits of using HTTP and WAIS protocols. HTTP is commonly used on WWW sites. In order to find information on the Internet, users go to sites such as AltaVista that maintain search engines. These have the ability to do full text searches of complete html documents. To find data sets of interest, text would need to be imbedded in the data files which describes the content of the file. This is not commonly done. Also, when using search engines, users supply key words (and so need to anticipate how the supplier describes their information) and the search is conducted over the entire database (that is the entire contents of the Internet indexed by the search engine). This makes for inefficient searching and often inappropriate matches are found.

WAIS protocol are however compatible with commercial browsers. The protocol allows for better full text searching and the indexing can be restricted to a closed environment.

The group considered the World Wide Web and what can be done to make the IODE data system more transparent. They decided that putting GE/TADE pages on the IODE home page and demonstrating it at the next session of IODE would be a good way forward. It was suggested that the pages should contain the following information at least:

(i)   a Link to the ICES MDM home page;
(ii)   the Terms of Reference for TADE;
(iii)   technical documentation including:
              - a list of technical documents
              - list of actions from GE/TADE.
              - formats, Metadata, OceanPC, Documentation and guidelines
              - links to similar organizations such WDCs, RNODC-Formats.
              - articles on current issues relevant to marine data management.

In order to keep this information up to date, the Secretariat would be requested to send out a periodic message to data centres requesting relevant information to be included.

The group noted the offer by IOC to act as a host server for countries that do not have a home page capability. The group recommended that data centres with full Internet access also work with data centres without these capabilities. The group felt that while this was a good idea it was no replacement for actual WWW access. The group agreed to provide the Chairman with narrative examples of the benefits of having full Internet access as a means of promoting greater access in countries where this service is limited. The Chairman would bring this information to the attention if IODE, To facilitate the development of the GE/TADE Home page the group requested the Secretariat to create a TADE list server.

The group also recommended that IODE support home page development for NODCs that do not have the capability using assistance from NODCs that do have the capability .

As noted in the Chairman's report, recommendations on content of member's WWW pages was put forward at IODE XV (Rec. 5). GE/TADE members resolved to review their own servers to see if this is followed, and to take whatever corrective actions are needed. In addition, and when a lack is noted at other NODC servers, to alert the data centres of the problem and to encourage them to make the needed changes.

6.   **SOOP IMPLEMENTATION PLAN**

The Ship of Opportunity Program (SOOP) is an IOC/WMO programme for oceanographic data collection from ships of opportunity. IODE has an active participation in SOOP through the GTSPP. Since

GE/TADE supports IODE activities, it must also support SOOP data and thus the need for GE/TADE to be aware of the programme. The SOOP system is a very important source of information on where data is being collected and can be used to track data collection efforts. The SOOP system presently works with salinity, and temperature but intends, in the future, to manage other data types. Full resolution data from ships can be received in as few as 2-3 days. Information regarding the SOOP system is available on the Internet. Subsurface temperature data from buoys are also made available as BATHYs or TESACs on the GTS.

The group felt that it was important to insure that these data are represented under MEDI. The group suggested just one ongoing MEDI entry for all real time reports.

7. PRODUCTS

The group noted that a number of IODE data centres provide both routine and custom products for their clients. However, the capabilities of data centres and the availability of these products is not widely known. The group noted that visibility is the key. The group recommended a list of products for the IODE home page. The group recommended that the IOC Products page be made more visible and demonstrate more fully the capabilities of IODE. Products are independent technology.

8. ARCHIVING

The group discussed ADCP data noting that much of it is stored in the CODAS system (information is available from Pat Caldwell of the US NODC working at the University of Hawaii). JODC is the RNODC for ADCP data and is working with the U. of Hawaii to align their systems. RDI, a commercial company manufacturing ADCPs, also provides software for data handling. The group expressed concern about how much ADCP data actually gets to JODC. This matter is being dealt with to some extent by the WOCE Data Products Committee. IODE will have a better indication if there is a problem after the upcoming DPC meeting in January, 1998. The group noted that the CODAS system interfaces to popular processing packages such as MatLab. The group also noted that there is a summary of ADCP metadata requirements on the ICES MDM home page. Ms. Rickards will look at a common format for ADCP data in cooperation with U. of Hawaii The group decided to review the CODAS system and evaluate it as a reference system for the archive of ADCP. It was also suggested that reference to this documentation be put on the TADE web page.

Thermosalinograph data is now being collected in limited amounts, especially by the French. The data exists in both delayed mode and real time. The group noted efforts by the French to put the data on the GTS. The French have solved most of the problems with the ensuring reliable data in the collection process and are trying to promote the system. GOOS is very interested in these data. The group noted the lack of a RNODC for thermosalinograph data and recommended that IODE identify a data centre to act as custodian for this type of data.

9. DOCUMENTATION

A document has been completed which contains general guidelines on how to describe data sets. This is presently posted on the web page at RNODC-Formats. Draft documents on CTDs and drifting buoys have also been produced and are in the process of being finalized. The Chairman will encourage the rapid finalization of these documents.

The group noted that GF3 was designed to help people document as well as store their data. Unfortunately GF3 became obsolete when 9 track tapes did (although the concepts behind GF3 are just as applicable today and form the basis of the developments of the oceanographic tables in BUFR). The group recommended that the TADE home page contain information on format guidelines and requested the Chairman to discuss with the RNODC-Formats if it will act as the centre to answer guideline questions. The group felt that it was necessary to work closely with ICES in generating data specific guidelines documents. The Chairpersons of GE/TADE and ICES MDM will discuss how this cooperation can proceed.

The group noted that the SOOP is writing a manual of best practices. The group decided to review the guidelines that it intended to produce in light of outside documents to insure no conflict and no redundancy of effort. Short documents are preferred to more extensive documents. The group considered common formats for documents on the web and recommended PDF and RTF.

10.   OCEANPC

OceanPC is a key area of development with the objective of making data available to clients at all technological levels. Noting the importance of the Internet, the group recommended that OceanPC use the Internet for those things that it is good for and other media (e.g. CD-ROM, DVD) where they are appropriate. So, where appropriate, OceanPC could provide links to web pages where data or information exist that supplement its functions. Likewise, where CDs exist that contain valuable data sources for OceanPC, tools need to be available in the project to read the data on the CDs.

Every installation of OceanPC may not have direct access to the Internet or CD-ROMs. However, it is possible to create islands of technology within developing countries and systems within those region. These islands can deal with a variety of technological issues such as data and information media and distribution using the intranet concept. OceanPC must be careful to include both ends of the technology *continuum* so as not to restrict the high end but keep the trailing edge in mind. Within the OceanPC concept there must be a mechanism for exchanging experience and solutions to problems. Decisions need to be made on what is in OceanPC and what more appropriately should be in the "shoe box".

The group discussed Microsoft Access as a possible start for a new baseline capability and that the revised OceanPC could be directed at data management training. Tools for format conversion were seen as an important component. OceanPC should address issues of relevance to coastal data. The MEDI software should also be a component of the new OceanPC.

The group reviewed documents describing project management and execution from a technical point of view. OceanPC has been used in training missions in ocean data management. A common format/system for training and post training activity is needed and OceanPC could provide this functionality. The group agreed that there was a need for resources to create the optimal OceanPC package. The new OceanPC could hook together existing, powerful oceanographic data processing packages as well as documentation packages so that people will migrate toward a few common formats. The group decided that OceanPC is a functional package that is out of date and in need of update and concept revision. They noted that through the efforts of ICES some of the routines are being updated to Visual Basic and Windows. Surfer is now considered a part of the OceanPC suite of software. Mr. Mikhailov offered to review the present package and present a concept paper on the way forward by the end of November, 1997. Initially a document will be drafted laying out the requirements for OceanPC based on recent discussions with users as well as training activity feedback.

It was thought that some financial support for development of OceanPC may be gained from MAST if a proposal was put together in time (February, 1998 appeared to be the deadline). The proposal would need to interest MAST with results to be deliverable in one year. Members of GE/TADE were asked to review the document prepared by Mr. Mikhailov and to forward comments to Dr. Brown and Dr. Vanden Berghe by the middle of December, 1997. These two would prepare the proposal for MAST by mid January, 1998.

11. ELECTION OF THE CHAIRMAN

The Chairman was unanimously elected as interim Chairman until a new Chairperson for the group could be found.

12. CLOSURE

The group agreed on the action plan contained in Annex III.

The Chairman thanked all the participants for their participation and contributions to the meeting. He also thanked the Irish Marine Data Centre for providing such excellent facilities and support for the meeting. The Meeting closed at 12 noon on 22 October 1997.

ANNEX I

AGENDA

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    1.3   WORKING ARRANGEMENTS
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    1.4.1   GE/TADE VI Action Item Reviews
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    1.4.3   Symposium on Ocean Data Management

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2. DATA FORMATS/DICTIONARY

3. DATA TRACKING AND INVENTORIES

4. DATA ARCHIVE AND INFORMATION ACCESS

5. ISSUES RELATED TO THE WWW

6. SOOP IMPLEMENTATION PLAN

7. PRODUCTS

8. ARCHIVING

9. DOCUMENTATION

10. OCEANPC

11. ELECTION OF THE CHAIRMAN

12. CLOSURE

ANNEX II

LIST OF PARTICIPANTS

Murray Brown
Minerals Management Service (MS5440)
1201 Elmwood Park Blvd.
New Orleans, LA 70123-2394
USA
Tel: +1 504 736 2859
Fax: +1 504 736 1709
E-mail: murray.brown@mms.gov

Bronwyn Cahill
Director
Irish Marine Data Centre
80 Harcourt Street
Dublin, 2
Ireland
Tel: +353 1 475 7100
Fax: +353 1 475 7104
E-mail: bronwyn.cahill@marine.ie

Bob Keeley
Marine Environmental Data Service
1202 - 200 Kent Street
Ottawa, K1A 0E6
Canada
Tel: +1 613 990 0246
Fax: +1 613 993 4658
E-mail: keeley@ottmed.meds.dfo.ca

Nickolay Mikhailov
Russian Oceanographic Data Centre
6, Korolev St.
Obninsk, Kaluga Region 024020
Russian Federation
Tel: +7 08439 74907
Fax: +7 09525 52225
E-mail: nodc@storm.iasnet.com

Orla Ni Cheileachain
Irish Marine Data Centre
80 Harcourt St.
Dublin, 2
Ireland
Tel: +353 1 4557100
Fax: +353 1 4755704
E-mail: orla.ni@marine.ie

Lesley Rickards
British Oceanographic Data Center
Proudman Oceanographic Laboratory
Bidston Observatory
Birkenhead, Merseyside L43 7RA
United Kingdom
Tel: +44 151 653 8633
Fax: +44 151 652 3950
E-mail: ljr@ua.nbi.ac.uk

Ben Searle
Director,
Australian Oceanographic Data Center
Maritime Headquarters
Wylde St.
Potts Point, NSW 2011
Australia
Tel: +1 612 9563 4501
Fax: +1 612 9563 4820
E-mail: ben@aodc.gov.au

Edward Vanden Berghe
RECOSCIX-WIO
Box 95832
Mombasa, Kenya
Tel: +254 11 472527
Fax: +254 11 472215
E-mail: evberghe@recoscix.com

John Wallace
Informatics Management International
64 Harcourt St.
Dublin, 2
Ireland
Tel: +353 1 4752923
Fax: +353 1 4752952
E-mail: jwallace@informatic.ie

John Withrow
Intergovernmental Oceanographic Commission
UNESCO
1, rue Miollis
75732 Paris, cedex 15
France
Tel: +33 1 45 68 40 08
Fax: +33 1 45 68 58 12
E-mail: j.withrow@unesco.org

ANNEX III

GE/TADE-VII ACTION PLAN

Agenda Item	Activity	Responsibility	Date Due
1.5 Data Management Plan	Arrange back-to-back meeting with GE/MIM	Chairman	2000
2 Formats	(a) Poll Data Centres for most commonly used formats. Compile results and place on TADE Homepage	IOC,Chairman Dr. Brown	end 1998
	(b) MEDS to continue ocean BUFR developments and work of WMO DDBs	Mr. Keeley	On-going
	(c) Request data centre(s) as focal points for BUFR and support conversion software	IOC	end 1998
	(d) Provide ICES MDM with ocean BUFR tables	Chairman	Feb.98
3 MEDI	(a) Distribute study initiated by J-DIMP to group members	AODC	end 1997
	(b) Group review study keeping in mind Data Discovery objectives of NOP"s, CSR's and MEDI	GE/TADE	Jan. 1998
	(c) Construct and distribute a revised study for review	AODC	Feb. 1998 March 98
	(d) Construct and distribute project plan	AODC	March 98
	(e) Modify Distribution Software	AODC	mid-1998
	(f) Distribution software to participants	AODC	end 1998
	(g) Provide for Kenya to participate off-line	IOC, NOAA	end 1998
	(h) Demonstrate Pilot System at IODE-XVI	AODC	2000
	(I) Secretariat to study how MEDI fits into CEOS dictionaries and catalogues	IOC	mid-1998

4 Archive	(a) Poll IODE MS for present state of technology	IOC, Chairman	end 1998
	(b) Link ISMARE Guidelines to TADE Homepage	IOC	mid 1998
5 WWW	(a) Establish TADE Homepage	IOC	mid 1998
	(b) Narratives of benefits of WWW access	GE/TADE	end 1998
	(c) Review homepages to ensure they conform to TADE Homepage	GE/TADE	mid 1998
8 Archiving	(a) Investigate common format for ADCP data and post results on TADE Homepage	Ms. Rickards IOC	early 1999
	(b) IODE identify a centre to archive thermosalinograph data	IOC	2000
9 Documentation	(a) Complete guidelines for archiving CTD and drifting buoy data and post on TADE web pages	Chairman GE/TADE	mid 1998
	(b) Clarify if RNODC-Formats will answer questions on guidelines	Chairman	mid 1998
	(c) Post SOOP "Manual of best Practices" on TADE web site	Chairman	when ready
10 Ocean PC	(a) Construct baseline attributes document	Dr. Brown Dr. Michailov Dr.Vanden Berg	December 1997
	(b) Distribute document to GE/TADE	IOC	Dec.97
	(c) Comments on document to be sent to drafters	GE/TADE	15 Jan.98
	(d) Finalize document	Dr. Brown	30 Jan. 98
	(e) IOC contruct proposal	IOC Dr. Brown Mr. Wallace	22 Feb. 98

ANNEX IV

SYMPOSIUM ON OCEAN DATA MANAGEMENT
(Dublin, 15-18 October 1997)

RECOMMENDATIONS

The Symposium **recommends** that:

–   that as much as possible, any point of access within the IODE data system should provide catalogue and location level access to the entire data system;

–   data center or center of data should work together to the greatest extent possible to make the data system transparent to the user;

–   providers of data work toward a data system with a few standard formats;

–   adequate resourcing, training and technology transfer be made available to developing countries to permit them to participate in and benefit from marine data and information management activities;

–   off-line access to data (e.g. CD-ROM's) be provided for those who do not have Internet access;

–   data handling procedures be formalized and published for each data set;

–   standards be established for the collection of ocean data including metadata;

–   that funding for data and information management be included in research proposals and that it extend through from point of collection to archive;

–   that a data symposium such as this be held every 2-3 years to provide for exchange of information between the user and provider community and amongst the provider community;

–   data and information system capacity be expanded to handle multi-disciplinary data sets (e.g.. Remote sensing, contaminants, etc.);

–   to the greatest extent possible, person to person contact be established between data provider and data user to assure communication and mutual expectations.

ANNEX V

**NEW TERMS OF REFERENCE FOR THE GROUP OF EXPERTS
ON TECHNICAL ASPECTS OF DATA EXCHANGE**

(i)   Collaborate with IGOSS-CP, IODE GE-MIM and the data management groups of other international bodies and scientific programmes in the development of technical solutions for the management, exchange and easier integration of oceanographic data and information with data from other disciplines.

(ii)   Collaborate with IODE GE-MIM in the development of a common WWW interface for IODE Centres to deliver data and information in a consistent manner.

(iii)   Develop a set of documents to be used by data originators or data centres which describe guidelines for formatting ocean data and information.

(iv)   Continue the developments of a common data format which conforms to other major data collection programmes, meets the needs to handle more diverse data types and is independent of the exchange medium. This will include as appropriate the specification of software modules that may be required.

(v)   Liaise with other programmes and agencies concerned with oceanographic data exchange to ensure as much as possible a closer alignment of data structure and content.

ANNEX VI

LIST OF ACRONYMS

ADCP	Acoustic Doppler Current Profiler
AODC	Australian Oceanogrpahic Sub-group (CEOS)
BODC	British Oceanographic Data Centre
BUFR	Binary Universal Form for Representation
CEOS	Committee on Earth Observation Satellites
CREX	Character Extended Code
CSR	Cruise Summary Report
CTD	Conductivity - Temperature - Depth
DDB	Distributed Data Base
DPC	Data Processing Centre
DVD	Digital Video Disk
EDMED	European Directory of Marine Environmental Data
FGDC	(US) Federal Geographic Data Committee
FTP	File Transfer Protocol
GF3	General Format No. 3
GOOS	Global Ocean Observing System
GTS	Global Telecommunication System
GTSPP	Global Termperature and Salinity Pilot Project
IGOSS	Integrated Global Ocean Services System
IOC	Intergovernmental Oceanographic Commission
IODE	International Oceanographic Data and Information Exchange
ISMARE	Irish Marine Data Centre
JDIMP	Joint Data and Information Panel
JGOFS	Joint Global Ocean Flux Study
JODC	Japan Oceanographic Data Centre
MDM	Working Group on Marine Data Management
MEDI	Marine Environmental Data Information Referral System
MEDS	Marine Environmental Data Service (Canada)
MEL	Marine Environmental Laboratory
MIM	Marine Information Management
NEDI	National Environmental Data Index
NOAA	National Oceanic and Atmospheric Administration (USA)
NODC	National Oceanographic Data Centre
NOP	National Oceanogrpahic Programme
OCEANPC	Ocean Personal Computer Project
ODBMS	Object Oriented Data Base Management System
OTA	Operations and Technical Applications (IGOSS)
PDF	Portable Document Format
RNODC	Responsible National Oceanographic Data Centre
ROSCOP	Report of Scientific Cruises and Oceanographic Programmes
RTF	Rich Text Format
SOOP	IGOSS Ship of Opportunity Programme
TADE	Technical Asepcts of Data Exchange (IODE)

WAIS	Wide Area Information Server
WMO	World Meteorological Organization
WOCE	World Ocean Circulation Experiment
WWW	World Weather Watch