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METEOROLOGY

Treaty Series No. 76 (1979)

International Agreement

on the setting up of an Experimental European Network of Ocean Stations

Brussels, 15 December 1977

[The United Kingdom instrument of ratification was deposited on 14 February 1979 and the Agreement entered into force on 29 June 1979]

Presented to Parliament
by the Secretary of State for Foreign and Commonwealth Affairs
by Command of Her Majesty
October 1979

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HER MAJESTY'S STATIONERY OFFICE
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INTERNATIONAL AGREEMENT ON THE SETTING UP OF AN EXPERIMENTAL EUROPEAN NETWORK OF OCEAN STATIONS

The Governments of the Kingdom of Belgium, the Kingdom of Denmark, the Kingdom of Spain, the French Republic, Ireland, the Italian Republic, the Kingdom of Norway, the Portuguese Republic, the Republic of Finland, the Kingdom of Sweden, the United Kingdom of Great Britain and Northern Ireland, hereinafter referred to as " the Participants ", conscious of the need to co-ordinate action with a view to setting up an experimental European network of ocean stations for providing meteorological and oceanographic data,

Have agreed as follows:

ARTICLE 1

The contracting parties to this Agreement, hereinafter referred to as " the Parties ", shall co-operate in a project, hereinafter referred to as " the project ", with a view to setting up an experimental European network of ocean stations (ENOS) for providing meteorological and oceanographic data on a real-time basis.

A description of the project is contained in Annex I.

ARTICLE 2

A Management Committee, hereinafter referred to as " the Committee ", composed of one representative of each Party, is hereby established. Each representative may be accompanied by experts or advisers.

The Committee, acting unanimously, shall adopt its rules of procedure. In addition, it shall appoint its Chairman and Vice-Chairman.

ARTICLE 3

The Committee shall be responsible for co-ordinating the project and in particular shall:

(*a*) make recommendations to the Parties, giving reasons, on any activity relating to the implementation of the project;

(*b*) follow the progress of the work and recommend to the Parties, where appropriate, such changes as may be necessary in the overall direction or the volume of the work being undertaken;

(*c*) take any decisions concerning the activities of the five sub-regions referred to in Annex I, the co-ordination of which is necessary to the success of the project;

(*d*) appoint the project leader and define his functions;

(*e*) draw up programme proposals for the possible continuation of the work after this Agreement expires;

(*f*) exchange research results to an extent compatible with adequate safeguards for the interests of the Parties, their competent public authorities or agencies and research contractors, in respect of industrial property rights and confidential material of a commercial nature;

(*g*) publish, annually and at the end of the project, a report containing its conclusions on the results of the operations covered by the project and forward it to the Parties.

ARTICLE 4

The running costs, including administrative, secretarial and staff costs, the total amount of which shall not exceed the sum of 15,000,000 BF, shall be divided as follows among the Parties:

BELGIUM	887,650
DENMARK	528,100
SPAIN	1,359,550
FRANCE	4,393,250
IRELAND	101,100
ITALY	2,550,550
NORWAY	415,750
PORTUGAL	235,950
FINLAND	393,250
SWEDEN	955,050
UNITED KINGDOM	3,179,800

At the request of the Parties, the Commission of the European Communities shall provide the Secretariat for the Committee and shall administer the fund. The Commission will be reimbursed for these costs.

ARTICLE 5

1. The Parties shall require their establishments and contractors to notify them, for the information of the Committee, of previous commitments and industrial property rights of which they are aware and which might hinder the performance of the work covered by this Agreement.

2. Without prejudice to the application of national law, each Party shall ensure that the owners (falling within its jurisdiction) of industrial property rights and technical information resulting from work assigned to them will be under an obligation, if so requested by another Party, to grant that Party, or a third party nominated by that Party, a licence in respect of those industrial property rights or that technical information and will be under an obligation to supply the technical know-how necessary for use of the licence where the grant of the licence is requested:

—for the performance of work covered by this Agreement; or

—for setting up ocean stations for the provision of meteorological and oceanographic data.

Such licences shall be granted on fair and reasonable terms having regard to commercial usage.

3. The Parties shall accordingly ensure the inclusion in contracts for work covered by this Agreement of conditions enabling the licences referred to in paragraph 2 to be granted.

4. The Parties shall make every effort, in particular by the inclusion of appropriate conditions in contracts for work covered by this Agreement, to make provision on fair and reasonable terms and having regard to commercial usage, for the licences referred to in paragraph 2 to be extended to industrial property rights notified in accordance with paragraph 1 and to prior technical know-how owned or controlled by the contractor, insofar as use of the said licences would not otherwise be possible. Where the contractor is unable to agree to such an extension, the case shall be submitted to the Committee, before the contract is entered into, so that the Committee can state its views on the matter.

The Parties shall take any steps necessary to ensure that the fulfilment of the obligations laid down in paragraphs 1 to 4 is not affected by any subsequent transfer of the industrial property rights, technical information or technical know-how. Any transfer of industrial property rights shall be notified to the Committee.

6. If a Party terminates its participation in this Agreement, rights of use which it has granted or is obliged to grant or has obtained in application of paragraphs 2 and 4 and which concern the results of the work carried out up to the date when the said Party terminates its participation, shall continue thereafter, on the conditions laid down in the relevant contract or contracts.

7. The rights and obligations set out in paragraphs 1 to 6 shall continue to apply after this Agreement expires. They shall apply to industrial property rights as long as these remain in force and to unprotected technical information or technical know-how until such time as they pass into the public domain other than through disclosure by the licensee.

ARTICLE 6

The Parties shall apply the provisions of Annex II on the legal status of Ocean Data Acquisition Systems (ODAS).

The Annexes to Annex II may be subject to review independently of the Articles on the legal status of ODAS.

ARTICLE 7

The Parties shall consult each other:

—at the request of one of them, on any problem posed by the implementation of this Agreement;

—in the event of withdrawal by one of them, on the continuance of the project.

ARTICLE 8

1. This Agreement shall be open for signature by the Participants until it enters into force in accordance with paragraph 3. Any Participant which does not sign this Agreement within the said period may accede to it in accordance with Article 10 at any time thereafter.

2. This Agreement shall be subject to ratification or acceptance by the Signatories. Instruments of ratification or acceptance shall be deposited with the Secretary-General of the Council of the European Communities.

3. This Agreement shall enter into force 30 days after the date on which seven of the Signatories have deposited their instruments of ratification or acceptance(1).

4. For Participants whose instruments of ratification or acceptance are deposited subsequent to the entry into force of this Agreement, it shall enter into force on the date of the deposit of such instrument.

5. Participants which have not deposited their instruments of ratification or acceptance at the time of the entry into force of this Agreement may take part in the work of the Committee without voting rights for a period of six months after the date of entry into force.

6. The Secretary-General of the Council of the European Communities shall promptly notify all Participants and acceding States of the date of the deposit of instruments of ratification, acceptance or accession to this Agreement and the date of its entry into force and shall forward all other notices which he has received under the Agreement.

ARTICLE 9

Any Party may give notice of its withdrawal from the Agreement two years after its entry into force by written notification to the Secretary-General of the Council of the European Communities. Such withdrawal shall take effect one year from the date of the receipt by the Secretary-General of the Council of the European Communities of this notification.

ARTICLE 10

This Agreement is open to accession by the States which took part in the Ministerial Conference in Brussels on 22 and 23 November 1971, by the republic of Iceland, and by the European Communities. Any accession under this article shall require the unanimous consent of the Parties, which may impose conditions therefor. Instruments of accession shall be deposited with the Secretary-General of the Council of the European Communities, the Agreement shall enter into force for the acceding Party on the date of deposit of such instrument.

ARTICLE 11

This Agreement shall remain in force for 4 years. If the project is not completed within that time the Parties may agree to prolong it in order to complete the project.

(1) The Agreement entered into force on 29 June 1979.

ARTICLE 12

This Agreement, of which the English and French texts are equally authentic, shall be deposited with the General Secretariat of the Council of the European Communities, which shall transmit a certified copy to each of the Parties.

Done at Brussels on the fifteenth day of December in the year one thousand nine hundred and seventy-seven.

SIGNATURES

State	*Date of Signature*	*Date of ratification*
Belgium	14 June 1978	
Denmark		27 Feb. 1979
Finland		20 Feb. 1979
France		
Ireland, Republic of	15 Dec. 1977	8 Feb. 1979
Norway		26 Jan. 1979
Portugal		8 June 1979
Sweden		20 Dec. 1978
United Kingdom		14 Feb. 1979

ANNEX I

Description of the Project

I. INTRODUCTION

1. The Project

The aim of this project is to set up an experimental European network of ocean stations (ENOS) for the purpose of providing meteorological and oceanographic data on a real-time basis. The whole project will be divided into three phases; however, the present programme will cover only phases I and II.

Phase I

Evaluation, testing and further development of existing components such as sensors, structures, transmission systems etc.

Phase II

Based on the findings made during Phase I, a pilot network will be set up in five selected regions for the purpose of acquiring experience in the management of a network and in order to assess the data transmission technique. The pilot network will be based on contributions from all the participating nations. Taking into account the interest shown by the users, the results of Phase II will make it possible to form an opinion on the extent and progress of the integration of the pilot networks into an operational and standardized network covering the whole of the European region, which will constitute Phase III.

2. General Considerations

The thermodynamic processes in the ocean and the atmosphere above it, are closely inter-dependent. A complete monitoring survey will therefore have to be made from both aspects. The meteorological observations therefore must include data from the upper ocean; in the same way the oceanographic observations must include data from the lower atmosphere.

The ocean and the atmosphere are both subject to continual variations in space and in time. A detailed and continuous supply of data will therefore be necessary to monitor maritime environment conditions. For the purpose of weather-forecasting new weather maps based on simultaneous observations, are, for this reason, made at 3-hourly intervals. A series of weathermaps will show the development in atmospheric conditions in time and in space, and will enable the meteorologist to predict future developments. It should, however, be mentioned that a weather map is a picture based on single points of information. In order to make such a detailed map, a dense net of stations is necessary. The spatial resolution of the forecast therefore depends on the density of the station network. A relatively dense net of meteorological stations already covers the continent, but the ocean is not adequately covered. Ocean weathership stations do occupy selected positions, but are inadequate in number and some are being withdrawn, mainly for financial reasons.

ODAS* is suggested as an alternative system which could fill this gap in the ocean station network.

Most ocean phenomena, except those directly related to tidal forces, are very variable. For this reason a reliable and sufficiently detailed prediction of ocean phenomena cannot be worked out on the basis of the statistical analysis of old time-series.

At the same time there is an increasing demand for ocean data, particularly as regards ever increasing offshore activity. The optimum utilisation of the ocean food resources also demands close monitoring of ocean conditions such as the temperature, currents, oxygen and the nutrient content. Furthermore pollution in the ocean is becoming a vital problem which calls for continual surveillance, not only to detect the pollutants, but also to ascertain the diffusion parameters, that is wind, currents, state of sea, etc.

It should also be emphasized that a better knowledge of the physical processes of the ocean and the atmosphere—achieved presumably by a denser and improved ocean station network—will increase the safety of human life and property.

The proposed project is very comprehensive. Its mere size and complexity make it prohibitive for a single nation to undertake, not only for financial reasons, but also for reasons such as data acquisition from waters of foreign nations, deployment and recovery, data transmission, etc.

In order to serve its purpose, the ENOS must cover an area so large that most European countries will benefit directly from the results. It consequently calls for a common European effort to provide the data.

Environmental parameters are observed in order to:

A. provide information—normally as time-series—for the study of natural phenomena of either general or local relevance. Typical applications of time-series are:

   (i) statistical analysis giving information on the local statistical conditions such as means, max.-and-min. values, isopleths, tides, etc.

   (ii) scientific research where the data provides the necessary initial values for theoretical models, and provides the basis for testing the models by comparison with the actual observations.

   However, neither of these applications normally require the data on real-time basis.

B. provide information on real-time basis to be applied to:

   (i) models based on previous investigations, in order to form a basis for a prognosis of the future development of the model. This model may be weather maps or a model of ocean current, water level, etc.

   (ii) immediate practical use when very accurate information on the actual local conditions is required. For such purposes the

* Ocean Data Acquisition System

information must be passed to the users without any delay. Typical users are airports (wind data), shipping companies and offshore constructors (wind data, state of sea, currents, etc. at special locations during critical operation phases).

It has been stated in connection with the product of ENOS, namely the data, that its special value lies in its real-time availability for forecasting purposes and other immediate uses. It should be emphasized that its forecasting value rapidly deteriorates in time, as does the forecast itself.

It is therefore to be concluded that the data will be used for the following purposes:

—forecasting of ocean and atmospheric phenomena;

—establishment of climatological statistics;

—scientific studies on oceanic and atmospheric phenomena.

Whilst real-time data is imperative for forecasting, it is normally not required for the establishment of standards or for scientific studies.

As to scientific application, it should be mentioned that this project is a general system of data acquisition, whilst a scientific project is normally structured to provide data for studies of particular phenomena, where care is taken to avoid irrelevant information.

For obvious reasons scientific projects often depend on very specific sensors and equipment which have been built for a particular purpose and are in no way standardized or suited to a general system.

Statistical data forms the background for the planning of a large variety of permanent and mobile marine constructions, such as:—

docks, quays, moles, ships, oil rigs, etc.

Furthermore, statistical analysis on currents, tides, etc. are given as an aid to navigators in pilot books and charts.

II. OBJECTIVES

The meteorological and oceanographic real-time data as provided by this project are of great interest to a number of specific groups of users who need this information to achieve a better knowledge and a closer monitoring of the marine environment in order to:

—improve safety and protection of human life and property;

—improve the exploitation of marine resources;

—improve the economy of marine activity.

The potential users are:

—weather forecasting services;

—storm surge and warning services;

—coastal protection bodies;

—offshore oil-gas and mineral exploration and exploitation firms;

—ship-routing services and navigators;

—the fishing industry;

—environment protection agencies;

—marine research institutions;

—ice forecasting services;

—marine constructors and shipbuilders.

The priority will obviously vary depending on the locality and the national interest.

A brief survey of some of the topics and their practical importance to various users are given below.

Weather forecasting has proved its value and is a self-evident requirement in a modern community. The users cover more or less the whole community, especially ship and aircraft navigators, fishermen and farmers. However, additional information from offshore positions is required in addition to the network already in existence, if the reliability and resolution of the forecasts are to be improved.

Storm surges, flood warnings. Due to coinciding effect of tides, wind storms, air pressure and low frequency waves, the sea level can rise to extremely high levels. The results can have enormous consequences on those countries which are vulnerable to flooding. Early warning and close montitoring, based on adequate offshore information, is therefore of vital importance.

Ocean forecasting. Prognostic oceanography or prediction of ocean conditions of e.g. waves, state of sea, temperature, currents, contents of nutrients etc. in a form similar to a weather forecast, is probably still a long way ahead, because the dynamics of the ocean are not well enough understood and the information available is inadequate for the purpose. Nevertheless, a pilot project on synoptic oceanography was carried out under the auspices of the ICES* in the late sixties. The result of this pilot project was highly prized. However, the facilities were inadequate to maintain and develop the project which was considered premature at that time. Like weather forecasting, ocean forecasting is assumed to be an important source of information where offshore projects, coastal engineering, shipping and fisheries, are concerned.

Coastal and ocean engineering. The offshore activity relating to exploitation of the seabed obviously depends greatly on local weather conditions. Unfavourable and unexpected weather and sea conditions—during a critical operational phase—may be disastrous. In this connection it is assumed that, for some operational, the user will need to receive the relevant data at his own operations centre, in real-time, in addition to the standard forecast. Such information is therefore considered of special value where coastal and offshore construction operations, deployment of pipelines, cables etc. are concerned.

Ship routing. Estimation of the most favourable sailing route between two points at a given date, based on weather forecasting and knowledge of

* International Council for the Exploration of the Sea.

the state of the sea and currents, has proved its value. This method saves sailing time, results in less damage and danger to ships and cargo and gives greater passenger comfort and safety.

Fishing. Rational and optimum exploitation of maritime food resources requires adequate information on ambient water conditions such as temperature, salinity, currents, oxygen and nutrient content, because life in the ocean is closely interdependent and linked to these parameters. Ocean forecasting is therefore considered an important tool for improving fishery research and, eventually, for obtaining maximum yields of fish.

Navigation. Ship-routing has been mentioned. In addition, ocean forecasting and real-time data will prove a valuable aid in the handling of large ships, oil carriers, platforms etc., in narrow and shallow waters. The existing charts and pilot logs are based on statistics which are often insufficiently accurate in relation to actual conditions. The large ships of today develop less engine power per ton than the smaller ships, and consequently are more susceptible to the effects of wind and currents.

Monitoring of Pollutants. Pollution is a problem of increasing impact to the marine environment. Key parameters are the detection and monitoring of the diffusion rates and the movement of pollutants from place to place. In this connection a net of ODAS can play an important role by acting as a means of monitoring, providing, as it does, immediate information on the presence of polluting elements, together with those factors responsible for all aspects of their movements from place to place, i.e. wind, currents and waves.

At present there are no adequate automatic sensors for detecting pollutants on the market. However, great efforts are being made in this direction and it is believed that the first prototype sensors will appear on the ODAS in the near future.

TECHNICAL CONTENT

I. Structure of the programme

The programme includes:

—sub-systems development;

—implementation of the network;

—data exploitation and their integration into WMO* network.

Description of Regions

The pilot project (Phase II) comprises the following five regional networks:

1. The Azores, delimited by latitudes 44° N and 34° N, and meridian 32° W to the Iberian peninsula.
2. Bay of Biscay, delimited by latitudes 44° N and 52° N, and meridian 20° W and the west coast of France, Ireland and the United Kingdom.

* World Meteorological Organization.

3. Faroes/Shetland. The area delimited by the 64° N latitude between 10° W to 4° E. The southern border is formed by a line running along the 60° N latitude from 4° E to Shetland, from Shetland to the north-east coast of Scotland and further along the 58° 30′ latitude through the Butt of Lewis to 10° W.
4. Mediterranean. An area bordered by the south coast of Spain, France and Italy in the north and by a line joining positions (38° N 00°) and (38° N 12° E) in the south.
5. North Sea/Baltic region comprises the North Sea, limited by the Straits of Dover and a line running east from Shetland (60° N) to the coast of Norway, and part of the Baltic Sea.

These limits are in no way absolute, but are chosen as a convenient definition which may be adjusted if so required.

Scope of Co-ordination

The co-ordination will include:

Co-ordination of Data

Compatability of data

Collection of data

Data format

Dissemination of data.

Co-ordination of technical topics

Calibration/Intercalibration of sensors

Registration of ODAS

Deployment and recovery of ODAS

Testing of ODAS.

Calibration/Intercalibration

The national programmes on which this project is based cover a variety of ODAS regarding design and size. Although most of them are well designed and serve their purpose well, the data from the various ODAS are, unfortunately, not compatible. Compatibility of the data is a paramount demand for this project. Sensors showing reliable and unambiguous results in the laboratory may appear to diverge seriously when exposed to the open rough sea. Furthermore, quite obviously the calibration of the sensors depends, to a certain extent, on the platform on which they are mounted.

The calibration/intercalibration of the ODAS will therefore be carried out in three phases, *viz.*:

(1) An initial calibration against standard references will be carried out in laboratories using, by preference, the same facilities. Several participating laboratories have adequate means and the capacity to carry out this task.

(2) The various ODAS will be intercalibrated, fully equipped, but in sheltered waters and, as far as possible, under uniform conditions, in order to compare the results.

(3) For the purpose of checking the consistency and the compatibility of the data, fully equipped ODAS will be deployed under, as far as possible, uniform conditions, preferably nearby or under conditions similar to those at the operation site. This test should cover a substantial time in order to test the systems under various weather and sea conditions.

Deployment, Service and Recovery of ODAS

A substantial part of the expenses involved in the execution of this project goes to provide ships for deployment, service and recovery of ODAS. It is then proposed that the use of the ship's time can be optimized in connection with deployment and regular servicing by mutual arrangement between the participating laboratories. However, in the case of emergencies such as lost or drifting ODAS, all participating countries are encouraged to give priority to the recovery of ODAS, providing this can be done without seriously interfering with other programmes.

In order to increase the benefit of the network by ensuring the best possible coverage of ODAS, the participating countries which are not capable of deploying ODAS within the waters under their jurisdiction, should encourage other nations to do so.

Data Transmission

The data will be transmitted by means of various transmission systems, from ODAS to shore stations, which will re-transmit them to a central station. Subject to the satisfactory proving of the accuracy of the system, the central station(s) will disseminate the data according to the standard format of the WMO to the various national centres who, in turn, will provide the users with the data.

II. Description of the pilot network

The regions are described in the following order:

A = Azores
B = Bay of Biscay
C = Faroes/Shetland
D = Mediterranean
E = North Sea/Baltic

The items of each region are listed in the following order:

1. Participating countries and their individual contribution.
2. List and location of the ODAS*
3. Parameters

* The location of ODAS will be subject to operational requirements and may be varied.

4. Transmission system
5. Shore stations
6. Central Station
7. Deployment, service and recovery of the ODAS
8. Timetable

II. A AZORES

(1) *Participating countries and their individual contributions*

FRANCE: Shore-station; know how, calibration/intercalibration facilities.

PORTUGAL: 7 ODAS; deployment, recovery and service ships at appropriate opportunities; central station.

SPAIN: 11 ODAS; deployment, recovery and service ships at appropriate opportunities; calibration/intercalibration facilities.

(2) *List and Location of the ODAS*

St. No.	Position	Type of ODAS	Type of Data	Start of Operation	Sampling Interval	Country
1	36° 24′ N, 24° 14′ W	LCB NOMAD		1976		Portugal
2	37° 02′ N, 25° 20′ W	Data Well	Wave	1976		Portugal
3		LCB		Planned		Spain
4–13		LDB	Met + Ocean	Planned		
14–18		LDB	Met + Ocean	Planned		Portugal

LCB = Low Capability Buoys

LDB = (Light Drifting Buoys, used as drifting buoys).

(3) *Parameters*

St. No. 2 Wave data

St. Nos. 1–3

St. Nos. 4–13

Pa = atmospheric pressure

Ta = air temperature

Ts = sea surface temperature

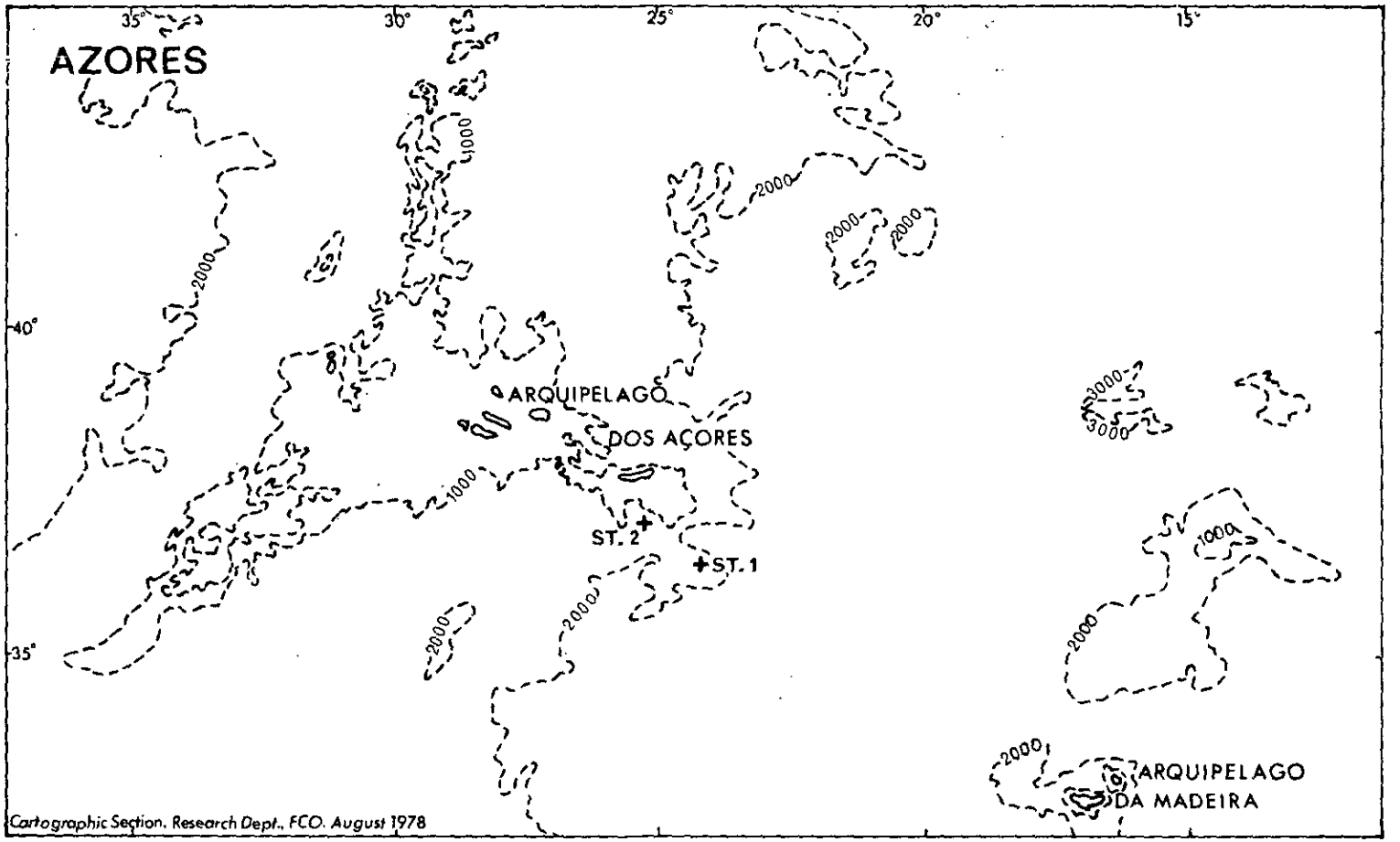
W = wind

Pos. = position (which is applied to determine drift or current in Lagrangian co-ordinates)

(4) *Transmission system*

St. Nos. 1–3 VHF

St. Nos. 4–18 ARGOS system as used in TIROS N satellite


AZORES
35°
30°
25°
20°
15°
40°
35°
1000
2000
3000
ARQUIPELAGO
DOS AÇORES
ST. 2
ST. 1
ARQUIPELAGO
DA MADEIRA
Cartographic Section, Research Dept., FCO. August 1978

(5) *Shore Stations*

St. Nos. 1 and 2 Azores
St. No. 3
St. Nos. 4–13 Toulouse (CNES)
St. Nos. 14–18 Toulouse (CNES)

(6) *Central Station*

Lisbon

(7) *Deployment, service and recovery of the ODAS*

Spain and Portugal will provide adequate ship facilities at appropriate opportunities and undertake the deployment and service of the ODAS stations. France will contribute with technical expertise and provide the shore station facilities for operating the LDBs.

(8) *Timetable*

1977 (*a*) St. No. 1 and 2 in operation.
(*b*) Operational studies of the surface water circulation and hydrograph of the zone in order to select the best site for the deployment of LDBs.
(*c*) Decision by Spain on the specifications and design of the VHF system to be used with the LCB.

1978 (*a*) Preparation of the equipment and the operation.
(*b*) Calibration/intercalibration of the equipment.
(*c*) *

1979 (*a*) Implementation of the project.
(*b*) Exchange of data with other pilot networks.

1980 (*a*) Evaluation of the results obtained by the pilot network for use as a basis for an integrated European network.

II. B. BAY OF BISCAY

(1) *Participating countries and their individual contributions*

FRANCE:	8 ODAS; shore station; central station; deployment, service and recovery ships at appropriate opportunities; Calibration/intercalibration facilities.
IRELAND:	Contribution to service and recovery at appropriate opportunities.
PORTUGAL:	Service and recovery ships at appropriate opportunities.
SPAIN:	Service and recovery ships at appropriate opportunities.
UNITED KINGDOM:	Service and recovery ships at appropriate opportunities.

* During a one-year period (July 1978–July 1979), the regional sub-groups of the Azores and the Bay of Biscay will carry out a joint programme within the framework of COST 43. This programme is based on approximately 24 drifting buoys, type *L 55* and Babeth (CNEXO), using the ARGOS system of the TIROS-N satellite. The positions for the buoys will be determined later.

(2) *List and Location of the ODAS*

St. No.	Position	Type of ODAS	Type of Data	Start of Operation	Sampling Interval	Country
1	Not defined	LCB	Met + Ocean			France
2	Not defined		Met + Ocean			France
3	Not defined	LCDB	Met + Ocean			France
8						

LCB = Low Capability Buoys.

LCDB = Low Capability Drifting Buoys.

(3) *Parameters*

St. Nos. 1–8 Pa = atmospheric pressure
Ta = air temperature
Ts = sea surface temperature
Td = sub-surface temperature
W = wind
H = wave (provided satisfactory development of the sensors)

(4) *Transmission System*

ARGOS system as used in the TIROS N satellite.

(5) *Shore Stations*

St. Nos. 1–8 Toulouse (CNES)

(6) *Central Station*

St. Nos. 1–8 Brest (COB)

(7) *Deployment, service and recovery of the ODAS*

France will provide adequate ship facilities and undertake the deployment of and service of the ODAS stations at appropriate opportunities.

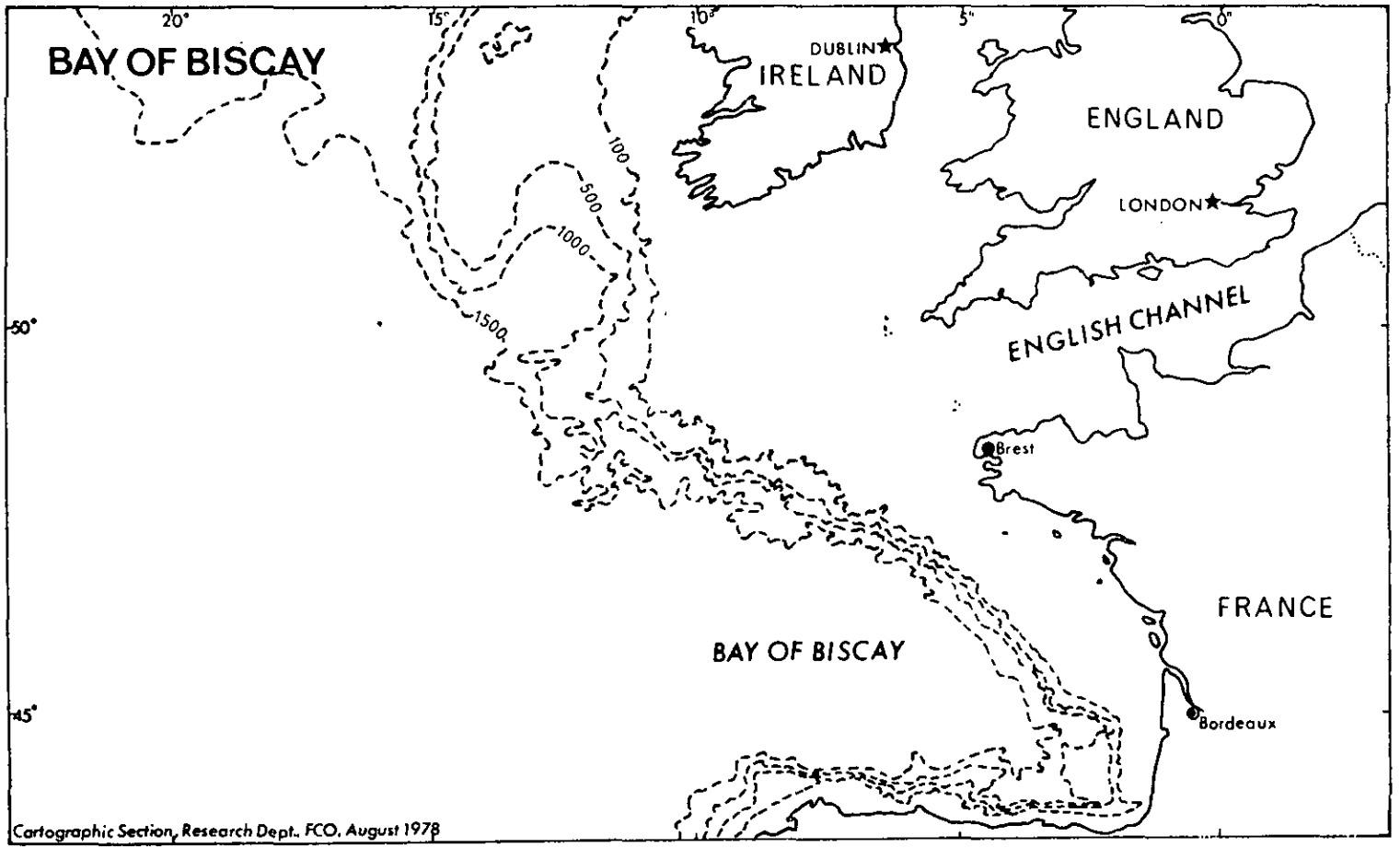
Ireland, Spain, Portugal and the United Kingdom will contribute to the service and recovery of the ODAS at appropriate opportunities.

(8) *Timetable*

1977 (*a*) French pilot project using 2 type L55 LCBs started in 1976 will be kept in operation till March 1977 using the NIMBUS-6 satellite.

The following parameters are measured at one minute intervals:—

Pa = air pressure
Ta = air temperature
Ts = surface temperature
W = wind speed and direction
Pos. = position (which is applied to estimate the drift or currents in Langrangian co-ordinates


BAY OF BISCAY
20°
15°
10°
5°
0°
DUBLIN
IRELAND
ENGLAND
LONDON
100
500
1000
1500
50°
ENGLISH CHANNEL
Brest
FRANCE
BAY OF BISCAY
45°
Bordeaux
Cartographic Section, Research Dept., FCO. August 1978

(*b*) Development and evaluation of the sensors to be used in the project.

1977–78 Exchange of information regarding the study of currents among the various countries concerned.

1978 *

1979 Setting-up the network and exchange of data and information with other pilot networks.

1980 Evaluation of the results obtained by the pilot network for use as a basis for an integrated European network.

II. C. FAROE/SHETLAND

(1) *Participating countries and their individual contributions*

DENMARK/FAROE ISLANDS: 1 ODAS; deployment, service and recovery ships at appropriate opportunities; shore station.

NORWAY: 5.5 ODAS; deployment, service and recovery ships at appropriate opportunities; shore stations; central station; calibration/intercalibration facilities.

UNITED KINGDOM: 2.5 ODAS; deployment, service and recovery ships at appropriate opportunities; calibration/intercalibration facilities.

(2) *List and Location of the ODAS*

St. No.	Position	Type of ODAS	Type of Data	Start of Operation	Sampling Interval	Country
1	64° 30′ N, 04° E	BS*	Met + Ocean	1976	3 hours	Norway
2	72° N, 18° E	BS	Met + Ocean	1976	3 hours	Norway
3	61° 10′ N, 06° W	Wave Rider	Wave	1976		Denmark/ Faroes
4	BRENT B 61° 03′ N, 01° 43′ E	Oil Platform	Met + Ocean	1977	3 hours	United Kingdom
5	STATFJORD 61° 12′ N, 01° 49′ E	Oil Platform	Met + Ocean	1976	3 hours	Norway
6	67° 30′ N, 04° E	BS	Met + Ocean	1977	3 hours	Norway
7	60° N, 04° W	BS	Test	1977		UK/Norway
8	65° N, 10° W	BS	Met + Ocean	1978	3 hours	Norway
9			Met + Ocean	1978		United Kingdom

*BS = Norwegian telemetering data buoy (Chr. Michelsen Inst. Bergen).

* During a one-year period (July 1978–July 1979), the regional sub-groups of the Azores and the Bay of Biscay will carry out a joint programme within the framework of COST 43. This programme is based on approximately 24 drifting buoys, type L 55 and Babeth (CNEXO), using the ARGOS system of the TIROS-N satellite. The positions for the buoys will be determined later.

(3) *Parameters*

St. Nos. 1, 2, 6 and 8 are:—

	Pa	= atmospheric pressure
	Ta	= air temperature
	Ts	= sea surface temperature
	Td	= sub-surface temperature
	W	= wind
	H	= waves
	C	= current
St. No. 3	H	= waves
St. Nos. 4 and 5	Pa	= atmospheric pressure
	Ta	= air temperature
	Ts	= sea surface temperature
	W	= wind
	R	= precipitation
	Dp	= dew point
St. Nos. 7 and 9		= Not yet decided.

(4) *Transmission System*

St. Nos. 1, 2, 6 and 8	HF two-tone frequency shift (FSK)
St. Nos. 3	Principal transmission system is HF
St. Nos. 4 and 5	Not decided yet
St. No. 9	HF (frequency shift or PICCOLO)

(5) *Shore Stations*

Norway	Bergen, Ørlandet.
United Kingdom	Bracknell.
Faroes	Suderøy.

(6) *Central Station*

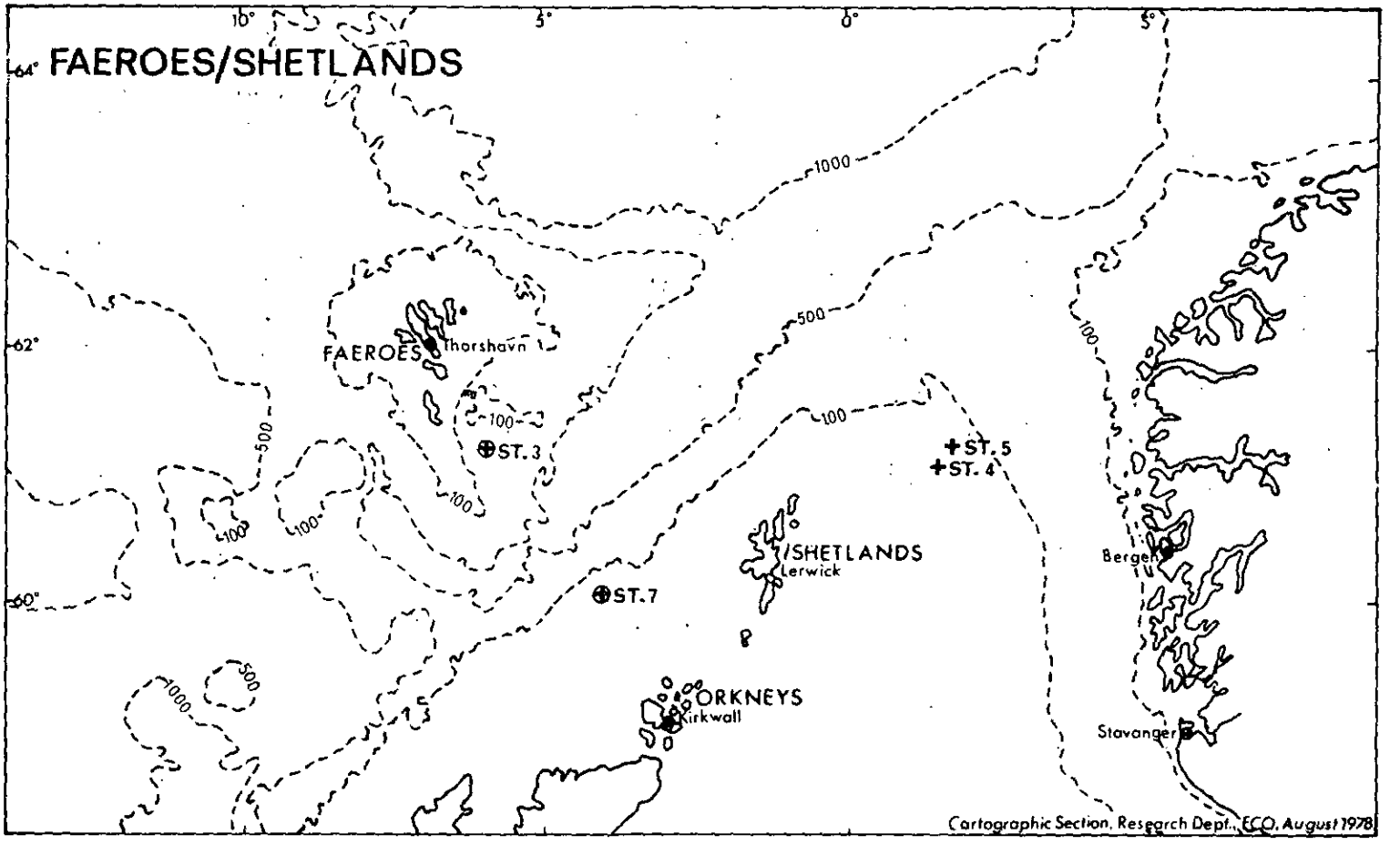
Bergen (for the Norwegian ODAS)

(7) *Deployment, maintenance and recovery of ODAS*

Denmark (Faroe Islands), Norway and the United Kingdom will contribute with ships for deployment, service and recovery at appropriate opportunities.

(8) *Timetable*

1977 St. Nos. 1 and 2 in operation since 1976.
Meteorological stations in operation on oil rigs.
Further development of sensors and equipment.
St. No. 6 in operation.


FAEROES/SHETLANDS
10°
5°
0°
5°
64°
62°
60°
1000
500
100
FAEROES
Thorshavn
ST. 3
ST. 5
ST. 4
ST. 7
/SHETLANDS
Lerwick
ORKNEYS
Kirkwall
Bergen
Stavanger
Cartographic Section, Research Dept., ECO, August 1978

UK/Norway carry out field tests on transmission systems.

Calibration/intercalibration of sensors and system.

Decide on sensor types.

1978 Decision on transmission system and shore stations for the FSK/PICCOLO system.

Deployment of St. Nos. 8 and 9.

1979 *Exchange of data with other pilot networks.*

1980 Evaluation of the results obtained by the pilot network for use as a basis for an integrated European network.

II. D. MEDITERRANEAN

(1) *Participating nations and their individual contributions*

BELGIUM: 1 ODAS.

FRANCE: 2 ODAS; deployment, service and recovery of the ODAS at appropriate opportunities; shore-station; central station; calibration/intercalibration facilities; study on HF ionospheric propagation system.

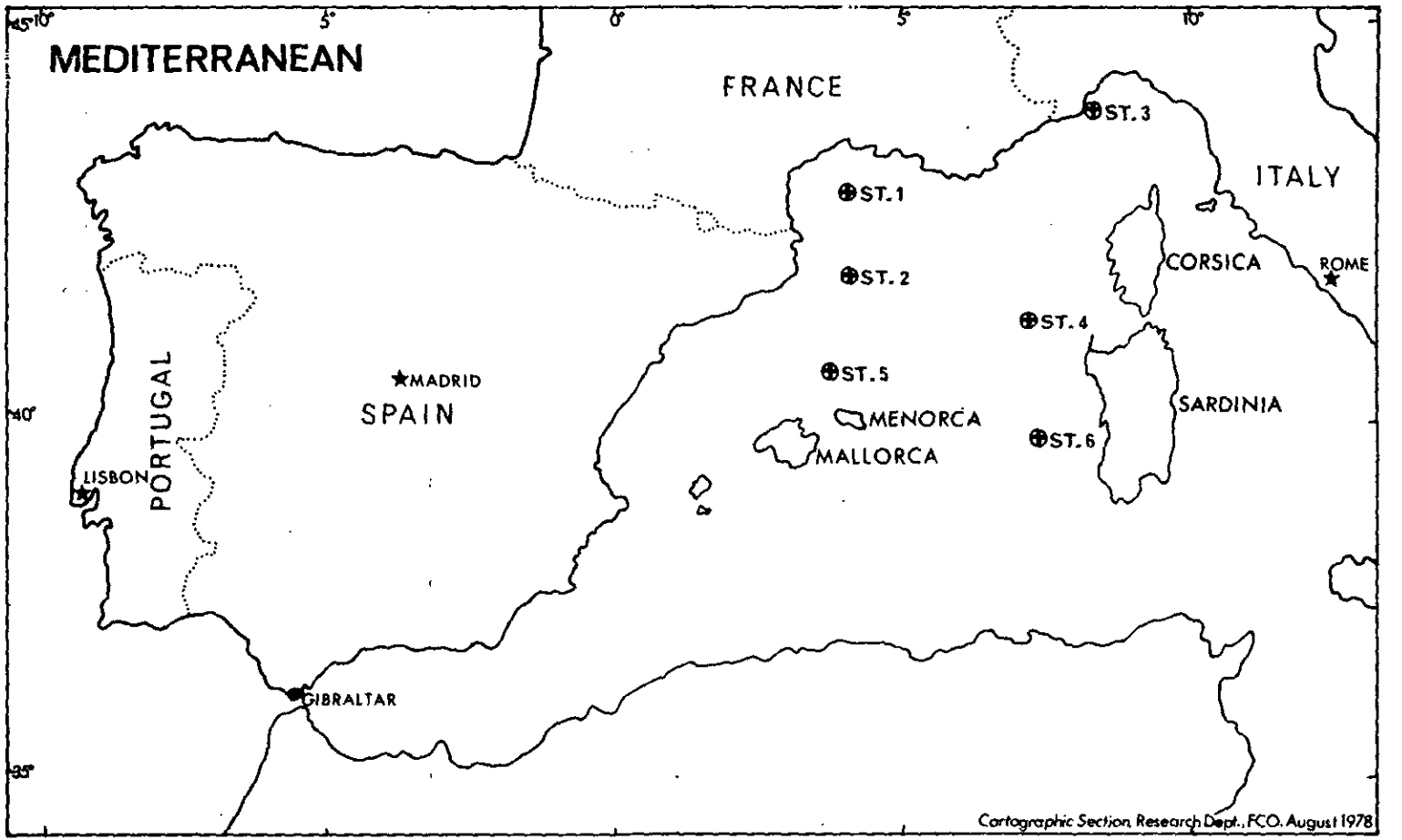
ITALY: 2 ODAS; deployment, service and recovery of the ODAS at appropriate opportunities; central station; calibration/intercalibration facilities.

SPAIN: 1 ODAS; deployment, service and recovery of the ODAS at appropriate opportunities; central station; calibration/intercalibration facilities.

(2) *List and Location of the ODAS*

St. No.	Position	Type of ODAS	Data	Start of Operation	Sampling Interval	Country
1	43° N, 4° E	LCB	Met + Ocean	1976		France
2	42° N, 4° E	BOHRA II	Met + Ocean	1976		France
3	44° N, 8° E	FRASSETTO	Met + Ocean	1976		Italy
4	41° N, 7° E					Belgium
5	40° 20′ N, 3° 40′ E		Met + Ocean	Planned		Spain
6	39° 40′ N, 7° 10′ E		Met + Ocean	Planned		Italy

LCB = Low Capability Buoy.
BOHRA II = Platform.
The FRASSETTO Buoy = Large Buoy.


MEDITERRANEAN
FRANCE
ITALY
ST. 1
ST. 2
ST. 3
ST. 4
ST. 5
ST. 6
CORSICA
ROME
SARDINIA
MENORCA
MALLORCA
MADRID
SPAIN
PORTUGAL
LISBON
GIBRALTAR
10°
5°
0°
5°
10°
45°
40°
35°
24
Cartographic Section, Research Dept., FCO. August 1978

(3) *Parameters*

(Proposed parameters in order of priority)

Pa = atmospheric pressure
Ta = air temperature
Ts = sea surface temperature
W = wind
C = current
H = waves

(4) *Transmission System*

The principal transmission system will be an HF remotely controlled frequency system.

(5) *Shore Station*

Brest, (COB)

(6) *Central Stations*

Rome, Paris and Madrid.

(7) *Deployment, service and recovery of the ODAS*

France, Italy and Spain will provide ships for the deployment, service and recovery of the ODAS at appropriate opportunities.

(8) *Timetable*

1977 (*a*) Development and evaluation of the HF transmission system.
(*b*) St. Nos. 1–3 in operation.
(*c*) Development and evaluation of sensors for the ODAS planned.
(*d*) Calibration/intercalibration of the sensors and the system.

1978 Testing of the minimum pilot network and, on the basis of the results, deployment of supplementary stations.

1979 Exchange of data with the other pilot networks.

1980 Evaluation of the results obtained by the pilot network for use as a basis for an integrated European network.

II. E. NORTH SEA/BALTIC

(1) *Participating countries and their individual contributions*

BELGIUM: 2 ODAS; deployment, service and recovery ships at appropriate opportunities.

DENMARK: 1 ODAS; deployment, service and recovery ships at appropriate opportunities.

FINLAND: 3 ODAS; deployment, service and recovery ships at appropriate opportunities.

FRANCE: 1 ODAS; calibration/intercalibration facilities.

NORWAY: 2 ODAS; deployment, service and recovery ships at appropriate opportunities; calibration/intercalibration facilities.

SWEDEN: 2 ODAS; deployment, service and recovery ships at appropriate opportunities.

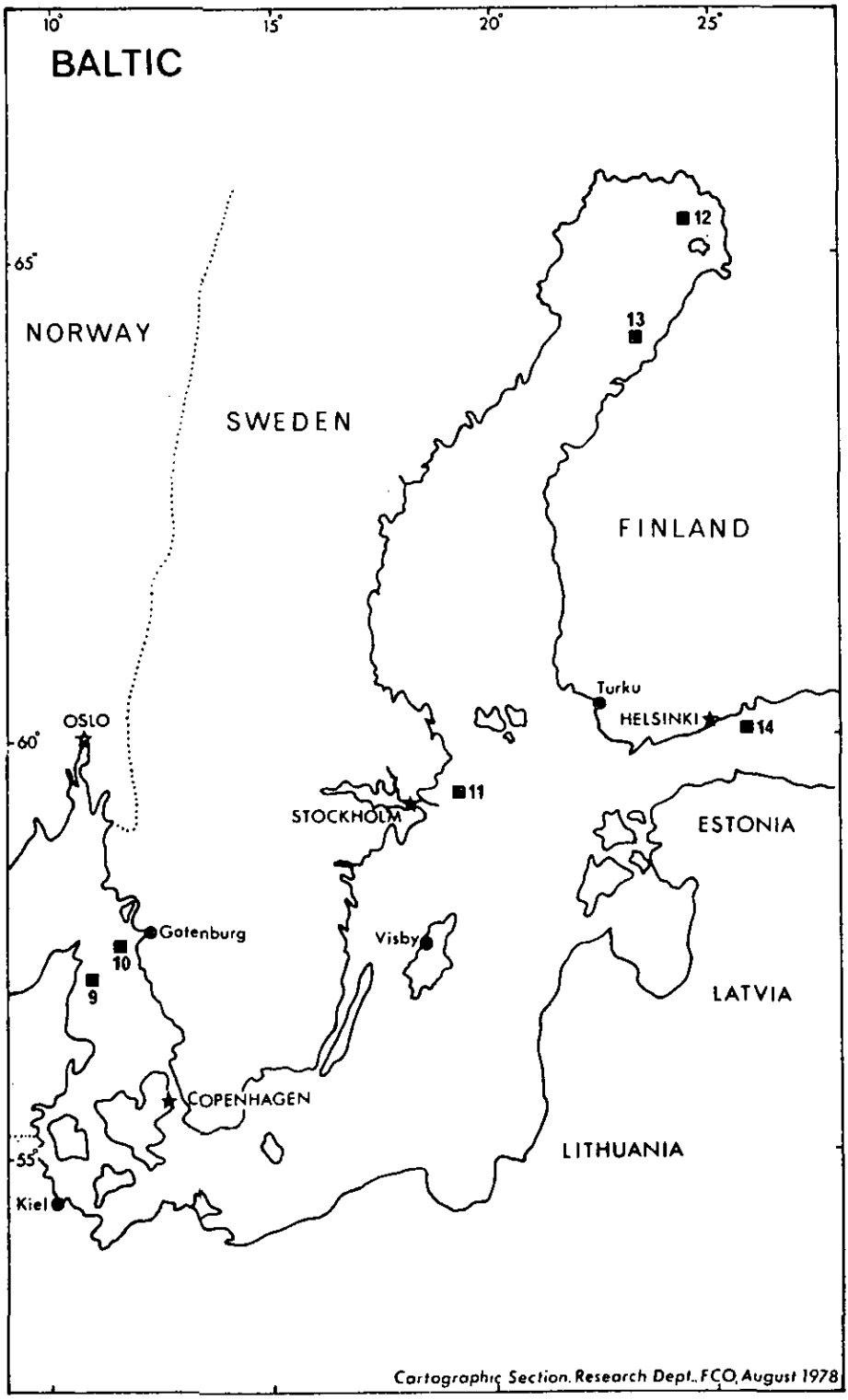
UNITED KINGDOM: 3 ODAS; deployment, service and recovery ships at appropriate opportunities, calibration and intercalibration facilities.

NORTH SEA

(2) *List and Location of the ODAS*

St. No.	Position	Type of ODAS	Type of Data	Start of Operation	Sampling Interval	Country
1	59° 15′ N, 01° E	BS	Met + Ocean	1976	3 hours	Norway
2	59° 15′ N, 03° 20′ E	BS	Met + Ocean	1977	3 hours	Norway
3	59° 15′ N, 01° 15′ W		Met + Ocean	1976		France
4	52° 24′ N, 01° 48′ E	DB 1*	Met + Ocean	1976		United Kingdom
5	51° 30′ N, 02° 30′ E		Met + Ocean	1976		Belgium
6	51° 45′ N, 03° 20′ E		Met + Ocean	1976		Belgium
7	BERYL A 59° 32′ N, 01° 33′ E	Oil Platform	Met	1976	3 hours	United Kingdom
8	PIPER OCCIDENTAL 58° 25′ N, 00° 12′ E	Oil Platform	Met	1977	3 hours	United Kingdom

*DB 1 = Data Buoy 1.


BALTIC
10°
15°
20°
25°
65°
60°
55°
NORWAY
SWEDEN
FINLAND
ESTONIA
LATVIA
LITHUANIA
OSLO
STOCKHOLM
HELSINKI
Turku
COPENHAGEN
Gotenburg
Visby
Kiel
9
10
11
12
13
14
Cartographic Section, Research Dept., FCO, August 1978

(4) *Transmission System*

The principal transmission system will be via Meteosat. However, other systems will also be used, such as VHF, HF PICCOLO and GPO troposcatter link.

(5) *Satellite Receiving Station*

Not yet decided.

(6) *Central Station*

Not yet decided.

(7) *Deployment, maintenance and recovery of the ODAS*

Belgium, Denmark, Finland, France, Norway, Sweden and the United Kingdom will participate in the deployment, service and recovery operations at appropriate opportunities.

(8) *Timetable*

1977 (*a*) The station will be in operation using a preliminary transmission system.

(*b*) Development and tests of the various sensors.

(*c*) Decision on sensors, sampling intervals, observation hours and data format.

(*d*) Implementation of data exchange via the GTS of the WMO.

1978 The Meteosat transmission system will be evaluated and its adoption considered.

1979 Exchange of data with the other pilot networks.

1980 Evaluation of the results obtained by the pilot network as basis for an integrated European network.

ANNEX II

LEGAL STATUS OF ODAS

ARTICLE—DEFINITION OF TERMS

1. Ocean Data Acquisition Systems, Aids and Devices placed under COST Project 43 are hereinafter referred to as ODAS COST 43.

2. ODAS COST 43 means a structure, platform, installation, buoy or or other device, not being a ship, together with its appurtenant equipment, deployed at sea primarily for the purpose of collecting, storing or transmitting samples or data relating to the marine environment or the atmosphere or the uses thereof. The various terms used in describing ODAS COST 43 in these Articles and in the annexes thereto are defined below:

(*a*) "manned": a device designed so as to require the continuous attendance on board, on a full-time basis, of one or more persons while the device is in operation; the term includes devices manned on a seasonal or other periodic basis of substantial duration;

(*b*) "unmanned": any device not included in the definition of a "manned" ODAS;

(*c*) "anchored": a device buoyant in or on the water and designed to be anchored, moored or maintained in a constant position by any appropriate system;

(*d*) "drifting": a device designed to be buoyant in or on the water and free to move, but not having the capability to change its course to avoid collision;

(*e*) "surface penetrating": a device so designed that part of it penetrates the air-sea interface;

(*f*) "sub-surface": a device designed to be deployed entirely below the air-sea interface;

(*g*) "bottom-bearing": a device designed to be physically supported by the sea bed or the subsoil thereof.

3. "Station" means a geographical location occupied from time to time by an ODAS COST 43.

4. "Registry State" means the State that has established a special register for ODAS COST 43 or the State in which an ODAS COST 43 is so registered.

5. "Person" means a legal or physical person.

6. "Placing" means the setting up of ODAS COST 43.

7. "Deployment" means using, employing, exploiting or operating ODAS COST 43.

8. "Owner" means the State or person in whose name an ODAS COST 43 is registered.

9. "Operator" means the State or person authorized by the owner to deploy an ODAS COST 43.

ARTICLE 2—SCOPE AND EFFECT

1. These Articles shall apply to all ODAS COST 43 which are registered in accordance with Article 4.

2. These Articles shall also apply to measuring equipment other than that referred to in Article 1(2) where the said equipment is deployed under COST Project 43 separately from the vessel or platform on which it is carried.

3. Nothing in these Articles shall require States participating in COST Project 43 to introduce new national law.

ARTICLE 3—DEPLOYMENT

States which participate in COST Project 43 shall, subject to applicable national and international law, encourage the placing and deployment in waters under their jurisdiction of ODAS COST 43.

ARTICLE 4—REGISTRATION

1. A State which deploys or authorizes the deployment of an ODAS COST 43 shall cause to be established a special register in the form set out in Annex 4 and in which all such ODAS shall be entered.

2. A certificate of conformity with the standards laid down in Annexes 2 and 3 shall be required as a condition of registration. In each Registry State this certificate shall be issued by a competent authority the name of which shall be communicated to the Committee. Furthermore, the competent national authorities shall keep the Committee fully informed concerning the activities of all ODAS COST 43 registered in that State.

3. No ODAS COST 43 may be registered by more than one Registry State.

4. Any ODAS COST 43 which becomes permanently inoperative shall be removed from the register in which it has been entered, once it has been withdrawn or once its loss has been noted.

ARTICLE 5—NOTIFICATION

States shall ensure that the owner or operator, as the case may be, of an ODAS COST 43 is required to give notice to the competent authorities of the deployment of and activities relating to that ODAS, including its withdrawal or loss, and provide other relevant information to the competent authorities for dissemination, in accordance with the provisions of Annex 1.

ARTICLE 6—MARKING AND SIGNALS

All ODAS COST 43 must comply with the marking and signal requirements prescribed in Annex 2.

ARTICLE 7—CONSTRUCTION ARRANGEMENTS AND OTHER SAFETY PROVISIONS

All ODAS COST 43 must comply with the provisions of Annex 3.

ARTICLE 8—REQUIREMENTS IN MATTERS OF SAFETY OF EMPLOYMENT

In accordance with the applicable rules of national and international law safety zones may be created around ODAS COST 43. Notice of the establishment of such zones shall be given in accordance with the provisions of Annex 1.

ARTICLE 9—RECOVERY AND RETURN

1. When any competent authority in a State participating in COST Project 43 receives information on the recovery of an ODAS COST 43 or any equipment referred to in Article 2(2), the competent authority in the Registry State and if possible the owner or operator shall be informed immediately.

2. After checking and inspection by a representative of the owner or operator, the recovered ODAS COST 43 or equipment shall be made available for return as soon as possible to the owner or operator at his request and at his expense.

If the owner or operator so wishes the data or recordings in the ODAS COST 43 may be extracted and returned separately within an even shorter time.

3. A reward in accordance with the scale in Annex 5 shall be paid by the owner or operator to the person who recovers and returns the ODAS COST 43 or the equipment of an ODAS COST 43.

4. States participating in COST Project 43 shall take all suitable measures to facilitate the return of recovered ODAS COST 43.

5. This Article shall take effect subject to national and international law.

ARTICLE 10—SALVAGE

1. An ODAS COST 43 shall not be subject to the rules of salvage unless its owner or operator contracts for the salvage thereof.

2. This Article shall apply without prejudice to Article 9 and without prejudice to applicable national and international law.

ANNEX 1

NOTIFICATION

PART 1. **Notice of activities and information concerning ODAS COST 43**

1.1 *General*

1.1.1 The availability of relevant information to mariners is of primary importance for the safety of both ODAS COST 43 and vessels. Each Registry State shall advise, through its appropriate national authority, the corresponding authority of at least one of the Governments issuing charts, notices to mariners and nautical publications on a world-wide basis, of the essential details of an ODAS COST 43 which constitute or might constitute a danger to shipping and safe navigation, so that such information can be given the widest possible dissemination.

1.2 *Details to be reported by the operators to the authorities concerned*

1.2.1 Primary reports are to include the following information:

All ODAS COST 43:

(*a*) Identification number and radio identification code where there is a radio transmitter;

(*b*) Owner's or operator's name and address, telex and telephone no;

(*c*) Size and configuration;

(*d*) Whether manned or unmanned;

(*e*) Markings and signal characteristics, including daymarks, lights, fog signals, etc.

(*f*) Geographical position of deployment;

(*g*) Intended data and duration of deployment;

In addition where applicable:

(*h*) Hazardous substances used abroad;

(*i*) A description of equipment which might constitute a hazard to surface and sub-surface craft such as wires, chains, scientific equipment, etc.;

(*j*) Safety zones (Articles 8 refers)

For drifting ODAS COST 43 only:

(*k*) Anticipated track and estimated speed of drift (see paragraph 1.2.2 below)

1.2.2 Qualifying reports are to be made as necessary, to notify termination of deployment (including any ODAS COST 43 which is not to be recovered), wreck, distress and other significant changes that may affect safety, such as change in signal characteristics, or their known or suspected malfunctioning, known or suspected instance of breaking adrift, etc.

For drifting ODAS COST 43 only:

Geographical position is to be reported, if known, at reasonable intervals, for promulgation through radio navigational warnings (the frequency of such reports should be consistent with the requirements of safety and the cost of such warnings which are borne by the owner or operator).

1.3 *Promulgation of reports*

1.3.1 The receipt of reports referred to in paragraphs 1.2.1 and 1.2.2 above by the appropriate national authorities does not bind that authority to promulgate all the details given in such a report.

PART 2. **Schedules**

2.1 *General*

2.1.1 As much information as possible concerning position and dates of deployment and removal of an ODAS COST 43 which constitutes or might constitute a danger to shipping and safe navigation, shall be notified well in advance. Such information shall be updated, as necessary, and confirmed when actual deployment or removal takes place.

2.2 *Period of advance notice*

2.2.1 Notices of activities and as detailed information as possible concerning ODAS COST 43, as listed in paragraph 1.2.1 above, should be forwarded well prior to any deployment or other action, and, if possible, so that it is received not less than two months in advance by the appropriate national authority which will be responsible for publication of the information by notice to mariners.

2.2.2 Information received too late for dissemination by this method, may be promulgated by radio navigational warnings at the discretion of the appropriate national authority but at the expense of the owner or operator.

PART 3. **Danger messages**

3.1 *General*

3.1.1 Every shipmaster who observes an ODAS COST 43 inadequately marked or a charted ODAS COST 43 off station which thereby constitutes a danger to shipping and safe navigation, shall broadcast the information to all ships in the vicinity and send it to the first point on the coast to which communication can be made, with a request that it be transmitted to the appropriate authorities.

3.1.2 Each State participating in COST Project 43 will take all steps necessary to ensure that when information specified in paragraph 3.1.1 above is received, it will be promptly brought to the knowledge of those concerned and communicated to other interested governments.

3.1.3 The transmission of messages respecting matters specified in paragraph 3.1.1 above, shall be free of cost to the ships concerned.

3.1.4 All radio messages issued under paragraph 3.1.1 above shall be preceded by TTT Navigation, as prescribed in the Radio Regulations in force of the International Telecommunication Union.

3.2 *Form of message*

3.2.1 Messages respecting matters specified in paragraph 3.1.1. above, shall be prepared in the following form:

Examples:

(*a*) "TTT Navigation. ODAS COST 43 "X" not in position. 0700 GMT 5 February."

(*b*) "TTT Navigation. Observed ODAS COST 43 identification number ODAS-35-FRA drifting in 5505 N 0512 E at 1430 GMT 17 May."

ANNEX 2

MARKING AND SIGNALS

PART 1. **Identification and marking**

1.1 *General*

1.1.1 Every ODAS COST 43 entered in an ODAS COST 43 register shall be assigned a unique identification number prefixed by the letters " ODAS " and suffixed by letters indicating in abbreviated form the Registry State taken from the Table of Allocation of International Call Sign Series of the Radio Regulations in force promulgated by the International Telecommunication Union.

1.1.2 Every ODAS COST 43 shall display its identification number clearly on an exterior surface where it can best be seen and, in addition, if feasible, the name and address of its owner.

1.1.3 Should the Owner or Operator of an ODAS COST 43 wish it to be subject to the rules of salvage in accordance with Article 10, such ODAS COST 43 shall bear a clearly visible special sign to this effect.

1.2 *Surface-penetrating ODAS COST 43*

1.2.1 Surface-penetrating ODAS COST 43 shall have their visible portions painted yellow. Drifting ODAS should carry an inscription in several languages stating that its purpose is to drift freely and that it should not be recovered by unauthorized persons.

PART 2. **Lights and signals**

2.1 *General*

2.1.1 The lights and signals referred to hereunder shall be positioned in places where they can best be seen or heard.

2.1.2 A satisfactory radar response at a distance of at least two miles shall be ensured for an ODAS COST 43 which constitutes a danger to shipping and safe navigation, and every effort shall be made to increase this range where the size of the ODAS COST 43 allows.

2.2 *Surface-penetrating ODAS COST 43 other than bottom-bearing ODAS COST 43*

2.2.1 Surface-penetrating ODAS COST 43 of all types other than bottom-bearing ODAS COST 43 shall:

(*a*) exhibit from sunset to sunrise and in the case of manned ODAS COST 43 also in conditions of poor visibility, a yellow light visible all round the horizon with, where technically practicable, a nominal range of at least 5 miles, exhibiting a group of 5 flashes every 20 seconds, the flash rate not to exceed 40 per minute.

(*b*) carry a sound signal where the installation thereof is technically practicable, of such a nature that it cannot be confused with neighbouring aids to navigation, nor with sound signals made in compliance with the International Regulations for Preventing Collisions at Sea.

2.3 *Surface-penetrating ODAS COST 43 which are bottom-bearing ODAS COST 43*

2.3.1 Bottom-bearing, surface-penetrating ODAS COST 43 shall be marked and carry lights and sound signals in the same manner as " a structure in the sea ", e.g. drilling platforms, as is customary in the area concerned.

2.4 *Sub-surface ODAS COST 43*

2.4.1 Sub-surface ODAS COST 43 of all types which, due to the depth at which they are deployed, constitute a danger to shipping and safe navigation or fishing gear, shall when they are not escorted by an attending vessel capable of giving warning(s) of its presence to passing ships, be marked by a surface buoy exhibiting lights and complying with the requirements for sound signals in paragraph 2.2.1 above.

PART 3. **Modification or waiver**

3.1 *General*

3.1.1 The requirements of Parts 1 and 2 may be modified or waived by the Registry State, subject, where relevant, to the concurrence of the State providing aids to navigation in the area concerned and at the risk of the operator, if such a waiver or modification does not result in the ODAS COST 43 becoming a danger to shipping and safe navigation.

PART 4. **Inspection**

4.1 *General*

4.1.1 The Registry State should establish and maintain an effective system of inspecting the marking and signal characteristics of all ODAS COST 43 contained in its register, before deployment. (See also Annex 3).

ANNEX 3

CONSTRUCTION ARRANGEMENTS AND OTHER SAFETY PROVISIONS

PART 1. **General Provisions**

1.1 *Application*

1.1.1 Unless otherwise provided, the present requirements apply to manned ODAS COST 43.

1.1.2 The present requirements do not apply to an installation, which has primarily been designed and deployed for purposes other than ocean data acquisition, e.g. off-shore drilling rigs, production platforms, navigational aids, submersibles, etc., even if it is used for ocean data acquisition.

1.2 *Inspection*

1.2.1 The Registry State shall establish and maintain an effective system of inspection in order to ensure compliance with the requirements of this Annex.

1.3 *Equivalents*

1.3.1 Where in the present requirements any special material, appliance, apparatus or type thereof is specified or provisions made, any other material, appliance, etc., may be allowed, provided the Registry State is satisfied that it is not less effective.

PART 2. **Subdivision and stability**

2.1 *Subdivision*

2.1.1 Any ODAS COST 43 shall comply with such subdivision requirements as may be decided by the Registry State, having regard to the number of persons on board.

2.2 *Reserve of buoyancy*

2.2.1 Where practicable watertight compartments shall be provided and the ODAS COST 43 shall have sufficient reserve of buoyancy to remain afloat and be capable of abandonment in the event of any one such compartment being flooded.

2.3 *Intact stability*

2.3.1 Surface-penetrating anchored or drifting ODAS COST 43

All units afloat shall have sufficient stability to withstand the heeling effect of wind and waves in any horizontal direction. The quantitative values for the heeling forces and acceptable stability criteria shall be decided by the Registry State having regard to the area of deployment of ODAS COST 43.

2.3.2 Surface-penetrating bottom-bearing ODAS COST 43

Bottom-bearing ODAS COST 43 shall have sufficient bearing force and spread of support to withstand the heeling effects of wind and waves in

any horizontal direction. The Registry State shall decide the requirements having regard to assumed load conditions relating to the area of deployment of the ODAS COST 43.

2.3.3 Sub-surface ODAS COST 43 except bottom-bearing types

Sub-surface ODAS COST 43 other than bottom-bearing types shall have sufficient positive stability in both surfaced and submerged conditions and at all times during transition from one to the other.

PART 3. **Fire protection**

3.1 *General*

3.1.1 The purpose of this part is to cover the fire protection for manned ODAS COST 43 which are non-self-propelled but may be provided with powers for dynamic anchoring to require the fullest practicable degree of fire protection for such ODAS COST 43. The basic principles underlying these requirements are:

(i) separation of accommodation spaces from remainder of the ODAS COST 43 by thermal and structural boundaries;

(ii) minimum use of combustible materials;

(iii) avoidance of use of materials that emit toxic vapours and large quantities of smoke under fire condition;

(iv) detection of any fire in the space of origin;

(v) containment and extinction of any fire in the space of origin;

(vi) protection of means of escape or access for fire-fighting; and

(vii) ready availability of fire-extinguishing appliances.

3.1.2 The requirements of Part 3 shall apply to the manned surface-penetrating ODAS COST 43.

3.1.3 Manned sub-surface ODAS COST 43 shall be provided with adequate means for fire protection to the satisfaction of the Registry State, bearing in mind the requirements for surface-penetrating ODAS COST 43 and the different combustion characteristics of materials in non-atmospheric environment.

3.2 *Structure*

3.2.1 The hull, superstructure and deck houses shall be constructed of steel or other equivalent material.

3.3 *Definitions*

3.3.1 Whenever the phrases defined below occur throughout this part, they shall be interpreted in accordance with the following definitions:

(*a*) Incombustible material means a material which neither burns nor gives off inflammable vapours in sufficient quantity to ignite at a pilot flame or other ignition source when heated to approximately 750° (1,382°F). Any other material is a "combustible material".

(*b*) A Standard fire test is one in which specimens of the relevant bulkheads or decks are exposed in a test furnace to temperatures

corresponding approximately to the standard time-temperature curve. The specimen shall have an exposed surface of not less than 4·65 square metres (50 square feet) and height (or length of deck) of 2·44 metres (8 feet) resembling as closely as possible the intended construction and including where appropriate at least one joint. The standard time-temperature curve is defined by a smooth curve drawn through the following points:

at the end of the first 5 minutes—538°C (1,000°F)
at the end of the first 10 minutes—704°C (1,300°F)
at the end of the first 30 minutes—843°C (1,550°F)
at the end of the first 60 minutes—927°C (1,700°F)

(*c*) " A " class divisions are those divisions formed by bulkheads and decks which comply with the following:

1. they shall be constructed of steel or other equivalent material;
2. they shall be suitably stiffened;
3. they shall be so constructed as to be capable of preventing the passage of smoke and flame to the end of the one-hour standard fire test;
4. they shall be insulated with approved incombustible materials such that the average temperature of the unexposed side will not rise more than 139°C (250°F) above the original temperature nor will the temperature, at any one point, including any joint rise more than 180°C (325°F), above the original temperature, within the time listed below:

   Class A–30 30 minutes
   Class A–15 15 minutes
   Class A–0 0 minutes

5. the Registry State may require a test of a prototype bulkhead or deck to ensure that it meets the above requirements for integrity and temperature rise.

(*d*) Bulkheads not required to be " A " class divisions shall be constructed of approved incombustible materials. They need not meet requirements relative to the passage of smoke and flame nor the limiting of temperature rise.

3.4 *Divisions*

3.4.1 Bulkheads and decks which form divisions of the following spaces from each other shall conform to the minimum fire integrity requirements as prescribed in Tables 1 and 2.

(*a*) accommodation spaces including living quarters, lavatories, galleys, food lockers and similar spaces;

(*b*) laboratory spaces, radio rooms and other spaces which are used for scientific research purposes;

(*c*) machinery spaces which are used for generators, batteries, ventilation machinery and similar spaces and trunks to such spaces;

(*d*) stairways/ladders and lift enclosures and corridors which constitute the means of escape;

(*e*) life-boat and life-raft handling and embarkation stations; and

(*f*) open deck spaces.

3.5 *Openings (other than ventilation ducts) in divisions*

3.5.1 Suitable arrangements, to the satisfaction of the Registry State, shall be made to ensure the fire resistance of divisions is not impaired by openings.

3.6 *Means of escape*

3.6.1 Protection of access from the living quarters to the life-boat or life-craft embarkation areas shall be to the satisfaction of the Registry State.

3.7 *Ventilation systems*

3.7.1 Where ventilation systems penetrate decks, precautions shall be taken to reduce the likelihood of smoke and hot gases passing from one between deck space to another through the system. The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the space in the event of fire. Efficient insulation shall be provided for exhaust ducts from galley ranges where the ducts pass through accommodation spaces.

3.8 *Fire-detection systems*

3.8.1 An automatic fire alarm and fire-detection system of an approved marine type shall be installed where it is considered necessary by the Registry State.

3.9 *Fire extinguishers*

3.9.1 At least one portable fire extinguisher of an approved marine type and design should be provided in a readily accessible position, in each main space. Spare charges shall be provided in accordance with the requirements to be specified by the Registry State.

3.9.2 The Registry State shall, where reasonable and practicable, require that a fixed fire-extinguishing system shall be provided for all machinery spaces where liquid fuel is used for production of electrical power or power for dynamic anchoring purposes, and that special attention be paid to the need to have effective ventilation for spaces containing electric batteries so that explosive vapours will not accumulate in the space.

Table 1—Bulkheads

Spaces	(*a*)	(*b*)	(*c*)	(*d*)	(*e*)	(*f*)
(*a*) Accommodation spaces ...	—	A0	A30	A0	A0	A0
(*b*) Laboratories*	—	A15	A30	A0	A0	A0
(*c*) Machinery	—	—	A0	A15	A0	A0
(*d*) Stairways	—	—	—	A0	A0	A0
(*e*) Lifeboat or life-raft stations ...	—	—	—	—	—	—
(*f*) Open decks	—	—	—	—	—	—

Note : * For laboratories with floor space greater than 50m² or with high fire load, corresponding values for machinery space shall apply.

Table 2—Decks

Space below	Space above					
	(*a*)	(*b*)	(*c*)	(*d*)	(*e*)	(*f*)
(*a*) Accommodation spaces ...	A0	A15	A15	A15	A0	A0
(*b*) Laboratories*	A30	A15	A15	A30	A30	A0
(*c*) Machinery	A30	A30	A15	A30	A30	A0
(*d*) Stairways	A0	A15	A15	A0	A0	A0
(*e*) Lifeboat or life-raft stations ...	A0	A0	A0	A0	A0	—
(*f*) Open decks	A0	A0	A0	A0	A0	—

Note: *For laboratories with floor space greater than 50m^2 or with high fire load, corresponding values for machinery space shall apply.

PART 4. **Life-saving appliances**

4.1 *General*

4.1.1 Personnel engaged in servicing unmanned ODAS COST 43 shall always wear life-jackets and a boat from the attending vessel shall stand by at all times to assist in case of accidents.

4.2 *Lifeboats and life-rafts*

4.2.1 Each ODAS COST 43 shall be provided with lifeboats of such an aggregate capacity to accommodate twice the number of persons on board, including those brought on board for brief periods and essential to operations. However, life-rafts may be substituted for lifeboats where the Registry State is satisfied that, having in mind such difficulties as safe launching, it would not be reasonable or practicable to provide lifeboats.

4.2.2 Where such substitution is made, the aggregate capacity of the life-rafts shall be at least equal to the total number of persons that the lifeboats would have been required to accommodate.

4.2.3 The Registry State may permit a reduction of the lifeboats and/or life-rafts provided in compliance with subparagraph 4.2.1 above, to an aggregate capacity sufficient to accommodate all persons on board, provided it is satisfied that the following measures are incorporated in the design:

(i) the ODAS COST 43 would retain sufficient reserve of buoyancy to remain afloat and be capable of abandonment in the event of any one such compartment being flooded; and

(ii) as regards fire protection:

—separation of accommodation spaces from the remainder of the unit by thermal and structural boundaries;

—detection, containment and extinction of any fire in the space of origin;

—protection of the means of escape;

—minimum use of combustibles.

4.2.4 In no case shall fewer than two survival craft be provided.

4.2.5 The lifeboats and life-rafts shall be so constructed and equipped in accordance with agreed international norms and to the satisfaction of the Registry State.

4.3 *Rescue boat*

4.3.1 Where practicable, as for instance in bottom bearing ODAS COST 43 and/or ODAS COST 43 with large crews, the carriage of a powered rescue boat may be considered by the Registry State. Such a boat, if carried, shall be available at all times and shall be of a type approved by the Registry State. This boat shall be of a type which permits rapid launching, is easily manoeuvred, allows quick recovery of a man overboard and permits towing a life-raft away from immediate danger. The rescue boat shall incorporate the following: ample reserve of buoyancy, rugged construction, adequate proportions to permit taking aboard an unconscious person without capsizing. The propelling machinery shall be easily started in all expected conditions.

4.4 Life-jackets of an approved type shall be provided for all persons on board plus 5 per cent of that number.

4.5 *Lifebuoys*

4.5.1 Each ODAS COST 43 shall be equipped with lifebuoys of an approved type and number to be determined by the Registry State. Some of these lifebuoys shall be equipped with self-igniting lights and self-activating smoke signals. The self-igniting lights shall be of an approved electric battery type. The number and placement of lifebuoys shall be such that a lifebuoy is accessible from exposed locations with particular emphasis on embarkation and debarkation points. At least one lifebuoy on each side of the ODAS COST 43 shall be fitted with a buoyant life-line, the length of which shall be at least 1½ times the distance from the buoy to the waterline at light draft, or 30m., whichever is greater.

4.5.2 On board some ODAS COST 43, where outside storage of lifebuoys is not practical or possible, the Registry State may permit keeping them inside the ODAS COST 43, due account being paid to the obedience of the principle of ready availability.

4.6 *Medical first-aid kits*

4.6.1 Medical first-aid kits should be readily available to the satisfaction of the Registry State. Each ODAS COST 43 shall, where possible, be provided with a stretcher capable of being used for lifting an injured person into a helicopter.

4.7 *Guards and rails*

4.7.1 The unprotected perimeter of all floor and deck areas and openings shall where possible be rimmed with guards, rails or other devices to the satisfaction of the Registry State to prevent persons from falling overboard.

BALTIC

(2) *List and Location of the ODAS*

St. No.	Position	Type of ODAS	Type of Data	Start of Operation	Sampling Interval	Country
9	57° 13′ N, 10° 45′ E	Light Platform	Met + Ocean	1976		Denmark
10	57° 40′ N, 11° 40′ E	Station	Met + Ocean	1976		Sweden
11	59° 10′ N, 19° 10′ E	Station	Met + Ocean	1976		Sweden
12	65° 26′ N, 24° 13′ E	Platform	Met + Ocean	1976		Finland
13	64° 20′ N, 23° 27′ E	Platform	Met + Ocean	1976		Finland
14	59° 59′ N, 25° 36′ E	Platform	Met + Ocean	1976		Finland

Stations Nos. 13 and 14 comprise a fixed tower for meteorological sensors and a buoy equipped with oceanographical sensors.

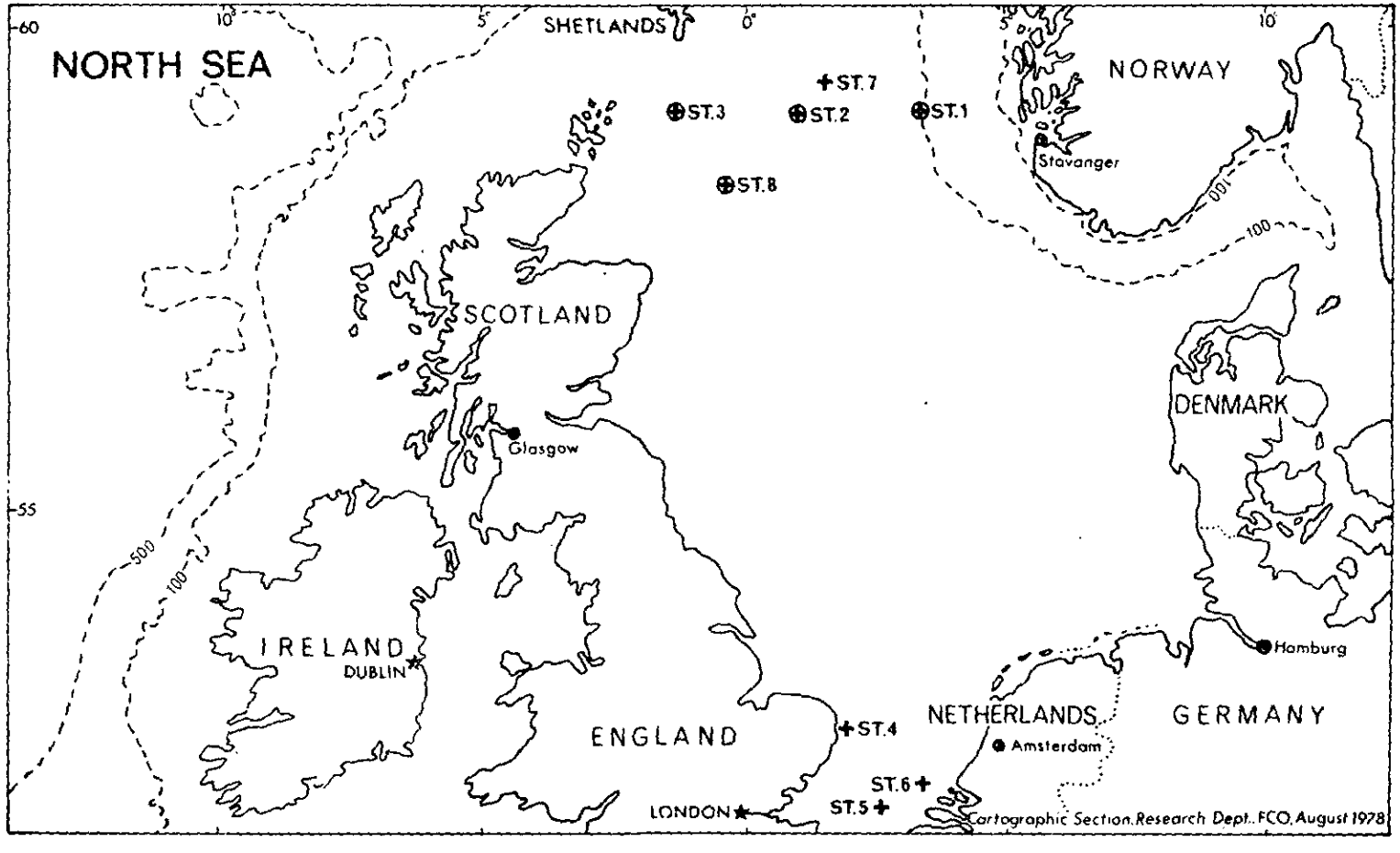
(3) *Parameters*

The following parameters will be measured on the North Sea ODAS and transmitted in real time.

St. No.	Pa	Ta	W	Dew-point	Solar rad.	Con-duct-ivity	Waves	Water level	Ts	Td	Cur-rent	Visi-bility	Rain
1	X	X	X				X		X	X	X		
2	X	X	X				X		X	X	X		
3	X	X	X										
4	X	X	X	X		X	X	X	X		X	X	X
5	X	X	X		X	X	X		X	X			
6	X	X	X		X	X	X		X	X			
7	X	X	X	X									
8	X	X	X	X									

In the Baltic Sea the following parameters will be measured and transmitted in real time.

St. No.	Pa	Ta	W	Dew-point	Solar rad.	Visi-bility	Pre-cipi-tation	Cloud height	Wind gust	Cond.	Waves	Water level	Ts	Cur-rent	Ice force
9	X	X	X			X				X	X	X	X	X	
10	X	X	X	X		X		X		X		X	X	X	
11	X	X	X	X		X		X		X		X	X	X	
12	X	X	X	X	X	X	X		X	X		X	X	X	X
13	X	X	X	X	X	X	X		X	X		X	X	X	X
14	X	X	X	X	X	X	X		X	X		X	X	X	X


NORTH SEA
SHETLANDS
NORWAY
Stavanger
ST.1
ST.2
ST.3
ST.7
ST.8
SCOTLAND
Glasgow
DENMARK
IRELAND
DUBLIN
ENGLAND
LONDON
ST.4
ST.5
ST.6
NETHERLANDS
Amsterdam
GERMANY
Hamburg
60
55
10°
5°
0°
5°
10°
500
100
100
100
Cartographic Section, Research Dept., FCO, August 1978

4.8 *Means of escape and emergency lighting*

4.8.1 Sufficient means shall be provided for embarkation into life-saving equipment and personnel boats as appropriate. The means provided should take into account the type and configuration of the ODAS COST 43 and the method of launching the life-saving appliances, and they should require minimum physical exertion. The means of escape to be considered are:

(*a*) wherever practicable at least two widely separated fixed metal inclined ladders or stairways, extending from the platform to the surface of the water;

(*b*) sufficient personnel landings shall be provided on each ODAS to assure safe access and egress. When due to special construction features personnel landings are not feasible, then suitable transfer facilities to provide safe access or egress, satisfactory to the Registry State, shall be provided;

(*c*) personnel landings where fitted shall be provided with adequate artificial illumination. Sea areas in their vicinity shall likewise be illuminated;

(*d*) where practicable, emergency power shall be provided for the illuminating purposes described in (*c*) above in the event of failure of the main generating system or other causes. The source or sources of this emergency power shall be as remote as practicable from the main generating plant and shall provide lighting for a period of time to be determined by the Registry State; and

(*e*) when arrangements are made for landing helicopters on an ODAS COST 43 means shall be provided for landing lights and other illumination as necessary on or around helicopter landing areas. Landing lights shall be installed in conformance with relevant regulations.

4.9 *Stowage, handling and launching*

4.9.1 Life-saving appliances and equipment shall be positioned or stowed to the satisfaction of the Registry State to provide for:

(*a*) distribution at the most easily accessible and/or readily available locations with due regard being given to the particular characteristics, shape and configuration of the ODAS COST 43. The distribution shall be such that a fire or other accident in one part of the unit would not be likely to immobilize all the appliances;

(*b*) the safe and rapid use of each device or piece of equipment under emergency conditions;

(*c*) the marshalling of persons on board at muster stations;

(*d*) such launching devices which might be considered necessary to launch safely survival craft under emergency conditions; and

(*e*) means for launching rapidly and for recovering the rescue boat, if carried.

4.10 *Person in charge*

4.10.1 On board each ODAS COST 43 the person to whom all personnel on board are responsible in an emergency shall be clearly defined. Such person shall be designated by title by the owner or operator of the ODAS COST 43. He shall be well acquainted with these characteristics, capabilities and limitations of the ODAS COST 43 and be fully cognizant of his responsibilities for emergency organization and action. He may also where it is applicable, be required to conduct emergency drills and training and to keep records of such drills.

4.11 *Muster list*

4.11.1 Each unit shall be provided with a muster list, kept current and revised as necessary to reflect any procedural changes. Each muster list shall be designed to cover such emergencies as may possibly occur, including fire, collision, severe storms, and abandonment. Special duties at specific locations shall be assigned to each regular personnel on board, and the muster list should show all these special duties and indicate to which location each man should go and the duties he is to perform. These duties shall, if possible, be comparable to the regular duties of the individual. All persons on board, other than those regularly assigned, shall be given necessary instructions on their action in cases of emergencies including the location to which they should go and the duties, if any, they would be expected to perform.

4.12 *Emergency drills*

4.12.1 Drills shall be conducted as if an actual emergency existed. All personnel shall report to their respective stations and be prepared to perform the duties assigned to them. The person in charge conducting the emergency drill shall give such instructions to the personnel as are necessary to ensure that all persons are familiar with the alarm signals and with their duties and stations. Drills shall be so conducted as to ensure that persons who cannot participate in an emergency drill on one date will participate in the same type drill held at the next drill period. Drills shall be held as necessary to ensure that all personnel participate at least once a month.

4.13 *Emergency warnings*

4.13.1 Each ODAS COST 43 shall be provided with a general alarm system so installed as to be perceptible in all parts of the ODAS COST 43 when operated. Control stations for activating the alarm shall be installed to the satisfaction of the Registry State. The number of signals used shall be limited to the following: general emergency signal, fire signal and abandon ODAS COST 43 signal. These signals shall be described in the muster list.

4.13.2 The warnings signals given over the general alarm system shall, if practicable, be supplemented by instructions over a public address system.

4.14 *Portable radio apparatus*

4.14.1 An approved portable radio apparatus for survival craft shall be carried. Such portable radio shall be kept in a suitable location ready to be moved to one of the survival craft in the event of an emergency. ODAS

COST 43 which because of their size, construction, area of operation, may have difficulties in carrying the portable radio, or its use would be impracticable, may be allowed to carry an Emergency Position-Indicating Radio Beacon to the satisfaction of the Registry State.

4.15 *Distress signals*

4.15.1 ODAS COST 43 shall be provided, to the satisfaction of the Registry State, with means of making effective distress signals by day and by night, including at least twelve parachute signals capable of giving a bright red light at a high altitude.

PART 5. **Radio communication**

5.1 *Installation*

5.1.1 Each manned ODAS COST 43 shall be fitted with a radio installation capable of operating on at least one of the maritime distress frequencies (500 kHz or 2181 kHz). However, where there is adequate VHF cover, the Registry State may permit the installation of VHF equipment instead, capable of operating on at least Channel 16 (156·8 MHz).

5.2 *Compliance with the relevant regulations*

5.2.1 The ODAS COST 43 fitted with radiotelegraph or radiotelephone stations, as the case may be, shall comply with the Radio Regulations of the International Telecommunication Union and as far as practicable, with the relevant requirements of the International Convention for the Safety of Life at Sea, in Force.

PART 6. **Dangerous substances**

6.1 *General*

6.1.1 The requirements of this Part apply to manned and unmanned ODAS COST 43.

6.2 *Safe stowage and marking*

6.2.1 Where dangerous substances such as explosives, inflammables, radioactive substances, etc., are carried and used on ODAS COST 43 measures shall be taken for their safe packaging and stowage to the requirements of the Registry State in conformity with the internationally accepted standards* as far as practicable.

6.2.2 Receptacles for such substances shall be of an approved type and clearly identified with internationally agreed labels† of not less, wherever possible, than 10 cm. square.

6.2.3 The presence of such substances shall be indicated by exhibiting on an exterior surface where it can best be seen, the appropriate label†, particularly on unmanned ODAS COST 43.

* For example, see IAEA Safety Series No. 33, "Guide to the Safe Design, Construction and Use of Radioisotopic Power Generators for Certain Land and Sea Applications".

† The United Nations labelling scheme which has been incorporated in the International Maritime Dangerous Goods Code.

PART 7. **Machinery and electrical installations**

7.1 *General*

7.1.1 The requirements of this part apply to manned and unmanned ODAS COST 43.

7.1.2 Requirements for machinery and electrical installations shall conform with accepted good marine practice as determined by the Registry State.

ANNEX 4

RECOMMENDED STANDARD FORM FOR REGISTRATION OF ODAS—CONVENTION ON OCEAN DATA ACQUISITION SYSTEMS, AIDS AND DEVICES (ODAS)

EXAMPLE

1	2	3	4	5	6	7	8	9	10
Register No.	Name and Address of Owner and Operator	ODAS Type	Type of Anchorage	Size and Configuration	Marking and Signal Characteristics	Types of Data to be Collected	Data Storage Telemetry (Frequency Range, Schedules)	Hazardous Substances	Additional and Complementary Information Linked Programme
	CNEXO (COB), Brest, France	Unmanned, Anchored, surface-penetrating	Simple Multiple Dynamic	Diameter Height of structure above water-line Height of mast Displacement	Red and yellow vertical bands Qk.Fl. 8 secs. Dark 12 secs. Cycle 20 secs. Howler Radar reflector	Wind speed and direction Air temperature Humidity Every ½ hour Sea temperature Salinity —at surface Current speed and direction at depths of 50, 100, 200m every 2 hours	Transmitted every 6 hours (0300, 0900, 1500 and 2100 GMT), on 12480·2 Hz. 1000 km range Stored on magnetic tape	No	Deployed as part of COST 43 or IGOSS

ANNEX 5

SCALE OF REWARDS REFERRED TO IN ARTICLE 9(3)

Current value(1) of equipment (BF)	Maximum Reward payable (%)	Maximum Reward payable (BF)
Up to 50,000	4	2,000
100,000	4	4,000
150,000	3·5	5,250
200,000	3·5	7,000
250,000	3	7,500
300,000	3	9,000
350,000	3	10,500
400,000	3	12,000
450,000	2·75	12,400
500,000	2·5	12,500
Maximum reward payable		12,500
Minimum reward payable		500

(1) Current value is defined as the initial cost of the equipment, depreciated annually by a percentage to be agreed by the Committee. Costs of putting the equipment in position are not included.

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