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Serial No. N2142

NAFO/FC Doc. 92/2

Northwest Atlantic Fisheries Organization

Report of STACTIC Working Group Meeting NAFO Hail System

28-29 April 1992, Dartmouth, N.S., Canada

NAFO
Dartmouth, N.S., Canada
1992

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Report of STACTIC Working Group Meeting

NAFO Hail System

28-29 April 1992, NAFO Headquarters
Dartmouth, N.S., Canada

1.0 Opening

Dr. L. Chepel, Executive Secretary of NAFO, opened the meeting by welcoming the working group membership (Annex I) to Dartmouth, Nova Scotia and briefly outlining the terms of reference as extracted from FC Doc. 92/1, STACTIC Report, February 1992, Copenhagen.

2.0 Appointment of Rapporteur

Mr. L. Strowbridge (Canada) was appointed rapporteur.

3.0 Adoption of Agenda

The agenda, as amended, was adopted (Annex II).

4.0 Elaboration of Terms of Reference

4.1 Presentation and discussion of Working Papers

The working group reviewed STACTIC WG WP 92/1 (Communication study to handle the hail system) presented by the Executive Secretary and 92/2 (Proposed Definition of Requirements and Implementation Strategy for an Automated Hail System) presented by Canada.

The working group exchanged views on these documents and requested clarification of certain points from the authors. The delegate of the EEC presented WG WP 92/3 (Annex III) as a description of their current hail reporting process.

4.2 Recommendation of system architecture and approximation of cost

STACTIC WG WP 92/2 (Annex IV), as amended, was accepted as a document that generally represented the definitions of requirements for an automated hail system. The delegate of the EEC noted the importance of ensuring security and confidentiality of all data. Discussions on the automation of the hail system were limited to adherence with current Conservation and Enforcement Measures as the continued evolution of the hail system is, at this point, difficult to predict.

The working group recommends that STACTIC and the Fisheries Commission approve WG WP 92/2 and the following course of action:

Phase 1. Implement a pilot project to test data exchange capability between Contracting Parties and the NAFO Secretariat. The pilot project would include participation by at least two (2) Contracting Parties (for example, the EEC and Canada) and the NAFO Secretariat and involve the transmission of data from, for example, the EEC to the NAFO Secretariat for storage and onward transmission to Canada and vice versa. As well, the pilot project would outline file structures/message formats, define data elements and test communication links. During the pilot project, current data exchange processes (telex/facsimile) would

continue to ensure redundancy and provide verifiable data for evaluation of the pilot project. The pilot project would also include the development of fall-back or back-up procedures to ensure that data is not lost or duplicated.

Phase 2. Upon successful conclusion of the pilot project, develop request for proposals from potential contractors to design a generic system to receive, store and forward hail data from Contracting Parties to the NAFO Secretariat for onward transmission to Contracting Parties with an inspection presence in the NAFO Regulatory Area. The design of this generic system should ensure that costs incurred by shipowners are minimized, whenever possible. It is recognized that some Contracting Parties with limited fishing activity in the NAFO Regulatory Area (NRA) may wish to continue using the current data exchange process (telex/facsimile).

To minimize costs associated with the pilot project, the EEC and Canada agreed to utilize existing personnel/resources (including consulting services from Canada) to assist the NAFO Secretariat in purchasing a computer modem and developing software. The costs associated with Phase II should not exceed $40,000 Cdn assuming that Contracting Parties have available hardware to accept the generic software.

5.0 Deadline for presentation of requests to/from potential contractors

Subject to the Fisheries Commission approval and a successful completion of the pilot project, proposals from interested contractors to automate the NAFO Hail System should be presented to the NAFO Secretariat by August 15, 1992.

6.0 Adoption of Final Report

The report of the Working Group was unanimously adopted by the participants. The Executive Secretary was asked to furnish as soon as possible the report to the Fisheries Commission and STACTIC for the comments of the Contracting Parties and adoption by the Fisheries Commission.

7.0 Other Matters

There were no questions raised under item "Other matters".

8.0 Adjournment

The meeting was adjourned at 11 a.m. on April 29, 1992.

Annex I

LIST OF PARTICIPANTS

NAFO SECRETARIAT

Dr. L. I. Chepel, NAFO Executive Secretary (Chair)
T. Amaratunga, Assistant Executive Secretary

CANADA

R. Cosh, Dept. of Fisheries and Oceans, Information Systems Development, Stn 1382, 200 Kent Street, Ottawa, Ontario K1A 0E6
L. Strowbridge, Dept. of Fisheries and Oceans, P. O. Box 5667, St. John's, Newfoundland A1C 5X1

EUROPEAN ECONOMIC COMMUNITY (EEC)

J. P. L. Verborgh, Commission of the European Communities, J-99 Office 6/78, Wetstraat 200, B-1049 Brussels, Belgium

JAPAN

T. Hasegawa, Japan Fisheries Association, Suite 1101, Duke Tower, 5251 Duke Street, Halifax, Nova Scotia, Canada B3J 1P6

RUSSIA

A. Mikhailov, Representative of Russia in Canada on Fisheries, Welsford Place, 2074 Robie Street, Suite 2202-3, Halifax, Nova Scotia, Canada B3K 5L3

Annex II

STACTIC Working Group Meeting
28-29 April 1992
Dartmouth, N.S., Canada, NAFO Headquarters

Agenda

1. Opening by the Executive Secretary

2. Appointment of Rapporteur

3. Adoption of Agenda

4. Elaboration of terms of reference for a Communication Study to recommend a compatible system for the NAFO Secretariat and Contracting Parties:

   4.1 Presentation and discussion of Contracting Parties' papers/proposals

   4.2 Recommendation of a compatible system architecture with its cost approximation

5. Recommendation of deadlines for presentation of requests to/from potential contractors

6. Adoption of a final report to STACTIC and Fisheries Commission

7. Other matters

8. Adjournment

Annex III

(STACTIC Working Group Working Paper 92/3)

STACTIC Working Group Meeting
28-29 April 1992, Dartmouth, N.S., Canada

Current hail reporting procedures

by the European Communities

Introduction

This document gives a short description of the way in which the hail reports are currently processed by the European Community. Distinction is made between hail reports from EC vessels and hail reports from vessels from other Contracting Parties.

1. Hail reports from European Community vessels

1.1 Principle

Vessels flying the flag of a Member State (MS) of the European Economic Community (EEC) shall transmit their hail reports

1) to the Commission of the European Communities (CEC) and simultaneously,

2) to their competent national authorities.

Within 24 hours of receipt of the hail reports, whenever possible, the CEC shall, on behalf of the EEC, transmit the information contained therein to the Executive Secretary of NAFO.

Attachment 1 refers.

1.2 Procedures for transmission to NAFO

Vessels send the hail reports by telex to the Directorate General for Fisheries (DG XIV) (telex no. 24.189 FISEU-B) of the CEC (see example in Attachment 2).

The incoming hail reports are entered in a database by the telex operators. A dedicated online application was developed for that purpose under the ORACLE database system on a UNIX computer (see example of completed screen in Attachment 3).

Originals of the telexes are filed.

Once or twice a day, depending on the workload, the newly arrived hail reports are extracted from the database and put in telex format. This telex is then sent to the Executive Secretary of NAFO (telex no. 019-31475) (see example in Attachment 4).

1.3 Enforcement

DG XIV's Inspection and Control Unit uses both desktop and portable PC's. The PC's run an integrated database and spreadsheet package, named OPEN ACCES, under MS-DOS. The desktop PC's are connected with the UNIX computer through a local network.

Hail reports from EEC vessels are downloaded from the UNIX machine to the PC's. Inspectors on mission in the NAFO Regulatory Area (NRA) use portable PC's.

A number of predefined reports can be made:

1) list of hail reports from a particular vessel
2) list of hail reports of all vessels present in the NRA
3) list of all hail reports

These lists can be used by the inspectors to verify whether vessels comply with NAFO conservation and enforcement measures.

2. Hail reports from vessels from other Contracting Parties

2.1 Principle

The Contracting Parties transmit the hail reports to the NAFO Executive Secretary.

The NAFO Executive Secretary transmits to the EEC the information contained in the hail reports received from the other Contracting Parties, when the EEC has an inspection presence in the NRA.

2.2 Procedure for reception from NAFO

The NAFO Executive Secretary transmits the hail reports to the EC chartered Inspection vessel "Ernst Haeckel", either by fax through Standard-A satellite communications or by telex via Halifax radio.

The hail reports are entered on the portable PC's on board of the inspection vessel. A screen mask has been developed for this purpose (see Attachment 5)

2.3 Enforcement

On the PC's, the data from EEC vessels and from other Contracting Parties vessels are merged.

Enforcement tools are as described under 1.3.

Attachment 1
(Annex III-STACTIC WG WP 92/3)

No L 21/4 Official Journal of the European Communities 30.1.92

COUNCIL REGULATION (EEC) No 189/92
of 27 January 1992

adopting provisions for the application of certain control measures adopted by the Northwest Atlantic Fisheries Organization

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Regulation (EEC) No 170/83 of 25 January 1983 establishing a Community system for the conservation and management of fishery resources(1), as amended by the 1985 Act of Accession and in particular Article 11 thereof,

Having regard to the proposal from the Commission,

Whereas the Convention on future multilateral cooperation in the Northwest Atlantic fisheries, hereinafter referred to as the NAFO Convention, was approved by the Council by Regulation (EEC) No 3179/78(2) and entered into force on 1 January 1979;

Whereas the Northwest Atlantic Fisheries Organization (NAFO) established by the NAFO Convention adopted a Scheme of Joint International Inspection which was adopted by the Council in Regulation (EEC) no 1956/88(3);

Whereas the NAFO Fisheries Commission, at its 13th Annual Meeting held in Dartmouth on 13 September 1991, adopted a proposal for the establishment of a control measure, requiring fishing vessels to communicate certain information regarding their activities in the NAFO regulatory area; whereas that proposal is acceptable to the Community,

HAS ADOPTED THIS REGULATION:

Article 1

Vessels flying the flag of a Member State of the Community to which the NAFO scheme of joint international inspection applies shall transmit to the Commission of the European Communities and simultaneously to their competent national authorities, in accordance with the rules laid down in the Annex, the information set out therein.

Article 2

Within 24 hours of receipt of the reports, whenever possible, the Commission shall transmit the information contained therein to the Executive Secretary of NAFO.

Article 3

This Regulation shall enter into force on the third day following that of its publication in the *Official Journal* of the European Communities.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 27 January 1992.

For the Council

The President

A. MARQUES DA CUNHA

(1) OJ No L 24, 27.1 1983, p. 1.
(2) OJ No L 378, 30. 12. 1978, p. 1
(3) OJ No L 175, 6. 7. 1988, p. 1.

ANNEX

1. The communications described below shall be entitled 'NAFO report'. The information to be transmitted, which shall be presented in the form specified, is as follows:

1.1 each entry of the vessel into the Regulatory Area. This report shall be made at least six hours in advance of the vessel's entry and shall contain the following particulars in the following order:

- name of vessel,
- call sign,
- external identification letters and numbers,
- the date, the time and geographical position,
- indication of the message code: "ENTRY",
- the NAFO division into which the vessel is about to enter,
- the name of the master;

1.2 each movement from one NAFO division to another NAFO division except when moving between divisions 3L and 3N, and 3N and 3O under the conditions provided for in 1.3, each movement from the delimited zone of 10 miles either side of the lines separating divisions 3L and 3N and 3O when the conditions set out in 1.3 no longer apply. These reports shall be made prior to the vessel's entry into a NAFO division and shall contain the following particulars in the following order:

- name of vessel
- call sign,
- external identification letters and numbers,
- the date, the time and geographical positon,
- indication of the message code: "MOVE",
- the NAFO division into which the vessel is about to enter,
- the name of the master;

1.3 vessels conducting trans-zonal fishery between NAFO Divisions 3L and 3N or between divisions 3N and 3O which cross the line separating these divisions more than once during a period of 24 consecutive hours, and provided that they remain within the delimited zone (of 10 miles either side of the line between the divisions) shall report when first crossing the line between the divisions and at intervals not exceeding 24 hours thereafter (while remaining in the delimited zone), the following particulars in the following order:

- name of vessel,
- call sign,
- external identification letters and numbers,
- the date, the time and geographical position,
- indication of the message code: "ZONE",
- the name of the master;

1.4 each exit from the Regulatory Area. These reports shall be made prior to the vessel's exit from the Regulatory Area and shall contain the following particulars in the following order:

- name of vessel,
- call sign,
- external identification letters and numbers,
- the date, the time of geographical position,
- indication of the message code: "EXIT",
- the NAFO division from which the vessel is about to leave,
- the name of the master.

2. Without prejudice to the provisions set down in Commission Regulation (EEC) No 2807/83 of 22 September 1983 laying down detailed rules for recording information on Member States' catches of fish[1], after each radio transmission of the information described in point 1 the following details are to be immediately entered in the logbook:

- date and time of the transmission,
- in the case of radio transmissions, the name of the radio station through which the transmission was made.

3.1 The information specified under point 1 shall be transmitted to the Commission of the European Communities in Brussels (telex 24189 FISEU-B) and to the competent national authorities of the Member State whose flag the vessel is flying.

3.2 If it is impossible for reasons of *force majeure* for the message to be transmitted by the vessel, it may be transmitted on the vessel's behalf by another vessel.

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(1) OJ No L 276, 10. 10. 1983, p. 1

Attachment 2
(Annex III-STACTIC WG WP 92/3)

CONFIDENTIAL

24189a fiseu b
29221 tc bru b
zczc es41107a23699 cot571
bebr co esra 035
mariavictoriag/efjs madridradio/ehy 32 21 2023

tlx24189
comision cc.ee. direccion general xiv licencias pesca
fiseu bruselas

a) nafo report
b) maria victoria g.
c) efjs
d) vi-2-02336
e) 20.04.92. 0900 gmt.
f) 4808n 04730w
g) zone
h) 31
i) jose gonzalez

Attachment 3
(Annex III-STACTIC WG WP 92/3)

CONFIDENTIAL

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LIF802                          NAFO REPORTING                    MANAGEMENT
Page 1/1                  Management of telex messages            Date : 22/04/92
-------------------------------------------------------------------------------
Year/Telex       : 92 ___497        Created by  : FISEU
Callsign         : EFJS____         Modified by :
Vessel Ext Ident: VI-2__2336__      Country     : ESP
      Name       : MARIA_VICTORIA_G
      Ident.     : 9217___
Date             : 20/04/92_              Time : 09:00
Message Type     : ZONE_                  Area : 3L___
Position         : 48 08 N - 47 30 W      Master : j_gonzalez
-------------------------------------------------------------------------------
 Telex addresses
  Id      Ctry Number      Answer back       Destination                Number
CND 01    CAN  01931475__  NAFO_A_DRT_____   NOVA_SCOTIA_____________   1241____
_____     ___  _________   _______________   ________________________   ________
_____     ___  _________   _______________   ________________________   ________
_____     ___  _________   _______________   ________________________   ________
_____     ___  _________   _______________   ________________________   ________
_____     ___  _________   _______________   ________________________   ________
_____     ___  _________   _______________   ________________________   ________
-------------------------------------------------------------------------------
            Char Mode: Replace  Page 1                    Count: *1
```

Attachment 4
(Annex III-STACTIC WG WP 92/3)

CONFIDENTIAL
X X X X X X X X X X X X X X X X X X X X X X

User: Relay administrator

Request id: fiseu-5719 Printer: fiseu

Tue Apr 21 14:13:03 BRU 1992
X X X X X X X X X X X X X X X X X X X X X X

SUBJECT :- N.4871.34.SPR/NAFOHAILREPORT/ PEDERSEN

BRUSSELS 21/04/92 N.4871.34.SPR

FM:CEC DIR.GEN.FISHERIES XIV/C/3
TO:
-NAFO - DTR - NOVA SCOTIA : 01931475
ATTN. DR. L. CHEPEL, EXECUTIVE SECRETARY
BT
SUBJ/ PLEASE FIND H/A HAIL REPORTS MSG.

A. NAFO REPORT 463 / 1207
B. PLAYA DE MENDUINA
C. EEKN
D. VI-5 9446
E. 16/04/92 22:35
F. 4812N - 4630W
G. MOVE
H. 3L
I. F VALLADARES

A. NAFO REPORT 464 / 1208
B. BIGARO
C. EFSM
D. VI-5 8748
E. 16/04/92 00:45
F. 4725N - 4710W
G. MOVE
H. 3M
I. R GARCIA

A. NAFO REPORT 465 / 1209
B. NARVAL
C. EACV
D. VI-5 8752
E. 16/04/92 00:45
F. 4725N - 4710W
G. MOVE
H. 3M
I. R GARCIA

A. NAFO REPORT 466 / 1210
B. VIEIRASA VI
C. EAHY
D. VI-5 9845
E. 16/04/92 01:15
F. 4805N - 4632W
G. MOVE
H. 3M
I. J B FRADUA

A. NAFO REPORT 467 / 1211
B. ANA MARIA GANDON
C. EFYK
D. VI-5 9334
E. 16/04/92 01:30
F. 4820N - 4630W
G. MOVE
H. 3M
I. J MARTINEZ

A. NAFO REPORT 468 / 1212
B. RAMPA
C. EHTR
D. GI-4 2179
E. 16/04/92 04:30
F. 4817N - 4625W
G. MOVE
H. 3L
I. S F FARNINA

Attachment 5
(STACTIC WG WP 92/3)

hail_rep ---- HAIL REPORT ----

A. Report number .. .. REP_No
B. Vessel Name .... NAME
C. Call Sign .... CALLSIGN
D. Vessel Number .. .. VSSL
Nationality .... FLAG

E. Date ..... Time..... DTE TME
F. Latitude ..... Longitude..... LAT LONG

G. Message .... MSG
H. NAFO division .. .. AREA
I. Name of Master . .. MASTER

Date and time of receipt on board FPV

Date DTE2
Time TME2

<edit_keys> <change> <select> <menu> <search>

Annex IV
(STACTIC WG WP 92/2)

Northwest Atlantic Fisheries Organization

NAFO

PROPOSED DEFINITION of REQUIREMENTS

and

IMPLEMENTATION STRATEGY

for an

AUTOMATED HAILS SYSTEM

STACTIC WGWP 92/2

Prepared by the

STACTIC Working Group

April 28, 1992

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EXECUTIVE SUMMARY

NAFO has amended its Conservation and Enforcement Measures such that fishing vessels of member nations are now required to hail, i.e. provide advance notice, of intended movement into and out of the NAFO regulatory area (Divisions 3L, 3M, 3N, 3O etc.), and between sub-Divisions within the regulatory area. The amount of advance notice required in different cases is specified in the amendments to the NAFO Conservation and Enforcement Measures.

A fishing vessel currently hails to its owner via radio. The owner sends the hailed data to, in most cases, a government department of the country of registry, or Competent Authority (if the owner is not the Competent Authority). The Competent Authority relays the hail to the Contracting Party (if the Competent Authority is not itself the Contracting Party). The Contracting Party then relays the hail to the NAFO Secretariat in Dartmouth, Nova Scotia. The NAFO Secretariat then relays the hail to Contracting Parties with an inspection presence in the area. Most steps in the forwarding of hails are performed using facsimile or telex, and involve duplication of work at different sites.

The objective of this project is to alleviate an increase in workload brought about by NAFO's new hail requirements, and to enhance the accuracy and timeliness of reporting by automating the storing and forwarding of hails from fishing vessels, and the production of statistical reports. Development of database and communications software is seen as an effective solution to an immediate requirement which could otherwise be satisfied only at an unacceptable labour cost.

This paper contains proposals for design standards (message format, database and communications), and an implementation strategy.

This report follows and is based on the STACTIC recommendations made in Copenhagen on 18-20 February 1992 and STACTIC Working Group Working Paper 92/1.

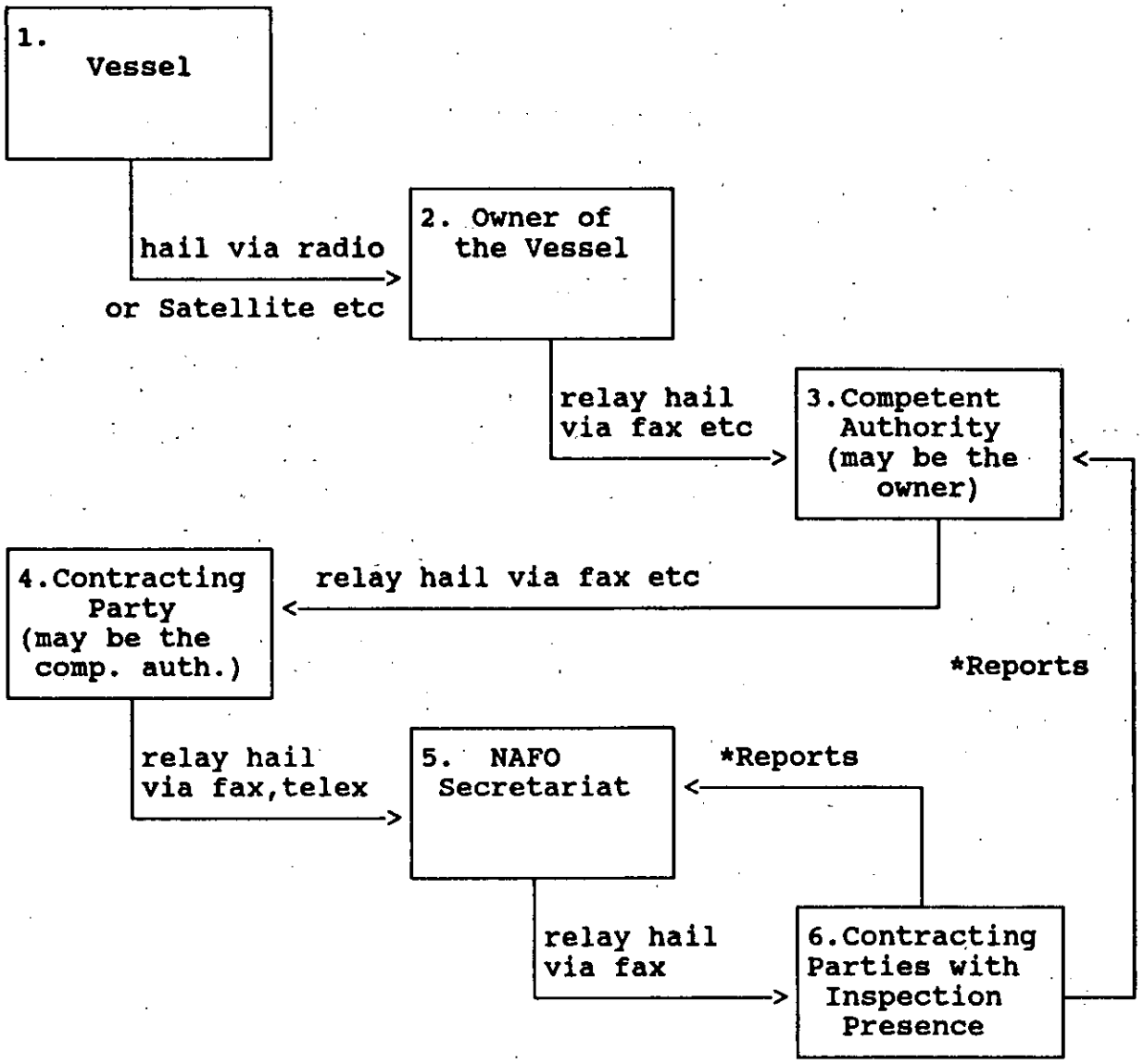
1.0 CURRENT SYSTEM MODEL

The Current System Model consists of a diagram of the current implementation of the automated or manual systems to be studied. The sole purpose of this model is to gain an understanding of the current environment and to become aware of the potential impact of the new system on the current environment; its level of detail therefore is only sufficient to achieve that understanding.

The current NAFO Hails system is manual. A fishing vessel currently hails to its owner via radio. The owner sends the hailed data to, in most cases, a government department of the country of registry, or Competent Authority (if the owner is not the Competent Authority). The Competent Authority relays the hail to the Contracting Party (if the Competent Authority is not itself the Contracting Party). The Contracting Party then relays the hail to the NAFO Secretariat in Dartmouth, Nova Scotia. The NAFO Secretariat then relays the hail to Contracting Parties with an inspection presence in the area. Most steps in the forwarding of hails are performed using facsimile or telex, and involve duplication of work at different sites.

Following is a Data Flow Diagram showing the current system of recording hails and reporting on compliance with the requirements of the NAFO Conservation and Enforcement Measures. The data elements are the same as listed in the Current System Data Model section.

CURRENT SYSTEM MODEL FLOW DIAGRAM



*Reports means surveillance reports from aircraft, or apparent infringements from inspection vessels.

2.0 CURRENT SYSTEM DATA MODEL

The current non-computerized NAFO Hail System is concerned with the following entities: **Country, Vessel, NAFO Division, Message Code,** and **Hail.** The definitions of these entities and the relationships among them are the same as in the Conceptual Data Model.

3.0 CURRENT RESOURCE MODEL

The Current Resource Model is a table of people, equipment and locations associated with the functions of the current system. The purpose of this model is to help to understand the potential resource requirements of the new system.

A fishing vessel currently hails to its owner via radio. The owner relays the hailed data to the Competent Authority (if the owner is not the Competent Authority). The Competent Authority relays the hail to the Contracting Party (if the Competent Authority is not itself the Contracting Party). The Contracting Party then relays the hail to the NAFO Secretariat in Dartmouth, Nova Scotia. The NAFO Secretariat then relays the hail to the Contracting Parties who have an inspection presence in the area. Most steps in the forwarding of hails are performed using facsimile or telex, and involve duplication of work at different sites.

AGENCY	USES RADIO	USES TELEX	USES FAX	USES STAND ALONE COMPUTER APPLIC'NS
VESSEL	✓	✓	✓	x
VESSEL OWNER	✓	?	✓	x
COMPETENT AUTHORITY	?	✓	✓	✓
CONTRACTING PARTY	?	✓	✓	✓
NAFO SECRETARIAT	x	x	✓	✓
CONTRACTING PARTIES WITH AN INSPECTION PRESENCE IN THE AREA	✓	✓	✓	✓

4.0 BUSINESS MODEL

A Business Model is the first level of conceptual analysis. It is the result of stripping technology and implementation considerations away from the Current System Model and integrating any new functional requirements identified in the analysis process.

The Business Model normally consists of a Data Flow Diagram, a supporting Data Flow Data Dictionary and process descriptions for the lowest level processes in the data flow diagram. A separate Business Model has not been included, as it would be essentially identical to the Conceptual System Model, since it is intended by NAFO to automate the entire process.

5.0 CONCEPTUAL SYSTEM MODEL

The Conceptual System Model is an essential process model that establishes the automation boundary on the Business Model, and provides sufficient detail to permit assessment of the resource requirements for the new system. This model provides the basis for alternatives analysis on the next phase.

The guide to interpretation of data flow diagrams in section 5.1 on the following page provides definitions and explanations of the symbols used in the conceptual system model data flow diagram in section 5.2.

5.1 DATA FLOW DIAGRAM - Guide to Interpretation

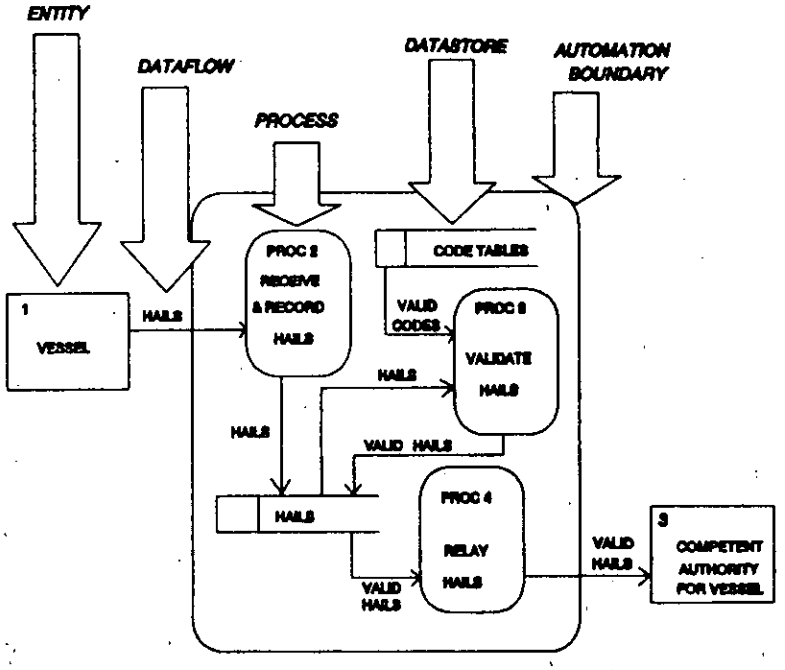
PROCESS A process is a logical collection of procedures which act together to accomplish one or more business requirements.

DATA STORE A data store is a source or sink of data within the boundaries of the business being modelled.

DATA FLOW A data flow provides data to processes from data stores, external entities, or other processes, and allows a process to send data to data stores, external entities, or other processes. A data flow consists of data elements.

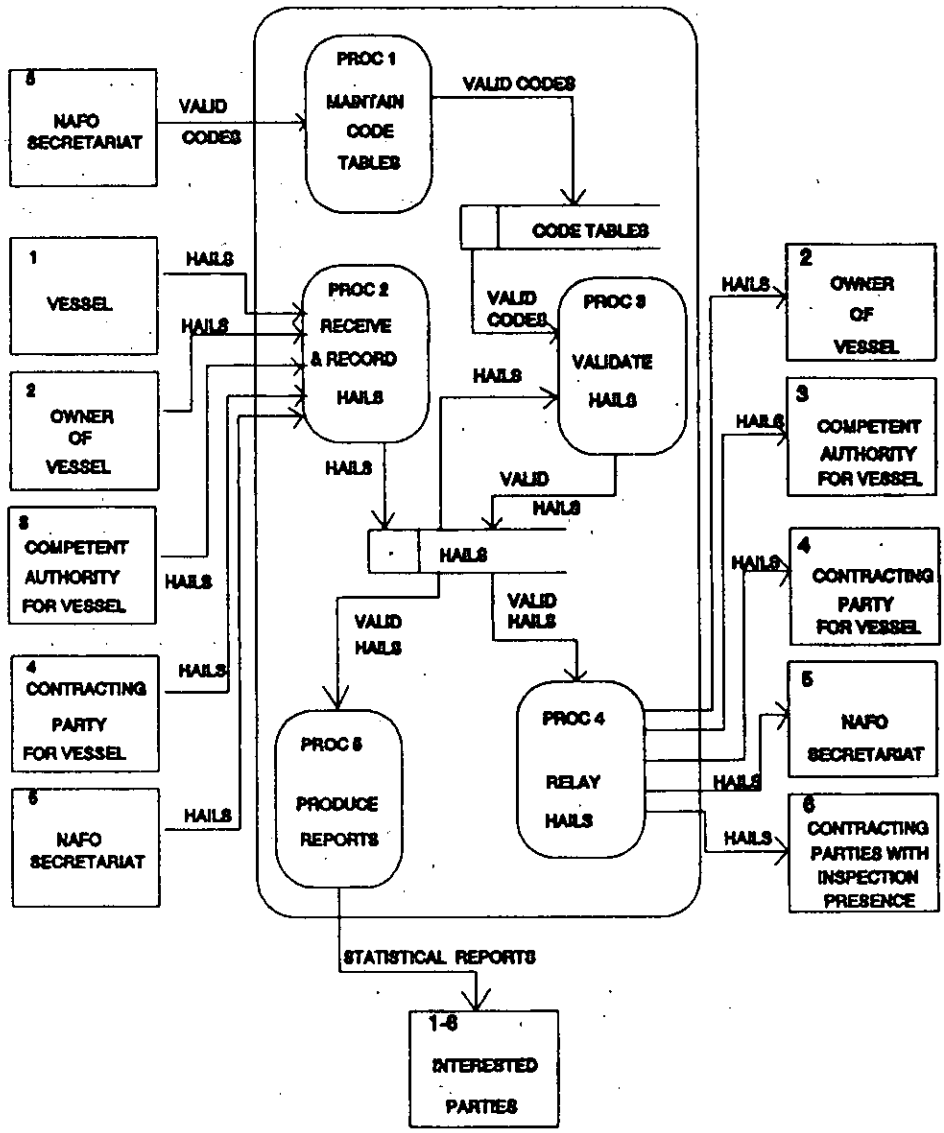
AUTOMATION BOUNDARY The automation boundary encloses the processes which are being modelled. It also includes all data stores and data flows which are internal to the overall process being modelled.

ENTITY An external entity is a source or sink of data which is outside the scope of the business area being modelled. As a source or sink of data, the external entity may impose processing and interface requirements.



GUIDE TO READING DATAFLOW DIAGRAMS

5.2 CONCEPTUAL SYSTEM MODEL - DATA FLOW DIAGRAM



HAIL DFDA; CONCEPTUAL SYSTEM MODEL

5.3 CONCEPTUAL SYSTEM MODEL - PROCESS DESCRIPTIONS

PROCESS 1 - MAINTAIN CODE TABLES

Code tables are required in an automated system in order to ensure the uniformity of data required for the automated selection and sorting of records. This uniformity is achieved by using code tables to validate all data input.

PROCESS 2 - RECEIVE AND RECORD HAILS

Following the initial transmission from the vessel, Hails are received in turn by the vessel owner, the Competent Authority for the vessel, the Contracting Party for the vessel, the NAFO Secretariat, and Contracting Parties with an inspection presence in the NAFO Regulatory Area. Each of these parties in the hail relay must be able to re-send hails in the event of data loss by any of the other parties. Each party may also wish to produce reports.

PROCESS 3 - VALIDATE HAILS

Hails are validated to ensure the validity of Message Codes, NAFO Division Codes, etc. The geographical position from which the vessel hails may be compared with the last hailed position and the elapsed time to determine whether the distance travelled is reasonable, and whether the vessel has been correctly identified. The geographical position of the hail may be compared with the intended movement indicated in the last hail.

PROCESS 4 - RELAY HAILS

A Hail originates from a vessel, is transmitted to the vessel owner, and is relayed in turn to the Competent Authority for the vessel, the Contracting Party for the vessel, the NAFO Secretariat, and Contracting Parties with an inspection presence in the NAFO Regulatory Area.

PROCESS 5 - PRODUCE REPORTS

The NAFO Secretariat wishes to produce statistical reports. Contracting Parties with an inspection presence in the area, in particular the coastal state (Canada), wish to compare hails with sightings by patrol vessels and aircraft to assess compliance of vessels with the NAFO requirement to hail in advance of movement into or out of the Regulatory Area, or between Divisions within the Area.

6.0 CONCEPTUAL DATA MODEL

The conceptual data model is an entity-relationship model of the data to be contained in the new system, with a supporting table of data element definitions. The model is developed to 3rd normal form.

6.1 CONCEPTUAL DATA MODEL - ENTITIES

The NAFO Hail System is concerned with the following entities: **Country, Vessel, NAFO Division, Message Code**, and **Hail**. The definitions of these entities and the relationships which exist among them are described below and in the entity relationship diagram, section 6.3.

6.1.1 COUNTRY

Each vessel has a single owner, and is registered to a single country, or Competent Authority. Either directly or through Contracting Parties, countries may be associated with NAFO. The Country Table must include the UN code for each country, the country name, and indicators of its affiliation with NAFO and the European Community (EC).

6.1.2 VESSEL

A vessel is any vessel of a NAFO Contracting Party fishing in the Northwest Atlantic. Each vessel is registered to a single country, and is represented at NAFO by a Contracting Party. A vessel is the source and subject of one or more Hails. Each vessel should hail its intended movements into and out of the NAFO Regulatory Area, and between subdivisions within the Area, in compliance with the NAFO Conservation and Enforcement Measures.

6.1.3 NAFO DIVISION

NAFO Divisions for scientific and statistical purposes are portions of the NAFO Convention Area whose dimensions and locations are defined in the NAFO Convention. Each hail indicates movement into or out of a NAFO Division, except where the message code indicates "ZONE". The valid NAFO Division codes are 3L, 3M, 3N, 3O etc.

6.1.4 MESSAGE CODE

The message code indicates the type of movement planned by the vessel. Each hail must contain a valid message code. Definitions of these codes are in the "Proposed Modification to the Hail System Message Format" attached to the letter dated 25 February from Dr. Chepel, Executive Secretary of NAFO, to members of the Fisheries Commission. The Message Codes are;

1. "ENTRY" for entry into the NAFO regulatory area;

2. "MOVE" for movement between one NAFO Division and another (with some exceptions);

3. "ZONE" for vessels conducting transzonal fishery between Divisions 3L and 3N or between Divisions 3N and 3O.

4. "EXIT" for each exit from the regulatory area.

6.1.5 HAIL

A Hail is a radio signal from a vessel to its owner, or Competent Authority, giving notice of intended movement of a fishing vessel into or out of the NAFO regulatory area, or between sub-Divisions within the regulatory area. The content of the Hail was agreed to by NAFO Members in Copenhagen in February 1992, and must include: the vessel name; call sign; external identification letters and numbers; date, time and geographical position; Indication of the message code "ENTRY", "MOVE", "ZONE", or "EXIT"; the NAFO Division which the vessel is about to enter or leave; and the name of the Master.

6.2 CONCEPTUAL DATA MODEL - DATA ELEMENTS

In the Conceptual Data Model, each "Entity" has "attributes", or data elements. Following are definitions for the attributes for the entities **Country, Vessel, NAFO Division, Message Code,** and **Hail.**

6.2.1 ATTRIBUTES OF THE ENTITY "COUNTRY":

COUNTRY CODE **(COUNTRY_CODE)**
The UN code for each country.
or
The ISO Alpha-3 country code*

COUNTRY DESCRIPTION **(COUNTRY_DESC)**
The name of the country.

NAFO MEMBER INDICATOR **(NAFO_MEMBER_IND)**
Indicates (Y/N) whether the country is a member of NAFO.

EEC MEMBER INDICATOR **(EEC_MEMBER_IND)**
Indicates (Y/N) whether the country is a member of the European Economic Community (EEC).

*Proposed by the EEC
ISO - International Standards Organization

6.2.2 ATTRIBUTES OF THE ENTITY "VESSEL":

COUNTRY (COUNTRY)
The nationality of the vessel.

CALL SIGN (CALLSIGN)
The radio call sign of the vessel, used to uniquely identify the vessel.

OFFICIAL NUMBER (OFFICIALNO)
The Official Number of the vessel, i.e. the external identification numbers or letters on the vessel.

VESSEL NAME (VESSELNAME)
The name by which the vessel is known, and under which it is registered.

HOME PORT (HOMEPORT)
The home port of the vessel.

OWNER (OWNER)
The owner or charterer of the vessel.

6.2.3 ATTRIBUTES OF THE ENTITY "NAFO DIVISION":

DIVISION (DIVISION)
NAFO Divisions for scientific and statistical purposes are portions of the NAFO Convention Area whose dimensions and locations are defined in the NAFO Convention. A Division is a further breakdown of a NAFO Subarea. The two character NAFO Division code is made up of a single numeric character to indicate the Subarea, with a single alpha character added to it so that together they indicate the Division.

6.2.4 ATTRIBUTES OF THE ENTITY "MESSAGE CODE":

MESSAGE CODE (MESSAGECODE)
A code which indicates whether a vessel is announcing its intention to enter or leave the Regulatory Area, or to move to another Division.

MESSAGE DESCRIPTION (MESSAGEDESC)
The description corresponding to the single character Message Code.

6.2.5 ATTRIBUTES OF THE ENTITY "HAIL":

MESSAGE TYPE (MESSAGETYPE)
The words "NAFO REPORT" identify the record to the receiving system as a NAFO Hail report.

VESSEL NAME (VESSELNAME)
The name of the vessel; used to cross check with the record on the VESSELS table which has the same CALL SIGN.

CALL SIGN (CALLSIGN)
The radio call sign of the vessel, used to uniquely identify the vessel.

OFFICIAL NUMBER (OFFICIALNO)
The external identification numbers or letters on the vessel; used to cross check with the record on the VESSELS table which has the same CALL SIGN.

HAIL DATE AND TIME (HAILDATETIME)
The date and time at which the vessel hailed its intended move.

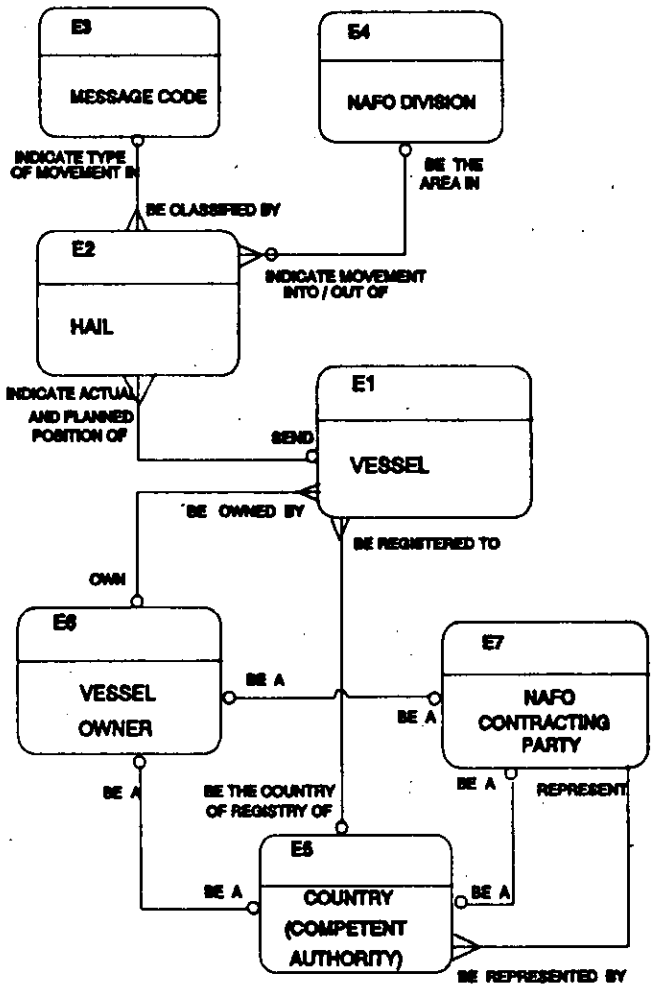
LATITUDE AND LONGITUDE (LATLONG)
The geographical position of the vessel at the time it hailed.

MESSAGE CODE (MESSAGECODE)
The code which indicates whether the vessel is announcing its intention to enter or leave the Regulatory Area, or to move to another Division.

DIVISION (DIVISION)
The NAFO Division which the vessel intends to enter or leave.

MASTER (MASTER)
The name of the master of the vessel.

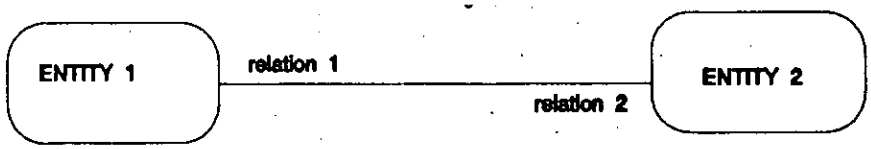
6.3 CONCEPTUAL DATA MODEL - ENTITY DIAGRAM



hallerds; CONCEPTUAL DATA MODEL

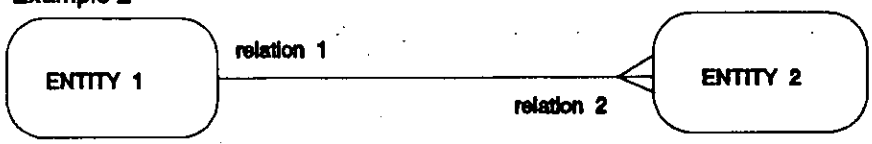
6.4 ENTITY DIAGRAM - Guide to Interpretation

Example 1



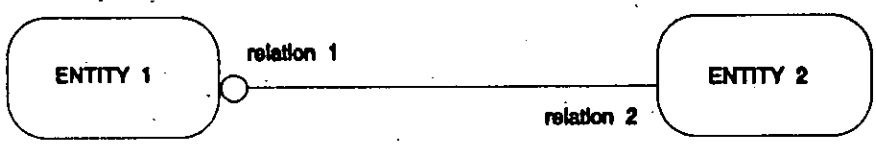
Each	ENTITY 1	must	relation 1	one and only one	ENTITY 2
Each	ENTITY 2	must	relation 2	one and only one	ENTITY 1

Example 2



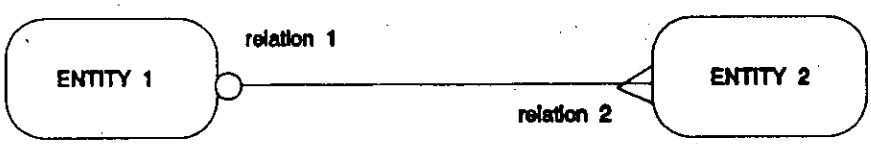
Each	ENTITY 1	must	relation 1	one or more	ENTITY 2
Each	ENTITY 2	must	relation 2	one and only one	ENTITY 1

Example 3



Each	ENTITY 1	may	relation 1	one and only one	ENTITY 2
Each	ENTITY 2	must	relation 2	one and only one	ENTITY 1

Example 4



Each	ENTITY 1	may	relation 1	one or more	ENTITY 2
Each	ENTITY 2	must	relation 2	one and only one	ENTITY 1

GUIDE TO READING ENTITY RELATIONSHIP DIAGRAMS

6.5 CONCEPTUAL DATA MODEL - DATABASE SCHEMA

The Oracle relational database conventions have been used for illustration purposes. The "name" column is the name of the data element, or column in the database table. If the "Null?" column indicates "NOT NULL", the field is manadatory. The "Type" column indicates what type of characters the field may containe, e.g. numbers, dates, or any combination of characters, followed by the field length. For example;

OFFICIALNO **NOT NULL CHAR(10)**

means the field called **OFFICIALNO** is mandatory (i.e. cannot be blank); may contain letters, digits or other characters (A-Z, 0-9, *,-,#etc.), and may be up to ten spaces long.

COUNTRIES

Name	Null?	Type
COUNTRY_CODE	NOT NULL	CHAR(3)
COUNTRY_DESC	NOT NULL	CHAR(20)
NAFO_MEMBER_IND		CHAR(1)
EEC_MEMBER_IND		CHAR(1)

VESSELS

Name	Null?	Type
COUNTRY	NOT NULL	CHAR(3)
CALLSIGN	NOT NULL	CHAR(12)
OFFICIALNO	NOT NULL	CHAR(12)
VESSELNAME	NOT NULL	CHAR(35)
HOMEPORT	NOT NULL	CHAR(30)
OWNER	NOT NULL	CHAR(50)

NAFO DIVISIONS

Name	Null?	Type
SUBAREA	NOT NULL	NUMBER(1)
SUBAREADIV	NOT NULL	CHAR(1)

MESSAGE CODES

Name	Null?	Type
MESSAGECODE	NOT NULL	CHAR(1)
MESSAGEDESC	NOT NULL	CHAR(5)

HAILS

Name	Null?	Type
MESSAGETYPE	NOT NULL	CHAR (11)
VESSELNAME	NOT NULL	CHAR(35)
CALLSIGN	NOT NULL	CHAR(12)
OFFICIALNO	NOT NULL	CHAR(12)
HAILDATETIME	NOT NULL	DATE
LATLONG	NOT NULL	CHAR(10)
MESSAGECODE	NOT NULL	CHAR(1)
DIVISION	NOT NULL	CHAR(2)
MASTER	NOT NULL	CHAR(32)

7.0 SYSTEM / PEOPLE INTERFACES

The system must provide a powerful, user-friendly query capability. Data must be available to many sites, using appropriate protocols.

The following inputs and outputs are required:

1. A machine-readable hail message.

2. An automated form for recording and editing hails and executing queries.

3. A form for reviewing all hails: Sorted by country, vessel, date, and time. Indicate inconsistencies, based on last hailed position and intention. The form is to display at least the following data, with the user able to query on any field:

   A. Name of vessel,
   B. Call sign,
   C. External identification letters and numbers,
   D. The date, the time and geographical position,
   E. Indication of the message code "ENTRY', "MOVE", "ZONE", or "EXIT",
   F. The NAFO Division which the vessel is about to enter (for message codes "ENTER" or "MOVE") or leave (for message code "EXIT). Not required if the message code is "ZONE",
   G. The name of the master.
   H. The date and time on which the hail was received.
   I. A unique sequence number.

4. A daily report of each vessel's last hailed position, by Division.

5. A variety of reports (anticipate about six) to list or summarize hails. At least one of these is to match the layout of the form referred to in item 1 above, sorted by country, vessel, date, and time.

Reports are to be available on screen or hard copy. The user is to be able to spool report output to a directory for incorporation in documents being prepared using word processing software.

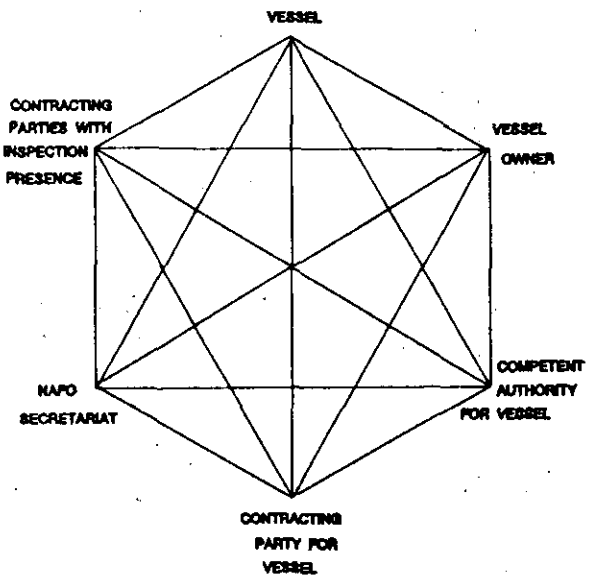
8.0 INTER-SITE COMMUNICATIONS REQUIREMENTS

Hails are sent from fishing vessels in or near the NAFO regulatory area to vessel owners / Competent Authorities / Contracting Parties of NAFO located in many countries around the world. Hails are communicated by the Contracting Parties to the NAFO Secretariat in Dartmouth, Nova Scotia. The NAFO Secretariat copies the hails to Contracting Parties with an inspection presence in the area. The volume of hails between different sites, and message file sizes may be estimated later in the 1992 fishing season. Database synchronization among all parties must be ensured. The security and confidentiality of databases and message files must be ensured.

The Executive Secretary, in WGWP 92/1, suggests examining Inmarsat-C; Global Positioning System (GPS); MSAT (Mobile Satellite) - Telesat Mobile Inc.; "Argos", etc.

The use of a particular technology may be at the discretion of individual vessel owners, Competent Authorities, or Contracting Parties. It is important, however, to agree at the outset on standards which will allow the easy receipt and forwarding of data. Contracting Parties and the NAFO Secretariat should consider sending hails via data networks such as X-25 or Email, and not only by FAX or telex.

The diagram below illustrates how, with flexible addressing, hails could be forwarded from any party to any other party or parties, as policy dictates.



AUTOMATED HAILS SYSTEM

MESSAGE FORWARDING NETWORK WITH FLEXIBLE ADDRESSING

9.0 TRACEABILITY MATRIX

The chart on the following page cross references the functional requirements which have been identified, and the process(es) in the new system intended to satisfy each. The processes referred to may be seen in context in the Conceptual System Model in section 5.0. The source of each requirement has also been indicated.

SOURCES:

1. STACTIC recommendations at the 18-20 February meeting in Copenhagen.

2. Communication Study to Handle the Hail System, Executive Secretary. STACTIC Working Group Paper 92/1

3. NAFO/FC Doc. 91/9 Serial No. N2025, 13th Annual Meeting, September 1991.

TRACEABILITY MATRIX

N°	REQUIREMENTS	SOURCES	PROCESSES				
			Proc 1 Maintain Code Tables	Proc 2 Receive &Record Hails	Proc 3 Validate Hails	Proc 4 Relay Hails	Proc 5 Produce Reports
1	Vessels must hail to their Competent Authorities.	1,2,3	✓	✓	✓	✓	
2	Facility must be available 24 hrs/day, 7 days/week.	2		✓		✓	
3	Contemporary technical means.	2	✓	✓	✓	✓	✓
4	Communications between fishing vessels in the regulatory area - Contracting Parties - NAFO HQ.	1,2	✓	✓	✓	✓	
5	Communications between NAFO HQ - inspection vessels-aircraft - Contracting Parties.	1,2	✓	✓	✓	✓	
6	To provide independent information on the positions and dates for vessels in the Regulatory Area at the request of Contracting Parties with inspection presence.	1,2	✓	✓	✓	✓	✓
7	To provide independent and secure information on the fishing activities of the vessels of each Contracting Party to the appropriate authorities of that Contracting Party at their request.	1,2	✓	✓	✓	✓	✓
8	To provide independent relevant information between inspection vessels and aircraft for coordination of their activities.	1,2	✓	✓	✓	✓	✓
9	to provide privacy and security of data processed, stored and transmitted through technical means.	1,2	✓	✓	✓	✓	
10	To provide full compatibility of the technical means for all Contracting Parties fishing in the Regulatory Area.	2	✓	✓	✓	✓	
11	An integrated satellite-based monitoring system. e.g. Inmarsat-C; Global Positioning System (GPS); MSAT (Mobile Satellite) - Telesat Mobile Inc.; "Argos", etc.	2		✓		✓	

10.0 IMPLEMENTATION STRATEGY

This proposal suggests a three stage approach, with advantages accruing from each stage, even if subsequent stages are not embarked upon.

1. Agree on standards for the storing and forwarding of hails received by radio:

   - **MESSAGE FORMAT**: The file structure for Electronic Data Interchange (EDI) e.g. ANSI X-12 or EDIFACT.
   - **DATABASE**: relational database management system (RDBMS) e.g. Oracle; and table structure.
   - **COMMUNICATIONS**: e.g. Inmarsat-A; Inmarsat-C; MSAT (Mobile Satellite) - Telesat Mobile Inc., etc. for ship to shore; shore to ship; shore to plane; vessel to plane.

   Adoption of message format, database and communications standards are a necessary first step if a single integrated system is to result. If Contracting Parties opt to develop their own systems, such standards will be critical if there is to be effective and efficient communications between all parties.

2. Prepare a request for proposals (RFP) to develop a system for the NAFO Secretariat for the automated collection, storage and forwarding of hails. An RFP for a generic system for Contracting Parties to use at their discretion will also be developed. Contracting Parties may develop their own systems for the collection, storing and forwarding of hails, provided such systems conform to the agreed message format, database and communications standards.

3. Prepare a request for proposals (RFP) to provide a ship-board system which would automatically assign the correct call sign, date and time, and geographical position, e.g. obtained through an interface with Global Positioning System (GPS), to radio hails from vessels. Such a ship-board system would require the operator to enter only the Message Code, NAFO Division, and Vessel Master. Other data such as Vessel Name and Official Number would be obtained from look-up tables on the corresponding shore-based system. Systems such as "ARGOS" could be evaluated.