SECTION V

(pages 127 to 201)

Report of the Meeting of the Standing Committee on International Control (STACTIC) 24-26 June 1997 Copenhagen, Denmark

Report of the Meeting of STACTIC

(FC Doc. 97/3)

24-26 June 1997
Copenhagen, Denmark

This intersessional meeting was held in accordance with the decision by the Fisheries Commission (FC Doc. 96/13, Part I, item 4.37) to call a STACTIC Meeting in June 1997.

1. Opening of the Meeting

The Chairman, D. Bevan (Canada) opened the meeting at 1000 on 24 June 1997. Representatives from the following Contracting Parties were present: Canada, Denmark (in respect of the Faroe Islands and Greenland, Estonia, the European Union (EU), France (in respect of St. Pierre et Miquelon), Iceland, Japan, Latvia, Norway and the United States of America (Annex 1).

2. Appointment of Rapporteur

Paul Steele (Canada) was appointed Rapporteur.

3. Adoption of Agenda

The agenda was adopted as attached (Annex 2).

4. Review of Implementation of Conservation and Enforcement Measures

a) Hail System

The Executive Secretary reported on the implementation of the hail system (Annex 3-Working Paper 97/4). He indicated that the operation of the system had greatly improved. The Executive Secretary recommended that the computerized hail report system be utilized by all Contracting Parties. This would require Contracting Parties to centralize all hail reports in their headquarters and transmit the reports to the NAFO Secretariat database.

The representative from Norway pointed out that satellite tracking can also be used to monitor the fishery and generate hails. It was also noted that the North Atlantic Fisheries ministers Conference, at the meeting in Torshavn in May, 1997, urged the relevant regional fisheries management organizations to take the necessary steps to complete the work of providing a standardized format for activity reporting and data exchange, suited also for the use of satellites.

The representative from Iceland indicated that the hail system should play a greater role in catch reporting. He also stated that hail information should be available to all Contracting Parties and that the NAFO Conservation and Enforcement Measures should be amended to remove the confidentiality element with regard to hail reports.

The confidentiality issue was raised again later in the meeting. The Icelandic representative proposed that the NAFO Hail System be made more transparent by removing the confidentiality clause (Part III.E.3 of the Conservation and Enforcement Measures). He stated that wider

availability of hail reports would help to deal with complaints about alleged non-compliance with the fishing day limits in the shrimp fishery, related to some particular interpretations of the term "fishing day".

There was considerable discussion on this issue. The European Union representative stated that the confidentiality of the hail reports must be respected. He also suggested that Iceland could receive hail information, pursuant to Part III.E.2 of the Conservation and Enforcement Measures, if they deployed a patrol vessel to the Regulatory Area.

The representative of Iceland stated that this proposal would not solve the problem as, due to Part III.E.3 of the Conservation and Enforcement Measures, it would still not allow Iceland to publish the hail data.

The Canadian representative suggested that, as an alternative, the Executive Secretary could produce summary reports of the hail information, which could then be distributed to Iceland and other Contracting Parties on an annual basis. The Icelandic representative accepted that such reports would be an improvement, but re-stated that the removal of the confidentiality clause would be the preferred solution.

The European Union representative suggested that, if Iceland wishes to pursue this matter, they should submit a formal proposal to the Fisheries Commission to seek an amendment to the Conservation and Enforcement Measures. The Chairman agreed, and he advised the Icelandic representative that the issue would have to be addressed through the Fisheries Commission.

b) Submission of catch statistics

The Executive Secretary reported on the current situation with regard to the submission of catch statistics. He noted that several overdue reports, from various Contracting Parties, are still outstanding. He also advised that the NAFO Scientific Council has expressed concern regarding the overdue reports. The Executive Secretary emphasized the importance of timely submission of catch statistics.

The Chairman requested suggestions on how to improve the timeliness of catch statistics reporting.

The Canadian representative suggested that Heads of Delegation for the Fisheries Commission should be made aware of the current situation. **It was agreed that each Contracting Party will ensure that their respective Heads of Delegation are advised of the problem.**

(c) Operation of surveillance and inspection; and (d) Reports with respect to the pilot project on observers and satellite tracking

The Executive Secretary presented a report on the activities of the NAFO Secretariat with regard to surveillance and inspection operations and communication between the Secretariat and all involved parties.

The Executive Secretary noted that there are concerns regarding the delays in submitting reports about the disposition of apparent infringements. He reminded Contracting Parties that the due dates for submission of these reports to the NAFO Secretariat are February 1 and September 1 each year.

The European Union and Canadian representatives questioned whether the Executive Secretary had received their reports regarding 1996 apparent infringements. The Executive Secretary confirmed that these reports had been received.

The Canadian representative presented a report on 1996 surveillance activities and inspections in the Regulatory Area (STACTIC Working Paper 97/7).

The European Union representative presented a report on 1996 inspections, catch record discrepancies and apparent infringements (STACTIC Working Paper 97/10).

The Japanese representative referred to the working paper submitted by the NAFO Secretariat (Working Paper 97/4) and questioned the apparent high frequency of inspections on Japanese vessels in 1996. He requested an equitable distribution of inspections. The EU representative also questioned why the number of inspections of Japanese vessels was so high. Later on he voiced concern about both the distribution of inspections conducted by Canadian inspectors as well as the lack of reports of at-sea inspections of Canadian vessels conducted by Canadian inspectors.

The Canadian representative stated that, since Canadian vessels are boarded in the Regulatory Area under the authority of Canadian law, the inspectors complete Canadian inspection reports rather than NAFO reports. These inspection reports are not forwarded to the NAFO Secretariat.

The Canadian representative raised concerns regarding the methodology used to develop the table on the distribution of inspections in 1996 (Working Paper 97/4). The main concern expressed was that the table considers the number of fishing vessels rather than fishing effort, which the Canadian representative stated was the requirement under the Conservation and Enforcement Measures and would allow for a more accurate description of the distribution of inspections. He referred to Part IV.2(ii) of the Conservation and Enforcement Measures, which outlines the criteria to be used to ensure objectivity in the distribution of inspections. The European Union representative requested the Executive Secretary to prepare a new table on the distribution of inspections based on fishing activity and catches, as per Part IV.2(ii) of the Conservation and Enforcement Measures.

Representatives from Norway, Denmark, Canada, Latvia, the United States, Japan, Estonia, the European Union and Iceland presented reports respecting the implementation of the Pilot Projects in 1996 and 1997 (Annexes 4-14).

During the discussions it was revealed that in many instances the costs associated with implementation of the systems are paid by government funds of the respective flag states, or even other states in some cases, and that such costs are not reimbursed by the respective fishing industries.

The Norwegian representative asked if there was any information on the implementation of the Pilot Project by Contracting Parties not present at the meeting. No such information was provided.

(e) Establish criteria for review of the pilot project

The Chairman referred Contracting Party representatives to Part VI.C.1 of the Conservation and Enforcement Measures, which describes some of the criteria to be considered in evaluating the Pilot Project (i.e. cost/benefit in terms of compliance and the volume of data received for fisheries management). He then requested comments from Contracting Party representatives regarding other criteria which could be considered.

The Norwegian representative noted that the satellite tracking pilot project has not yet been fully implemented by all Contracting Parties and the Secretariat and therefore the benefits will be very difficult to evaluate at this time. This specifically refers to the potential for real-time reporting, pursuant to Part VI.B.1(d) and Part VI.B.1(e) of the Conservation and Enforcement Measures.

The Icelandic representative questioned whether the evaluation was to be carried out at this meeting or at the annual meeting of the Fisheries Commission in September, 1997.

The Chairman pointed out that it would be difficult to carry out the evaluation at this meeting since several Contracting Parties, that have participated in the Pilot Project, are not represented. He suggested that the purpose of this STACTIC meeting should be to develop criteria which would be submitted to the Fisheries Commission for review at the annual meeting in September, 1997.

Representatives from Iceland, Canada and the European Union agreed that this approach would be appropriate, even though it is recognized that not all elements of the pilot project have been fully implemented.

The Icelandic representative advised that Iceland and the Faroe Islands had agreed to work cooperatively in order to have a satellite tracking program implemented in the Faroe Islands.

The Chairman requested proposals from Contracting Party representatives with regard to criteria to be used to evaluate the pilot project.

The European Union representative referred to the criteria for the review of the observer program in its presentation (Annex 13, Attachment 2, page 67), i.e. the design of the program; the manner in which it is delivered; the quality, timeliness and usefulness of the information gathered; the added value of an observer scheme in comparison to other means of monitoring fisheries. He also suggested that the duties of observers should be reviewed to ensure that they are properly focused on the most important tasks. The European Union representative further suggested that STACTIC consider the possibility of improving the level of coordination between the observer programs and other elements of the control program.

The Norwegian representative expressed the view that there is not a need for full observer coverage in single species fisheries such as the 3M shrimp fishery.

The Canadian representative stated that the evaluation should not only be focused on cost considerations, and that compliance should be an important element of the review. He noted that, in the past, non-compliance contributed to the decline of stocks in the Regulatory Area. He emphasized that, along with the cost of implementing the control measures, consideration must be given to the potential cost of losing the resource if large scale non-compliance is allowed to take place.

The Icelandic representative agreed with the Norwegian position that single species fisheries should be treated separately with regard to evaluation of the effectiveness of the Pilot Project. He stated that the incentives for non-compliance must be considered when developing a control strategy for a particular fishery.

The European Union representative indicated that the European Union would not be supportive of a proposal for two separate enforcement regimes in the Regulatory Area.

The Norwegian representative stated that Norway is not suggesting a totally different regime, but rather that a lower level of observer coverage could be considered.

The Icelandic representative agreed to continue working on the development of evaluation criteria, but he emphasized the Icelandic view that the shrimp fishery is unique and should be treated as such when evaluating the effectiveness of the Pilot Project.

The European Union representative stated that while compliance trends were one of the criteria to be considered, it is not possible to attribute improved compliance only to the elements of the Pilot Project.

The Canadian representative stated that, while it may not be possible to specify the exact impact of the Pilot Project on compliance levels, there can be no doubt that the improvements were in a large part attributable to the Pilot Project initiatives.

The Icelandic representative suggested that if the observer pilot project is extended, Contracting Parties should ensure that there is an ability to compare results on observed vessels with results on vessels not carrying observers.

There was further discussion regarding the need for a different enforcement approach for single species fisheries. The European Union and Canadian representatives expressed the view that a single enforcement regime is required for the Regulatory Area and the exceptions to this rule would lead to unnecessary complications. The Icelandic and Norwegian representatives stated that there are precedents for different management approaches for different fisheries, and that the characteristics of the shrimp fishery are such that a less pervasive enforcement program could be equally effective. The Denmark representative agreed with the Canadian view that observers were the most effective means of identifying discarding problems. He further stated that such enforcement problems cannot be resolved through the use of satellite tracking or patrol vessels. The Canadian representative pointed out that the general current trend in fisheries management is in favour of a multi-species, eco-system approach. He pointed out that this approach was endorsed by the North Atlantic Fisheries Ministers at their recent meeting in Torshavn.

The Chairman indicated that, since it would not be possible to reach a consensus on this issue at this meeting, the focus for the remainder of the meeting should be on developing the evaluation criteria. He proposed that the question of the application of the criteria to different fisheries be referred to the Fisheries Commission at the annual meeting in September, 1997. This proposal was accepted.

The representative from Iceland stated that, in the absence of consensus regarding the application of the criteria to different fisheries, it is Iceland's intention to pay special attention to actual and potential problems associated with individual types of fisheries and on the real and potential contribution of different components of the Pilot Project to deal with such problems.

A small working group was then established to develop a written proposal for an evaluation framework.

The Chairman presented the draft evaluation framework to the delegates. After some discussion, the amended evaluation framework (Working Paper 97/20) was prepared. **It was agreed that the evaluation criteria would be forwarded to the Fisheries Commission for their consideration** (Annex 15).

There was some discussion about the process to be followed in carrying out evaluations. The Norwegian representative asked whether Contracting Parties should proceed with their evaluations prior to the September annual meeting, or if the evaluations should only begin following approval of the criteria by the Fisheries Commission. **STACTIC agreed that, in anticipation of a favourable review of the criteria by the Fisheries Commission, Contracting Parties would proceed with their evaluations with a view to submitting individual reports in anticipation of the September annual meeting. The Fisheries Commission will also be asked to provide direction on the issue of whether the Pilot Project would be evaluated on a multi-species or a species by species basis.**

f) Other issues

The Executive Secretary presented a proposal for modification of the NAFO Inspector/Trainees document of identity (Annex 16-Working Paper 97/5). Following a short discussion, the proposed document, with a minor amendment, was approved and recommended to the Fisheries Commission for adoption.

The STACTIC Report was reviewed and adopted by the Representatives and referred to the Fisheries Commission.

5. Adjournment

The meeting was adjourned at 1300 on 26 June 1997.

Adoption of Report

The Draft Report of STACTIC was adopted by STACTIC at the last session on 26 June 1997 and then finalized through circulation to the Heads of Delegations of the Fisheries Commission and STACTIC (GF/97-359 of 21 July 1997) and, therefore, adopted in accordance with the established procedure.

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Annex 2. Agenda

1. Opening by the Chairman (D. Bevan, Canada)

2. Appointment of Rapporteur

3. Adoption of Agenda

4. Review of implementation of Conservation and Enforcement Measures with particular attention:

   a) hail system
   b) submission of catch statistics
   c) operation of surveillance and inspection
   d) review reports from the Contracting Parties with respect to the pilot project on observers and satellite tracking
   e) establish criteria for review of the pilot project
   f) other issues

5. Adjournment

Annex 3. Report by NAFO Secretariat on Implementation of Conservation and Enforcement Measures

a) Hail System

Pursuant to the provisions of Part III.E.2,3 of the NAFO Conservation and Enforcement Measures, the NAFO Secretariat performed the following functions:

- received hails via telex or fax from Contracting Parties and verified all hail reports and their sequential numbering;

- compiled reports from different Contracting Parties/vessels and transmitted via telex or fax the hails received to Contracting Parties with an inspection presence in the Regulatory Area;

- developed the NAFO database for communication purposes, which includes the following hard/software:

    - PC 386, 8 megs of RAM; 125 megs of hard drive
    - SVGA monitor, Dos 5.0; windowns 3.1 and PROMCOM+
    - X-25 connection, 2400 baud
    - Data base of MS ACCESS 7.0

This technology has enabled the Secretariat to communicate hail messages between the Secretariat-Ottawa-Brussels, the Contracting Parties with inspection presence, on a regular basis via the X.25 standard ASC II files.

Costs and volume of hail reports 1994-1997 has been the following:

	1994	1995	1996	1997 (5 months)
Transmissions* (from NAFO)	525	786	808	184
Costs of transmissions ($Cdn)	5,774.00	7,113.80	7,639.09	1600.00

*Note: Each transmission from NAFO Secretariat consists of several compiled reports of Contracting Parties forwarded to the NAFO Secretariat during one day; time of transmission of the compiled report approximately 1600 Halifax time; this method saves substantial costs of transmission.

Comments:

The computerized hail report system as described above is suitable for the purpose and herewith recommended for incorporation by all Contracting Parties. This system would secure low costs, low labour and effective operativeness of all communication (format in Annex 1).

The introduction of the system to its full and effective operation would require all Contracting Parties to centralize all hail reports in their headquarters and transmit the reports to the NAFO Secretariat database.

b) Submission of catch statistics

According to Rule 4.4 of the Rules of Procedure for the Scientific Council, the statistical information should be furnished to the Scientific Council in advance of meetings and with respect of STATLANT 21A and 21B not later than on 15 May and 30 June, respectively.

The current status of this matter is presented in the table below.

	Outstanding Statistics	
Contracting Party (Country)	STATLANT 21A Outstanding years	STATLANT 21B Outstanding years
Cuba	1994 and 1995	1994 and 1995
Estonia	1995	1995
Faroe Islands	1995	1993, 1994 and 1995
Iceland	-	1995
Korea	1994	1994
Lithuania	1994 and 1995	1994 and 1995
USA	1994 and 1995	1993, 1994 and 1995

c) Operation of surveillance and inspection

Under the provisions of Part IV of the NAFO Conservation and Enforcement Measures, the NAFO Secretariat maintained its communication with all involved/interested parties on the major issues:

- notification of vessels/aircraft/inspectors to Contracting Parties for the Scheme of Joint International Inspection;
- notification of all fishing vessels of Contracting Parties for fishing in the NAFO Regulatory Area;
- receipt of copy of inspection reports and information on apparent infringements and their communication to appropriate authorities of Contracting Parties as required (Part IV.9.10);
- receipt of copy of surveillance reports (Part IV.11(iii);
- compilation of all inspection/surveillance reports and their dispositions at the NAFO Secretariat;

- list apparent infringements in the report(s) to the Contracting Parties until their disposition by the Flag State (FC Doc 96/3, Revised; FC Doc. 96/12).

The following Contracting Parties are listed with **undisposed apparent infringements**:

Year	Contracting Party	Number of Vessels
1993	European Union	8
	Iceland	2
	Lithuania	2
1994	Estonia	3
	European Union	11
	Iceland	8
	Lithuania	2
1995	Denmark (Faroe Islands)	5
	European Union	4
	Iceland	3

Apparent Infringements of 1996 (should be reported on 1 September 1996 for January-June 1996)

There were no reports presented to the NAFO Secretariat in 1996 according to Part IV.17a of the Conservation and Enforcement Measures.

The report on the objectivity in the realization and distribution of inspections between Contracting Parties (Part IV.2(iii)) is presented in the table below.

Realization and distribution of inspections (Part IV.2(iii)) between the Contracting Parties in 1996:

Contracting Parties (Countries)	No. of vessels in the NAFO Regulatory Area (NRA)	Inspections / Apparent infringements Reported by:		Ratio 2,3 to 1: %		Total and Average	
		Canada*	EU**	Canada	EU	Inspections 2+3	ratio 6 to 1, %
	1	2	3	4	5	6	7
Canada	8	1/-	4/2	12/0	50/25	5/2	62/25
Denmark (DFG)	15	28/4	8/2	186/26	53/13	36/6	240/40
Estonia	6	13/-	-	233/0	0	13/-	216/0
EU	47	119/4	53/3	253/8	112/6	172/7	365/15
Iceland	39	41/3	16/13	105/10	41/33	57/16	146/41
Japan	2	10/-	1/-	500/0	50/0	11/-	550/0
Latvia	4	5/-	3/1	125/0	75/25	8/1	200/25
Lithuania	6	16/-	2/1	266/0	33/16	18/1	300/16
Norway	15	22/1	7/-	146/6	46/0	29/1	193/6
Russia	21	24/-	4/-	114/0	19/0	28/0	133/0
Total	164	279/12	98/22	170/7	60/13	377/34	230/21

* The data for Canada is provisional taken from inspection reports available at the NAFO Secretariat.
** The data for EU is taken from official EU information on inspections and apparent infringements.

Objectivity in distribution of inspections:

The data of the table above (column 7) indicate that the most frequently inspected vessels were for Japan (550%), the European Union (365%), Lithuania (300%) and Denmark (Faroe Islands 240%) and their average inspection ratio (number of inspections to the number of vessels) was above average (230%) ratio. The less frequent inspections were applicable to the vessels from Canada (62%), Cuba (100%), Russia (133%), Iceland (146%), Norway (195%), Latvia (200%) and Estonia (216%), and their average inspection ratio was below average ratio.

Comments on performance of the Measures:

There were/are several shortcomings re inspections addressed to Contracting Parties from the NAFO Secretariat (please see GF/96-505 of 11 Oct 96 and GF/97-159, 27 Mar 97) and those, in summary, are as follows:

- Re part IV.15 (Conservation and Enforcement Measures), provisional plans for participation in the scheme, the information from Contracting Parties would be required at the NAFO Secretariat by 1 November each year for next year.

- Re Part IV.16, information on inspections and apparent infringements, the reports from Contracting Parties would be required at the NAFO Secretariat by 01 March each year for the previous calendar year.

- Re Part IV.17a, disposition of apparent infringements, the information from Contracting Parties would be required by 01 February each year for the previous year.

These regulations and requirements have at all times been in arrears regarding the above-noted dates of presentation.

d) Pilot project on observers and satellite tracking

The NAFO Secretariat was performing its duties pursuant to the provisions of Part VI.A3.d and B1.d:

- The observer reports were sent/accumulated at the Secretariat and then circulated to the requesting Contracting Parties, mostly to Canada and the European Union.

- The satellite tracking messages were transmitted to the NAFO Secretariat only from one (1) Contracting Party - Norway. During 1996 there were 283 satellite reports received at the Secretariat. The reports were, in turn, transmitted by fax to two (2) Contracting Parties with inspection presence - Canada and the European union. The satellite tracking hails were filed in a separate file but unlike hail reports not computerized due to very different protocol-format.

The Working Group on satellite tracking met at the Secretariat on 2-4 April 1997 and developed the following recommendations to STACTIC and Fisheries Commission:

- according to the current NAFO Conservation and Enforcement Measures, the NAFO Secretariat is involved only in the receipt and transmission of hail reports;

- information pertaining to the geographical disposition of the fleet through satellite tracking positional information should be dealt with through direct bilateral cooperation between Contracting Parties, pursuant to Part VI Section B.1.e of the NAFO Conservation and Enforcement Measures;

- technology exists that, if acquired, could make it possible to transmit data between fishing vessels and the NAFO Secretariat and have the Secretariat retransmit to Contracting Parties with an inspection presence in the NRA and standardized formats may be the least expensive approach to achieve this;

- several Contracting Parties might be willing to enter into arrangements with the NAFO Secretariat to electronically transmit hail information;
- no consensus was reached on what new equipment and software should be provided to the NAFO Secretariat to accommodate this.

To follow-up the Working Group recommendations, the NAFO Secretariat has continued its communication with the appropriate authorities of Contracting Parties in charge of the satellite tracking with the following results:

- O. A. Davidsen from Norway requested our X.25 address to see if they would be able to send satellite tracking data directly to our computer. (They attempted to do this but were unsuccessful).
- J. P. Verborgh from the EU indicated that they were going to set-up a new mailbox in Brussels for us to retrieve information on satellite tracking. (They will inform when this is ready for testing).
- T. Blanchard informed that Canada will try to set-up a system where we can receive their hails using the X.25, similar to the process being used by the EU.

The provisional costs for incorporation of the satellite tracking system at the NAFO Secretariat could be estimated from the information of the FC Doc. 95/24, first Working Group meeting on this issue.

- The basic annual cost for hard/software would be at the level:

INMARSAT	20,000 USD
EUTELSAT	13,000 USD
ARGOS	10,000 USD

- Service charges would be in the range of 4000-5000 USD.
- Labour costs (upgrade and train one specialist) would be in the range of 3000-4000 USD.

Annex 4. Report by Norway on Satellite Tracking System - NAFO 1996/97

(STACTIC Working Paper 97/1)

1.1 Equipment on board vessels

It was a decision by Norway that all of her vessels taking part in the Flemish Cap shrimp fisheries for 1996 should carry satellite tracking devices suitable for the NAFO trials.

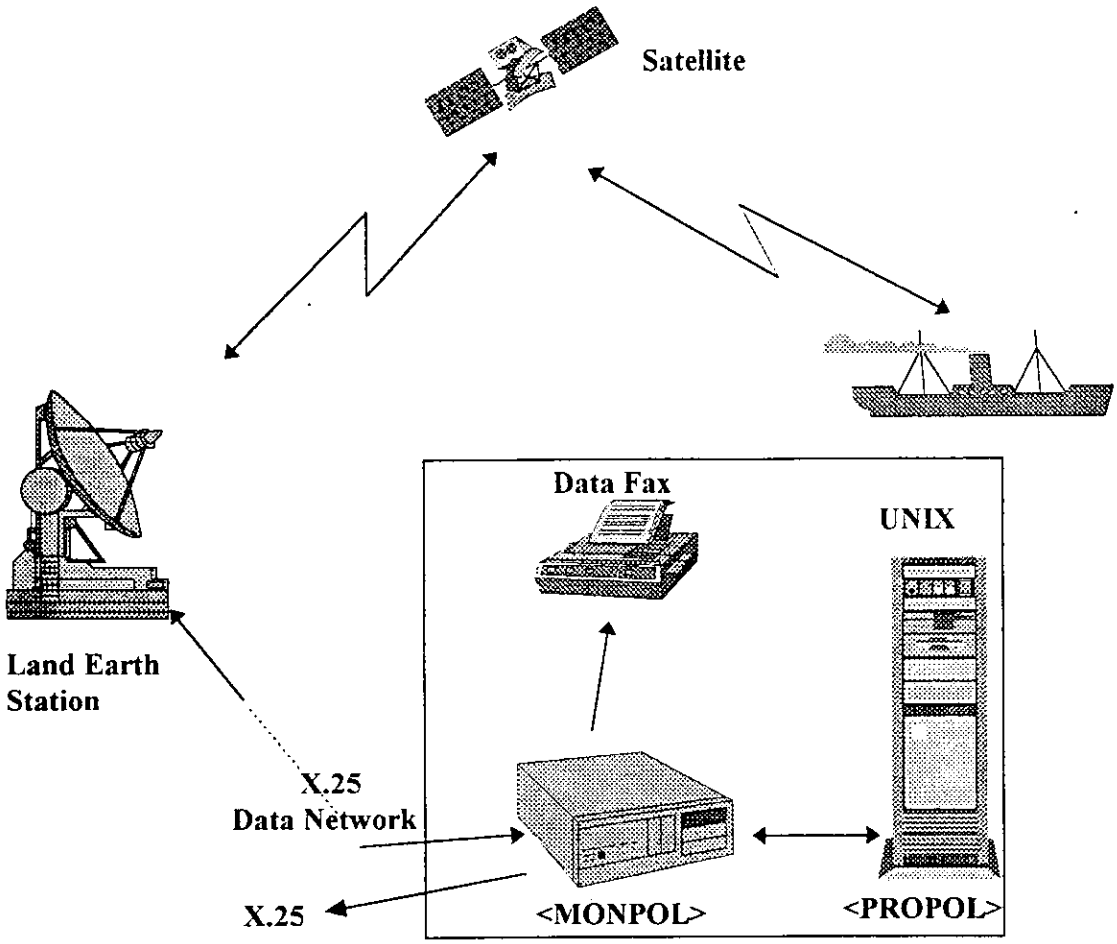
Out of 32 relevant Norwegian fishing vessels, about half were found to have Inmarsat-C equipment already installed before the start of the NAFO trials. Such equipment were, however, acquired for reasons other than tracking, and a fair amount of testing would be necessary to ascertain that tracking would work satisfactory. In the event not all those vessels chose to take part in the NAFO fisheries in 1996.

It was decided that a subsidy of NOK 20 000 (US $3 000) should be provided by the Directorate of Fisheries for vessels buying their own tracking devices specifically to participate in the Flemish Cap shrimp fisheries. If the ship owner was not interested in buying such equipment, suitable tracking devices of the most inexpensive type would be provided by the Directorate of Fisheries at no cost to the vessel, for the duration of the trials.

During 1996, 6 ship owners took up the option to buy Inmarsat-C units specifically for the NAFO trials. Including 10 vessels which had Inmarsat-C already installed, this raised the number of Inmarsat-C units commissioned to 16. A total of 7 vessels had at any one time installed Argos units provided by the Directorate of Fisheries for tracking purposes, and 1 vessel had also installed Euteltracs equipment. One vessel first installed an Argos-GI unit, but later acquired Inmarsat-C equipment.

It was required that the tracking equipment should be operational before a vessel could sail for the NAFO area. The maximum number of Norwegian vessels active simultaneously in the NAFO area during 1996 reached 15 by mid July, as compared to a total of 23 vessels commissioned.

Be aware that the number of vessels is not equivalent to the number of satellite units. The reasons for this is that one of the vessels did carry two sets of equipment. It was anticipated that the Euteltracs system could not operate without interruptions in the Regulatory Area. As the necessary mechanism for automatic data exchange between the European and the Canadian systems had not been established by the time the vessel left for Flemish Cap, the vessel with Euteltracs equipment therefore also carried an Argo transmitter. All Hails forwarded from Norway to the Executive Secretary for this vessel were generated based on the Argos position reports.



1.2 Equipment at the Directorate of Fisheries

By the time of the 1995 NAFO Annual Meeting, the Directorate of Fisheries had already carried out a number of trials on satellite tracking of fishing vessels. An experimental system was therefore operational, whereby the Directorate of Fisheries could handle data both from Inmarsat-C and Argos on a 'real time' basis. The Directorate of Fisheries was also familiar with the Euteltracs system, although the Euteltracs position reports had to be uploaded to the Directorate of Fisheries via modem and a telephone connection, as Eutelsat could not provide a X.25 delivery service.

Basically, Argos and Euteltracs position reports have been collected by the service provider and reported to the customer (i.e. the Directorate of Fisheries) in batches. The Inmarsat-C position reports can be obtained in two ways, either as scheduled reports initialised by the vessel, or as reports initialised by request from a control centre (e.g. the Directorate of Fisheries). It is often held that the second options is the better. The second option provides what is called *Polled Data Reports*. The Inmarsat-C system allows polls for position reports to be issued to a specific vessel, or to a pre-defined group of vessels.

The system at the directorate is set up in two parts. The first part <PROPOL> runs on a UNIX computer, and issues polls for position reports. Incoming position reports are also logged by this system, which then decides whether further action, such as the issuing of a Hail Report to a third party, must be initialised. With specific intervals, for the time being every 15 minutes, the system reads an operator-defined table to find out whether polls for position reports shall be issued over the Inmarsat-C system, and decides which satellite and *Land Earth Station* (LES) should be used. <PROPOL> can handle both Argos, Euteltracs and Inmarsat-C position reports.

The second part of the system <MONPOL> takes care of all actual data communication. <MONPOL> runs on one or more PCs. Basically X.25 is the preferred communication protocol. All Inmarsat-C traffic is handled via X.25, and all Argos data reports are submitted to the Directorate of Fisheries via X.25. A format for X.25 was agreed with Euteltracs, but no data on this format was received during 1996. The actual transmission of outbound Hails from <PROPOL>, in this trial the Hails to the NAFO Executive Secretary, is also handled by the <MONPOL> system. For the 1996 NAFO trials, such Hails were submitted by facsimile.

As the <MONPOL> system reads all incoming position reports and transcribes them to a standard format before uploading to <PROPOL>, the <MONPOL> system has been equipped with a module to decide which geographical area a specific position refers to. This may be a *National Economic Zone (NEZ)*, or as in the case of the NAFO trials, a statistical subdivision.

1.3 The Hailing System

NAFO/FC Doc. 95/24 made no specific recommendations as to the format and standards to be followed for the reporting of Hails. It did, however, in section 8, list Universal Time Count (UTC) and World Grid System 84 (WGS-84) as possible options. Further, it drew the attention to the EU format developed by Denmark and Spain for use in data exchange.

The Norwegian party therefore decided to use those standards as a starting point. It was, however, apparent that the EU format did not cover all the data elements necessary for a NAFO hailing systems. Two new data elements were therefore introduced:

Field Code RC(new) - Radio Call Sign
Field Code RA(new) - Reporting Area
Field Code XR would refer to Vessel Side Number

It was decided that the satellite devices on board the Norwegian vessels should trigger an automatic Hail message every time a vessel crosses a subdivision line, whether this be between divisions or between divisions and outside the Convention Area. Although the system was capable of generating e.g. EXIT Hails specifically, it was decided that the Hail should in all cases be MOVE, to be reported in Field Code TM.

No effort was made during 1996 to hail a crossing from the Regulatory Area into a NEZ.

As character set, the international ISO 8859.1 standard was adopted. In addition we took the liberty of reporting longitude (LO) and latitude (LA) according to the universally accepted decimal format, as this is better suited for handling by computer.

X.25 was our first choice as reporting media, with possible use of X.400 E-mail as a second best solution. As the X.25 installation at the NAFO Secretariat was not fully operational by mid February 1996, it was decided to use facsimile as reporting medium instead.

The NAFO Secretariat has acknowledged receipt of altogether 283 hails from Norway generated based on satellite tracking data for 1996.

An example of a 1996 hail message submitted by facsimile is given in Appendix 1.

2.1 Recent Developments

During the North Atlantic Fisheries Ministers Conference (NAFMC) meeting in Reykjavik in 1996, it was decided that an informal working group should report to the 3rd ministerial conference on current developments towards the application of common standards for the exchange of catch, position and activity data in the North Atlantic region, incorporating reference to work in NAFO and other relevant international organizations.

The Working Group should in particular aim at developing a standard for registration of catch and electronic data exchange that is compatible for both control and business use.

The NAFMC Working Group met in Torshavn 23-24 October, with delegates from Canada, the European Union, the Faroe Islands, Greenland, Iceland, Norway and Russia.

The Working Group inter alia decided to draw the attention of the Fisheries Ministers to the following:

A possible North Atlantic standard format for activity reporting and data interchange can be constructed by expanding the EU (Danish/Spanish) format to include other relevant data elements, for example those mentioned in the 1995 NEAFC report. If this approach is taken, efforts should be made to identify a body or organization which could accept responsibility for drafting and maintaining such a standard.

The Working Group also recommended that work on developing common standards, as proposed in the (Reykjavik) Communiqué, should continue.

At about the same time the Norwegian Directorate of Fisheries had accepted responsibility to organize the fisheries administration part of the Norwegian domestic trials on the use of satellite systems for fisheries purposes. As one of the main elements of these trials would be test automatic messaging systems, the Directorate of Fisheries decided that instead of starting off by defining a domestic format for the purpose of the trials, a better solution would be to try to adapt the recommendation of the NAFMC Working Group.

One comparatively great advantage with following this lead is apparent in the fact that a reporting scheme based on the EU (Danish/Spanish) model is not rigid, in the way that it does not assume a pre-defined array of elements to be reported. Rather, it allows elements to be added or taken away like building blocks, so as to set up messages tailored to specific needs with proper reference to the standard (re NAFO/FC Doc. 95/24, Annex 8).

The Directorate of Fisheries has consequently made an effort to define a number of data elements not included in the original EU (Danish/Spanish) proposal, enabling us to use this format as a basis for our domestic tests as well. A PC program <SATRAP> has been developed to set up messages according to this format for testing purposes, and matching data programs have been installed at the directorate to cater for the automatic handling of incoming messages on a machine readable

form. Although the Norwegian sea trials with this system is just about to start, one may hope that such trials could prove of value in setting up specifications for possible reporting schemes.

The EU Message Format as adapted to the Norwegian trials is outlined in Appendix 2.

It is the Norwegian view that to be of maximum value, a reporting scheme should be based on widely recognized standards. It should preferably operate equally well both in an E-mail environment (e.g. X.400) as well as implemented directly in a lower level protocol (e.g. X.25). In addition, the problem of authenticity is central to all automatic reporting schemes. Such problems are best resolved on an international basis.

3.1 NAFO Trials 1997

For 1997, 32 Norwegian fishing vessels may take part in the Flemish Cap shrimp fishery, limited to a total of 1,985 fishing days. As for 1996, all domestic vessels participating are obliged to carry satellite tracking equipment.

By early May two Norwegian vessels have commenced fishing at the Flemish Cap, one carrying Argos G-I and one Inmarsat-C equipment. So far a total of 15 hails from Norway have been forwarded automatically by computer during the 1997 trials. Based on experience from the 1996 trials, the reporting format has been modified to include also a Field Code SQ (new) for reporting the Sequence Number of the hail.

4.1 Points to consider

The Norwegian automatic hailing system is capable of submitting the hails either in the form of facsimile, or in a machine readable form as E-mail or via X.25. If E-mail is chosen, we would prefer the use of X.400. The NAFO Secretariat is for the time being not equipped to read X.25 messages automatically, as the present set-up within the Secretariat only supports the use of X.25 for logging into a remote computer system for manual file retrieval. An automatic hailing system can only be of limited use if the processing of the messages at the receiving end is not automated also.

For a system to generate hails automatically upon the crossing of border lines, it is necessary to have the boundaries of the relevant areas on computer readable form. The NAFO Convention Area is defined so as to enable the participants to make this transformation. To be able to hail crossings into and out of the Regulatory Area (NRA), e.g. passing to or from the NEZ's of countries where the point of crossing is inside the Convention Area, there is also a need to have the border lines delimiting the NRA available in the same way. This question will have to be addressed for an automatic hailing scheme to work for the Regulatory Area.

APPENDIX 1: EXAMPLE OF HAIL MESSAGES

TELEFAX

From: The Norwegian Directorate of Fisheries Bergen, 96-07-02 06:21
To: NAFO Executive Secretary

Re PILOT PROJECT FOR SATELLITE TRACKING (B.1.d)

Here are one or more HAILS regarding Norwegian fishing vessels,
as reported directly by computer

//SR//FR/NOR//AD/NAFO//RC/XXXX//XR/YYYY//NA/ZZZZ/
/FS/NOR//TI/044400//DA/960702//TM/MOVE//AC///RA/3L/
/LA/47.731//LO/-046.528//SP/110//CO/273//ER//

//SR//FR/NOR//AD/NAFO//RC/xxxx//XR/yyyy//NA/zzzz/
/FS/NOR//TI/044400//DA/960702//TM/MOVE//AC///RA/3M/
/LA/48.859//LO/-042.040//SP/87//CO/274//ER//

This is a copy of a real facsimile sent to the NAFO Executive Secretary. For reasons of anonymity, RC, XR and NA are given as XXXX, YYYY, ZZZZ and xxxx, yyyy, zzzz respectively for the two vessels.

APPENDIX 2: The EU Message Format as adapted to Norwegian trials

Draft Version 0.94E - March 1997

Field Code	Name	Type	Contents
SR	Start of Record	-	
FR	From	CHAR*5	ISO-3/NAFO/NEAFC
AD	Addressee	CHAR*5	ISO-3/NAFO/NEAFC
IR	Internal Register to	CHAR*12	(EU)
XR	External Register to	CHAR*12	Side Number
NA	Vessel Name	CHAR*30	ISO 8859.1
FS	Flag State	CHAR*3	ISO-3
DA	Date	NUM*6	YYMMDD
TI	Time	NUM*6	HHMMSS(UTC)
LA	Latitude (degrees)	SNUM*8	±99.9999 (WGS-84)
LO	Longitude (degrees)	SNUM*9	±999.9999 (WGS-84)
SP	Speed	NUM*3	Knots*10
CO	Course	NUM*3	360°scale
TM	Type of Message	CHAR*4	Codes
AC	Activity	CHAR*3	Codes
ER	End of Record	-	
TS	Trailer Start	CHAR*80	ISO 8859.1
TE Trailer End	-		
AU	Authenticity Code	HEX*8	Hexadecimal
AG	Agreement	CHAR*4	
SQ	Msg. Sequence No	NUM*3	
TN	Tour Number	NUM*3	
CP	Control Point	CHAR*10	ISO 8859.1
RA	Reporting Area	CHAR*6	ICES/NAFO codes
RC	Radio Call Sign	CHAR*8	
FT	Forward To	CHAR*5	ISO-3/NAFO/NEAFC
TT	Transfer To	CHAR*8	Radio Call
TF	Transfer From	CHAR*8	Radio Call
PO	Port Name	CHAR*20	ISO 8859.1
MA	Master name	CHAR*30	ISO 8859.1
NZ	National Zone	CHAR*3	ISO-3
PL	Platform Number	NUM*9	
PQ	Position Quality	CHAR*1	ARGOS code
CA	Catch Items	CHAR*3 NUM*7	FAO-Codes, 10 pairs
HO	Items in Hold	CHAR*3 NUM*7	----"----
KG	Other Items	CHAR*3 NUM*7	----"----
CG	Count Groups	CHAR*3 NUM*7	----"----
RS	Return Status	CHAR*3	Codes
RE	Return Error Number	NUM*3	Lookup Table
MS	Text String	CHAR*32	ISO 8859.1
DF	Days Fished	NUM*5	
GG	Global Area Grid no	NUM*2	FAO Global Area Grid

GE	Gear	CHAR*3	FAO-Code
VO	Vessel Owner	CHAR*60	ISO 8859.1
VL	Vessel Length	NUM*3	Overall length, meters
VT	Vessel Gross Tonnage	NUM*4	GT 1969 Convention

TYPES OF MESSAGE:

INITIALISATION	MOVE
ENTRY	TRANSFER
EXIT	PORTCALL
CATCH	CONTROL
POSITION	NOTIFICATION

Abbreviation to the first four characters is encouraged.

TYPES OF ACTIVITY:

FIS	= Fishing
NOF	= Not Fishing
PRO	= Production
STM	= Steaming
HAR	= In Harbour

CONTROL POINT:

Typical values from Phonetic Alphabet: ALFA, BRAVO, CHARLIE etc.

RETURN STATUS:

ACK	= Acknowledged
NAK	-.Not Acknowledged

FAO GLOBAL AREA GRID:

21	= NAFO Area
27	= NEAFC Area

etc. - Should be specified where misunderstandings are otherwise possible.

SPECIES/QUANTITY COMBINATIONS;

CA (Catch), HO (In Hold), KG (Species Distribution) .

Ex: //CA/COD 123 HAD 2345 SAI 56789 HER 98765/

A maximum of 10 pairs of Species and Quantity; where Species are given as FAO code, and Quantities are Round Fresh Weight in kilos. The individual data elements are separated by space.

Only the Field Codes varies between the types of entries.

COUNT-GROUP SPECIFICATION:

Ex: //CG/PRA 13246 GRI 123 GR4 362 GR8 5312 GR6 14/

A maximum of 10 pairs of identifiers and values, where one pair (preferably the first) identifies Species and Total Quantity, and the following 9 or fewer pairs the Group(s) and the Value(s). The individual data elements are separated by space.

EXAMPLES:

Return Message without error specification:

The Norwegian fishing administration NOR returns information to a vessel with Radio Call ABCD that her ENTRy message with sequence number 13, date 961203 and timestamp 12:55 has been ACKnowledged:

//SR//FR/NOR//RC/ABCD//TM/ENTR//RS/ACK//SQ/13//DA/961203//TI/125500//ER//

Return Message with an error specification:

The Norwegian fishing administration NOR returns information to a vessel with Radio Call ABCD that her CATCh message with sequence number 2, date 961203 and timestamp 12:45 has not been acknowledged. The error number is 713 (text found in look-up table):

//SR//FR/NOR//RC/ABCD//TM/CATC//RS/NAK//RE/713//SQ/2//DA/961203//TI/124500//ER//

USER-ASSIGNED ISO-3 CODES

(Ref. ISO 3166; 1993 E/F, Par. 7.3)

XXX International Waters
XAA Adjacent Area NOR-RUS
XBS International Waters Barents Sea
XNS International Waters Norwegian Sea
XEU European Union (Waters)
XSV Svalbard (Fishery Protection Zone)
XJM Jan Mayen (Fishery Zone)

PREDEFINED ERROR MESSAGES

999	System Error at Other End
800	Your Message has Bad Parity
801	Your Password is Unknown
802	(not used)
803	Your message is Unreadable
804	Unknown Identifier in Message
805	No Message in Your Transmission
890	Pending, Waiting for Duplicate
899	System Error at Other End
700	No Interpretation Possible
701	OK, but No Initialisation
702	OK, but No Entry Message
703	OK, but No Exit Message
704	No Catch Message
705	OK, but Last Message is Missing
706	OK, but Some Messages Missing
707	Message OK, but Other Error
708	Your Message Already Received
710	Unknown Radiocall
711	Unknown Agreement
712	Unknown Area Code
713	Unknown Species
714	Unknown Adm.ISO-3 Code
715	Unknown Checkpoint
716	Unknown Harbour
720	Too many Vessels Active
721	Too many Fishing Days
730	Invalid Area/Agreement combination
790	Data Base Error
799	Contact Receiving Authority

Messages 990-998 are user defined to distinguish between various forms of System Errors.

Annex 5. Report by Norway on NAFO Pilot Observer Scheme

(STACTIC Working Paper 97/2)

The introduction of a 100% observer-coverage in NRA in 1996, was carried out without any major problems. To accomplish this, two factors were important: 1. the good cooperation between Norway (The Directorate of Fisheries) and the Canadian fishery authorities (The Department of Fisheries and Oceans (DFO), NFLD), and 2. the use of the Canadian observer company Seawatch.

DFO agreed to transport observers between St. John's and NRA, and this was most helpful in the process of the deployment of observers to Norwegian vessels. Whenever possible, observers were transported on other Norwegian fishing vessels delivering shrimp in Harbour Grace.

The Directorate of Fisheries, DFO and Seawatch have worked out operational guidelines to ensure deployment. The main elements in these guidelines are:

- The fishing vessel notifies the Directorate of Fisheries and Seawatch a minimum of 7 days prior to entering the NRA, and supplies information about the vessel and time of arrival.
- Seawatch contacts DFO to arrange transport.
- Seawatch confirms deployments arrangement with the fishing vessel, and provides name, telephone number and departure time of the DFO patrol vessel.
- DFO transports observers and establishes contact with the fishing vessel to arrange position and time for rendezvous.

The deployment process has been monitored closely by the Directorate of Fisheries, and everything was carried out to the satisfaction of the Norwegian authorities.

By using Canadian observers, the cost pr. observer day is lower than by using Norwegian observers, due to lower wages and the location of the observer company. The administrative costs are also lower, mainly because the bidding process and the accrediting of the observer company is done by DFO.

Seawatch is engaged by and paid by the Directorate of Fisheries. However, the fishing vessels are to cover the costs, and each vessel is invoiced by the Directorate of Fisheries according to the amount of days in 3M. They pay the sea day rate for each day the vessel has been in 3M. 12% is added to this, to cover transportation between St. John's or Harbour Grace and NRA. In this way all the costs are distributed on the vessels according to the activity in 3M.

The observer cost pr. sea day was in 1996 CAD 337.61 and pr. land day (stand by) CAD 116.38.

Even if Norway has tried to limit the costs as much as possible, the costs are still considerable for each vessel, and a cost/benefit evaluation will have to be done at the end of the pilot observer scheme.

Norway has experienced that the observers are professional and impartial, and this gives the observer scheme an accredibility which is wanted by all parties.

In 1996 15 Norwegian vessels have participated in the shrimp fishery in 3M. Of the total amount of 2206 days, these vessels have been in 3M 1550 days.

Annex 6. Report by Denmark (Greenland) on Implementation of Conservation and Enforcement Measures

(STACTIC Working Paper 97/3)

Introduction

This working document is prepared to describe Greenland involvement in the implementation of Conservation and Enforcement Measures. This paper will therefore in accordance with the agenda, deal with the following issues: A. Hail System B. Submission of catch statistics C. Operation of Surveillance and Inspection D. Report on the pilot project on observers and (satellite tracking).

A. Hail System

In 1996 six Greenland vessels conducted shrimp fishery on Flemish Cap in the period from 28 May to 30 September. A total of 152 days (from ENTRY message to EXIT message) was spent in the Regulatory Area. The hail reports have been forwarded to the NAFO Executive Secretary by e-mail/Internet. This has proved to be fast and reliable. However, in order to avoid any failures some hail reports have been forwarded by fax as well. Also in order to secure that compliance with the hail system message format is being upheld. Greenland Fisheries Licence Authority has established an ongoing dialogue with the relevant fishing organizations, in order to ensure best possible compliance with the NAFO Conservation and Enforcement Measures.

B. Submission of catch statistics

Greenland has on a monthly basis reported provisional catch figures to the NAFO Executive Secretary. These reports have been based on weekly catch telex messages/reports from the vessels during their operations in the area and from the logbook at the end of the trip.

C. Operation of Surveillance and Inspection

Greenland does not conduct surveillance and inspection in the Regulatory Area.

D. Report on the pilot project on observers and (satellite tracking)

Greenland is currently only engaged in the shrimp fishery in area 3M. This fishery has been conducted by 6 vessels and the total number of fishing days in 1996 have been some 152 days although Greenland has been allocated more than 501 fishing days in the Regulatory Area.

Since Greenland did not exceed the minimum number of 300 days per year in the Regulatory Area (as laid down in Part VI - Pilot Project for Observers and Satellite Tracking of the NAFO Conservation and Enforcement Measures) Greenland applied only the Observer Scheme. Observers have been deployed to all our vessels in the Regulatory Area [as well as all our shrimp vessels in our own waters]. Observers are deployed and are working according to the pilot project. Observer reports from the Regulatory Area are forwarded to the NAFO Headquarters. However, in the future, the observers reports will now be available in English.

Apparent infringements have been detected in two cases on our vessels. An educational model has been produced in order to keep our observers up to date about any developments in conservation and enforcement regulations, national as well as international.

Greenland Fisheries Licence Control Authority are, in cooperation with Greenland Institute of Natural Resources and scientific communities, working to develop a functional method, by which the observers should collect and process samples from the catches and by-catches on a set-by-set basis in the Regulatory Area according to the Pilot Project and as requested by the Scientific Council.

Outline of Observer Expenses for Greenland. 1996.
(Estimated Cost)

50 observers/year

Items	Expenses DNK	Expenses ECU	Expenses US$
Wages	12,500,000	1,689,189	2,236,136
Daily allowance	1,544,000	208,649	276,208
Travelling-expenses	1,436,000	194,054	256,887
Holiday-travelling	450,000	60,811	80,501
Uniforms/clothing*	318,000	42,973	56,887
Training and education**	1,142,500	154,392	204,383
TOTAL (50 observers)	17,390,500	2,350,068	3,111,002
Annual expenses pr.year/obs.:	347,810	47,001	62,220
Cost per day/observer	952	129	170

* Uniforms and other clothing does not cover specialized equipment and certain personal equipment and safety equipment.
** Training in 1996 only reflects the supplementary courses and training for some of the observers.

1 ECU = 7,40 DNK
1 US$ = 5,59 DNK

In 1996 - 6 vessels spent 152 days in the NRA (Shrimp Flemish Cap).

	Expenses DNK	Expenses ECU	Expenses US$
Total/obs/NRA 1996:	144,841	19,573	25,911

Annex 7. Report by Canada on Pilot Project Observer and Satellite Tracking Technology

(STACTIC Working Paper 97/8-Revised)

1.0 Introduction

At the 17th Annual Meeting, Contracting Parties agreed to a two-year pilot project for Observer Coverage and Satellite Tracking Technology beginning in January 1996 (Canada and the EU actually began projects in May of 1995) and continuing to December 1997. Coverage levels under these pilot projects are 100% for observers and 35% for satellite tracking technology.

Other significant enhancements to the NAFO Conservation and Enforcement Measures adopted in 1995 included a 100% dockside monitoring program (DMP) and immediate follow-up to major apparent infringements.

2.0 Observer Programs Roles

The two-year pilot project for Observer Coverage and Satellite Tracking Technology is designed primarily to improve compliance by masters with the NAFO Conservation and Enforcement Measures.

Observer responsibilities include:

- Monitoring vessel compliance with relevant Conservation and Enforcement Measures, in particular,
    - recording and reporting on the fishing activities of vessels and verifying the position of vessels when engaged in fishing;
    - observing and estimating catches with a view to identifying catch composition and monitoring discards, by-catches and the taking of undersized fish;
    - recording the gear type, mesh size, and attachments employed by the vessel;
    - verifying entries in the logbooks (species composition/quantities, round/processed weight, and hail reports).
- Collecting catch effort data on a set-by-set basis, including location (latitude/longitude), depth, time of net on the bottom, catch composition and discards;
- Conducting scientific work (for example, collecting samples) as requested by the Fisheries Commission based on the advice of the Scientific Council;

- **Within 30 days** following completion of an assignment on a vessel, providing a report to the Contracting Party of the vessel and to the Executive Secretary, who shall make the report, available to any Contracting Party that requests it. Copies of reports sent to other Contracting Parties shall not include location of catch in latitude and longitude as required under 3 b), but will include daily totals of catch by species and division.

- In the case where an observer is deployed on a vessel equipped with satellite tracking technology the observer shall monitor the functioning of, and report upon any interference with, the system. In order to better distinguish fishing operations from steaming and to contribute to an *a posteriori* calibration of the signals registered by the receiving station, the observer shall maintain detailed reports on the daily activity of the vessel.

- When an apparent infringement of the Conservation and Enforcement Measures is identified by an observer, the observer shall, **within 24 hours**, report it to a NAFO inspection vessel using an established code, which shall report it to the Executive Secretary.

3.0 Pilot Project Administration

Contracting Parties shall take all necessary measures to ensure that observers are able to carry out their duties. Subject to any other arrangements between the relevant Contracting Parties, the salary of an observer shall be covered by the sending Contracting Party.

The vessel on which an observer is placed shall provide suitable food and lodging during the observer's deployment. Vessel masters shall ensure that all necessary cooperation is extended to observers in order for them to carry out their duties.

Subject to any other arrangements between Contracting Parties, each Contracting Party shall pay all costs associated with the satellite tracking system.

4.0 Pilot Project Application

- Each Contracting Party shall require all its vessels fishing in the Regulatory Area to accept observers on the basis of the following:

    - each Contracting Party shall have the primary responsibility to obtain, for placement on its vessels, independent and impartial observers;

    - in cases where a Contracting Party has not placed an observer on a vessel, any other Contracting Party may, subject to the consent of the Contracting Party of the vessel, place an observer on board until that Contracting Party provides a replacement in accordance with paragraph a);

    - no vessel shall be required to carry more than one observer pursuant to this Pilot Project at any time.

- Each Contracting Party shall provide to the Executive Secretary a list of the observers they will be placing on vessels in the Regulatory Area.

- Each Contracting Party whose vessels fish, or plan to fish, a minimum of 300 days per year in the Regulatory Area, shall:

    - require 35% of its vessels fishing in the Regulatory Area to be equipped with an autonomous system able to transmit automatically satellite signals to a land-based receiving station permitting a continuous tracking of the position of the vessel by the Contracting Party of the vessel;

    - endeavour to test several systems of satellite tracking;

    - install at least one receiving station associated with their satellite tracking system;

    - transmit to the Executive Secretary, on a real time basis, messages of movement between NAFO divisions (as per the requirements of the Hail System outlined in Part III.E of these Measures) for its vessels equipped with satellite devices. The Executive Secretary shall, in turn, transmit such information to Contracting Parties with an inspection vessel or aircraft in the Convention Area;

    - cooperate with other Contracting Parties which have a NAFO inspection vessel or aircraft in the Convention Area, in order to exchange information on a real-time basis on the geographical distribution of fishing vessels equipped with satellite devices and, on specific request, information related to the identification of a vessel.

5.0 Pilot Project Analysis

- Each Contracting Party shall prepare a report on the results of the Pilot Project from the perspective of efficiency and effectiveness, including:

    - overall effectiveness of the Project in improving compliance with the Conservation and Enforcement Measures;

    - the effectiveness of the different components of the Project;

    - costs associated with observers and satellite tracking;

    - a summary of observers' reports, specifying type and number of observed infractions and important events;

    - estimations of fishing effort from observers as compared to initial estimation by satellite monitoring;

- analysis of the efficiency in terms of cost/benefit, the latter being expressed in terms of compliance with the Conservation and Enforcement Measures and volume of data received for fisheries management.

- The reports shall be submitted to the Executive Secretary in time for their consideration at the September 1997 Annual Meeting of NAFO and, based on these reports, the Parties agree to establish a permanent scheme that will ensure that the degree of control and enforcement in the Regulatory Area provided by the Project, as indicated above, is maintained.

6.0 Canadian Observer Program Review

The observer program provides an effective means to determine vessel compliance with regulatory requirements. Observers also provide a reporting mechanism that ensures emerging problems to be identified and dealt with in a prompt manner.

In 1996 and 1997, no apparent infringements were reported by observers on Canadian vessels.

Total Canadian fishing days in the NAFO Regulatory Area during the January 1, 1996 to April 30, 1997 period was 291 days. This total was comprised of 248 days in the 3M shrimp fishery and 43 days for all groundfish fisheries. Observer coverage for all fisheries was maintained at 100% (Appendix 1).

Biological sampling followed the standard program for fisheries conducted inside Canadian Fisheries Waters. Observers deployed on Canadian vessels are required to conduct sampling on the main species sought by the vessel, and on major by-catch species. A sample consists of an average of 200 fish, which are measured and sexed.

Deployment costs for 1996-1997 (to April 30) period was $62,000 for the shrimp fishery and $11,000 for the groundfish fishery, exclusive of program administration costs estimated as $30,000. Cost per observer day was approximately $250.

In 1996, a Canadian company was contracted by Norway to provide observers on Norwegian vessels fishing shrimp in Division 3M. During 1996 and 1997 (April 30), Canadian observers have been deployed on Baltic State, Icelandic and Russian vessles fishing shrimp in Division 3M. Unless otherwise directed by the Contracting Party, all observer reports/information for these deployments are transmitted directly from the Canadian contractor to the Contracting Party.

An observer program provides a continuous presence on board fishing vessels. The observer program is seen as a cost effective response to enforcement issues particularly the use of mesh obstruction devices, misreporting of species and the capture of juvenile or prohibited species. These apparent infringements cannot be dealt with as effectively or completely by air/sea surveillance or satellite tracking technology. The observer program is also a valuable source of biological sampling data.

7.0 Canadian Satellite Tracking Program Review

Currently, satellite tracking technology can provide the following information:

- Vessel location and identification: a GPS position, as well as vessel name and nationality, is being provided to the NAFO Secretariat.
- Hail information: vessels notify the NAFO Secretariat of zone entries, exits and movements between divisions. As part of the hail, catch information may be provided.

The value of this information is limited when dealing with non-compliance related such as misreporting and the use of mesh obstruction devices.

In 1996, nine (9) Canadian vessels spent 194 days in the NAFO Regulatory Area. Under the Pilot Project for Observer Coverage and Satellite Tracking Technology, Contracting Parties with 300 or more of effort in the NAFO Regulatory Area are required to install satellite tracking devices on 35% of its vessels.

Canada had less than 300 days of effort in the NAFO Regulatory Area, however, satellite tracking systems were installed on 3 vessels which were anticipated to fish in the NAFO Regulatory Area. These vessels chose instead to pursue fisheries in Canadian Fishery Waters. As a result, none of the Canadian vessels that fished in the NAFO Regulatory Area in 1996 carried satellite tracking technology.

In 1997 (to 30 April) Canadian vessels have fished in the NAFO Regulatory Area for approximately 84 days. Satellite tracking systems have been installed on two shrimp vessels with more installations planned. The systems are working well and providing positional records as required.

In May of 1995, Canada established a contract with a Canadian supplier to provide 15 satellite tracking units on an annual basis. All inclusive costs (leasing/transmissions) is $150,000.

Appendix 1

The following table lists the sea days by month/fishery for 1996-1997:

Year	Month	Fishery	Observed Days
1996	February	Halibut	13
	February	Shrimp	3
	March	Shrimp	21
	April	Shrimp	98
	May	Shrimp	28
	May	Hake/GHL	8
	June	Shrimp	14
	June	Hake/GHL	4
	September	Hake/GHL	5
1997	February	Halibut	9
	March	Shrimp	16
	April	Shrimp	68
	April	Halibut	4
TOTAL			291

Annex 8. Report by Latvia

(STACTIC Working Paper 97/12)

The Latvian vessels do not fish for redfish and cod in the NAFO area because of unsettled issue on a separate quota for the above-mentioned species. Five middle size trawlers which could fish for shrimp in the NAFO Regulatory Area are flying the Latvian flag. Three of them have the satellite monitoring equipment adjusted by the company "Argos". The received equipment has been mounted in the Marine Environmental Board.

In 1996 four Latvian vessels fishing for shrimp were deployed with Canadian observers. In the near future, the reports received from the observers will be sent to the NAFO Secretariat. Since 1997 all the vessels fishing in the NAFO waters have Latvian observers.

Annex 9. Report by the United States of America on the NAFO Pilot Project for Observers and Satellite Tracking

(STACTIC Working Paper 97/13)

1. INTRODUCTION

In order to improve compliance with the Conservation and Enforcement Measures for their vessels fishing in the Regulatory Area, the Northwest Atlantic Fisheries Organization (NAFO) Contracting Parties agreed to implement during the period from January 1, 1996 to December 31, 1997 a NAFO Pilot Project for Observers and Satellite tracking. This project provides for properly trained and qualified observers on all vessels fishing in the NAFO Regulatory Area, and satellite tracking devices on 35 percent of their respective vessels fishing the Regulatory Area. To date, no U.S. vessels have fished in the NAFO Regulatory Area for NAFO stocks during the period for the Pilot Project, although U.S. fishers have indicated an intention to do so in the future. Therefore, the following paper will address strictly U.S. domestic developments paralleling implementation of the NAFO Pilot Project.

2. OVERALL EFFECTIVENESS

Based on reporting from other Contracting Parties, the 100 percent observer program has significantly increased compliance with Conservation and Enforcement Measures, with particular regard to proper gear. Given this development and the trial 90 mm net mesh size for 3M Redfish, this project should be fully implemented, with some additional conditions. Likewise, the satellite-based vessel monitoring system (VMS) has shown its usefulness and should be fully implemented onto all vessels fishing in the NAFO Regulatory Area. The VMS should be further developed to include minimum standards and with procedures to exchange the information electronically with the Secretariat and with inspection vessels.

3. OBSERVERS

In 1996 the U.S. implemented an observer program under the New England Multi-Species and Sea Scallop Fisheries Management Plans. The program is funded by Congress through the National Marine Fisheries Service and is administered by the Northeast Fisheries Science Center, Woods Hole, Massachusetts. It is estimated that it cost approximately US$2,000 to train an observer. Currently, there are approximately 30-35 observers deployed on vessels in the regulated fisheries off New England. Observers accounted for over 1,500 days at sea in 1996. They have increased compliance and provided value by-catch data reporting.

The Observer program is expensive. In view of this fact, the United States recommends that the program continue for all fishing vessels operating in NAFO Divisions where stocks are regulated. This will increase the opportunity for experimental fishing in other divisions, but not increase the financial obligations to the fishing vessels operating in these experimental fisheries.

4. VESSEL MONITORING SYSTEMS

The United States has also implemented a VMS program under the New England Multi-Species and Sea Scallop Fisheries Management Plans. The VMS is used to track days-at-sea and monitor compliance with closed areas. Additionally, there are valuable enforcement and management implications associated with VMS. Up to 450 vessels are expected to participate in the program when it is fully implemented.

VMS is a conservation and enforcement measure which requires an initial capital outlay. Individual shipboard units cost between US$3,500 and US$6,000. Installation and maintenance require an additional US$500 annually. However, individual position reports cost US$0.08 per transmission. Base stations are also a significant financial outlay. A Unix base station costs US$50,000, while a PC based hardware can cost US$20,000 with US$25,000 in additional software. These base stations access the vendor/downlink station via an X.25 line; these lines cost approximately US$15,000 annually.

The U.S. domestic VMS program has the following minimum performance criteria:

a. The VMS shall be tamperproof, i.e.,, shall not permit the input of false positions; furthermore, if a system sues satellites to determine position, satellite selection should be automatic to provide an optimum fix and should not be capable of being manually overridden by any person aboard a fishing vessel or by the vessel owner.

b. The VMS shall be fully automatic and operational at all time, regardless of weather and environmental conditions.

c. The VMS shall be capable of tracking vessels in all U.S. waters in the Atlantic Ocean from the shoreline of each coastal state to a line 215 nautical miles offshore and shall provide position accuracy to within 400 meters (1,300 feet).

d. The VMS shall be capable of transmitting and storing information including vessel identification, date, time, and latitude/longitude.

e. The VMS shall provide accurate hourly position transmissions every day of the year. In addition, the VMS shall allow polling of individual vessels and any set of vessels at any time and receive position reports in real-time. For the purposes of this specification, "real time" shall constitute data that reflects a delay of 15 minutes or less between the displayed information and the vessel's actual position.

f. The VMS shall be capable of providing network message communications between the vessel and shore. The VMS shall allow NMFS to initiate communications or data transfer at any time.

g. The VMS vendor shall be capable of transmitting position data to a NMFS-designated computer system via a modem at a minimum speed of 9600 baud. Transmission shall be in ASCII text in a file format acceptable to NMFS.

h. The VMS shall be capable of providing vessel position histories for a minimum of one year and providing transmission to NMFS of specified portions of archived data in response to NMFS requests and in a variety of media (e.g., tape, Floppy, etc.).

Operating requirements include that all required VMS units must transmit a signal indicating the vessel's accurate position at least every hour, 24 hours a day, throughout the year.

If a VMS unit fails to transmit an hourly signal of a vessel's position, the vessel shall be deemed to have incurred a "Day at Sea", or a fraction thereof, for as long as the unit fails to transmit a signal, unless a preponderance of evidence shows that the failure to transmit was due to an unavoidable malfunction or disruption of the transmission that occurred while the vessel was declared out of the scallop fishery or Northeast multispecies fishery, or was not at sea.

5. ANALYSIS OF EFFICIENCIES AND RECOMMENDATIONS

Observers provide a real time means of monitoring compliance with NAFO Conservation and Enforcement Measures. Although their use constitutes a significant capital outlay, they provide the most effective means of monitoring compliance with fishery resources management measures, especially stocks which are fully utilized or over utilized. Therefore, the United States recommends that the NAFO Observer Pilot Project be instituted as a provision of the NAFO Conservation and Enforcement Measures for all fishing vessels operating in NAFO Divisions where stocks are regulated.

Vessel monitoring systems provide a means for utilizing developing technologies to "work smarter not harder". During times of shrinking budgets for monitoring and surveillance assets, VMS provides the most economical means of monitoring the position and activity of Contracting Party vessels. Air and surface assets will still be required to monitor the fishing activity of Non-Contracting Parties and to support the at-sea inspection program. VMS, however, may also provide a means, if properly developed, to conduct near-real-time management of the stocks through the development of standardized catch reporting. Therefore, the United Sates would support a proposal for use of VMS on all Contracting Party fishing vessels operating in the Regulatory Area and the development of minimum standards and specifications similar to those which were developed by the Parties to the Convention for the Conservation and Management of Pollock Resources in the Central Bering Sea and which are in development by the Parties to the International Convention for the Conservation of Atlantic Tunas.

Annex 10. Report by Denmark (Faroe Islands) on Implementation of Conservation and Enforcement Measures

(STACTIC Working Paper 97/15)

Introduction

This paper describes in few words the Faroe Islands involvement in the implementation of Conservation and Enforcement Measures in NAFO Regulatory Area.

Hail System

The rules for the hail system in the NAFO Regulatory Area are stated in the licences for the Faroese vessels operating in the NAFO Regulatory Area. The vessels send the hail reports by telex or by fax to the Inspection-and Rescue Service who forward them to the NAFO Executive Secretary by fax.

Catch reports

According to the licenses issued by the Fisheries Department all vessels every Monday have to transmit the catch report for the previous week to the Inspection-and Rescue Service. The messages are sent by telex or by fax. The vessels use Inmarsat A for their communication. The Inspection- and Rescue Service report the catches to the Department of Fisheries who forward them to the NAFO Executive Secretary on a monthly basis.

Observer scheme

All Faroese vessels operating in the NAFO Regulatory Area shall have an observer onboard. The observers are authorized by the Department of Fisheries and are employed by the Inspection- and Rescue Service. The Inspection- and Rescue Service is responsible to see that the work by the observers is in compliance with the NAFO Conservation and Enforcement Measures.

Satellite Tracking

Up to now it has not been possible for the Faroe Islands to fulfil the part of NAFO Conservation and Enforcement Measures regarding satellite tracking of 35% of the vessels operating in the NAFO Regulatory Area. Attempts are now made to start introduction of satellite tracking of some shrimp trawlers during this summer.

Operation of Surveillance and Inspection

Since 1993 it has not been possible for the Faroe Islands to send an inspection vessel to the NAFO Regulatory Area.

Annex 11. Report by Japan on Implementation of Conservation and Enforcement Measures

(STACTIC Working Paper 97/16)

1. Hail System

During 1996, the two Japanese fishing vessels listed were engaged in Greenland halibut and redfish operations in 3LMNO. The total number of hails was 59.

The hail reports were submitted from the fishing vessels to the NAFO Secretariat via the designated representative in Halifax.

The form used was as attached, however, we have no intention to utilize E-Mail/Internet since the number of vessels involved are nominal.

There has been no mistake made up till present in implementing the hail system.

2. Catch Statistics Report

We have been sending in a monthly report every month which is based upon a weekly report from a fishing vessel. Also, STATLANT 21A and STATLANT 21B are submitted as according to the NAFO agreement, and there has been no particular problem arose.

3. Operation of Surveillance and Inspection

Since there have been a very few fishing vessels engaged in fishing operations, we have not assigned any vessel for enforcement.

The aggregated number of inspections conducted over the Japanese fishing vessels during 1996 was 11, which was 550% (on an average of 231%, the highest among the Contracting Parties. No infringement was found.

Such high frequency is conspicuous deviation from the NAFO Conservation and Enforcement Measures, Part IV.2(i), which stipulates "In its inspections a Contracting Party shall aim at ensuring equal treatment between all Contracting Parties with vessels operating in the Regulatory Area through an equitable distribution of inspections." Therefore, from now on, improvement of inspection measures should be considered in order to make all Contracting Parties exposed to a similar inspection frequency.

4. Report on the Pilot Project on Observers and Satellite Tracking

During the two-year term of the pilot project, namely 1996 and 1997, two Japanese fishing vessels operated in the NRA. Since it was expected that their fishing operation would not exceed 300 days, they did not introduce the satellite tracking system and, instead, carrying an observer on board has been implemented as the pilot project. Within 30 days after the conclusion of each trip, an observer report has been submitted to the NAFO Secretariat via the designated representative.

Currently, the monitoring by an observer project conducted by Japan is implemented as according to the NAFO Conservation and Enforcement Measures, Part VI.A.

Since Japan has a nominal number of fishing vessels operating, we are fully confident that, by the current monitoring by on-board observer alone, we should sufficiently be able to abide by the Conservation and Enforcement Measures required by the NAFO. Therefore, we do not think it is necessary to adopt the additional Satellite Tracking System which obviously increases our bearing of cost.

For your reference, the cost incurred by having an observer on board is as follows:

Travelling expenses	US$	27,000 (4 times)
Salary and Food	US$	95,000
Total	US$	122,000

January 30, 1997

To: Companies involved in fishing off Canada.

Japan Deep Sea Trawlers Association

(1997 Revised Edition)

Re: Issues relevant to the NAFO Convention waters

At the NAFO Enforcement meeting held last year, there was some changes made on Entry, Move, Zone, Exit and Transshipment (Hail System) forms applicable to the NAFO convention waters. We are informing you of those new forms and how to make entries.

Although the new forms were determined at the said NAFO meeting, interpretation of the definition for individual item differs by each Contracting Party, therefore, there is a possibility of changes in the manner to make entries. However, until you are so notified by us, please carry on as according to this notice.

Also, we wish to remind you that a report to the Halifax Office of the Japan Fisheries Association from each vessel can be done by handwritten memos.

Yours truly,

(REMARKS)

1. Leave "Sequential number" blank. (JFA. Halifax will fill in)

2. On Entry/Exit Report, entry/exit report by fishing vessel to/from the Convention waters should be done more than 6 hours prior to such Entry/Exit.

3. A Move report must be submitted prior to move zones.

4. In case to use Zone report form.

   When you are operating within 10 miles from the boundary between 3L and 3N, and from the boundary between 3N and 3O, if you are to operate crossing over those boundaries, report must be submitted at the time of crossing the boundary.

   Also, please be reminded that you are not allowed to remain in either one zone for more than 24 hours when you are operating in the manners described above. (If you remain beyond 24 hours, it should constitute "Move".)

5. A transhipment report must be submitted at least 24 hours prior to transhipment within the Convention waters.

6. At a time to submit Move, Zone report, it is not necessary to report round weight of fish kept on board.

The content of entries in Entry/Move/Zone/Exit/Transhipment Reports

1.	Name of Vessel	Name of the reporting vessel
2.	Call Sign	Call Sign
3.	External identification letter and number	Registration Number of the fishing vessel reporting.
4.	The date/The time (UTC) Geographical position	The date, time, position at the time of reporting.
5.	Indication of the message made	Description of report (such as Entry/Move, etc.).
6.	The NAFO division	Entry (or Exit/Move/Zone, etc.)

Example Entry: (→3M)
Move: (3L → 3M)

7.	The total round weight of fish by species on board	The total round weight of fish kept on board.

(Remarks)

@ Species should be indicated by Code which is consisted by 3 alphabetical letters.

@ Unit is in kilograms (=kg). Also, any fractions should be rounded to the closest number to 100 kg.

8.	The Name of the master	The name of the master of the vessel reporting.
9.	Target species	The targeted species.

SEQUENTIAL NO: JPA - 97 -

NAFO HAIL REPORT (ENTRY)

A	NAME OF VESSEL	
B	CALL SIGN	
C	EXTERNAL IDENTIFICATION LETTER AND NUMBER	
D	THE DATE	
	THE TIME (UTC)	
	GEOGRAPHICAL POSITION	LAT _____ N LONG _____ W
E	INDICATION OF THE MESSAGE CODE	ENTRY
F	THE NAFO DIVISION	→
G	THE TOTAL ROUND WEIGHT OF FISH BY SPECIES ON BOARD (ROUND TO THE NEAREST 100Kg)	TOTAL
H	THE NAME OF THE MASTER	
I	TARGET SPECIES	

SEQUENTIAL NO: JPA - 97 -

NAFO HAIL REPORT (MOVE)

A	NAME OF VESSEL	
B	CALL SIGN	
C	EXTERNAL IDENTIFICATION LETTER AND NUMBER	
D	THE DATE	
	THE TIME (UTC)	
	GEOGRAPHICAL POSITION	LAT _____ N LONG _____ W
E	INDICATION OF THE MESSAGE CODE	MOVE
F	THE NAFO DIVISION	→
G	THE NAME OF THE MASTER	
H	TARGET SPECIES	

SEQUENTIAL NO: JPA - 97 -

NAFO HAIL REPORT (ZONE)

A	NAME OF VESSEL	
B	CALL SIGN	
C	EXTERNAL IDENTIFICATION LETTER AND NUMBER	
D	THE DATE	
	THE TIME (UTC)	
	GEOGRAPHICAL POSITION	LAT _____ N LONG _____ W
E	INDICATION OF THE MESSAGE CODE	ZONE
F	THE NAFO DIVISION	→
G	THE NAME OF THE MASTER	
H	TARGET SPECIES	

SEQUENTIAL NO: JPA - 97 -

NAFO HAIL REPORT (EXIT)

A	NAME OF VESSEL	
B	CALL SIGN	
C	EXTERNAL IDENTIFICATION LETTER AND NUMBER	
D	THE DATE	
	THE TIME (UTC)	
	GEOGRAPHICAL POSITION	LAT _____ N LONG _____ W
E	INDICATION OF THE MESSAGE CODE	EXIT
F	THE NAFO DIVISION	→
G	THE TOTAL ROUND WEIGHT OF FISH BY SPECIES ON BOARD (ROUND TO THE NEAREST 100Kg)	TOTAL
H	THE NAME OF THE MASTER	

SEQUENTIAL NO: JPA - 97 -

NAFO HAIL REPORT (TRANSHIPMENT)

A	NAME OF VESSEL	
B	CALL SIGN	
C	EXTERNAL IDENTIFICATION LETTER AND NUMBER	
D	THE DATE	
	THE TIME (UTC)	
	GEOGRAPHICAL POSITION	LAT _____ N LONG _____ W
E	INDICATION OF THE MESSAGE CODE	TRANSFER
F	THE TOTAL ROUND WEIGHT OF FISH BY SPECIES ON BOARD (ROUND TO THE NEAREST 100Kg)	TOTAL
G	THE NAME OF THE MASTER	

Annex 12. Report by Estonia on NAFO Pilot Project for Observers and Satellite Tracking

(STACTIC Working Paper 97/17)

Observers

Since the beginning of 1996 all Estonian vessels fishing in the NRA have accepted observers on board in accordance to the NAFO requirements. As some financial difficulties related to implementation of 100% observer coverage were risen, Canadian Department of Fisheries and Oceans offered its help to start the project.

Whereas Estonia had no observers trained to work in the NAFO Regulatory Area, it was agreed that Canadian observers will be placed on board of the Estonian fishing vessels.

In the beginning of 1996 three persons from Estonia participated in the Canadian International Observers Training Course and were trained to work in the NRA. From the August 1996 two of them have worked in the Division 3M on board of the Estonian shrimp vessels.

In the second part of 1997 training course for NAFO observers is to be organized with the view of covering all Estonian vessels fishing in the NAFO area with Estonian observers.

Following data are to be collected by observers:

- catch and effort data on a set-by-set basis including start and end position, time and depth of the set, information on the catch, bycatch and discards;
- data about gear used (type, mesh size, etc.);
- data about vessel;
- production analysis.

Verifying that vessels activities meet NAFO requirements is also a part of observer's obligations.

Catch and effort data are saved in the computer database and can be used for the managing of the area.

Satellite Tracking

In 1996 there were five Estonian vessels fishing in the NAFO Regulatory Area. As at least 35% satellite tracking device coverage on board of vessels is required by Conservation and Enforcement Measures, 3 Estonian vessels were equipped with such a device.

After consultations with different companies the Argos system was preferred and installed with support from European Union.

Main reasons for selecting this system were easiness to use, compactness and relatively low cost.

The Argos satellite-based location and data collection system segments in general are shown in Attachment.

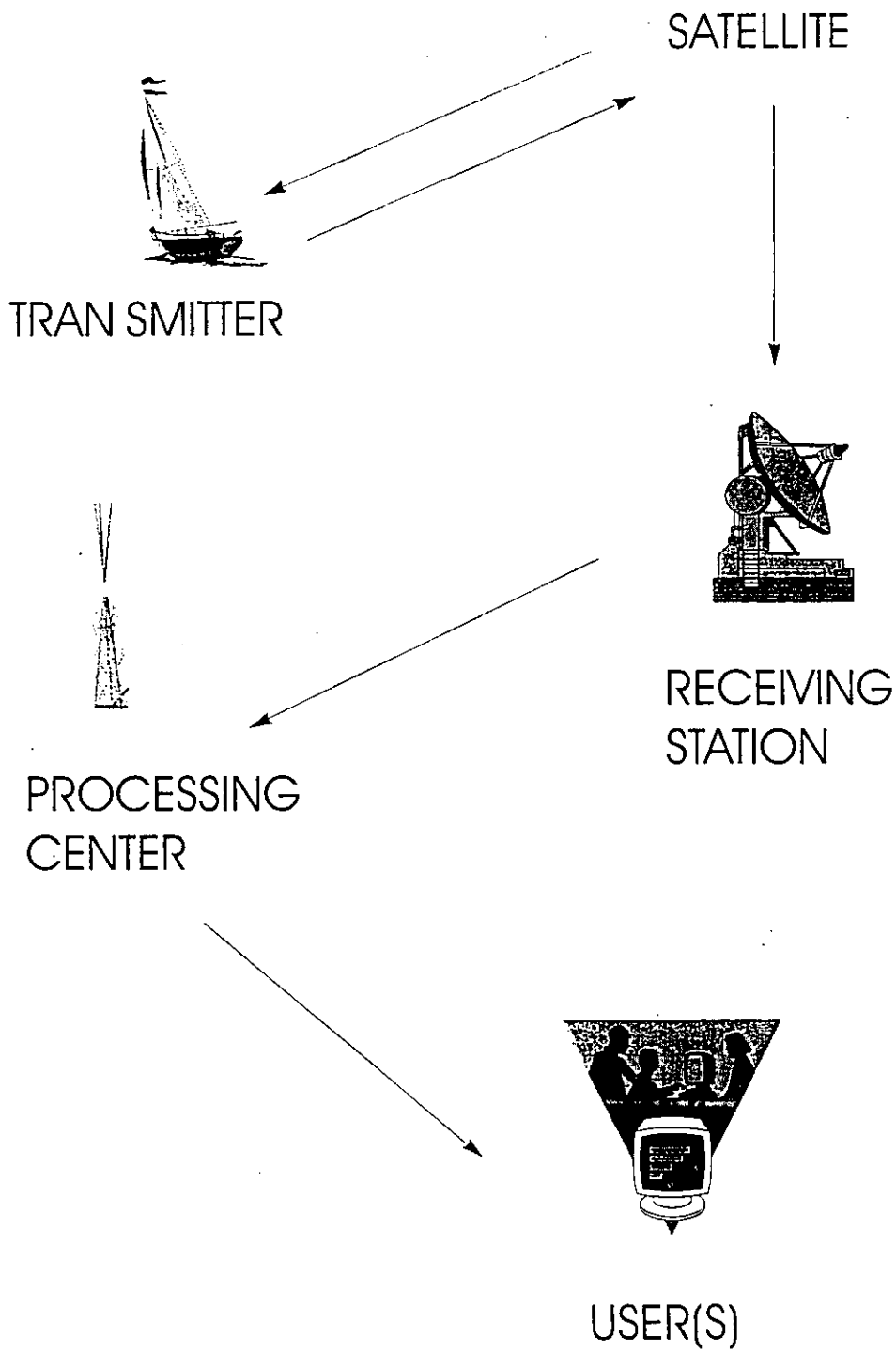
Vessel position and identification information is transmitted at one hour interval to the Receiving Station in France, processed in Toulouse and forwarded to the user's PC located in Estonian State Sea Inspection.

Data are received through the X.25 network. Other networks can also be used (X.400, telephone, internet, etc.).

Additional data (catch, effort, etc. up to 256 bits) can be sent from vessels by using special keypad.

PC P90 (16 MB RAM, 820 MB HD) and 17" screen are used to run special software which calculates vessels speed and heading on the basis of the information received. Possibility to show all information about the vessels and drawing their routes on the map makes it extremely easy to observe vessels activities on the real time basis.

Attachment
(Annex 12)



Annex 13. Report by the European Union on Implementation of the Conservation and Enforcement Measures

(STACTIC Working Paper 97/18)

A. Hail System

On the basis of inspections conducted by the European Union on vessels from Contracting Parties (including the EU) compliance with the requirements pertaining the NAFO Hail system remains satisfactory. In the limited number of cases where there were inconsistencies between hailed positions and observed positions at sea, these can be attributed to delays in the transmission process ashore rather than to the failure of masters of fishing vessels to hail their positions in a timely manner.

The new provisions of the hail system (communication of target species) adopted in 1996 by the Fisheries Commission have been implemented by the European Union and are being observed by its fishing vessels.

B. Submission of Catch Statistics

In accordance with NAFO rules, Contracting Parties shall submit catch statistics with 30 days following the end of each calendar month. The European Union has complied with these requirements in 1996. However in the first quarter of 1997 some delays were experienced. These were due to technical problems in the Commissions database and have been rectified.

Submission of weekly catch figure for Greenland Halibut has proceeded normally since the introduction of this requirement and no delays have been experienced to date.

C. Operation of surveillance and inspection

The European Union deployed an inspection vessel to the NAFO Area for a period of approximately ten months in 1996[1]. The inspection vessel recommenced control duties in early January 1997 and will continue to operate in the Area throughout the year.

In 1996, 171 inspections were conducted on European Union vessels. Approximately two thirds (119) of the inspections were conducted by NAFO inspectors deployed by Canada[2]. Four citations for apparent infringements were issued to E.U. vessels. During 1996, EU Inspectors issued 19 citations to non EU vessels (Icelandic 13; Canadian 2 and 1 on Faroese, Lithuanian, Latvian, Greenlandic vessels) and 3 to EU vessels. In 1997, 20 inspections were carried out by NAFO inspectors deployed by Canada during the period January-February. Inspectors from the European Community conducted 15 inspections on EU vessels in the period January to May 1997. Two apparent infringement were issued so far in 1997 for EU vessels.

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[1] Annual costs for chartering the vessel are 1.400.000 ECU.

[2] See Attachment 1.

With respect to the implementation of the observer scheme which is an element in the surveillance scheme, the European Union deployed observers on all its vessels in 1996-1997 (100% coverage of fishing days).

In 1996, 7.678 observer days were required and the costs generated amounted to 1.748.680 ECU in order to cover 5.833 fishing days generated by 48 vessels..

In the period January to May 1997 a further 1700 observer days were required and generated costs amounting to 357.000 ECU.

Port inspections have been carried out on all European Union vessels returning from the NAFO Area in 1996-1997.

D. Review of Disposition of Apparent Infringements

The follow-up to reported apparent infringements continues through the legal systems of the Member States.

The outcome of cases further to the ones reported by the European Union to the NAFO Executive Secretariat in March 1997 is attached.

With regard to the four cases mentioned under 1995, these were reported by Canada to the European Union as inspections without apparent infringements/under declarations of catches. The inspection report forms were furthermore without any evidence of misreporting.

Therefore, there are no cases to answer as legal follow-up action are impossible and the cases have thus been filed.

With regard to the last mentioned case of 1993 the under declaration in the logbook is well below the authorized tolerance under EU law for recording catches at sea.

The disposition of the outstanding cases will be reported to the Executive Secretariat in accordance with the NAFO Conservation and Enforcement Measures, Part IV, point 17 a (I) when the outcome of the cases is received from the competent authorities of the European Union.

OUTSTANDING DISPOSITION OF APPARENT INFRINGEMENTS

VESSEL	DATE OF INSP. 1993	BY	DISPOSITION
Ana Maria Gandon	03.11.93	CAN	Outstanding
Moradina	03.11.93	CAN	Outstanding
Punta Reboleira	04.11.93	CAN	Outstanding
José Antonio Nores	19.04.93	EU	Outstanding
Garoya Segundo	08.11.93	EU	Convicted and fined
Puente Sabaris	08.11.93	CAN	Outstanding
Playa de Mourisca	06.4.96	CAN	No record of inspection on this date.
Rio Orxas	10.06.93	CAN	No case to answer. 13% u/decl.
1994			
Nuevo Virgen de la Barca	21.01.94	CAN	Convicted and fined
Esperanza Menduina	22.01.94	CAN	Outstanding
Playa de Menduina	02.02.94	CAN	Outstanding
Villa de Bueu	13.03.94	CAN	Outstanding
Santa Mafalda	17.08.94	CAN	No case to answer
Fragana	29.10.94	CAN	Acquitted
Ria de Pontevedra	10.03.94	EU	Outstanding
Mayi Quatro	22.03.94	EU	Outstanding
Jose Antonio Nores	09.04.94	EU	Outstanding
Area Cova	17.08.94	EU	Convicted and fined
1995			
José Antonio Nores	25.02.95	CAN	No case to answer
Patricia Nores	25.02.95	CAN	No case to answer
Pedra Rubia	27.02.95	CAN	No case to answer
Puente Sabaris	03.03.95	CAN	No case to answer

E. I. Pilot Project on Observers 1996-1997

Pursuant to the Fisheries Commission decision of September 1995, the European Union deployed observers on all its fishing vessels engaged in fishing activities in the NAFO Regulatory Area.

Following the adoption of Community legislation in December 1995 and the selection of a private company to supply observers, deployment commenced on 1 January 1996.

Observers were normally deployed either from the home ports of the fishing vessels or via the Community inspection vessel operating in NAFO Regulatory Area.

The placement of observers on board has been facilitated by the positive attitude demonstrated by the masters of fishing vessels who have readily accepted the presence of observers on board. During the implementation of the pilot project the observers have been able to discharge their responsibilities in a free and independent manner.

The tasks and duties of the observers are fixed by Community Legislation and are in accordance with Part VI of the NAFO Conservation and Enforcement Measures. Observers maintain a daily log[1] of vessel activity, compile a summary report at the end of the observation period and the data derived from the daily log is entered on a data base maintained by the Company providing the observers. The daily log consists of a record of each haul.

To date, the pilot scheme has operated in a satisfactory manner but has generated substantial costs to the European Union during the period 1 January 1996 to 31 May 1997 (2.105.680 ECU) when 9.378 observer days were required.

[1] A new format for the daily log has been adopted in order to make it more computer usable.

Header

VESSEL EXTERNAL IDENTIFICATION | OBSERVER's NAME

Serial N° | Fishing Div. | Date and time (UTC) | Haul N° | Fishing time

Gear

Type | Mesh size ___ mm | N° hooks | N° gill nets | Panel length ___ m

Attachments to nets | Attachments mesh size ___ mm

Position shoot

Latitude | Longitude | Division | Depth

Haul report transmission

Latitude | Longitude | Time | Division

Code | Via | Time sent

Observation level

Haul observed (Fully, Almost fully, Partially, Not at all) | Production Line observed (Fully, Almost fully, Partially, Not at all)

FISH		Observer					Observer Accumulated Totals		Skipper			Skipper Accumulated Totals	
Species	Presentation	Catch live weight (kg)	Conversion factor	Production weight (kg)	Undersized (kg)	Discards (kg)	Live weight (kg)	Process weight (kg)	Catch live weight (kg)	Conversion factor	Process weight (kg)	Live weight (kg)	Process weight (kg)

Remarks:

Date | Signature

E. II. Criteria to Review the Pilot Project on Observers

The Observer Scheme was adopted by the Fisheries Commission on the premise that it would bring about improvements in the compliance levels of fishing vessels engaged in fishing activities in NAFO.

1. Any perceived improvement in compliance levels should take account of a number of factors, such as:

   - the reduction in fishing effort (vessel fishing days) and the trend towards targeting non quota species,
   - variations in catch rates of quota species caught whether or not in a directed fishery or as bycatches and quota catch prohibitions,
   - the variation in the range of conservation measures applying to the different fleets operating in NAFO,
   - the variety of derogations under NAFO rules and unique non discard prohibitions, etc.

2. Against this background it is to be noted that in the period preceding the introduction of the Observer Scheme, TAC's and Quotas for the key ground fish species had to be reduced drastically. The steep reduction of fishing possibilities has put major pressures on enforcement and required additional measures. In recent years the situation has stabilised and the relationship between fishing effort and fishing possibilities has improved. On the contrary, as regards the shrimp fishery which commenced as a free fishery, further stabilisation is still required. The current level of fishing effort is not sustainable.

   Against this background an evaluation of an observer scheme should be based on the overall conservation and enforcement strategy. Such evaluation was never carried out before the introduction of the current pilot project.

   The NAFO Conservation and Enforcement Measures aim at controlling fishing mortality by overall catch limitations as well as catches of immature fish and where appropriate bycatches of non targeted fish. Any fishing activity results in fishing mortality on target stocks as well as non target stocks, individuals of which are caught in the same fishing operation. The risk that fishing activities will exceed allowable fishing mortality depends on several variables such as:

   - state of the stock and quota levels,
   - level of bycatches of non targeted species in the same fishing operation,
   - level of juvenile catches,
   - gear selectivity,
   - fishing capacity,
   - fishing effort.

   The enforcement measures and in particular, the Scheme of Joint International Inspection and Surveillance should ensure compliance with the conservation measures. Taking into account the perception that traditional means of control were not capable of ensuring full compliance, the pilot project should provide transparency in this respect.

3. An observer scheme allows the collection of information on the gear used, the level of catches by species, juvenile catches, discards as well as the area where the vessel carries out its fishing operations. This information makes it possible to assess the accuracy of data recorded by the master of the vessel. In this way an observer scheme is complementary to other means of enforcement such as the recording by the master, hail reports, inspection at sea and inspection in the port of landing (Attachment 2).

   An evaluation of the observer scheme should address firstly the conception of the scheme as such and the execution of the observance requirements by the observer. Against this background, it should also be evaluated whether the information collected by the observers meets the requirements of inspectors and the scientific community and is provided within the shortest possible delay.

   Secondly, the evaluation should address what constitutes the added value of an observer scheme in comparison to other means of monitoring fisheries (costs/benefits).

4. At present, the observer has a broad range of monitoring tasks and these have been added to by the Scientific Council in 1996. It appears in practice that observers can not perform all tasks which they are required to do. In the evaluation of the pilot project, consideration should be given to assessing the range of tasks under two headings : compliance and scientific work. With respect to the former, observers duties should be rationalised and better focused in order to make the system more cost-effective overall. For example, observers should thoroughly monitor a certain percentage of hauls, review conversion factors used on board and mesh size measurement in order to improve the quality of the data collected. Concerning possible scientific tasks consideration could be given to requesting observers to provide data/information on catch per unit effort (CPUE) and age structure/profile of certain species. Against this background, provision should be made for ensuring the quality of the data collected by observers. Indeed, scientists must be able to rely on the data provided. The acquisition of this type of information could offer substantial benefits to fishery managers.

5. The benefits derived from the implementation of the observer scheme should be identified in some detail in order to have a comprehensive overview of its global contribution to fisheries management generally. In that context a review should also be undertaken to determine whether information obtained from the scheme is accessible to and utilised by fisheries managers. This review has not yet been carried out.

6. With respect to costs, a review should be undertaken to determine total costs. The latter should be compared with the costs of more conventional means (inspection vessels) and new control technologies.

7. In any cost effectiveness evaluation consideration should also be given to the administrative burdens generated by the scheme. The pilot project (EU) has created a range of new administrative tasks which require a considerable amount of work:

- review of observer reports (final report/daily log)
- transmission of information to national authorities, NAFO Secretariat, scientific institutions, enforcement authorities
- monitoring the performance of observers (daily communication with observers in situ)
- creation of database, inputting of observer data, etc.

8. An observer scheme does not reduce expenditure on traditional means of inspection.

On the contrary surveillance vessels spend more time following up on queries made by observers and must continue inspection in order to ascertain the quality of the work of the observers.

9. Finally, a review should be undertaken to determine the role of the NAFO Secretariat. Currently, Contracting Parties should transmit copies of the observer reports to the NAFO Secretariat which thus contains substantial quantities of information and data. These cannot be exploited in their current format (on paper) due to the lack of harmonisation in the observer reports.

If transmitted in harmonised electronic format, NAFO would dispose of a very valuable data base on fishing activities.

F. I. Vessel Monitoring System

The European Union produced two reports at the last STACTIC Meeting detailing the Community policy on the satellite monitoring of fishing vessels and a technical report evaluating the NAFO Pilot Project. It is thus not proposed to include a further report at this stage but rather to furnish some additional details on progress with VMS in the context of the NAFO Pilot Project since April 1997 and to identify some elements which may be utilised in the cost benefit analysis of the satellite tracking project.

Progress since April 1997

The European Commission has continued to work on the technical solution to transfer data received from the Member States to the NAFO Secretariat's mail box. There was an initial delay in the beginning of April because of the establishment of a new File Transfer Gateway (FTRG) mail store and the need to forward the appropriate access password to the NAFO Secretariat. Since then, some of the initial technical difficulties have been overcome and there has been substantial progress as is evident from the placing of over 350 records in the NAFO mail store. An example of the messages transferred to date is as follows:

1997/970003/255/XINZO/EDOF/VI-59970/18061997/0129/4820N/4630W/MOVE/3M

As several of the messages are test messages the European Commission is in the process of exchanging information with the Member States to ensure the messages transmitted to the NAFO Secretariat are the same as the messages received from Member States.

The European Commission has recently been informed by the NAFO Secretariat that it has been unable to access their mail store and the full value of the information exchanged has not yet been realised or evaluated. The European Commission continues to assist the NAFO Secretariat in resolving this problem and intends to continue to test and improve the technology with respect to data exchange. In this regard it is anticipated that the system will be improved and fine tuned in due course. Questions, such as guarantees with respect to data confidentiality and automatic electronic checks and whether all files sent have been really received by NAFO, need to be further examined and reviewed.

F. II. Evaluation of Satellite Tracking Pilot Project

Satellite tracking of fishing vessels can make a distinct contribution to better compliance and enforcement in NAFO. Satellite tracking of fishing vessels allows the collection of information on the fishing area and fishing time as well as ports visited. Indeed, even when a vessel operates in a remote area it is still tracked. Based on information concerning fishing depth and vessel speed, certain conclusions can be made about the fishing operations. This information also makes it possible to assess the accuracy of the data recorded by the Master. Therefore, satellite tracking complements traditional means of monitoring in the same way as an observer scheme (see Attachment 2).

However, the number of areas on which information is supplied may be less but the accuracy of the data is high and is available to the authorities in real time.

Satellite information may also be useful to scientists as it provides very precise data on fishing effort. Such information together with data collected by scientific observers could considerably enhance stock assessment.

Satellite information if available in real time may reduce expenditure for surveillance and in particular the use of aircraft. Furthermore, surveillance vessels could more effectively target fleet concentrations. In terms of enforcement, real time information on vessel positions and movements can greatly assist inspection vessels in the NAFO Area which are currently dependant on hail reports. These reports can be imprecise and their transmission can be subject to delays both of which undermine their overall value. Satellite tracking can also enhance catch reporting generally and the problem of misreporting of fishing areas, etc.

As reported at the April meeting of STACTIC, implementation of the current pilot project has, in many cases, been delayed. This effectively reduces the possibility of conducting a rigorous costs benefit analysis of the current pilot project. Consequently, it is not proposed to provide specific cost benefit criteria in this report but rather to highlight certain issues which may have an impact on any evaluation :

- costs of VMS
- personnel requirements for Contracting Parties and NAFO Secretariat
- utilisation rates of data derived from VMS
- synergy with conventional means of surveillance.

Attachment 1
(Annex 13)

Inspections of Community fishing vessels in the NAFO Regulatory Area in 1996.

Vessel	Reg. No.	By CAN	By EU	Division
Ana Maria Gandon	VI-5-9334	01.02.96		3 M/L
Ancora d'Ouro	GI-4-1989	29.01.96		3 L
		21.11.96		3 N
		03.12.96*		3 N
			29.02.96	3 M
Arcay	VI-5-10011	26.02.96		3 N
			28.01.96	3 M
Area Cova	VI-5-9287	29.01.96		3 L
		15.02.96		3 L
		10.04.96		3 L
Beiramar Tres	VI-5-9674	30.09.96		3 L
		24.12.96		3 L
Dorneda	CO-3-3854	11.11.96		3 M
Esperanza Menduina	VI-5-9954	20.09.96		3 N
		07.10.97		3 N
		26.10.96		3 L
		23.11.96		3 L
Feixe	VI-5-9825		11.09.96	3 L
Freiremar Uno	VI-5-9936	03.05.96		3 L
			30.03.96	3 M
		18.06.96	13.07.96	3 L
		17.08.96*	18.08.96*	3 L
Garoya Segundo	VI-5-10090	25.02.96		3 L
		21.03.96		3 L
		09.05.96	06.06.96	3 M
		19.06.96		3 L
			10.09.96	3 L
		30.09.96		3 L
Hermanos Gandon IV	VI-5-9967	05.08.96		3 N
		07.10.96		3 N
		03.11.96		3 L
		15.11.96		3 N
Jose Antonia Nores	VI-5-10075	15.07.96		3 N
			29.09.96	3 L
		07.10.96		3 L
		26.10.96		3 L
Leirachan	VI-5-9905	12.10.96		3 L
		09.11.96		3 L
Leon Marco	AT-4-1500	17.05.96	08.03.96	3 L
		08.06.96		3 M
		18.06.96		3 M
Leon Marco Cinco	AT-4-1501	17.05.96	08.03.96	3 L
		08.06.96	20.04.96	3 M

Vessel	Reg. No.	By CAN	By EU	Division
Maria Eugenia G	VI-5-9714	30.01.96	14.03.96	3 M
		16.04.96		3 M
Moradina	VI-5-9750	15.02.96		3 L
		03.05.96		3 L
		23.10.96		3 N
		06.11.96		3 N
		21.11.96		3 N
Nuevo Virgen de la Barca	VI-5-9972	04.06.96	18.06.96	3 M
		07.07.96	25.07.96	3 M
Nuevo Virgen de Lodairo	VI-5-9973	04.06.96	18.06.96	3 M
		07.07.96		3 M
Patricia Nores	VI-5-9842	15.07.96	06.07.96	3 N
		06.08.96		3 N
Pescaberbes Dos	VI-5-9994	08.07.96		3 L
		18.09.96		3 N
		30.09.96		3 L
		13.10.96		3 L
		27.10.96	28.10.96	3 L
		09.12.96		3 L
Pedra Rubia	VI-5-9728	13.05.96	19.04.96	3 L
		29.06.96		3 M
			26.07.96	3 L
Playa de Cativa	GI-4-2179		16.08.96	3 N
		18.09.96		3 N/O
		25.10.96		3 N
		22.11.96		3 N
Playa de Menduina	VI-5-9446	26.01.96		3 O
		02.02.96		3 N
		16.05.96		3 O
		12.06.96	17.05.96	3 N
		22.06.96	02.06.96	3 N
		24.07.96		3 N
Playa de Rodas	GI-4-2186	02.10.96		3 M
		14.10.96		3 L
		09.11.96		3 L
Playa de Sartaxens	VI-5-9915		29.01.96	3 M
			14.03.96	3 M
Puente Pereiras IV	VI-2-2336	05.04.96	29.01.96	3 L
		17.04.96	13.03.96	3 L
Puente Sabaris	GI-4-2127	26.02.96		3 N
			28.01.96	3 M
			20.03.96	3 L
Punta Robaleira	VI-5-9696	22.01.96		3 O
			14.03.96	3 L
Ria de Pontevedra	VI-5-9451	21.02.96	28.01.96	3 M
		18.04.96	21.03.96	3 L
		23.10.96		3 N
		06.11.96		3 N

Vessel	Reg. No.	By CAN	By EU	Division
Villa de Bueu	VI-5-10026	23.02.96		3 L
Xinzo	VI-5-9970	23.06.96		3 N
		08.07.96		3 M/L
		17.09.96	3 N	
		02.10.96		3 N
Adelia Maria	A-2318-N	01.09.96	08.08.96	3 L
		30.10.96		3 L
Antonia Cacao	FF-18-N	06.04.96		3 O
			23.04.96	3 M
		15.05.96		3 O
Brites	A-2130-N	23.07.96		3 O
		22.08.96		3 M
		03.10.96		3 L
		27.10.96		3 N
Calvao	A-2701-N	17.06.96	10.04.96	3 L
		07.08.96		3 O
		15.11.96*		3 N
Cidade de Amarante	A-3349-N		31.10.96	3 L
		24.11.96		3 M
Coimbra	A-2204-N	21.10.96	27.10.96	3 L
		14.11.96		3 M
Jose Cacao	FF-14-N	13.06.96		3 O
		04.07.96		3 O
			06.08.96	3 M
			07.09.96	3 M
Lutador	A-3337-N	03.05.96	05.03.96	3 L
Pascoal Atlantico	A-3323-N	23.07.96	11.07.96	3 O
		19.09.96		3 N
		14.11.96		3 M
Praia de Santa Cruz	V-12-N		29.02.96	3 L
		08.04.96		3 N
		25.04.96		3 N
			09.10.96	3 M
		26.10.96		3 N
Santa Cristina	A-1827-N	16.03.96		3 M
		07.04.96		3 N
		07.09.96		3 N
Santa Mafalda	A-1940-N	20.01.96		3 M
		03.02.96		3 M
		25.02.96		3 L
			17.04.96	3 N
			24.04.96*	3 M
			21.06.96	3 N
		05.07.96		3 O
		31.07.96		3 O
		03.10.96		3 L
		15.11.96		3 M

Vessel	Reg. No.	By CAN	By EU	Division
Solsticio	A-3170-N		15.03.96	3 M
		09.04.96		3 L
		03.05.96		3 L
			04.05.96	3 M
		19.06.96		3 L
			05.08.96	3 O
			30.09.96	3 L
		13.11.96		3 L
Arctic Corsair	H-320			
Southella	H-240		18.06.96	3 M
Cuxhaven	NC-106			
Total	**48 vessels**	**119 insp.**	**52 insp.**	

* Citation issued.

This table should be read in connection with table "EU vessels' presence in the NRA - 1996" in order to compare the dates of inspections with the periods of time of presene by the individual EU - registered vessels.

Inspections by EU Inspectors of Other Contracting Parties Vessels - 1996

Contracting Party	Vessel	Reg. No.	Date
Canada	Fame	134993	04.04.96
	Atlantic Enterprise	101597	11.04.96
	Aquiq	17694	21.04.96
	Genny and Doug	100646	29.07.96*
Denmark (Faroe Islands)	Ocean Castle	FD-242	04.03.96
			08.09.96*
	Huilvtenni	FD-60	21.04.96
	Gilston	KG-33	02.05.96
	Solberg	TN-245	01.10.96
	Palli Hja Mariannu	KG-691	03.11.96
Japan	Shinkai Maru	TK1-928	26.09.96
Russia	Kronshstadt	MB-0365	01.03.96
	Orlan	MI-1665	03.05.96
	Lyublino	KI-8106	26.06.96
	Shilale	KM-0623	20.08.96
Norway	Ståltind I	N-45-H	21.04.96
	Hekktind	N-35-H	25.05.96
	Myrefisk II	N-120-Ø	28.05.96
	Spitsbergen	N-2-H	14.07.96
			30.10.96
	Ingar Iversen	M-3-SM	14.07.96
	Remoytraal	FD-220-BD	16.07.96
Lithuania	Vertikalas	LI-8147	03.05.96
			22.07.96*
Latvia	Baltijas Petnieks	LP-8096	12.04.96
	Odincova	LZ-8341	16.07.96*
	Salatsgriva	LZ-8119	28.08.96
Denmark (Greenland)	Nicoline C	GR-6-311	19.06.96
	Polar Raaja	GR-6-173	08.09.96*
Iceland	Holmadrangur	ST-70	03.03.96
	Kan	BA-101	12.04.96
			20.06.96*
	Sunna	SI-67	19.04.96
			04.06.96*
			05.06.96*
			24.06.96*

Contracting Party	Vessel	Reg. No.	Date
Iceland (cont'd)	Helga Bjorg	HU-7	20.04.96
	Hvannaberg	BF-72	29.05.96
	Snæfell	SH-740	16.06.96*
			01.11.96
	Kolbeinsey	ThH-10	20.06.96*
	Jofur	AS-172	24.06.96*
	Klara Sveinsdottir	SU-50	21.08.96*
	Heidrun	IS-4	09.09.96*
	Erik	BA-204	03.11.96

* One or more citations issued.

Attachment 2
(Annex 13)

ELEMENTS OF EVALUATION

	Satellite tracking		Observer scheme		Traditional means of control (*)	
	data	**quality**	**data**	**quality**	**data**	**quality**
Fishing location	yes	+++	yes	+/-	yes	+/-
Fishing activities:						
N° of operation	yes	+/-	yes	+++	yes	+/-
Time in the area	yes	+++	yes	+++	yes	+
Fishing time	yes	+/-	yes	+++	yes	+
Gear used	no		yes	+++	yes	+++
Catches retained on board						
By species	no		yes	++	yes	+/-
By live weight	no		yes	+	yes	+/-
Discards						
Juveniles	no		yes	+/-	partial	+/-
By-catches	no		yes	+	partial	+/-
Processing						
By species	no		yes	++	yes	0
By presentation	no		yes	++	yes	0
By production weight	no		yes	+/-	yes	+/-
Landing/transhipment						
Port/Location	yes	+++	partial	++/-	yes	+++
Quantities landed or retained on board	no		no		yes	+++

High reliability (+++);
Reliable (++);
Low reliability (+);
Variable reliability +/-
No reliability 0

(*) Traditional means: Fishing and processing lobgook, landing/transhipment declaration, sightings and inspections at sea (either by vessel or aircraft), hail-system and communication of catches, single meshsize, inspection ashore, etc.

Annex 14. Report by Iceland on NAFO Pilot Project for Observers and Satellite Tracking

(STACTIC Working Paper 97/19)

A) Observers

All the Icelandic vessels fishing in the NRA have been deployed with observers in accordance with the NAFO requirements since the beginning of 1996, except that two vessel owners responsible for the operation of three vessels resisted boarding of observers to their vessels in their first fishing trip in 1996.

There have not been difficulties of technical nature implementing the scheme apart from minor problems mainly associated with its implementation right at the beginning.

This, however, does not mean that there have been no major problems in implementing the scheme in Iceland. On the contrary there have been considerable political and legalistic difficulties associated with its implementation. This is due to the general view held in Iceland that the establishment of a scheme of 100% observer coverage and its application in a single species fishery is a useless exercise and that the placement of people onboard fishing vessels with so trivial assignments and with so much cost involved is unacceptable.

This criticism, in respect of 3M shrimp, became apparent i.a. in Parliament discussions on a draft legislation providing for reimbursement from the fishing industry of cost resulting of the implementation of the scheme. In addition to that several vessel owners have challenged their duty to reimburse the State for such cost. In Iceland several litigation now take place where this is the case.

The Directorate of Fisheries in Iceland is responsible for the operation of the observer scheme. In 1996 the Directorate employed 58 observers in connection with the implementation of the scheme. These people spent 5.964 days on duty onboard vessels in NRA. The direct variable cost of running the scheme was 95.467.000 IKR in 1996 (CAD 1.893.810). This constitutes 2.87% of the f.o.b. value of the catch. Cost per day is therefore IKR 16.007 (CAD 318). In order to meet this cost vessel owners are required to pay 15.000 IKR for every fishing day in NRA. At the beginning the cost of the scheme had to be borne by the government budget. This was so until the summer of 1996 that the legislation authorizing a reimbursement from those engaged in the fishery passed in the Parliament.

The training of the observers is undertaken by the Directorate of Fisheries in Iceland in cooperation with the Marine Research Institute (MRI). The observers are specially authorized to carry out their duties in accordance with the provisions of Part VI.A.3 of the Conservation and Enforcement Measures of NAFO. In 1996 special emphasis was put on collecting samples in the shrimp fishery. Observers were taught to measure shrimp to the nearest 0.5 mm and to place individual shrimps into one of 9 sexual categories. This was a complicated task and was carried out on samples from every 2 of 3 hauls. Most of the observers, about 70% of them, carried this task out in an accurate manner. The rest did not seem to do this properly and their data could not be used. The amount of data collected by the observers was vast and it appears to be clear that fewer samples would have given the same result. The MRI analyzed all the samples and used it for various scientific purposes as can be seen in papers presented on earlier occasions to the Scientific Committee of NAFO.

The pilot project requires observer coverage far in excess of what is normally required and it has not been shown that such a coverage is necessary, particularly not in the shrimp fishery where shrimp is the only target species and a sorting grid is used. In that particular fishery there appear to be no incentives for not using the sorting grid since there is only inconvenience associated with the by-catch that might increase. In that context, and in general, it seems to have had a detrimental effect for the possibility of evaluating the scheme that there were no vessels allowed to be without observers on board. This makes impossible any comparison in respect of i.a. catch composition and compliance with NAFO rules in general between vessels with no observers onboard and those carrying observers.

When evaluating the observer scheme it is necessary to put things into a historical context. The obligation of deploying observers onboard every vessel derives from a solution of a specific dispute, regarding specific fisheries that is inherently different from many other types of fisheries in the NRA, such as the 3M shrimp fishery. In addition this was a dispute to which Iceland was not a party. Iceland was willing to contribute to a solution that included 100% observer coverage on the premises of a Canadian statement that no cost would have to arise thereof. Some months later a text of a STACTIC report reflecting this was amended unilaterally by the Executive Secretary of NAFO on a request from Canada.

Special attention need to be paid to the fact that state subsidies to fishing industry in some countries is invented through the implementation of the observer scheme and thus a competitive distorting element. It is not that States are subsidizing the activities of their own fleets but also activities of the fleets of other State. This is an unacceptable byproduct of the implementation of the scheme.

There are much more cost effective methods that can be used, such as the use of satellite tracking accompanied with more frequent submittal of catch reports from the vessels. Iceland is willing to make use of such cost effective means of control.

B) Satellite Tracking

At the Meeting of STACTIC Working Group on satellite tracking program in April this year Iceland submitted a thorough paper containing Iceland's National Report on Satellite Tracking Program and its implementation in 1996. To avoid duplication it seems, at this time, to be appropriate only to refer to that report in its entirety but at the same time to draw the attention to the following details of the Report: The Icelandic Coast Guard was appointed to run the system on daily basis. A maximum of 14 vessels were tracked at the same time by the system. The vessels were tracked via Inmarsat C, previously onboard these vessels. Thus vessel owners paid the cost associated with the equipment onboard that its necessary to locate vessels and send and receive reports. The cost deriving from the implementation of the project was paid by the Government. This cost amounted to IKR 10.000.000 (around CAD 200.000). Cost for each position, including speed and heading was 0.10 GBP. This means that the cost per vessel is less than 200 IKR (4 CAD per day) for hourly transmittals. Fleet Tracking System was set up by an individual company in Iceland. The system started operating in February 1996.

Annex 15. Evaluation Criteria Framework

(STACTIC Working Paper 97/20-2nd Rev.)

EVALUATION CRITERIA FRAMEWORK

	PILOT PROJECT COMPLIANCE MEASURES				CONTROL	
	Satellite tracking		Observer scheme		Traditional means of control (*)	
MANAGEMENT MEASURES	Relevance	Efficacy/ Efficiency	Relevance	Efficacy/ Efficiency	Relevance	Efficacy/ Efficiency
Fishing location	yes		yes		yes	
Fishing activities:						
N° of operation	yes		yes		yes	
Time in the area	yes		yes		yes	
Fishing time	yes		yes		yes	
Gear used	no		yes		yes	
Catches retained on board						
By species	no		yes		yes	
By live weight	no		yes		yes	
Discards						
Juveniles	no		yes		partial	
By-catches	no		yes		partial	
High-grading	no		yes		partial	
Processing						
By species	no		yes		yes	
By presentation	no		yes		yes	
By production weight	no		yes		yes	
Landing/transhipment						
Port/Location	yes		partial		yes	
Quantities landed or retained on board	no		no		yes	

(*) Traditional means: fishing and processing logbook, landing/transhipment declaration, sightings and inspections at sea (either by vessel or aircraft), hail-system and communication of catches, single mesh size, inspection ashore, etc.

INDICATORS OF RESULTS	
COMPLIANCE** BEFORE PILOT PROJECT IMPLEMENTATION	COMPLIANCE** AFTER PILOT PROJECT IMPLEMENTATION
% OF OBSERVER REPORTS NOT INDICATING A CHANGE IN COMPLIANCE BY MASTER	% OF OBSERVER REPORTS INDICATING A CHANGE IN THE COMPLIANCE BY THE MASTER

COSTS***		
Observer cost/sea day	Satellite Tracking capital costs and operating costs	Comparison cost of traditional enforcement measures

BENEFITS
Analysis of the efficiency in terms of cost/benefit, the latter being expressed in terms of compliance with the Conservation and Enforcement Measures and volume of data received for fisheries management and scientific stock assessment.

****Compliance**

When conducting the evaluation for indicators of results, with respect to compliance, any perceived improvement in compliance levels should take account of a number of factors, such as:

- the reduction in fishing effort (vessel fishing days) and the trend towards targeting non-quota species,
- variations in catch rates of quota species caught whether or not in a directed fishery or as bycatches and quota catch prohibitions,
- the variation in the range of conservation measures applying to the different fleets operating in NAFO,
- the variety of derogations under NAFO rules and unique non discard prohibitions, etc.

The contribution of the different components of the Project to any apparent changes in compliance should also be considered.

*****Costs**

- When conducting the evaluation with respect to costs, full costs should be calculated including all overheads. Total observer costs are to be incorporated into the estimation of observer sea day cost. With respect to satellite tracking, capital costs are to be calculated separately from operating costs. Alternative means of control should be calculated as a comparison to the costs of this pilot project (ship time etc.). Calculations of costs are to be converted to Canadian dollars for comparison purposes.

Annex 16. Modification of Inspector's/Trainee Document of Identity

Pursuant to the provisions of para 1.(iv), Part IV of the NAFO Conservation and Enforcement Measures (FC Doc. 96/1), the Executive Secretary would issue a document of identity as described in Annex I of Part IV.

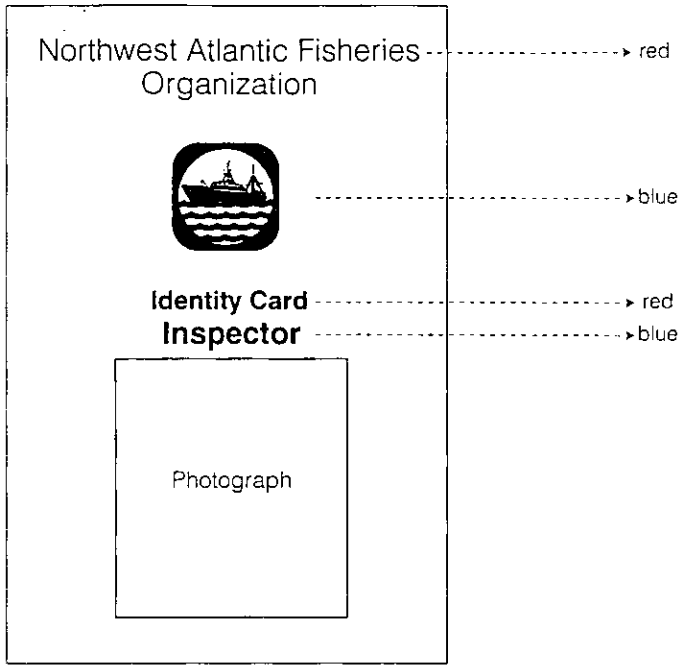
This document would be produced on a simple cardboard-type paper with unimpressive black and white features.

Considering the very important task by the NAFO inspectors, we believe that this is the right time to modify the inspector's/trainee's document to one with more authoritative international features. This is to some extent an important issue as NAFO becomes more and more involved in boardings on the vessels of non-Contracting Parties. The proposed format/feature of the document is attached.

The front side of the document will feature a glossy surface (laminated), which could protect the document in sea conditions. The cardboard will be 1/2 times thicker than the present. The cost implication would be estimated in the range of $200-300 Cdn annually.

Attachment
(Annex 16)

Front



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