

# Reports of the Regional vessel monitoring systems workshops: Southwest Indian Ocean, the Caribbean, Central America and Southeast Asia

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Global  
Partnerships  
for  
Responsible  
Fisheries



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**Reports of the**

**Regional vessel monitoring systems workshops:  
Southwest Indian Ocean, the Caribbean, Central America and  
Southeast Asia**

**Global Partnerships for Responsible Fisheries (FishCode)**

**Food and Agriculture Organization of the United Nations  
Rome, 2005**



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## Foreword

This document contains the reports of four regional workshops on vessel monitoring systems (VMS), respectively covering the Southwest Indian Ocean, Central America, the Caribbean and Southeast Asia. The workshops were organized and implemented in succession from September 2003 to October 2004 by the FAO Fishing Technology Service (FIIT) and the FishCode Programme of the FAO Department of Fisheries. They extend the series that commenced in October 2002 with a workshop covering parts of West Africa (Saly, Senegal: see *FAO Fisheries Report No. 696*). These workshops were intended to promote the use of VMS as an additional instrument for the management of fisheries, both at a national level and in cooperation with regional fishery bodies. They comprise one aspect of FAO's larger set of activities to implement the International Plan of Action (IPOA) to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) Fishing.

Technical and financial support for the workshop series was provided by the FAO Fisheries Department through the Regular Programme, and by the FishCode Programme through the FishCode Trust (MTF/GLO/125/MUL) and the FishCode IUU Fishing Project (GCP/INT/849/USA). This report has been assembled and edited by Kieran Kelleher (FIIT consultant) and Eric Reynolds (FishCode Programme Coordinator), with the assistance of Andrew Smith (FIIT) and Robert Harman (FishCode/FIIT Visiting Expert). Ms Nila Petralli, Mr Avilio Medina Pizzali, Ms Tina Farmer, Ms Françoise Schatto Terribile, Ms Isabella Pieroni and Ms Michele Kautenberger kindly helped with manuscript preparation.

Special thanks are due to all of those who facilitated workshops in the respective regions including: the officers and staff of the Seychelles Fishing Authority and the Indian Ocean Tuna Commission (IOTC) and Dr David Ardill (Secretary, IOTC), for the Southwest Indian Ocean; officers and staff of the Fisheries Division, Ministry of Agriculture, Land and Marine Resources, Trinidad and Tobago, the office of the FAO Representative in Trinidad and Tobago, the FAO Sub-Regional Office for the Caribbean (SLAC) and Mr Bisessar Chakalall (FAO Senior Fishery Officer, SLAC), for the Caribbean; Mr Vielka Morales (Coordinadora de Apoyo Técnico, Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA)), officers and staff of the Autoridad Marítima de Panamá and the Ministerio de Desarrollo Agropecuario, Panama, and Mr Francisco Pereira (FAO Regional Fisheries Officer, Latin America and the Caribbean), for Central America; and the officers and staff of the FAO Regional Office for Asia and the Pacific (RAP), and Mr Derek Staples (FAO Regional Fisheries Officer, RAP), for Southeast Asia.

The *FishCode Review* series publishes results of studies, missions, consultations, workshops, meetings and other project activities undertaken through the Programme, in furtherance of the objective of facilitating implementation of the 1995 FAO Code of Conduct for Responsible Fisheries and related international fisheries instruments and plans of action. Individual issues in the series are distributed to appropriate governments, regional bodies, meeting participants and Programme partners. For further information on Programme background, publications and activities, please consult the Website at <http://www.fao.org/fi/fishcode.htm>

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#### **ABSTRACT**

This document contains the reports of four regional workshops on vessel monitoring systems (VMS) respectively covering the Southwest Indian Ocean, Central America, the Caribbean and Southeast Asia. They were organized and implemented in succession from September 2003 to October 2004. The workshops were intended to promote the use of VMS as an additional instrument for the management of fisheries, both at a national level and in cooperation with regional fishery bodies. These workshops comprised one aspect of FAO's larger set of activities to implement the International Plan of Action (IPOA) to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) Fishing.

The proceedings and outcomes of each of the workshops are reported in Parts I through IV of the document. The report and related documentation for the Central America Workshop appear in the original Spanish. Full country reports made by the participants, and technical presentations made by FAO resource persons at each of the workshops, are provided on an accompanying CD-ROM. All material may also be accessed through the FishCode Programme Web site, at <http://www.fao.org/fi/fishcode.htm>

***Keywords: Vessel monitoring systems; VMS, monitoring, control and surveillance; MCS; Code of Conduct for Responsible Fisheries; CCRF; International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing; IPOA-IUU; management of fishing capacity; coastal fisheries; Caribbean; Central America; Southwest Indian Ocean; Southeast Asia.***



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## ABBREVIATIONS/ACRONYMS

ACS	Association of Caribbean States
AIS	automatic identification systems
ALC	Automatic Location Communicator = VMS unit/comunicador de posición automático
APEC	Asia-Pacific Economic Cooperation
APFIC	Asia-Pacific Fishery Commission
ASEAN	Association of Southeast Asian Nations
BID	Banco Interamericano de Desarrollo
BOBP-IGO	Bay of Bengal Programme – Intergovernmental Organization
CARICOM	Caribbean Community/Comunidad del Caribe
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources/ Comisión para la Conservación de los Recursos Marinos Vivos Antárticos
CCRF	Code of Conduct for Responsible Fisheries/ Código de Conducta para la Pesca Responsable
CFP	Common Fisheries Policy/Política Pesquera Común
CFPR	Common Fisheries Policy and Regime
CIAT	Comisión Interamericana del Atún Tropical
CICAA	Comisión Internacional para la Conservación del Atún del Atlántico
CNUDM	Convención de las Naciones Unidas sobre el Derecho del Mar
COFI	Committee on Fisheries/Comité de Pesca (FAO)
CONFEPESCA	Confederación de Pescadores Artesanales de Centroamérica
COPACO	Comisión de Pesca para el Atlántico Centro-Occidental
CPANE	Comisión de Pesquerías del Atlántico Nordeste
CRFM	Caribbean Regional Fisheries Mechanism
CVP	centro de vigilancia de pesca
EEZ	exclusive economic zone
DW	distant water
DWFN	distant water fishing nations/naciones de pesca en aguas distantes
EC/CE	European Commission/Comisión Europea
EU/UE	European Union/Unión Europea
FAD	fish aggregating device/dispositivo de agregación de peces
FFA	Forum Fisheries Agency/Organismo de Pesca del Foro (para el Pacífico Sur)
FishCode	FAO Programme of Global Partnerships to Implement the Code of Conduct for Responsible Fisheries/Programa de la FAO de Coparticipación Global para Implementar el Código de Conducta para la Pesca Responsable
FMC	fisheries monitoring centre
FOC	flag of convenience/pabellón de conveniencia
GDP	gross domestic product/producto bruto interno
GMDSS	Global Maritime Safety and Distress System
GPS	sistema de posicionamiento global
HMS	highly migratory stocks/poblaciones altamente migratorias
ICCAT	International Convention for the Conservation of Atlantic Tunas
IMO	International Maritime Organization
IMPAST	Improving fisheries monitoring through integrating passive and active satellite-based technologies
INDNR	Pesca ilegal, no declarada y no reglamentada
OECS	Organization of Eastern Caribbean States
IOC	Indian Ocean Commission
IOTC	Indian Ocean Tuna Commission
IPOA	International Plan of Action

ISO	International Organization for Standardization/Organización Internacional de Normalización
IUU fishing	Illegal, unreported and unregulated fishing
MCS	monitoring, control and surveillance
MRCC	Maritime Rescue Coordination Centre
MTC	(Harmonized) Minimum Terms and Conditions
NAFO	North Atlantic Fisheries Organization/Organización de Pesquerías del Atlántico Noroeste
NEAFC	North East Atlantic Fisheries Commission
OLDEPESCA	Organización Latinoamericana de Desarrollo Pesquero
OECAP	Organización de Empresarios Centroamericanos de Acuicultura y Pesca
OMI	Organización Marítima Internacional
OSPESCA	Organización del Sector Pesquero y Acuícola del Istmo Centroamericano
OROP	organización regional de ordenación pesquera
PAI	Plan de acción internacional
PAI-INDNR	Plan de Acción Internacional para Prevenir, Desalentar y Eliminar la Pesca Ilegal No Declarada y No Reglamentada
PPC	Política Pesquera Común (UE)
RFB	regional fishery body
RFMO	regional fisheries management organization
RSS	Regional Security System
SADC	Southern African Development Community
SAR	synthetic aperture radar
SCV	seguimiento, control y vigilancia
SEAFDEC	Southeast Asian Fisheries Development Centre
SFA	Seychelles Fishing Authority
SIA	sistemas de identificación automática
SICA	Sistema de la Integración Centroamericana
SOLAS	International Convention for the Safety of Life at Sea/Convención internacional para la protección de la vida en el mar
SMSSM	Sistema Mundial de Socorro y Seguridad Marítimos
SVE	sistema de vigilancia de embarcaciones
SWIO	Southwest Indian Ocean
SWIOC	South-West Indian Ocean Fisheries Commission
TAC	totales admisibles de captura (UE)
TCM	Términos y Condiciones Mínimas (Armonizadas)
UE	Unión Europea
UNCLOS	United Nations Convention on the Law of the Sea
VDR	vessel data recorders/registradores de datos de navegación
VHF	Very high frequency/muy alta frecuencia
VMS	vessel monitoring system
WCPFC	Western and Central Pacific Fisheries Commission/Comisión de Pesquerías del Pacífico Centro-Occidental
WECAFC	Western Central Atlantic Fisheries Commission
ZEE	zona económica exclusiva

## INTRODUCTION: THE GLOBAL CONTEXT

As part of FAO's activities to give effect to the International Plan of Action (IPOA) to Prevent Deter or Eliminate Illegal, Unreported and Unregulated (IUU) Fishing,<sup>1</sup> the Fisheries Department (FI) has developed a strategy to promote the use of vessel monitoring systems (VMS) as a fisheries management tool, both at a national level and, in particular, within the context of cooperation with and through regional fishery bodies.

The VMS strategy is supported by FishCode, FAO's Programme of Global Partnerships for Responsible Fisheries. FishCode serves as FI's umbrella programme for implementation of the Code of Conduct for Responsible Fisheries (CCRF). Largely funded through donor partner Trust Fund contributions, the Programme involves an array of component projects and activities that address the general and operational articles of the CCRF and related international fisheries instruments.

The issue of monitoring, control and surveillance (MCS) was highlighted at the Twenty-fifth Session of the FAO Committee on Fisheries (COFI) in February 2003. COFI members placed particular emphasis on vessel monitoring systems as tools that can significantly contribute to efforts to combat IUU fishing.<sup>2</sup> MCS and its critical role in fisheries management are primary concerns of both FAO and non-FAO regional fishery bodies. Fisheries policy-makers, planners and administrators in coastal States around the world, and particularly those from developing States, are becoming increasingly sensitized to the importance of effective MCS, and to the introduction of VMS as a key part of MCS toolkits.

In order to encourage VMS awareness and effective decision-making to ensure that VMS applications are appropriate to the needs and capacities of different fisheries and fisheries administrations, FI's Fishing Technology Service (FIIT) and the FishCode Programme organized a series of regional workshops beginning in late 2002. The first took place in West Africa, and involved representatives of all Member States of the Sub-Regional Fisheries Commission.<sup>3</sup>

Four other workshops have since been held, covering the regions of the Southwest Indian Ocean (September/October 2003), the Caribbean (July 2004), Central America (August 2004), and southeast Asia (October 2004). Brief reports on the proceedings and outcomes of these meetings are respectively provided in Parts I through IV of the present document. The report and related documentation for the Central America Workshop appear in the original Spanish. Full country reports made by the participants and technical presentations made by FAO resource persons at each of the workshops are provided on the accompanying CD-ROM (attached to the inside back cover). All material may also be accessed through the FishCode Programme website at <http://www.fao.org/fi/fishcode.htm>

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<sup>1</sup> FAO. 2001. International Plan of Action to prevent deter or eliminate illegal, unreported and unregulated fishing. Rome, FAO. 24p.

<sup>2</sup> See also: FAO Fisheries Department. 2002. Implementation of the International Plan of Action to prevent deter and eliminate illegal, unreported and unregulated fishing. *FAO Technical Guidelines for Responsible Fisheries*, No. 9. Rome, FAO, 122p.

<sup>3</sup> FAO. 2002. Report of the Sub-Regional Fisheries Commission Workshop on Vessel Monitoring Systems. Saly, Senegal, 14–17 October 2002. *FAO Fisheries Report*, No. 696. Rome, FAO. 99p.



## **PART I. REPORT OF THE SOUTHWEST INDIAN OCEAN VESSEL MONITORING SYSTEMS WORKSHOP (Victoria, Seychelles, 30 September – 3 October 2003)**

### **Opening session**

I.1 Dr David Ardill, Secretary of the Indian Ocean Tuna Commission (IOTC) welcomed the participants, set the context of the Workshop and thanked the FAO and all who contributed to its organization.

I.2 Dr Andrew Smith, representing the FAO, stressed the importance of the Workshop theme and noted that the meeting is supported by FishCode, FAO's umbrella Trust Fund programme for implementation of the Code of Conduct for Responsible Fisheries (CCRF) and in particular by the FishCode component project to help combat illegal unregulated and unreported fishing (IUU fishing).<sup>1</sup> He indicated that the purpose of the Workshop was to: (i) provide information on all aspects of VMS; (ii) sensitise the countries in the SWIO area on the need for cooperation on VMS; and (iii) enable discussions at a technical level leading to active cooperation on VMS with particular regard to the tuna fisheries.<sup>2</sup>

I.3 Mr Rondolph Payet, Managing Director General of the Seychelles Fishing Authority, speaking on behalf of the Minister for Agriculture and Marine Resources, opened the Workshop. He welcomed participants to the Seychelles and informed them that a fully operational VMS was established in the country. He expressed thanks to FAO and IOTC for their support to the Workshop and wished the participants a fruitful outcome.<sup>3</sup>

### **Adoption of Agenda**

I.4 The draft agenda was discussed and adopted by participants without substantive change. The Workshop Agenda is shown as Appendix I.A and the list of participants as Appendix I.B.

### **Presentation of technical papers**

I.5 A list of the technical presentations and documents made available to participants is given in Appendix I.C.<sup>4</sup>

### ***History and future of MCS and the International Plan of Action on Illegal, Unreported and Unregulated Fishing***

I.6 Mr Andrew R. Smith (FAO, Rome) made a presentation of the "History and Future of MCS and the International Plan of Action on Illegal, Unreported and Unregulated Fishing (IPOA-IUU)", focussing on the development and use of VMS as a Monitoring, Control and Surveillance (MCS) tool. Modern policing of fisheries developed subsequent to the Agreement on the United Nations Convention of the Law of the Sea (UNCLOS) in 1982. In addition to the economic benefits accruing from the extension of fisheries jurisdiction to 200 miles, UNCLOS placed obligations on States with respect to the management of fisheries.

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<sup>1</sup> FishCode component project GCP/INT/849/USA, "Support for Implementation of the International Plan of Action to Prevent, Deter and Eliminate Illegal Unregulated and Unreported Fishing".

<sup>2</sup> Text of Dr Smith's address on enclosed CD-ROM.

<sup>3</sup> Text of Mr Payet's address on enclosed CD-ROM.

<sup>4</sup> Copies of the presentations available on enclosed CD-ROM.

These responsibilities meant increased requirements for surveillance by patrol vessels and aircraft. Concurrently with UNCLOS, FAO convened an Expert Consultation on Monitoring, Control and Surveillance, where a definition for MCS was formulated.

I.7 The FAO Code of Conduct for Responsible Fishing was elaborated and agreed in 1995. Four International Plans of Action (IPOAs) were subsequently agreed within its framework, in order to tackle specific fisheries problems. One of these was the International Plan of Action to Prevent, Deter and Eliminate Illegal Unregulated and Unreported Fishing (IPOA-IUU). This IPOA specifically referred to the new technology of fishing vessel monitoring systems (VMS) – the subject of the present workshop.

I.8 Dr Smith noted that the IPOA-IUU was developed as a response to concerns that illegal fishing activities were on the increase. The IPOA provides a definition of what constitutes IUU fishing and suggests actions that should be taken by flag States, coastal States and port States. Improved MCS is one of the answers to this increasing problem, and VMS has an important role among the MCS tools. A further potent measure in combating IUU fishing is the use of trade documents to trace fish products from origin to destination, thus enabling the exposure of unreported fish. The importance of cooperation between countries and the vital place of regional fisheries management organizations (RFMOs) in the IPOA was also highlighted.

I.9 Dr Smith advised that as a consequence of the successful introduction of trade documents and their use by the International Convention for the Conservation of Atlantic Tunas (ICCAT), some of the most important flag of convenience (FOC) states have started to equip their vessels with VMS. More stringent controls over such vessels have resulted in the “migration”, or “flag-hopping” of vessels to more lenient flag of convenience (FOC) registers and an apparent reduction of the FOC-registered fishing fleet from 7 000 to 3 000 vessels. Coastal States may require vessels of distant water fishing nations (DWFN) to be equipped with transceivers and to transmit positions when inside the EEZ of the coastal State.

I.10 The traditional MCS tools are of obvious importance but it is recognised that new and additional tools need to be developed. The cost of operating surveillance vessels and aircraft is substantial, and the traditional tools may be inappropriate in some fisheries. Emerging some 15 years ago as a spin-off of the Global Maritime Safety and Distress System (GMDSS), the technology of combining vessel positioning information with communication systems has been recognised as a useful means for tracking fishing vessels. During the last six to seven years, this technology, generally known in fisheries as VMS, has been widely adopted around the world.

I.11 VMS is relatively inexpensive and its synergy with other MCS instruments greatly adds to their cost effectiveness, as for example in the case of patrol vessels and targeted inspections. VMS assists flag States to control their vessels and provides improved distress and safety communication. The potential for transmission of operational information is a significant benefit for vessel crew and operators.

I.12 Dr Smith underscored the importance of using VMS in association with the traditional MCS tools like land radar and air and surface patrols, and emphasised that it should be considered as a complement to rather than as a replacement for the traditional tools.

### ***The fisheries of the Southwest Indian Ocean (SWIO) and their control***

I.13 Mr Kieran Kelleher (FAO Consultant) gave a brief overview of how VMS functions and provided a summary of the status of fisheries in the Southwest Indian Ocean (SWIO) region. SWIO was defined as the maritime area south of a line from Djibouti to the southern end of the Maldives. He indicated that over 28 000 artisanal vessels, over 300 coastal State-based industrial and semi-industrial vessels and over 290 distant water (DW) industrial vessels operated in the region. The total SWIO reported catches are in the order of 850 000 tonnes, of which tuna and highly migratory stocks constitute over 65 percent. Coastal State



catches are approximately 330 000 tonnes (38%) while distant water catches, predominantly tuna and highly migratory stocks, total approximately 520 000 tonnes. The social and economic importance of small-scale fisheries and crustacean fisheries such as shrimp was noted.

I.14 From a standpoint of international VMS cooperation, Mr Kelleher categorised the fisheries into: (i) coastal transboundary fisheries and stocks; (ii) high sea demersal transboundary fisheries and stocks; and (iii) the fisheries for tuna and highly migratory stocks. He identified the predominant types of fisheries violations in the region and the potential requirements for VMS in terms of fleets and numbers of vessels. Misreporting of position and catch, falsification of vessel characteristics, closed area violations, and trawl net violations were among the principal fisheries violations identified.

I.15 Mr Kelleher illustrated a VMS related case with an example of the recent pursuit of the toothfish vessel “Viarsa” through the southern Indian Ocean and Antarctic waters.

I.16 MCS assets of the SWIO coastal States were summarised, common problems and issues identified and opportunities for international cooperation were suggested.

I.17 Discussions ranged over several topics including: definition of Exclusive Economic Zones (EEZs); VMS data submission by flag States to coastal State Fisheries Monitoring Centres (FMCs); falsification of VMS data; and difficulties in obtaining VMS data from vessels on the high seas.

I.18 The South African authorities require the flag State to declare that fish landed by distant water vessels in South African ports has been caught legally. Tracking of distant water vessels outside the South African EEZ may occur with the consent of the vessel operator.

I.19 Participants expressed concern regarding the tampering with VMS and falsification of VMS data and were informed that a study of the issue was in progress in the EU (Data-erase Project). A number of checks to detect tampering and possible solutions to tampering were noted. The need for an FMC to undertake secondary checking of the VMS data feed was stressed, i.e. to identify anomalies or incoherencies. The difficulties in rendering type approval compatible with the non-discrimination requirements of tendering were noted and the need to establish international norms and standards, e.g. through the International Organization for Standardization (ISO), was suggested.

### ***Fishing vessel monitoring, the what, why and how***

I.20 Mr Robert Gallagher (FAO Consultant) presented a technical overview of VMS entitled “Fishing vessel monitoring, the what, why and how.” His overview emphasised the need for accurate functional specifications that meet the requirements of the fisheries administration. He outlined shipboard, transmission and FMC hardware and software requirements.

I.21 An operational scenario for a fully functioning VMS system was presented, illustrating data analysis and confidentiality and the use of VMS data for control, resource management, commercial, and safety-at-sea purposes. Additional information was provided in response to questions on confidentiality, financing of VMS, sharing of data, equipment breakdown and data security (tampering).

I.22 It was affirmed that data security is generic, i.e. that VMS data have no special characteristics and that standard security methods were applicable, e.g. to prevent hacking or breach of confidentiality by personnel.

## **Legal issues related to VMS**

I.23 Mr Henning O. Teigene (FAO, Legal Office) made a presentation on “*Legal issues related to VMS*”. The relevant international legal regime and legal issues of importance to the implementation of VMS were addressed. Because of its crucial importance with respect to the duties and rights of states, the provisions of the 1982 UN Convention on the Law of the Sea of relevance to MCS and VMS were briefly explained. The relevant provisions of other international fisheries related instruments were presented, including the UN Straddling Fish Stocks Agreement, the FAO Compliance Agreement, the FAO CCRF and the IPOA-IUU.

I.24 It was noted that a number of provisions support the use of VMS and call for its implementation in waters under national jurisdiction and on the high seas, where applicable. Provisions on the collection and exchange of fisheries data and on regional and sub-regional cooperation in fisheries conservation and management, including MCS, were also highlighted. The scope and limitations of coastal State jurisdiction, flag State jurisdiction and port State jurisdiction were presented.

I.25 A variety of legal issues were considered. Among the points of importance for countries legislating for VMS are to ensure: constitutionality of the new approach; ample powers for enforcement purposes, including provisions to implement recent international instruments, ensuring the necessary application of fisheries legislation also outside national waters; regulatory powers; an authorization scheme for fishing vessels; and the prescription of offences and penalties. Other important legal issues highlighted were the security and confidentiality of VMS information, the use of VMS information as evidence, the importance of maritime boundaries and the complex question of determining property rights over VMS information.

I.26 Finally the main features of VMS regulations were presented. This overview was based on a comparative study of USA, New Zealand and Australia VMS regulations.

I.27 Discussions clarified a number of important issues. Participants emphasised the importance of States giving effect to requirements in international and regional agreements on the exchange of fisheries data. Constitutional challenges to VMS have been raised on the basis of invasion of privacy, since a VMS effectively tracks individual crew in addition to the vessel.

I.28 The possibility of requiring non-licensed fishing vessels to be equipped with VMS was discussed (i.e. vessels transiting, or on innocent passage through the EEZ or the territorial sea). Some legal experts dispute the right of port States or coastal States to require VMS information from transiting vessels and bunker and supply vessels. However, it was also noted that several countries already require such information from transiting foreign fishing vessels and these requirements are not known to have been successfully contested – indicating the emergence of customary international law on VMS. Foreign vessels may also volunteer entry position and “catch on board” reports in order to avoid transit inspections by patrol vessels.

I.29 Coastal and flag States have an obligation under international law to cooperate with RFMOs with regard to provision of information. RFMOs requiring VMS information include: the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the Forum Fisheries Agency (FFA), the International Convention for the Conservation of Atlantic Tunas (ICCAT), the North Atlantic Fisheries Organization (NAFO) and the North East Atlantic Fisheries Commission (NEAFC). This information is often provided in aggregated form if used for scientific purposes, but RFMOs such as NEAFC require disaggregated near-real-time VMS information to support patrol vessel operations on the high seas areas under their mandate.

I.30 The differences between civil and criminal law in the use of VMS information to secure prosecutions was noted. A reversal of the burden of proof can be applied with regard to civil offences, e.g. a vessel present in a protected zone may be presumed to be fishing

and it is incumbent on the fishing vessel operator to prove that the vessel was not fishing. Thus it may be more effective to classify certain offences as civil offences if VMS information is likely to be used as “stand alone” evidence of the violation. While the master or crew of a foreign fishing vessel may be detained for the purposes of trial, or due process, under UNCLOS Article 73, corporal punishment, e.g. imprisonment, may not be used as a sanction for the master and crew of a foreign fishing vessel operating illegally in the EEZ.

I.31 Workshop participants were made aware of the possibility of requesting legal technical assistance from FAO with a view to reviewing fisheries legislation and developing VMS regulations.

### ***Putting VMS into practice, the devil is in the details***

I.32 Mr Robert Gallagher (FAO Consultant) showed how a VMS system is designed and built in a presentation entitled “Putting VMS into practice, the devil is in the details”. He emphasised the need for careful research and planning to ensure the VMS system meets the precise needs of the fisheries administration and other users, such as the vessel operators themselves.

I.33 He stressed the wide range of technical options and compared the relative merits of Argos and Inmarsat C systems. He confirmed that both systems could readily co-exist in a national VMS system, and that in the case of the countries in the region, where foreign vessels deploy both types of transceivers, a national FMC is likely to require the capability to process both types of signal. He discussed the use of Inmarsat-D+ and terrestrial systems such as VHF radio and cellular telephony. The Iridium and Globalsat satellite voice systems were presented and their specific advantages with regard to VMS functionality described.

I.34 The choices confronting an agency acquiring an FMC were enumerated. Finally, the extension of VMS to a regional level was discussed, including choices to be made when developing and linking national VMS together into a regional system. The two principal architectures were described and the required protocol for regional cooperation mentioned.

### ***Electronic logbooks***

I.35 Mr Robert Gallagher (FAO Consultant) gave a presentation on electronic logbooks. He defined an electronic log as an electronic transmission of catch and/or related information from sea. He pointed out how upgraded VMS systems can provide a platform for the exploitation of electronic logs. A description of the range of possible input devices was given, concentrating upon hand-held equipment designed to facilitate data input. A list of some of the currently existing electronic log schemes around the world was provided and a discussion of the implementation issues regarding of electronic logs ensued.

I.36 The question was raised as to whether the electronic log should replace the current paper logs or if e-logs are best regarded as supplements to the paper log. The implications of this question were discussed, noting the costs involved in different sizes of messages and the requirements for timeliness, frequency and precision of catch and effort information that are, in turn, linked to the precision of catch data to be transmitted. The generalized implementation of electronic logs would have the advantages, *inter alia*, of avoidance of the need to punch (enter) logsheets in computer databases, improved accuracy in logbooks as a result of data verification checks at source, and the presence of an electronic time stamp that may assist enforcement.

I.37 It was noted that while the region’s shrimp fisheries required timely information for management, no real time, or near-real time catch and effort information was required for management of any of the region’s fisheries. It was noted that logbooks, whether electronic, or handwritten, constitute an estimate of the catch, while actual landed weights are a superior measure of catch. The average error in box or dip net counts of the catch could be

as high as 20 percent. Catch sampling is also required to supplement, or correct logbook information with accurate catch composition information. In the distant water tuna fisheries fees tend to be indirectly related to reported catch, thus reducing the incentive for individual vessels to falsify catch information.

### ***Satellite communication in the management of fisheries and collection of scientific information***

I.38 Dr David Ardill (IOTC) made a wide-ranging presentation on the use of satellite communication in the management of fisheries and collection of scientific information. He noted that approximately 33 percent of the global tuna catch originates from the Indian Ocean. Of this amount, almost 50 percent is produced by small-scale fisheries, although most of the artisanal catch originates outside of the SWIO area.

I.39 Dr Ardill described the use of satellite tracking of fish aggregating devices (FADs), satellite remote sensing of potential tuna aggregations, and the use of pop-up tags for monitoring fish migrations.

I.40 He then outlined the IOTC's regulatory approach including the positive and negative lists of industrial vessels and problems associated with area closures – particularly closure of high seas areas to protect juveniles. He also indicated the dimensions and nature of IUU fishing and the underscored the need for improved compliance. Finally, he stressed the confidential nature of catch and effort information and suggested that quotas may be applied in the tuna fisheries in future years.<sup>1</sup>

### ***Institutional options for VMS in the SWIO region***

I.41 Mr Kieran Kelleher (FAO Consultant) described a range of institutional options for VMS which existed in other regions. Examples of international VMS cooperation were provided from the Northeast Atlantic (EU and NEAFC) and the South Pacific (FFA and the emerging Western Central Atlantic Fisheries Commission (WCPFC). Differences between the institutional arrangements were highlighted.

I.42 EC law requires the automatic retransmission of VMS data between EU Member States as vessels move from the waters of one Member State to another. Each Member State operates its own VMS and the automatic re-transmission occurs on a "bilateral" basis in accordance with agreed protocols. The data formats, *inter alia*, are specified in EC legislation. A similar obligation rests with EU flag States with respect to their flag vessels operating on the high seas areas falling under the North East Atlantic Fisheries Commission (NEAFC) and the North Atlantic Fisheries Organization (NAFO).

I.43 In contrast, the Forum Fisheries Agency provides a centralised service to the South Pacific countries and arrangements for reporting from the high seas are still under discussion. The FFA arrangements apply only to distant water tuna vessels. A vessel flagged in an FFA member State is considered a distant water vessel when operating in the waters of another member State. The arrangement is based on an international agreement.

I.44 The relative merits of applying such different institutional arrangements in the SWIO region were described, along with the conclusions of the regional VMS workshop held in 2002 for West African countries.<sup>2</sup>

I.45 Mr Kelleher recalled the global instruments already reviewed in Mr Teigene's presentation on the legal aspects of VMS, and described regional instruments, notably the

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<sup>1</sup> Following the formal meeting sessions Dr Marco Garcia (IOTC) gave a briefing and demonstration on the WinTuna statistical package developed by IOTC.

<sup>2</sup> FAO. 2002. Report of the Sub-Regional Fisheries Commission Workshop on Vessel Monitoring Systems. Saly, Senegal, 14–17 October 2002. *FAO Fisheries Report*, No. 696. FAO, Rome. 99p.

Southern African Development Community (SADC) Protocol on Fisheries. He illustrated the disparate membership of the regional organizations (IOTC, the Indian Ocean Commission (IOC), SADC), noting that no one organization included all SWIO coastal states as members.

I.46 Reference was made to the ongoing and inconclusive discussions on the establishment of a South-West Indian Ocean Fisheries Commission (SWIOC). It was noted that priority focal areas for international VMS cooperation include: (i) transboundary fisheries (e.g. tuna and highly migratory stocks, shared coastal stocks and high seas deepwater and demersal fisheries); and (ii) mutual assistance and development cooperation on MCS. These targets parallel the twin streams of thinking in the various meetings on the proposed SWIOC.

I.47 In order to stimulate further discussion, Mr Kelleher suggested several scenarios for regional cooperation. A convention, or fisheries cooperation agreement among the coastal States could be considered with provisions on MCS and VMS. Alternatively, a set of bilateral agreements could be contemplated, with specific protocols on areas of particular concern such as hot pursuit, VMS and transboundary fisheries. Thirdly, a combination of multilateral and bilateral approaches could be considered, with bilateral arrangements nested within a multilateral fisheries cooperation convention. With regard to the important tuna and highly migratory stocks fisheries a reinforcement of the IOTC's regulatory approach was suggested as the most important step, while a coastal State tuna and highly migratory stocks convention (with, or without a secretariat) may serve as a conduit for harmonising terms and conditions of access to the resources by DW vessels.

I.48 Upon the request of member states FAO may be able to provide support for such initiatives and complement projects such as the SADC and IOC MCS projects. FAO plans to maintain a dialogue with the service providers and to hold an expert consultation on VMS data formats in 2004.<sup>1</sup>

### ***Use of VMS in developing alternative management strategies***

I.49 As much of the attention had focused on the direct application use of VMS for enforcement, Mr Kieran Kelleher gave a short presentation with examples illustrating VMS use in developing alternative management strategies. He described:

- a) how a system of "active closures" is used to reduce juvenile cod catches in the Bering Sea trawl fishery;
- b) the operation of "rolling closures" and "days-at-sea" management measures in the Gulf of Maine;
- c) use of VMS to manage area quotas in the EU;
- d) protection of endangered species and cost savings in enforcement in the Hawaii longline fishery; and
- e) the linking of patrol vessels with expert systems and advice through the VMS communications module.

### ***Satellite observation of fishing vessels and recent technological developments***

I.50 Mr Andrew Smith (FAO, Rome) updated the participants on emerging new surveillance technologies.

I.51 The technology of satellite observation of fishing vessels surveillance is under development through a project financed by the EC's Directorate of Fisheries and undertaken by the Joint European Research Centre in Ispra, Italy. It is a complicated project involving 13 commercial companies and a number of national Fisheries Monitoring Centres (FMCs).

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<sup>1</sup> Ed. note: See FAO, 2005. Report of the Expert Consultation on Data Formats and Procedures for Monitoring, Control and Surveillance. Bergen, Norway, 25–27 October 2004. *FAO Fisheries Report*. No. 761. Rome, FAO. 16p.

Iceland, Norway and the North East Atlantic Fisheries Commission are included in the project because of the shared fisheries involved.

I.52 The first phase of the project has been dealing with the problems of the timely collection and processing of the satellite images so that they can be presented to the FMCs in a format that would be useful to them. Images have been obtained from a number of areas, each with different characteristics (e.g. areas with high and low levels of merchant vessel traffic). Download times from the satellite and transfer of data between the different facilities do not allow real time responses, but times have been reduced significantly during the course of the experiment. It is expected that the EU FMCs will start using the satellite surveillance data on a regular basis sometime in 2004.

I.53 The International Maritime Organization (IMO) has recently introduced measures on Maritime Terrorism and has amended the Safety of Life at Sea Convention (SOLAS) to put these into effect. This is going to have a great influence on all vessels including fishing vessels. Automatic Identification Systems (AIS) will be mandatory for vessels over 300 tons and Voyage Data Recorders (VDR) will be mandatory for all vessels over 3 000 tons in 2004, rather than in 2008 as was originally planned. Both these technologies can be used for the increased effectiveness of MCS. It is expected that VMS and satellite monitoring will lead to integrated systems of marine monitoring with the involvement of several national agencies. Such a system is already in operation in Portugal using VMS. However, there will also be more cooperation between countries because of common boundaries.

## Country reports

I.54 The participants from the SWIO coastal States briefed the Workshop on the status of fisheries, MCS and VMS in their respective countries.<sup>1</sup> Participants agreed that the confused nature of fisheries and their control in Somalia required further study and attention.

I.55 Participants made specific requests for enhanced regional cooperation with particular regard to aerial and sea surveillance, regional observers, a regional vessel database and establishment of standards for VMS equipment. At the premises of the Seychelles Fishing Authority, Mr Jude Talma (SFA) gave a demonstration of the experimental small-scale fisheries VMS system (Inmarsat D+).

## Parallel programme: commercial briefings

I.56 Representatives of CLS Argos, BlueFinger, Inmarsat and TrackWell provided comprehensive briefings on their products and services, including details of technical performance. Participants had the opportunity to have private dialogue with the commercial representatives in relation to their respective fisheries and VMS requirements. It was stressed that FAO was not necessarily advocating the use of any of these commercial services and that their presentations were provided for information purposes only, as similar information had been provided to the participants in other regional VMS workshops.

## Report of the working groups

I.57 Three working groups were formed with identical terms of reference:

- **Question 1.** Is VMS cooperation necessary in the SWIO, and if so for what reasons? In order of priority, which are the main fisheries or fleets for which cooperation is required?

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<sup>1</sup> Copies of the presentations available on enclosed CD-ROM.

- **Question 2.** What is the nature of the cooperation required? List the types of cooperation.
- **Question 3.** What actions should be taken (i) at national level, (ii) at SWIO level and (iii) at any other level to achieve this cooperation? List the actions, if possible suggesting who should take the actions.

I.58 Each group presented the results of its deliberations in plenary session. The conclusions are summarised below.

I.59 There was unanimity on the necessity of enhanced cooperation between SWIO countries on MCS in general and on VMS in particular. The reasons cited included:

- To improve efficiency of MCS and fisheries management. VMS may make the use of surveillance assets more effective, reduce surveillance costs and improve the cost-effectiveness of surveillance.
- To fulfil of international obligations with respect to fisheries.
- To ensure consistency in reporting of exploitation of resource.
- To improve in knowledge of the state of stocks.
- To assist in unique vessel identification and establishment of a regional database(s) of fishing vessels.
- To harmonise terms and conditions for reporting on fisheries.
- To facilitate aggregation of data on fleets.
- To provide an opportunity to harmonize requirements for VMS equipment and service providers.
- To provide an opportunity to harmonize requirements for issuing of licenses.

I.60 The priority fisheries on which greater cooperation was considered to be required in order of importance are: (i) tuna and highly migratory stocks ; (ii) transboundary coastal fisheries and fish stocks; and (iii) deep sea fisheries including toothfish.

I.61 Participants recognized that effective international cooperation was important to ensure sustainable fisheries. This cooperation should focus not only on VMS, but also on a range of complementary MCS activities. The working groups and subsequent interventions interventions in plenary itemised the following areas for enhanced regional cooperation.

I.62 General MCS cooperation:

- Coordinate the activities of available assets, in particular patrol vessels and aircraft.
- Consider the shared use of observers.
- Organize staff exchanges for training and exchanges of experiences.

I.63 Information exchange:

- Establish a database of all vessels (the existence of the IOTC tuna vessel database was acknowledged, along with the fact that it did not include demersal fishing vessels).
- Establish automatic forwarding of VMS position (and catch on leaving EEZ) information between coastal States with particular reference to EEZ entry and exit information.
- Establish requirements for vessels to report position and catch from high seas areas, either to the coastal States or to IOTC, or other appropriate RFMO.
- SWIO countries to exchange lists of licensed industrial vessels and make arrangements for maintaining a list of currently licensed vessels.
- SWIO countries to exchange information on all violations in EEZs and establish a list of vessels (and owners and skippers) considered to have “responsible”, or

“delinquent” status (the existence of the IOTC positive and negative lists was noted, along with the need to provide tuna related information to IOTC).

- f) SWIO countries to exchange information on all acts of off-loading or trans-shipment.
- g) SWIO countries to exchange information on all contacts recorded by patrol vessels and patrol aircraft.

I.64 Legal issues:

- a) Harmonise fisheries legislation as appropriate.
- b) Encourage states to resolve EEZ boundary disputes and seek means to make cooperative MCS initiatives effective even in the absence of settlement of boundary disputes.
- c) Seek legal advice on issues of international law such as the means of responding to requests from foreign governments to detain a vessel from a third party flag state for alleged fisheries violations.
- d) Require VMS for all reefers and supply vessels.

I.65 Institutional frameworks:

- a) Encourage non-member countries to join IOTC as full members, or as cooperating parties, insofar as non-member countries do not have rights to fish tuna in the Indian Ocean under international law.
- b) Consider multilateral, or bilateral arrangements to conduct joint surveillance patrols to maximise the effectiveness of scarce patrol assets, e.g. establish arrangements to place inspectors from one coastal State on the patrol vessel of another when patrolling EEZ boundary areas.
- c) Consider multilateral, or bilateral protocols on hot pursuit.
- d) Consider the establishment of coastal state MCS/ VMS committee.
- e) Consider convening a technical workshop on establishing a formal arrangement for more effective MCS cooperation among SWIO coastal states, with particular reference to issues and arrangements that may lie outside the competence of IOTC.

I.66 Technical issues and international assistance:

- a) Explore the options for financing MCS cooperation with particular regard to the links between the EU-funded regional MCS projects and inclusion of States not party to these projects.
- b) Explore the possibilities of reducing tampering with VMS units on board the vessel.

## **Closing session**

I.67 The Workshop endorsed the conclusions of the working groups and agreed that following discussion at national level the conclusions may be forwarded by participating countries to the appropriate international fora for consideration. The draft report was adopted.

I.68 On behalf of FAO and the participants, Dr Andrew Smith thanked the IOTC for the organization of the Workshop and thanked the Seychelles Fishing Authority for the hospitality extended to the participants. Dr Smith noted the retirement of Dr David Ardill as IOTC Secretary, and wished him well. Extending his thanks to participants for their efforts during the Workshop and in the preparation of the country reports, Dr Smith wished all a safe journey home and declared the meeting closed.



## APPENDIX I.A

### AGENDA AND TIMETABLE



Indian Ocean Fisheries Commission  
FAO FISHCODE PROGRAMME  
SOUTHWEST INDIAN OCEAN VMS WORKSHOP  
Seychelles, 30 September - 3 October, 2003



#### Tuesday 30 September

09.30 Opening Statements

10.15 **Coffee**

#### Presentation of technical papers

10.30 Overview of VMS and its role in fisheries management and in the implementation of the IPOA/IUU at a global level  
(Andrew Smith, FAO Fishery Industries Division)

11.45 Overview of fisheries management and IUU fishing in the SWIO region and the potential role of VMS and satellite surveillance  
(Kieran Kelleher, FAO Consultant)

12.30 **Lunch**

14.00 Overview of the technical aspects of VMS  
(Robert Gallagher, FAO Consultant)

14.45 Legal issues associated with VMS  
(Henning Tegine, FAO Legal Office)

15.30 **Coffee**

15.45 Technical and administrative issues in creating a national or regional VMS and satellite surveillance capability  
(Robert Gallagher, FAO Consultant)

17.30 Close of session

20.00 **Dinner**

#### Wednesday 1 October

08.45 Electronic Logbooks and near Real Time Reporting in VMS  
(Robert Gallagher)

- 09.30 Use of satellite communications in the management of fisheries and the collection of statistics  
(*David Ardill, Indian Ocean Tuna Commission*)
- 10.15 **Coffee**
- 10.30 Institutional options for VMS and satellite surveillance in the sub-region  
(*Kieran Kelleher*)
- 11.45 Satellite Surveillance by Radar and the visual spectrum  
(*Andrew Smith*)
- 12.30 **Lunch**
- 14.00 Commercial programme. Presentations by CLS Argos, Inmarsat, BlueFinger and TrackWell (30 mins each)
- 16.00 **Coffee**
- 16.15 Country statements
- 17.30 Close of session
- 20.00 **Dinner**

#### **Thursday 2 October**

- 0845 Country Statements (continued)
- 10.15 **Coffee**
- 10.30 Discussion of issues and proposed strategies
- 12.30 **Lunch**
- 14.00 Field Visit for demonstration of WinTuna, IOTC statistical programme
- 15.45 Field Visit for demonstration of Seychelles small fishing vessel experimental VMS System
- 20.00 **Dinner**

#### **Friday 3 October**

- 08.45 Presentation of the Draft Report of the Workshop
- 11.00 Adoption of the Report and closing of the Workshop

## APPENDIX I.B

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## APPENDIX I.C

### LIST OF DOCUMENTS

#### 1. Opening statements and agenda provided on CD-ROM

Opening statement by the Secretary, IOTC  
Opening statement by FAO Representative  
Opening statement by the Representative of the Minister for Agriculture and Marine Resources of the Seychelles  
List of Participants  
Agenda and Timetable

#### 2. Documents provided (hard copy)

Code of Conduct for Responsible Fisheries/Code de conduite pour une pêche responsable  
What is the Code of Conduct for Responsible Fisheries?  
Qu'est-ce que le Code de conduite pour une pêche responsable?  
Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas  
International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing  
Plan d'action International visant à prévenir, à contrecarrer et à éliminer la pêche illicite, non déclarée et non réglementée  
Stopping illegal, unreported and unregulated fishing  
Mettre un terme à la pêche illicite, non déclarée et non réglementée  
FAO Technical Guidelines for Responsible Fisheries No. 9. Implementation of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (English and French versions)  
International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (English and French versions)  
FAO Technical Guidelines for Responsible Fisheries 1. Fishing operations  
FAO Directives techniques pour une pêche responsable 1. Opérations de pêche  
FAO Technical Guidelines for Responsible Fisheries 1. Fishing operations. 1. Vessel monitoring systems (English and French versions)  
Recent trends in monitoring control and surveillance systems for capture fisheries  
*FAO Fisheries Technical Paper*. No. 415  
Guidelines for Developing an At-sea Fishery Observer Programme  
*FAO Fisheries Technical Paper*. No. 414  
The cost of monitoring, control and surveillance of fisheries in developing countries.  
*FAO Fisheries Circular*. No. 976. (Kieran Kelleher)  
Flags of Convenience and Fleet Statistics (Mr Andrew Smith FIIT)  
Port State Control of Foreign Fishing Vessels (T. Lobach)



Satellite Communications in the Management of Fisheries and the Collection of Statistics (*David Ardill, IOTC*)

EC, 2003. Projet pilote régional de surveillance, contrôle et suivi (SCS) des grands pélagiques dans l'océan Indien. Annexe. Dispositions techniques e administratives d'exécution (DTA – provided only in electronic form).

### **3. Country reports on VMS**

UK (for British Indian Ocean Territory)

France (for Reunion and Mayotte)

Kenya

Madagascar

Mauritius

Mozambique

Seychelles

Tanzania

### **4. Thematic presentations provided on CD-ROM**

The History of Monitoring, Control and Surveillance and the International Plan of Action on IUU Fishing. *Andrew R. Smith (FAO, Fisheries Department)*

The Fisheries of the Southwestern Indian Ocean and their Control. *Kieran Kelleher (FAO Consultant)*

Vessel monitoring systems: the what, the why, and the how. *Robert Gallagher (FAO Consultant)*

Legal issues relating to VMS. *Henning O. Teigene (FAO Legal Office)*

Putting VMS into practice: the devil is in the details. *Robert Gallagher (FAO Consultant)*

Electronic logbooks and Real Time Reporting. *Robert Gallagher (FAO Consultant)*

Use of Satellite Communications in the Management of Fisheries and the Collection of Statistics. *David Ardill (IOTC)*

Institutional options for international VMS cooperation. *Kieran Kelleher (FAO Consultant)*

Use of VMS in non-MCS fisheries management applications. *Kieran Kelleher (FAO Consultant)*

Satellite surveillance by Radar and the Visual Spectrum. *Andrew Smith (FAO)*

Introduction to WinTuna statistical package (*Marco Garcia, IOTC*)

### **5. Commercial presentations provided on CD-ROM**

BlueFinger

CLS Argos presentation

Inmarsat presentation

Trackwell



## **PART II. REPORT OF THE CARIBBEAN VESSEL MONITORING SYSTEMS WORKSHOP (Port-of-Spain, Trinidad and Tobago, 28–30 July 2004)**

### **Opening session**

II.1 Ms Anne Marie Jobity, Director, Fisheries Division, Ministry of Agriculture, Land and Marine Resources and Workshop Chairperson, welcomed participants. She outlined the purpose and context of the Workshop and thanked the FAO and all who contributed to its preparation. Ms Jobity noted that the Workshop constituted a very positive step towards the elimination of illegal, unreported and unregulated (IUU) fishing in the region. She stressed the importance of the marine fisheries resources to the coastal economies and the need to use cost effective technologies to help build sustainable fisheries.

II.2 Mr Trevor Murray, Permanent Secretary, Ministry of Agriculture, Land and Marine Resources welcomed the participants to this important collaborative effort between Trinidad and Tobago and the FAO, stressing the excellent working relationship that has always existed. He underlined the importance of the subject in creation of sustainable management regimes in the region. He noted the timely nature of the Workshop, as illegal fishing is a growing source of concern of the Caribbean states and a focus of attention of ICCAT. He noted that he was looking forward to a fruitful outcome to the workshop.<sup>1</sup>

II.3 Mr Bisessar Chakalall, FAO Regional Fisheries Officer, speaking on behalf of the FAO Resident Representative in Trinidad and Tobago, welcomed the participants and noted that the Director General of FAO had placed a high priority on the implementation of VMS for combating IUU fishing. Mr Chakalall provided a brief background to the Workshop, which follows up decisions of the 25<sup>th</sup> Session of COFI and the 11<sup>th</sup> Session of the Western Central Atlantic Fishery Commission (WECAFC).

II.4 He noted that the Workshop was designed to provide an appropriate forum for an in-depth and open discussion on how to create an awareness of the benefits of VMS as an additional instrument for the management of fisheries at both national and regional levels. In thanking the Government of Trinidad and Tobago for its support in organising the Workshop and their hospitality, Mr Chakalall noted that the Government has always collaborated with FAO in implementation of regional activities and projects and expressed confidence that this excellent relationship would continue to grow in future.<sup>2</sup>

II.5 Dr Andrew Smith, representing the FAO Fisheries Department, Rome, stressed the importance of the Workshop's theme and noted that the meeting is supported by FishCode, FAO's umbrella Trust Fund programme for implementation of the Code of Conduct for Responsible Fisheries (CCRF), and in particular by the FishCode component project to help combat illegal unregulated and unreported fishing (IUU fishing).<sup>3</sup> He indicated that the purpose of the Workshop was to: (i) provide information on all aspects of VMS; (ii) sensitise the countries in the region on the need for cooperation on VMS; and (iii) enable discussions at a technical level leading to active cooperation on VMS and MCS, with particular regard to the fisheries of the island states of the Caribbean.<sup>4</sup>

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<sup>1</sup> Text of Mr Murray's address on enclosed CD-ROM.

<sup>2</sup> Text of Mr Chakalall's address on enclosed CD-ROM.

<sup>3</sup> FishCode component project GCP/INT/849/USA, "Support for Implementation of the International Plan of Action to Prevent, Deter and Eliminate Illegal Unregulated and Unreported Fishing.

<sup>4</sup> Text of Dr Smith's address on enclosed CD-ROM.

II.6 The Honourable Jarette Narine, Minister of Agriculture, Land and Marine Resources opened the Workshop and extended a warm welcome to Trinidad and Tobago to all participants. He highlighted the fact that the Workshop was planned in the light of the special needs of the small island developing states of the Caribbean and the critical need for mechanisms to be established to implement the FAO's International Plan of Action to Eliminate, Deter and Prevent IUU Fishing (IPOA-IUU). Certain provisions of the IPOA require regional collaboration and cooperation, such as the implementation of measures relating to the monitoring, control and surveillance of fishing operations. Tracking of fishing vessels using VMS is an important component of an MCS system, which is essential to ensure compliance with the fisheries laws and regulations.

II.7 IUU Fishing can have disastrous consequences for Caribbean fisheries resources by undermining and diminishing efforts at effective fisheries conservation and management. The data and statistics from IUU vessels are either not reported or under-reported, and undermine stock assessment and management efforts. Over the last three or four decades, the region's fishing fleets have developed the capacity to exploit offshore waters. The large pelagic species in these waters fall under the jurisdiction of ICCAT, of which only two of the Caribbean countries are members and only one country has cooperating non-Contracting Party status.

II.8 The Minister said that ICCAT members are implementing a pilot project on VMS. Subsequently, more comprehensive management regulations pertaining to the use of VMS may be adopted by ICCAT. Failure by Caribbean countries to comply with ICCAT regulations may result in trade sanctions in the future. The Caribbean region should thoroughly embrace VMS because the sustainability of its marine fisheries resources are critical to food security and to the protection of domestic fisheries for large pelagics. The ultimate goal is a legacy of sustainable productivity from the ocean for present and future generations.

II.9 The Minister also noted that the Workshop was timely, because the Caribbean region was presently considering proposals to establish a Common Fisheries Policy and Regime (CFPR). Essential to the process of establishing such a regime is MCS for fishing vessels operating in the Caribbean region.

### **Adoption of Agenda**

II.10 The draft agenda was discussed and adopted by participants without substantive change. The Workshop Agenda is shown as Appendix II.A and the list of participants as Appendix II.B.

II.11 Ms Anne Marie Jobity (Trinidad and Tobago) was elected as Chairperson and Mr Andrew Magloire (Dominica) as Vice-Chairperson.

### **Presentation of Technical Papers**

II.12 A list of the technical presentations and documents made available to participants is given as Appendix II.C.<sup>1</sup>

### ***History and future of MCS and the International Plan of Action on Illegal, Unreported and Unregulated Fishing***

II.13 Dr Andrew R. Smith (FAO, Rome) made a presentation of the "History and Future of MCS and the International Plan of Action on Illegal, Unreported and Unregulated Fishing

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<sup>1</sup> Copies of the presentations available on enclosed CD-ROM.

(IPOA-IUU)", focussing on the development and use of VMS as a Monitoring, Control and Surveillance (MCS) tool. Modern policing of fisheries developed subsequent to the Agreement on the United Nations Convention of the Law of the Sea (UNCLOS) in 1982. In addition to the economic benefits accruing from the extension of fisheries jurisdiction to 200 nautical miles, UNCLOS placed obligations on States with respect to the management of fisheries. These responsibilities meant increased requirements for surveillance by patrol vessels and aircraft. Concurrently with UNCLOS, FAO convened an Expert Consultation on Monitoring, Control and Surveillance, where a definition for MCS was formulated.

II.14 The FAO Code of Conduct for Responsible Fishing was elaborated and agreed in 1995. Four International Plans of Action (IPOAs) were subsequently agreed within its framework, in order to tackle specific fisheries problems. One of these was the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU). This IPOA specifically referred to the new technology of fishing vessel monitoring systems (VMS) – the subject of the present Workshop.

II.15 Dr Smith noted that the IPOA-IUU was developed as a response to concerns that illegal fishing activities were on the increase. The IPOA provides a definition of what constitutes IUU fishing and suggests actions that should be taken by flag States, coastal States and port States. Improved MCS is one of the answers to this increasing problem, and VMS has an important role among the MCS tools. A further potent measure in combating IUU fishing is the use of trade documents to trace fish products from origin to destination, thus enabling the exposure of unreported fish. The importance of cooperation between countries and the vital place of regional fisheries management organizations (RFMOs) in the IPOA was also highlighted.

II.16 Dr Smith advised that as a consequence of the successful introduction of trade documents and their use by the International Convention for the Conservation of Atlantic Tunas (ICCAT), some of the most important flag of convenience (FOC) states have started to equip their vessels with VMS. More stringent controls over such vessels have resulted in the "migration", or "flag-hopping" of vessels to more lenient flag of convenience (FOC) registers and an apparent reduction of the FOC-registered fishing fleet from 7 000 to 3 000 vessels. Coastal States may require vessels of distant water fishing nations (DWFN) to be equipped with transceivers and to transmit positions when inside the EEZ of the coastal State.

II.17 The traditional MCS tools are of obvious importance but it is recognised that new and additional tools need to be developed. The cost of operating surveillance vessels and aircraft is substantial, and the traditional tools may be inappropriate in some fisheries. Emerging some 15 years ago as a spin-off of the Global Maritime Safety and Distress System (GMDSS), the technology of combining vessel positioning information with communication systems has been recognised as a useful means for tracking fishing vessels. During the last six to seven years, this technology, generally known in fisheries as VMS, has been widely adopted around the world.

II.18 VMS is relatively inexpensive and its synergy with other MCS instruments greatly adds to their cost effectiveness, as for example in the case of patrol vessels and targeted inspections. VMS assists flag States to control their vessels and provides improved distress and safety communication. The potential for transmission of operational information is a significant benefit for vessel crew and operators.

II.19 Dr Smith underscored the importance of using VMS in association with the traditional MCS tools like land radar and air and surface patrols, and emphasised that it should be considered as a complement to rather than as a replacement for the traditional tools.

## ***Overview of fisheries management in the Wider Caribbean region and the role of regional fishery bodies***

II.20 Mr Bisessar Chakalall (FAO Subregional Office for the Caribbean, Barbados) presented an overview of fisheries management in the Wider Caribbean region and the role of regional fishery bodies. He highlighted the common characteristics of the region, which include the social and economic importance of fisheries – especially for small island States, the oceanographic and ecological linkages of the Caribbean Large Marine Ecosystem and the shared and straddling nature of the living marine resources.

II.21 Mr Chakalall mentioned the diversity in the region, including the different levels of economic and social development among the countries, natural resource endowments and historical, cultural and linguistic differences. Rather than being a hindrance, Mr Chakalall portrayed the existing diversity as an opportunity for promoting and enhancing technical cooperation among the member countries of the Western Central Atlantic Fishery Commission (WECAFC) in the implementation of the CCRF through South-South cooperation, North-South cooperation and the exchange of technical expertise.

II.22 Mr Chakalall also presented a brief summary of the current strategy of WECAFC, whose main goal is to promote international cooperation for the conservation, development and sustainable utilization of the living marine resources in the Wider Caribbean. The work programme of WECAFC, after approval by the Commission, was implemented through ad hoc working groups based on ecosystem (e.g. working group on shrimp and groundfish fisheries in the Brazil-Guianas Shelf), species (e.g. working group on Caribbean Spiny Lobster), and specific subjects (e.g. working group on anchored fish attracting devices for small-scale fisheries). He noted that there was a large number of groups, such as the Association of Caribbean States (ACS), the Caribbean Community (CARICOM), the Forum of the Caribbean ACP States (CARIFORUM), the Caribbean Regional Fisheries Mechanism (CRFM), the International Convention for the Conservation of Atlantic Tunas (ICCAT), the Organization of Eastern Caribbean States (OECS), Organización Latinoamericana de Desarrollo Pesquero (OLDEPESCA), Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA), the Western Central Atlantic Fisheries Commission (WECAFC) and WECAFC Lesser Antilles Committee that, to varying degrees, were involved in fisheries matters in the Wider Caribbean, and that WECAFC was the only intergovernmental body that has the potential to bring all the countries and institutions under one umbrella for promoting ecosystem approach to fisheries in the region.

II.23 In response to a question, Mr Chakalall, explained that the WECAFC working groups have specific terms of reference approved by the Commission, limit their activities to a few key areas supported by the members of the working groups, and undertake activities through networking in order to strengthen and improve national and regional capacity in fisheries.

### ***Fishing vessel monitoring, the what, why and how***

II.24 Mr Robert Gallagher (FAO Consultant) presented a technical overview of VMS entitled “Fishing vessel monitoring, the what, why and how,” emphasising the need for accurate functional specifications that meet requirements of the fisheries administration. He outlined shipboard, transmission and fisheries monitoring centre (FMC) hardware and software requirements.

II.25 An operational scenario for a fully functioning VMS system was presented, illustrating data analysis and confidentiality, and the use of VMS data for control, resource management, commercial and safety at sea purposes. Additional information was provided in response to questions on confidentiality, financing of VMS, sharing of data, equipment breakdown and data security (tampering).

II.26 It was affirmed that data security is generic: VMS data have no special characteristics, and standard security methods are applicable, e.g. to prevent hacking or breach of confidentiality by personnel. Mr Gallagher referred the question of costs to suppliers, stressing that each situation was case specific and required careful analysis in relation to the fishery control objectives, available human and financial resources, interagency requirements and the interests of industry and other stakeholders. He noted, for example, that Iceland uses VHF for certain vessels. A key question would be whether VHF can cover the geographical area of concern.

### ***Institutional options for VMS in the Caribbean region***

II.27 Mr Kieran Kelleher (FAO Consultant) described a range of institutional options for VMS which existed in other regions. Examples of international VMS cooperation were provided from the Northeast Atlantic (EU and NEAFC) and the South Pacific (FFA and the emerging WCPFC). Differences between the institutional arrangements were highlighted.

II.28 EC law requires the automatic retransmission of VMS data between EU Member States as vessels move from the waters of one Member State to another. Each Member State operates its own VMS and the automatic re-transmission occurs on a “bilateral” basis in accordance with agreed protocols. The data formats, *inter alia*, are specified in EC legislation. A similar obligation rests with EU flag States with respect to their flag vessels operating on the high seas areas falling under the North East Atlantic Fisheries Commission (NEAFC) and the North Atlantic Fisheries Organization (NAFO). In the case of these commissions, the VMS position and other data on catches is also directed (via national FMCs) to member states that have a patrol vessel presence in these high seas areas.

II.29 In contrast, the Forum Fisheries Agency (FFA) provides a centralised service to the South Pacific countries and arrangements for reporting from the high seas are still under discussion. The FFA arrangements apply only to distant water tuna vessels and support vessels. A vessel flagged in an FFA member state is considered a distant water vessel when operating in the waters of another member state. The arrangement is based on an international agreement. The FFA Secretariat manages and administers the FFA VMS on behalf of the 17 FFA members. The FFA has been given clearly defined operational responsibility for VMS by the member states. VMS requirements are found in the national legislation of FFA members. The licensing conditions of FFA members with respect to foreign fishing vessels conform to Harmonised Minimum Terms and Conditions (MTC) of access agreed by FFA members.

II.30 Under the MTC for Foreign Fishing Vessel Access, VMS is required for foreign vessels fishing in the EEZs of FFA members. There is ongoing harmonisation of the countries’ legal frameworks regarding the complex legal issues associated with VMS. The FFA VMS receives automatic position reports at a default rate of six reports per 24 hours. This interval can be increased to one report every 15 minutes and, through polling, vessels can be requested to provide a position at any given time. If a vessel's VMS unit (transceiver, also known as an automatic location communicator, or ALC) is switched on while it is on the high seas, the FFA will receive automatic position reports from that vessel. The USA has agreed that US purse seine vessels operating under the terms of the South Pacific Tuna Treaty will provide automatic position reports to the FFA VMS at all times while these vessels are inside the treaty area, which includes high seas areas.

II.31 The FFA focuses on controlling fishing activities within the members’ EEZs, while the area of jurisdiction of the Western Central Pacific Fisheries Commission (WCPFC) encompasses the high seas areas, and the member states include distant water fishing nations. The WCPFC is currently examining the institutional and technical options for VMS.

II.32 Mr Kelleher recalled that global instruments such as the UNCLOS and the Fish Stocks and Compliance Agreements (see presentation on legal aspects of VMS) provide an adequate international legal basis for implementing VMS at national and international levels. He briefly outlined the outcomes of previous regional VMS workshops, noting that there was unanimous support for cooperation, not only on VMS, but also on a broader agenda of MCS issues such as vessel registries and the need to communicate information on the entry/ exit of vessels to/ from EEZs.

II.33 In order to stimulate further discussion, Mr Kelleher suggested several scenarios for regional cooperation. A convention, or fisheries cooperation agreement, among the coastal States could be considered with provisions for MCS and VMS. Alternatively, a set of bilateral agreements could be contemplated, with specific protocols on areas of particular concern such as VMS, management of transboundary fisheries, or hot pursuit. Thirdly, a combination of multilateral and bilateral approaches could be considered with bilateral arrangements nested within a multilateral fisheries cooperation convention. Targets for VMS and MCS cooperation could include the larger vessels targeting tuna and highly migratory stocks, vessels operating in shared demersal fisheries such as the shrimp fisheries of the Guiana shelf, or generic targets such as motherships and fish carrier vessels.

II.34 The options for institutional arrangements require careful analysis, considering the multitasking nature of marine control and surveillance in the region and the numerous multilateral institutions with varying mandates and memberships. The relative importance of fisheries MCS and VMS within the context of an overall marine security and monitoring context must also be considered. In response to questions on identifying IUU vessels, Mr Kelleher noted the existence of lists of “positive” and “negative” vessels maintained by ICCAT. Similar registries are maintained by other agencies, such as the FFA. It was remarked that ICCAT requires even non-ICCAT member states to comply with ICCAT regulations.

II.35 Upon the request of member States, FAO may be able to provide limited support for such initiatives and complement existing regional projects, or initiatives. FAO plans to maintain a dialogue with the service providers and to hold an Expert Consultation in October 2004 on data formats and procedures used in MCS.<sup>1</sup>

### ***Putting VMS into practice, the devil is in the details***

II.36 Mr Robert Gallagher (FAO Consultant) showed how a VMS system is designed and built in a presentation entitled “Putting VMS into practice, the devil is in the details”. He emphasised the need for careful research and planning to ensure the VMS system meets the precise needs of the fisheries administration and other users, such as the vessel operators themselves.

II.37 He stressed the wide range of technical options and compared the relative merits of Argos and Inmarsat C systems. He confirmed that both systems could readily co-exist in a national VMS system, and that in the case of the countries in the region, where foreign vessels deploy both types of transceivers, a national FMC is likely to require the capability to process both types of signal. He discussed the use of Inmarsat-D+ and terrestrial systems such as VHF radio and cellular telephony. The Iridium and Globalsat satellite voice systems were presented and their specific advantages with regard to VMS functionality described.

II.38 The choices confronting an agency acquiring an FMC were enumerated. Finally, the extension of VMS to a regional level was discussed, including choices to be made when

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<sup>1</sup> *Ed. note:* See FAO, 2005. Report of the Expert Consultation on Data Formats and Procedures for Monitoring, Control and Surveillance. Bergen, Norway, 25–27 October 2004. *FAO Fisheries Report*. No. 761. Rome, FAO. 16p.



developing and linking national VMS together into a regional system. The two principal architectures were described and the required protocol for regional cooperation mentioned.

II.39 In response to questions Mr Gallagher indicated that, to his knowledge, with the exception of the FFA no group of countries operated a “star” configuration for sharing VMS information. He indicated that the costs of VHF data transmission were considerably lower than satellite transmission. The capital costs of VHF radios are approximately US\$200. The cost of an Argos terminal is approximately US\$1 500 and an Inmarsat-C terminal may cost approximately US\$2 000. In addition, the transmission costs using VHF are generally low, or negligible. He again stressed the importance of careful needs assessment, planning and system design, particularly if the fisheries VMS is to be integrated with coast guard, customs, or activities of other agencies.

### ***Legal issues related to VMS***

II.40 Mr Andrew Rahaman, Legal Counsel, Ministry of Agriculture, Land and Marine Resources made a presentation on “Legal issues related to VMS.” The relevant international legal regime and legal issues of importance to the implementation of VMS were addressed. Because of its crucial importance with respect to the duties and rights of states, the provisions of the 1982 UN Convention on the Law of the Sea of relevance to MCS and VMS were briefly explained. The relevant provisions of other international fisheries related instruments were presented, including the UN Straddling Fish Stocks Agreement, the FAO Compliance Agreement, the FAO Code of Conduct for Responsible Fisheries and the International Plan of Action on IUU fishing developed under the framework of the Code.

II.41 It was noted that a number of provisions support the use of VMS and call for its implementation in waters under national jurisdiction and on the high seas, where applicable. Provisions on the collection and exchange of fisheries data and on regional and sub-regional cooperation in fisheries conservation and management, including MCS, were also highlighted. The scope and limitations of coastal State jurisdiction, flag State jurisdiction and port State jurisdiction were also reviewed.

II.42 A variety of legal issues were considered. Among the points of importance for countries legislating for VMS are to ensure: constitutionality of the new approach; ample powers for enforcement purposes, including provisions to implement recent international instruments, ensuring the necessary application of fisheries legislation also outside national waters; regulatory powers; an authorization scheme for fishing vessels; and the prescription of offences and penalties. Other important legal issues highlighted were the security and confidentiality of VMS information, the use of VMS information as evidence, the importance of maritime boundaries and the complex question of determining property rights over VMS information.

II.43 Finally, the main features of VMS regulations were presented. This overview was based on a comparative study of USA, New Zealand and Australian VMS regulations. Mr Rahaman drew on examples from Trinidad and Tobago and the region to illustrate key points and noted that maritime boundary delimitations have not been agreed between many Caribbean states.

II.44 Coastal and flag States have an obligation under international law to cooperate with RFMOs with regard to provision of information. RFMOs requiring VMS information include: CCAMLR, FFA, ICCAT, NAFO and NEAFC. This information is often provided in aggregated form if used for scientific purposes, but RFMOs such as NEAFC require disaggregated near-real-time VMS information to support patrol vessel operations on the high seas areas under their mandate.

II.45 The differences between civil and criminal law in the use of VMS information to secure prosecutions was noted. A reversal of the burden of proof can be applied with regard

to civil offences, e.g. a vessel present in a protected zone may be presumed to be fishing and it is incumbent on the fishing vessel operator to prove that the vessel was not fishing. Thus it may be more effective to classify certain offences as civil offences if VMS information is likely to be used as “stand alone” evidence of the violation. While the master or crew of a foreign fishing vessel may be detained for the purposes of trial, or due process, under UNCLOS Article 73, corporal punishment, e.g. imprisonment, may not be used as a sanction for the master and crew of a foreign fishing vessel operating illegally in the EEZ.

### **Electronic logbooks**

11.46 Mr Robert Gallagher (FAO Consultant) gave a presentation on electronic logbooks. He defined an electronic logbook as being an electronic transmission of catch and /or related information from sea. He pointed out how an upgraded VMS can provide a platform for the exploitation of electronic logbooks. A description of the range of possible input devices was given, concentrating upon hand-held equipment designed to facilitate data input. A list of some of the existing electronic logbook schemes around the world was provided and a discussion of the implementation issues regarding of electronic logbooks ensued.

11.47 On the matter of whether electronic logbooks should replace the current paper logbooks or be treated as supplements to the paper logbook, it was noted that factors such as costs involved in different sizes of messages and the requirements for timeliness, frequency and precision of catch and effort information needed to be taken into account. These factors are, in turn, linked to the precision of catch data to be transmitted. The generalized implementation of electronic logbooks would have the advantages, *inter alia*, of avoidance of the need to punch (enter) logsheets in computer databases, improved accuracy in logbooks as a result of data verification checks at source, and the presence of an electronic time stamp that may assist enforcement.

11.48 It was noted that while many fisheries required timely information for management, real time or near real time catch and effort information was probably not required for management of many of the region’s fisheries. It was noted that logbooks, whether electronic or handwritten, constitute an estimate of the catch, while actual landed weights are a superior measure of catch. The average error in box or dip net counts of the catch could be as high as 20 percent. Catch sampling is also required to supplement, or correct logbook information with accurate catch composition information. In the distant water tuna fisheries, fees tend to be indirectly related to reported catch, thus reducing the incentive for individual vessels to falsify catch information.

11.49 In response to queries, Mr Gallagher suggested that fishers should not necessarily perceive the e-logbook as a burden, but as a tool that creates value through traceability, or replaces part of a personal accounting system or fishing logbook. Participants noted that even paper logbooks do not exist in many countries and fisheries and that computer literacy is generally low among fishers. However, although e-logbooks may be premature for many fisheries in the region, it may be appropriate for some larger vessels targeting high-value stocks.

### **Satellite observation of fishing vessels and recent technological developments**

11.50 Dr Andrew Smith (FAO, Rome) updated the participants on emerging new surveillance technologies.

11.51 The technology of satellite surveillance of fishing vessels is under development through a project financed by the EC’s Directorate of Fisheries and undertaken by the Joint European Research Centre in Ispra, Italy. It is a complicated project involving 13 commercial companies and a number of national fisheries monitoring centres (FMCs). Iceland, Norway

and the North East Atlantic Fisheries Commission are included in the project because of the shared fisheries involved.

II.52 The first phase of the project has been dealing with the problems of the timely collection and processing of the satellite images so that they can be presented to the FMCs in a format, which would be useful to them. Images have been obtained from a number of areas, each with different characteristics (e.g. areas with high and low levels of merchant vessel traffic). Download times from the satellite and transfer of data between the different facilities do not allow real time responses; however times have been reduced significantly during the course of the experiment. It is expected that selected EU FMCs will start using the satellite surveillance data on a regular basis in the medium term.

II.53 IMO has recently introduced measures on Maritime Terrorism and has amended the Safety of Life at Sea Convention (SOLAS) to put these into effect. This is going to have a great influence on all vessels including fishing vessels. Automatic Identification Systems (AIS) will be mandatory for vessels over 300 tons and Voyage Data Recorders (VDR) will be mandatory for all vessels over 3 000 tons in 2004, rather than in 2008 as was originally planned. Both these technologies can be used for the increased effectiveness of MCS. It is expected that VMS and satellite monitoring will lead to integrated systems of marine monitoring with the involvement of several national agencies. Such a system is already in operation in Portugal using VMS and there is likely to be increasing cooperation between countries because of common boundaries and the increasing importance of maritime security.

### ***Fisheries monitoring, control and surveillance in the EU***

II.54 Ms Irene Farina of the Ministry of Fisheries, Spain gave an overview of the European Union experiences with MCS. The EU's Common Fisheries Policy has three key components or "structures," dealing with such matters as the adaptation of fleet capacity to the available resources, markets and conservation.

II.55 Over 90 000 EU vessels fish in the waters of Member States, in third country waters and in areas under the jurisdiction of regional fisheries management bodies such as ICCAT. European Commission (EC) legislation pertains to States rather than individual vessels. Thus, each EU Member State enacts its own fisheries legislation, which conforms to the EC legislation, and the vessels operate under their respective flag State authorisations. The EC monitors the implementation of the legislation and helps coordinate fisheries management.

II.56 "Fishing rights" are allocated through two sets of negotiated arrangements: "access to waters" (fishing grounds), and "access to stocks" (quota arrangements). "Technical measures" regulate fishing gear and fishing.

II.57 There are several closely related dimensions to the regulatory system: the fishing vessel register, the licensing system, catch reporting, VMS and related at-sea monitoring, port control and market controls. VMS helps regulate fishing effort through a "days-at-sea" control. Logbooks, landings declarations by fishers and sales notes prepared by fish buyers provide additional controls.

II.58 The EU implements a range of regulations approved by regional fisheries organizations such as ICCAT and CCAMLR, including their catch documentation schemes. Of particular note is Spain's registry of fishing masters working on third country-flagged vessels. These masters must advise the Spanish authorities that they are going to undertake such work.

## **Regional Security System**

II.59 Mr Oliver Fredrick of the Regional Security System Central Liaison Office provided a description of the Regional Security System (RSS). The RSS is a joint arrangement for mutual support and cooperation between member countries for security and defence. The members are Antigua and Barbuda, Barbados, Dominica, Grenada, St Kitts, St Lucia and St Vincent and the Grenadines.

II.60 The Regional Security Coordinator operates under directives from the Council of Ministers and liaises with national security chiefs through a Joint Planning and Coordinating Committee. The Central Liaison Office mostly has a coordinating role and has limited operational funds. Thus the RSS activities essentially rely on the assets of Member States. However, the RSS operates two C-26 patrol aircraft under US funding and conducts extensive training for security forces in the region.

II.61 The RSS has a broad mandate related to: national emergencies, drug interdiction, search and rescue, immigration control, fisheries protection, customs and excise control, terrorism, smuggling, maritime policing duties, natural and other disasters and pollution control. It is capable of coordinating members' activities in maritime patrol and surveillance.

## **Country reports**

II.62 Participants from Caribbean coastal States briefed the Workshop on the status of fisheries and MCS and VMS in their respective countries. Country reports were presented for Antigua and Barbuda, Bahamas, Barbados, Belize, Grenada, Jamaica, St Kitts and Nevis, St Lucia, St Vincent, Suriname and Trinidad and Tobago.<sup>1</sup>

II.63 Participants made specific requests for enhanced regional cooperation with particular regard to aerial and sea surveillance, regional observers, a regional vessel database and establishment of standards for VMS equipment.

## **Parallel programme: commercial briefings**

II.64 Representatives of CLS Argos, BlueFinger, Inmarsat, Marimsys and Trackwell provided comprehensive briefings on their products and services, including details of technical performance. Participants had the opportunity to have private dialogue with the commercial representatives in relation to their respective fisheries and VMS requirements.<sup>2</sup> It was stressed that FAO was not necessarily advocating the use of any of these commercial services and that their presentations were provided for information purposes only, as similar information had been provided to the participants in other regional VMS workshops.

## **Report of the working groups**

II.65 Three working groups were formed with identical terms of reference:

- **Question 1.** Is VMS cooperation necessary in the Caribbean region and, if so, for what reasons?
- **Question 2.** Which are the main fisheries or fleets for which VMS cooperation could be most useful?

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<sup>1</sup> Copies of the presentations available on enclosed CD-ROM.

<sup>2</sup> Copies of the commercial presentations and supplementary information brochures were provided on CD-ROM to the country delegations.

- **Question 3.** What is the nature of the VMS/MCS cooperation required? List the types of cooperation.
- **Question 4.** Which is (are) the most appropriate regional forum (fora) for pursuing a Wider Caribbean programme of action on VMS, or MCS? What actions should be undertaken and by whom?
- **Question 5.** Do we include, or exclude member countries of Wider Caribbean (WECAF) that are not present at this workshop, and if so to what extent and how?

II.66 Each group presented the results of its deliberations in plenary session. The conclusions are summarised below.

### **Working Group 1**

II.67 Question 1. Working Group 1 agreed that both the MCS and VMS are of critical significance for the Wider Caribbean. The reasons cited were: search and rescue; safety-at-sea; compliance with international agreements (fisheries and non-fisheries); illegal fishing and non-fishing activities; maritime/ecosystem resource management; and detection of the movement and activities of extra - regional vessels.

II.68 Question 2. The group thought that it was premature to address the question of which fleet, or fisheries should be targeted, and that a cost/benefit analysis would help with the answer. Any system should be sufficiently flexible to capture the various components of fleets operating in the region, particularly as the small-boat fleet comprises the larger percentage of the vessels and contributes significantly to the catch. It is necessary to determine whether the VMS would be providing a service or a regulatory function. However, whichever function is undertaken, it is necessary to have some form of VMS within the MCS toolbox.

II.69 Question 3. VMS cooperation should include a common set of tools and reference points, including a general common policy, harmonization of definitions, training, and institutional building (cost effectiveness and duplication avoidance). The cooperation required includes: information sharing; resource sharing; training; policy development; and legislation. It is necessary clearly to identify the various institutions and regional bodies that would be instrumental in the implementation of VMS. These include fisheries authorities, the Regional Security System (RSS), the Maritime Rescue Coordination Centre (MRCC), IMO/SOLAS, national coast guards, marine police and customs.

II.70 Question 4. It was recognized that the only appropriate body to give policy direction would be at the CARICOM level, but that the RSS could be the appropriate executing agency. Collaboration with the MRCC and other regional institutions would be critical. Further, the CRFM was identified as the most appropriate agency to address the fishing needs as far as VMS/MCS was concerned. The CRFM should be responsible for the general planning of the program and sourcing of appropriate financing. It was recognized that it would have to collaborate the implementation of these activities through the RSS and other implementing agencies.

II.71 Question 5. All countries should be included on a cost-sharing basis. Different regions of North, Central and South could have access to a common system.

## **Working Group 2**

II.72 Question 1. It was concluded that cooperation in both MCS and VMS is required on a regional basis in order to track illegal activities, to ensure compliance with fisheries management rules and regulations, and to collect relevant data and information on fishing activities. Improved VMS and MCS will require a common strategy, training and development of stakeholder awareness. VMS should be extended to all vessels, as appropriate, and may be utilized on a national basis.

II.73 Question 2. The main target fisheries for VMS are those that exploit shared resources such as offshore pelagic for tuna, dolphin and flying fish, and fisheries such as lobster and conch. The target fleet should include those vessels within the domestic fleet which fish for shared resources, e.g. small boats, utilizing VHF and HF, radio and large deck boats utilizing VHF and HF radios and the high seas fishing fleet as specified by legislation.

II.74 Question 3. VMS cooperation should be based on one system for the whole region that at the same time allows each country to access its own data; alternatively, each individual country can have its own system with data sharing responsibilities.

II.75 Question 4. The RSS is considered the best option for executing a VMS system. WECAFC is a suitable forum for addressing VMS and MCS in the Wider Caribbean. Special arrangements could be considered with respect to different sub-groupings, e.g. CRFM sub-group members, the Spanish grouping, the French grouping, and the Dutch grouping.

II.76 Question 5. All countries in the regions should be part of the cooperative process.

## **Working Group 3**

II.77 Question 1. The group considered that there is need for cooperation at the Wider Caribbean level (WECAFC). They viewed VMS as a tool in the context of MCS. The reasons for wider regional cooperation include management of fisheries resources, safety at sea and search and rescue (SAR), security, counter-terrorism, and piracy.

II.78 Question 2. The group concluded that VMS could be used in relation to the main fisheries and fleets. Examples include the fisheries for coastal and offshore pelagic, shrimp fisheries, conch fisheries, grouper/snapper fisheries, and ground fish fisheries, such as those for large marine catfish. VMS was considered useful for monitoring of: marine protected areas; closed areas/seasons; illegal transshipment at sea; and quota management. The group classified the region's fleets into industrial, semi-industrial, and artisanal. While VMS may be readily available to industrial fleets, the group considered the most appropriate technology and cost-effective means for semi-industrial and artisanal MCS and VMS should be studied carefully. Some countries, such as Belize, felt that VMS is not applicable to their artisanal fleet. Some of the issues identified in terms of putting in place effective MCS/VMS included: development of appropriate policies; need for legislation and regulation; creating awareness among the stakeholders (i.e. demonstrating the benefits); whether government would want to subsidise the implementation of VMS or provide incentives or loans; inter-agency cooperation; and building on existing monitoring systems.

II.79 Question 3. Cooperation was considered to be required on technology transfer, training, procurement of equipment, development of model legislation, sharing of VMS data (MOUs and protocols will have to be developed).

II.80 Question 4. The group considered that existing regional bodies should be used in the implementation of the programme of action, e.g. OECS/RSS, CRFM and WECAFC.

II.81 Question 5. The group considered that a VMS programme needs to be inclusive of all countries in the Wider Caribbean regions with due consideration for the nature of the

fisheries involved and the geographical distribution of fishing activities and target fish stocks throughout the countries and EEZs.

### ***Summary of working group conclusions***

II.82 Discussion of the working group conclusions covered a broad range of issues. It became clear that traditionally VMS has been used to monitor, in near real time, the movements of fishing vessels sufficiently large to merit tracking as individual assets. Once a system designed to fulfil this function is in place, it then becomes possible to use the established infrastructure for other objectives, such as improving safety-at-sea and monitoring vessel activities by customs and police authorities. Traditionally the activities of the fleet of larger fishing vessels have been capable of financially supporting and justifying the creation of a VMS system.

II.83 However, it is clear that, as a region, the Caribbean does not fall into this standard framework. Indeed, the development of a cost-benefit argument for the implementation of VMS across the region's fisheries may well be problematical. In addition to traditional fisheries compliance and management concerns, there is a range of non-fisheries VMS requirements at national and regional levels. These include, for example, the safety of the fishing vessels at sea and police and customs services. It is entirely possible that an integrated Caribbean-wide vessel monitoring system could provide a critical mass of benefits sufficient to justify the necessary investment. In order to achieve such a goal, however, any implementation would need to be preceded by an in-depth analysis to reconcile the requirements and priorities of the various participants, so as to achieve a cost-effective approach.

II.84 There was general agreement that the benefits of VMS in the region were multifaceted and there were several regional problems and requirements that could be addressed using VMS. These included safety-at-sea and search and rescue, fisheries management and MCS, marine security, piracy, counter-terrorism, customs and immigration control and other illegal activities. There was also agreement that both MCS and VMS were of critical significance in the Wider Caribbean.

II.85 It was pointed out that there had been some level of cooperation for fisheries MCS in 1990s between RSS and OECS. Several agencies would be interested in VMS, including the MRCC, national coastguards, the marine police and customs. It was pointed out that due to limited human and financial resources within member States of the region the cost of individual country VMS and higher levels of MCS might be prohibitive. The most cost effective approach would be on a regional basis.

II.86 VMS should be used for the fleets targeting the main transboundary fisheries such as:

- a) fisheries for offshore pelagics;
- b) shrimp fisheries;
- c) grouper/snapper fisheries;
- d) lobster and conch;
- e) ground fish fisheries and
- f) other shared stocks.

II.87 VMS was considered useful for the monitoring of:

- a) sea safety and search and rescue;
- b) marine protected areas;
- c) closed areas/seasons;
- d) illegal transshipment at sea ;and

e) monitoring of quotas.

II.88 The nature of MCS/VMS cooperation could consist of :

- a) technology transfer;
- b) training;
- c) procurement of equipment;
- d) development of model legislation; and
- e) harmonisation of definitions.

II.89 The organizations suggested for pursuing a wider Caribbean programme of action on MCS and VMS were WECAFC, CARICOM, OECS/RSS, CFRM and MRCC.

II.90 There was general agreement that there needed to be an inclusive programme and that countries not represented at this Workshop should be included at a sub-regional and regional level. This cooperation should be on a cost-sharing basis. It was also recognised that further funding is required to advance the process of MCS/VMS implementation in the region.

### **Closing session**

II.91 The workshop endorsed the conclusions of the working groups and agreed that following discussion at national level the conclusions may be forwarded by participating countries to the appropriate regional and international fora for consideration. The draft report was adopted.

II.92 On behalf of the FAO, Mr Bisessar Chakalall thanked the Government of Trinidad and Tobago and the Ministry of Agriculture, Land and Marine Resources for hosting the Workshop and for their assistance and hospitality. He thanked the participants, both from the Caribbean countries the representatives of the commercial VMS service providers for their contributions.

II.93 On behalf of the participants the representative of Barbados thanked the members of the Ministry of Agriculture, Land and Marine Resources for acting as hosts and for their hospitality. He thanked FAO and the representatives of the commercial VMS service providers for their inputs and insights.

II.94 On behalf of the Ministry of Agriculture, Land and Marine Resources, Ms Anne Marie Jobity thanked all the participants for their contributions, wished them a safe return and declared the Workshop closed.



## APPENDIX II.A

### AGENDA AND TIMETABLE

#### **Regional Workshop on Vessel Monitoring System (VMS) Port-of-Spain, Trinidad and Tobago, 28-30 July 2004**

**Wednesday 28 July 2004**

**Opening of Workshop**

09:15 – 10:00 hrs *Chairperson:*

Ms AnnMarie Jobity, Director, Fisheries Division, Ministry of  
Agriculture, Land and Marine Resources

*Welcome Remarks:*

Trevor Murray, Permanent Secretary, Ministry of Agriculture, Land and  
Marine Resources

*Remarks:*

Mr David W. Bowen, FAO Representative, Trinidad and Tobago,  
Guyana and Suriname

*Remarks:*

Dr Andrew Smith, Fisheries Industry Officer, FAO, Rome

*Feature Address & Opening of Workshop:*

The Honourable Jarette Narine, Minister of Agriculture, Land and  
Marine Resources

*Chairperson's Closing Remarks*

Ms AnnMarie Jobity, Director, Fisheries Division, Ministry of  
Agriculture, Land and Marine Resources

10:00 – 10:30 hrs **Break**

**Session I**

**Overview of VMS and its role in fisheries management**

10:30 – 12:30 hrs *Overview of VMS and its role in fisheries management and in the  
implementation of the IPOA/IUU at a global level*

(Dr Andrew Smith, Fishery Industry Officer FAO, Rome)

*Overview of fisheries management in the Caribbean region and the  
potential role of regional fisheries management bodies*

(Bisessar Chakalall, Regional Fisheries Officer, FAO, Barbados)

Discussion

12:00 – 13:30hrs **Lunch**

**Session II**                    **Technical aspects of VMS, institutional options and the associated legal dimensions**

13:30 – 14:30 hrs    *Overview of the technical aspects of VMS*  
(Mr Rob Gallagher, FAO Consultant)

*Institutional Options for regional cooperation on VMS.*  
(Mr Kieran Kelleher , FAO, Consultant)

14:30 – 14:45 hrs    **Break**

14:45 – 17.30 hrs    *Technical and Administrative Issues in Creating a National or Regional VMS and Satellite Surveillance Capability.*  
(Mr Rob Gallagher, FAO Consultant)

*Legal Issues Associated with VMS.*  
(Mr Andrew Rahaman, Legal Counsel, Ministry of Agriculture, Land and Marine Resources, Trinidad)

Discussion

19:00 – 21:00 hrs    **Cocktail reception, The Ballroom**

**Thursday 29 July 2004**

**Session III**                    **Surveillance systems**

08:30 – 10:00 hrs    *Electronic Logbooks and Near Real Time Reporting in VMS*  
(Mr Rob Gallagher, FAO, Consultant)

*Satellite Surveillance by Radar and the Visual Spectrum*  
(Dr Andrew Smith, Fishery Industry Officer, FAO, Rome)

Discussion

10:00 – 10.15        **Break**

10:15 – 11:30        *European Union experience with MCS*  
(Ms Irene Farina, Ministry of Fisheries, Spain)

*Regional Security System.*  
(Mr Oliver Frederick, RSS)

Discussion

**Session IV**                    **National capabilities**

11:30 – 12:30        **Country statements**

Antigua and Barbuda

Bahamas

Barbados

- Belize
- 12:30 – 13:30 hrs **Lunch**
- 13:30 – 15:30 hrs **Country statements (Continued)**
- Dominica
- Grenada
- Jamaica
- St. Kitts & Nevis
- St. Lucia
- Saint Vincent and the Grenadines
- Suriname
- Trinidad and Tobago
- 15:30 – 15:45 hrs **Break**
- Session V**                    **Presentation by commercial enterprises**
- 15:45 – 18.00 hrs Trackwell: Mr Kolbeinn Gunnarsson
- Marinsys: Mr Elan Shwartz
- Inmarsat: Ms Marian Parker
- Bluefinger: Mr Ian Searle
- ARGOS: Mr Stephen Lee Morgan
- Friday 30 July 2004**
- Session VI**                    **Proposed strategy**
- 08:30 – 10:30 hrs Strategy working groups
- 10:30 – 10:45 hrs **Break**
- 10:45 – 12:30 hrs Discussion of proposed strategy
- 12:30 – 15:00 hrs **Lunch**
- 15:00 – 16:00 hrs Presentation of the Draft Report of the Workshop
- Adoption of the Report and closing of Workshop

## APPENDIX II.B

### LIST OF PARTICIPANTS

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## APPENDIX II.C

### LIST OF DOCUMENTS

#### 1. Opening statements and agenda

Opening remarks by Mr Trevor Murray, Permanent Secretary, Ministry of Agriculture, Land and Marine Resources of Trinidad and Tobago  
Opening remarks by Mr Bisessar Chakalall, FAO Regional Fisheries Officer  
Opening remarks by Dr Andrew Smith, Fishery Industries Division, FAO, Rome  
Opening of the Workshop by the Honourable Jarette Narine, Minister of Agriculture, Land and Marine Resources of Trinidad and Tobago  
Agenda and Timetable  
List of Participants

#### 2. Documents provided (hard copy)

Code of Conduct for Responsible Fisheries  
What is the Code of Conduct for Responsible Fisheries?  
Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas  
International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing  
Stopping illegal, unreported and unregulated fishing  
FAO Technical Guidelines for Responsible Fisheries No. 9. Implementation of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (English and French versions)  
International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (English and French versions)  
FAO Technical Guidelines for Responsible Fisheries 1. Fishing operations  
FAO Technical Guidelines for Responsible Fisheries 1. Fishing operations . 1. Vessel monitoring systems (English and French versions)  
Recent trends in monitoring control and surveillance systems for capture fisheries  
*FAO Fisheries Technical Paper*. No. 415  
Guidelines for Developing an At-sea Fishery Observer Programme  
*FAO Fisheries Technical Paper*. No. 414  
The cost of monitoring, control and surveillance of fisheries in developing countries.  
*FAO Fisheries Circular*. No. 976. (Kieran Kelleher)  
Port State Control of Foreign Fishing Vessels (T. Lobach)  
WCPFC VMS discussion paper (Kelleher)  
FFA ALC installation guidelines  
WECAF status/ description  
WECAF MCS briefing 8<sup>th</sup> Session (2003)

### **3. Country reports on VMS and MCS provided on CD-ROM**

Antigua and Barbuda  
The Bahamas  
Barbados  
Belize  
Dominica  
Granada  
Jamaica  
St. Kitts and Nevis  
St. Lucia  
St. Vincent  
Suriname  
Trinidad and Tobago

### **4. Thematic presentations provided on CD-ROM**

The History of Monitoring, Control and Surveillance and the International Plan of Action on IUU Fishing. *Andrew R. Smith (FAO, Fisheries Department)*  
The Fisheries management in the Wider Caribbean region. *Bisessar Chakallal (FAO)*  
Vessel monitoring systems: the what, the why, and the how. *Robert Gallagher (FAO Consultant)*  
Institutional options for international VMS cooperation. *Kieran Kelleher (FAO Consultant)*  
Legal issues relating to VMS. *Andrew Rahaman, (Legal Counsel, Trinidad)*  
Putting VMS into practice: the devil is in the details. *Robert Gallagher (FAO Consultant)*  
Electronic logbooks and Real Time Reporting. *Robert Gallagher (FAO Consultant)*  
Satellite surveillance by Radar and the Visual Spectrum. *Andrew Smith (FAO)*  
Fisheries monitoring, control and surveillance in the EU. *Irene Farina (Spain)*  
The Regional Security System *Oliver Fredrick (Regional Security System Central Liaison Office)*

### **5. Commercial presentations provided on CD-ROM**

CLS Argos; BlueFinger; Inmarsat; Marimsys; Trackwell



### **PART III. INFORME DEL TALLER REGIONAL SOBRE SISTEMAS DE MONITOREO DE EMBARCACIONES PARA PAÍSES DEL ISTMO CENTROAMERICANO Y DEL CFARIBE HISPANOPARLANTES (Panamá, 3–5 de agosto de 2004)**

#### **Sesión de apertura**

III.1 La Sra. Vielka Morales, de la Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA), indicó que se sentía sumamente honrada en poder participar de este importante taller. Así mismo, indicó a los participantes que se podrá intercambiar conocimientos y experiencias sobre este tema tan sensitivo como son los sistemas de vigilancia de embarcaciones (SVE), el cual ha sido incluido como parte de las actividades que desarrolla la FAO para implementar el Plan de acción internacional para prevenir, desalentar y eliminar la pesca ilegal, no declarada y no reglamentada (PAI–Pesca INDNR). Agradeció el gesto de la FAO en apoyar los esfuerzos que coordina OSPESCA y delegar la organización de este taller, el cual fortalecerá los lazos de amistad y profesionalismo entre los países latinoamericanos. Ella indicó que este primer esfuerzo conjunto para promover el uso de los SVE como instrumentos adicionales para el manejo de la pesquerías, será un ejemplo para futuros trabajos por una pesca responsable en la región centroamericana y del Caribe. Finalmente, ella dió la bienvenida al país a todos los participantes, deseándoles los mejores éxitos a sus propósitos e indicando que OSPESCA será un aliado en la iniciativa de la pesca responsable.

III.2 El Sr. Andrew Smith, representando al Departamento de Pesca de la FAO, dió la bienvenida a los participantes y expresó que el Director General de la FAO ha asignado una alta prioridad a la implementación de los SVE para combatir la pesca ilegal no detectada y no regulada (INDNR). Expresó que este taller cuenta con el respaldo del FishCode, Programa de la FAO de Coparticipación Global para la Implementación del Código de Conducta para la Pesca Responsable y en particular el proyecto componente del FishCode para ayudar a combatir la pesca INDNR, el cual es financiado por los gobiernos de Noruega y los Estados Unidos de América. Él indicó que el propósito del taller era: (i) suministrar información sobre todos los aspectos de los SVE, (ii) sensibilizar a los países en el área de la región sobre la necesidad de cooperar en los SVE y (iii) permitir discusiones a un nivel técnico orientadas a lograr la activa cooperación en los SVE y SCV con consideración especial a las pesquerías de los estados insulares del Caribe.

III.3 El Sr. Smith proporcionó un breve panorama sobre el taller, el cual estaba apoyado por las discusiones del 25° período de sesiones del Comité de Pesca (COFI) y el 11° período de sesiones de la Comisión de Pesca para el Atlántico Centro Occidental (COPACO). Él manifestó que el taller estaba diseñado para suministrar un foro apropiado para una discusión abierta y detallada sobre cómo crear conciencia acerca de los beneficios de la tecnología SVE, como un instrumento adicional para la administración de pesquerías tanto a nivel nacional como regional. El Sr. Smith, al agradecer al gobierno de Panamá, a la Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA) y APIA (Asociación Atunera), por su apoyo en la organización del taller y su hospitalidad, expresó que el gobierno de Panamá siempre ha colaborado con la FAO en la implementación de actividades y proyectos regionales. Se mostró seguro de que la excelente relación entre el gobierno de Panamá y la FAO van a continuar creciendo en el futuro<sup>1</sup>.

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<sup>1</sup> El texto del discurso del Sr. Smith está disponible en el disco compacto-ROM que se adjunta.

III.4 Se adoptó el borrador de la agenda sin cambios significativos. La agenda del taller se muestra como Apéndice III.A y la lista de participantes como Apéndice III.B.

III.5 El Lic. Arnulfo Franco, Director General de Recursos Marinos y Costeros de la Autoridad Marítima de Panamá, fue nombrado Presidente y la Lic. Sonia Salaverría Vicepresidenta, representando a El Salvador como presidente pro-tempore de OSPESCA.

### **Presentación de documentos técnicos**

III.6 Fueron distribuidas en disco compacto-ROM, copias de las presentaciones técnicas del taller a cada delegación participante antes de su salida de Panamá<sup>1</sup>.

### ***Historia y futuro del SCV y el Plan de Acción Internacional sobre la Pesca Ilegal, No Declarada y No Reglamentada***

III.7 El Sr. Andrew Smith (FAO, Roma) efectuó una presentación de la “Historia y Futuro del SCV y el Plan de Acción Internacional sobre la Pesca Ilegal, No Declarada y No Reglamentada (PAI-INDNR)” enfocándose en el desarrollo y uso de los SVE como una herramienta de seguimiento, control y vigilancia (SCV). Las políticas modernas de las pesquerías se desarrollaron después del Acuerdo a la Convención de las Naciones Unidas sobre el Derecho del Mar (CNUDM) en 1982. Además de los beneficios económicos acumulados desde la extensión de la jurisdicción de pesquerías a las 200 millas, la CNUDM también asignó las obligaciones de los estados con respecto a la administración de las pesquerías. Estas responsabilidades significaban mayores requisitos para la vigilancia a través de embarcaciones y aviones de patrullaje. Concurrentemente con la CNUDM, la FAO convocó a una Consulta de Expertos sobre Seguimiento, Control y Vigilancia y donde se formuló una definición para el SCV.

III.8 En 1995, se elaboró y acordó el Código de Conducta para la Pesca Responsable de la FAO. Posteriormente dentro de este marco, se acordaron cuatro Planes de Acción Internacional (PAI) para abordar problemas pesqueros específicos. Uno de estos planes fue el Plan de Acción Internacional para Prevenir, Desalentar y Eliminar la Pesca Ilegal No Declarada y No Reglamentada (PAI-INDNR). Este PAI, se refiere específicamente a la nueva tecnología de los sistemas de vigilancia de embarcaciones pesqueras (SVE), el cual es el tema de este taller.

III.9 Las herramientas tradicionales de SCV son de obvia importancia, pero se reconoce que es necesario desarrollar nuevas y adicionales herramientas. El costo de operación de las embarcaciones y aviones de vigilancia es significativo, y las herramientas tradicionales podrían no ser apropiadas en algunas pesquerías. Emergiendo hace unos 15 años, en base al Sistema Mundial de Socorro y Seguridad Marítimos (SMSSM), se ha reconocido que la tecnología de combinar la información de posicionamiento de barcos con los sistemas de comunicación es una herramienta útil para localizar las embarcaciones más pequeñas. Durante los últimos 6 a 7 años, esta tecnología, generalmente conocida en las pesquerías como sistemas de vigilancia de embarcaciones (SVE), ha sido ampliamente adoptada en todo el mundo.

III.10 Los SVE tienen un costo relativamente razonable y su sinergia con otros instrumentos de SCV, agrega mucho a su eficacia en función del costo, como por ejemplo, en el caso de las embarcaciones de patrullaje y las inspecciones con objetivos específicos. Los SVE ayudan a los países del pabellón para controlar sus embarcaciones y suministra mejor comunicación de socorro y seguridad. El potencial para la transmisión de información operacional es un importante beneficio para la tripulación y operadores de las

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<sup>1</sup> En el disco compacto-ROM que se adjunta están disponibles todas las presentaciones técnicas.

embarcaciones. El Sr. Smith destacó la importancia de utilizar los SVE en conjunto con las herramientas tradicionales de SCV, por ejemplo, radar terrestre, patrullajes aéreos y de superficie, y enfatizó que los SVE debe ser considerados como un complemento en lugar de un reemplazo para las herramientas de SCV tradicionales.

III.11 El Sr. Smith indicó, que el Plan de Acción Internacional para Prevenir, Desalentar y Eliminar la Pesca Ilegal, No Declarada y No Reglamentada (PAI-INDNR) se desarrolló como una respuesta a las preocupaciones que las actividades de pesca ilegal estaban en aumento. El PAI proporciona una definición sobre lo que constituye la pesca INDNR y sugiere acciones que deben emprender los Estados del pabellón, Estados ribereños y Estados del puerto. Un SCV mejorado, es una de las respuestas a este problema creciente, y los SVE desempeñan un papel importante entre las herramientas de SCV. Una medida potente adicional para combatir la pesca INDNR, es el uso de documentos de comercio para rastrear los productos de pesca, desde su origen hasta su destino, permitiendo así, la exposición de pescado no reportado. También, se subrayó la importancia de la cooperación entre países y el sitio vital de las organizaciones regionales de ordenación pesquera (OROP) en el PAI.

III.12 El Sr. Smith informó que como consecuencia de la introducción exitosa de los documentos de comercio y su utilización por la Comisión Internacional para la Conservación del Atún del Atlántico (CICAA), algunos de los estados del pabellón de conveniencia (FOC) más importantes, han comenzado a equipar sus embarcaciones con SVE. El hecho de tener controles más estrictos sobre dichas embarcaciones, ha producido la “migración”, o “salto de bandera” de las embarcaciones hacia registros de pabellón de conveniencia (FOC) más tolerantes y una aparente reducción de la flota de pesca registrada con pabellón de conveniencia de 7 000 a 3 000 embarcaciones. Los Estados ribereños podrán exigir que las embarcaciones de las naciones de pesca en aguas distantes (DWFN), sean equipadas con transceptores (dispositivo transmisor-receptor) y que transmitan sus posiciones cuando estén dentro de la ZEE del Estado ribereño.

III.13 La Sra. Vielka Morales, Coordinadora de Apoyo Técnico de OSPESCA inició su presentación sobre dicha organización, definiendo su rol de coordinar la definición y seguimiento de las estrategias, políticas y proyectos relacionados con el marco normativo de alcance regional, que conduzcan al desarrollo sostenible de las actividades de una política pesquera común en el Istmo centroamericano. Indicó, que esta organización la conforman: (a) el consejo de ministros o autoridades responsables de las actividades pesqueras, como el más alto nivel de decisión y orientación de la organización; (b) el comité de viceministros de los ministerios o autoridades responsables de las actividades pesqueras, como el ente ejecutivo de la organización; (c) la comisión de directores generales de las actividades pesqueras y acuícolas, integrando la instancia científica y técnica de la misma. Cuenta con un comité consultivo conformado por: OECAP (Organización de Empresarios Centroamericanos de Acuicultura y Pesca) y CONFEPESCA (Confederación de Pescadores Artesanales de Centroamérica).

III.14 Ella presentó ideas para una estrategia regional de control y vigilancia de las actividades pesqueras utilizando tecnología satelital, brindando previamente los antecedentes con los que contaba la región, indicando que no es una tecnología desconocida. Como organización, se propuso conocer las normativas establecidas en otros países latinoamericanos, gestionar una asistencia técnica regional para armonizar las normativas de control y vigilancia, incorporar el tema de la vigilancia en los nuevos programas regionales. Como conclusión, propuso que a través de OSPESCA sería más práctico sumar los esfuerzos de control de los siete países a nivel regional y se podría lograr un proyecto futuro, donde esto sea contemplado.

### ***Vigilancia de embarcaciones pesqueras, el qué, el por qué y el cómo***

III.15 El Sr. Robert Gallagher (Consultor de la FAO) presentó una visión general técnica de los SVE, titulado “Vigilancia de embarcaciones pesqueras, el qué, por qué y cómo”. En su visión general, destacó la necesidad de especificaciones funcionales precisas, que cumplan con los requisitos de la administración de pesca. Definió los requisitos de los equipos y programas informáticos para el equipamiento a bordo, la transmisión y el centro de vigilancia de pesca (CVP).

III.16 Se presentó un escenario operacional para un sistema SVE en completo funcionamiento, ilustrando el análisis y confidencialidad de la información, así como el uso de datos del SVE para propósitos de control, administración de recursos, fines comerciales y para la seguridad en el mar. Se suministró información adicional, en respuesta a preguntas sobre confidencialidad, financiamiento del SVE, formas de compartir la información, fallas en los equipos y seguridad de datos (sabotaje o alteración oficiosa).

III.17 Se afirmó que la seguridad de la información es genérica, es decir, que los datos del SVE no tienen características especiales y que eran aplicables los métodos estándares de seguridad, por ejemplo, para prevenir la intrusión informática o violación de la confidencialidad por parte del personal. El Sr. Gallagher, se refirió al asunto de los costos a los proveedores, destacando que cada situación era especial y específica, requiriendo un análisis detallado en relación con los objetivos de control de pesquerías, recursos humanos y financieros disponibles y tener en cuenta los intereses de la industria y otras partes interesadas. Manifestó por ejemplo, que Islandia utiliza el sistema VHF para algunas embarcaciones. Una pregunta clave podría ser, si el VHF puede cubrir el área geográfica de interés.

### ***Opciones institucionales para los SVE en la región***

III.18 El Sr. Kieran Kelleher (Consultor de la FAO) describió un rango de opciones institucionales para los SVE que existen en otras regiones. Algunos ejemplos de cooperación internacional en SVE fueron proporcionados desde el Atlántico Nordeste (UE y CPANE) y el Pacífico Sur (FFA y la emergente WCPFC). Se destacaron las diferencias entre los acuerdos institucionales.

III.19 La legislación de la Comisión Europea, requiere la retransmisión automática de datos del SVE entre los Estados miembros de la UE, a medida que las embarcaciones navegan en aguas de un Estado miembro a otro. Cada uno de los Estados miembros, maneja su propio SVE y la retransmisión automática ocurre de forma “bilateral”, de conformidad con protocolos acordados. Los formatos de datos, entre otros, se especifican en la legislación de la Comisión Europea. Una obligación similar, tienen los Estados del pabellón de la UE, con respecto a las embarcaciones de su pabellón, que operan en áreas de alta mar reguladas por la Comisión de Pesquerías del Atlántico Nordeste (CPANE) y la Organización de Pesquerías del Atlántico Noroeste (NAFO). En el caso de estas comisiones, la posición del SVE y otros datos sobre capturas también se dirige (a través de CVP nacionales) a los Estados miembros, que tienen una presencia de embarcaciones de patrullaje en estas áreas de alta mar.

III.20 En contraste, el Organismo de Pesca del Foro (FFA) para el Pacífico Sur, suministra un servicio centralizado a los países del Pacífico Sur y aún se encuentran en discusión los arreglos para informar desde alta mar. Los arreglos del FFA sólo se aplican para embarcaciones atuneras de aguas distantes y embarcaciones de apoyo. Una embarcación abanderada en un Estado miembro del FFA, se considera como una embarcación de aguas distantes, cuando opera en las aguas de otro Estado miembro. El arreglo está basado en un acuerdo internacional. La Secretaría del FFA maneja y administra el SVE del FFA en nombre de los 17 Estados miembros del FFA. Los Estados miembros le han asignado a la FFA, la responsabilidad operacional claramente definida del SVE. Los requerimientos del



SVE, se encuentran en la legislación nacional de cada uno de los miembros de la FFA. Las condiciones para el otorgamiento de licencias de todos los miembros de FFA, con respecto a las embarcaciones de pesca extranjeras, cumplen con los Términos y Condiciones Mínimas Armonizadas (TCM) de acceso acordados por todos los Estados miembros del FFA.

III.21 Bajo los TCM para el acceso de embarcaciones pesqueras extranjeras, el SVE es un requisito para las embarcaciones extranjeras que pescan en las ZEE de los miembros del FFA. Existe una armonización en curso de los marcos legales de los países, en relación con asuntos legales complejos relacionados con el SVE. El SVE de la FFA, recibe informes de posición automáticos a una tasa predeterminada de 6 informes cada 24 horas. Esta frecuencia se puede aumentar a un informe cada 15 minutos y mediante sondeos, las embarcaciones pueden ser requeridas de proporcionar su posición en cualquier momento. Si una unidad de SVE de la embarcación (unidad transceptora también conocida como comunicador de posición automática, o ALC) se activa mientras está en alta mar, la FFA recibirá informes automáticos de la posición de esa embarcación. Los Estados Unidos han acordado que las embarcaciones de cerco con jareta de los EE.UU. operando bajo los términos del Tratado del Atún del Pacífico Sur suministren informes de posición automáticos al SVE del FFA en todo momento, mientras estas embarcaciones estén dentro del área del tratado, lo cual incluye áreas en alta mar.

III.22 El FFA focaliza en controlar las actividades pesqueras dentro de las ZEE de los países miembros, en tanto que el área de jurisdicción de la Comisión de Pesquerías del Pacífico Centro Occidental (WCPFC) abarca las áreas de alta mar y los Estados miembros incluyen países que pescan en aguas distantes. La WCPFC está actualmente examinando las opciones institucionales y técnicas para los SVE.

III.23 El Sr. Kelleher recordó que los instrumentos globales tales como la CNUDM, y los Acuerdos sobre Poblaciones de Peces y Cumplimiento (ver la presentación sobre los aspectos legales de los SVE) suministran una adecuada base legal internacional para implementar los SVE a nivel nacional e internacional. Él expuso brevemente los resultados de los talleres regionales sobre SVE previos, indicando que hubo apoyo unánime para la cooperación, no solamente en relación a los SVE, sino también en una agenda más amplia de asuntos del SCV, tales como registros de embarcaciones y la necesidad de comunicar información sobre la entrada y salida de embarcaciones hacia y desde las ZEE.

III.24 Con el fin de estimular un mayor debate, el Sr. Kelleher recomendó varios escenarios para la cooperación regional. Una convención o un acuerdo de cooperación de pesca entre los Estados ribereños podría ser considerado con disposiciones para SCV y SVE. Alternativamente, se podrían contemplar un conjunto de acuerdos bilaterales con protocolos específicos en áreas de interés particular, tales como los SVE, administración de pesquerías transfronterizas, o persecución (a través de la frontera). En tercer lugar, se podría considerar una combinación de enfoques multilaterales y bilaterales con arreglos bilaterales anidados dentro de una convención de cooperación multilateral de pesca. Los objetivos para la cooperación sobre SVE y SCV podrían incluir embarcaciones más grandes que tienen al atún como objetivo y especies altamente migratorias (HMS), embarcaciones que operan en pesquerías demersales compartidas tales como las pesquerías de camarón en la plataforma continental de Guayana, y objetivos genéricos tales como buques nodrizas y embarcaciones de transporte de pescado.

III.25 Las opciones para arreglos institucionales requieren un análisis cuidadoso, considerando la naturaleza de tareas múltiples del control y la vigilancia marina en la región y las numerosas instituciones multilaterales con mandatos y participantes variables. También se debe considerar la importancia relativa del SCV y SVE dentro de un contexto global de control y seguridad marina.

III.26 A solicitud de los Estados miembros, la FAO podría proporcionar apoyo limitado para dichas iniciativas y complementar los proyectos o iniciativas regionales existentes. La FAO

planea sostener un diálogo con los proveedores de servicios y realizar una Consulta de Expertos en Octubre de 2004 sobre formatos de datos y procedimientos utilizados en el SCV.

### ***Implementando el SVE, el problema está en los detalles***

III.28 El Sr. Robert Gallagher (Consultor de la FAO) en la presentación titulada “Implementando el SVE, el problema está en los detalles”, demostró cómo se diseña y construye un sistema SVE. Él enfatizó la necesidad de investigación y planificación cuidadosas para garantizar que el sistema SVE cumpla con las necesidades precisas de la administración de pesca y otros usuarios, tales como los mismos operadores de embarcaciones.

III.29 Destacó el amplio rango de las opciones técnicas y comparó los méritos relativos de los sistemas de Argos e Inmarsat C. Él confirmó que ambos sistemas podrían coexistir fácilmente en un sistema SVE nacional y que en el caso de los países en la región, donde las embarcaciones extranjeras despliegan ambos tipos de transceptores, un centro de vigilancia de pesca nacional (CVP) probablemente necesitaría la capacidad para procesar ambos tipos de señal. Él debatió sobre el uso del Inmarsat-D+ y sistemas terrestres tales como radio VHF y telefonía celular. Se presentaron los sistemas de Iridio y Globalsat de voz satelital y sus ventajas específicas con relación a la funcionalidad del SVE descrito.

III.30 Se enumeraron las opciones que confronta una agencia que adquiere un centro de vigilancia de pesca (CVP). Finalmente, se discutió la extensión del SVE a un nivel regional, incluyendo las opciones a tomar cuando se desarrolla y vincula al SVE nacional dentro del sistema regional. Se describieron las dos arquitecturas principales y fue mencionado el protocolo requerido para la cooperación regional.

III.31 En respuesta a las preguntas, el Sr. Gallagher indicó que, según su conocimiento, ningún grupo de países ha operado una configuración “estrella” para compartir información del SVE. Él indicó que los costos de la transmisión de datos VHF eran considerablemente más bajos que la transmisión satelital. Los costos de capital de radios VHF son de aproximadamente \$EE.UU. 200. El costo de una unidad terminal Argos es aproximadamente de \$EE.UU. 1 500 y una terminal Inmarsat-C podría costar aproximadamente \$EE.UU. 2 000. Además, los costos de transmisión utilizando VHF son generalmente bajos o insignificantes. Él volvió a enfatizar la importancia de una detallada evaluación de las necesidades, así como una planificación y diseño del sistema, especialmente si el SVE pesquero se va a integrar con las actividades de la guardia costera, aduanas o actividades de otras agencias.

### ***Asuntos legales relacionados con los SVE***

III.32 El Licenciado Arnulfo Franco hizo una presentación sobre “*Asuntos relacionados con los SVE*”. Se discutieron el régimen legal internacional pertinente y los asuntos legales de importancia para la implementación de los SVE. Debido a su crucial importancia con respecto a los deberes y derechos de los estados, se explicaron brevemente las disposiciones de la Convención de las Naciones Unidas sobre el Derecho del Mar de 1982, de relevancia para los SCV y SVE. Se presentaron las disposiciones pertinentes de otros instrumentos internacionales relacionados con pesquerías, incluyendo el Acuerdo de Poblaciones de Peces Transzonales y Peces Altamente Migratorios, el Acuerdo de Cumplimiento de la FAO, el Código de Conducta de la FAO para la Pesca Responsable y el Plan de Acción Internacional para la pesca INDNR desarrollado bajo el marco del Código.

III.33 Se indicó, que hay una serie de disposiciones que apoyan el uso de los SVE y exigen su implementación en aguas bajo jurisdicción nacional y en alta mar, cuando sea aplicable. También se resaltaron varias disposiciones sobre la recopilación e intercambio de datos pesqueros y sobre la cooperación regional y subregional en conservación y

administración pesquera, incluyendo el SCV. Se revisaron el alcance y las limitaciones de la jurisdicción de los Estados ribereños, jurisdicción de los Estados del pabellón y la jurisdicción de los Estados del puerto.

III.34 Fueron considerados varios asuntos legales. Entre los puntos de importancia para los países que están legislando en SVE se encuentran el asegurar: la constitucionalidad del nuevo enfoque; amplios poderes para propósitos del cumplimiento de la ley, incluyendo disposiciones para implementar los recientes instrumentos internacionales, asegurando la aplicación necesaria de la legislación pesquera, también fuera de las aguas nacionales; proporcionar poderes de regulación; un esquema de autorización para embarcaciones pesqueras; y la prescripción de delitos y sanciones. Otros asuntos legales importantes que fueron destacados incluyen, la seguridad y confidencialidad de la información del SVE, el uso de la información del SVE como evidencia, la importancia de fronteras marítimas y el problema complejo de determinar los derechos de propiedad sobre la información del SVE.

III.35 Finalmente, fueron presentadas las principales características de las regulaciones del SVE; esta perspectiva estuvo basada en un estudio comparativo de las regulaciones de EE.UU., Nueva Zelandia y Australia. El Sr. Franco, se basó en ejemplos de Trinidad y Tobago y la región para ilustrar los puntos claves y manifestó que las delimitaciones fronterizas marítimas no han sido acordadas entre muchos estados del Caribe.

III.36 De acuerdo con la ley internacional los Estados ribereños y del pabellón tienen la obligación de cooperar con las organizaciones regionales de ordenación pesquera (OROP) en relación con el suministro de información. Las OROP que requieren información del SVE incluyen: CCAMLR, FFA, CICA, NAFO y CPANE. Esta información con frecuencia se suministra en formularios de datos agregados, si se utiliza para fines científicos, sin embargo, las OROP tales como CPANE, exigen información del SVE desagregada, casi en tiempo real, para apoyar las operaciones de embarcaciones de patrullaje en áreas de alta mar bajo su mandato.

III.37 Se indicaron las diferencias entre la ley civil y penal en el uso de información del SVE, para asegurar los procesos judiciales. Se puede aplicar la imposición de la prueba a la inversa con relación a delitos civiles, por ejemplo, se podrá presumir que un barco presente en una zona protegida está pescando y es obligatorio que el operador del barco pesquero demuestre que el barco no estaba pescando. Por lo tanto, podrá ser más efectivo clasificar ciertos delitos como delitos civiles, si la información del SVE probablemente se va a usar como evidencia "única" de la violación. El Sr. Franco ilustró este punto, dando el ejemplo de O.J. Simpson, quien aunque fue absuelto del homicidio, fue encontrado culpable de "muerte por negligencia" (un cargo civil). Aunque el capitán o la tripulación de una embarcación pesquera extranjera pueden ser detenidos con propósitos de procesos jurídicos, o del debido proceso, de acuerdo con el artículo 73 de la CNUDM, el castigo corporal, por ejemplo la encarcelación, no podrá ser utilizada como una sanción para el capitán y la tripulación de una embarcación de pesca extranjera operando ilegalmente en la ZEE.

### ***Diarios de pesca electrónicos***

III.38 El Sr. Robert Gallagher (Consultor de la FAO) hizo una presentación sobre diarios de pesca electrónicos. Él definió un diario de pesca electrónico como una transmisión electrónica de captura y / o información remitida desde el mar. Él señaló como un sistema mejorado de SVE puede proporcionar una plataforma para la explotación de los registros electrónicos. Se dió una descripción del rango de posibles dispositivos de entrada de datos, concentrándose en equipos portátiles diseñados para facilitar la entrada de datos. Se suministró una lista de algunos de los esquemas de registro electrónico existentes alrededor del mundo y surgió una discusión sobre asuntos de implementación relacionados con los diarios de pesca electrónicos.

III.39 Sobre el tema de si los diarios de pesca electrónicos deben reemplazar a los actuales diarios de pesca en formato papel o si los diarios electrónicos deben ser considerados como complementos del diario en formato papel, se indicaron que factores como los costos involucrados en los diferentes tamaños de mensajes y los requisitos de puntualidad, frecuencia y precisión de la información sobre la captura y el esfuerzo, deben ser tomados en cuenta. Estos factores, están a su vez ligados a la precisión de los datos de la captura a ser transmitidos. La implementación generalizada de diarios de pesca electrónicos tendría las ventajas, entre otras, de evitar la necesidad de incorporar las hojas de registros en las bases de datos de las computadoras (ordenadores), una mejor precisión en los diarios de pesca como resultado de las comprobaciones de verificación de datos en su origen y la presencia de un registro electrónico de tiempo que podría facilitar la imposición de la ley.

III.40 Se indicó que mientras muchas pesquerías exigían información oportuna para la administración, la información del esfuerzo y la captura en tiempo real o casi en tiempo real, probablemente no sería requerido para la administración de muchas de las pesquerías de la región. Se indicó que los diarios de pesca, ya sean electrónicos o en redactados a la mano, constituyen un estimación de la captura, mientras que los pesos de pescado desembarcado son una medida exacta de la captura. El error promedio de la contabilidad de las capturas en cajas o en el copo de la red puede ser tan grande como el 20%. También es necesario el muestreo de las capturas para complementar o corregir la información del diario de pesca, con información precisa acerca de la composición de la captura. En las pesquerías de atún en aguas distantes, los emolumentos tienden a estar indirectamente relacionados con la captura reportada, reduciendo así el incentivo en las embarcaciones individuales para falsificar la información de la captura.

III.41 En respuesta a las consultas, el Sr. Gallagher sugirió que los pescadores no deben necesariamente percibir el diario de pesca electrónico como un agobio, sino como una herramienta que agrega valor a través de la trazabilidad, o reemplaza parte de un sistema contable personal, o diario de pesca. Los participantes indicaron que en muchos países y pesquerías, ni siquiera existen diarios de pesca en formato papel y generalmente entre pescadores el conocimiento sobre informática es bajo. Sin embargo, aunque los diarios de pesca electrónicos podrían ser prematuros para muchas pesquerías en la región, podrían ser apropiados para algunas embarcaciones más grandes que tienen como objetivo poblaciones acuícolas de alto valor.

### ***Observación satelital de embarcaciones pesqueras y desarrollos tecnológicos recientes***

III.42 El Sr. José Navarro, (Consultor FAO) Subdirector General de Inspección Pesquera de la Secretaría General de Pesca Marítima de España, puso al día a los participantes sobre las nuevas tecnologías de vigilancia emergentes.

III.43 La tecnología de vigilancia satelital de embarcaciones pesqueras está desarrollándose a través de un proyecto financiado por la Dirección de Pesca y Asuntos Marítimos de la Comisión Europea y ejecutado por el Centro Europeo Conjunto de Investigación en Ispra, Italia. Es un proyecto complejo que involucra a 13 compañías comerciales y a varios centros de vigilancia de pesca (CVP) nacionales. Islandia, Noruega y la Comisión de Pesquerías del Atlántico Nordeste están incluidas en el proyecto, debido a las pesquerías compartidas involucradas.

III.44 La primera fase del proyecto ha estado tratando los problemas de la recolección y el procesamiento oportuno de las imágenes satelitales, a fin que se puedan presentar ante los CVP en un formato, el cual les fuera útil a ellos. Se han obtenido imágenes de diferentes áreas, cada una con características diferentes (por ejemplo, áreas con niveles altos y bajos de tráfico de barcos mercantes). Los tiempos de descarga de datos desde el satélite y la transferencia de datos entre las diferentes instalaciones no permitían respuestas en tiempo

real, sin embargo, estos tiempos se han reducido significativamente durante el curso del experimento. Se espera que centros de vigilancia de pesca seleccionados de la UE comenzaran a usar la información de vigilancia satelital en forma regular en el 2004.

III.45 El objetivo del proyecto IMPAST (Improving fisheries monitoring through integrating passive and active satellite-based technologies”) es conseguir la capacidad operativa de la detección por satélite en el control de pesca, así como automatizar el proceso de la obtención de datos útiles para el control a partir de las imágenes de radar SAR. Entre 2002 y 2004 se ha avanzado en ambos aspectos; el tiempo medio transcurrido desde la obtención de la imagen hasta la entrega de los datos operativos a los centros de seguimiento por satélite (CSP) se redujo a 40 minutos; por otra parte, la detección de embarcaciones experimenta una importante mejora con el programa SUMO, que los discrimina automáticamente con un alto porcentaje de éxitos. No obstante, se ha observado que es necesario progresar en la eliminación de los datos falsos, a veces a consecuencia de las circunstancias meteorológicas, especialmente el hielo. El tráfico marítimo también representa un inconveniente para las aplicaciones de control pesquero. Por último también es necesario mejorar en la reducción del tiempo de antelación necesario para solicitar las imágenes a las operadoras del satélite.

III.46 La Organización Marítima Internacional (OMI) introdujo recientemente medidas sobre el terrorismo marino y ha enmendado la Convención Internacional sobre Seguridad de la Vida Humana en el Mar (SOLAS) para ejecutar las mismas. Esto va a tener una gran influencia en todas las embarcaciones, incluyendo las embarcaciones pesqueras. Los sistemas de identificación automática (AIS) deben ser obligatorios para las embarcaciones de más de 300 toneladas y los registradores de datos de navegación (VDR) serán obligatorios para todas las embarcaciones de más de 3 000 toneladas en el 2004, en vez del 2008 como fue originalmente planeado. Ambas tecnologías se pueden utilizar para una mayor efectividad del SCV. Se espera que los SVE y la vigilancia satelital, conducirán a sistemas integrados de control marítimo con la participación de diferentes agencias nacionales.

### ***Seguimiento, control y vigilancia de pesquerías en la UE***

III.47 El Sr. José Navarro presentó un panorama general de las experiencias de la Unión Europea con el SCV. La Política Pesquera Común de la UE tiene cuatro elementos claves: recursos, estructuras, mercados y relaciones internacionales.

III.48 Más de 90 000 embarcaciones de la Unión Europea pescan en las aguas de los Estados Miembros, en aguas de terceros países y en áreas bajo la jurisdicción de organismos regionales para ordenación pesquera tales como NAFO, CPANE, CICAA, etc.. El ámbito de aplicación de la Política Pesquera Común de la UE abarca a todo el territorio y las aguas comunitarias (que son las aguas sujetas a la jurisdicción de los Estados Miembros), así como a todas las embarcaciones comunitarias donde quiera que operen y a sus nacionales, sin perjuicio de la responsabilidad última del Estado de pabellón. La Comisión Europea (CE) controla la implementación de la legislación y ayuda a coordinar la administración de las pesquerías. El principio general es el derecho de acceso de todas las embarcaciones pesqueras de los Estados Miembros a las aguas y recursos comunitarios.

III.49 Para las principales poblaciones de peces se fijan anualmente totales admisibles de capturas (TAC) que se distribuyen en cuotas nacionales para los Estados Miembros. Se pueden establecer planes plurianuales de gestión o de recuperación, para las poblaciones que se encuentran dentro o fuera de los límites biológicos de seguridad, respectivamente. Las medidas técnicas abarcan la regulación de las artes de pesca, el tamaño mínimo de las especies, las zonas restringidas o vedadas, etc.

III.50 Hay varias dimensiones estrechamente relacionadas con el sistema de control: el registro de las embarcaciones pesqueras, el sistema de concesión de licencias, la

preparación de informes de captura, SVE, así como con la vigilancia en el mar, control de puerto y controles en el mercado. Los SVE ayudan a regular el esfuerzo de pesca a través de un control de “días en el mar”. Los diarios de pesca, las declaraciones de desembarque por parte de los pescadores y notas de venta preparadas por los compradores de pescado proporcionan controles adicionales.

III.51 La UE implementa una gama de regulaciones de organizaciones de pesquerías regionales tales como CICAA y CCAMLR, incluyendo sus esquemas de documentación de captura. De particular importancia es el registro en España de capitanes de pesca, que trabajan en barcos abanderados en terceros países. Estos capitanes deben comunicarle a las autoridades de España que van a emprender dicho trabajo. Por último, se informó sobre las nuevas medidas de cooperación entre los Estados Miembros y la creación de una Agencia Comunitaria de Control de la Pesca.

### ***Experiencia en Chile con sistemas de vigilancia satelital para el seguimiento, control y vigilancia de la actividad pesquera***

III.52 El Sr. Alejandro Covarrubias, (Consultor de la FAO) Director de Fiscalización e Inspección Pesquera del Servicio Nacional de Pesca de Chile, presentó la “Experiencia en Chile con Sistemas de Vigilancia Satelital para el Seguimiento, Control y Vigilancia de la Actividad Pesquera”.

III.53 La Ley N° 19.521 estableció la obligación a todos los armadores de embarcaciones industriales matriculadas en Chile de instalar a bordo de las embarcaciones y mantener en funcionamiento un dispositivo de posicionamiento automático en el mar. Por su parte, el D.S. (MINECON) N° 139 de 1998, estableció los procedimientos para la implementación y características técnicas del sistema de posicionamiento automático en el mar.

III.54 El sistema debe ser utilizado en actividades pesqueras o pesca de investigación, dentro o fuera de las aguas jurisdiccionales. Similar obligación deberán cumplir los armadores de embarcaciones pesqueras de pabellón extranjero que sean autorizados a recalar en puertos del país. El sistema y tecnología garantiza la transmisión automática de un reporte básico actualizado de la embarcación, sirve para la administración de los recursos y para verificar el cumplimiento de la normativa vigente. La administración está a cargo de la Armada de Chile (DGTM y MM) y la fiscalización del sistema a cargo Sernapesca. La información obtenida tiene el carácter de reservada, es un instrumento público y constituye plena prueba para acreditar la operación de una embarcación en una área determinada. El programa informático utilizado es el Bridge Vigía, que se orienta al seguimiento de embarcaciones, áreas de pesca y sistema de seguridad, entre otras.

### ***Red Internacional para el Seguimiento, Control y Vigilancia de la Actividad Pesquera***

III.55 El Sr. Alejandro Covarrubias, Secretario Ejecutivo del comité que administra la Red Internacional, presentó una exposición relativa a las actividades de la Red Internacional de cooperación para el seguimiento, control y vigilancia de la actividad pesquera.

III.56 Junto con el rápido desarrollo de las operaciones pesqueras en aguas distantes, se comenzó a observar una creciente actividad ilegal, en el sentido de operar embarcaciones con pabellones de conveniencia y transgrediendo las regalías establecidas al amparo de acuerdos internacionales y regionales. Los países reconocieron la responsabilidad de los Estados en el manejo de pesquerías en que sus nacionales estaban comprometidos y/o beneficiados. Por otra parte, a los Estados les interesa mantener el desarrollo sustentable de los recursos marinos en el largo plazo, como alternativa de crecimiento de sus economías. Junto con el desarrollo de flotas de aguas distantes, se ha intensificado el rango y magnitud de las actividades de pesca dentro de las aguas costeras y en alta mar, provocando un fuerte impacto de pesca en las especies no objetivo y en el ambiente marino.

Los costos de asegurar el cumplimiento de las medidas de administración y conservación por parte de los barcos extranjeros y domésticos, han motivado a los Estados para establecer medidas más restrictivas en las operaciones de pesca. Así mismo, los evidentes beneficios de la coordinación y cooperación entre los países permiten inferir que es posible una aplicación en el seguimiento, control y vigilancia (SCV) de las pesquerías, lo que ayudaría a colectar y compartir la información del SCV, y una implementación más efectiva y eficiente de las leyes nacionales, regionales e internacionales. Los países participantes en la Conferencia Internacional de Monitoreo, Control y Vigilancia de Pesquerías, realizada en Santiago de Chile, el 25 y 26 de enero de 2000, indicaron su intención de crear una red internacional para coordinar el cumplimiento de las leyes sobre las pesquerías.

III.57 Esta iniciativa, propuesta por Chile, tiene su sustento en los numerosos acuerdos y protocolos internacionales, los cuales hacen énfasis en la necesidad de reforzar el Seguimiento, Control y Vigilancia (SCV) de la actividad pesquera a nivel mundial, como medio para prevenir, evitar y eliminar la pesca ilegal, no declarada y no reglamentada. La red internacional del SCV es un acuerdo de las organizaciones / instituciones nacionales encargadas de actividades del SCV relacionadas a pesquerías, quienes han sido autorizadas por sus países, para coordinarse y cooperar a fin de impedir, disuadir y eliminar la pesca INDNR.

III.58 Existen numerosas disposiciones internacionales que señalan la necesidad de coordinación entre los Estados a fin de combatir la pesca ilegal. El objetivo de la Red Internacional de SCV es mejorar la eficiencia y eficacia de las actividades de SCV de pesquerías. Implementar mecanismos de cooperación, coordinación, recolección e intercambio de información entre las organizaciones / instituciones responsables de SCV relacionadas a pesquerías.

III.59 La participación en la Red Internacional de SCV será voluntaria. Las instituciones / organizaciones responsables de SCV participarán y contribuirán dentro de los límites de sus recursos actuales.

III.60 Las instituciones / organizaciones responsables del SCV deberán cooperar en la recolección, intercambio y transmisión de información, dentro de los límites de las leyes nacionales y conforme a las convenciones de cada Estado en lo referente a la confidencialidad y protección de información privada, privilegiada y restringida.

III.61 Sujeto a las leyes de libertad de información y privacidad que rijan a cada participante, la información que sea posible proporcionar en respuesta a una solicitud se manejará como si ésta se hubiese dado o proporcionado de manera confidencial y se mantendrá resguardada a menos que el participante que haya proporcionado dicha información permita lo contrario. De conformidad con su legislación nacional, la siguiente información deberá ser recolectada y mantenida por cada institución / organización para facilitar la coordinación y cooperación en SCV. Los costos inherentes a la administración / operación de la Red Internacional de SCV, serán asumidos por quien ejerza la administración.

III.62 El comité se inició en el 2000 con los representantes de Perú, los Estados Unidos de America, la Unión Europea (15), Australia y Chile, participando además la FAO como observador. Actualmente, el comité está integrado además por los siguientes países: Canadá, Ecuador, España, Organismo de Pesca del Foro (para el Pacífico Sur), Japón, México, Noruega, Nueva Zelanda, Sudáfrica y la Federación de Rusia. Se encuentran en etapa de solicitud los siguientes países: Nigeria, Namibia, Mauricio, Panamá y Ghana.

### ***El uso de anzuelos en palangres para el atún***

III.63 El Dr. Martín Hall, del CIAT, expuso la presentación "Uso de anzuelos en palangres para el atun" (esta presentación técnica fue expuesta luego de las discusiones en sesión plenaria de las conclusiones de los grupos de trabajo).

## Informes de los países

III.64 Los participantes de los países centroamericanos informaron al taller sobre la situación de sus pesquerías, los SCV y SVE en sus países respectivos<sup>1</sup>.

III.65 La lista de los países participantes fue la siguiente:

- Brasil (no asistió al taller)
- Colombia
- Costa Rica
- Cuba
- El Salvador
- Guatemala
- Honduras
- Nicaragua
- Panamá
- República Dominicana
- Venezuela

## Programa paralelo: sesiones informativas comerciales

III.66 Los representantes de CLS Perú, BlueFinger y Marimsys suministraron sesiones informativas sobre sus productos y servicios, incluyendo detalles del desempeño técnico. Los participantes tuvieron la oportunidad de intercambiar información con los representantes comerciales en relación con sus pesquerías respectivas y requerimientos del SVE.<sup>2</sup> Se enfatizó que la FAO no necesariamente propugnaba el uso de cualquiera de estos servicios comerciales y que sus presentaciones fueron suministradas solamente para fines de información, como ha sido suministrada información similar en otros talleres regionales.

## Informe de los grupos de trabajo

III.67 Se conformaron tres grupos de trabajo con idénticos términos de referencia:

- **Pregunta 1.** ¿Es necesaria la cooperación en SVE en la región de América Central y de ser así, cuáles serían las razones?
- **Pregunta 2.** ¿Cuáles son las principales pesquerías o flotas para las cuales la cooperación en SVE pudiera resultar más beneficiosa?
- **Pregunta 3.** ¿Cuál es la naturaleza de la cooperación en SVE / SCV que se requiere? Liste los tipos de cooperación.
- **Pregunta 4.** ¿Cuáles son los foros regionales más apropiados para conseguir un programa de acción sobre SVE o SCV? ¿Qué acciones se deben emprender y por quién?

III.68 Cada grupo presentó los resultados de sus deliberaciones en la sesión plenaria. Las conclusiones se resumen a continuación.

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<sup>1</sup> Los informes nacionales están disponibles en el disco compacto-ROM que se adjunta y así mismo, copia de dichos informes fueron suministrados a las delegaciones en disco compacto-ROM.

<sup>2</sup> Se proporcionaron copias de las presentaciones comerciales y los panfletos de información complementarios en disco compacto-ROM a las delegaciones de los países participantes.



## **Grupo de Trabajo 1<sup>1</sup>**

III.69 Pregunta 1. Se considera que si es necesario y fundamental por las siguientes razones:

- Cooperación para la búsqueda de financiamiento a los gobiernos para que implementen el SVE.
- Cooperación para la implementación regional del SVE, procurando economías de escala.
- Cooperación para el control regional sobre la pesca ilegal y la pesca irresponsable.
- Cooperación para mejorar la administración de pesquerías en zonas limítrofes.

III.70 Pregunta 2. Idealmente todas las pesquerías y todas las flotas. Se puede iniciar con la flota industrial y las pesquerías transzonales, las reguladas por organismos internacionales y las flotas con banderas extranjeras que operen en el país. Para este último caso, se deberá solicitar que sea informado, por medio escrito, cada día de la ruta ejecutada por esa flota. En el caso de la flota artesanal, se puede iniciar con el control a través del uso de radar y transmisores.

III.71 Pregunta 3. La cooperación financiera, es requerida para implementar el sistema en cada país. Se podría solicitar a dicho apoyo los siguientes organismos: BID, Banco Mundial y la Unión Europea. La cooperación técnica es requerida en lo que se refiere a la definición del alcance de los programas informáticos a implementar, así como en la estandarización de leyes, reglamentos y sanciones comunes.

III.72 Pregunta 4. Foros regionales: OSPESCA para Centroamérica; OLDEPESCA para los países sudamericanos; CARICOM para el Caribe y COPACO/FAO.

## **Grupo de Trabajo 2<sup>2</sup>**

III.73 Pregunta 1. El SVE se considera necesario tanto en el ámbito de la pesca ilegal, como para el control de las flotas nacionales.

- La cooperación es fundamental para conseguir un sistema de futuro. Se debe establecer en el ámbito regional un compromiso sobre objetivos del SVE, y las condiciones mínimas, que permitan una utilización regional.
- Asimismo se considera muy conveniente una asistencia común en el ámbito regional para la puesta en marcha de los SVE nacionales.
- El SVE también es necesario para la cooperación científica.

III.74 Pregunta 2:

- Lucha contra la pesca ilegal realizada por foráneos en la zona centroamericana.
- Control de la actividad pesquera (legal o no) realizada por las flotas nacionales en aguas de otros países centroamericanos (por ejemplo, embarcaciones de Honduras pescando ilegalmente langosta y caracol en Jamaica; flota camaronera de Venezuela y Colombia).

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<sup>1</sup> Participantes: Jacobo Blanco Racedo (Colombia); Juan Carlos Vargas (Costa Rica); Jeryes Salvador Sedan K. (Honduras); Arnele Z. de Franco (Nicaragua); Sonia M. Salaverría (El Salvador); Alba Estela Melo Feliz (República Dominicana); José H. Jorge Ríos (Venezuela); Elan Shwartz (MARIMSYS); Robert Gallagher (FAO); Kieran Kelleher (FAO).

<sup>2</sup> Participantes: Hernando Restrepo L. (Colombia); Maria H. Obregón López-Sivero (Cuba); Fraterno Díaz (Guatemala); Miguel Ángel Suazo Sánchez (Honduras); Danilo Rosales P. (Nicaragua); Zoila Altagracia Reyes (República Dominicana); César Villarán (CLS); Giovanni Villarroel R. (MARIMSYS); José Navarro G. (FAO).

- Pesquerías del atún, tiburón y dorado.

III.75 Pregunta 3. Elaboración de una plataforma básica de despegue.

- Analizar los aspectos legales, técnicos y económicos.
- Intercambio de información científica en el comportamiento de las pesquerías comerciales comunes.

III.76 Pregunta 4:

- OSPESCA, bajo el tratado marco regional de la pesquería centroamericana, y siguiendo las orientaciones de la FAO.
- Acciones: las indicadas en 1) y 3).
- Promover el compromiso entre los países de la región sobre objetivos comunes del SVE.
- Promover el compromiso entre los países de la región para elaborar una plataforma de despegue básico del SCV.

### **Grupo de Trabajo 3<sup>1</sup>**

III.77 Pregunta 1. Si, es necesaria, dado que existe una situación pesquera que requiere atención conjunta, relacionada con la operación de la flota extranjera en aguas jurisdiccionales de los países centroamericanos.

III.78 Pregunta 2. Se requiere la cooperación para el control de la flota atunera nacional y extranjera y la flota palangrera extranjera.

III.79 Pregunta 3. Los temas principales en los cuales se requiere un nivel de cooperación son los siguientes:

- (i) Asistencia técnica en la planificación y desarrollo de estrategias del SVE; (ii) asistencia técnica para establecer un marco legal común dirigido a la administración del SVE.
- (i) Asistencia y capacitación de personal la administración del SCV; (ii) asistencia y capacitación de personal en la operación y estrategias de análisis del SCV.
- (i) Asistencia en gestión pesquera; (ii) asistencia para el desarrollo de los planes de acción nacionales (PAN) sobre pesca INDNR.

III.80 Pregunta 4. El foro regional que reúne tanto al ámbito político como técnico, en los países del área, es el Sistema de la Integración Centroamericana (SICA), a través de OSPESCA. Otra alternativa podría ser OLDEPESCA la cual incluye a Venezuela, Colombia y Brasil.

### **Resumen global de las preguntas formuladas**

III.81 Pregunta 1. Existe coincidencia en los grupos respecto de la necesidad de contar con asistencia y cooperación en el tema del SVC y del SVE, lo anterior, se justifica dado que existen situaciones, de tipo pesqueras, que requieren de una atención conjunta. El objetivo sería el prevenir y eliminar la pesca ilegal realizada por foráneos en la zona centroamericana.

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<sup>1</sup> Participantes: Ana Lorena Salas (Costa Rica); Wilberto Rodríguez (El Salvador); María Olga Menéndez (Guatemala); Jairo A. Fuertes Barahona (Nicaragua); David Silva (Panamá); Blanca Bottini Rojas (Venezuela); Ian Searle (BlueFinger); Alejandro Covarrubias (FAO); Andrew Smith (FAO).

III.82 Se considera también necesario y fundamental la cooperación, para la búsqueda de financiamiento para la implementación de los SVE, procurando economías de escala.

III.83 También existe coincidencia en la necesidad de enfrentar el control regional sobre la pesca ilegal, para mejorar la administración de pesquerías en zonas limítrofes

III.84 Pregunta 2. Idealmente todas las pesquerías y todas las flotas de cada país, no obstante, se sugiere dar prioridad los temas más relevantes y que colaboren en la administración pesquera regional de cada país.

III.85 La cooperación debiera estar dirigida a prevenir y eliminar la pesca ilegal, relacionada con la operación de la flota nacional y extranjera, que opera en aguas jurisdiccionales de los países hispanohablantes de Centroamérica y del Caribe y en aguas distantes.

III.86 Se requiere la cooperación para el control de la flota atunera nacional, extranjera y palangrera extranjera.

III.87 También es necesario el control de la actividad pesquera, legal o no, realizada por las flotas nacionales en aguas jurisdiccionales propias o de otros países.

III.88 Las pesquerías más relevantes donde es necesario acrecentar el control son:

- Langosta y caracol
- Flota camaronera
- Pesquerías del atún, tiburón y dorado

III.89 Se puede iniciar con la flota industrial, las pesquerías transzonales y altamente migratorias, las reguladas por organismos internacionales y las flotas extranjeras que operen en el país.

III.90 Pregunta 3. Entre los aspectos más relevantes que se podrían incorporar en una cooperación se menciona el sistema SVE.

III.91 La asistencia debería orientarse a la identificación de los aspectos técnicos del sistema que permitan estructurar los objetivos de su implementación.

III.92 Se debe establecer a nivel regional un compromiso sobre objetivos del SVE, y las condiciones mínimas, que permitan una utilización regional

III.93 El sistema SVE debería ser enfocado no sólo en el SCV de la actividad, sino también en tareas de administración de pesquerías y en investigación pesquera. También se deberá incluir la asistencia regional en el ámbito jurídico, destinado a crear un marco legal para su administración efectiva.

III.94 Los temas principales en los cuales se requiere un nivel de cooperación son los siguientes.

III.95 SCV:

- Asistencia técnica en la planificación y desarrollo de estrategias de SCV.
- Asistencia técnica para establecer un marco legal común dirigido a la administración del SCV.

III.96 SVE:

- Asistencia y capacitación de personal la administración del SVE.
- Asistencia y capacitación de personal en la operación y estrategias de análisis de situaciones del SVE.
- Asistencia técnica, en lo que se refiere a la definición de los programas informáticos a implementar,

- Asistencia técnica para establecer un marco legal común dirigido a la administración del SVE.

### III.97 Otras areas.

- Asistencia en gestión pesquera.
- Asistencia para el desarrollo de los planes de acción nacionales (PAN) sobre pesca INDNR.
- Asistencia financiera, para implementar el sistema en cada país. Se podría solicitar dicha asistencia a los siguientes organismos: BID, Banco Mundial e Unión Europea.
- Intercambio de información científica en el comportamiento de las pesquerías comerciales comunes.

III.98 Pregunta 4. Todos los grupos coinciden en señalar que los foros regionales más apropiados para trabajar los temas de SCV y SVE, son aquellos que reúnen tanto al ámbito político como técnico, en los países del área, que es el Sistema de la Integración Centroamericana (SICA), a través de OSPESCA y siguiendo las orientaciones de la FAO.

III.99 Otras alternativas regionales podrían ser a través de OLDEPESCA para el cono sur, la cual incluye a Venezuela, Colombia y Brasil, así como los foros regionales de CARICOM para el Caribe y COPACO/FAO.

### **Cierre de la sesión**

III.100 El taller aprobó las conclusiones de los grupos de trabajo y acordó continuar las deliberaciones a nivel nacional. Las conclusiones serán remitidas por los países participantes a los foros internacionales oportunos, para su consideración.

III.101 Las delegaciones asistentes al taller sugirieron a la FAO que investigue la posibilidad de iniciar un programa de cooperación técnica (PCT) sobre la implementación del SVE para los países hispanohablantes del istmo centroamericano.

III.102 Se aprobó la propuesta de informe del taller.

## APÉNDICE III.A

### PROGRAMA/AGENDA

#### Martes 3 de agosto

9:30 - 10:00	Apertura del taller	Salón Los Girasoles
	Palabras de bienvenida	Vielka Morales Q. Coordinadora de Apoyo Técnico, OSPESCA
	Importancia del taller SVE	Andrew Smith Oficial de Tecnología Pesquera Departamento de Pesca FAO
	Inauguración por la Autoridad Nacional	Arnulfo Franco Director General Recursos Marinos y Costeros Autoridad Marítima de Panamá
10:00 - 10:30	<b><i>Receso para café</i></b>	
10:30 - 11:45	Panorama general del SVE y su rol en la ordenación de las pesquerías y en la implementación del Plan de Acción Internacional INDNR a nivel global.	Andrew Smith - FAO
11:45 - 12:15	Ideas para una estrategia regional de control y vigilancia de las actividades pesqueras usando tecnología satelital.	Vielka Morales - OSPESCA
12:15 - 14:00	<b><i>Receso para almuerzo</i></b>	
14:00 - 14:45	Aspectos técnicos del SVE (Idea general).	Robert Gallagher - FAO
14:45 - 15:30	Opciones institucionales para el SVE en la región.	Kieran Kelleher - FAO
15:30 - 15:45	<b><i>Receso para café</i></b>	

15:45 - 17:30	Aspectos técnicos y administrativos importantes para la creación de capacidad nacional o regional para el SVE y de control satelital.	Robert Gallagher - FAO
17:30 - 18:00	Diarios de pesca electrónicos e información en tiempo real en SVE.	Robert Gallagher - FAO
18:00	Cierre de la sesión.	
18:30 - 20:00	<b>Cocktail de bienvenida</b>	Bar del hotel

### **Miércoles 4 de agosto**

8:45 - 9:30	El Sistema europeo SCV	José Navarro – FAO
9:30 - 10:15	El SCV chileno y la Red MCV.	Alejandro Covarrubias - FAO
10:15 - 10:30	Receso para café	
10:30 - 11:45	Aspectos legales asociados al SVE.	Arnulfo Franco – Director Gral. Recursos Marinos, AMP
11:45 - 12:30	Control satelital por radar y espectro visual Spectrum	José Navarro – FAO
12:30 - 14:00	<b>Receso para almuerzo</b>	
14:00 - 14:15	Brasil	Karim Bacha
14:15 - 14:30	Colombia	Hernando Restrepo
14:30 - 14:45	Costa Rica	
14:45 - 15:00	Cuba	María H. Obregón
15:00 - 15:15	El Salvador	Sonia Salaberría
15:15 - 15:30	Guatemala	Fraterno Díaz
15:30 - 15:45	<b>Receso para café</b>	
15:45 - 16:00	Honduras	Salvador Zedan
16:00 - 16:15	Nicaragua	Danilo Rosales
16:15 - 16:30	Panamá	David Silva
16:30 - 16:45	República Dominicana	Alba Estela Melo

16:45 - 17:00	Venezuela	
17:00 - 17:15	Compañía CLS – Perú	Cesar Villarán
17:15 - 17:30	Compañía Marinsys – Chile	Giovanni Villarroel
17:30 - 17:45	Compañía Bluefinger	Ian Searle
18:00	Cierre	

***Jueves 5 de agosto***

8:45 - 10:20	Discusión de la propuesta de estrategia.	
10:20 - 10:35	Receso para café.	
10:35 - 12:30	Continuación de la discusión de la propuesta de estrategia.	
12:30 - 13:30	Receso para almuerzo.	
13:30 - 15:30	Preparación del informe del taller.	
15:30 - 16:30	Presentación del borrador de informe del taller.	
16:30 - 17:15	Aprobación del informe del taller.	
17:15 - 17:30	Cierre del taller.	
19:00 - 21:00	Cena de clausura.	Restaurante Golden Unicorn

## APÉNDICE III.B

### LISTA DE PARTICIPANTES

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## **PART IV. REPORT OF THE SOUTHEAST ASIA VESSEL MONITORING SYSTEMS WORKSHOP (Bangkok, Thailand, 6–8 October 2004)**

### **Opening session**

IV.1 Mr Derek Staples, Regional Fisheries Officer welcomed the participants. He outlined the purpose and context of the Workshop and thanked all who contributed to its preparation.

IV.2 Mr Hiroyuki Konuma, Deputy Regional Representative, speaking on behalf of Mr He Changhui, Assistant Director-General and FAO Regional Representative for Asia and the Pacific, welcomed the participants and noted that the Director General of FAO had placed a high priority on the implementation of VMS for combating illegal, unreported and unregulated (IUU) fishing. Mr Konuma provided a brief background to the Workshop, which follows up decisions of the 25<sup>th</sup> Session of COFI and is part of FAO's efforts to implement the International Plan of Action to combat IUU fishing. He noted that the Workshop was designed to provide an appropriate forum for an in-depth and open discussion on how to create an awareness of the benefits of VMS as an additional instrument for the management of fisheries at both national and regional levels.<sup>1</sup>

IV.3 Dr Andrew Smith, representing the FAO Fisheries Department, Rome, stressed the importance of the Workshop's theme and noted that the meeting is supported by FishCode, FAO's umbrella Trust Fund programme for the Implementation of the Code of Conduct for Responsible Fisheries" (CCRF) and in particular by the FishCode component project to help combat IUU fishing. He indicated that the purpose of the Workshop was to: (i) provide information on the key aspects of VMS; (ii) sensitize the countries in the region area on the need for cooperation on VMS; and (iii) enable discussions at a technical level leading to active cooperation on VMS and MCS with particular regard to the fisheries of the countries of southeast Asia.<sup>2</sup>

### **Adoption of Agenda**

IV.4 The draft agenda was adopted by participants without substantive change. The Workshop Agenda is shown as Appendix IV.A and the list of participants as Appendix IV.B.

IV.5 Mr Pirochana Saikliang of the Department of Fisheries, Thailand was appointed Chairperson and Mr Ing Try of the Fisheries Department, Cambodia was appointed as Vice-Chairperson.

### **Presentation of technical papers**

IV.6 A list of the technical presentations is shown as Appendix IV.C.<sup>3</sup>

### ***History and future of MCS and the International Plan of Action on Illegal, Unreported and Unregulated Fishing***

IV.7 Dr Andrew R. Smith (FAO, Rome) made a presentation of the "History and Future of MCS and the International Plan of Action on Illegal, Unreported and Unregulated Fishing

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<sup>1</sup> Text of Mr Konuma's address on enclosed CD-ROM.

<sup>2</sup> Text of Dr Smith's address on enclosed CD-ROM.

<sup>3</sup> Copies of the presentations available on enclosed CD-ROM.

(IPOA–IUU)”, focussing on the development and use of VMS as a Monitoring, Control and Surveillance (MCS) tool. Modern policing of fisheries developed subsequent to the Agreement on the United Nations Convention of the Law of the Sea (UNCLOS) in 1982. In addition to the economic benefits accruing from the extension of fisheries jurisdiction to 200 miles, UNCLOS placed obligations on States with respect to the management of fisheries. These responsibilities meant increased requirements for surveillance by patrol vessels and aircraft. Concurrently with UNCLOS, FAO convened an Expert Consultation on Monitoring, Control and Surveillance, where a definition for MCS was formulated.

IV.8 The FAO Code of Conduct for Responsible Fishing was elaborated and agreed in 1995. Four International Plans of Action (IPOAs) were subsequently agreed within its framework, in order to tackle specific fisheries problems. One of these was the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unregulated and Unreported Fishing (IPOA–IUU). This IPOA specifically referred to the new technology of fishing vessel monitoring systems (VMS) –is the subject of the present Workshop.

IV.9 It was noted that the traditional MCS tools are of obvious importance but it is recognised that new and additional tools need to be developed. The cost of operating surveillance vessels and aircraft is substantial, and the traditional tools may be inappropriate in some fisheries. Emerging some 15 years ago, the technology of combining vessel positioning information with communication systems has been recognized as a useful tool for tracking fishing vessels. During the last six to seven years, this technology, generally known in fisheries as vessel monitoring systems (VMS), has been widely adopted around the world.

IV.10 VMS is relatively inexpensive and its synergy with other instruments in the MCS toolbox greatly adds to the cost effectiveness of the other activities such as patrol vessels and targeted inspections. It assists flag States to track their vessels and provides improved distress and safety communication. The potential for transmission of operational information is a significant benefit for vessel crews and operators.

IV.11 Dr Smith underscored the importance of using VMS in association with the traditional MCS tools, e.g. land radar, air and surface patrols, and he emphasised that VMS should be considered as a complement to rather than as a replacement for the traditional MCS tools.

IV.12 Presenting the IPOA–IUU, Dr Smith noted that it was developed as a response to concerns that such illegal fishing activities are increasing. The IPOA provides a definition of what constitutes IUU fishing and suggests actions that should be taken by flag States, coastal States and port States. Improved MCS is one of the answers to this increasing problem, and VMS has an important role among the MCS tools. A further potent measure for combating IUU fishing is the use of trade documents to trace fish products from origin to destination, thus enabling the exposure of unreported fish. The importance of cooperation between countries and the vital place of Regional Fisheries Management Organizations (RFMOs) in the IPOA was also highlighted.

IV.13 Dr Smith advised that as a consequence of the successful introduction of trade documents and their use by ICCAT, some of the most important flag of convenience (FOC) states have started to equip their vessels with VMS. More stringent controls over such vessels have resulted in the re-flagging of vessels to more lenient flag of convenience (FOC) registers (a practice known as “flag-hopping”) and an apparent reduction of the FOC-registered fishing fleet from 7 000 to 3 000 vessels. Coastal States may require vessels of distant water fishing nations (DWFN) to be equipped with transceivers and to transmit positions when inside the EEZ of the coastal State.

### ***Overview of fisheries and fishery issues in the Southeast Asia region and the role of Regional Fishery Bodies***

IV.14 Mr Derek Staples the FAO Senior Fishery Officer for the Regional Office for Asia and the Pacific gave an overview of fisheries management in the region entitled: “The Fisheries

of the southeast Asian region". He emphasized the significant contribution made by fisheries to food security and poverty alleviation and presented evidence that fisheries contributed a relatively high percentage to the Gross Domestic Product (GDP) of several countries in the region. The numbers of fishers in southeast Asia has stabilized at about 27 million, but the number of fish farmers is still increasing from the present level of 7.5 million. Trade of fisheries products is also growing.

IV.15 Mr Staples stressed that the trade in fish has changed dramatically over a period of twenty years. Whereas countries of the developing world were net importers in 1973, they had now become net exporters to the developed world. The difference between supply and demand for fish in the Asia and Pacific region was likely to increase, leading to an increase in the price of fish.

IV.16 Production from marine waters has been stable for about ten years, but production from inland waters has been increasing in Asia-Pacific countries. The main marine species in the region are Japanese anchovy, largehead hairtail, skipjack tuna and scads, each contributing more than one million tonnes to the catch.

IV.17 Fisheries resources are depleted in many coastal areas of the region and there has been a well documented change in the composition of the catch from marine capture fisheries in the region, a phenomenon that has been termed as "fishing down the food chain". This has resulted in a change in fishing practices and an overall loss in rent, or "profits" from capture fisheries. However, it was pointed out that, while these changes have been identified in the Gulf of Thailand and the Indonesian Sea, they are not evident in the catch composition of the South China Sea. In many areas, "trash fish" (fish of low value) now dominate the catch. The increased sales of trash fish, resulting from an increasing demand for aquaculture feed, either as direct food or for manufacture into fish meal and oil, has helped to maintain the viability of fleets.

IV.18 Management interventions in the region have tended to be geared towards reducing conflict – for example, between small-scale and industrial fishing. This was being achieved through zonation of fishing areas while continuing to allow open access. Co-management at the community level is being promoted as a way of conserving and better utilizing the fishery resources.

IV.19 In terms of regional fishery arrangements in the region, Mr Staples noted the Indian Ocean Tuna Commission (IOTC) and the Western Central Pacific Fisheries Commission (WCPFC). Both organizations focus exclusively on the management of tuna and highly migratory species. There are several fisheries organizations which have an advisory role, including Asia-Pacific Fisheries Commission (APFIC) and The Southeast Asian Fisheries Development Center (SEAFDEC). APFIC had been in existence for over 50 years under various names. From an FAO perspective, these bodies provide a regional mechanism for promotion of the Code of Conduct for Responsible Fisheries (CCRF); and for implementation of the CCRF Technical Guidelines and the International Plans of Action (IPOAs).

### ***Fishing vessel monitoring, the what, why and how***

IV.20 Mr Robert Gallagher (FAO Consultant) presented a technical overview of VMS entitled "Fishing vessel monitoring, the what, why and how" emphasising the need for accurate functional specifications which meet the requirements of the fisheries administration. He outlined the shipboard, transmission and fisheries monitoring centre (FMC) hardware and software requirements.

IV.21 An operational scenario for a fully functioning VMS system was presented illustrating data analysis and confidentiality, and the use of VMS data for control, resource management, and commercial purposes and to improve safety at sea. Additional information was provided in response to questions on confidentiality, financing of VMS, sharing of data, equipment breakdown, data security and equipment tampering.

IV.22 It was affirmed that data security is generic, i.e. that VMS data has no special characteristics and that standard security methods were applicable, e.g. to prevent hacking or breach of confidentiality by personnel. Mr Gallagher provided a breakdown of the costs involved in establishing and maintaining different types of VMS. He stressed that each situation was highly case specific requiring careful analysis in relation to the fishery control objectives, available human and financial resources and interagency requirements, and the interests of the industry and other stakeholders. He noted that, for example, Iceland uses VHF for certain vessels. A key question would be whether VHF can cover the geographical area of concern.

### ***Institutional options for VMS in the Southeast Asian region***

IV.23 Mr Kieran Kelleher (FAO Consultant) described a range of institutional options for VMS which existed in other regions. Examples of international VMS cooperation were provided from the Northeast Atlantic (EU and NEAFC) and the South Pacific (FFA and the emerging WCPFC). Differences between the institutional arrangements were highlighted.

IV.24 EC law requires the automatic retransmission of VMS data between EU Member States as vessels move from the waters of one Member State to another. Each Member State operates its own VMS and the automatic re-transmission occurs on a “bilateral” basis in accordance with agreed protocols. The data formats, *inter alia*, are specified in EC legislation. A similar obligation rests with EU flag States with respect to their flag vessels operating on the high seas areas falling under the North East Atlantic Fisheries Commission (NEAFC) and the North Atlantic Fisheries Organization (NAFO). In the case of these commissions, the VMS position and other data on catches is also directed (via national FMCs) to member States that have a patrol vessel presence in these high seas areas.

IV.25 In contrast, the Forum Fisheries Agency (FFA) provides a centralised service to the South Pacific countries and arrangements for reporting from the high seas are still under discussion. The FFA arrangements apply only to distant water tuna vessels and support vessels. A vessel flagged in an FFA member state is considered a distant water vessel when operating in the waters of another member state. The arrangement is based on an international agreement. The FFA Secretariat manages and administers the FFA VMS on behalf of the 17 FFA members. The FFA has been given clearly defined operational responsibility for VMS by the member states. VMS requirements are found in the national legislation of FFA members. The licensing conditions of FFA members with respect to foreign fishing vessels conform to Harmonised Minimum Terms and Conditions (MTC) of access agreed by FFA members.

IV.26 Under the MTC for Foreign Fishing Vessel Access, VMS is required for foreign vessels fishing in the EEZs of FFA members. There is ongoing harmonisation of the countries’ legal frameworks regarding the complex legal issues associated with VMS. The FFA VMS receives automatic position reports at a default rate of six reports per 24 hours. This interval can be increased to one report every 15 minutes and, through polling, vessels can be requested to provide a position at any given time. If a vessel's VMS unit (transceiver, also known as an automatic location communicator, or ALC) is switched on while it is on the high seas, the FFA will receive automatic position reports from that vessel. The USA has agreed that US purse seine vessels operating under the terms of the South Pacific Tuna Treaty will provide automatic position reports to the FFA VMS at all times while these vessels are inside the treaty area, which includes high seas areas.

IV.27 The FFA focuses on controlling fishing activities within the members’ EEZs, while the area of jurisdiction of the Western Central Pacific Fisheries Commission (WCPFC) encompasses the high seas areas, and the member states include distant water fishing nations. The WCPFC is currently examining the institutional and technical options for VMS.



IV.28 Mr Kelleher recalled that global instruments such as the UNCLOS and the Fish Stocks and Compliance Agreements (see presentation on legal aspects of VMS) provide an adequate international legal basis for implementing VMS at national and international levels. He briefly outlined the outcomes of previous regional VMS workshops, noting that there was unanimous support for cooperation, not only on VMS, but also on a broader agenda of MCS issues such as vessel registries and the need to communicate information on the entry/ exit of vessels to/ from EEZs.

IV.29 In order to stimulate further discussion, Mr Kelleher suggested several scenarios for regional cooperation. A convention, or fisheries cooperation agreement, among the coastal States could be considered with provisions for MCS and VMS. Alternatively, a set of bilateral agreements could be contemplated, with specific protocols on areas of particular concern such as VMS, management of transboundary fisheries, or hot pursuit. Thirdly, a combination of multilateral and bilateral approaches could be considered with bilateral arrangements nested within a multilateral fisheries cooperation convention. Targets for VMS and MCS cooperation could include the larger vessels targeting tuna and highly migratory stocks, larger vessels targeting shared stocks such as Indian mackerel, or hairtails, or generic targets such as motherships and fish carrier vessels.

IV.30 The options for institutional arrangements require careful examination considering the different memberships, mandates and areas of competence of the regional organizations. The Association of Southeast Asian Nations (ASEAN), APFIC, SEAFDEC and the Bay of Bengal Inter-Governmental Organization (BOBP-IGO) are just some of the numerous regional organizations that could contribute to such cooperation.

IV.31 The relative importance of fisheries MCS and VMS within the context of an overall marine security and monitoring context must also be considered. Issues of national security such as counter-terrorism may also increase demand for VMS, independently of fisheries. Given the importance of artisanal fisheries in the region the role of VMS in protecting the fishing grounds reserved for artisanal fishers from industrial vessels may be the most important objective.

IV.32 In response to questions on identifying IUU vessels, Mr Kelleher noted the existence of lists of "positive" and "negative" vessels maintained by IOTC and FFA. It was remarked that, for example, ICCAT requires even non-ICCAT member states to comply with ICCAT regulations. Participants pointed out the need to also consider non-fisheries uses of VMS, giving an example of the need to control illegal logging and shipment from remote areas. The need for careful design of VMS was stressed, with due consideration given to the time required for industry acceptance, and the need for an effective legal basis and fisheries administrative system to make the VMS an effective tool.

IV.33 Upon the request of member States, FAO may be able to provide limited support for such initiatives and complement existing regional projects, or initiatives. FAO plans to maintain a dialogue with the service providers and to hold an expert consultation in 2004 on data formats and procedures used in MCS.<sup>1</sup> The recently-established International MCS Network also provides a forum for technical discussions. The Network is accessible via the Internet (<http://www.imcsnet.org>) and is open to participation by countries and individuals.

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<sup>1</sup> *Ed. note:* See FAO, 2005. Report of the Expert Consultation on Data Formats and Procedures for Monitoring, Control and Surveillance. Bergen, Norway, 25–27 October 2004. *FAO Fisheries Report*. No. 761. Rome, FAO. 16p.

### ***Putting VMS into practice, the devil is in the details***

IV.34 Mr Robert Gallagher (FAO Consultant) showed how a VMS system is designed and built in a presentation entitled “Putting VMS into practice, the devil is in the details”. He emphasised the need for careful research and planning to ensure the VMS system meets the precise needs of the fisheries administration and other users, including the vessel operators themselves.

IV.35 He stressed the wide range of technical options and compared the relative merits of Argos and Inmarsat-C systems. He confirmed that both systems could readily coexist in a national VMS system, and that in the case of the countries in the region, where foreign vessels deploy both types of units, a national FMC is likely to require the capability to process both types of signal. He discussed the use of Inmarsat-D+ and terrestrial systems such as VHF radio and cellular telephony. Although the companies involved have encountered some financial difficulties, the Iridium and GlobalSat satellite voice systems were presented and their specific features with regard to VMS functionality described.

IV.36 The choices confronting an agency acquiring an FMC were enumerated. Finally, the extension of VMS to a regional level was discussed, including choices to be made when developing and linking national VMS together into a regional system. The two principal architectures, “star” and “distributed”, were described, and the required protocols for regional cooperation mentioned. In a star architecture, several countries share a single VMS system. In a distributed configuration, national VMS systems are linked through electronic exchange of VMS data.

IV.37 In response to questions, Mr Gallagher indicated that, to his knowledge, no group of countries, with the exception of the FFA, operate a star configuration for sharing VMS information. He indicated that the costs of VHF data transmission were considerably lower than satellite transmission. For example, the capital costs of VHF radios are less than US\$200. This compares to the cost of an Argos terminal at approximately US\$1 500 and an Inmarsat-C terminal at approximately US\$2 000, with total capital and operating costs for the first year could be as low as US\$15 000. The transmission costs using VHF are generally low, or negligible.

IV.38 Malaysia indicated that the costs for its VMS were in the order of US\$15–30,000 for the Absolute SmartTRAC software, US\$10 000 for the Oracle database, and computer hardware costs US\$10 000. Malaysia noted that political will and acceptance by industry is of great importance for the successful introduction of VMS.

IV.39 Participants agreed that the design phase was crucial and that one had to be very clear regarding the objectives of the VMS. This needs analysis is complex and the fisheries administration may have to “start small” and learn to gradually build the various components of the system – the fishery management plan, the legal basis, the human resources and the technology. Mr Gallagher noted that Internet-based systems exist, although additional security measures are required to ensure confidentiality and data integrity in such systems. He again stressed the importance of careful needs assessment, planning and system design, particularly if the fisheries VMS is to be integrated with coast guard, customs, or activities of other agencies.

### ***Legal issues related to VMS***

IV.40 Mr Kieran Kelleher (FAO Consultant) made a presentation on “Legal issues related to VMS”. The relevant international legal regime and legal issues of importance to the implementation of VMS were addressed. Because of its crucial importance with respect to the duties and rights of states, the provisions of the 1982 UN Convention on the Law of the Sea of relevance to MCS and VMS were briefly explained.

IV.41 The relevant provisions of other international fisheries related instruments were presented, including the UN Straddling Fish Stocks Agreement, the FAO Compliance Agreement, the FAO Code of Conduct for Responsible Fisheries, and the International Plan of Action on IUU fishing developed under the framework of the Code. It was noted that various provisions support the use of VMS and call for its implementation in waters under national jurisdiction and on the high seas, where applicable.

IV.42 A number of provisions on the collection and exchange of fisheries data and on regional and subregional cooperation in fisheries conservation and management, including MCS, were also highlighted. The scope and limitations of coastal State jurisdiction, flag State jurisdiction and port State jurisdiction were presented.

IV.43 A variety of legal issues were considered. Among the points of importance for countries legislating for VMS are to ensure: constitutionality of the new approach; ample powers for enforcement purposes, including provisions to implement recent international instruments, ensuring the necessary application of fisheries legislation also outside national waters; regulatory powers; an authorization scheme for fishing vessels; and the prescription of offences and penalties. Other important legal issues highlighted were the security and confidentiality of VMS information, the use of VMS information as evidence, the importance of maritime boundaries and the complex question of determining property rights over VMS information.

IV.44 Finally, the main features of VMS regulations were presented. This overview was based on a comparative study of USA, New Zealand and Australian VMS regulations. Mr Kelleher drew on examples from Malaysia, South Africa, Chile, and the USA to illustrate key points and noted that maritime boundary delimitations have not been agreed between many States and that this can raise legal problems regarding enforcement of fisheries legislation in border areas.

IV.45 Coastal and flag States have an obligation under international law to cooperate with regional fisheries management organizations (RFMOs) with regard to provision of information. RFMOs requiring VMS information include: CCAMLR, FFA, NAFO and NEAFC. This information is often provided in aggregated form when used for scientific purposes, but RFMOs such as NEAFC require disaggregated near-real-time VMS information to control quotas and support patrol vessel operations on the high seas areas under their mandate. Shipments of some species into the USA are rejected in the absence of a validated VMS record.

IV.46 The differences between civil and criminal law in the use of VMS information to secure prosecutions was noted. A reversal of the burden of proof (also called a “rebuttable presumption”) can be applied with regard to civil offences, e.g. a vessel present in a protected zone may be presumed to be fishing and it is incumbent on the fishing vessel operator to prove that the vessel was not fishing. However, as criminal prosecutions must prove the offence “beyond reasonable doubt” the reversal of the burden of proof, effectively a presumption of guilt, may not be acceptable under the law. Thus it may be more effective to classify certain offences as civil offences if VMS information is likely to be used as “stand alone” evidence of the violation. Mr Kelleher illustrated this point by giving the example of O.J. Simpson, who, while acquitted of murder, was found guilty of “wrongful death” – a civil charge requiring only “the preponderance of the evidence” to demonstrate guilt.

IV.47 It was noted that, while the master or crew of a foreign fishing vessel may be detained for the purposes of trial or due process, under UNCLOS Article 73, imprisonment and other corporal punishment may not be used as a sanction for the master or crew of a foreign fishing vessel operating illegally in the EEZ (in the absence of agreements to the contrary by the States concerned).

IV.48 The question of the integrity of the chain of evidence was raised. In other words, what assurance does a court have that the electronic information on the position of the vessel has not in some way been modified, or falsified? The issue is particularly important as the

electronic information passes through institutions outside of the fisheries administration (e.g. the telecommunications institutions) and even outside the country (e.g. the land receiving station). A challenge to the chain of evidence was mounted as a defence in a case in the USA. Since that time, the US administration has maintained an “independent” record of the data stream received at the land station. This question of the integrity of the chain of electronic VMS information is closely linked to the status of electronic evidence under the law and still remains largely unresolved.

### **Electronic logbooks**

IV.49 Mr Robert Gallagher (FAO Consultant) gave a presentation on electronic logbooks. He defined an electronic logbook as an electronic transmission of catch and /or related information from sea. He pointed out how an upgraded VMS can provide a platform for the exploitation of electronic logbooks. A description of the range of possible input devices was given, concentrating upon hand-held equipment designed to facilitate data input. A list of some of the existing electronic logbook schemes around the world was provided and a discussion of the implementation issues regarding electronic logbooks ensued.

IV.50 The question was raised as to whether the electronic logbooks should replace the current paper logbooks or if electronic logbooks are best regarded as supplements to the paper logbook. The implications of this question were discussed, noting the costs involved in different sizes of messages and the requirements for timeliness, frequency and precision of catch and effort information. These are, in turn, linked to the precision of catch data to be transmitted. The generalized implementation of electronic logbooks would have the advantages, *inter alia*, of avoidance of the need to punch (enter) log sheets in computer databases, improved accuracy in logbooks as a result of data verification checks at source, and the presence of an electronic time stamp that may assist enforcement.

IV.51 It was noted that while many fisheries required timely information for management, real time or near real time catch and effort information was probably not required for management of many of the region’s fisheries. It was noted that logbooks, whether electronic or handwritten, constitute an estimate of the catch, while actual landed weights are a superior measure of catch. The average error in box or dip net counts of the catch could be as high as 20%. Catch sampling is also required to supplement, or correct logbook information with accurate catch composition information. In the distant water tuna fisheries, fees tend to be indirectly related to reported catch, thus reducing the incentive for individual vessels to falsify catch information.

IV.52 In response to queries, Mr Gallagher suggested that fishers should not necessarily perceive the e-logbook as a burden, but as a tool that creates value through traceability, or replaces part of a personal accounting system or fishing logbook. Participants noted that even paper logbooks do not exist in many countries and fisheries and that computer literacy is generally low among fishers. However, although e-logbooks may be premature for many fisheries in the region, it may be appropriate for some larger vessels targeting high-value stocks.

### **Satellite observation of fishing vessels and recent technological developments**

IV.53 Dr Andrew Smith (FAO, Rome) updated the participants on emerging new surveillance technologies.

IV.54 The technology of satellite surveillance of fishing vessels is under development through a project financed by the EC’s Directorate of Fisheries and undertaken by the European Joint Research Centre in Ispra, Italy. It is a complicated project involving 13 commercial companies and a number of national fisheries monitoring centres (FMCs).

Iceland, Norway and the North-East Atlantic Fisheries Commission are included in the project because of the shared fisheries involved.

IV.55 The first phase of the project has been dealing with the problems of the timely collection and processing of the satellite images so that they can be presented to the FMCs in a format, which would be useful to them. Images have been obtained from a number of areas, each with different characteristics (e.g. areas with high and low levels of merchant vessel traffic). Download times from the satellite and the lags in the transfer of data between the different facilities do not allow real time response, but these times have been reduced significantly during the course of the experiment. It is expected that selected EU VMS programmes could start using the satellite surveillance data on a regular basis when issues are further resolved relating to data transfer lags, analysis algorithms, and other operational aspects of this type of system.

IV.56 IMO has recently introduced measures on Maritime Terrorism and has amended the Safety of Life at Sea Convention (SOLAS) to put these into effect. This is going to have a great influence on all vessels including fishing vessels. Automatic Identification Systems (AIS) will be mandatory for vessels over 300 tons and Voyage Data Recorders (VDR) will be mandatory for all vessels over 3 000 tons in 2004, rather than in 2008 as was originally planned. Both these technologies can be used for the increased effectiveness of MCS. It is expected that VMS and satellite monitoring will lead to integrated systems of marine monitoring with the involvement of several national agencies. Such a system is already in operation in Portugal using VMS and there is likely to be increasing cooperation between countries because of common boundaries and the increasing importance of maritime security.

## Country reports

IV.57 Participants from the southeast Asian coastal States briefed the Workshop on the status of fisheries and on MCS and VMS in their respective countries. Country reports were presented for Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Timor-Leste and Viet Nam.<sup>1</sup>

## Report of the working groups

IV.58 Two working groups were formed with identical terms of reference:

- **Question 1.** Is VMS cooperation necessary in the southeast Asian region and, if so, for what reasons?
- **Question 2.** Which are the main fisheries or fleets for which VMS cooperation could be most useful?
- **Question 3.** What is the nature of the VMS/ MCS cooperation required? List the types of cooperation.
- **Question 4.** Which is (are) the most appropriate regional forum(for) for pursuing a programme of regional cooperation on VMS, or MCS? What actions should be undertaken and by whom?

IV.59 Each group presented the results of its deliberations in plenary session. The conclusions are summarised below.

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<sup>1</sup> Copies of the presentations available on enclosed CD-ROM.

IV.60 Question 1. A range of issues were discussed and there was broad agreement that regional VMS cooperation is necessary for the following reasons:

- a) to promote sustainable management of coastal States' resources and the regional marine fishery resources;
- b) to combat illegal, unregulated and unreported fishing (IUU);
- c) to facilitate exchange of information in a proactive manner in order build and maintain good relations with other states in the region. This action can contribute to prevention of international incidents and possible regional conflicts; and
- d) to integrate fishing vessel reporting with other systems that are already in place such as merchant vessel reporting system.

IV.61 Question 2. VMS was considered particularly useful in relation to the sustainable management of transboundary fisheries and fish stocks which may be the subject of joint (bilateral or regional) management plans. The target species include both demersal and pelagic fish stocks, , such as highly migratory species (e.g. skipjack, yellowfin tuna, and bigeye tuna) and other pelagics (e.g. scad mackerel).

IV.62 Priority target fleets for VMS are considered to be:

- vessels fishing on the high seas, and
- vessels fishing in waters under the jurisdiction of another state.

IV.63 The main target vessels are likely to be: tuna longliners, purse seiners targeting tuna and small pelagics, and trawlers, such as those operating under charter, or joint venture arrangements in waters outside the jurisdiction of their flag States. The size or length of the vessels is likely to vary considerably by fishery.

IV.64 Question 3. The groups envisaged bilateral, multilateral, subregional and regional MCS and VMS cooperation. The cooperation can be achieved through memoranda of understanding, memoranda of agreement, or other forms of international instruments. The groups considered that MCS/ VMS cooperation would be of value with regard to the following:

- a) training;
- b) information sharing on fish stocks and on fishing vessel registers (databases);
- c) technical cooperation on capacity building and advice;
- d) joint enforcement exercises and preparation of joint management plans;
- e) establishment and use of common standards and specifications for exchange of MCS information; and
- f) on sharing of expertise and hardware, as appropriate.

IV.65 The groups also recognized the potential role of the MCS Network in fostering such cooperation. It was noted that the MCS Network is an international voluntary group whose members include national MCS focal points. Its objectives are to improve the efficiency and effectiveness of fisheries-related MCS activities through enhanced cooperation, coordination, information collection and exchange among national organizations/institutions responsible for fisheries-related MCS.

IV.66 Question 4. The participants concluded that no single organization provided a forum for the entire spectrum of MCS/VMS cooperation, and recognized that some southeast Asian States are party to RFMOs that have established MCS programmes and are in various stages of designing, or piloting VMS schemes. These RFMOs include the IOTC and the WCPFC and are considered to be among the most appropriate forums for MCS/VMS cooperation.

IV.67 At a technical level, SEAFDEC was considered to be an important regional forum for promoting cooperation on all fisheries matters including MCS and VMS. SEAFDEC should

be involved in any projects to be undertaken in this area as all countries are SEAFDEC members. It was also considered that APFIC/FAO may be in a position to provide technical assistance for regional cooperation. The MCS focal points of each member countries can also actively participate in the MCS Network.

IV.68 Other regional bodies that could provide fora for further discussion of MCS and VMS cooperation include ASEAN and Asia-Pacific Economic Cooperation (APEC). The meetings of these organizations are attended by high level officials which could facilitate decisions on regional MCS/VMS cooperation.

IV.69 Participants noted that, while the Brunei Indonesia Malaysia Philippines–East Asia Growth Area (BIMP-EAGA) has a focus on trade, it could also provide a venue for the discussions on fisheries cooperation, including MCS and VMS. This is based on the assumption that fishery products are relatively important in trade compared to other commodities.

### ***Follow-up action***

IV.70 The workshop requested that FAO:

- provide assistance in relation to legislation on VMS;
- assist in the formulation and implementation of pilot projects;
- promote the use of VMS through high level forums; and
- assist in structuring an awareness programme for various target groups.

### **Closing session**

IV.71 The Workshop endorsed the conclusions of the working groups and agreed that, following discussion at national level, the conclusions may be forwarded by participating countries to the appropriate regional and international forums for further consideration. The draft report was adopted.

IV.72 On behalf of the FAO, Dr Andrew Smith thanked the Department of Fisheries of Thailand for its assistance and hospitality and thanked the FAO Regional Office for its invaluable support in organising the Workshop. He thanked all the participants for their contributions, wished them a safe return, and declared the Workshop closed.

IV.73 On behalf of the participants the representative of Malaysia thanked FAO for its initiative in organizing the Workshop and for their inputs and insights.

## APPENDIX IV.A

### AGENDA AND TIMETABLE

#### REGIONAL WORKSHOP ON VMS Bangkok, Thailand, 6–8 October 2004

##### Wednesday 6 October 2004

09.00-09.30 Opening Statements

##### **SESSION I OVERVIEW OF VMS AND ITS ROLE IN FISHERIES MANAGEMENT**

09.30-10.15 Overview of VMS and its role in fisheries management and in the implementation of the IPOA/IUU at a global level (Smith)

10.15–10.30 **Break**

##### **Presentation of technical papers**

10.30-11.15 Overview fisheries management in the South-East Asia region and the potential role of Regional Fisheries Management Bodies (Staples)

##### **SESSION II TECHNICAL ASPECTS OF VMS AND INSTITUTIONAL OPTIONS**

11.15-12.00 Overview of the technical aspects of VMS (Gallagher)

12.00-12.30 Discussion

12.30-14.00 **Lunch**

14.00-14.45 Institutional options for VMS and satellite surveillance (Kelleher)

14.45-15.30 Technical and administrative issues in creating a national or regional VMS and satellite surveillance capability (Gallagher)

15.30-15.45 **Break**

15.45-16.30 Legal issues associated with VMS (Kelleher)

16.30-17.00 Discussion

17.00 Close of Session



**Thursday 7 October 2004**

**SESSION IV SURVEILLANCE SYSTEMS**

09.00-09.45	Electronic logbooks and near real time reporting in VMS (Gallagher)
09.45-10.30	Satellite surveillance by radar and the visual spectrum (Smith)
10.30-10.45	<b>Break</b>
10.45-12.30	Country statements
12.30-14.00	<b>Lunch</b>
14.00-15.30	Country statements
15.30-15.45	Break
15.45-17.00	Country statements
17.00	Close of session

**Friday 8 October 2004**

09.00-10.15	Discussion of proposed strategy
10.15-10.30	Break
10.30-12.30	Discussion of proposed strategy
12.30-14.00	<b>Lunch</b>
15.00-16.00	Presentation of the Draft report of the Workshop Adoption of the Report and Closing of the Workshop

*(Time of presentations based on 30 minutes and 15 minutes discussion.)*

## APPENDIX IV.B

### LIST OF PARTICIPANTS

#### FAO REGIONAL WORKSHOP ON VESSEL MONITORING SYSTEM (VMS) BANGKOK, THAILAND, 6–8 OCTOBER 2004

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## APPENDIX IV.C

### LIST OF DOCUMENTS

#### Procedural

Opening of the Workshop by Hiroyuki Konuma, Deputy Regional Director, FAO  
Opening remarks by Dr. Andrew Smith, Senior Fisheries Officer, FAO, Rome  
Agenda and Timetable  
List of participants

#### Background documents

Code of Conduct for Responsible Fisheries  
What is the Code of Conduct for Responsible Fisheries?  
Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas  
International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing  
Stopping illegal, unreported and unregulated fishing  
FAO Technical Guidelines for Responsible Fisheries No. 9. Implementation of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (English and French versions)  
International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (English and French versions)  
FAO Technical Guidelines for Responsible Fisheries 1. Fishing operations  
FAO Technical Guidelines for Responsible Fisheries 1. Fishing operations . 1. Vessel monitoring systems (English and French versions)  
Recent trends in monitoring control and surveillance systems for capture fisheries  
FAO Fisheries Technical Paper. No. 415  
Guidelines for Developing an At-sea Fishery Observer Programme  
*FAO Fisheries Technical Paper. No. 414*  
The cost of monitoring, control and surveillance of fisheries in developing countries.  
*FAO Fisheries Circular. No. 976. (Kieran Kelleher)*  
Niue Treaty on MCS cooperation  
Satellite radar surveillance JRC (*Kourti*)  
WCPFC VMS discussion paper (*Kelleher*)  
Port State Control of Foreign Fishing Vessels (*T. Lobach*)  
FFA ALC installation guidelines

#### Documents and presentations provided on CD

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#### Opening statements, Agenda and timetable; List of Participants

Opening remarks by *Dr Andrew Smith, FAO, Rome*  
Agenda and Timetable  
List of Participants

## **Powerpoint Presentations**

The History of Monitoring, Control and Surveillance and the International Plan of Action on IUU Fishing. *Andrew R. Smith (FAO, Fisheries Department, Rome)*

Fisheries management in SE Asia and the role of regional fisheries management bodies. *Derek Staples (FAO, Bangkok)*

Vessel monitoring systems: the what, the why, and the how. *Robert Gallagher (FAO Consultant)*

Institutional options for international VMS cooperation. *Kieran Kelleher (FAO Consultant)*

Legal issues relating to VMS. *Kieran Kelleher (FAO Consultant)*

Putting VMS into practice: the devil is in the details. *Robert Gallagher (FAO Consultant)*

Electronic logbooks and Real Time Reporting. *Robert Gallagher (FAO Consultant)*

Satellite surveillance by Radar and the Visual Spectrum. *Andrew Smith (FAO)*

## **Country statements – texts and Powerpoints**

Brunei Darussalam

Cambodia

Indonesia

Malaysia

Myanmar

Philippines

Timor Leste

Thailand

Viet Nam

## **Commercial Presentations and brochures**

CLS Argos

BlueFinger

Inmarsat

Marimsys

Trackwell

## FAO FishCode Reviews

**1 Pintz, W.S. Tuna and bottom fishery licence management: Tonga. *FAO/FishCode Review*. No. 1. Rome, FAO. 2003. 35p.**

Fish are now the largest single export from the Kingdom of Tonga. However, expansion of the industry faces severe infrastructure constraints, and granting substantial numbers of new longline licences without resolving the constraints could seriously affect all Tongan commercial fisheries.

**2 Gillett, R. Aspects of fisheries management in the Maldives. *FAO/FishCode Review*. No. 2. Rome, FAO. 2003. 61p. (*Restricted distribution*)**

The inshore marine resources of the Maldives, an atoll environment, are being increasingly exploited for baitfishing, food for local residents, consumption by tourists, exports and non-extractive uses such as dive tourism. This situation must be reconciled with the limited nature of the resources.

**3 Die, D.L.; Alió, J.; Ferreira, L.; Marcano, L.; Soomai, S. Assessment of demersal stocks shared by Trinidad and Tobago and Venezuela. *FAO/FishCode Review*. No. 3. Rome, FAO. 2004. 32p.**

The FAO/WECAFC Workshop on assessment of demersal stocks shared by Trinidad and Tobago and Venezuela (2002) initiated an assessment of the shrimp stocks shared by the two countries. The main conclusion of the assessment is that some shrimp stocks are being severely overfished and are suffering as a result.

**4 Gillett, R. The marine fisheries of Cambodia. *FAO/FishCode Review*. No. 4. Rome, FAO. 2004. 57p.**

Excess fishing effort and associated declines in abundance of target species are the most serious problems facing Cambodia's marine fisheries: resource sustainability will require restrictions on resource access.

**5EN FAO/FishCode. Seminar on responsible fisheries management in large rivers and reservoirs of Latin America. *FAO/FishCode Review*. No. 5. Rome, FAO. 2004. 72p. [En]**

This report of the Seminar on Responsible Fisheries Management in Large Rivers and Reservoirs in Latin America (2003), attended by experts from member countries of the Commission, observers from other regional bodies and representatives from local fishing communities in El Salvador, presents the principles of responsible fishery management in Latin America as well as a selection of national reports.

**5SP FAO/FishCode. Seminario sobre ordenación pesquera responsable en grandes ríos y embalses de América Latina. *FAO/FishCode Revista*. No. 5. Roma, FAO. 2004. 78 p. [Sp]**

El Seminario sobre ordenación Pesquera Responsable en Grandes Ríos y Embalses de América Latina (2003) se efectuó en San Salvador en asociación con la novena reunión de la Comisión de Pesca Continental para América Latina (COPESCAL). Participaron expertos de países Miembros de la Comisión ; observadores de otros organismos regionales y representantes de comunidades pesqueras locales de El Salvador. Se presentaron dos documentos sobre los principios de la ordenación pesquera responsable en grandes ríos y embalses en América Latina y una selección de informes nacionales.

**6 Swan, J. National Plans to combat illegal, unreported and unregulated fishing: models for coastal and small island developing states. *FAO/FishCode Review*. No. 6. Rome, FAO. 2003. 76p.**

These case studies for use in FAO regional and subregional workshops were prepared in accordance with the FAO International Plan of Action to Prevent, Deter and Eliminate IUU Fishing. The "Republic of Galactia" and the "Alpha Islands" are fictitious, but the fisheries profiles presented draw on typical existing circumstances.

**7 Kuemlangan, B. Creating legal space for community-based fisheries and customary marine tenure in the Pacific: issues and opportunities. *FAO/FishCode Review*. No. 7. Rome, FAO. 2004. 65p.**

The laws of Pacific Island countries generally support traditional fisheries management with only modest efforts to encourage the use of customary marine tenure-based community fisheries management. Government commitment for the role of customary marine tenure in community-based fisheries management, with support from interested stakeholders, will complement efforts for promoting sustainable utilization of fisheries resources and improved livelihoods in the Pacific region.

**8 FAO/FishCode. Report of the Workshop on Development of a Management Plan for Tomini Bay Fisheries, Indonesia. *FAO/FishCode Review*. No. 8. Rome, FAO. 2004. 31p.**

Tomini Bay fishery resources are still considered to be underexploited, but annual catches have increased dramatically over the past ten years. In the absence of a fisheries management body, The FAO/Government of Indonesia Workshop on the Development of a Management Plan for Tomini Bay Fisheries (2003) provided a starting point for addressing responsible fisheries issues and laying the groundwork for a fisheries management plan.



**9** FAO/FishCode. Report of the National Conference on Responsible Fisheries in Viet Nam, Hanoi, Viet Nam, 29–30 September 2003. *FAO/FishCode Review*. No. 9. Rome, FAO. 2004. 94p.

This national conference was organized in the context of increasing problems faced by Vietnamese fishers in maintaining and improving their livelihoods through coastal and offshore fisheries; some coastal fish resources in particular are being heavily over-exploited.

**10** Stanley, J. Institutional review of the National Fishing Corporation and the Fisheries Department of Tuvalu. *FAO/FishCode Review*. No. 10. Rome, FAO. 2004. 47p. (*Restricted distribution*)

The economic growth and development of Tuvalu depend on its marine resources and especially its relatively rich tuna resources. Although the primary concern of the government is the sustainable economic development and management of tuna, there is also potential for the development of other marine products, particularly deep bottom fish.

**11** García Mesinas, A. Lineamientos para un Código de Ética de Pesca y Acuicultura para El Salvador. *FAO/FishCode Revista*. No. 11. Roma, FAO. 2004. 59p. [Sp] (*Restricted distribution*)

Este documento presenta los resultados de un proyecto llevado a cabo a través del Programa FishCode de la FAO a petición del Gobierno de El Salvador para desarrollar los lineamientos a nivel nacional del Código de Ética de la Pesca y Acuicultura. El trabajo se realizó coordinado a través de la Oficina Regional de América Latina (RLC) y la Representación de FAO de El Salvador.

**12** FAO/FishCode. Report of the National Workshop on the Code of Conduct for Responsible Fisheries and its practical application to coastal aquaculture development in Viet Nam. *FAO/FishCode Review*. No. 12. Rome, FAO. 2004. 47p.

The National Workshop on the Code of Conduct for Responsible Fisheries and its Practical Application to Coastal Aquaculture Development in Viet Nam took place in Hué from 3 to 4 October 2003. The Workshop aimed to build awareness among national and provincial stakeholders about the need to develop and implement an Aquaculture Code of Conduct for Viet Nam. Coastal aquaculture in Viet Nam, particularly shrimp culture, has developed rapidly in recent years. Although shrimp farming has brought many benefits to coastal communities, it is associated with high social and environmental risks.

**13** FAO/FishCode. Report of the National Seminar on the reduction and management of commercial fishing capacity in Thailand. *FAO/FishCode Review*. No. 13. Rome, FAO. 2005. 59p.

The marine capture fisheries sector is more capital intensive than is appropriate for Thailand's resource endowment, and there is an urgent need for fishing capacity reduction for improved fisheries management and protection and conservation of fish habitats and other threatened coastal resources. Failure to achieve this will have serious consequences for the most vulnerable people in coastal communities, fish consumers and society at large.

For further information, or to obtain copies,  
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[www.fao.org/fi/fishcode.htm](http://www.fao.org/fi/fishcode.htm)

To start, select the drive designation of your CD-ROM device (e.g. D:\) and open (double click) the file "start.htm"

Software requirements:

All Browsers compatible with "HTML 4.0 Transitional"



Adobe® Reader®





Four regional workshops on vessel monitoring systems (VMS), respectively covering the Southwest Indian Ocean, Central America, the Caribbean and Southeast Asia, were organized and implemented in succession from September 2003 to October 2004. The workshops were intended to promote the use of VMS as an additional instrument for the management of fisheries, both at a national level and in cooperation with regional fisheries bodies. They comprise one aspect of FAO's larger set of activities to implement the International Plan of Action (IPOA) to Prevent, Deter or Eliminate Illegal, Unreported and Unregulated (IUU) Fishing.

This document includes a CD-ROM.

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