Fisheries Monitoring Center
Republic of Korea

Aug 2016
Fisheries Monitoring Center

Fisheries Monitoring System

System Demonstration
Chapter

Fisheries Monitoring Center

1. Organization and History
2. Function and Role
3. IUU Response System
Established under the Ministry of Oceans and Fisheries (MOF)

23 March 2014
Began its pilot operation with vessels in the West African waters

23 May 2014
Started its full operation covering all vessels with FMS

3 September 2015
Started operation of ERS

20 September 2015
Introduced KFIMS
Ministry of Oceans and Fisheries

East Sea Fisheries Management Service

Fisheries Monitoring Center

- Monitoring Team
- Data Analysis Team
- Int’l Cooperation Team
- Management Support Team

24/7 365 day Operation
I. Fisheries Monitoring Center

MOF (Distant Fisheries Division)
- Daily reporting
- IUU alert reporting
- Information sharing on IUU

Masters of Fishing Vessels
- Monitoring & Control
- Instruction
- Transshipment permission
- IUU Alert

RFMOs /coastal States
- Information sharing on IUU

NFQS
- Validation of catch certificate
- VMS, fishing activity sharing
- Catch data sharing

NIFS
- Fisheries science & research
- RFMO stock assessment
Chapter II

Fisheries Monitoring System

1. Schematic of FMS
2. System Overview
3. Korean Fisheries Information Management System (KFIMS)
4. Schematic of Electronic Monitoring (EM)
II. Fisheries Monitoring System

System Transition

Version 1  VMS (May 2014)

Version 2  FMS = VMS + ERS (Sep 2015)
Data Flow Diagram

version 2015

Inmarsat Satellite
<Two way Digital Communication>

M2M Satellite Communication Unit

Vessel Operator

SMS

Position data

Catch data

Position Catch

Sending SOS

Data Sharing with Relevant Authorities

National Fisheries Product Quality Inspection Service

Ministry of Oceans and Fisheries

Fisheries Monitoring Center

NIFS
System Overview

FMC Database

Monitoring fishing activities

Track records and fishing activity data

IUU fishing activity analysis/statistics

IUU fishing Alert/Instruction

Position data
ver.2014
inmarsat

Catch Data
ver.2015

Requirements
(RFMO, Coastal States)
- IUU fishing Monitoring
- Vessel Management
- Area Management

Relevant Authorities
- Policy-Making
- Intl. affairs

National Network
- Catch Reports
- Relevant Statistics

FiQ
- Port State Inspection
- CC validation
- Statistics

Vessel Operator
- Catch data
- Transshipment/Landing
- Vessel/Operator Details

Alert

Web Service

- FAX
- e-Mail
- SMS
# System Functions

<table>
<thead>
<tr>
<th>Category</th>
<th>Functions</th>
<th>Improved Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electronic Chart &amp; Control</strong></td>
<td>Zoom in/out, User view, Area Search, Measurement, EBL/VRM, Screen shot, User, Vessel Overview, Track Search</td>
<td>Basic Software Functions</td>
</tr>
<tr>
<td><strong>Monitoring</strong></td>
<td>Restricted area, Non-Reporting, IUU vessel, IUU vessel list</td>
<td>Area setting &amp; Approach/Violation Alarm, Non-reporting Vessel, IUU Vessel List Management</td>
</tr>
<tr>
<td><strong>Catch Data</strong></td>
<td>Vessel Details, Fishing Permit, Catch, Transshipment, Landing</td>
<td>Vessel Database Management, Automatic alarm</td>
</tr>
</tbody>
</table>
II. Fisheries Monitoring System

- E-Reporting Procedure

1. Trip Start
2. Departure
3. Entry
4. Catch Reporting
5. Transshipment Request
6. Transshipment Result
7. Exit
8. Pre-Notification
9. Port Entry
10. Landing Result

- Fishing Area
- Port Area

- Non fishing days
- Lost fishing gear
## II. Fisheries Monitoring System

**ERS Unit Main Screen**

<table>
<thead>
<tr>
<th>VOYAGE</th>
<th>DEPARTURE</th>
<th>PRE-ARRIVAL NOTI.</th>
<th>ARRIVAL</th>
<th>ENTRY/EXIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>FISHING</td>
<td>REQUEST TRANSHIP</td>
<td>TRANSHIP</td>
<td>LANDING</td>
<td>MEASUREMENT</td>
</tr>
<tr>
<td>[Tuna purse seine fishery]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **FISHERIES MONITORING SYSTEM**
- **COMM. STATUS**
- **CONFIG.**
- **MESSAGE**

You are using an Internet network in the terminal.

UTC : 2016-02-24 07:06:03

LMT : 2016-02-24 16:06:03
### ERS Unit Catch Report Screen

#### II. Fisheries Monitoring System

<table>
<thead>
<tr>
<th>No</th>
<th>Report Date-Time</th>
<th>Report Cnt</th>
<th>Fishery Zone</th>
<th>Report Pos.(Lat.)</th>
<th>Report Pos.(Long.)</th>
<th>Haul Numbers</th>
<th>Comm, Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2016-02-24 07:24:43</td>
<td>1</td>
<td>ICCAT</td>
<td>35° 13.256’ N</td>
<td>129° 13.880’ E</td>
<td>1</td>
<td>Transmit Comm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No</th>
<th>Shoot</th>
<th>Retrieve</th>
<th>Species</th>
<th>Catch</th>
<th>Release</th>
<th>Discard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Start Time</td>
<td>Start Pos,</td>
<td>End Time</td>
<td>End Pos,</td>
<td>Start Time</td>
<td>End Time</td>
</tr>
</tbody>
</table>

*You are using an Internet network in the terminal.*

UTC: 2016-02-24 07:30:59
LMIT: 2016-02-24 16:30:59

MODIFY  DELETE
KFIMS (Korea Fisheries Information Management System)

II. Fisheries Monitoring System

FMC Data Management

Monitoring Database
- Position (Track Record)
- Vessel Specification
- Vessel Operator

Catch Database
- Catch
- Transshipment
- Landing
- Others

Data-link Solution

Web Service

NIFS
- Position Report
- Catch Report
- Transshipment/Landing
- Vessel (Operator) specification

FiQ

MOF

Vessel Operator

NIFS

Catch Data

Quota

Transshipment/Landing
Vessel/Operator Details
II. Fisheries Monitoring System

<table>
<thead>
<tr>
<th>조업정보</th>
<th>취약정보</th>
<th>임종정보</th>
<th>관리정보</th>
<th>기기정보</th>
<th>기타관리</th>
</tr>
</thead>
<tbody>
<tr>
<td>배정</td>
<td>부대</td>
<td>선박</td>
<td>노선</td>
<td>위치</td>
<td>활동</td>
</tr>
<tr>
<td>17:30</td>
<td>05:21</td>
<td>23</td>
<td>부과</td>
<td>중위</td>
<td>활동</td>
</tr>
</tbody>
</table>

### 조업정보

<table>
<thead>
<tr>
<th>선박명</th>
<th>현재 / 전체</th>
<th>배출물</th>
<th>그래프</th>
</tr>
</thead>
<tbody>
<tr>
<td>사소산업(주)</td>
<td>6,933,583 / 11,868,553</td>
<td>58.4 %</td>
<td></td>
</tr>
<tr>
<td>사조산업(주)</td>
<td>90,783 / 887,065</td>
<td>10.2 %</td>
<td></td>
</tr>
<tr>
<td>(주)사조산업</td>
<td>383,929 / 5,246,562</td>
<td>7.3 %</td>
<td></td>
</tr>
<tr>
<td>(주)스마트포어선</td>
<td>104,931 / 1,719,599</td>
<td>6.1 %</td>
<td></td>
</tr>
<tr>
<td>동원산업(주)</td>
<td>311,693 / 7,034,839</td>
<td>4.4 %</td>
<td></td>
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</tbody>
</table>

### 취약정보

<table>
<thead>
<tr>
<th>수역명</th>
<th>현재 / 전체</th>
<th>배출물</th>
<th>그래프</th>
</tr>
</thead>
<tbody>
<tr>
<td>전미안해태어수출원</td>
<td>6,946,812 / 13,946,897</td>
<td>49.8 %</td>
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<tr>
<td>중서부태양수산수출원</td>
<td>785,812 / 26,805,866</td>
<td>2.9 %</td>
<td></td>
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<tr>
<td>하피아해양</td>
<td>302,160 / 31,950,000</td>
<td>0.9 %</td>
<td></td>
</tr>
<tr>
<td>남미안태양수산수출원</td>
<td>0 / 1,095,370</td>
<td>0.0 %</td>
<td></td>
</tr>
<tr>
<td>대서양한국수산수출원</td>
<td>0 / 1,539,064</td>
<td>0.0 %</td>
<td></td>
</tr>
</tbody>
</table>

### 정보수집사항

<table>
<thead>
<tr>
<th>선정시</th>
<th>선박명</th>
<th>수정정보</th>
<th>사용</th>
<th>요청정보</th>
<th>상태</th>
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</thead>
<tbody>
<tr>
<td>2015-10-27 00:09:34.173</td>
<td>신사산업(주)</td>
<td>임종정보 &gt; 수출정보</td>
<td>오키</td>
<td>출발지</td>
<td>상안</td>
</tr>
<tr>
<td>2015-10-27 07:32:31.5</td>
<td>신사산업(주)</td>
<td>임종정보 &gt; 수출정보</td>
<td>오키</td>
<td>출발지</td>
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<td>2015-10-27 07:48:19.373</td>
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<td>오키</td>
<td>출발지</td>
<td>상안</td>
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<tr>
<td>2015-10-26 05:43:31.423</td>
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<td>부산출항</td>
<td>오키</td>
<td>출발지</td>
<td>상안</td>
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<tr>
<td>2015-10-23 03:00:11.73</td>
<td>고성산업(주)</td>
<td>어선출항</td>
<td>오키</td>
<td>출발지</td>
<td>상안</td>
</tr>
</tbody>
</table>

### 기타 보고정보

<table>
<thead>
<tr>
<th>보고일시</th>
<th>선박명</th>
<th>선박명</th>
<th>형태</th>
<th>입/출항일</th>
<th>입/출항항구</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-11-01 01:02:51.0</td>
<td>(주)지오핑</td>
<td>지오핑 379</td>
<td>입항</td>
<td>2015-11-02 00:00:00</td>
<td>논평도 BLUFF HARBOUR</td>
</tr>
<tr>
<td>2015-11-01 01:00:31.0</td>
<td>(주)지오핑</td>
<td>지오핑 379</td>
<td>입항</td>
<td>2015-11-02 00:00:00</td>
<td>논평도 BLUFF HARBOUR</td>
</tr>
<tr>
<td>2015-11-01 00:14:24.0</td>
<td>(주)지오핑</td>
<td>지오핑 379</td>
<td>입항</td>
<td>2015-11-02 00:00:00</td>
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</tr>
<tr>
<td>2015-11-01 00:02:11.0</td>
<td>(주)지오핑</td>
<td>지오핑 379</td>
<td>입항</td>
<td>2015-11-02 00:00:00</td>
<td>논평도 BLUFF HARBOUR</td>
</tr>
</tbody>
</table>
Building a Comprehensive MCS System

**Improved Monitoring and control functions in FMS**

- Advanced IUU risk assessment ➔ Strengthening of MCS capacity
- Big data management and statistics ➔ Contribution to global fish stock management

**Introducing Video Monitoring System in line with International MCS standards**

- EMS trial operation to be initiated in 2016 to verify IUU fishing activities in real time
- Ensuring deterrence and credibility of Korean FMC
Schematic of EM

- VMS Satellite Unit (Position)
- Satellite Communication (MVSAT)
- Internet
- Video Cameras
- Gear Sensor
- Fire Detection Sensor

- Real-time video monitoring
- Detection of gear usage
- Safety management (Fire detection)
1. FMS = VMS + ERS
Thank you