

SC-03-05.2(01)

**3rd Meeting of the Southern Indian Ocean Fisheries Agreement (SIOFA) Scientific Committee
20-24 March 2017, Saint Denis, La Reunion**

Thailand National Observer Program

Relates to agenda item: 5.2

Working paper Info paper

Delegation of Thailand

Abstract

This paper introduces the Electronic Reporting and Electronic Monitoring System (ERS and EMS) that is the requirement by law for the Thai oversea vessel. Although the priority of the using is for compliance purpose, the system has the capacity to record and report the scientific fisheries data and information to fulfill the scientific purpose.

So, the presentation of this paper is to recommend the Scientific Committee (SC) to include study of Thailand on the efficiency of electronic observer program to the SC working plan in order to identify the minimum requirement in the electronic observer devices in complement the human observer scheme. The determination on the proportion of human observer and electronic observer coverage is the main objective of the proposed work plan.

Recommendations (*working papers only*)

1. SC should review the minimum coverage of onboard observer
 2. SC should include the development of the electronic observer program to collecting the scientific information in a SC Work Plan;
 3. The objective of the work plan on the development of the electronic observer program should be to identify the minimum requirement in the electronic observer devices in complement the human observer scheme and to determine the proportion of human observer and electronic observer coverage.
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1. Introduction

After a long history of the enforcement of the Royal Fisheries Act B.E. 2490 (1947), the Royal Ordinance (RO) on Fisheries B.E. 2558 (2015) has been issued to supersede additionally with the new implementing rules to control the oversea fisheries. The issuing of the RO 2558 and the according implementing rules is to reflect the current situation and context as well as to conform the SIOFA CMMs that Thailand has become a member, since 21 May 2017. The principle of the control is to effectively monitoring of vessel before port out, during operation and until the vessel return to the port of Thailand.

One among other circumstances of control, the Electronic Reporting and Electronic Monitoring System has been introduced and used. Although the priority of the using is for compliance purpose, the system has the capacity to record and report the scientific fisheries data and information. However, its minimum capacity requirement to be analysed and determined.

This paper introduces the Electronic Reporting and Electronic Monitoring System (ERS and EMS) that is introduced to use in Thai oversea fleet. The paper aims to recommend the Scientific Committee (SC) to include this pilot study into the SC working plan. We expect that with the support of the SC, we will be able to identify the minimum requirement of the electronic observer devices in complement the human observer scheme. Then, the proportion of human observer and electronic observer coverage can be determined.

2. Monitoring Control and Surveillance System

The minimum requirements of the authorized oversea fishing vessels and carrier include the installations of the VMS, ERS and EMS, the submission of the transshipment plan before port out (PO); the submission of logbook, transshipments request and declaration via ER; port-out and port-in only at the designated ports; record fisheries information in the provided paper logbook and placing onboard of human observer (Table 1 and Figure 1). This package of system allows the verification of data and information.

Table 1 Minimum requirement for Thai oversea fishing vessels and carriers

VMS	Transshipment plan	Port-out & Port-in at Designated Port	Paper Logbook	E-Reporting System			E-Monitoring System		Human Observer
				E-logbook	Activities Request	Activities Declaration	CCTV	winch sensors	
√	√	√	√	√	√	√	√	√	√

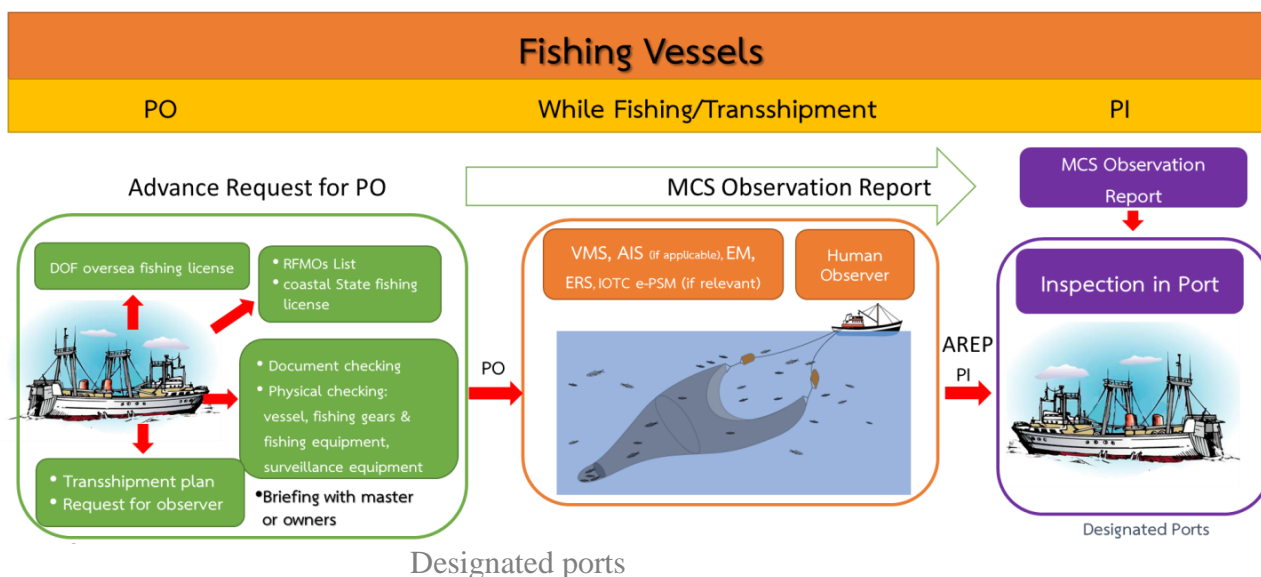


Figure 1 Protocol to Control the Oversea Fisheries and Transshipment

3. Observer Scheme

3.1 Human Observer

The Royal Ordinance on Fisheries B.E. 2558 (2015) and amendment has the provisions on fisheries observer requirement, Section 50 and 51. Observers have a duty to observe, record and collect data and information for the scientific and compliance purposes. The observers will be qualified and approved by DOF Director General only after obtaining the observer training based on the FAO Guidelines for Developing an at-Sea Fisheries Observer Program. The training course included the onboard training that particularly emphasized the learning on trawl configuration which is the major fishing gear of Thai fleet as well as the species identification in a multi-species situation. Currently, there are 22 qualified observers for SIOFA vessels. The DOF also hold a training course for debriefers or training for the trainer course. Debriefers are the ones who in charge the briefing session for observers before their deployment as well as debriefing session when they return. The briefing and debriefing will ensure the quality of the collecting data and information as well as to improve observer capacity and performance. Currently, the fisheries biologist, of Department of Fisheries are working as debriefers of observers.

As to comply with the SIOFA CMM 2017/02, CMM for the Collection, Reporting, Verification and Exchange of Data relating to fishing activities in the Agreement Area (Data Standards), DOF requires the authorized fishing vessels undertaking bottom fishing in the Agreement Area having the observer onboard as following criteria.

Onboard observer coverage: (a) using trawl gear has observer coverage for the duration of the trip (100% coverage). (b) using any other bottom fishing gear types have 20% onboard observer coverage in any fishing year.

Transshipment Observer: In case the vessels request to transshipment at sea, the vessels must have transshipment observer for 100% coverage of the transshipment period.

3.2 Electronic Observer System

The electronic observer system comprises 2 main components :Electronic Reporting System (ERS) and Electronic Monitoring System (EMS)

Electronic Monitoring (EM): Firstly, the component includes a CCTV that equipped to the vessel to continuously records the video of the activities on fishing operation, transshipment and transfer of a whole period of the trip and then used to pursue the monitoring. Secondly, the electronic sensors are the component attached to winches, cranes and hatch. Any move of these gears and equipment, the photo snapshot will be automatically taken and sent via satellite to the Fisheries Monitoring Center (FMC), Department of Fisheries. The signal transmitting from winch means the start and end of the fishing operation which accordingly indicate the fishing effort. In addition, the manual photo snapshot is an available function for competent officer to remotely snapshot a photo of a particular period of time. This EM is the additional components to VMS. Thus, the video and photos will be accompanied with the footage information that synchronized and derived from VMS. So, the activities can be either real-time monitored or examined afterwards from the recording videos.

Electronic Reporting System (ERS) is an electronic component comprising reporting and requesting functions. The reporting function is available to report data and information on fishing and transshipment activities from the vessel to the FMC, Department of Fisheries. The first category of the report function is the reporting of the fishing data recorded in the electronic logbook which is built-in the ERS. The required timeframe of the report is at least once a day of data separated in a single set of fishing. So, the information based on the designed logbook template can be received by scientists of the DOF on a daily basis. The second category of the report function is the reporting of activities authorized by the DOF such as transshipment declaration, transfer declaration and loading/landing declaration. The requesting function is available for the master of the vessel to request the authorizations from DOF such as transshipment request, crew transfer request and loading/landing request. So, the ERS is the two-way communication system that allow the FMC, DOF to receive the scientific fisheries data during the trip of the vessel. The data is in electronic format that can facilitate the management and analysis afterwards.

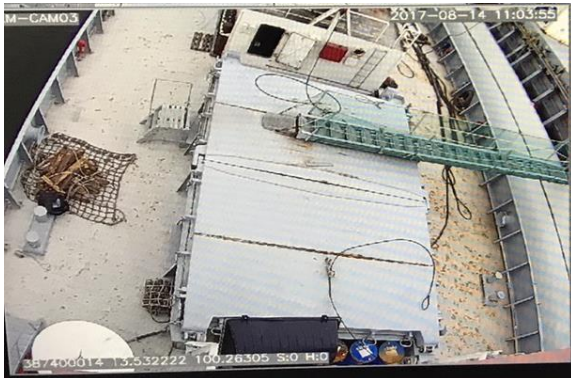
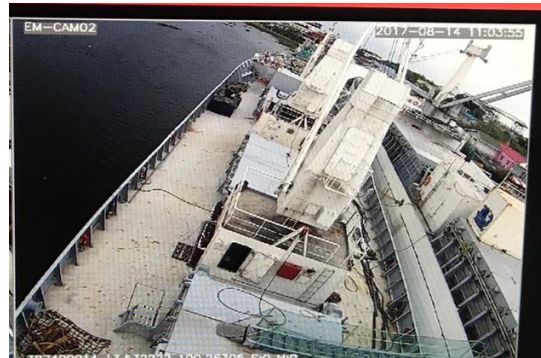


Figure 2 CCTV installed onboard and its snapshots



Figure 3 the electronic sensors attached to winches, cranes and door of fish hatch to detect fisheries activities.



Figure 4 Processors and connectors for satellite data transmission

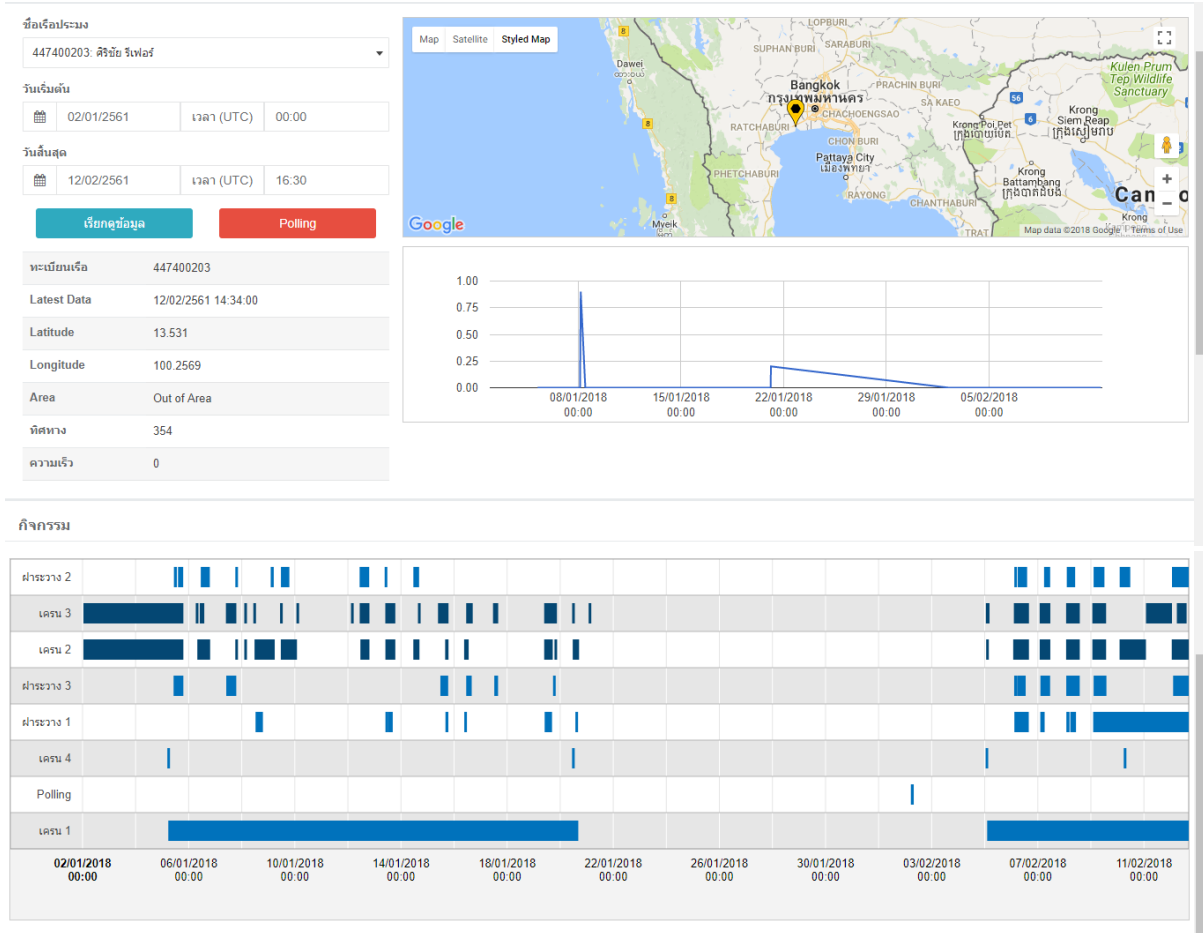


Figure 5 The display window of electronic system for monitoring by competent officer

The screenshot shows a software interface for monitoring a vessel. A central 'Snapshot' window displays a video frame of an open hatch on a ship's deck. The hatch is filled with a grey, granular material. The text 'SAFETY+FIRST' is visible on the hatch's edge. Below the video frame, technical data is displayed: COURSE : 180.000000, SPEED : 0.038877 kts, LAT : 0.738046, and LONG : 73.429178. The video frame also includes a timestamp: 447400203HATCH1 20/01/2018 14:07:38. To the right of the video frame is a table with the following data:

ชื่อกิจกรรม	ผ่าระหว่าง 1
เวลาเริ่มกิจกรรม	20/01/2018 14:07
ทะเบียนเรือ	447400203
Latitude	0.7381
Longitude	73.4295
ทิศทาง	121
ความเร็ว	0
Area	51

The background interface shows a timeline from 02/01/2018 00:00 to 11/02/2018 00:00 and various status indicators for different areas and equipment.



A. Opened Hatch



B. Closed Hatch

Figure 6 Snapshots transmitted via satellite from the detected sensors of the crane and hatch to the electronic monitoring system of officer

The screenshot shows a software interface for vessel tracking. A central window titled 'Snapshot' displays a bird's-eye view of a vessel. To the right of the snapshot is a data table:

ชื่อกิจกรรม	Polling
เวลาเริ่มกิจกรรม	02/02/2018 06:36
ทะเบียนเรือ	447400203
Latitude	13.3983
Longitude	100.32
ทิศทาง	349
ความเร็ว	0
Area	71

Below the main snapshot are four smaller thumbnail images. The background interface shows a timeline from 02/01/2018 to 11/02/2018 and various vessel status indicators.

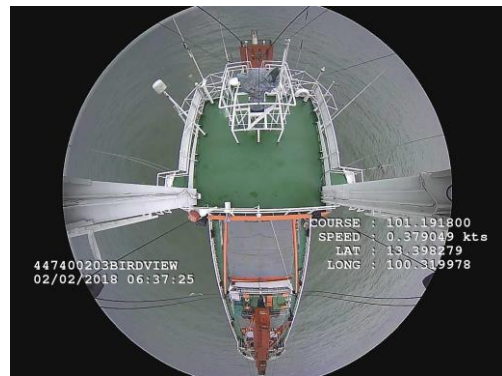


Figure 7 Snapshots from polling for suspicious behavior such as drifting of vessel

กล่องค้นหา

ชื่อเรือที่ยื่นเรื่อง

[-- เลือกทั้งหมด --]

ประเภทคำขออนุญาต

[-- เลือกทั้งหมด --]

สถานะพิจารณาผล

[-- เลือกทั้งหมด --]

สถานะการรับ-ส่งข้อมูล

[-- เลือกทั้งหมด --]

วันที่ยื่นเรื่อง

📅 15/01/2561 ถึง 13/02/2561

🔍 ค้นหา 🔄 Auto Refresh 🔄 ล้างคำค้นหา

* หากข้อมูลเรือขนถ่ายในรายการข้อมูล ไม่ปรากฏ list รายชื่อเรือขนถ่าย กรุณาแจ้งข้อมูลกับเจ้าหน้าที่

จำนวน 50 📄

#	Tracking No.	ประเภทคำขออนุญาต	ชื่อเรือที่ยื่นเรื่อง	วันที่ยื่นเรื่อง	สถานะพิจารณาผล	คำสั่ง
1	4700042720825120218srng66r	รับหรือส่งสัตว์น้ำ	470004272 : อาเซียน มาริน รีเฟลอร์ 2 (เรือขนถ่าย)	12/02/2561 08:25	✔️ อนุมัติ	📄 รายละเอียด
2	387400014065511021879	รับหรือส่งสัตว์น้ำ	387400014 : เพอนานโด (เรือขนถ่าย)	11/02/2561 06:55	✔️ อนุมัติ	📄 รายละเอียด
3	4422000141138090218OZ	รับหรือส่งสัตว์น้ำ	442200014 : ส. เข็มทอง 1 (เรือขนถ่าย)	09/02/2561 11:38	✔️ อนุมัติ	📄 รายละเอียด
4	5300031720751090218HC	รับหรือส่งสัตว์น้ำ	530003172 : กัสสร (เรือขนถ่าย)	09/02/2561 07:51	✔️ อนุมัติ	📄 รายละเอียด
5	5300031720244080218S1	รับหรือส่งสัตว์น้ำ	530003172 : กัสสร (เรือขนถ่าย)	08/02/2561 02:44	❌ ไม่อนุมัติ	📄 รายละเอียด
6	3874000140452060218SZ	รับหรือส่งสัตว์น้ำ	387400014 : เพอนานโด (เรือขนถ่าย)	06/02/2561 04:52	✔️ อนุมัติ	📄 รายละเอียด

EM & ERS

EM จัดการคำขออนุญาต รายงาน จัดการผู้ใช้

prasil.luesrithawornsin 🔙 ออกจากระบบ

รายละเอียดคำขออนุญาตทำการรับสัตว์น้ำ

อนุมัติ เมื่อวันที่ 09/02/2561 09:22 โดย chuanpit.jaikeo@dof.in.th

วันที่ยื่นเรื่อง	09/02/2561 07:51	ชื่อเรือ	530003172-กัสสร	วันที่รับสัตว์น้ำ	10/02/2561 ถึง 15/02/2561
วันที่ได้รับข้อมูล	09/02/2561 07:52 ล่าช้า 1.82 นาที	เลขทะเบียน RFMOs	-	บริเวณที่รับสัตว์น้ำ	KOODDOO (KDDOOMDV)
ประเภท	รับสัตว์น้ำ	เลข IMO	-	ปริมาณที่ขนถ่าย	350,000 kg

รายการสัตว์น้ำ

#	ชนิดสัตว์น้ำ	ชื่อวิทยาศาสตร์	ปริมาณ (กิโลกรัม)
1.	ปลาทูน่า (Mixed tuna)		350,000

หมายเหตุ หากผู้ควบคุมเรือแจ้งเจ้าหน้าที่ว่า ทางเรือยังรับสัตว์น้ำไม่เสร็จตามวันที่ ที่แจ้งไว้ จึงขอเพิ่มวันที่จะรับสัตว์น้ำตามแผนขนถ่ายสัตว์น้ำที่แจ้งรับและส่งให้เจ้าหน้าที่แล้ว

Service Provider ได้รับค่าคอมรับคำขออนุญาตแล้ว

EM & ERS

EM จัดการคำขออนุญาต รายงาน จัดการผู้ใช้

prasil.luesrithawornsin 🔙 ออกจากระบบ

รายละเอียดรายงานการรับสัตว์น้ำ

ชื่อเรือ	กัสสร	ชื่อผู้คุมเรือ	-	ประเภท	รับสัตว์น้ำ
ทะเบียนเรือเจ้าของตง	530003172	เลขทะเบียน RFMOs	-	วันที่รับสัตว์น้ำ	10/02/2561 ถึง 11/02/2561
นามเรียกขาน	-	เลข IMO	-	ปริมาณที่ขนถ่าย	90,657 kg
		ท่าเรือ	KOODDOO (KDDOOMDV)	Tracking No.	530003172044612021839

รายการขนถ่าย (Location of Transshipment)

#	ชนิดสัตว์น้ำ	ชื่อทางวิทยาศาสตร์	น้ำหนัก (kg.)	ลักษณะของสัตว์น้ำ
1.	ปลาทูน่าทองแดง, ปลาโธแนบ, ปลาโธแดง, ปลาโธแดงไทย (Skipjack tuna)	Katsuwonus pelamis (Linnaeus, 1758)	90,657	None; Round (whole, live)

🔙 ย้อนกลับ

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Figure 8 The display window of requesting for permission and reporting through the electronic Reporting system (ERS)

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3.3 Electronic observer in application of scientific purpose

Scientific data area	Human observer coverage (%)	Electronic Observer coverage (%)	
		EMS	ERS
1. Effort			
• Gear configuration	100/20	na (deriving prior to port out)	na (deriving prior to port out)
• Number of setting	100/20	100	100
• number of fishing hour	100/20	100	100
2. Fishing ground	Position of settings & hauling	100% of tracking	100% position of settings & hauling
3. Catch			
• species/amount	100/20	To be studied	e-logbook
• Incidental catch species/amount	100/20	To be studied	e-logbook
• Releasing species/amount	100/20	To be studied	e-logbook
• Discards species/amount	100/20	To be studied	e-logbook

3.4 Cost and Benefit

Thai fleet are mostly the trawlers of the sizes between 100-400 GRT. These overseas vessels are required by national regulation to be equipped with the VMS and electronic observer. However, this equipment is costly. Apart from the first payment for equipping between 20,000-27,000 USD, it also needs a monthly payment for the airtime operation of between 170-1,600 USD, depending on the package size of data choosing by fishers. Moreover, to comply **SIOFA CMM 2017/02**, the vessels authorized to operate in the SIOFA area of competent are required to placing observer onboard for 100% coverage for trawler. It is another additional cost for fisheries in SIOFA area. Before became a member of SIOFA, Thailand required all overseas vessels to placing observer for only 5% of operations which was comply to the **IOTC Resolution 11/04 on a Regional Observer Scheme**. The payment for observer was 125 USD/days. It is a very high rate when applied to SIOFA vessels as the prices of multispecies of demersal fish caught by bottom trawling nets are much lower than tunas. Previously, it was not too difficult for fishers to afford on the additional cost for placing observers for 5% coverage. However, when the 100% coverage has been required, this cost factor has affected fishers to decide whether they continue their trawling fishery while observer thought is the more risk on working onboard of the small vessel where shelter is either limited. The negotiation between fishers and group of observers took place many times with the Department of Fisheries as the mediator, but there were no agreed the rate of payment. Lastly, by the end of February, 2018, the Department of Fisheries decided to seek for only the qualified observers who are willing to work with the payment of 70 USD/Day with the intention to reduce the cost of the vessel and maintain fishing operation in SIOFA area accordingly.

With the long term perspective, after effective and stability of an electronic observer the Department of Fisheries propose to complement the human observer with the electronic observer, based on the SIOFA CMM 2017/01 Para. 33 (a), 33 (b) and 33 (c). Thus, this might reduce the cost for fishers in a long-term basis. In this regard, Thailand submitted the working paper to the Scientific Committee to review in the minimum coverage of onboard human observer as well as to determine the proportion of the complimentary of an electronic observer to the human observer.