Proposed Standards, Specifications and Procedures (SSPs) for the SIOFA VMS.

*Draft 3.*

**SIOFA Secretariat**

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Description automatically generated

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Southern Indian Ocean Fisheries Agreement

*Accord relatif aux Pêches dans le Sud de l’Océan lndien*

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# Background

Vessel Monitoring Systems (VMS) are satellite-based monitoring systems that enable flag States and regional fisheries management organisations (RFMOs) to track and monitor the activities of fishing vessels in a defined geographical area through the transmission of position data by fishing vessels at regular intervals. They are a cornerstone of monitoring control and surveillance (MCS) programmes at national and international levels and a key instrument in the fight against illegal, unreported and unregulated (IUU) fishing.

Article 6(1)(h) of the Southern Indian Ocean Fisheries Agreement (SIOFA) requires SIOFA to develop rules and procedures for the monitoring, control and surveillance of fishing activities to ensure compliance with SIOFA conservation and management measures (CMM), including a system of verification incorporating vessel monitoring and observation of vessels operating in the SIOFA Area. While flag CCPs are required to track and monitor their vessels’ activities using VMS, SIOFA does not operate a VMS system. In this respect, it is behind other RFMOs that have installed and operated a VMS. However, CMM 10 on Monitoring also requires SIOFA to develop specifications and propose rules and procedures for establishing a SIOFA VMS.

To close this gap, the 10th Meeting of the Parties to the SIOFA (MoP10) adopted Conservation and Management Measure (CMM) 16 (2023) setting out the framework of the SIOFA VMS covering all critical aspects, including the scope of application, definitions, nature and specifications of the VMS, prevention of tampering and actions in case of suspected breach, use and release of VMS data requiring / not requiring the consent of Contracting Parties, Participating Fishing Entities and Cooperating non-Contracting Parties (collectively: CCPs), closed and interim protected areas, as well as data security and confidentiality. However, this framework needs to be further completed through the development of Standards, Specifications and Procedures (SSPs) as required by paragraph 9 of [CMM 16 (2023) (Vessel Monitoring System),](https://siofa.org/management/CMM/16%282023%29) [[1]](#footnote-2) prior to the entry into operation of the SIOFA VMS.

This third draft of the SSPs for the SIOFA VMS takes into consideration comments received from CCPs during and after the 1st and 2nd Meetings of the SIOFA VMS Working Group.

***The proposed SSPs assume that Cooperating Non-Contracting Parties (CNCPs) will be treated similarly as CPs and PFEs, recalling that CNCPs do not currently contribute to the budget, which may be impacted by the implementation of the SIOFA VMS.***

***For the purpose of this document, all terms used shall have the same meaning as those in CMM 16 (2023) unless otherwise specified.***

# 1. Purpose

1. The purpose of these Standards, Specifications and Procedures (SSPs) is to complement measures established under CMM 16 (2023) so as to achieve the objectives of the CMM, which are to monitor in an automatic, continuous and cost-effective manner the movements and activity of fishing vessels operating in the Agreement Area to ensure compliance with SIOFA Conservation and Management Measures (CMMs).

# 2. Application

1. These SSPs shall apply to all fishing vessels flying the flag of a CCP, that are entered onto the SIOFA Record of Authorised Vessels (RAV) and operating within the Agreement Area (Area), as defined in Article 3 of the Agreement.
2. These SSPs do not prejudice the right of CCPs to apply additional or more stringent measures to vessels flying their flag.

# 3. General Provisions

1. For the purposes of these SSPs, the term “VMS data” shall refer to all data associated with the SIOFA VMS, including VMS position reports and ALC details.
2. CCPs shall:
   1. For vessels entered onto the SIOFA Record of Authorized Vessels (RAV) prior to the entry into force of CMM 16 (2023), provide ALC details specified in paragraph 6 for each vessel registered on the SIOFA RAV within 30 days before the entry into operation of the SIOFA VMS.
   2. For vessels to be entered onto the SIOFA RAV after the entry into operation of the SIOFA VMS, provide ALC details specified in paragraph 6 at the time of the submission of information required by [CMM 07 (2022) (Vessel Authorization](https://siofa.org/management/CMM/07%282022%29)).[[2]](#footnote-3)
3. CCPs shall provide the following ALC details:
   1. Model and Brand
   2. ALC Unique Identifier[[3]](#footnote-4)
   3. Service Provider (Inmarsat/Iridium/ARGOS etc…) ID
4. For the purposes of CMM 16 (2023), the term Unique Vessel Identifier (UVI) shall have the following meaning:
5. For CCPs transmitting VMS position reports pursuant to paragraph 6 a), of CMM 16 (2023) the UVI shall be the International Radio Call Sign (IRCS), the International Maritime Organization (IMO) Number or the ALC Unique Identifier.
6. For CCPs transmitting VMS position reports pursuant to paragraph 6 b) of CMM 16 (2023) the UVI shall be the ALC Unique Identifier.

# 4. Methods to ensure ALCs comply with SIOFA Standards

***Explanatory Notes***

Paragraph 12 of CMM 16 (2023) sets out the general standards by which ALCs are expected to be installed and operated. Paragraphs 18 and 19 expand on the requirements to have tamper-proof ALCs while also prohibiting the tampering of ALCs. The minimum standards for ALCs are further described in Annex 1 of CMM 16 (2023).

This section of the SSPs proposes the option of the MoP adopting a list of approved ALCs and clarifies that it is the responsibility of flag CCPs to ensure that ALCs installed on their vessels comply with SIOFA specifications and standards.

1. The MoP may adopt a list of approved ALCs to be used by vessels entered onto the SIOFA Record of Authorized Vessels (RAV), taking into account lists approved by existing regional and subregional VMS programs and by CCPs.
2. CCPs shall be responsible for ensuring that the ALCs on board vessels flying their flag and entered into the SIOFA RAV meet the specifications and standards set out in paragraph 12 and Annex 1 of CMM 16 (2023). To this end, CCPs are encouraged to conduct periodic audits of a representative sample of ALCs. Any findings shall be reported as part of CCPs' annual compliance assessment reporting under paragraph 12 of CMM 11 (2020) (Compliance Monitoring Scheme).

# 5. Rules for Polling and Programming for Vessels Reporting to the Secretariat in accordance with Paragraph 6 b).

***Explanatory Notes***

Paragraph 6 b) of CMM 16 (2023) allows for simultaneously reporting VMS position reports automatically to the Secretariat. In this regard, there may be a need to interact with the ALCs to program its automatic reporting and to change its reporting frequency based on location (programming) and also to "query" an unscheduled position report (polling). It should be noted that while CMM 16 (2023) does not provide for polling of ALCs, it may be required during diagnosis when the good reception of position reports cannot be achieved. Other cases may be to stop the reporting temporarily or indefinitely based on scenarios, such as the deletion of the vessels from the SIOFA RAV, repairs, flagging and decommissioning of fishing vessels.

As such, these SSPs suggest procedures for the same.

1. CCPs shall ensure that the ALCs on board of vessels flying their flag are configured to comply with paragraph 8 of CMM 16 (2023) and paragraph 3 of Annex 1 to the CMM and, where applicable, shall send programming commands.
2. CCPs which opt for simultaneously reporting under paragraph 6. b) of CMM 16 (2023) shall ensure that their ALC service provider is capable of providing simultaneous reporting to multiple destinations (receivers) and shall bear the cost for reporting to their FMC and to the Secretariat as well as for [polling]/programming command sending. The Secretariat (SIOFA VMS) shall receive the "simultaneously reporting" in accordance with the protocol provided by the CCP’s service provider.

# 6. Responsibilities of the Secretariat

***Explanatory Notes***

These SSPs set out the responsibilities of the Secretariat in administering the SIOFA VMS.

## The SIOFA Secretariat

1. The Secretariat shall:
   1. ensure that data, once received by the SIOFA VMS, are not altered, manipulated, copied or interfered with in any way, and that the data is only used in accordance with CMM 03 (2016), and with any such additional data security and confidentiality rules adopted by the Meeting of Parties for the purposes of the SIOFA VMS.
   2. provide a stable, reliable, fully maintained and supported SIOFA VMS that is in compliance with CMM 03 (2016), and any additional data security and confidentiality rules adopted by the Meeting of Parties.
   3. utilise the SIOFA VMS in a manner consistent with the Agreement, CMMs and these SSPs.
   4. compile and report annually to the MoP, through the Compliance Committee, an overview of potential issues identified by vessel and flag with regard to their compliance with CMM 2016 (2023) and these SSPs.
   5. monitor and report annually to the Compliance Committee on the implementation and performance of the SIOFA VMS and its application and, as necessary, make recommendations for improvements or modifications to the system and these SSPs established to support it.

# 7. Data format for data transmission

***Explanatory Notes***

Paragraph 6 a) of CMM 16 (2023) allows CCPs to choose to report VMS positions automatically to the Secretariat via their FMC. However, these provisions do not provide for the data format and standards that will allow these transfers to take place.

There are at least two globally accepted data formats for data exchange of fisheries information. These are the North Atlantic Format (NAF) and the Fisheries Language for Universal Exchange (UN/FLUX). NAF is recognised as an older format with some limitations, therefore there are ongoing efforts to improve NAF or develop new standards for the exchange of fisheries information altogether.

UN/FLUX is one such proposed standard that has already gained recognition by the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), with more states and regional organisations adopting its use for VMS data exchange, among others. The most significant advantage of UN/FLUX over NAF is its ability to cater to other data types, such as inspection reports, catch and effort reporting, etc. However, the uptake of UN/FLUX is still relatively low, and implementation may present challenges to the Secretariat and CCPs.

Noting the above, the SSPs recognise the two data formats and provide standards to enable CCPs to exchange data using those formats.

1. VMS position reports sent to the SIOFA VMS, in accordance with paragraph 6 a) of CMM 16 (2023) shall be transferred using the following data formats;
   1. The North Atlantic Format (NAF) (Annex 1)

or

* 1. Fisheries Language for Universal Exchange, (UN/FLUX) (Annex 2)

1. VMS position reports sent using NAF shall follow the structure of NAF messages provided in Annex 1, and shall be transferred using one of the following application layers (secured connection):
   1. Hypertext Transfer Protocol Secure (HTTPS)
   2. File Transfer Protocol (FTP) with Transport Layer Security (TLS) (FTPS)
   3. Email
2. VMS position reports sent using FLUX shall adhere to the specifications of the Flux P1000-1 (General Principles) and Flux P1000-7 (Vessel Position Domain), as described in Annex 2.[[4]](#footnote-9)

# 8. Data Confidentiality and Security Provisions

***Explanatory Notes***

The SSP also cover the Confidentiality and Security procedures required to ensure the secure and confidential treatment of VMS data being exchanged between CCPs and the Secretariat.

1. The CCPs and the Secretariat shall only use VMS data for the purposes specified in CMM 16 (2023).
2. The Secretariat shall maintain a database of the ALC details attributed to all vessels entered onto the SIOFA RAV. ALC details shall be treated as confidential information and shall not be public domain data.
3. The Secretariat shall only provide VMS position reports to the contact point designated pursuant to Paragraph 11 of CMM 16 (2023).
4. CCPs shall immediately delete VMS position reports received for the purposes set out in paragraph 28 of CMM 16 (2023) once the VMS position reports have served their intended purpose, and confirm their deletion to the Secretariat in writing without delay.
5. CCPs and the Secretariat shall take appropriate measures to protect VMS data against accidental or unlawful destruction, loss, alteration, unauthorised disclosure or access, and against all inappropriate form of processing.
6. The following security measures shall be mandatory for the SIOFA VMS:
   1. System Access Control: The Secretariat shall ensure that the system can withstand break-in attempts from unauthorised persons.
   2. Authenticity and data access control: The Secretariat shall ensure that the system is able to limit access of users only to the data necessary for their task via a flexible user identification and password mechanism.
   3. Communication Security: VMS position reports shall be securely communicated.
   4. Data Security: All VMS data received by the Secretariat shall be securely stored for a predetermined time and shall not be tampered with.
   5. Security Procedures: The Secretariat shall implement an Information System Security Policy adopted by the Meeting of the Parties to ensure proper access to the system (hardware and software), system administration and maintenance, backup and general usage of the system.
7. The system shall have the following mandatory access control features:
   1. Stringent password and authentication system, attributed to each designated user. The user shall only have access to functions and data that they are designated to have access to;
   2. All access to physical computer systems shall be controlled by the Secretariat;
   3. The system shall automatically record all events for analysis and detection of potential security breaches;
   4. Time-based access control: Access to the system can be specified in terms of times-of-day and days of the week that each user is allowed to log into the system;
   5. Terminal access control: the system shall specify for each workstation which user(s) are allowed to access it.
8. Communication between CCPs, the SIOFA VMS Service Provider, and the Secretariat shall use secure internet protocols. The exchange of VMS position report may also require the use of digital certificates that correctly identify and validate the party submitting VMS position reports.
9. The Secretariat shall periodically review access to and the logs of the VMS software and ensure the proper maintenance of system security.

# Annex 1: Description of the North Atlantic Format (NAF)[[5]](#footnote-10)

## Data Elements of NAF Messages

All NAF Messages sent to the SIOFA VMS shall contain, at minimum, the information required in paragraph 1. f) of CMM 16 (2023). The general structure and data elements are as below

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Element** | **Field Code** | **Definition** | **Contents** |
| Start Record | SR | Defines the start of the message structure. | No Data |
| Address | AD | Indicates the destination. Provider and Secretariat to define code for SIOFA VMS | 3-Alpha code [(ISO-3166)] |
| From | FR | 3-alpha code describing the country which FMC is submitting the report. | 3-Alpha code [(ISO-3166)] |
| Sequence Number | SQ | Message Sequence Number | 0-999999 |
| Internal Reference Number | IR | Unique Number attributed by the flag state | 3-Alpha code [(ISO-3166)] 0-999999999 |
| Type of Message | TM | Letter code of the type of message | POS = position report, MAN = manual report, ENT = entry report, EXI = exit report |
| Radio Call Sign (ICRS) | RC | Vessel detail: international radio call sign of the vessel | IRCS |
|  |  |  |  |
| Latitude (decimal) | LT | Latitude expressed in degrees and decimals (WGS-84) | +(-)DD.ddd |
| Longitude (decimal) | LG | Longitude expressed in degrees and decimals (WGS-84) | +(-)DD.ddd |
| Latitude | LA | Latitude expressed in degrees and minutes (WGS-84) | N(S)DDMM |
| Longitude | LO | Longitude expressed in degrees and minutes (WGS-84) | E(W)DDDMM |
| Vessel Speed | SP | Speed of the vessel | Knots \* 10 |
| Vessel Course | CO | Heading of the vessel in degrees | 1-360 |
| Flag State | FS | State of registration of the vessel. | 3-Alpha code [(ISO-3166)] |
| Date | DA | Date of reported event | YYYYMMDD |
| Time | TI | Time of reported event | HHMM |
| End of Record | ER | Indicates the end of the message/report | No Data |

## Structure of the position report

Each data transmission shall be structured as follows:

* double slash (//) and the characters ‘SR’ indicate the start of a message,
* a double slash (//) and field code indicate the start of a data element,
* a single slash (/) separates the field code and the data,
* pairs of data are separated by space,
* the characters ‘ER’ and a double slash (//) indicate the end of a record.

# Annex 2: Description of the Fisheries Language for Universal Exchange, (UN/FLUX)

**2 I: UN/FLUX format : mandatory data to be transmitted in position reports**

|  |  |  |
| --- | --- | --- |
| **Data** | **Mandatory/optional** | **Comments** |
| Addressee | M | Message detail — Addressee Alpha-3 country code [(ISO-3166)]  Note: Part of the FLUX TL envelope |
| From | M | Message detail — Sender Alpha-3 country code [(ISO-3166)] |
| Unique message identifier | M | UUID according to RFC 4122 defined by IETF |
| Date and time of transmission | M | Date and time when the message was created in UTC according to ISO 8601, using the format YYYY-MM-DDThh:mm:ss[.000000]Z[[6]](#footnote-11) |
| Flag State | M | Message detail – Flag of flag State, Alpha-3 country code [(ISO-3166)] |
| Type of message | M | Message detail – Type of message  The following codes are to be used:  ENTRY: first position recorded after entering the fishing zone)  EXIT: first message recorded after leaving the fishing zone  POS: posistions transmitted while being in the fishing zone)  MANUAL: position transmitted manually |
| Radio call sign | M | Vessel detail – Vessel international radio call sign (IRCS) |
| Contracting party internal reference number | O | Vessel detail – Unique contracting party vessel identifier |
| Unique Vessel Identifier (UVI) | O | Vessel detail – IMO number |
| External registration number | O | Vessel detail – Number on side of vessel [(ISO 8859.1)] |
| Latitude | M | Vessel position detail – Position in degrees and decimal degrees DD.ddd (WGS-84)  Positive coordinates for positions north of the Equator; Negative coordinates for positions south of the Equator. |
| Longitude | M | Vessel position detail – Position in degrees and decimals DD.ddd (WGS-84)  Positive coordinates east of the Greenwich meridian; Negative coordinates west of the Greenwich meridian. |
| Course | M | Vessel course 360° scale |
| Speed | M | Vessel speed in knots |
| Date and time | M | Vessel position detail – date and time of recording of the position in UTC according to ISO 8601, using the format YYYY-MM-DDThh:mm:ss[.000000]Z[[7]](#footnote-12) |

The transmission of data in UN/FLUX format is to be structured in the manner set out in the separate Technical Implementation Document to be developed and agreed by the Parties before the date of application of the Protocol.

1. Conservation and Management Measure for the establishment of a SIOFA Vessel Monitoring System (Vessel Monitoring System) [↑](#footnote-ref-2)
2. Conservation and Management Measure for Vessel Authorisation and Notification to Fish. [↑](#footnote-ref-3)
3. For INMARSAT ALCs, the *Inmarsat Serial Number* (ISN) shall be provided. [↑](#footnote-ref-4)
4. <https://unece.org/trade/uncefact/unflux> [↑](#footnote-ref-9)
5. <https://www.naf-format.org/index.htm> [↑](#footnote-ref-10)
6. YYYY= year; MM= month, including leading 0 where month number is less then 10; DD= day of the month including leading 0 where day number is less then 10; T= the letter T to indicate the part of the time section; H24= hours of the day expressed with 2 digits using the 24-hour notation; MI=minutes expressed as 2 digits; SS=seconds expressed as 2 digits; [.000000]= optionally fractions of seconds may be included, not including the brackets; Z= time zone, which must be Z (i.e. UTC) [↑](#footnote-ref-11)
7. YYYY= year; MM= month, including leading 0 where month number is less then 10; DD= day of the month including leading 0 where day number is less then 10; T= the letter T to indicate the part of the time section; H24= hours of the day expressed with 2 digits using the 24-hour notation; MI=minutes expressed as 2 digits; SS=seconds expressed as 2 digits; [.000000]= optionally fractions of seconds may be included, not including the brackets; Z= time zone, which must be Z (ie. UTC) [↑](#footnote-ref-12)