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VMSWG-06-02

Potential amendments to CMMs and the SIOFA SSPs to support the entry into operation of the SIOFA VMS

SIOFA Secretariat

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Abstract

At the *3rd Meeting of the Working Group to Support the Establishment of the SIOFA VMS (VMSWG03)*, CCPs recognised the need to align some of the current Conservation and Management Measures currently in force in place with the provisions Conservation and Management Measure for the establishment of a SIOFA Vessel Monitoring System (CMM 16 (2023) (Vessel Monitoring System), and the Standards, Specifications and Procedures (SSPs) for the SIOFA VMS, to ensure compatibility between those instruments, ensuring a smooth implementation of the SIOFA VMS once it enters into operation. The CMMs discussed at VMSWG-03 were CMM 03 (2016) on Data Confidentiality and CMM 07(2022)[3] on Vessel Authorization.

The need to review current CMMs in force was also highlighted at the *5th Meeting of the Working Group to Support the Establishment of the SIOFA VMS (VMSWG05)*, highlighting the need to review any CMMs that may need to be updated to accommodate the VMS work.

To this end, a series of potential amendments is being proposed to the two aforementioned CMMs, recalling those discussions, and also to CMM 16(2023) on a SIOFA Vessel Monitoring System, to strengthen confidentiality and security provisions in those CMMs ahead of the

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[2] Documents available only to members invited to closed sessions.
[3] CMM 07 (2022) on Vessel Authorization was superseded by CMM 07(2024).

anticipated entry into operation of the SIOFA VMS and to improve compatibility between those CMMs

This paper also proposes some amendments to the SIOFA VMS SSPs to allow an efficient testing phase and subsequent entry into operation of the SIOFA VMS. A list of these updates proposed are listed below:

CMM 03 (2016) on Data Confidentiality – Annex 1

- Addition of a paragraph that classifies VMS data as "Confidential Data"
- Adding provisions that would require CCPs and the Secretariat to take necessary measures to protect data from loss, unauthorised access, and inappropriate processing
- Added requirement for the Secretariat to report on measures taken pursuant to CMM 03 (2016)

CMM 07 (2024) on Vessel Registration – Annex 2

- Inclusion of a footnote to paragraph 2 r. to align with proposed changes in the SIOFA VMS SSPs

CMM 16 (2023) on Vessel Monitoring System – Annex 3

- Additional provision in paragraph 1 f.) to classify "VMS Provision Reports" as "Confidential Data"
- Inclusion of some core provisions from the SIOFA VMS SSPs. It includes the addition of two new annexes to this end to include:
    - Data formats for transmission of VMS data (New Annex 2 of CMM)
    - Confidentiality and Security provisions from the SIOFA VMS SSPs and some additional provisions from VMSWG02 and VMSWG03.(new Annex 3 of CMM)
- Inclusion of new provisions to require the treatment of data pursuant to CMM 02 (Data Standards) and CMM 03 (Data Confidentiality)
- **Additional** provisions to require the annual reporting and monitoring of the Service Providers performance vis-à-vis the future VMS **Service** Contract
- Minor editorial changes throughout the CMMs with improved language to make it consistent with other SIOFA instruments

SIOFA VMS SSPs – Annex 4

- Sets a deadline for CCPs to submit ALC details to the Secretariat to allow the commencement of the testing phase of the SIOFA VMS
- Classification of ALC Details as "Confidential Data"
- Added clarity to paragraph 20
- Minor editorial changes to the SSPs and Annex 2 thereof

Recommendations (for proposals and working papers only)

- The SIOFA VMSWG-06 is welcome to **review** the proposed updates to the three above-mentioned CMMs and the SIOFA VMS SSPs;
- That the VMSWG-06 ***endorse*** those changes and makes recommendations to the CC/MoP as necessary

CMM 03(2016)

Conservation and Management Measure for Data Confidentiality and Procedures for access and use of data (Data Confidentiality)

The Meeting of the Parties to the Southern Indian Ocean Fisheries Agreement;

RECOGNISING that Article 4(a) of the *Southern Indian Ocean Fisheries Agreement* (SIOFA or the Agreement) calls on the Contracting Parties, in giving effect to the duty to cooperate, to adopt measures on the basis of the best scientific evidence available to ensure the long-term conservation of fishery resources, taking into account the sustainable use of such resources and implementing an ecosystem approach to their management;

FURTHER RECOGNISING Article 11(3)(d) of the Agreement which provides that Contracting Parties shall collect and share in a timely manner, complete and accurate data concerning fishing activities by vessels flying its flag operating in the area, in particular on vessel position, retained catch, discarded catch and fishing effort, where appropriate maintaining confidentiality of data as it relates to the application of relevant national legislation; and

RECALLING Article 14 of the Agreement which calls on Contracting Parties to promote transparency in decision making processes and other activities carried out under the Agreement;

***ADOPTS* the following Conservation and Management Measure (CMM) in accordance with Article 6 of the Agreement:**

1. This CMM establishes the policy and procedures on confidentiality of data that will apply to data collected from Contracting Parties, cooperating non-Contracting Parties (CNCPs) and Participating Fishing Entities (PFEs) in accordance with the Agreement and relevant SIOFA CMMs.

Data ~~Submitted~~ submitted to the Secretariat

2. The policy for releasing catch-and-effort, length-frequency and observer data will be as follows:

Public domain data

a) The following data shall be considered to be "public domain data":

i) Data for vessels including current flag, name, registration number, international radio call sign, IHS-Fairplay (IMO) number, previous names, port of registry, previous flag, type of vessel, types of fishing methods, length, length type, gross tonnage (and/or gross registered tonnage), power of main engine(s), hold capacity, vessel authorisation start and end dates; and

ii) Observer data grouped by 5° longitude by 5° latitude, stratified by month and by flag State, provided that:

A. the catch of no individual vessel can be identified within a time/area stratum; and

B. the flag State that submitted the data provides its written authorisation that such data be considered to be "public domain data".

b) The following data shall be considered to be "public domain catch and effort data": Catch-and-effort and length-frequency data grouped by 5° longitude by 5° latitude by month stratified by fishing method associated with catch and flag State, provided that the catch of no individual vessel can be identified within a time/area stratum. In cases when an individual vessel can be identified, the data will be aggregated to preclude such identification, and will then be "public domain catch and effort data".

c) The Secretariat shall keep "public domain catch and effort data" confidential until the Meeting of the Parties has acted on the advice of the Scientific Committee in relation to a SIOFA Bottom Fishing Impact Assessment and SIOFA bottom fishing footprint as provided for under the Conservation and Management Measure for the Interim Management of Bottom Fishing in the SIOFA Agreement Area (CMM 01(2024)). This will not prevent observer data or finer scale catch and effort data being made available by the Secretariat to the Scientific Committee on a confidential basis where required.

d) The Secretariat shall compile and disseminate "public domain data", and "public domain catch and effort data" provided the conditions in paragraph 2(c) are satisfied, through appropriate mechanisms, including the SIOFA website, once developed.

Finer level stratification

e) Finer-scale data including catch and effort, length-frequency and observer data will be made available to the Scientific Committee and any of its working groups, on a confidential basis, to undertake its work.

f) Catch and effort and length-frequency data grouped at a finer level of time-area stratification will only be released with written authorisation from the flag State that submitted the data. Each such data release will also require the specific permission of the Secretariat.

g) Individuals requesting the data are required to provide a description of the research project, including the objectives, methodology and intentions for publication. Prior to publication, the manuscript should be cleared by the Secretariat. The data are released only for use in the specified research project and the data must be destroyed upon completion of the project. However, with written authorisation from the flag State that submitted the data, catch-and-effort and length-frequency data may be released for long-term usage for research purposes, and in such cases the data need not be destroyed.

h) The identity of individual vessels will be hidden in finer-level data unless the individual requesting this information can justify its necessity and the flag State that submitted the data provides its written authorisation.

i) Individuals requesting data shall provide a report of the results of the research project to the SIOFA Secretariat for subsequent forwarding to the sources of the data.

2.bis VMS data shall be considered confidential data and shall be processed in accordance with the specific requirements of CMM 16(2023) (Vessel Monitoring System) whereby 'processed'

refers to the collection, recording, organisation, structuring, storage, retrieval, consultation, use, disclosure by transmission, deletion, dissemination or otherwise making available of VMS data.

Procedures for the safeguarding and securing of records

3. Procedures for safeguarding records and databases will be as follows:

a) Access to logbook-level information, VMS data or detailed observer data will be restricted to SIOFA staff members who require these records for their official duties. Each staff member having access to these records will be required to sign an attestation recognising the restrictions on the use and disclosure of the information.

b) Logbook and observer records will be kept locked, under the specific responsibility of the Data ~~Manager~~Officer. These sheets will only be released to authorised SIOFA staff members for the purpose of data input, editing or verification. Copies of these records will be authorised only for legitimate purposes and will be subjected to the same restrictions on access and storage as the originals.

c) Databases will be encrypted to preclude access by unauthorised persons. Full access to the database will be restricted to the Data ~~Manager~~ Officer and to senior SIOFA staff members requiring access to these data for official purposes, under the authority of the SIOFA Executive Secretary. Staff entrusted with data input, editing and verification will be provided with access to those functions and data sets required for their work.

c) bis CCPs and the Secretariat shall take appropriate measures to protect all data against accidental or unlawful destruction, loss alteration, unauthorised disclosure or access, and against all inappropriate forms of processing.

Data submitted to the Scientific Committee

4. Data submitted to the Scientific Committee and any of its working groups will be retained by the Secretariat or made available for other analyses only with the permission of the flag State that submitted the data.

5. The above rules of confidentiality will apply to all members of the Scientific Committee and any of its working groups.

5 bis The Secretariat shall inform the MoP of measures taken to implement these confidentiality and security provisions.

CMM 07(2024)[1]

Conservation and Management Measure for Vessel Authorisation and Notification to Fish (Vessel Authorisation)

The Meeting of the Parties to the Southern Indian Ocean Fisheries Agreement;

RECOGNISING that Article 6(1)(h) of the *Southern Indian Ocean Fisheries Agreement* (SIOFA or the Agreement) calls on the Meeting of the Parties to develop, *inter alia*, a system of verification to incorporate vessel monitoring and observation;

NOTING that Article 1(i) of the Agreement defines 'fishing vessel' as any vessel used or intended for fishing, including a mothership, any other vessel directly engaged in fishing operations, and any vessel engaged in transhipment;

TAKING INTO ACCOUNT the provisions of Article 11(2) of the Agreement which provides that no Contracting Party shall allow any fishing vessel entitled to fly its flag to be used for fishing in the SIOFA Area of Application (Agreement Area) unless it has been authorised to do so by the appropriate authority or authorities of that Contracting Party;

***ADOPTS* the following Conservation and Management Measure (CMM) in accordance with Article 6 of the Agreement:**

1. The Meeting of the Parties shall establish a SIOFA Record of Authorised Vessels for fishing vessels authorised to fish in the Agreement Area. For the purpose of this CMM, fishing vessels that are not entered onto the SIOFA Record of Authorised Vessels are deemed not to be authorised to fish for, retain on board, tranship or land fishery resources in the Agreement Area[2].
2. Each Contracting Party, cooperating non-Contracting Party and Participating Fishing Entity (CCP) shall submit electronically to the Executive Secretary the following data for each of the vessels flying their flag that are authorised to operate in the Agreement Area. The vessels shall be entered onto the SIOFA Record of Authorised Vessels only if the following information has been submitted[3]:
    a. name of vessel, registration number, previous names (if known), and port of registry;
    b. previous flag (if any), using codes;
    c. International Radio Call Sign (if any);
    d. IMO Number (if required by IMO);
    e. name and address of owner or owners;
    f. type of vessel (using appropriate ISSCFV codes);

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[1] CMM 07(2024) Vessel Authorisation supersedes CMM 07(2022) Vessel Authorisation

[2] Until such time as the Meeting of the Parties adopts a framework governing research cruises in the Agreement Area, the Meeting of the Parties may authorise research vessels from a non-CCP to conduct a research cruise which may include limited fishing for fishery resources without being included on the SIOFA Record of Authorised Vessels. The MoP may request any information it needs for considering the authorization of such research activities, and may apply any terms and conditions to authorized research activities it deems necessary.

[3] The Secretariat shall provide advice to the relevant CCP within two business day after initially receiving information from the CCP, if the minimum information requirements have not been met. The relevant CCP shall promptly provide requested information or explanation to the Secretariat.

g. length and length type (e.g. LOA, LBP);

h. name and address of operator (manager) or operators (managers) (if any);

i. type of fishing method or methods (using appropriate ISSCFG codes);

j. gross tonnage (GT);

k. power of main engine or engines (kw);

l. Fish hold capacity (cubic metres);

m. Freezer type (if applicable);

n. Number of freezing units (if applicable);

o. Freezing capacity (if applicable);

p. Vessel communication types and numbers (e.g. INMARSAT A, B and C, VSAT numbers);

q. certified drawings or description of all fish holds;

r. the following Automatic Location Communicator (ALC) details[4]:

   i. Model and brand;

   ii. ALC unique identifier;

   iii. Service provider (e.g. INMARSAT/IRIDIUM/ARGOS); and

s. Good quality, high resolution digital images of the vessel of appropriate brightness and contrast, no older than 5 years old:
   - one digital image showing the starboard side of the vessel displaying its full overall length and complete structural features;
   - one digital image showing the port side of the vessel displaying its full overall length and complete structural features; and
   - one digital image of the stern taken directly from astern.

3. CCPs shall ensure that the data referred to in Paragraph 2 on the vessels flying their flag authorised to fish in the Agreement Area is kept up to date. CCPs shall inform the Executive Secretary of any modification regarding the vessel data, including authorisation status of current fishing vessels and any new vessels, within 15 days after such modification.

4. The Executive Secretary shall maintain the SIOFA Record of Authorised Vessels. A summary of the SIOFA Record of Authorised Vessels, except the information in paragraph 2. e, h, and p-r (inclusive), shall be made publicly available on the SIOFA website.

5. Each CCP shall:

   a. authorise the vessels flying their flag to operate in the Agreement Area only if they are able to fulfil in respect of these vessels the requirements and responsibilities under the Agreement, and all relevant SIOFA CMMs;

[4] Following the conclusion of the 12th Meeting of the Parties (MoP12), the Executive Secretary shall identify vessels, if any, on the SIOFA Record of Authorised Vessels for which CCPs have not submitted all ALC details. Such vessels shall be marked as 'incomplete' in the Record until all required details have been submitted. By 31 July 2025, the Executive Secretary shall write to CCPs whose vessels have incomplete ALC details and request that these CCPs either provide the outstanding information or request the removal of such vessels from the Record by 31 December 2025 at the latest.

b. take necessary measures to ensure that the vessels flying their flag comply with all relevant SIOFA CMMs;

c. take necessary measures to ensure that the vessels flying their flag that are on the SIOFA Record of Authorised Vessels keep on board valid certificates of vessel registration and valid authorisation to fish and/or to undertake fishing related activities;

d. ensure that the vessels flying their flag on the SIOFA Record of Authorised Vessels have no history of IUU fishing, or, if those vessels have such history, the new owners have provided sufficient evidence demonstrating that the previous owners and operators have no legal, beneficial or financial interest in, or control over those vessels, or that having taken into account all relevant facts, its vessels are not engaged in or associated with IUU fishing;

e. ensure, to the extent possible under domestic law, that the owners and operators of its registered vessels on the SIOFA Record of Authorised Vessels are not engaged in or associated with fishing activities conducted in the Agreement Area by vessels not registered in the SIOFA Record of Authorised Vessels; and

f. take necessary measures to ensure, to the extent possible under domestic law, that the owners and/or operators of the vessels on the SIOFA Record of Authorised Vessels are citizens, residents or legal entities within its jurisdiction so that any enforcement or punitive actions can be effectively taken against them.

6. Each CCP shall take measures, under their applicable legislation, to prohibit the fishing and fishing related activities on fishery resources covered by the Agreement by vessels which are not registered in the SIOFA Record of Authorised Vessels.

7. Each CCP shall, as soon as practicable, notify the Secretariat of any evidence showing that there are reasonable grounds for suspecting vessels not registered on the SIOFA Record of Authorised Vessels are operating in the Agreement Area.

CMM 16(2023)[1]

Conservation and Management Measure for the establishment of a SIOFA Vessel Monitoring System (Vessel Monitoring System)

The Meeting of the Parties to the Southern Indian Ocean Fisheries Agreement:

RECALLING Article 6(1)(h) of the Southern Indian Ocean Fisheries Agreement (SIOFA) which requires the Meeting of the Parties to develop rules and procedures for the monitoring, control and surveillance of fishing activities in order to ensure compliance with conservation and management measures adopted by the Meeting of the Parties including, where appropriate, a system of verification incorporating vessel monitoring and observation of vessels operating in the Agreement Area;

MINDFUL of Article 18(3) of the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA) which outlines the duties of the flag State, including to take measures to ensure recording and timely reporting of vessel position, catch of target and non-target species, fishing effort and other relevant fisheries data, and to ensure the monitoring, control and surveillance of vessels, their fishing operations and related activities by, inter alia, the development and implementation of vessel monitoring systems;

FURTHER MINDFUL of the importance of international cooperation in the fight against illegal, unreported and unregulated (IUU) fishing, in particular through the exchange of information and effective monitoring, control and surveillance;

RECALLING paragraph 14 of the SIOFA Conservation and management measure for the Monitoring of Fisheries in the Agreement Area (CMM 10(2023)) to develop specifications and propose rules and procedures for the establishment of a SIOFA Vessel Monitoring System;

MINDFUL of the key principles upon which the vessel monitoring system should be based, including the confidentiality and security of information handled by the system, and its efficiency, cost-effectiveness and flexibility;

***ADOPTS* the following Conservation and Management Measure (CMM) in accordance with Articles 4 and 6 of the Agreement:**

Definitions

1. The following definitions shall apply to this CMM:
   a) "Automatic location communicator" (ALC) means a satellite-based on-board device that is capable of continuously, automatically and independently of any intervention of the vessel, transmitting VMS position reports;
   b) "Fisheries monitoring centre" (FMC) means the authority or agency of a Flag CCP responsible for managing the VMS for its flagged fishing vessels;
   c) "Vessel Monitoring System" (VMS) means a satellite-based monitoring system which, at regular intervals, provides VMS position reports;
   d) "SIOFA VMS" means the SIOFA Vessel Monitoring System established under this CMM;
   e) "Manual reporting" means the transmission via alternative means of the position reporting of a fishing vessel when an ALC fails to transmit VMS position reports;
   f) VMS position reports shall include at least the following data, which shall be considered confidential (i.e. non-public domain data):

i. the fishing vessel's unique vessel identifier[2];
ii. the current geographical position (latitude and longitude) of the vessel;
iii. the date and time (UTC) of the fixing of the position of the vessel;
iv. the vessel's speed; and
v. the vessel's course.

Objective

2. The main objective of the SIOFA VMS is 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 CMMs.

Application

3. The SIOFA VMS shall apply to all fishing vessels flying the flag of a Contracting Party, cooperating non-Contracting Party or participating fishing entity (CCP) that are entered onto the SIOFA Record of Authorised Vessels and operating in the Agreement Area, as defined in Article 3 of the Agreement.

Nature and specifications of the SIOFA VMS

4. The SIOFA VMS shall be administered by the SIOFA Secretariat under the guidance of the Meeting of the Parties.

5. Each CCP shall ensure that all fishing vessels flying their flag entered onto the SIOFA Record of Authorised Vessels and operating in the Agreement Area are fitted with an operational ALC that complies with the minimum standards for ALCs described in Annex 1.

6. Each CCP shall ensure that all fishing vessels flying their flag referred to in paragraph 3 report VMS position reports automatically while they are operating in the Agreement Area either:
   a) to the ~~Secretariat~~ SIOFA VMS via their FMC; or
   b) simultaneously to both the ~~Secretariat~~ SIOFA VMS and their FMC.

7. CCPs that choose to report under option (a) of paragraph 6 shall automatically forward VMS position reports to the ~~Secretariat~~ SIOFA VMS without delay but not later than one hour after receipt.

8. CCPs~~S~~ shall ensure that VMS position reports are reported automatically[3] by each of their vessels while operating in the Agreement Area:
   a) at least once every hour as provided for in paragraph 25 of CMM 15(2024) (Management of Demersal Stocks), and;
   b) at least once every two hours in other circumstances.

[2] The unique vessel identifier shall be the ALC Unique Identifier or, for vessels reporting pursuant to paragraph 6 a) of this Measure, the vessel's International Radio Call Sign (IRCS) or International Maritime Organisation (IMO) number.

[3] In the event that the connection between the ALC and the satellite is temporarily unavailable, the data referred to in paragraph 1(f) of this Measure shall still be collected but shall instead be transmitted as soon as the satellite connection becomes available again.

9. VMS position reports shall be transmitted to the SIOFA VMS using one of the data formats in Annex 2. ~~The Meeting of the Parties shall establish VMS position report format and transmission standards, specifications and procedures prior to the entry into operation of the SIOFA VMS.~~

Commented [JL1]: ***This note was added after the chair endorsed this document:*** This para may only be applicable when VMS data is transmitted pursuant to para 6.a of this CMM. To discuss at WG06

10. Each CCP shall ensure that their FMC can automatically receive and, for those CCPs whose vessels transmit VMS position reports in accordance with paragraph 6 a), transmit VMS position reports from ALCs. Each CCP shall provide backup and recovery procedures in case of system failures.

11. Each CCP shall provide the Secretariat with the name, address, email, and telephone number(s) of ~~the relevant authorities of~~ its FMC and shall designate a VMS Point of Contact for the purposes of any communication regarding the SIOFA VMS ("VMS Point of Contact"). Each CCP shall notify the Secretariat of any changes to these details within 30 days after such changes take effect and the Secretariat shall promptly notify this information to the other CCPs and make it available on the non-public area of the SIOFA website.

12. Each CCP shall ensure that in vessels flying their flag:
    a) the ALC is not tampered with in any way;
    b) VMS position reports are not altered in any way;
    c) the antenna or antennae are connected to the ALC and not obstructed in any way;
    d) the power supply of the ALC is not interrupted in any way;
    e) the ALC is not removed from the vessel except for the purpose set out in paragraph 15; and
    f) ~~T~~the satellite navigation decoder and transmitter ~~shall be~~are fully integrated and housed in the same tamper-proof physical enclosure.

Procedure for manual reporting

13. In the event of non-reception of four consecutive, expected programmed VMS position reports by the SIOFA VMS, the Secretariat shall notify the CCP whose flag the vessel is flying. The Flag CCP shall immediately notify the vessel Master and direct the Master to provide it with manual reports every four hours of the vessel's position in accordance with the reporting frequency under paragraph 8. The Flag CCP shall ensure that this manual reporting is transmitted to the Secretariat, either by the flag CCP or by the fishing vessel, with a clear distinction between reports that are manual and those that are automatic.

14. The Flag CCP shall ensure that the manual reports include at least the information referred to in paragraph 1(f)(i), (ii) and (iii). If automatic reporting to the SIOFA VMS has not been re-established within 60 days of the commencement of manual reporting, the Flag CCP shall order the vessel to cease fishing, stow all fishing gear and return immediately to port in order to undertake repairs or replacement.

15. Following a technical failure or non-functioning of the ALC, the Flag CCP shall ensure that the fishing vessel only leaves port once the ALC fitted on board is fully functioning to the satisfaction of the competent authorities of the Flag CCP. By derogation, the Flag

CCP may authorise the fishing vessel to leave port with a non-functioning satellite-tracking device for its repair or replacement.

16. The Flag CCP shall ensure that the vessel recommences fishing in the Agreement Area only when the ALC has been confirmed as operational by its FMC. Four consecutive, programmed VMS position reports must have been received by the FMC to confirm that the ALC is fully operational.

17. Notwithstanding paragraphs 13 to 16, where the Flag CCP confirms that the ALC on board the vessel is functioning normally, but the ~~Secretariat~~ SIOFA VMS is not receiving the vessel's VMS position reports, the Secretariat shall immediately take steps to resolve any technical or other issue that is preventing the SIOFA VMS~~it~~ from receiving the VMS position reports. If the VMS position reports cannot be retrieved by the ~~Secretariat~~ SIOFA VMS after the issue has been resolved, the Flag CCP shall send these VMS position reports to the Secretariat via manual reporting and provide the Secretariat with any assistance as may be necessary.

Measures to prevent tampering with ALCs

18. Each CCP shall ensure that the ALCs fitted on board vessels flying their flag are tamper resistant, that is, are of a type of and configuration that prevent the input or output of false positions, and that they are not capable of being over-ridden, whether manually, electronically or otherwise, in accordance with the minimum standards for ALCs set out in Annex 1.

19. Each CCP shall prohibit vessels flying their flag to destroy, damage, switch off, render inoperative or otherwise interfere with the ALC.

20. In the event that a CCP or the Secretariat obtains information that indicates an ALC on board a fishing vessel operating in the Agreement Area does not meet the requirements of Annex 1 or there is evidence that the ALC has been tampered with, it shall immediately notify the Secretariat, and the fishing vessel's Flag CCP which shall:

    a) investigate the suspected breach of this measure as soon as possible; and

    b) depending on the outcome of the investigation, if necessary suspend the vessel from fishing until an ALC that meets the specifications outlined in Annex 1 is operational on board the vessel; and

    c) communicate actions taken to the Meeting of the Parties, including the outcome of the investigation within 30 days of its completion.

21. Nothing in this measure shall prevent a CCP from applying additional or more stringent measures to prevent tampering of ALCs on board vessels flying its flag.

Use and ~~Release~~ release of VMS position reports

22. All requests for access to VMS position reports must be made to the Secretariat by a VMS Point of Contact by electronic means using the appropriate template[4] at least 5 working days in advance of the intended use, except for the purposes of paragraph 23 c), and in accordance with the procedures set out in paragraphs 24 to 29.

[4] The template shall be developed by the Secretariat and submitted to the Compliance Committee and the Meeting of the Parties for consideration.

23. Upon request of a CCP, the Secretariat shall only provide VMS position reports without the permission of the Flag CCP for the exclusive purposes of:

    a) planning for active surveillance operations and/or boarding and inspection at sea within 72 hours of the expected start of the operations in the Agreement Area;

    b) active surveillance operations and/or boarding and inspection at sea in the Agreement Area;

    c) supporting search and rescue activities undertaken by a competent Maritime Rescue Coordination Centre (MRCC) subject to the terms of an Arrangement between the Secretariat and the competent MRCC. Such Arrangement shall be reported to the Meeting of the Parties.

24. For the purpose of implementing paragraph 23 a) and b):

    a) Boarding and inspection at sea shall be undertaken in accordance with CMM 14(2021) (High Seas Boarding and Inspection Procedures), including its paragraph 7;

    b) each CCP shall only make available VMS position reports relevant to the planned or active surveillance operations and/or boarding and inspection at sea in the Agreement Area to the requesting CCP's inspectors and any other government officials for whom it is deemed necessary to access the reports;

    c) CCPs shall ensure that such inspectors and government officials keep the VMS position reports confidential and only use the reports for the purposes described in paragraph 23 a) and b);

    d) CCPs shall be allowed to retain VMS position reports provided by the Secretariat for the purposes described in paragraph 23 a) and b) until 72 hours after the time that the active operation has concluded. Except in the circumstances outlined in paragraph 24 e), CCPs shall submit a written confirmation to the Secretariat of the deletion of the VMS position reports immediately after the 72 hours' period;

    e) CCPs' inspectors and government officials authorities shall be allowed to retain VMS position reports provided by the Secretariat for the purposes described in paragraph 23 a) and b) for longer than the periods specified in paragraph 24 d) only if it is part of an investigation, judicial or administrative proceeding of an alleged violation of the provisions of the Agreement, any CMMs or decisions adopted by the Meeting of the Parties. CCPs shall inform the Secretariat of the purposes and expected timing of the additional period of retention before the expiration of the initial period and the Secretariat shall promptly notify the concerned Flag CCP of the additional period. CCPs shall submit a written confirmation to the Secretariat of the deletion of the VMS position reports as soon as the purposes have been achieved or immediately after the additional period of retention has expired, whichever is earlier.

25. For the purpose of paragraph 23 a), CCPs requesting VMS position reports shall provide the Secretariat the geographic area of the planned surveillance and/or boarding and inspection activity. In this case, the Secretariat shall provide the most recent available VMS position reports for the notified geographic area at a specified point in time no more than 72 hours prior to the commencement of each surveillance and/or boarding and inspection activity. In the event that the planned surveillance and/or boarding and inspection activity does not proceed, the CCP shall notify the Secretariat, ~~destroy~~ delete

the VMS position reports, and confirm their deletion to the Secretariat in writing, without delay. Regardless of whether the planned surveillance and/or boarding and inspection activity were conducted or not, the Secretariat shall notify the Flag CCP that the VMS position reports were provided to the CCP no later than 7 days after the VMS position report provision, and, if applicable, that they have received confirmation that the reports have been deleted.

26. For the purpose of paragraph 23 b), the Secretariat shall provide VMS position reports from the previous 10 days, for vessels detected during the active surveillance and/or boarding and inspection activity by a CCP, and VMS position reports for all vessels within 300 n miles of the surveillance and/or boarding and inspection activity location. The Secretariat shall provide regular updates of VMS position reports to the CCP for the duration of the active surveillance and/or boarding and inspection activity. CCPs conducting the active surveillance and/or boarding and inspection activity shall provide the Secretariat and the VMS Point of Contact of the Flag CCP with a report including the name of the vessel or aircraft on active surveillance and/or boarding and inspection activity. This information shall be made available without undue delay after the surveillance and/or boarding and inspection activities are complete. The Secretariat shall notify the Flag CCP that the VMS position reports were provided to the CCP no later than 7 days after the active surveillance and/or boarding and inspection activity has ended, and, if applicable, that they have received confirmation that the reports have been deleted.

27. For the purpose of paragraph 23 c), upon the request of a CCP, the Secretariat shall provide VMS position reports without the permission of the Flag CCP for the purposes of supporting search and rescue activities undertaken by a competent MRCC subject to the arrangement between the Secretariat and the competent MRCC, including in relation to the provision of VMS position reports to the requesting CCP, and the protection and deletion of those reports.

28. Other than the purposes set out in paragraph 23, the Secretariat shall only provide VMS position reports to a requesting CCP or to the SIOFA Scientific Committee and its ~~subsidiary bodies~~Working Groups where the VMS position reports relate~~s~~ to vessels flagged to CCPs that have provided prior written consent through their VMS Point of Contact for the reports to be shared. Such VMS position reports shall be deleted as soon as they have served their intended purpose, and the deletion of the reports shall be confirmed to the Secretariat in writing without delay.

29. CCPs may request VMS position reports for their own flagged vessels from the Secretariat.

Closed areas and interim protected areas

30. If VMS position reports received by the Secretariat indicate~~s~~ the presence of a fishing vessel in a closed area~~s~~, or of a fishing vessel excluding those using line and trap methods in an interim protected area, as defined in paragraph 42 and Annex 3 of CMM 01(2024) (Interim Management of Bottom Fishing), the Secretariat shall notify the Flag CCP. The Flag CCP shall investigate the matter and provide an explanation within 5 working days to the Secretariat. The explanation shall be provided by the Secretariat to the Compliance Committee for consideration at its next annual meeting.

Data security and confidentiality

31. All CCPs, the Secretariat, the SIOFA Scientific Committee and its ~~subsidiary bodies~~Working Groups, and any SIOFA VMS service provider shall ensure the secure and confidential treatment of VMS data in their respective electronic data processing facilities in accordance with the requirements of CMM 02(2023) (Data Standards), CMM 03(2016) (Data Confidentiality) and Annex 3, in particular where the processing involves transmission over a network, including by using secure internet protocols to ensure secure communications and taking all necessary measures to protect VMS data against accidental or unlawful destruction, loss, alteration, unauthorised disclosure or access, and against all unauthorised forms of processing.

32. ~~The Meeting of the Parties shall adopt detailed data security and confidentiality provisions prior to the entry into operation of the SIOFA VMS and shall review the applicability and appropriateness of CMM 03(2016) (Data Confidentiality) to VMS position report security, confidentiality, management and use.~~

Entry into operation

33. The SIOFA VMS shall enter into operation at a date to be determined by the Meeting of the Parties.

34. Upon entry into operation of the SIOFA VMS, paragraphs 5 to 14 of CMM 10(2023) (Monitoring) shall be superseded and replaced by this CMM.

Review

35. Following the entry into operation of the SIOFA VMS, the Secretariat shall report annually to the Meeting of the Parties on the implementation of, and compliance with, this CMM, including on the performance of the SIOFA VMS provider.

36. After two years of implementation of the SIOFA VMS, the Meeting of the Parties shall conduct a review of this CMM and consider improving it as appropriate.

Annex 1
Minimum standards for Automatic Location Communicators (ALCs) used in the SIOFA VMS

1. The Automatic Location Communicator (ALC) shall continuously, automatically and independently of any intervention by the fishing vessel, communicate VMS position reports referred to in paragraph 1(f) of this ~~conservation measure~~CMM.

2. The position reports referred to in paragraph 1(f) shall be obtained from a satellite-based positioning system.

3. ALCs fitted to fishing vessels must be capable of transmitting the position reports referred to in paragraph 1(f) recorded at least every fifteen minutes.

4. ALCs fitted to fishing vessels must be tamper-proof so as to preserve the security and integrity of the position reports referred to in paragraph 1(f).

5. Storage of information within the ALC must be safe, secure and integrated within a single unit under normal operating conditions.

6. It must not be reasonably possible for unauthorised persons to alter any of the VMS position reports stored in the ALC, including the frequency of position reporting to the FMC.

7. Any features built into the ALC or terminal software to assist with servicing shall not allow unauthorised access to any areas of the ALC that could potentially compromise the operation of the VMS.

8. ALCs shall be installed on fishing vessels in accordance with the manufacturer's specifications and applicable standards.

9. Under normal satellite navigation operating conditions, positions derived from the data forwarded must be accurate to within 100 metres (2 × Distance Root Mean Squared; 2DRMS) i.e., 99 per cent of the positions must be within this range.

10. The satellite navigation decoder and transmitter shall be fully integrated and housed in the same tamper-proof physical enclosure.

Annex 2
Data formats for transmission of VMS position reports

A. North Atlantic Format (NAF)

1. VMS position reports sent in NAF format shall be transmitted using one of the following application layers (secured connection):
   (i) Hypertext Transfer Protocol Secure (HTTPS);
   (ii) File Transfer Protocol (FTP) with Transport Layer Security (TLS) (FTPS);
   (iii) Email.
2. VMS position reports sent in NAF format shall contain, at minimum, the data elements in Table 1.

Table 1: NAF message data elements

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
From	FR	3-alpha code describing the country which FMC is submitting the report.	3-Alpha code
Sequence Number	SQ	Message Sequence Number	0-999999
Internal Reference Number*	IR	Unique Number attributed by the flag state	3-Alpha code. 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 (IRCS)	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
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
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

3. VMS position reports sent in NAF format shall be structured as follows:
   (i) double slash (//) and the characters 'SR' indicate the start of a message;

(ii) a double slash (//) and field code indicate the start of a data element;
(iii) a single slash (/) separates the field code and the data;
(iv) pairs of data are separated by a space;
(v) the characters 'ER' and a double slash (//) indicate the end of a record.

B. Fisheries Language for Universal Exchange (UN/FLUX)

1. VMS position reports sent in UN/FLUX format shall contain, at minimum, the mandatory data elements in Table 2.

Table 2: UN/FLUX data elements

Data Element	**Mandatory/ optional**	**Comments**
Addressee	M	Message detail — Addressee Alpha-3 country code Note: Part of the FLUX TL envelope
From	M	Message detail — Sender Alpha-3 country code
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, using the format YYYY-MM-DDThh:mm:ss[.000000]Z[5]
Flag State	M	Message detail – Flag of flag State, Alpha-3 country code
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: positions transmitted while being in the fishing zone MANUAL: position transmitted manually
Radio call sign	M	Vessel detail – Vessel international radio call sign (IRCS)
CCP internal reference number	O	Vessel detail – Unique CCP vessel identifier
Unique Vessel Identifier (UVI)	O	Vessel detail – IMO number
External registration number	O	Vessel detail – Number on side of vessel
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.

[5] YYYY= year; MM= month, including leading 0 where month number is less than 10; DD= day of the month including leading 0 where day number is less than 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).

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, using the format YYYY-MM-DDThh:mm:ss[.000000]Z[6]

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 (ie. UTC)

Annex 3

Data Confidentiality and Security Provisions

1. The following security measures shall be mandatory for the SIOFA VMS:
    a. System Access Control: The Secretariat shall ensure that the system can withstand break-in attempts from unauthorised persons.
    b. Authenticity and data access control: The Secretariat shall limit access of Secretariat staff to the data necessary for them to carry out their tasks via a flexible user identification and password mechanism.
    c. Communication Security: VMS position reports shall be securely communicated.
    d. Data Security: All VMS data received by the Secretariat shall be securely stored for a predetermined time and shall not be tampered with.
    e. 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.
2. The SIOFA VMS shall have the following mandatory access control features:
    a. 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.
    b. All access to physical computer systems shall be controlled by the Secretariat.
    c. The system shall automatically record all events for analysis and detection of potential security breaches.
    d. 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.
    e. Terminal access control: the system shall specify for each workstation which user(s) is/are allowed to access it.
3. Communication between CCPs, the SIOFA VMS Service Provider, and the Secretariat shall use secure internet protocols. The exchange of VMS position reports may also require the use of digital certificates that correctly identify and validate the party submitting the VMS position reports.
4. The Secretariat shall only provide VMS position reports to the email address specified by the requesting entity at the time the data is requested.
5. The Secretariat shall periodically review access to and the logs of the SIOFA VMS software and ensure the proper maintenance of system security.

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

SIOFA | APSOI

Southern Indian Ocean Fisheries Agreement

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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. CMM 10 (2023) (Monitoring) also requires SIOFA to develop specifications and propose rules and procedures for establishing a SIOFA VMS. While flag Contracting Parties, Participating Fishing Entities and Cooperating non-Contracting Parties (collectively: CCPs) are required to track and monitor their vessels' activities using VMS, SIOFA does not currently operate a VMS system. In this respect, it is behind other RFMOs that have installed and operate a VMS.

To close this gap, the 10th Meeting of the Parties to the SIOFA (MoP10) adopted CMM 16 (2023) (Vessel Monitoring System) 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 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) prior to the entry into operation of the SIOFA VMS.

Following intersessional work by the VMS-WG, the 11th Meeting of the Parties adopted these SSPs and the 12th Meeting of the Parties revised them.

The 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

2. These SSPs shall apply to all fishing vessels flying the flag of a Contracting Party, Participating Fishing Entity or Cooperating non-Contracting Party (collectively CCPs), 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.

3. These SSPs do not prejudice the right of CCPs to apply additional or more stringent measures to vessels flying their flag.

3. General Provisions

4. 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 Automatic location communicator (ALC) details.

5. CCPs shall:

    a. 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 ~~no later than 30 days before the entry into operation of the SIOFA VMS~~by 31 December 2025 at the latest.

    b. 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 (2024) (Vessel Authorization).[1]

6. CCPs shall provide the following ALC details:

    a. Model and Brand
    b. ALC Unique Identifier
    c. Service Provider (Inmarsat/Iridium/ARGOS etc.~~...~~)

7. For the purposes of CMM 16 (2023), the term Unique Vessel Identifier (UVI) shall have the following meaning:

    a) 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.

[1] Conservation and Management Measure for Vessel Authorisation and Notification to Fish.

b) 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 provides for the possibility 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.

8. 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.

9. CCPs shall be responsible for ensuring that the ALCs on board vessels flying their flag and entered onto 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.

10. 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, where applicable, shall send programming commands.

11. CCPs which opt for simultaneous 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 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.

12. The Secretariat shall:

    a. 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.

    b. 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.

    c. utilise the SIOFA VMS in a manner consistent with the Agreement, CMMs and these SSPs.

    d. 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.

    e. 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.

13. 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;

    a. The North Atlantic Format (NAF) (Annex 1)

    or

    b. Fisheries Language for Universal Exchange (UN/FLUX) (Annex 2)

14. 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):
    a. Hypertext Transfer Protocol Secure (HTTPS)
    b. File Transfer Protocol (FTP) with Transport Layer Security (TLS) (FTPS)
    c. Email

15. 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.[2]

[2] https://unece.org/trade/uncefact/unflux

8. Data Confidentiality and Security Provisions

Explanatory Notes

These SSPs covers the Confidentiality and Security procedures required to ensure the secure and confidential treatment of VMS data being exchanged between CCPs and the Secretariat.

16. CCPs and the Secretariat shall only use VMS data for the purposes specified in CMM 16 (2023).

17. The Secretariat shall maintain a database of the ALC details attributed to all vessels entered onto the SIOFA RAV. ALC details shall ~~not~~ be confidential data (i.e. non public domain data) but shall be provided to CCPs' VMS points of contact upon request pursuant to paragraphs 23 to 28 of CMM 16 (2023).

18. The Secretariat shall only provide VMS position reports to the contact point designated pursuant to Paragraph 11 of CMM 16 (2023).

19. 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.

20. CCPs, ~~and~~ the Secretariat, the SIOFA Scientific Committee and its Working Groups, and any SIOFA VMS service provider shall take ~~appropriate~~ all necessary measures to protect VMS data against accidental or unlawful destruction, loss, alteration, unauthorised disclosure or access, and against all ~~inappropriate~~ unauthorised forms of processing.

21. The following security measures shall be mandatory for the SIOFA VMS:

    a. System Access Control: The Secretariat shall ensure that the system can withstand break-in attempts from unauthorised persons.

    b. Authenticity and data access control: The Secretariat shall ensure that the system is able to limit access of Secretariat staff only to the data necessary for them to carry out their tasks via a flexible user identification and password mechanism.

    c. Communication Security: VMS position reports shall be securely communicated.

    d. Data Security: All VMS data received by the Secretariat shall be securely stored for a predetermined time and shall not be tampered with.

    e. 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.

22. The system shall have the following mandatory access control features:

        a. 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;

        b. All access to physical computer systems shall be controlled by the Secretariat;

c. The system shall automatically record all events for analysis and detection of potential security breaches;

d. 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;

e. Terminal access control: the system shall specify for each workstation which user(s) are allowed to access it.

23. Communication between CCPs, the SIOFA VMS Service Provider, and the Secretariat shall use secure internet protocols. The exchange of VMS position reports may also require the use of digital certificates that correctly identify and validate the party submitting the VMS position reports.

24. 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)[3]

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
From	FR	3-alpha code describing the country which FMC is submitting the report.	3-Alpha code
Sequence Number	SQ	Message Sequence Number	0-999999
Internal Reference Number*	IR	Unique Number attributed by the flag state	3-Alpha code. 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 (IRCS)	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
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
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,

[3] https://www.naf-format.org/index.htm

* Submission of IR is optional

- 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 Note: Part of the FLUX TL envelope
From	M	Message detail — Sender Alpha-3 country code
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, using the format YYYY-MM-DDThh:mm:ss[.000000]Z[4]
Flag State	M	Message detail – Flag of flag State, Alpha-3 country code
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~~CCP internal reference number	O	Vessel detail – Unique ~~contracting party~~CCP vessel identifier
Unique Vessel Identifier (UVI)	O	Vessel detail – IMO number

4 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)

External registration number	O	Vessel detail – Number on side of vessel
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, using the format YYYY-MM-DDThh:mm:ss[.000000]Z[5]

~~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.~~

5 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)

2.II FLUX Vessel Position Implementation Document

1. INTRODUCTION

This document aims to describe the implementation of Vessel Position in the context of the SIOFA VMS. Submissions of reports will be done through the FLUX Transportation Layer.

2. REFERENCES

UN/CEFACT P1000 FLUX Standard v1.0 [2]:

- FLUX BRS: P1000 – 1; General principles (version 2.1).
- FLUX BRS: P1000 – 7; Vessel Position domain (version 2.0).

UN/CEFACT FLUXVesselPositionMessage_4p0.xsd

3. SCOPE

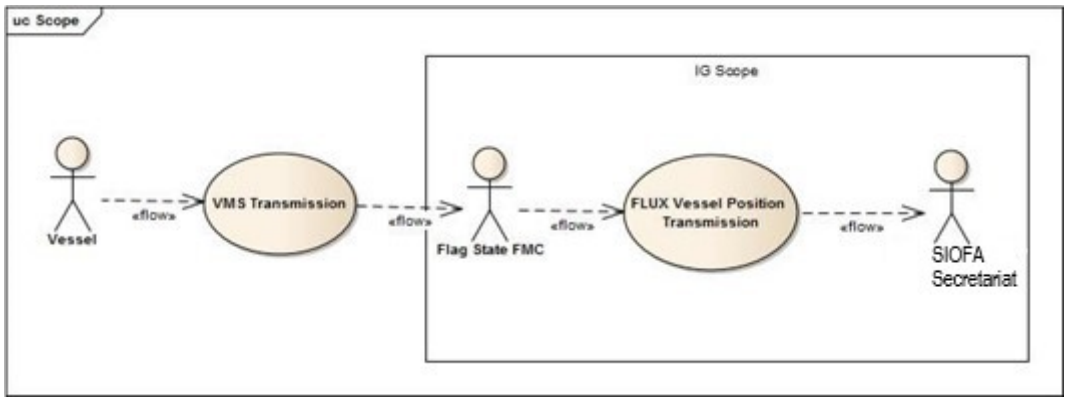

Figure 1: Implementing Guide Scope diagram

As shown on Figure 1, even if the message is provided by a Vessel, the scope of this document is limited to the transmission from a Flag CCP FMC, which has received the Vessel Position message, coming in most cases from aa ALC to the SIOFA Secretariat.

4. PROCEDURES

4.1. General principles

The following activity diagram describes the normal procedure defined for the submission of every Vessel Position Messages sent between the FMC of a Flag CCP to the SIOFA Secretariat:

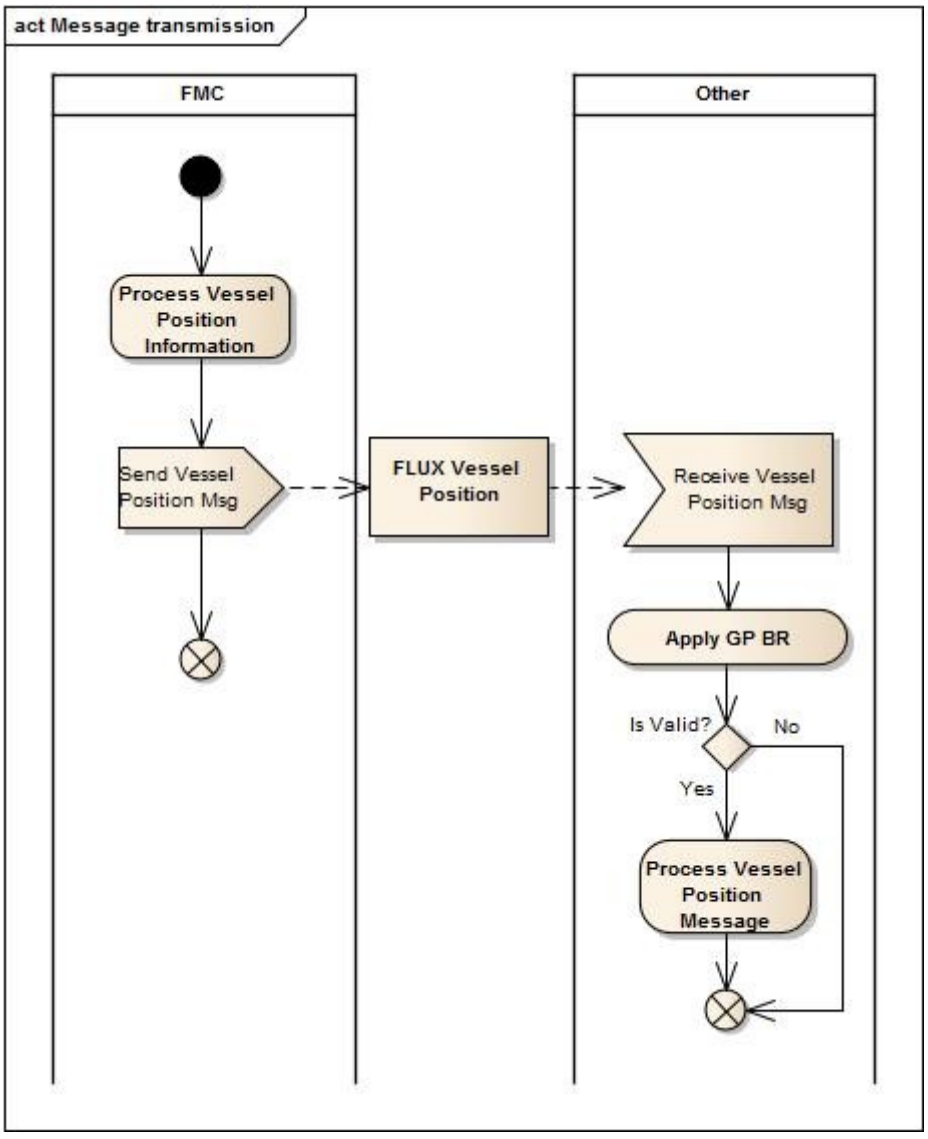

Figure 2: Message Transmission activity diagram

As shown in the diagram, Apply General Principles (GP) Business Rules (BR) is a validation process which does:

1. XML Validation level: Based on the definition in the XSD, the parser validates the structure and cardinality as well as compliance for mandatory elements of the XML provided.[6]

[6] In general, only XSD element are defined as mandatory. Element attributes and facets remain optional.

Note: Comparing XML vs. XSD defined by the namespace can make the parser generating error having technical information when the basic information requested by General Principles is not correct.

2. Business Rules Validation level: a Business Rules Engine validates the content of XML according to the General Principles Business Rules definition.[7]

[7] Some specific business rules of this domain can withdraw or overwrite the definition of FLUX General Principles

5. DATA MODEL (XSD) IMPLEMENTATION

The implementation of the Vessel Position Data Model applies the following general constraints at the level of XSD Element attributes:

(1) For Code & Identifier DataType: *listID* or *schemeID* attribute must be provided if it is not specifically defined in the definition of the element;

(2) For DateTime DataType: only udt:DateTime (of type xsd:dateTime) choice is used. The date and time must be expressed in UTC, unless explicitly mentioned otherwise. The format shall be YYYY-MM- DDThh:mm:ss[.000000]Z;[8]

The following diagram describes the Vessel Position Data Model used for the implementation of transmission of VesselPositionMessage:

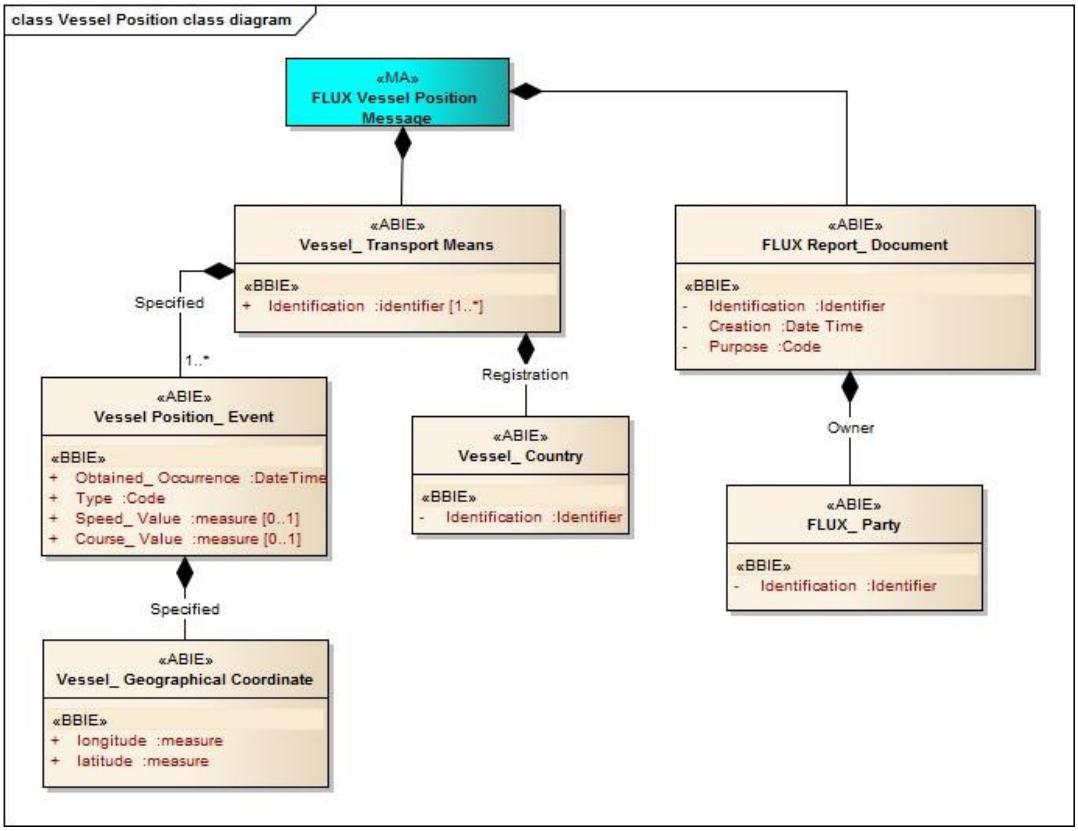

Figure 3: Vessel Position Message Data Model

[8] YYYY= year; MM= month, including leading 0 where month number is less than 10; DD= day of the month including leading 0 where day number is less than 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 up to 6 digits, not including the brackets; Z= time zone, which must be Z (ie. UTC)

The table below describes for each fields defined in the Data Model (XSD) the values that can be used:

Entity/Field Name	DataType	Cardinality		Description	Remarks
		Min	Max		
FLUX Report_ Document		1	1	The document details for this FLUX vessel position message.	FLUX General Principles Entity
Identification	Identifier	1	1	The unique identification of the FLUX vessel position message	A UUID as defined in the RFC 4122
Creation	DateTime	1	1	The date, time, date time of the creation of the FLUX vessel position message.	A UTC date time. Must be according to the definition provided in 6(2)
Purpose	Code	1	1	The code specifying the purpose of this FLUX report document, such as original, cancellation or replace.	Attribute *listID*= FLUX_GP_PURPOSE Reference: EDIFACT Code List 1225 (qDT UN02000125 - Message Function_ Code). Restriction: only value 9 is used in this context.
Owner. FLUX_ Party	Assoc.	1	1	Entity used to provide information on an individual, a group, or a body having a role in a Fisheries Language for Universal eXchange (FLUX) business function. Party has a legal connotation in a business transaction.	FLUX General Principles Entity
Identification	Identifier	1	1	An identifier of this FLUX party.	Attribute *listID*= TERITTORY alpha-3 code of the country owning this report. e.g.: SWE

Entity/Field Name	DataType	Cardinality		Description	Remarks
		Min	Max		
Vessel_ Transport Means		1	1	Entity used to provide the identification and characteristic information of a ship or boat.	
Identification	Identifier	1	*	An identifier for this transport means vessel UVI, as defined by the SIOFA VMS SSPs,	Attribute *schemeID must be provided with a value from list* = **FLUX_VESSEL_ID_TY PE**
Registration. Vessel_ Country	Assoc.	1	1	The country of registration of this transport means vessel.	
Identification	Identifier	1	1	The identifier for this vessel country.	*Use Code Countries code list in MDR.* *listID* = TERRITORY alpha-3 code of the country where the vessel is registered (flag state).
Specified. Vessel	Assoc.	1	*	The general information of the VMS message.	More than one position can be provided.

Entity/Field Name	DataType	Cardinality		Description	Remarks
		Min	Max		
Position_ Event					
Obtained_ Occurrence	DateTime	1	1	The date and time when the position of the vessel was taken by the vessel's navigation equipment.	The UTC date time when the position was obtained by the vessel navigation equipment, transmitted by the VMS system on-board of the vessel. Must be according to the definition provided in 6(2)
Type	Code	1	1	The code specifying the type of vessel position event.	Attribute *listID must be provided with a value from list* = FLUX_VESSEL_POSITION_TY PE Example of values are: "ENTRY,"EXIT","POS"," MANUAL".
Speed_ Value	Measure	0	1	The measure of speed of the vessel for this vessel position event.	Mandatory. In knots. Maximum 2 significant decimals. Optional in case the following conditions are all met: - TypeCode= EXIT - Message addressed to Third party or RFMO - The element is defined as optional in the agreement with the Third Party or RFMO
Course_ Value	Measure	0	1	The measure of course of the vessel for this vessel position event.	Mandatory. In degrees and decimal degrees. Maximum 2 significant decimals.

					Optional in case the following conditions are all met: - TypeCode= EXIT - Message addressed to

Entity/Field Name	DataType	Cardinality		Description	Remarks
		Min	Max		
					Third party or RFMO - The element is defined as optional in the agreement with the Third Party or RFMO
Specified. Vessel_ Geographical Coordinate	Assoc.	1	1	The latitude and longitude of a specified place, by which a vessel's relative situation on the globe is known. The height above the sea level constitutes a third coordinate.	Geographical Coordinates Position of the vessel transmitted by the VMS system at Obtained DateTime. Altitude and System information are not used in context of this implementation.
Latitude	Measure	1	1	The measure of the latitude as an angular distance north or south from the Equator meridian to the meridian of a specific place for this vessel geographical coordinate.	Coordinate expressed in WGS84, decimal degree notation, using a precision of at least 3 and maximum 6 decimal positions. Positive coordinate refers to North of equator. Negative coordinate refers to South.
Longitude	Measure	1	1	The measure of the longitude as an angular distance east or west from the Greenwich meridian to the meridian of a specific place for this vessel geographical coordinate.	Coordinate expressed in WGS84, decimal degree notation, using a precision of at least 3 and maximum 6 decimal positions. Positive coordinate refers to East of Greenwich meridian. Negative coordinate refers to West.

6. XML EXAMPLES

```
<rsm:FLUXVesselPositionMessage
xsi:schemaLocation="urn:un:unece:uncefact:data:standard:FLUXVesselPositionMessage:4
FLUXVesselPositionMessage_4p0.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:rsm="urn:un:unece:uncefact:data:standard:FLUXVesselPositionMessage:4"
xmlns:ram="urn:un:unece:uncefact:data:standard:ReusableAggregateBusinessInformationEntity:18"
xmlns:udt="urn:un:unece:uncefact:data:standard:UnqualifiedDataType:18">
<rsm:FLUXReportDocument>
<ram:ID> c133b211-0b0e-4358-893c-7afb5437bd61</ram:ID>
<ram:CreationDateTime>
<udt:DateTime>2001-12-17T09:30:47.0Z</udt:DateTime>
</ram:CreationDateTime >
<ram:PurposeCode >9</ram:PurposeCode>
<ram:OwnerFLUXParty>
<ram:ID >SWE</ram:ID>
</ram:OwnerFLUXParty>
</rsm:FLUXReportDocument>

<rsm:VesselTransportMeans>
<ram:ID schemeID=" CFR ">SWE000007880</ram:ID>
<ram:ID schemeID=" EXT_MARKING">S-381</ram:ID>
<ram:ID schemeID=" IRCS ">EI6207</ram:ID>
<ram:RegistrationVesselCountry>
<ram:ID>SWE</ram:ID>
</ram:RegistrationVesselCountry>

<ram:SpecifiedVesselPositionEvent>
<ram:ObtainedOccurrenceDateTime>
<udt:DateTime>2001-12-17T09:30:47.0Z  </udt:DateTime>
</ram:ObtainedOccurrenceDateTime>
<ram:TypeCode >POS</ram:TypeCode>
<ram:SpeedValueMeasure>8.3</ram:SpeedValueMeasure>
<ram:CourseValueMeasure>50</ram:CourseValueMeasure>
<ram:SpecifiedVesselGeographicalCoordinate>
<ram:LatitudeMeasure >50.563</ram:LatitudeMeasure>
<ram:LongitudeMeasure>009.252</ram:LongitudeMeasure>
</ram:SpecifiedVesselGeographicalCoordinate>
</ram:SpecifiedVesselPositionEvent>
        </rsm:VesselTransportMeans>
      </rsm:FLUXVesselPositionMessage>
```

```
<rsm:FLUXVesselPositionMessage
xsi:schemaLocation="urn:un:unece:uncefact:data:standard:FLUXVesselPositionMessage:4
FLUXVesselPositionMessage_4p0.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:rsm="urn:un:unece:uncefact:data:standard:FLUXVesselPositionMessage:4"
xmlns:ram="urn:un:unece:uncefact:data:standard:ReusableAggregateBusinessInformationEntity:18"
xmlns:udt="urn:un:unece:uncefact:data:standard:UnqualifiedDataType:18">
<rsm:FLUXReportDocument>
<ram:ID> c133b211-0b0e-4358-893c-7afb5437bd61</ram:ID>
<ram:CreationDateTime>
<udt:DateTime>2018-12-17T11:31:47.0Z</udt:DateTime>
</ram:CreationDateTime >
<ram:PurposeCode >9</ram:PurposeCode>
<ram:OwnerFLUXParty>
<ram:ID >SWE</ram:ID>
</ram:OwnerFLUXParty>
</rsm:FLUXReportDocument>

<rsm:VesselTransportMeans>
<ram:ID schemeID=" CFR "> SWE000007880</ram:ID>
<ram:ID schemeID=" EXT_MARKING">S-381</ram:ID>
<ram:ID schemeID=" IRCS ">EI6207</ram:ID>
<ram:RegistrationVesselCountry>
<ram:ID>SWE</ram:ID>
</ram:RegistrationVesselCountry>

<ram:SpecifiedVesselPositionEvent>
<ram:ObtainedOccurrenceDateTime>
<udt:DateTime>2018-12-17T09:30:47.0Z </udt:DateTime>
</ram:ObtainedOccurrenceDateTime>
<ram:TypeCode >POS</ram:TypeCode>
<ram:SpeedValueMeasure>8.3</ram:SpeedValueMeasure>
<ram:CourseValueMeasure>50</ram:CourseValueMeasure>
<ram:SpecifiedVesselGeographicalCoordinate>
<ram:LatitudeMeasure >50.563</ram:LatitudeMeasure>
<ram:LongitudeMeasure>009.252</ram:LongitudeMeasure>
</ram:SpecifiedVesselGeographicalCoordinate>
</ram:SpecifiedVesselPositionEvent>

<ram:SpecifiedVesselPositionEvent>
<ram:ObtainedOccurrenceDateTime>
<udt:DateTime>2018-12-17T11:30:47.0Z </udt:DateTime>
</ram:ObtainedOccurrenceDateTime>
<ram:TypeCode >POS</ram:TypeCode>
<ram:SpeedValueMeasure>8.3</ram:SpeedValueMeasure>
<ram:CourseValueMeasure>50</ram:CourseValueMeasure>
<ram:SpecifiedVesselGeographicalCoordinate>
<ram:LatitudeMeasure >50.123456</ram:LatitudeMeasure>
<ram:LongitudeMeasure>009.132</ram:LongitudeMeasure>
</ram:SpecifiedVesselGeographicalCoordinate>
</ram:SpecifiedVesselPositionEvent>
```

```
        </rsm:VesselTransportMeans>
</rsm:FLUXVesselPositionMessage>
```

7. CODE LISTS

Vessel Transport Means[2]

Description: the entity containing the details of the identification and characteristic information of a ship or boat.

Mult.	Business term	Rel.	Type	Description
0..n	Identification	Att	Identifier	An identifier for this transport means vessel, such as an identifier defined by the Food and Agriculture Organisation (FAO), the radio call sign, or an external marking.
0..1	Registration	Ass	Vessel_ Country Entity	The country of registration of this transport means vessel.
0..n	Specified	Ass	Vessel Position_ Event Entity	A position event specified for this vessel transport means.

Vessel Country[9]

Description: the entity containing the details of a country associated to a vessel.

Mult.	Business term	Rel.	Type	Description
1	Identification	Att	Identifier	The identifier for this vessel country.

Vessel Position_ Event

Description: The entity containing information obtained related to the position of a vessel.

Mult.	Business term	Rel.	Type	Description
1	Obtained_ Occurrence	Att	DateTime	The date and time when the position of the vessel was taken by the vessel's navigation equipment.
1	Type	Att	Code	The code specifying the type of vessel position event.

[9] For sake of clarity, the description of Vessel_ Transport Means; Vessel Country entities contains only the part that is necessary for this domain. The complete definition of such entities can be found in the Vessel domain document of the UN/FLUX standard.

0..1	Speed	Att	Measure	The measure of speed of the vessel for this vessel position event.

0..1	Activity_ Type	Att	Code	The code specifying the type of activity, such as of the vessel or the crew, at this vessel position event.
1	Specified	Ass	Vessel_ Geographical Coordinates Entity	The set of geographical coordinates specified for this vessel position event.

Vessel_ Geographical Coordinates

Description: The latitude and longitude of a specified place, by which its relative situation on the globe is known. The height above the sea level constitutes a third coordinate.

Mult.	Business term	Rel.	Type	Description
1	Latitude	Att	Measure	The measure of the latitude as an angular distance north or south from the Equator meridian to the meridian of a specific place for this vessel geographical coordinate.
1	Longitude	Att	Measure	The measure of the longitude as an angular distance east or west from the Greenwich meridian to the meridian of a specific place for this vessel geographical coordinate.
0..1	Altitude	Att	Measure	The measure of the altitude that reflects the vertical elevation of an object above a surface for this vessel geographical coordinate.
0..1	System	Att	Identifier	The identifier of the system used for measuring this specified geographical coordinate.

8. FLUX TL ENVELOPE PARAMETERS

The following FLUX TL parameters must be used for transmission of Vessel Position Messages.

Common name	FLUX TL Envelope Tag name	Value	Remark
Dataflow name	DF	urn:un:unece:uncefact:data:standard:FLUXVesselPositionMessage:4	

Timeout DateTime	TODT	DateTime (in UTC) of creation of the envelope + 60 minutes.	Value expressed as XSD DateTime in UTC. Must be according to the definition provided in 6(2).
Acknowledge Receipt	AR	False	Note: a non-delivery message is always sent when the recipient cannot be reached and timeout (TODT) time has expired.