
ASSESSMENT OF DELAYS FOR TRANSMISSION OF VMS DATA FROM FLAG STATE TO COASTAL STATE¹

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Background

At the VMSWG01, the working group requested that the EU and the Seychelles reports at the second meeting, a summary on how data are transmitted between flag state and coastal states, and to report on the typical delays between the flag state to the coastal state in typical/ normal circumstances.

The two parties were also tasked with the presenting of any risks (if any) associated to the exchange of data in that matter, and mitigation measures that may apply.

To this end, the Seychelles did an assessment on the data it is currently receiving pursuant to applicable fisheries agreements.

Seychelles did not undertake to provide an assessment of risks associated to the exchange of data, given that this is largely covered by the *Options Paper for Strengthening the IOTC Vessel Monitoring System*.²

Context

As a coastal State, the Seychelles actively monitors fishing activities using Vessels Monitoring System (VMS) for several foreign flagged vessels, fishing under different types of agreements in the Seychelles exclusive economic zone (EEZ). Currently, two (2) of those agreements are bilateral, therefore requiring the exchange of VMS data via the flag States, compared to the other “Private agreements” with some foreign flagged vessels, whereby data is received directly from the vessels’ Land Earth Stations (LES).

At the time of producing this report,³ some 41 foreign flagged vessels under bilateral agreements were being monitored through their flag State. The data is received directly to the Seychelles Fisheries Monitoring Centre (FMC) at the Seychelles Fishing Authority (SFA), via their States’ FMC. All data are supposed to be relayed automatically, as provided by the applicable agreements, from the flag State to the Seychelles FMC.

All data are exchanged using the *North Atlantic Format* (NAF)⁴ for fisheries related electronic data transmission, via *Hypertext Transfer Protocol Secure* (HTTPS), over the public network. Other possible reporting formats includes the newer *Fisheries Language for Universal*

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² IOTC-2019-WPICMM02-VMS Study

³ 13 September 2021

⁴ <http://www.naf-format.org>

Exchange (FLUX). The current VMS system being used by the SFA's FMC is also able to receive VMS data via Simple Mail Transfer Protocol (SMTP), which is regarded as less secure than HTTPS, and *File Transfer Protocol* (FTP).

Aligning the above context against the proposed option for the implementation of an Indian Ocean Tuna Commission's VMS, this would be compatible with the hybrid option that the VMSWG01 has recommended for the Compliance Committee to consider.⁵

Methodology

The current system at the SFA can assess by default, delays between time of reporting by the Vessel Location Device (VLD) and the time received at the SFA. While this calculation will inherently include the processing time of the data from the flag state, it does not indicate the time it was processed and forwarded by the flag state as the data packet received is the same as that submitted by the VLD. Notwithstanding, it should provide an adequate indication of time delays between the time the VLD sends a position report (PU) and when the VMS software in Seychelles receive it.

Datasets from five (5) different flag States, using various VLD models were assessed, with a total of 17,677 PUs assessed. The range of observed delays (in in minutes (mm) and seconds (ss)) and the results are presented in Table 1, below.

To provide a baseline, data was also compared against VMS reports from Seychelles flag vessels, which reports directly to the SFA's FMC, via their respective LES'. To establish the baseline time delay, a total of 84,455 PUs was assessed. The range of observed delays are also presented in Table 1, below.

Currently, Seychelles flag vessels report directly to the SFA's FMC via the Inmarsat network or the Iridium Network. Both networks forward vessels position directly to the SFA FMC through the public network, via HTTPS and the SMTP by the Iridium and the Inmarsat Land Earth Stations respectively. The lack of any other data exchange point allows for the optimum and fastest data exchange between the fishing vessels and the SFA FMC, and therefore should be a reasonable baseline to compare the delay in data transmission between flag states and coastal states.

For both sets of data the reporting frequency is 1 (one) PU per hour, spanning over a period of five (5) months.

The assessments also assumes that all time stamps in the assessed datasets are at the time the positions are fixed, prior to reporting to the respective LES.

⁵ Available online <https://www.iotc.org/sites/default/files/documents/2021/09/IOTC-2021-VMSWG01_R_E_FINAL.pdf>

Table 1. Outcome of assessment of delay between time of recording and time of receipt of PU Reports by coastal state.

Flag	PU Assessed	Min Delay	Max Delay	Average	Delay=0s-9m59s	Delay= 10m-29m59s	Delay= 30m-49.59	Delay >50m
Baseline ⁶	84455	00:00	17:09	05:44	88.00%	7.53%	0.26%	4.21%
FMC01	977	00:13	59:14	12:07	91.81%	1.74%	0.20%	6.24%
FMC02	1487	00:54	59:57	26:39	96.37%	0.27%	0.13%	3.23%
FMC03	5129	01:19	58:02	14:09	97.09%	1.21%	0.06%	1.64%
FMC04	5915	01:11	56:20	10:13	95.37%	1.86%	0.57%	2.20%
FMC05	4169	02:07	58:42	22:38	97.53%	0.26%	0.02%	2.18%

⁶ Baseline results includes a period of downtime, that may distort data to some extent. But it should serve as worst case scenario performance.

Observations and Conclusion

The assessment showed that on average, 96.3% of the data reports were received by the Seychelles FMC within 10 minutes of the position being fixed by the VLD. A minor percentage (1.4%) of PUs were received in the intervals of between 10 minutes to 50 minutes, and only 2.3% of total PUs assessed were received after 50 minutes after the position reports had been fixed by the VLD. There was no observation of PU received later than 1 hour.

Based on the above, it can be deduced that the risk of delays of more than 10 minutes from the time the position is fixed by the VLD, to the time the coastal State receives the data, via the vessel's flag State FMC, is minimal. Notwithstanding the above, it should be understood that there are other variables that needs consideration, in determining the delay for receiving VMS data, which in some cases are beyond the control of the flag State. As such, all care must be taken by all concerned parties in the dataflow to anticipate such risks, and appropriate mitigation measures adopted. Recalling that it is expected that a larger volume of data would be received and processed by a future IOTC VMS; an extrapolation of the large number of vessels authorized to operate in the IOTC area of competence.

The WG is welcomed to note the above assessment and consider same while designing the proposed option for implementing a centralized VMS for the IOTC.