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INNOVATION | TECHNOLOGY | SUSTAINABILITY

**PILOT PROJECT ON REMOTE ELECTRONIC  
MONITORING (REM) ONBOARD BLUEFIN  
TUNA PROCESSING VESSELS  
EXECUTIVE SUMMARY**



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## PROJECT OVERVIEW

This pilot project took place from November 2022 to May 2024, and as participants had:

- European Union: as funding party.
- ICCAT: as managing party.
- Grupo Ricardo Fuentes: shipowner.
- Satlink: as technology provider.
- Digital Observer Services (DOS): as data managing party.

The purpose of the project was to test REM technology, Satlink's Seatube Nano+ system, onboard bluefin tuna (BFT) processing vessels and check if the systems were able to get enough information to monitor the interaction between the vessel's crew and the fish hauled onboard. In order to be able to compare data, the shipowner accepted sharing the two vessel's (Paloma Reefer and Princesa Guasimara) logbooks with DOS.

Once installed, the vessels were supposed to stay in port enough time each visit for Satlink, or a Satlink's partner, to board the vessel and replace the hard drive with information and then send it to DOS. During both phases, this scenario wasn't the most common, due to the vessels' tight schedules, but all the information recorded was extracted and analyzed by DOS.

The project consisted of two different phases; the first phase only had SeaTube systems without sensors installed onboard, since it wasn't feasible to get the sensors on time. This phase had data analyzed from November 2022 to January 2023 and, even without sensors, DOS proved that the data provided from the SeaTube was enough to have a reliable source of information from these vessels. When this phase ended, both SeaTube systems were decommissioned and shipped to Satlink's warehouse for safekeeping.

The second phase started recording information by August 2023 until January 2024. The SeaTubes were re-installed onboard both vessels, this time sensors included. During the installation we faced some problems with the proposed sensors: inclinometers for the haul doors wouldn't work, since they were lids removed entirely without inclination; and the crane scales had to be installed right under the crew's own crane scales, for they wouldn't accept using ours in stead of them. By the end of the second phase, results proved sensors to be a big help for data analysts and reduced the analysis time considerably (around 40% faster in the worst-case scenario), and weight data became more consistent than through weight estimates with a mean variation of less than 5%.

By the end of the project, the SeaTube systems were gifted to the shipowner, but they were deactivated without signs of interest in keeping them up and running.



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#### LESSONS LEARNED

Although we are aware that scheduling works onboard vessels is logistically complicated, it is dangerous for the project to rush installing this equipment. We have to try to have all the parts onboard REM projects before acting, since with the crew's cooperation smaller issues could have been avoided, as well as more noteworthy problems (like the sensor's issues).

Having constant communication with the systems is key to have a REM system working properly throughout an entire project. Having a VMS antenna integrated, as was for this project, in the SeaTube, allows for fast solving of minor issues and for an easier diagnosis and plan for reparation when needed.

About having the crew's collaboration, it was proved again that for a good data quality, we need the crew's help in keeping the cameras clean as instructed during installation. Camera maintenance is a simple and fast task, but vital to the analysis. In many reports from DOS was stated that cameras were not clean enough to have a good vision of the BFT being hauled, which might have caused part of the biggest differences between REM and logbook data.

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#### CONCLUSIONS & NEXT STEPS

Reports produced by DOS successfully show how this technology can provide quality information about these types of vessels, so we can conclude that the pilot project has been a success on its own.

As stated in the Final Report, there are still technologies that can be applied to these vessels to enhance the data management:

- Using broadband global satellite communications for live access to the data, as per the use of Starlink antennas.
- Using ML models to speed up analysis time while making tuna haulings detection automatic.

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