



North Pacific Fisheries Commission

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**SIMRAD's ITI fishing net monitoring system and Marport's Trawl Fish System
used by Kaiyo Maru No.51 in the Emperor Seamount:**

Information for discussion on temporary measure of NPFC post-encounter measure

Japan Overseas Fishing Association

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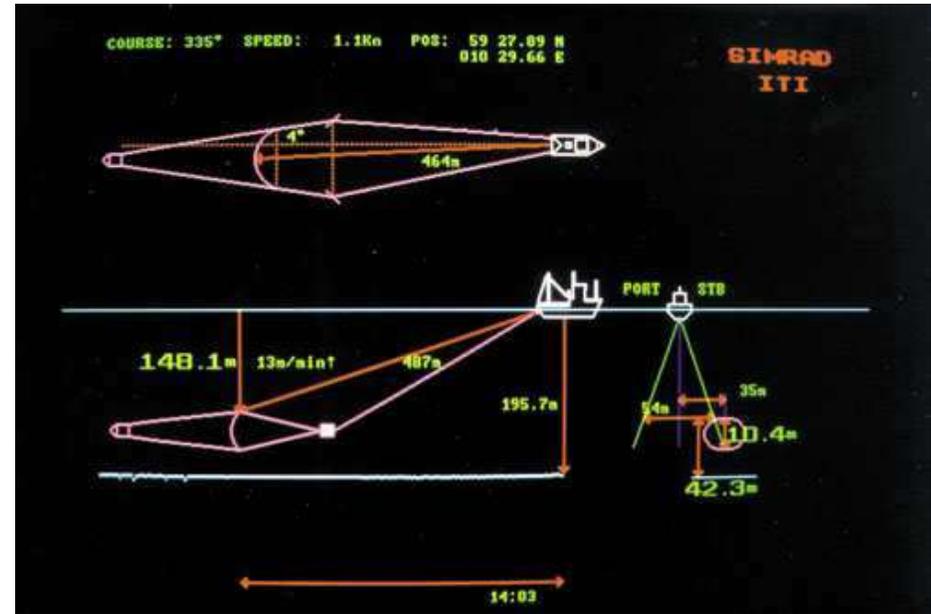
8th October, 2021

(Real-time Monitoring of bottom-off status of trawl net)

The Japanese trawler, "Kaiyo Maru No. 51" is currently equipped with SIMRAD's ITI fishing net monitoring system and Marport's Trawl Fish System as monitoring devices for trawl net location and depth.

(1) ITI fishing net monitoring system

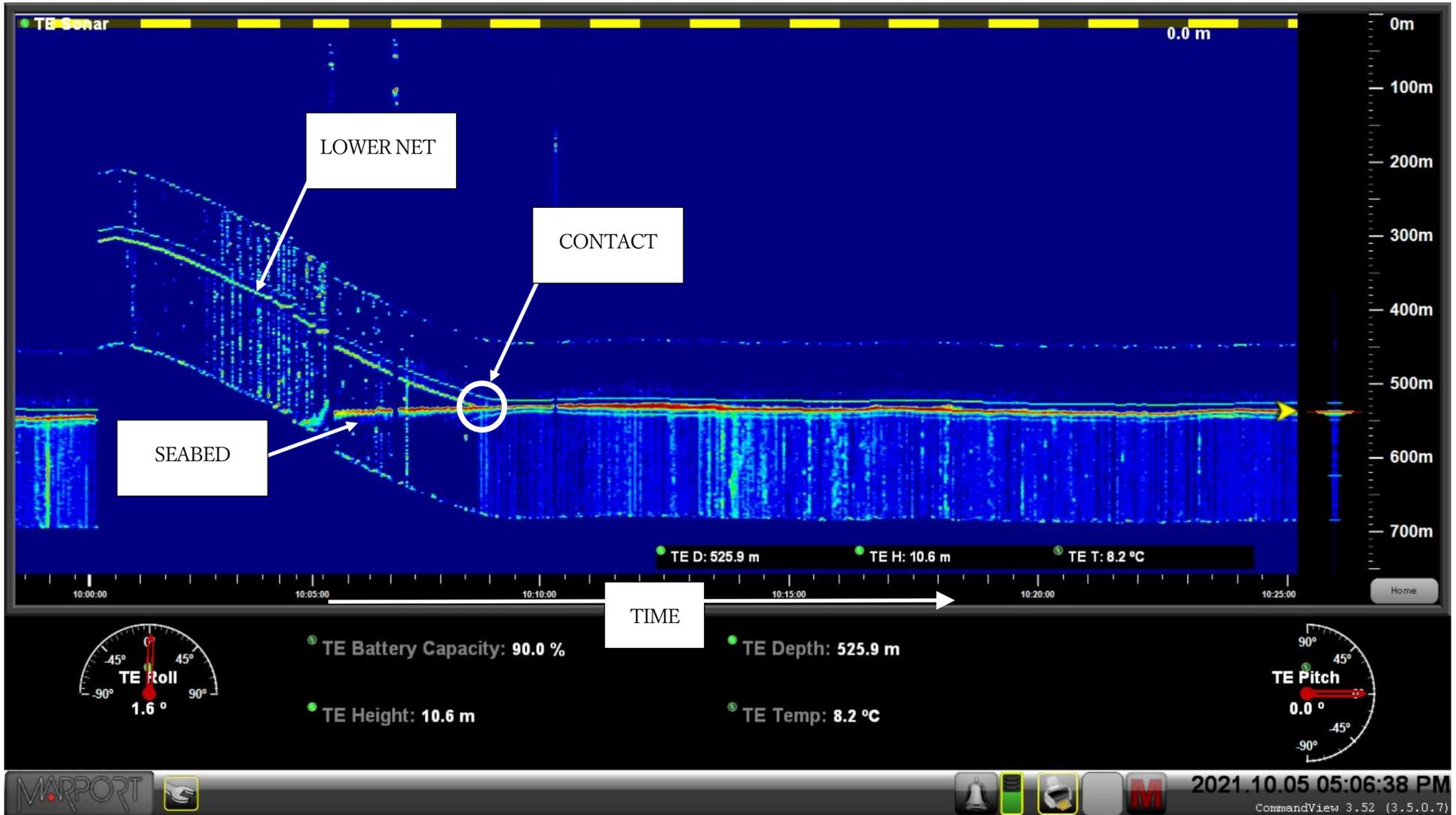
Normally, when the fishing vessel is in operation, the vessel position is determined by GPS and displayed on plotters and electronic charts. When the vessel casting the net, the ITI displays the net position. The net position is displayed relative to the ship's position on the screen, and both the net and vessel positions are recorded in the latitude and longitude. (Currently Kaiyo Maru's ITI does not record the vessel position, but implementation of this function is under consideration.) The net depth is also recorded.



The vessel and net positions can be displayed on plotters and electronic charts. The precision is plus or minus 10 meters for the vessel position, ± 5 meters for the net position in the display positions, and ± 4 meters in the net depth (range 2,000 meters: FS 0.2% ± 2 meters).

(2) Marport's Trawl Fish System

Marport's Trawl Fish System is the device to monitor the behavior of the net and can be used to check whether the net has contacted on the seabed or not. As for accuracy, if the separation between the lower net and the seabed can be confirmed, the lower net is considered to be at least 45cm above the seabed.

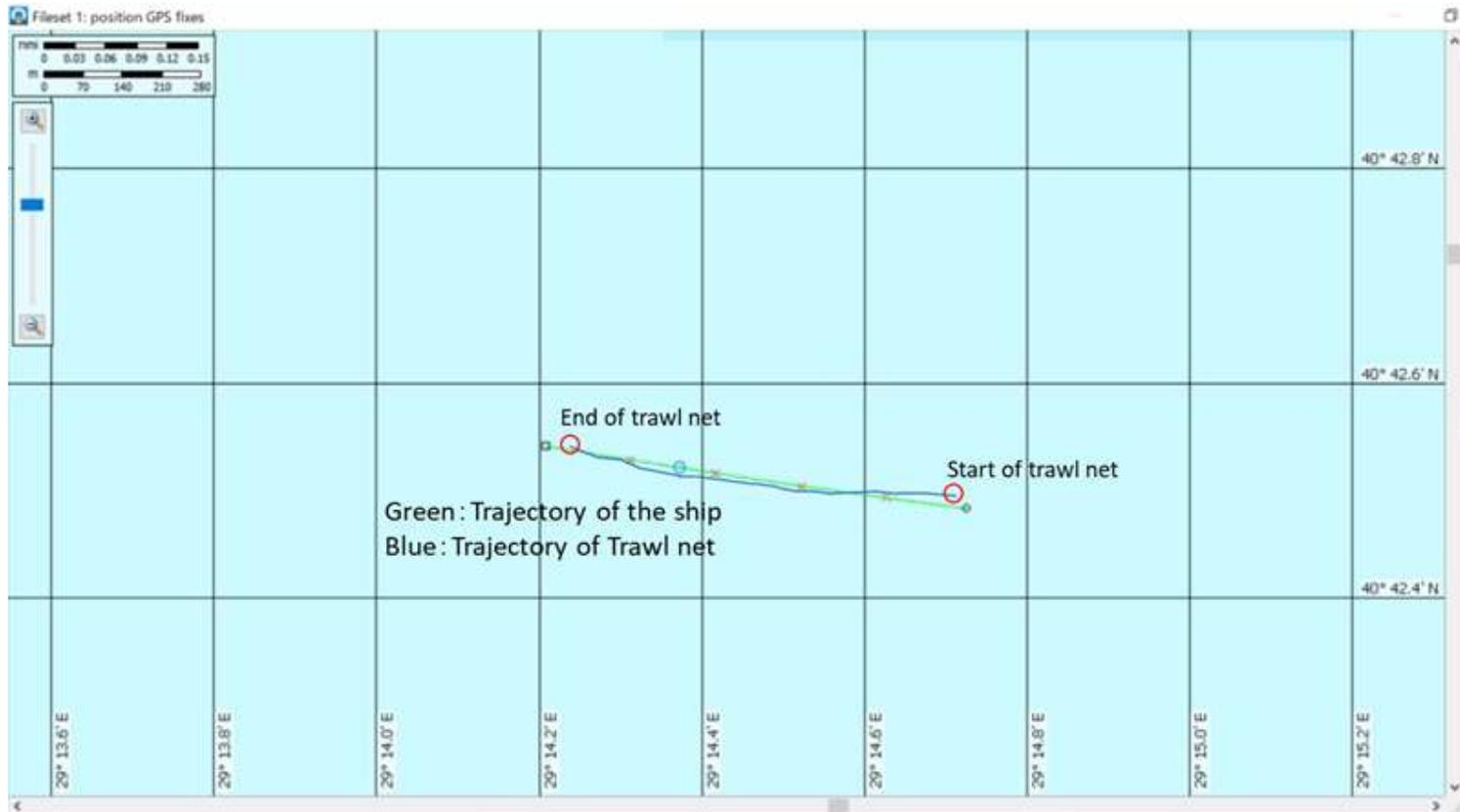


(Confirmation of no contact of the fishing gear on the seabed by a third party when entering a temporal closure area)

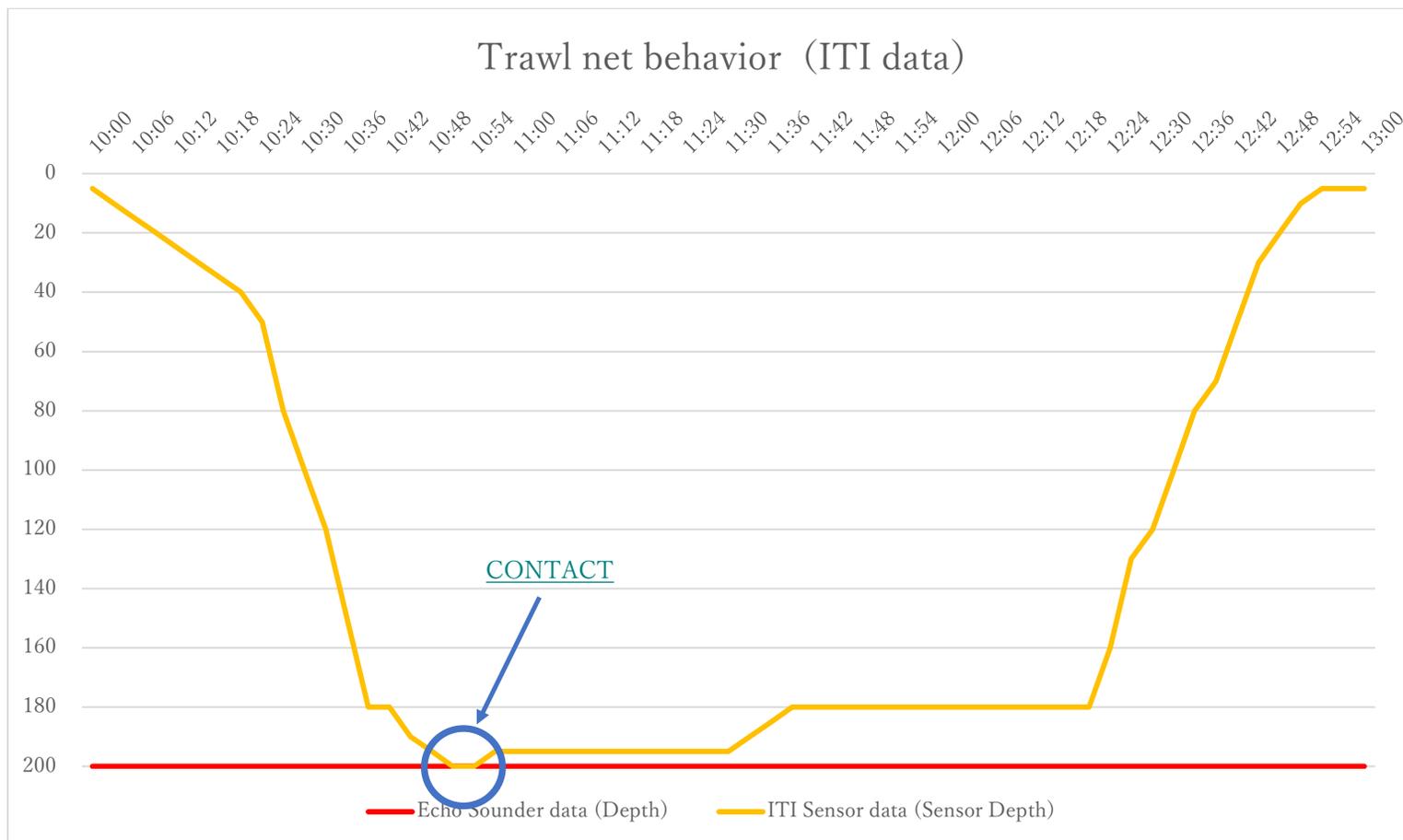
All of these data can be recorded as digital data, which is currently being tested.

Of the ITI data, the latitude and longitude of the net position, net depth and time are currently being recorded. As mentioned before, the vessel is considering to implement the function of recording the latitude and longitude of the vessel position as well in the next year.

Trajectories of positions of the 51st Kaiyo Maru and the trawl net (image created from the data)



By transforming the ITI data into graphs, it is possible to create a graph that can be used to determine whether a fishing gear has contacted or off the seabed, as shown below.

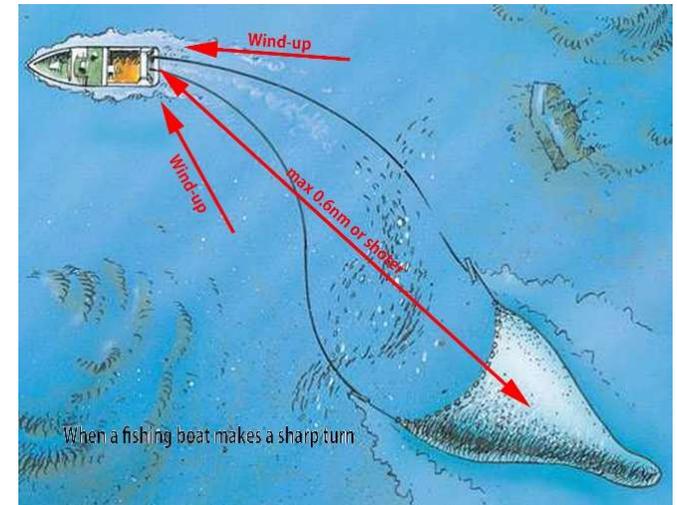


If the vessel enters "a temporal closure area", the data of net depth during the period of its entry can be submitted, so that the depth of the net sensor in relation to seabed can be checked by the flag state authority and/or the NPFC Secretariat.

With the self-monitoring system of net behavior and the possibility of subsequent verification, bottom-off operation can be secured. Therefore, a temporal closure should be defined as "no bottom contact fishing" in line with the concept of VME protection measures (prohibition of contacting the seabed with gears).

(Appropriate size of temporal closure)

-A temporal closure area by the move-on rule should be limited to 1 nm either side of trawl track, considering a reason below.



When the fishing boat steers, it winds up the warp to avoid warp and door congestion.

The fishing vessel and net positions are monitored with high precision by GPS and sensors. If warps are too long, the net may easily get caught on the seabed, which fishers make every effort to avoid. For this reason, the warp is not extended more than about 1.7 times the depth (1,020m for a depth of 600m, 1,360m for 800m). Hence, distance from the ship to the net on the sea surface is about 1100 meters.

In fishing operation, the angle of the net relative to the ship is never more than 90 degrees, so that the net is never more than about 0.6 miles away from the center of the vessel, considering the depth of the fishing grounds in the Emperor Seamounts. Therefore, regarding the size of the temporal closure, 1 nm wide band on both side of the trawl track is appropriate.