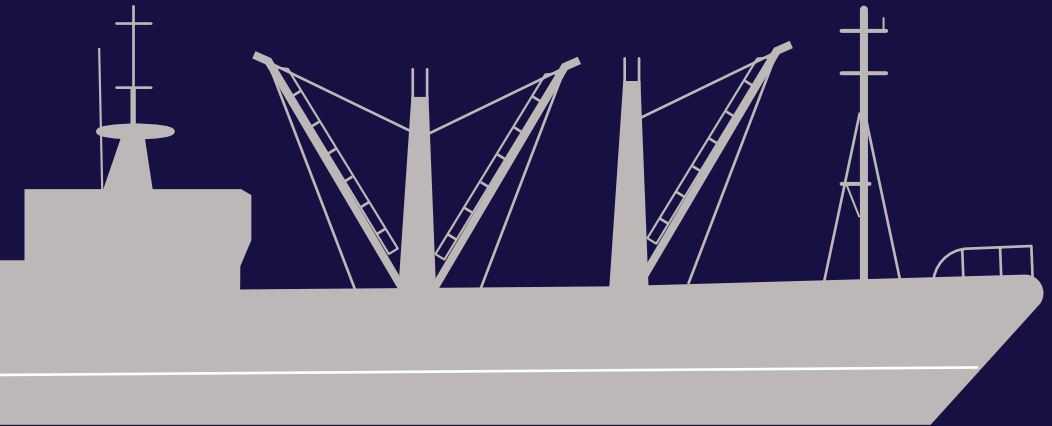


MCS PRACTITIONERS INTRODUCTORY GUIDE TO:

CARRIER VESSELS



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GLOSSARY OF TERMS

AIS	Automatic Identification System
AREP	Advance Request for Entry to Port
FAD	Fish Aggregation Devices
GT	Gross Tons
IMO	International Maritime Organisation
IUU	Illegal, Unreported and Unregulated (fishing)
MCS	Monitoring, Control and Surveillance
RFMO	Regional Fisheries Management Organisation
STCW	Standards of Training Certification and Watchkeeping
VMS	Vessel Monitoring System



This MCS Practitioners Introductory Guide has been developed by TMT in cooperation with the IMCS Network. The guides in this series are intended to be used as a training tool to introduce common international industrial fisheries vessels and gear types, towards building knowledge in personnel working in all government agencies (Fisheries, Port, Coast Guard and Navy, Maritime etc.) who may play an operational role in fisheries monitoring, control and surveillance (MCS), as well as for use by broader interested stakeholders.

While this guide is a stand-alone tool focussed on fishing vessels that utilise trawl fishing gear, it has been developed as part of a series of similar introductory guides on other major industrial fishing methods and related operations, as well as complementary material on fishing vessel inspection considerations.

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OPERATIONAL OVERVIEW: CARRIER VESSELS

Carrier vessels are not fishing vessels per se but are refrigerated¹ cargo vessels (also often called ‘reefers’ or ‘carriers’) that receive catch offloaded from a fishing vessel. This can occur both at sea and in port. They are an intrinsic part of many fisheries, in particular tuna fisheries, and more specifically with transshipments, which is the transfer of fish or fishery products between vessels. In addition, while it is not their primary purpose, carrier vessels may also carry supplies, equipment, and crew to the fishing vessels they are transshipping with.

There are many different types and sizes of carrier vessels, and these can vary between regions. However, most of the global industrial carrier vessel fleet are above 300 gross tons (GT) in size and operate on international voyages. Because of their size, in addition to any reporting requirements through vessel monitoring systems (VMS), these carrier vessels are also mandated by the International Maritime Organisation (IMO) to carry, operate, and report their positions and other information through an automatic identification system (AIS) transponder.

Carrier vessels need to be authorised by their flag States to operate in any areas beyond the waters under the national jurisdiction of that flag State. This authorisation typically includes the conditions specified by the flag State that are designed to control the vessel’s activities. Carrier vessels also frequently need to be licensed to operate in the national waters of another coastal State. When operating in waters under the competence of a Regional Fisheries Management Organisation (RFMO), they are also required to be listed on the record of authorised vessels that is maintained by that RFMO.



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¹ Some smaller carrier vessels may not use automated refrigeration systems and may use ice for this purpose.

HOW CARRIER VESSELS OPERATE

The main role of a carrier vessel is to receive fish and fishery products from fishing vessels either at sea or in port areas prior to the first point of landing of the product, and to carry this catch and unload it in ports where the fish can be processed or sent to market. However, they can also be used to carry crew, food, bait, parts, and equipment, etc. to fishing vessels, which can allow the fishing vessels to remain at sea for longer. In some cases, they may also be used for other activities in support of fishing, such as setting up and dropping Fish Aggregation Devices (FADs) on behalf of other fishing vessels, however these sorts of activities are not permitted in some jurisdictions.

When transshipping at sea, carrier vessels will travel to a predetermined rendezvous point which is generally close to the fishing grounds of the vessels with which it is planning to tranship. Fishing vessels will steam to the rendezvous point to unload catch onto the carrier vessel. The fishing vessels will then come alongside sequentially. The fishing vessels may also receive goods, crew, or equipment to allow them to remain at sea and not have to transit to port.

When carrier vessels are transshipping in port, they will anchor in the port waters or at another spot designated as a transshipment area by the port State, and fishing vessels will come alongside and tranship their catch. This activity can take place in port either at anchor or alongside a pier. Once the carrier vessel has completed planned transshipments with the fishing vessels, it may travel to a further port area or rendezvous point to conduct additional transshipments. A single carrier vessel trip may include transshipments with several vessels in several different locations, both at sea and in port. Once the carrier vessel is full, or has sufficient catch on board, it will steam to the unloading or landing port(s)².



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² Some voyages may result in offload in more than one port.

HOW TO RECOGNISE A CARRIER VESSEL

In general, modern industrial carrier vessels have a characteristic silhouette, with a raised cranes and big hatches to load and unload fish. It should be noted however that carrier vessels may also have a similar appearance to other bulk cargo vessels, so it can be difficult to differentiate some carrier vessels from other cargo vessels from a distance. However, there are some specific features that can assist in identifying carrier vessels. Long decks with the presence of deck cranes, refrigerated cargo holds and oversized 'Yokohama' fenders are all common characteristics of modern industrial carrier vessels.



Shape - view from the side



Unloading by the pier



Transshipping at anchor in port area. Note the large 'Yokohama' fender deployed between the carrier and unloading vessel.



DESCRIPTION OF THE OPERATION AND MANOEUVRING

When the fishing vessel approaches the carrier vessel to tranship its catch, the following steps generally take place:

ALONGSIDE (ropes tied)

Large fenders are lowered from the carrier vessel before the fishing vessel comes alongside. Lines (mooring ropes) are secured at the bow first and then at the stern to keep the fishing vessel alongside the carrier vessel.

Generally, fishing vessels are secured to the port side of the carrier vessel, but in some cases, there may be two and up to three fishing vessels secured alongside large carrier vessels on both port and starboard sides. Depending on the sea state and weather conditions the process of a fishing vessel securing alongside a carrier vessel can take up to 30 minutes.



TRANSHIPMENT (Transfer of fish)

Cranes on board the carrier are used to transfer the catch from the fishing vessel to the carrier vessel. For transshipments from purse seine vessels to carrier vessels, a large net is either laid on deck and the fish are transferred on to the net from the fish holds, or the net is lowered into the hold itself and the fish are loaded there. The net is then secured to the hook on the end of the carrier's winch/boom cable by a series of ropes attached to the corners of the net and is then transferred to the carrier vessel. For transshipments from long line and pole and line vessels, nets may also be used in a similar way, but a method called a "swing" is commonly used. Every fish from a long line vessel normally has a closed loop of monofilament (fishing line) that is attached to the caudal (tail fin) area of the fish. In a swing, several fish are attached to the carrier vessel crane's hook and cable by ropes (i.e. a "string").

A closed circle of thicker rope is fed through these monofilament loops to gather the fish together. Both ends of the looped rope are then slipped over the hook that is on the end of the carrier's winch/boom cable and the fish are then lifted across to the carrier.

Transshipment activities can sometimes be interrupted by other activities; mostly the movement of cargo or crew, or by the movement of catch between hatches. Transshipment can also be delayed due to weather conditions or by crew rest, particularly for transshipment activities involving larger quantities of fish.



LOADING OF FISH IN THE CARRIER

Once the net or swing is brought on board, the fish are lowered below deck into huge holds that generally take up most of the carrier vessel hull and stretch over various decks. As the primary purpose of a carrier vessel is to receive and transport fish, these holds generally take up large amounts of the space onboard the carrier vessel. Freezing such large quantities of fish, requires very large and powerful freezing equipment. Many carrier vessels separate the catch from the different fishing or “donor” vessels with old nets. The cargo plans kept onboard the carrier vessel should keep a record of where the catch from each donor vessel is kept on board.



TRANSFER OF CARGO AND CREW

Cargo transfers from carrier vessels to fishing vessels can be part of the transshipment process. Cargo is mostly contained inside large wooden boxes which can contain various items, such as bait, clothing, food, and machine parts. For crew transfers, the process can depend on arrangements made in advance by the vessels. It can often be cheaper and simpler for vessel operators to undertake crew changes through carrier vessels, as this can often allow them to avoid more costly and complex travel and immigration (visa) arrangements, as well as allowing the fishing vessels to remain at sea longer, avoiding costly trips to port.



VESSELS SEPARATE

Once the transshipment, and any associated activities, are completed the fishing vessel will untie its mooring ropes, and steam away from the carrier vessel back out to the fishing grounds. The carrier vessel fenders generally remain deployed until all transshipments in the area are complete and the carrier is ready to steam to its next transshipment or unloading destination.



The steps above are based on transshipment activities from onboard industrial carrier vessels. However, similar steps will apply to all carrier vessel transshipments, but smaller carriers and “tenders” may employ more manual methods for transferring the catch depending on the equipment available onboard the vessels to support the transfer of catch.



CARRIER VESSEL POSITIONAL TRACKING (AIS AND VMS)

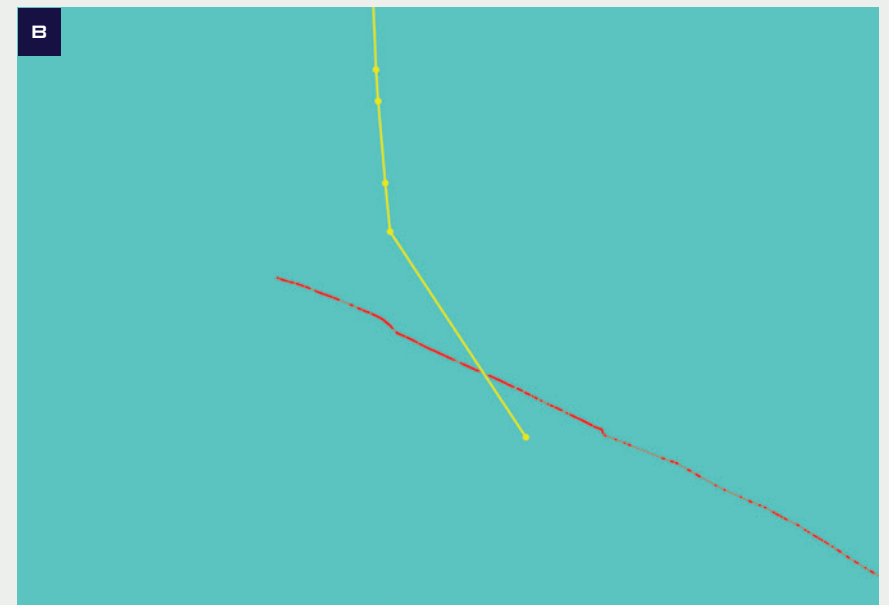
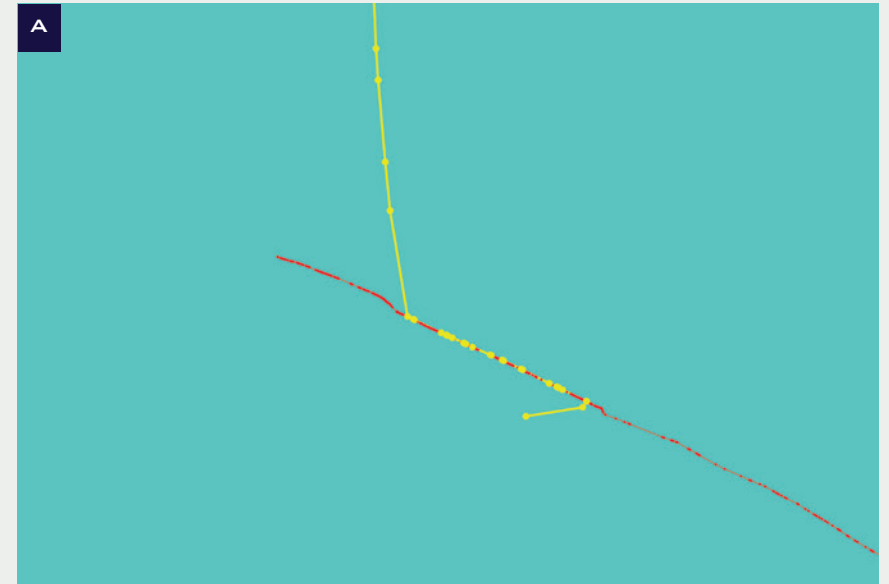
Carrier tracks on the VMS or AIS are relatively easy to identify. This is because the tracks almost always include long periods of relatively direct vessel steaming that is preceded and/or followed by periods of very low speeds, where the vessel will “drift” at sea in conformity with wind, current and sea conditions or where the vessel will steam directly to port, depending on where the carrier vessel intends to carry out the transshipments.

However, it is important to note that when a carrier vessel is drifting at sea, it does not always mean that transshipment activities are occurring at that moment. Carrier vessels may also drift or “loiter” while they are awaiting donor vessels to arrive from the fishing grounds; while awaiting further orders from their owner; or while they await access to port to undertake transshipment activities in port. This is because there is almost always a cost or payment required for vessels to access and remain in port, so it is more cost effective for the carrier vessels to loiter at sea and conserve fuel, rather than burning fuel in constant transit or spending additional time in port when they may not be actively offloading. This can make it very difficult to differentiate carrier vessel loitering periods from periods when the vessel may actually be undertaking transshipment activities, especially where tracks for all fishing vessels in the vicinity may not be available on VMS or AIS.

When vessel tracks for fishing vessels that have an encounter with a carrier vessel are available, it may be possible to identify those encounters through the visualisation of overlaps in position, time, speed, and course in the tracks of both carrier and donor vessel. This may require the need to overlap both VMS and AIS data together, as most carrier vessels are on AIS only, and fishing vessels may only be on VMS. However, because the temporal resolution of both AIS and VMS may sometimes be limited to reporting only every 1-3 hours, and encounters may be shorter than this time, it is important to note that the available data may not always be available to identify and display the overlapping track.



Overview of a carrier vessel track showing the pattern of steaming (in red) and then loitering (in yellow) in different areas in the Atlantic



Example a) shows an Indicated encounter that lasted for two hours, between a carrier vessel (in red) and fishing vessel (in yellow) with HIGH temporal resolution. The same event can be seen in example b) with a LOW resolution with positions only every 2.5 hours from the fishing vessel, which results in missing the period of overlap in vessel tracks.

GLOBAL FISHING WATCH CARRIER VESSEL PORTAL

Transshipment is a vital part of the global fishing industry, but it often takes place far out at sea, making it challenging for authorities to determine whether the catch being transferred is both legal and verifiable.

To improve the understanding and management of transshipment, Global Fishing Watch has partnered with The Pew Charitable Trusts to develop the Global Fishing Watch Carrier Vessel Portal, a technology portal to bring greater monitoring and analysis of transshipment activity to all those who need it, for free. The two organizations developed the carrier vessel portal to help both policymakers and fisheries managers, as well as enforcement authorities, better comprehend the activities of carrier vessels that take on catch from commercial fishing vessels and deliver it to ports worldwide for processing. The portal provides a valuable tool for managers and inspectors that seek to verify transshipment activities, which can help reduce opportunities for unauthorized transfers of fish products and identify when such activities are not being adequately reported.

The portal uses publicly available AIS data from 2017 through the present (with 72 hours delay) to identify potential carrier vessel encounters and loitering events. Updated with new registry data monthly, the portal synthesizes fishing registry information to create a picture of potential authorizations for both carrier and fishing vessels potentially involved in transshipment activity taking place at sea. The carrier vessel portal uses satellite technology, machine learning and up-to-date vessel databases to give users consolidated information on carrier vessels' activities, allowing them to analyse vessel tracks and visualize which ports are most frequented by the global carrier vessel fleet.

- 1) Automatic identification system, or AIS, data is used to display vessel tracks and estimate vessel movements consistent with possible transshipment. AIS transmits a ship's location, course, and speed, and should also provide vessel identity information, such as its name and flag. By tracking the vessel's movements, analysts can track where a vessel has gone and identify when vessels are potentially transshipping at sea or visiting a port.
- 2) Vessel registry data in the portal is matched to the AIS data to identify the authorization of carrier and fishing vessels. Publicly accessible historical records and current vessel authorisation records obtained from RFMOs are used to identify if vessels were authorized during the same timeframe of potential transshipments.
- 3) The portal relies on a carrier vessel database curated using a combination of sources including vessel registry lists, national registries, IMO numbers, web, and search images, as well as a machine learning algorithm used to estimate vessel class.

Free registration by users provides full access to the carrier vessel portal features, which include:

- 1) Analysis of loitering events and encounters.
- 2) Filtering of data by time, area of activity, flag State, port, event duration and vessel.
- 3) Detailed vessel history of possible at sea transshipment events mapped through time.
- 4) Downloadable individual vessel history data, which includes loitering events, encounters, and port visits.

For more information and to register see www.globalfishingwatch.org/carrier-portal



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OTHER CONSIDERATIONS

Carrier vessels have been associated with a number of operational issues and challenges that MCS practitioners should be aware of:

ILLEGAL AND UNREPORTED TRANSHIPMENTS

Carrier vessels are how many fishing vessels get their fish to the processing factory and market. Carrier vessels conducting transshipments with fishing vessels have an associated risk of conducting illegal transshipments, or of receiving and carrying products of IUU fishing. An associated risk to these activities is the mixing and 'laundering' of illegal fish with legally caught fish, making it very difficult to determine what is legal or not.

Transshipments that take place both at sea, where there is limited oversight and monitoring, and in port, which also may have monitoring limitations, need to be considered. Transshipment is often heavily regulated, particularly in RFMO authorised fisheries, and where this is the case is generally subject to specific reporting and authorisation processes, although these conditions may vary to some degree between RFMOs. Carrier vessels should in all cases have onboard full and complete records, including authorisations, for all transshipments that it has undertaken during the vessel's current voyage. This should include authorisations from both the flag State and any coastal State where transshipments have been undertaken anywhere in coastal State waters.

Through positional (AIS and VMS) tracking data, MCS practitioners should seek to verify the purpose of all carrier vessel interactions and ensure that there were no unreported transshipments carried out during the current voyage of the vessel prior to entering port. This analysis should identify any interactions with other vessels for which records have not been maintained. Effort should be made to verify the quantities and species composition onboard the carrier vessel as well to ensure that reported quantities reflects the actual quantities onboard. Sometimes processing factories can be best placed to provide accurate species weights and composition for larger shipments.

It is also crucial to check and verify the authorisations and activities of all the donor vessels that have transhipped with the carrier vessel. It is important, where possible, to try to obtain and validate positional tracking data, licences and authorisations and catch records for these donor vessels. This can sometimes be performed by organisations and agencies with access to this information. Transshipments involving illegally caught or sourced fish will often not be reported accurately, if at all. More details on what to look for during inspections is included in the next section.

VESSEL IDENTITY ISSUES

Exterior vessel markings are important for vessel identity. These can be checked against official vessel records and the growing records of vessel identity details and images available online. However, carrier vessels that undertake international voyages are quite similar in their design, and companies that own multiple vessels often use similar hull colourings, so the external appearance of the vessel alone may not be sufficient to differentiate between different vessels. Vessel authorisation and licences will relate to specific vessels, so it is important that the vessel identity is confirmed and verified. If there are any concerns about the identity of the vessel or the validity of registration documents, it may be necessary to conduct a detailed review the vessels' registration papers and crosscheck the serial numbers of the hull, main engine, and gearbox with those specified.



VESSEL INSPECTIONS ON CARRIERS WHAT TO LOOK FOR?

For an overview of the general needs and considerations for the inspection of all fishing vessels, please refer to the *MCS Practitioners Introductory Guide to Industrial Fishing Vessel Inspections*. Specific considerations for in port and at sea inspections of carrier vessels include the following:

CATCH ONBOARD

Some vessel authorisation and/or carrier vessel licence conditions can specify the species that the vessel has been authorised to carry on board. Where this is specified, inspections should confirm that only those authorised species are onboard. Where this not specified, inspections should identify that the species on board do not violate any national species regulations before any offload is permitted. In addition to the main target species, the inspection should also closely examine by-catch species that have been transhipped and are onboard the carrier vessel. Sometimes species may be misidentified, and bycatch species may be under reported. This misidentification can be both intentional, to avoid catch limits and more stringent catch reporting requirements, and unintentional, due to poor or ineffective processes onboard the fishing vessel.

Due to contracting and insurance requirements, carrier vessels should record and maintain very detailed documentation of the quantities and location onboard of species that have been received during transhipments. Documents such as “mate’s receipts”, hatch and cargo plans are always onboard carrier vessels and can provide excellent records to help identify and verify the catch onboard. A mate’s receipt is a document issued by the carrier vessel for the fish (and other goods) that have been received onboard and is issued at the time of receiving the fish.

Sometimes fishing vessels may also only carry out partial transhipments with carrier vessels. Partial transhipments may sometimes be carried out to try and hide evidence of illegal activities. Vessels will usually seek to land or tranship illegally caught fish into vessels or locations where detection will be less likely. Where a vessel has conducted a partial transhipment, or the quantities transhipped do not align with the time the vessel was active at sea, the inspector should conduct follow up enquiries. These should confirm the species and quantity transferred during the partial transhipment and the specific vessels involved as well as the means used, if possible, by those vessels to move the remaining catch into the supply chain.

Some carrier vessels operate as part of a global carrier fleet and will operate at different times in different regions of the world. Sometimes carrier vessels can also conduct transhipment in waters of different States and RFMOs during the same voyage. There can often be different rules or regulations that exist between the different areas in which a carrier vessel may tranship during a single trip, particularly between different RFMOs, and these transhipments may also involve different species. In these circumstances, MCS practitioners should seek to work with officers in all the identified jurisdictions to address any potential concerns with any of the catch onboard.



EVIDENCE OF ILLEGAL TRANSHIPMENT

Transhipment is regulated in most (but not all) jurisdictions and will be subject to conditions and authorizations that are normally found attached to the carrier vessel's authorisation or licence. Proximity and vessel speed analysis using positional tracking data (AIS and VMS) as part of a risk assessment undertaken following the receipt of an Advance Request for Entry to Port (AREP), or as part of a preboarding risk assessment for at sea inspections, can provide an indication of possible transhipment events at sea.

However, this information alone does not prove a transhipment took place, as there are many valid reasons for which vessels may be alongside and interact at sea. These can include exchanging or provision of food, medical supplies, fishing gear, vessel parts, supplies such as salt or oil and crew exchanges. Sometimes the length of time spent alongside a fishing vessel can give an indication of potential transhipment, with smaller non-fisheries exchanges generally taking less time than a transfer of catch. But this can vary significantly depending on the quantities of catch transhipped, and all such encounters should be verified. Records onboard the carrier vessel that may provide an indication of the purpose of the interaction (such as deck or vessel logbooks), temperature records in the engineer's logbook and discrepancies between the estimated volumes and catch composition onboard the vessel and the transhipment documentation can also be used to identify if possible illegal transhipments have taken place.

Temperature records in the cargo holds are kept in the Engineers Logbook, which is generally kept in the engine room. This provides continuous temperature records taken at set intervals during the voyage and are maintained to verify that the fish has been kept at a sufficient temperature to meet food safety requirements. If an unreported transhipment is suspected, sudden spikes in the recorded temperature around the time of the suspected unreported transhipment can indicate that the hatch covers were open at this time to receive or transfer fish.

CREW CONDITIONS

It is important to build a positive rapport with crew during all inspections. As well as making the inspection easier, it can also make the crew feel more comfortable to provide information on any possible illegal activities, including crew mistreatment. Carrier vessels undertaking international voyages are required to meet international maritime labour and training standards, which have historically not been applied to fishing vessels. Typically crew on carrier vessels are considered professional mariners and are subject to Standards of Training Certification and Watchkeeping (STCW) which is an internationally recognized set of rules that determine what mariners need to know to perform their jobs safely. Therefore, crew conditions are generally better on carrier vessels than they are on fishing vessels, with crew onboard international carrier vessels generally having more clearly defined hours of work and rest, and required access to decent accommodation, sanitary and recreational facilities onboard. However, officers should always be aware of evidence of potential crew mistreatment or poor working conditions while they are onboard and inspecting any vessel.

DURATION OF TRIP - DOES THIS MATCH NORMAL?

The trip duration for industrial carrier vessels conducting international voyages is generally between around two to three months. Smaller carrier vessels operating closer to their “home port” or within a region will conduct shorter trips. However, the duration of the trip can be dependent on the types of donor vessels they are receiving catch from (fishing method), the quantity of fish transhipped by these vessels, the transshipment locations (in port or at sea), proximity of fishing and support vessels during the trip and the fishing areas and target species of donor vessels. Carrier vessels make money from transporting fish, so inspectors should always pay attention to the vessel capacity and the quantity of fish onboard when considering if the trip duration is what would be expected.

IS THERE AN OBSERVER ONBOARD?

Where transshipment is regulated, it can often (but not always) be a requirement that an observer is carried on the carrier vessel to monitor all transshipments and verify the transhipped species and quantities. Where an observer is embarked onboard the vessel it is important that the inspector speak to the observer to identify any potential illegal or misreported transshipments as well as provided independent verification of the identity and number of vessels the carrier vessel interacted with during its last voyage. This should be carried out in a private area that is away from the carrier vessel crew, and ideally away from the vessel itself if the inspection is taking place in port. During these discussions the observer’s details (name, nationality, and contact details) should be recorded in case further information or evidence is required from the observer at a later date. Where the observer identifies potential non-compliance to have occurred involving transshipments or other fishing activities, the observer should be interviewed, and any evidence held by the observer, including any written or photographic documentation, should be copied, and secured as appropriate. If the observer is required to remain onboard the vessel following the inspection, any action in relation to the information provided by the observer should be discretely carried out and the safety of the observer should always be the primary concern.



NOTES

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The tools are also supported and made available by the cooperating organisations of the Joint Analytical Cell (JAC)
www.tm-tracking.org/joint-analytical-cell

The Guides are available for download at
www.tm-tracking.org/updates-and-resources and www.imcsnet.org/library-search

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