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**DEVELOPMENT OF GUIDANCE ON ASSESSMENTS AND APPLICATIONS OF REMOTE
SURVEYS, ISM CODE AUDITS AND ISPS CODE VERIFICATIONS**

**Draft guidance on remote statutory surveys and draft guidance for
performance of ISM/ISPS remote audits/verifications**

Submitted by IACS

SUMMARY

Executive summary: This document provides the draft guidance on remote statutory surveys and draft guidance for performance of ISM/ISPS remote audits/verifications.

Strategic direction, if applicable: 1

Output: 1.18

Action to be taken: Paragraph 11

Related documents: MSC 104/18 (paragraph 15.5) and III 8/12/1

Introduction

1 The Maritime Safety Committee, at its 104th session, considered proposals for a new output to develop measures regulating remote surveys and audits, such as guidelines for remote inspections and verifications in the field of maritime security, undertaking a scoping exercise of the framework and developing technical requirements for remote surveys, including the information on the application of new technology in remote surveys of ships.

2 Consequently, the Committee agreed to include a new output on “Development of guidance on assessments and applications of remote surveys, ISM Code audits and ISPS Code verifications”, in the biennial agenda of the III Sub-Committee for 2022-2023 and the provisional agenda for III 8, with a target completion year of 2024 (MSC 104/18, paragraph 15.5).

3 Recognizing that normally periodical, annual, and intermediate surveys should not be fully replaced by remote activities, during the COVID-19 pandemic the use of remote surveys and audits by flag States, recognized organizations (ROs) and recognized security organizations (RSOs) has increased. However, it was noted that there is a lack of uniformity in respect of scope, procedures and conditions, which are required for remote surveys, audits and verifications to be widely accepted.

4 Due to the experience and knowledge gained during the COVID-19 pandemic and the advancement in Information and Communication Technology (ICT), a wider use of remote surveys, audits and verifications is expected, even after the logistical difficulties of the current COVID-19 pandemic situation are overcome. That wider use would catalyse the development of guidance in order to facilitate the conduct of remote surveys, audits and verifications in a harmonized way and in a manner that would allow demonstration of the same level of safety, environmental protection and security as in the case of physical onboard surveys or physical audits and verifications. Therefore, it is necessary to base the methodology of remote surveys, audits and verifications on a recognised and standardized method.

5 To address the above challenges, in the summer of 2020, IACS started a project to develop unified requirements for the conduct of remote classification surveys, which resulted in the adoption of the new IACS Unified Requirement (UR) Z29. The document was published in April 2022 on IACS' website (<https://iacs.org.uk/publications/unified-requirements/ur-z/?page=2>) and will apply to remote surveys commenced on or after 1 January 2023.

6 On the basis of experience gained in performing remote surveys, audits and verifications and in developing UR Z29, IACS is working to actively contribute, in line with the principles highlighted in document III 8/12/1 (Austria et al), to the IMO objective of developing a guideline and establishing a regulatory framework that would support the new technology, while maintaining the required level of safety and contributing to the protection of the environment. This contribution is based on the belief that, in general terms, the current liability regime, which is regulating the surveys, audits and verifications between flag States, ROs/RSOs and shipowners' obligations, should not be changed.

Discussion

7 In order to define a standardized method of performance of remote statutory surveys, audits and verifications, IACS has developed two draft guidance documents:

- .1 draft guidance on remote statutory surveys; and
- .2 draft guidance for performance of ISM/ISPS remote audits/verifications.

8 These two draft guidance documents take into account the knowledge obtained from the development of IACS UR Z29 and the current practices and procedures implemented by individual IACS members when conducting remote statutory surveys, audits and verifications, when acting as ROs or RSOs.

9 Some of the main topics addressed in the draft guidance on remote statutory surveys (annex 1 to this document) are:

- .1 eligibility and conditions for equivalency;
- .2 digital information, quality and transparency;
- .3 scope and procedures for remote surveys; and
- .4 recording evidence and reporting.

10 Some of the main topics addressed in the draft guidance for performance of ISM/ISPS remote audits/verifications (annex 2 to this document) are:

- .1 requirements for equivalency with on-site verifications;

- .2 eligibility of remote audits and verifications;
- .3 qualification of auditors;
- .4 Information and Communication Technology (ICT); and
- .5 performance of a remote audit and verification, and recording of evidence.

Action requested of the Sub-Committee

11 The Sub-Committee is invited to note the information provided above, as well as the draft guidance on the remote statutory surveys and the draft guidance for performance of ISM/ISPS remote audits/verifications, annexed to this document.

ANNEX 1

DRAFT GUIDANCE ON REMOTE STATUTORY SURVEYS

General

In terms of scope, a survey can range from a simple review of documents to an extensive survey, including hull, equipment and machinery repairs and follow-up of all class and statutory items.

Remote activities not requiring a survey, such as some administrative tasks, document review, records following a correction, etc., should not be considered remote surveys. This guidance is not applicable for administrative tasks.

Upon shipowner's request and if eligible, remote surveys may be carried out as an alternative to on-board surveys in accordance with this guidance.

A remote survey should only be undertaken provided the level of assurance is not compromised, and the survey is carried out with the same effectiveness as and is equivalent to a survey carried out with attendance on-board by a surveyor.

Remote surveys require the cooperation of crew members; therefore, the master should ensure that crew are trained, familiar with the remote survey process and able to understand the remote instruction from the surveyor with respect to tests, examinations, and gathering of evidence on the condition of the ship. The implementation of remote surveys should not constitute an undue burden to ship crew and shore-based personnel.

1. Definitions

1.1 Remote survey

A "Remote Survey" is a process of verifying that a ship and its equipment are in compliance with applicable statutory regulations where the verification is undertaken, or partially undertaken, without physical attendance on board the ship by a surveyor.

1.2 Information and Communication Technology (ICT)

Information and Communication Technology (ICT) are the technologies used in the scope of remote surveys for gathering, storing, retrieving, processing, analysing, and transmitting information which includes both software and hardware.

2. Eligibility and conditions for equivalency

2.1 Eligibility of the remote survey

The eligibility of the remote survey should be decided based on the type and scope of the requested survey, in accordance with paragraph 4.1.

Equivalency of a remote survey to a survey attended on board by a surveyor is obtained when, with the use of suitable ICT, the flag State or their authorized recognized organization (RO) can perform the survey remotely to their satisfaction and being able to:

- .1 obtain the supporting and technical evidence required according to the applicable regulations;

- .2 verify applicable survey items and relevant tests.

And the results of the remote survey provide the same level of assurance obtained with attendance on board by a surveyor.

If considered applicable by the flag State, eligibility of the remote survey should also be based on:

- .1 safety performance of the ship and the Company;
- .2 PSC performance of the ship and the Company; and
- .3 type and age of the ship.

2.2 Qualification of the surveyor

The surveyors engaged in remote surveys should be trained and qualified as per standard procedures of the flag State or their authorized RO for the type of ship and type of survey.

Additional training should be carried out, covering the ICT used for the remote survey, in relation to the applicable remote survey scope and methods, in order to qualify surveyors engaged in remote surveys.

The additional training should include at least the following aspects:

- .1 knowledge of the operation of the remote survey software, if applicable;
- .2 knowledge of the technical and procedural aspects related to remote surveys; and
- .3 knowledge of the connectivity and data/screen sharing aspects related to remote surveys.

2.3 Responsibility and training of ship's crew

Suitable procedures related to the performance of remote surveys should be included in the Company's Safety Management System (SMS), addressing at least the following aspects:

- .1 responsibility, impartiality and liability of the Company and crew/personnel involved in remote surveys;
- .2 knowledge of the operation of the ICT used for remote surveys, as applicable;
- .3 knowledge of the technical and procedural aspects related to remote surveys;
- .4 knowledge of the connectivity and data/screen sharing aspects related to remote surveys; and
- .5 record of training of crew/personnel involved in remote surveys for the aspects listed in the above items.

2.4 Safety and fatigue of ship's crew

Suitable procedures related to safety and fatigue aspects for the crew/personnel involved in the remote surveys should be included in the Company's Safety Management System (SMS), addressing at least the following aspects:

- 1 safety aspects:
 - .1 the risk of accident due to the use/presence of the ICT when working on board;
 - .2 the compatibility of the ICT with Personal Protective Equipment (PPE) to be used by the crew; and
 - .3 the use of ICT in hazardous areas, if applicable.
- 2 fatigue aspects:
 - .1 the minimum number of the persons in the crew team attending the remote survey; and
 - .2 the schedule and duration of the remote survey considering the rest hours.

2.5 Availability of ICT and connectivity

When performing remote surveys, the owner's representative should ensure that compatible and suitable ICT for the remote survey scope is available for the planned survey.

Remote surveys are generally to be carried out with an internet connection allowing a two-way audio and video communication (livestreaming), although, at the discretion of the flag State, a combination of livestreaming and other ICT (see paragraph 4.3) may be used.

For simple/limited verifications, other types of ICT may be accepted by the flag State, provided that with such ICT the equivalency of the remote survey is ensured.

The owner's representative should ensure that internet connectivity tests are carried out before the survey and that proper connectivity is available and maintained during the remote survey.

The quality of the audio and video connection should ensure proper communication and to allow the surveyor to carry out the survey remotely, to the flag State's satisfaction.

2.6 Equivalency of the remote survey

To determine if a survey can be carried out remotely with results equivalent to a survey physically attended by a surveyor, a risk assessment should be carried out by the flag State.

Risk assessment

A risk assessment carried out by the flag State for the purpose of accepting a remote survey should address at least the following aspects with respect to the scope of the survey:

- .1 safety performance of ships and Company, PSC performance, type and age of ships according to this guidance, as applicable (paragraph 2.1);

- .2 justification for the use of remote methods for surveys, and conditions and circumstances under which these surveys may be performed remotely;
- .3 the scope of the remote surveys, with consideration to those items that could be verified remotely for compliance with the applicable requirements, to achieve the same level of assurance and equivalence when compared to physically attended surveys;
- .4 the type of ICT to be used during the remote survey, including confidentiality, security of information and data protection;
- .5 the roles and responsibilities of on-board personnel/crew involved in the physical examinations and tests according to this guidance (paragraph 2.3);
- .6 the training and qualification of on-board personnel/crew involved in the physical examinations and tests on board according to this guidance (paragraph 2.3);
- .7 the qualification of the surveyors performing remote surveys, as applicable (paragraph 2.2);
- .8 the type of evidence that will be provided using the proposed ICT to the surveyor, necessary to perform the survey according to the applicable requirements and this guidance (paragraph 5.1); and
- .9 the reporting of the remote survey as per flag State's requirements according to this guidance (paragraph 5.3).

In case the survey is delegated to an RO, the RO should consult the flag State and follow their instructions.

Procedural and technical requirements

Upon satisfactory results of the risk assessment, specific procedural and technical requirements may be defined, if considered necessary by the flag State, in order to consider the proposed remote survey equivalent to a survey attended on board.

Validation phase

If considered necessary by the flag State, the final acceptance of the methodology may require a validation phase by a physical survey.

3 Digital information, quality, and transparency

This section outlines the minimum requirements for the use of ICT that can capture images, record video and/or live stream video or other data from a ship as considered acceptable to the flag State.

3.1 Hardware

The owner is responsible for the availability of the hardware on board which can be requested for the ICT used during remote surveys. The master is responsible for ensuring that safety and procedural requirements relevant to the hardware are managed on board in accordance with the Company SMS.

The use of ICT should facilitate a remote collaboration between the ship and the surveyor. The hardware on board should be compatible with the software application used by the ICT for the applicable remote survey.

Portable equipment on board should be equipped with a power capacity suitable for the intended scope and duration of the survey.

The availability of necessary hardware on board should be verified before commencing a remote survey.

For live streaming two-way audio and video or other means, the following devices are normally used on board for effective collaboration between the ship and the surveyor, ensuring the surveyor can coordinate and drive the remote survey:

- .1 digital device, which may include digital cameras capable of capturing videos/photos/data;
- .2 smart device compatible with the applicable software/technology; or
- .3 communication accessories like headphones and microphone for the noisy environment as applicable and as deemed necessary.

Notes: The smart device may be a smartphone, tablet, computer, wearable device, smart glass, digital camera, drone, or any other device which can be connected to the network and capable of transmitting the necessary video/data/images to a remote location.

When live streaming is applied for a remote survey, to allow the surveyor to have more effective control of the survey, it is beneficial for some key functions of the smart device to have the capability to be operated remotely by the surveyor, such as:

- .1 take photos;
- .2 record videos;
- .3 zoom in/out; and
- .4 share contents.

When using a portable device on-board for livestreaming, the movement of the handheld device may affect the stability of the video and the image, leading to lower quality outputs. When necessary, a suitable anti-shake device should be used to provide proper stability.

The crew should use additional headphones/microphones to reduce background noise and improve call clarity when necessary.

Maintenance and regular checks that the equipment and set up on-board are working satisfactorily should be part of the on board planned maintenance system and should be recorded accordingly.

Surveyors performing the remote surveys should use a computer normally with one or more screens of sufficient size, enabling them to view the evidence received from the ship to their satisfaction.

3.2 Software

The software applications for live streaming, to be downloaded onto smart devices, should provide a secure channel through which image/video/data can be shared. Overall function and ability of such software applications to ensure the required data security, should be part of the risk assessment. When provided by the owner, software applications used in remote surveys should be accepted by the flag State.

The surveyor should normally facilitate the live video call providing instructions to the on-site personnel/crew attending survey activities to capture relevant information. The onboard software and device should have the capability of transmitting the audio/image/video/data over a cellular, wired network, Wi-Fi, or satellite connection to the surveyor.

The software used to perform the remote survey may also be provided with technologies that support the surveyor in the process of decision making, such as:

- .1 Artificial Intelligence (AI) for the review of data;
- .2 Internet of Things (IoT) for collecting parameters and evaluating acceptability/working condition of machinery and equipment;
- .3 data driven verification and self-testing systems method; or
- .4 sharing of ship's integrated control, monitoring and alarm system in order to view and assess data in real-time.

The above software and technologies should be evaluated and accepted by the flag State as part of the ICT.

3.3 Internet connectivity requirement

The communication system should have sufficient capacity to ensure efficient and stable online communication for the required direct colour image/video streaming and voice communication from the ship to the shore remote surveyor.

The network used to transmit data for the remote survey should have the required bandwidth in order to provide sufficient stability of the connection and allow colour video streaming of adequate resolution and frame rate from applicable locations. The communication equipment between the ship and shore, when performing live streaming, should have the following functionality in almost real time:

- .1 surveyor should see the same image/videos framed by the smart device;
- .2 two-way direct voice communication;
- .3 delivering high-definition (HD) video;
- .4 delivering high-resolution photos; and
- .5 record videos and photos.

Notes: The quality/resolution of image and video should be evaluated by the surveyor based on the items being surveyed remotely. The flag State may also apply and define a minimum standard for the videos/photos.

3.4 Data protection

Remote surveys require the transfer of photos, videos, and other data across global networks. During the preparation of the survey, data security policies should be made available to the flag State as necessary. It is the owner's responsibility to ensure that data security policies are implemented as per the Company's SMS.

When considering the use of the ICT, data protection should be considered in advance. The software/application used to perform the remote survey should be compatible with the applicable technical requirements; in addition, the software used should be in compliance with the applicable:

- .1 cyber security requirements; and
- .2 data protection and confidentiality requirements for the transmitted data.

Notes: The flag State may advise ship owner or operator that cyber risk is based on resolution MSC.428(98) on *Maritime cyber risk management in safety management systems* and MSC-FAL.1/Circ.3/Rev.1 on *Guidelines on maritime cyber risk management*.

4 Remote Statutory Survey Scope and Procedures

4.1 Eligible survey items

A remote statutory survey may be accepted as an alternative to a survey attended on-board by a surveyor in case of force majeure, exceptional circumstances, and normal circumstances, as detailed below.

There is a need to distinguish between remote surveys under force majeure and exceptional circumstances and normal circumstances.

4.1.1 Handling of remote surveys under force majeure and exceptional circumstances

In such a case:

- .1 postponement of surveys; and
- .2 verification of rectification, or postponement, of deficiencies covered under section 4.8.4 of the *Survey Guidelines under the harmonized system of survey and certification (HSSC)* (resolution A.1156(32)),

are eligible for remote surveys, provided a case-by-case assessment is carried out by the flag State, including the verification and validation of remote survey results during subsequent surveys with physical attendance on board, if considered necessary.

Such a case-by-case assessment should include at least:

- .1 safety performance of the ship and the Company, PSC performance, type and age of ship according to this guidance (paragraph 2.1);
- .2 documented justification, provided by the Owner, for the use of a remote survey;

- .3 the scope of the remote surveys, with consideration to those items that could be verified remotely for compliance with the applicable requirements, to achieve the same level of assurance and equivalence when compared to physically attended surveys;
- .4 the type of the ICT to be used during the remote survey, including confidentiality, security of information and, data protection;
- .5 the roles and responsibilities of on-board personnel/crew involved in the physical examinations and tests according to this guidance (paragraph 2.3);
- .6 the training and qualification of on-board personnel/crew involved in the physical examinations and tests on-board according to this guidance (paragraph 2.3);
- .7 the qualification of the surveyors, as applicable (paragraph 2.2);
- .8 the type of evidence that will be provided using the proposed ICT to the surveyor, necessary to perform the survey according to the applicable requirements according to this guidance (paragraph 5.1); and
- .9 the reporting of the remote survey as per flag State's requirements according to this guidance (paragraph 5.3).

In case the survey is delegated to an RO, the RO should consult the flag State on a case-by-case basis, for the flag State's review and acceptance of the above assessment at first, together with possible flag State's additional instructions including for the verification and validation of the remote survey by a survey physically attended, if considered necessary.

Items that may not or could not be surveyed remotely should be verified by surveys with physical attendance on board.

Handling of remote surveys under normal circumstances:

In such a case:

- .1 specified survey items, for surveys other than initial and renewal surveys;
- .2 documentary and data verifications and checks (including for initial and renewal surveys);
- .3 issuance, verification of rectification, postponement of deficiencies;
- .4 minor retrofit/installation/upgrade of equipment;
- .5 inspections of the outside of the ship's bottom survey with the ship afloat; and
- .6 load line annual surveys on unmanned non-self propelled (UNSP) barges, such ship type has been covered under MEPC.1/Circ.892

are eligible for remote surveys.

In case the survey is delegated to an RO, the RO should consult the flag State and follow the instructions.

The surveyor may require confirming the results of the remote survey, by a survey attended on board by a surveyor, to credit the relevant survey items, in case the remote survey is not carried out to the surveyor's satisfaction, or it is required by the flag State.

Items that may not or could not be surveyed remotely should be verified by surveys with physical attendance on-board.

4.2 Planning of the remote statutory survey

Planning of the remote statutory survey is required to ensure that the remote survey is carried out in accordance with the applicable requirements. The content of the planning should be based on the scope of the remote survey.

To ensure that the flag State can properly plan the remote survey and communicate with personnel/crew, so that the survey is carried out according to the applicable regulations, adequate means should be available to:

- .1 properly interact with personnel/crew involved in the remote survey, before and during the survey process;
- .2 agree on the ICT means to be used;
- .3 verify that personnel/crew involved in the remote survey are suitably skilled to use the electronic devices and/or software used to perform the remote survey;
- .4 acquire as deemed necessary, information on identity and ranking of personnel/crew involved in the remote survey;
- .5 provide the survey item/scope to the personnel/crew involved in facilitating the remote surveys, including the tests that will be performed; and
- .6 communicate, during the remote survey, additional actions depending on the evidence to be collected.

One or more of the following means should be used for planning the remote surveys:

- .1 live-streaming video and audio connection;
- .2 exchange of data / electronic documents; and/or
- .3 other means acceptable to the flag State.

Safety of the personnel involved on board is under responsibility of the master and should be taken into account according to the SMS during the planning of the surveys.

4.3 Performance of the remote statutory survey

To ensure that the flag State can properly perform the remote statutory survey according to the applicable regulations, the available evidence should be adequate to:

- .1 examine and assess required items and/or supporting documents; and
- .2 verify and assess applicable tests and/or services.

The evidence provided is subject to the technical evaluation and final acceptance by the flag State with respect to the completeness and accuracy, necessary to perform the requested survey according to the applicable requirements.

One or more of the following evidence should be provided for performing the remote survey, as required by the flag State:

- .1 live-streaming video and audio;
- .2 recorded videos provided by the owner's representative;
- .3 photos provided by the owner's representative; and/or
- .4 other data and/or supporting documents acceptable to the flag State.

4.4 Assessment of the remote statutory survey

The flag State should evaluate all evidence received for acceptability before crediting the remote survey.

The means used for the remote survey must allow the flag State to collect the necessary evidence that should be examined in order to satisfactorily complete and credit the relevant survey items.

In case the surveyor, according to their professional judgement, deems that the remote survey does not provide the same level of assurance as an onboard survey the surveyor may decide not to credit the relevant survey items.

5 Recording evidence and reporting

5.1 Type of evidence

5.1.1 Live streaming video and audio

Livestreaming video and audio using the ICT should satisfy the requirements in paragraph 3.

5.1.2 Recorded videos/photos

For the recorded videos/photos, the following information should be available:

- .1 whether they were actually taken on the ship;
- .2 when they were taken (date/time); and
- .3 by whom they were taken.

5.1.3 Master's/chief engineer's statement

Recorded videos/photos provided by the owner or the ship's master may be supplemented with a statement signed by the master and/or the chief engineer confirming the condition of the items shown in the evidence. The final evaluation of the remote statutory survey by the surveyor should be based on all of the provided evidence, and it does not delegate the responsibility to the master/chief engineer statement only.

5.1.4 Ship's logbook

When a remote statutory survey is carried out, the surveyor in charge of the remote statutory survey may require the master to submit copies of the relevant pages of the ship's logbook as evidence the remote statutory survey was carried out.

5.1.5 Other supporting documents

A surveyor in charge of remote statutory surveys may request the owner or ship's master to submit supplementary documents such as ship's maintenance report and record for the operation of machinery, and equipment and service report issued by manufacturer and service supplier and service provider.

5.2 Required evidence

In principle, for the application of remote surveys, use of live streaming video and audio should be considered as a primary means. Alternatively, one or more of the following evidence (but not limited to) may be used for remote statutory surveys in cases a surveyor in charge deems sufficient to verify conditions of remote survey items:

- .1 recorded video and audio;
- .2 photos;
- .3 master's/chief engineer's statement;
- .4 ship's logbook / service engineer report; and/or
- .5 owner's confirmation.

Prior to accepting evidence for remote statutory surveys, the surveyor in charge of remote statutory surveys should:

- .1 confirm the declaration by the owner or the ship's master/chief engineer that information provided for remote statutory surveys is correct and not arbitrarily modified;
- .2 agree with the owner or the ship's master that any recording taken during a remote statutory survey is dealt with as confidential and is not used for any purpose other than the remote statutory survey; and
- .3 request the owner or the ship's master not to record the videos of a surveyor undertaking the remote statutory surveys without prior permission.

5.3 Reporting

Upon completion of the remote statutory survey, the reporting should be carried out as per flag State's requirements, and should include:

- .1 an indication that the survey was carried out remotely;
- .2 description of the means used during the remote survey; and
- .3 an indication of type of evidence provided.

ANNEX 2

DRAFT GUIDANCE FOR PERFORMANCE OF ISM/ISPS REMOTE AUDITS/VERIFICATIONS

1 General

The approach outlined in this recommendation acknowledges that the respective IMO codes make no provision for the application of remote methods. Organizations acting as ROs for the ISM Code certification or RSOs for the ISPS Code certification should apply this guidance and any additional instructions issued by flag State.

1.1 Application

This document describes the methodology for performance of remote audits against the ISM and ISPS Codes.

1.2 Definitions

“Remote verification/audit” – a verification or an audit carried out for a company or vessel against the requirements of the ISM and/or the ISPS Codes, where the audit/verification is performed without attendance on-site by the auditor. Audit or verification where only documentation and records have been reviewed remotely should not be considered as remote audit or verification.

“Auditor” - a person qualified in accordance with IACS PR 10 and 10B, regardless of the role they may be undertaking when performing remote audit or verification.

“Information and Communication Technology (ICT)” - technologies used in the scope of remote audits or verifications for gathering, storing, retrieving, processing, analysing, and transmitting information which includes both software and hardware.

2 Requirements for equivalency

The requirements for equivalency of remote audits and verifications with on-site audit and verifications include:

- .1 eligibility of ship/company office for the remote audit/verification;
- .2 knowledge of auditors in remote audit/verification techniques;
- .3 risk assessment of the remote audit/verification; and
- .4 performance of the remote audit/verification (including planning and reporting).

Equivalency is obtained when, with the use of available ICT, auditor can remotely:

- .1 obtain the supporting objective evidence required to confirm effective implementation and compliance with applicable requirements;
- .2 verify through interviews, review of records, livestreaming videos, and pictures that applicable requirements are being met; and

- .3 the results of the remote audit/verification provide the same level of assurance obtained by performing on-site audit/verification.

2.1 Eligibility of the remote audit/verification

Eligibility of each remote audit/verification and the extent of activities to be verified remotely should be decided based on a risk assessment for type and scope of the requested audit/verification, ship/company performance, availability of adequate ICT solution for remote audit/verification and State(s)' acceptance.

In case of partially performed ship or Company remote audit/verification, additional attendance on site or additional remote audit/verification is required in order to complete parts of the audit/verification which were not performed remotely.

Audits/verifications where all audit/verification activities are performed remotely, do not require additional attendance on site or additional remote audit/verification.

Remote audit/verifications can be conducted if the following conditions are met:

- .1 risk assessment has been performed and documented; and
- .2 remote audit/verification activities are performed in real time through secure network connection using the ICT tools with functionality for voice, video and document sharing.

Special consideration should be given when remote audit/verification is performed during night hours either for the auditor or the audit/verification site.

2.2 The Company/shipowner's responsibilities

The Company/shipowner's responsibilities include, but are not limited to:

- .1 ensuring that there is sufficient bandwidth for remote connection;
- .2 ensuring connectivity to ship/Company ICT;
- .3 ensure that personnel are familiar with the agreed ICT tools;
- .4 ensuring that personnel are ready and prepared in accordance with the agreed audit plan;
- .5 ensuring that documents and records can be presented using the agreed ICT tools;
- .6 ensuring that interviews can be carried out with the required privacy and confidentiality; and
- .7 ensuring the safety of personnel involved.

2.3 Qualification of auditors

The auditors engaged in remote audits/verifications should be trained and qualified as per IMO guidance¹ and national requirements of the flag State.

In addition, auditors performing remote audits/verifications should be familiar with the applicable ICT tools for remote audits/verifications including:

- .1 knowledge of the operation of the remote audit/verification software used;
- .2 knowledge of the technical and procedural aspects related to remote audits/verifications; and
- .3 knowledge of the connectivity aspects related to remote audits/verifications.

2.4 Risk assessment of the remote audit/verification

Prior to conducting any remote audit/verification, the risks associated with the remote audit/verification should be determined.

Risk assessment should as a minimum consider type and age of ship, PSC performance and results of previous ship audits in case of shipboard audits.

Results of previous company ISM Code audits, Company fleet's performance in PSC and classification/statutory survey and history of accidents/incidents should be considered in case of remote ISM Code Company audits.

Decision to proceed with remote audit/verification should be based on acceptable risk.

2.5 Information and Communication Technology (ICT)

When performing remote audits/verifications, the Company/shipowner should ensure that compatible and suitable ICT for the scope of the remote audit/verification is available.

When remote audit/verification by livestreaming is being performed, a connection that enables livestreaming between the auditor and the ship crew and/or company personnel attending on site is required. The quality of the livestreaming connection (audio and video) should ensure proper communication and to allow the auditor to carry out the audit/verification remotely, to the auditor's satisfaction. In the case where a livestreaming connection with the auditor is not possible or is not continuous at the place of the audit/verification (e.g., Engine Room), partly online sequences (where the Company/shipowner is able to capture pictures and videos offline of those items not covered by live streaming) may be accepted by the auditor.

The ICT should typically consist of:

- .1 host computer device, to receive the streaming of documentation / images / data / video sufficient to enable an audit/verification decision to be made;
- .2 on site standalone device which may include digital cameras capable of capturing documentation/videos/photos/data;

¹ Resolution A.1118(30) on *Revised guidelines on the implementation of the international Safety Management (ISM) Code by Administrations*

- .3 on site portable device(s) compatible with the applicable software/technology with a power capacity suitable for the intended scope and time of the audit/verification; and
- .4 communication accessories like headphones and microphone for the noisy environment as applicable and as deemed necessary.

The communication equipment used for the live streaming should have the following minimum functionality:

- .1 both ends should simultaneously see the same image/videos in near real-time;
- .2 two-way direct voice communication; and
- .3 possibility to take screenshots

When using a portable device on site for livestreaming, the movement of the handheld device may affect the stability of the video and the image, leading to lower quality outputs. When necessary, a suitable anti-shake device should be used to provide proper stability.

When livestreaming communication is applied, the internet connection should have sufficient and stable bandwidth capacity to ensure quality (such as resolution and frame rate) of the direct colour image/video and voice communication between verification site and auditor location.

The software/application used to perform the remote audit should be compatible with the applicable requirements for:

- .1 cyber security; and
- .2 data protection and confidentiality for the transmitted data.

2.6 Performing the remote audit/verification

Auditor should plan the audit/verification. The plan should indicate activities to be audited/verified as part of remote audit/verification, personnel to be interviewed, and the ICT to be used.

Company/shipowner should provide information necessary to properly cover the scope and objectives and to ensure needed resources are available for the remote audit/verification.

This may require close coordination with the Company/shipowner to ensure availability, without constituting an undue burden, on the ship's crew and shore-based personnel, and connectivity to Company/shipowner's ICT. Availability of ship crew in relation of work and rest hours should be considered when selection of crew for interviews is planned.

Planning of the remote audit/verification should take into consideration:

- .1 technical problems (e.g. connection issues) which may cause a delay; and
- .2 frequent breaks from on-screen time.

The remote audit/verification may be scheduled over multiple sessions and spread over multiple days, rather than in a single intensive day.

Before the remote audit/verification is commenced the auditor should emphasize the right to terminate the audit/verification if the objectives of the audit/verification and equivalency with onsite audit/verification and safety cannot be achieved.

Interviews in private with key Company/shipowner's personnel, or a representative sample of a ship's crew, as applicable, are vital to the quality and integrity of any audit/verification.

Interviews with crew members on board ships should, as far as practicable, be held at locations where the crew member's role is being fulfilled.

Where live video feeds are found to be difficult due to connectivity issues, e.g., machinery spaces, the auditors may accept time stamped video recordings which are made available via a suitable file sharing application.

Interruptions in the audit/verification due to the ICT issues should be recorded and the plan adjusted accordingly.

It is critical to all audit/verifications that the auditor is able to gain an overall impression of the condition of the ship, covering all areas just as would be the case in a normal visit on board.

This includes implementation of SMS and Ship Security Plan (SPS) requirements such as safe working practices, seafarers living and working conditions, emergency preparedness and maintenance of the ship, etc. similar to an on-site audit/verification.

The reporting and follow-up for remote audit/verification should follow the same principles as on-site audit/verification.

Audit reports and related records should indicate activities carried out remotely and the extent to which the ICT has been used in carrying out the audit/verification and the effectiveness of the ICT in achieving the objectives of the audit/verification.

2.7 Aborting or adjusting the audit/verification

If, for any reason, the remote audit/verification cannot be progressed adequately, a decision should be made whether to cancel the audit/verification entirely or record it as partial audit/verification.

Possible options include:

- .1 reschedule the audit/verification as a complete on-site audit/verification;
- .2 schedule additional remote audit/verification(s) to continue the audit/verification; and/or
- .3 re-arrange to complete the remaining parts of the audit/verification on site, i.e. partial remote audit/verification.

2.8 Recording of evidence

The hardware and software used for the remote audit/verification should be acceptable to the auditor.

The overall function and ability of the software used to ensure the security of data should be evaluated prior to use.

The auditor should control the live video call, providing instructions to the on-site personnel/crew and supervising audit/verification activities for capturing relevant information.

In case of vessel audit/verification the on-board device should have the capability of transmitting the data over a cellular, Wi-Fi, or satellite connection to the auditor.

In principle, livestreaming video and audio and online document sharing should be applied to remote audit/verifications as a primary means.

The auditor may require additional objective evidence to be submitted before or during the audit/verification such as:

- .1 copies of procedures;
- .2 reports of internal audits/verifications, master review, management review;
- .3 other relevant records, e.g. accident/incident reports;
- .4 recorded video and audio;
- .5 photos;
- .6 master's/chief engineer's reports;
- .7 ship's logbook(s); and
- .8 maintenance reports and record for the operation of machinery and equipment.

For the recorded videos/photos submitted by the Company/shipowner, the following information should be available:

- .1 confirmation that the objective evidence is related to location subject to audit/verification;
- .2 date and time when they were taken; and
- .3 identity of the personnel responsible for taking evidence.

Requirements of applicable data protection regulations apply in case of any evidence submitted by the Company/shipowner is retained after the remote audit/verification.
