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GUIDELINES FOR THE IMPLEMENTATION OF THE INSPECTION PROGRAMMES FOR CARGO TRANSPORT UNITS

1 The Maritime Safety Committee, at its ninetieth session (16 to 25 May 2012), noted that Member Government reports on inspections of cargo transport units (CTUs), as defined in chapter 1.2 of the IMDG Code, carrying dangerous goods for international transport by sea, could benefit from guidance on how to conduct the inspections. Inspection procedures and protocols may vary, depending on the specific type of CTU, on how it is presented for inspection (e.g. whether mounted on chassis or grounded), and on the need for additional precautions depending on the specific nature of potential dangerous goods (e.g. radioactive, explosive, inhalation hazard).

2 Noting that in those countries where regular inspection programmes have been implemented, a considerable improvement has been experienced in the general compliance with those standards, MSC 90 approved MSC.1/Circ.1442 on *Inspection programmes for cargo transport units carrying dangerous goods*, which offered inspection guidance to Member Governments to facilitate improvement to and implementation of inspection programmes. Furthermore, to help identify areas of improvement to pertinent IMO standards, Member Governments were requested to continue providing reports on inspections of cargo transport units. The results have been duly submitted to IMO over the preceding years, usually accompanied by a summary of such reports compiled by the Secretariat. To avoid the diverting of dangerous goods to ports where inspections are not carried out, a regional approach should be taken.

3 The Maritime Safety Committee, at its 100th session, agreed to revise the *Inspection programmes for cargo transport units carrying dangerous goods* (MSC.1/Circ.1442, as amended by MSC.1/Circ.1521), in order to broaden the inspection programmes for CTUs. In this context, the Committee, at its 105th session (20 to 29 April 2022), approved *Guidelines for the implementation of the inspection programmes for cargo transport units*, as set out in the annex, prepared by the Sub-Committee on Carriage of Cargoes and Containers, at its seventh session (6 to 10 September 2021).

4 The inspection guidance set out in the annex, while not in all cases definitive, is intended to provide Member Governments with adequate inspection guidelines and procedures to prompt substantial compliance with IMO standards and is applicable to all types of CTUs. Related circulars may be developed or updated to address peculiarities of specific types of CTUs and to provide greater detail on certain inspection items such as structural integrity (see resolution MSC.310(88)).

5 Noting the low rate of submission of inspection reports to the Organization, Member Governments are encouraged to submit all reports on inspections of CTUs. Assuming inspection procedures among Member Governments are comparable to the guidelines contained in the annex, the reports will make it possible to justify and effect safety improvements without an actual safety incident happening. To aid the Organization in evaluating the reports, Governments are invited to submit their reports in a structured manner, using the format given in the appendix, or directly in the "Reports of CTU inspections" module of the Global Integrated Shipping Information System (GISIS).

6 Member Governments are invited to apply the annexed Guidelines when implementing inspection programmes for CTUs and bring them to the attention of CTU inspectors, shippers, packers, dock workers, shipowners, ship operators, masters and crews, and all parties concerned.

7 This circular revokes MSC.1/Circ.1442 and MSC.1/Circ.1521.

ANNEX

GUIDELINES FOR THE IMPLEMENTATION OF THE INSPECTION OF CARGO TRANSPORT UNITS

General

1 The objective of these Guidelines is to assist in the implementation of a uniform and safe inspection programme for the inspection of cargo transport units (CTUs) carrying goods for international transport by sea, and to provide guidance relating to such inspections in accordance with applicable IMO instruments, such as the International Convention for the Safety of Life at Sea (SOLAS), the International Maritime Dangerous Goods (IMDG) Code, the International Convention for Safe Containers (CSC) and related recommendations including the IMO/ILO/UNECE Code of Practice for Packing Cargo Transport Units (CTU Code).

2 Any inspection should be carried out in accordance with applicable IMO instruments. The following items should, at a minimum, be covered by the inspection programme and be checked for compliance with applicable standards:

- .1 Documentation;

Structural safety – Container

- .2 CSC Safety Approval Plate;
- .3 Serious structural deficiencies (refer to CSC.1/Circ. 138/Rev.1, as amended by CSC.1/Circ.151);
- .4 Approved Continuous Examination Program (ACEP) or Periodic Examination Scheme (PES) label;

Structural safety – CTUs not covered by CSC

- .5 Road vehicles and trailers;
- .6 Tanks and Multiple Element Gas Containers (MEGCs);

Cargo

- .7 Marking/placarding of CTUs;
- .8 Packaging;
- .9 Marking and labelling of packages;
- .10 Packing practices;
- .11 Blocking techniques;
- .12 Securing inside or on the CTUs; and
- .13 Pest contamination.

Definitions

Door end inspection – A visual inspection of the contents of a CTU without breaking the plane of the door end.

Facility supervisor – Person competent to arrange, change, alter and halt the facility operations.

Inspector – Person employed, contracted or authorized by the Member State deemed to be competent to perform the functions under this annex.

Multiple-element gas containers (MEGCs) – has the same meaning as defined in the IMDG Code (1.2.1 definitions).

Packaging – has the same meaning as defined in the Code of Practice for Packing of Cargo Transport Units (CTU Code), chapter 2.

Pest contamination – Visible¹ forms of animals, insects or other invertebrates (alive or dead, in any lifecycle stage, including egg casings or rafts), or any organic material of animal origin (including blood, bones, hair, flesh, secretions, excretions); viable or non-viable plants or plant products (including fruit, seeds, leaves, twigs, roots, bark); or other organic material, including fungi; or soil, or water, where such products are not the manifested cargo within the CTU.

Pest contamination competent authority – Any body or authority designated or otherwise recognized by a Member Government as being responsible for pest contamination matters in connection with these Guidelines.

Safety Strap – A strap attached to or secured around the locking bars of a CTU to minimize the free movement of the right-side door when it is first opened.

Tailgate Inspection – An internal inspection of a CTU, that is limited to that interior volume of a CTU beginning at the door sill and ending at an imaginary plane established at the lesser of either the first meter of the container itself or the first tier of dunnage.

Targeting methodology and undeclared or misdeclared dangerous goods

3 Commensurate with available resources, Member Governments are encouraged to inspect a representative sample of CTUs and cargoes carried in or on CTUs. CTUs should be targeted for inspection with consideration given to risk-based principles. For example, Member Governments should focus their inspection resources on those shipments that have historically presented the greatest safety risk. Targeting criteria could also assist Member Governments in addressing dangerous goods being shipped in an undeclared or misdeclared manner.

4 The presence of undeclared or misdeclared dangerous goods should not be underestimated. Undeclared dangerous goods can occur when hazardous materials are placed within a CTU with no markings to indicate the presence of dangerous goods, and when required documents fail to declare the presence of dangerous goods or are missing altogether.

.1 A targeted selection method should be used to identify general cargo CTUs with a higher probability of carrying undeclared hazardous materials. The inspection of general cargo transport units should complement those performed on CTUs with declared dangerous goods.

¹ Detectable by the human eye without the aid of any supporting instruments or aids such as magnifying glasses and microscopes.

- .2 Methods for tracking parties responsible for repeatedly violating dangerous goods shipping standards are encouraged.
 - .3 Reporting between competent authorities in cases where the safety of the transport of dangerous goods is compromised as a result of serious or repeated infringements by an enterprise which has its headquarters on the territory of another competent authority is strongly encouraged.
- 5 Actions undertaken upon discovery of a CTU with a deficiency may include, as appropriate:
- .1 placing the cargo on hold, or putting the CTU out of service;
 - .2 notifying all relevant parties;
 - .3 planning for and implementing corrective actions; and
 - .4 providing or facilitating appropriate penalty actions against those responsible under the IMDG Code, CSC and/or applicable national legislation, including, but not limited to reporting the non-compliance to the competent authority of the State in which the infringing enterprise has its headquarters.

General safety and pest contamination considerations

- 6 Given the safety and health risks CTUs present, all inspections should be conducted with caution and a suitable risk assessment carried out before entering any CTU.²
- .1 CTU inspections should be carried out in safe areas (CTU Code, annex 5, section 2). If it is necessary to carry out inspections in port areas or terminals, appropriate precautions should be taken to prevent persons being struck by vehicles or handling equipment.
 - .2 Given possible interactions with hazardous materials, inspectors should not smoke or eat while conducting inspections.
 - .3 Inspectors should minimize the likelihood of slips, trips or falls especially while inspecting CTUs loaded on chassis or when climbing on to and walking along the tops of CTUs. Inspectors should follow applicable occupational safety regulations in order to view the CTU components (corner fittings, top side rails, roof, etc.) otherwise not readily visible from the ground. Inspectors should not climb any CTU if it is stacked on top of another CTU (CTU Code chapter 8, subsection 8.3.3, annex 5, section 2.2 and annex 8).
 - .4 Inspectors should not open container doors if that container is part of a stack. Container doors are a structural part of a container and, if opened while stacked, may compromise the structural integrity of the container and stack.
 - .5 Precautions must be taken to minimize risks associated with the opening of a CTU:

² Guidance on reception, opening and inspecting CTUs is contained in the CTU Code, especially relevant is: chapter 8: Arrival, Checking and Positioning of CTUs; chapter 12 Advice on Receipt and Unpacking of CTUs; annex 2: Safe Handling of CTUs; annex 5: Receiving CTUs; annex 8: Access to tank and bulk tops, working height; annex 9: Fumigation.

- .1 prior to opening a CTU an assessment should be taken of any risks involved, as might be indicated by warning signs, placards or other marks, on the exterior of the unit or the nature of the cargo (CTU Code, annex 5, section 4);
 - .2 opening the doors: Inspectors should observe caution when opening a CTU's doors as cargoes may have shifted and may be resting against the doors (CTU Code, annex 5, section 6); and
 - .3 ventilation: A closed CTU is an enclosed space and care should be taken before entering (CTU Code, annex 5, section 7).
- .6 Precautions must be taken to minimize potential exposure during inspections. Inspectors should be aware of the potential hazards of the atmosphere inside CTUs:
- .1 oxygen depleting cargoes and temperature controlled CTUs can substantially reduce the oxygen levels; and
 - .2 residues from previous cargo, hazardous cargoes, toxic gases or vapours emitted by non-dangerous goods, decomposition products, fumigants and fumigant residues can increase the level of toxic gases and vapours (CTU Code, annex 9, section 4).
- .7 CTU inspections should be carried out by a team of at least two personnel, one who can undertake the role of inspector and another who can monitor the environment for external and internal hazards from outside the CTU while the inspection is conducted. The CTU is an enclosed space and, therefore, adequate precautions should be taken when an inspector enters. In a team of two, both personnel should not be in the CTU simultaneously.
- .8 While inspecting a CTU, inspectors should be alert to any inadvertent attempt by facility personnel to move that CTU. Facility supervisors should ensure that facility operators are aware of the CTUs being inspected and that no handling operations should take place in the vicinity.
- .9 For CTUs carrying dangerous goods:
- .1 exposure through inadvertent ingestion, absorption, injection or inhalation of hazardous materials from a CTU may be harmful or fatal; and
 - .2 exposure to radioactive materials may pose potential health risks. Inspectors should be aware of the commodities reportedly contained within the CTU and should be in possession of appropriate radiation monitoring equipment.
- 7 Inspection controls should be established for all CTU inspections.
- .1 Entering CTUs presents a risk to inspectors irrespective of the cargo carried. Therefore, a suitable risk assessment should be performed and considered.
 - .2 Inspectors should look for signs or indicators of fumigant having been applied to the CTU, e.g. cargoes with timber dunnage are candidates for the improper use of fumigation.

- .3 Further guidance on testing atmospheres inside CTUs and dealing with fumigated units is available in the CTU Code (annex 9: Fumigation).
 - .4 Special controls may be required for CTUs containing dangerous goods or fumigants.
 - .1 CTUs, containing toxic commodities bearing the labels of 2.3 or 6.1 as per paragraph 5.2.2 of the IMDG Code or bearing "FUMIGANT" warning signs as per paragraph 5.5.2.3.2 or "WARNING" as per paragraph 5.5.3.6.2 of the IMDG Code may be opened, but should only be inspected visually without having the inspector cross the plane of the doorway if it has not been adequately ventilated.
 - .2 Shipments of radioactive materials, identified in section 2.7.2 of the IMDG Code, should be inspected taking into account the unique nature of the hazard. Radioactive materials shipped properly pose little risk of exposure and are required to be prepared in compliance with the same standards as all other hazardous material shipments. The inspection of radioactive materials should be done with extreme caution.
 - .5 Where there is a risk of toxic or flammable internal atmospheres, controls must be put into place to ensure that escaping toxic gases can be captured or dissipate in a safe area (CTU Code, annex 5, section 7.3.4) and a safe area established which would be free from emitted toxic gases.
- 8 Inspections related to pest contamination of the CTUs fall into two distinct actions:
- .1 initial inspection by the inspection team to identify and report if there are any signs of pest contamination to the appropriate pest contamination competent authority; and
 - .2 detailed inspection and possible action by the pest contamination competent authority.
- 9 The inspection team (refer to paragraph 6.7) should be familiar with procedures of response to hazardous material releases or exposures established by local authorities.
- .1 The inspection team should immediately egress from the exposure area and muster in a safe location upwind. This action is referred to as an emergency egress. The following, among others, are indications of possible exposure that should require immediate emergency egress:
 - .1 leaks, odours, fumes or sounds (such as when compressed gas is released);
 - .2 atmospheric monitor or meter alarms;
 - .3 feelings of dizziness, light-headedness or shortness of breath; and
 - .4 unexpected chemical smells or dermal sensations such as burning.
 - .2 Actions to be taken in an emergency egress include immediate notification to the facility so that response plans can be activated.

- .3 Inspectors should not re-enter any CTU until it has been determined that it is safe to do so.

10 Provisions should be in place for swift emergency medical treatment:

- .1 inspection team should be aware of appropriate emergency medical services such as hospitals, fire departments, first aid stations and chemical decontamination stations; and
- .2 chemical specific emergency response information should be available during inspections and consulted for appropriate initial decontamination in the event of exposure to a hazardous material.

Conduct of inspections

11 CTU inspection preparation, assessment and opening procedures should be established, as follows:

- .1 Contact the facility with the custody of the CTUs that are to be inspected.
- .2 Establish an inspection team communications plan, which should involve reliable voice communications that take into account administration and facility safety procedures.
- .3 Identify CTUs for inspection and inform facility and/or carrier. A risk assessment methodology should be used to select CTUs posing the highest threat and consequence for non-compliance with regulations.
- .4 Identify the contents of the CTUs selected for inspection by obtaining and reviewing the relevant documents. If the CTUs to be inspected are declared as carrying dangerous goods, then the dangerous goods documentation should also be reviewed. It should be borne in mind that the lack of dangerous goods declaration does not mean the CTU will be absent of dangerous goods and due care should be taken.
- .5 Assemble the personal protective and inspection equipment needed.
 - .1 Personnel should wear hard hats, safety glasses, safety shoes, high visibility or reflective vests, and gloves, and properly calibrated hazardous condition sensing devices. As appropriate, inspectors should consider the use of additional personal protective equipment such as chemical protective clothing, air purifying respirators or emergency escape breathing apparatus to prevent inadvertent exposure to hazardous materials within the CTU.
 - .2 Personnel should assemble a container inspection kit containing all required tools, references (including regulatory provisions for quick reference) and paperwork.
- .6 A safety brief should be conducted prior to the first inspection. The safety brief should cover the following:

- .1 operational risk assessment to determine if present and predicted conditions, such as weather and personnel readiness, allow for a safe operation;
 - .2 assignment of roles and responsibilities for all members of the inspection team. At least one member should be assigned safety duties to ensure that proper procedures are followed and to implement protocols in emergency situations;
 - .3 a review of personal protective equipment and its use;
 - .4 a review of safe work practices;
 - .5 a discussion of emergency egress situations, muster location, and other emergency protocols;
 - .6 known hazards that exist at the location where the inspection is to occur; and
 - .7 accidental exposure procedures.
- .7 Stage CTUs for inspection in a manner that will maximize natural ventilation and provide safety from existing traffic patterns, CTU handling operations and concentrations of CTUs scheduled for movement. Staging areas should have adequate lighting and be away from water runoff drains and electrical outlets. As an additional precaution, when a CTU is on the chassis, place cones or park a vehicle, if available, immediately in front of the CTU to prevent a vehicle from connecting up to the chassis during the inspection.
- .8 Establish a safety watch and review safety procedures before starting the inspection:
- .1 discuss inspection activity with the safety watch;
 - .2 once the potential hazards of the commodities in the selected CTUs are known, these should be reviewed with the team;
 - .3 assess the staging area and discuss any unique aspects that may pose potential safety hazards. This should include identification of the safe egress routes; and
 - .4 the final step before beginning the inspections should be to conduct a second operational risk assessment to determine if conditions have changed from the previous assessment. When appropriate, reassess safety procedures to reduce risk and, if unsure, seek guidance from the inspector(s) superior or manager.
- .9 Conduct an external assessment, to include a complete walk-around, of selected CTUs to ensure safety of inspection personnel. Remain alert for indications of potential internal hazards such as cargo leaks or severe CTU damage. If any leaks are discovered, stop the inspection and initiate established response procedures.

- .10 For closed CTUs, it is highly encouraged to perform atmospheric monitoring before, and continuously during, the inspection cycle.
- .1 Inspectors should not enter a CTU if tests indicate that the atmosphere in it is potentially hazardous until it is determined that it is safe to do so.
- .2 When an inspector enters a CTU, atmospheric measurements should be taken above the inspector's head near the top of the container, at head or breathing zone level, at waist level, and near the bottom of the container. After adequate ventilation, the oxygen level at the container door end should equal ambient levels. Entry into the enclosed space of the container should only occur when the meter readings match those obtained for the ambient atmosphere. Under no circumstances should a tailgate inspection occur when door end readings differ from normal ambient atmospheric readings or if combustible gas readings indicate a hazardous condition.
- .11 The use of a safety strap is encouraged. Exercise caution when opening closed freight containers. The safety strap will be secured to minimize the free movement of the right-side door when it is first opened by crossing the vertical seam between both doors. This can reduce the risk of personal injury from shifted cargo. The safety strap, and other associated components such as ratcheted cargo tie downs, should have a minimum breaking strength of 1,800 kilograms. If the safety strap is made of synthetic material, it should not be elasticized, such as that found in shock cords.³
- .12 For CTUs, an assessment of the door end should be performed to identify shifted cargo. With the safety strap in place, carefully crack open the right door enough to determine if there is any danger from spilled or shifted cargo. A second inspector can do this by looking into the container standing to the left of the left door and at a safe distance. If cargo has shifted and poses a safety threat, notify the facility immediately so that it can be opened safely prior to continuing the inspection.
- .13 Ventilate the CTU: For CTUs other than those that have been fumigated or contain toxic materials, loosen the safety strap and ventilate the CTU by fully opening the doors for natural ventilation.
- .1 To maximize natural ventilation, open the right and left doors a minimum of 180 degrees so that they are perpendicular to the CTU sides, and ventilate the container for a minimum prescribed time.
- .2 For CTUs that have been fumigated, ensure that at least 24 hours have elapsed since the time of fumigation before opening the doors. Upon opening the doors, the fumigant and residues must be completely ventilated using natural ventilation or mechanical means prior to entry.
- .3 Inspectors should be aware that residual hazards may remain in ventilated CTUs (see paragraph 6.6).

³ CTU Code chapter 12: Advice on receipt and unpacking of CTUs.

- .14 Conducting a tailgate inspection: The number of persons entering the CTU to conduct tailgate inspections should be limited to the minimum necessary. Exercise caution when trying to examine cargo forward of the doors; climbing on packages or dunnage is dangerous and should be avoided.
- 12 Inspection procedures related to CTU pest contamination should meet the following requirements:
- .1 inspections should be carried out during daylight hours and in line with procedures outlined in this annex;
 - .2 inspections for pest contamination should be done as part of the normal CTU inspection programme and no particular CTU selection criteria for such inspections would therefore be required;
 - .3 the cargo should be inspected to the extent possible;
 - .4 inspectors should consult the CTU Code and informative material related to the CTU Code for information on pest contamination;
 - .5 where possible, all six sides of the interior and exterior of the CTU should be inspected; and
 - .6 detailed inspection and possible action by the pest contamination competent authority should be conducted in coordination with the terminal facility supervisor to ensure that inspections are carried out safely and without unnecessary delay to normal facility operations.
- 13 Procedures for internal inspections of a closed CTU should be established.
- .1 Normally, inspectors should not have a need to proceed beyond a door end inspection to complete their duties. An inspector should not enter an enclosed space within a CTU if it is not felt safe to do so. However, in situations that call for entry beyond the door end, the following steps should be adhered to:
 - .1 Determine the risk of conducting an internal inspection and assess access and egress routes. Examine the interior of the CTU at the door end and determine if the enclosed space has limited access or egress. If the nature of the cargo or loading procedure does not leave a direct or unobstructed egress path, the inspector should consider the CTU a confined space. If the inspector needs access to a cargo in a potential confined space to verify compliance, then the inspector should take appropriate measures to require de-vanning of the cargo to allow unrestricted access to it or utilize specialized remote viewing equipment. Never climb on packages containing dangerous goods, unless such an inspection is necessary and appropriate safety precautions have been taken.
 - .2 Ensure that the CTU has been properly ventilated (see paragraphs 6.6 and 11.13.3).
 - .3 Continue to evaluate the interior of the space throughout the inspection. If at any time there is an obvious change to the interior environment or the inspector feels unsafe, the inspector should immediately egress from the container and re-evaluate the situation.

- .4 Continuously monitor the internal atmosphere using sensing devices.
- .5 Maintain readiness for emergency egress. Each inspector should be ready to immediately exit the CTU when changes in sensing devices indicate the presence of atmospheric hazards or if any of the symptoms identified in paragraph 9.1 are detected. In the event that the inspector becomes incapacitated and rescue requires entry to be made into the CTU, emergency response personnel with the proper training and equipment should be used to affect the rescue.

14 Establish procedures for resealing a CTU: Procedures should be established for the replacement, recording and information sharing with facilities and carriers of seals that have been removed in the conduct of a container inspection. Such procedures should conform with applicable national legislation and should take into account MSC-FAL.1/Circ.1 on *Securing and facilitating international trade*.⁴

Items to check during an inspection

15 To ensure that the flow of information is transmitted to the parties involved in the transport of the CTU, the following information should be verified (see also CTU Code, chapter 4, paragraph 4.2.12):

- .1 CTU identification;
- .2 seal number;
- .3 verified gross mass of the CTU (where required);
- .4 accurate description of the cargo carried in the CTU:
 - .1 non-dangerous cargoes should be described with all necessary information to enable a check, whether the cargo is suitable for transport, to identify a possible need to segregate incompatible goods and to assess specific needs to secure the cargo in the CTU; and
 - .2 dangerous goods should be described by their proper shipping name, including the technical name enclosed in parenthesis, as applicable (IMDG Code, paragraph 5.4.1.4);
- .5 correct description of dangerous goods;
- .6 identification of risks to the integrity of the CTU that may be present for all or some part of the journey;
- .7 correct and appropriate transport documentation; and

⁴ MSC-FAL.1/Circ.1 provides information on the WCO's "SAFE Framework of Standards", which in its "Customs to Customs" pillar encourages the usage by Customs Authorities of advance electronic information as part of a risk-based cargo security strategy. Requirements on the use of high security mechanical seals, as part of a seal integrity programme for containers, form an important element of this pillar. One of these requirements is that if public or private officials remove a seal to inspect the container, they will install an acceptable replacement seal and note the particulars of the action, including the new seal number, in the cargo documentation.

- .8 any information required for safety, security, phytosanitary, veterinary, customs or other regulatory purposes.

16 Additionally, the following documentation as specified in dangerous goods regulations such as the IMDG Code (chapter 5.4) should be checked for compliance with the Code, in order to identify the hazards of the consignment (a substance, material or article):

- .1 dangerous goods transport document;
- .2 container/vehicle packing certificate;
- .3 documentation for tanks used to transport dangerous goods; and
- .4 other information and documentation, if provided.

17 The following information, at a minimum, for each dangerous substance, material or article offered for transport should be checked for compliance with section 5.4.1 of the IMDG Code:

- .1 UN number preceded by the letters "UN";
- .2 Proper Shipping Name: Proper Shipping Names that are assigned special provision 274 in column 6 of the dangerous goods list should be supplemented with their technical or chemical group names as described in paragraph 3.1.2.8 of the IMDG Code;
- .3 primary hazard class or division of the goods;
- .4 subsidiary hazard class or division number(s); and packing group for the substance or article;
- .5 other applicable information required by section 5.4.1 of the IMDG Code; and
- .6 proper certification or declaration required by paragraph 5.4.1.6 of the IMDG Code. In case of doubt, information should be checked whether the classification of the goods is consistent with the properties of the material as described in the Safety Data Sheet.

18 In addition, the information included in the container/vehicle packing certificate should be checked in order to confirm that the operation of packing or loading dangerous goods has been appropriately carried out in accordance with IMDG Code, section 5.4.2.

19 If appropriate, in the case of documentation for tanks used to transport dangerous goods, the following should be checked:

- .1 the certificate mentioned in paragraph 4.2.1.8 of the IMDG Code, used to attest the suitability of portable tanks for sea transport;
- .2 the certificate mentioned in paragraph 6.8.3.1.3.2 of the IMDG Code, used to attest the suitability of road tanks used for sea transport of class 3-9 substances;
- .3 the certificate mentioned in paragraph 6.8.3.2.3.2 of the IMDG Code, used to attest the suitability of road tanks for the sea transport of class 2 substances (IMO type 6), non-refrigerated liquefied gases; and

- .4 the certificate mentioned in paragraph 6.8.3.3.2 of the IMDG Code, used to attest the suitability of road tanks for the sea transport of refrigerated liquefied gases (IMO type 8).

Structural safety

20 ISO Containers, international loading units and regional containers designed for intermodal transport are covered by the requirements of the CSC.

21 The following items should be checked by the inspector:

- .1 the presence of a permanently attached and valid Safety Approval plate;
- .2 that the CTU is covered by an approved maintenance scheme, either by the display of a Next Examination Date in the future, or a mark showing the reference for an approved continuous examination programme (ACEP); and
- .3 that structurally sensitive components are not seriously damaged which would prevent the CTU from onward transport or subjected to a transport restriction (refer to resolution MSC.310 (88) and CSC.1/Circ.138/Rev.1, as amended by CSC.1/Circ.151).

22 Road vehicles and trailers:

- .1 road vehicles, including trailers and semi-trailers, should be maintained in a safe condition and are subject to national legislation, however, the inspector should check to confirm that the CTU body appears to be in a good condition; and
- .2 securing points should be fitted in accordance with international standards and checked for integrity.

23 Tanks and Multiple-element gas containers (MEGCs) should display a metal plate as described in chapter 6 of the IMDG Code, its validity and periodic inspection and test dates, where appropriate:

- .1 the metal plate on portable tanks as described in paragraphs 6.7.2.20, 6.7.3.16 and 6.7.4.15 of the IMDG Code;
- .2 the metal plate on MEGCs as described in paragraph 6.7.5.13 of the IMDG Code;
- .3 the metal plate on road tanks used for sea transport (IMO type 4) as described in paragraph 6.8.3.1.3.4 of the IMDG Code;
- .4 the metal plate on road tanks used for sea transport (IMO type 6) as described in paragraph 6.8.3.2.3.4 of the IMDG Code;
- .5 the metal plate on road tanks used for sea transport (IMO type 8) as described in paragraph 6.8.3.3.3.4 of the IMDG Code; and
- .6 the metal plates on tanks may show markings required by other regulations.

24 Tanks, MEGCs and CTUs should be checked to ensure that their accessories are in proper working condition and properly attached.

25 Inspectors should not attempt to manipulate tank or compressed gas appliances unless they are trained to do so.

Cargoes

26 The following items should be checked by the inspector:

- .1 placarding and marking of CTUs;
- .2 packaging;
- .3 marking and labelling of packages;
- .4 packing of CTUs and segregation of dangerous goods;
- .5 blocking;
- .6 securing; and
- .7 pest contamination.

Placarding and marking of CTUs

27 The cargo carried in or on a CTU may need marking/placarding to alert persons of potential risks. These markings/placards should remain on the CTU until the cargo has been unpacked and, when necessary, the CTU has been cleaned.

- .1 After identifying the hazards and classification of the goods, the inspector should confirm a clear display of appropriate placards and marks on CTUs in compliance with the provision of chapter 5.3 of the IMDG Code.
- .2 A CTU containing dangerous goods or residues of dangerous goods should display placards clearly, as follows:
 - .1 freight container, trailer or portable tank: one on each side and one on each end of unit;
 - .2 railway wagon: at least on each side;
 - .3 multiple-compartment tank containing more than one dangerous substance or their residue: along each side at the positions of the relevant compartments; and
 - .4 any other CTU: at least on both sides and on the back of the unit.

28 The Proper Shipping Name of contents should be marked on at least both sides of:

- .1 tank transport units containing dangerous goods;
- .2 bulk containers containing dangerous goods; or

- .3 any other CTU containing packaged dangerous goods of a single commodity for which no placard, UN number or marine pollutant mark is required.

29 The UN number for the goods and, if required, other placarding and marking such as elevated temperature, marine pollutant, limited quantity and fumigation warning sign, as provided in IMDG Code, should be displayed.

30 In case of class 7, the transport index (TI) indicated on the placard should be verified by a measurement of the radiation level in accordance with paragraph 5.1.5.3 of the IMDG Code and/or by calculation (sum of TI of packages).

31 When flexitanks, containing bulk liquids, are carried in a closed CTU, the doors should be marked with the appropriate warning label.

Packaging

32 Inspectors should consider the following:

- .1 Does the packaging contain the cargo?
- .2 Does the packaging reduce risk of harm to life and the environment?
- .3 Does the packaging protect the cargo?
- .4 Have any of the packages been damaged or collapsed?
- .5 Is the packaging appropriate for the cargo being carried?

33 Specifically, the following items should be checked by the inspector:

- .1 the condition of the packages does not compromise the stable and secure stowage of the cargo in the CTU;
- .2 there are no signs of cargo leaking in all states (vapour, solid or liquid);
- .3 where applicable that the packaging is appropriate for dangerous goods:
 - .1 the type of packaging is permitted for the goods according to the applicable packing instruction of the dangerous goods list;
 - .2 the packing is of a design type approved as required by paragraph 4.1.1.3 of the IMDG Code;
 - .3 the approved packing group(s) of the design type (X, Y or Z) are consistent with the packing group of the goods (I, II or III);
 - .4 single packaging used for liquids are approved for liquids;
 - .5 for plastic drums and jerricans, plastic inner receptacles of IBC, check that the five-year period of use is not exceeded; and
 - .6 for rigid IBCs check that the periods of inspections as required in paragraph 4.1.2.2.1 of the IMDG Code are not exceeded.

Marking and labelling of packages

34 All packages should be marked so that handling requirements can be identified by the packer and the unpacker.

35 Appendix 1 of annex 7 to the CTU Code identifies markings that should be made on the package to indicate handling and packing instructions. Inspectors should identify any packages that are not packed in accordance with these markings, particularly:

- .1 Do not stack;
- .2 This way up; and
- .3 Temperature limits.

36 For dangerous goods, the inspector should verify that the following marks and labels are shown on the packaging:

- .1 Proper Shipping Name for the dangerous goods;
- .2 UN number;
- .3 other special marking provision (e.g. marine pollutant mark); and
- .4 appropriate label; for class 7 the transport index (TI) on the label should be verified by a measurement of the radiation level in accordance with paragraph 5.1.5.3 of the IMDG Code.

Packing of CTUs and segregation of dangerous goods⁵

37 The following items should be checked by the inspector:

- .1 the mass of the cargo is evenly distributed over the floor (CTU Code, annex 7, paragraph 3.1);
- .2 heavy packages are sufficiently supported on load transfer beams (CTU Code, annex 7, paragraphs 3.1.2 and 3.1.3);
- .3 the centre of gravity is close to the mid-length of the CTU or conforms with the CTU Load Distribution Diagram (CTU Code, annex 7, paragraphs 3.1.4 to 3.1.7);
- .4 packing techniques described in annex 7, paragraph 3.2 of the CTU Code are followed;
- .5 any dangerous goods transported as part of a mixed cargo should be packed near the door and the correct separation from other dangerous goods maintained:
 - .1 the segregation table in paragraph 7.2.4 of the IMDG Code has been applied correctly for the hazard classes and subsidiary risks;

⁵ Packing CTUs correctly is essential to ensure the safe transport of the cargo from consignor to consignee and the CTU Code provides considerable information and guidance on packing processes and practices (chapter 9 and annex 7).

- .2 specific segregation requirements as indicated in column 16b of the dangerous goods list have been complied with;
- .3 specific segregation requirements for the different compatibility groups of class 1 have been complied with (paragraph 7.2.7.1.4 of the IMDG Code); and
- .4 segregation requirements in relation to foodstuffs have been observed (paragraph 7.3.4.2.1 of the IMDG Code).

Blocking

38 Cargoes may require blocking to prevent horizontal movement (CTU Code, annex 7, paragraphs 2.3 and 4.2). Where appropriate, the following should be checked by the inspector: void spaces are filled with dunnage, cardboard, air bags or other suitable material to ensure a minimum likelihood of movement of packages/cargo during transport (CTU Code, annex 7).

Securing

39 During transport the CTU may be subjected to vertical, longitudinal and transverse accelerations, which cause forces to each cargo item, which are proportional to the mass. Inspectors should check that packing and securing conform to the CTU Code (annex 7, section 4) or applicable national legislation, as appropriate.

Pest contamination

40 The inspector should identify if there are any signs of pest contamination.

41 It is recognized that proper identification of pest contamination may not be within the remit or knowledge of the inspector, therefore, if the inspector observes signs of pest contamination, they should report it as soon as is practicable to the pest contamination competent authority.

Control actions for deficiencies

42 Establish a process for issuing deficiency reports placing a CTU out of service or cargo on hold and/or appropriate penalty actions.

43 *General procedures*

- .1 Issue a deficiency report that details the non-compliance and describes the required corrective actions. For discrepancies that are quickly corrected, the inspector should note official records as such.
- .2 Mark the CTU, so it is evident that the CTU has been taken out of service and/or cargo placed on hold. The marking should be sufficiently visible on more than one side of the CTU. While the marking should not be permanent in nature, it should not be easily removable. The use of a large sticker may be appropriate.
- .3 Immediately notify the facility with custody of the CTU and the CTU operator of the deficient CTU or cargo.
- .4 Report deficiencies to the relevant competent authority in cases where the safety of the transport of dangerous goods is compromised as a result of serious or repeated infringements by an enterprise which has its headquarters on the territory of another competent authority.

44 ***Serious structural deficiencies***

- .1 If an International Convention for Safe Containers (CSC) container is determined to have a serious structural deficiency or has not been examined as required, the inspector should place the container out of service.
- .2 Clear detention statements should be used. The following sample text may be appropriate for both the deficiency report and marking for a seriously structurally deficient container: "Prior to reloading or reuse in international transportation, this container must be reinspected for compliance in accordance with the procedures prescribed by (insert appropriate legal authority)".
- .3 CTUs carrying dangerous goods with deficient securing points where deficient securing points have been used to secure the cargo should be placed on hold.

45 ***Cargo deficiencies***

- .1 Cargo that fails to conform to the provisions of the IMDG Code should be placed on hold.
- .2 If there is an imminent risk of injury and/or a damage from deficient stowage, securing and/or segregation of goods inside CTUs, appropriate corrective actions should be undertaken to rectify the deficiency.
- .3 The nature of the deficiency should help determine who should correct it.
- .4 If a deficiency involves the non-declaration or misdeclaration of cargo, the cargo's package, label or other specification when the shipment was originally offered and accepted for transportation, the original shipper or freight forwarder should be held accountable. The inspector should avoid taking action against the vessel, carrier or waterfront facility simply because they are the most accessible party.

46 ***Pest contamination***

- .1 Signs of pest contamination should be reported to the pest contamination competent authority with the following information:
 - .1 inspection date;
 - .2 origin of the CTU;
 - .3 location of the pest contamination (exterior, interior and/or the cargo);
 - .4 pest contamination type; and
 - .5 planned date of onward movement, including destination to the extent known.
- .2 If the pest contamination competent authority cannot attend before the CTU is due for onward transportation, they should then forward the inspection details to the pest contamination competent authority of the CTU's next destination, if known.

Follow-up procedures

- 47 Establish a procedure to monitor cargo placed on hold.
- 48 Establish follow-up procedures for CSC containers with serious structural deficiencies taken out of service.
- .1 A CSC container removed from service owing to serious structural deficiencies should be repaired and reinspected in accordance with the owner's prescribed programme. Prior to returning a CSC container to service, the owner should notify the inspector in writing that the CSC container has been brought back into compliance per the CSC or other applicable standard.
 - .2 In situations where there is an unwillingness to repair a CSC container back to applicable standards, the container owner may remove the damaged container from international service and provide such proof to the inspector.
 - .3 The removal of markings referenced in paragraph 43.2 should only be authorized by the inspector.
- 49 Establish a follow-up procedure for CSC containers that have been found with deficiencies that requires the CTU Operator to be advised and transport restrictions imposed.
- 50 The pest contamination competent authority should establish, and make publicly available, the procedures it will follow for CTUs that in accordance with paragraph 46 have been found to have signs of pest contamination.

Inspection and recording of the results of the inspection and deficiencies record

- 51 Inspection results and deficiencies should be recorded and archived to allow for the completion of the report requested under paragraph 5 of this circular.

APPENDIX

RECORDING OF INSPECTION RESULTS AND DEFICIENCIES

Country _____

	Number	Percentage
Total number of inspected CTUs		
- number of inspected CTUs with declared dangerous goods		
- number of inspected CTUs with undeclared dangerous goods (4)		
- number of inspected CTUs with misdeclared dangerous goods (4)		
Total number of inspected CTUs with deficiencies		
<i>Number of CTUs with deficiencies:</i>		
- with declared dangerous goods		
- with undeclared dangerous goods (4)		
- with misdeclared dangerous goods (4)		
- not carrying dangerous goods		
- packed inside the country where the inspection is performed		
- packed outside the country where the inspection is performed		
Types of identified deficiencies		
Cargo leaking or sifting (9)		
<i>Documentation: (15-19)</i>		
- Dangerous Goods Declaration		
- Container/Vehicle Packing Certificate		
- Undeclared or Misdeclared Cargo		
- Fumigated CTU		
- CTU containing substances presenting a risk of asphyxiation that have not been completely ventilated		
Portable tank container invalid periodic inspection dates (19)		
Portable tank or road tank vehicles not covered by CSC (inappropriate or damaged) (19)		
<i>CSC plate: (20-23)</i>		
- Plate missing or damaged		
- CTU overdue for inspection		
- Invalid plate		
Structural safety (20-25)		
Placarding and marking of CTUs (27-31)		
Packaging (inappropriate or damaged) (32-33)		
Marking and labelling of packages (34-36)		
Stowage/securing/segregation of cargo (37)		
Packing of CTUs (37)		
Serious structural deficiencies (44)		
Blocking (38)		

	Number	Percentage
Securing (39)		
Pest contamination (number of CTUs found with pest contamination) (46)		

Note: References in brackets refers to paragraphs in the annex above.
