

**GUIDANCE FOR CONVERSION
MCO-SER-WI-A-CLASS-01
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**Issued By: Technical Department
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GUIDANCE FOR CONVERSION

INTRODUCTION:

This Guidance for Conversion is deemed to assist owners, managers, consultants and shipyards when considering conversion projects of MCO classed ships. With a special view to the initial planning phase the main topics to be considered are highlighted as well as relevant contact details within MCO.

GENERAL:

Any modifications on board of a MCO classed ship, which deviates from the approved drawings or cause alterations of previously approved documents are regarded to be a conversion of the ship.

Such modifications normally do have effect on the validity of class and in addition also on the statutory certificates issued by MCO on behalf of the flag State Administration or by the flag State Administration itself.

In so far such intended modifications are to be planned well in advance in order to maintain validity of class or validity of the corresponding statutory certificates, or even to ensure the issue of new additional statutory certificates which might be required after conversion.

Information of any intended modifications is expected to be provided to MCO Head Office prior to start of conversion works (preferably at least 6 weeks in advance). This will enable MCO Head Office to clarify the scope of required drawing and document examination, the scope of required surveys and/or specific items to be observed.

This may also include initiation of a kick-off meeting with all parties concerned for clarification of specific details and/or clarifications with the flag State Administration.

To enable the smooth proceeding of a conversion as well as correct certification at the time of physical completion, MCO Head Office will prepare a quotation for conversion. When accepted by the client this will ensure that all relevant aspects of the conversion project are correctly understood and agreed by the parties concerned (client, MCO and, if applicable the flag State Administration).

All parties may then rely upon a clear scope of service to be provided by MCO. This does ensure that the scope of required drawing/document review, of surveying activities and of certification will be and remain in compliance with MCO's Classification Rules and the applicable statutory requirements.

It is worth to mention that all relevant survey activities by MCO surveyors shall be based on approved drawings and documents as well as on a signed order for conversion.

-----Considering the various different types of conversions the above Guidance cannot and is not intended to be complete but may provide guidance on main issues to be considered when starting a conversion project on a MCO classed ship.-----

DEFINITIONS:

'Conversion'

There are various different kinds of conversions but no commonly defined definition does exist. Repairs in accordance with approved drawings and documents are not considered to be a conversion. In short a 'Conversion' does include but is not limited to -any modifications on board of a MCO classed ship which deviates from the approved drawings, -increase of the maximum allowable draft, -changing the MCO ship type class notation for dry-cargo ships (e.g. from Container Ship to General Cargo Ship / to Multi-Purpose Dry Cargo Ship or vice versa) -changing or deleting of any other class notations (e.g. Inert, Aut, Ice Class etc.), the range of trading area etc.

Typical examples for conversions are:

1. Changes of arrangements within Accommodation Areas,
2. Changes of the Deckhouse itself,
3. Outfitting with Cargo Cranes,
4. Stowage of additional containers, increase of deck load,
5. Carriage of additional IMO D/G Classes,
6. Modifications of Cargo Hold Structure,
7. Modifications of Tanks,
8. Change of Main Engines / Aux. Diesel Generators etc. with a different type,
9. Fitting of Exhaust Gas Scrubber Systems,
10. Change of fuel oil from MDO to HFO or even to LNG (Dual Fuel),
11. Change of Piping Systems etc....

Considering the various scope of conversion issues it is to be noted that some modifications may be regarded to be of 'major' character (e.g. Increase of Draught might need clarification

on a case-by-case basis when leading to a major change of load capacity on a bulk carrier or oil tanker).

Therefore, it is important to clarify such issues well in advance and MCO is prepared to assist.

'Major Conversion'

'Major Conversion' is to be distinguished from above definition. The definition Major Conversion is individually provided in the applicable statutory instruments (SOLAS, MARPOL etc.). However, a 'Major Conversion' does include but is not limited to -Changing of the ship type other than shown under 'Conversion' above -Each modification which substantially alters the dimensions or carrying capacity of the ship as all these measures do normally imply new requirements which are to be observed.

Major conversions normally do imply complete application of rules effective at the time of conversion.

In so far it is generally required to initiate clarification of all relevant details by means of a kick-off meeting with all parties concerned.

APPLICABLE RULES:

The areas affected by a conversion are to be applied the latest edition of Class and Statutory Rules

In addition, relevant new equipment and components do need valid certification in accordance with the requirements of the current Class and Statutory Rules, e.g. class type approvals for gears, clutches etc., IMO or MED Certification as for oily water separators, Live Saving Appliances (LSA), structural fire protection components, doors and windows, navigation and radio equipment, electrical and automation components as cables, switches etc.

Combustion engines with more than 130kW power output need an Engine International Air Pollution Prevention Certificate issued by or on behalf of the current flag State Administration.

However, in some cases the basis of the current rules (keellaying date) will be considerably different and might hardly be complied with. Such cases do need special consideration and clarification.

MAIN TOPICS TO BE OBSERVED:

Modifications very often do have effect also on areas which in the initial planning phase might not have been considered.

Typical issues to be considered are:

1. TONNAGE:

Re-calculation of Gross or Net Tonnage figures is often necessary when the volume of applicable spaces will change (e.g. new crane and columns, hatch covers, deckhouse etc.). Normally it is required that an up-dated General Arrangement Plan will be submitted and, if applicable also detail drawings showing the relevant new dimensions of altered structures. The results of such recalculations may cause additional requirements to be observed as laid down in other statutory instruments due to a new higher GT which is applicable after conversion. (Typical limits are 150 GT, 300 GT, 400 GT, 1600 GT, 2000 GT, 3000 GT, 10000 GT, 15000 GT, 20000 GT, 50000 GT as additional outfitting requirements would be applicable).

In addition for older ships with keel-laying date before 18th July 1982 it is to be observed in case of an Increase of Draught that the 'National Tonnage Privilege' (IMO Resolution A.791(19)) will always be lost, i.e. the new applicable Gross Tonnage will be acc. to the International Convention on Tonnage Measurement of Ships, 1969.

Further Panama 'PC/UMS Documentation of Total Volume' and 'Suez Canal Special Tonnage Certificate' might be effected and relevant re-calculations / re-issue of certificates be required. These items will also be dealt with by MCO when so requested.

2. INTACT STABILITY:

Most conversions cause alteration of lightship data, which are outside the limits given by IMO MSC/Circ. 1158 compared to the light ship data prior to modification, i.e. the change of ship's lightship data is more than 2% or the change of lightship longitudinal centre of gravity is in excess of 1%.

In such cases an Inclining Test is to be carried out and ship's Intact Stability Documentation and, if applicable Loading Manual, is to be up-dated in accordance with ship's new lightship particulars.

(In case of very minor modifications evidence by a detailed weights and center calculation may be provided that alteration of lightweight data will remain within the limits given by IMO/Circ. 1158 compared to the light ship data prior to modification. The attending surveyor shall be able to verify the masses and positions of changes and has to countersign the

weights and center calculation. On such basis an Inclining Test may be dispensed with and only ship's Intact Stability Documentation is to be up-dated or an Addendum to ship's present stability booklet is to be provided. However, depending on the conversion details the relevant requirements must be clarified with MCO. MCO reserves the right to decide the relevant requirements or to clarify finally with the flag State Administration).

3. Damage Stability:

-In case the level of ship's subdivision will change (e.g. modification of tanks, cargo holds, measures to increase ship's draught etc.) damage stability requirements may become applicable for ships where no damage stability requirements have been previously been in force.

Remark for dry cargo ships with keel-laying date before 1st February 1992 regardless of length or dry cargo ships with keel-laying date before 1st July 1998 with freeboard length below or equal of 100m in length:

MSC.1/Circ.1246 does provide guidance how to provide evidence by damage stability index calculations for proof that the level of subdivision is not less than before the conversion.

Provided agreement by the flag State

Administration damage stability documentation may be not required in such cases.

-Depending on the ship type (e.g. Oil Tankers etc.) also Damage Stability Calculations, Damage Control Plan and/or Damage Control Booklet are to be up-dated considering new details after conversion.

4. LOADING INSTRUMENT:

The loading instrument is always to be up-dated in accordance with new up-dated Stability Documentation (Intact and Damage).

5. LOAD LINE:

Many kinds of modifications do have influence on Load Line issues.

In case of modifications to air and sounding pipes, ventilation openings, scuppers, windows, sidescuttles, external doors / shell doors / access hatches, ladders and railings, bulkheads, hatch covers, sills and coamings, manholes etc. specific examination by MCO is required.

Up-date of Conditions of Assignment, Plan of Closing Appliances, evidence of IMO resp. MED type approvals for air pipe heads / windows / doors etc. is to be provided.

Other issues as change of freeboard length, minimum bow high requirements for manned barges/pontoons may be affected by a conversion and are to be considered and clarified with MCO. The same does apply for recalculation of freeboard in case of draft increase/draft decrease etc.

6. SOLAS (with specific view to outfitting items):

A wide range of conversions will have impact on SOLAS requirements. Structural Fire **Protection and Fire Extinguishing:**

In case of modifications of or in way of deckhouse/accommodation area normally review/examination of following information is required by MCO:

- Up-dated Fire Control and Safety Plan,
- Up-dated Escape Way Plan (for specific ship types as e.g. passenger ships)
- Up-dated Structural Fire Protection Plan (incl. details of fire divisions, insulation), relevant information of materials and components used (incl. IMO or MED type approval certificates) is to be submitted (e.g. 'Joiner Plan'; 'Fire Barrier Penetrations', 'Deck Covering Plan'),
- Up-dated 'Ventilation and Air Conditions Scheme',
- Up-dated 'Door Plan incl. List of Doors' and 'Window Plan incl. List of Windows',

Further drawings of modifications to Fire Detection and Alarm System incl. 'Arrangement of Fire Detectors and Manually Operated Call Points', 'General Alarm/Public Address system' etc.

The specific scope of required drawings and documents will be defined by MCO depending on the individual scope of modification.

Modifications in machinery spaces or specially protected areas on deck (e.g. chemical tankers), provision of helicopter decks etc. need special consideration and will be clarified by MCO.

Life Saving Appliances (LSA):

In case of any changes to LSA arrangement/equipment due to a conversion, drawings showing the new arrangement are to be submitted for review/approval. This may include

- Up-dated LSA plan
- In case of launching appliances relevant drawings reg. substructures, relevant IMO / MED type approval certificates of the new equipment (e.g. for davits, lifeboats etc.

Navigation Bridge Visibility:

Conversions such as Outfitting with Cargo Deck Cranes, additional stowage of containers on deck etc. normally do require also examinations of navigation bridge visibility for maintaining compliance with SOLAS Reg. V/22.

For such purpose a Visibility Plan showing

- Horizontal and Vertical Fields of Vision from Workstations,
- Blind Sectors caused by obstructions outside the wheelhouse,
- Shadow sectors for radar is to be provided to MCO.

ILO Crew Accommodation (MLC, 2006):

In case of changes within the accommodation area ILO 92 and 133 or MLC, 2006 requirements are to be observed. For verification MCO will carry out an examination on basis of an up-dated Accommodation Arrangement Plan and later on a specific survey.

COLREG (Convention on the International Regulations for Preventing Collisions at Sea, 1972):

Modifications on deck may also necessitate re-positioning of navigation lights. Any modification of navigation light arrangements should especially consider COLREG requirements as laid down in Annex I for vertical and horizontal positioning and spacing of lights, which sometimes causes problems.

For such purpose, a drawing showing the arrangement of Navigation and Signal Lights is to be provided to MCO.

Structural Requirements:

It is understood that any structural modifications are to be reviewed and approved by MCO. In so far relevant drawings and calculations for global and local strength are to be provided to MCO.

Relevant up-dated drawings and documents (if deemed necessary also supported by corresponding FEM analysis) are to be prepared in general for all existing drawings in which modifications will be carried out.

For major conversions, the scope will be defined by MCO and the client will receive a corresponding List of Drawings and Documents to be submitted for review.

Other hull items:

- Anchor equipment should be considered in case ship's trading area, displacement and the area of vessel profile above the waterline are considerably changed.
- Steering gear is to be considered in case of change of ship's rudder, main parameters.
- Effects on ice class notation should be considered in case of change of draught, change of propulsion power / shafting / propeller.

Machinery, Piping Systems, Electrical Equipment and Automation:

All changes in machinery systems or components which are covered by ship's scope of classification are subject to drawing approval. Relevant new equipment (e.g. main and auxiliary engines, gears, thrusters etc.) shall be type approved by MCO Class.

This does also include relevant schematic drawings of all modified systems.

The same does apply to electrical drawings and documents. Here it is expected that all components (cables, breakers etc.) are MCO type approved. Depending on the type and scope of conversion following up-dated drawings and documents may be required to be submitted for approval:

- Single line diagram,
- Information on cables, breakers etc. used,
- Electrical load balance,
- Short circuit calculation,
- Main switchboard (incl. information of Generator Protection Settings and Adjustments, parts list etc.)
- Modifications of lighting/emergency lighting system,
- Power management system,
- Safety/alarm/monitoring systems,
- Remote control systems
- Fire detection system etc..

All components shall have IACS type approval.

MCO Head Office Contact and initial Procedure:

Macosnar Corporation Head Office can directly be contacted for all questions in connection with conversion issues.

For this purpose, a specific E-Mail address is available: depot_tecnico@macosnar

- Please send your initial inquiry directly to this E-Mail address.
- Please provide detailed information to the scope of the intended conversion project (scope, place, and date, G /A Plan etc.) MCO Head Office.
- Fill the Conversion Questionary

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