



TECHNICAL CIRCULAR No. 065 of 13th June 2012

To: All Surveyors/Auditor

Applicable to flag: All Flags

Subject: **Testing and General Survey Criteria for Machinery Equipment**

Reference: CLASS – MACHINERY SURVEY

Testing and General Survey Criteria for Machinery Equipment

1 Testing

- Test the operation of each motor and pump assembly, utilizing both sources of electrical or other power. Confirm normal amperages.
- Operate both motors and pump assemblies from the bridge control station, secondary control station, and local control station through the full range of rudder travel. Operate each motor and pump assembly on the normal, alternate, and emergency power supplies, checking the proper operation of the manual and automatic bus transfer during the procedure.
- Check the hard-over position during an operational test of the steering gear. Any reduction of the angle, i.e., the inability to attain 35° or the designed maximum angle, may be indicative of a piston backing-off a ram or other play in mechanical connections and should be further investigated. Operate the emergency hand pump (if fitted) to swing the rudder both port and starboard from amidships.
- Verify that the synchro-steering repeaters on the bridge, secondary control, and steering gear room are reading the same with each other and with the mechanical rudder angle indicator.
- Verify that all indicating lights, pressure gauges and electric meters, visual and audible alarms, and emergency lighting for the steering gear room operate properly.
- Test for proper operation of voice communication and calling system between bridge, engine room and the steering gear space, as well as the alternate steering position, if fitted.
- Check for properly posted operating instructions (3/5.15.16) and that the instructions are in the required language of the crew.

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- Listen for unusual noises, vibrations, leaking fluids, or abnormal hydraulic pressures or motor amperages during operational testing of the steering apparatus.
- Check for erratic or jerky movement of the rudder, follow-up system, or synchro-repeater system.
- If underway, check for normal operation under load, with special attention to overheating of the operating motor and pump assembly.
- Examine and/or test all devices used during changeover from automatic to manual operation.

2 General Survey Criteria

- After testing, properly secure all systems in the normal operating mode.
- Carefully examine all accessible mechanical connections to confirm the continued effectiveness of the locking and securing arrangements. The Surveyor should particularly check for evidence of movement, slack or worn keys, loose set screws, or slack bolts, and improper installation of locking arrangements including proper fit of cotter keys.
- Where locking wires are used, verify that no more than two or three bolts are locked by the same wire to ensure that if one wire is broken, all the bolts will not be freed at the same time.
- The Surveyor shall verify that recommended repairs have been dealt with and reported upon in detail.
- Verify that securing arrangements (e.g., Allen set-screws) are properly set up and tack welded or a second properly torqued threaded device (e.g., lock-nut or lock-screw) is employed to prevent loosening. Set screws smaller than 1/2" diameter should be replaced with 1/2" diameter or larger set-screw, if space or part size permits. Normally, such set-screws should be the cup-point, hardened type.
- Any and all such deficiencies noted shall be immediately brought to the attention of the vessel's Master and/or Chief Engineer and the Owner or the attending representative with the recommendation that the deficiencies be placed in good order and tested to the satisfaction of the Surveyor prior to movement of the vessel. Any deficiencies not attended to should be brought to the attention of the Surveyor-in-Charge, immediately.
- Examine steering gear space for loose lighting fixtures, missing lamps and guards, and for improper use as storage area for flammable and combustible material such as rags, wood, paint, flammable oils, etc.

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- Check for evidence of sea water leakage into the steering gear compartment through vent pipes, air ducts or rudder stock packing gland. Salt encrustation in the corners of the space may be the only clue to this problem when the vessel is in port. In addition, examine tanktop plating and manhole covers for tightness of same.

REFERENCES:

CLASS – MACHINERY SURVEY

ATTACHMENTS: No.

Kindest Regards,
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