

## ANNUAL SURVEY CHECKLIST FOR OIL / CHEMICAL TANKER

**Ship Name:**

**Report No.:**

**I.R. No.:**

<b>DOCUMENTATION</b>
<p><b>STATUTORY CERTIFICATES</b> Valid Statutory certificates available on board.</p>
<p><b>APPROVED TRIM &amp; STABILITY INFORMATION</b> Confirmation of availability of trim and stability booklet approved by administration.</p>
<p><b>MANOEUVRING BOOKLET</b> Confirmation that the manoeuvring booklet is on board and that the manoeuvring information is displayed on the navigating bridge.</p>
<p><b>FIRE CONTROL PLANS</b> Verification of proper posting of fire control plans (including duplicate sets permanently stored in a prominently marked weather tight enclosure outside deckhouse.</p>
<p><b>STEERING GEAR ENTRIES REQUIRED BY SOLAS/FLAG</b> Verification of entries made in the ship's log for departure.</p>
<p><b>DAMAGE STABILITY</b> Availability of damage stability information.</p>
<p><b>LOADING MANUAL</b> Verification that vessel has an approved Loading Manual.</p>
<p><b>I.G. SYSTEM OPERATIONAL MANUAL</b> Verification for availability of I.G. Instruction manual. (operation, maintenance, safety, health hazard etc.)</p>
<p><b>DAMAGE CONTROL PLANS &amp; BOOKLET</b> Verification that damage control plan and booklet are available. (Note: Applicable for vessels of 500 GT and over, keel laid on or after 01/01/2009)</p>
<p><b>ESP DOCUMENT</b> Availability of ESP documents on board.</p>
<p><b>THE SHIP STRUCTURE ACCESS MANUAL</b> Checking the availability of Ship Structure Access Manual. (Note: Applicable for vessels of 500 GT and over, constructed on or after 1<sup>st</sup> Jan. 2006)</p>
<p><b>CONSTRUCTION DRAWINGS MAINTAINED ON BOARD</b> Confirming that structural alterations performed, if any, have been approved by the classification society and reported on the as-built drawings kept on board (constructed on or after 1<sup>st</sup> Jan. 2007)</p>
<p><b>NATIONAL REQUIREMENTS / CODE</b> Availability of applicable code (Note: (IBC-for ships whose keel was laid on or after 01-06-1986 / BC Code for ships built before 01-06-1986 but after 31-12-1976) or National requirements and Material Safety Data sheets for the carriage of cargoes.)</p>
<p><b>P &amp; A MANUAL</b> Verified that vessel has an approved P &amp; A Manual.</p>
<p><b>EMERGENCY TOWING PROCEDURES</b> Confirm that ship specific emergency towing procedures available on board.</p>
<p><b>CARGO INFORMATION</b> Confirmation that table giving the filling ratio for cargo tank at various densities provided and information related to the chemical and physical properties of the product provided including provision for measure taken in an accident.</p>
<p><b>CARGO TRANSFER PROCEDURE MANUAL</b> Confirmation that manual covering procedure for cargo transfer, tank, cleaning, gas freeing and also compatibility information as to material of construction, protective lining and coating is provided.</p>

Note: Refer IOPP & BWM statutory checklist for COW & BWM related items when class & statutory survey for IOPP & BWM carried out concurrently.

**Condition to be reported using number code as follows:**

1. When examined found to be satisfactory and/or examined/tested satisfactory and/or confirmed arrangements exist in satisfactory condition. No repairs considered necessary this time.
2. Repairs now recommended and were carried out satisfactorily. After repairs found to be satisfactory and/or examined / tested satisfactorily and/or confirmed arrangements exist in satisfactory condition.
3. Repairs now recommended and remain outstanding.
4. Opportunity to examine/test was not provided this time. Remains outstanding.

NA - Not Applicable

<p><b>CARGO RECORD BOOK</b> Confirmation that Cargo Record Book is on board.</p>
<p><b>COATING TECHNICAL FILE:</b> Confirm that Coating Technical File available on board and maintained. (Note: Applicable for ships of not less than 500 gross tonnage provided with dedicated seawater ballast tanks for which the building contract is placed on or after 01/07/2008 or the keels of which are laid on or after 01/01/2009 or which are delivered on or after 01/07/2012.)</p>
<p><b>SHIP CONSTRUCTION FILE (SCF):</b> Confirming availability of Ship Construction File. <b>A</b> – For the SCF stored on board ship, the Surveyor is to examine the information on board ship. In cases where any major event, including, but not limited to, substantial repair and conversion, or any modification to the ship structures, the surveyor is to also verify that the updated information is kept on board the ship. If the updating of the SCF onboard is not completed at the time of survey, the Surveyor is to record it and request for confirmation at the next periodical survey. <b>B</b> – For the SCF stored on shore archive, the Surveyor is to examine the list of information included on shore archive. In cases where any major event, including, but not limited to, substantial repair and conversion, or any modification to the ship structures, the Surveyor is to also verify that the updated information is stored on shore archive by examining the list of information included on shore archive or kept on board the ship. In addition, the Surveyor is to confirm that the service contract with the Archive Center is valid. If the updating of the SCF Supplement ashore is not completed at the time of survey, the Surveyor is to record it and request for confirmation at the next periodical survey. (Note: Applicable for oil tanker of 150 m length &amp; above as per SOLAS Chapter II-1, Part A-1, Regulation 3-10 (Ships built to Goal Based Standards)</p>
<p><b>ALTERNATIVE DESIGN &amp; ARRANGEMENTS:</b> Confirm that, where applicable, the approved documentation for the alternative design and arrangement is on board.</p>
<p><b>DOCUMENT OF APPROVAL FOR STABILITY INSTRUMENT</b> Confirmation that vessel is provided with DOA for stability instrument (Note: Applicable for new vessel keel laid on or after 01/01/2016 and existing vessel first renewal survey on or after 01/01/2016)</p>
<p><b>HARMONIC DISTORTION RECORD FOR VESSEL FITTED WITH HARMONIC FILTER.</b> Verification of annual measurement record of harmonic distortion level at bus bar (Applicable for vessel keel laid before 1 July 2017 and for any modification on electrical distribution system on existing vessel, total distortion measured along with equipment running at the time of measurement to be recorded)</p>
<p><b>OPERATIONAL MANUAL FOR EFFECT OF HARMONIC FILTER</b> Verification that following document are available on board.</p> <ol style="list-style-type: none"> <li>1) Effect of failure on harmonic filter on electrical distribution system.</li> <li>2) Permitted modes of operation for maintaining harmonic distortion level within acceptable limit during normal operation and during failure of filter.</li> <li>3) Approved copy of relaxation on allowable distortion limit, if any</li> <li>4) Record of harmonic distortion level measured.</li> </ol> <p>(Note: Applicable for vessel keel laid on or after 01 July 2017 and on exiting ship retrofitted with harmonic filter on or after 01 July 2017.)</p>
<p><b>IGF</b></p>
<p>Examining the logbooks and operating records with regard to correct functioning of the gas detection systems, fuel supply/gas systems, etc.</p>
<p>Confirmation that that manufacturer/builder instructions and manuals covering the operations, safety and maintenance requirements and occupational health hazards relevant to fuel storage, fuel bunkering, and fuel supply and associated systems for the use of the fuel, are available on board.</p>
<p>Confirmed availability of IGF Code, or national regulations incorporating the provisions of IGF Code is on board.</p>
<p>Confirmed availability of maintenance procedures and information for all gas related installations and records for same are maintained.</p>
<p>Confirmed availability of suitable emergency procedures covering all aspects of fuel handling systems including procedures for the emergency shutdown of any equipment that has the potential to become hazardous under certain abnormal condition.</p>

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Confirmed that necessary information and procedures are in place for maintenance of electrical equipment installed in explosion hazardous spaces and a record of maintenance is available. The procedure provides that the inspection and maintenance of electrical installations in explosion hazardous spaces shall be performed in accordance with recognized standard.
Confirmed availability of operational procedures including fuel handling manual to ensure trained personnel can safely operate the fuel bunkering, storage and transfer systems.
Verified that inspection/survey plan for the liquefied gas fuel containment system approved by the Administration is on board. (Note: The inspection/survey plan identify aspects to be examined and/or validated during surveys throughout the liquefied gas fuel containment system's life and, in particular, any necessary in-service survey, maintenance and testing that was assumed when selecting liquefied gas fuel containment system design parameters. The inspection/survey plan may include specific critical locations where effective defect or crack cannot be assured.)
<b>CLASS CERTIFICATE</b> Confirmation that the Class annual/Intermediate/renewal* survey completed satisfactorily and Class Certificate endorsed/interim certificate issued*
<b>WEATHER DECK</b>
<b>ACCOMMODATION, SERVICE, MACHINERY SPACES, SUPERSTRUCTURES, DECKHOUSES &amp; WHEELHOUSES</b> Verification gas tight condition of wheelhouse doors and windows, fixed type side scuttles and windows in superstructure and deckhouse ends facing the cargo area and containing accommodation, service, machinery, control spaces and gas tight bulkhead penetrations.
<b>SEPERATION FROM ACCOMODATION, SERVICE SPACE</b> Confirmation that tanks containing cargo or residues of cargo are suitably segregated from accommodation, service and machinery spaces and from drinking water and stores for human consumption, that cargo piping does not pass through any accommodation, service or machinery space other than cargo pump rooms or pump rooms and cargoes are not carried in either the fore or the aft peak tank.
<b>SPACE NOT NORMALLY ENTERED</b> Confirmation that double bottoms, cofferdams, duct keels, pipe tunnels, hold spaces and other spaces where cargo may accumulate are capable of being efficiently ventilated to ensure a safe environment when entry into the space is necessary and that, when appropriate, permanent ducting is provided and any ventilation fans comply with non-sparking construction in hazardous locations.
<b>VENTILATION OF SPACE IN THE CARGO AREA NORMALLY ENTERED DURING CARGO OPERATION</b> Examination of arrangement of mechanical ventilation of space for satisfactory condition and verification that it is controlled from outside space, Warning notice placed, if it is the extraction type, with extraction from below the floor plates, unless the space houses electrical motor driving cargo pumps when it should be of the positive pressure type. The ducting does not pass through accommodation, machinery and service space and that exhaust duct are clear of the ventilation inlet and opening to such space.
<b>CARGO, OILY SLOP &amp; BALLAST TANK OPENINGS</b> Openings including gaskets, covers, coamings, flame screens and fasteners examined for condition and signs of leakages.
<b>BUNKER TANKS</b> Examination of flame screens on vents to all bunker tanks.
<b>CARGO &amp; PROCESS PIPING AND FITTINGS</b> Verification for condition of cargo, bunker, ballast and vent piping system including vent masts and headers and devices to prevent the passage of flame on vents to all bunker, oily-ballast and oily-slop tanks and void spaces, as far as practicable. Examination of associated expansion arrangements and identification / markings on cargo and process piping and valves. The verification to include condition of removable pipe lengths/other approved equipment necessary for cargo operation.
<b>CARGO TRANSFER ARRANGEMENTS</b> Examination of the cargo transfer arrangements and confirmation that any hoses are suitable for their intended purpose and, where appropriate, type-approved or marked with date of testing.

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NA - Not Applicable

<p><b>CARGO TANK VENTING ARRANGEMENTS</b>  Verification of cargo tank venting arrangements. Where controlled tank venting system is employed such verification to include pressure / vacuum valves, mast raisers, devices to prevent passage of flames into the cargo tanks and cargo tanks gas freeing arrangements (on ships constructed on or after 01-07-2002 the controlled venting system should consist of a primary and a secondary means). Confirmation that suitable provision is made for drainage of vent lines and that no shut-off valves or other means of stoppage, including spectacle or blank flanges, are fitted either to the individual vents or to the header, if the vents are combined or either above or below pressure/vacuum relief valves with closed vent systems.</p>
<p><b>CARGO, COW, OILY SLOP &amp; BALLAST TANK PIPING SYSTEMS</b>  Cargo, crude oil washing, bunker, ballast and vent piping systems including COW deck machines, valves, vent masts and headers visually examined and records of testing verified. (no soft patches allowed)</p>
<p><b>EMERGENCY TOWING ARRANGEMENT</b>  Examining the towing arrangements and verification of operational readiness. (Note: Applicable for vessels of 20,000 DWT and above)</p>
<p><b>WATER TIGHT DOORS AND CONTROLS</b>  Examining and testing (locally and remotely) all the watertight doors in Water Tight bulkheads including indicating lights and alarms.</p>
<p><b>FIRE DOORS AND CONTROLS</b>  Operation of manual/automatic fire doors, no holding back arrangements exist.</p>
<p><b>ANCHORING &amp; MOORING EQUIPMENT</b>  Examining the anchoring equipment &amp; mooring equipment. At renewal survey, during the examination, anchors are lowered and raised using the windlass.</p>
<p><b>SOUNDING PIPES</b>  Sounding pipes, including self-closing devices on short sounding pipes.</p>
<p><b>HATCHWAYS, COAMING AND COVERS</b>  Examination and testing of hatchways on freeboard and superstructure decks including efficient condition of closing appliances.</p>
<p><b>WEATHER DECKS</b>  Examination of weather decks.</p>
<p><b>DRIP TRAYS (IGF)</b>  Verified that portable and fixed drip trays are in satisfactory condition.</p>
<p><b>FREEBOARD MARKS</b>  Verification of freeboard marks.</p>
<p><b>VENTILATORS</b>  Examination and or testing of ventilators including efficiency of their closing appliances.</p>
<p><b>WINDOWS, SIDE SCUTTLES AND DEAD LIGHTS</b>  Examination and or testing of windows, side scuttles and dead lights.</p>
<p><b>SCUPPERS, SANITARY DISCHARGES, VALVES AND CONTROLS</b>  Examination scuppers and sanitary discharges and valves together with valves and their control gear.</p>
<p><b>SKYLIGHTS AND FIDDLEY OPENINGS</b>  Examination and or testing of skylights and fiddley openings including their closing appliances.</p>
<p><b>EXPOSED CASINGS, DECK HOUSES, COMPANION WAYS AND SUPERSTRUCTURES</b>  Examination and / testing of exposed casings, deck houses, companionways and superstructure bulkheads including closing appliances.</p>
<p><b>REFUSE CHUTES etc., AND OTHER OPENINGS</b>  Examination and / or testing including their closing appliances.</p>
<p><b>GUARD RAILS AND/OR BULWARKS</b>  Examination of the condition and arrangement.</p>
<p><b>FITTINGS FOR TIMBER DECK CARGOES</b>  Examination of the condition and arrangement.</p>

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NA - Not Applicable

<p><b>COLLISION &amp; WATERTIGHT BULKHEAD OPENINGS</b> Examining the collision and the other watertight bulkheads as far as can be seen. Watertight bulkheads penetrations examination as far as practicable for satisfactory condition.</p>
<p><b>TUNNEL</b> Tunnel closing arrangements, lighting and notices.</p>
<p><b>MASTS AND STANDING RIGGING</b> Masts, Derricks &amp; Crane columns including their standing rigging.</p>
<p><b>FLUSH DECK SCUTTLES</b> Flush Deck scuttles including their closing appliances.</p>
<p><b>SAFE ACCESS TO BOW</b> Examining the arrangements of safe access to bow including trends, side stringer cross members, decking, deck plate, stanchion, rigid hand rails, hand ropes, support points, shelter and confirmation that it is constructed of fire resistant and non slip material.</p>
<p><b>BOW AND STERN LOADING</b> Confirmation, when applicable Bow or Stern loading and unloading arrangement in order and testing of means of communication and remote shut down for cargo pump in satisfactory condition.</p>
<p><b>AIR PIPES</b> Examination and or testing of air pipes including efficiency of their closing appliances, weld connection between Air pipes and deck plating. Examining and confirming that vents from bunker tanks, oily ballast, oily slop tank, void space and ballast tanks (with cathodic protection) are equipped with flame screens.</p>
<p><b>FREEING PORTS</b> Examination of the condition and arrangement including shutters and crew protection bars</p>
<p><b>GANGWAYS, LIFELINES AND ACCOMMODATION LADDER</b> Satisfactory examination of various items pertaining to lifelines, accommodation ladder, gangways, Davits, Winches. Verification of inspection and maintenance records.</p>
<p><b>ACCESS TO AND WITHIN SPACES IN, AND FORWARD OF, THE CARGO AREA OF OIL TANKERS AND BULK CARRIERS</b> Confirming, when appropriate and as far as is practicable when examining internal spaces on oil tankers of 500GT and over that the means of access to cargo and other spaces remain in good condition. Checking, when appropriate, the provision of means of access to cargo and other spaces in accordance with the arrangements in the Ship Structures Access Manual of oil tankers of 500GT and over.</p>
<p><b>NEW INSTALLATION OF MATERIALS CONTAINING ASBESTOS</b> Confirming that new equipment containing asbestos was not fitted on board since last survey.</p>
<p><b>TOWING AND MOORING EQUIPMENT</b> Confirming that the towing and mooring equipment is properly marked with any restriction associated with its safe operation for ships constructed on or after 01/01/2007.</p>
<p><b>INTERNAL SPACES</b> Verification of the permanent means of access where appropriate of the internal spaces as far as practicable.</p>
<p><b>UPGRADATION / REPAIR TO COATING</b> Confirmation that maintenance, repair and partial recoating had been done as per manufacturer's specification using acceptable coating system, suitable surface preparation and adequate film thickness under the supervision of coating manufacturer's representative/coating inspector. These had been verified through stage/patrol inspection during survey and considered acceptable. Confirmation that in service maintenance and repair activities of coating of cargo oil tank / ballast are recorded in the Coating Technical File. (Note: Ballast tank for which coating condition was upgraded to "GOOD" this time during survey are to be listed in the "Remark" section.)</p>
<p><b>LOADING INSTRUMENT</b> Availability of an approved loading instrument together with its operational manual and verification of test cases. [Capable of verifying compliance with intact and damage stability requirement, for new vessel keel laid on or after 01/01/2016 and existing vessel first renewal survey on or after 01/01/2016]</p>

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2. Repairs now recommended and were carried out satisfactorily. After repairs found to be satisfactory and/or examined / tested satisfactorily and/or confirmed arrangements exist in satisfactory condition.
3. Repairs now recommended and remain outstanding.
4. Opportunity to examine/test was not provided this time. Remains outstanding.

NA - Not Applicable

## MACHINERY SPACES

### MACHINERY AND BOILER SPACES

Confirming that the machinery, boilers and other pressure vessels, associated piping systems and fittings are so installed and protected so as to reduce to a minimum any danger to persons on board, due regard being given to moving parts, hot surfaces and other hazards.

### FIRE/EXPLOSION HAZARDS

i) Propulsion system and auxiliary machinery, boilers, all pressurized systems (steam, pneumatic, hydraulic) and their associated fittings were examined to see whether they are being properly maintained and with particular attention to the fire and explosion hazards.

ii) Verification that oil / water leakages, accumulation of oil, with potential source of ignition does not exist in the machinery spaces. Leakages if any have been dealt and source of leakages rectified.

iii) Confirmation that floor plates & gratings are secured and found to be in order.

### STEERING GEAR

All main and auxiliary steering arrangements and their associated equipment and control systems were examined and tested. Steering chains are verified for wear and tear and it was ensured wear is within 12% of the original rule diameter. Confirmation that various alarms required for hydraulic power operated, electric and electro-hydraulic steering gears are, operating satisfactorily and that the recharging arrangements for hydraulic power operated steering gears are being maintained. Log entries made in accordance with statutory requirements were verified where applicable. Confirm the requisite arrangements to regain steering capability in the event of the prescribed single failure are being maintained. Floor to be anti skid and guard rails.

Confirmation that the required arrangement to regain steering capability in the event of the prescribed single failure is maintained.

### MEANS OF COMMUNICATION

All means of communication between the navigating bridge and the machinery control positions including engine room telegraph, as well as the bridge and the main / alternative steering position, if fitted, are tested. Where ships having emergency steering positions there are means of relaying heading information and, when appropriate, supplying visual compass readings to the emergency steering positions. Confirmation that means of indicating the angular position of the rudder is operational.

### BOILERS AND PRESSURE VESSELS

Periodical Surveys of boilers and other pressure vessels have been carried out as required by the Rules and the safety devices have been tested. External visual examination. External examination of boilers including test of safety & protective devices and test of safety valve using it's relieving gear. For exhaust gas economisers, review of engine log book to verify that Chief Engineer has tested the safety valves at sea within the window period of Annual Survey.

### REMOTE CONTROLS

Examining the means for the operation of the main and auxiliary machinery essential for propulsion and the safety of the ship, including when applicable, the means of remotely controlling the propulsion machinery from the navigating bridge (including the control, monitoring, reporting, alert and safety actions) and the arrangements to operate the main and other machinery from a machinery control room.

### BILGE PUMPING ARRANGEMENT

Examination of the bilge pumping systems and bilge wells including operation of each bilge pump (including hand pumps and eductors), extended spindles and level alarms, where fitted. Operational confirmation of emergency bilge suction and bilge-pumping system for each watertight compartment and drainage from enclosed cargo spaces situated on freeboard deck.

### FIRST START ARRANGEMENT

Operational confirmation of the means provided to bring the machinery into operation from the dead ship condition without external aid.

### SEA WATER PIPE EXPANSION JOINTS

Examining visually the condition of any expansion joints in sea water system.

### AUTOMATION

General Examination of automation equipment. Operation of safety devices, bilge level detection and alarm systems and control systems. Examination and testing of the general emergency alarm system and Operational confirmation of the engineer's alarm that it is clearly audible in the engineer's accommodation.

### SCHEDULE OF BATTERIES

Schedule of batteries for essential and emergency services available on board and maintenance being done as per this schedule.

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3. Repairs now recommended and remain outstanding.
4. Opportunity to examine/test was not provided this time. Remains outstanding.

NA - Not Applicable

<p><b>PROPULSION MACHINERY</b> Confirmation that normal operation of the propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative.</p>
<p><b>MACHINERY SPACE VENTILATION</b> Confirmation that machinery space ventilation is in good working condition.</p>
<p><b>EMERGENCY GENERATOR ROOM VENTILATORS ARRANGEMENT</b> Verification that following requirement of emergency generator room ventilation louvers and its closing appliance examined/ tested and found satisfactory.</p> <ol style="list-style-type: none"> <li>Manual or power operation of louvers and its closing appliance.</li> <li>Operating instruction, where hand –operated system is in use</li> <li>Automatic opening of ventilation louvers whenever emergency generator starting/ in operation for power operated system where provided including fail to open operation..</li> <li>Manual closing operation from outside the space, where open /closed indication clearly marked.</li> </ol> <p>(Note: Applicable for vessel keel laid on or after 01 January 2017)</p>
<p><b>VENTILATION SYSTEM (IGF)</b> Examining the ventilation system, including portable ventilating equipment where fitted, for spaces containing fuel storage, fuel bunkering, and fuel supply units or components or associated systems, including air locks, pump rooms, compressor rooms, fuel preparation rooms, fuel valve rooms, control rooms and spaces containing gas burning equipment</p>
Testing, as far as practicable, alarms such as differential pressure and loss of pressure alarms.
Control, monitoring and safety system( IGF)
Confirming gas detection and other leakage detection equipment in compartments containing fuel storage, fuel bunkering, and fuel supply equipment or components or associated systems, including indicators and alarms, is in satisfactory operating condition.
Confirming the satisfactory operation of the control, monitoring and automatic shutdown systems of the fuel supply and bunkering systems.
Confirmed that calibration of the gas detection systems carried out in accordance with manufacturer requirement and record of same available.
Confirmation of shutdown of ESD protected machinery spaces operational and tested operationally as far as practicable.
<p><b>MACHINERY VERIFICATION RUNS</b> Towards completion of Special/Continuous Survey of Machinery, trial of main &amp; auxiliary machinery including the steering gear &amp; controls carried out to confirm satisfactory operation (In afloat condition).</p>
<p><b>SEA TRIAL</b> In case of major repairs to main propulsion machinery or steering gear, confirmation that a sea trial has been carried out satisfactorily to confirm proper operation of the relevant machinery in all respects. (Note: With effect from 1<sup>st</sup> July 2018, in case of major repairs to main propulsion machinery or steering gear, the scope of sea trial is to also include a test plan for astern response characteristics based on those required for such an equipment or system when fitted to the new ship. The tests are to be carried out at least over the manoeuvring range of the propulsion system and from all control positions. A test plan is to be provided by the manufacturer and accepted by the surveyor. If specific operational characteristics have been defined by the manufacturer, same is to be included in the test plan and the reversing characteristics of the propulsion plant, including the blade pitch control system of controllable pitch propellers, are to be demonstrated and recorded during trials.)</p>
<b>ELECTRICAL INSTALLATION</b>
<p><b>ELECTRICAL SYSTEM</b> General examination visually and in operation, as feasible, of the main electrical machinery, the emergency sources of electrical power, the switch gear, other electrical equipment including the lighting system. The precautions provided against shock, fire and other hazards of electrical origin for proper maintenance.</p>
<p><b>EMERGENCY SOURCE OF POWER</b> The operation of the emergency source(s) of electrical power, including their starting arrangement, the systems supplied, and when appropriate, their automatic operation as far as practicable. Verify that Emergency light operational.</p>
<p><b>ELECTRICAL INSTALLATION AND ARRANGEMENT</b> Confirmation that electrical equipment and cables in dangerous spaces and zones are suitable for such locations and in satisfactory condition and properly maintained. The electric motors driving ventilation fans are positioned outside ventilation duct when carriage of flammable product is intended and the ducts, in way of fans only, are of non sparking</p>

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NA - Not Applicable

construction in dangerous zone.
<b>INSULATION RESISTANCE AND EARTHING</b> Verification of insulation resistance of electrical equipment and cables in the dangerous zones and space (immediate past records may be accepted when the ship is not in a gas free state) where applicable, the Pipelines and Independent cargo tanks are Electrically bonded to Hull.
<b>INTRINSICALLY SAFE SYSTEMS AND CIRCUITS</b> Confirmation that intrinsically safe systems and circuits used for measurement, monitoring, control and communication purpose in all hazardous location are properly maintained.
<b>MONITORING OF HARMONIC DISTORTATION</b> Confirmation that equipment for continuous monitoring of harmonic distortion level is in good order, alarm tested, logging of measured value verified in engine log book or electronically in case where automation system fitted and found to satisfactory. (Note: Applicable for vessel keel laid on or after 01 July 2017 and on exiting ship retrofitted with harmonic filter on or after 01 July 2017.)
<b>PROTECTION ARRANGEMENT FOR HARMONIC FILTER</b> Confirmation that protection for harmonic filter, including alarm tested and found satisfactory. (Note: Applicable for vessel keel laid on or after 01 July 2017 and on exiting ship retrofitted with harmonic filter on or after 01 July 2017.)
<b>HAZARDOUS AREA (IGF)</b> Examined that electrical equipment, bulkhead / deck penetration and access opening in hazardous area are maintained and in satisfactory condition
<b>ELECTRICAL BONDING (IGF)</b> Examining that electrical equipment including electrical bonding arrangements and bulkhead/ deck penetrations including access openings in hazardous areas.
<b>ALTERNATIVE DESIGN AND ARRANGEMENT</b> Where applicable, examination of alternative design and arrangement for machinery or electrical installations, low-flashpoint fuel storage and distribution system or fire safety, in accordance with the test inspection & maintenance requirements, if any, specified in the approved documentation is to be carried out.
<b>FIREFIGHTING ARRANGEMENTS</b>
<b>MAIN AND EMERGENCY FIRE PUMP</b> Verification that each Fire pump (including starting and priming arrangements) is capable of producing the required two jets of water (whilst also permitting the simultaneous operation of foam system on tankers) whilst the required pressure is maintained in fire main.
<b>FIREMAINS, HYDRANTS, HOSES, NOZZLES AND APPLICATORS</b> Condition of fire main (no soft patches or doublers) together with flanges and valves, hydrants, hoses, nozzles, applicators, spanners, relief valves and international shore connection.
<b>READINESS OF FIRE HYDRANTS, HOSES</b> Each hose complete with couplings, nozzle (dual-purpose nozzles where applicable) and tools kept ready for use.
<b>PORTABLE EXTINGUISHERS AND FOAM APPLICATORS</b> Confirmation that portable fire extinguishers correspond to the fire control plan w.r.t. number, type and location and that when examined were in good condition, fully charged and ready for use.
<b>SPARE CHARGES</b> Availability of spare charge/s for each portable extinguisher or additional portable extinguishers of the same type.
<b>FIRE AND/OR SMOKE DETECTION SYSTEM</b> Examine for proper functioning and possible testing. Any fire detection and alarm system and any sample extraction system.
<b>DECK FOAM SYSTEM &amp; CARGO PUMPROOM PROTECTION</b> Verification that fixed fire fighting system for cargo pump room, that the deck foam system and deck sprinkler system are in good operating condition and means of operation marked. Check for adequate supply of Foam concentrate, testing that minimum number of jets of water at the required pressure in the fire main is obtained when the system is in operation. Examination of deck foam system for cargo area.

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NA - Not Applicable

<p><b>FIXED FIRE FIGHTING SYSTEM</b></p> <p>i) Examination of fire fighting system for cargo pump room including fixed fire fighting system for the machinery spaces controls, piping, instructions and marking. Checking for evidence of proper maintenance and servicing including date of last systems tests.</p> <p>ii) Examination of the fixed CO2 system control, where applicable, are provided with two separate controls, one for opening of the gas piping and one for discharging the gas from the storage container, each of them located in a release box clearly identified for the particular space.</p> <p>iii) Verification with regard to correct positioning(for in service condition) of safety pins where used on cylinder head discharge valves for fixed fire fighting CO2 system are in accordance with manufacture's instruction manual.</p>
<p><b>REMOTE STOPPING OF FANS, OIL PUMPS, ETC</b></p> <p>Verification that the remote controls for stopping fans and machinery in machinery spaces are in working order. Examination of the arrangements for remote closing of valves for oil fuel, lubricating oil and other flammable oils and confirming, as far as practicable and as appropriate, the operation of the valves on the tanks that contain oil fuel, lubricating oil and other flammable oils.</p>
<p><b>CLOSING ARRANGEMENTS FOR SKYLIGHTS, FLAPS ETC</b></p> <p>Examination of closing arrangements of ventilators, funnel annular spaces, skylights, doorways and tunnel where applicable, including condition of operating mechanism e.g.: wire ropes, hydraulic piping etc.</p>
<p><b>FIRE DOORS</b></p> <p>Examination of any manual and automatic fire doors and proving their operations.</p>
<p><b>MEANS OF ESCAPE</b></p> <p>Confirmation that the means of escape from accommodation, machinery and other spaces are satisfactory / free from any obstruction.</p>
<p><b>GASEOUS FUEL FOR DOMESTIC PURPOSE</b></p> <p>Examining the arrangements for gaseous fuel for domestic purposes.</p>
<p><b>FIRE EXTINGUISHER FOR PAINT STORE/ FLAMMABLE LOCKER</b></p> <p>Examination of the fire extinguishing systems for spaces containing paint and/or flammable liquids and deep fat cooking equipment in accommodation and service spaces, examination of fire safety requirements of any helicopter facilities.</p>
<p><b>FIREMAN'S OUTFITS</b></p> <p>Confirmation that the fire fighters' outfits including its self-contained compressed air breathing apparatus and emergency escape breathing devices (EEBDs) are complete and in good condition and that the cylinders, including the spare cylinders, of any required self-contained breathing apparatus are suitably charged, and that on board means of recharging breathing apparatus cylinders used during drills or a suitable number of spare cylinders to replace those used are provided, and provision of two-way portable radiotelephone apparatus of an explosion-proof type or intrinsically safe.</p>
<p><b>SAMPLING POINTS OR DETECTOR HEADS</b></p> <p>Confirmation that sampling points or detector heads are located in suitable positions in order that potentially dangerous leakages are readily detected.</p>
<p><b>SAFETY ARRANGEMENTS RELATED TO CARGO</b></p>
<p><b>CARGO SYSTEM</b></p> <p>Examinations of gauging devices, high level alarms, valves associated with overflow control. Examination of cargo heating/cooling system sampling arrangements where fitted. Examination of the cargo transfer arrangements and confirming that any hoses are suitable for their intended purpose and mark with date of testing.</p>
<p><b>CARGO ARRANGEMENT</b></p> <p>Verification of temperature devices and alarms, removable pipe lengths or other approved equipment necessary for cargo separation. Verification that the ventilation system including portable equipment is operational. Verification that arrangements are made for sufficient inert/padding/drying gas to be carried to compensate for normal losses and that means are provided for monitoring of ullage spaces. Verification that arrangements are made for sufficient medium to be carried where drying agents are used on air inlets to cargo tanks.</p>
<p><b>PERSONAL EQUIPMENT</b></p> <p>Confirmation that the protective clothing for crew engaged in loading and discharging operations and its stowage is in a satisfactory condition.</p>
<p><b>SAFETY EQUIPMENT &amp; BREATHING APPARATUS</b></p>
<p>Confirmation that safety equipment and associated breathing apparatus and associated air supplies and, when appropriate, emergency-escape respiratory and eye protection, are in a satisfactory condition and are properly stowed.</p>

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<b>PORTABLE GAS DETECTION INSTRUMENTS</b>
Verify that at least two for toxic & flammable, fixed or portable type gas detection instruments are on board and arrangements have been made for the supply of the appropriate vapour detection tubes.
<b>FIRST AID EQUIPMENT</b>
Confirmation that medical first-aid equipment, including stretchers and oxygen resuscitation equipment are in a satisfactory condition.
Confirmation that arrangements have been made for the antidotes for the cargoes actually carried to be on board.
<b>DECONTAMINATION AND EYE WASH ARRANGEMENT</b>
Functional verification of decontamination and eye wash arrangements including arrangements against freezing
<b>CARGO SAMPLE</b>
Confirmation that stowage of cargo sample is in satisfactory condition
<b>INERT GAS (NV) SYSTEM</b>
<b>IG SYSTEM COMPONENTS AND PIPING</b>
External examination of the condition of all components and piping for signs of corrosion and gas / effluent leakage including inert gas plant overboard discharges.
<b>SCRUBBER ROOM VENTILATION SYSTEM</b>
Verification of the operation of scrubber room ventilation arrangement.
<b>DECK WATER SEAL</b>
Verification of deck water seal for automatic filling/draining and absence of water carry over and condition of non-return valve
<b>INERT GAS BLOWERS</b>
Verification of the proper operation of both inert gas blowers including test of interlocking feature of the soot blowers and automatic closure of gas pressure regulating valve when the IG blowers are stopped.
<b>IG SYSTEM VALVES</b>
Verification of the operation of all remotely or automatically controlled valves, (in particular the flue gas isolating valve/s)
<b>IG SYSTEM INSTRUMENTATION, AUTOMATION &amp; ALARMS</b>
Verification of the function of alarms and safety devices of the inert gas system (using simulated conditions, where necessary): Low water pressure to the scrubber, High gas temperature in inert gas main, High water level in the scrubber, Failure of inert gas blower, High oxygen content of gas in inert gas main, Low water level in deck water seal, Failure of power supply to gas regulating valve/IG main pressure and oxygen content indicators, Low gas pressure in inert gas main, High gas pressure in inert gas main. Check for the operational test of the inert gas system after performing the above checks satisfactorily.
<b>FUEL SYSTEM(IGF)</b>
<b>FUEL HANDLING PIPING, MACHINERY AND EQUIPMENT</b>
Examining and testing of piping, hoses, emergency shut-down valves, remote operating valves, relief valves, machinery and equipment for fuel storage, fuel bunkering, and fuel supply such as venting , compressing, refrigerating, liquefying, heating, cooling or otherwise handling the fuel as far as practicable .
Confirmed that mean of inerting provided on board is in satisfactory condition.
Confirmation of stopping of pumps and compressor in case of emergency shut down of the system.
<b>FUEL STORAGE SYSTEM</b>
Examining the condition and arrangement of fuel storage, bunkering and supply systems including external examination of storage tank (including secondary barrier if fitted), internal examination of tank connection space and relief valves if accessible..
Verification of satisfactory operation of tank monitoring system, examination and testing of installed bilge alarms and means of drainage.
Examination and testing of the remote and local closing of the installed main tank valve for fuel storage system.
<b>FUEL BUNKERING SYSTEM</b>
Examining and testing of bunkering stations and the fuel bunkering system including operation of the fuel bunkering control, monitoring and shutdown systems.

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NA - Not Applicable

<b>FUEL SUPPLY SYSTEM</b>
Examining and testing of fuel supply system including the fuel supply system control, monitoring and shut-down systems
Examining and testing of remote and local operation of master fuel valve for each engine compartment.
<b>CARGO PUMP / CONTROL ROOM/ CARGO TANK</b>
<b>CARGO TANK GAUGING SYSTEM</b>
Verification of cargo tank level gauges, high level alarms and automatic high-liquid-level shut-off system.
<b>LOCATION OF VENTING</b>
Examining the location of the vent outlets in respect of the height above the weather deck or the fore and aft gangway, from the nearest air intakes or openings to accommodation, service and machinery spaces and ignition sources are in satisfactory condition.
<b>CARGO PUMP ROOM DRAINAGE ARRANGEMENT/ GAS DETECTION/ BILGE LEVEL</b>
Verification of cargo pump room / other cargo handling spaces bilge system operable from outside the cargo pump rooms. Examinations of the monitoring & alarm system for concentration of hydrocarbon gasses and bilge level in cargo pump rooms.
<b>ACCESS LADDERS AND RESCUE ARRANGEMENTS</b>
Verification of cargo pump room / other cargo handling spaces access ladders, railings and permanent rescue arrangements
<b>PUMP ROOM BULKHEAD AND PIPE TUNNEL IF FITTED</b>
Examinations of all pump room / other cargo handling spaces bulkheads for signs of chemical leakage or fractures, the sealing arrangements of all penetrations of pump room bulkheads, Temp. Sensing devices for bulkhead glands and alarm. Examination of condition of all piping systems.
<b>PIPING IN CARGO PUMP ROOMS, VALVES, GAUGES,</b>
Examination of cargo, bilge, ballast, stripping pumps for excessive gland seal leakage. Verification that installed pressure gauges on cargo discharge lines including those fitted outside the cargo pump room and level indicating systems are operational, verification that pumps, valves and pipelines are identified and distinctively marked.
<b>CARGO PUMPS</b>
Examination of Cargo pump/s bulkhead / deck glands, remote operation/shut down devices, pressure relief devices, pump foundations and temperature monitoring of glands, bearings & casings and associated alarm systems including stand-by means of pumping
<b>CARGO HANDLING SYSTEM CONTROLS, INSTRUMENTATION &amp; ALARMS</b>
General examination of pressure gauges and relief devices on cargo pumps and discharge lines, local / remote controls of valves on cargo piping and cargo tank level indicator / alarm systems
<b>CARGO PUMP ROOM VENTILATION, CLEANLINESS Etc</b>
Examination of cargo pump room(s) spaces for freedom from potential sources of ignition, access ladders and cargo pump room drainage arrangements; operation of the ventilation system (damper operation and flame screens) including interlocking arrangement to lighting .
Verification that no oil leakages and no accumulation of oil in the cargo pump room. Leakages if any have been dealt and source of leakages rectified.
Examining the cargo tank venting, cargo tank purging and gas-freeing and other ventilation systems.
Confirmation that potential sources of ignition in or near the cargo pump room are eliminated, such as loose gear, combustible materials, etc, that there are no signs of undue leakage of cargo and that access ladders are in good condition
<b>MONITORING OF GAS IN CARGO AREA</b>
Examining, as far as possible, and testing the fixed hydrocarbon gas detection system examining the arrangement for gas measurement in double hull spaces and double bottom spaces including fitting of permanent gas sampling line.
<b>CRUDE OIL WASHING ARRANGEMENTS</b>
IOPP Report to be referred for COW System Examination
<b>COW PIPING SYSTEM</b>
Confirmation by external examination that the crude oil washing piping, pumps, valves and deck mounted washing machines are free from any sign of leakage and that all anchoring devices for crude oil washing piping are intact and secure

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NA - Not Applicable

<p><b>TANK CLEANING MACHINE DRIVE UNITS</b> Confirmation, in those cases where drive units are not integral with the tank cleaning machines, that the number of operational drive units as specified in the Manual are on board</p>
<p><b>ISOLATION OF STEAM HEATERS FOR WATER WASHING</b> Confirmation that, when fitted, steam heaters for water washing can be properly isolated during crude oil washing operations, either by double shut-off valves or clearly identifiable blanks</p>
<p><b>COMMUNICATION</b> Confirmation that the prescribed means of communications between the deck watch keeper and the cargo control position is operational</p>
<p><b>PRESSURE RELIEF DEVICE</b> Confirmation that an overpressure relief device (or other approved arrangement) is fitted to the pumps supplying the crude oil washing systems is in satisfactory condition.</p>
<p><b>FLEXIBLE HOSES FOR SUPPLY OF OIL TO THE WASHING MACHINE</b> Confirmation that flexible hoses for supply of oil to the washing machines on combination carriers, are of an approved type, are properly stored and are in good condition</p>
<p><b>CRUDE OIL WASHING MACHINE</b> Confirmation by checking, as far as practicable, that the crude oil washing machines are operable and, when the survey is carried out during crude oil washing operations, by observing the proper operation of the washing machines by means of the movement indicators and/or sound patterns or other approved methods</p>
<p><b>CARGO TANK STRIPPING SYSTEM</b> Confirmation by checking, as far as practicable, the effectiveness of the stripping system in appropriate cargo tanks by observing the monitoring equipment and by hand-dipping or other approved means</p>
<p><b>COMBINATION CARRIERS</b></p>
<p><b>GAS DETECTION ARRANGEMENTS</b> Verification of Gas detection arrangement in cofferdams.</p>
<p><b>ISOLATION ARRANGEMENTS</b> Verification of blanking arrangement for IG main, oil cargo and slop tank pipes, when carrying cargo other than oil.</p>
<p><b>OPERATIONAL NOTICES</b> Verification of posting of required signboards and instruction manuals</p>
<p><b>ADDITIONAL CLASS NOTATION REQUIREMENT</b></p>
<p><b>ADDITIONAL CLASS NOTATIONS E.G. SPM, VCS etc.</b> <b>‘SPM’ NOTATION</b> Components of the single point mooring system (bow chain stoppers, bow fairleads, winches and capstans), to verify their satisfactory condition, Hull structures supporting and adjacent to the components to the single point mooring system, to verify that there is no deformation or fracture.</p>
<p><b>GENERAL</b></p>
<p><b>HOUSE KEEPING</b> i) Verification that general housekeeping / cleanliness in engine room, pump room, on deck, accommodation, hospital, galley, wash basins and toilets are satisfactory. ii) Confirmation that no loose drums and no heavy items without securing/lashing on deck. iii) Confirmation that Spare anchor where provided, its lashing bracket in good condition.</p>
<p><b>FLAG SPECIFIC REQUIREMENTS</b> Confirmation that flag specific requirements/instructions, if any are complied with. Please Provide details in Remark section.</p>
<p><b>H.O. INSTRUCTIONS</b> Confirmation that H.O. Instructions pertaining to this survey if any communicated separately, have been complied with. Please Provide details in Remark section.</p>
<p><b>ADDITIONAL REQUIREMENTS TOWARDS CLASS INTERMEDIATE SURVEY</b></p>
<p><b>CRUDE OIL WASHING PIPING SYSTEM</b> Examining the crude oil washing piping outside the cargo tanks. If upon examination there is any doubt as to its condition, the piping may be required to be pressure tested, gauged or both. Particular attention should be paid to any repairs such as welded doublers</p>

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<b>ISOLATION OF STEAM HEATER</b>
Confirming the satisfactory operation of the isolation valves to steam heaters for washing water, when fitted
<b>CARGO TANK EXAMINATION</b>
Examining at least two selected cargo tanks for verifying the continued effectiveness of the installed crude oil washing and stripping systems. If the tank cannot be gas-freed for the safe entry of the surveyor, an internal examination should not be conducted. In this case this examination may be conducted in conjunction with the internal examination of cargo tanks as part of the structural survey required for SAFCON intermediate survey
<b>CARGO TANK VALVE EXAMINATION</b>
Examining the manual and/or remote operation of the individual tank valves (or other similar closing devices) to be kept closed at sea
<b>CARGO, COW, BUNKER, BALLAST, STEAM AND VENT PIPING SYSTEMS</b>
i) Verification that the cargo, crude oil washing, bunker, ballast, steam and vent piping systems as well as vent masts and headers are maintained in satisfactory and efficient condition (Note: If upon examination there is any doubt as to the condition of the piping, the piping may be required to be pressure tested, thickness measured or both. Particular attention is to be paid to any repairs such as welded doublers).
ii) Where the scope of intermediate survey is to the same extent as the previous special survey, examination and operational testing to working pressure of cargo piping on deck including crude oil washing (COW) piping, and cargo and ballast piping systems within the tanks and spaces, bunker, steam and vent piping to ensure that tightness and condition are satisfactory (Note: Special attention is to be given to ballast piping in cargo tanks and cargo piping in ballast tanks and void spaces and when the piping, including valves and fittings are open during repair periods, same to be examined internally).
<b>ELECTRICAL EQUIPMENT IN DANGEROUS ZONES</b>
General Examination and testing of insulation resistance of electrical circuits in dangerous zones to confirm these are maintained in satisfactory condition (Note: i) In cases where a proper record of testing is maintained, consideration should be given for accepting recent readings. ii) These measurements are taken when the ship is in a gas free condition and to be carried out within an acceptable time period).
<b>SAFETY SYSTEM(IGF)</b>
Examining and testing gas detectors, temperature sensors, pressure sensors, level indicators, and other equipment providing input to the fuel safety system, including verification of the response upon fault conditions
<b>ADDITIONAL REQUIREMENTS TOWARDS SPECIAL SURVEYS</b>
<b>AIR PIPES</b>
Internal Examination of Automatic air pipe heads at special survey as required by IRS Rules
<b>MOORING ROPES AND TOW LINES</b>
Confirmation that sufficient mooring ropes and tow lines as required by rules are provided onboard.
<b>MEANS OF EMBARKATION AND DISEMBARKATION</b>
Accommodation ladders, gangways and its winches incl. brake system are to be operationally tested with specified maximum operation load in accordance with IRS Rules
<b>CRUDE PIPING PRESSURE TESTING</b>
Carrying out pressure testing of the crude oil washing system to at least the working pressure and confirming it is satisfactory
<b>CARGO TANKS STRIPPING SYSTEMS</b>
Examining the cargo tanks verifying the continued effectiveness of the installed crude oil washing and stripping systems
<b>ISOLATION VALVES</b>
Examining internally, when fitted, the isolation valves for any steam heaters
<b>CARGO TANK EXAMINATION</b>
Verifying, by internal tank inspection or by another alternative method acceptable to the Administration, the effectiveness of the crude oil washing system. If the tank cannot be gas-freed for the safe entry of the surveyor, an internal inspection should not be conducted. An acceptable alternative would be verification of arrival/departure ballast, verification of operation of COW machines, verification of effectiveness of stripping system.
<b>CARGO, COW, BUNKER, STEAM AND BALLAST PIPING SYSTEM</b>
Examination of cargo piping on deck including crude oil washing (COW) piping, and cargo and ballast piping systems within the tanks and spaces, bunker, steam and vent piping and operational testing to working pressure, as applicable to ensure that tightness and condition remain satisfactory (Note: Special attention is to be given to ballast piping in cargo

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tanks and cargo piping in ballast tanks and void spaces and when the piping, including valves and fittings are open during repair periods, same to be examined internally).
<b>LONGITUDINAL STRENGTH EVALUATION</b>
Confirmation that for oil tankers of 130 [m] in length and upwards (as defined in ILLC), the ship's longitudinal strength has been evaluated and found to be satisfactory (applicable during the renewal survey after the ship reached 10 years of age).
<b>ADDITIONAL REQUIREMENT FOR IGF</b>
<b>FUEL HANDLING AND PIPING</b>
Examining of all piping for fuel storage, fuel bunkering, and fuel supply such as venting, compressing, refrigerating, liquefying, heating storing, burning or otherwise handling the fuel and liquid nitrogen installations, Confirmation of removal of insulation from the piping and opening for examination and hydrostatic test of suspected pipeline as necessary, and leak test of complete piping after reassembly carried out and found satisfactory.
<b>FUEL VALVES</b>
Examining and testing of emergency shut-down valves, check valves, block and bleed valves, master gas valves, remote operating valves, isolating valves for pressure relief valves in the fuel storage, fuel bunkering, and fuel supply piping systems, with randomly selected valves being opened for examination.
<b>PRESSURE RELIEF VALVES</b>
Examining the pressure relief valves connected to fuel storage tanks, connecting pipes & venting system checked in open condition, tested for the setting, and found satisfactory.
Confirmation that pressure relief valves in fuel supply/bunker lines, checked in open condition for internal examination, tested for the setting and found satisfactory. (Note: Where proper record of continuous overhaul and resetting of individually identifiable relief is maintained, consideration to be given to acceptance on the basis of opening, internal examination, and testing of representative sampling of valves including each size and type of valves in use, provided logbook evidence that remaining valve have been overhauled and tested since crediting of the previous special survey.)
Confirmation that pressure/Vacuum relief valves or devices for interbarrier spaces and hold spaces, examined in open condition , tested for setting and found satisfactory.
<b>FUEL STORAGE TANK</b>
Examining of fuel storage tanks internally in accordance with an approved survey plan, visual examination of tank insulation and tank support arrangement, NDT of suspected area if required. (Note: Vacuum insulated independent fuel storage tank of type C need not be examined and record of vacuum monitoring system be examined and record to be reviewed.)
<b>FUEL HANDLING EQUIPMENT</b>
Examining of fuel pumps, compressors, process pressure vessels, inert gas generators, heat exchangers and other components used in connection with fuel handling.
<b>ELECTRICAL EQUIPMENT</b>
Confirmed that electrical equipment fitted in hazardous area are certified safe type and are maintained in satisfactory condition
Confirmed that electrical cable installed in hazardous area are continuous and are in satisfactory condition.
Examining and functional testing of pressurized equipment and associated alarms and testing of system to de-energization electrical equipment, which are not certified for use in hazardous areas
Verified that insulation resistance of the equipment, electrical circuit terminating in or passing through hazardous area carried out and meeting the requirement.
<b>SAFETY SYSTEM</b>
Examining and testing gas detectors, temperature sensors, pressure sensors, level indicators, and other equipment providing input to the fuel safety system, including verification of the response upon fault conditions,
Confirmation that calibrations of pressure, temperature and level indicating equipment in accordance with the manufacturer's requirements carried out and record for same available.

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