**ON BOARD CARGO OPERATION AUDIT FORM**

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| Vessel: |  |  | Period : |  |
| Name of Master/ Auditor: |  |  | Voyage : |  |

| **Section 1 – Procedures** | | | |
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| **No.** | **Items** | **Yes/ No/ NA** | **Remarks / Observation** |
|  | Are all shipboard personnel duly certified for service on board an oil tanker and are familiar with Shipboard operations and cargo handling? |  |  |
|  | Does deck watch personnel understand their responsibilities? |  |  |
|  | Are all Officers and crew involved in cargo operations familiar with the hazards associated with the cargoes being carried on board? |  |  |
|  | Are Officers familiar with special requirements regarding medical treatment following exposure to hazardous cargoes? |  |  |
|  | Are Officers familiar with personnel protection used for the current cargoes handled? |  |  |
|  | Do Master, Chief Officer and Deck Officers understand displays on cargo operations console? |  |  |
|  | Are all officers aware of the emergency procedures for dealing with leakage, spillage or fire involving the cargo? |  |  |
|  | Are Officers aware of the maximum loading rate for each tank? |  |  |
|  | Are Officers aware of closed loading / discharging and closed sampling? |  |  |
|  | Are Officers aware with Hazards from electrostatic generation? |  |  |
|  | Is the verbal communication between the ship and the shore adequate?  Does the ship have the relevant terminal regulations available? Are Officer(s) on cargo duty is aware of the communication procedures agreed with shore? |  |  |
|  | Are Officer(s) on cargo duty is aware of the emergency stop procedure agreed with shore? |  |  |
|  | Has a cargo-handling plan been prepared for all cargoes during last three voyages and does it provide a detailed sequence of cargo and ballast transfer? The plan should cover all stages of the transfer operations and as a minimum, contain:   * + Quantity and grade of each parcel;   + Density, temperature and other relevant properties;   + A plan of the distribution, lines and pumps to be used;   + Transfer rates and maximum allowable pressures;   + Critical stages of the operation;   + Notice of rate change;   + Venting requirements;   + Stability and stress information;   + Drafts and trims;   + Ballast operations;   + Emergency stop procedures;   + Emergency spill procedures and spill containment; and   + Hazards of the particular cargoes.   And also, as required:   * + Precautions against static generation;   + Initial start-up rates;   + Control of cargo heating systems;   + Line clearing;   + Crude oil washing procedures;   + Under keel clearance limitations;   + Bunkering; and   + Special precautions required for the particular operation.   Has the cargo plan been signed by the watch officers to indicate their understanding of it? |  |  |
|  | Is Duty Officer familiar with the load/discharge plan and the process used for updating the plan, along with any changes made to the plan? |  |  |
|  | Are Officer(s) on cargo duty are aware of the current operational instructions and the relationship to stress, stability and free-surface effects? |  |  |
|  | Is Duty Officer aware of the proper operation of cargo pumping and monitoring equipment, including level gauges, temperature readouts, pressure gauges and value readouts etc..?  Are cargo pump performance curves available for various speeds and are the Watch keeping Officers able to demonstrate clear understanding? |  |  |
|  | Is the vessel free of inherent intact stability problems? |  |  |
|  | Is there an class approved Loading/Stability and Damaged Stability booklet on board?  Is there an approved computer system for intact stability?  Does the system include damage stability assessment?  Are stability and stress calculations made prior commencement of the cargo transfer operation? |  |  |
|  | Are there records indicating that the operational accuracy of the load computer is tested regularly on-board by C/O? |  |  |
|  | Are there records indicating that the operational accuracy of the load computer is tested once a year in presence of class surveyor? |  |  |
|  | Are longitudinal stresses, where applicable, maintained within design limits throughout the vessel’s operation? |  |  |
|  | Are cargo and/or ballast tanks free of sloshing or weight restrictions?  Where applicable, are officers aware of the dangers of high free surface effects and of the possibility of structural damage caused by sloshing in cargo tanks?  Are Master, Chief Officer and Deck Officers aware of maximum density and load restriction in cargo tanks? |  |  |
|  | Are Master, Chief Officer and Deck Officers aware of the procedures for restoring stability in case of unstable conditions developing during cargo operations, where applicable? |  |  |
|  | Are Master, Chief Officer and Deck Officers familiar with the cargo valves and piping system and their controls, safety limitations and alarms?  Are all officers familiar with the carriage requirements for the cargoes on board in general? |  |  |
|  | Are personnel aware of the hazards associated with tank cleaning after the carriage of volatile products? |  |  |
|  | Is IG being used for cargo and tank cleaning operations requiring inert atmosphere?  If Yes: Oxygen content of the tank is |  |  |
|  | If yes, is there evidence established from written records that the tank was in inert condition? |  |  |
|  | Are cargo pipelines tested annually to 100% of rated working pressure? |  |  |
|  | Are cargo pipelines tested in last 30 months to 150% of rated working pressure? |  |  |
|  | Are there records of the calibration of key cargo instrumentation, including temperature and pressure gauges? |  |  |
|  | Is the high level alarm system operated during both loading and discharging? |  |  |
|  | Is the vessel capable of operating in a closed condition if volatile or toxic products are handled, including ullaging and sampling?  Is the vessel is handling cargoes in a closed condition?  Do tank hatches, tank cleaning apertures and sighting ports appear to be liquid and gas tight?  Are Officers aware of closed loading / discharging and closed sampling? |  |  |
|  | Is the cargo venting system and its individual components, including pressure alarms serving as an alternative to secondary vents, in a satisfactory condition?  Is the cargo venting system being operated correctly?  Are SOLAS secondary venting requirements being complied with?  Are the P/V valves in good order, inspected and cleaned as part of a regular maintenance routine and are there records to support this?  Are flame screens easily accessible and removable, in good order and inspected and cleaned as part of a regular maintenance routine and are there records available?  Is there a record available to evidence that devices to prevent the passage of flame have been routinely checked and maintained within the vent system? Do interviews and verification reveal that these checks and maintenance routines are effective?  Are all Officers involved in cargo operations familiar with the hazards of tank over-pressurization, including the function and operation of a PV valve and the secondary means for pressure/vacuum relief? |  |  |
|  | Does the vessel have a Vapour Emission Control System (VECS)? If yes, does an approved VECS Manual is readily available and up to date?  If the vessel was operating with a vapour return line connected for any of the cargoes carried during last three voyages, are appropriate transfer procedures in place? |  |  |
|  | Are precautions relating to maximum flow rates during initial loading being observed?  Where vapour locks are fitted to cargo tanks that are not fitted with full depth sounding pipes, are static electricity precautions taken to ensure that the appropriate relaxation period elapses prior to ullaging or sampling? |  |  |
|  | Are personnel aware of the need to avoid the free fall of liquid into tanks? |  |  |
|  | Has Ship / Shore Safety Checklist, been completed correctly?  Are requirements of the SSSCL being observed? (SSSCL)  Are Repeat Checks required by SSSCL being conducted by a responsible person at routine intervals and recorded in the SSSCL?  Are items requiring Agreement in the SSSCL duly documented / endorsed? |  |  |
|  | Is adequate deck-watch maintained throughout cargo operations? |  |  |
|  | Are crew on deck properly dressed for the cargoes being handled? |  |  |
|  | Are Officers familiar with company cargo pump-room entry procedure? |  |  |
|  | Is the appearance and condition of the following appear satisfactory in pump-room:  Ventilation system - *SOLAS II-2, Reg. 59.3.2*  Explosion proof lighting  Pumping arrangements and other equipment - *ISM 10.1*  Plates, gratings and ladders  Bilges - *TSG (C) 5.3.2, ISGOTT*  Bilge Alarm - *SOLAS II-2, Reg. 4.5.10.4.*  Fire Fighting Equipment  Fixed hydrocarbon gas detection system - *SOLAS II-2 Reg. 4.5.10.1.3*  Temperature sensing devices for bulkhead shaft glands, bearings and pump casings, with associated audible and visual alarms - *SOLAS II-2 Reg. 4.5.10.1.1*  Lighting/ventilation Interlock - *SOLAS II-2 Reg. 4.5.10.1.2* |  |  |
|  | Are correct safety procedures been followed when taking cargo samples? |  |  |
|  | Are cargo samples properly stored in a suitable locker and are they identified?  Is Sample Log Being Maintained? |  |  |
|  | Are cargo samples from ship's tanks retained on board? |  |  |
|  | Are personnel familiar with proper techniques, hazards, protective equipment, and other aspects of taking, handling and storing samples? |  |  |
|  | Does the condition of all cargo handling equipment appear satisfactory (as fitted):   * + Cargo pump   + Stripping system   + Pipelines   + Pipeline drains   + Tank valves   + Pressure / vacuum valve   + Venting and vapour return system   + PV vents   + Flame screens   + Vapour lock gauging / sampling   + Sampling pipe   + Tank hatch gasket   + Tank cleaning opening/inspection port gasket   + UTI/MMC Tapes   + Remote Temp and Pressure Sensors |  |  |
|  | Is Inert gas system operating satisfactorily? |  |  |
|  | Are all crew familiar with the hazards of handling inert gases? |  |  |
|  | Are Master and officers familiar with appropriate aspects of ship to ship cargo transfer procedures? |  |  |
|  | Are there records indicating that appropriate equipment is included in the planned maintenance and testing programme. |  |  |
|  | Are there records indicating the regular testing of the following systems:  Remote/emergency cargo pump shutdown |  |  |
|  | Do the Company provide guidelines on the care and maintenance of the COW/tank cleaning equipment? |  |  |

| **Section 2 - Documentation** | | | |
| --- | --- | --- | --- |
| **No.** | **Items** | **Yes/ No/ NA** | **Remarks / Observation** |
| 2.1 | Is the vessel provided with up-to-date company manual, instructions and procedures with regard to safe cargo operations?  Are adequate cargo operational procedures available on board? |  |  |
| 2.2 | Is technical information for the cargo monitoring equipment available on board? |  |  |
| 2.3 | Is the Oil Record Book correctly completed and up to date? |  |  |
| 2.4 | Is MSDS for current cargo available on-board and displayed in CCR and common places? |  |  |
| 2.5 | Are company forms and checklists used for the current cargo operation the latest edition?  Are entries made in the CCR logbook in chronological order and all sections filled up as needed during the watch? |  |  |
| 2.6 | Are damage stability guidelines available?  Is the master aware of the worst damage stability condition in the stability book? |  |  |

| **Section 3 – Cargo Equipment Questionnaire** | | | |
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| **No.** | **Items** | **Yes/ No/ NA** | **Remarks / Observation** |
|  | Are cargo and ballast system valves in good order and is there evidence of regular testing?  Are cargo and ballast system ullage gauges in good order and is there evidence of regular testing? |  |  |
|  | Are cargo tank high and high-high level alarms in good order and is there evidence of regular testing? |  |  |
|  | Is Duty Officer aware of the proper operation of the high level alarms and high-high level alarms? |  |  |
|  | Gauging Systems:  Are level gauges appears fully operational? |  |  |
|  | Gauging Systems:  Are stowage and grounding reference heights available? |  |  |
|  | Are manual ullaging reference points located as per calibration tables? |  |  |
|  | Are records available for shore calibration check for all portable gauge tapes (UTI / MMC) within the last 12 months? |  |  |
|  | Is records available indicating satisfactory completion of shore calibration checks for reference pressure gauge and thermometer within the last 12 months? |  |  |
|  | Is the tank pressure measurement equipment / sensors fully operational? |  |  |
|  | Are fittings and calibrators for pressure and temperature gauges available onboard? |  |  |
|  | If yes, is records available indicating satisfactory completion of calibration checks against reference pressure gauge within the last 12 months? |  |  |
|  | Is the ship fitted with fixed tank pressure gauging equipment? |  |  |
|  | Is portable ullage / temperature / interface devices appear in good working order?  Is vapour locks appear in good condition?  Are there sufficient UTI tapes for use with the vapour locks?  Number of operational UTI tapes carried: |  |  |
|  | Are all cargo cranes and other lifting equipment properly marked and has periodical testing and inspection been carried out? |  |  |
|  | Is the general condition of the cargo tank heating system satisfactory?  Is Chief Officer and Deck Officers familiar with the method of segregation of tank heating coils from the main supply and return system?  Are Officers familiar with special heating requirements for the cargoes carried on board? |  |  |
|  | Are metal tapes and other gauging or sampling devices effectively bonded before being introduced into tanks? |  |  |
|  | If portable tank cleaning hoses are used, are continuity tests carried out and the results recorded? |  |  |
|  | Are cargo pipe joints bonded? |  |  |
|  | Are cargo manifold arrangements satisfactory? |  |  |
|  | Are manifold pressure gauges fitted outboard of the manifold valves and are they in good order? |  |  |
|  | Are pressure gauges also fitted to the offshore manifolds and regularly checked during the loading / discharging for manifold valve leakage? |  |  |
|  | Are manifold pressure gauges fitted with valves or cocks? |  |  |
|  | Are all manifold flange connections fully bolted? |  |  |
|  | Are manifold blank flanges of an equivalent rating to that of the manifold pipelines? Are offshore manifold blanks n place and fully bolted? |  |  |
|  | Are the manifold valves and lines marked to identify the tank or tanks they serve? |  |  |
|  | Is the vessel free of unauthorised inter-connections between cargo, bunker and ballast systems? |  |  |
|  | Is the pump room free of evidence of significant leaks from machinery, pipework, valve glands and instrumentation? |  |  |
|  | Are pump rooms bulkhead seals (in E/R) gas tight and, if required, well lubricated? |  |  |
|  | Is the cargo pump room gas monitoring system in good order and regularly checked? |  |  |
|  | Is the cargo pump room bilge pump in good order and can it be operated from a position outside the pump room? |  |  |
| 3.31 | Does the condition of all other cargo equipment appears satisfactory (as fitted):  - Tank cleaning main and connections  - Tank cleaning hoses (If onboard)  - Tank cleaning machines (portable and fixed)  - Tank cleaning heater  - Cargo heating coils  - Cargo heating control valves  - Hydraulic systems (pipelines, controls, actuators)  - Emergency/remote cargo pump shut down  - Electrical conduit and cable trays |  |  |
| 3.32 | Does the condition of all cargo monitoring equipment and systems appear satisfactory?  Cargo Monitoring Equipment and Systems to be assessed (as fitted) includes:  - Tank gauging system and remote readout for above  - Tank pressure system and remote readout for above  - Tank pressure alarm  - Tank temperature system  - Remote readout for above  - High level alarm system  - High / high level alarm system  - Vapor return alarm system |  |  |
| 3.33 | Is the cargo tank high-level alarm system independent of both the gauging devices and the overflow-control alarm system? |  |  |
| 3.34 | Is the inert gas system and associated pipework, where fitted, in good order? |  |  |

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| **Section 4 – Cargo Team Members Skills Analysis** | | | | | | |
| Skills Analysis | Master | C/Off. | 2/O | 3/O | 3/O | Ratings |
| Confidence |  |  |  |  |  | Unsatisfactory 1- 3  Average 4- 5  Above average 6  Good 7-8  Very Good 9-10 |
| Procedures for cargo loading/discharging, ballast, tank cleaning and bunkering |  |  |  |  |  |
| Cargo Stowage and Planning |  |  |  |  |  |
| Ships Stability and Stress Calculation |  |  |  |  |  |
| Cargo /COW Operations |  |  |  |  |  |
| Ballast/ Deballasting |  |  |  |  |  |
| Emergency Procedures |  |  |  |  |  |
| Communication Skill |  |  |  |  |  |
| Average Score |  |  |  |  |  |

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| **Section 5 – Master/Auditor - Brief Summary of the overall onboard cargo operation audit and Recommendation** |
| Comments: |
| Observations: |

Legends: Ns – Not Seen, Na – Not Applicable

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| --- | --- | --- | --- |
| Name of Master/Auditor: |  |  |  |
| Signature: |  |  |  |
| Date: |  |  |  |