

OI-BN01 Verify operations of internal communication and control systems

CFR	SOLAS
<p><u>46 CFR 129.560</u> Engine-order telegraphs - sends you to 113.35 Engine-order telegraph systems <u>46 CFR 113.35</u> Engine-order telegraph systems - Indicator located in engine room, transmitter located on bridge - Vsl with more than one engine, each engine has system - Exception – small vsl does not need if no means of normal engine control from engine room - Audible signal at each station that sounds when not matched - Alarm on bridge for loss of power and has means to reduce volume to 50%</p>	<p><u>SOLAS 14 II-1/37</u> Comms between bridge and engine room - At least two independent means for communicating orders from bridge to engine room control, one shall be engine-order telegraph</p>
<p><u>46 CFR 130.440</u> Communications system - Comm system to summon a crew member to machinery space 1. Alarm dedicated to this purpose, sounds in crew accommodations and normally manned spaces, and operable from pilothouse; or 2. Telephone operated from pilothouse that calls master/engineer stateroom, engine room, and crew accommodations that is sound powered or powered by emergency switchboard or own battery w/charger</p>	<p><u>SOLAS 14 III/6.4.1</u> Communications - Emergency means (fixed or portable equipment) shall be provided for two-way comms between emergency control stations, must/embarcation stations, and strategic positions</p>
<p><u>46 CFR 113.50</u> Public address system - Sufficient number of loudspeakers throughout vsl - Minimum sound level: interior 75 dB (+20 dB above background noise) exterior 80dB (+ 15 dB) - Loudspeakers must not have local volume control/cutout switch</p>	<p><u>SOLAS 14 III/6.4.2</u> Communications - LSA Code 7.2.2 - Same as CFR</p> <p><u>SOLAS 14 II-1/49</u> Control of propulsion machinery from bridge - Under all sailing conditions, including manoeuvring, the speed, direction of thrust, and pitch of prop shall be controlled from bridge - Main propulsion machinery shall be provided with emergency stopping device on bridge which is independent of control system - Indicators on bridge for; prop speed and direction of rotation (pitch position)</p>

46 CFR 130.430 Pilothouse control

- In pilothouse controls to start fire pump, charge fire main, and monitor pressure

46 CFR 129.540 Remote stopping systems, 100 GT or more

- Exceptions to 111.103
 - Each propulsion engine, in pilothouse
 - Each discharge pump for bilge slop or dirty oil, at deck discharge
 - Each powered ventilation system, outside space served
 - Each fuel oil pump, outside space with pump
 - Each cargo transfer pump for combustible/flam liquid, at each transfer station control

OI-BN02 Inspect radar

CFR	SOLAS
46 CFR 130.310 Radar - Each vsl 100 GT or more must be fitted with a general marine radar in pilothouse	SOLAS 14 V/19 Nav systems and equipment 19.2.3.2 - Each vsl 300 GT or more be fitted with 9 GHz radar 19.2.7.1 - 3000 GT or more a 3 GHz or second 9 GHz radar independent of above requirement (meaning a second radar)
33 CFR 164.38 Automatic radar plotting aids - applies to 10,000 GT and above	Same

OI-BN03 Inspect magnetic compass

CFR	SOLAS
46 CFR 130.340 Compass - Each vsl fitted with compass - must be illuminated unless daytime ops only 33 CFR 164.35 Equipment: all vessels - deviation table	SOLAS 14 V/19 Nav systems and equipment 19.2.1.1 - Properly adjusted standard magnetic compass 19.2.1.3 - Means of correcting heading and bearing (deviation table)
No spare needed	19.2.2.1 - Vsl 150 GT or more be fitted with a spare magnetic compass

OI-BN04 Inspect gyrocompass

CFR	SOLAS
<u>33 CFR 164.35</u> - Applies to vsl greater than 1600 GT - Must have gyrocompass	<u>SOLAS 14 V/19.2.5</u> - All ships 500 GT and up shall have a gyrocompass - Gyro or repeater at main steering station (clearly readable) - If emergency steering position, repeater or other means to supply heading info
	<u>SOLAS 14/II-1/43.2.4.2</u> - Capable of 18 hours of operation under emergency power
CFR Sub I	
<u>46 CFR 96.17</u> - All mechanically propelled vsls in ocean or coastwise service must be with a gyrocompass - Must have illuminated repeater at main steering stand unless gyrocompass is illuminated and at main steering	

OI-BN05 Inspect depth sounding / recording equipment

CFR	SOLAS
<p><u>33 CFR 164.35</u> - Applies to vsl 1600 GT or greater - Must have an echo depth sounding device</p>	<p><u>SOLAS 14 V/19.2.3.1</u> - All ships 300 GT and up shall be fitted with: - Echo-sounding device, or; - Other electronic means to measure and display water depth</p>
<p>CFR Sub I</p>	
<p><u>46 CFR 96.27</u> - All mechanically propelled vsls 500 GT and over in ocean or coastwise service must be fitted with: - Efficient electronic sounding apparatus</p>	

OI-BN06 Inspect electronic position-fixing device (satellite navigation (GPS) receiver)

CFR	SOLAS
<u>33 CFR 164.46</u> - Each vsl must be equipped with an electronic position-fixing device	<u>SOLAS 14 V/19.2.1.6</u> - All ships shall have a receiver for a global navigation satellite system
<u>33 CFR 164.41(a)</u> Electronic position-fixing devices - Applies to vsl 1600 GT or greater	

OI-BN07 Verify operation of Automated Identification System (AIS)

CFR	SOLAS
<p><u>33 CFR 164.46</u></p> <ul style="list-style-type: none">- AIS Class A device required on:<ul style="list-style-type: none">- Self propelled vsl 65 feet or more, engaged in commercial Service- AIS must be maintained in effective operating condition;<ul style="list-style-type: none">- ability to reinitialize- ability to access AIS info from primary conning position- accurate broadcast of MMSI- accurate input and upkeep of all AIS data fields- continual operation of AIS at all times underway, at anchor, and if moored at least 15 minutes prior to departure	<p><u>SOLAS 14 V/19.2.4</u></p> <ul style="list-style-type: none">- All ships 300 GT and up on international voyage and cargo ships 500 GT and up not on international voyage be fitted:<ul style="list-style-type: none">- AIS than:<ul style="list-style-type: none">- automatically provides ship's identity, type, position, course, speed, navigational status, and other safety info- receive such info- monitor and track ships- exchange data with shore based facilities <p><u>SOLAS 14 II-1/43.2.4</u></p> <ul style="list-style-type: none">- Capable of 18 hours of operation under emergency power

OI-BN08 Verify Long Range Identification and Tracking Information (LRIT) equipment

CFR	SOLAS
<p><u>33 CFR 169.200</u></p> <ul style="list-style-type: none"> • Applies to following on international voyage: <ul style="list-style-type: none"> ◦ passenger ship ◦ cargo ship 300 GT or more ◦ MODU underway • transmit info at 6 hour intervals • Exempt: <ul style="list-style-type: none"> ◦ fitted with AIS and operates within 20 NM of US baseline 	<p><u>SOLAS 14 V/19-1</u></p> <ul style="list-style-type: none"> • 33 CFR implements SOLAS regs • Transmit the following info: <ul style="list-style-type: none"> ◦ identity of ship ◦ position of ship ◦ date and time of position • Exempt: <ul style="list-style-type: none"> ◦ fitted with AIS and operate exclusively within Sea Area A1
<ul style="list-style-type: none"> • CG Recognized Application Service Provider (ASP): <ul style="list-style-type: none"> ◦ Pole Star • Request conformance test through Navcen website 	<p>MSC.1/Circ.1307 – Conformance Test</p>

OI-BN09 Inspect Global Maritime Distress and Safety System (GMDSS) equipment

CFR	SOLAS
<p data-bbox="149 321 1045 389"><u>47 CFR 80.1065</u> Subpart W, GMDSS - Applies to cargo ships 300 GT and up</p> <p data-bbox="149 430 1045 544"><u>80.1067</u> Inspection of station</p> <ul data-bbox="199 462 1045 544" style="list-style-type: none">• Equipment inspected every 12 months<ul data-bbox="252 503 1045 544" style="list-style-type: none">◦ tech with GMDSS Radio Maintainer's License <p data-bbox="149 576 1045 690"><u>80.1073</u> Radio operator requirements</p> <ul data-bbox="199 617 1045 690" style="list-style-type: none">• at least two persons holding GMDSS Radio Operator's License <p data-bbox="149 722 1045 1039"><u>80.1105</u> Maintenance requirements</p> <ul data-bbox="199 763 1045 1039" style="list-style-type: none">• duplication of equipment• shore based maintenance• at sea maintenance<ul data-bbox="252 885 1045 966" style="list-style-type: none">◦ sea area A1 and A2 pick one above◦ sea area A3 and A4 pick two above• instruction and maintenance manuals maintained onboard; (tools, spare parts, test equip. if at sea maint) <p data-bbox="149 1071 1045 1226"><u>80.1099</u> Ship sources of energy (reserve source)</p> <ul data-bbox="199 1112 1045 1226" style="list-style-type: none">• In addition to main and emergency power<ul data-bbox="252 1153 1045 1226" style="list-style-type: none">• 1 hour with an emergency source of power• 6 hours without emergency power	<p data-bbox="1045 321 1942 389"><u>SOLAS 14 IV</u> Radiocommunications - Reads the same as CFR</p>

OI-BN10 Inspect radiotelephone equipment

CFR	SOLAS
<p data-bbox="149 311 478 349"><u>47 CFR 80.1001</u> (Sub U)</p> <ul data-bbox="205 358 966 628" style="list-style-type: none"><li data-bbox="205 358 394 391">• Applies to:<ul data-bbox="254 399 966 508" style="list-style-type: none"><li data-bbox="254 399 808 431">◦ Power driven vsl 20 m (65.6 ft) or more<li data-bbox="254 435 966 467">◦ Vsl 100 GT and up carrying one or more passengers<li data-bbox="254 470 678 503">◦ Tow vsl 7.8 m (26 ft) or more<li data-bbox="205 511 886 544">• Inspected and issued Bridge-to-Bridge Certificate<li data-bbox="205 547 621 579">• Capable of channels 13, 22A<ul data-bbox="254 587 672 620" style="list-style-type: none"><li data-bbox="254 587 672 620">◦ 67 in lower Mississippi areas	<p data-bbox="1054 311 1203 349"><u>SOLAS 14</u></p>

OI-BN11 Inspect steering system controls at operating station

CFR Sub L	SOLAS
<p><u>46 CFR 131.845</u> Instructions for shift of steering gear</p> <ul style="list-style-type: none"> - Instructions, including diagrams for a shift in steering gear and shift to alternate station must be water-resistant and posted at each station (including steering-engine room) - Must indicate each clutch pin to be in or out and each valve to be open or closed - Must specify that each steering wheel/lever and each rudder must be amidships before any shift - Each clutch, gear, wheel, lever, valve, or switch used during shift must be numbered or lettered so recognizable at a reasonable distance <p><u>46 CFR 131.850</u> Rudder orders</p> <ul style="list-style-type: none"> - Each steering station must have in the helmsman's line of sight a notice to indicate the direction in which to turn the wheel/lever for right/left rudder <p><u>46 CFR 130.130</u> Steering on OSV less than 100 GT</p> <ul style="list-style-type: none"> - Rudder move 35 deg to 30 deg n 28 sec at max service speed - Light for operation of power pumps - Rudder angle indicator - No aux steering if multiple screw <p><u>46 CFR 130.140</u> Steering on OSV 100 GT or more</p> <ul style="list-style-type: none"> - Meet Sub F/J or have hydraulic-helm steering system - 2 steering pumps - Dual hydraulic cylinders (able isolate so 1 cylinder control rudder) - Alarms in Sub F 	<p><u>SOLAS 14 II-1/29</u> Steering gear</p> <ul style="list-style-type: none"> - Same as Sub F except: - Alternative power supply duration: <ul style="list-style-type: none"> o 10,000 GT and more – 30 minutes o Any other ship – 10 minutes

CFR Sub I → Sub F	CFR Sub I → Sub F
<p><u>46 CFR 58.25-10</u> Main and aux steering gear</p> <ul style="list-style-type: none"> - Main steering gear - rudder move 35 deg to 30 deg in 28 sec at deepest loadline draft and max service speed - Aux steering gear – rudder move 15 deg to 15 deg in 60 sec at deepest loadline and at one-half max service speed or 7 knots, whichever is greater <ul style="list-style-type: none"> o No aux steering needed if main steering has two identical power units - Main steering gear arranged so single failure of piping can be isolated <p><u>46 CFR 58.25-15</u> Voice comms</p> <ul style="list-style-type: none"> - Each vsl must be provided with sound powered phone system between pilothouse and steering gear compartment <p><u>46 CFR 58.25-25</u> Indicating and alarm systems</p> <ul style="list-style-type: none"> - Rudder angle indicator at main steering station and in steering gear compartment - Vsl 1600 GT and more must have a steering failure alarm in pilothouse - Audible and visual alarm in pilothouse upon: <ul style="list-style-type: none"> o Failure of electric power to control system o Failure of power to power unit o Low oil level in reservoir - Audible and visual alarm in machinery space upon: <ul style="list-style-type: none"> o Failure of any phase in three phase power supply o Overload of any steering gear motor o Low oil level in reservoir - Each power motor in main and aux steering gear must have a “motor running” indicator light in pilothouse and mach space 	<p><u>46 CFR 58.25-65</u> Feeder circuits</p> <ul style="list-style-type: none"> - Vsl on oceans, coastwise, GL route 500 GT or more, or 1600 GT or more on any route: <ul style="list-style-type: none"> o One or more feeder circuits connected to emergency switchboard or alternative power source that: <ul style="list-style-type: none"> ▪ Automatically available within 45 seconds ▪ Comes from independent source in steering gear compartment ▪ Used for no other purpose ▪ Capacity for 30 minutes continuous operation to move rudder 15 deg to 15 deg in 60 seconds at half speed or 7 knots <p><u>46 CFR 58.25-70</u> Steering gear control systems</p> <ul style="list-style-type: none"> - One switch to activate power to steering system - Transfer control switch passes through “off” - Power disconnect switch in steering gear compartment

46 CFR 58.25-30 Automatic restart

- Each control system for main and aux steering system must restart when electrical power is restored after failure

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OI-BN12 Inspect navigation aids

CFR Sub L	SOLAS
<p><u>46 CFR 129.430</u> Navigational lighting</p> <ul style="list-style-type: none">- Less than 100 GT and less than 65 ft must comply with nav rules- More than 100 GT or more than 65 ft must comply with nav rules and 111.75-17(d) →nav lights have to be certified <p>- Over 6000 ITC (500 GRT) need to comply fully with Sub J</p> <p><u>33 CFR 83</u> Lights and Shapes</p> <ul style="list-style-type: none">- Three balls, one diamond	<p><u>SOLAS 14 V/19.2.2.2</u></p> <ul style="list-style-type: none">- All ships 150 GT and upwards shall be fitted with a daylight signaling lamp that is on emergency power
CFR Sub J	
<p><u>46 CFR 111.75-17</u> Navigational lights</p> <ul style="list-style-type: none">- Vsl with final emergency power source must have nav light panel connected- Nav light indicator panel, must visually and audibly sound when light fails- Dual light source on side, masthead, and stern lights- Nav lights certified <p><u>46 CFR 111.75-18</u> Signaling lights</p> <ul style="list-style-type: none">- Vsl over 150 GT on international voyage must have a daylight signaling lamp on emergency power	

OI-BN13 Inspect sound signaling devices

33 CFR	
<u>33 CFR 83.33</u> Equipment for sound signals <ul style="list-style-type: none">• whistle – vsl 12 m (39 ft) or more in length• bell – vsl 20 m (65 ft) or more in length, plus above• gong – vsl 100 m (328 ft) or more in length, plus above	

OI-BN14 Examine charts and publications

CFR Sub L	SOLAS
<p><u>46 CFR 130.330</u> Charts and nautical pubs - Vsl must carry adequate and up-to-date</p> <ol style="list-style-type: none"> 1. Charts 2. US Coast Pilot 3. CG Light List 4. Tide tables 5. Notice to Mariners 6. Current tables 	<p><u>SOLAS 14 V/19.2.1.4</u> - Same as CFR - See also SOLAS 14 V/27</p> <p>SOLAS 14 V/21 - International Code of Signals and IAMSAR Manual</p>
<p><u>33 CFR 83.01</u> Nav Rules - Vsl 12 meters or more shall carry a copy of Nav Rules</p>	

OI-CD05 Review Merchant Mariner Credentials (MMCs), Medical Certificates, & Transportation Worker ID Credential (TWIC)

CFR Sub L	USC
<p><u>46 CFR 131.920</u> Level of manning</p> <ul style="list-style-type: none"> • each vsl must carry personnel required by the COI, as determined by the OCMI, based on Part 15 <p><u>46 CFR 15.515</u> Compliance with COI</p> <ul style="list-style-type: none"> • no vsl may be navigated unless it has in its service and onboard the crew complement required by the COI <ul style="list-style-type: none"> ◦ 15.725 – sailing short • no vsl will be navigated unless it is under direction and control of an appropriate licensed individual <p><u>46 CFR 131.955</u> Display of MMC</p> <ul style="list-style-type: none"> • Each officer on a vsl must conspicuously display license <ul style="list-style-type: none"> ◦ 46 USC 7110 – display within 48 hours of employment <p><u>46 CFR 15.815</u> Radar observers</p> <ul style="list-style-type: none"> • vsl 300 GRT and above which are radar equipped must hold radar observer endorsement <p><u>46 CFR 15.817</u> GMDSS radio operator</p> <ul style="list-style-type: none"> • deck officers, including master, valid STCW endorsement • 47 CFR 80.1073 – ships must carry at least 2 operators <p><u>46 CFR 10.203</u> Requirement to hold a TWIC and MMC</p> <ul style="list-style-type: none"> • failure to obtain or hold a valid TWIC serves as basis for denial of application of original, renewal, new endorsement, duplicate, or raise of grade of MMC <ul style="list-style-type: none"> ◦ may serve as basis of suspension and revocation • TWIC must be retained and serves as mariners primary identification document 	<p><u>46 USC 8104</u> Watches</p> <ul style="list-style-type: none"> • 8104(d) – on a merchant vessel of more than 100 GT the licensed individual shall be divided, when at sea, into at least 3 watches. • 8104(g) – on a towing vsl, OSV, or barge, that is engaged on a voyage of less than 600 miles, the licensed individuals may be divided, when at sea, into at least 2 watches

46 CFR 15.401 Employment and service

- may not employ an individual in a position required to hold an MMC unless there is a current medical certificate
 - STCW – 2 years
 - all others – 5 years

46 CFR 15.820 Chief engineer

- must be an individual holding a MMC as chief engineer:
 - OSV more than 200 GRT
 - seagoing or Great Lakes vsl of 200 GRT and over
 - inland vsl of 300 GRT or more
- vsl subject to STCW, must also hold an STCW endorsement as chief engineer with propulsion power

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OI-CD09 Examine muster lists and emergency instructions

CFR Sub L	SOLAS
<p><u>46 CFR 133.80</u> Emergency instructions</p> <ul style="list-style-type: none"> • Illustrations/instructions in English (and other language if needed) • must be conspicuously displayed at each muster station and spaces where offshore workers are carried showing: <ul style="list-style-type: none"> ○ Fire and emergency signal ○ Muster station ○ Essential actions must take in an emergency ○ Location of life jackets ○ Method of donning life jackets <p><u>46 CFR 133.90</u> Operating instructions</p> <ul style="list-style-type: none"> • Must have signs displayed in vicinity of each survival craft and craft launch controls showing: <ul style="list-style-type: none"> ○ Illustrate purpose of controls ○ Illustrate procedures for operating launching device ○ Instructions on warnings ○ Easily seen under emergency lighting conditions ○ Display symbols IAW IMO Res A.760 	<p><u>SOLAS 14 III/8</u> Muster list and emergency instructions</p> <ul style="list-style-type: none"> • Same as CFR, but specifically calls out nav bridge, engine room, and accommodation spaces for display <p><u>SOLAS 14 III/37</u> Muster list and emergency instructions</p> <ul style="list-style-type: none"> • Muster list specify details of the general emerg alarm and public address system and action to be taken when sounded. • Muster list show duties assigned including: <ul style="list-style-type: none"> ○ Closing of watertight doors, fire doors, valves, etc ○ Equipping of survival craft and other lifesaving appliances ○ Prep and launch of survival craft ○ General prep of other lifesaving appliances ○ Muster of passengers ○ Use of comms equipment ○ Manning of fire parties ○ Special duties assign with fire fighting equipment • Specify which officers assigned maintenance duties • Specify substitutions for key persons if disabled
<p>CFR Sub I → Sub W</p>	
<p><u>46 CFR 199.80</u> Muster list and emergency instructions</p> <ul style="list-style-type: none"> • Same as SOLAS 	

OI-CD10 Review International Safety Management, Document of Compliance (DOC) and Safety Management Certificate (SMC)

CFR	SOLAS
<p><u>33 CFR 96.330</u> Document of Compliance</p> <ul style="list-style-type: none"> • Issued to company • Applicability – company owns a US vsl engaged on foreign voyages: <ul style="list-style-type: none"> ○ Carrying more than 12 passengers ○ Tanker, bulk freight vsl, freight vsl, or self-propelled MODU of 500 GT or more • Can list multiple vsl types depending on what company owns • Vsl carry a valid copy of DOC onboard • Valid for 5 years <ul style="list-style-type: none"> ○ Verified annually ○ Can be revoked if annual verification not completed or major non-conformities are found <p><u>33 CFR 96.340</u> Safety Management Certificate</p> <ul style="list-style-type: none"> • Issued to vessel • Applicability – same as above • Vsl carry certificate onboard • Valid for 5 years <ul style="list-style-type: none"> ○ Verified at intermediate between 2nd and 3rd year ○ Can be revoked if annual verification not completed or major non-conformities are found ○ Invalid if DOC is revoked 	<p><u>SOLAS 14 IX</u> Management for the safe operation of ships</p> <p>Regulation 2</p> <ul style="list-style-type: none"> • Applicability – passenger ships <ul style="list-style-type: none"> ○ Oil tankers, chem tankers, gas carriers, bulk carriers, and high speed cargo craft 500 GT or more ○ Other cargo ships and MODU 500 GT or more <p>Regulation 3</p> <ul style="list-style-type: none"> • Company and ship shall comply with requirements of International Safety Management (ISM) Code <p>Regulation 4</p> <ul style="list-style-type: none"> • DOC issued to company • SMC issued to ship <p>ISM Code 13.13</p> <ul style="list-style-type: none"> • If renewal verification has been completed but a new SMC can not be issued/placed onboard, existing SMC can be endorsed to extend not exceeding five months from expiry date

OI-CD11 Review Classification Society document/certificates

CFR Sub A	SOLAS
<p><u>46 CFR 8.400</u> Alternate Compliance Program</p> <ul style="list-style-type: none"> • for a society to participate in ACP, they must develop a U.S. Supplement to their rules that must be accepted by CG • will receive authorization to participate in ACP after CG has delegated the authority to issue the following certificates: <ul style="list-style-type: none"> ◦ International Load Line ◦ International Tonnage Certificate ◦ Cargo Ship Safety Construction Certificate ◦ Cargo Ship Safety Equipment Certificate ◦ International Oil Pollution Prevention Certificate, and ◦ must have performed a delegated function related to general vsl safety assessment (means issuance of CSS Construction or CSS Equipment Cert) for a two year period 	<p><u>SOLAS 14 I/6</u></p> <ul style="list-style-type: none"> • Administration (Coast Guard) may entrust the inspections and surveys either to surveyors nominated for the purpose or to organizations recognized by it (means ACP)
<p>NVIC 10-82 - Acceptance of Plan Review and Inspection Tasks Performed by the American Bureau of Shipping (ABS) for New Construction or Major Modification of U. S. Flag Vessels</p> <p>NVIC 02-95 – The Alternate Compliance Program (ACP)</p>	

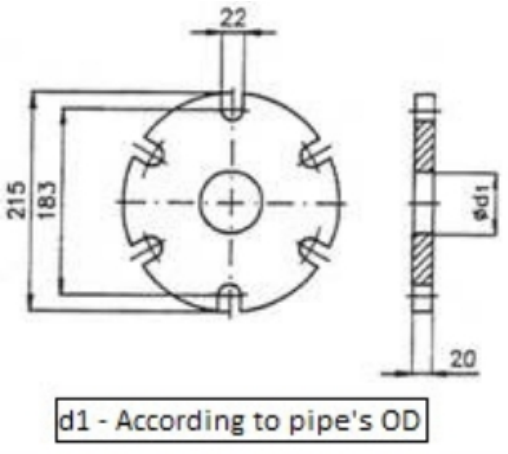
OI-CD12 Review International Anti-Fouling System (IAFS) certificate with Record of Anti-Fouling System

International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS), 2001	IMO Resolution MEPC.195(61) 2010 Guidelines for Survey and Certification of Anti-Fouling Systems on Ships
Applies to ships 400 GT and above on international voyage Ships 24 m (79 ft) or more but less than 400 GT on international voyage must carry a Declaration on Anti-Fouling Systems signed by the owner. Must be accompanied by documentation (receipt/invoice)	<ul style="list-style-type: none">• Initial survey before ship put into service• Survey whenever anti-fouling system is changed or replaced<ul style="list-style-type: none">◦ repairs of 25% or more of anti-fouling system should be considered a change/replacement

OI-CD15 Review Cargo Ship Safety Radio Certificate (CSSRC) and Form R (Record of Equipment)

CFR	SOLAS
<u>46 CFR 2.01-25(a)(4)</u> SOLAS <ul style="list-style-type: none">FCC will issue Cargo Ship Safety Radio Certificate	<u>SOLAS 14 I/9</u> <ul style="list-style-type: none">Certificate can be issued not exceeding five years<ul style="list-style-type: none">Typically we see one year certs

OI-CD17 Review International Oil Pollution Prevention Certificate (IOPP) and From A (Supplement)

CFR	MARPOL
<p><u>33 CFR 151.17</u> Surveys</p> <ul style="list-style-type: none"> • window does not align with MARPOL (2 months for annuals, 6 months for intermediate) <p><u>33 CFR 151.19</u> IOPP Certificate</p> <ul style="list-style-type: none"> • ships 400 GT and above that engage in voyages to ports or off-shore terminals under the jurisdiction of other parties to MARPOL must have a valid IOPP onboard • issued by CG or recognized Class Society • Supplement must remain attached to Certificate. If Supplement is changed, a new IOPP is required • valid for 5 years <p><u>33 CFR 155.430</u> Standard discharge connection</p> <ul style="list-style-type: none"> • all oceangoing ships 400 GT and above must have a standard shore connection to discharge oily mixtures to reception facilities. See CFR for specs (numbers in mm)  <p>d1 - According to pipe's OD</p>	<p><u>MARPOL I/9</u> Form of certificate</p> <ul style="list-style-type: none"> • follow model in appendix II of Annex I and in at least English, French, or Spanish <p><u>MARPOL I/6</u> Surveys</p> <ul style="list-style-type: none"> • Initial – before ship is put into service • Renewal – not exceeding 5 years • Intermediate – within 3 months before/after the 2nd anniv. date • Annual – within 3 months before/after anniv. date <p><u>MARPOL I/12</u> Tanks for oil residues</p> <ul style="list-style-type: none"> • ships 400 GT and above shall be provided with a tank of adequate capacity to receive oil residues (sludge) which can not be dealt with otherwise <p><u>MARPOL I/13</u> Standard discharge connection</p> <ul style="list-style-type: none"> • same as CFR <p><u>MARPOL I/14</u> Oil filtering equipment</p> <ul style="list-style-type: none"> • ships 400 GT and above but less than 10000 GT shall be fitted with oil filtering equipment <ul style="list-style-type: none"> ◦ equipment shall be approved by Administration ◦ oily mixture discharge does not exceed 15 ppm • ship 10000 GT and above shall be fitted with oil filtering equipment <ul style="list-style-type: none"> ◦ comply with above, and ◦ alarm when 15 ppm level cannot be maintained ◦ automatically stops when 15 ppm is exceeded • ships less than 400 GT are not required to have oil filtering

	<p>equipment</p> <p><u>MARPOL I/16</u> Segregation of oil and water ballast and carriage of oil in forepeak tanks</p> <ul style="list-style-type: none">• ships 4000 GT and above other than oil tankers, no ballast water shall be carried in any oil fuel tank; except<ul style="list-style-type: none">◦ if carrying ballast water which is not a clean ballast in any oil fuel tank (because of carrying large quantities of oil fuel), such ballast shall be discharged to reception facilities for into sea with OWS.• Ships 400 GT and above, oil shall not be carried in a forepeak tank or a tank forward of the collision bulkhead

OI-CD18 Review International Air Pollution Prevention Certificate (IAPP) and Supplement

OI-PP04 Conduct an International Air Pollution Prevention (IAPP MARPOL Annex VI) Survey

CFR	MARPOL
<p><u>40 CFR 1043</u> Control of NOX, SOX, and PM emissions from marine engines and vsls subject to MARPOL</p> <ul style="list-style-type: none"> • exclusions for vsls that operate only domestically, see CFR 	<p><u>MARPOL VI/12</u> Ozone-depleting substances</p> <ul style="list-style-type: none"> • does not apply to permanently sealed equipment <ul style="list-style-type: none"> ◦ no refrigerant charging connections or potentially removable components • installations that contain ODS (other than HCFC's) shall be prohibited; <ul style="list-style-type: none"> ◦ 19 May 2005 • Installations that contain HCFC's shall be prohibited: <ul style="list-style-type: none"> ◦ 1 Jan 2020 • shall maintain a list of equipment containing ODS in the supplement • rechargeable systems that contain ODS shall maintain an ODS Record Book <ul style="list-style-type: none"> ◦ entries contain in mass (kg) of substance <ul style="list-style-type: none"> ▪ recharge (full or partial) ▪ repair or maintenance ▪ discharge or ODS (deliberate or non-deliberate) ▪ discharge of ODS to land based reception facility ▪ supply of ODS onboard
<p><u>CVC-WI-022</u> Implementation of compliance/enforcement policy for MARPOL Annex VI</p> <ul style="list-style-type: none"> • MI should ascertain the approved method utilized to comply with MARPOL (IAPP Supplement, sections 2.3 and 2.6) • when US flagged ship cannot purchase low sulfur fuel, notification made to cognizant COTP (fuel oil non availability report - FONAR) • MI encounter a ship with fuel sulfur content exceeding limits while operating in ECA <ul style="list-style-type: none"> ◦ if report submitted: verify notification made, review actions to attempt compliance, obtain copy of bunker delivery note ◦ if report not submitted: same as above, request Master submit a report, refer to CVC-WI-022 for deficiency and recommended actions 	<p><u>MARPOL VI/13</u> Nitrogen oxides (NOX)</p> <ul style="list-style-type: none"> • exhaust limits from ships engines (Tiers are ship build date) • applies to marine diesel engine with power output more than 130 kW (170 HP) <ul style="list-style-type: none"> ◦ does not apply to engine used solely for emergencies • Tier I – 1 Jan 2000 – 1 Jan 2011 least restrictive • Tier II – 1 Jan 2011 – 1 Jan 2016 ↓ • Tier III – 1 Jan 2016 most restrictive
<p><u>CG-CVC Policy Letter 09-01</u> Guidelines for ensuring compliance with Annex VI</p> <ul style="list-style-type: none"> • bunker samples – substantially consumed – 80% of each particular fuel delivery • under vsl control – CG interprets as “onboard the vsl” 	

MARPOL VI/16 Shipboard incineration

- incinerators shall be provided with manufacturers operating manual
- personnel operating shall be trained
- IMO Type Approval Certificate
- minimum operating temp of 850°C

MARPOL VI/14 Sulphur oxides (SOX) and particulate matter

- sulphur content of any fuel oil used onboard not exceed:
 - 4.50% m/m prior to 1 Jan 2000
 - 3.50% m/m on and after 1 Jan 2012
 - **0.50% m/m on and after 1 Jan 2020**
- within emission control area (Gulf of Mexico is an ECA)
 - 1.50% m/m prior to 1 July 2010
 - 1.00% m/m on and after 1 July 2010
 - **0.10% m/m on and after 1 Jan 2015**
- ships using both fuel types shall have a written procedure showing how the fuel changeover is done and shall be recorded

MARPOL VI/18 Fuel oil availability and quality

- details of fuel for combustion purposes delivered to and used onboard shall be recorded by means of a bunker delivery note
 - kept onboard and retained for 3 years
 - include: name and IMO no. of ship, port, date, name/address/phone of fuel supplier, product name, quantity in metric tonnes, density, sulphur content, declaration signed/certified by supplier that fuel conforms to regs
- note accompanied by a sample of fuel
 - sample sealed and signed by supplier and master/officer in charge of bunker operation
 - retained onboard until fuel is used, but in any case for a period not less than 12 months from delivery
 - MEPC.182(59) Guidelines for sampling of fuel
 - sample should not be less than 400 ml

ozone-depleting substances – ODS
hydrochlorofluorocarbons – HCFC

OI-CD19 Review Engine International Air Pollution Prevention (EIAPP) Certificate

CG-543 Policy Letter 09-01	MARPOL
<ul style="list-style-type: none"> • Applies to ships 400 GT and above engaged on international voyage with engines over 130 kW (175 HP) installed on vsl after 1 Jan 2000. • will accompany the IAPP • Issued by the EPA <ul style="list-style-type: none"> ◦ certificate obtained from engine manufacturer • Technical File <ul style="list-style-type: none"> ◦ approved by EPA ◦ one for each engine ◦ Record Book of Engine Parameters <ul style="list-style-type: none"> ▪ record engine adjustments, parameter changes ▪ component changes • EPA emission regulations <ul style="list-style-type: none"> ◦ 40 CFR 94 (Category 1, 2, and 3 engines) ◦ 40 CFR 1042 (Category 1 and 2 engines) 	<p><u>MARPOL VI/13</u> Nitrogen oxides (Nox)</p> <ul style="list-style-type: none"> • Applies to ships 400 GT and above engaged on international voyage with engines over 130 kW (175 HP) installed on vsl after 1 Jan 2000

OI-CD20 Verify compliance with Vessel General Permit (VGP)

CFR	SOLAS
<ul style="list-style-type: none">- Applies to vessels greater than 79 feet- Vsl greater than 300 GT submit Notice of Intent (NOI)- See EPA VGP and Policy Letter 11-01	<u>SOLAS 14</u>

OI-CD21 Review Certificate of Financial Responsibility (COFR)

CFR	
<u>33 CFR 138</u> Emergency instructions <ul style="list-style-type: none">• Applies to:<ul style="list-style-type: none">◦ any tank vsl◦ any other vsl 300 GT or more• Valid for 3 years• Insurance in case of incident	

OI-CD22 Review Tonnage Certificate (International (ITC) / Domestic)

CFR	ICTM
<p><u>46 CFR 69.11</u> Measurement system</p> <ul style="list-style-type: none"> • Convention Measurement System (Subpart B) <ul style="list-style-type: none"> ○ International, ITC assigned • Standard Regulatory Measurement System (Subpart C) <ul style="list-style-type: none"> ○ Domestic, GRT assigned • Dual Regulatory Measurement System (Subpart D) <ul style="list-style-type: none"> ○ Domestic, both ITC and GRT assigned • Simplified Regulatory Measurement System (Subpart E) <ul style="list-style-type: none"> ○ Domestic (vsl under 79 ft, vsl any length non-self-propelled, vsl only for pleasure) <p><u>46 CFR 69.69</u> Tonnage certificates</p> <ul style="list-style-type: none"> • International Tonnage Certificate issued if; <ul style="list-style-type: none"> ○ measured under Subpart B and ○ vsl is 79' or more in length and will engage on a foreign voyage ○ Must maintain International Cert onboard • US Tonnage Certificate issued if; <ul style="list-style-type: none"> ○ International Cert is not issued under Subpart B and ○ Must also indicate vsl measurement under any other Subpart ○ No requirement to maintain US Cert onboard 	<p>International Convention on Tonnage Measurement of Ships</p> <ul style="list-style-type: none"> • The gross tonnage is a function of the moulded volume of all enclosed spaces of the ship. The net tonnage is produced by a formula which is a function of the moulded volume of all cargo spaces of the ship.
<p>NVIC 11-93</p>	
<p>Applicability of Tonnage Measurement Systems to US Flag Vessels</p> <ul style="list-style-type: none"> • Substantially altered – results in an increase or decrease of more than 5% in tonnage 	

OI-CD23, 24, 25 FCC Bridge-to-Bridge, Station License, Safety Radiotelephony Certificates

CFR	SOLAS
<p><u>47 CFR 80</u> <u>Station License</u> - Applies to:</p> <ul style="list-style-type: none"> • Cargo ships over 300 GT on open seas • Carry more than 6 passengers • Ships over 20 meters (65 feet) in length • Ships more than 100 GT that carry at least 1 passenger 	<p><u>SOLAS 14</u></p>
<p><u>Bridge-to-Bridge Certificate</u></p> <ul style="list-style-type: none"> • Ships over 20 meters (65 feet) in length • Ships more than 100 GT that carry at least 1 passenger 	
<p><u>Safety Radiotelephony Certificate</u></p> <ul style="list-style-type: none"> • Carry more than 6 passengers 	

OI-CD26 Review International Energy Efficiency (IEE) Certificate and Record of Construction

CVC Policy Letter 13-02	MARPOL
<p><u>MARPOL Annex VI IEE Certificate implementation guidance</u></p> <ul style="list-style-type: none"> • major conversion – means conversion of a ship: <ul style="list-style-type: none"> ◦ which substantially alters the dimensions, carrying capacity, or engine power of the ship ◦ which changes the type of ship ◦ intent of which, in the opinion of the Administration, is substantially to prolong the life of the ship ◦ which otherwise so alters the ship that, if it were a new ship, it would become subject to current regulations ◦ which substantially alters the energy efficiency of the ship and includes any mods that could cause the ship to exceed the required EEDI • SEEMP not approved by CG or RO <ul style="list-style-type: none"> ◦ must follow guidelines in MEPC.282(70) (example parts below) ◦ Part 1: ship management plan to improve energy efficiency <ul style="list-style-type: none"> ▪ fuel efficient operations - improved voyage planning, weather routing, speed optimization ▪ optimized ship handling - optimum trim, optimum ballast, optimum use of autopilot, hull maintenance ◦ Part 2: ship fuel oil consumption data collection plan 	<p><u>MARPOL VI/6.4</u> International Energy Efficiency Certificate</p> <ul style="list-style-type: none"> • applies to any ship 400 GT and above • valid for life of the ship, except; <ul style="list-style-type: none"> ◦ ship is withdrawn from service or a new certificate is issued following a major conversion ◦ transfer of the ship to flag of another State <p>MARPOL VI/19 Application</p> <ul style="list-style-type: none"> • does not apply to ships which have non-conventional propulsion (diesel-electric, turbine, hybrid) <p><u>MARPOL VI/20</u> Attained Energy Efficiency Design Index (EEDI)</p> <ul style="list-style-type: none"> • attained EEDI calculated for: <ul style="list-style-type: none"> ◦ each new ship ◦ each new ship which has undergone a major conversion ◦ each new or existing ship which has undergone a major conversion so extensive that it is regarded as a new ship and falls into ship type: bulk carrier, ro-ro passenger ship, LNG carrier, cruise passenger ship ◦ attained EEDI shall be specific to each ship and shall indicate the estimated performance of the ship in terms of energy efficiency ◦ be accompanied by the EEDI technical file that contains calculation information <p><u>MARPOL VI/21</u> Required EEDI</p> <ul style="list-style-type: none"> • required EEDI for each: <ul style="list-style-type: none"> ◦ new ship ◦ new ship which has undergone a major conversion

	<ul style="list-style-type: none">○ each new or existing ship which has undergone a major conversion so extensive that it is regarded as a new ship and falls into ship type: bulk carrier, combination carrier, ro-ro cargo ship, ro-ro passenger ship, LNG carrier, cruise passenger ship <p><u>MARPOL VI/22</u> Ship Energy Efficiency Management Plan SEEMP</p> <ul style="list-style-type: none">• each ship shall keep onboard a ship specific SEEMP<ul style="list-style-type: none">○ may form part of ship's SMS

OI-CD27 Review Statement of Voluntary Compliance, MARPOL Annex IV (Sewage)

<p>NVIC 01-09</p>		
<ul style="list-style-type: none"> • United States is not party to MARPOL Annex IV • Statement of Voluntary Compliance (SOVC) (CG-6047A) <ul style="list-style-type: none"> ◦ issued by CG or Authorized Class Society ◦ valid for 5 years ◦ vsl not issued an International Sewage Pollution Prevention Certificate (ISPPC) 	<p>MARPOL Type</p>	<p>USCG Type</p>
	<p>Sewage treatment plant</p>	<p>Type I and II MSDs</p>
	<p>Sewage comminuting and disinfecting system with holding tank</p>	<p>Type II MSD with storage tank</p>
	<p>Sewage holding tank</p>	<p>Type III MSD</p>

OI-CS01 Inspect liquid cargo transfer system

CFR Sub L	SOLAS
<p><u>46 CFR 129.520</u> Hazardous areas</p> <ul style="list-style-type: none"> • electrical equipment must be certified safe if installed in: <ul style="list-style-type: none"> ◦ within 10 ft of vent, pump rooms, hose storage space <p><u>46 CFR 129.540</u> Remote stopping systems, 100 GT or more</p> <ul style="list-style-type: none"> • following are substitutions to 111.103 <ul style="list-style-type: none"> ◦ each propulsion unit, in the pilothouse ◦ each discharge pump for bilge slop / dirty oil, at deck discharge ◦ each powered vent system, outside the space ventilated ◦ each fuel-oil pump, outside the space with pump ◦ each cargo transfer pump for combustible/flammable liquid, at each transfer control station 	<p><u>SOLAS 14</u></p>
<p><u>46 CFR 58.01-25</u> Means of stopping machinery</p> <ul style="list-style-type: none"> • machinery driving fuel-oil transfer pumps, fuel-oil unit and service pumps must be fitted with remote controls from outside the space <ul style="list-style-type: none"> ◦ protected against accidental operation and marked 	
<p><u>33 CFR 155.700</u> Transfer procedures (including piping diagram) at transfer station</p>	

OI-CS02 Examine portable tanks

CFR Sub L	Tank Types
<p><u>46 CFR 125.110</u></p> <ul style="list-style-type: none"> OSV may carry hazmat in portable tanks, must comply with 46 CFR 64 and 98.30. Portable tank may be filled or discharged aboard the vsl if so endorsed on COI <p><u>46 CFR 125.130</u> Carriage of packaged hazmat</p> <ul style="list-style-type: none"> OSV may carry hazmat in portable tanks, if prepared, loaded, and stowed, must comply with 49 CFR 171-179 <p><u>46 CFR 98.30-12</u> Stowage of portable tanks</p> <ul style="list-style-type: none"> Stowed on open deck Not stow: <ul style="list-style-type: none"> In vicinity of another tank with incompatible product Unless all electrical equipment is explosion proof or intrinsically safe <ul style="list-style-type: none"> Area around tank – 10 ft horiz, 8 ft vert. <p><u>46 CFR 98.33-9</u> Stowage</p> <ul style="list-style-type: none"> Tank must be secured to the vsl by devices of sufficient strength and number to prevent moving in any direction <p><u>46 CFR 132.370</u> Additional fire fighting equipment</p> <ul style="list-style-type: none"> When carrying portable tanks, must comply with 46 CFR 98.30-37 and 98.30-39 (alternative fire extinguishing system) <p><u>46 CFR 98.30-37</u> Fire fighting requirements</p> <ul style="list-style-type: none"> Water pressure maintained in firemain Firehoses, fitted with CG approved combo nozzles, are attached to each hydrant in vicinity of portable tanks 	<p>Marine Portable Tank (MPT)</p> <ul style="list-style-type: none"> Inspected and stamped by the CG on or before 30 Sep 1992 Meets Part 98, Part 64, and ASME design standards Max gross weight of 55,000 lbs <p>IM Portable Tank (IM 101, IM 102)</p> <ul style="list-style-type: none"> Constructed and approved by PMSA (Pipeline Materials Safety Administration) and manufactured on or before 1 Jan 2003 Meets requirements for continued use under 49 CFR 173.32 Tested and inspected IAW 49 CFR 180 <p>IMO Portable Tank (IMO Type 1, IMO Type 2)</p> <ul style="list-style-type: none"> Constructed, tested, and inspected IAW IMDG Code

- Dry chemical fire extinguishers (semi portable)
 - Located to protect deck area 10 ft in any direction
 - CG approved
 - Capable of covering deck area without being moved
 - Deck area 500 sq ft or less – 2 or more extinguishers of 300 lbs or more total agent
 - Deck area more than 500 sq ft – 3 or more extinguishers of 450 lbs or more total agent

OI-CS03 Verify compliance of packaged hazardous materials

CFR Sub L	SOLAS
<p><u>46 CFR 125.130</u> Carriage of packaged hazmat</p> <ul style="list-style-type: none">• OSV may carry packaged hazmat or hazmat in portable tanks if materials are prepared, loaded, and stowed IAW:<ul style="list-style-type: none">◦ 49 CFR 171-179	<p><u>SOLAS 14</u></p>
<p><u>49 CFR 176</u> Carriage by vessel</p> <ul style="list-style-type: none">• 176.18 – National Cargo Bureau authorized to certify• 176.24 – Shipping papers must be prepared before acceptance<ul style="list-style-type: none">◦ maintain 3 years – hazardous waste◦ maintain 1 year – all other hazmat• 176.27 – Certificate<ul style="list-style-type: none">◦ can be on shipping papers or separate certificate◦ statement from shipper that shipment is in compliance• 176.63 – Stowage locations<ul style="list-style-type: none">◦ 49 CFR 172 had details<ul style="list-style-type: none">▪ “on deck and “under deck” stowage▪ check for segregation / compatibility of cargoes	

OI-CS04 Inspect remotely operated valves and controls

CFR Sub F	SOLAS
<p><u>46 CFR 56.50-1(g)</u></p> <ul style="list-style-type: none"> • power actuated valves required in an emergency in vsl machinery, maintain stability, bilge, and fire main systems must have manual means of opeation • remote valve controls not readily identifiable as to service must be fitted with nameplates 	<p><u>SOLAS 14</u></p>
<p><u>46 CFR 56.50-60</u> Systems containing oil</p> <ul style="list-style-type: none"> • valve actuators must be capable of closing the valve under all conditions, except physical failure (cable break, tube rupture) • fluid power actuated valves, other than those opened against spring pressure, must have energy storage system <ul style="list-style-type: none"> ○ sufficient capacity to cycle all connected valves from initial valve position to opposite position and return ○ local power actuator to open/close unless local manual opening will not prevent remote closure ○ positioning of the valve by local or remote actuators shall not void the ability of the other actuator to close the valve ○ provided with emergency manual operation to open/close <ul style="list-style-type: none"> ▪ if interfere with power operation lock out manual ▪ instructions posted at valve for emergency ops 	

OI-ES01 Inspect switchboards

CFR Sub L	SOLAS
<p><u>46 CFR 129.330</u> Distribution panels and switchboards</p> <ul style="list-style-type: none"> • location – dry as possible, accessible, ventilated, protected from falling debris / dripping, splashing water • totally enclosed • must have non-conductive handrails • must be fitted with dripshield • working space – 24 inches front, 18 inches rear <ul style="list-style-type: none"> ◦ less than 18 inches in rear prohibited access • non-conductive mats in front <ul style="list-style-type: none"> ◦ rear if accessible 	<p><u>SOLAS 14</u></p>
<p><u>46 CFR 129.320</u> Generators and motors</p> <ul style="list-style-type: none"> • generator rated at 50 volts or more, must have: <ul style="list-style-type: none"> ◦ voltmeter, ammeter, frequency (if A/C) 	
CFR Sub J	
<p><u>46 CFR 111.30</u> Switchboards</p> <ul style="list-style-type: none"> • location and installation = IEEE 45 (section 8.2) <ul style="list-style-type: none"> ◦ dry place away from water and oil pipes ◦ piping in vicinity, dripshields and joints welded ◦ table shows minimum working space (minimum 36 in) • if parallel operation, must have: <ul style="list-style-type: none"> ◦ speed control for generator prime mover ◦ wattmeter for each generator ◦ synchroscope / synchronizing lamp • ground detection system • ammeter, voltmeter, frequency <ul style="list-style-type: none"> ◦ selector switch to see each phase • voltage regulator 	

OI-ES02 Inspect main service and propulsion generators and prime movers

CFR Sub L	ABS Rules Part 4
<p><u>46 CFR 129.320</u> Generators and motors</p> <ul style="list-style-type: none"> • rated for 50°C (122°F) <ul style="list-style-type: none"> ◦ if ambient temp does not exceed 40°C (104°F), generator can be rated at 40°C ◦ 40°C rated generator in location above that, must be derated to 80% full load rating • generator rated at 50 volts or more, must have: <ul style="list-style-type: none"> ◦ voltmeter, ammeter, frequency (if A/C) • each generator has nameplate attached <p><u>46 CFR 129.323</u> Multiple generators</p> <ul style="list-style-type: none"> • can parallel = reverse power relay • no parallel = interlock device 	<p><u>ABS 4-2-1/7.5</u> Overspeed Protective Device</p> <p>In addition to the governor, each engine driving an electric generator and having a rated power of 220 kW (295 hp) and over is to be fitted with a separate overspeed device so adjusted that the speed cannot exceed the maximum rated speed by more than 15%. Provision is to be made for hand tripping.</p>
CFR Sub J	
<p><u>46 CFR 111.12</u> Generators</p> <ul style="list-style-type: none"> • prime movers <ul style="list-style-type: none"> ◦ overspeed device (max rated speed cannot exceed 15%) ◦ low lube oil shutdown • parallel operation must have reverse power relay 	

OI-ES03 Inspect emergency generator and prime mover

CFR Sub L	SOLAS
<p><u>46 CFR 112.05-5</u> Emergency power source</p> <ul style="list-style-type: none"> • cargo vsl less than 500 GT needs emergency lighting • located aft of collision bulkhead, outside of machinery casing, and above the uppermost continuous deck <ul style="list-style-type: none"> ◦ accessible from open deck ◦ only contain equipment associated with emergency power source ◦ emergency switchboard located in same space • full operation at max angle of heel from assumed damage in Sub S or 22.5°, whichever is greater; 10° trim 	<p><u>SOLAS 14 II-1/43</u> Emergency source of power, cargo ships</p> <ul style="list-style-type: none"> • location same as Sub J • operation same as Sub J • transfer time same as Sub J <p><u>SOLAS 14 II-1/43</u> Starting arrangements</p> <ul style="list-style-type: none"> • requires two sources, with three starts each <p><u>SOLAS 14 II-2/4.2.2.3.4</u> Probability of ignition</p> <ul style="list-style-type: none"> • emergency fuel shutoff outside of space if tank capacity is 500 liters (132 gal) or more and fuel can drain out from damage to a supply/return line (lines penetrate at bottom of tank) <ul style="list-style-type: none"> ◦ if lines penetrate tank top (pick up tube), do not need remote shutoff valves
CFR Sub J	
<p><u>46 CFR 112.05-5</u> Emergency power source</p> <ul style="list-style-type: none"> • cargo vsl 500 GT or more needs final emergency power source (automatically started generator), 18 hour operation • same generator requirements as ES02 <p><u>46 CFR 112.25</u> Emergency system with auto start genset</p> <ul style="list-style-type: none"> • when normal power source potential is reduced by 15-40%, emergency generator must start • when potential of emergency generator reaches 85-95%, emergency loads are transferred <ul style="list-style-type: none"> ◦ no more than 45 seconds after failure of normal source ◦ switch back to normal source can be auto or manual 	

46 CFR 112.50 Emergency diesel genset

- self-contained cooling system (typically air cooled radiator)
- automatic shutdowns:
 - loss lube oil pressure
 - overspeed
 - operation of fixed fire fighting
- audible alarms:
 - low lube oil pressure
 - high cooling water temp
- independent fuel supply (typically belly tank)
- battery start – at least six consecutive starts
 - second, separate source may provide three of the six starts
 - if there is a second source, main source only needs three starts

Sub I

46 CFR 97.15-30 Emergency lighting and power systems

- internal combustion gensets tested under load for 2 hours monthly
 - date, condition, and performance noted in vsl logbook

OI-ES04 Inspect battery installation

CFR Sub L	SOLAS
<p><u>46 CFR 129.353 / 356</u> Battery categories / installations</p> <ul style="list-style-type: none">• Large – charger output more than 2 kW<ul style="list-style-type: none">◦ located in a locker room or enclosed box◦ powered ventilation (111.15-10 - interlock)◦ electrical equipment in enclosure must be Class I, Div I, Group B and meet 111.105 (hazardous locations)• Small – charger output of 2 kW or less<ul style="list-style-type: none">◦ located in a well-ventilated space, protected from falling objects.◦ NOT located in closet, storeroom, or similar space	<p><u>SOLAS 14</u></p>
<p><u>46 CFR 129.350</u> Batteries – general</p> <ul style="list-style-type: none">• located as high above bilge as practical, protected against shifting, vibration, splashing water• accessible for maintenance and removal• connections permanent (NO spring clips)• tray lined with material resistant to damage by electrolyte• charger must have ammeter• batteries no adjacent to its panel must have fuses• battery used for starting as close as possible to engine	

CFR Sub I – Sub J

46 CFR 111.15 Storage batteries and chargers

- Large – charger output more than 2 kW
 - located in battery room or box on deck
 - electrical equipment meet (111.105) haz locations
- Moderate – charger output between 0.2 kW – 2 kW
 - located in battery room, box on deck, or box/locker in engine room or similar space
 - protected against falling objects
- Small – charger output less than 0.2 kW
 - not located in poorly ventilated spaces (closet, stateroom)
- Trays
 - chocked to prevent movement
 - spacers on bottom/sides for air circulation
 - accessible for maintenance and removal
- Nameplates
 - manufacturer, model number, type designation (cold cranking amps or amp-hour rating discharge, if lead acid the fully charged specific gravity, all permanently affixed)
- Lining
 - rooms and lockers watertight lining
 - shelf to a height of at least 3 inches
 - deck to a height of at least 6 inches
 - corrosion resistant to electrolyte
 - battery boxes watertight lining
 - height of at least 3 inches

46 CFR 111.15-10 Ventilation

- Large battery room must have powered ventilation
- Moderate/small battery room/locker must have louvers near bottom and ventilated by power or exhaust duct
- Deck boxes (except small) have 4 ft gooseneck, weathertight
- Small battery boxes openings near top, weathertight

OI-ES06 Inspect lighting system fixtures

CFR Sub L	
<u>46 CFR 129.410</u> Lighting fixtures <ul style="list-style-type: none">• each globe, lens, or diffuser must have a high strength guard or be made of high strength material<ul style="list-style-type: none">◦ exceptions: accommodations, pilothouse, galley, or other spaces where not subject to damage• no lighting fixture may be used a connection box for a circuit other than another light	
CFR Sub I → Sub J	
<u>46 CFR 111.75-15</u> Lighting requirements <ul style="list-style-type: none">• each passageway, public space, or berthing more than 25 persons - lights must be divided into two branch circuits• machinery space – alternate groups of lights so failure of one circuit does not leave area without light• crew berth – light not wired by flexible cord and minimum horizontal projection so light may not be covered by bedding	

OI-ES07 Inspect emergency lighting

CFR Sub L	SOLAS
<p><u>46 CFR 129.440</u> Emergency lighting</p> <ul style="list-style-type: none"> • vsl less than 100 GT must have adequate lighting along line of escape from accommodations and working spaces below • automatically actuate upon failure of main lighting • individual battery powered lights, unless single source <ul style="list-style-type: none"> ○ not readily portable ○ connected to automatic battery charger ○ capacity for 6 hours of operation <p><u>46 CFR 131.525</u> Emergency lighting</p> <ul style="list-style-type: none"> • emergency lighting tested weekly • tested every 6 months to demonstrate ability of batteries to supply load for time specified (112.05-5 = 6 hours) • internal combustion gensets tested under load for 2 hours monthly • date, condition, and performance noted in vsl logbook <p><u>46 CFR 133.110(d) / .150(g)(7)</u> Survival craft</p> <ul style="list-style-type: none"> • each muster and embarkation station must be adequately illuminate by emergency lighting • during preparation and launching, the survival craft, its launching appliance and area of water to which it is launched, is illuminated by emergency lighting <p><u>46 CFR 131.840</u> Emergency lighting</p> <ul style="list-style-type: none"> • marked with letter “E”, at least ½ inch high 	<p><u>SOLAS 14 II-1/43</u> Emergency source of power in cargo ships</p> <ul style="list-style-type: none"> • emergency lighting <ul style="list-style-type: none"> ○ 3 hour period – every muster and embarkation station, and over the sides ○ 18 hour period – accommodations, machinery spaces, control stations, control rooms, main/emergency switchboards, stowage position of fireman's outfits, steering gear, fire pump, emergency bilge pump

CFR Sub I	
<p><u>46 CFR 97.15-30</u> Emergency lighting and power systems</p> <ul style="list-style-type: none"> • emergency lighting tested weekly • tested every 6 months to demonstrate ability of batteries to supply load for time specified (112.05-5 = 6 hours) • internal combustion gensets tested under load for 2 hours monthly • date, condition, and performance noted in vsl logbook <p><u>46 CFR 97.37-25</u> Emergency lights</p> <ul style="list-style-type: none"> • marked with letter “E”, at least ½ inch high 	
CFR Sub J	
<p><u>46 CFR 111.75-15</u> Lighting requirements</p> <ul style="list-style-type: none"> • sufficient illumination provided by emergency lighting to effect damage control and egress from each space <p><u>46 CFR 111.75-16</u> Lighting of survival craft / rescue boat</p> <ul style="list-style-type: none"> • during preparation, launching, and recovery, the launching appliance and water to which it is launched is illuminated by emergency lighting • arranged so adjacent launching stations are supplied by different branch circuits <p><u>46 CFR 112.05-5</u> Emergency power source</p> <ul style="list-style-type: none"> • cargo vsl less than 500 GT = e-lighting 6 hour operation 	

OI-ES08 Inspect distribution panels

CFR Sub L	
<p><u>46 CFR 129.330</u> Distribution panels and switchboards</p> <ul style="list-style-type: none">• location must be dry as practicable, accessible, ventilated, protected from falling debris and dripping/splashing water• totally enclosed and dead-front type• fitted with dripshield unless mounted to overhead• working space<ul style="list-style-type: none">◦ 24 in front◦ 18 in rear<ul style="list-style-type: none">▪ less than 18 in rear, access is prohibited• switchboard specific<ul style="list-style-type: none">◦ must have non-conductive handrails◦ non-conductive mats/grating on deck in front, and in rear if accessible from rear <p><u>46 CFR 129.200-220</u> General requirements</p> <ul style="list-style-type: none">• designed, installed, and maintained to:<ul style="list-style-type: none">◦ provide services under normal and emergency conditions◦ protect from electrical hazards◦ minimize accidental personal contact with energized parts (blanks installed in breaker panels)• electrical equipment in following spaces must be drip proof:<ul style="list-style-type: none">◦ machinery space◦ space normally exposed to splashing (wet environment) within a galley, laundry, washroom, toilet w/bath, shower◦ every other space with similar wet conditions• exposed to the weather must be watertight• exposed to corrosive environments must be suitable construction and corrosion resistant• installations must be suitable for roll, pitch, vibration	

<ul style="list-style-type: none"> • electrical equipment and circuits must be clearly marked • if more than one source of power must be fitted with a warning sign 	
<p>CFR Sub I → Sub J</p>	
<p><u>46 CFR 111.40</u> Panelboards</p> <ul style="list-style-type: none"> • each panelboard must meet section 17.1 of IEEE 45-2002 <p>46 CFR 111.40-11 Panelboard directory</p> <ul style="list-style-type: none"> • must have a circuit directory and cardholder 	
<p>IEEE 45-2002</p>	
<p><u>17.1</u> Distribution panels</p> <ul style="list-style-type: none"> • constructed of corrosion resistant materials • each circuit labeled (nameplate or number with directory) • number of branch circuits should not exceed: <ul style="list-style-type: none"> ○ 18 for 3-phase AC branches ○ 26 for single-phase AC or two-wire DC 	

OI-ES10 Inspect components installed in designated hazardous locations

CFR Sub L	IEEE
<p><u>46 CFR 129.520</u> Hazardous areas</p> <ul style="list-style-type: none"> • No OSV that carries flammable/combustible liquid (flashpoint below 140° F), or carries hazardous cargoes on deck or in integral tanks, or is involved in servicing wells, may have electrical equipment installed in pump rooms, hose storage spaces, or within in 10 ft of a source of vapor on a weather deck unless the equipment is explosion proof or intrinsically safe • No electrical equipment in any locker used for paint, oil, turpentine, or other flammable liquid unless its explosion proof or intrinsically safe • Explosion proof and intrinsically safe must comply with 46 CFR 111.105 	<p><u>Std 45-2002 / 33</u> Hazardous locations, installations, equipment</p> <ul style="list-style-type: none"> • Class I Division I or Class I Zone 1 <ul style="list-style-type: none"> ○ Weather locations <ul style="list-style-type: none"> ▪ Within 3 m of gooseneck vents ▪ Within 5 m of pressure/vacuum vent valves ▪ Within 10 m of high velocity vent valves
<p>CFR Sub J</p>	
<p>46 CFR 111.105 Hazardous locations</p> <ul style="list-style-type: none"> • Electrical installations must comply with: <ul style="list-style-type: none"> ○ IEEE 45-1998, section 33 ○ NFPA NEC 2002, articles 500-505 ○ IEC 60079 • Hazardous location equipment must be approved as suitable for use in specific hazardous atmosphere. Use of non-approved equipment is prohibited (no mods) 	

OI-FF02 Inspect areas for compliance with Structural Fire Protection (SFP) requirements

NVIC 9-97 Guide to structural fire protection

CFR Sub L	SOLAS
<p><u>46 CFR 127.110</u> Plans/specs required for new construction</p> <ul style="list-style-type: none"> • submit – Safety Plan (Fire-Control Plan) for OCMI review and approval <p><u>46 CFR 127.220</u> General fire protection</p> <ul style="list-style-type: none"> • when compartment containing the emergency power source, adjoins a space containing the ships service generators, each common bulkhead and deck must be A-60 Class 	<p><u>SOLAS 14 II-2/15.2.4</u> Fire control plans</p> <ul style="list-style-type: none"> • general arrangement plans shall be permanently exhibited...showing the various fire sections enclosed by A and B Class divisions <p><u>SOLAS 14 II-2/9.2.3</u> Cargo ships except tankers</p> <ul style="list-style-type: none"> • tables show required class of bulkheads and decks of adjacent spaces <ul style="list-style-type: none"> ◦ any space adjacent to Cat. A machinery space needs A-60 • Stairways which penetrate only a single deck shall be protected at a minimum at one level by B-0 Class and self-closing doors • penetrations in fire-resisting divisions and prevention of heat transmission – insulation at least 18 in past point of penetration
CFR Sub I	
<p><u>46 CFR 92.07-10</u> Construction</p> <ul style="list-style-type: none"> • Bulkheads of emergency generator rooms shall be A Class • boundary bulkheads and decks separating the accommodations and control stations from cargo and machinery spaces, galleys, main pantries/storerooms, shall be of A Class • Stairtowers, dumbwaiter, and other trunks shall be of A Class <ul style="list-style-type: none"> ◦ integrity of stairtower shall be have A Class doors ◦ doors shall be of self-closing type <ul style="list-style-type: none"> ▪ holdback hooks or other means of holding door open are not permitted 	

- magnetic holdbacks operated from the bridge or other remote location are acceptable

46 CFR 97.36 Display of plans

- general arrangement plans showing ... for each deck the various sections enclosed by fire-resisting bulkheads...

OI-FF03 Inspect fire boundary closures

CFR Sub L	SOLAS
<p><u>46 CFR 129.540</u> Remote stopping on OSV of 100 GT or more</p> <ul style="list-style-type: none"> • must comply with 46 CFR 111.103, except for following: <ul style="list-style-type: none"> ◦ propulsion unit – in pilothouse ◦ discharge pump for bilge slop/dirty oil – at deck discharge ◦ powered ventilation – outside space ventilated ◦ fuel oil pump – outside space with pump ◦ cargo transfer pump for combustible/flam liquid – at transfer control station <p><u>46 CFR 127.250</u> Ventilation for enclosed spaces</p> <ul style="list-style-type: none"> • means must be provided for stopping each fan serving machinery and cargo spaces • means for closing each doorway, ventilator and annular space around funnels and other openings <p><u>46 CFR 131.896</u> Remote stopping systems</p> <ul style="list-style-type: none"> • must be clearly marked to show what system each controls <p><u>46 CFR 131.899</u> Fire dampers</p> <ul style="list-style-type: none"> • each fire damper installed within boundary of a space protected by fixed fire extinguishing system must be fitted with an indicator showing open or closed. <ul style="list-style-type: none"> ◦ Marked with red letters at least ½ in high “FIRE DAMPER” and identifying the space served by damper 	<p><u>SOLAS 14 II-2/14</u> Operational readiness and maintenance</p> <ul style="list-style-type: none"> • 14.2.1 - following fire protection systems shall be kept in good order: <ul style="list-style-type: none"> ◦ structural fire protection, protection of openings and penetrations in these divisions • 14.2.2.3 – maintenance plan shall include: <ul style="list-style-type: none"> ◦ ventilation systems including fire and smoke dampers, fans, and controls ◦ fire doors, including controls
<p>CFR Sub I</p>	
<p><u>46 CFR 92.15-10</u> Ventilation for closed spaces</p> <ul style="list-style-type: none"> • same as 127.250 	

46 CFR 95.15-35 / 95.16-30 Enclosure openings

CO2 and clean agent extinguishing systems

- mechanical ventilation shall automatically shutdown with operation of the system
- if natural ventilation is provided for space, vents must be capable of being easily and effectively closed off
- means shall be provided for closing all other openings to the space protected from outside such space (tight doors, shutters, or dampers shall be provided for openings in lower portion of space)

CFR Sub J

46 CFR 111.103 Remote stopping systems

- each power ventilation system must have a control to stop it that is:
 - outside the space ventilated, and
 - grouped with controls for every power ventilation system
 - in addition to the control above, a stop control that:
 - as far as practicable from above control and grouped with others; OR
 - circuit breakers for ventilation grouped on the main switchboard and marked :In case of fire trip to stop ventilation”
- machinery space ventilation must have two controls to stop it, one of which may be the circuit breaker
- each stop station must:
 - be protected by an enclosure with glass panel door
 - marked “in case of fire break glass and operate switch to stop ventilation”
 - have stop position of switch clearly identified
 - nameplate that identifies the system controlled
 - be arranged so damage to the switch automatically stops the equipment controlled

OI-FF04 Inspect fire main and pumps – primary and emergency

CFR Sub L	SOLAS
<p><u>46 CFR 132.120</u> Fire pumps OSV less than 500 GT</p> <ul style="list-style-type: none"> • one self priming power driven fire pump <ul style="list-style-type: none"> ◦ 50 psi Pilot tube pressure at highest hydrant • pressure gage on discharge side of pump <ul style="list-style-type: none"> ◦ relief valve if 125 psi or 25 psi in excess of the pressure required above, whichever is greater • no branch lines except for anchor / deck wash down • fire monitor must lead from discharge manifold near fire pump • capable of manual and if equipped remote operation <p><u>46 CFR 132.100</u> General OSV 500 GT or more</p> <ul style="list-style-type: none"> • two fire pumps, each capable of simultaneously from two highest outlets: <ul style="list-style-type: none"> ◦ 75 psi Pilot tube pressure 	<p><u>SOLAS 14 II-2/10</u> Fire fighting</p> <ul style="list-style-type: none"> • PUMS or when only one person on watch, remote starting from bridge and fire control station (if any), or permanent pressurization of fire main. <ul style="list-style-type: none"> ◦ Less than 1600 GT can waive if fire pump starting arrangement in machinery space is easily accessible • diameter of pipes sufficient for discharge of 616 GPM • relief valve if pumps capable of pressure exceeding design pressure of pipes, hydrants, and hoses • two pumps simultaneously delivering water through nozzles the minimum pressure: <ul style="list-style-type: none"> ◦ 6000 GT and upwards = 39 psi ◦ less than 6000 GT = 36.2 psi • 500 GT and upwards shall have at least one international shore connection • Sanitary, ballast, bilge, or general service pumps may be accepted as fire pumps (no oil use) • independently driven fire pumps <ul style="list-style-type: none"> ◦ 1000 GT and upwards = at least 2 ◦ less than 1000 GT = at least 2 power-driven pumps, one of which shall be independently driven • if fire in any one compartment could put all pumps out of action, shall be emergency fire pump

CFR Sub I

46 CFR 95.10 Fire main system, details

Gross tons		Minimum # of pumps
Over	Not over	
	100	¹ 1
100	1,000	1
1,000	1,500	2
1,500		2

- Independently driven fire pumps
- 1000 GT or more on international voyage, each pump delivering water at required pressure, must have minimum capacity of at least 2/3 that require for an independent bilge pump
- each pump capable of delivering water simultaneously from two highest outlets at 50 psi Pilot tube pressure
- pressure gage on discharge side of pump
 - relief valve if 125 psi or 25 psi in excess of the pressure required above, whichever is greater
- where two fire pumps are required, they shall be located in separate spaces
 - pumps, sea connections, and power shall be to insure that a fire in one space will not put all pumps OOC
- 500 GT or more: at least one shore connection to fire main on each side of vs1
 - international voyage - at least one international shore connection

- emergency fire pump
 - source of power and sea connection located outside space of main fire pumps
 - space containing emergency fire pump shall not share a boundary of machinery space cat. A or space with main fire pump
 - if it does, bulkhead between shall be insulated to structural fire protection for control station
 - no direct access between machinery space and emergency fire pump space
 - if it does, access through airlock, with machinery space door being “A-60” rated

Sub J

46 CFR 111.70-3 Motor controllers

- each motor controller for a fire pump must have low-voltage release, if automatic restart is not hazardous

OI-FF05 Inspect fire stations

CFR Sub L	SOLAS
<p>46 CFR 131.830 Fire-hose stations</p> <ul style="list-style-type: none"> • marked in red letters/figures at least 2 in high: <ul style="list-style-type: none"> ◦ “FIRE STATION #1”, etc 	<p><u>SOLAS 14 II-2/10</u> Fire fighting</p> <ul style="list-style-type: none"> • number and position of hydrants shall be so at least two jets of water not from same hydrant (one from single length of hose) reach any part of ship normally accessible to passengers or crew and any part of cargo space when empty. • Diameter of hose to satisfaction of Administration • ships 1000 GT and up, number of hoses shall be one for each 30 m length of ship and one spare, but no less than five. • Ships less than 1000 GT number of hoses calculated, but no less than three. • Standard nozzle shall be 12mm, 16mm, 19mm <ul style="list-style-type: none"> ◦ accommodation and service spaces no larger than 12mm ◦ dual purpose type (spray/jet stream)
<p>46 CFR 132.130 Fire stations</p> <ul style="list-style-type: none"> • enough total stations so each part of vsl can be reached by two separate stations (one uses single length of hose) • main machinery must be reachable by two streams of water from single length of hose and from separate stations • outlet at station at least 1.5 inches and no hose leads upward to prevent kinking • each station equipped with spanner wrench • each station at least one length of hose and nozzle (capable of solid and spray pattern) • each station equipped with valve • station connection must be brass, bronze, or equivalent and meet NFPA 1963 • hose – 1.5 in diameter and 50 ft length, must lined commercial fire hose or meet Standard 19 of UL 	
<p>46 CFR 132.350 Tests and inspections</p> <ul style="list-style-type: none"> • annually, fire main system must be operated and pressure checked at the remotest and highest outlets • each hose tested to service pressure or 100 psi whichever greater 	

CFR Sub I	
46 CFR 97.37-15 Fire-hose stations <ul style="list-style-type: none"> marked in red letters/figures at least 2 in high: <ul style="list-style-type: none"> “FIRE STATION #1”, etc 	
46 CFR 95.10-10 Fire hydrants and hose <ul style="list-style-type: none"> same basics as Sub L, but see below table vsls 500 GT and more must be at least one shore connection to the fire main available to each side of vsl <ul style="list-style-type: none"> international voyage must have at least one international shore connection vsl on international voyage or 1000 GT or more must have in each machinery space containing oil fired boiler, internal combustion machinery, or oil fuel unit a <ul style="list-style-type: none"> low velocity water spray applicator less than 6 ft fixed stowage location next to hydrant with applicator 	

Gross tons		Minimum number of pumps	Hose and hydrant size, inches	Nozzle orifice size, inches	Length of hose, feet
Over	Not over				
	100	1 ¹	1 1/2	1 1/2	1 50
100	1,000	1	1 1/2	5/8	50
1,000	1,500	2	1 1/2	5/8	50
1,500		2	2 1/2	2 7/8	2 50

¹ On vessels of 65 feet (19.8 meters) in length or less, 3/4-inch hose of a good commercial grade together with a commercial garden hose nozzle may be used. The pump may be hand operated and the length of hose must be sufficient to assure coverage of all parts of the vessel.

² A 1 1/2 inch hose that is 75 feet (22.86 meters) in length with a 5/8-inch nozzle may be used where specified by [§ 95.10-10\(b\) of this subpart](#) for interior locations and 50 feet (15.24 meters) of 1 1/2 inch hose may be used in exterior locations on vessels in other than ocean or coastwise service. For vessels on ocean or coastwise service, two 1 1/2 inch outlets, each provided with one 1 1/2 inch hose supplied through a wye connection may be substituted

OI-FF08 Inspect fire axes

<p>CFR Sub L</p>	<p>SOLAS</p>																				
<p><u>46 CFR 132.360</u></p> <ul style="list-style-type: none"> • 1 ax – Less than 100 GT • 2 ax – 100 GT or more 	<p><u>SOLAS 14</u></p>																				
<p>CFR Sub I</p>																					
<p><u>46 CFR 95.60-5</u></p> <table border="1" data-bbox="155 618 588 950"> <thead> <tr> <th colspan="2">Gross tons</th> <th rowspan="2"># of axes</th> </tr> <tr> <th>Over</th> <th>Not over</th> </tr> </thead> <tbody> <tr> <td></td> <td>50</td> <td>1</td> </tr> <tr> <td>50</td> <td>200</td> <td>2</td> </tr> <tr> <td>200</td> <td>500</td> <td>4</td> </tr> <tr> <td>500</td> <td>1,000</td> <td>6</td> </tr> <tr> <td>1,000</td> <td></td> <td>8</td> </tr> </tbody> </table> <p>(b) Manned barges shall carry at least two fire axes.</p>	Gross tons		# of axes	Over	Not over		50	1	50	200	2	200	500	4	500	1,000	6	1,000		8	
Gross tons		# of axes																			
Over	Not over																				
	50	1																			
50	200	2																			
200	500	4																			
500	1,000	6																			
1,000		8																			

OI-FF09 Inspect fireman's outfit

CFR Sub I	SOLAS
<p><u>46 CFR 96.35</u> Fireman's Outfit</p> <ul style="list-style-type: none"> - Self contained breathing apparatus – pressure demand, open circuit type, approved by MSHA/NIOSH, 30 minute minimum air supply - Flashlights – Type II or III - Lifelines – Steel or bronze wire rope, no less than 50 ft, 1500 lbs breaking strength - Boots and gloves – rubber or other nonconducting material - Protective clothing – protect from heat, fire, steam, water resistant - Safety flame lamp or oxygen depletion meter - Helmet – rigid to protect against impact - Fire ax <p>- Every vsl shall carry at least two outfits.</p>	<p><u>SOLAS 14 II-2/10</u> Fire-fighter's outfits</p> <ul style="list-style-type: none"> - Ships shall carry at least two outfits - Two spare charges for each breathing apparatus. Only one if can recharge onboard. <p>FSS Code 3.2</p> <ul style="list-style-type: none"> - Self contained breathing apparatus – at least 30 minute of air, audible and visual alarm for low air - Lifeline – at least 30 meters - Boots - rubber or other nonconducting material - Protective clothing – protect from heat, fire, steam, water resistant - Electric safety lamp (hand lantern) – minimum 3 hours - Helmet – rigid to protect against impact - Axe – handle with high-voltage insulation
<p><u>46 CFR 96.35-15</u> Stowage</p> <ul style="list-style-type: none"> - Outfits must be stored in widely separated, accessible locations 	<p><u>II-2/18.5.1.6</u> Heli deck requires its own two outfits</p> <p><u>II-2/14.2.2</u> Maintenance plan includes fire-fighter's outfits</p> <p><u>II-2/15.2.4</u> Location marked on fire control plan</p>
<p><u>46 CFR 96.35-20</u> Spare charges</p> <ul style="list-style-type: none"> - Complete recharge shall be carried for each breathing apparatus - Complete set of spare batteries shall be carried for each flashlight - Spares stowed in same location as equipment to reactivate 	
<p><u>46 CFR 97.37-20</u></p> <ul style="list-style-type: none"> - Lockers or spaces containing breathing apparatus shall be marked: “SELF-CONTAINED BREATHING APPARATUS” 	

OI-FF11 Inspect fire detection system

CFR Sub L	SOLAS
<p>Sub L only requires fire detection under the automation cite (100 GT and above). Sub L under 100 GT does not require fire detection.</p> <p><u>46 CFR 130.470</u> Fire alarms</p> <ul style="list-style-type: none"> • detectors and control unit must be approved type • no fire alarm circuit for the engine room may contain a fire detector for any other space • number and placement of detectors approved by OCMI 	<p><u>SOLAS 14 II-2/7</u> Suppression of fire, detection and alarm</p> <ul style="list-style-type: none"> • 7.4 Protection of machinery spaces, installed in: <ul style="list-style-type: none"> ◦ periodically unattended machinery spaces ◦ full automation ◦ manned supervision from control room • 5.5 Protection of accommodation, service, control spaces <ul style="list-style-type: none"> ◦ also look at 9.2.3 ◦ Method IC – fixed detection and alarm system to provide smoke detection in all corridors, stairways, and escape routes within accommodation spaces if internal divisional bulkheads are Class B or C ◦ Method IIC – automatic sprinkler, detection, and alarm in all accommodation, galleys, and other service spaces, and provide smoke detection in all corridors, stairways, and escape routes within accommodation spaces with no restriction on type of internal divisional bulkheads ◦ Method IIIC – fixed detection and alarm in all accommodation and service spaces, providing smoke detection in all corridors, stairways, and escape routes within accommodation spaces with no restriction on type of internal divisional bulkheads except no accommodation space bound by Class A or B exceed 50m² • periodically tested by means of equipment producing hot air or smoke/aerosol particles having correct range of density/particle size • audible and visual alarms (distinct from any other alarms) on the navigation bridge (when unmanned, sound where crew can hear)
<p>CFR Sub I</p>	
<p><u>46 CFR 95.05-1</u> Fire detection systems</p> <ul style="list-style-type: none"> • fire detection systems are not required except in special cases <ul style="list-style-type: none"> ◦ if installed the systems must meet 46 CFR 76, Sub H, Passenger Vessels 	
<p>CFR Sub J</p>	
<p><u>46 CFR 113.10</u> Fire and smoke detecting and alarm systems</p> <ul style="list-style-type: none"> • approved under 46 CFR 161.002 <p>46 CFR 113.10-9 Power supply</p> <ul style="list-style-type: none"> • must be at least two sources of power <ul style="list-style-type: none"> ◦ normal source must be main power supply ◦ other source must be emergency power source or automatically charged battery 	

	FSS Code
	<p>Ch. 9 Fixed fire detection and fire alarm systems</p> <ul style="list-style-type: none"> • shall not be less than two sources of power <ul style="list-style-type: none"> ◦ one of which shall be emergency source • if main control panel is located in main fire control, an indicating unit shall also be located on the bridge • indicating units shall at a minimum denote the section that has an alarm • activation of any detector or manually operated call point shall initiate a visual/audible alarm, that, if not acknowledged within 2 min, an alarm sounds throughout crew accommodation/service spaces, control stations, and Cat. A machinery spaces

OI-FF12 Inspect high pressure CO2 systems

CFR Sub L	SOLAS
<p><u>46 CFR 132.350</u> Tests/inspections of fire extinguishing equipment</p> <ul style="list-style-type: none"> • annual tests: <ul style="list-style-type: none"> ◦ weigh cylinders – recharge if weight loss exceeds 10% ◦ test time delays, alarms, vent shutdowns with CO2, nitrogen, or other non-flammable gas. ◦ Inspect hoses ◦ inspect nozzles ◦ cylinders and flex connections → 46 CFR 147.65 <ul style="list-style-type: none"> ▪ cylinders hydro tested every 12 years <ul style="list-style-type: none"> • if discharged and more than 5 years since last test, must retest be recharging ▪ flex connections tested when cylinders are tested <ul style="list-style-type: none"> • 1000 psi test, pressure not drop greater than 150 psi per minute for 2 minutes. <p><u>46 CFR 131.815/.817/.820/.825</u> Markings</p> <ul style="list-style-type: none"> • specific wording for each (see CFR) • each alarm must be marked • warning signs in spaces storing, protected by, and spaces where CO2 can migrate • branch line valves marked with space served • controls marked 	<p><u>SOLAS 14 II-2/10.5</u> Fire-extinguishing in machinery spaces</p> <ul style="list-style-type: none"> • Cat. A machinery spaces shall have fixed fire extinguishing system (fixed gas, fixed foam, or fixed water spray) <p><u>SOLAS 14 II-2/10.4.3</u> Storage rooms of fire extinguishing medium</p> <ul style="list-style-type: none"> • in a room behind collision bulkhead • used for no other purpose • entrance preferably from open deck <ul style="list-style-type: none"> ◦ if below deck, no more than one deck below open deck and directly accessible by stairway or ladder from open deck ◦ fitted with mechanical ventilation • storage rooms treated as fire control stations for fire boundaries

CFR Sub I	FSS Code
<p><u>46 CFR 95.15</u> CO2 extinguishing system</p> <ul style="list-style-type: none"> • table shows required number of pounds of CO2 per space • two controls - one for control valve, one for discharge valve <ul style="list-style-type: none"> ◦ clearly marked ◦ instructions on how to release ◦ line diagram if storage cylinders in separate space • systems greater than 300 lbs need time delay (20 sec min.) • cylinders stowed outside space <ul style="list-style-type: none"> ◦ can be inside if system is less than 300 lbs and automatically operated by heat actuator ◦ securely fastened and supported ◦ if subject to moisture, at least 2 inches above deck ◦ mounted upright, not more than 30° from vertical • alarm sound for 20 seconds before discharge, powered gas from system • mechanical vent. automatically shutdown upon activation <ul style="list-style-type: none"> ◦ natural vent. has provisions to close off • lockout valve installed on system protecting a space over 6000 cubic feet and installed/alterd after July 9, 2013 • odorizing unit on system installed/alterd after July 9, 2013 <p><u>46 CFR 97.37-9/-10/-11/-13</u> Markings</p> <ul style="list-style-type: none"> • specific wording for each (see CFR) • each alarm must be marked • branch line valves marked with space served • warning signs in spaces storing, protected by, and spaces where CO2 can migrate • controls marked 	<p><u>Chapter 5</u> Fixed fas fire-extinguishing systems</p> <ul style="list-style-type: none"> • alarm sound for 20 seconds before discharge • Two separate controls for releasing CO2 <ul style="list-style-type: none"> ◦ one for control valve for protected space ◦ one for release/discharge valve ◦ located in release box, clearly marked

OI-FF13 Inspect water mist system

CFR Sub I	SOLAS
<p><u>46 CFR</u></p>	<p><u>SOLAS 14 II-2/10.5</u></p> <ul style="list-style-type: none"> - 5.6 Fixed local application fire-extinguishing systems - Applies to cargo ships 2000 GT and above <ul style="list-style-type: none"> - Machinery spaces Category A above 500 cubic meters (17657 cubic feet), shall in addition to regular fixed fire extinguishing system, be protected by an approved type of fixed water based system (water mist) - Periodically unattended machinery spaces activation shall be automatic and manual. Manned spaces manual only. - Protect following areas without engine shutdown, personnel evac, or sealing of spaces <ul style="list-style-type: none"> - fire hazard portions of internal combustion machinery used for propulsion and power generation - boiler fronts, fire hazard portions of incinerators an purifiers for heated fuel oil
	<p>MSC/Circ.913</p> <ul style="list-style-type: none"> - Fresh or salt water with or without additives mixed - Capable of fire suppression with forced vent fans running or auto shutdown to ensure water is not dispersed - Continuously supply water for at least 20 minutes - Operation from inside and outside the space

OI-FU01 Verify vessel compliance with the International Safety Management (ISM) Code

<p>CFR</p>	<p>SOLAS</p>
<p><u>33 CFR 96.210</u> Rules for the safe operation of vessels</p> <ul style="list-style-type: none"> • applies to vsl on foreign voyage that are: <ul style="list-style-type: none"> ◦ transporting more than 12 passengers; or ◦ 500 GT or more <p><u>33 CFR 96.250</u> Docs and reports</p> <ul style="list-style-type: none"> • follows ISM Code 	<p><u>SOLAS 14 IX/2</u> Application</p> <ul style="list-style-type: none"> • cargo ships 500 GT and upwards <p><u>SOLAS 14 IX/3</u> Safety management requirements</p> <ul style="list-style-type: none"> • company and ship shall comply with the requirements of the ISM Code.
	<p>ISM Code</p>
	<p><u>A/5</u> Master's responsibility and authority</p> <ul style="list-style-type: none"> • clearly define and document with regard to: <ul style="list-style-type: none"> ◦ implementing the safety and environmental protection policy of the company ◦ motivating the crew in observation of that policy ◦ issuing appropriate orders and instructions in a clear and simple manner ◦ verify specified requirements are observed ◦ review safety management system and report deficiencies to shore-based management <p><u>A/10</u> Maintenance of ship and equipment</p> <ul style="list-style-type: none"> • establish procedures to ensure ship is maintained in conformity <ul style="list-style-type: none"> ◦ inspections held at appropriate intervals non-conformity is reported ◦ appropriate corrective action taken ◦ records are maintained <p><u>A/2</u> Safety and environmental protection policy</p> <ul style="list-style-type: none"> • establish a safety and environmental protection policy and ensure policy is implemented and maintained at all levels of the organization

	<p><u>A/4</u> Designated persons</p> <ul style="list-style-type: none">• every company should designate a person having direct access to the highest level of management<ul style="list-style-type: none">◦ monitor operations of each ship to ensure compliance <p><u>A/12</u> Company verification, review, and evaluation</p> <ul style="list-style-type: none">• internal safety audits onboard and ashore not exceeding 12 months

OI-GH01 Inspect accommodation spaces

CFR Sub L	SOLAS
<p><u>46 CFR 127.280</u> Location – not forward of collision bulkhead, generally not below deepest load waterline.</p> <p>100 GT or more Bulkheads and decks separating accommodations for crew and offshore workers from machinery must be “A” Class construction</p> <p>Crew</p> <ul style="list-style-type: none">– berthing four people max– headroom 6 ft 3 in– 30 sq ft of deck, 210 cubic ft of space for each person– one toilet and sink for every 8 or fewer <p>Offshore Worker</p> <ul style="list-style-type: none">– fixed seating at least 18 in– berthing six people max– headroom 6 ft 3 in– 20 sq ft of deck, 140 cubic feet of space for each person– same toilet as above <p>100 GT or less accommodations of adequate size, with equip for protection and convenience suitable to size of vsl</p> <p>Only one means of escape is less than 300 square ft and max dimension is less than 20 ft</p> <p>Ventilation – must be adequately ventilated 100 GT or more – mechanical ventilation unless OCMI determines natural is adequate</p>	

Sanitary inspections – master shall make periodic inspections of quarters, toilet, wash spaces, pantry, galley, and like to ensure they are sanitary. Enter in vsl logbook the results.	
CFR Sub I	
<u>46 CFR 92.20</u> - Same as Sub L, but adds locker for each person in a room.	

OI-GH02 Inspect means of escape

CFR Sub L	SOLAS
<p><u>46 CFR 127.240</u> Two means of escape</p> <p>Scuttle / vertical ladder</p> <ul style="list-style-type: none"> - primary means is stairway or passageway - located where cargo not in the way - quick acting release with hold back device - vertical ladder, rungs 16 in long, 12 in apart, 7 in from back of ladder, 70-90 deg angle <p>no dead end passageway more than 40 feet in length (SOLAS 20ft 11in)</p>	<p>no dead end passageway more than 20ft 11in</p>
<p><u>46 CFR 129.440</u> Emergency lighting 100 GT or less</p> <ul style="list-style-type: none"> - along escape path from accommodations and working machinery spaces below - auto actuate, if individual batteries have 6 hour capacity <p>Marked with letter “E” at least ½ in high (131.840)</p>	
CFR Sub I	

OI-GHEX Inspect hospital space

CFR Sub I	SOLAS
<p><u>46 CFR 92.20-35</u> Hospital space</p> <ul style="list-style-type: none"> • Applicability – voyages of more than 3 days and carries a crew of 12 or more. • Suitably separated from other spaces and used only for care of the sick (no other purpose) • Fitted with berths in ratio of 1 berth per 12 crew members <ul style="list-style-type: none"> ○ Not exceed 6 berths • Fitted with toilet, washbasin, bathtub/shower, clothes locker, table, seat • If vs1 has single occupancy rooms, hospital space not required, provided one room is designated and fitted for use as treatment or isolation room <ul style="list-style-type: none"> ○ Must be available for immediate medical use ○ Washbasin with hot and cold water must be installed or immediately adjacent to room 	<p><u>SOLAS 14</u></p> <p><u>ILO</u> Crew accommodation</p> <ul style="list-style-type: none"> • Applicability – ships 500 GT or more, carrying a crew of 15 or more, and on a voyage more than 3 days

OI-HD01, HD02 Inspect helideck, inspect fire fighting systems for helideck

CFR Sub I-A MODU	SOLAS														
<p><u>46 CFR 108.231</u> Helicopter facilities</p> <ul style="list-style-type: none"> • landing area must have <ul style="list-style-type: none"> ◦ non-skid surface ◦ drainage that prevent collection of fluids and prevent liquids from spreading/falling to other areas ◦ recessed tie-down points ◦ be free of projections, except lights around edge • unprotected perimeter must have safety net at least 5 ft <ul style="list-style-type: none"> ◦ outer edge of net not extend more than 6 in above deck surface ◦ must have both main and emergency access/egress <ul style="list-style-type: none"> ▪ located as far apart as practical • visual aids <ul style="list-style-type: none"> ◦ wind direction indicator ◦ yellow and blue lights around deck perimeter <ul style="list-style-type: none"> ▪ not more than 10 ft apart • deck marked with, in contrasting color <ul style="list-style-type: none"> ◦ unit's identification ◦ continuous line 16 in wide on the perimeter <p><u>46 CFR 108.653</u> Markings</p> <ul style="list-style-type: none"> • each access to landing area, letters at least 3 in high <ul style="list-style-type: none"> ◦ “BEWARE OF TAIL ROTOR” • other warning marks for fuel hose storage and fuel tank 	<p><u>SOLAS 14 II-2/18</u> Helicopter facilities</p> <ul style="list-style-type: none"> • In general, should be constructed of steel <ul style="list-style-type: none"> ◦ if helideck part of ship structure – A-60 fire protection ◦ Can be constructed of aluminum • shall be provided with two means of escape, as far apart as practical • operations manual with checklist of procedures and equip. • fire fighting <ul style="list-style-type: none"> ◦ at least 2 dry powder extinguishers – total cap 45kg ◦ CO2 extinguishers – total cap 18kg ◦ foam application system (monitors or branch pipes) <ul style="list-style-type: none"> ▪ at least 5 min of discharge <table border="1" data-bbox="1058 784 1940 987"> <thead> <tr> <th>Category</th> <th>Heli length</th> <th>Discharge rate (l/min)</th> </tr> </thead> <tbody> <tr> <td>H1</td> <td>up to 15m (49 ft)</td> <td>250</td> </tr> <tr> <td>H2</td> <td>15m up to 24m (78 ft)</td> <td>500</td> </tr> <tr> <td>H3</td> <td>24m up to 35m (115 ft)</td> <td>800</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • At least two nozzles (jet/spray) and hose to reach any part of the helideck • two sets of fire-fighter's outfits (in addition to ship req.) • following equipment stored for immediate use <ul style="list-style-type: none"> ◦ adjustable wrench ◦ blanket, fire resistant ◦ bolt cutters, 60cm ◦ hook, grab, or salving ◦ hacksaw, with 6 spare blades ◦ ladder ◦ lift line, 5mm dia and 15m length ◦ pliers, side cutting ◦ assorted screwdrivers ◦ harness knife with sheath 			Category	Heli length	Discharge rate (l/min)	H1	up to 15m (49 ft)	250	H2	15m up to 24m (78 ft)	500	H3	24m up to 35m (115 ft)	800
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H3	24m up to 35m (115 ft)	800													

46 CFR 108.239 Fuel transfer equipment

- nozzle must be “deadman”
- hose must have storage reel and static grounding device
- transfer pump has operation indicator light
- fuel pump shutoff at each access route
- transfer pump and hose reel have means to contain spills
- hose must meet “aircraft fueling hose” in NFPA

CAP 437 – Standards for offshore helicopter landing areas

- green perimeter lights
- helideck should be dark green
- black chevron at edge to mark approach
- max helicopter mass marked followed by a 't' (ex. “9.5t”)
- D-value marked around perimeter
- Yellow aiming circle
- White 'H' in center of aiming circle

Fire protection for helicopter facilities

46 CFR 108.486

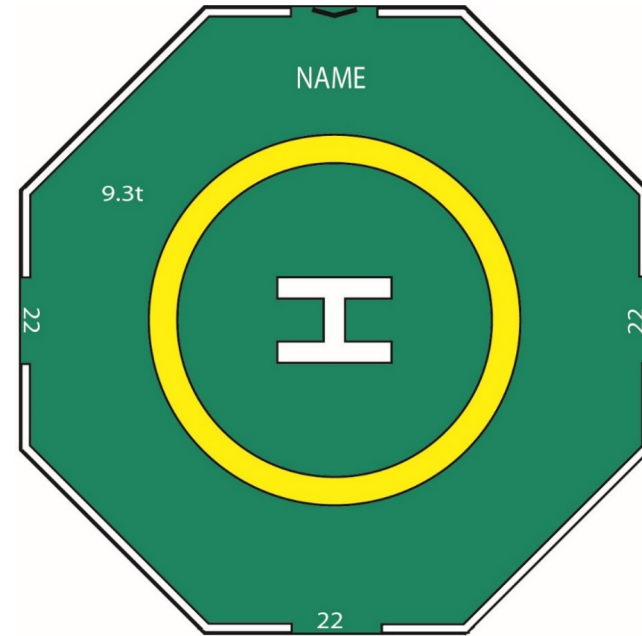
- at least two of the accesses to landing deck must each have a fire hydrant from ship's fire main

46 CFR 108.487 Deck fueling operations

- if have fueling operations must have fire protection system
 - enough foam agent for at least 5 min of discharge
 - at least amount of foam to cover area equal to swept rotor area of largest helicopter the deck is designed for
 - protein foam - .16 GPM for each sq ft of area
 - aqueous film - .1 GPM for each sq ft of area
 - discharge from each hose at 100 psi
 - foam stream at 90 GPM
 - foam spray at 50 GPM
 - hose at each access
 - reel mounted and long enough to cover entire deck

46 CFR 108.489 Fueling facilities

- fire protection system over fuel containment, transfer pumps, marine portable tanks, fuel hose reels
- same rates as above
- 50 lbs of dry chemical (B-V semi-portable) for each facility up to 300 sq ft
- if system covers both .487 and .489 need both amounts



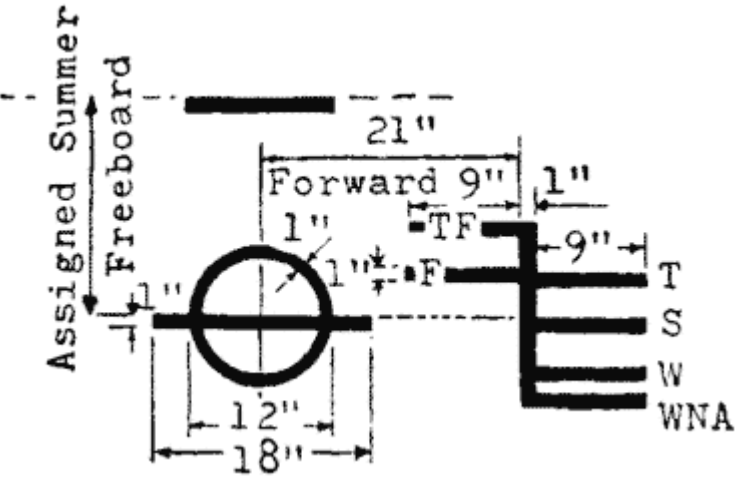
MSM Vol II, Sec C, Ch 2, I

- annual foam analysis from manufacturer
 - specific gravity, pH, % of water dilution, solid contents.

OI-HI01 Inspect hull

CFR Sub L	SOLAS
<u>46 CFR 126.140</u> - Drydocked twice in 5 not exceed 3 - ISE same as drydock Tailshaft - Under 100 GT drawn when necessary - Over 100 GT go to Sub F (61.20-15)	<u>SOLAS 14</u>
CFR Sub F	
<u>46 CFR 61.20-15</u> - Multiple shafts, exam once every 5 years - Oil lubricated need not be drawn if; - bearing clearance readings are taken, - inboard seal assemblies are examined, - oil analysis performed semi-annually, and - tailshafts with taper, prop removed and taper and keyway NDT -Single shaft, twice in 5 not exceed 3	

OI-HI02 Inspect hull markings

CFR Sub E	SOLAS
<p><u>46 CFR 42.13-20</u> Deck line - 12 in long 1 in wide, above plimsoll mark</p> <p><u>46 CFR 42.13-25</u> Load line mark</p>  <p><u>46 CFR 42.13-40</u> Details of marking - white or yellow on dark background - black on a light background - permanently marked</p>	<p><u>SOLAS 14</u></p>

OI-LM02 Review logbook

CFR Sub L	SOLAS
<p><u>46 CFR 131.610</u> Logbooks and records</p> <ul style="list-style-type: none"> • Shall have an official logbook if; <ul style="list-style-type: none"> ○ Foreign voyage ○ At least 100 GT on voyage between Atlantic and Pacific oceans ○ When voyage is complete, master shall file official logbook with OCMI • CG provides official logbook (CG-706) • Unless official logbook is required, an alternative log shall be kept (not filed with OCMI) for making required entries and retained for a year <p><u>46 CFR 131.620</u> Matters that must be logged</p> <ul style="list-style-type: none"> • Safety orientation for offshore workers • Tests and inspection of steering gear, whistle, and means of comms; before departure • Draft and loadline markings; before leaving port (ocean and coastwise voyages only) • Verification of compliance with stability requirements; after loading and prior to departure • Periodic sanitary inspections • Hatches and other openings; before departure • Tests of emergency lighting and power; weekly, monthly, twice yearly • Abandon ship training/drills, firefighting training/drills • Inspection of lifeboat winches; once every 3 months • 46 USC 11301 <ul style="list-style-type: none"> ○ Marine casualty, vsl fails to carry out ballast water management requirements, death onboard, illness/injury onboard 	<p><u>SOLAS 14 V/26</u> Steering gear testing and drills</p> <ul style="list-style-type: none"> • Steering gear shall be checked and tested within 12 hours before departure • Emergency steering drills shall take place at least once every 3 months • These tests/drills shall be recorded <p><u>SOLAS 14 III/19</u> Emergency training and drills</p> <ul style="list-style-type: none"> • Abandon ship drills , fire drills, other lifesaving appliance drills, and onboard training shall be recorded

CFR Sub I	
<p><u>46 CFR 97.35</u> Logbook entries</p> <ul style="list-style-type: none"> • Same as Sub L and USC with additions <ul style="list-style-type: none"> ○ Training, musters, and drills IAW Sub W ○ Loading doors ○ Fuel oil data; upon receipt onboard ○ Cargo gear inspections; at least once a month ○ Inflatable hopper gate seals 	
<p><u>33 CFR 164.25</u> Tests before entering or getting underway</p> <ul style="list-style-type: none"> • Applies to vsl 1600 GT or more • No more than 12 hours before entering or underway <p>Tests steering gear (all), control comms, control alarms, emergency generator, main propulsion ahead/astern</p>	
USC	
<p><u>46 USC 11301</u> Logbook and entry requirements</p> <ul style="list-style-type: none"> • Marine casualty, vsl fails to carry out ballast water management requirements, death onboard, illness/injury onboard <p><u>46 USC 11302</u> Manner of making entries</p> <ul style="list-style-type: none"> • Each entry made in official logbook; <ul style="list-style-type: none"> ○ Shall be made as soon as possible after occurrence ○ Shall be signed by the master 	

OI-LM03 Review radio logs

<p>CFR Sub L</p>	<p>SOLAS</p>
<p><u>46 CFR 130.210</u> Radiotelegraph and radiotelephone</p> <ul style="list-style-type: none"> • Each vsl must comply with 47 CFR 80 	<p><u>SOLAS 14 IV/17</u> Radio records</p> <ul style="list-style-type: none"> • Record shall be kept, to satisfaction of Administration and required by the Radio Regulations, of all incidents connected with the radio service which appear to be of importance to safety of life at sea.
<p>47 CFR</p>	
<p><u>47 CFR 80.409(e)</u> Ship radiotelephone logs</p> <ul style="list-style-type: none"> • Must contain the following entries: <ol style="list-style-type: none"> 1. Distress comms affecting own ship, relayed distress comms, distress comms rcvd from SAR authorities 2. Safety comms other than VHF affecting own ship 3. Inadvertent transmissions of distress 4. Pre-departure equipment checks and required pubs onboard. Daily entries of tests of GMDSS 5. Daily statement about condition of equipment 6. Weekly entry; <ol style="list-style-type: none"> a. Proper functioning of DSC b. Portable survival craft radio gear and radar transponders have been tested c. EPIRBs have been inspected 7. Entry at least once every 30 days checking batteries 8. Results of required equipment tests 9. Results of inspections/tests of lifeboat radio equipment 10. When master is notified of improperly functioning equipment 11. Beginning of each watch, Officer of Navigational Watch or GMDSS Operator shall ensure navigation receiver is functioning properly and interconnected to all GMDSS alerting devices which do not have integral navigation receivers. Ship without integral navigation receiver input, officer on watch shall update position. 	

<p>12. Any malfunctioning GMDSS equipment and an entry when normal ops restored</p> <p>13. GMDSS equipment is exchanged or replaced, major repairs, and annual inspections are conducted.</p>	
<p><u>47 CFR 80.409(f)</u> Applicable radiotelephone log entries</p> <ul style="list-style-type: none">• Radiotelephone log must provide a separate section for the required inspection of the ship's radio station, including:<ul style="list-style-type: none">○ Date inspection conducted, next inspection date, inspectors (printed name, address, FCC license number), results of inspection (including repairs if made), inspectors signed certification, vsl (owner, operator, master) cert that inspection was sat○ Log failed inspections also	

OI-LM04 Review lifesaving equipment maintenance record

CFR Sub L	SOLAS
<p><u>46 CFR 131.545</u> Maintenance in general</p> <ul style="list-style-type: none"> • Each lifesaving appliance, manufacturers maintenance instructions must be onboard and include: <ul style="list-style-type: none"> ◦ checklists for monthly tests and inspections (131.565(a)) ◦ instructions for maintenance and repair ◦ schedule of periodic maintenance ◦ diagram of lube points with recommended lubricants ◦ list of replaceable parts ◦ list of sources of spare parts ◦ log for records of inspections, maintenance, repair ◦ can use a program for planned maintenance <p><u>46 CFR 131.550</u> Maintenance of falls</p> <ul style="list-style-type: none"> • End-for-end every 30 months, replace every 5 years • corrosion-resistant tag permanently marked with date new fall installed and last date fall was turned <p><u>46 CFR 131.565</u> Monthly tests and inspections</p> <ul style="list-style-type: none"> • each lifesaving appliance (and lifeboat equipment). Report of inspection and statement of condition logged • each EPIRB and SART tested and logged <p><u>46 CFR 131.570</u> Quarterly inspections</p> <ul style="list-style-type: none"> • each apparatus that controls a lifeboat winch including motor controller, emergency / master / limit switches. Remove drain plugs / open drain valves to ensure enclosures are free of water. Date of inspection and condition logged. 	<p><u>SOLAS 14 III/20</u> Operational readiness, maintenance, inspections</p> <ul style="list-style-type: none"> • Falls renewed every 5 years (no end-for-end) <p><u>20.6</u> Weekly inspections</p> <ul style="list-style-type: none"> ◦ survival craft, rescue boats, launching appliances visually inspected, including condition of hooks ◦ engines in lifeboats / rescue boats run for at least 3 min and gearbox tested ◦ lifeboats (not free fall) shall be moved from stowed position without persons ◦ test general emergency alarm <p><u>20.7</u> Monthly inspections</p> <ul style="list-style-type: none"> ◦ lifeboats (not free fall) shall be turned out from stowed position without persons ◦ inspection of life-saving appliances including lifeboat equipment using checklist from 36.1 <p><u>20.8</u> Servicing of inflatable liferarts</p> <ul style="list-style-type: none"> ◦ serviced by approved facility ◦ serviced every 12 months <ul style="list-style-type: none"> ▪ can extend 5 months

46 CFR 131.575 Yearly inspections and repair

- each lifeboat, rescue boat, rigid liferaft, buoyant apparatus, and lifefloat, must be stripped, cleaned, and inspected. Includes emptying and cleaning fuel tank, refill with new fuel
- each davit, winch, fall, and other launching appliance inspected
- each battery without an expiration date replaced

46 CFR 131.580 Servicing of inflatable liferafts

- serviced by approved facility
- no later than the date marked
 - can extend up to 5 months to line up with vsl inspection

36 Instructions for on-board maintenance

- instructions for life-saving appliances shall be easily understood, illustrated when possible and include
 - checklist for monthly inspections from 20.7
 - maintenance and repair instructions
 - schedule of periodic maintenance
 - diagram of lube points with recommended lubricants
 - list of replaceable parts
 - list of sources of spare parts
 - log for records of inspections and maintenance

OI-LM05 Review abandon ship and firefighting training manual

CFR Sub L	SOLAS
<p><u>46 CFR 131.530</u> Abandon ship training and drills</p> <ul style="list-style-type: none"> • Same as SOLAS 14 III/35, excluding: <ul style="list-style-type: none"> ○ all other functions contained in muster list/emergency instructions ○ emergency repair of lifesaving appliance 	<p><u>SOLAS 14 II-2/15.2.3</u> Instructions, onboard training and drills</p> <ul style="list-style-type: none"> • Training manuals shall be provided in each crew mess and recreation room OR in each crew cabin • Include the following: <ul style="list-style-type: none"> ○ General fire safety, instructions on firefighting procedures, meaning of ships alarms, use of firefighting systems, use of fire doors, use of fire/smoke dampers, escape systems <p><u>SOLAS 14 III/35</u> Training manual and onboard training aids</p> <ul style="list-style-type: none"> • Training manuals shall be provided in each crew mess and recreation room OR in each crew cabin • Include the following: <ul style="list-style-type: none"> ○ Donning lifejackets, muster at assigned stations, boarding/launching/clearing survival craft/rescue boats, method of launching with survival craft, release from launching appliances, use of protection devices in launch areas, illumination in launch areas, use of all survival equipment, use of all detection equipment, use of radios with illustrations, use of drogues, use of engines, recover of survival craft/rescue boat, hypothermia, best use of survival craft facilities in order to survive, methods of retrieval (including helo rescue gear), all other functions contained in muster list/emergency instructions, emergency repair of lifesaving appliance
<p>CFR Sub I → Sub W</p>	
<p><u>46 CFR 199.180</u> Training and drills</p> <ul style="list-style-type: none"> • Same as SOLAS 14 III/35 	

OI-LM06 Review cargo securing manual

NVIC	SOLAS
<p><u>NVIC 10-97</u> Guidelines for Cargo Securing Manual approval Applies to vsl 500 GT or more engaged in international trade CSM for US vsl shall comply with MSC/Circ.1353 MSC/Circ.745 superseded by above Approved by: Coast Guard ABS National Cargo Bureau</p>	<p><u>SOLAS 14 VI/5 and VII/5</u> Stowage and securing / CSM</p> <ul style="list-style-type: none"> • All cargoes shall be loaded, stowed, and secured throughout the voyage IAW the Cargo Securing Manual, approved by the Administration. <p><u>MSC.1/Circ.1353</u> Revised Guidelines for the Preparation of the Cargo Securing Manual</p> <p>Stowage and securing of non-standard and semi-standard cargo</p> <ul style="list-style-type: none"> • Specification for fixed cargo securing devices <ul style="list-style-type: none"> ○ Pad eyes, eyebolts, elephant feet, container fittings • Specification for portable cargo securing devices <ul style="list-style-type: none"> ○ Chains, wire lashing, tensioners (turnbuckles), anti-skid material • Inspection and maintenance schemes <ul style="list-style-type: none"> ○ Inspection and maintenance of cargo securing devices ○ Entries made in record book kept with CSM • Handling and safety instructions • Evaluation of forces acting on cargo units • Application of portable securing devices on various cargo units, vehicles, and stowage blocks <p>Stowage and securing of containers and other standard cargo</p> <ul style="list-style-type: none"> • Handling and safety instructions, stowage and securing instructions, stowage and securing plan, stowage and securing principle on deck/under deck, other allowable stowage patterns, forces acting on cargo units <p>Cargo Safe Access Plan (CSAP)</p> <ul style="list-style-type: none"> • Ships which are specifically designed/fitted for the purpose of carrying containers should be provided with a CSAP

OI-LM07, LM08 Examine waste/garbage management plan / Examine garbage record book

OI-PP03 Conduct garbage handling (MARPOL Annex V) Survey

CFR	MARPOL
<p><u>33 CFR 151.51</u> Applicability</p> <ul style="list-style-type: none"> • Recordkeeping – manned oceangoing ship of 400 GT and above • Garbage management plans – manned oceangoing ship of 40ft or more • Placards – manned US ship that is 26ft or more <p><u>33 CFR 151.55</u> Recordkeeping requirements</p> <ul style="list-style-type: none"> • Written record is maintained for the following <ul style="list-style-type: none"> ○ Discharge to a reception facility or another ship ○ Incineration on the ship ○ Discharge into the sea ○ Accidental or other exceptional discharges • Entries include: date/time, location, categories of garbage, estimated amount (volume in cubic meters) • Record book maintained onboard for 2 years after last entry <p><u>33 CFR 151.57</u> Garbage management plans</p> <ul style="list-style-type: none"> • Shall be in writing and include: <ul style="list-style-type: none"> ○ Discharge of garbage by means that meets MARPOL ○ Procedures for minimizing, collecting, processing, storing, and discharging garbage ○ Designate the person in charge of carrying out plan <p><u>33 CFR 151.59</u> Placards</p> <ul style="list-style-type: none"> • Displayed in prominent locations and sufficient number so they can be read by crew and passengers (at least 8in x 5in) 	<p><u>MARPOL V/10</u> Placards, garbage management plans, recordkeeping</p> <ul style="list-style-type: none"> • Ships 12m or more shall display placards • Ships 100 GT and above and ships certified to carry 15 persons or more shall carry a garbage management plan • Ships 400 GT and above and ships certified to carry 15 persons or more shall have a garbage record book <ul style="list-style-type: none"> ○ Record book same entries as CFR ○ Record book maintained for 2 years after last entry
CVC-PL-13-01 Revised MARPOL Annex V Implementation	

OI-LM09 Review Oil Record Book (ORB)

33 CFR	MARPOL
<p><u>33 CFR 151.25</u> Oil Record Book</p> <ul style="list-style-type: none"> • ships of 400 GT and above shall maintain an ORB <ul style="list-style-type: none"> ◦ Part I (machinery space operations) <ul style="list-style-type: none"> ▪ Part II (cargo/ballast operations) apply to oil tankers • ORB available from OCMI office • ownership of ORB is the US Government • machinery space operations entries: <ul style="list-style-type: none"> ◦ ballasting or cleaning of fuel oil tanks ◦ discharge of ballast containing an oily mixture or cleaning water from fuel oil tanks ◦ disposal of oil residue ◦ discharge overboard or disposal otherwise of bilge water that has accumulated in machinery spaces ◦ bunkering of fuel or bulk lube oil ◦ an failure, and the reasons for, of the oil filtering equipment (OWS) • emergency, accidental, or other exceptional discharge of oil or oily mixture, statement made in ORB of the circumstances of, and the reasons • each operation above fully recorded without delay • completed operations signed by POC of ops • completed page signed by the master • maintained onboard for 3 years 	<p><u>MARPOL I/17</u> Oil Record Book Part I – Machinery Space Ops</p> <ul style="list-style-type: none"> • same as CFR

OI-LM10 Review Shipboard Oil Pollution Emergency Plan (SOPEP)

CFR Sub L	MARPOL
<p><u>46 CFR 131.935</u> Prevention of oil pollution</p> <ul style="list-style-type: none"> • each vsl must be operated in compliance with: <ul style="list-style-type: none"> ◦ FWPCA ◦ 33 CFR Parts 151, 155, 156 	<p><u>MARPOL I/37</u> Shipboard oil pollution emergency plan</p> <ul style="list-style-type: none"> • every oil tanker 150 GT and above and every other ship 400 GT and above shall carry onboard a SOPEP approved by the Administration • can combine with SMPEP • shall consist at least of: <ul style="list-style-type: none"> ◦ procedures to report an oil pollution incident ◦ list of authorities/persons to contact in event of incident ◦ immediate action to reduce/control discharge of oil ◦ procedures for coordinating with local authorities
<p><u>33 CFR 151.09(c)</u> Applicability</p> <ul style="list-style-type: none"> • ships 400 GT and above, oil tanker 150 GT and above <ul style="list-style-type: none"> ◦ Vessel Response Plan (non-tank) is an alternative 	
<p><u>33 CFR 151.27</u> Plan submission and approval</p> <ul style="list-style-type: none"> • plan approved by Coast Guard (CVC-1) • valid for 5 years 	
<p><u>33 CFR 151.28</u> Plan review and revision</p> <ul style="list-style-type: none"> • review SOPEP annually, within 1 month of anniv. date <ul style="list-style-type: none"> ◦ submit letter to CVC-1 certifying review is complete ◦ submit any plan amendments/revisions for approval ◦ record annual review and changes in Section 6 • entire plan resubmitted for re-approval 6 months before expiration • see 151.26(b)(8) for plan organization 	
CFR Sub I	
<p><u>46 CFR 91.25-38</u> Pollution prevention</p> <ul style="list-style-type: none"> • at each COI and periodic inspection, ensure compliance with: <ul style="list-style-type: none"> ◦ 33 CFR Part 155 	

OI-LM12 Examine ballast water management documents

33 CFR	NVIC 01-18
<p data-bbox="149 318 709 350"><u>33 CFR 151.2050</u> Additional requirements</p> <ul data-bbox="205 358 1020 857" style="list-style-type: none">• maintain a ballast water management plan<ul data-bbox="254 399 726 431" style="list-style-type: none">◦ developed specifically for the vsl• must include:<ul data-bbox="254 480 1020 857" style="list-style-type: none">◦ detailed safety procedures◦ actions for implementing BWM requirements / practices◦ detailed fouling maintenance and sediment removal procedures◦ procedures for coordinating BWM strategy to CG◦ identification of the designated officer in charge of plan implementation◦ detailed reporting requirements/procedures for ports in US that vsl may visit◦ plan in English, French, or Spanish <p data-bbox="149 898 701 930"><u>33 CFR 151.2060</u> Reporting requirements</p> <ul data-bbox="205 938 1031 1198" style="list-style-type: none">• submit report to National Ballast Information Clearinghouse (NBIC)<ul data-bbox="254 1011 1031 1198" style="list-style-type: none">◦ submit NLT 6 hours after arrival or prior to departure, whichever is earlier<ul data-bbox="302 1092 1020 1125" style="list-style-type: none">▪ Great Lakes and Hudson River have special requires◦ includes: vsl info, voyage info, ballast water info, info on discharging, and certificate of accuracy <p data-bbox="149 1239 768 1271"><u>33 CFR 151.2070</u> Recordkeeping requirements</p> <ul data-bbox="205 1279 978 1422" style="list-style-type: none">• written or digital records of 151.2060 and if discharge of sediment• copy retained onboard for 2 years<ul data-bbox="254 1393 768 1422" style="list-style-type: none">◦ reporting and monitoring (if BWMS)	<ul data-bbox="1100 318 1913 505" style="list-style-type: none">• Alternate management system (AMS) – ballast water management system approved by foreign flag and meets all applicable requirements of US law<ul data-bbox="1148 431 1724 505" style="list-style-type: none">◦ manufacturer must request CG approval◦ 5 year window to use AMS (1 Dec 2013)

Table 1 to §151.2015—Table of 33 CFR §151.2015 Specific Exemptions for Types of Vessels

Vessel category	Requirement category		
	§151.2025 (Management)	§151.2060 (Reporting)	§151.2070 (Recordkeeping)
Department of Defense or Coast Guard vessel subject to 46 U.S.C. 4713 ¹	Exempt	Exempt	Exempt
Vessel of the Armed Forces subject to the “Uniform National Discharge Standards for Vessels of the Armed Forces” (33 U.S.C. 1322(n)) ²	Exempt	Exempt	Exempt
Crude oil tanker qualified for and engaged in coastwise trade	Exempt	Exempt	Exempt
Vessel operates exclusively on voyages between ports or places within a single COTP Zone	Exempt	Applicable	Exempt
Seagoing vessel operates on voyages between ports or places in more than a single COTP Zone, does not operate outside of EEZ, and ≤ 1600 GRT or ≤ 3000 GT ITC	Exempt	Applicable	Applicable
Non-seagoing vessel	Exempt	Applicable	Applicable (unless operating exclusively on voyages between ports or places within a single COTP Zone).
Vessel operates between ports or places in more than a single COTP Zone and takes on and discharges ballast water exclusively in one COTP Zone	Exempt	Applicable	Applicable

¹ Note that such vessels are exempt from subparts C and D in their entirety as per 33 CFR 151.1502 and 151.2015(a).

² Same as footnote 2 above.

OI-LM16 Review Shipboard Marine Pollution Emergency Plans (SMPEP)

CFR	MARPOL
	<p><u>MARPOL II/17</u> SMPEP for noxious liquid substances</p> <ul style="list-style-type: none"> • every ship 150 GT and above certified to carry NLS in bulk shall have a SMPEP approved by the Administration • plan consists of: <ul style="list-style-type: none"> ◦ procedure to report NLS pollution incident ◦ list of authorities/persons to contact in event of incident ◦ action taken to reduce/control discharge of NLS ◦ procedures to contact local authorities • can be combined with SOPEP

OI-LM17 Review Procedures and Arrangements Manual (P&A)

CFR	MARPOL
	<p><u>MARPOL II/14</u> Procedures and Arrangements Manual</p> <ul style="list-style-type: none"> • every ship certified to carry substances of category X, Y, or Z shall have onboard a P&A Manual approved by the Administration <ul style="list-style-type: none"> ◦ manual in standard format in App. IV of Annex II • main purpose of manual is to identify the physical arrangements and all the operational procedures with respect to cargo handling, tank cleaning, slops handling, and cargo tank ballasting and deballasting

OI-LS03 Inspect line throwing equipment

CFR Sub L	SOLAS
<u>46 CFR 133.170</u> <ul style="list-style-type: none">• Approval 160.031 – Shoulder gun type<ul style="list-style-type: none">◦ 500 ft of line• Approval 160.040 – Impulse projected rocket type<ul style="list-style-type: none">◦ 1500 ft of line	<u>SOLAS 14 III/18</u> <ul style="list-style-type: none">• LSA Code 7.1<ul style="list-style-type: none">◦ Has reasonable accuracy◦ Can carry line at least 230m in calm weather◦ At least 4 projectiles
CFR Sub I → SUB W	
<u>46 CFR 199.170</u> <ul style="list-style-type: none">• Only approval 160.040 impulse projected rocket type	

OI-LS05 Inspect Life Jackets

CFR Sub L	SOLAS
<p><u>46 CFR 133.70(b)</u></p> <ul style="list-style-type: none"> • Approval – 160.002, .005, .055, .077, .155, .176, .177 • Stowage positions marked with “LIFEJACKETS” or IMO symbol • Additional stowage at watch stations (bridge, eng room, etc) • Marked in block capital letters name of OSV and type 1 retro-reflective material IAW IMO Res. A.658(16) • Each has lifejacket light (approval 161.112, .012) on the front shoulder area 	<p><u>SOLAS 14 III/7.2 → LSA Code 2.2</u></p> <ul style="list-style-type: none"> • Stowage positions marked with “LIFEJACKETS” or IMO symbol • Additional stowage at watch stations (bridge, eng room, etc) • Each lifejacket has a white light and whistle on a lanyard, and releasable buoyant line to secure to another lifejacket
<p><u>46 CFR 133.80(b)</u></p> <ul style="list-style-type: none"> • Emergency instructions in English and other language displayed at muster station and spaces where offshore works are carried showing: <ul style="list-style-type: none"> ◦ Location of lifejackets ◦ Method of donning lifejackets 	<p><u>SOLAS 14 III/35</u></p> <ul style="list-style-type: none"> • Training manual includes instructions in detail donning of lifejackets
<p>CFR Sub I → Sub W</p>	
<p>46 CFR 199.70</p> <ul style="list-style-type: none"> • Approval – 160.155, .176, .177 • Stowage same as Sub L • Marked same as Sub L • Light (approval 161.112) on front shoulder area and whistle secured by cord 	

OI-LS07 Inspect immersion suits

CFR Sub L	SOLAS
<p><u>46 CFR 133.70</u> Personal lifesaving appliances</p> <ul style="list-style-type: none"> • Exceptions – operating in Gulf of Mexico and other routes between 32 deg north and south latitudes • An immersion or anti-exposure suit for each person assigned to rescue boat crew • An immersion suit for each person onboard. Above count towards this. • Stowage so readily accessible and marked with “Immersion Suits” or “Anti-Exposure Suits” or IMO symbol. • Extra immersion suits at watch stations equal to persons on watch. • Marked to identify the person it belongs to. • Must have lifejacket light on front shoulder area. 	<p><u>SOLAS 14 III/32</u></p> <ul style="list-style-type: none"> • Same as CFR (needs lights and whistle) • LSA has particulars about buoyancy and movement. • If a lifejacket is required to be worn with suit, no lights or whistle on suit.
<p><u>46 CFR 131.875</u> Markings</p> <ul style="list-style-type: none"> • Marked with vsl's name 	<p><u>IMO Resolution A.658</u></p> <ul style="list-style-type: none"> • Retro-reflective on Lifesaving
<p>CFR Sub I → Sub W</p>	
<p><u>46 CFR 199.70</u> Personal lifesaving appliances</p> <ul style="list-style-type: none"> • Same as Sub L, but with added whistle. 	

OI-LS09 Inspect inflatable liferaft installations

CFR Sub L	SOLAS
<p><u>46 CFR 133.105</u> Survival craft</p> <ul style="list-style-type: none"> • Unlimited oceans route <ul style="list-style-type: none"> ◦ SOLAS liferaft, SOLAS A pack • Oceans route ltd. To 50 NM <ul style="list-style-type: none"> ◦ SOLAS liferaft, SOLAS A or B pack • Coastwise route <ul style="list-style-type: none"> ◦ Domestic liferaft or SOLAS liferaft with any pack • Have enough liferafts with aggregate capacity of total number of persons onboard <ul style="list-style-type: none"> ◦ stowed providing easy side-to-side transfer at a single open deck level, or ◦ additional liferafts to bring total capacity on each side to 100% total number of persons onboard • Operating in Gulf of Mexico can substitute IBA or life floats 	<p><u>SOLAS 14 III</u></p> <ul style="list-style-type: none"> • same as Sub W
<p><u>46 CFR 133.130</u> Stowage of survival craft</p> <ul style="list-style-type: none"> • two crew members can complete preps for embarkation and launching in less than 5 minutes • Not require lifting to launch, except <ul style="list-style-type: none"> ◦ if weighs 407.8 lbs or less, no lift over 1 ft • not stowed higher than 59 ft or as marked on container 	
<p><u>46 CFR 131.865</u> Marking</p> <ul style="list-style-type: none"> • liferaft number marked • number of persons approved for • inspection sticker with expiration, service facility 	
<p><u>46 CFR 133.110</u> Embarkation arrangements</p> <ul style="list-style-type: none"> • illuminated by emergency lighting • need ladder if more than 10 ft above waterline 	

CFR Sub I → SUB W

46 CFR CFR 199

- Must be SOLAS liferaft and have SOLAS A pack
- operating instructions posted in vicinity of craft
- embarkation ladder regardless of height
- stowed ready for use so two crew members can complete preps for embarkation and launching in less than 5 minutes
- Not require lifting to launch, except
 - if weighs 407.8 lbs or less, no lift over 1 ft
- not stowed higher than 59 ft or as marked on container
- stowage location marked with IMO sticker and capacity of liferaft
- craft numbered consecutively starting from bow
 - odd on port side, even on stbd side-to-side
- serviced annually, can extend up to 5 months to align with inspection; at service facility
- 85 meter (278 feet) exception (lifeboat break point):
 - on each side of vsl, liferafts to accommodate total number of persons onboard and stowed for side-to-side transfer or
 - on each side of vsl, liferafts to accommodate 150% total number of persons onboard (no side-to-side)

OI-LS11 Inspect lifeboats

- Vsl less than 278 ft (85 m) exempt from carrying lifeboats - 46 CFR 199.261(d)

CFR Sub W	SOLAS
<p><u>46 CFR 199.261</u> Survival craft</p> <ul style="list-style-type: none">• lifeboat must be totally enclosed<ul style="list-style-type: none">◦ approval series 160.135 <p><u>46 CFR 199.130</u> Stowage</p> <ul style="list-style-type: none">• ready for use so two crew members can complete preps for embarkation and launching in less than 5 minutes• protected from damage from heavy seas<ul style="list-style-type: none">◦ if lowered over the side, as far forward from vsl propellers as practical• stowed attached to its launching appliance• have means for recharging batteries from ships power <p><u>46 CFR 199.176</u> Markings</p> <ul style="list-style-type: none">• each side of the bow<ul style="list-style-type: none">◦ name of vessel◦ name of port• number of persons equipped to carry<ul style="list-style-type: none">◦ preferably on the bow• visible from above<ul style="list-style-type: none">◦ number of the boat◦ name of vessel◦ retro-reflective material IAW IMO Res A.658(16)• stowage location marked with survival craft number<ul style="list-style-type: none">◦ consecutively from bow; odd on port, even on stbd <p><u>46 CFR 199.175</u> Equipment</p> <ul style="list-style-type: none">• see table<ul style="list-style-type: none">◦ if lifeboat is rescue boat, must carry lifeboat equipment	<p><u>SOLAS 14 III/31</u></p> <ul style="list-style-type: none">• pretty much matches with CFR• lifeboat must be totally enclosed<ul style="list-style-type: none">◦ comply with LSA Code 4.6 and 4.4◦ speed of at least 6 knots, 2 kts when towing◦ enough fuel for at least 24 hours @ 6 kts fully loaded• Not found in Code equipment list:<ul style="list-style-type: none">◦ ladder - 4.4.3.3◦ rainwater collection - 4.4.7.5◦ skates and fenders - 4.4.7.9◦ towline – could not find in Code <p>MSC.1/Circ.1205/Rev.1 – Guidelines for developing operation and maintenance manuals for lifeboat system</p>

199.175 Survival Craft Equipment

Item No.	Item	International voyage			Short international voyage		
		Lifeboat	Rigid liferaft (SOLAS A pack)	Rescue boat	Lifeboat	Rigid liferaft (SOLAS B pack)	Rescue boat
1	Bailer ¹	1	1	1	1	1	1
2	Bilge pump ²	1			1		
3	Boathook	2		1	2		1
4	Bucket ³	2		1	2		1
5	Can opener	3	3		3		
6	Compass	1		1	1		1
7	Dipper	1			1		
8	Drinking cup	1	1		1		
9	Fire extinguisher	1		1	1		1
10	First aid kit	1	1	1	1	1	1
11	Fishing kit	1	1				
12	Flashlight	1	1	1	1	1	1
13	Hatchet	2			2		
14	Heaving line - quoit in LSA	2	1	2	2	1	2
15	Instruction card		1			1	
16	Jackknife	1			1		
17	Knife ^{1 4}		1	1		1	1
18	Ladder	1		1	1		1
19	Mirror, signaling	1	1		1	1	
20	Oars, units ^{5 6}	1		1	1		1
	Paddles		2			2	
21	Painter	2	1	1	2	1	1
22	Provisions (units per person)	1	1				
23	Pump ⁷			1			1
24	Radar reflector	1	1	1	1	1	1

Item No.	Item	International voyage			Short international voyage		
		Lifeboat	Rigid liferaft (SOLAS A pack)	Rescue boat	Lifeboat	Rigid liferaft (SOLAS B pack)	Rescue boat
25	Rainwater collection device	1			1		
26	Repair kit ⁷			1			1
27	Sea anchor	1	2	1	1	2	1
28	Searchlight	1		1	1		1
29	Seasickness kit (units per person)	1	1		1	1	
30	Signal, smoke	2	2		2	1	
31	Signal, hand flare	6	6		6	3	
32	Signal, parachute flare	4	4		4	2	
33	Skates and fenders ⁸	1		1	1		1
34	Sponge ⁷		2	2		2	2
35	Survival instructions	1	1		1	1	
36	Table of lifesaving signals	1	1		1	1	
37	Thermal protective aids ⁹	10%	10%	10%	10%	10%	10%
38	Tool kit	1			1		
39	Towline ¹⁰	1		1	1		1
40	Water (liters per person)	3	1.5		3		
41	Whistle	1	1	1	1	1	1

Notes:

1. Each liferaft equipped for 13 persons or more must carry two of these items.

2. Not required for boats of self-bailing design.

3. Not required for inflated or rigid-inflated rescue boats.

4. A hatchet counts towards this requirement in rigid rescue boats.

5. Oars are not required on a free-fall lifeboat; a unit of oars means the number of oars specified by the boat manufacturer.

6. Rescue boats may substitute buoyant paddles for oars, as specified by the manufacturer.

7. Not required for a rigid rescue boat.

8. Required if specified by the boat manufacturer.

9.

9. Sufficient thermal protective aids are required for at least 10% of the persons the survival craft is equipped to carry, but not less than two.

10. Required only if the lifeboat is also the rescue boat.

OI-LS14 Inspect davit and appurtenances

CFR Sub L	SOLAS
<p><u>46 CFR 131.540</u> Operational readiness</p> <ul style="list-style-type: none"> • each lifesaving appliance and each item of equipment must be in good working order and ready for immediate use • each deck where survival craft or rescue boat is stowed, launched, or boarded must be kept clear <p><u>46 CFR 133.90</u> Operating instructions</p> <ul style="list-style-type: none"> • Posters or signs displayed in vicinity of launching controls: <ul style="list-style-type: none"> ◦ illustrate purpose of controls, procedures for operation, relevant warnings, easily seen under emergency lighting, display IMO symbols <p><u>46 CFR 133.153</u> Survival craft launching/recovery falls and winch</p> <ul style="list-style-type: none"> • fall wire must be rotation-resistant and corrosion-resistant steel wire rope • winch drum must be arranged so the fall wire winds onto the drum in a level wrap • safety devices provided which cut off power before davit arms or falls reach the stops (limit switch) • fitted with brakes <ul style="list-style-type: none"> ◦ capable of stopping descent and holding boat w/full load ◦ manual brakes arranged so brake is always applied unless the operator holds the brake control in off position 	<p><u>SOLAS 14 III/20</u> Operational readiness, maintenance and inspection</p> <ul style="list-style-type: none"> • all lifesaving appliances shall be in working order and ready for immediate use • maintenance, testing, and inspections of lifesaving appliances shall be carried out <ul style="list-style-type: none"> ◦ instructions for onboard maintenance shall be provided • weekly inspections <ul style="list-style-type: none"> ◦ visually inspected, includes: condition of hooks, onboard release gear ◦ lifeboats moved from stowed position • monthly inspections <ul style="list-style-type: none"> ◦ lifeboats shall be turned out from stowed position • periodic servicing of launching appliances <ul style="list-style-type: none"> ◦ 5 year load test (1.1 times full load weight) <p>SOLAS 14 III/9 Operating instructions</p> <ul style="list-style-type: none"> • same as CFR
<p>CFR Sub I – SUB W</p>	
<ul style="list-style-type: none"> • Same as Sub L and SOLAS. All regs pretty much read the same 	

OI-MI01 Inspect steering gear

CFR Sub L	SOLAS
<p><u>46 CFR 130.130</u> Steering on OSV less than 100 GT</p> <ul style="list-style-type: none"> • main steering move rudder from 35° to 30° at deepest draft and max speed in no more than 28 sec • no aux steering if main steering including power units are duplicated; or <ul style="list-style-type: none"> ◦ multiple screws with independent control from pilothouse and can restrain rudder amidships • rudder angle indicator independent of control from main steering gear installed in pilothouse <p><u>46 CFR 130.140</u> Steering on OSV 100 GT or more</p> <ul style="list-style-type: none"> • can meet requirements of Sub F and J; or • adequate strength and capable of steering vsI at every service speed and max astern speed w/o being damaged • hydraulic system with MAWP of 1800 psi and dedicated to steering • rudder stops • two steering pumps or single cascading overflow sump • control of main steering gear from pilothouse • multiple screw propulsion • dual hydraulic cylinders that can be isolated • steering alarms in 46 CFR 58.25-25 • rudder angle indicator in pilothouse • means to locally start and stop pumps • manual capability to center and steady the rudder 	<p><u>SOLAS 14 II-1/29</u> Steering gear</p> <ul style="list-style-type: none"> • main steering move rudder from 35° to 30° at deepest draft and max speed in no more than 28 sec <ul style="list-style-type: none"> ◦ aux steering 15° to 15° at deepest draft and half speed in no more than 60 sec • main and aux steering power units restart automatically when power restored after failure • no aux steering if main has two or more identical power units • means of comms between bridge and steering gear compartment • when rudder stock is over 230 mm (9 in) diameter, an alternative power supply (emergency or independent) shall be provided within 45 sec. <ul style="list-style-type: none"> ◦ Independent power supply only for this purpose and capacity for 10 min ◦ 10,000 GT and up 30 min • failure of electrical power supply to control system has audible and visible alarm on bridge

<p>CFR Sub I → Sub F</p>	
<ul style="list-style-type: none"> • Same as SOLAS <p><u>46 CFR 58.25-25</u> Indicating and alarm systems</p> <ul style="list-style-type: none"> • vsl 1600 GT or more go to: • 46 CFR 113.43-3 <ul style="list-style-type: none"> ◦ visual and audible alarm in pilothouse when actual position of the rudder differs more than 5° from rudder angle indicator in follow up mode <ul style="list-style-type: none"> ▪ 30 sec for changes of 70° ▪ 6.5 sec for changes of 5° • 46 CFR 113.43-5 <ul style="list-style-type: none"> ◦ steering failure alarm is fed from final emergency power source 	<p><u>SOLAS 14 V/26</u> Steering gear: testing and drills</p> <ul style="list-style-type: none"> • within 12 hours before departure, check and test: <ul style="list-style-type: none"> ◦ main / aux steering gear, remote steering gear controls, steering positions on bridge, emergency power supply, rudder angle indicators in relation to rudders, alarms ◦ full movement of rudder, visual inspection of steering gear and linkage ◦ comms between bridge and steering gear compartment • operating instructions with diagram showing change over procedures for remote steering and power units permanently displayed on bridge and steering compartment • emergency steering drill once every 3 months • checks/test and details of emergency steering drill recorded

OI-MI02 Inspect fuel oil service and transfer system

Sub L - 46 CFR 131.935 → must comply with 33 CFR 151, 155, 156 and FWPCA

33 CFR Sub O	SOLAS
<p><u>33 CFR 155.720</u> Transfer procedures</p> <ul style="list-style-type: none"> • vsl with capacity of 250 brl or more (10500 gal) of oil shall provide transfer procedures for transferring to or from the vsl and from tank to tank within the vsl <p><u>33 CFR 155.740</u> Availability of transfer procedures</p> <ul style="list-style-type: none"> • available for inspection whenever vsl is in operation • legibly printed in language understood by transfer personnel • permanently posted or available at a place where procedures can be easily seen and used 	<p><u>SOLAS 14 II-2/4</u> Probability of ignition</p> <ul style="list-style-type: none"> • 2.2.5 Oil fuel piping <ul style="list-style-type: none"> ◦ restricted use of flexible pipes where Administration deems necessary ◦ oil fuel lines shall be screened/protected to avoid oil spray or leaks onto sources of ignition (SOLAS tape, plastic clips, double walled/jacketed lines ◦ means to isolate fuel supply to each engine • 2.2.6 Protection of high-temperature surfaces <ul style="list-style-type: none"> ◦ surfaces with temp above 220°C (428°F) shall be properly insulated
<p>CFR Sub F</p>	
<p><u>46 CFR 56.50-60</u> Systems containing oil</p> <ul style="list-style-type: none"> • filling pipes may led directly to tank; or <ul style="list-style-type: none"> ◦ manifold in accessible location permanently marked to indicate tanks • piping subject to internal head pressure from oil in the tank must be fitted with positive shutoff valves located at tank <ul style="list-style-type: none"> ◦ valves on outside of tank must have means of local control and remote control from accessible/safe location outside where valves are located • drain valve only allowed on diesel driven machinery if within the machinery space and fitted with a cap/plug to prevent leaks • if piping not run away from hot surfaces, only welded joints to be used; or <ul style="list-style-type: none"> ◦ suitable shields fitted on flanges/mechanical pipe joints • drip pans fitted on equipment subject to normal oil leaks 	

46 CFR 56.60-25(b) Nonmetallic flexible hose

- use only where flexibility required, not exceeding 30 inches
- SAE J1942 hose / SAE J1475 hose end fittings

46 CFR 58.01-25 Means of stopping machinery

- pumps must be fitted with remote controls from a readily accessible position outside the space, to stop in case of fire
- protected against accidental operation
- must be marked

OI-MI03 Inspect main propulsion systems

CFR Sub L	SOLAS
<p><u>46 CFR 127.330</u> Guards in dangerous places</p> <ul style="list-style-type: none"> • suitable hand covers, guards, or rails must be installed on each exposed and dangerous place <ul style="list-style-type: none"> ◦ gears, rotating machinery, hot surfaces <p><u>46 CFR 128.230</u> Hull/watertight bulkhead penetrations</p> <ul style="list-style-type: none"> • meet requirements in Sub F <p><u>46 CFR 128.430</u> Non-integral keel cooler</p> <ul style="list-style-type: none"> • each hull penetration must be made through a cofferdam or at a seachest and must be provided with isolation valve fitted as close to the sea inlet as possible • non-integral keel cooler must be protected by guards or recessing into the hull 	<p><u>SOLAS 14 II-1/27</u> Machinery</p> <ul style="list-style-type: none"> • if risk of overspeed exists, means shall be provided to ensure safe speed is not exceeded • main/aux machinery (including pressure vsl) that may be subject to dangerous overpressure, means shall be provided to protect against excessive pressure • internal combustion engines with cylinder diameter of 200mm (7.8 in) or crankcase volume of 0.6m³ (21 cu ft) and above shall be provided with crankcase explosion relief valves
CFR Sub F	
<p><u>46 CFR 58.01-20</u> Machinery guards</p> <ul style="list-style-type: none"> • gears, couplings, flywheels and all machinery capable of injuring personnel shall be provided with covers/guards <p><u>46 CFR 56.50-95</u> Overboard discharges and shell connections</p> <ul style="list-style-type: none"> • check valves (automatic non-return valve) installed: <ul style="list-style-type: none"> ◦ no load line - penetration more than 17 ½ inches below freeboard deck ◦ load line - penetration less than 23 ½ inches above summer load waterline • sea inlets and discharges used in machinery shall be fitted with a shutoff valve located as near the shell plating • all inlets and discharges through vsl side shell shall be fitted 	

with means (located as close to the hull penetration as practicable) for preventing admission of water

46 CFR 56.50-96 Keel cooler installations

- shutoff/isolation valve not required for inlet/discharge connections if installation is integral with ships hull and:
 - cooler is same material and thickness as hull plate
 - full penetration welds in construction and attachment
 - forward end is faired to the hull
 - no less than 4 times the height

OI-MI04 Inspect non-metallic expansion joints

CFR Sub F	SOLAS
<p><u>46 CFR 61.15-2</u> Non-metallic expansion joints</p> <ul style="list-style-type: none">• examined externally at each COI and periodic inspection<ul style="list-style-type: none">◦ signs of excessive wear, fatigue, deterioration, physical damage, misalignment, improper flange-to-flange spacing, and leakage◦ complete internal exam if fails external exam• must be replaced after 10 years after put into service<ul style="list-style-type: none">◦ if located in a system which penetrates the side of the ship and both the penetration and expansion joint are located below the deepest load waterline	<p><u>SOLAS 14 II-1/26.9</u> Machinery installations, general</p> <ul style="list-style-type: none">• non-metallic expansion joints, if located in a system which penetrates the ships side and both the penetration and expansion joint are located below the deepest load waterline, shall be inspected annually and replaced as necessary, or at an interval recommended by the manufacturer<ul style="list-style-type: none">◦ no 10 year rule

MSM Vol II, Sec B, Ch 3, F.3

a. Leaks at the flange. Retaining ring splits should be as close together as possible and flat steel washers should be used on the bolts over the splits. The bolts should be tightened uniformly by moving alternately around the flange from bolt to bolt until the rubber on the joint flange bulges slightly and uniformly between the steel retaining ring and the piping flange.

b. Cracks at base of arch or flange. These are caused by unexpected pipe movements that put excessive stress on the joint, most commonly from initial misalignment at the time of installation, excessive pipe movement, improper anchorage, or failure to use control rods. If such cracks are severe enough to interfere with the integrity of the joint, it must be replaced after the cause of the damage has been corrected.

c. Ballooned or otherwise deformed arches. These indicate interior displacement of reinforcing rings or wire, usually because of higher than recommended pressures. The joint must be replaced after all working conditions have been checked and proper recommendations made.

d. Loose outer body fabric. A feeling of softness or looseness near the surface of the arch indicates a loss of adhesion between fabric plies. If plies have separated, the joint must be replaced.

e. Spongy feeling of the joint body. This is caused by moisture penetration and deterioration of the fabric, usually from loose bolts or deterioration of, or physical damage to, the bolt hole sealant. Operating conditions should be checked and the joint replaced.

f. Hardness and cracking of the cover. This is caused by exposure to extreme heat, chemical fumes, ozone, and other elements in service conditions. The joint should be replaced after the cause has been determined and corrected.

g. Cuts and gouges in the cover. These are caused by careless handling or damage from tools. Repairs should be made after consultation with the manufacturer and notification of the OCMI.

OI-MI05 Witness operational test of main propulsion automation

CFR Sub L	SOLAS
<p><u>46 CFR 130.400</u></p> <ul style="list-style-type: none">- Applies to vsl 100 GT or more - Each piece of machinery under auto control must have alternative means of manual control - Must have in pilothouse controls to start fire pump, charge the fire main, and monitor pressure - Comms system to immediately summon crew member to machinery space.<ul style="list-style-type: none">• dedicated alarm operable from pilothouse that sounds in crew accommodations/normally manned spaces; or• telephone operated from pilothouse that reaches masters and engineers stateroom, engine room, and crew accommodations that is sound powered or emergency powered. - Visual and audible alarms in pilothouse for<ul style="list-style-type: none">• loss of power for propulsion control• loss of power to steering motor or control for main steering• engine room fire• high bilge level• low lube oil pressure - MDE, SSDG, red gear, turbo• high lube oil temp - MDE, SSDG, red gear, turbo• high jacket water temp – MDE, SSDG• loss of normal power to alarms - Centralized displays installed in machinery space to allow rapid evaluation of alarms	<p><u>SOLAS 14</u></p>

<p>- Test procedures</p> <ul style="list-style-type: none"> • be in sequential-checkoff format • include require alarms, controls, and comms • set forth details of the tests • details specify status of equipment, functions necessary to complete the tests, and expected results • detailed operations manual 	
<p>CFR Sub I → Sub F</p>	
<p>46 CFR 62 Vital system automation</p>	

OI-MI07 Inspect refrigeration/air conditioning systems

CFR Sub L	MARPOL
<p><u>46 CFR 128.410</u> Ship's service refrigeration systems</p> <ul style="list-style-type: none"> • no self-contained unit for air conditioning or refrigerated spaces for ship's stores need comply with Sub F, if; <ul style="list-style-type: none"> ◦ unit uses a fluorocarbon refrigerant allowed in part 147 ◦ manufacturer certifies the unit is suitable for its intended purpose ◦ electrical wiring meets requirements in Sub J <p><u>46 CFR 130.230</u> Protection from refrigerants</p> <ul style="list-style-type: none"> • same as Sub I, 96.30 	<p><u>MARPOL VI/12</u> Ozone depleting substances</p> <ul style="list-style-type: none"> • IAPP Cert Supplement will list equipment containing ozone depleting substances <ul style="list-style-type: none"> ◦ vsl maintain an ozone depleting substances record book • 19 May 2005 – prohibited installation of ozone depleting substances, other than HCFC • 1 Jan 2020 – prohibited installation of HCFC <ul style="list-style-type: none"> ◦ HCFC – hydrochlorofluorocarbon ◦ R-22 refrigerant most common in A/C system
CFR Sub I	
<p><u>46 CFR 96.30</u> Protection from refrigerants</p> <ul style="list-style-type: none"> • applies to each vsl contracted on or after Nov 23, 1992 and equipped with any refrigeration unit using <ul style="list-style-type: none"> ◦ ammonia to refrigerate any space with volume more than 20 cubic feet ◦ fluorocarbons to refrigerate any space with volume more than 1000 cubic feet • each vsl must have a self-contained breathing apparatus for use against gas leaking <ul style="list-style-type: none"> ◦ 30 minute air supply, full face piece, spare charge ◦ can be a fireman's outfit 	

CFR Sub F	
<p>46 CFR 58.20 Refrigeration machinery</p> <ul style="list-style-type: none"> • regs in this subpart do not apply to small self-contained units <p>46 CFR 147.90 Refrigerants</p> <ul style="list-style-type: none"> • Only refrigerants listed in ANSI/ASHRAE 34-78 may be carried as ships' stores • Refrigerants contained in a vessel's operating system are not considered as being carried as ship's stores 	
CFR Sub J	
<p><u>46 CFR 113.45</u> Refrigerated spaces alarm systems</p> <ul style="list-style-type: none"> • each refrigerated space accessible to personnel that can be locked from the outside and not opened from inside, must have an audible alarm system that can be operated from inside the space • alarm activator must be in the refrigerated space at exit • audible signal must sound at a manned station <ul style="list-style-type: none"> ◦ if common signal for more than one space, must be an annunciator to locate space where signal was initiated 	

OI-MI08 Inspect bilge system

CFR Sub L	SOLAS
<p><u>46 CFR 128.440</u> Bilge systems</p> <ul style="list-style-type: none"> • Sends to Sub F (56.50-50 and 56.50-55) • Exception <ul style="list-style-type: none"> ○ If steering room, engine room, centerline p-way, forward machinery space, and compartment with dry mud tanks are the only below deck spaces that require bilge suctions, vsl can be equipped to 56.50-50 and 56.50-57 applicable to dry cargo vsl less than 180 ft <p><u>46 CFR 131.935</u> Prevention of oil pollution</p> <ul style="list-style-type: none"> • 33 CFR 151, 155, 156 <p><u>33 CFR 155.450</u> Placard</p> <ul style="list-style-type: none"> • Ship 26 ft or greater must have placard (5in x 8in) fixed in conspicuous place in each machinery space, or at bilge/ballast pump controls: Discharge of Oil Prohibited 	<p><u>SOLAS 14 II-1/35-1</u> Bilge pumping arrangements</p> <ul style="list-style-type: none"> • cargo ships at least two power pumps
<p>CFR Sub I → Sub F</p>	
<p><u>46 CFR 96.03</u> Marine engineering systems</p> <ul style="list-style-type: none"> • Systems of marine engineering nature IAW Sub F 	

CFR Sub F

46 CFR 56.50-55 Bilge pumps

- 2 power-driven pumps if 65 ft or more (dry cargo vsl)
 - see table for other vsls
 - suitable means for priming if not self-priming

46 CFR 56.50-50 Bilge and ballast piping

- emergency bilge suction – vsl over 180 ft
 - direct suction from machinery space, any pump except required bilge pumps
- each bilge suction must lead from a manifold
 - valve must be of the stop-check type
- vsl 150 GT and over – piping no less than 2-½ inch
 - branch piping no more than 4 inch / less than 2 inch
- vsl less than 150 GT – piping no less than 1-½ inch
 - branch piping no less than 1 inch
- each individual bilge suction shall be fitted with a strainer
 - open area not less than 3 times pipe size
- basket strainer fitted in accessible position between bilge manifold and pump

46 CFR 56.50-1(2)(i) General

- remote valve controls that are not readily identifiable as to service must be fitted with nameplates

46 CFR 61.20-5 Drydock exam

- sea chests, sea valves, sea strainers, and **valves for the emergency bilge suction shall be opened for exam every 5 years.**

OI-MI09 Inspect ballast system

CFR	
<u>33 CFR 151.2015</u> Applicability <ul style="list-style-type: none">• See table below	
<u>33 CFR 151.2025</u> Ballast water management requirements <ul style="list-style-type: none">• vsl equipped with ballast tanks that operates in US waters must employ one of the following methods<ol style="list-style-type: none">1. Install and operate a ballast water management system (BWMS) that has been CG approved.2. Use only water from a US public water system (PWS). Must maintain records of which PWS water was rcvd including receipt/invoice. Vsl using PWS must use exclusively and either previously cleaned tanks and/or never introduced ambient water to the tanks3. Perform complete ballast water exchange in an area 200 NM from any shore prior to discharging ballast water.4. Do not discharge ballast water into US waters5. Discharge to a facility onshore or to another vsl for treatment. <u>33 CFR 151.2060</u> Reporting requirements <ul style="list-style-type: none">• submit report to National Ballast Information Clearinghouse (NBIC)<ul style="list-style-type: none">◦ submit NLT 6 hours after arrival or prior to departure, whichever is earlier<ul style="list-style-type: none">▪ Great Lakes and Hudson River have special requires◦ includes: vsl info, voyage info, ballast water info, info on discharging, and certificate of accuracy <u>33 CFR 151.2070</u> Recordkeeping requirements <ul style="list-style-type: none">• written or digital records of 151.2060 and if discharge of sediment• copy retained onboard for 2 years<ul style="list-style-type: none">◦ reporting and monitoring (if BWMS)	

CFR Sub F	
<p>46 CFR 56.50-55 Bilge and ballast piping</p> <ul style="list-style-type: none"> • where bilge/ballast piping are lead through tanks (except ballast piping in ballast tanks), must minimize flooding from pipe failure <ul style="list-style-type: none"> ◦ in oil tight or watertight pipe tunnel; or ◦ Schedule 80 pipe wall thickness <ul style="list-style-type: none"> ▪ fitted with expansion bends ▪ all joints welded <p>46 CFR 56.50-1(g)(2)(i) General</p> <ul style="list-style-type: none"> • remote valve controls not readily identifiable as to service must be fitted with nameplates 	

	151.2025 (Management)	151.2060 (Reporting)	151.2070 (Recordkeeping)
Department of Defense or Coast Guard vessel subject to 46 U.S.C. 4713	Exempt	Exempt	Exempt.
Vessel of the Armed Forces subject to the "Uniform National Discharge Standards for Vessels of the Armed Forces" (33 U.S.C. 1322(n))	Exempt	Exempt	Exempt.
Crude oil tankers engaged in coastwise trade	Exempt	Exempt	Exempt.
Vessel operates exclusively on voyages between ports or places within a single COTP Zone	Exempt	Exempt	Exempt.
Seagoing vessel operates on voyages between ports or places in more than a single COTP Zone, does not operate outside of EEZ, and ≤1600 gross register tons or ≤3000 gross tons (ITC)	Exempt	Applicable	Applicable.
Non-seagoing vessel	Exempt	Applicable ¹	Applicable ¹
Vessel operates between ports or places in more than a single COTP Zone and takes on and discharges ballast water exclusively in a single COTP Zone	Exempt	Applicable	Applicable.

¹ Unless operating exclusively on voyages between ports or places within a single COTP Zone.

OI-PP01 Inspect oily water separator (OWS)

46 CFR 131.935 → 33 CFR 151, 155, 156

CFR	MARPOL
<p><u>33 CFR 155.380</u> OWS equipment and bilge alarm approvals</p> <ul style="list-style-type: none">• US inspected ships – must be approved under 162.050• US uninspected ships / foreign ships – 162.050 or MARPOL• accuracy of bilge alarms must be checked at IOPP renewal according to manufacturers instructions or replaced by a calibrated bilge alarm• ship staff training must include familiarization in operation and maintenance of the equipment• routine maintenance must be clearly defined in ops and maintenance manuals and must be recorded (routine/repair)	<p><u>MARPOL Annex I/14</u> Oil filtering equipment</p> <ul style="list-style-type: none">• ships 400 GT and above but less than 10000 GT shall be fitted with oil filtering equipment<ul style="list-style-type: none">◦ equipment shall be approved by Administration◦ oily mixture discharge does not exceed 15 ppm• any ship 10000 GT and above shall be fitted with oil filtering equipment<ul style="list-style-type: none">◦ comply with above, and◦ alarm when 15 ppm level cannot be maintained◦ automatically stops when 15 ppm is exceeded• ships less than 400 GT are not required to have oil filtering equipment
<p>All the following state: a person may not operate a ship unless;</p> <p>Oily mixture discharges(bilge slops)</p> <p><u>33 CFR 155.330</u> Non-oceangoing ships</p> <ul style="list-style-type: none">• has capacity to retain onboard and equipped to discharge to a reception facility• may retain in bilges, sludge tank not required <p><u>33 CFR 155.350</u> Oceangoing ships less than 400 GT</p> <ul style="list-style-type: none">• has capacity to retain onboard and equipped to discharge to a reception facility; or• has approved OWS equipment• may retain in bilges, sludge tank not required <p><u>33 CFR 155.360</u> Oceangoing ships 400 GT above, less than 10000</p> <ul style="list-style-type: none">• fitted with approved 15 ppm OWS equipment• fitted with sludge tank (cannot use bilges)• equipped with pipeline to discharge oily mixtures to a reception facility	

OI-PP02 Inspect sewage system

46 CFR 131.940 Marine sanitation device → 33 CFR 159

CFR	SOLAS
<u>33 CFR 159.7</u>	<u>SOLAS 14</u>
CFR Sub I → Sub J, Sub F, etc	

Types of marine sanitation devices (MSDs): Type I, Type II and Type III.

Type I MSDs are flow-through devices, which are suitable for vessels up to 65 feet in length. These devices use a combination of maceration and disinfection to treat vessel sewage. After pulverizing the solids, the effluent is exposed to disinfectants (often, chlorine tablets) that reduce bacteria levels to below the established limits under the Clean Water Act. In some cases, bactericide can be generated from the saltwater using special electrodes, so that no added disinfectant products are needed.

Type I CFR - produce an effluent having a fecal coliform bacteria count not greater than 1,000 per 100 milliliters and no visible floating solids

Type II MSDs are flow-through devices suitable for larger vessels. Type II devices are biological systems. First, sewage is aerated so that the bacteria already present in the sewage can thrive and begin to consume/break down the sewage as their food supply. As with the Type I devices, the remaining liquid waste is then treated via contact with chlorine tablets, UV disinfection, or other methods of disinfection. Overall, Type II devices can achieve better treatment levels than Type I devices because of the biological component of the system, as opposed to maceration.

Type II CFR - produce an effluent having a fecal coliform bacteria count not greater than 200 per 100 milliliters and suspended solids not greater than 150 milligrams per liter

Type III MSDs are holding tanks which do not treat sewage onboard the vessel. These devices are designed to store sewage effluent while preventing overboard discharge.

Type III CFR - designed to prevent the overboard discharge of treated or untreated sewage or any waste derived from sewage

OI-PP06 Inspect pollution prevention equipment

CFR Sub L	
<u>46 CFR 131.935</u> Prevention of oil pollution <ul style="list-style-type: none">• each vsl must be operated in compliance with:<ul style="list-style-type: none">◦ FWPCA◦ 33 CFR Parts 151, 155, 156	
33 CFR	
<u>33 CFR 155.785</u> Communications <ul style="list-style-type: none">• continuous two-way communications during transfer ops	
<u>33 CFR 155.800</u> Transfer hose <ul style="list-style-type: none">• 33 CFR 154.500 Hose assemblies<ul style="list-style-type: none">◦ marked with product, “Oil Service”, “Hazmat Service – See List”, MAWP, date of manufacture, date of last test	
<u>33 CFR 155.450</u> Placard <ul style="list-style-type: none">• posted in each machinery space, or at bilge/ballast pump controls	
<u>33 CFR 156.170</u> Equipment tests and inspections <ul style="list-style-type: none">• no person may use any equipment unless it has been tested and inspected	
<u>33 CFR 155.320</u> Fuel oil and bulk lube oil discharge containment <ul style="list-style-type: none">• ship 300 GT or more must have a fixed container or enclosed deck area under each fuel oil or bulk lube oil tank vent, overflow, and fill pipe that:<ul style="list-style-type: none">◦ 300 to less than 1600 GT – one-half barrel (26 gal)◦ 1600 GT or more – one barrel (52 gal)◦ 100 to less than 300 GT – portable container (5 gal)<ul style="list-style-type: none">▪ or automatic back pressure shut-off nozzle	

<p><u>33 CFR 156.120(n) and (o)</u> Requirements for transfer</p> <ul style="list-style-type: none"> • containment in place and periodically drained to provide required capacity • each drain and scupper is closed by mechanical means <p><u>33 CFR 155.790</u> Deck lighting</p> <ul style="list-style-type: none"> • transfer operations between sunset and sunrise must have deck lighting that illuminates: <ul style="list-style-type: none"> ◦ each transfer ops work area and each transfer connection point in use on the vsl <p><u>33 CFR 156.150</u> Declaration of inspection</p> <ul style="list-style-type: none"> • retain signed copy of DOI onboard for at least 1 month 	
<p>CFR Sub I</p>	
<p><u>46 CFR 91.25-38</u> Pollution prevention</p> <ul style="list-style-type: none"> • at each COI and periodic inspection, ensure compliance with: <ul style="list-style-type: none"> ◦ 33 CFR Part 155 	

OI-SD01 Review Vessel Security Plan (VSP) or Alternate Security Plan (ASP)

CFR	ISPS
<p><u>33 CFR 120</u> Compliance documentation</p> <ul style="list-style-type: none"> • copies of following docs onboard: approved VSP and approval letter from Msc • VSP submitted for approval and current acknowledgment letter from MSC stating its under review • copy of CG approved ASP, including vsl specific security assessment report and letter signed by vsl owner/operator stating which ASP the vsl is using <p><u>33 CFR 104.400</u> VSP, General</p> <ul style="list-style-type: none"> • VSP is sensitive security information (SSI) and must be protected IAW 49 CFR 1520 <ul style="list-style-type: none"> ◦ 49 CFR 1520.9 – when a person is not in physical possession of SSI, it must be stored in a secure container (locked desk or locked room) <p><u>33 CFR 104.405</u> Format of the VSP</p> <ul style="list-style-type: none"> • must consist of the individual sections listed in CFR. If not in CFR order, VSP must contain an index <p><u>33 CFR 104.415</u> Amendment and audit</p> <ul style="list-style-type: none"> • amendments approved by MSC <ul style="list-style-type: none"> ◦ if initiated by company of vsl, submitted at least 30 days before amendment is take effect ◦ if owner/operator has changed, VSO must amend the VSP to update new contact info. Submit the new section for approval • Audits – conducted annually, beginning no later than 1 year from initial date of approval 	<p><u>ISPS Code A/9.1</u> Ship security plan</p> <ul style="list-style-type: none"> • each ship shall carry onboard a ship security plan approved by the Administration <p><u>ISPS Code A/9.7</u></p> <ul style="list-style-type: none"> • plan shall be protected from unauthorized access or disclosure <p><u>ISPS Code A/9.4</u></p> <ul style="list-style-type: none"> • shall address at the following: see ISPS Code <p><u>ISPS Code A/10</u> Records</p> <ul style="list-style-type: none"> • minimum period specified by the Administration <ul style="list-style-type: none"> ◦ includes audits

33 CFR

- 104.265 Security measures for access control
- 104.267 Security measures for newly hired employees
- 104.270 Security measures for restricted access
- 104.275 Security measures for handling cargo
- 104.280 Security measures for delivery of vs1 stores/bunkers
- 104.285 Security measures for monitoring

OI-SD02 Examine security records

CFR	ISPS
<p data-bbox="149 318 751 350"><u>33 CFR 104.235</u> Recordkeeping requirements</p> <ul data-bbox="205 358 1047 894" style="list-style-type: none">• VSO must keep records for at least 2 years• training records<ul data-bbox="254 440 1047 505" style="list-style-type: none">◦ for each session: date, duration, description of training, and list of attendees• drills and exercises<ul data-bbox="254 553 1047 618" style="list-style-type: none">◦ for each: date, description of, list of participants, and best practices or lessons learned which may improve VSP• declaration of security (DOS)<ul data-bbox="254 667 1047 773" style="list-style-type: none">◦ keep onboard copy of last 10 DOS◦ copy of each continuing DOS for at least 90 days after the end of its effective period• annual audit<ul data-bbox="254 821 1047 886" style="list-style-type: none">◦ letter certified by the CSO or VSO stating date audit was completed <p data-bbox="149 935 709 967"><u>33 CFR 104.310</u> Submission requirements</p> <ul data-bbox="205 976 1047 1227" style="list-style-type: none">• Vessel Security Assessment (VSA) must be submitted with the VSP<ul data-bbox="254 1057 1047 1122" style="list-style-type: none">◦ can encompass more than one vsl if vsls share similarities in physical characteristics and operations• VSA must be reviewed and re-validated and report must be updated each time the VSP is submitted for re-approval or revisions	<p data-bbox="1050 318 1388 350"><u>ISPS Code A/10</u> Records</p> <ul data-bbox="1098 358 1946 464" style="list-style-type: none">• records shall be kept onboard for at least the minimum period specified by the Administration<ul data-bbox="1146 431 1946 464" style="list-style-type: none">◦ training, drills, exercises, audits, etc <p data-bbox="1050 618 1352 651"><u>ISPS Code A/5.7</u> DOS</p> <ul data-bbox="1098 659 1946 724" style="list-style-type: none">• <u>SOLAS 14 XI-2/9.2.3</u> Control and compliance measures ship shall keep records for the last 10 calls at port facilities

33 CFR 104.230 Drill and exercise requirements

- drill conducted at least every 3 months
 - test individual elements of the VSP
 - unauthorized entry to restricted area, response to alarm, notification of LE authorities
 - conducted within 1 week when vsl personnel change exceeds 25% (if no prior participation)
- exercises conducted at least once each calendar year, with no more than 18 months between exercises
 - full test of the security program
 - must test comms and notification procedures
 - must include substantial and active participation of company and vsl security personnel
 - may be: full scale, tabletop simulation, combined with other exercises

33 CFR 104.255 Declaration of Security (DOS)

- MARSEC Level 1
 - applies to cruise ship or manned vsl carrying certain dangerous cargoes in bulk
- MARSEC Level 2 and 3
 - applies to any manned vsl required by this part
 - vsl-to-vsl and vsl-to-facility – complete DOS prior to cargo/transfer ops
- Continuing DOS (for multiple visits to same facility)
 - at MARSEC Lvl 1 – does not exceed 90 days
 - at MARSEC Lvl 2 – does not exceed 30 days
 - change in MARSEC Level voids DOS, complete new

OI-SD03 Examine security equipment

CFR	SOLAS / ISPS
<p><u>33 CFR 101.310</u> Additional communication devices</p> <ul style="list-style-type: none">Alert systems such as ship security alert system required by SOLAS may be used to augment comms and may be one of the comms methods listed in VSP <p><u>33 CFR 104.235</u> Recordkeeping</p> <ul style="list-style-type: none">for each occurrence of maintenance, calibration, and testing, the date, time, and equipment must be recorded <p><u>33 CFR 104.260</u> Security systems and equipment maintenance</p> <ul style="list-style-type: none">must be in good working orderinspected, tested, calibrated, and maintained according to manufacturerresults must be recorded as aboveVSP must include procedures to identifying and responding to equipment failures or malfunctions	<p><u>SOLAS 14 XI-2/6</u> Ship security alert system</p> <ul style="list-style-type: none">applies to other cargo ships 500 GT and upwhen activated shall: initiate and transmit a ship-to-shore security alert to a competent authority designated by the Administration (may include the company), identifying the ship, location, and indicating security of ship is under threatnot send the alert to any other shipnot raise any alarm onboard the shipcontinue to alert until deactivatedcapable of activation from bridge and at least one other location

OI-SD05 Verify security training and records

CFR	ISPS
<p><u>33 CFR 104.265</u> Security measures for access control</p> <ul style="list-style-type: none"> • ensure implementation of security measures to: <ul style="list-style-type: none"> ◦ deter unauthorized introduction of dangerous substances and devices ◦ secure dangerous substances/devices that are authorized ◦ control access to the vessel ◦ prevent an unescorted / unauthorized individual from entering a secure area • must ensure the following are specified <ul style="list-style-type: none"> ◦ locations providing means of access to the vsl where access restrictions are applied ◦ signs posted: describe security measures in effect, state that boarding vsl is valid consent to screening, and failure to consent will result in denied entry <p><u>33 CFR 104.245</u> Communication</p> <ul style="list-style-type: none"> • VSO must have means to effectively notify vsl personnel of changes in security conditions • comms system must enable vsl personnel to notify shore side authorities or other vsl of security threat <p><u>33 CFR 104.240</u> MARSEC level implementation</p> <ul style="list-style-type: none"> • prior to entering a port or visiting an OCS facility, all measures are taken in VSP for compliance with MARSEC level in effect • notify COTP when compliance with higher MARSEC level is attained • vsl in port have 12 hours to attain next higher MARSEC 	<p><u>ISPS Code A/7</u> Ship security</p> <ul style="list-style-type: none"> • a ship is required to act upon the security levels set by Contracting Governments • following activities shall be carried out: <ul style="list-style-type: none"> ◦ controlling access to the ship, monitoring deck and surrounding areas around ship, ensuring security comms is readily available <p><u>ISPS Code A/13</u> Training, drills, exercises on ship security</p> <ul style="list-style-type: none"> • ship security officer shall have knowledge and training • shipboard personnel having specific security duties and responsibilities shall understand those and have sufficient knowledge and ability to perform assigned duties

OI-TE02 Examine ground tackle and related equipment

<p>CFR Sub L</p>	<p>ABS Rules</p>
<p><u>46 CFR 130.240</u> Anchors and chains OSV 100 GT or more</p> <ul style="list-style-type: none"> • anchors and chains meet standards set by ABS • exceptions: <ul style="list-style-type: none"> ◦ vsl under 200 ft with ABS equipment number less than 150 may be equipped with <ul style="list-style-type: none"> • one anchor of the tabular weight and one-half the tabulated length of chain; or • two anchors of one-half the tabulated weight with the total length of chain listed, if both anchors ready for use at any time and windlass can heave in either anchor 	<p><u>ABS Part 3, Ch 5, Sec 1</u> Anchor, mooring, towing equipment</p> <ul style="list-style-type: none"> • Circle E, is a classification symbol that signifies that the equipment of anchors and chain cables of the vessel is in compliance with the requirements of the Rules, or with the requirements corresponding to the service limitations noted in the vessel’s classification which have been specifically approved for the particular service. • Math calculation to determine equipment number which is cross referenced in a table to determine anchors and chain <p><u>ABS Part 7, Ch 3, Sec 2/1.1.7</u> Anchoring systems</p> <ul style="list-style-type: none"> • each windlass is to be operated for braking, clutch function, lower and hoisting of chain, proper riding over wildcat, proper transit thru hawse pipe and chain pipe, and proper stowage
<p>CFR Sub I</p>	
<p><u>46 CFR 96.07-5</u> Anchors, chains, hawsers</p> <ul style="list-style-type: none"> • same as Sub L 	

OI-TE03 Inspect mooring system and equipment

CFR Sub L	SOLAS
<p><u>46 CFR 130.250</u> Mooring/towing equip. OSV less than 100 GT</p> <ul style="list-style-type: none">• meet requirements for SPV in 184.300 <p><u>46 CFR 184.300</u> Ground tackle and mooring lines</p> <ul style="list-style-type: none">• must be fitted with ground tackle and mooring lines to safely anchor and moor vsl and sized properly for vsl	<p><u>SOLAS 14 II-1/3-8</u> Towing and mooring equipment</p> <ul style="list-style-type: none">• applies to ships constructed after Jan 1, 2007• ships shall be provided with arrangements, equipment, and fittings of sufficient safe working load to enable safe conduct of all towing and mooring operations
CFR Sub I	
<p><u>46 CFR 96.07</u> Anchors, chains, and hawsers</p> <ul style="list-style-type: none">• vsl in ocean , coastwise, or GL service shall be fitted with anchors, chains, and hawsers IAW ABS rules	

OI-TE04 Inspect air ports, dead covers, and natural vent openings

CFR Sub L	SOLAS
<u>46 CFR 127.250</u> Ventilation for enclosed spaces <ul style="list-style-type: none">• for enclosed spaces, means must be provided for closing each vent• for machinery and cargo spaces, means must be provided for stopping fans and closing openings	<u>SOLAS 14</u>
CFR Sub I	
<u>46 CFR 92.15-10</u> Ventilation for enclosed spaces <ul style="list-style-type: none">• same as Sub L	

OI-TE05 Inspect tank vents

CFR Sub F	SOLAS
<p data-bbox="149 321 611 354"><u>46 CFR 56.50-85</u> Tank vent piping</p> <ul data-bbox="205 362 1026 784" style="list-style-type: none"><li data-bbox="205 362 1026 427">• Vents from oil tanks must terminate not less than 3 feet from any opening into living quarters<li data-bbox="205 435 1026 548">• Satisfactory means, permanently attached to close openings<ul data-bbox="254 475 510 548" style="list-style-type: none"><li data-bbox="254 475 510 508">◦ ball check valve<li data-bbox="254 516 510 548">◦ hinged closure<li data-bbox="205 557 1026 670">• flammable/combustible vapors need flame screen:<ul data-bbox="254 597 873 670" style="list-style-type: none"><li data-bbox="254 597 474 630">◦ 30 x 30 mesh<li data-bbox="254 638 873 670">◦ 20 x 20 mesh, 2 screens, ½ to 1 ½ inch apart<li data-bbox="205 678 657 711">• fresh water tank – 1.5 inch pipe<li data-bbox="205 719 657 751">• ballast water tank – 2 inch pipe<li data-bbox="205 760 617 792">• fuel oil tanks – 2.5 inch pipe	<p data-bbox="1050 321 1205 354"><u>SOLAS 14</u></p>

OI-TE06 Inspect rails and guards

CFR Sub L	SOLAS
<p><u>46 CFR 127.310</u> Where rails required</p> <ul style="list-style-type: none"> • at least 39.5 inches (1 meter) high • freeboard and superstructure deck <ul style="list-style-type: none"> ◦ at least 3 courses including the top ◦ lowest opening no more than 9 inches ◦ courses no more than 15 inches apart • other decks and bridges <ul style="list-style-type: none"> ◦ at least 2 courses including top, evenly spaced 	<p><u>ICLL I/25</u> International Convention on Load Lines</p> <ul style="list-style-type: none"> • Same as CFR
<p><u>46 CFR 127.320</u> Storm rails</p> <ul style="list-style-type: none"> • installed in each passageway and deckhouse sides • on both sides if more than 6 feet (1.8 m) wide 	
<p><u>46 CFR 127.330</u> Guards in dangerous places</p> <ul style="list-style-type: none"> • suitable hand covers, guards, or rails installed on each exposed dangerous place <ul style="list-style-type: none"> ◦ gears of rotating machinery, hot surfaces, etc 	
CFR Sub I	
<p><u>46 CFR 92.25-5</u></p> <ul style="list-style-type: none"> • Same as Sub L 	
<p><u>46 CFR 42.15-75</u></p> <ul style="list-style-type: none"> • Same as above 	

OI-TE07 Examine cranes

OI-LM15 Examine crane record book

<p>CFR Sub L → Sub I-A MODU</p>	<p>API Recommend Practice 2D</p>								
<p><u>46 CFR 126.130</u> Cranes</p> <ul style="list-style-type: none"> • sends you to MODU regs 	<p><u>API RP 2D / Section 3</u> Inspection, Testing, Maintenance</p> <ul style="list-style-type: none"> • Following recorded in Crane Record Book: <ul style="list-style-type: none"> ○ inspection dates, including detailed descriptions of all required inspections ○ description of any replaced crane components ○ dates of any failures to the crane ○ dates and descriptions of repairs done to any part of the crane • Cranes not in regular use <ul style="list-style-type: none"> ○ idle for 1 to 6 months given frequent inspection of crane and inspection of wire rope ○ idle for over 6 months given complete inspection (frequent, periodic, and wire rope) ○ stand by cranes shall be inspected at least semi-annually 								
<p>CFR Sub I-A MODU</p>									
<p><u>46 CFR 107.258</u> Crane certification</p> <ul style="list-style-type: none"> • recognized organizations <ul style="list-style-type: none"> ○ ABS ○ International Cargo Gear Bureau (ICGB) • each load test and inspection recorded in crane record book <p><u>46 CFR 107.259</u> Crane inspection and testing</p> <ul style="list-style-type: none"> • inspected and tested IAW API Recommend Practice 2D Operation and Maintenance of Offshore Cranes <ul style="list-style-type: none"> ○ only use 1972 version with supplement 1 • can be witnessed/conducted by CG, ABS, ICGB <p><u>46 CFR 107.260</u> Rated load test</p>									
<table border="1"> <thead> <tr> <th>Rated load of assembled gear</th> <th>Proof load</th> </tr> </thead> <tbody> <tr> <td>Less than or equal to 20 tons</td> <td>25% in excess</td> </tr> <tr> <td>Greater than 20 tons, less than or equal to 50 tons</td> <td>5 tons in excess</td> </tr> <tr> <td>Greater than 50 tons</td> <td>10% in excess</td> </tr> </tbody> </table>		Rated load of assembled gear	Proof load	Less than or equal to 20 tons	25% in excess	Greater than 20 tons, less than or equal to 50 tons	5 tons in excess	Greater than 50 tons	10% in excess
Rated load of assembled gear		Proof load							
Less than or equal to 20 tons	25% in excess								
Greater than 20 tons, less than or equal to 50 tons	5 tons in excess								
Greater than 50 tons	10% in excess								
<ul style="list-style-type: none"> • tested at both maximum and minimum boom angles • weight of hook blocks and other gear part of test weight • tests performed <ul style="list-style-type: none"> ○ every 60 months (5 years) ○ install ○ after repairs/alterations to structural components 									

46 CFR 108.601 Crane design

- each control marked to show its function
- instruments with built in lighting
- no gasoline engines
- spark arrestors on engine exhaust pipes

46 CFR 109.437 Crane record book

following maintained in crane record book (dates and descriptions)

- API name plate data
- rated load chart for each line reeving and boom length
- info required by Section 3 of API RP 2D
- frequent inspections and tests
- periodic inspections and tests
- rated load test
- replacement of load components (wire rope, hooks, etc)
- failures of the crane, component, or safety feature
- repairs to crane structure, boom, or equipment

46 CFR 109.439 Crane certificates

- following certificates and records are maintained
 - certificates issued by crane certifying authority
 - loose gear, wire rope, annealing of wrought iron gear

46 CFR 109.521 Cranes general

- cranes operated and maintained IAW API RP 2D
- rated load chart posted near controls
- crane operator designated in writing
 - only designated operators operate cranes

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- Cranes less than 5 net tons (10,000 lbs) used for special purpose (lifting fuel hoses, ships stores) exempt from API and should meet manufacturers specs. No crane record book

