# GREAT LAKES BULK CARRIER (LAKER) INSPECTION BOOK

<table>
<thead>
<tr>
<th>Name of Vessel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Official Number</th>
<th>Overall Length (in feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Date Completed</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

## Vessel Build Date:

### Layout/Type:

- □ Forward House  
- □ Self-Unloader  
- □ Diesel Propulsion  
- □ 1000 Footer  
- □ Steam Propulsion

## Inspection Type:

- □ Inspection for Certification (COI)  
- □ First Annual  
- □ Second Annual  
- □ Third Annual  
- □ Fourth Annual

## Inspectors

1. __________________  
2. __________________  
3. __________________  
4. __________________  

Created by MSD Sturgeon Bay, WI  
Rev 06/2009
Use of Laker Inspection Book:
This inspection book is intended to be used as a job aid by Coast Guard marine inspectors during inspections of U.S. flagged Great Lakes bulk carriers (Lakers). As of 2008, the youngest Laker was 26 years old, the average age was 43. Due to the age of the Laker fleet there are several standards, systems, and equipment that were grandfathered when regulations were rewritten. Also, since vessels operating solely on the Great Lakes are not subject to SOLAS, many items and cites of the Hull and Machinery CG-840 booklets do not apply.

This booklet combines the checklists for both Hull and Machinery inspections as they apply to U.S. Lakers. For the most part, this booklet will identify certain regulations that are exempted on the Great Lakes (e.g., items listed in 46 CFR Table 199.610(a)), but some non-applicable items were simply removed in the interest of brevity. The scope of this booklet is intended to cover the age, systems and equipment typical to the majority of the Laker fleet. Therefore, some Lakers will have equipment not addressed by this booklet (e.g., motorized lifeboats).

The standard and cite will be delineated by the vessel build date for instances where grandfathered regulations apply. Unless otherwise noted, the cite listed in each column will be from the CFR for the respective time period. It may be assumed that if a cite is not broken down by build date that the standard in current regulations either applies or is essentially the same in old regulations.

The lists contained within this book are not intended to limit the inspection. Each marine inspector should determine the depth of inspection necessary. A checked box should be a running record of what has been inspected. It does not imply that the entire system has been inspected or that all or any items are in full compliance. This job aid does not constitute part of the official inspection record.

This document does not establish or change Federal laws or regulations. References given are only general guides. Refer to CFR’s, NVIC’s or any locally produced cite guides for specific regulatory references.

Conversions:

### Distance and Energy

<table>
<thead>
<tr>
<th>Unit (kW)</th>
<th>Conversion Factor</th>
<th>Unit (hp)</th>
<th>Conversion Factor</th>
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</thead>
<tbody>
<tr>
<td>Kilowatts (kW)</td>
<td>X</td>
<td>1.341 = Horsepower (hp)</td>
<td></td>
</tr>
<tr>
<td>Feet (ft)</td>
<td>X</td>
<td>3.281 = Meters (m)</td>
<td></td>
</tr>
<tr>
<td>Long Ton (LT)</td>
<td>X</td>
<td>.98421 = Metric Ton (t)</td>
<td></td>
</tr>
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</table>

### Liquid

(>NOTE: Values are approximate.)

<table>
<thead>
<tr>
<th>Liquid</th>
<th>bbl/LT</th>
<th>m³/t</th>
<th>bbl/m³</th>
<th>bbl/t</th>
</tr>
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<tbody>
<tr>
<td>Freshwater</td>
<td>6.40</td>
<td>1.00</td>
<td>6.29</td>
<td>6.29</td>
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<td>Saltwater</td>
<td>6.24</td>
<td>.975</td>
<td>6.13</td>
<td>5.98</td>
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<tr>
<td>Heavy Oil</td>
<td>6.77</td>
<td>1.06</td>
<td>6.66</td>
<td>7.06</td>
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<tr>
<td>DFM</td>
<td>6.60</td>
<td>1.19</td>
<td>7.48</td>
<td>8.91</td>
</tr>
<tr>
<td>Lube Oil</td>
<td>7.66</td>
<td>1.20</td>
<td>7.54</td>
<td>9.05</td>
</tr>
</tbody>
</table>

### Weight

1 Long Ton = 2240 lbs
1 Metric Ton = 2204 lbs
1 Short Ton = 2000 lbs
1 Cubic Foot = 7.48 gal
1 Barrel (oil) = 5.61 ft = 42 gal = 6.29 m³
1 psi = .06895 Bar = 2.3106 ft of water

### Temperature

°F = 9/5 °C + 32
°C = 5/9 (°F – 32)

<table>
<thead>
<tr>
<th>°F</th>
<th>°C</th>
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<tbody>
<tr>
<td>0</td>
<td>-17.8</td>
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<tr>
<td>32</td>
<td>0</td>
</tr>
<tr>
<td>40</td>
<td>4.4</td>
</tr>
<tr>
<td>50</td>
<td>10.0</td>
</tr>
<tr>
<td>60</td>
<td>15.6</td>
</tr>
<tr>
<td>70</td>
<td>21.1</td>
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<td>80</td>
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<td>100</td>
<td>37.8</td>
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<tr>
<td>110</td>
<td>43.3</td>
</tr>
<tr>
<td>120</td>
<td>48.9</td>
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<tr>
<td>150</td>
<td>65.6</td>
</tr>
<tr>
<td>200</td>
<td>93.3</td>
</tr>
<tr>
<td>250</td>
<td>121.1</td>
</tr>
<tr>
<td>300</td>
<td>148.9</td>
</tr>
<tr>
<td>400</td>
<td>204.4</td>
</tr>
<tr>
<td>500</td>
<td>260</td>
</tr>
<tr>
<td>1000</td>
<td>537.8</td>
</tr>
</tbody>
</table>

### Pressure

Bars = Pounds per square inch

<table>
<thead>
<tr>
<th>Bars</th>
<th>psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Bar = 14.5 psi</td>
<td>5 Bars = 72.5 psi</td>
</tr>
<tr>
<td>2 bars = 29.0 psi</td>
<td>6 Bars = 87.0 psi</td>
</tr>
<tr>
<td>3 Bars = 43.5 psi</td>
<td>7 Bars = 101.5 psi</td>
</tr>
<tr>
<td>4 Bars = 58.0 psi</td>
<td>8 Bars = 116.0 psi</td>
</tr>
</tbody>
</table>
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Section 1: Administrative Items

CFR Applicability Dates:

<table>
<thead>
<tr>
<th>46 CFR Subchapter I</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Subchapter I</td>
<td>Prior to 19 NOV 1952</td>
</tr>
<tr>
<td>• 46 CFR Subchapter H: Great Lakes, General Rules and Regulations</td>
<td></td>
</tr>
<tr>
<td>• Covers all Great Lakes vessels including passenger vessels</td>
<td></td>
</tr>
<tr>
<td>• NOTE: the scope of this booklet does not cover these regulations</td>
<td></td>
</tr>
<tr>
<td>Old, Old Subchapter I</td>
<td>19 NOV 1952</td>
</tr>
<tr>
<td>• Separation of spaces containing emergency power source</td>
<td></td>
</tr>
<tr>
<td>• Rails and guards</td>
<td>01 OCT 1958</td>
</tr>
<tr>
<td>• Steam smothering systems prohibited</td>
<td></td>
</tr>
<tr>
<td>Structural Fire Protection</td>
<td></td>
</tr>
<tr>
<td>Old Subchapter I</td>
<td>26 MAY 1965</td>
</tr>
<tr>
<td>• Changes to lifesaving and fire main regulations</td>
<td></td>
</tr>
<tr>
<td>• Changes to rail requirements</td>
<td>01 JUL 1969</td>
</tr>
<tr>
<td>• Stability regulations in Subchapter S</td>
<td>03 JAN 1984</td>
</tr>
<tr>
<td>• Navigation bridge visibility</td>
<td>07 SEP 1990</td>
</tr>
<tr>
<td>Subchapter I</td>
<td>01 OCT 1996</td>
</tr>
<tr>
<td>• Lifesaving regulations in Subchapter W</td>
<td></td>
</tr>
</tbody>
</table>

Liferaft Requirements for Cargo Vessels Not Subject to SOLAS (46 CFR 199.10(h))

Subchapter J Requirements

Existing electrical arrangements acceptable; lighting only req’d for lifeboats

Old Old Subchapter J
1952-1982

E-lighting of entire launching process from stowage to water; powered by temp & final emergency power source §112.15-1(n)

Old Subchapter J
1982-1996

E-lighting powered by temp & final emergency power source §112.15-1(g)

New Subchapter J
1996-Current

E-lighting powered by temp & final emergency power source §112.15-1(g)

Floodlights req’d for launching & embarkation of liferaft in water §111.75-16

Separate branch circuits for adjacent launching stations §112.43-11

Lighting of launching & embarkation of liferaft in water §111.75-16(a)

Separate branch circuits for adjacent launching stations §111.75-16(b)
Liferaft Requirements for Cargo Vessels
Not Subject to SOLAS (46 CFR 199.10(h))

Old Subchapter I

Yes

Vsl. Built > 5/26/65?

Require ments of Old Old Subchapter I Prior to 1965

No

200% lifesaving capacity combo of lifeboats & liferafts
§Table 94.10-40(a)

Vsl. Built > 5/26/65?

Yes

See Subchapter J Flowchart for Detailed Requirements
§94.50-15

> 300 GT w/ widely separated accomm. spaces?

No

Lighting for continuous illumination of liferaft stations
§94.50-15

Yes

Liferaft in each location w/ 50% capacity
§Table 94.10-40(a)
Footnote 3

Embarkation ladders NOT req’d
§94.50-7

No

Sufficient ladders or other suitable devices to facilitate embarkation into liferafts when waterborne
§94.50-7

Liferafts capable of being launched safely, rapidly, & in unfavorable conditions
§94.15-10(a)

Inflatable liferafts must be float-free
§94.15-10(c)(4)

Liferafts only req’d to be in float-free arrangement
§94.15-10(c)(3)

Are liferafts part of req’d lifesaving capacity?
§94.15-90

Yes

No

Requirements of Old Old Subchapter I Prior to 1965

Old Subchapter F

01 JUL 1935

Subchapter F

01 JUL 1969

- Implemented USCG stamp and shop inspections of pressure vessels
- Adopted industry standards for material, power boilers, heating boilers, pressure vessels, piping systems, and welding (i.e., ASME, ANSI, ASTM)
- Added personnel safety, system redundancy, remote shutdowns, automation, and changed pressure vessel inspection intervals
- Incorporated NVIC’s 1-69 and 6-84 for automation into Part 62
- Aligned with SOLAS amendments

Enhanced steering system regulations; added auto shut downs for main propulsion machinery

16 AUG 1988

46 CFR Subchapter J

Old, Old Subchapter J

19 NOV 1952

Old Subchapter J

31 MAY 1982

- Complete rewrite of Subchapter J
- Adopted industry standards (i.e., NEC, UL)

Subchapter J

30 SEP 1996

- Streamlined regs, changed regs to performance vs. prescriptive basis, harmonized with SOLAS amendments
Involved Parties & General Information:

Vessel's Representatives

Phone Numbers

Owner—Listed on DOC (if applicable), or COFR

Operator

☐ No Change

Suitable criteria for the Vessel's Representatives, Phone Numbers, Owner—Listed on DOC (if applicable), or COFR, and Operator are included in the document.
Section 5: Appendices

Example list of security questions:

To the Vessel Security Officer:
What do you do if there is a security breach? Or security threat?
How do you coordinate security activities with the port facility?
Who is the Company Security Officer? Do you have 24/7 contact information for this person? Ask to see information.
How often do you hold security drills, training, or exercises? When was the last time you conducted a security drill, training session, or exercise? Ask to see associated records.
How do you report security breaches or incidents? Ask to see records.
What do you do if someone tries to bring an unauthorized weapon on board the vessel? Dangerous substance? Device?
How do you prevent unauthorized persons from coming on board?
Who on board are assigned security duties?
How do you safeguard the Vessel Security Plan?

To crew members having security responsibilities:
Who is the Vessel Security Officer?
What do you do if there is a security breach? Or security threat?
When was the last time you participated in a security drill, training session, or exercise?
What do you do if someone tries to bring an unauthorized weapon on board the vessel? Dangerous substance? Device?
How do you prevent unauthorized persons from coming on board?
Certificates:

- COI Posted 46 CFR 91.01-5
- Stability letter posted in pilothouse 46 CFR 97.11-1
- Annual drug and alcohol program audit 46 CFR Part 16
- Alcohol testing kit 46 CFR 4.06-15
- Officers’ licenses current
- Endorsement
  - FCC Station License 47 CFR 80.161
  - Safety Radio Certificate
  - Marine Radio Operators Permit Great Lakes Radio Agreement
- Crew possesses valid TWIC’s 33 CFR 101.514(a)
- Loading Manual 46 CFR 97.12-1
- Liferaft servicing certificates 46 CFR 160.151-57(p)
  - Annual service
- Cargo Gear Certificate 46 CFR 91.37-75

Pollution Prevention Records:

- N/A Shipboard oil pollution emergency plan 33 CFR 151.26
  - Exempted by 33 CFR 151.09 (d)(1)
  - May voluntarily comply
- Non-Tank Vessel Response Plan
  (vessels greater than 400GT carrying oil as fuel for main propulsion) NVIC 01-05, Ch 1
  - Interim approval by Coast Guard

Section 4: Drills

- **Fire Drill:**
  - Initial notifications
  - General alarms / signals
  - Crew response
  - Properly dressed / equipped
  - Language understood by crew (NVIC 6-91)
  - Location: __________________________ Time on Scene: _______
  - Notes: __________________________

- **Abandon Ship / Rescue Boat Drill:**
  - General alarms / signals
  - Muster lists
  - Muster of crew
  - Crew response
  - Language understood by crew
  - Lifejackets / Immersion suits
  - Location: __________________________ Time to Water: _______
  - Notes: __________________________

- **Security Drill:**
  - Type of scenario (circle):
    - Security threat
    - Suspicious package/person
    - Other:
  - General alarms / signals
  - Crew response
  - Security breach
  - Change of MARSEC level
  - NRC/CSO Notification
  - Communication
  - Engine start
  - Brake operation
  - Lighting
  - Boat release
  - Boat operation
  - Egress procedures

Notes: ____________________________________________________________

_________________________________________________________

_________________________________________________________

_________________________________________________________

_________________________________________________________

_________________________________________________________

_________________________________________________________
Marine Sanitation Devices:

- Marine sanitation device
  - Type I
  - Type II
  - Type III
- Certified for inspected vessels
  - Type III - considered Certified if installed prior to 30 Jan 75
- Capacity satisfactory
- Installation
  - Operation
  - Ventilation
  - Wiring and piping
  - Maintenance
  - Placard posted
  - Safety
  - Accessibility to parts requiring routine servicing
  - Manufacturer’s instructions available

Oil transfer procedures
- Posted
- Description of transfer system including a line diagram of piping
- Duties by title of each person
- Means of communication
- Procedures to top off tanks
- Procedures to report oil discharges

Logs and Manuals:

- Lifesaving equipment maintenance record
  - Periodic checks as required
  - Visual inspection of survival craft
  - Lifesaving appliances, including lifeboat equipment examined
  - Batteries

- Emergency training and drills
  - Onboard training in use of lifesaving equipment (all crew members)
  - Fire and lifeboat drills
  - General alarm tested

- Bridge log
  - Pre-arrival tests conducted
  - Casualties (navigation equipment and steering gear failures reported)
  - Steering gear drills

Section 3: Inspection Items

Navigation Equipment:

- Navigation publications
  - Current and corrected charts or ECDIS
  - U.S. Coast Pilot
  - Great Lakes Pilot
  - Coast Guard Light List
  - Notice to mariners
  - International Rules of the Road
  - Inland Rules of the Road

Notes:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
- Operationally test radar(s)
  - Operate independently
  - ARPA only req’d for vessels after 1984

- Automatic identification system (AIS)
  - 33 CFR 164.46(a)(3)
  - 33 CFR 161.12(c)

- Compasses
  - Illuminated gyrocompass with repeater at stand
  - Illuminated magnetic compass
  - Current deviation table

- Navigation equipment powered by emergency source of power

- Electronic depth sounding device
  - Accurate readout
  - Recording device not req’d on Great Lakes

- Radio equipment
  - Radios, RDF, Loran
  - Electronic position fixing device tested
  - GMDSS and SART not req’d on Great Lakes

- Navigation lights and signals
  - Control panels
  - Running lights
  - Anchor lights
  - Day shapes
  - Distress signals and stowage
    - 12 hand red flares alternative to parachute flares
  - Flag signals, international code
  - Whistle, light, bells, gongs
  - Certificate of Alternate Compliance

| Regulation | 1952-1982 | 1982-
<table>
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<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>33 CFR 164.35</td>
<td>Recommended</td>
<td>46 CFR 112.15-5</td>
</tr>
</tbody>
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- Panelboards
  - Overcurrent devices
  - Circuit directory
  - Locking device

- Motor controllers & Motors
  - 46 CFR 111.70
  - 46 CFR 111.25
  - NEMA 250 standards

| Regulation | 1952-1982 | 1982-
<table>
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<tbody>
<tr>
<td>46 CFR 111.40-1</td>
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<td>46 CFR 111.40-15</td>
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<tr>
<td>46 CFR 111.40-11</td>
<td></td>
<td>46 CFR 111.40-9</td>
</tr>
</tbody>
</table>

- General electrical installation
  - Jury rigs
  - Connection boxes
  - Dead-end cables
  - Splices
  - Grounding
  - Receptacles (covered & grounded)
  - Portable electrical equipment

| Regulation | 1952-1982 | 1982-
<table>
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<th></th>
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<tbody>
<tr>
<td>46 CFR 111.60</td>
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<td>46 CFR 111.60</td>
</tr>
</tbody>
</table>

Notes: ____________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________  _________________________________________________________
_________________________________________________________  _________________________________________________________
_________________________________________________________  _________________________________________________________
Ship's service lighting systems
- Panelboards
- Circuit directory
- Fuses
- Circuit breakers
- Berth lights
- Globes and guards
- Explosion-proof or watertight (where required)

Adequate emergency power and lighting
- Engine Room, Escape routes, Cargo Tunnel
- Navigation equipment
- Embarkation Stations

Emergency batteries tested
- Charger
- Protection
- Capacity
- Ventilation

Equipment and Fixtures in Hazardous Locations
- Tunnel and holds (coal or grain cargos)

Ventilation systems
- Remote shutdown stations tested
- Machinery space fans
- Accommodation fans

Switchboards (including emergency)
- Automatic bus transfer - EGen
- Personnel safeguards (guards, rails, mats)
- Drip shields
- Nameplates

| 1952-1982 | 1982-
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>§ 111.30-15</td>
<td>§ 111.05-21</td>
</tr>
<tr>
<td>§ 111.50-1</td>
<td>§ 111.53 &amp; 54</td>
</tr>
</tbody>
</table>

Steering gear
- Illuminated rudder angle indicator
- Block diagram at bridge and gear
- Main/Auxiliary gear tested
- Alarms
  - Steering failure alarm
  - Power failure to control system
  - Power failure to power unit
  - Low oil level
  - Loss of phase (alarm in e/r)
  - Motor overload (alarm in e/r)

Maneuvering facts sheet with warning statements
EPIRB (406 MHz)
- Float-free arrangement
- Battery date current
- Hydrostatic release

Vessel Security:
- LCA Alternative Security Plan
- Master
- Vessel Security Officer
- Security training for vessel personnel
- Drill and exercise requirements

Notes: ____________________________________________________
_________________________________________________________
Vessel record keeping requirements

- Training, drills and exercises
- Breaches of security
- Annual audit of VSP
- Declaration of Security (req’d at MARSEC 2)
- Retained for two years

Security measures for access control

- Means of identifying unauthorized personnel
- Access points examined

General Health and Safety:

N/A Hospital and First Aid equipment

- Voyages < 3 days

Crew and passenger accommodations

- Size
- Lighting and wiring
- Heating
- Ventilation
- Sanitation
- Insulation
- Fire retardant

Galley

- Equipment
- Sanitation
- Ventilation
- Range hood damper

Means of escape from accommodation, machinery, and other spaces

- Two required (some exceptions)
- Dead end corridors
- Absence of locks

Independent fuel tanks

- External examination
- Electrically grounded
- Shutoff valve with reach rod

Lubrication systems

- Pumps
- Heat exchangers
- Valves and controls
- Piping
- Gauges, thermometers, and alarms
- Tanks, vents, and strainers

Electrical Systems:

NOTE: Guidance for inspecting electrical systems is detailed in NVIC 2-89.

Ship’s service generators

- Protective guards

<table>
<thead>
<tr>
<th>Year (2-82)</th>
<th>Description</th>
<th>Code</th>
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<tbody>
<tr>
<td>1952-1982</td>
<td>Reverse power relay</td>
<td>46 CFR 111.12-11</td>
</tr>
<tr>
<td>1982-</td>
<td>N/A</td>
<td>46 CFR 111.12-1</td>
</tr>
<tr>
<td>1952-1982</td>
<td>Overspeed trip (&gt; 110%, &lt; 115%)</td>
<td>N/A</td>
</tr>
<tr>
<td>1982-</td>
<td>N/A</td>
<td>46 CFR 111.12-1</td>
</tr>
<tr>
<td>1952-1982</td>
<td>Low oil pressure shutdown</td>
<td>N/A</td>
</tr>
<tr>
<td>1982-</td>
<td>46 CFR 111.10-15(j)</td>
<td>46 CFR 111.12-1</td>
</tr>
</tbody>
</table>

Emergency generator tested

- Fuel system
- Overspeed trip (> 110%, < 115%)
- Low oil pressure alarm / shutdown
- High jacket water temperature alarm
- Fixed firefighting system shutdown
- Starting system
  - Hydraulic | 46 CFR 112.50-1 |
  - Electric  | 46 CFR 112.50-1 |
  - Pneumatic | N/A |

Notes: ____________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
Pressure Vessels:

- Pressure vessels hydrostatically tested or internally examined
  - Class II & III pressure vessels that have a volume < 5 ft³ req ASME stamp (U or UM); not subject to other provisions.

\[ \text{Vol (gal)} = \frac{\text{tank height} \times (\text{tank radius})^2}{7357} \]

37.4 gal = 5 ft³

<table>
<thead>
<tr>
<th>Service</th>
<th>MAWP</th>
<th>Date Tested or Examined Internally</th>
<th>Relief Valve Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Relief valves springs set within range 46 CFR 54.15-10(g)

Auxiliary Machinery:

- Bilge and ballast systems
  - Pumps
  - Eductors
  - Emergency bilge pump
  - Manifold, valves, and piping
  - Remote controls (hydraulic, pneumatic, manual, electric)
  - Strainers
  - Sounding and vent piping
  - Markings and indicators
  - Bilge alarms in machinery spaces (ACC/ACCU)

- Compressed air system
  - Compressor
  - Controls and gauges
  - Relief valves

Structural Integrity:

- Hull structure
  - Decks
  - Shell
  - Bulkheads
  - Tank tops
  - Strength members

- Hull openings and closures

- Nonmetallic expansion joints
  - External exam
  - 10-yr service replacement or at scheduled dry dock exam

- Guards, ladders, rails, and gangways
  - Guards in dangerous places
  - Rails

- Watertight doors in subdivision bulkhead tested:
  - Review stability letter for door locations
  - Indicator light in pilothouse
  - Indicator light at each vessel operating station from which the door is not visible

- Bulkhead penetrations

- Hull marks

Notes: ____________________________________________________

_________________________________________________________

_________________________________________________________
Draft marks
- Legible
- Properly sized & spaced
- Contrasting color to hull

Load line marks
- Deckline
- Diamond
- Seasonal load lines
- Marking

Ground Tackle:
- Anchors
  - Tested
  - Windlass
  - Capstans
    - Automatic tensioning device
- Mooring, standing and running gear (other than gear covered by Cargo Gear Certificate)

Lifesaving Equipment:
NOTE: Exemptions and alternatives for vessels not subject to SOLAS can be found in 46 CFR 199.600.
- General alarms
  - Contact maker(s) location
  - Fuse or breaker locked
  - Tested
  - Markings
  - Bell locations audible
  - Flashing light in mach space
- Lifeboats
  - Hull, fittings, cradles, grips
  - Disengaging Apparatus
  - Markings

Periodic test and inspection of low pressure heating boilers in accordance with 46 CFR Table 61.05-10

<table>
<thead>
<tr>
<th>Boiler ID Number</th>
<th>Date Hydro Tested (5 years)</th>
<th>Date Mountings/Valves Opened (5 years)</th>
<th>Date Mountings Removed and Studs Examined (10 years)</th>
<th>Fireside</th>
<th>Waterside</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Diesels:
Note: ABS refers to 1986 ABS Steel Rules incorporated by reference in 46 CFR 58.03
- Main propulsion diesels
  - Foundations
  - Guards
  - Controls
  - Fuel lines
    - Drip pans
    - Flange shields
  - Air starting lines
  - Exhaust system
  - Lube oil system
    - Coolers
    - Standby L/O pump
  - Explosion covers
  - Engine protection
    - Overspeed protection (alarm/shutdown)
    - Low lube oil (alarm/shutdown)
    - High temperature (alarm)

Notes:

_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
### Fuel systems
- Service and transfer pumps
- Remote shutoff valves
- Reach rods
- Remote cutouts
- Reliefs and bypass valves
- Strainers
- Drip pans
- Piping
- Heaters

46 CFR 56.50-65

### Feedwater system (including condensate)
- Pumps
- Injectors
- Valves and controls
- Water heaters (including deaerator)
- Water regulators
- Water level indicators
- Grease extractors
- Piping
- Gauges and thermometers
- Air ejectors
- Condensers

46 CFR 52.01-115

46 CFR 56.50-35

46 CFR 56.50-45

46 CFR 56.50-30

### Automatic auxiliary boilers
- Controls and safety devices
- Fuel systems
- Alarms
- Inspections / test

46 CFR 63.15-1

46 CFR 63.20

46 CFR 63.15-3

46 CFR 63.15-7

46 CFR 63.15-9

### Low pressure heating boilers
- Safety or relief valves
- Gauges
- Thermometers
- Automatic controls
- Bottom blow off
- Water level indicator
- Connections
- Refractory

46 CFR 53.01

46 CFR 53.05

46 CFR 53.12

### Lifeboat equipment

#### Lifeboat equipment

(Use table below)

46 CFR 94.20-10

46 CFR 94.20-15

46 CFR 199.620(j)

46 CFR 199.175

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>1952-1996</th>
<th>1996 -</th>
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<tbody>
<tr>
<td></td>
<td>Lifeboat</td>
<td>Rigid</td>
<td>Lifeboat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rescue</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Bailers</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Bilge pump</td>
<td></td>
<td>1&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>3</td>
<td>Boathook</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Bucket</td>
<td>1&lt;sup&gt;3&lt;/sup&gt;</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Fire extinguisher</td>
<td>2&lt;sup&gt;4&lt;/sup&gt;</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Flashlight</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Hatchet</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Ladder</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Lifeline&lt;sup&gt;5&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Life preservers</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Locker</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Matches (boxes)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Oil lantern w/ 9hrs of oil</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Oil, storm (gallons)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Oars, units&lt;sup&gt;6&lt;/sup&gt;</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>Painter</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>Plugs</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Rowlocks, units&lt;sup&gt;6&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Rudder and tiller</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Sea anchor</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>Searchlight</td>
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<td>1</td>
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<tr>
<td>22</td>
<td>Signal, hand flare</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>23</td>
<td>Signal, parachute flare</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>24</td>
<td>Skates and fenders&lt;sup&gt;7&lt;/sup&gt;</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>Survival instructions</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Towline</td>
<td>1&lt;sup&gt;8&lt;/sup&gt;</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Footnotes:
1. Since rescue boats not req’d in Old Sub I, existing rescue boat equip must meet Sub W.
Footnotes (cont’d):
3 Not required for inflated or rigid-inflated rescue boats.
4 Motor-propelled lifeboats only.
5 Properly secured to both sides of lifeboat along entire length, festooned in bights not longer than 3 ft, with seine float in each bight (float may be omitted if line is inherently buoyant and absorbs little water). Lifeline shall be of size/strength not less than 3/8-in manila. Bights shall hang to within 12 in of water when lifeboat is light. 46 CFR 94.20-15(p).
6 A unit of oars/rowlocks means the number specified by the boat manufacturer.
7 Required if specified by the manufacturer.
8 Required only if the lifeboat is also the rescue boat.

- Disengaging apparatus examined or tested and marked as required
  - Universal joints
  - Safety latches
  - Hooks
  - Locking knuckles
  - Frame

- Lifeboat operational test

- Motorized rescue boat*
  - Stowage
  - Embarkation aids
  - If part of lifeboat alternative, meets req’ts in D9 approval letter

- Davits

- Falls
  - Inspect for corrosion & damage
  - Only required to be renewed if falls are damaged or corroded

- Pilot ladder and hoists in good condition

- Station bill posted

* Required after 1996 or as part of lifeboat alternative in accordance with D9 approval letter.

Notes: ___________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________

<table>
<thead>
<tr>
<th>Set Pressure, psi</th>
<th>Tolerance +/- from set pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 70</td>
<td>2 psi</td>
</tr>
<tr>
<td>&gt; 70 and ≤ 300</td>
<td>3% of set pressure</td>
</tr>
<tr>
<td>&gt; 300 and ≤ 1,000</td>
<td>10 psi</td>
</tr>
<tr>
<td>&gt; 1,000</td>
<td>1% of set pressure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drum Safety and Superheater safety valves</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Relieving gear</td>
</tr>
<tr>
<td>- Escape pipes</td>
</tr>
<tr>
<td>- Drains</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Automation</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Reduced manning</td>
</tr>
<tr>
<td>- Yes</td>
</tr>
<tr>
<td>- No</td>
</tr>
<tr>
<td>- Approved test procedure</td>
</tr>
<tr>
<td>- Satisfactory test</td>
</tr>
<tr>
<td>- Reviewed logs/records</td>
</tr>
<tr>
<td>- Interviewed personnel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fusible plugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Examined</td>
</tr>
<tr>
<td>- Renewed at this inspection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High pressure steam piping</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Lagging or insulation</td>
</tr>
<tr>
<td>- Hangers or supports</td>
</tr>
<tr>
<td>- Steam piping &gt; 3 inches subject to boiler pressure hydrostatically tested</td>
</tr>
</tbody>
</table>

Notes: ___________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________

ASME Table PG-72.2

The popping point tolerance plus or minus (+/-) shall not exceed that specified in the table to the right:

- | Set Pressure, psi | Tolerance +/- from set pressure |
- |-------------------|--------------------------------|
- | ≤ 70              | 2 psi                          |
- | > 70 and ≤ 300    | 3% of set pressure             |
- | > 300 and ≤ 1,000 | 10 psi                         |
- | > 1,000           | 1% of set pressure             |

- Drum Safety and Superheater safety valves

- Automation

- Fusible plugs

- High pressure steam piping

Notes: ___________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
## Testing of Stbd Boiler Safety Valves

*46 CFR 52.01-120*

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>D/S#1</th>
<th>D/S#2</th>
<th>S/S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Determine MAWP of boiler.</td>
<td></td>
<td></td>
<td>psi</td>
</tr>
<tr>
<td>2</td>
<td>Record pressure setting stamped on each valve.</td>
<td>psi</td>
<td>psi</td>
<td>psi</td>
</tr>
<tr>
<td>3</td>
<td>Observe opening and closing of valves and record lift and seating pressures of each valve.</td>
<td>psi</td>
<td>psi</td>
<td>psi</td>
</tr>
<tr>
<td>3a.</td>
<td>Lift pressure</td>
<td>psi</td>
<td>psi</td>
<td>psi</td>
</tr>
<tr>
<td>3b.</td>
<td>Seating pressure</td>
<td>psi</td>
<td>psi</td>
<td>psi</td>
</tr>
</tbody>
</table>

**WARNING:** NEVER allow test pressure to be greater than MAWP during test. If lift pressure is above MAWP, the valve must be adjusted or replaced before test continues (Exception – see note below)

**NOTE:** ABS Rules and ASME Code PG-67.3 allow the second drum safety valve to lift at a maximum of 3% above MAWP (ABS Steel Vessels 1991 Section 32.23.3b).

*Safety valves must be tested in highest-to-lowest pressure order; typically D/S-S/S. This avoids the risk of damaging a valve or changing its setting by placing a gag on it after it has been tested.

4 Ensure Step 3 pressures are within acceptable limits of stamped pressure (see ASME PG-72.2).

* Tolerance from Table PG-72.2

4a. Step 2 (stamped pressure) = psi | psi | psi | psi |
4b. Step 2 (stamped pressure) − | psi | psi | psi |
4c. Step 2 (stamped pressure) + | psi | psi | psi |

**IMPORTANT:** Step 3 (lift pressure) must be between pressures recorded in 4b and 4c. If NOT, safety valve lift pressure MUST be adjusted within specified limits.

5 Record superheater pressure drop value from boiler manual. | psi | psi |

6 Ensure S/S lift pressures (from Step 3) are ≤ pressures recorded in 6b.

6a. Step 5 (superheater pressure drop) + 5 psi | psi | psi |
6b. Step 3a (D/S pressure) − 6a pressure | psi | psi |

**IMPORTANT:** If Step 3a (S/S) is NOT ≤ 6b, S/S lift pressures MUST be adjusted.

7 Determine blowdown and ensure it is between 2% and 4% of lift pressure for each valve. Use the following calculations (ASME Code PG-69.1.4).

7a. 3a pressure − 3b pressure = blowdown | psi | psi | psi |
7b. 3a pressure x .02 (2%) | psi | psi | psi |
7c. 3a pressure x .04 (4%) | psi | psi | psi |

**IMPORTANT:** If 7a (blowdown) is not between 7b and 7c, blowdown setting MUST be adjusted within specified limits.

8 After hand-relieving gear is reinstalled, observe each valve as it is hand-relieved from the fireroom or engineroom floor (46 CFR 52.01-120(d)(2)).

D/S = Drum Safety Valves  S/S = Superheater Safety Valve
<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>D/S#1</th>
<th>D/S#2</th>
<th>S/S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Determine MAWP of boiler.</td>
<td>_____ psi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Record pressure setting stamped on each valve.</td>
<td>_____ psi</td>
<td>_____ psi</td>
<td>_____ psi</td>
</tr>
<tr>
<td>3</td>
<td>Observe opening and closing of valves and record lift and seating pressures of each valve.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3a</td>
<td>Lift pressure</td>
<td>_____ psi</td>
<td>_____ psi</td>
<td>_____ psi</td>
</tr>
<tr>
<td>3b</td>
<td>Seating pressure</td>
<td>_____ psi</td>
<td>_____ psi</td>
<td>_____ psi</td>
</tr>
</tbody>
</table>

**WARNING:** NEVER allow test pressure to be greater than MAWP during test. If lift pressure is above MAWP, the valve must be adjusted or replaced before test continues (Exception – see note below)

**NOTE:** ABS Rules and ASME Code PG-67.3 allow the second drum safety valve to lift at a maximum of 3% above MAWP (ABS Steel Vessels 1991 Section 32.23.3b).

*Safety valves must be tested in highest-to-lowest pressure order; typically D/S-S/S. This avoids the risk of damaging a valve or changing its setting by placing a gag on it after it has been tested.

4 Ensure Step 3 pressures are within acceptable limits of stamped pressure (see ASME PG-72.2).  

* Tolerance from Table PG-72.2

4a. Step 2 (stamped pressure) | _____ psi | _____ psi | _____ psi |
4b. Step 2 (stamped pressure) – _____* | _____ psi | _____ psi | _____ psi |
4c. Step 2 (stamped pressure) + _____* | _____ psi | _____ psi | _____ psi |

**IMPORTANT:** Step 3 (lift pressure) must be between pressures recorded in 4b and 4c. If NOT, safety valve lift pressure MUST be adjusted within specified limits.

5 Record superheater pressure drop value from boiler manual. |       | _____ psi | _____ psi |

6 Ensure S/S lift pressures (from Step 3) are ≤ pressures recorded in 6b.  

6a. Step 5 (superheater pressure drop) + 5 psi | _____ psi |       |     |
6b. Step 3a (D/S pressure) – 6a pressure | _____ psi | _____ psi |     |

**IMPORTANT:** If Step 3a (S/S) is NOT ≤ 6b, S/S lift pressures MUST be adjusted.

7 Determine blowdown and ensure it is between 2% and 4% of lift pressure for each valve. Use the following calculations (ASME Code PG-69.1.4).

7a. 3a pressure – 3b pressure = blowdown | _____ psi | _____ psi | _____ psi |
7b. 3a pressure x .02 (2%) | _____ psi | _____ psi | _____ psi |
7c. 3a pressure x .04 (4%) | _____ psi | _____ psi | _____ psi |

**IMPORTANT:** If 7a (blowdown) is not between 7b and 7c, blowdown setting MUST be adjusted within specified limits.

8 After hand-relieving gear is reinstalled, observe each valve as it is hand-relieved from the fireroom or engineroom floor (46 CFR 52.01-120(d)(2)). |     |     |     |
Boilers:

- Propulsion machinery
  - Safety devices
  - Foundations
  - Guards
  - Controls

- Propulsion and auxiliary boilers
  - Shells or drums
  - Headers
  - Superheater
  - Blow off piping and valves
  - Tubes or flues
  - Furnaces
  - Soot blowers
  - Economizers
  - Combustion chambers
  - Refractory
  - Casing and insulation
  - Uptakes
  - Air preheaters
  - Forced draft blowers
  - Foundations
  - Gauges
  - Water level indicators

- Periodic test and inspection of boilers in accordance with 46 CFR Table 61.05-10

<table>
<thead>
<tr>
<th>Boiler ID Number</th>
<th>Date Hydro Tested (5 years)</th>
<th>Date Mountings/Valves Opened (5 years)</th>
<th>Date Mountings Removed and Studs Examined (10 years)</th>
<th>Fireside</th>
<th>Waterside</th>
<th>External</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Notes: ___________________________________________________
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_________________________________________________________
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Fire Protection Equipment:

- Fire control plan
  - Permanently posted

- Fire detection systems
  - Req’d in minimally attended machinery space
  - If installed elsewhere, must comply with Sub H:

- Portable & semiportable extinguishers

- Fixed fire extinguishing systems
  - Type of system: ________________

<table>
<thead>
<tr>
<th>Type</th>
<th>System Details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: ___________________________________________________
_________________________________________________________
_________________________________________________________
N/A  Fireman’s outfit
• Great Lakes not considered international voyage

☐ Fire main system
• Vessels built prior to 1965 shall meet current standards
• Fire pumps
• Piping

☐ Fire stations
• Vessels built prior to 1965 shall meet current standards
• Hydrants (2 effective streams)
• Hoses/nozzles connected
• Nozzles & spanners
• Fog applictators in e/r
• Markings

☐ Total length of all hose tested:

☐ Paint locker
• Fixed fire fighting systems installed
• Lighting/fixtures in hazardous location

☐ Structural fire protection
• Bulkheads
• Insulation
• Fire doors & controls tested

☐ International shore connection

☐ Fire axes
• 8 required

Notes: ____________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________
_________________________________________________________

Pollution Prevention:
☐ Pollution placard posted 33 CFR 155.450
☐ Person-in-charge designation 33 CFR 155.700
N/A  Oily water separating equipment 33 CFR 155.330
☐ Oily waste retention
• Bilge
• Tank
☐ Prohibited oil spaces 33 CFR 155.470
☐ Deck lighting 33 CFR 155.790
☐ Oil transfer hose 33 CFR 155.800
☐ Fuel tank vents/fill pipes 33 CFR 155.320
☐ Garbage 33 CFR 151.63
• Great Lakes garbage placard 33 CFR 151.59(e)

Notes: ____________________________________________________________________________________________
______________________________________________________________________________________________
______________________________________________________________________________________________
______________________________________________________________________________________________
______________________________________________________________________________________________