

- Lubrication systems 46 CFR 56.50-80
  - Pumps
  - Heat exchangers
  - Valves and controls
  - Piping
  - Gauges, thermometers, and alarms
  - Tanks, vents, and strainers
- Refrigeration and air conditioning systems 46 CFR 58.20
  - Compressors
  - Valves and controls
  - Spare refrigerant stowage
  - Gas mask (ammonia) with spare charges
  - Ventilation
  - Alarms
- Evaporators 46 CFR 54.01-10
  - Pumps
  - Valves and controls
- Freshwater systems (potable and domestic)
  - Pumps
  - Valves and controls
  - Sump tanks
  - Tank pressure
  - Air cushion supply line
- Steering gear systems tested
  - Motors and pumps 46 CFR 58.25  
46 CFR 61.20
  - Telemotor or other control 46 CFR 58.25-70
  - Indicators and alarms 46 CFR 58.25-25
  - Instructions and markings 33 CFR 164.34

**Electrical Systems:**

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

- Ship's service generators
  - Protective guards 46 CFR 110.10  
46 CFR 111.12  
SOLAS 74/78 II-1/41
  - Reverse power relay MSM Ch.B1.J
  - Overspeed trip (> 110% < 115%) MSM Vol. IV Ch. 3.D.2
  - Low oil pressure alarm / shutdown 46 CFR 111.12-1

Notes: \_\_\_\_\_  
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- Switchboards (including emergency) 46 CFR 111.30  
MSM Ch. B1.J.4.g
  - Automatic bus transfer
  - Ground detectors MSM Ch. B1.J.5.g
  - Personnel safeguards (guards, rails, mats, etc.)
  - Drip shields
  - Nameplates
  - Warning notices posted
  - Fuse / circuit breaker ratings
- Panelboards 46 CFR 111.40
  - Overcurrent devices
  - Circuit directory 46 CFR 111.40-11
  - Locking device
- Motor controllers 46 CFR 111.70  
MSM Ch. B1.J.4.i
  - Drip shields
  - Disconnect switch
  - Wiring diagram posted
  - Remote shutdowns tested
- Ventilation systems 46 CFR 111.103  
SOLAS 74/78 II-1/48
  - Remote shutdown tested
  - Cargo fans
  - Machinery space fans
  - Accommodation fans
- Ship's service lighting systems 46 CFR 111.75  
46 CFR 111.40
  - Panelboards
  - Circuit directory
  - Fuses
  - Circuit breakers
  - Berth lights
  - Globes and guards
  - Explosion-proof or watertight (where required)

Notes: \_\_\_\_\_  
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**Diesels:**

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

46 CFR 58.05  
SOLAS 74/78 II-1/27
  
- Main propulsion diesels
  - Fuel lines
  - Air starting lines
  - Exhaust system
    - Manifold
    - Exhaust pipe
    - Protective devices
  - Lube oil system
    - Coolers
    - Standby L/O pump
  - Engine protection
    - Remote shutdowns
    - Overspeed protection
    - Low lube oil
    - High temperature
    - Crank case
  - Explosion covers

46 CFR 58.05  
46 CFR 58.10  
SOLAS 74/78 II-1/27
  
- Automation
  - Reduced manning
    - Yes
    - No
  - Approved test procedure
  - Satisfactory test
  - Reviewed logs/records
  - Interviewed personnel

46 CFR Part 62  
SOLAS 74/78 II-1/46-54  
MSM Vol. IV Ch. 3.L  
NVIC 1-69  
NVIC 6-84  
46 CFR 62.50

46 CFR 62.30-10

Notes: \_\_\_\_\_  
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- General electrical installation
  - Jury rigs
  - Connection boxes
  - Dead-end cables
  - Splices
  - Grounding
  - Personnel safeguards (guards, rails, etc.)
  - Hazardous locations
  - Portable electrical equipment

46 CFR 111.01-1  
SOLAS 74/78 II-1/40  
46 CFR 111.60  
MSM Ch. B1.J.5.h  
46 CFR 111.60-17  
46 CFR 111.60-19  
46 CFR 111.05  
46 CFR 111.30-11  
46 CFR 111.105  
MSM Vol. IV Ch. 3.C.2.f  
MSM Ch. B1.J.5.i

**Firefighting Equipment:**

- Portable extinguishers (machinery spaces)
  - Required number, type, and class
  - Annually serviced
  - Bottles hydrostatically tested (every 5 years)
  - Markings (weight and hydrostatic test date)
  - Spare charges, spare extinguishers

46 CFR 34.50  
46 CFR 76.50  
46 CFR 95.50  
SOLAS 74/78 II-2/6  
SOLAS 74/78 II-2/21  
MSM Ch. C2.I.3  
NVIC 7-70  
NVIC 13-86
  
- Semiportable extinguishers (machinery spaces)
  - Required number, type, and class
  - Annually serviced
  - Bottles hydrostatically tested (every 12 years)
  - Controls, instructions, markings
  - Hose and diffuser
  - Flexible loops tested or replaced (same as bottle)

46 CFR 34.50  
46 CFR 76.50  
46 CFR 95.50  
SOLAS 74/78 II-2/6  
SOLAS 74/78 II-2/21  
MSM Ch. C2.I.4
  
- Sprinkler system tested
  - Type
  - Pumps
  - Manifold
  - Controls
  - System diagram posted

46 CFR 34.30  
46 CFR 76.25  
46 CFR 95.30  
MSM Ch. C2.I.9  
NFPA 13-1996

Notes: \_\_\_\_\_  
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- Fusible plugs
  - Examined 46 CFR 52.01-50  
46 CFR Table 61.05-10  
MSM Vol. IV Ch. 3.I.3.b
  - Renewed at this inspection
- High pressure steam piping 46 CFR 52.01-105  
46 CFR 56.50-15  
SOLAS 74/78 II-1/33
  - Steam piping > 3 inches subject to boiler pressure hydrostatically tested (46 CFR 61.05-10)
  - Lagging or insulation
  - Hangers or supports
- Fuel systems 46 CFR 56.50-65
  - Service and transfer pumps
  - Remote shutoff valves
  - Remote cutouts
  - Reliefs and bypass valves
  - Strainers
  - Drip pans
  - Torch pots
  - Piping
  - Heaters
- Feedwater system (including condensate) 46 CFR 52.01-115
  - Pumps 46 CFR 56.50-35
  - Injectors 46 CFR 56.50-45
  - Valves and controls
  - Water heaters (including deaerator)
  - Water regulators
  - Water level indicators
  - Grease extractors
  - Piping 46 CFR 56.50-30
  - Gauges and thermometers
  - Air ejectors
  - Condensers

Notes: \_\_\_\_\_  
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**Pollution Prevention:**

*NOTE: Guidance for inspecting pollution prevention items is detailed in MSM Volume II, Chapter B6.*

- Oil record book maintained and submitted 33 CFR 151.25  
MARPOL Ax. I/20
- Oily water separating equipment 33 CFR 155.380  
MARPOL Ax. I/6  
MSM Vol. IV Ch. 3.K.2  
MSM Ch. D6.D.11
  - Approved equipment
  - Operationally tested
  - Alarms
  - Shutdowns
- Ballast discharge 33 CFR 155.330  
33 CFR 155.350  
33 CFR 155.360  
33 CFR 155.370  
MSM Ch. D6.D.10
  - Piping system
  - Outlet
  - Stop valve
  - Acceptable processing equipment
- Pollution placard posted 33 CFR 155.450  
MSM Ch. B6.D.13
- Oily waste retention MSM Ch. B6.D.7
  - Bilge
  - Tank

**Marine Sanitation Devices:**

*NOTE: Guidance for inspecting marine sanitation devices is detailed in MSM Volume II, Chapter C2.*

- Marine sanitation device 33 CFR 159.55  
MSM Ch. B6.F
  - Type I
  - Type II
  - Type III
- Certified for inspected vessels MSM Ch. B6.F.4
- Capacity satisfactory MSM Ch. C2.K.7.d

Notes: \_\_\_\_\_  
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 \_\_\_\_\_

## Testing of Boiler Safety Valve

46 CFR 52.01-120

Step	Action	D/S	S/S	S/P
1	Determine MAWP of boiler. _____ psi			
2	Record pressure setting stamped on each valve.	_____ psi	_____ psi	_____ psi
3	Observe opening and closing of valves and record lift and seating pressures of each valve.  <b>3a.</b> Lift pressure <b>3b.</b> Seating pressure	_____ psi _____ psi	_____ psi _____ psi	_____ psi _____ psi
<p><b>WARNING:</b> 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.</p> <p><b>NOTE:</b> Safety valves must be tested in highest-to-lowest pressure order; typically D/S-S/S-S/P. This avoids the risk of damaging a valve or changing its setting by placing a gag on it after it has been tested.</p>				
4	Ensure <b>Step 3</b> pressures are within acceptable limits ( $\pm 5\%$ ) of stamped pressure. Use the following calculations.  <b>4a.</b> <b>Step 2</b> (stamped pressure) x .05 <b>4b.</b> <b>Step 2</b> (stamped pressure) – <b>4a</b> (-5%) <b>4c.</b> <b>Step 2</b> (stamped pressure) + <b>4a</b> (+5%)	_____ psi _____ psi _____ psi	_____ psi _____ psi _____ psi	_____ psi _____ psi _____ psi
<p><b>IMPORTANT:</b> <b>Step 3</b> (lift pressure) must be between pressures recorded in <b>4b</b> and <b>4c</b>. If NOT, safety valve lift pressure MUST be adjusted within specified limits.</p>				
5	Record superheater pressure drop value from boiler manual.		_____ psi	_____ psi
6	Ensure S/S and S/P lift pressures (from <b>Step 3</b> ) are $\leq$ pressures recorded in <b>6b</b> .  <b>6a.</b> <b>Step 5</b> (superheater pressure drop) + 5 psi <b>6b.</b> <b>Step 3a</b> (D/S pressure) – <b>6a</b> pressure		_____ psi _____ psi	_____ psi _____ psi
<p><b>IMPORTANT:</b> If <b>Step 3a</b> (S/S and S/P) is NOT <math>\leq</math> <b>6b</b>, S/S and S/P lift pressures MUST be adjusted.</p>				
7	Determine blowdown and ensure it is between 2% and 4% of lift pressure for each valve. Use the following calculations.  <b>7a.</b> <b>3a</b> pressure – <b>3b</b> pressure = blowdown <b>7b.</b> <b>3a</b> pressure x .02 (2%) <b>7c.</b> <b>3a</b> pressure x .04 (4%)	_____ psi _____ psi _____ psi	_____ psi _____ psi _____ psi	_____ psi _____ psi _____ psi
<p><b>IMPORTANT:</b> If <b>7a</b> (blowdown) is not between <b>7b</b> and <b>7c</b>, blowdown setting MUST be adjusted within specified limits.</p>				
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 Valve    S/S = Superheater Safety Valve    S/P = Superheater Pilot Valve

## Section 2: Appendices

### Recommended US Vessel Deficiency Procedures:

Step	Action								
1	Identify deficiency.								
2	Inform vessel representative.								
3	Record on the <i>Deficiency Summary Worksheet</i> (next page).								
4	If deficiency is corrected prior to end of inspection, go to <b>Step 7</b> .								
5	<p>If deficiency is unable to be corrected prior to end of inspection, issue CG-835 in accordance with table below.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">IF deficiency:</th> <th style="width: 50%;">THEN issue CG-835:</th> </tr> </thead> <tbody> <tr> <td> <p>Does NOT immediately impact crew/passenger safety, hull seaworthiness, or the environment, e.g.,</p> <ul style="list-style-type: none"> <li>• Missing placards</li> </ul> </td> <td> <p>That provides a specific time for correcting deficiency, e.g.,</p> <ul style="list-style-type: none"> <li>• "X" number of days</li> </ul> </td> </tr> <tr> <td> <p>Allows vessel operations to be MODIFIED to meet less stringent requirements, e.g.,</p> <ul style="list-style-type: none"> <li>• Automation defect</li> </ul> </td> <td> <p>That restricts operation of vessel to meet current vessel conditions, e.g.,</p> <ul style="list-style-type: none"> <li>• Increased crew</li> </ul> </td> </tr> <tr> <td> <p>DOES immediately impact crew/passenger safety, hull seaworthiness, or the environment, and cannot be modified to meet less stringent requirements, e.g.,</p> <ul style="list-style-type: none"> <li>• Missing or defective firefighting equipment</li> </ul> </td> <td> <p>That requires the deficiency to be corrected prior to operating vessel ("NO SAIL" item), e.g.,</p> <ul style="list-style-type: none"> <li>• Prior to carrying passengers</li> <li>• Prior to carrying cargo</li> </ul> </td> </tr> </tbody> </table>	IF deficiency:	THEN issue CG-835:	<p>Does NOT immediately impact crew/passenger safety, hull seaworthiness, or the environment, e.g.,</p> <ul style="list-style-type: none"> <li>• Missing placards</li> </ul>	<p>That provides a specific time for correcting deficiency, e.g.,</p> <ul style="list-style-type: none"> <li>• "X" number of days</li> </ul>	<p>Allows vessel operations to be MODIFIED to meet less stringent requirements, e.g.,</p> <ul style="list-style-type: none"> <li>• Automation defect</li> </ul>	<p>That restricts operation of vessel to meet current vessel conditions, e.g.,</p> <ul style="list-style-type: none"> <li>• Increased crew</li> </ul>	<p>DOES immediately impact crew/passenger safety, hull seaworthiness, or the environment, and cannot be modified to meet less stringent requirements, e.g.,</p> <ul style="list-style-type: none"> <li>• Missing or defective firefighting equipment</li> </ul>	<p>That requires the deficiency to be corrected prior to operating vessel ("NO SAIL" item), e.g.,</p> <ul style="list-style-type: none"> <li>• Prior to carrying passengers</li> <li>• Prior to carrying cargo</li> </ul>
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6	Enter CG-835 data in MIDR.								
7	Enter deficiency data in MSDS.								
8	Initiate Report of Violation (ROV) if necessary.								



**Total Time Spent Per Activity:**

<b>Regular Personnel (Active Duty)</b>			
ACTIVITY TYPE	ACTIVITY	TRAINING	(PERS) MI

TOTAL ADMIN HOURS	TOTAL TRAVEL HOURS
-------------------	--------------------

<b>Reserve Personnel</b>			
ACTIVITY TYPE	ACTIVITY	TRAINING	(PERS) MI

TOTAL ADMIN HOURS	TOTAL TRAVEL HOURS
-------------------	--------------------

<b>Auxiliary Resources</b>	
TOTAL BOAT HOURS	TOTAL AIRCRAFT HOURS

**Conversions:**

<b>Distance and Energy</b>				
Kilowatts (kW)	X	1.341	=	Horsepower (hp)
Feet (ft)	X	3.281	=	Meters (m)
Long Ton (LT)	X	.98421	=	Metric Ton (t)
<b>Liquid</b> (NOTE: Values are approximate.)				
Liquid	bbbl/LT	m <sup>3</sup> /t	bbbl/m <sup>3</sup>	bbbl/t
Freshwater	6.40	1.00	6.29	6.29
Saltwater	6.24	.975	6.13	5.98
Heavy Oil	6.77	1.06	6.66	7.06
DFM	6.60	1.19	7.48	8.91
Lube Oil	7.66	1.20	7.54	9.05
<b>Weight</b>				
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 m <sup>3</sup>	1 psi	= .06895 Bar = 2.3106 ft of water
<b>Temperature: Fahrenheit = Celsius</b> (°F = 9/5 °C + 32 and °C = 5/9 (°F - 32))				
0	=	-17.8	80	= 26.7
32	=	0	90	= 32.2
40	=	4.4	100	= 37.8
50	=	10.0	110	= 43.3
60	=	15.6	120	= 48.9
70	=	21.1	150	= 65.6
200	=	93.3	250	= 121.1
300	=	148.9	300	= 148.9
400	=	204.4	400	= 204.4
500	=	260	500	= 260
1000	=	537.8	1000	= 537.8
<b>Pressure: Bars = Pounds per square inch</b>				
1 Bar	=	14.5 psi	5 Bars	= 72.5 psi
2 bars	=	29.0 psi	6 Bars	= 87.0 psi
3 Bars	=	43.5 psi	7 Bars	= 101.5 psi
4 Bars	=	58.0 psi	8 Bars	= 116.0 psi
9 Bars	=	130.5 psi	10 Bars	= 145.0 psi