United States Coast Guard

Drydock Inspector Job Aid

Name of Vessel	
Official Number	**Activity Number**
Date Completed	**Class**
Location	
Vessel Built in Compliance with SOLAS:	**60 74 74/78 NA**

Route

❑ Oceans ❑ Limited Coastwise ❑ Lakes / Bays / Sounds

❑ Coastwise ❑ Great Lakes ❑ Rivers

Inspection Type

❑ Inspection for Certification (COI) ❑ Annual

❑ Periodic ❑ Drydocking

Inspectors

1. _____ **3.** _____

2. _____ **4.** _____

Use of Drydock Inspector (DI) Job Aid:

This Job Aid is intended for use by qualified Coast Guard DI Marine Inspectors for use on U.S. flagged vessels during drydock inspections on vessels regulated under Subchapters D, H and I.

The tasks contained within this Job Aid are not intended to limit the scope or depth of inspection. A checked box should be a running record of what has been inspected and 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 and references given are only general guidance to the Marine Inspector. The Marine Inspector will need to refer to other publications such as the International Maritime Organization (IMO) resolutions, U.S. Codes of Federal Regulation (CFR), USCG Navigation and Vessel Inspection Circulars (NVIC) or locally produced guidance during the course of inspection for specific regulatory references. Not all items in this Job Aid are applicable to all vessels.

NOTE: *Guidance on how to conduct inspections of U.S. flagged deep draft vessels can be found in MSM Volume II, Section B: Domestic Inspection Programs.*

Pre-inspection Items

- Review MISLE records
- Obtain copies of forms to be issued

Post-inspection Items

- Issue letters/certificates to vessel
- Complete MISLE entries within 48 hours

Table of Contents:

Section 1: Administrative Items

IMO Applicability Dates:

Reference	Dates
1974 SOLAS (2020 Consolidated)	
Chapter (I)	All Ships
Chapter (II-1)	01 JAN 09
Chapter (II-2)	01 JUL 02
Chapter (III)	01 JUL 98
Chapters (IV-XII)	All Ships
1974 SOLAS (2009 Consolidated)	
Chapter (II-1)	01 JAN 09
Chapter (II-2)	01 JUL 02
Chapter (III)	01JUL 98
1974 SOLAS (2004 Consolidated)	
Chapter (II-1)	01 JUL 86
Chapter (II-2)	01 JUL 02
Chapter (III)	01 JUL 98
1974 SOLAS (2001 Consolidated)	
Chapter (II-1)	01 JUL 86
Chapter (II-2, III)	01 JUL 98
1974 SOLAS (1997 Consolidated)	
Chapters (II-1, II-2 Part A,C,D, III)	01 JUL 86
Chapter (II-2 Part B)	01 OCT 94
1974 SOLAS (1981 Amendments)	
Chapters (II-1, II-2, III)	01 SEP 84
1974 SOLAS (Unamended)	25 MAY 80
1960 SOLAS	Prior to 25 MAY 80

74 SOLAS 2020 Consolidated contains all amendments entered into force up-to 01 Jul 14. The following Amendments (resolutions) have entered into force since it was published. www.imo.org	
MSC 365(93)	01 JUL 15
MSC 366(93)	01 JUL 15
FSS CODE (2015 edition)	
LSA Code (2017 edition)	
ITC 1969	18 JUL 82
Load Line 1966	21 JUL 68
Load Line 88 Protocol	03 FEB 00
Load Line (2005 edition) contains all amendments entered into force up-to 2003 Amendments. The following Amendments (resolutions) have entered into force since it was published. www.imo.org	
MSC 172(79)	01 JUL 06
MSC 223(82)	01 JUL 08
MSC 270(85)	01 JUL 10
MSC 329(90)	01 JAN 14
MSC 356(92)	01 JAN 15
MSC 375(93)	01 JAN 16
MARPOL 2017 Consolidated contains all amendments entered into force up-to 01 JAN 2017 Amendments. The following Amendments (resolutions) have entered into force since it was published. www.imo.org	

STCW (2017 edition) contains all amendments entered into force up-to 2017 Amendments. The following Amendments (resolutions) have entered into force since it was published. www.imo.org	28 APR 84

Involved Parties & General Information:

Vessel's Representative: _____ _____
Phone Numbers:

Owner
❑ No Change

Operator – Listed on DOC (if applicable) or COFR
❑ No Change

Vessel Information:

Classification Society	
ISM Issuer: Same as above? ❑Yes ❑ No If not the same, which Recognized Organization? _____ ***NOTE:*** *The period of validity for ISM documents should correspond to the following list. If they do NOT, ISM documents should be further investigated.* ☐ *5 years = Full term (SMS and DOC)* ☐ *12 months = Interim (DOC)* ☐ *6 months = Interim (SMC)* ☐ *5 months = Short term (SMC)*	
Last Drydocking Date	Next Drydocking Date
Location of Last Drydocking	
Call Sign	❑ No Change
Gross Tons	❑ No Change
Built Date (use delivery date)	❑ No Change
Overall Length (in feet)	❑ No Change

Certificates and Documents

Name of Certificate	Issuing Agency	ID #	Port Issued/ Country	Issue Date	Exp. Date	Endors. Date
Certificate of Documentation ☐ No Change	USCG					
Classification Document ☐ No Change						
Certificate of Financial Responsibility (COFR) ☐ No Change	USCG					
FCC Station License ☐ No Change	FCC					
FCC Safety Certificate ☐ No Change	FCC					
FCC Marine Operator's Permit ☐ No Change	FCC					

Name of Certificate	Issuing Agency	ID #	Port Issued/ Country	Issue Date	Exp. Date	Endors. Date
Cargo Ship Safety Construction ☐ No Change						
Cargo Ship Safety Equipment ☐ No Change	USCG					
Cargo Ship Safety Radio ☐ No Change	USCG					
International Load Line (ILLC) ☐ No Change						
International Tonnage (ITC) ☐ No Change						
ISM Document of Compliance (DOC) ☐ No Change						
ISM Safety Management (SMC) ☐ No Change						

Name of Certificate	Issuing Agency	ID #	Port Issued/ Country	Issue Date	Exp. Date	Endors. Date
International Oil Pollution Prevention (IOPP) ☐ No Change						
International Sewage Pollution Prevention (ISPP) ☐ No Change						
International Air Pollution Prevention (IAPP) ☐ No Change						

Section 2: Inspection Items
Pre-Inspection

☐ 1. Research vessel details in MISLE (Marine Information for Safety and Law Enforcement) database

• Determine authority, jurisdiction, applicable regulations and enrollment in alternate inspection programs (ACP, SIP, MSP etc.…)	46 USC 3301(3),46 CFR 30.01-5 46 CFR 70-05-1 & 90.05-1 MSM II/B.9 & B 10
• Locate vessel in MISLE	MSM I/12.G.5
• Verify documents are current in MISLE	MISLE User Guide MSM II/B.1.C.2
• Review history (narratives, deficiencies & special notes)	MSM II/B.1.C.2
• Verify status of user fees	MSM II/B.1.C.2
• Enter title and point(s) of contact	MSM II/B.1.C.2
• Verify status of Certificate of Financial Responsibility (e-COFR)	33 CFR 138.15 & .30(c) 33 CFR 138.65 33 CFR 138.90(a)
• Generate new activity	MPS-PR-SEC-04
• Prepare folder and required documents	MPS-PR-SEC-04 & 05

☐ 2. Alternative Hull Examination (AHE)

• Verify eligibility	46 CFR 71.50-17
• Review application	46 CFR 71.50-19
• Review preliminary examination	46 CFR 71.50-21
• Conduct pre-survey meeting and review procedures	46 CFR 71.50-23 46 CFR 71.50-25
• Review AHE report/assessment	46 CFR 71.50-27 46 CFR 71.50-29

☐ 3. Review Initial/Periodic mid-body gauging report

• Verify need for initial or periodic regauging	46 CFR 31.10-21a(a) & (b)
• Verify location of mid-body survey gauging	46 CFR 31.10-21a (a) & (c)
• Verify results, engineering analysis and repair proposal(s)	46 CFR 31.10-21a(d)& (f)
• Verify availability of permanent approved copies	46 CFR 31.10-21a(e)

☐ 4. Coordinate inspection with vessel's representative

• Verify vessel's representative	MPS-PR-SEC-01
• Determine location and time of inspection	MPS-PR-SEC-01
• Discuss inspection expectations	46 CFR 31.10-21 46 CFR 71.50-3, 91.40-3 MSM II/B.1.D.1 & B.2.A.1
• Verify vessel's owner/operator information	MPS-PR-SEC-04
• Verify vessel's Classification Society information	MPS-PR-SEC-04
• Review outstanding conditions from third party reports and/or CG-835s	MPS-PR-SEC-04
• Review repairs and alterations	46 CFR 31.10-22 &-25 46 CFR 78.33-10 46 CFR 91.45-1, -5

☐ 5. Mitigate potential hazards encountered during an inspection

• Recognize potential hazards encountered during inspection	NFPA 306 NFPA 350
• Determine confined spaces	MSM I/10 App.A NFPA 350
• Determine if exam scope will require a Marine Chemist certification for space entry	29 CFR 1915, Subpart B MSM II/A.5.H
• Verify Marine Chemist has been scheduled for exam	MSM I/10 App. A
• Prepare necessary personal protective equipment for exam	MSM I/10 App. A MSM I/8.A.3. Operator's Manual
• Review CG policy for when to leave a space due to hazardous condition	MSM I/10 App. A

Certificates & Documents

☐ 6. Review Certificate of Inspection (COI)

• Verify presence of original	46 CFR 31.05-5 46 CFR 71.01-5 46 CFR 91.01-2
• Verify hull exams date	46 CFR 31.10-21 46 CFR 71.50-3 46 CFR 91.40-3
• Verity Internal Structural Exam (ISE) date	46 CFR 31.10-21 46 CFR 71.50-3 46 CFR 91.40-3
• Verify Cargo Tank(s) Internal Exam (CTIE) date	46 CFR 31.10-21 46 CFR 70.05-30 46 CFR 91.20-20(e) & 40-3
• Verify integral fuel oil tank examination date	46 CFR 31.10-24 46 CFR 71.53-1 46 CFR 91.43-1
• Verify tailshaft inspection date(s)	46 CFR 31.30-1, 70.20-1 46 CFR 91.25-35 46 CFR 61.20-17
• Verify pressure vessel date(s)	46 CFR 31.30-1, 70.20-1 46 CFR 91.25-35 46 CFR 61.10-5(b)

☐ 7. Examine stability letter and booklet

• Parent cites	46 CFR 31.10-30 & 72.30-1 46 CFR 91.55-5(c) 46 CFR 170.001(a)
• Verify presence of stability documents	46 CFR 35.08-1 & 78.12-1 46 CFR 97.11-1 46 CFR 170.120
• Verify type and location of fixed ballast	Vessel Stability Letter
• Verify location of watertight subdivision bulkheads	Vessel Stability Letter

☐ 8. Review Load Line Certificate (International/Coastwise)

• Parent cites	46 CFR 31.25-1 46 CFR 72.01-5 46 CFR 92-01-5
• Verify presence and type	46 CFR 42.03-5 46 CFR 42.07-5 ICLL Article 16
• Verify validity	46 CFR 42.07-45 ICLL Article 15 ICLL Article 19
• Verify proper certificate form	46 CFR 42.07-45(e) ICLL Article 18
• Confirm load line observed on hull matches certificate	46 CFR 42.07-5(b) ICLL I/9
• Verify Record of Conditions of Assignment (Form LL.11) is present and validates issued Load Line	46 CFR 42.09-15

☐ 9. Review International Anti-Fouling System (IAFS) certificate & Record of Anti-Fouling System

• Verify vessel particulars	IMO Res MEPC.208(62)2011
• Verify COI has Anti-Fouling endorsement or, if not required, IAFS Certificates	MSM II/B.3.J
• Verify records from manufacturer & shipyard(s) where coatings were applied	AFS Annex 4 Reg 5(1)
• Verify vessel particulars on Record of Anti-Fouling Systems	IMO Res MEPC.208(62)2011 MSM II/B.3.J
• Verify Anti-Fouling Systems details provided	IMO Res MEPC.208(62)2011
• Verify that no change in Anti-Fouling System has occurred since issuance of IAFS Certificates	IMO Res MEPC.208(62)2011 MSM II/B.3.J

☐ 10. Review Cargo Ship Safety Construction Certificate (CSSCC)

• Verify presence	46 CFR 31.40-5, -25 & -35 46 CFR 91.60-5 & -35
• Verify validity	46 CFR 31.40-15 & -40 46 CFR 91.60-25 & -40
• Verify vessel particulars	SOLAS 20 I/15
• Verify ship type is accurate	SOLAS 20 I/12(a)(ii)
• Verify presence of previous two dry dock examinations and endorsements	SOLAS 20 I/10(a)(v)
• Verify any extension, renewal or change in anniversary date endorsements	SOLAS 20 I/14

☐ 11. Review Drydock Inspection Report for compliance with Vessel General Permit (VGP) requirements

• Verify presence	VGP 2013 4.1.1 VGP 2013 4.2.1 Policy Ltr 11-01
• Verify chain locker cleaned and/or flushed	VGP 2013 4.1.4 VGP 2013 2.2.8
• Verify inspection and removal of living organisms	VGP 2013 4.1.4 VGP 2013 2.2.8
• Verify anti-fouling hull coatings are applied, maintained, and removed consistent with FIFRA label	VGP 2013 4.1.4 VGP 2013 2.2.4
• Verify cathodic protection, anodes, or dialectic have been cleaned and/or replaced	VGP 2013 4.1.4 VGP 2013 2.2.7
• Verify all pollution control equipment is functioning	VGP 2013 4.1.4 VGP 2013 2.2.9

Topside Equipment

☐ 12. Examine freeing ports and scuppers

• Verify no modifications	46 CFR 31.10-30, 72.01-5 & .30-1 46 CFR 92.01-5 & 93.01-1 46 CFR 174.215
• Verify unobstructed	46 CFR 35.35-10 46 CFR 42.15-60 & -70

☐ 13. Inspect air ports, dead covers and natural vent openings

• Verify covers are readily available and operational	46 CFR 31.10-32 & .25 46 CFR 72.01-5 & .30-1 46 CFR 92.01-5 & 93.01-1
• Examine condition	46 CFR 42.15-45 thru .15-60
• Exam covers for proper fit and seal	46 CFR 42.15-45 thru .15-60 ICLL I/23 MSM II/B.1.E.5
• Verify insect screens	46 CFR 32.40-55 46 CFR 72.20-55 46 CFR 92.20-55

☐ 14. Inspect tank vents

• Parent cite	46 CFR 31.30-1 46 CFR 70.20-1 46 CFR 90.20-1
• Verify condition and location	46 CFR 32.55 46 CFR 56.50-85
• Verify installation and condition of flame screens	46 CFR 56.50-85(a)(8)
• Verify permanently attached means for closing tank vents	46 CFR 56.50-85(a)(7)

☐ 15. Inspect rails and courses

• Verify rail heights and courses	46 CFR 32.02-10, 72.40-5 46 CFR 92.25-1 & .25-5 46 CFR 42.15-75, ICLL I/25
• Verify condition of storm rails	46 CFR 32.02-10, 72.40-10 46 CFR 92.25-1 & .25-10 46 CFR 42.15-75, ICLL I/25
• Verify no modifications	46 CFR 31.10-30, 72.01-5 & .30-1 46 CFR 92.01-5 & 93.01-1
• Verify unobstructed	46 CFR 35.35-10 46 CFR 42.15-60 & -70

Internal Structural Examination

☐ 16. Inspect confined spaces are safe for entry

• Review Marine Chemist Certificate (MCC)	29 CFR 1915.12(f) CIM 5100.47C 13.B.3 NFPA 306/4.3
• Verify Competent Person has maintained Marine Chemist Certificate	29 CFR 1915.15 CIM 5100.47C 13.B.8 NFPA 306/4.6.2
• Verify no changes to vessel's condition	29 CFR 1915.15(b)
• Verify forced ventilation is provided	29 CFR 1915.13(b)(3) MSM I/Chap 10, Appx F
• Verify condition of space access point	29 CFR 1915.76
• Verify compliance with competent person program	MSM II/A.5.H.6
• Verify condition of electrical lockouts/tags or piping/valves listed on MCC	NFPA 306/6.2.1(5)

☐ 17. Inspect internal structures

• Examine internal structures	46 CFR 31.10-1 & -20 46 CFR 71.50-3, 92.01-5 46 CFR 42.09-30, ABS 7-3-1/1
• Examine coamings, closures and other fittings	46 CFR 42.09-25(b)(2) MSM II/B3.B
• Verify wastage discovered is within acceptable limits	ABS 7-A-4/27 NVIC 07-68 III(C) & (H)-(N)
• Verify unsatisfactory condition(s) are resolved	46 CFR 42.09-45

☐ 18. Inspect fixed ballast tanks and voids

• Parent cites	46 CFR 31.10-30 46 CFR 72.30-1 46 CFR 91.55-5(c)
• Verify tanks containing fixed ballast	Vessel stability letter
• Verify spaces are gas free	See task IS03 card
• Verify no shifting or settling of fixed ballast has occurred	46 CFR 170.235(2) NVIC 05-82
• Verify satisfactory testing of bacteriostatic agent and/or corrosion inhibitors, as applicable	NVIC 05-82
• Examine corrosion test plates to determine type and rate of corrosion	NVIC 05-82
• Review Marine Chemist Certificate (MCC)	29 CFR 1915.12(f) CIM 5100.47C 13.B.3
• Verify Competent Person has maintained Marine Chemist Certificate	29 CFR 1915.15 CIM 5100.47C 13.B.8
• Verify no changes to vessel's condition	29 CFR 1915.15(b)
• Verify forced ventilation is provided	29 CFR 1915.13(b)(3) MSM I/Chap 10, Appx F
• Verify condition of space access point	29 CFR 1915.76
• Verify compliance with competent person program	MSM II/A.5.H.6
• Verify condition of electrical lockouts/tags or piping/valves listed on MCC	NFPA 306/6.2.1(5)

Hull Inspection

☐ 19. Inspect hull

• Examine for wastage, defect(s) and damage	46 CFR 31.10-1 & -20 46 CFR 70.35-1, 71.50-3 46 CFR 91.40-3(c), ABS 7-4-1/1
• Examine stress areas (stringer plate, sheer plate, etc.)	NVIC 07-68 II, III & IV(B)
• Examine seachest(s), strainers and emergency bilge suction and overboard discharges for wastage, defect(s), and damage	46 CFR 61.20-5 NVIC 07-68 II & III
• Verify condition of drydock (bottom) plugs	NVIC 07-68 II & III MSM II/B.3.B.2
• Verify wastage/corrosion is within limits	ABS 7-A-4/27 NVIC 07-68 III(C) & H-N
• Ensure unsatisfactory condition(s) are resolved	46 CFR 42.09-45 MSM II/B.3.B

☐ 20. Inspect hull markings

• Verify placement of hull markings	46 CFR 31.25-1 & 32.05-1 46 CFR 78.17-20, 97.40-5 46 CFR 67.120 & 69.177
• Verify load line markings are permanently affixed	46 CFR 32.25-1, 78.50-15 46 CFR 97.40-15 46 CFR 42.13-40, 67.121
• Verify markings are of contrasting colors	46 CFR 32.05-1(f), 78.50-10(f) 46 CFR 97.40-10(f) 46 CFR 42.13-40

☐ 21. Inspect main propulsion propeller(s)

• Exam condition	46 CFR 32.35-1, 77.03-1 46 CFR 91.25-35 46 CFR 61.20-5(a) & ABS 7-5-1/1.5
• Verify locking nut (locking device) is installed and secured	46 CFR 58.01-5 ABS 7-4-1/1 & 7-5-1/1.5 & 3.5 MSM II B.3
• Witness non-destructive testing (NDT) of propeller coupling bolts and flange radius	46 CFR 61.20-18 ABS 7-5-1/3 MSM II/B.3.D
• Verify documentation of defects & inspection	ABS 7-A-10/1.5.4

☐ 22. Inspect tailshaft(s) and stern bearing(s)

• Determine if tailshaft(s) need to be drawn	46 CFR 32.35-1, 77.03-1, 91.25-35 46 CFR 58.01-5, 61.20-17 & ABS 7-2-1/13 MSM II/B.3.D.3 & 6
• Verify bearing clearance, inboard seal assembly and record of lube oil analysis are within limits	46 CFR 61.20-17(e) & 20-23(c) ABS 7-5-1/1 & 3 ABS 7-5-2/1
• Visually examine shaft	46 CFR 61.20-18(a) & .20-23(a) ABS 7-5-1/1 & 3 ABS 7-5-2/1
• Witness non-destructive testing (NDT) of shaft's taper section and keyway	46 CFR 61.20-18(b) ABS 7-5-1/1
• Verify condition and weardown of strut bearing(s)	MSM II/B.3.D.10 46 CFR 61.20-23
• Verify condition of blade hardware on Controllable Pitch Propeller (CPP)	ABS 7-5-1/3

☐ 23. Inspect rudder installation

• Verify type of assembly installed	46 CFR 32.35-1, 77.03-1 46 CFR 91.25-35, 58.01-5 ABS 3-2-14/1 & MSM II/B.3.E.2
• Examine assembly	46 CFR 58.01-5 ABS 7-4-1/1 ABS 7-4-4/27
• Verify bearing clearance(s)	ABS 7-4-1/1
• Verify condition of pintle(s), gudgeon(s), bushing(s), pintle nut(s), and locking device(s)	ABS 7-4-1/1 MSM II/B.3.E.2
• Verify condition of pintle by nondestructive test (NDT)	MSM II/B.3.E.2
• Verify tightness of rudder assembly by pneumatic test	ABS 7-4-1/1

☐ 24. Inspect hull appendages

• Examine condition and structural integrity of bilge keel	46 CFR 32.35-1, 70.35-1 & 77.03-1 46 CFR 91.25-35, 58.01-5 MSM II B.3.D, ABS 7-4-1/1
• Examine condition of coolers (keel or grid)	46 CFR 56.50-96 46 CFR 58.05-1 ABS 4-6 5/7.9
• Examine condition of transducers and other similar appendages	ABS 7-4-1/1

☐ 25. Inspect anchor chain(s) and chain locker

• Examine condition of anchor	46 CFR 32.15-15, 70.35-1 & 77.07-1 thru -90 46 CFR 96.07-5 & -10 ABS 3-5-1
• Examine condition anchor chain	46 CFR 31.10-1 ABS 7-3-2/1.1.7
• Examine Inspect connection points of anchor handling equipment (base of windless, capstan, cats paw, etc.)	46 CFR 31.10-1 ABS 7-3-2/1.1.7
• Examine condition ground tackle connection points	46 CFR 31.10-1 ABS 7-3-2/1.1.7
• Verify chain is marked	46 CFR 31.10-1 ABS 2-2-2/21
• Examine condition chain locker	46 CFR 31.10-1 ABS 7-A-4/27 NVIC 07-68 III(c)
• Examine condition chain's pad eye (holdfast)	46 CFR 31.10-1 ABS 7-3-2/5.1.4
• Examine condition of hawse pipe	46 CFR 31.10-1 ABS 7-3-2/5.1.4

☐ 26. Inspect sea valve(s)

• Determine which are due for examination	46 CFR 32.35-1, 77.03-1 46 CFR 90.20-1 46 CFR 61.20-5(b)
• Verify quantity and type	46 CFR 32.35-1, 77.03-1 46 CFR 90.20-1 46 CFR 42.15–60(e) & 56.50–95(f)
• Verify that all sea valves are identified and are opened for examination	46 CFR 42.15–60(c) 46 CFR 56.50–95
• Examine external/internal components	46 CFR 61.20-5(b) 46 CFR 42.09-25(b)(4) 46 CFR 42.09-25(b)(5)

☐ 27. Inspect auxiliary propulsion thruster(s) related to hull exam

• Examine propeller	46 CFR 32.35-1, 70.35-1 & 77.03-1 46 CFR 96.03-1, 58.01-5, ABS 7-4-1/1 ABS 7-9-6/1.3, MSM II/B.3.D.2.c
• Examine thruster tunnel plate	46 CFR 31.10-1 & 32.35-1 46 CFR 77.03-1, 42.09-30(b) ABS 7-4-1/1 & 7-A-4/27
• Verify shaft seal or packing gland in place	46 CFR 31.10-1 ABS 7-4-1/1 & 7-9-6/1.3

☐ 28. Determine if vessel qualifies to participate in Underwater Survey Program (UWILD)

• Review application	46 CFR 31.10-21(d), 71.50-5(b) 46 CFR 91.40-3(d)) NVIC 01-89, MSM II/B.3.C.1
• Inspect condition of hull and protection system	NVIC 01-89 Encl.1/1.a
• Verify reference points	46 CFR 31.10-21(d)(3), 71.50-5(b)(3) 46 CFR 91.40-3(d)(3) NVIC Encl.1/1.b & MSM II/B.3.C.1.b
• Verify hinged gratings are installed on sea chest(s)	46 CFR 31.10-21(d)(4), 71.50-5(b)(4) 46 CFR 91.40-3(d)(4) NVIC Encl.1/1.c & MSM II/B.3.C.1.c
• Verify means for taking shaft-bearing and rudder-bearing clearances	46 CFR 31.10-21(d)(5) 46 CFR 71.50-5(b)(5) 46 CFR 91.40-3(d)(5)
• Review hull gauging report	NVIC Encl.1/1.a
• Review reference video	NVIC Encl.1/1.d MSM II/B.3.C.1.d
• Forward application with OCMI's recommendation	MSM II/B.9.K.7 MSM II/G.2.V.6.a

☐ 29. Inspect hull during an underwater survey

• Review vessel's application for (UWILD) drydocking examination	46 CFR 31.10-21(d), 71.50-5(b) 46 CFR 91.40-3(d) NVIC Encl.1/2.a & MSM II/B.3.C.2
• Verify procedures to be followed	46 CFR 31.10-21(d)(1), 71.50-5(b)(1) 46 CFR 91.40-3(d)(1), 197.202 MSM II/B.3.C.2
• Verify suitability of location	46 CFR 31.10-21(d)(2), 71.50-5(b)(3) 46 CFR 91.40-3(d)(4) NVIC Encl.1/5.c & MSM II/B.3.C.5.c
• Review reference plans and video	46 CFR 31.10-21(d)(3), 71.50-5(b)(4) 46 CFR 91.40-3(d)(4) NVIC Encl.1/2.a(12)
• Meet with vessel's representative and diving supervisor to discuss details of survey	46 CFR 31.10-21(d), 71.50-5(b)(5), 46 CFR 91.40-3(d)(5) NVIC Encl.1/4 & MSM II/B.3.C.4
• Verify vessel's representative submitted a signed letter of vessel's overall condition	NVIC Encl.1/2.a(7) MSM II/B.3.C.3 MSM II/B.3.C.3
• Verify divers quals, type of diving equipment, & nondestructive testing (NDT) & damage repair capabilities	NVIC Encl.1/5.f MSM II/B.3.C.5.k.5
• Verify all areas of the hull have been cleaned	NVIC Encl.1/5.g
• Witness underwater survey from a video monitor	NVIC Encl.1/1.a & 5.l MSM II/B.3.C.5.k.3

☐ 30. Inspect bilge and ballast components in voids and ballast tanks

• Verify structural integrity of piping	46 CFR 31.10-20, 71.25-35 46 CFR 96.03-1 46 CFR 56.50-50(h)-(k)
• Verify valve operation and labeling	46 CFR 56.50-1(g) 46 CFR 61.20-5(b)
• Verify bilge suction pipe(s) are fitted with strainers	46 CFR 56.50-50(g)
• Verify compliance for Ballast Water Management	33 CFR 151.2000 -.2075
•	
• Examine for wastage, defect(s) and damage	46 CFR 31.10-1 & -20 46 CFR 70.35-1, 71.50-3
• Examine stress areas (stringer plate, sheer plate, etc.)	NVIC 07-68 II, III & IV(B)
• Examine seachest(s), strainers and emergency bilge suction and overboard discharges for wastage, defect(s), and damage	46 CFR 61.20-5 NVIC 07-68 II & III
• Verify condition of drydock (bottom) plugs	NVIC 07-68 II & III MSM II/B.3.B.2
• Verify wastage/corrosion is within limits	ABS 7-A-4/27 NVIC 07-68 III(C) & H-N
• Ensure unsatisfactory condition(s) are resolved	46 CFR 42.09-45 MSM II/B.3.B

Machinery Equipment

☐ 31. Inspect nonmetallic expansion joint(s)

• Determine need for removal	46 CFR 31.30-1, 70.20-1 46 CFR 91.15-1 46 CFR 61.15-12
• Verify internal and external condition	MSM II/B.3.F.3
• Verify new installation	MSM II/B.3.F.3

Welding Repair

☐ 32. Evaluate structural repair proposals

• Parent cites	46 CFR 31.10-1 & 32.60-1 46 CFR 70.35-1
	46 CFR 90.35-1
• Evaluate extent of damage and/or wastage/corrosion	46 CFR 42.09-50 ABS 7-A-4/17
	NVIC 07-68 IV
• Review repair proposal	46 CFR 42.09-50 & ABS 7-A-4/29 MSM II/A.1.F.2.a
	NVIC 07-68 IV
• Verify repair materials	46 CFR 42.09-50(c) ABS 7-A-4/29
	ABS 2-1-1/7
• Verify welding procedures	46 CFR 42.09-50(c) 46 CFR 2.75-70
	ABS 2-4-1/1.3

☐ 33. Verify welding Procedure Qualification Records (PQR)

• Parent cites	46 CFR 31.10-1, .30-1 & 32.60-1 46 CFR 70.20-1 & .35-1
	46 CFR 90.20-1 & .35-1
• Confirm need for qualified welding procedure	46 CFR 2.75-70 46 CFR 57.02-2(a)(1)
• Verify variables on PQRs to the Welding Procedure Specification (WPS)	ASME IX/QW-200.1(b) ASME IX/QW-483
• Verify tests and results	ASME IX/QW-200.2(b)

☐ 34. Verify welder is qualified to perform repair work

• Parent cites	46 CFR 31.10-1, .30-1 & 32.60-1 46 CFR 70.20-1 & .35-1 46 CFR 90.20-1 & .35-1
• Confirm need for qualified welding procedure	46 CFR 2.75-70 46 CFR 57.02-2(a)(1)
• Verify Welder Performance Qualification (WPQ) is valid	46 CFR 57.02-3 ASME IX/QW-322.1
• Verify variables on WPQ(s)	ASME IX/QW-301.2 ASME IX/QW-301.4 ASME IX/QW-484(a)
• Verify tests are satisfactory	ASME IX/QW-302.1 ASME IX/QW-484(a)

☐ 35. Inspect fit-up

• Parent cites	46 CFR 31.10-1 & 32.60-1 46 CFR 70.35-1 46 CFR 90.35-1
• Examine material and verify it is fitted to approved joint detail	46 CFR 42.09-50 ANSI/AWS D3.5-93 NVIC 07-68 IV & V
• Verify materials (base, filler, gas)	46 CFR 57.02-5 ABS 2-1-1/1.1
• Verify welding processes	ABS 2-4-1/1.7

☐ 36. Inspect back gouge

• Parent cites	46 CFR 31.10-1 & 32.60-1 46 CFR 70.35-1 46 CFR 90.35-1
• Examine welds for defects (discontinuity)	ABS 2-4-1/5.9 NVIC 07-68 V(G)(2)
• Verify weld sequencing	ANSI/AWS D3.5-93 NVIC 07-68 V(F)
• Verify joints are cleaned interpasses	ABS 2-4-1/3.5 NVIC 07-68 V(H)

☐ 37. Inspect welds

• Parent cites	46 CFR 31.10-1 & 32.60-1 46 CFR 70.35-1 46 CFR 90.35-1
• Examine welds for uniformity and reinforcement	ABS 2-4-1/5.15.1 NVIC 07-68 V
• Examine welds for defects (discontinuity)	ABS 2-4-1/5.15.1 NVIC 07-68 V(H)
• Examine adjacent base metal for injurious arc strikes, spatter, undercut, overlap, slag and irregular and/or sharp edges	ABS 2-4-1/5.15.1
• Verify workmanship through an nondestructive test	ABS 2-4-1/5.15.2 ABS NDT Guide

☐ 38. Verify welding Procedure Qualification Record(s) (PQR)

• Parent cites	46 CFR 31.10-1 & 32.60-1 46 CFR 70.35-1 46 CFR 90.35-1
• Confirm need for qualified welding procedure	46 CFR 2.75-70 NVIC 07-68
• Verify variables on PQR(s) to the Welding Procedure Specification (WPS(s))	46 CFR 2.75-70
• Verify tests and results	46 CFR 2.75-70

☐ 39. Verify welder is qualified to perform repair work

• Parent cites	46 CFR 31.10-1 & 32.60-1 46 CFR 70.35-1 46 CFR 90.35-1
• Confirm need for qualified welding procedure	46 CFR 2.75-70
• Verify Welder Performance Qualification (WPQ) is valid	46 CFR 2.75-70
• Verify variables on WPQs	46 CFR 2.75-70
• Verify tests are satisfactory	46 CFR 2.75-70

☐ 40. Inspect repairs to tail shafts

• Determine if repairable	46 CFR 61.20-17 MSM II/A5.I.2 ABS 7-A-11/7
• Verify repair proposal & welding procedure	MSM II/A5.I.2 ABS 7-A-11/9.1 ABS 7-A-11/5.5.2
• Verify welder qualifications	46 CFR 2.75-70 MSM II/A5.I.2
• Verify facility approval	ABS 7-A-11/5.3 ABS 7-A-11/17.1
• Examine production welding process	ABS 7-A-11/9, .11 & .13
• Examine clad welding	ABS 7-A-11/17 & .19

Nondestructive Testing

☐ 41. Inspect nondestructive testing (NDT) using the liquid (dye) penetrant method

• Parent cites	46 CFR 31.10-1 & 32.60-1 46 CFR 70.35-1 46 CFR 90.35-1
• Verify technician's qualification and certification	ABS 2-4-1/5.17 NDT Guide 4/5.3
• Verify application technique	NDT Guide 4/5.5
• Witness application procedures	ABS NDT Guide 4/5.7
• Witness visible penetrant examination	ABS NDT Guide 4/7.5
• Witness fluorescent penetrant examination	ABS NDT Guide 4/7.7
• Evaluate test results or technician's report	ABS NDT Guide 4/9 & 11

☐ 42. Inspect nondestructive testing (NDT) using the magnetic particle method

• Parent cites	46 CFR 31.10-1 & 32.60-1 46 CFR 70.35-1 46 CFR 90.35-1
• Verify technician's qualification and certification	ABS 2-4-1/5.17 NDT Guide 7/5.3
• Verify inspection technique	ABS NDT Guide 7/5.5
• Verify equipment and magnetic field strength	ABS NDT Guide 7/5.7.1 & .2
• Witness application of visible magnetic particles	ABS NDT Guide 7/5.7.3
• Witness application of fluorescent particles	ABS NDT Guide 7/5.7.4
• Witness technician examine/interpret readings	ABS NDT Guide 5/5.7 & 9
• Evaluate test results or review technician's report	ABS NDT Guide 5/5.7 & 9

☐ 43. Verify nondestructive testing (NDT) using the radiography (gamma rays or x-rays) method

• Parent cites	46 CFR 31.10-1 & 32.60-1 46 CFR 70.35-1 46 CFR 90.35-1
• Verify technician's qualification and certification	ABS 2-4-1/5.17 NDT Guide 2/5.1
• Verify inspection technique	ABS NDT Guide 2/5.3
• Verify film identification markings	ABS NDT Guide 2/5.5
• Verify radiography quality level	ABS NDT Guide 2/5.7
• Verify Image Quality Indicator (IQI)	ABS NDT Guide 2/5.9
• Witness technician examine/interpret readings	ABS NDT Guide 2/5.15
• Review technician's report	ABS NDT Guide 2/9 & 11

☐ 44. Verify nondestructive testing (NDT) using the ultrasonic method

• Parent cites	46 CFR 31.10-1 & 32.60-1 46 CFR 70.35-1 46 CFR 90.35-1
• Verify technician's qualification, certification and techniques	ABS 2-4-1/5.17 ABS NDT Guide 3/3
• Verify calibrate block's material and thickness	ABS NDT Guide 3/3.5
• Verify type of equipment/instrument used	ABS NDT Guide 3/3.7
• Verify equipment is calibrated	ABS NDT Guide 3/3.9
• Witness technician examine/interpret readings	ABS NDT Guide 3/3.11
• Evaluate test results or review technician's report	ABS NDT Guide 3/3.13

☐ 45. Inspect nondestructive testing (NDT) using the hydro-static method (Pressure Vessels)

• Parent cites	46 CFR 31.10-1, .30-1 & 32.60 46 CFR 70.20-1 46 CFR 90.20-1
• Verify requirement for test	46 CFR 54.10-10(a)
• Verify ready for testing	46 CFR 54.10-10(b)
• Verify air has been purged	46 CFR 54.10-10(b)
• Verify piping components are isolated	46 CFR 54.10-10(b)
• Verify test pressure	46 CFR 54.10-10(b) 46 CFR 54.10-20
• Verify test pressure is attained and maintained	46 CFR 54.10-10(c)
• Witness test	46 CFR 54.10-10(c)

☐ 46. Inspect nondestructive testing (NDT) using the hydro-static method (Piping Systems)

• Parent cites	46 CFR 31.10-1, .30-1 & 32.60 46 CFR 70.20-1 46 CFR 90.20-1
• Verify test pressure of nonstandard piping components	46 CFR 56.97-5
• Verify system is ready for testing	46 CFR 56.97-25
• Verify air has been purged	46 CFR 56.97-30(a)
• Verify test medium	46 CFR 56.97-30(b)
• Verify piping components are isolated	46 CFR 56.97-30(c)
• Verify test pressure	46 CFR 56.97-30(e) & (f)
• Witness test	46 CFR 56.97-30(d)
• Verify test pressure is attained and maintained	46 CFR 56.97-30(g)
• Verify pressures for Installation tests	46 CFR 56.97-40

☐ 47. Inspect nondestructive testing (NDT) using the hydro-static method (Tanks and Bulkheads)

• Parent cites	46 CFR 31.10-1, .30-1 & 32.60 46 CFR 70.20-1 46 CFR 90.20-1
• Verify tanks/space is ready for testing	ABS 3-7-1/3.5.4(a) & (b)
• Verify test medium being used	ABS 3-7-1/3.5.4(a) & (b)
• Verify piping components are isolated	ABS 3-7-1/3.5.4(a) & (b)
• Verify test pressure	ABS 3-7-1/3.5.4(a) & (b)
• Witness test	ABS 3-7-1/3.5.4(a) & (b)

☐ 48. Inspect nondestructive testing (NDT) using the pneumatic method (Pressure Vessels)

• Parent cites	46 CFR 31.10-1, .30-1 & 32.60 46 CFR 70.20-1 46 CFR 90.20-1
• Determine suitability for test	46 CFR 54.10-15(a) & (b)
• Ensure all safety precaution are taken	46 CFR 54.10-15(g)
• Verify test pressure	46 CFR 54.10-15(c)
• Witness gradual pressure increase	46 CFR 54.10-15(d)
• Witness test	46 CFR 54.10-15(e)

☐ 49. Inspect nondestructive testing (NDT) using the pneumatic method (Piping Systems)

• Parent cites	46 CFR 31.10-1, .30-1 & 32.60 46 CFR 70.20-1 46 CFR 90.20-1
• Verify test medium and temperature	46 CFR 56.97-35(b)
• Verify piping components are isolated	46 CFR 56.97-35(c)
• Verify test pressure	46 CFR 56.97-35(f) & (g)
• Witness gradual pressure increase	46 CFR 56.97-35(d)
• Verify test pressure is attained and maintained	46 CFR 56.97-35(h)
• Witness test	46 CFR 56.97-35(e)

☐ 50. Inspect nondestructive testing (NDT) using the tank air test (pneumatic) method (Tanks and Bulkheads)

• Parent cites	46 CFR 31.10-1, .30-1 & 32.60 46 CFR 70.20-1 46 CFR 90.20-1
• Verify tanks/space is ready for testing	ABS 3-7-1/3.5.4(d)
• Verify piping components are isolated	ABS 3-7-1/3.5.4(d)
• Verify test pressure	ABS 3-7-1/3.5.4(d)
• Verify presence of leak indicating solution	ABS 3-7-1/3.5.4(d)
• Verify calibration of means to measure pressure	ABS 3-7-1/3.5.4(d)
• Witness initial test	ABS 3-7-1/3.5.4(d)
• Witness secondary test	ABS 3-7-1/3.5.4(d)

☐ 51. Inspect nondestructive testing (NDT) using the hose test method (Tanks and Bulkheads)

• Parent cites	46 CFR 31.10-1, .30-1 & 32.60 46 CFR 70.20-1 46 CFR 90.20-1
• Verify tanks/space is ready for testing	ABS 3-7-1/3.5.4(c)
• Verify nozzle size	ABS 3-7-1/3.5.4(c)
• Verify water pressure	ABS 3-7-1/3.5.4(c)
• Verify nozzle distance from joints/seams during test	ABS 3-7-1/3.5.4(c)
• Witness test	ABS 3-7-1/3.5.4(c)

☐ 52. Inspect nondestructive testing (NDT) using the vacuum box method (Tanks and Bulkheads)

• Parent cites	46 CFR 31.10-1, .30-1 & 32.60 46 CFR 70.20-1 46 CFR 90.20-1
• Verify tanks/space is ready for testing	ABS 3-7-1/3.5.4(f)
• Verify condition of gauge and injector	ABS 3-7-1/3.5.4(f)
• Verify presence of leak indicating solution	ABS 3-7-1/3.5.4(f)
• Verify test gauge pressure	ABS 3-7-1/3.5.4(f)
• Witness test	ABS 3-7-1/3.5.4(f)

Follow Up

☐ 53. Verify vessel compliance with the International Safety Management (ISM) Code

• Verify master's oversight	33 CFR 96.250 SOLAS 20 IX/3.2 ISM Code A/5
• Verify maintenance program for vital equipment	33 CFR 96.250 ISM Code A/10.4
• Verify compliance of Safety and Environmental Policy	33 CFR 96.250 ISM Code A/2
• Verify record keeping compliance	33 CFR 96.220(a)(3) ISM Code A/10.2.4
• Verify company responsibilities and authority are defined	33 CFR 96.250 ISM Code A/3
• Verify crew can identify and contact information of designated person(s) ashore	33 CFR 96.250 ISM Code A/4
• Review audit documentation and ensure follow-up actions	33 CFR 96.250 ISM Code A1.4.6, A/9 & 12

☐ 54. Issue control action(s)

• Determine control action	MMS CVC-PR-001(2)
• Conduct reports and notifications (when applicable)	MMS CVC-PR-001(2)
• Issue control action(s)	MMS CVC-PR-001(2) CG-835V
• Explain control action(s) to responsible parties/stakeholders	MMS CVC-PR-001(2) CG-835V

☐ 55. Issue deficiencies

• Determine when worklists may be used	MMS CVC-PR-001(2)
• Document "self reported" deficiencies	MMS CVC-PR-001(2)
• Determine deficiency's reference cite	46 USC 3313(b) MSM II/A.2.C.4
• Discuss deficiencies and corrective measures/timeframe with vessel's master or representative	MSM II/A.2.C.2
• Issue signed CG-835V to vessel's master or representative	46 CFR 2.01-10(a) MSM II/A.2.C MMS CVC-PR-001(2)

☐ 56. Issue/Endorse vessel's certificates

• Issue/Endorse certificates, as applicable	46 CFR 31.40-1, 71.75-1 46 CFR 91.60-1 SOLAS 20 I/14(i)(ii) IMO Res A.1076(28)
• Obtain a copy of all endorsed certificates for the unit's vessel file	MSM I/12.E.7

☐ 57. Complete MISLE Activity

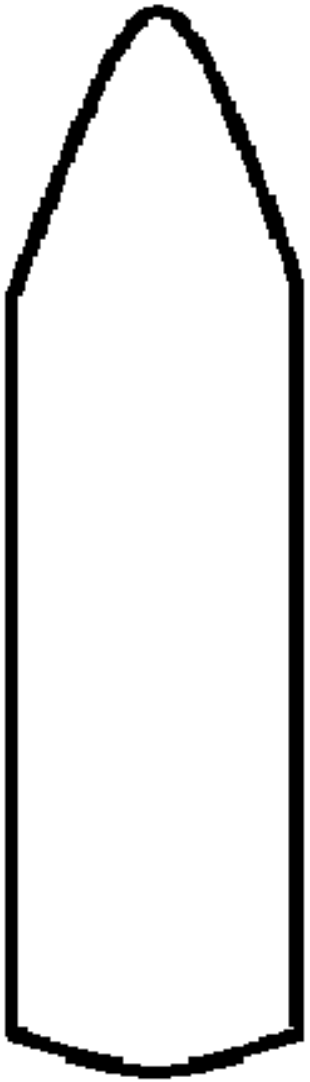
• Open existing activity in MISLE	MSM I/12.G.2.a IMO Res A.1076(28)
• Update inspection results	MSM I/12.H.1/MSM II/A.2.C.2.d MISLE User Guide
• Update activity narrative	MSM I/12.H.1 MISLE User Guide
• Update vessel details	MSM I/12.H.1 MMS PR-009(2)
• Amend Certificate of Inspection	MSM I/12.H.1 MISLE User Guide
• Print new or amended Certificate of Inspection and Deficiency Letter	MSM II/A.2.C.6 MISLE User Guide
• Change activity status to "Open - Submitted for Review"	MSM I/12.H.1 MISLE User Guide

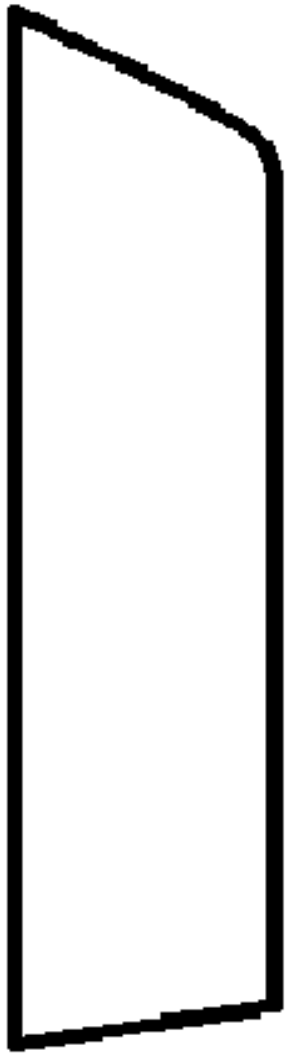
☐ 58. Conduct deficiency check

• Determine an appropriate verification method for the identified deficiencies	MSM II/A.2.C.4
• Verify correction(s) meet appropriate regulations	MSM II/A.2.C.4.a
• Clear deficiency(s) in MISLE activity	MSM II/A.2.C.2.d MMS PR-001(2) MISLE User Guide
• Remove control action(s)	MISLE User Guide

Appendices

Vessel Layout:





Recommended US Vessel Deficiency Procedures:

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Identify deficiency</td></tr>
<tr><td>2</td><td>Inform vessel representative</td></tr>
<tr><td>3</td><td>Record on the Deficiency Summary Worksheet (next page)</td></tr>
<tr><td>4</td><td>If deficiency is corrected prior to end of inspection, go to step 6</td></tr>
<tr><td>5</td><td>If deficiency is unable to be corrected prior to end of inspection, issue CG-835V in accordance with the table below:
<table>
<tr><th>IF deficiency:</th><th>THEN issue CG-835V:</th></tr>
<tr><td>Does NOT immediately impact crew/passenger safety, hull seaworthiness or the environment, e.g.,
Missing placards
Non-metallic expansion joints if more than 10 years in service</td><td>That provides a specific time for correcting deficiency, e.g.,
“X” number of days
At next drydock</td></tr>
<tr><td>Allows Vessel operations to be MODIFIED to meet less stringent requirements, e.g.,
Expired international certificates
Automation defect
Insufficient lifesaving equipment</td><td>That restricts operation of vessel to meet current vessel conditions, e.g.,
Reduced route
Increased crew
Fewer offshore workers</td></tr>
<tr><td>DOES immediately impact crew/passenger safety, hull seaworthiness, or the environment and cannot be modified to meet less stringent requirements, e.g.,
Missing or defective firefighting equipment
Structural defect or damage</td><td>That requires the deficiency to be corrected prior to operating vessel (“NO SAIL” item), e.g.,
Prior to carrying offshore workers
Prior to carrying cargo</td></tr>
</table></td></tr>
<tr><td>6</td><td>Enter CG-835V data in MISLE</td></tr>
</table>

Deficiency Summary Worksheet:

Name of Vessel	
Deficiency	**Req't. Issued/ Date Cleared**

Notes:

Notes:

Notes

Conversions:

Distance and Energy

Kilowatts (kW)	X	1.341	=	Horsepower (hp)
Feet (ft)	X	3.281	=	Meters (m)
Long Ton (LT)	X	.98421	=	Metric Ton (t)

Liquid *(**NOTE:** Values are approximate.)*

Liquid	bbl/LT	m^3/t	bbl/m^3	bbl/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

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 m^3	1 psi	=	.06895 Bar = 2.3106 ft of water

Temperature: Fahrenheit = Celsius (°F = 9/5 °C + 32 and °C = 5/9 (°F – 32))

0	=	-17.8	80	=	26.7	200	=	93.3
32	=	0	90	=	32.2	250	=	121.1
40	=	4.4	100	=	37.8	300	=	148.9
50	=	10.0	110	=	43.3	400	=	204.4
60	=	15.6	120	=	48.9	500	=	260
70	=	21.1	150	=	65.6	1000	=	537.8

Pressure: Bars = Pounds per square inch

1 Bar	=	14.5 psi	5 Bars	=	72.5 psi	9 Bars	=	130.5 psi
2 bars	=	29.0 psi	6 Bars	=	87.0 psi	10 Bars	=	145.0 psi
3 Bars	=	43.5 psi	7 Bars	=	101.5 psi			
4 Bars	=	58.0 psi	8 Bars	=	116.0 psi			