

NAVSEA
STANDARD ITEM

FY-20

ITEM NO: 009-69
DATE: 30 APR 2018
CATEGORY: I

1. SCOPE:

1.1 Title: Heavy Weather/Mooring Plan; provide

2. REFERENCES:

2.1 845-6686999 Rev E, US Navy Vessel Water Depth, Mooring and Hull/Appendage Clearance Requirements for Transit and Berthing

2.2 DDS 582-1, Design Data Sheet, Calculations for Mooring Systems

2.3 S9086-TW-STM-010/CH-582, Mooring and Towing

2.4 UFC 4-159-03, Mooring Design

3. REQUIREMENTS:

3.1 Maintain a written Heavy Weather Plan that shall be implemented during gales, storms, hurricanes, and destructive weather, including mooring calculations in accordance with 2.1 and 2.2, using 2.3 and 2.4 for guidance. The documented Heavy Weather Plan shall be submitted to the SUPERVISOR for a document review and acceptance. The contractor shall have an acceptable documented Heavy Weather Plan, in accordance with this Standard Item, in place no later than 15 days prior to availability start date. The Heavy Weather Plan shall be subject to periodic conformity audits by the SUPERVISOR throughout the contract.

3.1.1 Submit updated or changed plans to the SUPERVISOR as they occur.

3.2 Ensure that the plan designates responsibility and implements procedures for prevention of damage to naval ships, craft, barges, and lighters. This includes periods when ships, craft, barges, and lighters are physically located in private contractors' plants; during times when work on ships, craft, barges, and lighters at naval facilities requires openings to hulls or decks; and when contractor owned/furnished floating equipment is tied alongside ships, craft, barges, and lighters.

3.2.1 The plan shall contain specific responsibilities and detailed actions to be taken during the weather conditions listed below.

3.2.2 Conditions where there is substantial advance warning for approaching adverse weather are addressed by the following 4 categories:

3.2.2.1 Gale/Storm/Hurricane Condition IV: Trend indicates a possible threat of destructive winds of force indicated within 72 hours.

3.2.2.2 Gale/Storm/Hurricane Condition III: Destructive winds of force indicated are possible within 48 hours.

3.2.2.3 Gale/Storm/Hurricane Condition II: Destructive winds of force indicated are anticipated within 24 hours.

3.2.2.4 Gale/Storm/Hurricane Condition I: Destructive winds of force indicated are anticipated within 12 hours or less.

3.2.3 Conditions where there is little or no advance warning for approaching adverse weather are addressed by the following 2 categories:

3.2.3.1 Thunderstorm/Tornado Condition II: Destructive winds accompanying the phenomenon indicated are reported or expected in the general area within 6 hours. Lightning and thunder are also anticipated.

3.2.3.2 Thunderstorm/Tornado Condition I: Destructive winds accompanying the phenomenon are imminent. Lightning and thunder are also anticipated.

3.3 Ensure that the plan contains, as a minimum, the following information as dictated by conditions listed in 3.2:

3.3.1 Steps to be taken to remove or secure staging items or equipment on decks of ships, craft, barges, and lighters, pier or dry dock, including cranes that could become wind-borne.

3.3.2 Protection of ships, craft, barges, and lighters from damage from other floating equipment, such as barges, doughnuts, work floats, and other ships, craft, barges, and lighters.

3.3.3 Provisions for protection of government equipment and material in custody of the contractor from damage by pierside flooding.

3.3.4 Provisions for removal of temporary hoses, welding lines, air lines, oxygen/acetylene lines, etc., extending through watertight closures.

3.3.5 Provisions for security, emergency fire and flooding protection, emergency shipboard dewatering and fire main capability, emergency shipboard electrical generation, and emergency shipboard communications.

3.3.5.1 Specific requirements for emergency shipboard fire main capability are shown on Attachment A.

3.3.5.2 The minimum requirements for emergency shipboard electrical generation equipment are shown on Attachment B.

3.3.5.3 One portable dewatering pump and associated equipment for each 100 feet of ship's length in addition to the dewatering equipment provided by 009-08 of 2.1 shall be available on the damage control or main deck adjacent to damage control lockers or temporary damage control equipment boxes. Pumps must be capable of providing a minimum of 200 gal/min at a discharge head of 50 feet of dewatering capacity and can be used at the scene of a casualty within 3 minutes of receiving an alarm. Additional dewatering capacity to provide 1,000 gal/min at a discharge head of 50 feet at the scene shall be available within 15 minutes. During the waterborne overhaul period, no damage control system associated with flooding prevention and control or any portion thereof shall be removed or made inoperable without prior notification of the SUPERVISOR and to the casualty-control station and until a back-up system has been established.

3.3.6 Provisions for access to the ship for personnel and emergency equipment during and immediately following the storm consistent with prudent safety precautions.

3.3.7 Assurance that all hull/deck openings are made watertight.

3.3.8 Steps to be taken to secure floating piers during high winds/high tides.

3.3.9 Provisions for messing contractor, Ship's Force, and SUPERVISOR duty personnel for 3 days (minimum). The maximum number of Navy personnel will be 15.

3.3.10 The name and telephone number (business and residential) of the private contractor's single point of contact. This person shall have the authority to commit the contractor to take necessary actions as requested by the SUPERVISOR.

3.3.11 Provisions for operation and manning of a Hurricane Control Center, with capabilities of telephone and portable radio communications with the ship and SUPERVISOR duty personnel.

3.4 Ensure that the plan contains the following mooring related information:

3.4.1 Specify steps to be taken to secure ships, craft, barges, and lighters to contractor's pier, dry dock, graving dock, marine railway, or contractor's other facility. Information must define specific precautions to be taken and supporting calculations, to include limits of docking blocks and dock stability for both normal and heavy weather conditions. Calculations for heavy weather configurations shall include wind and tidal considerations.

3.4.1.1 Provide the heavy weather state at which the ship must be undocked.

3.4.2 Submit mooring calculations for the worst anticipated loading condition during the availability. For ships with a self-compensating fuel system, the loading condition shall show the self-compensation fuel system full of water, fuel, or some combination of fuel and water, projecting the worse possible condition as shown in calculations for maintaining ship's stability. Determine the combined loading due to wind load from each direction and both peak flood and ebb current loads at low and high tides. Calculations may require re-submittal if significant changes occur from the original estimate on which the calculations were based.

3.4.3 For ships in dry dock, provide limits and supporting calculations for listed conditions. Analyze both the "normal" dock configuration and the "heavy weather" configuration.

3.4.3.1 Maximum safe wind speed and surge for side block strength and stability. Include maximum loading of the side blocks on ship.

3.4.3.2 Maximum safe wind speed and surge for dry dock strength and stability.

3.4.3.3 Surge required to float ship.

3.4.3.4 Table or graph showing safe combinations of wind speed and surge.

3.4.4 For ships pierside, provide limits and supporting calculations for ship loading conditions specified in 3.4.2. Analyze the "heavy weather" mooring configuration that would be used during the conditions specified in 3.2. Analyze worst-case wind directions including frontal, broadside, and quartering.

3.4.4.1 Maximum safe wind speed for mooring strength. Include strength of pier, pier fittings, mooring lines, and shipboard fittings. Maximum applied load on any mooring line shall be the breaking strength of the mooring line divided by 2.5 (factor of safety of 2.5).

3.4.4.2 Maximum safe surge for mooring.

3.4.4.3 Maximum safe elongation of mooring lines. Include the following information:

Size and type of mooring line;
Percent elongation of mooring line at failure;
Tattletale-free length and length between attachments.

3.4.4.4 Sketch, showing size, type, and location (vertical and horizontal angles) of all securing devices including fenders, bumpers, and camels.

3.4.5 Include the following statement, providing the necessary data:
 USS _____ can be safely moored to withstand a maximum of ___ mph winds with a ___ knot current and a ___ foot storm surge.

4. NOTES:

4.1 The SUPERVISOR will set Conditions of Readiness consistent with the forecasts and advisories of the local Weather Service Office of National Oceanic and Atmospheric Administration (NOAA).

4.2 NOAA defines the 5 categories of hurricanes as follows:

<u>CATEGORY</u>	<u>WIND SPEED</u>		<u>STORM SURGE</u>
1	74 - 95 MPH	OR	4 - 5 FT ABOVE NORMAL
2	96 - 110 MPH	OR	6 - 8 FT ABOVE NORMAL
3	111 - 129 MPH	OR	9 - 12 FT ABOVE NORMAL
4	130 - 156 MPH	OR	13 - 18 FT ABOVE NORMAL
5	157 MPH OR HIGHER	OR	GREATER THAN 18 FT ABOVE NORMAL

4.3 Attachment C contains regional heavy weather conditions based on historical data and is provided as information only; the historical data is not intended to place limitations/restrictions on other values appropriate and/or previously authorized by a Naval Supervising Activity for their cognizant contractor(s) sites.

4.4 The Heavy Weather Plan submitted in 3.1 requires a one-time submittal/acceptance unless this NAVSEA Standard Item and/or references change or contractor's status changes.

ATTACHMENT A
FIRE PROTECTION WATER SUPPLY REQUIREMENTS

<u>SHIP TYPE</u>	<u>FLOW, GPM</u> *		
AG	Miscellaneous Auxiliary Ship	1,500	
AGM	Missile Range Instrumentation Ship	1,500	
AGOR	Oceanographic Research Ship	500	
AGS	Surveying Ship	1,000	
AH	Hospital Ship	1,000	
AK	Cargo Ship	1,500	
AKR	Vehicle Cargo Ship	1,500	
AO	Oiler	1,500	
AOE	Fast Combat Support Ship	1,500	
ARC	Cable Repair and Laying Ship	1,000	
ARS	Salvage Ship	500	
AS	Submarine Tender	1,500	
ATF	Ocean Tug Fleet	500	
CVN	Aircraft Carrier	3,000	
CG	Guided Missile Cruiser	1,000	
DDG	Guided Missile Destroyer	1,000	
LCC	Amphibious Command Ship	1,000	
LCS	Littoral Combat Ship	1,000	
LHA	Amphibious Assault Ship	2,500	**
LHD	Amphibious Assault Ship	2,500	
LPD	Amphibious Transport Dock	1,500	***
LSD	Landing Ship Dock	2,000	***
YRB	Repair and Berthing Barge	500	
YRBM	Repair, Berthing and Messing Barge	500	
YRBL	Repair, Berthing and Messing Barge (large)	500	
MCM	Mine Counter Measures Ship	750	
PC	Patrol Coastal	500	

* All flows are from the pier or dry dock outlet and are available at adequate residual pressures from those systems in compliance with present design criteria for dry docks and piers as reflected in NAVFAC design manuals (UFC 4-213-10, UFC 4-213-12, UFC 4-150-01, UFC 4-150-02, and UFC 4-150-06).

** Includes supply to operate 2 hangar sprinkler groups and 2, 2-1/2-inch hoselines.

*** Includes supply to operate one sprinkler group and 2, 2-1/2-inch hoses.

ATTACHMENT B

HEAVY WEATHER
EMERGENCY POWER REQUIREMENT

		<u>SHIP TYPE (NOTE 3)</u>	<u>MINIMUM POWER REQUIREMENT (KILOWATTS EXCEPT AS NOTED)</u>
AGM		Missile Range Instrumentation Ship	
AGOR	11, 23	Oceanographic Research Ship	
AGOS	1	Ocean Surveillance Ship	109
AGOS	19	Ocean Surveillance Ship	246
AGS		Survey Ship	221
AH		Hospital Ship	628
AK		Cargo Ship	
AKR		Vehicle Cargo Ship	
AO	105, 143, 187	Oiler	
AO	177CL		373
AO	177 (JUMBO)	Oiler	451
AOE	1CL	Fast Combat Support Ship	436
AOE	6	Fast Combat Support Ship	1,090
AOT	168	Transport Oiler	
APL		Berthing and Messing Barge	
ARC		Cable Repair and Laying Ship	264
ARDM		Medium Auxiliary Repair Dock	
ARS	50CL	Salvage Ship	100
AS	39, 40, 41	Submarine Tender	653
ATF	91, 113	Ocean Tug Fleet	16
CG	47CL	Guided Missile Cruiser	638
CG	52CL		623
CVN	68-70	Aircraft Carrier (Nuclear)	2,491
CVN	71		
CVN	72		
DDG	51CL	Guided Missile Destroyer	1,121
LCC	19, 20	Amphibious Command Ship	436
LCU*		Landing Craft	
LHA	1CL	Amphibious Assault Ship	840
LHD	1CL		
LPD	17CL	Amphibious Transport	1,050
LSD	41CL	Landing Ship Dock	334
MCM	1	Mine Countermeasures	80
PC		Patrol Coastal	50
		Combatants	(NOTE 2)
YD		Floating Crane	

* Type includes ASDV, YFU, YFB

ATTACHMENT B
(CON'T)

HEAVY WEATHER
EMERGENCY POWER REQUIREMENT

MINIMUM POWER
REQUIREMENT
(KILOWATTS
EXCEPT AS NOTED)

SHIP TYPE (NOTE 3)

YRB	Repair & Berthing Barge
YRBM	Repair, Berthing and Messing Barge
YTB	Harbor Tug (Large)
	Yard Craft (Misc.)

GENERAL NOTES: The power requirement listed is the minimum considered necessary for emergency power if the main source of shore power is lost during heavy weather situations. Each contractor's heavy weather plan shall specify the individual power capacity for each ship connected to the ship's shore power distribution system. Electrical information referenced from MIL-HDBK-1025/2.

NOTES:

1 - CAPACITY IS GIVEN IN KW. UNLESS OTHERWISE INDICATED. INPUT VOLTAGE IS 450 VOLTS, 3 PHASE, 3 WIRE, 60 HERTZ, UNGROUNDED. POWER FACTOR IS APPROXIMATELY 0.8.

2 - REQUIREMENT IS TO SUPPORT AN EXISTING PORTABLE MOTOR GENERATOR SET WHICH CONVERTS THE 60 HERTZ POWER TO 400 HERTZ POWER. THE MOTOR GENERATOR SET NORMALLY ACCOMPANIES THE SHIP SUPPORT FACILITIES.

3 - POWER REQUIREMENTS FOR ANY SHIP TYPE NOT LISTED SHALL BE DETERMINED BY COMPARISON WITH A SHIP(S) OF SIMILAR DESIGN LOAD AND APPROPRIATE SHIP'S INFORMATION BOOK.

ATTACHMENT C

HEAVY WEATHER CONDITIONS

SITE	WIND (Knots)	CURRENT (Knots)	SURGE (Feet)
Bath, ME	83	2.5	8.7
Portsmouth NSY, NH	84	3.8	12.8
SUBBASE New London, CT	87	0.2	10.8
Norfolk NSY, VA	82	0.4	8.9
NAVSTA Norfolk, VA	87	0.8	8.4
NAB Little Creek, VA	91	0.3	7.1
Newport News Ship Building, VA	87	1.3	8.4
SUBBASE Kings Bay, GA	96	0.3	9.1
NAVSTA Mayport, FL	96	3.1	7.5
NAVSTA Pascagoula, MS	104	Negligible	6.1
NAVSTA Ingleside, TX	109	2	16.2
NAVSTA Everett, WA	74	0.6	14.4
SUBBASE Bangor, WA	64	1.1	14.7
Puget Sound NSY, WA	64	0.5	15.4
NAS North Island, CA	52	0.6	8.4
Pearl Harbor NSY, HI	87	Negligible	3.5
Guam	122	2	4.7
La Maddelana, Italy	89	Negligible	Not Available