

NAVSEA
STANDARD ITEM

FY-11

ITEM NO: 009-69
DATE: 24 JUL 2009
CATEGORY: I

1. SCOPE:

1.1 Title: Heavy Weather 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 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 shall be available adjacent to each damage control equipment box such that 200 gal/min at a discharge head of 50 feet of dewatering capacity 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 SUPSHIP 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 SUPSHIP 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 - 130 MPH	OR	9 - 12 FT ABOVE NORMAL
4	131 - 155 MPH	OR	13 - 18 FT ABOVE NORMAL
5	GREATER THAN 155 MPH	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>	
AD	Destroyer Tender	1500
ADG	Degaussing Ship	500
AE	Ammunition Ship	1500
AF	Store Ship	1500
AFS	Combat Store Ship	1500
AG	Miscellaneous Auxiliary Ship	1500
AGEH	Hydrofoil Research Ship	500
AGF	Miscellaneous Flagship	2000
AGFF	Frigate Research Ship	1000
AGM	Missile Range Instrumentation Ship	1500
AGMR	Major Communications Relay Ship	1500
AGOR	Oceanographic Research Ship	500
AGP	Gunboat Support Ship	2000
AGS	Surveying Ship	1000
AH	Hospital Ship	1000
AK	Cargo Ship	1500
AKS	Store Issue Ship	1500
AKR	Vehicle Cargo Ship	1500
ANL	Net Laying Ship	500
AO	Oiler	1500
AOE	Fast Combat Support Ship	1500
AOG	Gasoline Tanker	1000
AOR	Fleet Replenishment Oiler	1500
AP	Transport Ship	1000
APB	Self-propelled Barracks Ship	500
AR	Repair Ship	1500
ARB	Battle Damage Repair Ship	500
ARC	Cable Repair and Laying Ship	1000
ARG	Internal Combustion Engine Repair Ship	1500
ARL	Landing Craft Repair Ship	1000
ARS	Salvage Ship	500
ARSD	Salvage Lifting Ship	500
ARST	Salvage Tender	1000
ARVA	Aircraft Repair Ship	1000
ARVE	Aircraft Engine Ship	1000
ARVH	Helicopter Tender	1500
AS	Submarine Tender	1500
ASR	Submarine Rescue Ship	600
ATA	Ocean Tug	500
ATF	Ocean Tug Fleet	500
ATS	Salvage and Rescue Tug	500
AVM	Guided Missile Ship	1500
CV, CVN	Aircraft Carrier	3000
CG, CGN	Guided Missile Cruiser	1000
DD	Destroyer	1000

ATTACHMENT A
FIRE PROTECTION WATER SUPPLY REQUIREMENTS (Con't)

<u>SHIP TYPE</u>		<u>FLOW, GPM</u> *	
DDG	Guided Missile Destroyer	1000	
FF	Frigate	1000	
FFG	Guided Missile Frigate	1000	
FFR	Radar Picket Frigate	1000	
IX	Unclassified Miscellaneous	1500	
LCC	Amphibious Command Ship	1000	
LFR	Inshore Fire Support Ship	500	
LHA	Amphibious Assault Ship	2500	**
LKA	Amphibious Cargo Ship	1500	
LPA	Amphibious Transport Ship	1500	
LPD	Amphibious Transport Dock	1500	***
LPH	Amphibious Assault Ship	2500	**
LPR	Amphibious Transport-Small	500	
LSD	Landing Ship Dock	2000	***
PTF	Fast Patrol Crafts	500	
YRB	Repair and Berthing Barge	500	
YRBM	Repair, Berthing and Messing Barge	500	
YRBL	Repair, Berthing and Messing Barge (large)	500	
LST	Landing Ship Tank	1500	***
MCM	Mine Counter Measures Ship	500	
MSF	Fleet Minesweeper Ship	500	
MSH	Minesweeper-Hunter	500	
MSI	Minesweeper-Inshore	500	
MSO	Minesweeper-Ocean	500	
MSS	Minesweeper-Special	1000	
PC	Patrol Coastal	520	
PCH	Hydrofoil Patrol Craft	500	
PG	Patrol Combatants	500	
PGH	Hydrofoil Gunboat	500	
PHM	Hydrofoil Missile Patrol Combatants	500	

* All flows are from the pier or drydock outlet and are available at adequate residual pressures from those systems in compliance with present design criteria for drydocks and piers as reflected in NAVFAC design manuals (DM-29 and DM-25).

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

*** Includes supply to operate one sprinkler group and two 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>
AD	15, 18, 19	Destroyer Tender	358
AD	37, 38		529
AD	41, 42, 43, 44		809
AE	21CL	Ammunition Ship	202
AE	26CL		264
AFS	1CL	Combat Stores Ship	342
AGDS	2	Deep Submergence Support Ship	186
AGF	3, 11	Miscellaneous Flagship	498
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(J)	51, 98, 99	Oiler	186
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	1090
AOR	1-6	Fleet Replenishment Oiler	264
AOR	7		295
AOT	168	Transport Oiler	
AP	122	Transport Ship	
APL		Berthing and Messing Barge	
AR	5, 6, 7, 8	Repair Ship	373
ARC		Cable Repair and Laying Ship	264
ARD		Auxiliary Repair Dock	
ARDM		Medium Auxiliary Repair Dock	

ATTACHMENT B
(CON'T)

HEAVY WEATHER
EMERGENCY POWER REQUIREMENT

		<u>SHIP TYPE (NOTE 3)</u>	<u>MINIMUM POWER REQUIREMENT (KILOWATTS EXCEPT AS NOTED)</u>
ARS	8, 38CL	Salvage Ship	15
ARS	50CL	Salvage Ship	100
AS	11	Submarine Tender	327
AS	18		436
AS	19		559
AS	31, 32		622
AS	33, 34		529
AS	36, 37		467
AS	39, 40, 41		653
ASR	9, 13, 14, 15	Submarine Rescue	16
ASR	21CL		124
ATF	91, 113	Ocean Tug Fleet	16
ATS	1CL	Salvage and Rescue Tug	93
BB		Battleship	436
CG	16-24	Guided Missile Cruiser	467
CG	26CL		358
CG	47CL		638
CG	52CL		623
CGN	9	Guided Missile Cruiser (Nuclear)	872
CGN	25		872
CGN	35		872
CGN	36CL, 38CL		653
CV	60-62, 66	Aircraft Carrier	1152
CV	63, 64, 67		1339
CVN	65	Aircraft Carrier (Nuclear)	1837
CVN	68-70		2491
CVN	71		
CVN	72		

ATTACHMENT B
(CON'T)

HEAVY WEATHER
EMERGENCY POWER REQUIREMENT

		<u>SHIP TYPE (NOTE 3)</u>	<u>MINIMUM POWER REQUIREMENT (KILOWATTS EXCEPT AS NOTED)</u>
DD	963-992, 997	Destroyer	498
DDG	2CL	Guided Missile Destroyer	280
DDG	37CL		358
DDG	51CL		1121
DDG	993CL		662
FF	1052CL	Frigate	202
FFT	1052CL	Frigate (Reserve Training)	202
FFG	7CL	Guided Missile Frigate	436
LCC	19, 20	Amphibious Command Ship	436
LCU*		Landing Craft	
LHA	1CL	Amphibious Assault Ship	840
LHD	1CL		
LKA	113CL	Attack Cargo Ship	218
LPD	1, 2, 4CL, 7CL, 14CL	Amphibious Transport	218
LPD	17CL		1050
LPH	2, 3, 7, 9-12	Amphibious Assault Ship	280
LSD	36CL	Landing Ship Dock	295
LSD	41CL		334
LST	1179CL	Landing Ship Tank	280
MCM	1	Mine Countermeasures	80
MHC	1	Minehunter Coastal	
MSO	443, 448, 490	Minesweep Ocean	35
PC		Patrol Coastal	50
PHM	1-6	Guided Missile Patrol	35
		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