

MEETING HEAVY WEATHER

Basic terms

**heavy weather *strain *stress *weight *buoyancy *pitching *rolling *surging
*swaying *heaving *yawing *heaving to *log-book *sea *swell *hogging *sagging
*pounding *pooping *heavy weather routine *a storm *heavy/big seas *weather side
*leeward side *beam sea *broaching to *squall *gust *cold front *cross sea*

In heavy weather the ship is subject to heavy strain and stresses. The motions of the ship in heavy seas are: pitching, rolling, surging, heaving, yawing and swaying. The other stresses experienced by the ship are hogging, sagging, pounding and pooping. If it is thought that the ship will meet bad weather, precautionary measures are always to be put into effect. The Boatswain, who usually reports to the Chief Officer on the bridge at eight o'clock, or four bells, in order to get his instruction for the day's work, is given special duties. He is told:

1. to check and double, if necessary, all cargo lashings on deck;
2. to batten down all hatches, manholes etc;
3. to tighten all life-boat gripes;
4. to remove all ventilator heads, plug the entry ports, and fit covers on them;
5. to clear all loose gear from the decks;
6. to make quite sure that all the derricks are secured.

The Chief Officer prepares a heavy weather routine which is designed to protect the crew. Only essential men would be required on deck during the coming storm; all others would be given work to do below decks. The wind is blowing on to the starboard beam. It means that the starboard side is known as the weather side, and the port side the leeward side. The kind of sea that the ship is beginning to experience is called a beam sea.

Leeway is the difference (or distance) between the course steered by a vessel and that actually run when the wind is on any part of her side. When the wind and sea are directly astern we say that the ship is running before the sea. It might be dangerous because the ship might be pooped or again she might broach to, or surf and broach to. A ship is pooped if a following sea crashes down on to the stern. A ship broaches to if she is travelling as fast as the waves. When she is on the forward slope of a wave or in a trough, the ship might be violently slewed round broadside to the waves which then break aboard her, heel her over and quite possibly capsize her. Sometimes, the ship surfs, that is, she can be carried on the crest of a wave for some distance with her propeller and rudder out of the water. Pounding is the violent beating of the waves against the ship.

All events when encountering heavy weather must be carefully and duly entered in the ship's or deck log book. Here is an extract from the deck log:

May 10, 19...

09.00 - On voyage from Shanghai to Manilla with a full cargo of light , machinery in containers. Course 052 true, speed 20 knots, wind 7, sea 4, bar* 994 hPa, overcast with squalls. All lashings on deck cargo checked and doubled in places.

09.45 - Received facsimile weather chart indicating that a depression near the Phillipines was growing in intensity and moving eastwards, speed 40 knots.

Rechecked cargo lashings.

10.30 - Hove to in position 025° N, 160°20' E.

10.45 to 11.30 - Wind S9, sea 5, swell 5, bar 990 falling rapidly, squalls. Forced to heave to on a southerly course, speed about 2 knots.

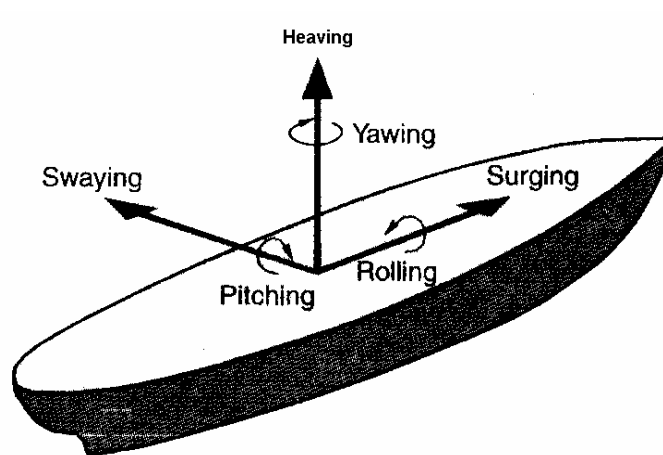
11.35 - Wind of hurricane force SE 10 to 11 gusting to 12. Very heavy sea and fierce squalls. The ship riding fairly easily but rolls violently. Passage of cold front. Mountainous cross sea, bar rising rapidly. Heavy continuous rain. Ship buried in foam and spray. Big seas washing over the deck.

12.10 - Wind beginning to moderate. Weather conditions improving, clearing sky. Resume voyage on course. Inspected cargo lashings. Found that a container in bay No. ... starboard side had come partly adrift damaging two other containers.

12.30 - Increase to full speed, 21 knots, course 066 degrees.

* bar = atmospheric pressure = hectopascal

Dynamic Forces (Motion of the Ship)



Ship in Motion – 6 Degrees Freedom

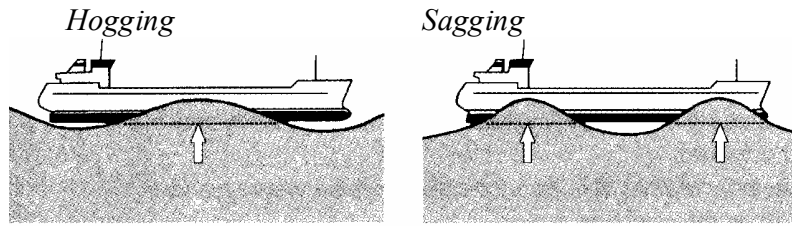
IMO STANDARD MARINE COMMUNICATION PHRASES

III/3.1.1 - Winds, storms, tropical storms, state of the sea

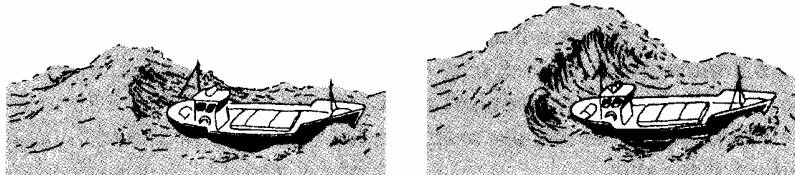
Latest tropical storm warning is as follows:

(Standard tropical storm warning)

Tropical storm warning at ... UTC. Hurricane ... (name)/tropical cyclone/tornado/willy-willy/typhoon... with central pressure of ... millibars located in position Present movement... (compass points) at ... knots. Winds of ... knots, within radius of ... miles of centre. Seas over ... metres. Further information on VHF channel ... /frequency



A Vessel Popped



A. Comprehension & vocabulary

A.1 Tick whether the following statements are true or false:

1. The static forces acting upon the ship are the buoyancy and pressure.
2. In heavy weather the ship experiences heavy stress and strain on the structure.
3. Pitching is the motion of the ship around its longitudinal axis.
4. Rolling is the motion of the ship around its longitudinal axis.
5. Swaying is the side motion of the whole ship.
6. The vessel experiences a beam sea when she is running before the sea.
7. The leeward side is the windward side of the ship.
8. Swell is caused by the wind at a greater distance from the position of the ship.
9. The vessel heaves to in heavy weather when she cannot withstand the storm without risk.
10. High wind arising and ceasing suddenly is called a squall.
11. Cross sea is the result of two seas running in different directions.
12. Gusts of wind are short periods of a decrease in the strength of the wind.

A.2 Supply the missing words:

*rolling *seawater *force *forecast *shelter *seas *bad weather *heavy weather *gusts
*stress *pounding

Heavy weather report

During the voyage the vessel encountered 1. _____, heavy pitching and 2. _____, big seas 3. _____ heavily on the ship's bow section. She was shipping 4. _____ over the deck and hatch-covers. At noon on October 15th the wind rose to 5. _____ 8-9 with 6. _____ to 11 and changed from NE to SE. At 14.00 the Chief Engineer reported damage to the rudder caused by the ship's labouring through the 7. _____ of weather. As the 8. _____ indicated further 9. _____ with

strong easterly winds and very high 10. _____ , and fearing from shifting of the cargo, I ordered my vessel to enter the roads of Antwerp for 11. _____ .

A.3 Which dynamic forces acting upon the ship and ship motions are described below?

1. Waves coming from ahead or astern cause the bow and stern to lift and fall alternately _____.
2. Waves coming from abeam cause one side of the ship, then the other, to rise and fall _____.
3. Rolling and pitching cause the ship to head to one side of its course, and then to the other _____.
4. With sufficiently large waves the whole vessel may be moved vertically up and down _____.
5. Large waves passing under the ship from one side impart a side-to-side motion which is known as _____.
6. The movement of the whole ship ahead and astern is called _____.
7. Heavy pitching that causes a shock through the vessel's structure (i.e.: violent beating of the waves against the ship) _____.
8. A ship heading up the seas, just turning her engines enough to hold her course and able to steer in heavy weather _____.
9. A tendency to turn to wind when the ship is running free, because of bad weather or by the force of a heavy sea - a frequent cause of foundering _____.
10. When the ship is sailing with the wind and sea directly astern, and so causing danger, she is said to _____.
11. When a sea (wave) falls forward in a mass of broken water, it is said to _____.
12. Waves breaking over the stern cause _____.
13. A vessel's bow and stern dropped cause _____.

A.4 Supply the appropriate adjectives and adverbs:

*fully *properly *seaworthy *undersigned *boisterous *constantly *convenient
*high *heavily *possible *fore *aft *bad *equipped *complete *easterly *more

Sea Protest (Heavy Weather)

I, the 1. _____ , Master of MS «Europa», of 11,323 G.T., registered at Trieste, and sailing under the Italian flag, being 2. _____ and 3. _____ manned and 4. _____, and in all respects 5. _____ , on the 12th April sailed from Dakar with a full and 6. _____ cargo of bananas for Trieste, where she arrived at 12.00 on 18th April, mooring at berth No. 6 and receiving free pratique.
On the 14th of April we met with 7. _____ weather with south 8. _____ winds of whole gale force and 9. _____ seas, the vessel pitching, rolling and labouring 10. _____ , shipping water 11. _____ and 12. _____ , deck, hatches and vents being 13. _____ awash. Ventilation was closed for 14. _____ than six

hours. Fearing is 15. _____ damage to the ship and cargo through the stress of the
 16. _____ weather during the voyage, I hereby give notice of sea protest against any
 claim, and reserve for myself and the owners the right to extend this protest at a time and
 place 17. _____. Master of MS

B. Grammar

B.1 Study the abstract of the log-book carefully and find out which words (parts of the sentences) have been omitted:

EXAMPLE

1. (**We are**) on a voyage from _____.
2. (**Sea**) overcast with squalls _____.
3. All lashings on deck cargo (**have been**) checked _____.

B.2 Give the irregular form of the Simple Past and Past Participle of the verb heave:

heave heaved heaved

heave _____

C. Translation

C.1 Translate into English:

ORA	ROTTA	NOTE (osservazioni)
12.00	023	La nave rolla e beccheggia con vento forte da NNE e mare grosso, imbarca acqua sul ponte e sui portelloni dei boccaporti, intensi piovvaschi.
14.00	023	La nave rolla e beccheggia, forti colpi sullo scafo con mare in prua a intervalli, imbarca acqua sul ponte e spruzzi intensi dappertutto. Per i forti colpi di mare, ridotti i giri dell'elica e a causa delle alambardate si e passati al governo manuale. Nessuna ventilazione del carico a causa del maltempo.
18.30		Vento moderato da NE, mare mosso. Ripresa la rotta originale, passati al pilota automatico. Ispezionato il ponte per possibili danni alla nave e al carico. Nave e carico risultano in apparenti buone condizioni.

----- DEBEG navtex 2 -----
ZCZC LB44*
191357 UTC AUG 90
HONG KONG RADIO OPS
TROPICAL CYCLONE WARNING
AT 191200 GMT TYPHOON YANCV
CENTRAL PRESSURE 955
HECTOPASCALS WAS CENTRED WITHIN 60
NAUTICAL MILES OF TWO FOUR
POINT NINE DEGREES NORTH (24.9 N) ONE
TWO ZERO POINT FIVE
DEGREES EAST (120.5 E) AND IS FORECAST
TO MOVE WEST-NORTHWEST
AT ABOUT 8 KNOTS FOR THE NEXT 24 HOURS.

MAXIMUM WINDS NEAR THE CENTRE ARE
ESTIMATED TO BE 75 KNOTS.
RADIUS OF OVER 33 KNOT WINDS 400
NAUTICAL MILES OVER SOUTH OR
SOUTHEAST QUADRANT, 200 NAUTICAL MILES
ELSEWHERE.
RADIUS OF OVER 47 KNOT WINDS 250
NAUTICAL MILES OVER SOUTH OR
SOUTHEAST QUADRANT, 150 NAUTICAL MILES
ELSEWHERE.
RADIUS OF OVER 63 KNOT WINDS 60
NAUTICAL MILES.
RADIUS OF OVER 2 METRE WAVES 600
NAUTICAL MILES OVER THE SOUTH
QUADRANT, 350 NAUTICAL MILES ELSEWHERE.

FORECAST POSITION AT 201200 GMT TWO SIX
POINT ZERO DEGREES
NORTH (26.0 N) ONE ONE SEVEN POINT TWO
DEGREES EAST (117.2
E).
FORECAST POSITION AT 211200 GMT
DISSIPATED OVERLAND.

NNNN