Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE INSTRUCTION 10-303
SEPTEMBER 9, 2010

Operations and Services

Marine And Coastal Weather Services, NWSPD 10-3

MARINE AND COASTAL SERVICES STANDARDS AND GUIDELINES

NOTICE: This publication is available at: http://www.nws.noaa.gov/directives/.

OPR: OS21 (W. Weeks) **Certified by:** OS21 (T. Pierce)
Type of Issuance: Routine

SUMMARY OF REVISIONS: This directive supersedes NWSI 10-303, dated August 22, 2008.

Much of NWSI 10-304, Marine and Coastal Services Communication/Dissemination (rescinded) has been included in sections 1 through 1.2, and all of sections 5 and 7.

Appendices of definitions, accepted abbreviations (both from rescinded NWSI 10-301), and Text Marine Product List by AWIPS ID (from rescinded NWSI 10-304) have been added.

signed August 26, 2010

David B. Caldwell Date
Director, Office of Climate,
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MARINE AND COASTAL SERVICES STANDARDS AND GUIDELINES

Table of Contents: Page

Appendices

1. Purpose. To have the most value, NWS marine weather products are consistent, accurate, available, transmitted to and received by users in a timely manner. To this end, they are made available through a wide variety of dissemination vehicles outlined in this instruction. A complete discussion of the communication requirements and formats is given in NWSI 10-1701.

1.1. Responsibilities. To ensure NWS marine weather products are effectively processed and disseminated, offices issuing these will ensure their products are clear, properly disseminated, and properly formatted.

1.2. General Guidelines. The forecaster is responsible for the timeliness, currency, and accuracy of the marine weather products issued for the marine area of responsibility. However, to the extent possible, forecasters should try to maintain spatial and temporal consistency between adjoining offices and from one forecast period to the next. Forecasters from WFOs will use the Interactive Forecast Preparation System (IFPS) intersite coordination tools to minimize discontinuities in gridded products prepared at adjoining offices.

Marine forecasts will include significant or predominant weather events impacting marine users. Wind and sea conditions will always be included in NWS marine forecasts. To most effectively describe these conditions, one value or a small range of values should be used. To avoid confusion, transition terms for winds and seas should be discrete and consistently used. Wind speed transition terms such as “INCREASING” and “DIMINISHING” and direction transition terms such as “BECOMING” and “SHIFTING” should be used to add clarity to the forecast trends. The terms "VEERING, BACKING, BECOMING, SHIFTING," or "RISING" may be used when appropriate, but **not** "DECREASING." For seas, transition terms such as "BUILDING" and "SUBSIDING" should be used.

NWS marine products may include tidal information. If it is included, it should cover no more than 24 hours and will be based on official Government observations or predictions.

Marine forecasts should not use the word “under” when describing winds below a certain threshold. Instead use the words “less than”. For instance, in the High Seas Forecast, state “WINDS LESS THAN 20 KT” versus “WINDS UNDER 20 KT”. Similarly, do not use the word “below” when describing seas less than a certain threshold. Instead use the words “less than”. For instance, in the High Seas Forecast, state “SEAS LESS THAN 8 FT”, versus “SEAS BELOW 8 FT”. Also, use separate sentences when describing the wind and sea conditions in the Offshore Waters and High Seas Forecasts.

2. Update Guidelines. Forecasters should update forecasts whenever existing or expected weather conditions differ significantly (i.e., there is a change in a warning or advisory status) from the forecast which are expected to continue for more than 2 hours. If an amendment is needed near the next scheduled forecast time (i.e., within an hour), the forecaster may issue that forecast early in lieu of an amendment. Specific instructions and criteria are described in NWSI 10-310, 10-311, and 10-312.

Based on available information, use the following guidelines for updating marine forecasts. The regions and local offices may develop local updating procedures and criteria to supplement these.

2.1 Wind. Amend if:

a. Unpredicted change in status of advisories or warnings.

b. Highest sustained wind speed increased or diminished 10 KT or more from forecast (20 KT or more if no change in hurricane force wind warning status occurs).

c. Mean wind direction changes by more than 45 degrees from forecast when speeds are 20 KT or greater.

d. Sustained wind and/or gust conditions begin to affect marine operations adversely or favorably.

2.2 Seas. Amend if unpredicted wind wave, swell, or combined seas begin to affect marine operations either adversely or favorably.

2.3 Visibility. For WFOs providing visibility forecasts, amend if:

a. No restriction to visibility is in the forecast and the forecast visibility of 5NM or more changes to **1 NM** or less over a significant part of the forecast area.

b. Forecast visibility of **1 NM** or less increases to 5 NM or more over a significant part of the forecast area.

2.4 Weather. Amend if significant, unpredicted changes in weather begin to affect marine operations either adversely or favorably.

2.5 Severe Local Storm Watches. If a watch for severe local storms is issued over marine zones, the routine marine forecast will be updated.

3. Warning/Advisory Guidelines. Criteria for all marine warnings and advisories are defined in NWSI 10-301. Instructions on short-duration warning events (lasting 2 hours or less) are contained in NWSI 10-313.

Headline standards and other appropriate methods for highlighting long duration events (more than 2 hours) are described in NWSI 10-310, 10-311, and 10-312.

If, in a forecast, a forecaster includes a range of winds or seas which cross a warning or advisory threshold, the highest value will determine the advisory or warning category (e.g., a gale warning

is issued for a forecast of 'Winds 25 to 35 KT').

The forecaster may use gust speeds rather than the sustained winds if these values better describe existing conditions. In such cases, a significant portion of the area/zone(s) should be affected. As a guideline, this could include at least half of the affected area/zone(s) through at least half the affected forecast period(s).

If a tropical cyclone is anticipated to impact a marine area, the headlines associated with that system, as issued by the TPC, CPHC, or WFO Guam (based on Joint Typhoon Warning Center guidance) supersede all other headlines.

4. Coordination and Collaboration. Field offices with adjoining or overlapping areas of responsibility should coordinate and collaborate to ensure products are consistent and compatible. This effort includes communication with appropriate governmental forecast agencies outside the United States.

Forecasters should reference Section 4, Intersite Coordination and Collaboration, of NWSI 10-506, Digital Data Products/Services Specification for detailed information on the coordination and collaboration processes for gridded forecasts and analyses, available at: http://www.nws.noaa.gov/directives/

4.1 USCG. The USCG is responsible for disseminating marine safety messages, including marine weather forecasts and warnings, to mariners in and around the U.S. coastline. It also retrieves and forwards observational data to the NWS. National, regional, and local level NWS managers should closely work with their USCG counterparts to ensure the most effective level of service is provided.

4.2 HAZMAT. Assistance to the NOAA Office of Response and Restoration (NOAA HAZMAT): http://response.restoration.noaa.gov

Hazardous Materials (HAZMAT) releases: NWS marine forecast offices will maintain current phone numbers and contact information of their NOAA HAZMAT Scientific Support Coordinator(s) (SSC). Offices will also maintain standard procedures to anticipate and respond to the specialized forecasting needs of an oil spill or other marine HAZMAT release. An example of a HAZMAT template is shown in Appendix B. Note: Offices may maintain other HAZMAT information as needed by local, state, or Federal authorities.

4.3.1 Users. To ensure user needs are being met, the NWS will maintain regular contact with users of its marine products. Similarly, the NWS will cooperate with other NOAA offices to meet organizational goals.

5. Product Header Formats. All marine products issued by the NWS will have common product headers. Included in these are:

(WMO ID)(ISSUANCE TIME)(AMENDMENT/CORRECTION IDENTIFIER)
(AWIPS ID)

PRODUCT NAME [+ Optional descriptor]
NATIONAL WEATHER SERVICE (CITY)(STATE)(or OFFICE ID)
(VALID TIME) AM/PM (TIME ZONE)(DAY)(DATE-MON DAY YEAR))
[Refer to NWSI 10-1701 for further guidance on headers.]

5.1 World Meteorological Organization (WMO) Identifier (ID). The WMO has established a scheme used throughout the world for identifying meteorological products. These codes are defined in WMO Manual 386. Each alphanumeric marine product issued by the NWS will have an appropriate WMO header.

5.2 Issuance Time. This time is automatically placed on every product transmitted.

5.3 Amendment/Correction Identifier. This is a three letter code to denote if a product has been non-routinely amended (AAX) or corrected (CCX). Use separate letters to denote more than one change (e.g. CCA, CCB, CCC).

5.4 Advanced Weather Interactive Processing System (AWIPS) ID. Each NWS alphanumeric product has been assigned a 6 letter identifier (see Appendix A). Each alphanumeric marine product issued by the NWS will include an appropriate AWIPS ID.

5.5 Product Name. This is the common phrase describing what the product is (e.g., COASTAL WATERS FORECAST). Each alphanumeric marine product issued by the NWS will include an appropriate product name.

5.6 City/State. Each alphanumeric marine product issued by the NWS will include the appropriate city and state in which the office issuing the product is located.

5.7 Office ID. The forecast branches of the TPC and OPC should include their office identifiers in this location.

5.8 Issuance Date/Time. The date/time the product was issued in local time. In products that span multiple time zones, the date/time may be shown in UTC, rather than local time. For high seas forecasts broadcast via SafetyNET, the date/time should reflect the scheduled broadcast time of the forecast.

5.9 Universal Geographic Code (UGC) Codes. In the coastal and offshore waters and Great Lakes, all marine zones have been assigned UGCs as noted in NWSI 10-302. Forecasts, statements, and warnings including these areas will contain the UGC code line identifying the marine zones impacted by the product. As in NWSI 10-1702, the format of this line is: (UGC CODE[S])-(EXPIRATION TIME)-

5.10 VTEC CODES. When required, VTEC line(s) will be included on the line immediately below the UGC Code line as in NWSI 10-1703. The current VTEC-enabled NWS product suite, along with other information regarding implementation of VTEC, is available on the Internet at http://www.nws.noaa.gov/os/vtec/.

6. Marine Standards. Appendix A provides the standards NWS personnel should strive for within the marine service program.

7. Communication Systems. Marine products are disseminated through a variety of systems. Among these are NOAA Weather Radio; USCG and other Governmental and commercial radio stations, Navigational Teleprinter Exchange (NAVTEX), Simplex Telephone Exchange Over Radio (SITOR) and radiofacsimile broadcasts; Internet and other computer to computer systems; and satellite based systems such as SafetyNET and the Emergency Managers Weather Information Network (EMWIN). Complete information on these systems can be found via the NWS Marine Forecasts webpage http://www.nws.noaa.gov/om/marine/home.htm. Other systems may be added with coordination through NWS Headquarters, Office of Operational Systems. Several of the most widely used marine dissemination systems are described below.

7.1 NOAA Weather Radio (NWR). NWSI 10-1710 provides overall policy on the NWR. The marine portion of the NWR program should routinely include the latest forecasts for marine areas within the radio's broadcast area and a summary of local area marine observations. Marine watches, warnings and advisories should be emphasized. Additional information, such as offshore waters forecasts, oceanographic conditions, tidal data, etc., may be included based on local user requirements. The amount and content of the marine products broadcast over the NWR may be adjusted according to the time of day and season.

Special Marine Warnings affecting any part of a NWR listening area should be immediately placed in the broadcast cycle. Use of the 1050 Hz warning alarm for Special Marine Warnings is at forecaster discretion in accordance with NWSI 10-1710. Broadcast of other non-routine marine products is at the discretion of the local office manager based on local user requirements. Broadcasts of emergency marine information such as MAYDAYS, and Public Service Announcements should be in accordance with NWSI 10-1710.

7.1.1 NOAA Weather Radio SAME

The following SAME event codes should be broadcast via NWR Weather Forecast Offices should periodically review as well as immediately inform W/OS21 of any changes to NOAA Weather Radio programming as listed at http://www.nws.noaa.gov/om/marine/marsame.htm by sending corrections via e-mail to; marine.weather@noaa.gov

EVENT	SAME EVENT CODE
Hurricane Watch*	HUA
Hurricane Warning*	HUW
Hurricane Local Statement*	HLS

Severe Thunderstorm Watch	SVA
Special Marine Warning	SMW
Tornado Watch	TOA
Tropical Storm Watch*	TRA
Tropical Storm Warning*	TRW
Tsunami Watch#	TSA
Tsunami Warning#	TSW

* Not applicable to Great Lakes and Alaska forecast areas
\# Not applicable to Great Lakes

7.2 USCG Radio Broadcasts. The U.S. Coast Guard (USCG) is a prime disseminator of marine weather information for the U.S. via high frequency (HF), medium frequency (MF) and very high frequency (VHF) voice, NAVTEX, SITOR, and radiofacsimile (U.S. Navy in Hawaii). Lists of NWS products and broadcast schedule information are available under the NWS Marine Forecasts webpage http://www.nws.noaa.gov/om/marine/home.htm. The USCG receives NWS text forecasts via the NOAA Weather Wire System (NWWS), using the Internet as a backup.

7.3 WWV/WWVH HF Voice (Time Tick). Brief recorded statements on major storm systems are prepared and recorded by the offices listed below for hourly broadcast over the time and frequency radio stations WWV (Fort Collins, Colorado) and WWVH (Honolulu) operated by the National Institute of Standards and Technology.

From WWV, Atlantic high seas warnings are broadcast at 7 and 8 minutes past the hour while Pacific high seas warnings are broadcast at 9 minutes past the hour.

From WWVH, Pacific high seas warnings are broadcast from 48 to 51 minutes past the hour.

STATION	AREA	OFFICE
WWV	Western North Atlantic Gulf of Mexico Caribbean Sea	OPC
WWVH	Eastern Pacific North Pacific Tropical South Pacific	Weather Forecast Office (WFO) Honolulu

The script is a brief summary describing the location and movement of storms producing, or expected to produce, gale, storm, or tropical cyclone force winds and associated seas. This service is intended to supplement the primary marine weather broadcasts that give more complete information. When time permits, add the following:

"More complete information is available from other marine broadcast stations."

7.4. Internet. All NWS marine weather products, text and graphics should be accessible on the Internet, to the extent practicable. Each WFO and National Center should maintain a marine webpage providing such information as local forecasts, tide predictions, and local observations.

Links to NWS marine products may be found on the NWS Marine Forecasts webpage at http://www.nws.noaa.gov/om/marine/home.htm.

7.5 FTPMAIL. NWS radiofax charts, marine text products and buoy/C-MAN observations are available via e-mail. The FTPMAIL server will be maintained by NWS headquarters and is intended to allow Internet access for mariners and other users who do not have direct access to the World Wide Web but who are equipped with an e-mail system. For the FTPMAIL "help" file see: http://weather.noaa.gov/pub/fax/ftpmail.txt

7.6 Digital Marine Weather Dissemination System (DMAWDS). DMAWDS is a web-based system with restricted access, Volunteer Observing Ship (VOS) participants and other users authorized by WFO's receive products from it.

7.7 Radiofax Per NWSI 10-311, NWS prepares high seas weather maps, satellite images, ice charts, etc. for broadcast via four U.S. Coast Guard (Boston, New Orleans, Pt. Reyes, and Kodiak) and one DOD transmitter site (Honolulu). Content and scheduling of these broadcasts is centrally managed by the Marine and Coastal Weather Services Branch. Proposed changes to the product suite or broadcast times will be coordinated with the Branch, Centers, and adjacent WFO's, from earliest development stages. User notification will be in accordance with NWSI 10-1805 User notification for major changes should also include the U.S Coast Guard's and the National Geospatial-Intelligence Agency's (NGA) "Notices to Mariners" which will be coordinated by the Branch. General information on radiofax and links to products may be found at: http://www.nws.noaa.gov/om/marine/radiofax.htm

7.8 Other Dissemination Systems NWS marine products are distributed by other means including several common to other NWS forecasts including telephone recordings, NWWS, EMWIN, NOAAPORT, etc. For more detailed information see the NWS Marine Forecasts webpage at http://www.nws.noaa.gov/om/marine/home.htm.

APPENDIX A - NWS Marine Standards

ASPECT	STANDARD	MEASURE
Timeliness	Routine products disseminated according to published time schedules	Compare issuance and scheduled times
	Event driven products disseminated as soon as possible	Compare lead time between event occurrence and product issuance
Accuracy	Products consistent with actual weather	Compliance with amendment criteria
Consistency	Products coordinated between adjoining areas	Consistency between neighboring areas
	Products consistent with other in-office products	Consistency with appropriate aviation and public products
Format	Products disseminated in the proper format	Comparison with approved format
	Products contain required information	Comparison with approved content
	Products grammatically correct	Compliance with correct spelling and approved acronyms
Usefulness	Products clear and concise	Easily comprehended by users

APPENDIX B - Example of a NOAA HAZMAT weather template

INCIDENT TITLE:

Time (Local), Day (alpha) Month (alpha) Day (numeric), Year (numeric)

Sunrise/Sunset (Current Day):
Sunrise/Sunset (Current Day +1):

0-36 Hour Forecast:
Winds:
General wind speed in knots and direction (in degrees or 8 points of the compass), but often necessary to break the speed and direction into ranges of uncertainty. Local effects and unique characteristics of the area are very important.

Waves (if applicable):
Generally combined seas, but often necessary to have wind waves and swell height and direction separated. Local effects and unique characteristics of the area are very important.

Precipitation:
Continuous rain, shower and/or thunderstorm activity, but often necessary to have daily and weekly accumulation totals.

Ceiling/Visibility:
Cloud cover, haze or fog with visibility in nautical miles.

Temperatures:
General range of highs and lows.

Extended Forecast: (usually day 3 and 4 from current day)

Hydrology (if applicable):
Five day forecast, gauge readings, flood stages, current CFS (cubic feet per second) flow rate and historical normals for the current year.

Severe Weather Update (if applicable):
Severe thunderstorms, tropical depressions, tropical storms and hurricanes. Necessary to supply storm track data from storm centroid.

Special:
If gaseous chemical spill or in-situ burn, then include stability class inversion height, mixing layer, wind shear. If in situ burn in vegetation, then include relative humidity (fuel dryness).

APPENDIX C – Definitions

Ashfall Advisory: An advisory issued for a volcano undergoing a minor eruption where there is the potential that mariners could be affected by a limited hazard extent such as less than ¼" of ashfall accumulation, pumice rafts or some floating debris.

Ashfall Warning: A warning issued for a volcano undergoing a major eruption where there is the likelihood that mariners could be affected by a significant extent such as greater than or equal to ¼" of ashfall accumulation, significant debris, lava or lahar flows.

Brisk Wind Advisory: A small craft advisory issued for ice-covered waters. Not issued for the Great Lakes.

Coastal/Lakeshore Hazard Message (CFW): An NWS product issued to describe coastal and lakeshore flooding, high surf, and, at WFO option, a high risk of rip currents.
A Coastal/Lakeshore Flood Advisory will be issued when minor flooding is possible (i.e, over and above normal high tide levels). A Coastal/Lakeshore Flood Watch will be issued when flooding with significant impacts is possible. A Coastal/Lakeshore Flood Warning will be issued when flooding that will pose a serious threat to life and property is occurring, imminent or highly likely.

Coastal Waters Forecast (CWF): The marine forecast for areas, including bays, harbors, and sounds, from a line approximating the mean high water mark (average height of high water over a 19-year period) along the mainland or near shore islands extending out to as much as 100 NM.

Cold Front: The leading, progressive edge of a density discontinuity ahead of a cooler/drier airmass. These boundaries tend to be narrower than warm fronts due to the higher density low-level air in their wake which helps drive their forward motion. Over the continent, a minimum of 6C (10F) over 500 km (300 nm) is usually needed for a frontal zone with smaller differences needed over the oceans.

Dense Fog Advisory: An advisory for widespread or localized fog reducing visibilities to regionally or locally defined limitations not to exceed 1 nautical mile.

Dense Smoke Advisory: An advisory for widespread or localized smoke reducing visibilities to regionally or locally defined limitations not to exceed 1 nautical mile.

Developing Gale/Storm: In the High Seas and Offshore forecasts, a headline used in the warnings section to indicate that gale/storm force winds are not now occurring but are expected before the end of the forecast period.

Dryline: The leading edge of a significant density/dewpoint discontinuity forced by foehn winds off the Rockies, usually ahead of a significant synoptic scale system moving through the

West/Southwest. They usually progress eastward during the heating of the day, and westward at night. A tight 14C (25F), or a broader 17C (30F), dewpoint gradient is used to help determine the existence of a dryline. The dryline does not have to be the leading edge of all the change in the dewpoint, merely where the best gradient/leading edge of foehn winds exists (mainly after Bluestein).

Freezing Spray Advisory: An advisory for an accumulation of freezing water droplets on a vessel at a rate of less than 2 centimeters (cm) per hour caused by some appropriate combination of cold water, wind, cold air temperature, and vessel movement.

Gale Warning: A warning of sustained surface winds, or frequent gusts, in the range of 34 knots (39 mph) to 47 knots (54 mph) inclusive, either predicted or occurring, and not directly associated with a tropical cyclone.

Gale Watch: A watch for an increased risk of a gale force wind event for sustained surface winds, or frequent gusts, of 34 knots (39 mph) to 47 knots (54 mph), but its occurrence, location, and/or timing is still uncertain.

Great Lakes Marine Alert Message (MAW): A message generated whenever storm force or greater winds are included in any open lakes forecast.

Great Lakes Marine Forecast (MAFOR): A coded version appended to each of the Great Lakes open lakes forecasts.

Great Lakes Weather Broadcast: (LAWEB): An observation summary prepared to provide Great Lakes mariners with a listing of weather observations along or on the Lakes.

Hazardous Seas Warning: A warning for wave heights and/or wave steepness values meeting or exceeding locally defined warning criteria.

Hazardous Seas Watch: A watch for an increased risk of a hazardous seas warning event to meet Hazardous Seas Warning criteria but its occurrence, location, and/or timing is still uncertain.

Heavy Freezing Spray Warning: A warning for an accumulation of freezing water droplets on a vessel at a rate of 2 cm per hour or greater caused by some appropriate combination of cold water, wind, cold air temperature, and vessel movement.

Heavy Freezing Spray Watch: A watch for an increased risk of a heavy freezing spray event to meet Heavy Freezing Spray Warning criteria but its occurrence, location, and/or timing is still uncertain.

High Pressure System: A relative maximum in the pressure pattern, usually accompanied by at least one closed isobar, which normally has an outward, clockwise circulation from its center in

the Northern Hemisphere and an outward, counterclockwise circulation in the Southern Hemisphere.

High Seas Forecasts (HSF): Marine forecasts for the major oceans of the world. In this context, major gulfs or seas (e.g., the Gulf of Mexico or the Bering Sea) are included within these forecast areas. Areas of responsibility for the U.S. are determined by international agreements under the auspices of the World Meteorological Organization (WMO).

High Surf Advisory: A High Surf Advisory is issued when breaking wave action poses a threat to life and property within the surf zone. High surf criteria vary by region. High Surf Advisories are issued using the Coastal Hazard Message (CFW) product.

High Surf Warning: A High Surf Warning is issued when breaking wave action results in an especially heightened threat to life and property within the surf zone. High surf criteria vary by region. High Surf Warnings are issued using the Coastal and Lakeshore Hazard Message (CFW) product.

Hurricane Warning: Warnings for sustained surface winds of 64 knots (74 mph) or higher associated with a hurricane are expected in a specified coastal area within 24 hours or less. A hurricane or typhoon warning can remain in effect when dangerously high water or a combination of dangerously high water and exceptionally high waves continue even though winds may be less than hurricane force.

Hurricane Force Wind Warning: A warning for sustained winds, or frequent gusts, of 64 knots (74 mph) or greater, either predicted or occurring, and not directly associated with a tropical cyclone.

Hurricane Force Wind Watch: A watch for an increased risk of a hurricane force wind event for sustained surface winds, or frequent gusts of 64 knots (74 mph) or greater, but its occurrence, location, and/or timing is still uncertain.

Low Pressure System: A relative minimum in the pressure pattern, usually accompanied by at least one closed isobar, which normally has an inward, counterclockwise circulation in the Northern Hemisphere and an inward, clockwise circulation in the Southern Hemisphere.

Low Water Advisory: An advisory to describe water levels which are significantly below average levels over the Great Lakes, coastal marine zones, and any tidal marine area, waterway, or river inlet within or adjacent to a marine zone that would potentially be impacted by low water conditions creating a hazard to navigation.

Marine Weather Message (MWW): A product issued to describe long duration (greater than 2 hours) marine weather hazards impacting the coastal waters and Great Lakes. This product is used to issue marine watches, marine warnings and marine advisories (e.g., gale, storm, hurricane force wind events).

Marine Weather Statement (MWS): A product issued to provide mariners with details on significant or potentially hazardous conditions not otherwise covered in existing marine warnings and forecasts.

Nearshore Marine Forecast (NSH): The marine forecast for an area of the Great Lakes from a line approximating mean low water datum along the coast or an island, including bays, harbors, and sounds, out to 5 NM.

Occluded Front: A front that forms southeast/east of a cyclone that moves deeper into colder air, in the late stages of wave-cyclone development. Cold occlusions result when the coldest air surrounding the cyclone is behind its cold front, and are normally seen on the west sides of ocean basins and with clipper systems descending from the arctic. Warm occlusions form when the coldest air surrounding the cyclone is ahead of its warm front, forcing the cold front aloft. Warm occlusions are normally seen on the east side of ocean basins and just to the lee of the United States portion of the continental divide (mainly after Glickman 2000).

Offshore Waters Forecast (OFF): A marine forecast for that portion of the oceans, gulfs, and seas beyond the coastal waters extending to a specified distance from the coastline, to a specified depth contour, or covering an area defined by specific latitude and longitude points.

Open Lakes Forecast (GLF): The marine forecast for the U.S. waters within a Great Lake not including the waters covered by an existing Nearshore Waters Forecast (NSH).

Outflow Boundary: A mesoscale surface boundary formed by the horizontal spreading of thunderstorm-cooled air. These features may last more than a day (after Glickman 2000).

Severe Thunderstorm Watch: A watch issued when conditions become favorable for severe thunderstorms to develop and headlined in the Coastal Waters Forecast, the Great Lakes Open Lakes Forecast, and the Nearshore Marine Forecast. Reference NWSI 10-512 for severe thunderstorm watch criteria.

Shearline: The final stage in the life cycle of a cold front over the subtropics and tropics. Lying equatorward of the subtropical ridge, these boundaries have lost all temperature contrast over the warm ocean and have minimal dewpoint contrast across them. They delineate an area where wind speed quickly increases on the poleward side at least 10 knots from nearly the same direction (within 45 degrees). Since mid and high level cloudiness previously associated with the cold front has dissipated due to lack of upper level support, a shearline is indicated on satellite imagery as the leading edge of a line of low-level clouds with tops near 10,000 feet. Shearlines lie in troughs, but due to lack of surface data over the subtropical/tropical ocean, the trough may not be recognized in the available surface observations. Using streamline analysis, a shearline is denoted by a confluence of streamlines equatorward and west of the col area where a cold front divides the subtropical ridge. The symbol for shearline is an alternating dot-dash pattern, in the color of red.

Small Craft Advisory (SCA): An advisory issued by coastal and Great Lakes Weather Forecast Offices (WFO) for areas included in the Coastal Waters Forecast or Nearshore Marine Forecast (NSH) products. Thresholds governing the issuance of small craft advisories are specific to geographic areas.

Note: "Frequent gusts" are typically long duration conditions (greater than 2 hours). For a list of NWS Weather Offices by Region, refer to the following website: http://www.nws.noaa.gov/organization.html

NWS Region Thresholds for Small Craft Advisory (SCA)

Eastern - Sustained winds or frequent gusts ranging between 25 and 33 knots (except 20 to 25 knots, lower threshold area dependent, to 33 knots for harbors, bays, etc.) and/or seas or waves 5 to 7 feet and greater, area dependent.

Central - Sustained winds or frequent gusts (on the Great Lakes) between 22 and 33 knots inclusive, and/or seas or waves greater than 4 feet.

Southern - Sustained winds of 20 to 33 knots, and/or forecast seas 7 feet or greater that are expected for more than 2 hours.

Western - Sustained winds of 21 to 33 knots, and/or wave heights exceeding 10 feet (or wave steepness values exceeding local thresholds).

Alaska - Sustained winds or frequent gusts of 23 to 33 knots. A small craft advisory for rough seas may be issued for sea/wave conditions deemed locally significant, based on user needs, and should be no lower than 8 feet.

Pacific - Sustained winds 25 knots or greater and seas 10 feet or greater; except in Guam and the northern Mariana Islands where it is sustained winds or frequent gusts of 22 to 33 knots and/or combined seas of 10 feet or greater.

Small Craft Advisory for Hazardous Seas (SCAHS): An advisory for wind speeds lower than small craft advisory criteria, yet waves or seas are potentially hazardous due to wave height, wave period, steepness, or swell direction. Thresholds governing the issuance of Small Craft Advisories for Hazardous Seas are specific to geographic areas.

NWS Region Thresholds for Small Craft Advisory for Hazardous Seas

Eastern - Seas or waves 5 to 7 feet and greater, area dependent.

Central - Seas or waves greater than 4 feet.

Southern - Seas 7 feet or greater that are expected for more than 2 hours.

Western - Criteria for wave heights and/or wave steepness are locally defined; refer to Western Region Supplement 12-2003, Marine Weather Services.

Alaska - Seas or wave conditions deemed locally significant, based on user needs, and should be no lower than 8 feet.

Pacific - Seas 10 feet or greater.

Small Craft Advisory for Rough Bar (SCARB): An advisory for specialized areas near harbor or river entrances known as bars. Waves in or near such bars may be especially hazardous to mariners due to the interaction of swell, tidal and/or river currents in relatively shallow water. Thresholds governing the issuance of Small Craft Advisories for Rough Bar are specific to local geographic areas, and are based upon parameters such as wave steepness, wind speed and direction, and local bathymetry.

Small Craft Advisory for Winds (SCAW): An advisory for wave heights lower than small craft advisory criteria, yet wind speeds are potentially hazardous. Thresholds governing the issuance of small craft advisories are specific to geographic areas.

NWS Region Thresholds for Small Craft Advisory for Winds (SCAW)

Eastern - Sustained winds ranging between 25 and 33 knots (except 20 to 25 knots, lower threshold area dependent, to 33 knots for harbors, bays, etc.)

Central - Sustained winds or frequent gusts (on the Great Lakes) between 22 and 33 knots inclusive.

Southern - Sustained winds of 20 to 33 knots that are expected for more than 2 hours.

Western - Sustained winds of 21 to 33 knots.

Alaska - Sustained winds or frequent gusts of 23 to 33 knots.

Pacific - Sustained winds 25 knots or greater; except in Guam where it is sustained winds or frequent gusts of 22 to 33 knots.

Special Marine Warning (SMW): A warning of potentially hazardous weather conditions usually of short duration (up to 2 hours) producing sustained marine thunderstorm winds or associated gusts of 34 knots or greater; and/or hail 3/4 inch or more in diameter; and/or waterspouts affecting areas included in a Coastal Waters Forecast, a Nearshore Marine Forecast, or an Great Lakes Open Lakes Forecast that is not adequately covered by existing marine

warnings. Also used for short duration mesoscale events such as a strong cold front, gravity wave, squall line, etc., lasting less than 2 hours and producing winds or gusts of 34 knots or greater. In offices without VTEC, the Special Marine Warning can be utilized to issue Ashfall Warnings.

Squall Line: A solid line of convection, usually associated with rapid pressure fluctuations and high winds. The squall line will normally be placed at the leading edge of the wind shifts and inside the leading pressure trough. The symbol for squall line is an alternating two dot-dash pattern, in the color of red.

Stationary Front: The equatorward edge of a slow-moving density discontinuity with a motion of less than 10 knots (12 mph). Winds tend to lie parallel to these boundaries. Over the continent, a minimum of 6C (10F) over 500 km (300 nm) is usually needed for a frontal zone with smaller differences required over the oceans

Storm Warning: A warning of sustained surface winds, or frequent gusts, in the range of 48 knots (55 mph) to 63 knots (73 mph) inclusive, either predicted or occurring, and not directly associated with a tropical cyclone.

Storm Watch: A watch for an increased risk of a storm force wind event for sustained surface winds, or frequent gusts, of 48 knots (55 mph) to 63 knots (73 mph), but its occurrence, location, and/or timing is still uncertain.

Surf Zone Forecast (SRF): A forecast issued for the very narrow area of water between the high tide level on the beach and the seaward side of breaking waves.

Tornado Watch: A watch issued when conditions become favorable for tornadoes to develop and headlined in the Coastal Waters Forecast, the Great Lakes Open Lakes Forecast, and the Nearshore Marine Forecast . Reference NWSI 10-512 for tornado watch criteria.

Tropical Storm Warning: A warning for sustained surface winds, associated with a tropical cyclone, within the range of 34 to 63 knots (39 to 73 mph), expected in a specified coastal area within 24 hours.Tropical Wave (formerly known as inverted trough): A trough or cyclonic curvature maximum in the trade wind easterlies. The wave may reach maximum amplitude in the lower middle troposphere or may be the reflection of an upper tropospheric cold low or an equatorward extension of a mid-latitude trough.

Trough: An elongated area of low pressure with no distinct low level center. Winds usually flow cyclonically through it, outside of terrain influences.

Warm Front: The equatorward edge of a density discontinuity behind a retreating/modified cool/dry airmass. This type of frontal zone is significantly broader than a cold front, due to the slower erosion of the superior density airmass ahead of the boundary. Over the continent, a

minimum of 6C (10F) over 500 km (300 nm) is usually needed for a frontal zone while smaller differences are necessary over the oceans.

APPENDIX D – Accepted Abbreviations

The following have been agreed to by the NWS and the USCG for use in marine text forecasts.

Day of Week. . . . . SUN, MON, TUE, WED, THU, FRI, SAT

Months. . . . . JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC

Direction. . . . . N, NE, E, SE, S, SW, W, NW

Latitude/Longitude. . . . . N, S, E, W (e.g., 27N 97W)

Latitude/Longitude Points ....e.g. 05N109.5W, 16N108W, 00N76W, 27N180W (Avoid decimals where possible)

Atlantic = ATLC

Average = AVG

Degree = DEG

Equator = EQ

Fathom(s) = FM

Foot/Feet = FT

Hurricane = HURCN

Intertropical Convergence Zone = ITCZ

Knot(s) = KT Latitude = LAT Longitude = LONG

Millibar(s) = MB Nautical Mile(s) = NM

Pacific = PAC Pressure = PRES Position = PSN

Quadrant = QUAD Thunderstorm(s) = TSTM(S)

Visibility = VSBY

The following additional terms may be used for radiofax graphics, however, they should be shown in a radiofax Legends Key and other outreach materials to assist mariners in learning the meaning of these terms. Additional abbreviations may be used following coordination among Offices/Centers producing radiofax products and W/OS21

Tropical Depression = TD Tropical Storm = T

APPENDIX E - Text Marine Product List by AWIPS ID

XXX is the three letter identifier of the office issuing the product; VVV is a two or three letter identifier designating specific areas for the High Seas, NAVTEX, or Offshore Waters Forecasts; ZZ is a two letter identifier designating a specific Great Lake for the Open Lake Forecast; and YYY is a three letter identifier of the appropriate ocean (PAC (Pacific) or ATL (Atlantic)) for the Marine Weather Discussion.

PRODUCT	AWIPS IDENTIFIER
Coast Guard Report -	CGRXXX
Coastal/Lakeshore Hazard Message -	CFWXXX
Coastal Waters Forecast -	CWFXXX
Open Lakes Forecast -	GLFZZ
Storm Summary -	GLSCLE
High Seas Forecast -	HSFVVV
Marine Alert -	MAWCLE
Marine Forecast Matrix -	MFMXXX
Marine Weather Discussion -	MIMYYY
MAROB Observations -	MOBXXX (experimental)
Marine Weather Statement -	MWSXXX
Marine Weather Message -	MWWXXX
Nearshore Forecast -	NSHXXX
NAVTEX Forecast -	OFFVVV
Offshore Forecast -	OFFVVV
Other Marine Report -	OMRXXX
Plain Language Ship Report -	PLSXXX
Special Marine Warning -	SMWXXX
Surf Zone Forecast -	SRFXXX
Tide Report -	TIDXXX