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HEADQUARTERS, US ATLANTIC FLEET
NORFOLK, VIRGINIA 23551-2487

ANNEX H TO COMFLTFORCOM/COMLANTFLT OPORD 2000-03
METEOROLOGICAL AND OCEANOGRAPHIC (METOC) SERVICES

- REFERENCES:
- a. NAVMETOCCOMINST 3140.1 (Series)
 - b. COMNAVAIRLANTINST 3141.1 (Series)
 - c. COMNAVREGMIDLANT/SOPA(ADMIN) HAMPINST 3141.1 (Series)
 - d. NAVMETOCCOMINST 3144.1 (Series)
 - e. NAVAIR 50-1D-1 "Federal Meteorological Handbook"
 - f. NAVMETOCCOMINST 3140.23 (Series)
 - g. NAVMETOCCOMINST 3140.4 (Series)
 - h. NAVMETOCCOMINST 3142.1 (Series)

1. PURPOSE. To promulgate guidance on weather response and reporting procedures, including destructive weather.

2. BACKGROUND AND DISCUSSION. Heavy weather at sea is a formidable adversary to fleet operations. Operations in the Atlantic Fleet may be seriously affected by severe weather at any time. There are no normal peacetime operations of greater importance than the avoidance of heavy weather damage. The policies below are designed to minimize the probability of personnel casualties and material damage to ships and aircraft due to weather.

3. POLICY

a. Meteorological Observation Requirements. Meteorological observing and recording shall be in accordance with these instructions and references (a) through (h).

(1) Surface Weather Observations. Minimum requirements for ships underway are in reference (a). Synoptic weather observation reports are to be routinely transmitted at 0000Z, 0600Z, 1200Z, and 1800Z. Observation procedures are described in reference (d), Manual for Ship's Surface Weather Observations. When ships are steaming in company or in close proximity (within 50 miles), the OTC may designate one of the ships to report observations for the group. Ships in port shall continue regular weather observing and reporting unless there is a nearby U.S. weather reporting activity that meets the existing support requirements. In port weather observing and reporting guard ship arrangements may be utilized for groups of ships at the discretion of the SOPA. In such instances, the weather logs of exempted ships should bear a notation of the guard ship(s) and effective dates/times. Additional and special weather and oceanographic observation and reporting schedules, as may be required in support of Fleet operations, are promulgated in pertinent operation plans and orders. The frequency of reporting synoptic observations

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will be increased to once every three (3) hours when: sustained wind speed exceeds 35 knots, seas exceed 12 feet, visibility is less than one nautical mile, the ship is within 300 NM of a tropical cyclone, or when weather is otherwise severe or unusual. Under these circumstances, transmit observations via IMMEDIATE PRECEDENCE.

(a) Aviation capable ships will maintain continuous weather surveillance by qualified meteorological personnel when launching or recovering aircraft.

(b) Ships should periodically (at least semi-annually) compare their sea level pressure observation to a nearby NAVMETOCCOM activity. If the difference between these observations exceeds one millibar (three hundredths of an inch), the ship's barometer is to be delivered (by surface transportation, not air) for calibration at the nearest regional calibration center. Regional calibration centers are located at Portsmouth Naval Shipyard, NH; Lakehurst, NJ; NAS Norfolk, VA; and Aviation Depot Jacksonville, FL.

(c) Ships are requested to take note of any information concerning the potential of a harbor as a "Hurricane Haven" for any harbor in which they may be located during the passage of a hurricane. Descriptive information such as protection from high winds by surrounding terrain, funneling effects of mountains, mooring facilities, bottom holding characteristics, etc., should be forwarded to Naval Research Laboratory, Marine Meteorology Division, Monterey, CA. This information will be used to update of "Hurricane Havens" publications for Fleet use.

(d) Training for ship's personnel in taking and reporting observations can be arranged through any NAVMETOCCOM activity in accordance with reference (a).

(2) Upper Air Observations

(a) Ships so equipped will carry out an effective upper air observing program. Weather observations will be taken to provide needed meteorological information in support of local operations and as directed by competent authority. During open ocean transits, consistent with operational and logistical concerns, and if not in conflict with an established Battle Group sensing strategy, 0000Z and 1200Z upper air observations are desired, as feasible. It should be noted that a radiosonde emits an electronic signal, therefore, upper air observations are subject to EMCON restrictions.

(b) Upper air data are the basic ingredients of modern weather forecasting methods. Accurate and timely upper air observation reports are particularly important in data-sparse areas. Reliable tropical cyclone prediction is dependent upon accurate upper air analysis. Upper air (UA) observations are required every six (6) hours whenever a ship with UA capabilities is within 300 nautical

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miles of a tropical cyclone.

(3) Aircraft Observations. Weather information shall be observed and recorded to the maximum extent possible on all aircraft. Synoptic features such as fronts, squall lines, and fog banks shall be accurately located/delineated as the mission permits, making every effort to ascertain the degree and extent of weather likely to curtail, modify or postpone scheduled operations.

b. Ship Meteorological Reporting Requirements. Subject to EMCON conditions that may be in effect, weather data will be reported in accordance with reference (a). The previously used Collective Address Designators (CADs) "OCEANO EAST" and "OCEANO WEST" have been eliminated. Instead, units will transmit observations directly to addressees as follows:

1) For units operating in the Atlantic, Mediterranean, Baltic, Black, and Red Seas, plus all areas north of 60N in the Pacific:

ACTION Addees:
FLENUMMETOCCEN DATA MONTEREY CA//DATA//
NAVLANTMETOCCEN NORFOLK VA//N3//
NAVEURMETOCCEN ROTA SP//NEMOC//
INFO Addees:
CNO WASHINGTON DC//N096/N311WX//
COMSECONDFLT
COMSIXTHFLT
NAVOCEANO STENNIS SPACE CENTER MS//N321//
other activities or units as specified

2) for units operating in the Pacific (south of 60N), Indian Ocean, and Arabian Gulf, plus all areas south of 60S in the Atlantic:

ACTION Addees:
FLENUMMETOCCEN DATA MONTEREY CA//DATA//
NAVPACMETOCCEN SAN DIEGO CA//30//
NAVPACMETOCCEN YOKOSUKA JA//30//
INFO Addees:
CNO WASHINGTON DC//N096/N311WX//
COMTHIRDFLT
NAVOCEANO STENNIS SPACE CENTER MS//N321//
NAVPACMETOCCEN PEARL HARBOR HI//30//
other activities or units as specified

When receiving METOC services from a NAVMETOCCOM activity that is not normally an observation message addressee, the servicing activity should be added as an INFO addee.

(1) Hazardous Weather/Evasion and Special Weather Phenomena Reports.

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(a) Hazardous weather. Hazardous weather is defined as winds of 35 KTS and above and/or seas of 12 FT and greater and/or visibility less than one nautical mile. However, ship material condition, load, cargo or seaworthiness may considerably reduce these limits. For instance, heavy superstructure icing could constitute hazardous weather by itself. "Threatened by hazardous weather" includes being within the boundaries of a hurricane or tropical storm twenty-four hour danger area as defined in this instruction. Whenever a unit at-sea is, or by virtue of PIM, will be in the vicinity of hazardous weather; or is threatened by, experiencing, or is taking evasive action to avoid such weather; will submit situation reports (SITREPS) to appropriate operational and area commanders, information to COMLANTFLT, numbered Fleet Commander and regional METOC activity, as appropriate. For ships in-company, the OTC shall submit a single report for units under his cognizance. Reports shall be in the format outlined below and shall be submitted every six (6) hours, apprising commanders concerned of the situation encountered. More frequent reports may be submitted, should the situation warrant. Cease reports upon return to weather conditions less than noted above. HAZARDOUS WEATHER SITUATION REPORT FORMAT:

PRECEDENCE: IMMEDIATE

TO: OPERATIONAL AND AREA COMMANDERS

INFO: NUMBERED FLEET COMMANDER
COMLANTFLT NORFOLK VA//CDO//
REGIONAL METOC CENTER
ADMINISTRATIVE CHAIN OF COMMAND (AS REQUIRED)

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SUBJECT: (SELECT AS APPROPRIATE FROM A, B, OR C.)

A. HURRICANE/TROPICAL STORM NAME EVASION/AWARENESS SITREP NR.

B. HAZARDOUS WEATHER EVASION/AWARENESS SITREP NR

C. SPECIAL WEATHER PHENOMENA INFORMATION SITREP NR.

1. DATE/TIME: DATE AND TIME (GMT) OF REPORT.

2. POSITION: LATITUDE OF LONGITUDE WITH CHECK SUMS.

3. MOVEMENT: (IF UNDERWAY) COURSE, SPEED AND SOG.

4. WEATHER: WIND DIRECTION AND SPEED, PEAK GUSTS, VISIBILITY,
DIRECTION AND HEIGHT OF WIND WAVES AND SWELL WAVES, BAROMETRIC
PRESSURE AND TREND, SIGNIFICANT WEATHER PHENOMENA (IF ANY).

5. FUEL STATUS: PERCENT ON HAND/DAILY CONSUMPTION RATE.

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6. MATERIAL STATUS: SIGNIFICANT MATERIAL CASUALTIES WHICH IMPACT MOBILITY OR SEA WORTHINESS.

WATER STATUS: PERCENT FEED/FRESH.

7. COMMENTS: BEHAVIOR OF SHIP (i.e., HOW SHIP IS RIDING), PERSONNEL CASUALTIES, BALLAST CONDITION, DAMAGE, DISPOSITION OF ACCOMPANYING UNITS, PRECAUTIONARY MEASURES TAKEN OR PLANNED, INTENTIONS FOR FUTURE MOVEMENT, AND OTHER PERTINENT INFORMATION. ON FINAL REPORT STATE: "THIS IS MY FINAL REPORT THIS INCIDENT".

(b) Special Weather Phenomena. Whenever special (e.g., waterspout), severe (e.g., severe thunderstorm, tornadic activity, etc.), or unforecasted weather phenomena are encountered, reports may be submitted as outlined above or specific weather information may be appended to the end of ship and aircraft weather reports in accordance with Chapter 2 of reference (d). It is particularly important that such reports be made when unexpected phenomena are encountered or weather experienced is significantly more severe than that predicted by supporting NAVMETOCCOM activities.

(2) Synoptic Surface Weather. Submitted every six (6) hours, in accordance with references (a) and (d) by weather guardship(s) designated by OTC or SOPA. See paragraph 3.a.(1) of this instruction for additional details.

(3) Radar Detection of Tropical Storm. In accordance with reference (a).

(4) Upper Air (RAWINSONDE). Submitted using format specified by reference (f) by guardship(s) designated by OTC. If no ship is designated, senior ship with the capability will take for action.

(5) Task Force/Group Forecast. Submitted by ship with METOC personnel as designated by OTC. Provided as directed to ships in company. Include EM/EO propagation conditions as appropriate.

(6) Terminal Aerodrome Forecasts. Same as (5). Also, provide to airbase providing supporting aircraft and appropriate CTF/CTG, every six (6) hours or as directed.

(7) Nuclear and Chemical/Biological Warfare (CBW) Forecasts. Submitted in accordance with ATP 45 by unit designated by OTC.

(8) METOC Post-Deployment Report. Submitted in accordance with reference (g) by ships with permanently assigned METOC personnel. This is an optional report.

c. Aircraft Reports Summary. The listing below summarizes

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required reports.

(1) Turbulence and Airframe Icing Reports are submitted in accordance with reference (h) by pilots of independent flights and by the flight leader or designated pilot of multi-plane flights.

(2) Pilot Weather Reports (PIREPs) are submitted in accordance with reference (h) by pilots of independent flights and by the flight leader or designated pilot of multi-plane flights.

d. Special Observations Near Tropical Cyclones. As stated in reference (a), all ships, land-based weather reporting units, commands with suitable radar and military aircraft are required to take and transmit, within their capabilities, the observations outlined below. These observations will be taken whenever a designated tropical cyclone is within 300 nautical miles. Transmit observations to the NAVMETOCCOM activity issuing warnings on the tropical cyclone by immediate precedence.

(1) Observations every 3 hours from ships at-sea. Sea level pressure will be included in these reports.

(2) Six (6) hour interval radiosonde/rawinsonde observations.

(3) Hourly radar observations, and whenever significant changes occur while the tropical cyclone is within radar range.

(4) Aircraft pilot weather reports (AIREPS and PIREPS).

e. Tropical Cyclones. Tropical cyclones normally occur during the period June through November in the North Atlantic Ocean. Widespread areas of high winds and seas and heavy rains characterize tropical cyclones (including tropical depressions, tropical storms, and hurricanes).

(1) Definitions:

(a) Tropical Cyclone. A general term for a warm-air low pressure system, developing over tropical or sub-tropical waters with a definite organized circulation.

(b) Tropical Depression. A tropical cyclone that may have one or more closed isobars (on a 4-millibar contour surface pressure analysis) and maximum surface wind (1 minute mean) less than 34 KTS.

(c) Tropical Storm. A tropical cyclone with maximum sustained surface wind of 34 to 63 KTS.

(d) Hurricane. A tropical cyclone in which maximum

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sustained surface wind is 64 KTS or greater.

(2) Regional Coordinators/Area SOPAs are responsible for ensuring tropical cyclone Conditions of Readiness (COR) and/or sortie conditions, where appropriate, are properly set by activities within their respective areas of responsibility. Regional Coordinators may delegate actual COR setting responsibilities for areas within their regions to Sub-Regional Coordinators. Naval activities / commands will report attainment or exclusion per local Regional Coordinator and/or SOPA/SOPA ADMIN destructive weather directives. Regional Coordinators/area SOPAs will in turn assume appropriate reporting responsibilities to COMLANTFLT (N00/N01/N3/N31/N7/CDO/CAT). Attainment reports should include a POC with phone, FAX number, and e-mail address (if available). Regional Coordinators/Sub-Regional Coordinators for tropical cyclone COR setting and reporting affecting COMLANTFLT activities and areas of responsibilities are as follows:

(a) COMNAVREG NORTHEAST (Commander, Navy Region Northeast): Overall responsibility for Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York and New Jersey.

1. CO, WPNSTA EARLE: Sub regional responsibility for New York and New Jersey.

2. CO, SUBASE NEW LONDON: Sub regional responsibility for Connecticut.

3. CO, NAVSTA NEWPORT, RI: Sub regional responsibility for Rhode Island and Massachusetts.

4. CO, NAS BRUNSWICK: Sub-regional responsibility for Vermont, New Hampshire, and Maine (except for Kittery Area).

5. CO, PORTSMOUTH NAVAL SHIPYARD (PNSY): Sub-regional responsibility for Kittery, Maine area.

(b) COMNAVREG MIDLANT (Commander, Navy Region Mid-Atlantic): Overall responsibility for Pennsylvania, Delaware, Virginia, Maryland, Washington DC, and West Virginia. Directly sets COR for Virginia east of 079 degrees West longitude with the exception of Virginia counties surrounding Washington DC.

1. CO, NAS WILLOW GROVE: Sub regional responsibility for Pennsylvania and Delaware.

2. COMNAVDIST WASHINGTON DC: Sub regional responsibility for NAVDIST Washington, surrounding northern Virginia counties, and Maryland.

3. CO, NAVAL SECURITY GROUP ACTIVITY, SUGAR

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GROVE: Sub regional responsibility for Virginia West of 079 degrees West longitude and West Virginia.

(c) COMNAVREG SOUTHEAST (Commander, Navy Region Southeast): Overall responsibility for North Carolina, South Carolina, Georgia, Florida (East of Tallahassee), AUTEK-ANDROS Island, Roosevelt Roads, Guantanamo Bay, and the C1 and C3 Sub-Areas. Directly sets COR for North Carolina, South Carolina, Georgia, Florida and Andros Island.

1. CO NAVSTA GUANTANAMO BAY: Sub regional responsibility for NAVSTA Guantanamo Bay.

2. CO NAVSTA ROOSEVELT ROADS: Sub regional responsibility for Puerto Rico.

(d) Other (non-CLF) Regional Coordinators responsible for setting tropical cyclone COR for CLF activities:

1. NETC, PENSACOLA FL: Sets CORs for Sub-Areas C2 and C4.

2. COMNAVRESFOR, NEW ORLEANS LA: Sets CORs for the state of LA.

3. CNATRA, CORPUS CHRISTI TX: Sets COR for the state of TX.

(3) Emergency Sorties for Tropical Cyclone Evasion

(a) COMLANTFLT has re-designated TASK FORCE 183 as a standing emergency task force organization to be used for any type of emergency sortie, including tropical cyclones. TASK FORCE 183 is organized by homeport, with a COMLANTFLT Executive Agent assigned for each annually by separate message traffic. Reporting and coordination procedures for tropical cyclone sorties will also be re-issued annually at the beginning of tropical cyclone season by COMLANTFLT and COMSECONDFLT.

(b) Per Navy Regulations, the decision to sortie will be made by area SOPA. Each homeport will be assigned a sortie commander, who will in turn promulgate the sortie OPGEN. When destructive weather evasion is directed, sortie units will shift operational control (OPCON) and tactical control (TACON) as directed. Units not able to get underway will continue to report to area SOPA/regional coordinator. Area sortie commanders submit all underway/evasion planning, and task group attainment reports to CTG 183.0, info unit operational/administrative chain of command to include: COMLANTFLT, COMSUBLANT, COMNAVSURFLANT, COMNAVAIRLANT, and COMMINEWARCOM, as appropriate. CTG 183.0 will coordinate and approve evasion plans and report on all preparations to get underway and

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progress of sorties To CTF 183.

(c) Once underway, the sortie task group commanders will submit daily OPREP 5 and OPREP 1-5 messages to CTG 183.0 info operational / administrative chain of command. Task group FOTC will ensure hourly updates on ships location via OTCIXS or verbal report to COMLANTFLT.

(d) Following passage of destructive weather and when directed by CTF 183, CTG 183.x will order return to port as required. On return to port and completion of destructive weather evasion, units will shift operational control in accordance with COMLANTFLT quarterly employment schedule, unless otherwise directed.

(e) Aircraft evacuation / hangaring. The decision to evacuate/hangar aircraft will be made in accordance with guidance provided by COMNAVAIRLANT and as outlined in reference (b). Status will be reported by type wing commanders, and NAS Commanding Officers to COMNAVAIRLANT IAW reference b. COMNAVAIRLANT will provide consolidated status reports to COMLANTFLT (N00/N01/N3/N31/CDO/CAT).

(4) After action reports.

(a) Destructive weather preparation and storm evasion costs. All unbudgeted incremental costs associated with destructive weather preparation and storm evasion must be captured throughout all phases of a destructive weather operation. Incremental costs are defined as costs incurred as a result of direct support to the operation. They do not include those expenses the organization would incur in the course of normal operations (costs should account for unexpected fuel usage, additional port services, and supplementary consumables required for unplanned ship and aircraft evacuation). Activities must maintain records, receipts and documents to support claims for reimbursement. Sortied task group commanders and area SOPAs/regional coordinators will compile and report all unbudgeted incremental costs due to destructive weather preparation/evasion as described above to COMLANTFLT (codes N00, N01, N02f, N3, N7) within 96 hours following completion of a destructive weather operation.

(b) Lessons learned. CTG 183.X and area SOPAs/Regional Coordinators will consolidate and report lessons learned to COMLANTFLT (N3/N31/N37), info chain of command, within 30 days following completion of a destructive weather operation.

(5) Preparations for Hazardous Weather

(a) Shore Installations. Storm bills at shore installations must include measures to reduce damage from high winds, flying objects, torrential rains, and in some cases exceptionally high tides and heavy surf. Consideration must be given to protection of buildings (especially those of light construction), power and water

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supplies, waterfront facilities, and personnel. Recovery from damage must be part of shore activity destructive weather bills.

(b) Ships in Port. Basic shipboard heavy weather procedures are set forth in OPNAVINST 3120.32, Article 630.8. For ships capable of maneuvering at sea, the best protection generally, is to get underway in the early stages of a storm's approach and steam in a direction to clear its anticipated path. Non-operational ships and ships not able to withstand heavy weather at sea shall be securely moored and prepared to withstand high winds with minimum damage. Ships capable of evading a hurricane at sea must make preparations to sortie in the event sortie becomes advisable.

(6) Avoiding a Tropical Cyclone

(a) Commanding Officers shall use prudent seamanship to avoid damage from weather. There is no substitute for distance when attempting to avoid the inherent dangers of a tropical cyclone. When the initial warning of a tropical depression, storm, or hurricane is received, units should maintain a running plot of own-ship's position (whether in port or at sea) relative to the actual tropical cyclone center position and the areas of dangerous winds (35 knots and above). Each warning should be completely plotted as soon as received. Plot the current center position, time, and the area of over-35 knot winds, the 12, 24, 48, and 72-hour forecast positions, and the 24-hour forecast area of over-35 knot winds.

(b) Definition of "dangerous" and "less-dangerous" semi-circles (see Figure 1):

1. The "dangerous" semi-circle is defined as that half of a tropical cyclone in which the cyclonic wind field of the storm and the forward motion of the storm reinforce one another AND are in a direction that tends to blow a vessel directly into the center of the storm. The "dangerous" semi-circle is to the right of the storm center in the Northern Hemisphere (to the left in the Southern Hemisphere).

2. The "less-dangerous" semi-circle (often referred to as the "navigable" semi-circle) is defined as that half of a tropical cyclone in which the cyclonic wind field of the storm and the forward motion of the storm are opposite to one another AND are in a direction that tends to blow a vessel directly away from the center of the storm.

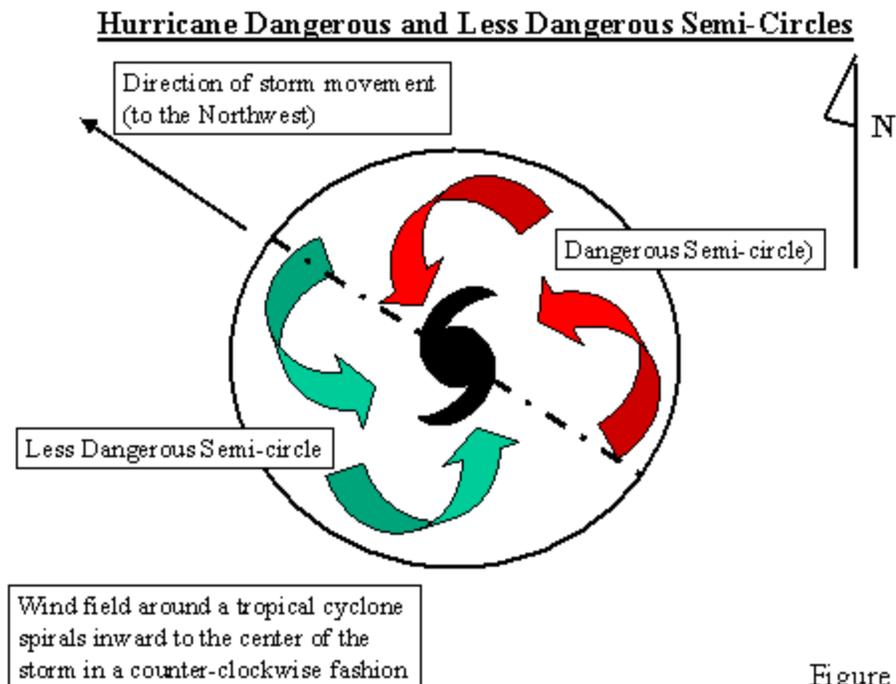


Figure 1

(c) In calculating the tropical cyclone danger area, keep in mind that although forecast accuracy is improving, the average 24-hour hurricane center position forecast error (derived from statistics over many years) can be 100 nautical miles or more. Tropical cyclone warnings issued by the Naval Atlantic Meteorology and Oceanography center contain 24-hour forecasts of peripheral winds greater than 35 knots associated with a tropical cyclone. The inexactness of center position reports and the fact that a system often follows an erratic track have led to the evolution of rules for avoiding the destructive winds (greater than 35 knots) in the circulation. As each new warning is received:

1. Plot the reported position of the tropical cyclone and the extent of winds greater than 35 knots. The warning may differentiate between semicircles (e.g., "RADIUS OF OVER 35 KT WINDS: 200 NM NORTH SEMICIRCLE 150 NM SOUTH SEMICIRCLE"), the plot will appear as in Figure 2(a). Not all systems have symmetrical or concentric wind fields.

2. Plot the 24-hour forecast position for the tropical cyclone and the extent of the radius of winds greater than 35 knots Figure 3 (a).

3. To provide for statistical forecast error, add 100 NM to the 35-knot wind radius plotted in 3(b) and connect this plot to that of 3(a) as illustrated in Figure 3. The resultant enclosed area, "the Danger Area," accommodates the inherent forecast error and will somewhere contain winds in excess of 35 knots within the next 24 hours. THE ENTIRE DANGER AREA IS TO BE AVOIDED, except

when otherwise recommended by Optimum Track Ship Routing (OTSR) as a best evasion route. (NOTE: For ships in-port which are threatened by a tropical cyclone and may be required to sortie, the concept of avoiding the "Danger Area" and the practice of plotting all warnings will provide a good guide in determining when one must sortie from port to avoid/miss the "Dangerous Area.")

4. RECALCULATE THE DANGER AREA WITH EACH NEW WARNING RECEIVED IN ACCORDANCE WITH THE ABOVE RULES AND THE FIGURE BELOW.

Hurricane Danger Area Plot

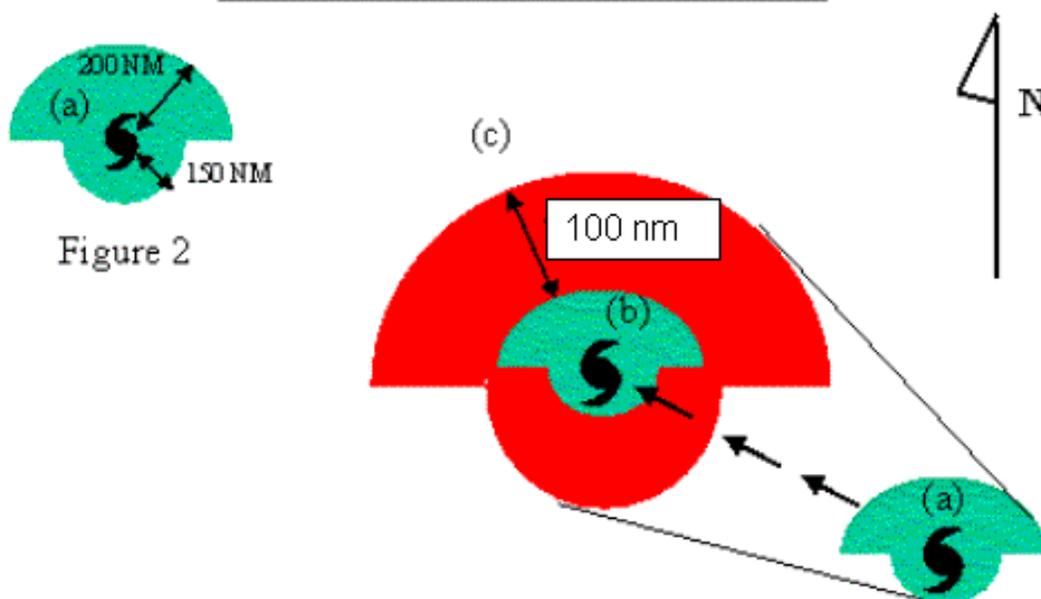


Figure 3

Note: Entire area encompassed by arcs and straight lines in Figure 3 comprises the "danger area" which should be avoided.

5. If in the danger area, locate the ship position relative to the "dangerous" and "less dangerous" semicircles, to initiate evasion procedures. CHANGING COURSE AND SPEED TO CROSS THE FORECAST TRACK OF A SYSTEM IN ORDER TO REACH THE "LESS DANGEROUS" SEMICIRCLE IS CONSIDERED EXTREMELY DANGEROUS once the ship is located within the area of increasing winds and seas. This maneuver, called "crossing the T," should only be conducted well in advance of the storm and when no better safe navigation maneuver is available. Heavy swell generated by a tropical cyclone running well ahead of the storm position may slow the ship, and therefore, should also be considered

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when making evasion decisions.

(d) If the ship is in the "dangerous" semicircle, bring the wind on the starboard bow and hold it there. Make as much way as the condition of the sea will allow. While maintaining this course, watch the wind log carefully, if the wind direction "veers" (shifts in a clockwise fashion), it indicates that you are in the "dangerous" semicircle, so keep changing the course to hold the wind on the starboard bow, and the hurricane will pass astern.

(e) If the ship is in the "less dangerous" semicircle, bring the wind on the starboard quarter and hold it there. Make as much headway as possible. If the wind direction "backs" (shifts in a counterclockwise fashion) it means that the ship is in the "less dangerous" semicircle. If this method is used, the hurricane will pass astern. Note, however, if the wind starts to "veer" (clockwise) it means that you are in the "dangerous" semicircle rather than the "less dangerous" semicircle, and the ship's course should be changed to follow the procedure described in subparagraph (a) above.

(f) Do not use winds associated with "feeder bands" or squalls to determine that a change in wind direction has occurred.

(7) Hurricane Sortie and Evasion Procedures. All ships from a port will normally sortie as a Sortie Group, under a Sortie Group Commander. The Hurricane Sortie Group may be split into different units as necessary to ensure that each unit is composed of vessels with similar sea-keeping characteristics. Evasion courses and speeds of the various units shall be appropriate to the capabilities of the ships assigned. Close communication between the supporting METOC activity, SOPA and the Sortie Group Commander is mandatory to ensure a fully coordinated, safe sortie plan is developed and executed.

(a) Individual Responsibility. The assignment of a ship to the Hurricane Sortie Group does not relieve the Commanding Officer of ultimate responsibility for the safety of his ship. Should it appear at any time that remaining with the Group would more seriously jeopardize his ship than another course of action, the Commanding Officer should request permission to proceed independently. Any ship leaving the Hurricane Sortie Group shall keep the Group Commander informed of his course, speed, and position.

(b) The "Hurricane Havens Handbook for the North Atlantic Ocean," NAVENVPREDRSCHFAC Technical Report TR82-03 is in Fleet distribution. Although the ultimate decision to sortie must remain with the Commanding Officer, the information contained in the Hurricane Havens Handbook should be considered in making this decision. Commanding Officers should review the contents for ports visited.

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(8) Tropical Cyclone Conditions of Readiness and Sortie Conditions of Readiness. The actual conditions and actions required as outlined below may vary dependent upon location and local SOPA instructions. However, the following general definitions are provided using destructive winds defined as sustained winds of 50 knots:

TROPICAL CYCLONE CONDITIONS OF READINESS:

FIVE - ONSET OF DESTRUCTIVE WINDS POSSIBLE WITHIN 96 HOURS

FOUR - ONSET OF DESTRUCTIVE WINDS POSSIBLE WITHIN 72 HOURS

THREE - ONSET OF DESTRUCTIVE WINDS POSSIBLE WITHIN 48 HOURS

TWO - ONSET OF DESTRUCTIVE WINDS ANTICIPATED WITHIN 24 HOURS

ONE - ONSET OF DESTRUCTIVE WINDS ANTICIPATED WITHIN 12 HOURS

SORTIE CONDITIONS:

CHARLIE - ALL UNITS MAKE PREPARATIONS TO BE ABLE TO GET UNDERWAY WITHIN 48 HOURS

BRAVO - ALL UNITS MAKE PREPARATIONS TO BE ABLE TO GET UNDERWAY WITHIN 24 HOURS

ALPHA - ALL UNITS GET UNDERWAY AS SPECIFIED IN THE SORTIE PLAN

f. OPTIMUM TRACK SHIP ROUTING (OTSR)

(1) COMLANTFLT Requirement. Commanders and Commanding Officers of Atlantic Fleet units shall use OTSR as guidance for all North Atlantic transits of 1500 NM or greater. In addition, Commanders and Commanding Officers are strongly encouraged to make use of OTSR services for all transits that encounter the "North Wall" of the Gulf Stream in winter and the tropics during the hurricane season. Line "D" of unit MOVREP should contain "OTSR" in accordance with NWP 10-1-10. Note, however, that NAVMETOCCOM activities require additional information on ship's sea-keeping characteristics in order to provide optimal OTSR service. Desired sea-keeping characteristics include: maximum head, beam and following seas, maximum sustained winds, deck cargo loading, and any other pertinent information. Finally, all U.S. Navy ships not requesting OTSR will be route monitored. If wind/sea conditions are forecast to reach 35 KTS or greater or 12 feet or higher along track, then an OTSR advisory will be issued.

(2) OTSR Service. OTSR is an advisory service which provides optimal ship route recommendations and subsequent revisions to that route during transit to avoid heavy weather. OTSR services are designed to minimize both time en route and risk of damage from high

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winds and seas. OTSR routing activity must be promptly advised of any significant deviations from intended track or changes in operational commitment(s). The routing activity will adjust surveillance as new information is received. Personal visits to and correspondence with NAVMETOCCOM activities are encouraged particularly where special requirements exist.

(3) OTSR Recommendations. OTSR recommendations are advisory in nature and do not replace the authority of Commanding Officers or their ultimate responsibility for safety of ship and crew. The assistance provided by OTSR must be weighed against on-scene information and operational commitments when making decisions. If for any reason an OTSR divert recommendation is declined, Commanding Officers must respond, keeping their chain of command informed of movement and intentions so that OTSR can continue to provide route weather surveillance.

(4) Requesting OTSR. As stated in reference (a), requests for OTSR routing, via message or letter, should be addressed to Naval Atlantic Meteorology and Oceanography Center (NAVLANTMETOCEN NORFOLK VA), Norfolk, VA 23551-2487. Requests should be received at least 72 hours prior to estimated time of departure (ETD) whenever possible.

(5) Provisional Route Recommendation. Provisional OTSR routes based on climatology, are for planning purposes only and may be modified in the final recommendation, which is based on the weather forecast valid at and beyond ETD.

(6) OTSR Reporting Requirements. The effectiveness of route surveillance depends primarily upon the timeliness of weather information received from the unit being monitored. A unit under OTSR surveillance is obligated to provide the following information (by message).

(a) Acknowledge receipt of OTSR recommendation and provide intentions by message within twelve hours. Do not include this acknowledgement with coded synoptic weather observations messages.

(b) Submit synoptic weather observations to OCEANO WEST/EAST (as appropriate) in accordance with references (a) and (d) through (f).

(c) Submit daily OTSR reports in accordance with reference (a).

(7) OTSR Postscripts. If Panama Canal or Cape Horn transits are desired, send OTSR requests and MOVREPs to both NAVPACMETOCEN SAN DIEGO CA) and NAVLANTMETOCEN NORFOLK, VA.

g. TRAINING REQUIREMENTS FOR SHIPS WITH METOC PERSONNEL ASSIGNED

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(1) COMNAVMETOCOM has established the Naval Meteorology and Oceanography Professional Development Center (NMOPDC) to oversee and execute tailored training for METOC personnel assigned to shipboard Operations Aerology (OA) divisions and has established Professional Development Detachments (PDDs) in Norfolk and San Diego, co-located with OA Team Trainer (OATT) facilities.

(2) In support of pre-deployment training requirements and to ensure maximum training levels and full integration with their Battle Group, Strike Group, or Amphibious Ready Group, OA division personnel onboard carriers and large deck amphibious ships shall participate in the following training and workup evolutions:

a) Required courses:

1) Senior METOC Officer Afloat (SMOA) course: required for the Carrier Strike Group METOC Officer, OA Division Officer, and OA Division Leading Chief Petty Officer.

2) Joint METOC Tactical Applications Course (JMTAC): required for the Carrier Strike Group METOC Officer, OA Division Officer, OA Division Leading Chief Petty Officer, and all OA Division forecasters.

3) Joint Maritime Tactics Course: required for the Carrier Strike Group METOC Officer.

b) Required training modules for OA division personnel at the PDDLANT/OATT:

1) Basic Level: GCCS Introduction, NITES Operator, NITES SYSADMIN, CBRNE, EM/EO/Space Weather, SAR, Solar/Lunar, Remote Sensing, SURF and Tides, Tactical Oceanography, Final Scenario.

2) Intermediate Level: CBRNE, EM/EO/Space Weather, Remote Sensing, Tactical Oceanography, Strike Warfare (for STW support team), Final Scenario.

3) Advanced Level: Tactical Oceanography, Final Scenario.

c) Additional courses and modules, although not required, are available and are encouraged wherever feasible. The COMLANTFLT METOC officer to meet emerging requirements may modify the list above.

(3) Air Wing Training at NAS Fallon. Each CV/CVN OA Division will send at least one forecaster and one technician with their assigned Air Wing to take part in CVW Fallon Detachment training

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at NAS Fallon. If additional METOC personnel are required to support ship operations during that period, NAVMETOCCOM activities will provide assistance using Mobile Environmental Team personnel.

(4) Training Plan. Each Carrier Strike Group, Strike Group, and Expeditionary Strike Group METOC Officer shall meet with the OA Division Officer and PDDLANT Officer in Charge during the CV/CVN/LHA/LHD yard period in order to develop a customized IDTC/workup training plan for all units in their group. This group training plan shall meet all of the above requirements, will be tailored to the requirements of the upcoming deployment, and will also include the target timelines for the following events:

- a) Establishing the flag briefing template
- b) Identifying the Mobile Environmental Team requirements for the upcoming workup cycle and deployment
- c) Issuing draft and final versions of the group METOC LOI, OPTASK METOC Supp, or equivalent guidance.
- d) Conducting a Training Conference for the METOC Liaison Officers (MLOs) of the group
- e) Conducting a Pre-Deployment Conference for the group MLOs.
- f) This plan shall be briefed to and approved by the COMSECONDFLT METOC officer as early as possible and no later than the end of the CV/CVN/LHA/LHD yard period.

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