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National East Coast Winter Storms Operations Plan

FCM 74-8

Washington, D.C.
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U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. Office of FEDERAL COORDINATOR FOR METEOROLOGICAL
SERVICES AND SUPPORTING RESEARCH,

NATIONAL EAST COAST WINTER STORMS

//

OPERATIONS PLAN

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OPERATIONS PLAN

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FOREWORD

In a memorandum dated October 23, 1969, the Chairman, Interdepartmental Committee for Meteorological Services (ICMS), established an Ad Hoc Group to function under the purview of the Subcommittee on Basic Meteorological Services (SC/BMS). The task of the Group was to develop an Operations Plan designed to furnish weather observations for use in predicting and providing adequate and timely warnings of severe and crippling winter storms along the east coast of the United States. This Plan was to consider use of surface platforms, aircraft, and satellites. Arrangements, if practical, were to be made to meet the data requirements of research facilities.

The National East Coast Winter Storms Operations Plan was developed to meet this request. The following revised Plan has been developed to reflect the current systems and procedures.

ACKNOWLEDGMENTS

The Ad Hoc Group of the Subcommittee on Basic Meteorological Services gratefully appreciates the time and effort of the following member agencies in the development of this Plan.

Department of Commerce:

National Oceanic and Atmospheric Administration
National Weather Service
National Environmental Satellite Service
Research Laboratories, Research Flight Facility
NOAA Data Buoy Office

Department of Defense:

Deputy Director for Operations, Joint Chiefs of Staff
(Environmental Services)
U.S. Air Force
U.S. Navy

Department of Transportation:

Federal Aviation Administration
U.S. Coast Guard

RESPONSIBILITIES OF COOPERATING AGENCIES

1. The National Oceanic and Atmospheric Administration (NOAA). It shall provide:

a. Basic surface, upper air, and radar observations from its network of stations making such observations.

#b. Basic analyses and forecast charts through the National Meteorological Center (NMC), Camp Springs, Md.

#c. Special numbered Winter Weather Bulletins to the general public and to all concerned interests through the Regional Warning Coordination Center (RWCC) New York, N.Y., and Fort Worth, Tex.

d. Statements on local warnings through Weather Service Forecast Offices (WSFO) and local Weather Service Offices (WSO) along the eastern seaboard.

#e. Advice on aircraft reconnaissance requirements forwarded through the National Hurricane Center (NHC) to the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH), from the Regional Warning Coordination Center (RWCC) New York, N.Y.--the central coordinating office for this program.

f. Additional observations, when required, making available all reports to any requesting agency.

g. Personnel and any special meteorological equipment needed to observe and report various weather phenomena on the Ocean Weather Station HOTEL.

h. Operate satellite systems capable of providing coverage of the east coast of the United States during the winter storms season.

i. Coordinate with the National Aeronautics and Space Administration (NASA) to obtain pertinent meteorological data from NASA research and development experimental satellites.

j. Provide data in the form of pictures for selected situations to authorized research facilities.

k. Furnish aircraft to support the reconnaissance and research objectives of the National East Coast Winter Storms program.

(1) Primary Objective is to participate and provide additional real-time meteorological data to operational forecasters in an attempt to improve the quality of forecasts associated with winter coastal storms.

(2) Secondary Objective is to provide data that will permit analyses and a better understanding of the structure and dynamics of these winter storm systems.

1. Provide oceanographic and meteorological surface data obtained from the offshore buoy deployment (EB 01 and EB 13).

2. The Department of Defense (DOD). It shall:

a. Furnish to the National Weather Service such aircraft reconnaissance observations and other special observations detailed in Chapter 4 of this Plan that are within its capabilities and are in accord with established reconnaissance priorities.

b. Designate the CARCAH as the primary point of contact for coordination with the RWCC New York for aircraft reconnaissance required in support of this Plan.

c. Provide warnings to all DOD facilities and military units of weather factors which threaten to inhibit their operations or to damage their installations.

3. The Federal Aviation Administration (FAA). It shall provide for:

a. Air traffic control, communication, and flight assistance services as appropriate in support of this Plan.

b. Dissemination of Pilot Reports (PIREPS).

c. Flight Service Station (FSS) and Tower aviation observations.

4. The U.S. Coast Guard. It shall:

a. Interrogate surface ships of opportunity for special weather observations through the Automated Merchant Vessel Reporting (AMVER) system, as requested by the National Weather Service.

#b. Relay to the WSOs marine meteorological data as received from Coast Guard ships and stations or from other Government and commercial reporting stations, including both routine and special observations.

c. Disseminate warnings, watches, and forecasts to marine interests.

d. Furnish regular and special surface weather observations taken by Coast Guard land stations.

#e. Operate the Ocean Weather Station HOTEL vessel in the vicinity of latitude 38°N and longitude 71°W, and relay all observations taken by the embarked National Weather Service personnel.

DEFINITIONS

The following definitions will apply for the purposes of this Plan and its appendixes:

1. EAST COAST WINTER STORMS SEASON: The portion of the year having a relatively high incidence of winter storms along the east coast will be regarded as the period from November 1 to April 15.

2. EAST COAST AREA: The geographic area of concern will range from latitudes 30°N. to 48°N., west of longitude 65°W., and will extend about 150 miles inland along the eastern coast of the United States (fig. 2-1).

#3. BLIZZARD WARNING: The term will be used to indicate that the following conditions are expected to prevail for an extended period (for 3 hours or longer):

a. Wind speeds of 35 miles an hour or more.

b. Considerable falling and/or blowing snow with visibility frequently less than 1/4 mile.

The term "severe" will be used to inidicate the following:

a. Wind speeds of 45 miles an hour or more.

b. Great density of falling and/or blowing snow with visibility frequently near zero.

c. Temperature of 10° or lower.

#4. HEAVY SNOW WARNING: The term will generally be used to mean:

a. A fall accumulating to 4 inches or more in depth in 12 hours, or

b. A fall accumulating to 6 inches or more in depth in 24 hours.

#5. Ice Storm (Freezing Rain or Drizzle): Describes the freezing of rain or drizzle on objects as it strikes them. Ice storm warnings should be reserved for occasions when significant, and probably damaging, accumulations of ice are expected.

#6. Winter Storm Watch/Warning: A winter storm watch is an alert to the public on the possibility of severe winter weather conditions.

The term winter storm warning serves notice to the public that severe winter weather events, two or more in combination, are almost certain to occur. The specific event or events will be highlighted in the text of the warning message or forecast.

7. COASTAL FLOOD (STORM SURGE) WARNING: The term will be used to indicate that tidal flooding is expected along the coastal area. The tidal departure in feet above normal, as well as the expected degree of flooding, wave or surf battering, and significant beach erosion will be included in the forecasts.

8. GALE WARNING: The term will be used in marine warnings to indicate that winds within the range of 39 to 54 miles an hour (34 to 47 knots) are forecast or are occurring.

9. STORM WARNINGS: The term will be used in marine warnings to indicate that winds 55 miles an hour (48 knots) and above are forecast or are occurring.

10. FLASH FLOOD WARNING: This term will be used when a flood in which the rapid rise in stream level and the resulting inundation follows the observable causitive event by about four hours or less.

11. STORM THREAT SITUATION: The term will be used to indicate the atmospheric circulation and temperature patterns which precede by 6 to 24 hours the development of east coast winter storms.

12. STORM SITUATION: The term will be used to indicate the atmospheric circulation pattern associated with significant weather, such as heavy precipitation (snow or rain), strong winds, or high tides which are affecting, or are expected to affect within the next 6 hours, the east coast area.

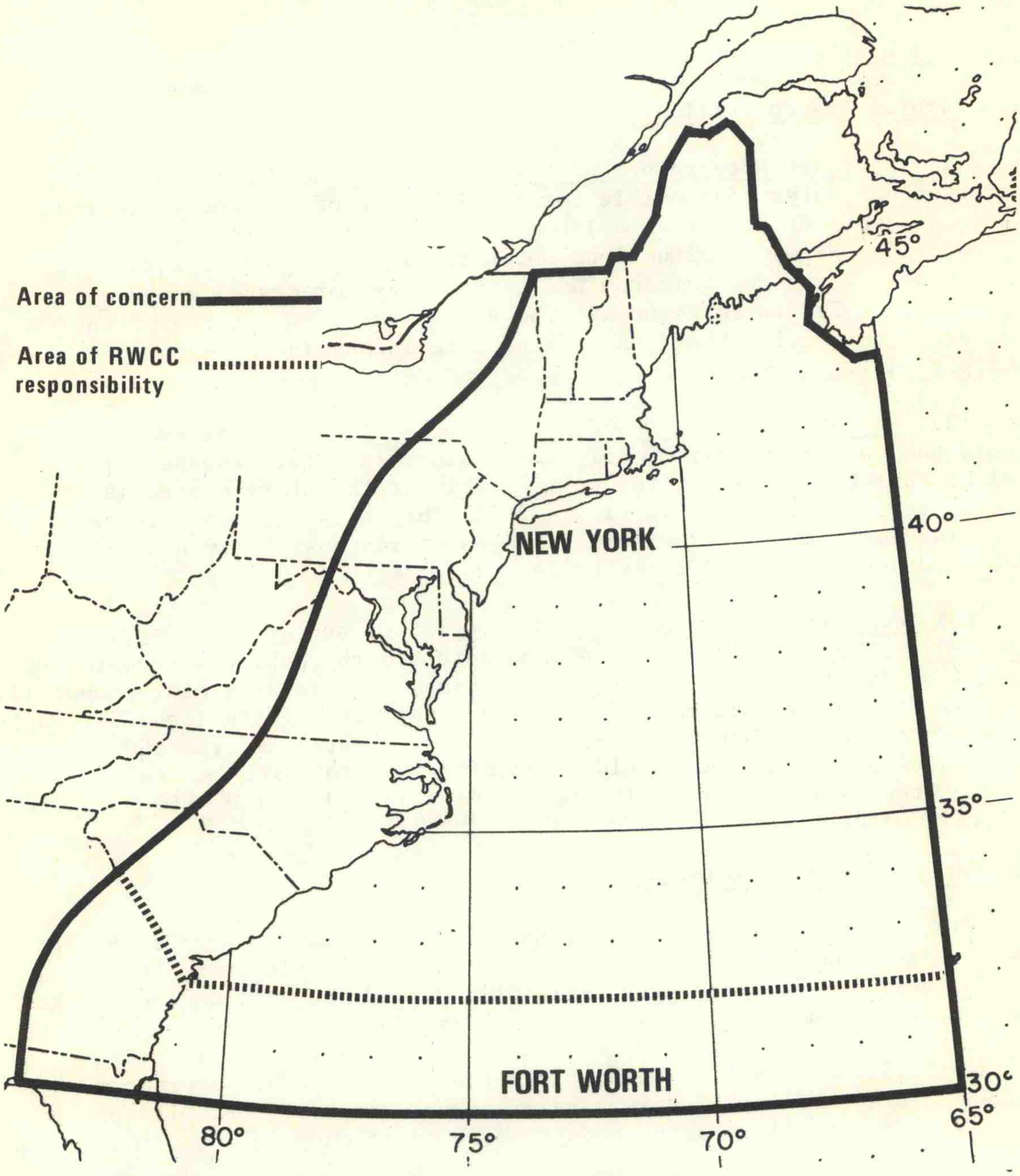

FIGURE 2-1. EAST COAST WINTER STORMS AREA OF CONCERN

CHAPTER 3

FORECASTS AND WARNINGS

1. National Weather Service.

a. Warning Responsibilities.

(1) National Meteorological Center (NMC). The NMC is the central data processing center responsible for the issuance of prognostic charts, discussions, and other material which may be helpful in calling the attention of the WSFOs to situations which require issuance of warnings. The NMC issues heavy snow guidance and probability forecasts on the National Weather Facsimile Network. The depiction is an outline of the area expected to receive heavy snow (4 or more inches in the specified 12-hour periods).

(2) Regional Warning Coordination Center (RWCC). The RWCCs have the coordination responsibility for winter storms and for issuance of Special Weather Bulletins for the entire storm if the storm center is located in their areas shown in figure 2-1. The RWCCs will coordinate the warnings issued by the WSFOs within its area of responsibility and will provide guidance to these Offices as needed.

(3) Weather Service Forecast Office (WSFO) and Weather Service Office (WSO). The WSFO issues and disseminates to the public forecasts and statements of winter weather watches or warnings for its area of responsibility. The WSO assists in the dissemination and includes warnings in local forecasts and statements. Each WSFO should use the guidance material from the NMC in making warning decisions and should coordinate with the RWCC before issuance. Other WSOs should follow the warning issued by the WSFO in their area of responsibility.

b. Winter Weather Releases.

#(1) Special Weather Bulletins. Special numbered Weather Bulletins will be prepared and released to the press, radio, and television by the RWCCs. The decision to issue a Bulletin will depend not only on the probability that the expected conditions will occur but also on their potential severity. Such Bulletins serve to alert the general public and all interests concerned to the possibilities of severe weather occurence, to warn of severe conditions which are imminent or have already begun, and to inform all concerned of the storm's extent, intensity, and probable duration.

(a) Watch. This alert places the public on guard to the possibility of severe weather conditions and is used in the same context as in the Hurricane and Severe Local Storms Warning Services. The storm can be forecast to develop or can be a well-developed storm with uncertainty as to the timing, track, intensity, and associated weather.

(b) Warning. This alert warns of severe weather conditions, as defined and listed in Chapter 2, which are imminent or have already begun.

(2) Special Weather Statements (Local Warnings). Special releases issued by the WSFOs or WSOs are labeled "Statements" to distinguish them from the overall Special Weather Bulletins. Such Statements will normally be considered as a supplement to the Bulletins and will usually be issued immediately following the Bulletin. Frequent local Statements at 2- or 3-hour intervals are important in providing an effective service to the public during severe warning situations, even at times when there is little new to report except the latest actual weather conditions. In a case where a warning situation is of a local nature, Statements will be issued even though no Special Weather Bulletin has been released. The contents of Statements will normally include the items listed under Bulletins in a more localized and specific manner.

(3) State, Zone, or Local Forecasts. The word "warning" and the type of warning will be highlighted in a separate line immediately preceding the normal text.

(4) Time and Circumstances of Issue of Bulletins.

(a) Scheduled Bulletins. The first Bulletin will be released as soon as warranted and subsequent routine Bulletins near 0500, 1100, 1700, and 2300 Greenwich Mean Time (GMT).

(b) Special Bulletins. Scheduled Bulletins will be supplemented by Special Bulletins whenever any significant change in severity, type of weather, direction, or speed of movement is indicated.

#(5) Content of Bulletin.

(a) Heading on Message.

1 Special Weather Bulletin.

2 Number of Bulletin (Separate series for each storm system).

3 Issuing office. (RWCC)

4 Time, day of the week, and date.

(b) Headline

1 Winter Storm Watch/Warning

(c) Body of Message.

1 Type of Watch or Warning.

2 Storm intensity and timing.

3 Area to be affected.

4 Movement of storm.

5 Current weather associated with storm.

6 Time of issuance and office to issue next Bulletin.

7 Forecaster's name and office.

c. Backup Plan. If the RWCC New York is incapacitated because of a communication failure or other cause, WSFO Washington will take over all warning responsibilities and reconnaissance coordination responsibilities.

2. U.S. Navy Warning Responsibility.

The U.S. Navy, through the Naval Weather Service Command, is responsible for issuance of gale, storm, and high seas warnings for fleet operations and Navy shore installations within the east coast area.

3. U.S. Air Force Warning Responsibility.

The U.S. Air Force, through the Air Force Global Weather Central, Offutt Air Force Base (AFB), Nebr., is responsible for the issuance of military weather warning advisories and point warnings to all Air Force and Army (including Reserve and National Guard) installations, facilities, and operations related to east coast storms for those hazardous phenomena specified in Air Weather Service Manual 105-8, Volume II.

AIRCRAFT RECONNAISSANCE

1. Responsibility.

a. U.S. Navy.

(1) In support of Naval requirements, the Navy will fly meteorological and oceanographic reconnaissance flights through the area of concern. These flights will be diverted or supplementary missions flown, if required, to cope with a given storm threat as determined by RWCC and/or Fleet Weather Central (FLEWEACEN) Norfolk. Information on scheduled Navy oceanographic reconnaissance flights through the area of concern will be reported to the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH) in time for inclusion in the Plan of the Day (POD). Requests by RWCC for diversion of these flights or supplementary flights for specific storm threats will be made through CARCAH.

(2) Navy flights will normally be conducted at low levels (1,500 feet or below) to facilitate oceanographic data collection and to allow observation of surface meteorological conditions, however, flights at any level can be accommodated.

b. U.S. Air Force. Air Weather Service (AWS) WC-130 sorties will be conducted for storm and storm threat situations. All Air Force AWS storm sorties in support of this Plan will be assigned through the POD issued by the CARCAH.

c. Research Flight Facility.

(1) The RFF aircraft flights will be available on request for a "storm," "threat" situations, or storms of research interest (as specified in para. 3.d.(4) of this chapter) through a negotiated agreement between the National Weather Service and the Environmental Research Laboratories.

(2) The RFF aircraft will be used as available as backup for DOD aircraft reconnaissance.

2. Operational Control of Aircraft. Operational control of reconnaissance aircraft will be exercised by the agency to which the aircraft is assigned.

3. Reconnaissance Planning and Flight Notification.

a. Requirements. The RWCC New York will coordinate reconnaissance requirements with NMC and will forward aircraft reconnaissance needs to CARCAH for tasking within responsibilities stated above in the POD. Requirements for the following day will be provided CARCAH by 1830 GMT daily. (Amendments will be passed as required.)

(1) Changes to the POD will be accepted up to 4 hours before the scheduled aircraft departure provided:

(a) Track changes are limited to substitution of one track or pattern for another.

(b) Departure delay plus the sortie flight plan time does not exceed 14 hours.

(c) Early departures are not requested.

(2) On rare occasions, the RWCC may place a requirement on CARCAH for a reconnaissance flight into a rapidly developing storm 4 hours before the departure time. Fulfillment of this unforeseen requirement will of necessity be subject to availability of DOD or RFF resources for tasking or diversion at the time required.

b. Flight Levels. Personnel filing flight plans will specify an altitude or flight level to be flown. Any change in a cruising altitude or flight level during the flight in controlled air space will require approval by the appropriate FAA Air Route Traffic Control Center (ARTCC).

c. Dropsondes. Dropsonde releases within controlled airspace will be coordinated with the appropriate ARTCC for approval at least 10 minutes before drop time.

d. Flight Planning.

(1) General Storm Track.

(a) Storm situation reconnaissance tracks and altitudes to be flown by DOD or RFF aircraft are indicated in Appendix 4-A. Air Force tracks Gull BRAVO, Gull DELTA, and Gull GOLF shown in Appendix 4-B will also be flown during a storm situation.

(b) The Gull JULIET track will be flown by the Air Force in support of a storm threat situation.

(2) Air Force.

(a) Preplanned Air Force tracks and altitude in the east coast area are indicated in Appendix 4-B.

(b) RWCC New York will provide CARCAH with the following data prior to 1830Z daily:

1. On storm situations requiring flight patterns 1A-1D or 2A-2D:

a. Flight pattern desired (1A-1D or 2A-2D).

b. Forecast storm position in coordinates: (Point #3 on pattern 1A-1D or 2A-2D).

c. Forecast storm position time: time aircraft desired on station over storm center position (Forecast Position).

d. Forecast movement of storm center position: degrees and knots.

e. Requirements for succeeding day.

2. On storm threat situations requiring Gull tracks:

a. Track desired.

b. Takeoff time.

c. Requirements for succeeding day.

(c) CARCAH will provide the following Plan of the Day information: (Appendix 4-F).

1. Aircraft Call Sign: (for example: Air Force Gull Bravo, etc., for standard tracks; Air Force Gull No. # Storm, for pattern missions).

2. Takeoff time: for pattern missions.

3. Departure point.

4. Destination.

5. Negative Plans of the Day will be disseminated.

(3) Navy.

(a) The track to be flown by Navy aircraft will approximate one of those indicated in Appendix 4-C and will be determined by Navy requirements.

(b) Notification of specific Navy flight tracks will be made by priority flight advisory message from Weather Reconnaissance Squadron 4 (VW-4), Jacksonville, by 1200 local time on the day preceding the flight. National Weather Service Communications (WBC) Washington and CARCAH will be included in the distribution of these messages.

(c) Direct discussion on weather situations between Navy and the RWCC is encouraged with respect to a storm or threat situation. Navy point of contact is the FLEWEACEN Norfolk Command Duty Officer, and the optimum time is between 1100 and 1130 local time. Any tasking by RWCC resulting from these discussions will be through CARCAH. Any independent tasking by FLEWEACEN Norfolk will be directly through VW-4, keeping CARCAH informed.

(4) Research Flight Facility.

(a) Meteorological situations selected for RFF aircraft monitoring will be investigated while the storms are in the vicinity of preselected routes. In the event that these routes do not provide the desired data, the RFF will provide the National Weather Service Controller, RWCC New York, the additional capability of requesting en route pattern changes (within the endurance capability of the aircraft and airspace restrictions).

(b) Coordination of pattern changes will be directed to the senior meteorologist on the RFF aircraft from the flight mission monitor designated by RWCC New York.

(c) Requests for RFF aircraft will originate with the RWCC New York after coordination with NMC and will normally be transmitted to CARCAH, Coral Gables, Fla. These requests will be included in the POD. In the event that a "short-notice" requirement for reconnaissance is made after the POD has already been published, the RFF may be contacted directly by the RWCC. In this event, RFF will coordinate the mission requirements and notify CARCAH of its intentions to fly; RFF will also furnish CARCAH enough information to amend the POD.

(d) The RFF plans to conduct its missions primarily from Miami. It will accomplish this task by remaining on an alert or standby status during the period agreed to by National Weather Service and Environmental Research Laboratories. After the completion of a given mission, however, RFF may be requested to recover at an advanced staging base. It will remain there for a period of a few days if the RFF expects to have a mission requirement from that area within the specified time period.

(e) During standby status (in Miami), RFF will establish a daily conference call procedure with RWCC New York for planning purposes, for preparing operations that may be required late the same day or early the next day, and for handling emergency requests in the event that RFF is required to serve as backup for the DOD.

(f) Besides these backup or emergency requests, the RFF may be called upon for entry into "threat" situations and for flights into those storms that are of interest for research purposes only.

(g) Minimum leadtime notification: A 24-hour notice is desirable for most missions, but not necessary. Minimum practical limitations require at least 4 to 6 hours' notification. All flights are to be conducted within RFF's Standing Operating Procedures (SOP) which specify minimum turn around (15 hours) and maximum crew duty times (16 hours per day).

(5) Plan of the Day (POD). Utilizing requirements stated by RWCC New York and the planned flights reported by the Navy, the CARCAH will prepare the POD daily throughout the season in coordination with Navy, Air Force, and RFF to effect maximum useful data from available resources.

(a) Coordination contacts are:

1. CARCAH, FTS 305-350-5547 or commercial 305-666-3912.

2. USAF 53rd Weather Reconnaissance Squadron, Keesler AFB, Miss. Call Autovon 436-3396 or commercial 601-377-4304.

#3. FLEWEACEN Norfolk, Autovon 690-7750 or commercial 703-444-7750 (2436).

4. RFF (Miami International Airport), FTS 305-350-4139 (or 4130) or commercial 305-887-9591 (or 9592).

#5. RWCC New York, FTS 212-995-8568 (or 8569).
RWCC Fort Worth, FTS 817-334-2940 or 2949.

#6. NHC Miami, FTS 305-350-5547 or commercial 305-284-4253.
WSFO Washington, FTS 301-763-8261.

7. McClellan Consolidated Command Post, McClellan AFB, Calif., Autovon 633-5040 (5041, 5045), or Area Code 916-643-5040 (5041, 5045).

(b) Tracks.

#1. Initial Air Force and RFF track selection will be made at the discretion of RWCC New York after coordination with RWCC Fort Worth and NMC to provide maximum essential data based on the existing and anticipated meteorological situations.

2. Changes to standard winter storms reconnaissance tracks within controlled airspace must be passed to FAA ARTCCs at San Juan, P.R., Miami, Jacksonville, Washington, New York, and Boston, allowing at least 30 days' time before implementation of the changes.

3. Within operational limitations and with prior approval of FAA, airborne diversions deemed advisable by the aircraft meteorological officer may be made from these tracks to investigate storms.

(c) Format. The POD format to be followed is indicated in Appendix 4-F.

(d) Dissemination. The CARCAH will disseminate the POD to WSFOs and RWCC New York (over Circuit 7072) and to FAA, RFF, Navy, Eastern Sea Frontier, Air Force, and other appropriate addressees by 2000 GMT on the day preceding the planned missions. Amendments will be disseminated as required.

4. Data Requirements.

a. Data requirements are defined in table 4-1. Pending full satisfaction of the requirements, National Weather Service desires to obtain all information possible with existing resources.

#b. Navy aircraft will use the Data Acquisition Logging System (DALS) as a primary method of reconnaissance reporting (see Appendix 6-B, attachment 1). DALS transmission will be made at 30-minute intervals. Navy aircraft when using voice transmissions will transmit weather reconnaissance reports at least hourly and at least every 30 minutes for flights in threat or storm situations. NAVWEASERVFAC Jacksonville shall extract standard reconnaissance code (RECCO) data from the DALS for dissemination to appropriate agencies. Voice reconnaissance reports will be in the standard reconnaissance format. (Appendix 4-D).

c. A dropsonde will be released approximately every 300 miles during flights at 500 mb or higher over water. Data will be coded and transmitted as detailed in Appendix 4-E.

5. RFF Research Data.

RFF research data include the following standard information: time, position, wind speed and direction, ambient temperature, ambient pressure, ambient vapor density, humidity, and visual observations, additional cloud physics data as required (and available), liquid-water content, total water content, icing detection, cloud construction, nuclei count, sea-surface temperature, radar data (3.2-cm cross section presentation; 5.6-cm Plan Position Indicator (PPI); and 10.2-cm PPI radar data available), and special cloud photography (as required). Meteorological data are recorded digitally on magnetic tape in binary coded decimal form at one complete sample per second; radar and cloud photography are provided as required by the researcher. Dropsonde data are also normally available as required.

6. Communication Procedures.

a. Air Force communications procedures are contained in Appendix 6-A of this Plan.

b. Navy communications procedures are contained in Appendix 6-B of this Plan.

c. RFF communications procedures are contained in Appendix 6-C of this Plan.

d. RWCC communications procedures with DOD aircraft are contained in Appendix 6-D of this Plan.

#e. Common communications capabilities are contained in Appendix 6-E of this Plan.

TABLE 4-1. REQUIREMENT FOR AIRCRAFT RECONNAISSANCE DATA

Data required	Altitudes at which data are required	Areal portion of cyclone or environment in which data are needed	Time and frequency of observations	Accuracy required
Location of center.	850-mb height or any lower level.	At center (by pressure, wind, or radar).	Every 6 hours at 0000Z, 0600Z, 1200Z, and 1800Z. Occasionally, upon request, every 3 hours for special situations.	10 n.mi.
Central pressure or height.	850-mb height and surface.	At center.	Every 6 hours at 0000Z, 0600Z, 1200Z and 1800Z. Occasionally, upon request, every 3 hours for special situations.	± 2 mb ± 20 m
Storm data--winds, pressure (heights) temperature, moisture (dew point), clouds, and weather-- for forecasting storm movement, development, and associated weather.	500-mb and 850-mb heights supplemented by dropsondes from 500 mb.	At 500 mb, all quadrants at a radius of about 180 n.mi., and dropsondes about every hour. At 850 mb, southern, western, and northern quadrants at radius of about 120 n.mi., and also along two diameters of the storm oriented NE-SW and NW-SE.	Twice daily at 0000Z and 1200Z.	± 5 kt, ± 10° (Dir) ± 1°C ± 20 m
Peripheral data for short-range forecasting and movement of storm.	500-mb and 850-mb heights with dropsondes.	Plan of the Day - Threat Tracks.	Twice daily at 0000Z and 1200Z during threat situations.	± 5 kt, ± 10° (Dir) ± 1°C ± 20 m

TABLE 4-1. REQUIREMENT FOR AIRCRAFT RECONNAISSANCE DATA (Continued)

Data required	Altitudes at which data are required	Areal portion of cyclone or environment in which data are needed	Time and frequency of observations	Accuracy required
Synoptic data--pressure (heights), temperature, moisture, and winds--for national weather prediction and medium-range forecasting.	500-mb height with dropsondes.	Throughout the marine portion of east coast area as defined in Chapter 2.	Routinely; twice daily at 0000Z and 1200Z.	± 5 kt, ± 10° (Dir) ± 1°C ± 20 m
Location and strength of radar echoes.	Any level.	All sectors.	When available.	± 20 mi
Ocean wave heights and wave lengths.	Sea surface.	All quadrants.	Every 6 hours.	± 10% (height) ± 10 ft (length)

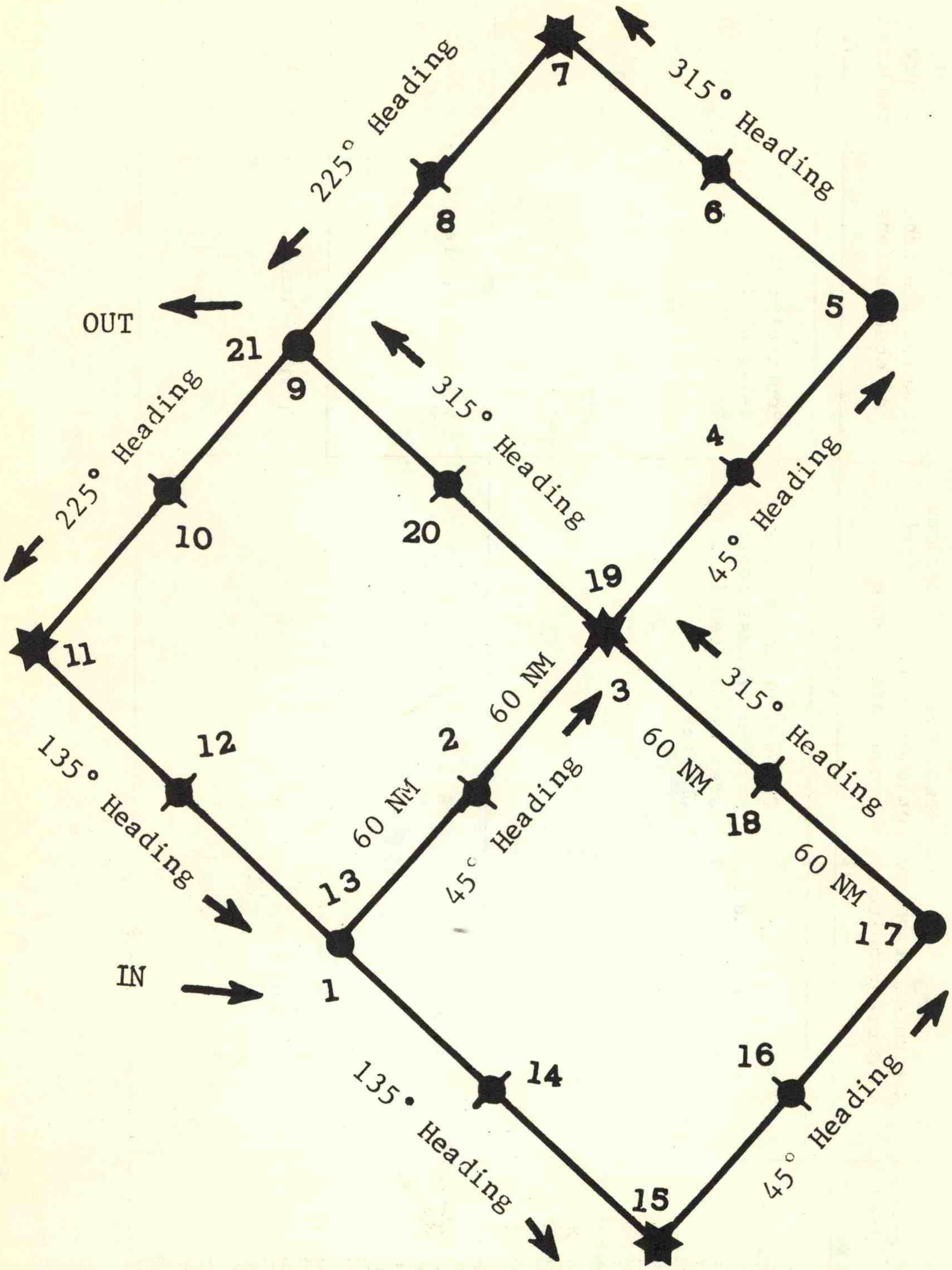

FIGURE 4A-1. STORM SITUATION RECONNAISSANCE TRACKS 1A-1D FOR STORM CENTERS SOUTH OF LATITUDE 35° NORTH

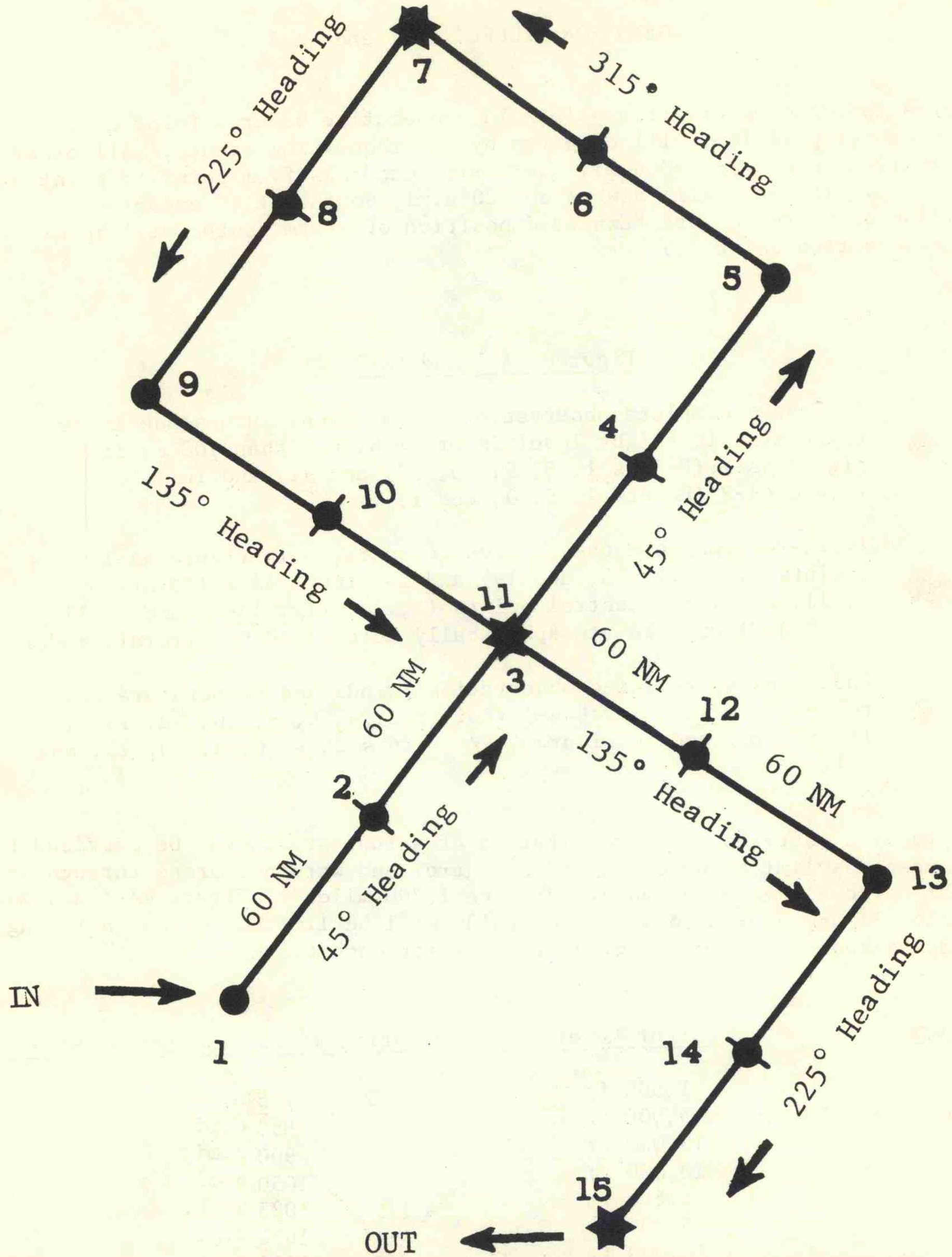

FIGURE 4A-2. STORM SITUATION RECONNAISSANCE TRACKS 2A-2D FOR STORM CENTERS NORTH OF LATITUDE 35° NORTH

CHAPTER 4
APPENDIX A

LEGEND FOR FIGURES 4A-1 and 4A-2

Numbers indicate observation points in consecutive order. Point 3, the storm center position, will be given by the requesting agency. All other observation points are 60 n.mi. apart with headings from point-to-point as indicated. (Point 1 will always be 120 n.mi. southwest of expected position of storm center. Expected position of storm center will be at the observation Point 3.)

Figures 4A-1 and 4A-2

● Indicates complete observation to be taken. Dropsonde to be taken also if flight level is at or higher than 700 mb in figure 4A-1 (Points 1, 5, 9, 13, 17, and 21) and in figure 4A-2 (Points 1, 5, 9, and 13).

✸ Indicates complete observation to be taken in figure 4A-1 (Points 3, 7, 11, 15, and 19) and in figure 4A-2 (Points 3, 7, 11, and 15). Central points (3, 19, fig. 4A-1; and 3, 11, fig. 4A-2) will be atmospherically determined by aircraft radar.

⊕ Indicates abbreviated observation (winds and temperature only) to be taken in figure 4A-1 (Points 2, 4, 6, 8, 10, 12, 14, 16, 18, and 20) and in figure 4A-2 (Points 2, 4, 6, 8, 10, 12, and 14).

#The proposed patterns for investigation of actual storms can be provided by AWS except as limited by air traffic control and warnings areas through which flight approval cannot be obtained. The 1,200 miles of Figure 4A-1 and 840 miles of Figure 4A-2 also mean the WC-130 will be limited to the following operating radius from the beginning point for each track.

Pattern	Flight Level	Operating Radius (Center of Storm)
1A	1,500 ft	725 n.mi.
1B	5,000 ft	850 n.mi.
1C	10,000 ft	900 n.mi.
1D	18,000 ft	1050 n.mi.
2A	1,500 ft	1025 n.mi.
2B	5,000 ft	1050 n.mi.
2C	10,000 ft	1100 n.mi.
2D	18,000 ft	1225 n.mi.

AIR FORCE TRACK GULL BRAVO			
COORDINATES	ALT	WX	DROP
32 54 N 80 02 W	19000 ft	01	
31 58 N 77 00 W	19000	02	
33 30 N 74 54 W	19000	03	
35 00 N 72 45 W	19000	04	1
37 00 N 70 39 W	19000	05	
39 00 N 68 24 W	19000	06	
41 00 N 66 00 W	19000	07	2
39 30 N 63 45 W	18000	08	
37 00 N 64 20 W	18000	09	3
34 36 N 66 39 W	18000	10	
32 10 N 68 53 W	18000	11	
32 08 N 72 30 W	18000	12	4
31 58 N 77 00 W	18000	13	

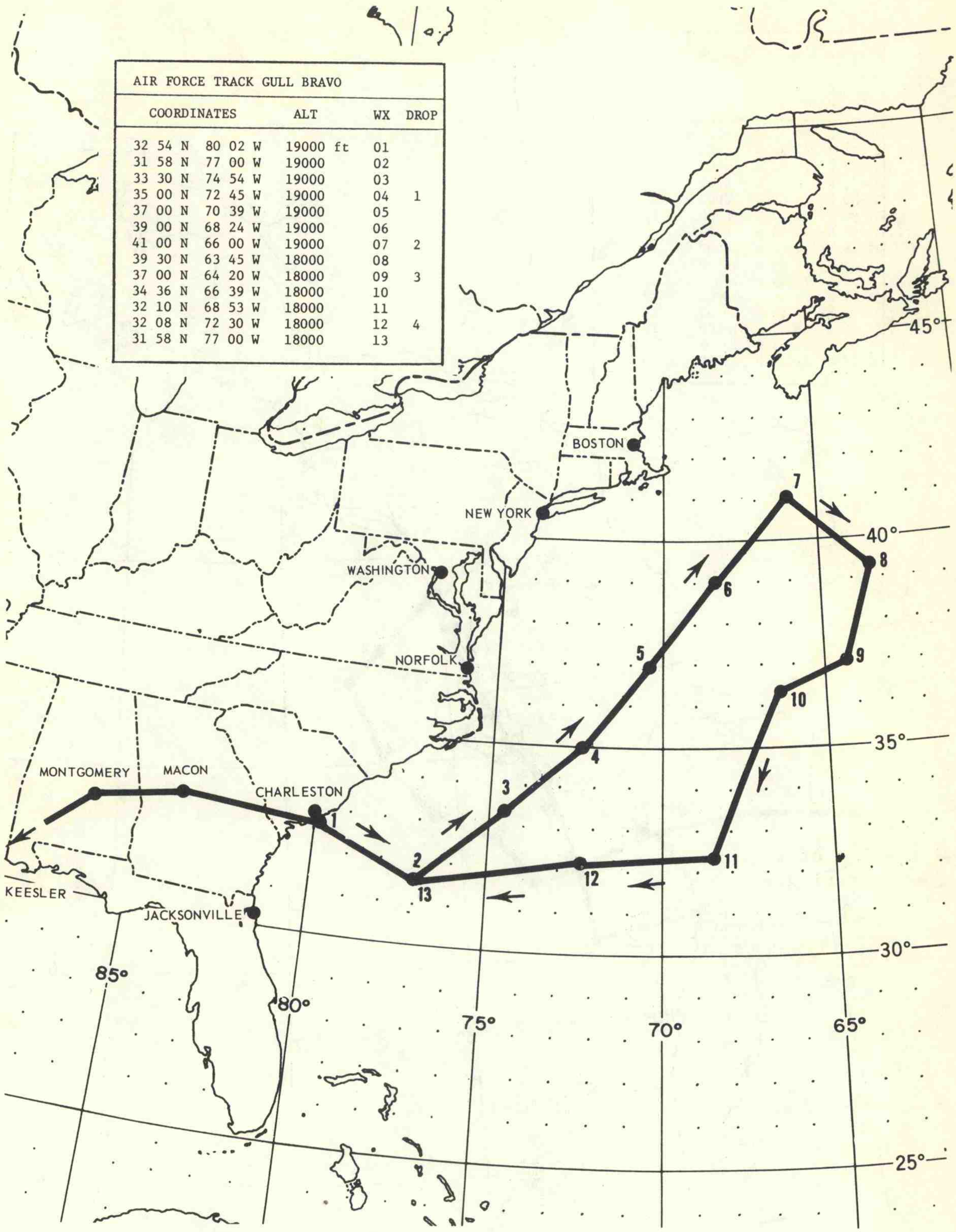

FIGURE 4B-1. AIR FORCE TRACK GULL BRAVO.

AIR FORCE TRACK GULL DELTA								
COORDINATES					ALT		WX	DROP
32	54	N	80	02	W	6000 ft	01	
31	58	N	77	00	W	6000	02	
33	00	N	76	00	W	6000		
33	33	N	74	20	W	6000	03	
35	00	N	73	00	W	6000	04	
37	00	N	72	00	W	6000	05	
37	43	N	73	00	W	6000	06	
39	06	N	74	48	W	6000	07	
38	03	N	75	28	W	18000		
37	00	N	75	54	W	18000	08	
35	27	N	76	56	W	18000	09	
34	21	N	77	52	W	18000	10	
32	21	N	78	15	W	18000	11	
30	24	N	78	34	W	18000	12	
30	27	N	81	34	W	18000	13	

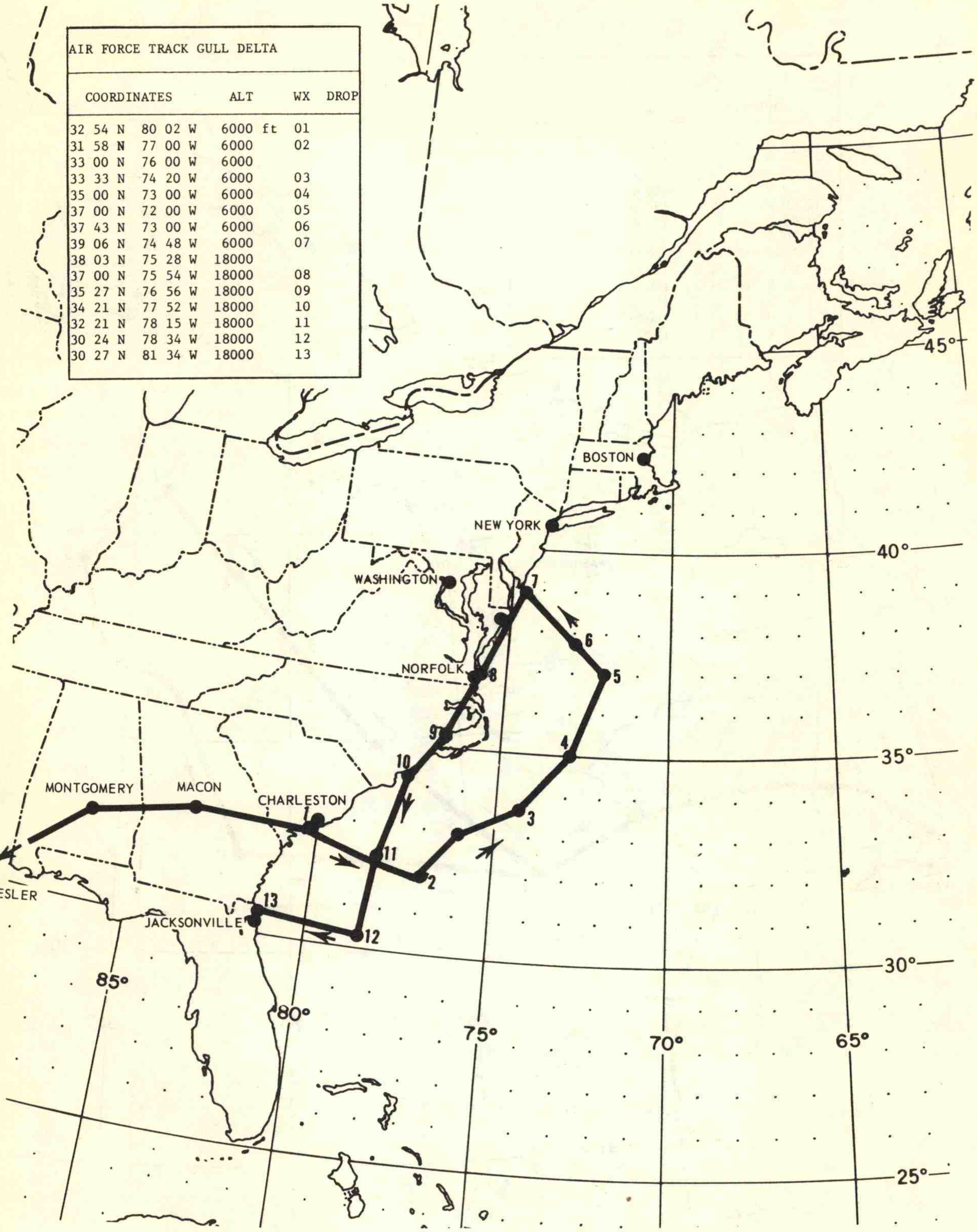

FIGURE 4B-2. AIR FORCE TRACK GULL DELTA.

AIR FORCE TRACK GULL GOLF							
COORDINATES					ALT	WX	DROP
32	54	N	80	02 W	19000 ft	01	
31	58	N	77	00 W	6000	02	
33	30	N	75	00 W	6000	03	
34	26	N	73	51 W	6000	04	
35	13	N	71	30 W	6000	05	
36	38	N	70	13 W	6000	06	
38	00	N	69	00 W	6000	07	
39	50	N	69	15 W	6000	08	
41	17	N	70	02 W	6000	09	
40	55	N	72	19 W	6000		
40	07	N	73	16 W	6000	10	
39	06	N	74	48 W	6000		
37	42	N	73	00 W	6000	11	
36	57	N	73	00 W	6000		
36	58	N	74	00 W	6000	12	
37	00	N	76	10 W	6000	13	
35	36	N	77	06 W	18000	14	
34	21	N	77	52 W	18000	15	

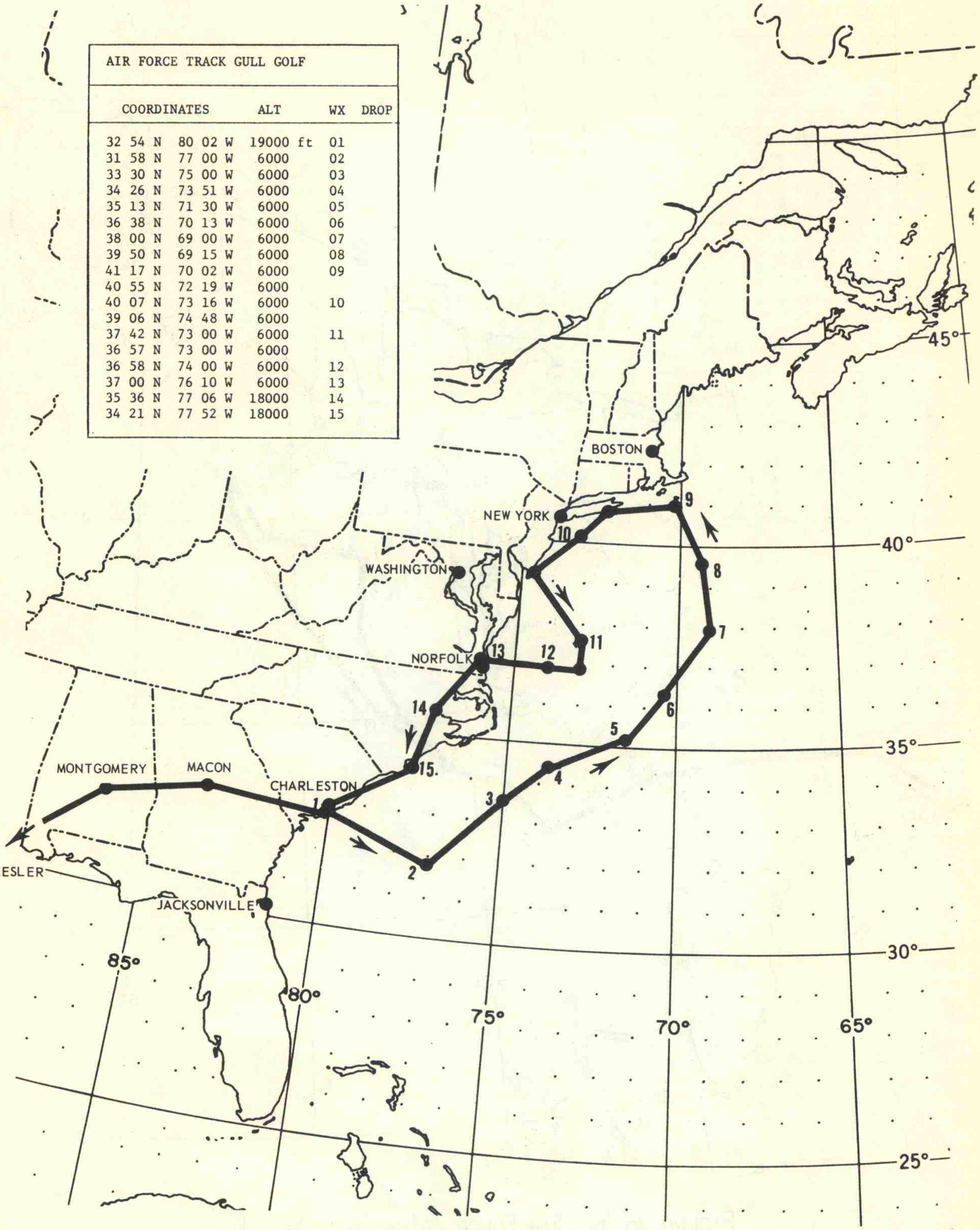

FIGURE 4B-3. AIR FORCE TRACK GULL GOLF.

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AIR FORCE TRACK GULL JULIET				
COORDINATES	ALT	WX	DROP	
32 54 N 80 02 W	6000 ft	01		
31 58 N 77 00 W	6000	02		
33 00 N 76 00 W	6000			
33 33 N 74 20 W	6000	03		
35 00 N 73 00 W	6000	04		
37 00 N 72 00 W	6000	05		
38 00 N 72 00 W	6000	06		
38 55 N 72 07 W	6000	07		
39 30 N 69 00 W	6000	08		
41 00 N 68 00 W	19000	09	1	
40 00 N 68 00 W	19000	10		
38 30 N 69 23 W	19000	11	2	
37 00 N 70 39 W	19000	12		
35 00 N 72 45 W	19000	13	3	
33 33 N 74 20 W	19000	14		
33 00 N 76 00 W	19000			
31 58 N 77 00 W	19000	15	4	

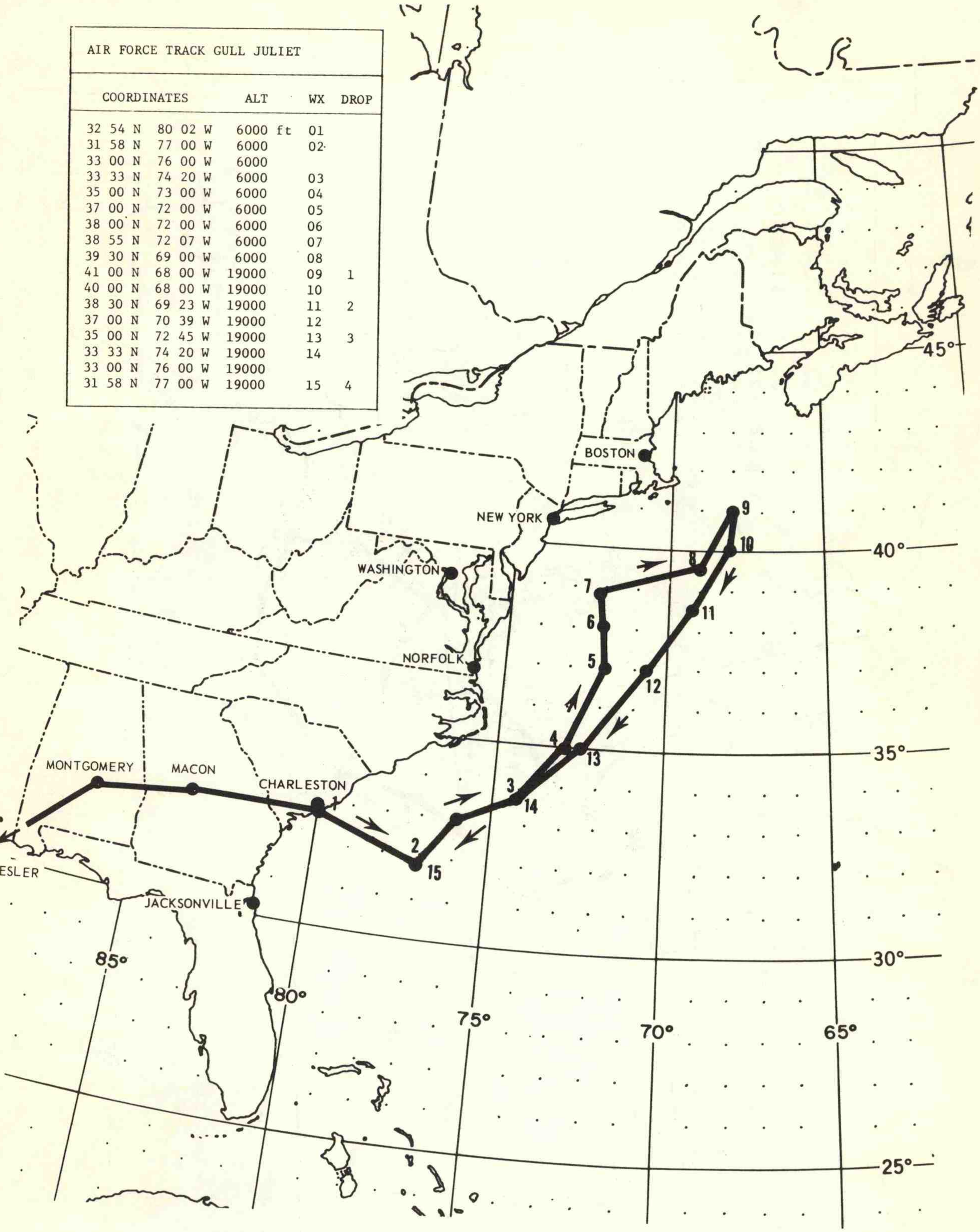

FIGURE 4B-4. AIR FORCE TRACK GULL JULIET.

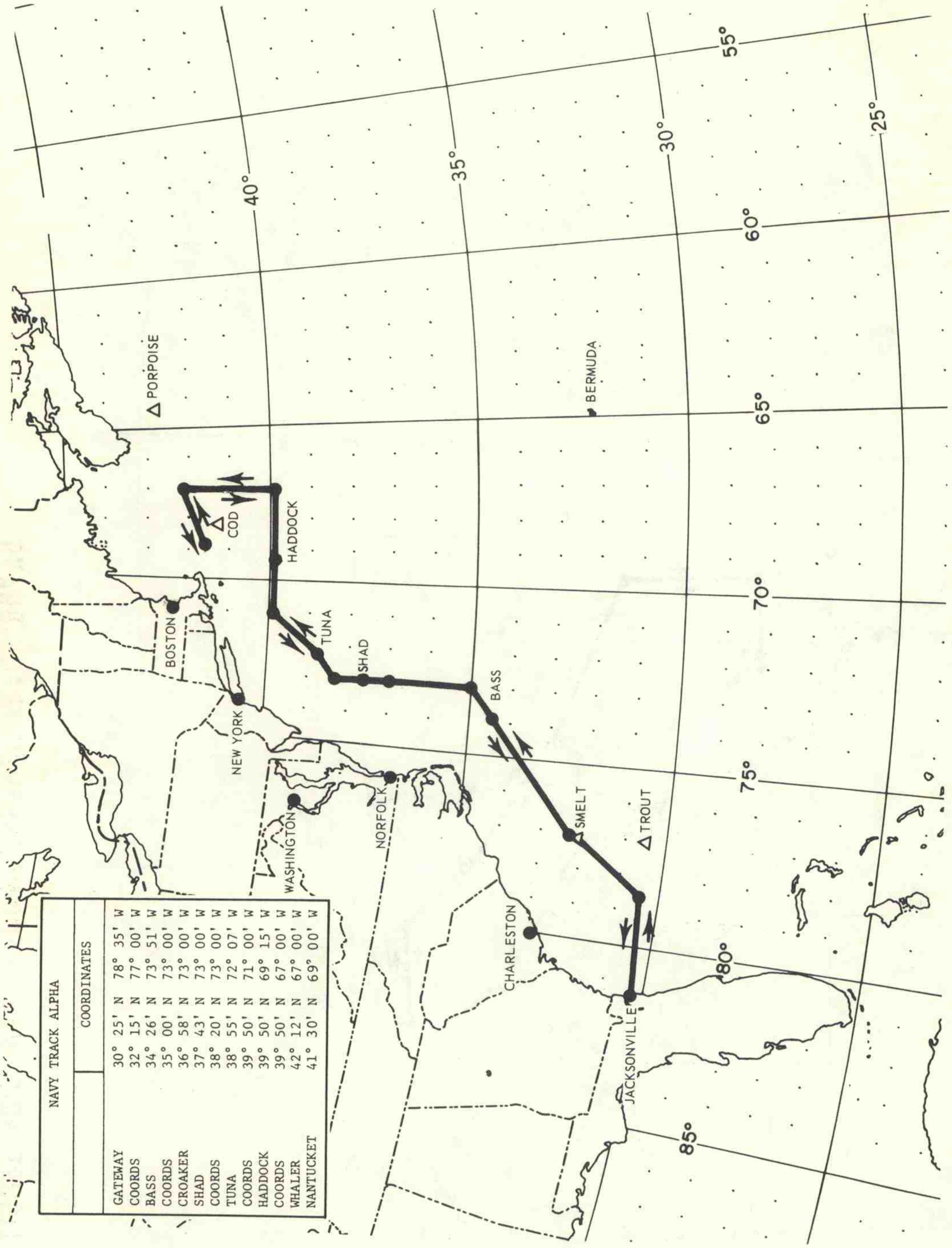

FIGURE 4C-1. NAVY RECONNAISSANCE TRACK ALPHA

CHAPTER 4
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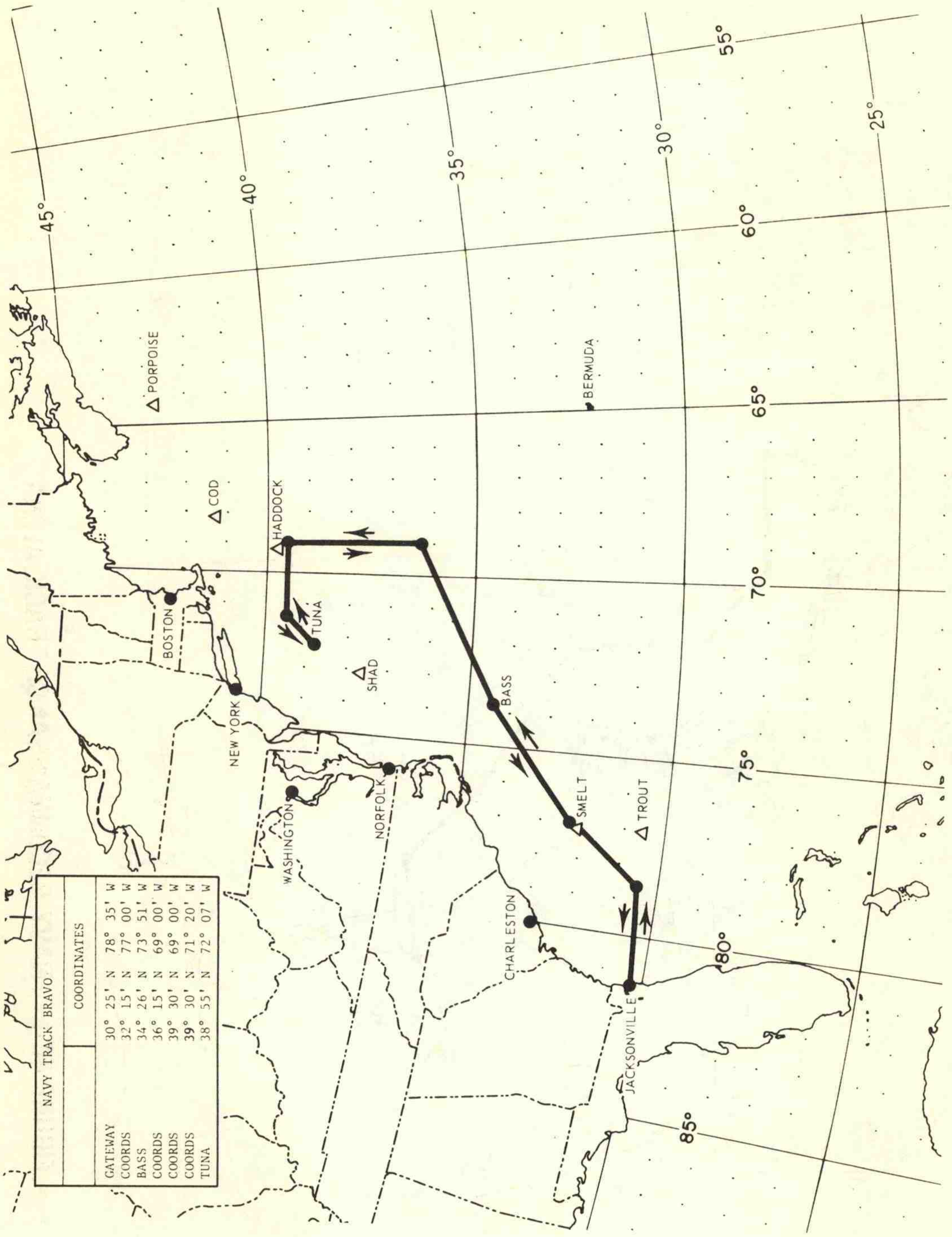


FIGURE 4C-2. NAVY RECONNAISSANCE TRACK BRAVO

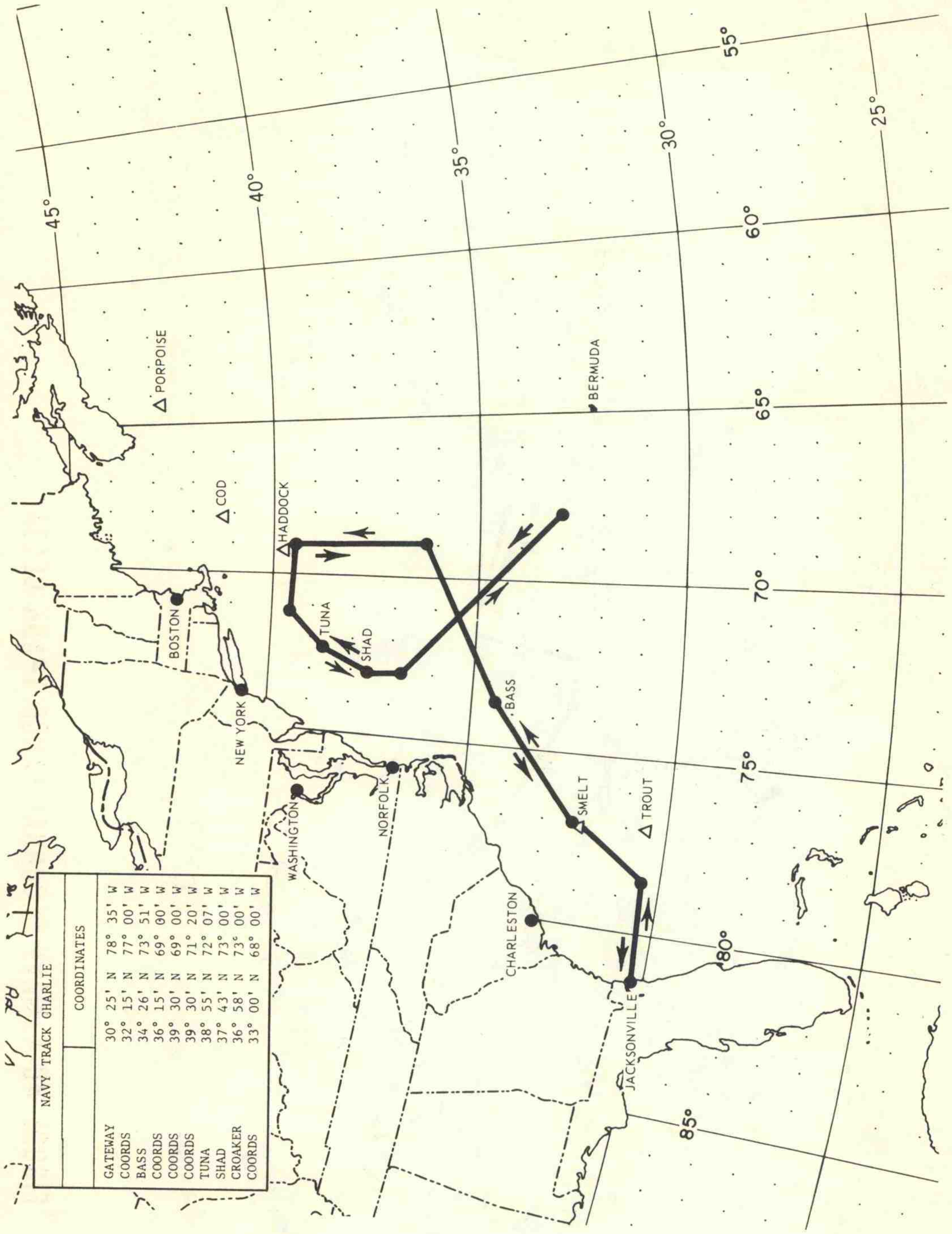


FIGURE 4C-3. NAVY RECONNAISSANCE TRACK CHARLIE

CHAPTER 4
APPENDIX C

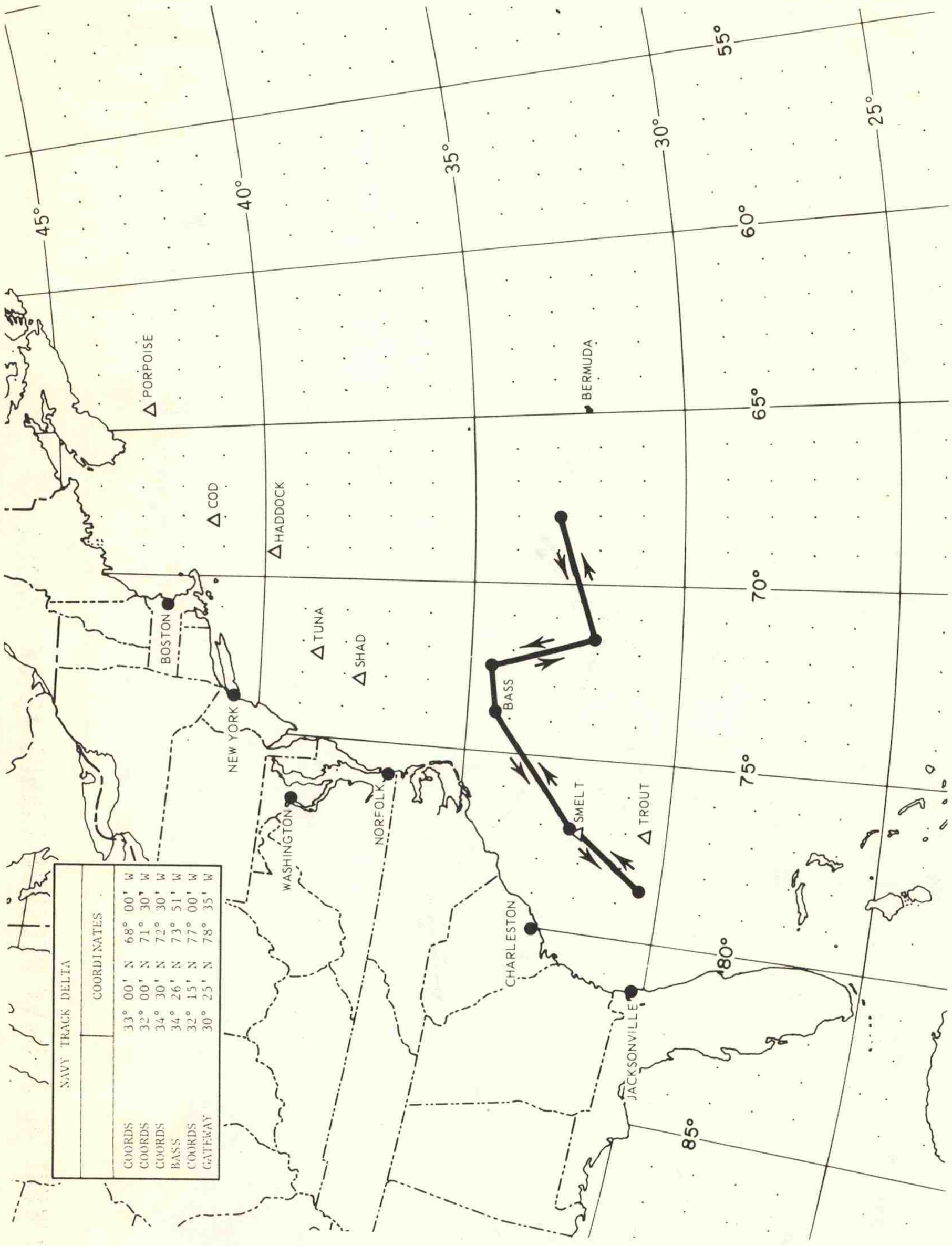


FIGURE 4C-4. NAVY RECONNAISSANCE TRACK DELTA

WS Form G-12
11-70
(Formerly WB Form 611-6)

U. S. DEPARTMENT OF COMMERCE

RECCO CODE

(Aerial Meteorological Reconnaissance Reporting Code)

Section	Symbol	Description	See Table	See Note
Section 1 — MANDATORY	9 xxx 9	Group	1	8
	GGgg	Time (GCT) of Observation (hours and minutes)		9
	i_u	Humidity Indicator	2	
	Y	Day of Week	3	9
	Q	Octant of Globe	4	
	$L_aL_aL_a$	Latitude (In tens, units, and tenths of degrees)		10
	$L_oL_oL_o$	Longitude (In tens, units, and tenths of degrees)		10
	B	Turbulence	5	11
	f_c^t	Flight Conditions	6	12
	hhh	True Altitude of Aircraft (100s of ft. or decameters above m. s. l.)		13
	d_t	Type of Wind at Flight Altitude	7	14
	d_a	Reliability of Wind at Flight Altitude	8	15
	dd	Wind Direction at Altitude "hhh" (10s of degrees, true)		15
	fff	Wind Speed at Altitude "hhh" (knots)		
	TT	Temperature (In Whole Degrees Celsius)		16
	T_dT_d	Dew Point (In Whole Degrees Celsius)		17
	w	Present Weather	9	18
	m	Remarks on Present Weather	10	19
	j	Index pertaining to HHH	11	
	HHH	Altitude and Other Data		
Section 2 — OPTIONAL	1	Group Indicator		20
	k_n	Total Number of Cloud Layers Reported		21
	N_1	Cloud Amount (1st. layer) — Ascending Order	12	22
	N_2	Cloud Amount (2nd. layer) — Ascending Order		
	N_3	Cloud Amount (3rd. layer) — Ascending Order		
	C	Cloud Type	13	23–25
	hh	Altitude of Base of Cloud Type Reported by C	14	
	HH	Altitude of Top of Cloud Type Reported by C		
	C	Cloud Type	13	23–25
	hh	Altitude of Base of Cloud Type Reported by C	14	
	HH	Altitude of Top of Cloud Type Reported by C		
	C	Cloud Type	13	23–25
	hh	Altitude of Base of Cloud Type Reported by C	14	
	HH	Altitude of Top of Cloud Type Reported by C		
	4	Group Indicator		26
	dd	Direction of Surface Wind (10s of degrees true)		27
	ff	Wind Speed at Surface (knots)		28
	5	Group Indicator		26
	D	Direction of Surface Wind	15	29
	F	Force of Surface Wind	16	30
	S	State of Sea	17	
	D_x	Direction of Swell	15	31
		Plain Language Remarks		54 – 55

FIGURE 4D-1. STANDARD RECONNAISSANCE CODE

DROPSONDE CODE

Dropsonde. Sounding data observed from a dropsonde released from an aircraft shall be reported by means of the World Meteorological Organization (WMO) code form FM 36.E (TEMP SHIP). The dropsonde data may be added either to the flight level report or sent as a separate report.

a. When the dropsonde data are added to Section 2 of RECCO, the indicator group 71717 precedes the coded sounding data (FM 36.E). In this instance, two minor alterations are made in FM 36.E --the M_iM_i group is omitted from the report and CG is reported to the nearest quarter hour. The nearest quarter of an hour is indicated by adding 25, 50, or 75 to the actual number of hours.

   When the minute lies between 52 1/2 and 07 1/2 minutes, nothing is added to the hour; for example, times between 0152 1/2 to 0207 1/2 are coded 02. When the minute lies between 07 1/2 and 22 1/2 minutes, 25 is added to the hour; for example, times between 0307 1/2 to 0322 1/2 are coded 28. When the minute lies between 22 1/2 and 37 1/2 minutes, 50 is added to the hour; for example, times between 1122 1/2 to 1137 1/2 are coded 61. When the minute lies between 37 1/2 to 52 1/2 minutes, 75 is added to the hour; for example, times between 2037 1/2 to 2052 1/2 are coded 95.

b. When the dropsonde data are sent as a separate report, the TEMP SHIP form of message (FM 36.E) is preceded by the key group 9xxx9 and 71717.

c. The location and time (to the nearest quarter hour) at which the dropsonde was ejected from the aircraft shall be given in the $YQL_aL_aL_a$ and $L_oL_oL_oGG$ groups of TEMP SHIP (FM 36.E).

Following are general notes which apply to the coding of sounding data obtained by aircraft.

a. Whenever practicable, extrapolated data are reported for $P_oP_oP_o$, T_oT_o, and $T_{do}T_{do}$. If extrapolated data are not available for these elements, the surface groups are omitted from the report.

b. If tenths values of air and dew point temperatures are not reported, a zero is coded for T_{xo}, T_{x1}, T_{x2}, etc.

WINTER STORM PLAN OF THE DAY FORMAT

FM: OL-G HQ AWS CARCAH/RUCJBBF CORAL GABLES FLA.

TO: AIG 8368 (VIA DIAL TWX TO HOMESTEAD AFB FLA TWX #305-248-0151)
O/EASTERN SEA FRONTIER
GT22117
7072

- -

UNCLAS CARCAH SENDS ______________________

AMENDMENT NO. ______________ TO

WINTER STORM
RECON POD FROM ________Z________TO________Z________FOLLOWS

		1. ________	2. ________	3. ________	4. ________
CONTROL POINT TIME	A.	/ Z	/ Z	/ Z	/ Z
CALL SIGN (TRACK/STORM OCEANO)	B.	________	________	________	________
ETD	C.	/ Z	/ Z	/ Z	/ Z
DEPARTURE PT	D.	________	________	________	________
ENROUTE ALT	E.	________	________	________	________
FCST STORM PSN	F.	N W	N W	N W	N W
DESTINATION	G.	________	________	________	________
TRACK/FLT PAT-TERN	H.	________	________	________	________
FCST MOVEMENT	I.	/	/	/	/
SUCCEEDING DAY	J.	________	________	________	________
REMARKS	K.	________	________	________	________

REQUIREMENTS PRIOR TO 1830Z
DISSEMINATE PRIOR TO 2000Z

CHAPTER 5

OBSERVATIONS

1. Surface Weather Observational Network. To provide the basic weather data for analysis purposes, all available surface data are used. The following stations provide data:

a. Weather offices (WSO/WSFO) and Automatic Meteorological Observing Stations (AMOS).

b. FAA weather reporting stations (FSS and Towers).

#c. Supplementary weather reporting stations including: Supplementary Aviation Weather Reporting Stations (SAWRS); part-time, paid, and cooperative aviation and synoptic weather reporting stations; and Coast Guard facilities. In addition, surface observations are made by the Marine Reporting Station (MARS) Network shown in figure 5-1 and identified in table 6-1. On request, MARS stations will report on a specified schedule (hourly when required). These MARS reports are transmitted on Radar Report and Warning Coordination Circuits (RAWARC) 23420 or 23421 and/or Circuit 7072. Non-routine observations can be requested from the Supplementary Marine Reporting Station (SMARS) Network by NWS offices.

d. DOD weather reporting stations. These stations take observations and transmit coded observational data at regularly scheduled intervals. Transmissions are made hourly and even more frequently for aviation purposes, every 3 and 6 hours for synoptic map preparation, and daily for climatological purposes.

e. Cooperating ships, Ocean Weather Station HOTEL (4YH) (hourly observations including 3- and 6-hourly synoptic observations), Coast Guard facilities, and NOAA Buoys EB-01 and EB-13.

2. Radiosonde/Rawinsonde Observing Stations.

a. Rawinsonde observations are scheduled twice daily, 0000Z and 1200Z, at stations in the domestic radiosonde network (fig. 5-2). These stations also take special observations when required and requested by the agency concerned. Evaluated data from the routine soundings are transmitted over the Service C and Comet II teletypewriter systems in the regulation radiosonde code. Data from special soundings requested for potential or existing severe weather situations are transmitted by means of RAWARC and other appropriate communications circuits.

b. The Naval Air Technical Training Command (NATTC), Lakehurst, N.J., takes unscheduled rawinsonde observations which might be a potential source of data under certain conditions. Observations may be requested from NATTC, Autovon 624-2228 or commercial 201-323-2228. Requests for special upper air observations will be limited to one or two soundings during any particular weather situation.

MARINE REPORTING STATIONS

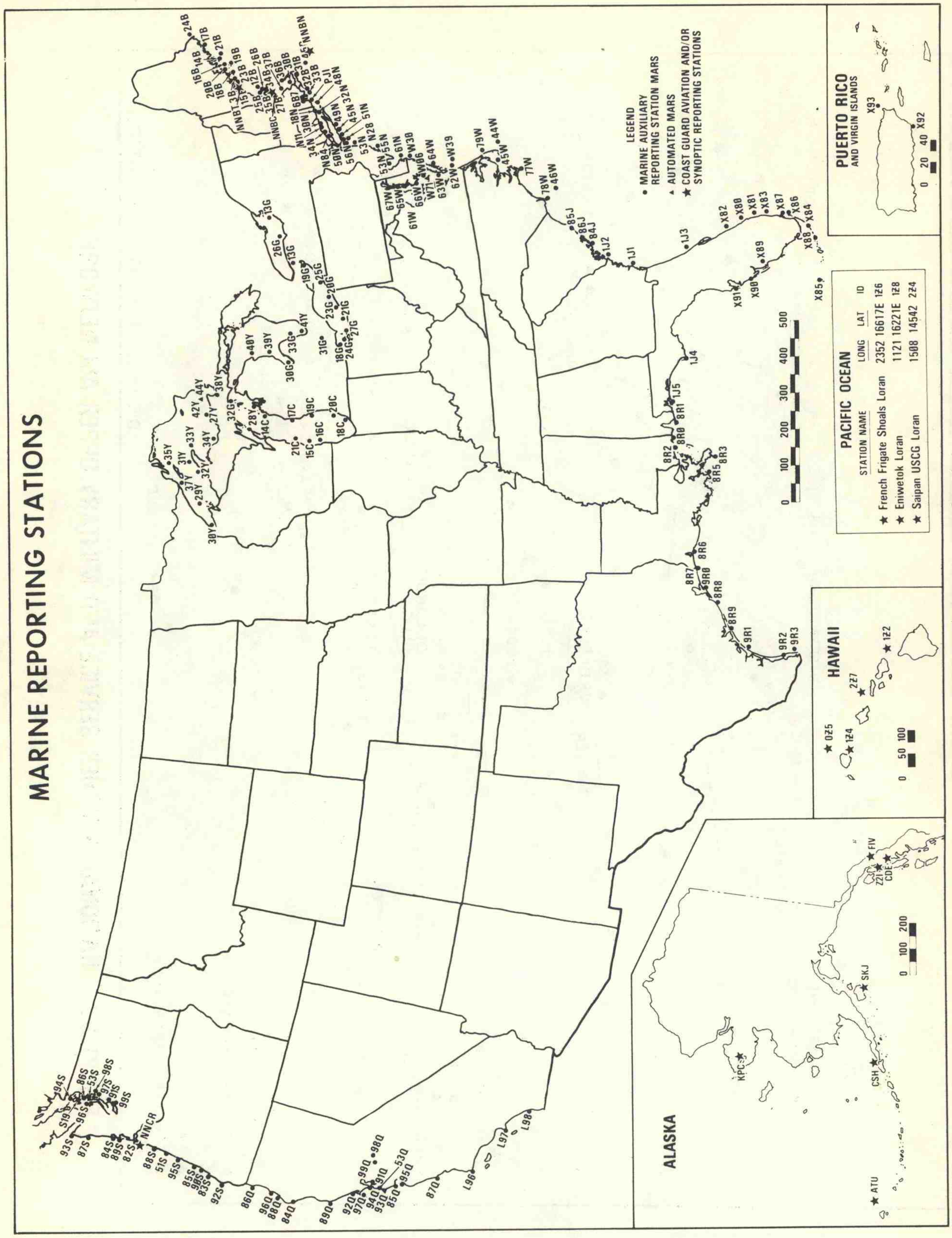
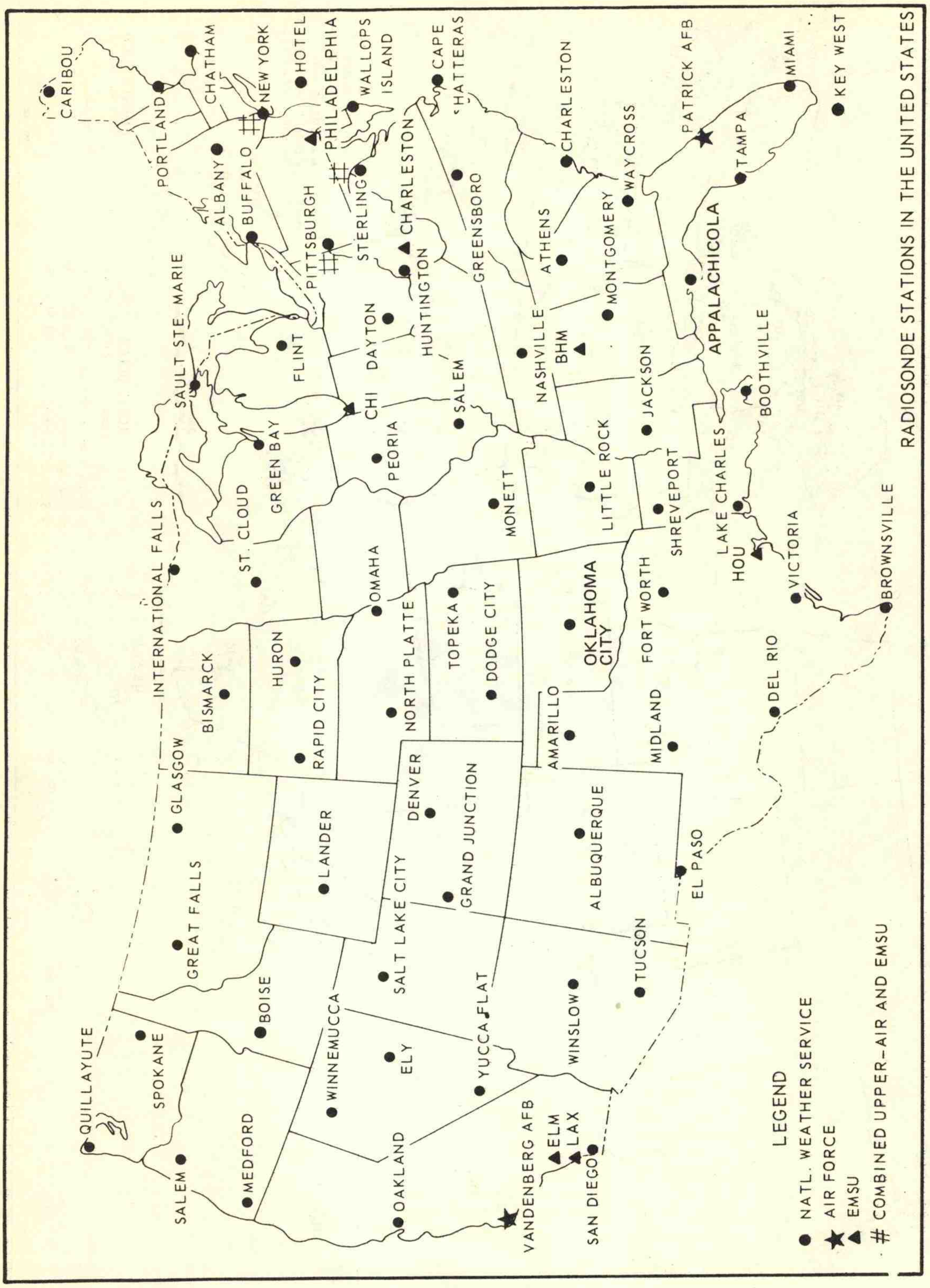


FIGURE 5-1. MARS NETWORK



 # FIGURE 5-2. NATIONAL WEATHER SERVICE AND MILITARY UPPER AIR NETWORK

#c. Low-level radiosonde soundings (to 700 mb) are scheduled twice daily, Monday through Friday (except holidays), near sunrise and noon by the Environmental Meteorological Support Units (EMSU) at WSFO Philadelphia, Pa., and WSFO Charleston, W. Va. Low level soundings are also taken at noon Monday through Friday at WSMO Pittsburgh, and WSMO New York (Ft. Totten). These EMSUs will take special observations upon request by the responsible Weather Service Forecast Office (WSFO). Regular observations are scheduled for transmission over the Service C teletypewriter system, and specials are transmitted over the RAWARC.

#d. Rawinsonde observations at 0000 and 1200 GMT and rawins at 0600 and 1800 GMT are made on Ocean Weather Station HOTEL (4YH) and are transmitted to Coast Guard Radio Station, Washington (NMH) where they are placed on National Weather Service teletypewriter Circuit 7072. Special upper air observations can be obtained as necessary from Ocean Weather Station HOTEL when ships manning this station are on station or en route to or from station. Requests for such special observations should be directed to the Regional Warning Coordination Center, National Weather Service, New York. Hourly surface reports are transmitted in the same manner, and special surface observations can be requested by the same procedure. Hourly radar reports are transmitted from Ocean Weather Station HOTEL when the USCGC TANEY is on the station.

3. Radar Observing and Reporting Plans.

a. Radar data for use in support of this Plan are available from radars of the National Weather Service Radar Network (fig. 5-3) located in the area of concern. This network, composed mainly of WSR-57 radars, is also supplemented by Navy and Air Force weather radars (Appendix 5-A). Selection of radars for the Network was made on the basis of attaining the maximum required data and coverage with a minimum number of radars.

(1) National Weather Service radar observations are transmitted hourly on RAWARC at H+35 in the Weather Bureau - Air Force - Navy (WBAN) Radar Report (RAREP) code. More frequent observations are taken and transmitted in severe weather situations.

(2) At approximately the same time (H+45), RAREPs are available from AWS stations.

(3) The National Weather Service, Navy, and Air Force have other radars which are not a part of the primary network. These radars are mainly used for local warning purposes, but on occasion they do enter reports on communication circuits (fig. 5-3 shows other National Weather Service radars).

(4) A number of WSOs in the Plan's area of responsibility have remote displays from nearby radars of the National Weather Service Radar Network. These displays are within about 75 n. mi. of the radar site and contain information on heights, intensity, and velocity of the radar echoes. Some WSFOs have the dial-call capability to permit receipt of radar data from any radar station within the area of forecast responsibility. These WSFOs may obtain radar data when needed to assist with specific weather forecast problems.

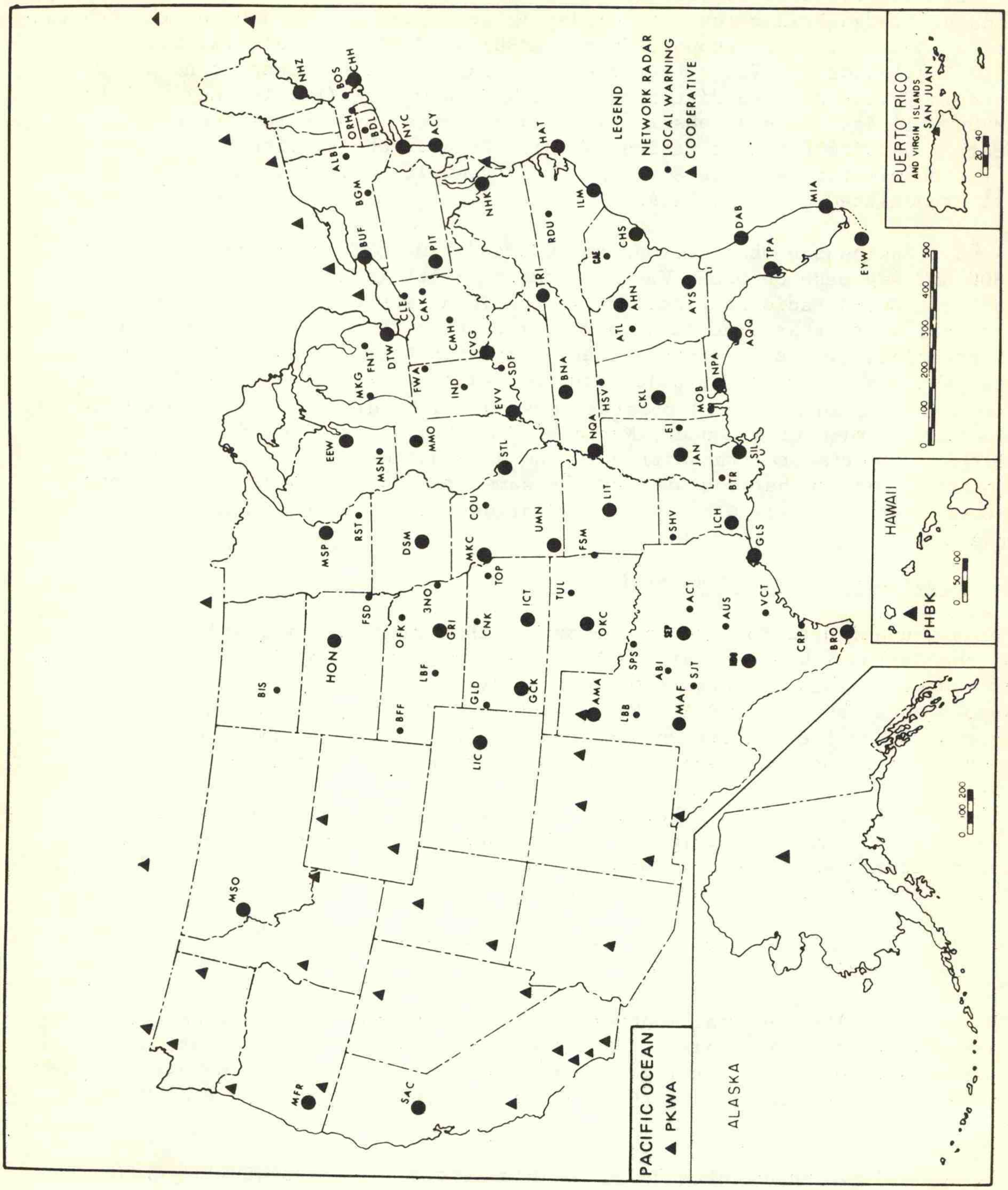


FIGURE 5-3. NATIONAL WEATHER SERVICE RADAR NETWORK

b. A number of Aerospace Defense Command (ADC) radar sites are capable of detecting and interpreting weather echoes. Operational commitments permitting, these sites will provide supplementary reports upon request.

c. The FAA has a number of ARTCCs that also participate in this program. National Weather Service radar meteorologists possessing proper security clearance are permitted access to ARTCCs for the purpose of recording and transmitting radar observations (Appendix 5-B).

d. Procedures for taking radar observations will be those given in the Weather Radar Manual (WBAN).

e. A list of participating National Weather Service, Navy, Air Force, Cooperators, ARTCCs, ADC, and Aircraft Control and Warning (AC&W) radar stations is included in Appendix 5-A.

4. Cooperative Marine Observing Program. Observational data are required from marine areas to complete meteorological analysis. Synoptic observations are taken aboard cooperative merchant ships of U.S. registry and of other maritime nations when they are at sea. Many of these ships transmit reports by radio to shore-based communication centers where the data are entered on meteorological circuits. The WSFOs at Boston, New York, Philadelphia, Washington, Columbia, S.C., Raleigh-Durham, N.C., Atlanta, Ga., and Miami may obtain special ship reports. (Details for procedures to obtain these reports are listed in Weather Service Operations Manual, Chapter B-90.) The following procedures are used:

a. Requesting radio shore stations to make a direct call for ship reports in a given area.

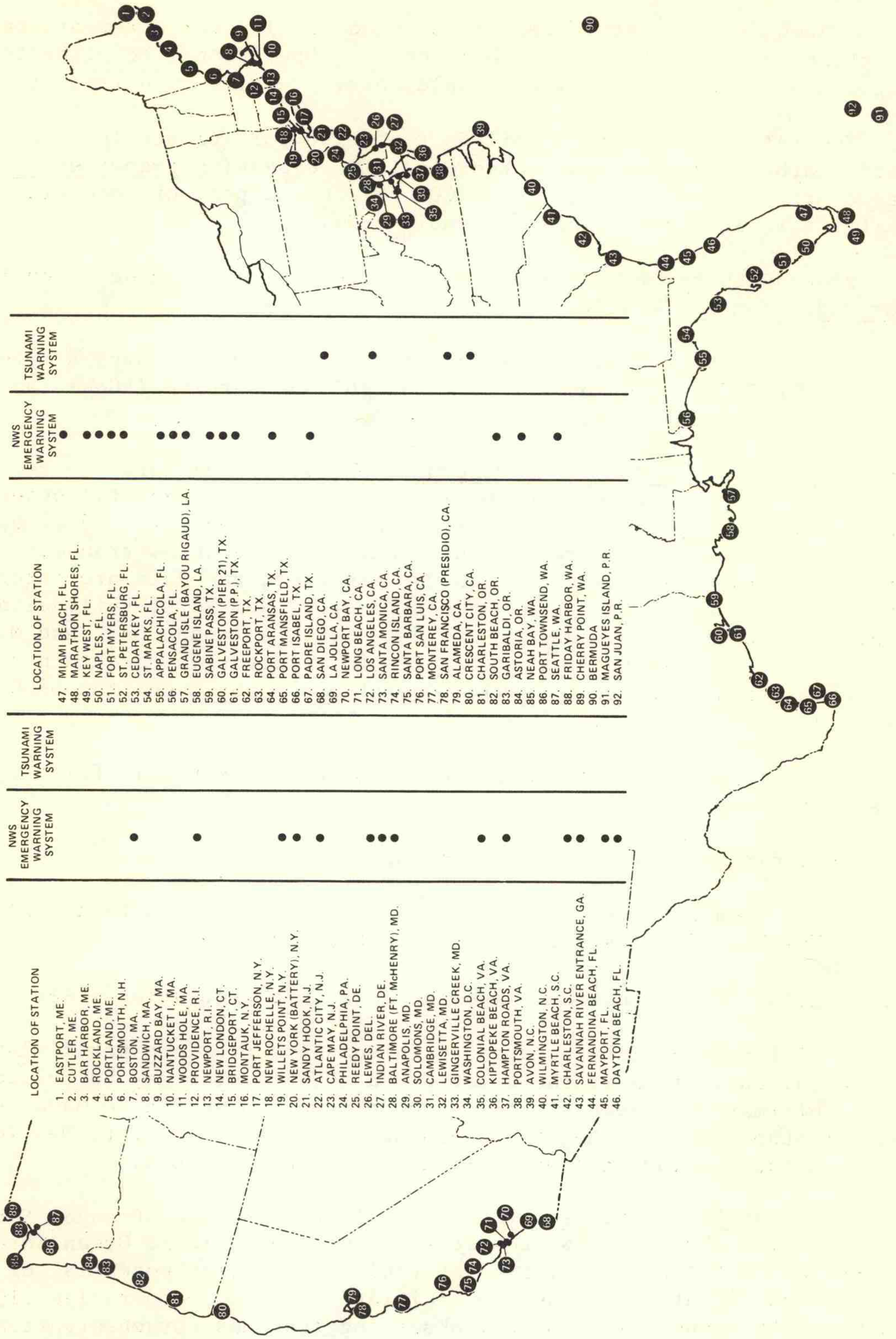
b. Including request in NAM Marine Broadcast.

c. Initiating a request from local Coast Guard offices to the AMVER system in New York for listing of ships in the WSFO's area.

d. Sending of an individual message to a ship requesting observation.

If information is needed as to which ships are in a particular area of the ocean, facilities of the Coast Guard AMVER System may be called upon for this information. Requests for such information should be made by the National Weather Service, Regional Warning Coordination Center, New York, to the Commander, Atlantic Area, U.S. Coast Guard, New York.

5. Tide Height Reporting Network. Coastal offices have arranged for cooperative tide observations from stations of the National Ocean Survey Tide Observation Network (fig. 5-4 and table 5-1) during potential or actual warning situations. The WSOs initiate calls to cooperative tide stations and to cooperative coastal observing stations for observations whenever needed. Supplemental observations are placed on RAWARC or phoned to the appropriate WSFO. Table 5-2 indicates these WSOs that are equipped with tide recorders and tide gages from which they receive their information.



	LOCATION OF STATION	NWS EMERGENCY WARNING SYSTEM	TSUNAMI WARNING SYSTEM
1.	EASTPORT, ME.		
2.	CUTLER, ME.		
3.	BAR HARBOR, ME.		
4.	ROCKLAND, ME.		
5.	PORTLAND, ME.		
6.	PORTSMOUTH, N.H.		
7.	BOSTON, MA.	•	
8.	SANDWICH, MA.		
9.	BUZZARD BAY, MA.		
10.	NANTUCKET I., MA.		
11.	WOODS HOLE, MA.		
12.	PROVIDENCE, R.I.	•	
13.	NEWPORT, R.I.		
14.	NEW LONDON, CT.		
15.	BRIDGEPORT, CT.		
16.	MONTAUK, N.Y.		
17.	PORT JEFFERSON, N.Y.		
18.	NEW ROCHELLE, N.Y.		
19.	WILLETS POINT, N.Y.	••	
20.	NEW YORK (BATTERY), N.Y.	••	
21.	SANDY HOOK, N.J.		
22.	ATLANTIC CITY, N.J.	•	
23.	CAPE MAY, N.J.		
24.	PHILADELPHIA, PA.		
25.	REEDY POINT, DE.		
26.	LEWES, DEL.	••	
27.	INDIAN RIVER, DE.	••	
28.	BALTIMORE (FT. McHENRY), MD.	••	
29.	ANAPOLIS, MD.		
30.	SOLOMONS, MD.		
31.	CAMBRIDGE, MD.		
32.	LEWISETTA, MD.		
33.	GINGERVILLE CREEK, MD.		
34.	WASHINGTON, D.C.		
35.	COLONIAL BEACH, VA.	•	
36.	KIPTOPEKE BEACH, VA.	•	
37.	HAMPTON ROADS, VA.	•	
38.	PORTSMOUTH, VA.		
39.	AVON, N.C.		
40.	WILMINGTON, N.C.		
41.	MYRTLE BEACH, S.C.		
42.	CHARLESTON, S.C.	••	
43.	SAVANNAH RIVER ENTRANCE, GA.	••	
44.	FERNANDINA BEACH, FL.		
45.	MAYPORT, FL.	••	
46.	DAYTONA BEACH, FL.	••	
47.	MIAMI BEACH, FL.	•	
48.	MARATHON SHORES, FL.		
49.	KEY WEST, FL.	••	
50.	NAPLES, FL.	••	
51.	FORT MYERS, FL.	••	
52.	ST. PETERSBURG, FL.	••	
53.	CEDAR KEY, FL.		
54.	ST. MARKS, FL.		
55.	APPALACHICOLA, FL.	••	
56.	PENSACOLA, FL.	••	
57.	GRAND ISLE (BAYOU RIGAUD), LA.	••	
58.	EUGENE ISLAND, LA.		
59.	SABINE PASS, TX.	••	
60.	GALVESTON (PIER 21), TX.	••	
61.	GALVESTON (P.P.), TX.	••	
62.	FREEPORT, TX.		
63.	ROCKPORT, TX.	•	
64.	PORT ARANSAS, TX.		
65.	PORT MANSFIELD, TX.		
66.	PORT ISABEL, TX.		
67.	PADRE ISLAND, TX.	•	
68.	SAN DIEGO, CA.		•
69.	LA JOLLA, CA.		
70.	NEWPORT BAY, CA.		
71.	LONG BEACH, CA.		•
72.	LOS ANGELES, CA.		
73.	SANTA MONICA, CA.		
74.	RINCON ISLAND, CA.		
75.	SANTA BARBARA, CA.		
76.	PORT SAN LUIS, CA.		
77.	MONTEREY, CA.		
78.	SAN FRANCISCO (PRESIDIO), CA.		••
79.	ALAMEDA, CA.		
80.	CRESCENT CITY, CA.		••
81.	CHARLESTON, OR.		
82.	SOUTH BEACH, OR.		
83.	GARIBALDI, OR.	•	
84.	ASTORIA, OR.	•	
85.	NEAH BAY, WA.		
86.	PORT TOWNSEND, WA.		
87.	SEATTLE, WA.	•	
88.	FRIDAY HARBOR, WA.		
89.	CHERRY POINT, WA.		
90.	BERMUDA		
91.	MAGUEYES ISLAND, P.R.		
92.	SAN JUAN, P.R.		

 # FIGURE 5-4. NATIONAL OCEAN SURVEY TIDE OBSERVATION NETWORK—CONTERMINOUS U.S.A.

TABLE 5-1. TIDE HEIGHT REPORTING NETWORK STATIONS

WSFO, Portland, Maine			
Eastport, Me.	44°54'N	66°59'W	On Request*
Bar Harbor, Me.	44°23'N	68°12'W	
Portland Harbor, Me.	43°40'N	70°15'W	
Portsmouth, N.H.	43°05'N	70°44'W	
WSFO, Boston, Mass.			
Appraisers Stores Wharf, Mass.	42°21'N	71°03'W	Bristol Recorder-WS
Cape Cod Canal (East), Mass.	41°46'N	70°30'W	On Request*
Cape Cod Canal (West), Mass.	41°44'N	70°37'W	
Wareham, Mass.	41°45'N	70°43'W	
Marion, Mass.	41°42'N	70°46'W	
Harwich Port, Mass.	41°40'N	70°04'W	
North Falmouth, Mass.	41°39'N	70°39'W	
Hyannis Port, Mass.	41°38'N	70°18'W	
Osterville, Mass.	41°37'N	70°24'W	
Woods Hole, Mass.	41°31'N	70°40'W	
New Bedford Hurricane Barrier, Mass.	41°37'N	70°54'W	
Steamboat Wharf, Mass.	41°17'N	70°06'W	
WSO Providence, R.I.			
State Pier, R.I.	41°48'N	71°24'W	Bristol Recorder-WS
Providence-Narragansett Elec., R.I.	41°49'N	71°24'W	On Request*
Fox Point Hurricane Barrier, R.I.	41°49'N	71°24'W	
Newport, R.I.	41°30'N	71°20'W	
Galilee, R.I.	41°23'N	71°31'W	
Stonington, Conn.	41°20'N	71°54'W	
Block Island, R.I.	41°10'N	71°33'W	
WSO Bridgeport, Conn.			
Bridgeport Harbor, Conn.	41°11'N	73°11'W	On Request*
WSO Hartford, Conn.			
New London, Conn.	41°22'N	72°06'W	On Request*
WSFO New York, N.Y.			
New York City (Battery), N.Y.	40°42'N	72°11'W	Bristol Recorder-WSO
Willets Point, N.Y.	40°48'N	73°47'W	Bristol Recorder-WSO(LGA)
Great South Bay, N.Y.	40°43'N	73°14'W	Bristol Recorder-WSFO
Stamford, Conn.	41°03'N	73°33'W	On Request*
Montauk (Ft. Pond Bay), N.Y.	41°03'N	71°58'W	
Port Jefferson, N.Y.	40°57'N	73°05'W	
Sandy Hook Ft. Hancock, N.J.	40°25'N	74°01'W	
WSO, Atlantic City, N.J.			
Steel Pier, N.J.	39°21'N	74°25'W	Bristol Recorder-WS
Mays Landing, N.J.	39°27'N	74°44'W	On Request*

TABLE 5-1. TIDE HEIGHT REPORTING NETWORK STATIONS (Continued)

WSO, Atlantic City, N.J. (Cont'd)			
Atlantic City, Marina. N.J.	39°22'N	74°26'W	On Request*
Atlantic City Electric, N.J.	39°22'N	74°26'W	Recorder at A.C. Electric
Cape May. N.J.	38°58'N	74°58'W	
WSO, Philadelphia, Pa.			
Breakwater Harbor, Del.	38°47'N	75°06'W	Bristol Recorder-WS
Philadelphia Electric Co., Pa.	39°57'N	75°08'W	Bristol Recorder-WS
Reedy Point, Del.	39°34'N	75°34'W	Recorder Phila. Elec.
Morrisville, Pa.	40°10'N	74°45'W	
Burlington, N.J.	40°05'N	74°52'W	
Richmond, Pa.	39°59'N	75°05'W	
Schuylkill River, Pa.	39°57'N	75°12'W	On Request*
Gulf Oil Co., Pa.	39°54'N	75°13'W	
Fort Mifflin, Pa.	39°52'N	75°13'W	
Chester, Pa.	39°51'N	75°21'W	
Deepwater, N.J.	39°41'N	75°30'W	
WSO, Wilmington, Del.			
Indian River Inlet, Del.	38°37'N	75°04'W	Bristol Recorder-WS
WSO, Baltimore, Md.			
Fort McHenry, Md.	39°16'N	76°35'W	Bristol Recorder-WS
Sparrows Point, Md.	39°13'N	76°29'W	
Annapolis, Md.	38°59'N	75°34'W	On Request *
Gingerville Creek, Md.	38°58'N	76°33'W	
Cambridge, Md.	38°34'N	76°04'W	
Port Republic, Md.	38°30'N	76°30'W	0800-1700E
Ocean City, Md.	38°20'N	75°06'W	0800-1700E *
Solomons, Md.	38°19'N	76°28'W	0730-1700E *
Piney Point, Md.	38°08'N	76°32'W	0800-1700E
Crisfield, Md.	37°59'N	75°52'W	0800-1700E
WSFO Washington, D. C.			
Colonial Beach, Va.	38°15'N	76°58'W	Bristol Recorder-WS
Wisconsin Ave.	38°54'N	77°04'W	On Request*
Dahlgren, Va.	38°19'N	77°02'W	Report at given criteria
WSFO Norfolk, Va.			
Tide Reporting Stations, with Recorders			
Sewells Point, Va. (Norfolk)	36°57'N	76°18'W	Esterline Angus-WS
Portsmouth, Va. (Shipyard)	36°49'N	76°18'W	Esterline (on call Navy)
Portsmouth, Va.	36°49'N	76°18'W	Esterline (on call)
Norfolk, Va.	36°50'N	76°17'W	On call City of Norfolk
West Point, Va.	37°32'N	76°49'W	Foxboro (Chesapeake Corp. on call)
Ft. Norfolk, Va.	36°51'N	76°18'W	On call Corp.
Wallops Island, Va.	37°51'N	75°29'W	(WSO) NASA

TABLE 5-1 TIDE HEIGHT REPORTING NETWORK STATIONS (Continued)

Stations with Staff Tidal Gages--heights available on call, when needed.

WSFO Norfolk, Va. (Cont'd)			
Windmill Point, Va.	37°37'N	76°17'W	
Coinjock, N.C. (Army Eng.)	36°21'N	75°58'W	On Request*
Edenton, N.C. (Displayman)	36°04'N	76°37'W	
Bodie Island, N.C.	35°48'N	75°33'W	(Nat'l Park Service)
Kiptopke Beach, Va.	37°10'N	75°59'W	
WSO Cape Hatteras, N.C.			
Avon Pier, Avon, N.C.	35°21'N	75°30'W	Bristol Recorder-WS
WSO Wilmington, N.C.			
Wrightsville Beach, N.C.	34°13'N	77°47'W	Esterline Angus-WS
Holden Beach, N.C.	33°54'N	78°19'W	
Stumpy Point, N.C.	35°42'N	75°46'W	
Washington, N.C.	35°33'N	77°04'W	
Bellhaven, N.C.	35°32'N	76°38'W	
Hobucken Hwy. Bridge, N.C.	35°15'N	76°35'W	
New Bern, N.C.	35°06'N	77°03'W	On Request*
Cherry Point, N.C.	34°56'N	76°52'W	
Atlantic Beach, N.C.	34°42'N	76°44'W	
Topsail Island, N.C.	34°22'N	77°38'W	
Wilmington (Princess St.), N.C.	34°14'N	77°57'W	
Wrightsville Sound, N.C.	34°13'N	77°48'W	
WSO Charleston, S.C.			
State Pier #2, S.C.	32°47'N	79°55'W	Bristol Recorder-WS
Myrtle Beach, N.C.	33°41'N	78°53'W	
Georgetown, S.C.	33°22'N	79°17'W	
U.S. Naval Base, S.C.	32°52'N	79°58'W	
Municipal Yacht Basin	32°47'N	79°57'W	On Request*
Parris Island (USMCRS), S.C.	32°20'N	80°40'W	
Hilton Head Island, S.C.	32°13'N	80°44'W	
WSO Savannah, Ga.			
Fort Pulaski, Ga.	32°02'N	80°54'W	Bristol Recorder-WS
WSO Jacksonville, Fla.			
Mayport, Fla.	30°24'N	81°26'W	Bristol Recorder-WS
Fernandina, Fla.	30°40'N	81°28'W	On Request*

*On request during daylight hours and on a 24-hour basis during storms.

TABLE 5-2. WEATHER SERVICE OFFICES EQUIPPED WITH REMOTE TIDE RECORDERS

WEATHER SERVICE STATION	LOCATION OF TIDE GAGE
1. Boston	South Boston Docks
2. Providence	State Pier
3. New York (a) City Office	Battery
(b) La Guardia Airport	Willets Point, N.Y.
(c) WSFO	Great South Bay
4. Atlantic City	Steel Pier
5. Philadelphia	(1) Breakwater Harbor
	(2) Delaware River (owned by Phila. Electric Co.)
6. Wilmington, Del.	Indian River Inlet
7. Baltimore	Fort McHenry
8. Washington	Colonial Beach
9. Norfolk	Sewells Point, Va.
10. Cape Hatteras, N.C.	Avon Pier
11. Wilmington, N.C.	(1) Wrightsville Beach } Coe Wavegage #
	(2) Holden Beach } Coe Wavegage #
12. Charleston, S.C.	State Pier No. 2
13. Savannah	Fort Pulaski (Cockspur Is.)
14. Jacksonville	Mayport

#6. Satellite Observations.

a. Department of Commerce, National Oceanic and Atmospheric Administration, National Environmental Satellite Service (NESS).

(1) The following types of data from satellites are available for surveillance of storms:

(a) Direct readout pictures from the Automatic Picture Transmission (APT) System on the Environmental Survey Satellite, ESSA 8, at approximately 1000 local time.

(b) Very High Resolution Radiometer (VHRR) data from NOAA 2 and NOAA 3. (See footnote Table 5-3)

(c) Full earth disc, visible and infrared (IR), as well as visible and equivalent IR sectors from SMS-1. Data will be made available to WSFO's in near real time through the Central Data Distribution System (CDDS) at the World Weather Building.

(2) The improved TIROS operational satellites, designated NOAA 2 and 3 provide the following types of data:

(a) Direct readout of visible and IR data from the Scanning Radiometer at 0900 and 2100 local time, respectively.

(b) Stored visible and IR data from the Scanning Radiometer at 0900 and 2100 local time, respectively.

(c) Atmospheric soundings from the Vertical Temperature Profile Radiometer (VTPR) at 0900 and 2100 local time.

(d) Data from the VHRR. This instrument is similar to the Scanning Radiometer and produces data of higher resolution (0.5 nautical mile at subpoint for both visible and IR data compared to 2 nautical miles for visible and 4 nautical miles for IR from the scanning radiometer). The data from the VHRR for 0900 and 2100 local time is available on a delayed basis.

(3) The Synchronous Meteorological Satellite (SMS-1) also known as the Geostationary Operational Environmental Satellite (GOES), is now the primary source of satellite information. Data from this satellite are available at the NESS/Satellite Field Services Stations (SFSS) at Washington and Miami, which are collocated with the Washington WSFO and and the National Hurricane Center, respectively. Data from SMS-1 (GOES) presently available to the Eastern Region are listed in Table 5-3.

(4) All satellite data for the east coast are available at the National Environmental Satellite Service (NESS), World Weather Building, Marlow Heights, Maryland. The APT and Direct Readout Scanning Radiometer data are available to the NWS Forecast Offices directly. The Advanced Vidicon Camera System and stored Scanning Radiometer data are transmitted in digitized mapped format on facsimile circuits.

(5) Meteorologists of the NESS Synoptic Analysis Section personally confer with meteorologists of the NMC. The Washington Satellite Field Services Station (SFSS), collocated with the NWS Washington WSFO, is available to all Eastern Region stations via phone (area code 301, 763-8425 or 8424) 24 hours/day, seven days a week.

(6) Satellite Narratives (TBXX6) from the SFSSs at DCA and MKC are available through the FAA Request/Reply teletype circuit. All WSFOs in the Eastern and Central Regions receive these automatically as transmitted from the SFSSs. However, other users such as those WSOs which are collocated with FAA-FSS may also have access to these narratives by using the standard Request/Reply Teletype capability of the FSS. For receipt of Eastern Region narratives the code is: RC TBXX6 KWBC. For receipt of the Central Region narratives it is: RC TBXX6 KMKC. The Kansas City SFSS prepares four narratives per day (0200Z, 0800Z, 1400Z, 2000Z). The Washington SFSS prepares at least 6 narratives per day. Messages will be stored in the FAA's computer's memory bank for a maximum of 6 hours. However, the old messages are automatically erased as soon as an update narrative is issued.

(7) A summary of satellites and satellite data availability from NOAA satellites is shown in Table 5-3.

#b. Department of Defense

(1) The Defense Meteorological Satellite Program (DMSP) routinely has two satellites collecting meteorological imagery and vertical temperature profile data. One satellite is in an early morning/evening orbit, approximately 0700/1900 local equator crossing time. The second is in a noon/midnight orbit, approximately 1200/2400 local equator crossing time. Normal data acquisition covering the East Coast Winter Storm's area is as follows:

(a) Two nautical mile resolution visual (0.4-1.1 um) and infrared (8-13 um) day and nighttime data, and vertical temperature profile data are collected at 0700, 1200, 1900 and 2400 local time.

(b) One-third nautical mile resolution visual (0.4-1.1 um) data are collected at 0700 and 1200 local time.

(c) One-third nautical mile resolution infrared (8-13 um) data are collected at 0700 local time during the winter months north of about 35 degrees North.

Table 5-3. Department of Commerce satellites and satellite data availability.

Satellite	Type of data	Local Time	NESS products	Methods of distribution
ESSA 8	APT (direct)	Approx. 1000	1. Analog pictures 2. APT Vidio Signal	FOFAX Telephone WEFAX Direct Data Quality Lines to SFSSs & WSFOs display units from the CDDS.
NOAA 2, 3 and NOAA 4*	SR (stored) DRSR (direct) VTPR VHRR	0900-2100	1. Mapped digitized SR 2. Sea-surface temp. analysis 3. Moisture analyses 4. Temperature soundings	
SMS-1 (GOES)	VISSR	Every 30 minutes (except for PM)	1. 4 n.mi. Resolution (IR) (Full Disk) 2. 2 n.mi. Resolution VIS Sectors 3. 1 n.mi. Resolution VIS Sectors 4. 1/2 n.mi. Resolution VIS Sectors 5. Equivalent IR Sectors	

APT - Automatic Picture Transmission
AVCS - Advanced Vidicon Camera System
CDDS - Central Data Distribution System
DRSR - Direct Readout Scanning Radiometer
ESSA - Environmental Survey Satellite
FOFAX - Forecast Office Facsimile Network
GOES - Geostationary Operational Environmental Satellite
ITOS - Improved TIROS Operational Satellite
PM - Preventative Maintenance
SMS-1 - Synchronous Meteorological Satellite No. 1
VHRR - Very High Resolution Radiometer
VISSR - Visual-Infrared Spin-Scan Radiometer
VTPR - Vertical Temperature Profile Radiometer
WEFAX - Weather Facsimile

*As of October 1, 1974 NOAA 3 is the operational spacecraft and NOAA 2 is backup. After successful launch and checkout, NOAA 4 will become primary; NOAA 3 backup, and NOAA 2 will be deactivated.

(2) All DMSP data will be available at the Air Force Global Weather Central (AFGWC) for support to the East Coast Winter Sotrms Operations Plan. The data collected at 0700 and 1200 local time are available within minutes of sensing; the data collected at 1900 and 2400 local time are available 100 minutes after sensing.

7. Aircraft Pilot Reports (PIREPS).

a. Federal Aviation Administration (FAA).

(1) The present FAA Instrument Flight Rules (IFR) regulation (91.125, radio communications, section b.) requires pilots to report "(b) Any unforecast weather conditions encountered; and . . ."

(2) The ARTCCs are requested to pass PIREPS to FSSs which are required to place them on the Area A System for distribution (fig. 6-5).

(3) The following significant information should be included in PIREPS whenever it is observed:

(a) Moderate or greater turbulence.

(b) Moderate or greater icing.

(c) Hail encountered.

(d) Location of lines of thunderstorms observed on the airborne radar.

(e) Related maximum observed cloud tops of thunderstorms.

8. Coastal and Marine Observations and Operations.

a. Atlantic Seacoast Land Reporting Stations. (U.S. Coast Guard)

(1) Cooperative Network. Many Coast Guard Stations along the east coast are part of the National Weather Service cooperative station network; many north of Cape Hatteras, N.C., also serve as the MARS stations. Still other offshore light towers and lightships are reporting stations.

(2) Scope of Network. Observations from the above Cooperative Network are collected by Coast Guard District Offices (field commands) and passed to local WSOs as follows:

Station Locations		U.S. Coast Guard District Office		Weather Service Facility
Maine through Rhode Island	-	First (Boston)	-	WSFO Boston
Connecticut through Delaware	-	Third (New York City)	-	WSFO New York
Maryland through North Carolina	-	Fifth (Norfolk)	-	WSO Norfolk
South Carolina through Florida	-	Seventh (Miami)	-	WSO Charleston
			-	NHC Miami

(3) Nature of Observations. Both climatological and synoptic reports are associated with the above Cooperative Network.

(4) Requests for Reports. Because arrangements for specific observations have been delegated to local levels, the request for special reports should be originated by the responsible WSO and WSFO and transmitted to the appropriate supervising Coast Guard District Office. In turn, the latter will request designated substations to report on a specified schedule.

b. Environmental Data Buoys (EB-01 and EB-13). (NOAA Data Buoy Office, National Ocean Survey)

(1) Description. Two forty-foot discus buoys, EB-01 and EB-13, are deployed off the east coast and two others, EB-10 and EB-12, are deployed in the Gulf of Mexico to provide scheduled surface information.

Identification Number	Latitude/Longitude	
EB-01	36.5N	73.5W
EB-10	27.5N	88.0W
EB-12	26.0N	94.0W
EB-13	33.0N	75.0W

(2) Environmental Data. Present shore interrogation of buoy data is once every 3 hours, but the system is capable of more frequent interrogation. Meteorological and oceanographic parameters are measured every hour. The meteorological and oceanographic elements sampled and stored aboard the buoy consist of the following:

- wind direction and speed
- atmospheric pressure
- air temperature
- dewpoint temperature
- wave height
- sea-surface temperature
- subsurface temperature

#(3) Mission. The principal objective of these experimental buoys is to provide operational environmental data and to concurrently gather needed engineering and environmental information to aid further development of future prototype operational data buoys. Buoy data are telemetered to

to the U.S. Coast Guard-operated Shore Collection Station at Miami, where they are converted into physical units and then translated into WMO FM21.E ship weather code and transmitted to NMC-Suitland by means of NWS Circuit 7072. Both environmental data and engineering data, which monitor the operation of the buoy, are transmitted to NDBO at the National Space Technology Laboratories, Miss., for data quality checking and buoy performance monitoring purposes. These carefully checked environmental data are sent to the Environmental Data Services, NOAA, for archiving.

(4) Services Organization for the East Coast Storms Warning System. The Shore Collection Station, located at the USCG Radio Station-Miami, routinely collects synoptic information from the buoy eight times daily. Commencing at 0000GMT each day, the 3-hourly synoptic data are transmitted to Suitland within 1 hour of the synoptic time. RWCC requests for special hourly interrogations during critical storm periods will be accommodated by phone request to the Miami Radio Station Duty Office, telephone (305) 233-3062. The start and stop time for special hourly reports should be given, and the requests should be limited to 12-hour consecutive operation unless an emergency exists. In this case, consultation should also be made with the NOAA Data Buoy Office.

System maintenance, calibration, and final data quality verification are under the technical control of the NOAA Data Buoy Office. Requests for system status and schedule information should be directed to the NOAA Data Buoy Office in Mississippi, telephone (601) 688-2836.

c. Special Duty Offshore Weather Ship (Ocean Weather Station HOTEL--4YH). (Coast Guard)

(1) Description. A Coast Guard cutter is deployed to man the Atlantic Ocean Weather Station (OWS) HOTEL in the vicinity of latitude 38°N. and longitude 71°W. (approximately 205 miles south of Martha's Vineyard Island and 200 miles east of the Virginia Capes).

#(2) Time of Manning Station. The OWS HOTEL will be manned continuously during 8 1/2 months of the year (August 1 through April 15) to cover both the east coast storm and hurricane seasons. During June and July, the weather ship will remain on a 24-hour standby status for emergency assignment to station. Thus, a total of 10 1/2 months coverage of OWS site HOTEL is provided.

#(3) Weather Surveillance Radar. A weather surveillance radar (WSR-S1) has been installed aboard the U.S. Coast Guard Cutter TANEY which is the primary ship for the manning of OWS HOTEL. Relief cutters do not have this weather surveillance radar system and hence, this special "storm tracking" capability will be available only during the periods when USCGC TANEY is manning OWS HOTEL--which is scheduled to be about 50% to 60% of the 8 1/2-month OWS HOTEL season.

* RADAR OBSERVING STATION NETWORK

a. National Weather Service

	Radar	Latitude	Longitude
Atlantic City, N.J.	WSR-57	39° 27'N.	74° 34'W
Brunswick, Maine	WSR-57	43° 53'N.	69° 56'W
Cape Hatteras, N.C.	WSR-57M	35° 16'N.	75° 33'W.
Charleston, S.C.	WSR-57	32° 54'N.	80° 02'W.
Chatham, Mass.	WSR-57	41° 39'N.	69° 57'W.
Daytona Beach, Fla.	WSR-57	29° 11'N.	81° 03'W.
New York, N.Y.	WSR-57	40° 46'N.	73° 59'W.
** OWS HOTEL	WSR-S1	38° 00'N.	71° 00'W.
Patuxent, Md.	WSR-57	38° 17'N.	76° 25'W.
Waycross, Ga.	WSR-57M	31° 15'N.	82° 24'W.
Wilmington, N.C.	WSR-57	34° 17'N.	77° 55'W.

b. Department of Defense

Andrews AFB, Md.	FPS-77	38° 49'N.	76° 51'W.
Beaufort MCAS, S.C.	FPS-41	32° 29'N.	80° 44'W.
Cherry Point MCAS, N.C.	FPS-81	34° 54'N.	76° 53'W.
Jacksonville NWSF, Fla.	FPS-106	30° 14'N.	81° 41'W.
Lakehurst NWSED, N.J.	FPS-81	40° 02'N.	74° 20'W.
Loring AFB, Maine	FPS-77	46° 57'N.	67° 53'W.
McGuire AFB, N.J.	FPS-77	40° 01'N.	74° 35'W.
Bermuda NWSED	CPS-9	32° 22'N.	64° 41'W.
Norfolk FWC, Va.	FPS-81	36° 56'N.	76° 18'W.
Pope AFB, N.C.	CPS-9	35° 11'N.	79° 01'W.
Robins AFB, Ga.	FPS-77	32° 38'N.	83° 36'W.
Seymour Johnson AFB, N.C.	FPS-77	35° 20'N.	77° 58'W.
Sudbury, Mass.	CPS-9 and FPS-68	42° 25'N.	71° 29'W.

c. Aerospace Defence Command (ADC) Sites:

(1) 20 NORAD Region Control Centers

632 Radar Sq., Roanoke Rapids AFS, N.C.	36° 27'N.	77° 44'W.
* 645 Radar Sq., Patrick AFB, Fla.	28° 13'N.	80° 36'W.
* 679 Radar Sq., Jacksonville AFS, Fla.	30° 13'N.	81° 41'W.
701 Radar Sq., Fort Fischer AFS, N.C.	33° 59'N.	77° 55'W.
702 Radar Sq., Hunter AAF, Ga.	32° 01'N.	81° 10'W.
770 Radar Sq.,Ft.George G. Mead RSI, Md.	39° 07'N.	76° 44'W.
* 771 Radar Sq., Cape Charles AFS, Va.	37° 08'N.	75° 57'W.
* 792 Radar Sq., North Charleston AFS,S.C.	32° 39'N.	81° 41'W.
861 Radar Sq., Aiken AFS, S.C.	33° 39'N.	81° 41'W.

* Remoted in FAA ARTCC.
** Limited Operations (See page 50).

(2) 21 NORAD Region Control Centers

	Latitude	Longitude
*648 Radar Sq., Benton AFS, Pa.	41° 21'N.	76° 18'W.
*656 Radar Sq., Saratoga Springs AFS, N.Y.	43° 01'N.	73° 41'W.
762 Radar Sq., North Truro AFS, Mass.	42° 02'N.	70° 03'W.
772 Radar Sq., Gibbsboro, N.J.	40° 00'N.	74° 30'W.
773 Radar Sq., Montauk AFS, N.Y.	41° 04'N.	71° 52'W.
*907 Radar Sq., Buck's Harbor AFS, Maine	44° 38'N.	67° 24'W.

d. Air Route Traffic Control Centers (ARTCC)

	FAA and Military Joint-Use Radar Site
#New York ARTCC (Islip, N.Y.) Long Island MacArthur Airport Ronkonkoma, L.I., N.Y. 11779 COM: 516-737- 3432 FTS: 8-516-737- 3432	New York, N.Y. Trevose, Pa. Benton, Pa.
Washington ARTCC Leesburg, Va. 22075 COM: 202-783-0745 x4201 703-777-4000 x4201 FTS: 8-703-777-4201	Washington, D.C. Bedford, Va. Benson, N.C. Cape Charles, Va.
Boston ARTCC Federal Aviation Administration Northeastern Blvd. & Harris Rd. Nashua, New Hampshire 03060 COM: 603-889-1171 x633 FTS: 8-603-889-7633	Boston, Mass Saratoga Springs, N.Y. Buck's Harbor, Me.
Miami ARTCC 7500 N.W. 58th St. and Palmetto Expressway Miami, Fla. 33166 COM: 305-635-7741 FTS: 8-305-534-5266	Richmond, Fla. MacDill, Fla. Cocoa Beach, Fla.
Jacksonville ARTCC P.O. Box 98 Hilliard, Fla. 32046 COM: 904-845-3311 (Hilliard) 904-791-2581 (Jacksonville) FTS: 8-904-791-2581	Panama City, Fla. Jedburg, S.C. Whitehouse, Fla. Valdosta, Ga.
Houston ARTCC P.O. Box 60308 Houston, Texas 77060 COM: 713-443-8535 FTS: 8-713-990-3070	Alexandria, La. Ellington, Texas New Orleans, La. Oilton, Texas Lackland, Texas

* Remoted in FAA ARTCC

e. Cooperating Sites

	Radar	Latitude	Longitude
**Wallops Station, Va, (NASA)	MPS-19	37° 50'N.	75° 29'W.
	SPS-12	37° 56'N.	75° 28'W.
	FPS-16	37° 50'N.	75° 29'W.
	FPQ-6	37° 52'N.	75° 31'W.

AAF - Army Air Field
AFB - Air Force Base
AFS - Air Force Station
FWC - Fleet Weather Central
MCAS - Marine Corps Air Station
NWSED - Naval Weather Service Environmental Detachment
NWSF - Naval Weather Service Facility

**The radar set used depends upon the location of the storm. The one in use will be properly identified.

CHAPTER 5
APPENDIX B

PROCEDURES FOR DETAILING NATIONAL WEATHER SERVICE METEOROLOGISTS TO FAA AIR ROUTE TRAFFIC CONTROL CENTERS

1. The National Weather Service has been authorized by the FAA to send radar meteorologists to ARTCCs during the winter storm season. These meteorologists will make, record, and transmit radar observations as well as act as a focal point to solicit and process PIREPS from the winter storms area.

2. Because of the limited facilities at the Centers, the National Weather Service agreed that no more than two persons will visit a Center at any given time. Each visit will normally be short, 1 or 2 days, but will depend upon the progress of the winter storm under observation.

3. Security clearances are required by the FAA of all personnel visiting the ARTCCs.

#a. The National Weather Service must notify the appropriate FAA facility watch supervisor in writing of the intent of weather service personnel to visit such a facility. This may be done by telephone in an emergency. Notification will normally be handled by the responsible National Weather Service Regional Office or the Emergency Warnings Branch, Silver Spring, Maryland. This notification will include the name of individuals, security clearance data, social security account number, site to be visited, and inclusive date(s) of the visit.

#b. The permission to visit, and the security status of the National Weather Service personnel listed in paragraph 6, this appendix, must be on file at the FAA facilities to be visited. It will be the responsibility of the Emergency Warnings Branch, Meteorological Services Division (MSD), National Weather Service Headquarters, Silver Spring, Md., to coordinate additions, changes and/or deletions in the list of their personnel listed in paragraph 6 with the FAA regional Air Transporation Security Divisions two (2) weeks in advance of effective date of change. Coordinating correspondence should refer to this document and appropriate paragraph, and should include the following security clearance data: name, degree of clearance to which access is authorized, basis for clearance and effective date.

c. Positive identification must be presented for access to FAA facilities.

d. Only those personnel who have been certified by the National Weather Service and whose names appear in paragraph 6, as amended, will be admitted to FAA facilities.

e. The list of cleared personnel will be updated annually by the National Weather Service.

f. Copies of this plan shall be forwarded to appropriate ARTCCs and FAA Regional Air Tranportation Security Divisions.

4. The FAA Regional Air Transportation Security Division will insure that appropriate ARTCCs are properly briefed.

5. The National Weather Service Regional Headquarters will keep themselves advised of the radar site locations and be prepared to detail radar meteorologists to the Centers if conditions warrant. The participating ARTCCs and their associated radar site locations are listed in Appendix 5-A. The ADC locations listed in Appendix 5-A are remoted to the ARTCCs.

#6. The following National Weather Service personnel have SECRET security clearances and are authorized by the Air Force's ADC to visit ADC radar sites. These personnel have also been authorized by the FAA to visit ARTCCs listed in Appendix 5-A for the same purpose.

NAME	SOCIAL SECURITY NO.	DUTY STATION	INVESTIGATIVE AUTHORITY	DATE
Baskerville, R.W., Jr.	128-26-7982	WSO N.Y., N.Y.	*CSC	04-11-69
Benton, Davis	429-36-2305	WSO Galveston, Tex.	CSC	08-04-60
Bianchi, Albert C.	013-24-6281	WSO Lake Charles, La.	CSC	05-02-60
Black, Dale A.	428-72-5368	WSMO Centerville, Ala.	CSC	06-24-63
Boudreaux, Jerry F.	463-54-4520	WSO Galveston, Tex.	**OIS	08-20-69
Bowser, Carl O., Jr.	188-24-0965	NWSH	CSC	04-14-69
Brown, Warren E.	494-32-4537	WSO Victoria, Tex.	OIS	09-16-60
Capo, Rafael A.	580-58-8863	WSO Lake Charles, La.	CSC	03-14-67
Cathey, Gerald	461-54-6262	WSFO Oklahoma City, Okla.	CSC	12-20-66
Conway, Charles L.	519-26-9457	NWSH	CSC	04-16-71
Crane, Billy D.	525-60-1385	WSO Midland, Tex.	CSC	09-15-60
Crouch, Billy J.	419-36-5778	WSFO New Orleans, La.	CSC	04-24-67
Dixon, Kenneth E.	224-42-8501	WSO Cincinnati, Ohio	CSC	11-10-59
Drybala, Francis J.	191-16-1786	NHC Miami, Fla.	CSC	05-28-68
Filion, Joseph	037-24-1775	WSO Wilminton, N.C.	CSC	08-08-62
Fisher, Robert E.	149-22-6695	WSO New York, N.Y.	CSC	01-07-66
Flanders, Allen F.	030-18-3762	NWSH	CSC	11-03-60
Fortenberry, Stephen W.	456-50-5783	DATAC SRH	CSC	09-17-70
Foster, Harrie E., Jr.	016-14-8374	NSSFC Kansas City, Mo.	OIS	10-26-56
Fuertsch, Francis E.	362-28-5667	WSMO Albuquerque, N. Mex.	CSC	12-10-68
Fulcher, Melvin	023-26-9455	WSMO Chatham, Mass.	OIS	02-04-72
Gill, Robert, L.	253-54-6861	DATAC, SRH	CSC	01-23-67
Gray, Elwood C.	245-60-5235	WSO Cape Hatteras, N.C.	CSC	09-30-65
Hadsock, James R., Jr.	248-36-0861	WSFO San Juan, P.R.	CSC	06-23-71
Hamilton, Robert E.	312-32-7947	WSFO Cleveland, Ohio	CSC	01-05-66
Harris, Gordon W.	397-22-3412	WSMO Brunswick, Maine	OIS	01-16-63
Hexter, Paul L., Jr.	012-30-6909	NWSH	CSC	10-27-59
Holmes, David W.	483-18-9671	NWSH	CSC	09-20-60
Keener, Robert W.	232-34-4596	WSO Atlantic City, N.J.	CSC	04-11-68
King, Thomas	242-62-4339	WSMO Patuxent River, Md.	OIS	07-01-74
Kuhn, Ronald E.	227-48-7562	WSO Wilmington, N.C.	CSC	05-07-69
Lockhart, William D.	026-20-5632	WSMO Patuxent River, Md.	CSC	01-25-71
McCaslin, Robert W.	445-20-9199	NWSH	CSC	05-26-70
Monroe, Harold J., Jr.	166-12-9223	WSMO Slidell, La.	CSC	06-14-61
Montagne, Wilfred J.	437-52-2521	WSO Victoria, Tex.	CSC	05-18-61

NAME	SOCIAL SECURITY NO.	DUTY STATION	INVESTIGATIVE AUTHORITY	DATE
Nordland, Robert	040-32-4865	WSMO Patuxent River, Md.	OIS	01-03-74
Oldmixon, Donald H.	462-24-1916	RFC Slidell, La.	CSC	07-29-60
Parrish, Samuel K.	265-26-5577	WSO Charleston, S.C.	CSC	11-25-60
Phipps, Carl L.	498-36-7104	WSO Apalachicola, Fla.	CSC	03-17-61
Robinson, John M.	233-46-1635	WSO Cincinnati, Ohio	CSC	04-10-68
Sadowski, Alexander F.	134-10-7603	NWSH	CSC	08-06-59
Samet, Alvin M.	263-34-6359	NHC Miami, Fla.	CSC	05-28-68
Sarnowski, Edward	115-16-7916	WSFO Buffalo, N.Y.	CSC	09-16-65
Schulz, Walter A., Jr.	450-24-8888	WSFO Jackson, Miss.	CSC	07-05-66
Sheffield, Richard K.	051-22-8591	WSFO Buffalo, N.Y.	CSC	05-17-65
Smith, Robert L.	465-24-0810	WSO Apalachicola, Fla.	OIS	04-15-54
Stringer, Bob J.	455-50-7246	DATAC, SRH	CSC	02-21-52
Warden, John D.	035-16-3068	WSO Daytona Beach, Fla.	CSC	06-17-60
Wells, Fred E.	509-18-7938	NWSH	CSC	10-22-59
Wilk, Kenneth E.	340-22-0234	NSSL	CSC	12-17-62
Whitehead, Robert E.	428-46-0702	WSO Apalachicola, Fla.	OIS	07-21-60

*CSC: Civil Service Commission
**OIS: Office of Investigation and Security.

COMMUNICATIONS

1. National Weather Service. Collection and Distribution of Severe Winter Weather Information.

a. Systems Used.

(1) NOAA Weather Wire Service (NWWS). The teletypewriter system makes around-the-clock weather services available to all mass dissemination media and to other selected users. The NWWS consists of (a) statewide intrastate circuits, and (b) overlay circuits. The purpose of the NWWS is to transmit consumer-oriented forecasts, watches, weather warnings, and meteorological data to the mass news media for broadcast to the public. Various specialized users also obtain drops on the NWWS to meet their requirements. Each intrastate circuit has one National Weather Service station designated as the State Relay Center (SRC). The SRC is also connected to the regional overlay interstate circuit and serves as the relay point for transmissions to other States through the SRCs. Suitland, Md. is responsible for the relay of traffic between overlay circuits. Only WSOs (or certain other authorized offices) have direct entry on these circuits. The WSFOs furnish broad-scale information, while local WSOs enter local information. Relays between adjacent circuits are established as necessary to meet the requirements of the National Weather Service's Severe Local Storm Warning Service and subscribers located along State or area borders. When urgent material such as a warning is transmitted, a prearranged bell signal is used to attract the attention of users to the transmission. Figure 6-1 shows the areas covered.

(2) NOAA Weather Radio. The WSOs equipped with this type of radio can transmit weather warnings over a frequency of 162.55 MHz or 162.40 MHz (fig. 6-2).

(3) RAREP (Radar Report) and Warning Coordination (RAWARC). The National Weather Service's internal teletypewriter system, a landline teletypewriter network consists of five circuits. Relay between circuits is accomplished by computer at Suitland, Md. Traffic on RAWARC is basically unscheduled and is handled according to a priority system. The only regularly scheduled operation on RAWARC is an hourly collection (H+35) of radar reports (SD). Special radar reports can be transmitted at any time the circuit is not in use (fig. 6-3).

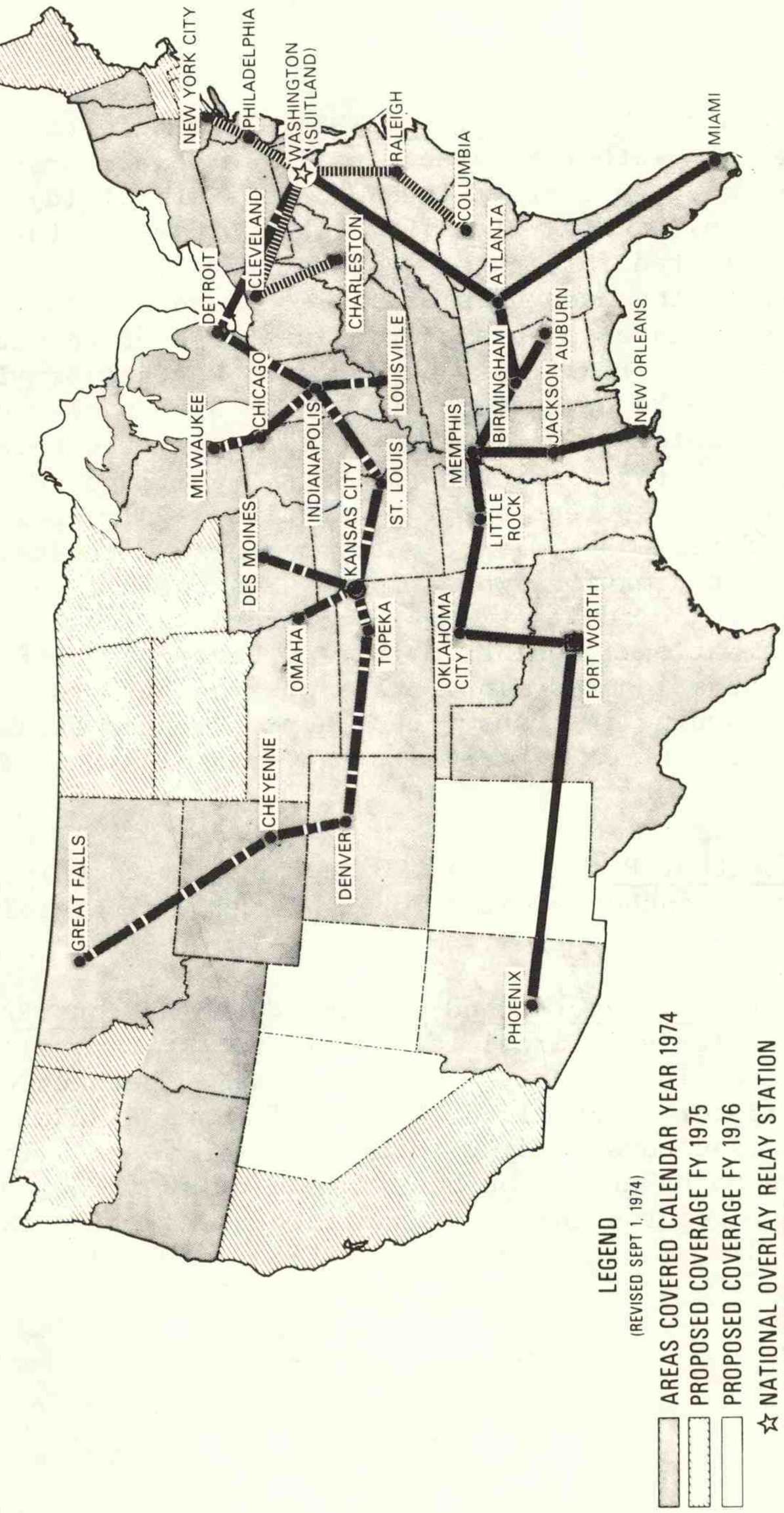


FIGURE 6-1. NOAA WEATHER WIRE SERVICE

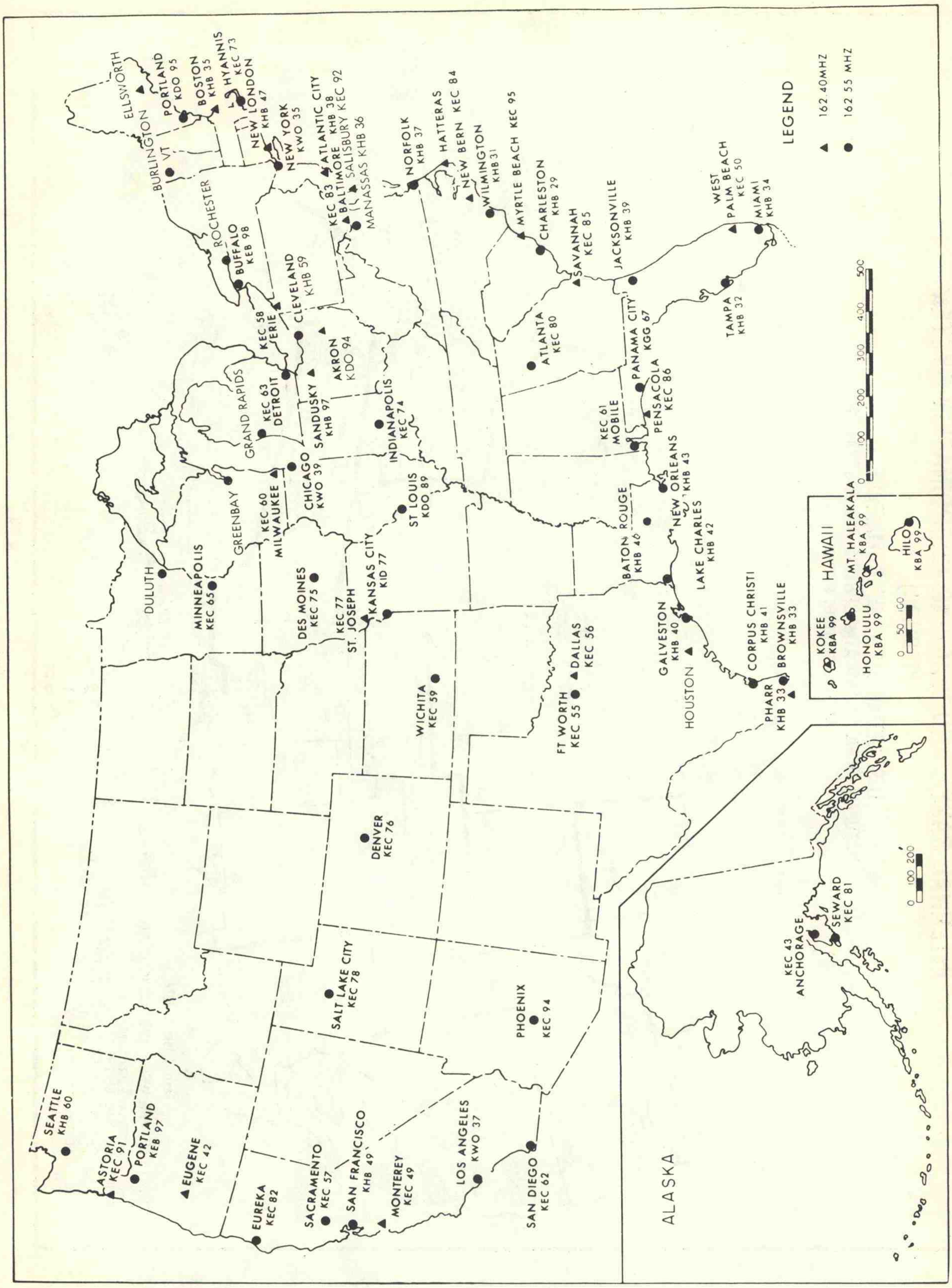
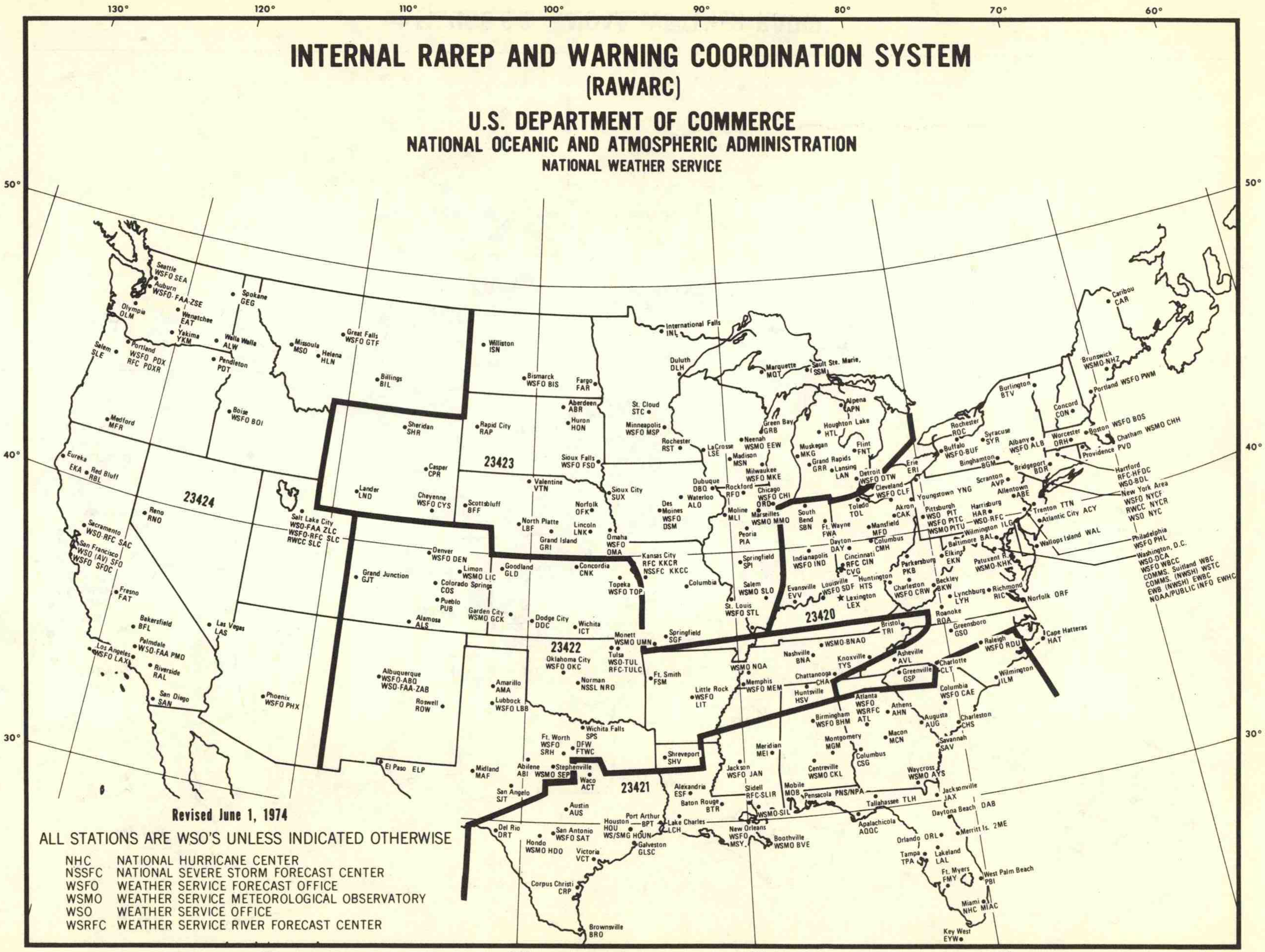


FIGURE 6-2. NOAA WEATHER RADIO

INTERNAL RAREP AND WARNING COORDINATION SYSTEM
(RAWARC)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE



Revised June 1, 1974

ALL STATIONS ARE WSO'S UNLESS INDICATED OTHERWISE

NHC	NATIONAL HURRICANE CENTER
NSSFC	NATIONAL SEVERE STORM FORECAST CENTER
WSFO	WEATHER SERVICE FORECAST OFFICE
WSMO	WEATHER SERVICE METEOROLOGICAL OBSERVATORY
WSO	WEATHER SERVICE OFFICE
WSRFC	WEATHER SERVICE RIVER FORECAST CENTER

FIGURE 6-3

(4) Circuit 7072. This teletypewriter system is operated by the National Weather Service for transmission of weather information between the following Offices:

Station

1. WSFO Portland, Maine.
2. WSO, (Hartford) Windsor Locks, Conn.
3. WSFO, East Boston, Mass.
4. WSO, Rockefeller Plaza, New York, N.Y.
5. RWCC/WSFO New York, N.Y.
6. WSFO, Philadelphia, Pa.
7. National Weather Service Headquarters, (NWSH), COMMS Operating Branch, Suitland, Md.
8. WSFO, Washington, D.C.
9. U.S. Coast Guard, Alexandria, Va.
10. *NWSH, COMMS Division, Silver Spring, Md.
11. WSFO Columbia, S.C.
12. WSFO, Raleigh, N.C.
13. *NHC, Miami, Fla.
14. *U.S. Air Force Carswell Automatic Digital Weather Switch (ADWS), Ft. Worth, Tex.
15. U.S.C.G. Primary Radio Station, Perrine, Fla.

*Receive only.

(5) Service C Teleprinter. All warnings included as a part of the regular State forecasts will be transmitted on Service C.

(6) National Warning System (NAWAS). A Defense Civil Preparedness Agency-operated telephone hot-line connecting their warnings points within each warning area. Most WSOs within each State have a drop on this system.

(7) Miscellaneous. All other types of distribution methods are used, as appropriate, to make warnings available to the other WSOs and to the public as rapidly as possible. These other methods include:

(a) Telephone (including NAWAS).

(b) Radio and Teleprinter Networks.

(c) Public Service Teleprinter Networks.

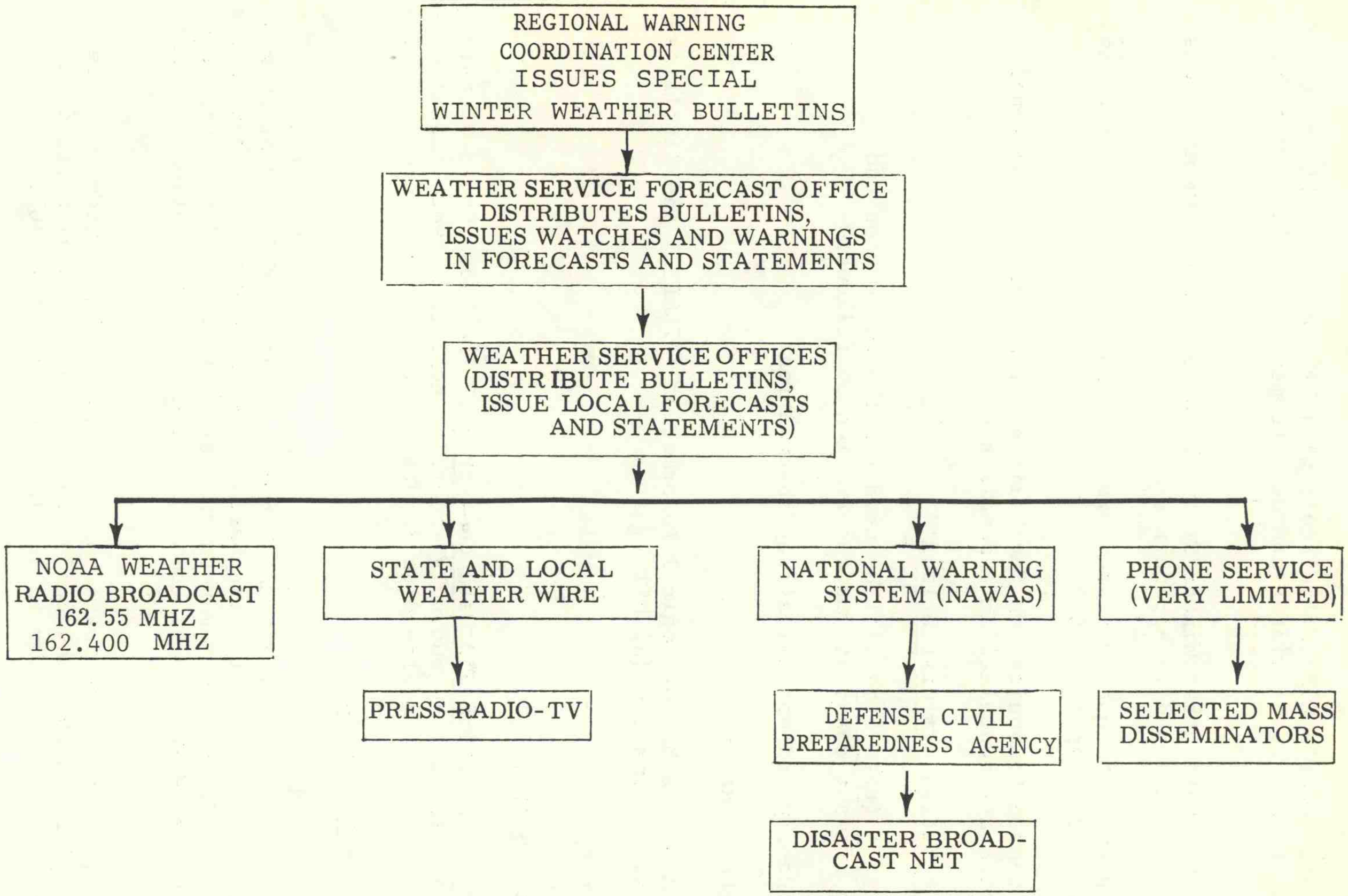
(d) Press Associations and News Services.

(e) Amateur radio.

(f) State Police and Highway Radio and Teleprinter Networks.

(g) State Defense Civil Preparedness Agency Teleprinter Networks.

b. Distribution of Special Winter Weather Bulletins. (fig. 6-4).



 # FIGURE 6-4. DISTRIBUTION OF SPECIAL WINTER WEATHER BULLETINS

2. Department of Defense.

a. The Air Force's COMET II Circuit will be used for collection and distribution of east coast winter storms information received from WSFO Washington.

b. The USAF East Coast Winter Storms Reconnaissance Communications Support Plan is contained in Appendix 6-A.

c. The Navy East Coast Winter Storms Reconnaissance Communications Plan is contained in Apprndix 6-B.

d. The Common Communication Capabilities of DOD and the National Weather Service are contained in Appendix 6-E.

3. Federal Aviation Administration.

a. Service A (fig. 6-5) will be used for the collection and distribution of east coast storms information as follows:

(1) Hourly and special airway observations.

(2) Radar Reports (SD).

(3) Airmen's Meteorological Information (AIRMETS) and Significant Meteorological Information (SIGMETS).

(4) PIREPS.

4. U.S. Coast Guard.

a. Weather Reporting and Data Collection. The Coast Guard operates numerous activities which routinely report or collect meteorological data. Those units which will provide data inputs for this program are as follows:

(1) Radio Stations.

(a) Coast Guard communications facilities at Boston, Portsmouth (Pungo), Va., Miami, and San Juan collect AMVER and METEO messages from merchant vessels on a routine basis. The METEO data are then passed directly to the NMC Suitland over Coast Guard Circuit GT 7990. Figure 6-6 shows the applicable east coast commands which have terminations on this circuit.

(b) The Coast Guard radio station at Washington supports the Ocean Weather Station HOTEL by collecting the OWS meteorological data. These data are passed directly to Suitland on Circuit GT-7072.

(c) The Coast Guard radio station in Miami operates the Shore Collection Center and passes data buoy meteorological messages from the EB-01 and EB-13 to Suitland.

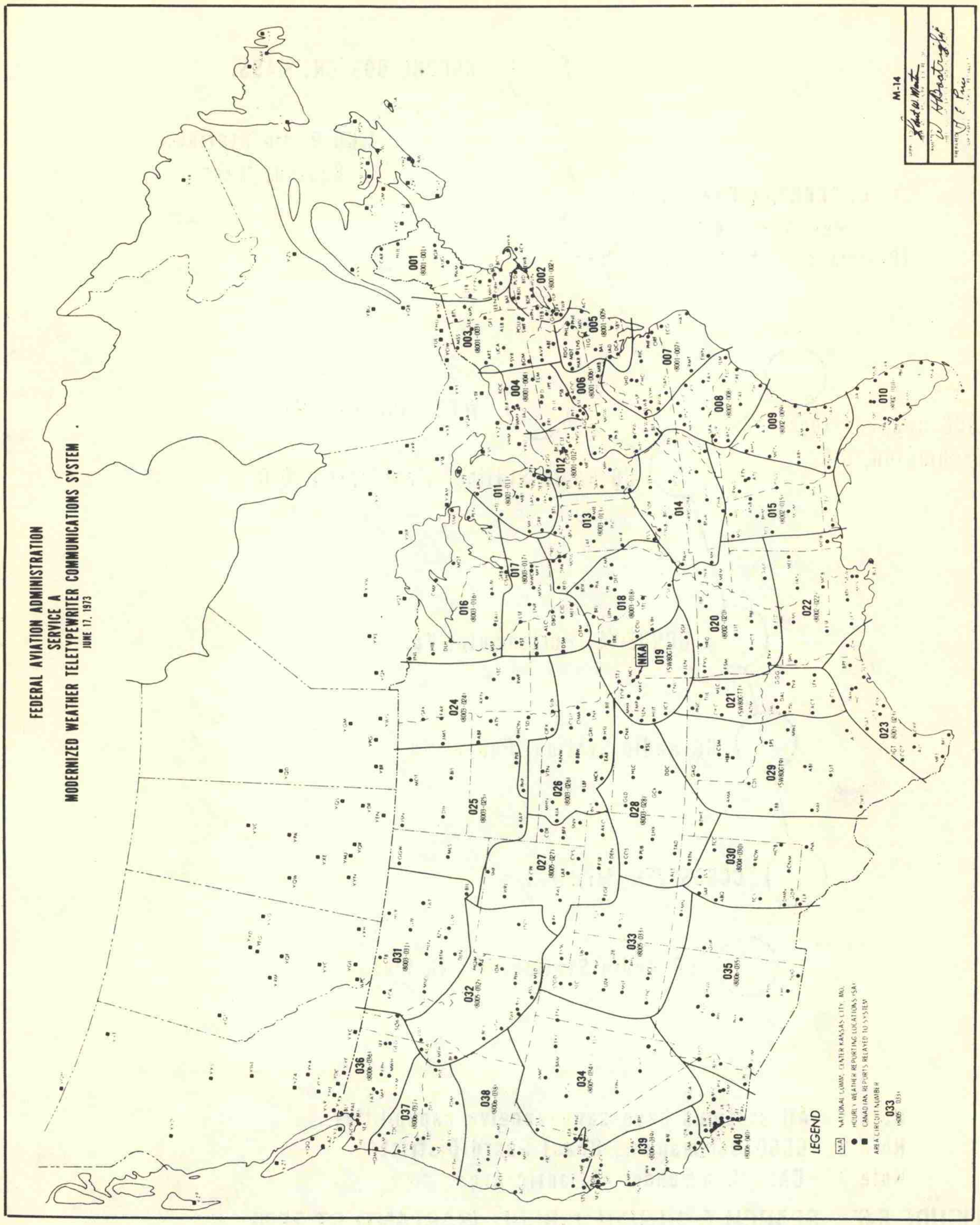
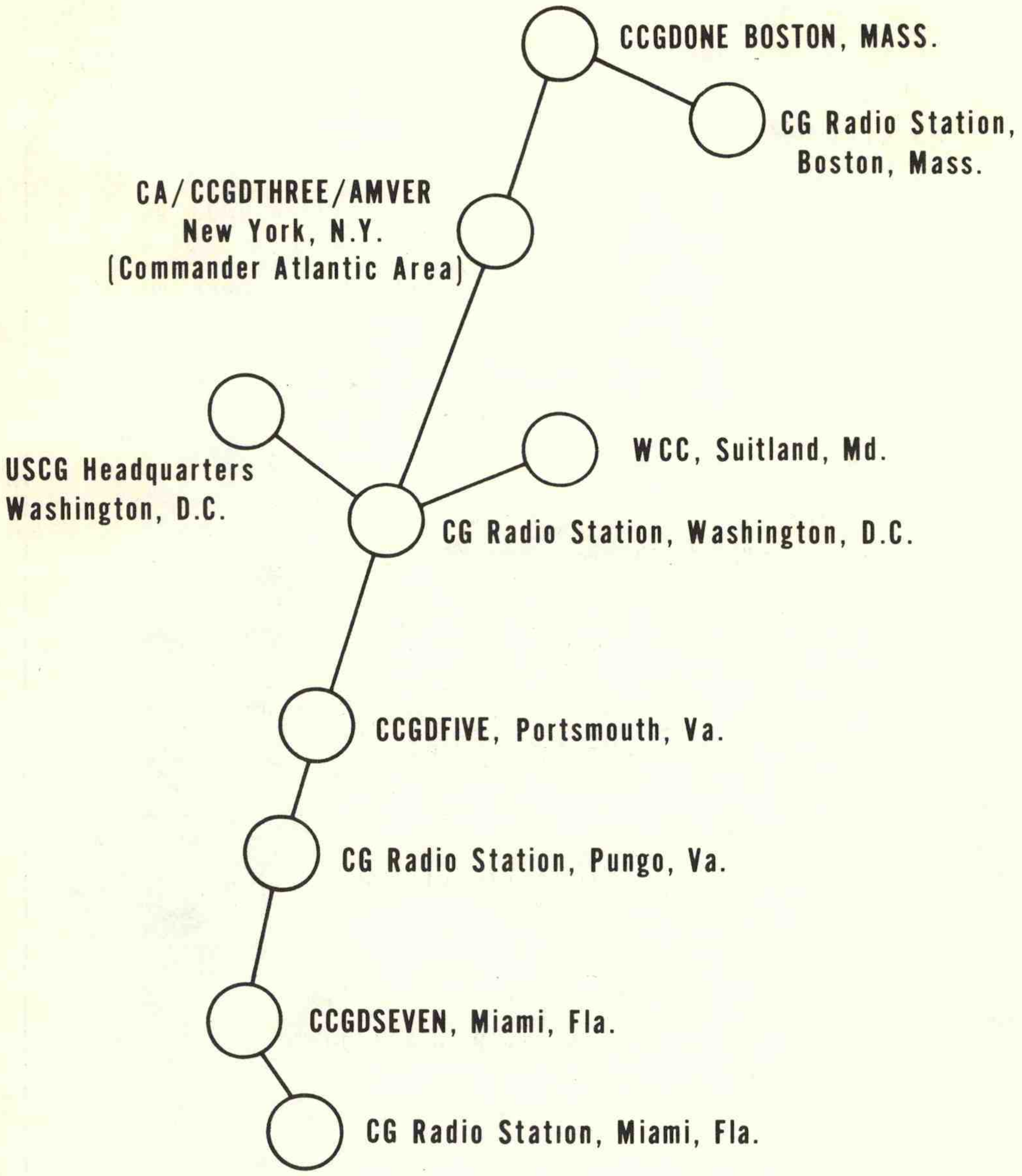


FIGURE 6-5. SERVICE A TELETYPEWRITER SYSTEM



Note 1. All stations have send/receive capabilities.
Note 2. CCGD Commander, Coast Guard District.
Note 3. CA: Commander, Atlantic Area.

FIGURE 6-6. SEARCH & RESCUE CIRCUIT (SARLANT) GT 7990

(2) Weather Reporting Units.

(a) Coast Guard cutters with radiomen assigned make routine weather reports whenever more than 25 miles from the nearest regularly reporting station. These reports, when received at any of the Coast Guard radio stations listed in paragraph (1) above, may be passed to NMC Suitland in the same manner as other METEO traffic or may be sent to the local WSO only by a Coast Guard District Communication Center, as mutually agreed by those concerned.

(b) Numerous Coast Guard Search and Rescue (SAR) Stations, Light Vessels, and Manned Offshore Lights make routine weather reports as part of the Cooperative Coast Guard Network. The units shown in table 6-1 constitute the present reporting stations.

(c) Reporting times for all reporting units are at 0000, 0300, 0600, 0900, 1200, 1500, 1800, and 2100 GMT daily, or such other times that may be agreed upon by the Coast Guard and the National Weather Service.

(d) Reports made by the activities in paragraph (b) above are sent over Intra-Coast Guard teletypewriter circuits to the local District Communication Center. From there, they are relayed to the local WSO over the circuits shown in figure 6-7.

(e) In addition to the Coast Guard/National Weather Service circuits mentioned above, the Coast Guard has an AUTODIN terminal in all of its Communication Centers which can be used to relay weather data whenever traffic loads or higher priority traffic restrict the use of other circuits.

b. Weather Forecast Dissemination. To provide timely information for the maritime community on local environmental conditions, the Coast Guard has both a visual and radio dissemination program.

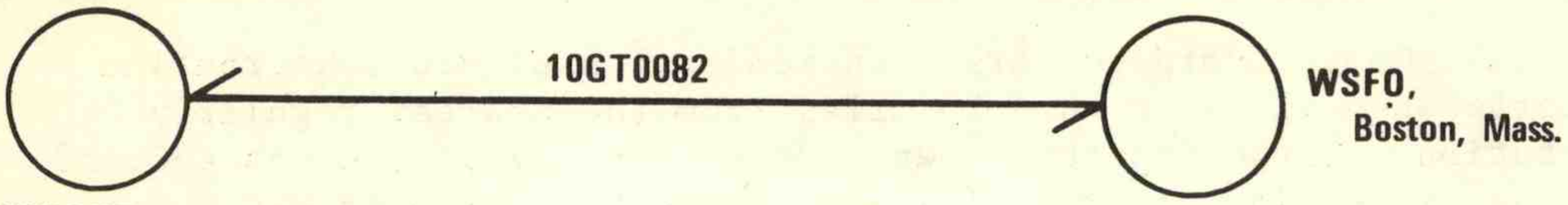
(1) Radio Dissemination.

(a) Weather information supplied by the National Weather Service is included in the Marine Information Broadcasts made by designated Coast Guard radio stations. The District Commander may also authorize additional stations to broadcast weather warnings to insure wide dissemination of information during severe weather. Table 6-2 lists those radio stations which have been designated to broadcast marine weather information.

(b) In addition to those stations which make regular broadcasts, unscheduled broadcasts will be made by those stations authorized to initiate smallcraft visual advisory displays, based upon locally observed conditions, on 2182 kHz and 156.8 MHz. The broadcast will be made at the times small-craft advisories are issued.

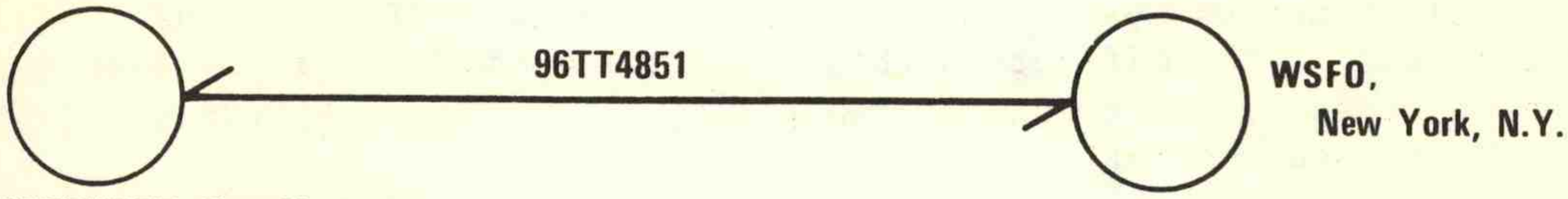
(2) Visual Dissemination. Coast Guard District Commanders in liaison with National Weather Service Regional Directors have designated certain Light Vessels, Light Towers, and SAR Stations as coastal warning display units. Selected display stations have been authorized by the National Weather Service to initiate the display of smallcraft advisory pennants.

Communication Center



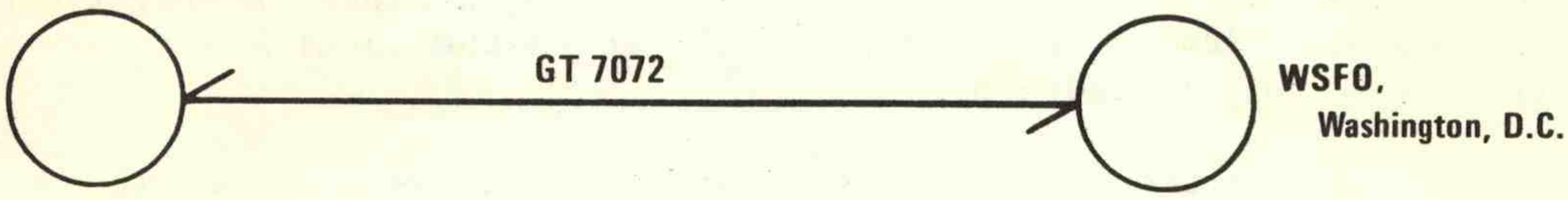
CCGDONE, Boston, Mass.

Communication Center

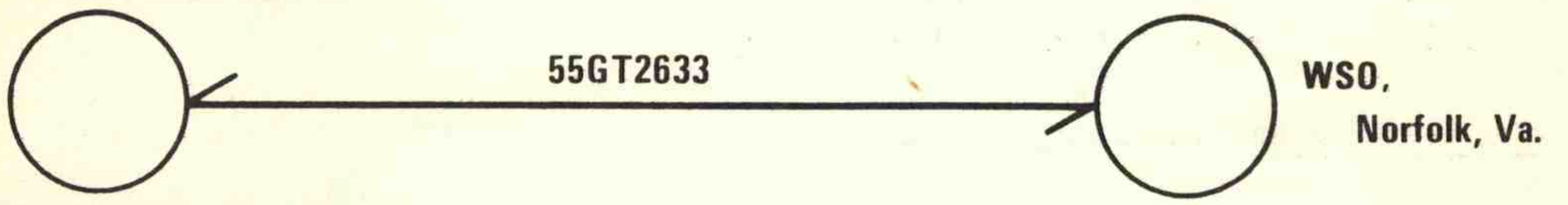


CCGDTHREE, New York, N.Y.

Coast Guard Radio Station

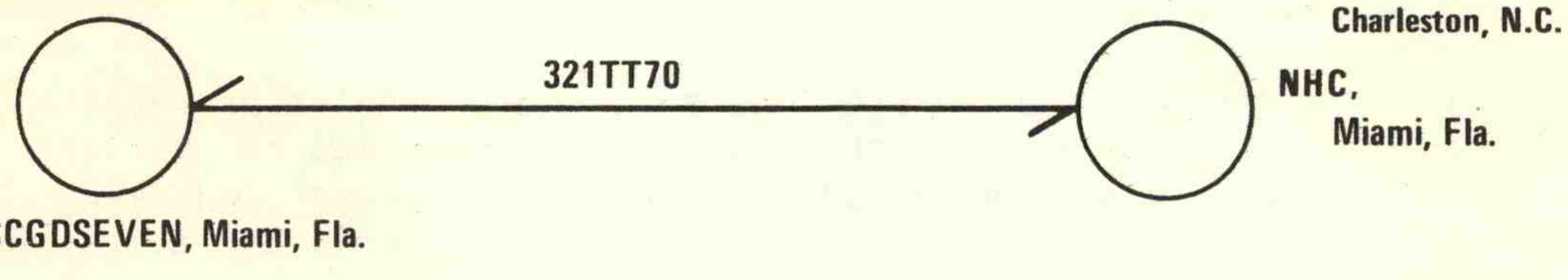


Communication Center



CCGDFIVE, Portsmouth, Va.

Communication Center



CCGDSEVEN, Miami, Fla.

Note. CCGD: Commander Coast Guard District.

FIGURE 6-7. COAST GUARD / NATIONAL WEATHER SERVICE CIRCUITS

TABLE 6-1. COAST GUARD WEATHER REPORTING UNITS AND MARS IDENTIFICATION NUMBERS

MARS ID	1st District
	Maine
24B	West Quoddy Head Light Station
17B	Libby Island Light Station
14B	Great Duck Island Light Station
21B	Mount Desert Light Station
20B	Rockland Station
16B	Heron Neck Light Station
19B	Matinicus Rock Light Station
13B	The Cuckolds Light Station
18B	Manana Island Fog Signal
23B	Sequin Island Light Station
	Portland Light Vessel
15B	Halfway Rock Light Station
	New Hampshire
12B	Boon Island Light Station
25B	Portsmouth Harbor Station
26B	Isle of Shoals Light Station
	Massachusetts
35B	Merrimac River Station
34B	Gloucester Station
	Boston Light Vessel
36B	Race Point Station
37B	Scituate Station
30B	Cape Cod Canal Station
31B	Chatham Station
33B	Buzzards Bay Entrance Light Station
32B	Gay Head Station
	Nantucket Shoals Light Vessel
	Rhode Island
PJ1	Point Judith Station

MARS ID	3rd District
	Connecticut
N11	New Haven Station
18N	New London Ledge Light Station
30N	Falkner Island Light Station
32N	Little Gull Island Light Station
	New York
48N	Montauk Point Light Station
34N	Eatons Neck Station
N84	Execution Rock Light Station
49N	Moriches Station
45N	Fire Island Station
51N	Short Beach Station
50N	Rockaway Station
N28	Ambrose Light Tower
	New Jersey
56N	Sandy Hook Station
54N	Manasquan Inlet
55N	Atlantic City Station
	Delaware
61N	Indian River Station

NOTE: Reporting times for all reporting units are at 0000, 0300, 0600, 0900, 1200, 1500, 1800, and 2100 GMT daily, or at such other times that may be agreed upon by the Coast Guard and National Weather Service.

TABLE 6-1. COAST GUARD WEATHER REPORTING UNITS AND MARS IDENTIFICATION NUMBERS (Continued)

MARS ID	5th District
	Maryland
66W	Cove Point Light Station
W30	Ocean City Station
65W	Thomas Point Shoal Light Station
W06	Crisfield Light Station
	Virginia
62W	Cape Henry Light Station
W39	Chesapeake Light Station
63W	Milford Haven Station
64W	Parramore Beach Station
	North Carolina
77W	Cape Lookout Light Station
44W	Diamond Shoals Light Station
46W	Frying Pan Shoals Light Station
78W	Oak Island Station
45W	Ocracoke Station
79W	Oregon Inlet Station

MARS ID	7th District
	South Carolina
86J	Sullivan Island Light Station
84J	Folley Beach Loran
85J	Georgetown Light Station
	Georgia
1J1	Saint Simmons Island Station
1J2	Tybee Light Station
	Florida
	No reporting stations in the east coast storms area.

NOTE: Reporting times for all reporting units are at 0000, 0300, 0600, 0900, 1200, 1500, 1800, and 2100 GMT daily, or at such other times that may be agreed upon by the Coast Guard and National Weather Service.

TABLE 6-2. COAST GUARD--MARINE INFORMATION BROADCASTS

Abbreviations under Subject column:

4F4 - Facsimile 10c 576, 120 rpm
WX - Weather
SWW - Severe Weather Warning
HD - Hydro Data
NTM - Notice to Mariners

CW - Continuous Wave
6A3 - AM Telephony
2.8A3H - SSB Single-Channel Telephony (FC)
2.8A3J - SSB Single-Channel Telephony (SC)

All frequencies are in the kHz range.

Preliminary announcements of these broadcasts are made on 500 kHz (CW) or 2182 kHz (6A3/2.8A3H) as appropriate.

1st District	Type	Time (GMT)	Subject WX	SWW	HD	NTM
Boston (NMF)						
(a) 472 (CW)	Regular	0050 & 1650	X	X	X	X
	Safety	1st silent period after receipt		X	X	X
(b) 2670 (6A3/2.8A3H)	Regular	0440	X	X	X	X
	Regular	1640		X	X	X
	Regular	1040 & 2240	X			
	Safety	Upon receipt		X	X	X
(c) 8765.4 (2.8A3J)	Regular	0130, 0730, 1330, & 1930	X	X		
	Safety	Upon receipt		X		
8764.0 (2.8A3H)	Regular	0200, 0800, 1400, & 2000	X	X		
	Safety	Upon receipt		X		
# (d) 8502/12750 (4F4)	Regular	1830	X	X		
3rd District						
#Shinnecoch (NMY 41)						
(a) 2670(6A3/2.8A3H)	Regular	0020 & 1220	X	X	X	X
	Safety	Upon receipt		X	X	X
	Special*	0020, 0920, 1220, 1520, 1820, & 2120	X	X		

*Special broadcasts are provided for boating safety during the period from 15 May through 15 October.

TABLE 6-2. COAST GUARD--MARINE INFORMATION BROADCASTS (Continued)

3rd District	Type	Time (GMT)	Subject			
			WX	SWW	HD	NTM
Cape May (NMK)						
(a) 2670(6A3/ 2.8A3H)	Regular	1100 & 2300	X	X	X	X
	Safety	Upon receipt		X	X	X
	Special*	0945, 1245, 1545, 1845, 2145, & 0045	X	X		
5th District						
Baltimore (NMX)						
(a) 2670(6A3/ 2.8A3H)	Regular	1750	X	X	X	X
	Safety	Upon receipt		X	X	X
# Portsmouth (NMN)						
(a) 448(CW)	Regular	0120 & 1620	X	X	X	X
	Safety	1st silent period after receipt		X	X	X
(b) 2670(6A3/ 2.8A3H)	Regular	0520 & 1720		X	X	X
	Safety	Upon receipt		X	X	X
Fort Macon (NMN37)						
(a) 2670(6A3/ 2.8A3H)	Regular	1130 & 1700	X	X	X	X
	Safety	Upon receipt		X	X	X
7th District						
Charleston (NMB)						
(a) 2670(6A3/ 2.8A3H)	Regular	0420 & 1620		X	X	X
	Safety	Upon receipt		X	X	X
#Mayport (NMV)						
(a) 2670(6A3/ 2.8A3H)	Regular	0620, 1120, 1320, 1520, & 1820	X	X	X	X
	Safety	Upon receipt		X	X	X

* Special broadcasts are provided for boating safety during the period from 15 May through 15 October.

TABLE 6-2. COAST GUARD--MARINE INFORMATION BROADCASTS (Continued)

7th District	Type	Time (GMT)	Subject			
			WX	SWW	HD	NMT
Miami (NMA)						
# (a) 440(CW)	Regular	0100 & 1600	X	X	X	X
	Safety	1st silent period after receipt		X	X	X
(b) 2670(6A3/ 2.8A3H)	Regular	0450 & 1650	X	X	X	X
	Safety	Upon receipt		X	X	X
	Special*	0500, 0600, 0700, 0800, 0900, 1000, 1200, 1500, 1700, 2000, & 2400 (local time)	X	X		X

* Special broadcasts are provided for boating safety.

CHAPTER 6
APPENDIX A

USAF EAST COAST WINTER STORMS

RECONNAISSANCE COMMUNICATIONS SUPPORT PLAN

#1. General. Reconnaissance observations initiated by WC-130 type aircraft of the 53rd Weather Reconnaissance Squadron (53 WRS) will be voice-transmitted by means of high frequency single side band (HF/SSB) radio through the Air Force's Aeronautical station complex to a Weather Monitor at MacDill AFB, Fla. The Weather Monitor will evaluate and edit the reports to insure meteorological and technical accuracy. The monitor will then relay over Circuit GT22117 the edited reports to both the CARCAH and to the USAF Carswell ADWS for further distribution over military weather communications systems. Circuit GT22117 links the CARCAH, 53 WRS at Keesler AFB, Miss., alternate CARCAH at Andrews AFB, Md., MacDill Weather Monitor and the USAF Aeronautical Stations at MacDill AFB, Fla., and the USAF Carswell ADWS. In addition to providing for the relay of reconnaissance observations, this circuit is also to be used for coordinating the Plan of the Day (POD) as well as other aspects of reconnaissance activities. A diagram of the Air Force East Coast Winter Storms Communications System is shown in figure 6A-1.

2. Air/Ground (A/G) Communications.

a. Whenever it is possible, an Air Force storm reconnaissance aircraft may also relay reconnaissance reports through the Air Force Aeronautical Station at MacDill or Loring AFBs. Specific station contacted will depend upon aircraft location and radio propagation conditions. The HF/SSB frequencies to be used for initial contact with each Aeronautical Station are listed in the appropriate DOD Flight Information Publication Enroute Supplement. Subsequent to initial contact, the Aeronautical Station will assign a primary and secondary frequency for use by reconnaissance aircraft during each mission. Frequencies assigned may or may not be the same as frequencies published in the Enroute Supplement for the contacted Stations.

#b. Whenever possible, frequencies will be assigned to reduce interference and congestion from other HF A/G traffic. When specifically requested by the aircrew, and circuit conditions will permit, a direct voice phone patch between the aircraft and the Weather Monitor at MacDill AFB will be provided by the Aeronautical Station. The Air Force has authorized the use of "Immediate" precedence for transmission of storm reconnaissance reports. To further facilitate such voice patching, direct AUTOVON access lines have been provided. Specific methods of handling reconnaissance messages are listed below for each station:

PRIMARY METHOD	FIRST ALTERNATE	SECOND ALTERNATE
# Direct phone patch between recon aircraft and MacDill Weather Monitor via phone.	MACDILL AERONAUTICAL STATION A/G operator copy transmission from aircraft; relay by voice to MacDill Weather Monitor via phone.	A/G operator copy from aircraft; relay to MacDill Weather Monitor via teletypewriter circuit (GT 22117).
# Direct phone patch between recon aircraft and MacDill Weather Monitor over AUTOVON.	LORING AERONAUTICAL STATION A/G operator copy transmission from aircraft; relay by voice to MacDill over AUTOVON.	A/G operator copy from aircraft; relay to MacDill using WATS or commercial long-distance telephone.

3. Point-to-Point Teletypewriter Communications Capability.

a. Circuit GT22117 (JQGAGP28) will be configured with send/receive terminals at the CARCAH; alternate CARCAH, Andrews AFB, Md.; 53 WRS at Kessler AFB, Miss.; the Weather Reconnaissance Monitor, MacDill AFB, Fla.; and the USAF Aeronautical Station at MacDill AFB, Fla. The NHC will have a receive-only reperforator (located at the CARCAH) to provide for further relay of the reconnaissance reports over the FAA and NWS weather networks. The USAF Carswell ADWS will have a receive-only terminal to provide for further relay over military weather communications networks. The MacDill Monitor will act as net control station and maintain circuit discipline. Authorized uses of this circuit are:

(1) Relay of reconnaissance observations and other appropriate aircraft reports.

(2) Coordination of POD and other related matters between the CARCAH and the 53 WRS.

(3) Alternate relay of reports received from reconnaissance aircraft by USAF Aeronautical Stations as described in subparagraph 2a.

(4) Relay and coordination of data in the event responsibilities are transferred from RWCC New York to WSFO Washington. Traffic received at MacDill by AUTOVON will be relayed to the NHC/CARCAH over this circuit for further relay to NHC to WSFO Washington over Circuit 7072.

4. Miscellaneous Communications Services and Support.

a. Routine communications between weather reconnaissance aircraft and Air Force Aeronautical Stations for normal air traffic control services will be handled in accordance with SOPs. Where contact cannot be made with Aeronautical Stations, air traffic control communications may be conducted with the following facilities in priority as listed:

#(1) FAA stations--6568 kHz (Miami, San Juan, and New York).

(2) U.S. Navy SSB stations--see paragraph 2a, appendix B, chapter 6.

(3) The ARINC Stations are contained in current DOD Flight Information Publication Enroute Supplement.

b. TWX messages for the CARCAH Coral Gables should be addressed in the heading of the message as follows: RUCJBBF/CARCAH MCDILL AFB, FLA.

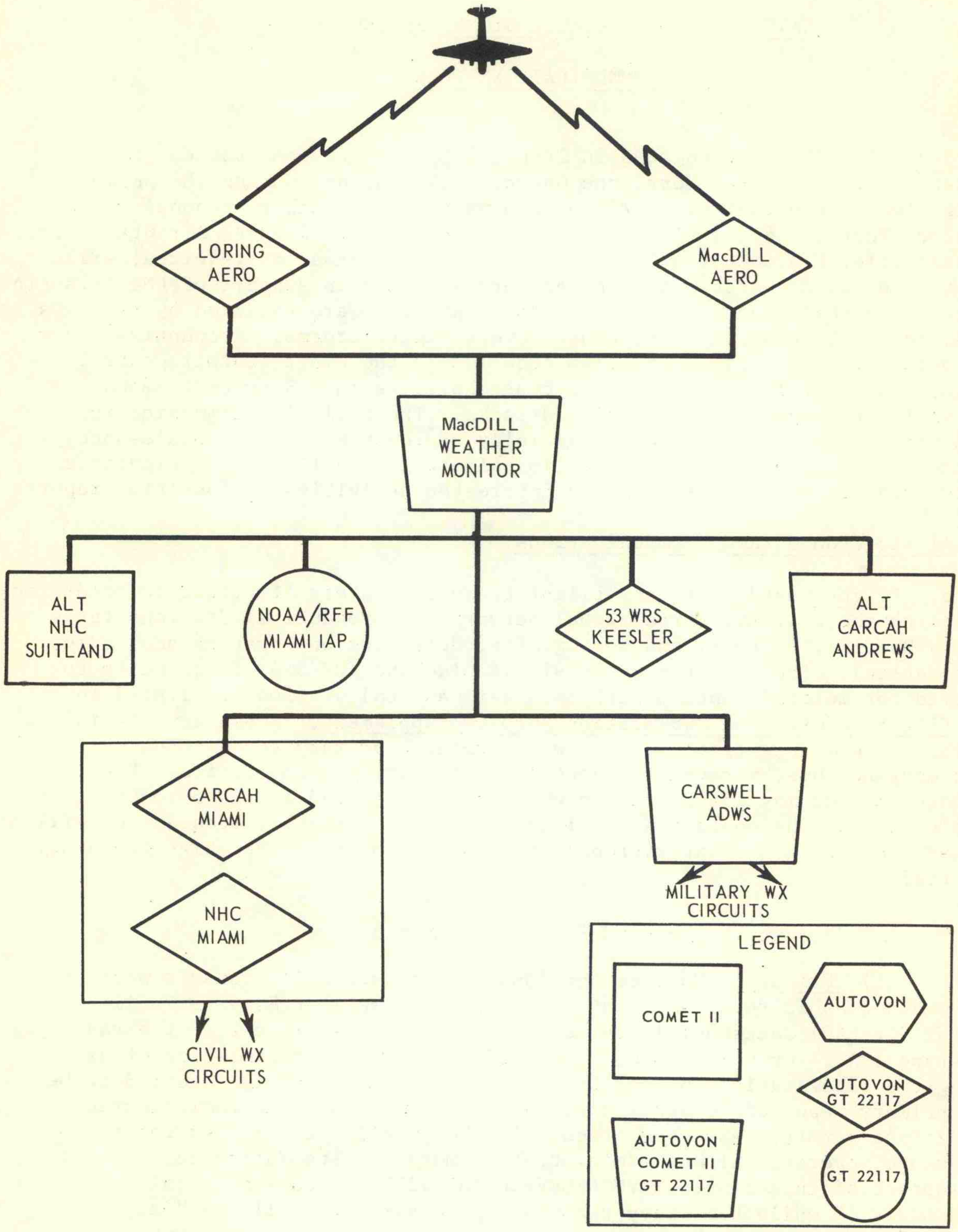


FIGURE 6A-1. USAF EAST COAST WINTER STORMS COMMUNICATION SYSTEM

CHAPTER 6
APPENDIX B

NAVY EAST COAST WINTER STORMS RECONNAISSANCE

COMMUNICATIONS PLAN

1. General. When not engaged in Tropical Cyclone reconnaissance, as defined in the National Hurricane Operations Plan, and during the period designated as the East Coast Winter Storms Season, Weather Reconnaissance Squadron Four (VW-4), flying WP3-A type aircraft out of Naval Air Station, Jacksonville, Fla. (NAS JAX) or alternate staging bases as required, will fly reconnaissance tracks off the eastern seaboard in support of the Atlantic Fleet. Reconnaissance reports from these aircraft are required by the WSOs to assist in forecasting east coast severe winter storms. Reconnaissance and oceanographic reports are also required by the Fleet Weather Central (FLEWEACEN) Norfolk and other east coast Naval Weather Service Command activities to support their assigned tasks. The following Communications Plan prescribes the means for: (a) relay of reports from reconnaissance aircraft, (b) maintenance of essential air-to-ground (A/G) communications guard, and (c) subsequent relay to interested activities of essential reports.

2. Air-to-Ground (A/G) Communications.

a. Flight Guard. Primary flight guard for safety of flight is conducted utilizing the U.S. Air Force global network of Aeronautical Stations (primarily MacDill, Albrook, and Loring AFBs, depending on location and radio propagation). The high frequency single sideband (HF/SSB) frequencies to be used for initial contact with each aeronautical station are listed in DOD Flight Information Publication Enroute Supplement. Subsequent to initial contact, the aeronautical station will assign a primary and secondary frequency for use by reconnaissance aircraft during each mission. Frequencies may or may not be the same as those published in the enroute supplement for the contacted stations. Whenever possible, frequencies will be assigned to reduce interference and congestion from other high frequency A/G traffic.

b. Reconnaissance (Data Communication) Guard.

(1) Primary - Navy reconnaissance aircraft will transmit weather and oceanographic reports directly to the Naval Weather Service Facility (NAVWEASERVFAC) Jacksonville by means of HF/SSB radio in either the radioteletype (RATT) or voice mode. The RATT mode is for transmission of data using the Data Acquisition and Logging System (DALS) and is intended to be the primary means of reconnaissance data transmission when communications conditions permit. Assigned frequencies below will be utilized for reconnaissance, operational and administrative messages from airborne aircraft in support of this plan. NAVWEASERVFAC JAX will use the voice call of "JAX CONTROL" while U.S. Navy reconnaissance aircraft will use "Navy Weather", followed by the last three (3) digits of the bureau number. Frequencies for reconnaissance guard with NAVWEASERVFAC JAX are as follows, in accordance with JANAP 195:

(a) HF/SSB voice:

1.	ALPHA	4701.5 kHz
2.	BRAVO	9011.5 kHz
3.	CHARLIE	13222.5 kHz
4.	DELTA	15082.5 kHz
5.	ECHO	23228.5 kHz

(b) RATT (DALS transmission):

1.	FOXTROT	4708.5 kHz
2.	GOLF	8973.5 kHz
3.	HOTEL	13232.5 kHz
4.	INDIA	15072.5 kHz
5.	JULIET	17980.5 kHz
6.	KILO	23201.5 kHz

(c) HF/SSB Radioteletypewriter (RTTY)*

1.	MIKE	3096.5 kHz
2.	NOVEMBER	11192.5 kHz
3.	OSCAR	18010.5 kHz

*Note: SSB-suppressed carrier frequencies located 1.5 kHz below indicated frequency.

(2) Secondary. The alternate method of transmitting weather and oceanographic reports to NAVWEASERVFAC JAX, when the above procedures fail, is via USAF Aeronautical Stations and direct phone patch to NAVWEASERVFAC JAX, AUTOVON 434-3740. When utilizing phone patch, any question or comment on the observation message by NAVWEASERVFAC JAX should be resolved before discontinuation of the patch. In the event that a phone patch cannot be provided, the Aeronautical Station will copy the traffic and relay the message to NAVWEASERVFAC JAX by AUTOVON. When using the USAF communications facilities, the use of IMMEDIATE precedence has been authorized for transmission of all reconnaissance reports. The alternate to NAVWEASERVFAC JAX for phone patch is FLEWEACEN Norfolk, AUTOVON 690-7750.

(3) Backup Reconnaissance Guard and Emergency Circuits.

(a) The Air Route Traffic Control Center (ARTCC) communications of FAA may be used to relay reconnaissance reports when the primary and secondary means have failed: frequency 6568 kHz (Miami, San Juan, New York).

(b) Emergency and Distress frequencies are as follows:

FREQUENCY	EMISSION	USE
500.0 kHz	CW	International Distress and Calling Frequency.
2182.0 kHz	V	International Distress and Calling Frequency.
2670.0 kHz	V	Coast Guard Calling and Working Frequency.
5680.0 kHz	V	International Search and Rescue (SAR) Control (Coast Guard).
5695.0 kHz	V	SAR Control (U.S. Navy).
8364.0 kHz	CW	International Lifeboat, Liferaft, and Survival Craft Frequency.
121.5 MHz	V	Emergency and Distress for Aircraft and Ships SAR, and VHF/DF Primary.
243.0 MHz	V	Military Common Emergency, UHF.

3. Point-to-Point (Ground) Communications.

a. NAVWEASERVFAC JAX will use the following means of distributing Winter Storm Reconnaissance Data:

(1) GT 22117, East Coast Reconnaissance Circuit. This circuit will be the primary circuit for relay of reconnaissance reports to designated users, including the Automated Digital Weather Switch (KAWN), in the standard reconnaissance format. The Winter Storms Plan of the Day (POD) will also be distributed on this circuit.

(2) DALS Ground Loop, Direct-Line Teletypewriter. This circuit consists of terminals at FLEWEACEN Norfolk, FLEWEAFAC Suitland, NAVWEASERVFAC JAX, and NHC Miami. This is the primary circuit for relaying raw DALS data. In addition to being sent on this circuit, raw DALS data will be reformated into RECCO code by NAVWEASERVFAC JAX and then transmitted on GT 22117 at periodic intervals, not less frequently than once per hour. It is also an alternate circuit for relay of reconnaissance reports in the event of failure of circuit GT 22117. NHC Miami will be responsible for entering RECCO type reports received on this circuit on circuit GT 7072.

(3) COMET II. This circuit will be used as an alternative method of entering reconnaissance reports received by NAVWEASERVFAC JAX via HF/SSB into KAWN. Reports will be transmitted on this circuit only if GT 22117 is inoperative.

(4) GP 90656, Direct Line Telephone. This circuit connects VW-4, FLEWEACEN Norfolk, NAVWEASERVFAC JAX, CARCAH, and NHC Miami and is used to coordinate the Winter Storms POD and to resolve discrepancies in reconnaissance data.

4. Procedures for East Coast Winter Storms Navy Aircraft Reconnaissance.

a. Reports. As previously stated, DALS will be employed as the primary means of providing meteorological and oceanographic reconnaissance data. DALS data received by NAVWEASERVFAC JAX will be handled as stated in paragraph 3a(2) of this appendix. When transmitted by voice, reconnaissance data will be encoded in the currently effective RECCO code; at the end of each such message the coded latitude, longitude, flight level wind, and surface wind groups will be repeated for confirmation. Oceanographic data will be coded in accordance with current OCEANAV instructions. Radar reports may be transmitted in plain language. All meteorological and oceanographic reports shall be unclassified.

b. Precedence:

Message	Precedence
Conditions less than indicated below RECCO reporting conditions of:	Priority (P)
Surface winds 25 knots or greater	Immediate (O)
Seas 12 feet or greater	Immediate (O)
Moderate or heavy precipitation	Immediate (O)
Moderate or severe icing	Immediate (O)
Significant changes in meteorological conditions as determined by flight METRO	Immediate (O)

c. Communication Procedures and Message Formatting.

(1) In formatting messages for transmission to ground stations, procedures outlined in ACP 121, U.S. SUPP-2 shall be used with respect to message heading, date-time-group and numbering systems external to the message text. Appropriate JANAP and ACP procedures will be used in contacting ground stations.

(2) Message texts shall be preceded by UR, unit identification (i.e. Navy), mission identifier (synoptic track or number), and message number (1, 2, 3, etc.) with "1" assigned to the departure report. The sequence of messages will be continuous for all messages on a flight regardless of control. The arrival report will be the final message of the series.

(3) Message texts for AXBT and/or ARTST collectives will be filed and numbered as separate messages but shall be preceded by DX vice UR.

d. NAVWEASERVFAC JAX Reconnaissance Guard Circuit Procedure. Unless otherwise arranged, Circuit CHARLIE (13222.5 kHz) will be considered the primary voice frequency to be guarded by NAVWEASERVFAC JAX for establishing initial radio contact. Voice call for NAVWEASERVFAC JAX will be "JAX CONTROL".

(1) Net operations and control.

(a) This circuit will operate as a free net unless otherwise directed by NAVWEASERVFAC JAX (JAX CONTROL).

(b) NAVWEASERVFAC JAX shall act as the reconnaissance guard ground-monitoring station.

(c) The aircraft shall notify the ground-monitoring station before leaving the circuit, except in case of emergency.

(d) The aircraft will give its call sign at the beginning of each transmission to facilitate High Frequency Direction Finding (HFDF) identification. Each radio check shall contain one full count if no other traffic is passed.

(e) The aircraft and ground-monitoring station shall return to the last frequency on which contact was made if, after a frequency shift is made, no contact is made within 15 minutes.

(f) The ground-monitoring station will request a "Test Transmission" on another frequency to determine if another circuit (frequency) will provide better communications. For example, upon the command "Test Circuit ALPHA", give three long counts, and return to the circuit upon which the command was given.

(g) In-flight position reports, requests for clearances, and other communications for ARTCC can be relayed on Reconnaissance Guard only if normal means of communications with ARTCC have failed.

(2) Radio Checks.

(a) Radio checks will be initiated by the aircraft with NAVWEASERVFAC JAX before takeoff and at 30-minute intervals while airborne. Check times will be on the hour and half hour.

(b) An attempt will be made on the next lower frequency if contact on a given frequency cannot be established within 15 minutes of the assigned time. If this 15-minute attempt on the lower frequency is not successful, another attempt will be made on the next higher frequency. If, at this point, contact is not made, the aircraft shall return to the primary frequency.

(c) DALS transmission with channels 00, 01, 02, and 03 functional will be considered as being valid radio checks. See attachment 1 for DALS channelization.

#DATA ACQUISITION AND LOGGING SYSTEM (DALS)

DALS data is available from Navy aircraft (100 w.p.m. HF/SSB RATT) for selected parameters at 5-second intervals or for all 30 channels at 30-second, 1-minute, 5-minute, or 10-minute intervals in the following format:

Channel	Parameter	Recorded Increment	Input
00	Date	Mo., Day, Year	M
01	Time (Z)	Hr., Min., Sec.	A
02	Latitude/Octant	Deg., Min., Oct.	A
03	Longitude	Deg., Min.	A
04	Absolute altitude	10 feet	A
05	Pressure altitude	10 feet	A
06	Ambient pressure	0.1 millibar	A
07	Ambient temperature	0.01°C	A
08	Dew point	0.1°C	A
09	FLT LVL wind direction	1 degree	A/M
10	FLT LVL wind speed	1 knot	A/M
11	Sea-surface temperature	0.1°C	A
12	Sea-level pressure	0.1 millibar	M
13	Surface wind (ddfff)	Tens of deg./whole knots	M
14	True air speed	1 knot	A
15	True heading	1 degree	A
16	Ground speed	1 knot	A
17	Drift angle	1 degree	A
18	Future use for "n" or wave	PD/HGT or ice accretion	
19	Weather ($wwWBf_c$) wwW = WMO	Code/Bf_c = RECCO	M
20	1 $K_nN_1N_2N_3$	RECCO Code	M
21	Lowest cloud	RECCO Code	M
22	Second cloud layer	RECCO Code	M
23	Third cloud layer	RECCO Code	M
24	GMT time of last Lat./Long. DALS update	Tens of seconds	M
25	Navigation latitude	Quad./1 minute	M
26	Navigation longitude	1 minute	M
27	Reserved		
28	Reserved		
29	Bathythermograph	0.1°F/10 feet	A

NOTE: (1) Channel 20 19999 = in clouds.
(2) Channel 21 = lowest cloud visible from aircraft.
(3) Channel 22 = first layer above channel 21.
(4) Channel 23 = first layer above channel 22.
(5) Channels 09 and 10 are normally automatic input from inertial navigation system and Doppler; however, manual input can be selected.
(6) If the Flight Meteorologist determines (from separate instruments) a specific channel is providing incorrect data, that channel will be deleted and only the channel identifier will be transmitted.
(7) Sea-and-swell conditions, together with other significant data, including data for deleted channels will be provided in plain language.
(8) Input-- A = Automatic/M = Manual.

CHAPTER 6
APPENDIX B
ATTACHMENT 1--CONTINUED

This page displays examples of teletypewriter copy as received from U.S. Navy reconnaissance aircraft.

Teletype display	Explanation of data
00 04051	00=Date ID, 04=April, 05=the 5th, 1=1971
01 12345	01=Time ID, 12=Hour, 34=Min , 5=50 Sec
02 30140	02=Lat/Oct ID, 30=Deg , 14=Min , 0=North of Equator between 0° and 90° Long.
03 08141	03=Long ID, 081=Deg , 41=Min
04 25140	04=Absolute altitude ID, 25140=25,140 Ft
05 24140	05=Pressure altitude ID, 24140=24,140 Ft
06 03781	06=Ambient pressure ID, 03781=378.1 Mb
07 92663	07=Ambient temp. ID, 9=Minus, 2663=26.63°C
08 9271	08=Dew point ID, 9=Minus, 271=27.1°C
09 252	09=FL wind direction ID, 252=Wind from 252 Deg
10 046	10=FL wind speed ID, 046=46 Kt
11 0109	11=Sea-surface temp. ID, 0=Positive, 109=10.9°C
12 10278	12=Sea-level pressure ID, 10278-1027.8 Mb (99876 would = 987.6 Mb)
13 14125	13=Surface wind ID, 14=from 140 Deg , 125=125 Kt
14 315	14=True air speed ID, 315=315 Knots
15 103	15=True heading ID, 103=True heading of aircraft
16 350	16=Ground speed ID, 350=Acft ground speed 350 Kt
17 956	17=Drift angle ID, 9=Left drift, 56=4° drift (Left drift value taken from 60, 0=right drift)
18	18=Future use
19 13845	19=Weather ID, 13=Lightning, 8=Past shower, 4=Mod Turb in clouds infreq., 5=Chaotic sky
20 13438	20=Cloud amount ID, 1=Indicator, 3=Three layers, 4=5/10 lowest, 3=4/10 second, 8=10/10 third.
21 65658	21=Lowest cloud ID, 6=SC, 56=Base 6000 Ft, 58=Tops 8000 Ft
22 46567	22=Second cloud layer ID, 4=AS, 65=Base 15,000 Ft, 67=Tops, 17,000 Ft
23 07577	23=3rd layer ID, 0-CI, 75=bases 25,000 Ft, 77=tops 27,000 Ft
24 18000	24=ID of time of channels 25 and 26, 18=Hours, 00=Min , 0=Tens of sec.
25 33040	25=ID for Lat /Oct of channel 24 time, 33=Deg , 04=Min 0=North of Equator between 0° and 90° Long.
26 08820	26=ID for Long. of channel 24 time, 088=88°, 20=20 Min
27	27=Reserved
28	28=Reserved
29 01598	29=Bathythermograph ID, 01=10 Ft, 598=59.8°F

NOTE: (1) ID--Identifier.
FL--Flight level.

U.S. NAVY ATLANTIC RECONNAISSANCE DATA COMMUNICATIONS SYSTEM (HF RATT AND VOICE)

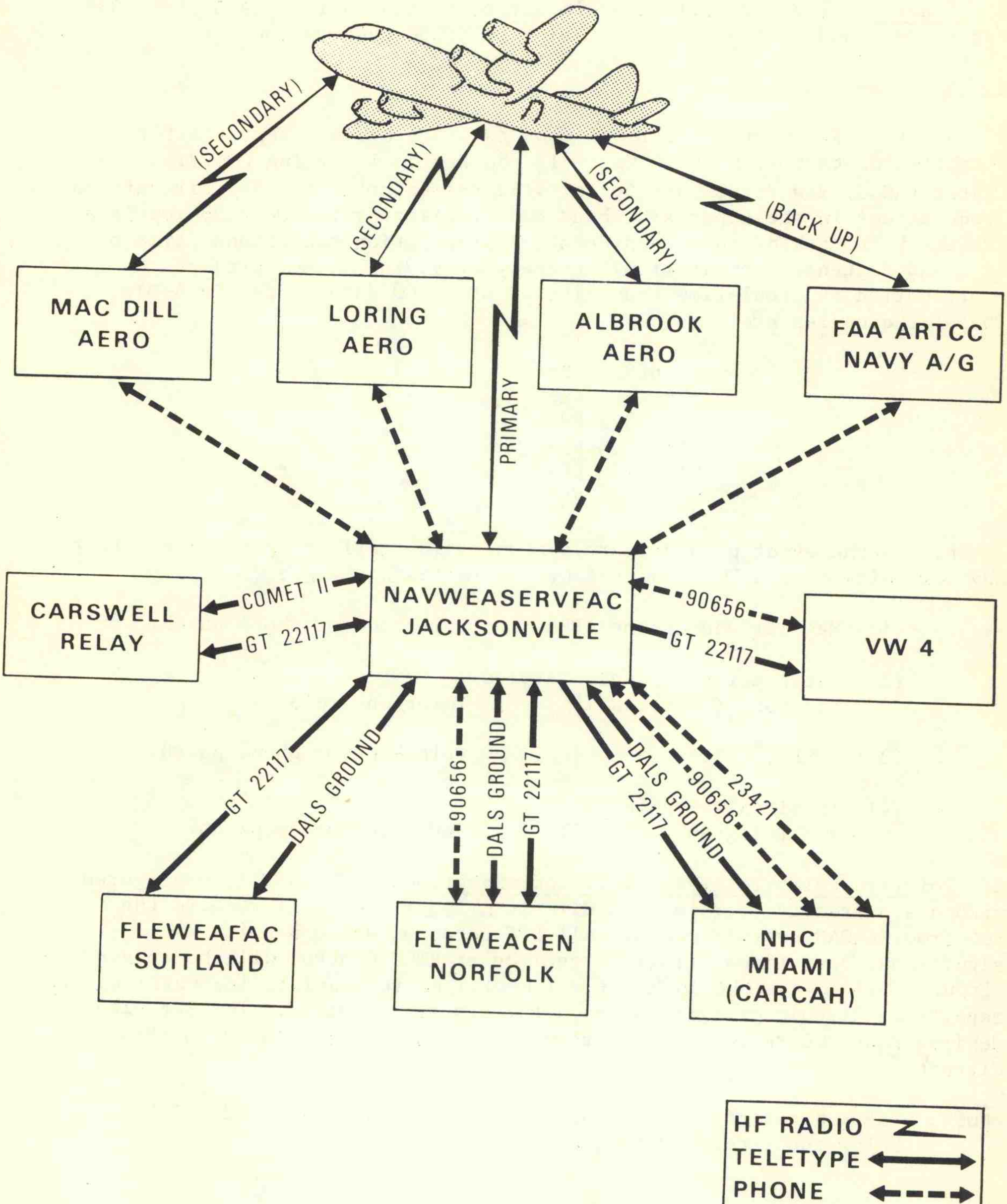


FIGURE 6B-1. NAVAL WEATHER SERVICE FACILITY JACKSONVILLE COMMUNICATIONS

CHAPTER 6
APPENDIX C

RFF EAST COAST WINTER STORMS RECONNAISSANCE COMMUNICATIONS SUPPORT PLAN

1. General. The RFF will maintain direct communications (A/G) over SSB for control and transmission of real-time RECCO observations.

2. A/G Communications.

a. The RFF aircraft will, as soon as practicable after departure, establish contact with "RWCC Control" the Regional Warning Coordination Center (RWCC) New York. This Center will communicate with RFF aircraft on frequencies* in the upper side band mode (utilizing the most appropriate frequency and taking into consideration propagation conditions, time of day, and distance from station), thereby providing direct project coordination and real-time transmission of RECCO data (Appendix 4-D). These frequencies are:

4669.5 kHz
6646.5 kHz
8963.5 kHz
11397.5 kHz
13261.5 kHz
17902.5 kHz

b. In the event of a primary communication failure, project aircraft may communicate with RWCC Control by the following means:

(1) MacDill and Loring AFBs	Telephone or phone patch.
(2) International Flight Service Stations (IFSS), N.Y.	Telephone relay.
(3) ARINC, N.Y.	Telephone or phone patch.
(4) American Telephone and Telegraph Co. (ATT)	Radio telephone patch.

3. Point-to-Point Teletypewriter Communications. The RFF is configured with a send/receive terminal on Circuit GT-22117 and will receive the POD from CARCAH by this means. All RFF Reconnaissance Reports and significant operational traffic received at RWCC Control will be relayed over Circuit 7072 to the NHC in Miami which will be responsible for entering these reports on Circuit GT-22117 as soon as they are received. The RFF also desires that DOD RECCO Messages received at the NHC be placed on this Circuit.

*NOTE: The suppressed carrier SSB voice frequency is located 1.5 kHz below the indicated frequency.

4. Air Traffic Control Communications.

a. Communications between ARTCC controllers and pilots of Instrument Flight Rule (IFR) aircraft will be conducted over direct controller-to-pilot communications channels using the appropriate ARTCC sector discrete frequency. Aircraft will be advised of the frequency to be used and when a frequency change is required. When beyond VHF/UHF communication capability, the New York ARTCC desires direct controller-to-pilot communications to be conducted through:

(1) The Air Force Aeronautical Stations at MacDill or Loring AFBs by requesting "Patch" New York Center, or

(2) As an alternate, the New York ARINC on the following frequencies, in the AM mode (upper SSB is available).

2952 kHz
5484 kHz
6540 kHz
8959 kHz
11367 kHz
17925 kHz.

Extended range VHF is available on 130.85 MHz.

b. The Air Force's Aeronautical HF Radio Station at Loring AFB can be utilized as an alternate means of providing direct controller-to-pilot communications through an AUTOVON phone patch on any Air Force published frequency.

5. Emergency and Distress Communications.

The following frequencies have been assigned for emergency and distress:

Frequency	Emission	Use
500.0 kHz	CW	International distress and calling
2182.0 kHz	V	International distress and calling
5680.0 kHz	V	International SAR control (Coast Guard)
5695.5 kHz	V/CW	SAR control (Navy)
8364.0 kHz	CW	International lifeboat, liferaft, and survival craft frequency
121.5 MHz	V	Emergency and distress for aircraft and ship SAR and VHF/DF primary
243.0 MHz	V	Military common emergency frequency, UHF

6. American Telephone and Telegraph (ATT) High Seas Radio Telephone.

The RFF aircraft have the capability of ship-to-shore telephone service provided by ATT high seas radio telephone stations, WOO/WOY, at New York. This facility can be brought into use, when required, whenever other phone patch means are not available. This ATT service is conducted at a nominal charge and on a duplex basis through use of paired transmitting frequencies as follows:

Shore Station WOO/WOY	Aircraft
Transmitting Frequency	Transmitting Frequency
4390.2 kHz	4091.6 kHz
8757.6 kHz	8223.6 kHz
13175.5 kHz	12396.5 kHz
17321.5 kHz	16526.5 kHz

The SSB frequencies are available in accordance with the ATT brochure.

RWCC COMMUNICATIONS PROCEDURES WITH DOD AIRCRAFT

1. General. The purpose is to supply a rapid means of communication between the forecaster and the airborne meteorologists so as to obtain meteorological information or to request flight diversion to secure more useful data. This will not be a continuous requirement, but would be on a request basis.

2. Ground Communications. The RWCC will be able to monitor or establish contact with aircraft on the following SSB frequencies:

RFF and Air Force	Navy
4669.5 kHz	4701.5 kHz
6646.5 kHz	9011.5 kHz
8963.5 kHz	13222.5 kHz
11397.5 kHz	15082.5 kHz
13261.5 kHz	
17902.5 kHz	

The following communication procedures will be used:

a. On the days the Air Force is flying, the RWCC will have two of their receivers monitor the frequencies 6646.5 kHz (primary) and 4669.5 kHz (secondary). Once the initial contact is made on either of these two channels and atmospheric conditions warrant, the RWCC will switch to one of the remaining four channels if necessary. These frequencies will be monitored for 5-minute periods beginning at 1130 and 1300 GMT and each subsequent odd hour (GMT) for the duration of the flight.

b. On the days the Navy is flying, the RWCC will monitor two frequencies as follows: Daytime--13222.5 kHz (primary), 9011.5 kHz (morning-secondary), and 15082.5 kHz (afternoon-secondary); nighttime--4701.5 kHz (primary) and 13222.5 kHz (secondary). These frequencies will be monitored for 5-minute periods beginning at 1200 GMT and each subsequent even hour (GMT) for the duration of the flight.

c. To contact reconnaissance flights at other than the above times, RWCC will make telephone contact with the MacDill Weather Monitor (commercial 813-803-2854/2035) for Air Force aircraft and with NAVWEASERVFAC Jacksonville (commercial 904-772-2535/2536/2542) for Navy aircraft. The military ground stations will be advised that DOD aircraft should contact the RWCC on one of the above frequencies. Aircraft will contact the RWCC as soon as practicable after receiving the message from these ground stations.

3. A/G Communications. Aircraft will advise RWCC if unable to accept the requested diversion because of flight safety, traffic clearance, or operational consideration. The CARCAH will be advised by RWCC of the diversion effected.

CHAPTER 6
APPENDIX E

COMMON COMMUNICATIONS CAPABILITIES--ATLANTIC

STATIONS	AUTODIN	GT22117*	7072	COMET	GP90656	AUTOVON	DALS GROUND CIRCUIT
NAVWEASERVFAC Jacksonville	RUEDABA	X		X	X	X	X
FLEWEACEN Suitland	RUEBEGA	X				X	X
NAVSTA Roosevelt Roads	RULGANA					X	
CARCAH Coral Gables	RUGJBBF	X			X	X	
ALT CARCAH Andrews	RUEBBAA	X		X		X	
NHC Miami	RUGJBBF	X(RO)	X	X(RO)	X		X
NOAA/RFF Miami		X					
NMC Washington	RUEOLMA		X	X(RO)			
Weather Service Washington	RUEOLMA		X				
MacDill Weather Monitor	RUCJAAA	X		X		X	
MacDill Aeronautical	RUCJBBB	X				X	
Albrook Aeronautical	RUEOEFA					X	
Loring Aeronautical	RUEDLDA					X	
FLEWEACEN Norfolk	RUEBJNA	X		X**	X	X	X
VW-4 Jacksonville	RUCLBKA	X(RO)			X	X	
53 WRSMC Keesler AFB	RUCLERA	X				X	
IFSS*** Miami							
ARTCC Jacksonville	RUWTAIA					X	
ARTCC Washington	RUEONEA					X	
ARTCC Miami	RUCLFPA					X	
ARTCC New York	RUEDJKA					X	
ARTCC Houston	RUWTDPA					X	
Carswell ADWS	RUCLDAA	X(RO)		X		X	
RWCC New York			X				

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*East Coast Reconnaissance Circuit

(RO) Receive only

**COMET Circuit located at NAS Norfolk but not in the FWC Norfolk building

***IFSS-International Flight Service Station

(SO) Send only

PUBLICITY

News media releases that concern the cooperative efforts in severe winter storms activities of the Department of Defense, National Weather Service, Federal Aviation Administration, and U.S. Coast Guard should reflect the joint nature of these efforts by giving due credit to participating agencies. Copies of these releases should be forwarded to:

Deputy Director for Operations (Environmental Services)
The Joint Chiefs of Staff
Washington, D.C. 20301

Department of the Army
Attention: DAMI-DOT-C
Washington, D.C. 20310

Headquarters, Naval Weather Service Command
Building 200
Washington Navy Yard
Washington, D. C. 20390

Military Airlift Command (MAFOI)
Scott Air Force Base, Ill. 62225

Headquarters, Air Weather Service
(AWS/AO)
Scott Air Force Base, Ill. 62225

National Oceanic and Atmospheric Administration
Office of Public Affairs
6010 Executive Boulevard
Rockville, Md. 20852

Federal Aviation Administration
800 Independence Avenue S.W.
Washington, D.C. 20590

Commandant (GAPA)
U.S. Coast Guard
400 Seventh Street S.W.
Washington, D.C. 20590

Commandant, Marine Corps
Headquarters, U.S. Marine Corps
Washington, D.C. 20380

CHAPTER 8

LIST OF ACRONYMS AND ABBREVIATIONS

AAF	Army Air Field
AC&W	Aircraft Control and Warning
ADC	Aerospace Defense Command
ADWS	Automatic Digital Weather Switch
AFB	Air Force Base
AFGWC	Air Force Global Weather Central
AFS	Air Force Station
A/G	Air Ground
AIRMETS	Airmen's Meteorological Information
AMOS	Automatic Meteorological Observing System
AMVER	Automated Merchant Vessel Reporting
APT	Automatic Picture Transmission
ARINC	Aeronautical Radio Inc.
ARTCC	Air Route Traffic Control Center
ATS	Application Technology Satellite
ATT	American Telephone and Telegraph
AUTODIN	Automatic Digital Network
AUTOVON	Automatic Voice Network
AVCS	Advanced Vidicon Camera System
AWN	Automatic Weather Network
AWS	Air Weather Service
#CARCAH	Chief, Aerial Reconnaissance Coordination, All Hurricanes
CW	Continuous Wave
DALS	Data Acquisition Logging System
DATAC	Data Acquisition
DOD	Department of Defense
#DMSP	Defense Meteorological Satellite Program
DRSR	Direct Readout Scanning Radiometer
EANS	Emergency Action Notification Attention Signal
EMSU	Environmental Meteorological Support Unit
ESSA	Environmental Survey Satellite
FAA	Federal Aviation Administration
FLEWEACEN	Fleet Weather Central
FLEWEAFAC	Fleet Weather Facility
FOFAX	Forecast Office Facsimile Network
FSS	Flight Service Station
FTS	Federal Telecommunications System
GMT	Greenwich Mean Time
GOES	Geostationary Operational Environmental Satellite
HD	Hydro Data
HF	High Frequency
ICMS	Interdepartmental Committee for Meteorological Services
IFR	Instrument Flight Rules
ITOS	Improved TIROS Operational Satellite
JANAP	Joint Army, Navy Air Force Procedures
#MARS	Marine Reporting Station Network
MCAS	Marine Corps Air Station

#MSD	Meteorological Services Division
NASA	National Aeronautics and Space Administration
NATTC	Naval Air Technical Training Command
NAVSTA	Naval Station
NAVWEASERFAC	Naval Weather Service Facility
NAWAS	National Warning System
NDBO	NOAA Data Buoy Office
NESS	National Environmental Satellite Service
NHC	National Hurricane Center
NMC	National Meteorological Center
NOAA	National Oceanic and Atmospheric Administration
NSSFC	National Severe Storms Forecast Center
NSSL	National Severe Storms Laboratory
NTM	Notice to Mariners
NWSED	Naval Weather Service Environmental Detachment
NWSH	National Weather Service Headquarters
NWWS	NOAA Weather Wire Service
OSV	Ocean Station Vessel
OWS	Ocean Weather Station
POD	Plan of the Day
PPI	Plan Position Indicator
RAREP	Radar Report
#RAWARC	Internal RAREP and Warning Coordination System
RECCO	Reconnaissance Code
RFC	River Forecast Center
RFF	Research Flight Facility
RFO	River Forecast Office
RTTY	Radio Teletypewriter
RWCC	Regional Warning Coordination Center
SAR	Search and Rescue
#SARLANT	Search and Rescue Atlantic Circuit
SAWRS	Supplementary Aviation Weather Reporting Station
SC/BMS	Subcommittee on Basic Meteorological Services
SD	Hourly Collection of Radar Reports
SFSS	Satellite Field Services Station
SIGMETS	Significant Meteorological Information
#SMARS	Supplementary Marine Reporting Station Network
SMS	Synchronous Meteorological Satellite
SOP	Standing Operating Procedure
SR	Scanning Radiometer
SRC	State Relay Center
SSB	Single Side Band
SSCC	Spin-Scan Cloud Camera
SWW	Severe Weather Warning
TIROS	Television Infrared Observation Satellite
USAF	United States Air Force
USCG	United States Coast Guard
USN	United States Navy
VHF	Very High Frequency
VHRR	Very High Resolution Radiometer
VISSR	Visual-Infrared Spin-Scan Radiometer
VTPR	Vertical Temperature Profile Radiometer

WBAN	Weather Bureau - Air Force - Navy
WEFAX	Weather Facsimile
WMO	World Meteorological Organization
WRS	Weather Reconnaissance Squadron
WSFO	Weather Service Forecast Office
WSMO	Weather Service Meteorological Observatory
WSO	Weather Service Office
WSR	Weather Surveillance Radar
WX	Weather