RTMENT OF COMMERCE / National Oceanic and Atmospheric Administration

FEDERAL COORDINATOR FOR METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

National East Coast Winter Storms Operations Plan

FCM 75-5

Washington, D.C.
October 1975

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
FEDERAL COORDINATOR FOR METEOROLOGICAL
SERVICES AND SUPPORTING RESEARCH

NATIONAL EAST COAST WINTER STORMS

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 Plan covers that part of the year having a relatively high incidence of winter storms along the east coast. This period is from November 1 to April 15. The plan lists only those special arrangements between the various agencies involved in meeting the objective of furnishing special weather observations for use in warning of severe winter storms along the east coast.

This document is the 7th annual edition of the Plan. It is a major revision to previous editions in that much material considered extraneous is deleted, references to U.S. Navy reconnaissance have been deleted, and other materials reorganized. Because of the many changes in this document, specific changes are not identified. The user of the document should view it as a completely new edition.

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 Facilities Center
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 AND AREA OF CONCERN

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

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

b. Provide basic analyses and forecasts through the National Meteorological Center (NMC), Camp Springs, Md.

c. Provide special numbered storm summaries to the general public and to all concerned interests through Storm Coordination Centers (SCC) at Boston, Washington, Miami, New Orleans, and Chicago.

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

e. Provide advice on aircraft reconnaissance requirements forwarded through the National Hurricane Center (NHC) to the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH), from the Storm Coordination Center Washington -- the central coordinating office for this program.

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

g. Provide personnel and any special meteorological equipment needed to observe and report various weather phenomena on the Ocean Weather Station (OWS) 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 offshore buoy deployment, if possible within existing facilities.

m. Provide dissemination of weather observation data received by CARCAH monitor to appropriate agencies.

The National Weather Service is responsible for the issuance of winter weather forecasts, watches and warnings to the public and various specialized user groups. Its responsibilities are documented in Weather Service Operations Manual Chapters A-02, "Weather Service Mission", and C-42, "Winter Weather Warnings."

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 3 of this Plan that are within its capabilities and are in accord with established reconnaissance priorities.

b. Designate CARCAH as the primary point of contact for coordination with Storm Coordination Center Washington 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.

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 as elaborated in NAVWEASERVCOM Instruction 3140.1 (series).

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.

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.

5. Area of Concern:

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. 1-1).

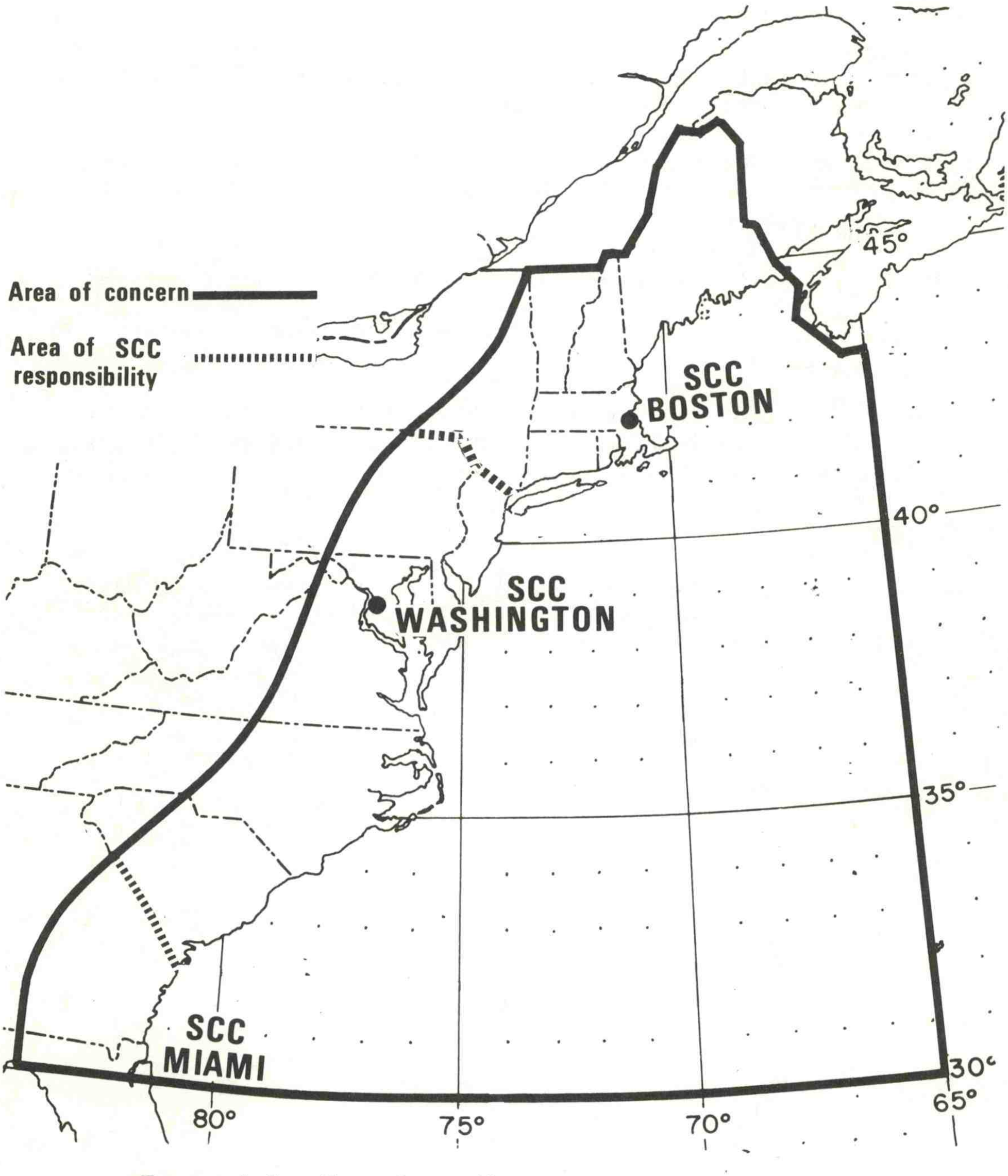


FIGURE 1-1. EAST COAST WINTER STORMS AREA OF CONCERN

AIRCRAFT RECONNAISSANCE

1. Responsibility.

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

b. Research Facilities Center (RFC).

(1) The RFC 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 RFC 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. WSFO Washington will coordinate reconnaissance requirements with NMC and will forward aircraft reconnaissance needs to CARCAH for tasking within responsibilities stated above in the Plan of the Day (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 Storm Coordination Center (SCC) may have a requirement for a reconnaissance flight into a rapidly developing storm. Fulfillment of this requirement will of necessity be subject to availability of USAF or RFC resources for tasking or diversion at the time required. The SCC can better insure the availability of resources if, at the time of forwarding reconnaissance needs to CARCAH, a request is made for a standby aircraft/crew the subsequent day for a potential mission into a meteorologically suspicious area.

(3) SCC requirements are considered satisfied when an observation is or could have been taken (for example, aircraft are diverted by customer from original track) at the specified location with the interval from 1 hour before to 30 minutes after the scheduled time.

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) Air Force tracks Gull BRAVO, Gull DELTA, and Gull GOLF shown in Appendix 2-A will generally 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 2-A.

(b) WSFO Washington will provide CARCAH with the following data prior to 1830Z daily:

1. On storm threat situations requiring Gull tracks:

a. Track desired.

b. Desired Track initiation time and location.

c. Special observations or dropsonde release points.

d. Requirements for succeeding day.

(c) CARCAH will provide the following Plan of the Day information: (Appendix 2-D).

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) Direct discussion on weather situations between the Navy and WSFO Washington 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 1330 local.

(4) Research Facilities Center.

(a) Meteorological situations selected for RFC aircraft monitoring will be investigated while the storms are in the vicinity of pre-selected routes. In the event that these routes do not provide the desired data, the RFC will provide the National Weather Service Controller, SCC Washington, 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 Flight Director on the RFC aircraft from the flight mission monitor designated by WSFO Washington.

(c) Requests for RFC aircraft will originate with the SCC Washington 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 RFC may be contacted directly by the SCC. In this event, RFC will coordinate the mission requirements and notify CARCAH of its intentions to fly; RFC will also furnish CARCAH enough information to amend the POD.

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

(e) During standby status (in Miami), RFC will establish a daily conference call procedure with SCC Washington for planning purposes, for preparing operations that may be required the next day, and for handling emergency requests in the event that RFC is required to serve as backup for the DOD.

(f) Besides these backup or emergency requests, the RFC 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. All flights are to be conducted within RFC's Standard 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 WSFO Washington, the CARCAH will prepare the POD daily throughout the season in coordination with the Air Force and RFC to effect maximum useful data from available sources.

(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 804-444-7750 (2436).

4. RFC (Miami International Airport), FTS & commercial 305-526-2936 or 2938, or 305-949-8198.

5. NHC Miami, FTS 305-350-5547 or 4265. WSFO Washington FTS 301-763-8261.

6. McClellan Operations Center, McClellan AFB, Calif. Autovon 633-2751, or Area Code 916-643-2751.

7. USAF, 920th Weather Reconnaissance Group, Keesler AFB, Miss., Autovon 868-4318 or 3207, or commercial 601-377-4318.

(b) Tracks.

1. Initial Air Force and RFC track selection will be made at the discretion of SCC Washington after coordination with SCC Boston, SCC Miami, and NMC to provide maximum essential data based on the existing and anticipated meteorological situation.

2. Changes to standard winter storms reconnaissance tracks within controlled airspace must be passed to FAA ARTCCs at Houston, 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 2-D.

(d) Dissemination. The CARCAH will disseminate the POD to WSFOs and SCC Washington (over Circuit 7072) and to FAA, RFC, 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 2-1. Pending full satisfaction of the requirements, National Weather Service desires to obtain all information possible with existing resources.

b. Dropsondes will be released as specified by the POD. Data will be coded and transmitted as detailed in Appendix 2-C.

c. The first weather message will be an out/departure message and will include departure station (ICAO-International Civil Aviation Organization--four letter designator) time of departure, and estimated time of arrival (ETA) for the appropriate control point.

EXAMPLE:

AIR FORCE GULL BRAVO OB1

DPTD KBIX AT 10/2100Z ETA 38.9N 72.1W AT 11/0230Z.

d. The final weather message will be transmitted AFTER the aircraft reaches the destination that terminates the mission. This will be the last-numbered observation and will include: where aircraft landed (ICAO designator), actual time of arrival (ATA), number of horizontal observations, number of vertical observations, and the monitor station (s) that copied the observations.

EXAMPLE:

AIR FORCE GULL JULIET OB(X)

ARVD KBIX, 15/2300Z 12 OBS 2 DROPS 1-14 KMIA.

5. RFC Research Data.

RFC research data include the following standard information: time position, wind speed and direction, ambient temperature, ambient pressure, dewpoint, ambient vapor density, altitude, 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, and special cloud photography (as required). Meteorological data are recorded digitally on magnetic tape at one complete sample per second; radar and cloud photography are provided as required by the researcher.

6. Communication Procedures. (See Chapter 4)

TABLE 2-1. 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
Synoptic data--pressure (heights), temperature, moisture, and winds--for national weather prediction and medium-range forecasting.	850 or 500 mb height with dropsondes.	Throughout the marine portion of east coast area as defined in Chapter 2.	As specified in Plan of the Day.	± 5 kt, ± 10° (Dir) ± 1°C ± 20 m ± 2 mb
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)

AIR FORCE TRACK GULL BRAVO

LOCATION	COORDINATES	ALT
CHS	32-54N 80-02W	6000 Ft
AZANA	32-24N 78-15W	6000 Ft
SMELT	31-59N 77-00W	6000 Ft
LAMBERT	31-48N 74-18W	6000 Ft
PERCY	35-00N 72-45W	6000 Ft
ARCHER	37-20N 72-21W	6000 Ft
TUNNA	38-55N 72-07W	6000 Ft
PORPOISE	40-07N 73-16W	6000 Ft
MANTA	39-54N 73-32W	6000 Ft
SIE	39-06N 74-48W	6000 Ft
SWL	38-03N 75-28W	6000 Ft
CCV	37-21N 76-00W	6000 Ft
ORF	36-54N 76-12W	6000 Ft
PINETOWN	35-48N 76-58W	6000 Ft
EWN	35-04N 77-03W	6000 Ft
ILM	34-21N 77-52W	6000 Ft
CRE	33-49N 78-43N	6000 Ft
CHS	32-54N 80-02W	6000 Ft

BRAVO ALTERNATE

LOCATION	COORDINATES	ALT
(ORIGINAL TRACK THROUGH SIE)		
SHADS	37-42N 73-00W	6000 Ft
CROAK	36-57N 73-00W	6000 Ft

THEN, ORF AND ORIGINAL TRACK

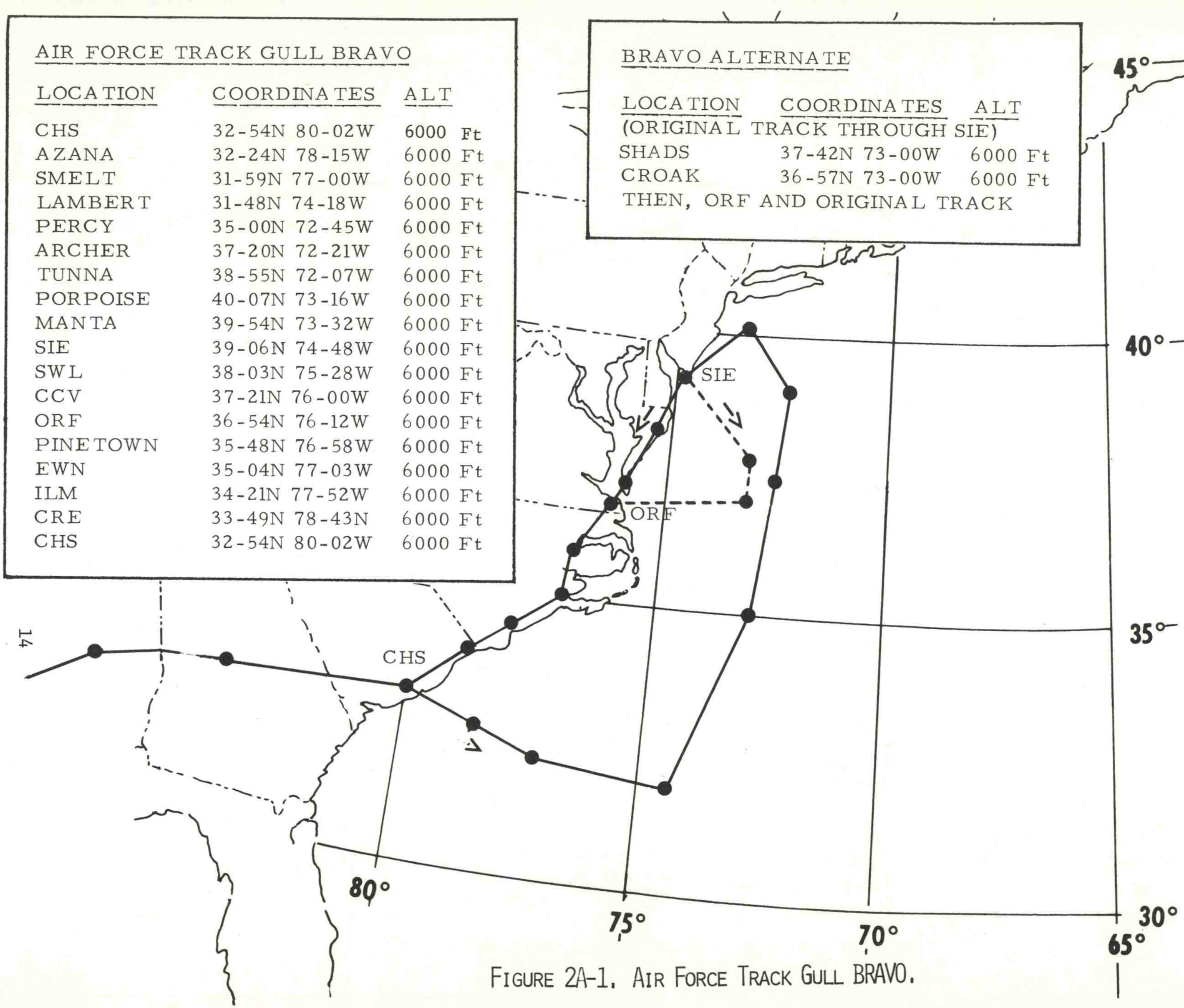


FIGURE 2A-1. AIR FORCE TRACK GULL BRAVO.

AIR FORCE TRACK GULL DELTA

LOCATION	COORDINATES	ALT
CHS	32-54N 80-02W	19000 Ft
AZANA	32-24N 78-15W	19000 Ft
SMELT	31-59N 77-00W	19000 Ft
LAMBERT	31-48N 74-18W	19000 Ft
PERCY	35-00N 72-45W	19000 Ft
ARCHER	37-20N 72-21W	19000 Ft
TUNNA	38-55N 72-07W	19000 Ft
GOLD	39-13N 70-14W	19000 Ft
ROY	36-32N 69-24W	19000 Ft
GEORGE	34-13N 68-48W	19000 Ft
LANDRY	31-50N 68-05W	31000 Ft
CLARK	31-31N 69-55W	31000 Ft
MICKEY	31-13N 71-50W	31000 Ft
CHALMERS	30-57N 73-34W	31000 Ft
TROUT	30-23N 77-00W	31000 Ft
CARPS	30-24N 77-44W	31000 Ft
GAUGE	30-25N 78-34W	31000 Ft
JAX	30-27N 81-34W	31000 Ft

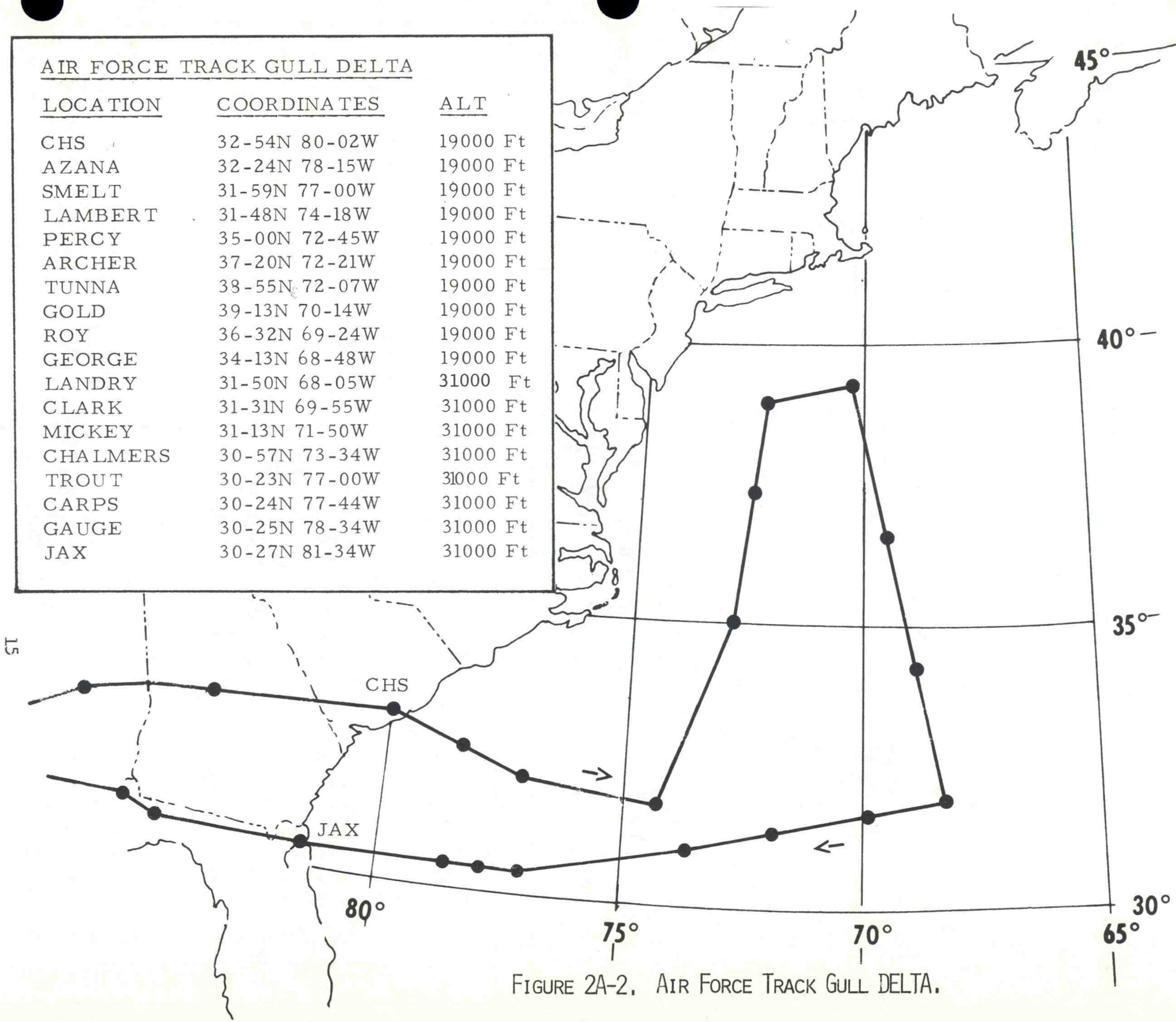
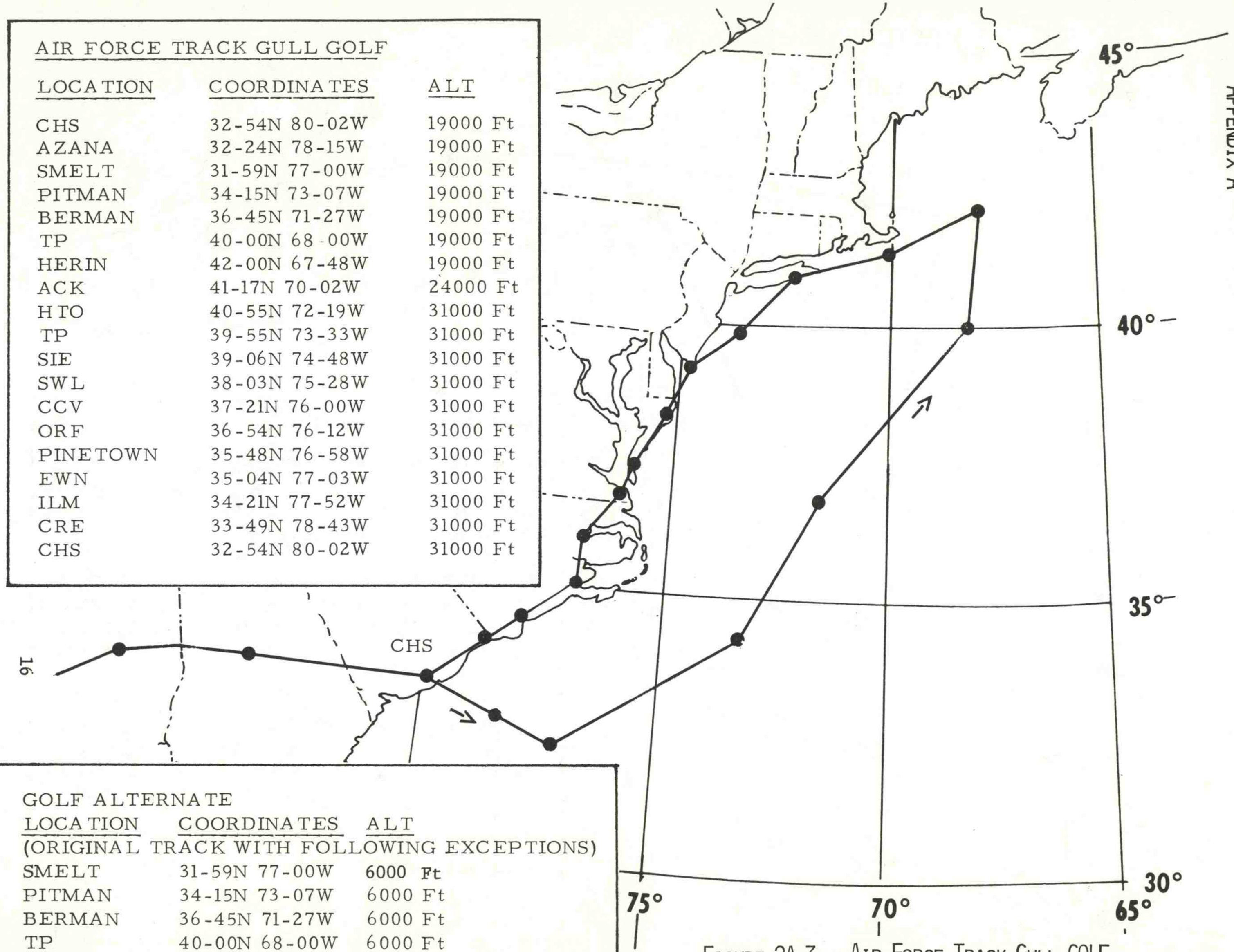


FIGURE 2A-2. AIR FORCE TRACK GULL DELTA.

AIR FORCE TRACK GULL GOLF

LOCATION	COORDINATES	ALT
CHS	32-54N 80-02W	19000 Ft
AZANA	32-24N 78-15W	19000 Ft
SMELT	31-59N 77-00W	19000 Ft
PITMAN	34-15N 73-07W	19000 Ft
BERMAN	36-45N 71-27W	19000 Ft
TP	40-00N 68-00W	19000 Ft
HERIN	42-00N 67-48W	19000 Ft
ACK	41-17N 70-02W	24000 Ft
HTO	40-55N 72-19W	31000 Ft
TP	39-55N 73-33W	31000 Ft
SIE	39-06N 74-48W	31000 Ft
SWL	38-03N 75-28W	31000 Ft
CCV	37-21N 76-00W	31000 Ft
ORF	36-54N 76-12W	31000 Ft
PINETOWN	35-48N 76-58W	31000 Ft
EWN	35-04N 77-03W	31000 Ft
ILM	34-21N 77-52W	31000 Ft
CRE	33-49N 78-43W	31000 Ft
CHS	32-54N 80-02W	31000 Ft



GOLF ALTERNATE

LOCATION	COORDINATES	ALT
(ORIGINAL TRACK WITH FOLLOWING EXCEPTIONS)		
SMELT	31-59N 77-00W	6000 Ft
PITMAN	34-15N 73-07W	6000 Ft
BERMAN	36-45N 71-27W	6000 Ft
TP	40-00N 68-00W	6000 Ft

FIGURE 2A-3. AIR FORCE TRACK GULL GOLF.

AIR FORCE TRACK GULL JULIET

LOCATION	COORDINATES	ALT
JAX	30-27N 81-34W	19000 Ft
GAUGE	30-25N 78-34W	6000 Ft
CARPS	30-24N 77-44W	6000 Ft
TROUT	30-23N 77-00W	6000 Ft
USHER	30-45N 74-48W	6000 Ft
LAMBERT	31-48N 74-18W	6000 Ft
PERCY	35-00N 72-45W	6000 Ft
ARCHER	37-20N 72-21W	6000 Ft
TUNNA	38-55N 72-07W	6000 Ft
REVERSE COURSE		18000 Ft

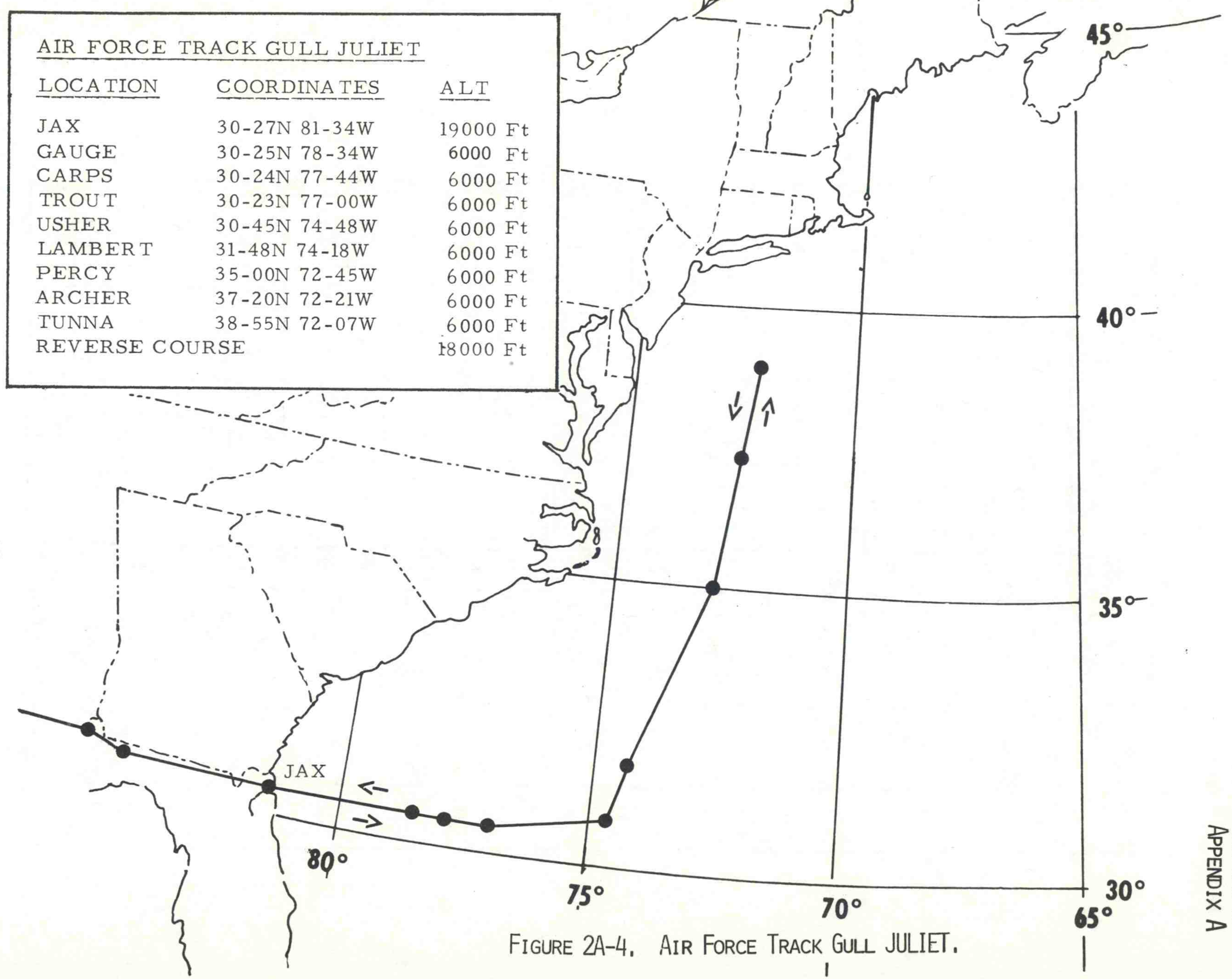
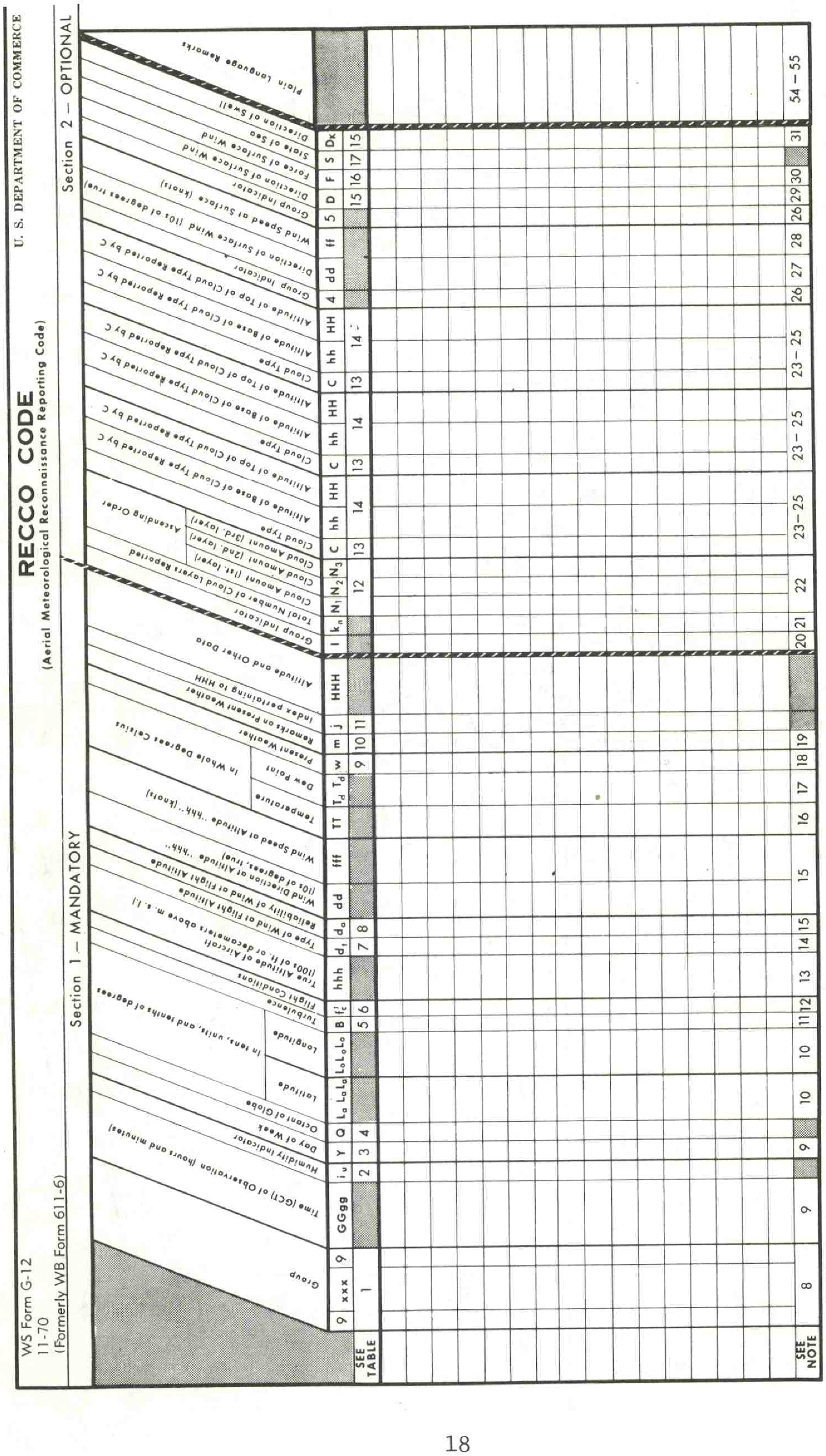


FIGURE 2A-4. AIR FORCE TRACK GULL JULIET.



U. S. DEPARTMENT OF COMMERCE

RECCO CODE

(Aerial Meteorological Reconnaissance Reporting Code)

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

Section 1 — MANDATORY

Group	Time (GCT) of Observation (hours and minutes)	Humidity Indicator	Day of Week	Octant of Globe	Latitude (In tens, units, and tenths of degrees)	Longitude (In tens, units, and tenths of degrees)	Turbulence	Flight Conditions	True Altitude of Aircraft (100s of ft. or decameters above m.s.l.)	Type of Wind at Flight Altitude	Reliability of Wind at Flight Altitude	Wind Direction at Altitude "hhh" (10s of degrees, true)	Wind Speed at Altitude "hhh" (knots)	Temperature (In Whole Degrees Celsius)	Dew Point (In Whole Degrees Celsius)	Present Weather	Remarks on Present Weather	Index pertaining to HHH	Altitude and Other Data
9 xxx 9	GGgg	i_u	Y	Q	$L_aL_aL_a$	$L_oL_oL_o$	B	$f_c^!$	hhh	d_t	d_a	dd	fff	TT	T_dT_d	w	m	j	HHH
SEE TABLE: 1		2	3	4			5	6		7	8					9	10	11	
SEE NOTE: 8	9	9		9	10	10	11	12	13	14	15	15		16	17	18	19		

Section 2 — OPTIONAL

Group Indicator	Total Number of Cloud Layers Reported	Cloud Amount (1st. layer) (Ascending Order)	Cloud Amount (2nd. layer) (Ascending Order)	Cloud Amount (3rd. layer) (Ascending Order)	Cloud Type	Altitude of Base of Cloud Type Reported by C	Altitude of Top of Cloud Type Reported by C	Cloud Type	Altitude of Base of Cloud Type Reported by C	Altitude of Top of Cloud Type Reported by C	Cloud Type	Altitude of Base of Cloud Type Reported by C	Altitude of Top of Cloud Type Reported by C	Group Indicator	Direction of Surface Wind	Wind Speed at Surface (knots) (10s of degrees true)	Group Indicator	Direction of Surface Wind	Force of Surface Wind	State of Sea	Direction of Swell	Plain Language Remarks
1	k_n	N_1	N_2	N_3	C	hh	HH	C	hh	HH	C	hh	HH	4	dd	ff	5	D	F	S	Dx	
SEE TABLE:		12			13	14		13	14		13	14						15	16	17	15	
SEE NOTE: 20	21	22			23 – 25			23 – 25			23 – 25			26	27	28	26	29	30		31	54 – 55

FIGURE 2B-1. STANDARD RECONNAISSANCE CODE

DROPSONDE CODE

Sounding data obtained from a dropsonde released from aircraft will be reported by means of WMO code form (FM36.E) as adopted for usage in FMH No. 4. The code has been modified, and the following exceptions are necessary to adopt the code for dropsonde soundings:

a. Parts C and D of the WMO code format are not used as present reconnaissance flight altitudes are well below 200 mbs. Thus, only Parts A and B will be sent for a complete dropsonde observation.

b. Wind information is not available from current dropsonde instruments, therefore, all wind groups are excluded and 77999 is reported for the maximum wind groups.

c. Most reconnaissance flights are below 200 mbs; therefore, tropopause data will be encoded as 88999 for all dropsonde releases.

d. The dropsonde data will be sent as a separate report.

e. When dropsonde data are sent, the indicator group 9XXX9 71717 precedes the coded sounding data. In this instance, two minor alterations are made, the prefix, TEMP SHIP, is omitted from the report, and GG is reported to the nearest quarter hour.

CHAPTER 2
APPENDIX D

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 PATTERN	H.				
FCST MOVEMENT	I.	/	/	/	/
SUCCEEDING DAY	J.				
REMARKS	K.				

REQUIREMENTS PRIOR TO 1830Z
DISSEMINATE PRIOR TO 2000Z

OBSERVATIONS

1. The observational system used in support of the East Coast Winter Storms Operations Plan is a mixture of land surface, ship, radar, and upper air networks, plus a series of satellites. The routine operations of these various data sources are detailed in the following series of Federal Handbooks and Plans:

Federal Meteorological Handbook Number 1, Surface Observations
Federal Meteorological Handbook Number 7, Weather Radar Observations
National Weather Service Weather Radar Manual
Operations of the National Weather Service
Federal Meteorological Handbook Number 2, Synoptic Observations
Federal Plan for Environmental Data Buoys
Federal Meteorological Handbook Number 4, Radiosonde Code

Procedures for obtaining special or non-routine observations required in support of winter storm detection and forecasting, while covered to some extent in these documents, are described in detail in Weather Service Operations Manual Chapter B-90, Special Warning Program Observations. This chapter covers observational programs of the several agencies involved.

The only observational programs which will be covered in any detail here are the two data sources which are still considered somewhat unique and/or were established particularly to help in the winter storm analysis and forecast problem.

2. 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 4.

(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 WSFOs in near real time through the Central Data Distribution System (CDDS) at the World Weather Building.

(2) The improved TIROS operational satellites, (NOAA 4) provides 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.

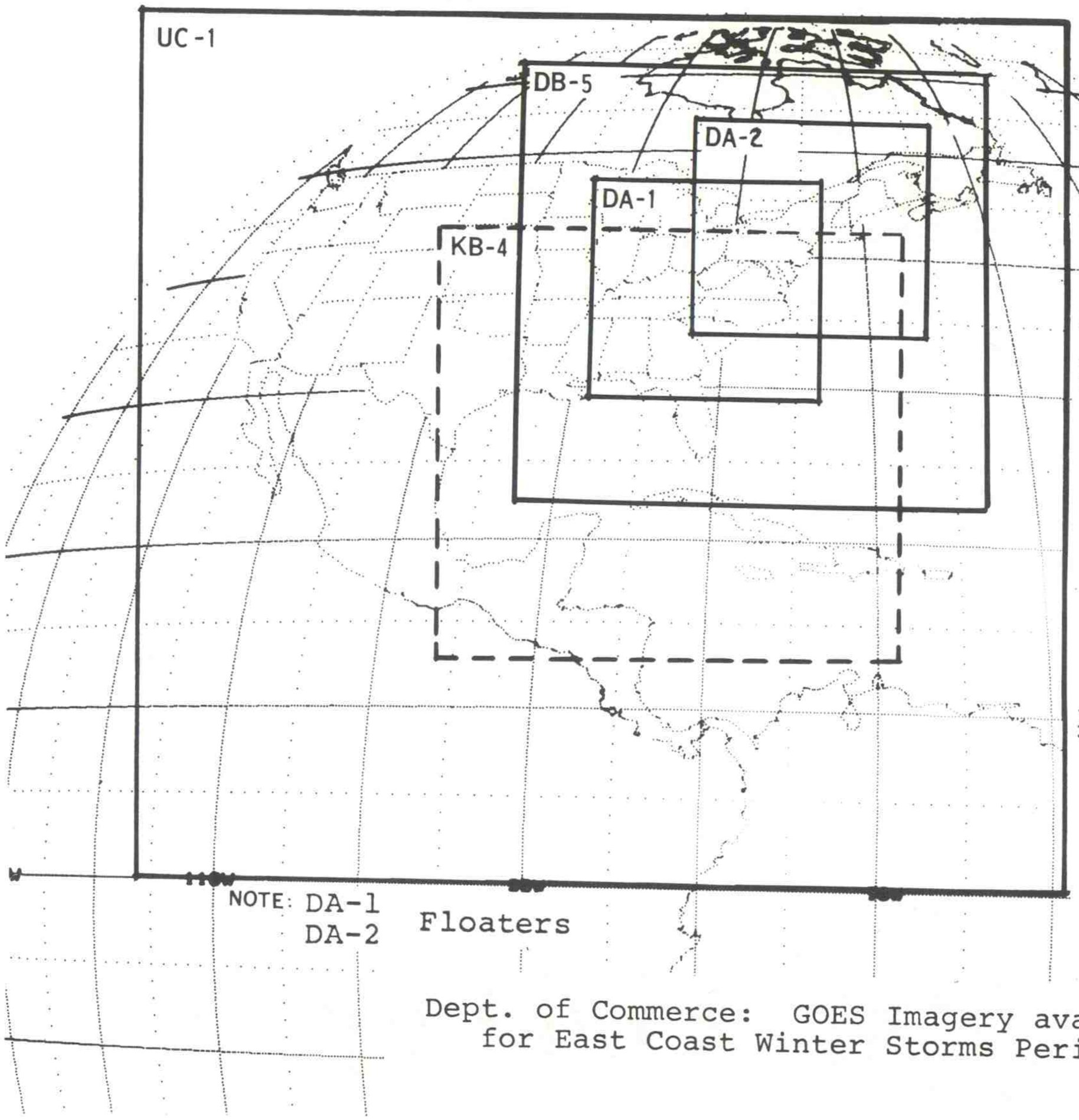
(d) Data from the VHRR. This instrument is similar to the Scanning Radiometer and produces data of higher resolution (0.5 nautical mile at subpoint for both visible and IR data compared to 2 nautical miles for visible and 4 nautical miles for IR from the scanning radiometer). The data from the VHRR for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

(3) The Synchronous Meteorological Satellite (SMS-1) also known as the Geostationary Operational Environmental Satellite (GOES), is now the primary source of satellite information from the East Coast. 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 the National Hurricane Center, respectively. Data from SMS-1 (GOES) presently available to the Eastern Region are listed in Fig. 3-1.

(4) All satellite data for the east coast are available at the National Environmental Satellite Service (NESS), World Weather Building, Marlow Heights, Md. The APT and Direct Readout Scanning Radiometer data are available to those stations possessing direct readout receivers. Stored Scanning Radiometer data are transmitted in digitized mapped format or facsimile circuits.

(5) Meteorologists of the NESS Synoptic Analysis Section personally confer with meteorologists of the NMC concerning current and probable future direction and speed of winter storms based on satellite data and numerical forecasts. Differences between the numerical forecasts and indications from satellite data are discussed in detail. The possibility of turbulence, icing, and precipitation amounts are also discussed.

(6) 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. Oceanographic and meteorological advice and analyses are provided.



FIELD SERVICES DIVISION, NESS

EAST COAST IMAGERY INVENTORY
SUPPORTING WINTER STORMS OPERATIONS

FROM WASH SFSS:

1. Full Disc IR
2. DB-5 VIS & EQUIV IR
3. KB-4 VIS & EQUIV IR
4. UC-1 VIS & EQUIV IR
5. One 1/2 mi VIS Floater
6. Two Floaters (capable of providing VIS or EQUIV IR at 1/2, 1, or 2 mi resolution)

FROM MIA SFSS:

1. Full Disc IR
2. Two floaters (capable of providing VIS or EQUIV IR at 1/2, 1 or 2 mi resolution)

Dept. of Commerce: GOES Imagery available for East Coast Winter Storms Period

FIGURE 3-1

(7) Satellite Narratives (TBXX6) from the SFSSs at DCA and MKC are available through the FAA Request/Reply, RAWARC and Service "C" teletype circuits. 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 (2000CST, 0200CST, 0800CST, 1400CST). The Washington SFSS prepares at least 7 narratives per day (0815LST, 0615LST, 0915LST, 1215LST, 1515LST, 1815LST, 2115LST). 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.

(8) Imagery available from the Washington SFSS to Eastern Region stations for support of winter storms is shown in Fig. 3-1.

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 μm) and infrared (8-13 μm) 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 μm) data are collected at 0700 and 1200 local time.

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

3. Ship HOTEL Observations. The U.S. Coast Guard and the National Oceanic and Atmospheric Administration cooperate in the operation of Ocean Weather Station HOTEL (C7H). This ship is located in the vicinity of 38°N and 71°W or about 205 miles south of Martha's Vineyard Island and 200 miles off the Virginia Capes. The observational program consists of the following:

1) Surface observations cycled three-hourly. Intermediate observations available on request.

2) Radar reports cycled three-hourly. Intermediate observations available on request.

3) Radiosonde observations at 0000Z and 1200Z. Intermediate RAWINS, 0600Z and 1800Z, available on request.

Observations 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 enroute to or from station. Requests for such special observations should be directed to the Storm Coordination Center, National Weather Service, Washington. 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--which is scheduled to be about 50% to 60% of the 8 1/2-month OWS HOTEL season.

CHAPTER 4

COMMUNICATIONS

1. Department of Commerce.

a. National Weather Service.

All of the communication systems in use by the National Weather Service are used in support of the data collection and warning program given in this plan. These communication systems are described in the publication, Operations of the National Weather Service.

b. Research Facilities Center.

The RFC will use the communications facilities of the Air Force described in Appendix 4-A.

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 4-A.

c. The Common Communication Capabilities of DOD and the National Weather Service are contained in Appendix 4-B.

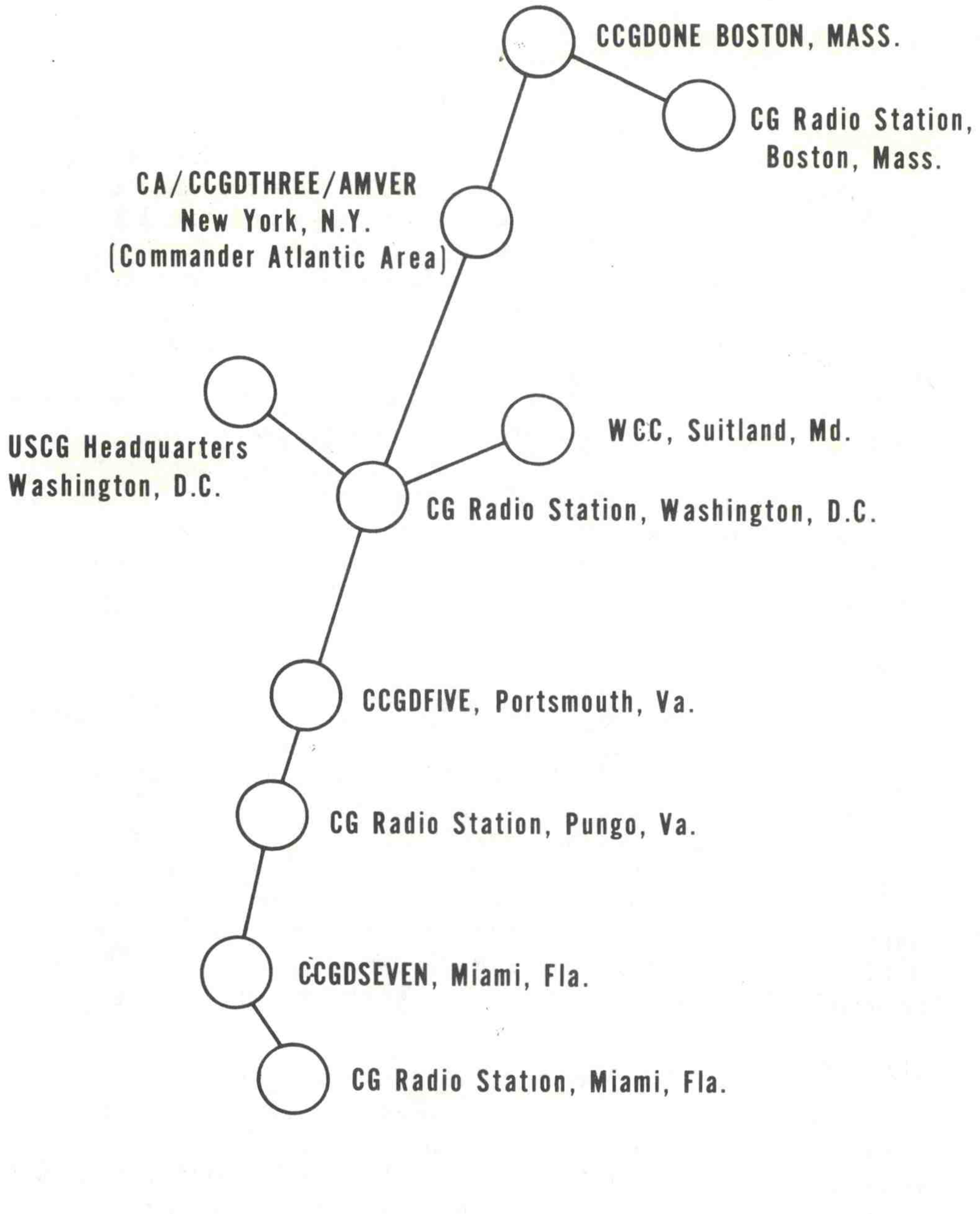
3. U.S. Coast Guard.

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 4-1 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.



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

FIGURE 4-1. SEARCH & RESCUE CIRCUIT (SARLANT) GT 7990

CHAPTER 4
APPENDIX A

USAF EAST COAST WINTER STORMS

RECONNAISSANCE COMMUNICATIONS SUPPORT PLAN

1. General. Reconnaissance observations initiated by USAF WC-130 type aircraft 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 CARCAH. The Weather Monitor will evaluate and edit the reports to insure meteorological and technical accuracy. The NHC will prepare for transmission and disseminate the edited weather observation reports through its communications facility over appropriate circuits and provide CARCAH with a printed copy. Circuit GT22117 links CARCAH, 53 WRS at Keesler AFB, Miss., alternate CARCAH at Andrews AFB, Md., 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 4A-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 CARCAH 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
	MACDILL AERONAUTICAL STATION	
Direct phone patch between recon aircraft and CARCAH Weather Monitor via AUTOVON.	A/G operator copy transmission from aircraft; relay by voice to CARCAH Weather Monitor via phone.	A/G operator copy from aircraft; relay to CARCAH Weather Monitor via teletypewriter circuit (GT 22117).
	LORING AERONAUTICAL STATION	
Direct phone patch between recon aircraft and CARCAH Weather Monitor over AUTOVON.	A/G operator copy transmission from aircraft; relay by voice to CARACH over AUTOVON.	A/G operator copy from aircraft; relay to CARCAH using WATS or commercial long-distance telephone.

3. Point-to-Point Teletypewriter Communications Capability

a. Circuit GT22117 (JQGAGP 28) will be configured with send/receive terminals at the CARCAH; alternate CARCAH, Andrews AFB, Md.; 53 WRS at Kessler AFB, Miss.; and the USAF Aeronautical Station at MacDill AFB, Fla.

The USAF Carswell ADWS will have a receive-only terminal to provide for further relay over military weather communications networks. The CARCAH 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. 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) 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/NHC-CARCAH, Coral Gables, Fla.

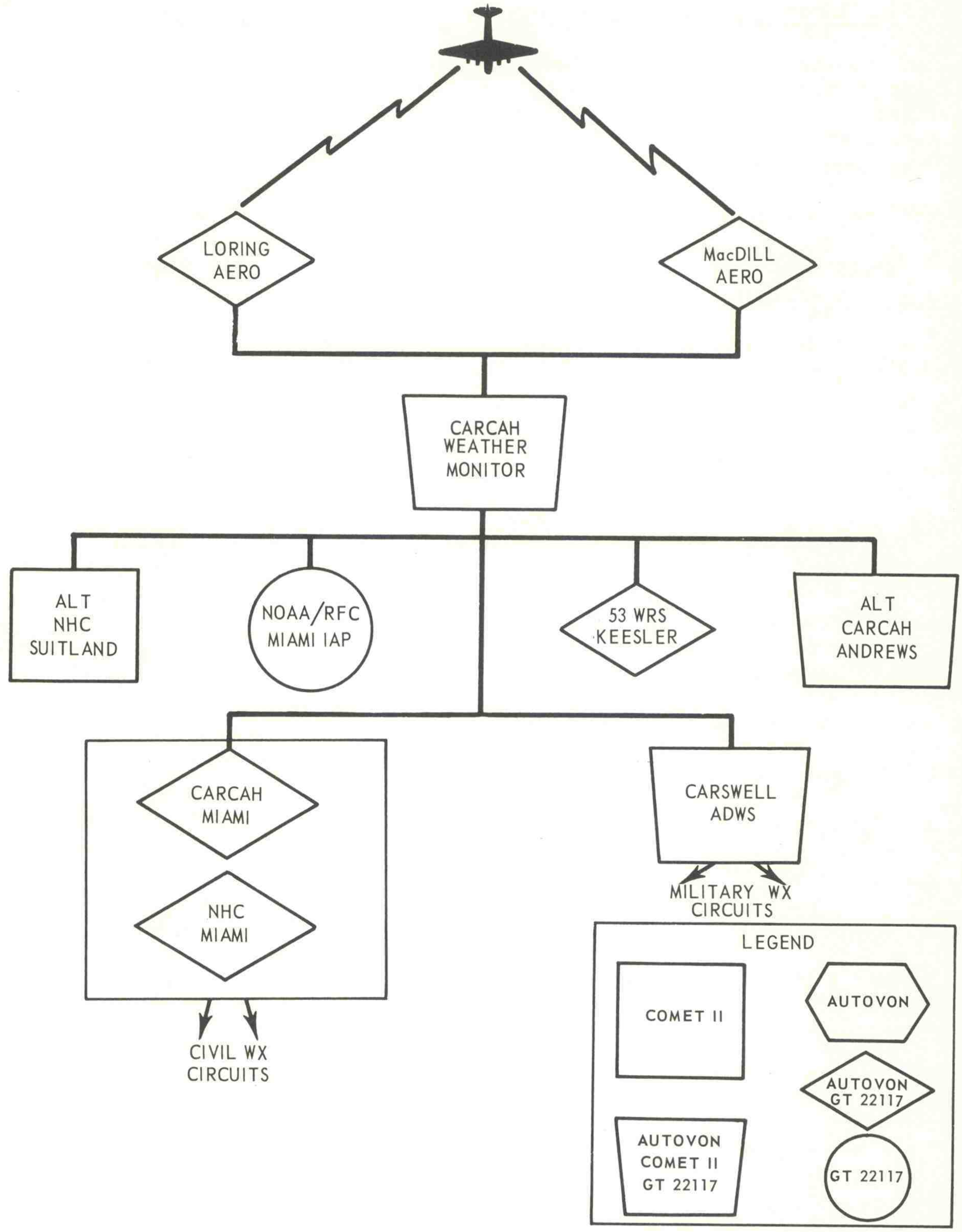


FIGURE 4A-1. USAF EAST COAST WINTER STORMS COMMUNICATION SYSTEM

CHAPTER 4
APPENDIX B

COMMON COMMUNICATIONS CAPABILITIES--ATLANTIC

STATIONS	AUTODIN	GT22117*	7072	COMET	AUTOVON
FLEWEAFAC Suitland	RUEBEGA				X
CARCAH Coral Gables	RUGJBBF	X			X
ALT CARCAH Andrews	RUEBBAA	X		X	X
NHC Miami	RUGJBBF	X(RO)	X	X(RO)	
NOAA/RFC Miami		X			
NMC Washington	RUEOLMA		X	X(RO)	
Weather Service Washington	RUEOLMA		X		
MacDill Aeronautical	RUCJBBB	X			X
Albrook Aeronautical	RUEOEFA				X
Loring Aeronautical	RUEDLDA				X
FLEWEACEN Norfolk	RULYSDC	X		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(RO)	X	X

*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-T
Washington, D.C. 20310

Headquarters, Naval Weather Service Command
Building 200
Washington Navy Yard
Washington, D.C. 20374

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

Headquarters, Air Weather Service
(AWS/DO)
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

Headquarters Aerospace Rescue & Recovery Service
ARRS/DO
Scott Air Force Base, Ill. 62225

CHAPTER 6

LIST OF ACRONYMS AND ABBREVIATIONS

AAF	Army Air Field
AC&W	Aircraft Control and Warning
ADWS	Automatic Digital Weather Switch
AFB	Air Force Base
AFGWC	Air Force Global Weather Central
AFRES	Air Force Reserve
AFRR	Air Force Reserve Region
AFS	Air Force Station
A/G	Air Ground
AIRMET	Airmen's Meteorological Information
AMOS	Automatic Meteorological Observing System
AMVER	Automated Merchant Vessel Reporting
APT	Automatic Picture Transmission
ARINC	Aeronautical Radio Inc.
ARTC	Air Route Traffic Control Center
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
COMET	CONUS Meteorological Teletype
CW	Continuous Wave
DOD	Department of Defense
DMSP	Defense Meteorological Satellite Program
DRSR	Direct Readout Scanning Radiometer
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
MCAS	Marine Corps Air Station
MSD	Meteorological Services Division

NASA	National Aeronautics and Space Administration
NATTC	Naval Air Technical Training Center
NAVSTA	Naval Station
NAVWEASEVFAC	Naval Weather Service Facility
NAWAS	National Warning System
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
NWSH	National Weather Service Headquarters
OSV	Ocean Station Vessel
OWS	Ocean Weather Station
POD	Plan of the Day
PPI	Plan Position Indicator
RAREP	Radar Report
RAWARC	Internal RAREP
RECCO	Reconnaissance Code
RFC	Research Facilities Center
RFO	River Forecast Office
RTTY	Radio Teletypewriter
SAR	Search and Rescue
SARLANT	Search and Rescue Atlantic Circuit
SC/BMS	Subcommittee on Basic Meteorological Services
SCC	Storm Coordination Center
SFSS	Satellite Field Services Station
SIGMET	Significant Meteorological Information
SMARS	Supplementary Marine Reporting Station Network
SMS	Synchronous Meteorological Satellite
SOP	Standing Operating Procedure
SR	Scanning Radiometer
SSB	Single Side Band
SSCC	Spin-Scan Cloud Camera
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
WEFAX	Weather Facsimile
WMO	World Meteorological Organization
WRG	Weather Reconnaissance Group
WSFO	Weather Service Forecast Office
WSMO	Weather Service Meteorological Observatory
WSO	Weather Service Office
WSR	Weather Surveillance Radar
WX	Weather

NOAA--S/T 76-1961