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DEPARTMENT OF COMMERCE / National Oceanic and Atmospheric Administration

FEDERAL COORDINATOR FOR
METEOROLOGICAL SERVICES
AND SUPPORTING RESEARCH



National Winter Storms Operations Plan

FCM 79-3

Washington, D.C.
October 1979

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United States, Office of

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

NATIONAL WINTER STORMS
"
OPERATIONS PLAN

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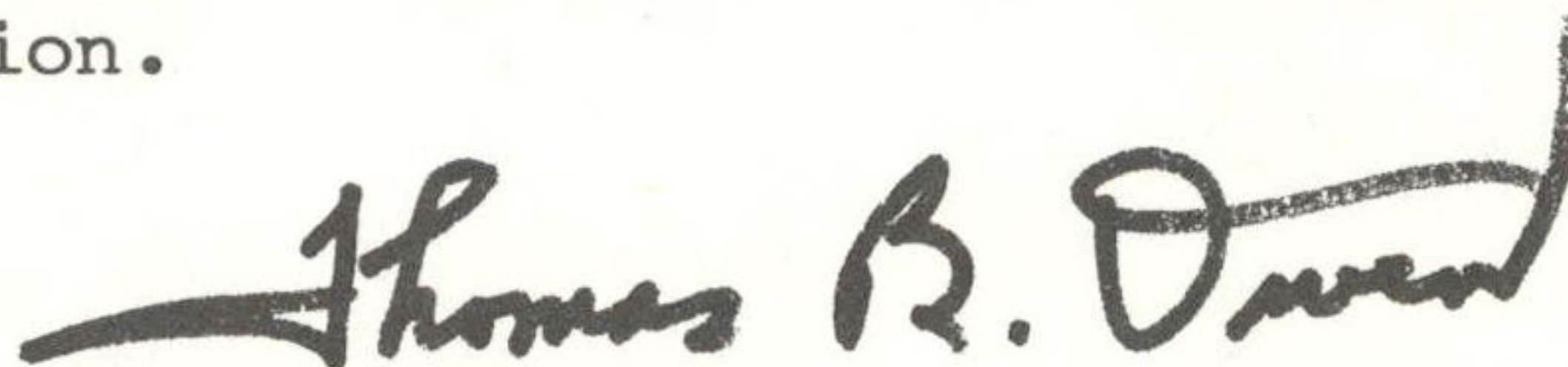
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FOREWORD

In a memorandum dated October 23, 1969, the Chairman, Interdepartmental Committee for Meteorological Services (ICMS), established a Working Group under the purview of the Subcommittee on Basic Meteorological Services (SC/BMS) 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.

The National East Coast Winter Storms Operations Plan was developed to meet this request. In 1978, the Plan was expanded to cover data requirements in the Gulf of Mexico. The Plan covers that part of the year (November 1 to April 15) having a relatively high incidence of winter storms along the East and Gulf Coasts and lists only those special arrangements, between the agencies involved, in meeting the objective of furnishing special weather observations for use in warning of severe winter storms along the Gulf and East Coasts.

This document is the 11th annual edition of the Plan and represents a general update of the previous edition.



Thomas B. Owen
Federal Coordinator for Meteorological
Services and Supporting Research

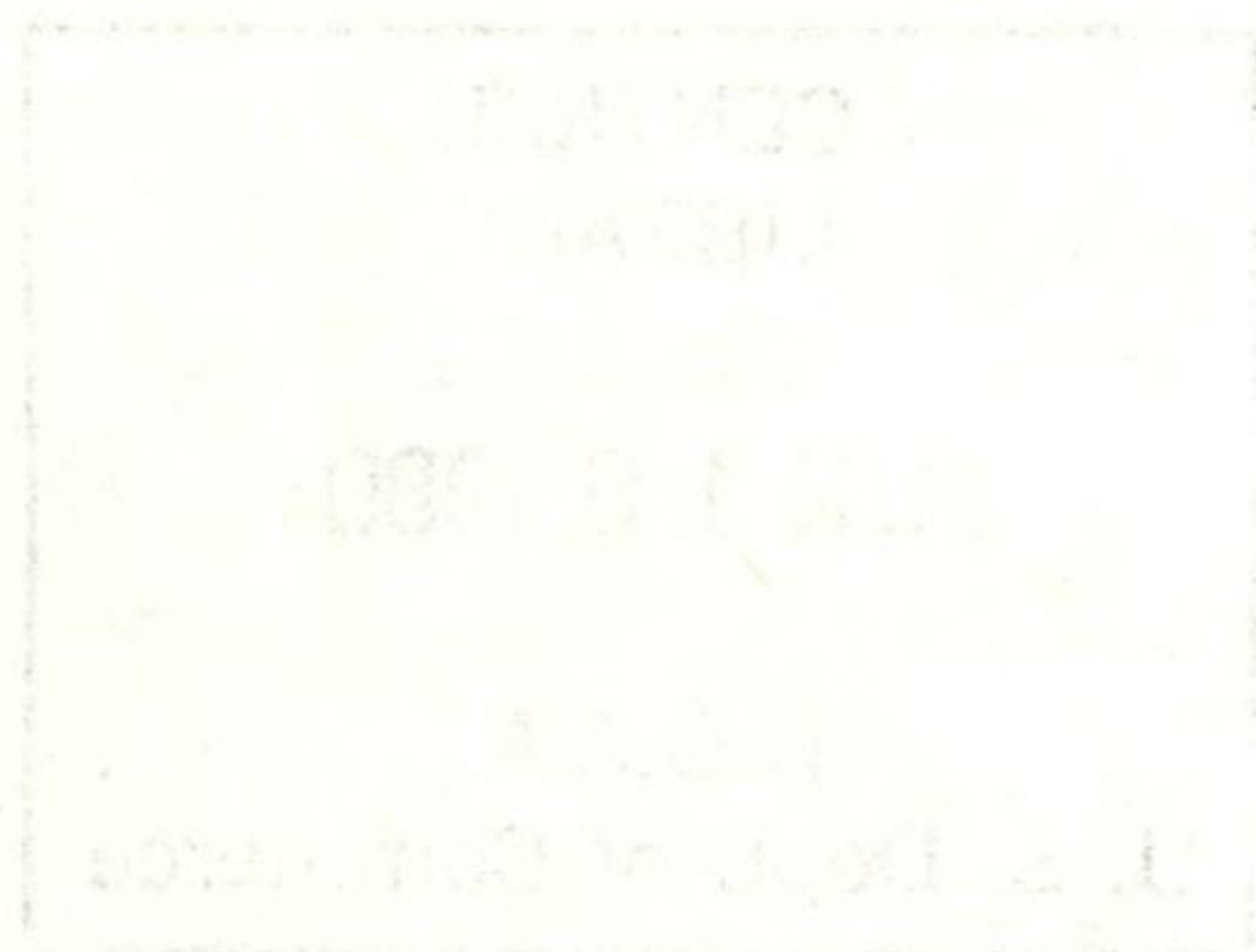


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ACKNOWLEDGMENTS

The Working 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

RESPONSIBILITY OF COOPERATING AGENCIES AND
AREA OF CONCERN

1. The National Oceanic and Atmospheric Administration (NOAA) 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 Spring, Maryland.
 - c. Provide special numbered national storm summaries to the general public and to all concerned interests through the National Public Service Unit (NPSU) at Kansas City, Missouri.
 - d. Provide statements and warnings through Weather Service Forecast Offices (WSFO) and local Weather Service Offices (WSO) along the eastern seaboard and Gulf of Mexico.
 - e. Provide advice on aircraft reconnaissance requirements forwarded through the WSFO Miami to the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH), from the National Meteorological Center (NMC) Washington. NMC is the central coordinating office for this program for all reconnaissance requirements.
 - f. Provide additional observations, when required, making available all reports to any requesting agency.
 - g. Operate satellite systems capable of providing coverage of the East Coast of the United States and the Gulf of Mexico during the winter storms season.
 - h. Coordinate with the National Aeronautics and Space Administration (NASA) to obtain pertinent meteorological data from NASA research and development experimental satellites.
 - i. Coordinate with the DOD Services to obtain pertinent meteorological data from the Defense Meteorological Satellite Program.
 - 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 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.

CHAPTER 1

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 MIAMI monitor to appropriate agencies.

n. Reimburse the Air Force for the aircraft reconnaissance flown in support of this Plan in accordance with the NOAA/USAF Memorandum of Understanding dated 16 March 1976.

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) shall:

a. Make available to NOAA agencies through the Automated Weather Net (AWN) interface basic surface, upper air, and radar observations from those DOD stations making such observations and PIREPs that become available.

b. Furnish to the National Weather Service, (1) aircraft reconnaissance observations that are within its capabilities and in accord with established reconnaissance priorities, and (2) special observations detailed in Chapter 3 of this Plan.

c. Designate CARCAH as the point of contact for coordination with NMC for aircraft reconnaissance required in support of this Plan.

d. Provide weather reconnaissance data monitor services to evaluate and disseminate reconnaissance reports.

e. Provide USAF aeronautical station communications to relay reconnaissance reports from the aircraft to the weather monitors.

f. 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 Oceanography 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 DIRNAVOCEANMET Instruction 3140.1 (series).

The U.S. Air Force, through the Air Weather Service, 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 winter storms for those hazardous phenomena specified in Air Weather Service Regulation 105-8.

CHAPTER 1

3. The Federal Aviation Administration (FAA) 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 shall:

a. Provide surface observations to NWS from its coastal facilities and vessels.

b. Interrogate surface ships of opportunity for special weather observations through the Automated Mutual - Assistance Vessel Rescue (AMVER) system.

c. Provide personnel, vessel, and communication support to the NOAA Data Buoy Office for development, deployment, and operation of environmental data buoy systems.

d. Provide communication circuits for relay of weather observations to NWS.

e. Provide coastal broadcast facilities at selected locations for dissemination of forecasts and warnings.

5. Area of Concern:

The geographic area of concern covers the Gulf of Mexico extending about 150 miles inland along the U.S. Gulf Coast. In the Atlantic, the area of concern ranges from latitudes 30°N to 48°N, west of longitude 65°W, extending about 150 miles inland along the Eastern Coast of the United States.

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 sorties in support of this plan will be assigned by CARCAH in the Winter Storm Plan of the Day (WSPOD). Normally, DOD will be prepared to generate one reconnaissance sortie per day. Requirements exceeding this capability will be accomplished on a "resource permitting" basis.

b. NOAA, Research Facilities Center (RFC). The NOAA RFC aircraft flights will be available on request for a storm or storm threat situation and will be used when available as backup for USAF aircraft reconnaissance. Additionally, they may be flown on storms of research interest as desired by the Environmental Research Laboratories. All such flights will be assigned by CARCAH in the WSPOD.

2. Operational Control Aircrafts. 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. NMC will forward sortie/alert needs to CARCAH through SCC Miami for tasking in the Winter Storm Plan of the Day (WSPOD) within responsibilities stated above. CARCAH will advise NMC of mission availability or non-availability and expected responsiveness of USAF and RFC assets (see paragraph 3e(4) on responsiveness). NMC will be responsible for requesting all reconnaissance flights and will provide information as specified in paragraph 3.e. below.

(1) Reconnaissance Requirements. NMC will forward NWS mission requirements, for the next 24-hour period (0500Z-0500Z) and an outlook for the succeeding 24 hours, to CARCAH not later than 1430Z each day. Vertical observation positions will be identified by NMC through CARCAH and will identify vertical observation requirements (approximately 200 nmi interval).

b. Change to Requirements. Changes to mission requirements will be accepted by the appropriate point of contact based on the following guidelines:

(1) Early departures will not be requested.

(2) When notification is received more than 2 1/2 hours prior to scheduled aircraft departure:

(a) Changes to tracks will be limited to substitution of one track for another.

(b) Departure delays will be accepted provided the delay plus the flight plan time does not exceed 13 1/2 hours.

(3) When notification is received more than 4 hours prior to scheduled aircraft departure time, departure delay requests will be evaluated in accordance with appropriate flight management directives. Delays exceeding that specified in paragraph 3b(2)(b) may be accepted in certain circumstances.

CHAPTER 2

(4) Point of contact for all of the above changes will be CARCAH.

(5) Coordination of meteorological data requirements will be accomplished prior to each flight over the Gulf of Mexico. The flight meteorologist responsible for the mission will contact the Lead Forecaster (telephone (504) 525-0823) at the SCC New Orleans approximately 2 1/2 hours prior to scheduled aircraft departure time. Since CARCAH publishes the WSPOD, all changes to the WSPOD will be made through CARCAH.

c. Cancellation of Requirements. Missions should be cancelled prior to aircraft departure and as much in advance as possible to allow maximum resource conservation. Cancellation after departure may result in degradation of follow-on mission capability.

d. Satisfaction of Requirements.

(1) Requirements are considered satisfied when an observation is or could have been taken (as in the case where aircraft are diverted from original track) at the specified location within the interval from 1 hour prior to 30 minutes after scheduled time.

(2) Requirements will be considered as satisfied "late" when an observation is or could have been taken at the specified location more than 30 minutes after the scheduled time, but prior to the requirement expiration time.

(3) Normally, no credit will be given for early missions.

(4) The requesting agency (NMC and/or appropriate WSFO) will provide CARCAH a written assessment of the weather reconnaissance mission anytime its timeliness and quality are outstanding or substandard. These assessments should be mailed to:

OL G, HQS AWS
National Hurricane Center
Gables One Tower - Room 631
1320 S. Dixie Highway
Coral Gables, FL 33146

e. Reconnaissance Winter Storm Plan of the Day (WSPOD).

(1) Coordination. NMC will coordinate with the appropriate NWS field offices as needed and provide WSPOD information to CARCAH through SCC Miami by 1430Z. Direct discussion in weather situations is also encouraged between the Navy and NMC with respect to storm or storm threat situations. Navy point of contact is the FLEAWEACEN Norfolk Command Duty Officer and the optimum time is 1330 local. The following data will be provided to CARCAH when applicable.

(a) Track and level desired. For mission altitude a second choice of level will be given in case level desired is not feasible due to probable icing or other operational constraints.

CHAPTER 2

(b) Selected trackpoint (Control Point) and time aircraft is required at the point.

(c) Special observations or dropsonde release points.

(d) Expiration time of requirement (time mission is regarded as dropped).

(e) Succeeding day outlook (anticipated track, control point, control point time--not earlier than).

(2) Preparation. Utilizing requirements stated by NMC, CARCAH will prepare the WSPOD as required throughout the season in coordination with the Air Force and RFC to effect maximum useful data from available resources. Format will be as shown in Appendix 2-C.

(3) Dissemination. The WSPOD will be made available in message form to all appropriate agencies that provide support to or exercise control of the missions. CARCAH will be responsible for disseminating the WSPOD as soon as possible after the DOC requirements (including changes) are received. Negative WSPODs will not be disseminated except to cancel a previously published requirement or outlook.

(4) Responsiveness.

(a) Notification of requirements must occur early enough to allow 16 hours plus en route flying time to the control point.

(b) The Succeeding Day Outlook portion of the WSPOD is designed to allow advance notification.

(c) When circumstances do not allow the appropriate notification lead time, the mission will be levied as "resources permitting."

4. Reconnaissance Flights.

a. General Storm Tracks.

(1) Air Force tracks 01 through 11 (Appendix 2-A) will normally be flown during storm situations or storm threat.

(2) Within operational limitations and with prior ARTCC approval, airborne diversions deemed advisable by the airborne meteorologist may be made from these tracks.

(3) Permanent changes to winter storm reconnaissance tracks must be coordinated with and approved by the appropriate FAA ARTCCs at least 30 days in advance of the implementation date.

b. Flight Plans. The flight plans for reconnaissance flights will be filed with FAA as soon as practicable before departure time.

c. Flight Levels. Reconnaissance aircraft will fly only at ARTCC assigned altitudes and will accept flight level changes when requested by FAA.

CHAPTER 2

d. Dropsonde Releases. Dropsonde instrument releases will be coordinated with the appropriate ARTCC at least 10 minutes before droptime, except for those outside of controlled airspace which do not require coordination.

e. Air Traffic Control Clearances.

(1) Air Traffic Control clearances, unless otherwise coordinated prior to the flight with the responsibility ATC facility, will provide ATC separation between all aircraft operating on storm missions and between these aircraft and other nonparticipating aircraft operating within controlled airspace. Mission commanders should be aware that nonparticipating aircraft may be operating over and nearby the storm area, thus adherence to ATC clearances is mandatory for safety purposes.

(2) Air Traffic Control, as a routine procedure, increases the vertical separation maintained between aircraft when reports from pilots indicate their inability to maintain assigned altitudes due to turbulence. Pilots should be aware, however, that unless such reports are received, only normal vertical separation of 1,000 feet below FL290 and 2,000 feet above FL290 will be provided by ATC to aircraft operating in the storm area. Thus, the fact that storm-mission aircraft have filed flight plans and are operating 5,000 or 10,000 feet apart, does not imply that the altitudes (flight levels) in between may not be in use by nonstorm aircraft.

(3) Any procedures desired by storm-mission commanders concerning ATC separation which is outside of the above parameters must be specifically coordinated with the ATC center(s) of concern.

f. Data Requirements. Data requirements are defined in Table 2-1. Data will be coded and transmitted in standard RECCO (flight level observations) or WMO TEMP DROP (dropsonde soundings) format.

(1) Appended to the first observation will be plain language remarks stating departure station (ICAO four letter identifier), time of departure, and ETA at control point.

Example:

```
AF 987 TRACK 01 OB01
97779 ... 93/// DPTD KBIX 10/0845Z ETA 37.3N 72.3W
10/1210Z
```

(2) Appended to the last observation will be plain language remarks stating ETA and intended arrival station (ICAO four letter identifier), number of observations, and monitor that copies observations.

Example:

```
AF 968 TRACK 05 OB06
97779 ... 91///
95559 ... ETA KBIX 17/2300Z OBS 01 THRU 14 to KMIA
```


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.	At altitudes indicated in the WSPOD.	Throughout the marine portion of area as defined in Chapter 1.	Dropsondes as specified in Plan of the Day (drop interval approximately 200 nmi). Horizontal observations are specified on the tracks. Intermediate observations will be appended to each horizontal observation. (No intermediate observations required on tracks 01-04.)	+ 5 kt, + 10° (Wind Direction) + 1°C + 20 m + 2 mb Position within 20 nmi
Location and strength of radar echoes	Any level.	All sectors.	When available.	Position within 20 nmi
*Ocean wave heights and wave lengths, sea surface wind estimates.	Sea surface.	All quadrants.	Every horizontal observation at or below 700 mb.	+ 10% (wave height) + 10 ft (wave length) 5 kt (Wind speed) 10° (Wind direction)

*Ocean wave heights and wave lengths will not be reported by USAF aircraft.

AIR FORCE TRACK 01

LOCATION IDENTIFIER

COORDINATES

BIX DEPARTURE	3025N 08855W
SJI	3044N 08822W
MGM	3213N 08691W
MCN	3241N 08339W
CHS	3254N 08002W
WX	3249N 07940W
SMELT/WX	3159N 07700W
WX	3300N 07436W
LEVER/WX	3352N 07229W
MERCI	3500N 07145W
WX	3630N 07144W
CHAMP	3731N 07141W
*GILBA/WX	3918N 07030W
FLANN	3820N 06957W
WX	2724N 05942W
DANER/WX	3516N 06904W
SWAPS/WX	3255N 07019W
MILKS	3201N 07137W
CORAN/WX	3201N 07336W
SMELT/WX	3159N 07700W
WX	3249N 07940W
CHS	3254N 08002W
MCN	3241N 08339W
MGM	3213N 08619W
SJI	3044N 08822W
BIX DESTINATION	3025N 08855W

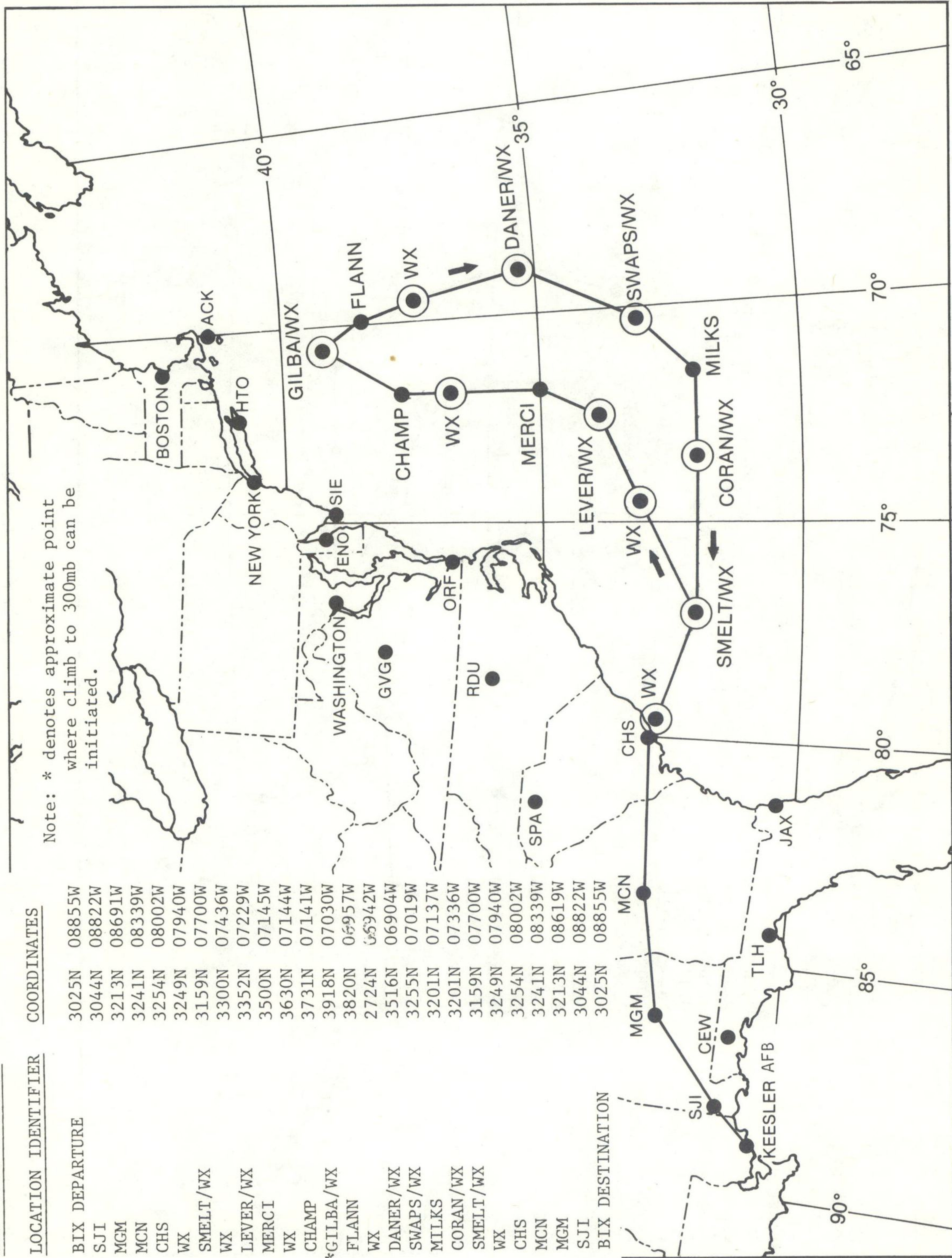


FIGURE 2A-1 AIR FORCE TRACK 01

LOCATION IDENTIFIER	COORDINATES
BIX DEPARTURE	3025N 08855W
SJI	3044N 08822W
MGM	3213N 08619W
MCN	3241N 08339W
CHS	3254N 08002W
WX	3249N 07940W
SMELT/WX	3159N 07700W
CORAN/WX	3201N 07336W
MILKS	3201N 07137W
SWAPS/WX	3255N 07019W
*DANER/WX	3516N 06904W
WX	3724N 06942W
FLANN	3820N 06957W
GILBA/WX	3918N 07030W
CHAMP	3731N 07141W
WX	3630N 07144W
MERCI	3500N 07145W
LEVER/WX	3352N 07229W
WX	3300N 07436W
SMELT/WX	3159N 07700W
WX	3249N 07940W
CHS	3254N 08002W
MCM	3241N 08339W
MGM	3213N 08619W
SJI	3044N 08822W
BIX DESTINATION	3025N 08855W

Note: * denotes approximate point where climb to 300mb can be initiated.

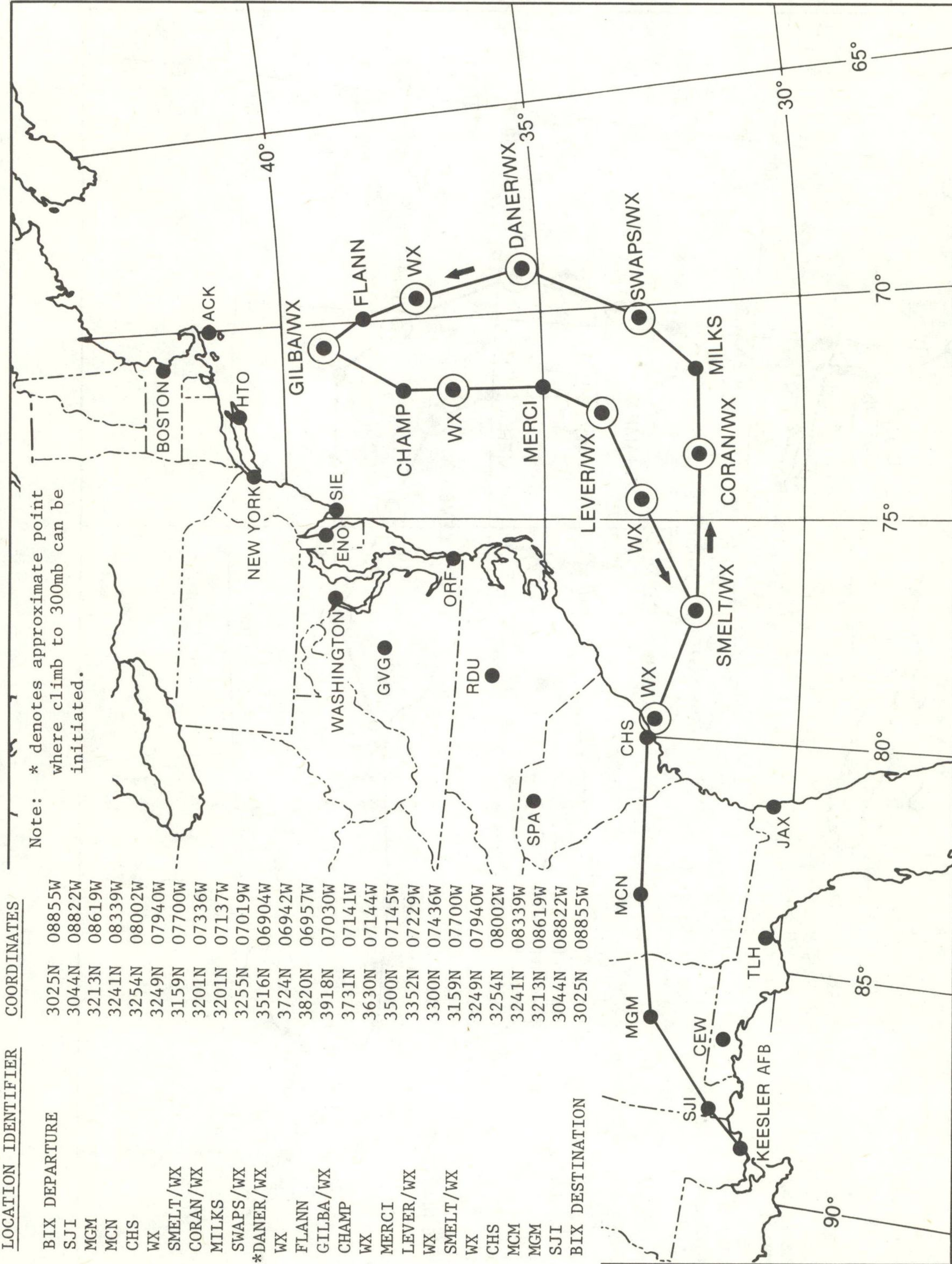


FIGURE 2A-2 AIR FORCE TRACK 02

AIR FORCE TRACK 03

LOCATION IDENTIFIER

COORDINATES

LOCATION IDENTIFIER	COORDINATES
BIX DEPARTURE	08855W
SJI	3025N 08822W
MGM	3044N 08619W
SPA	3213N 08156W
GVG	3502N 07809W
ENO	3801N 07531W
SIE	3914N 07448W
WX	3906N 07333W
HTO	3956N 07219W
WX	4055N 07100W
ACK	4106N 07002W
*WX	4117N 06830W
POGGO	4111N 06830W
WX	4100N 06700W
FLANN/WX	4000N 06800W
WX	3820N 06957W
MERCI	3600N 07115W
LEVER/WX	3500N 07145W
WX	3352N 07229W
SMELT/WX	3300N 07436W
WX	3159N 07700W
CHS	3249N 07940W
MCN	3254N 08002W
MGM	3241N 08339W
SJI	3213N 08619W
BIX DESTINATION	3044N 08822W
	3025N 08855W

Note: * denotes approximate point where climb to 300mb can be initiated.

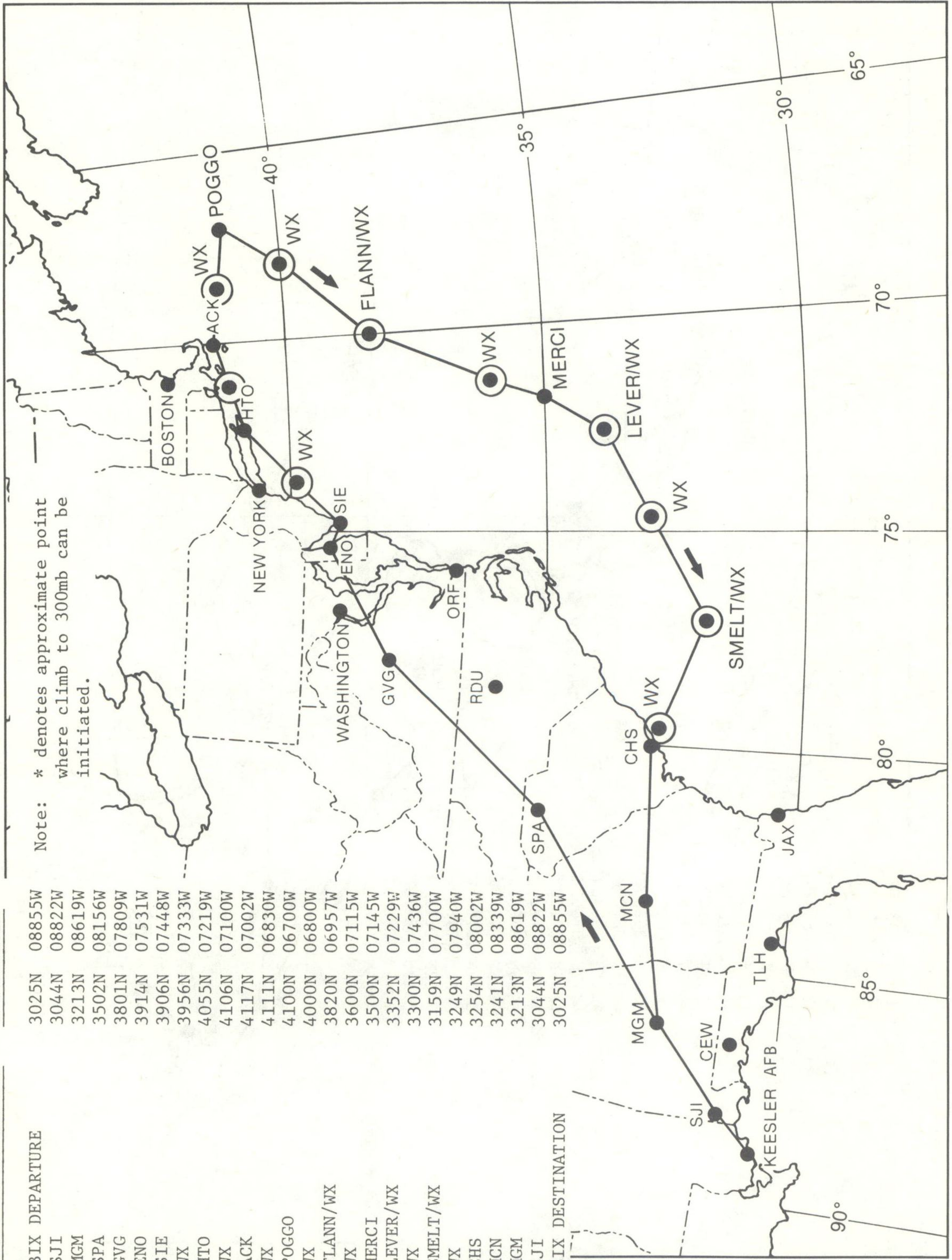


FIGURE 2A-3 AIR FORCE TRACK 03

AIR FORCE TRACK 04

LOCATION IDENTIFIER	COORDINATES
BIX DEPARTURE	08855W
SJI	3025N 08822W
MGM	3044N 08619W
MCN	3213N 08339W
CHS	3254N 08002W
WX	3249N 07940W
SMELT/WX	3159N 07700W
WX	3300N 07436W
LEVER/WX	3352N 07229W
MERCI	3500N 07145W
WX	3600N 07115W
*FLANN/WX	3820N 06957W
WX	4000N 06800W
POGGO	4100N 06700W
WX	4111N 06830W
ACK	4117N 07002W
WX	4106N 07100W
HTO	4055N 07219W
WX	3956N 07333W
SIE	3906N 07448W
ENO	3914N 07531W
GVG	3801N 07809W
SPA	3502N 08156W
MGM	3213N 08619W
SJI	3044N 08822W
BIX DESTINATION	3025N 08855W

Note: * denotes approximate point where climb to 300mb can be initiated.

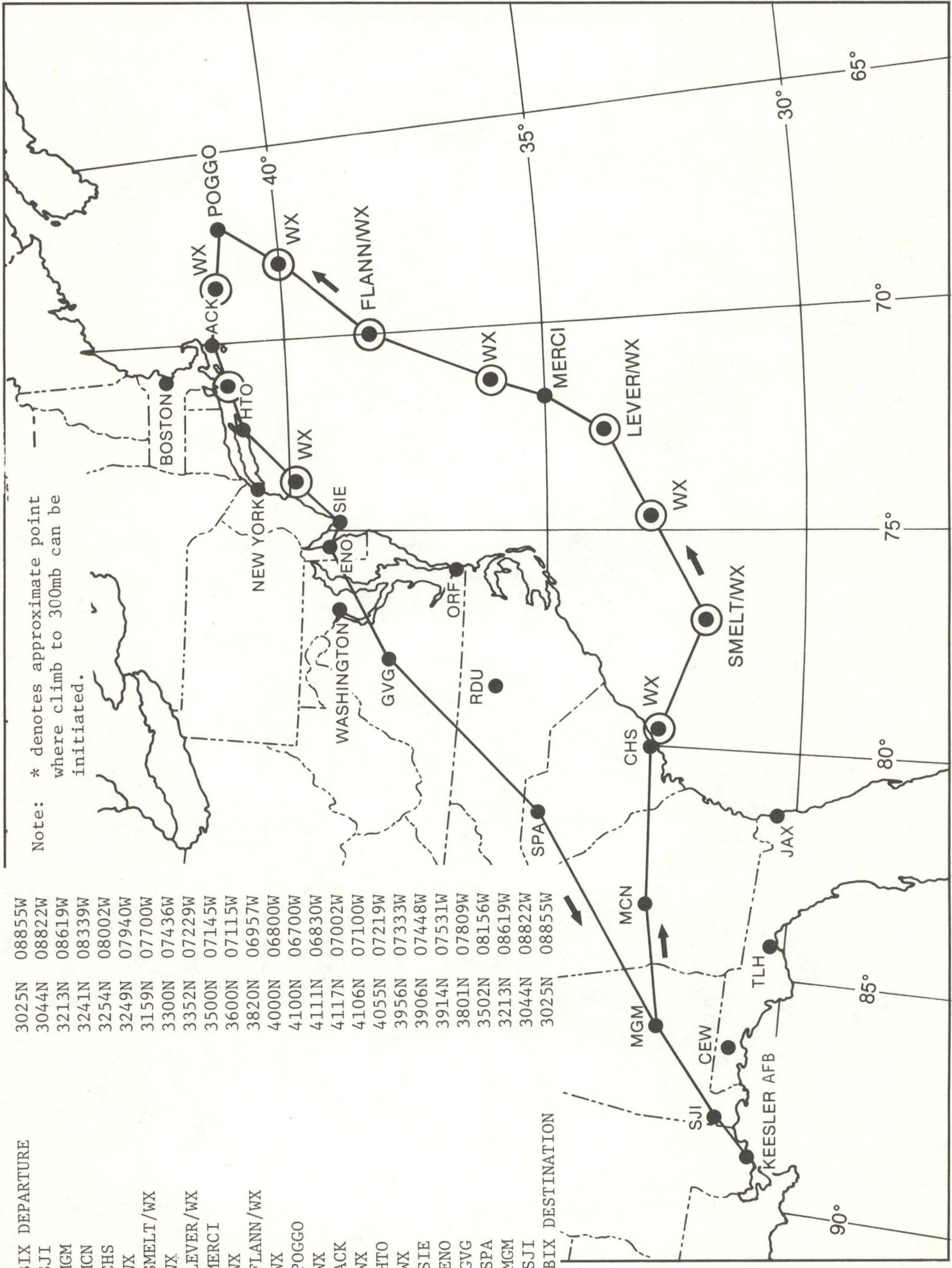


FIGURE 2A-4 AIR FORCE TRACK 04

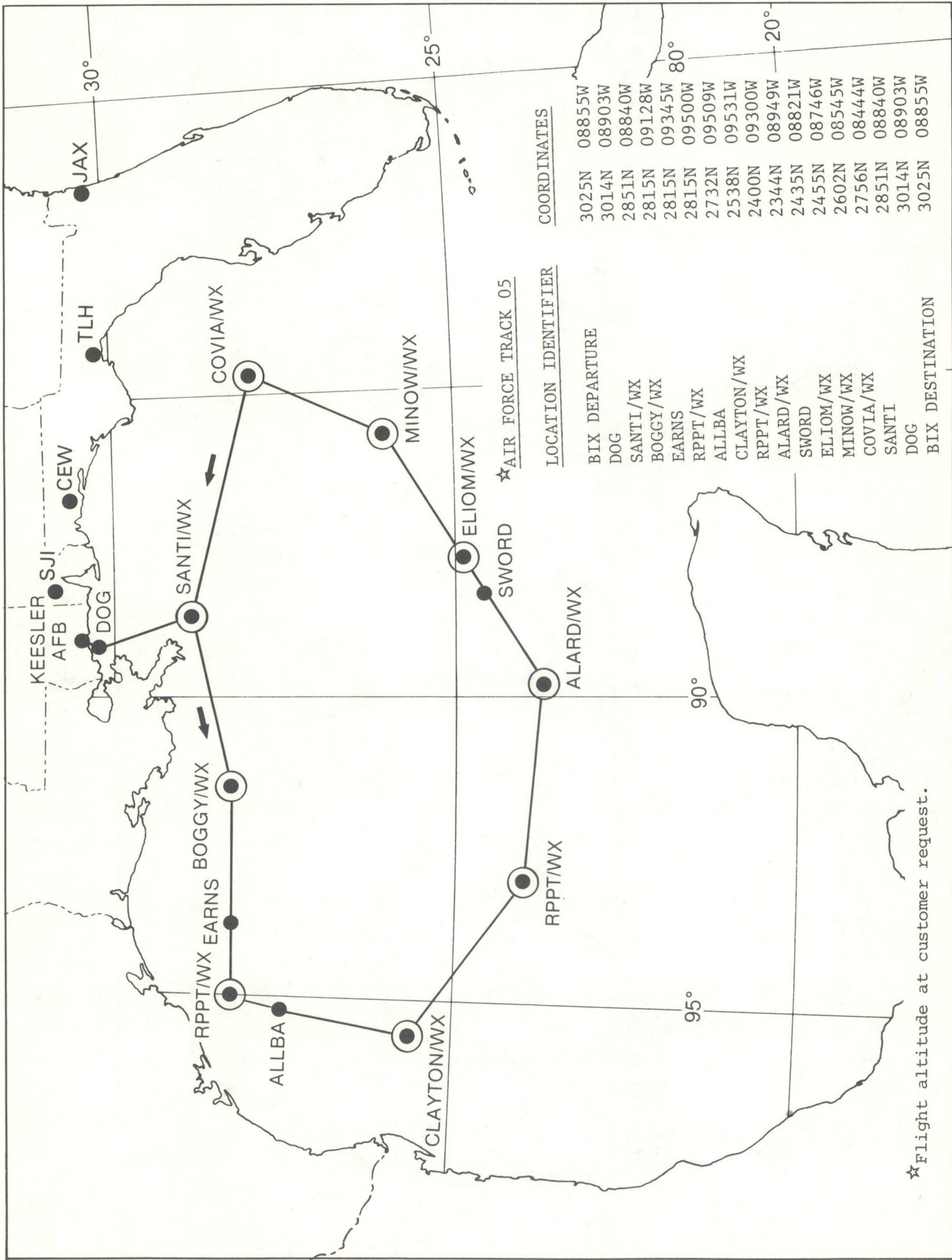


FIGURE 2A-5 AIR FORCE TRACK 05

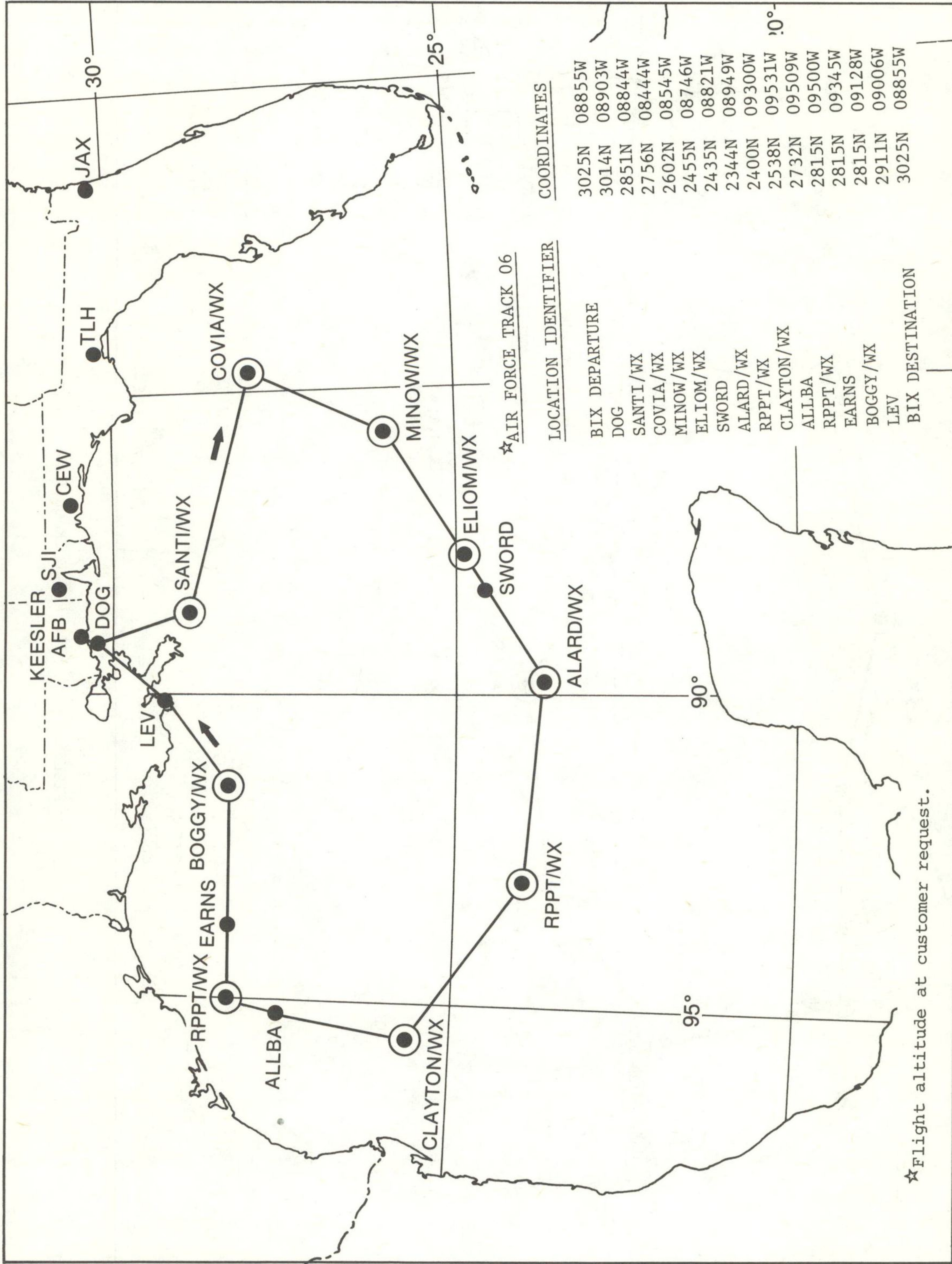


FIGURE 2A-6 AIR FORCE TRACK 06

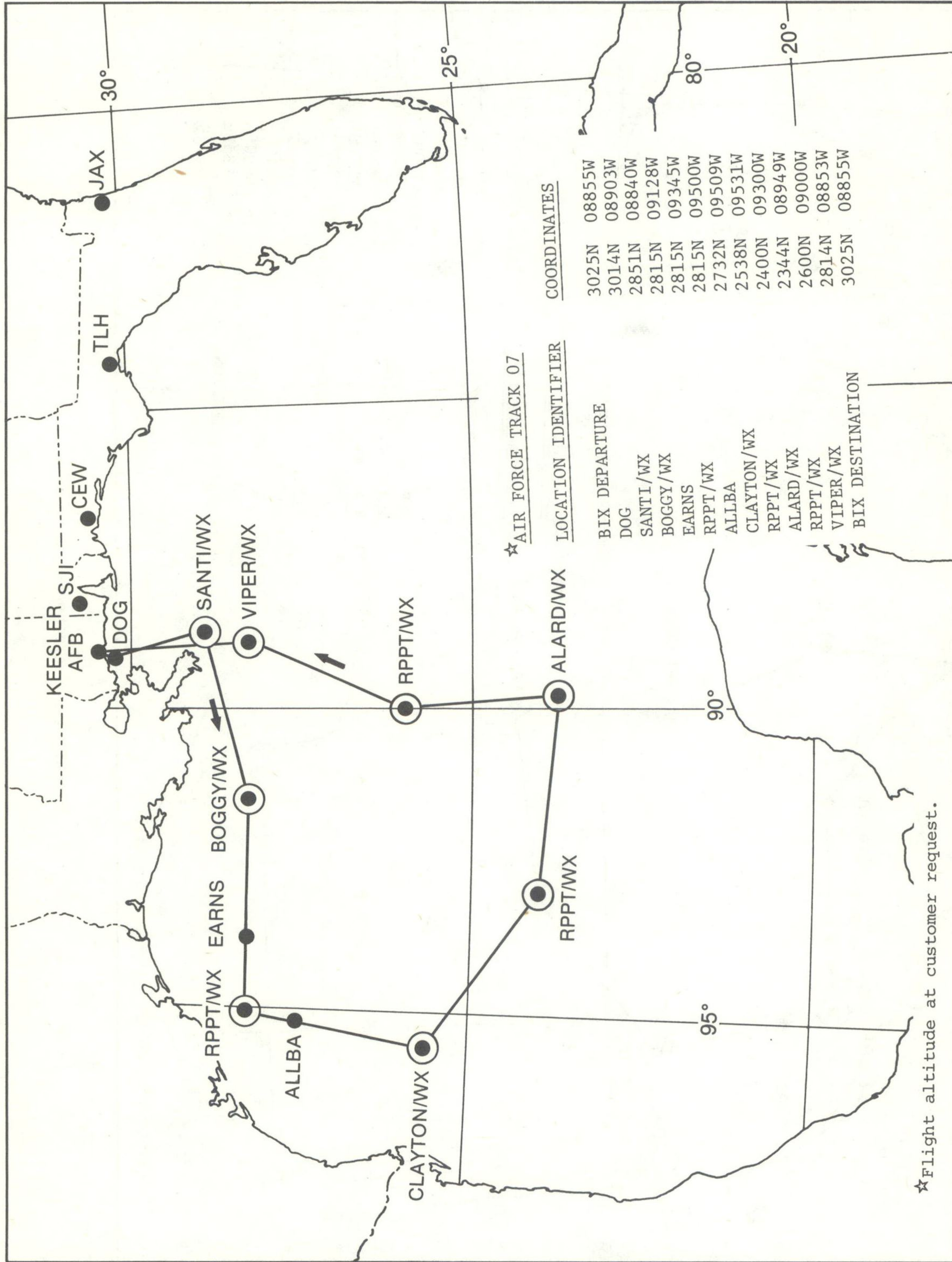


FIGURE 2A-7 AIR FORCE TRACK 07

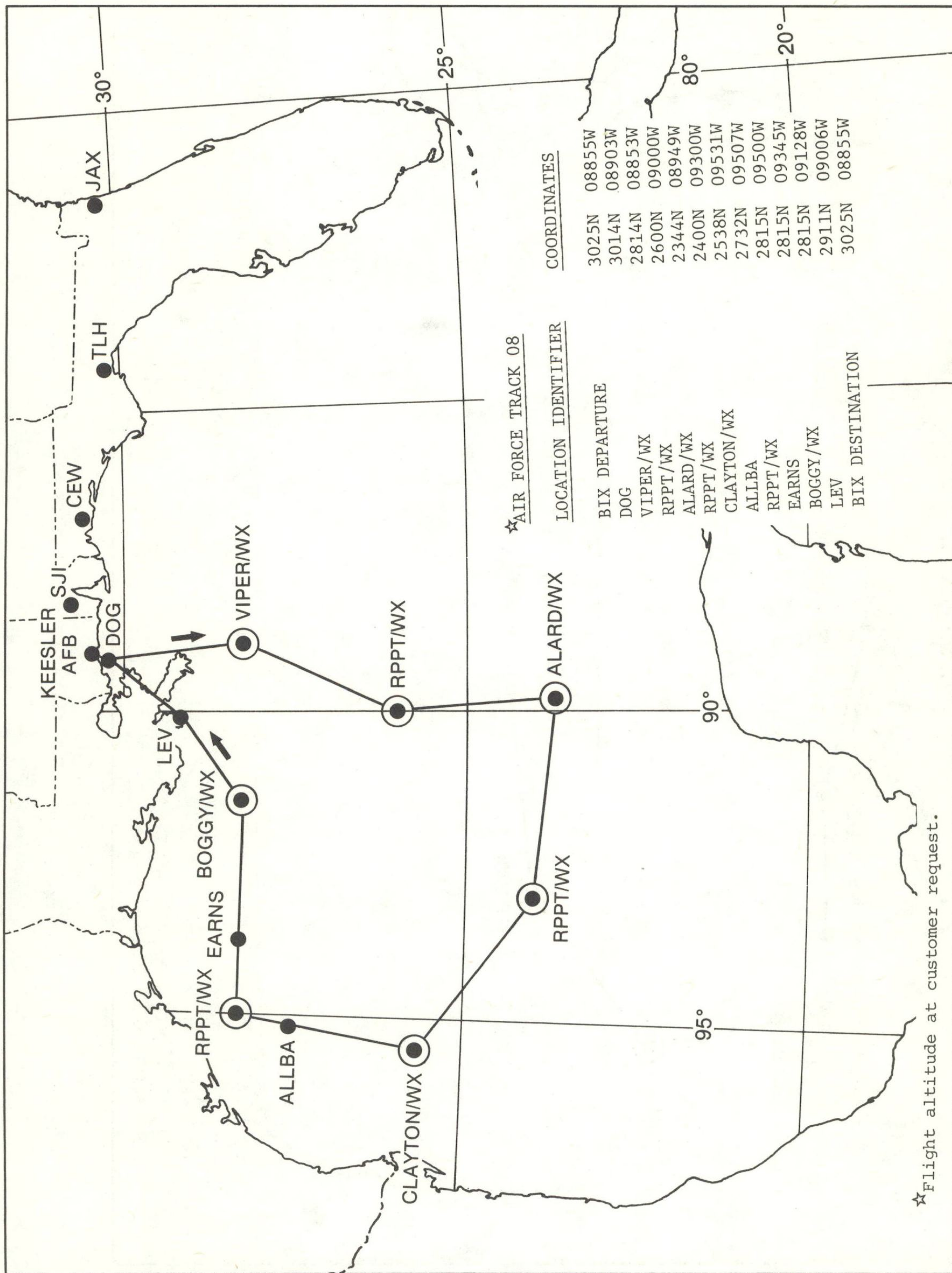


FIGURE 2A-8 AIR FORCE TRACK 08

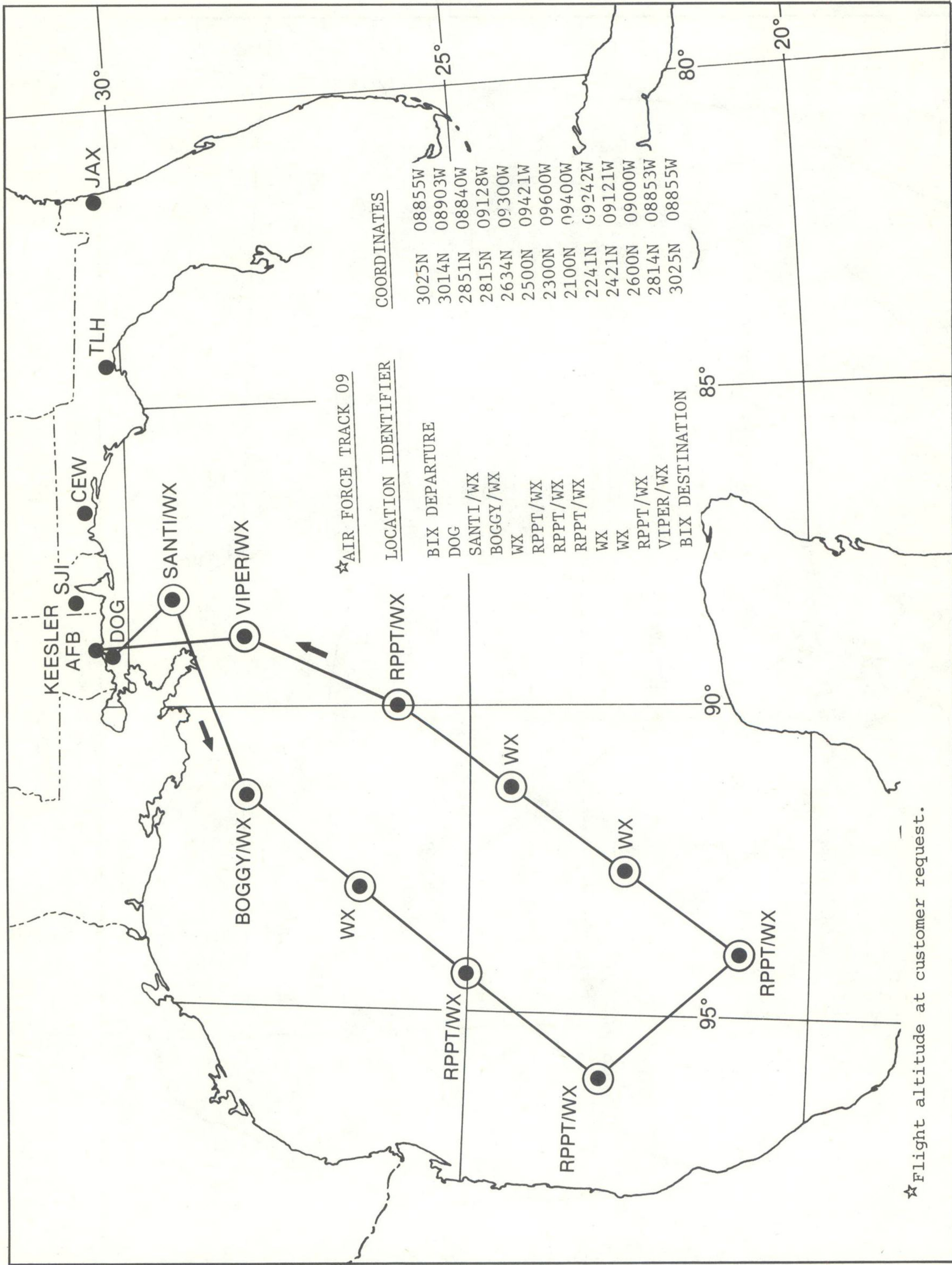


FIGURE 2A-9 AIR FORCE TRACK 09

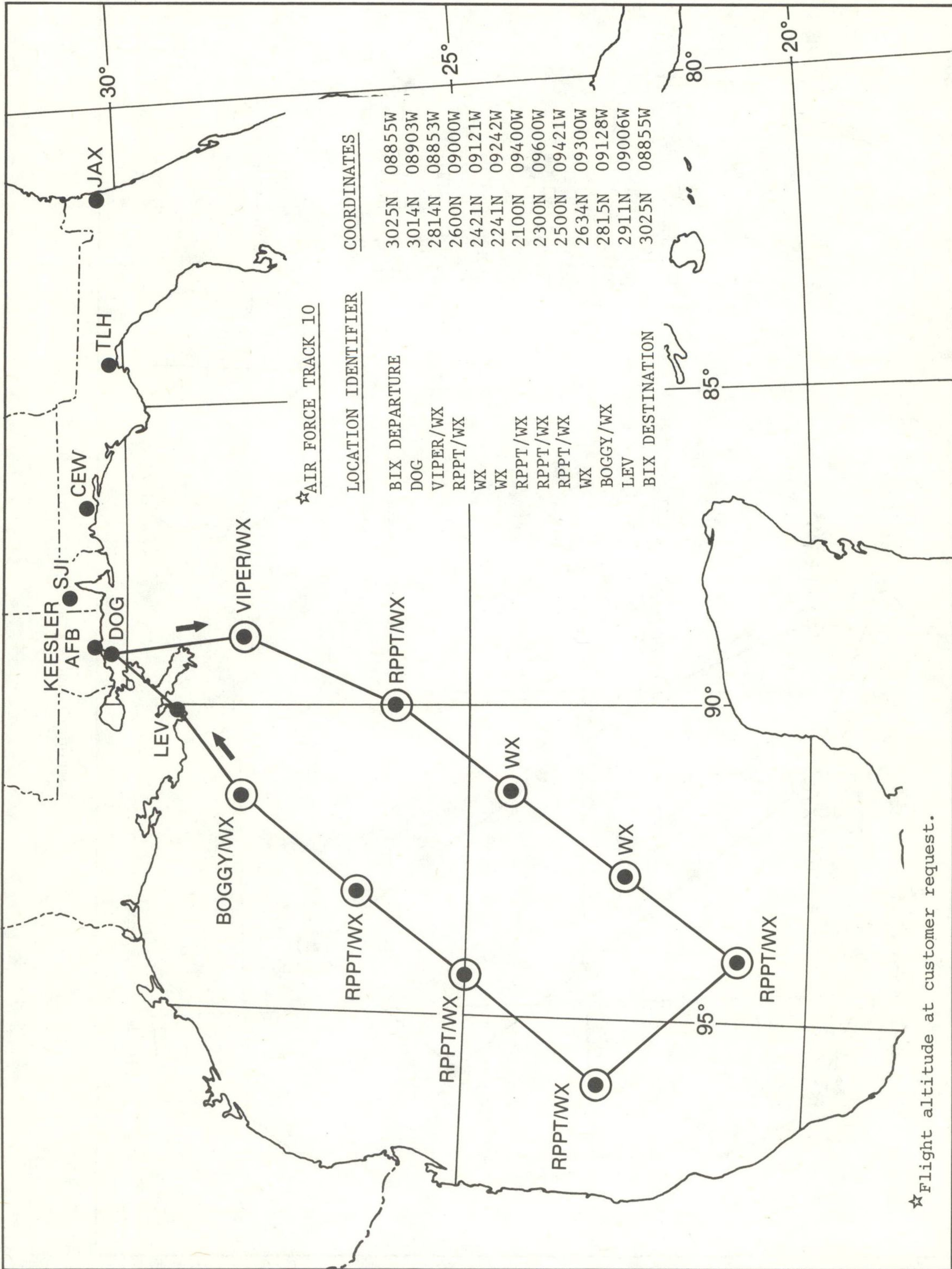


FIGURE 2A-10 AIR FORCE TRACK 10

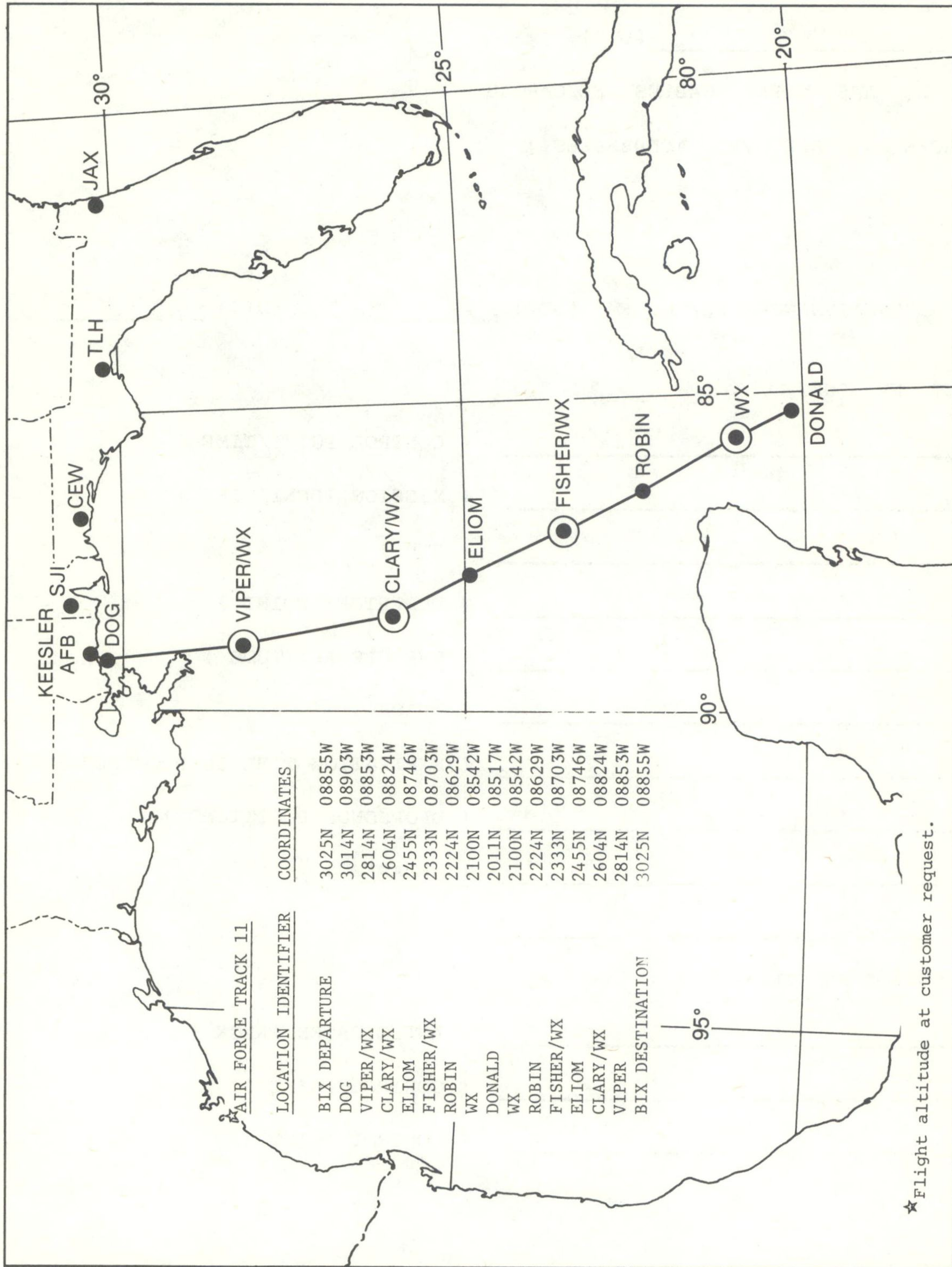


FIGURE 2A-11 AIR FORCE TRACK 11

WINTER STORM PLAN OF THE DAY (WSPOD) FORMAT

O/R _____ (DTG)

FM OLG HQ AWS CORAL GABLES FL/CARCAH

TO (MAC/NOAA APPROVED ADDRESSEES)

BT

UNCLAS

SUBJECT RECONNAISSANCE WSPOD FM (DTG) _____ TO (DTG) _____
FOLLOWS:

1. FLIGHT NR ONE

- A. _____ (CONTROL POINT/TIME)
- B. _____ (MISSION IDENTIFIER)
- C. _____ (ETD)
- D. _____ (DEPARTURE POINT)
- E. _____ (ENROUTE ALTITUDE)
- F. _____ (TRACK)
- G. _____ (EXPIRATION TIME OF REQUIREMENT)
- H. _____ (DROPSONDE POSITIONS)
- I. _____ (REMARKS)

2. OUTLOOK FOR SUCCEEDING DAY

- A. _____ (ANTICIPATED TRACK)
- B. _____ (CONTROL POINT)
- C. _____ (CONTROL POINT TIME)

BT

NNNN

(SAMPLE MISSION EVALUATION FORM)

DATE:

TO: OL-G HQ AWS/CARCAH

FROM:

SUBJECT: MISSION _____ EVALUATION
(MISSION IDENTIFIER)

I. PUBLISHED REQUIREMENTS

1. CONTROL POINT AND TIME _____
2. FLIGHT TRACK _____
3. EXPIRATION TIME OF REQUIREMENT _____
4. MISCELLANEOUS (DROP PSNS, ALTITUDES, ETC.) _____

II. RECONNAISSANCE MISSION PERFORMANCE

1. CONTROL PT TIME: _____ ON TIME _____ LATE _____ EARLY _____ MISSED
2. FLIGHT TRACK FLOWN: _____ COMPLETELY _____ PARTIALLY _____ OTHER
3. HORIZONTAL DATA COVERAGE: _____ COMPLETE _____ INCOMPLETE
_____ ACCURATE _____ INACCURATE _____ TIMELY _____ UNTIMELY
4. VERTICAL DATA COVERAGE: _____ COMPLETE _____ INCOMPLETE
_____ ACCURATE _____ INACCURATE _____ TIMELY _____ UNTIMELY

III. OVERALL MISSION EVALUATION

1. _____ OUTSTANDING OR _____ UNSATISFACTORY FOR EQUIPMENT _____ ACCURACY
_____ TIMELINESS _____ PROCEDURES _____ COMPLETENESS _____ OTHER

IV. REMARKS (BRIEF BUT SPECIFIC) _____

V. REPLY BY INDORSEMENT _____ YES _____ NO

(Forecaster Signature)

NWSOP COORDINATED REQUEST FOR
AIRCRAFT RECONNAISSANCE

I. NMC REQUEST (ACCOMPLISH ITEMS 1 AND 3 OR 2 AND 3 AND FILL IN APPROPRIATE SPACES)

___ 1. FLIGHT IS DESIRED

A. CONTROL POINT AND CONTROL POINT TIME

B. TRACK NUMBER AND ALTITUDE

C. EXPIRATION TIME OF FLIGHT REQUEST

D. SPECIAL INSTRUCTIONS (SUCH AS DROPSONDE POSITIONS)

___ 2. NO FLIGHT IS DESIRED OR PREVIOUSLY REQUESTED FLIGHT IS CANCELLED

___ 3. SUCCEEDING DAY OUTLOOK

A. ANTICIPATED TRACK NUMBER _____

B. CONTROL POINT AND CONTROL POINT TIME _____

II. SCC MIAMI/CARCAH COORDINATION

1. SCC MIAMI FORECASTER INITIALS _____

2. NMC FORECASTER INITIALS _____

3. CARCAH DUTY OFFICER INITIALS _____

4. DATE AND TIME _____

III. SCC MIAMI DISTRIBUTION

1. PASS ALL AIRCRAFT RECON REQUESTS, CHANGES OR CANCELLATIONS TO CARCAH IMMEDIATELY.

OTHER OBSERVATIONS

1. General. In addition to aerial reconnaissance data, the observational system used in support of the National Winter Storm Operations Plan includes land surface, ship, radar, buoy, upper air, and satellite data. 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
 The GOES/SMS User's Guide and Operational Amendments

Procedures for obtaining special or nonroutine 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 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) Geostationary Operational Environmental Satellite (GOES). The GOES system consists of two operational satellites located over the equator at 75W (GOES East) and 135W (GOES West). The principal GOES products (See Table 3-1) are 1/2 hourly pictures with implanted grids automatically applied to all sectors. During the daylight hours 1/2 mile, 1 mile, and 2 mile resolution fixed standard sectors are produced, and during the night equivalent 1 mile and 2 mile IR (infrared) standard sectors are produced. Additionally, certain IR pictures will be enhanced at specified times to emphasize various features, and floating sectors at 1/2, 1, and 2 mile resolution may be produced as desired to augment standard sector coverage. Geographical coverage of standard sectors are indicated in the GOES/SMS User's Guide.

(2) NOAA Polar-Orbiting Satellites. TIROS-N and NOAA-6 will provide data for direct read-out (Automatic Picture Transmission) [APT]. TIROS-N will be the primary spacecraft for data that are centrally received, processed, and disseminated via NWS facsimile circuits, and in some instances, the GOES distribution system, to appropriate SFSS's and to WSFO's.

(3) Satellite Field Services Stations (SFSS's) and Satellite Analysis Branch (SAB).

(a) Support Concept. Under the NESS support concept, satellite imagery in support of the Winter Storms plan is distributed by the Central Data Distribution Facility at Camp Springs, Maryland, to the SFSS's, the SAB, and WSFO's.

1. NESS SAB. The SAB operates 24-hours a day to provide satellite data support to the National Meteorological Center (NMC). The SAB meteorologists provide satellite information to the NMC meteorologists concerning present locations and intensities of winter storms and the projected speed, direction, and future intensities of these storms. The possibility of turbulence, icing, and precipitation amounts are also discussed.

2. Satellite Field Services Stations. Satellite support is provided by the MIA SFSS, MKC SFSS, and DCA SFSS to their collocated NWS SCC's. In addition, the following support products are available to the meteorological community:

a. Satellite Interpretation Messages (SIM). SIM's are available through the FAA Request/Reply, RAWARC, and Service "C" teletype circuits. All WSFO's receive these automatically as transmitted from the SFSS's. However, other users such as those WSO's which are collocated with FAA-FSS may also have access to these SIM's by using the standard Request/Reply teletypewriter capabilities of the FAA-FSS.

The heading and issue times for the SIM's are as follows:

TBXX6	KWBC	- Eastern Region - 0300L, 0900L, 1500L, 2100L
TBXX6	KMKC	- Central and Southern Region, 0100Z, 0700Z, 1300Z, 1900Z
TBXX7	KMKC	- Gulf of Mexico - 0000Z, 0500Z, 1200Z, 1800Z
		(Times subject to change)
TBXX6	KSFO	- Western Region - 0100Z, 0700Z, 1300Z, 1900Z
TBXX6	KANC	- Alaskan Region - 0000Z and 0900Z (To be changed when 24-hour operation begins)

SIM's may be updated as required by weather conditions.

b. Satellite Cloudtop and Tropopause (SCAT) messages are prepared by DCA SFSS, and contain information on cloud top heights and temperatures and tropopause heights over areas of interest throughout the Eastern Region. The heading for SCAT messages is TBXX10 KWBC. Issue times are 0530X, 1130Z, 1730Z and 2330Z.

c. The DCA SFSS prepares and issues a daily message on snow and ice cover within its area of responsibility. This message is a "verbal nephanalysis" of existing ground snow and river ice cover and any major changes (plus or minus) since the previous day. The message heading is TBXX11 KWBC and is issued at approximately 2130Z daily.

b. NESS Station Contact:

Miami SFSS (305) 350-4310 and 4460	0630-1630 EDST
FTS - 350-4310 and 4460	2000-0400 EDST
Kansas City SFSS (816) 374-2102 and 2103	24 hrs/day
FTS - 758-2102 and 2103	
Washington SFSS (301) 763-8424 and 8425	24 hrs/day
FTS - 763-8424 and 8425	
Satellite Analysis Branch	24 hrs/day
(301) 763-8444	
FTS - 763-8444	
San Francisco SFSS (415) 876-9122 and 9123	24 hrs/day
FTS - 470-9122 and 9123	
Anchorage SFSS (907) 271-3473	
FTS Seattle Opr 399-0150	16 hrs/day
Anchorage 271-3473	(24 hrs/day
	Expected FY80)

b. Department of Defense Meteorological Satellite Program (DMSP). 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. DMSP data capabilities in the area of concern are provided in Table 3-1 to this chapter. Special requests for DMSP support will be addressed to OL-G, AWS.

3. Environmental Data Buoy Observations. Through its NOAA Data Buoy Office (NDBO), NOAA operates environmental data buoys which provide meteorological and oceanographic data. (See Figure 3-1 for location of data buoys). Normally, synoptic data are reported once every 3 hours but may be requested on an hourly basis. Data are relayed to NMC via GOES and the satellite ground station at Wallops Island, VA.

a. Special Requests for Data. Requests for reports of hourly data during critical storm periods will be accommodated by telephone requests to the telephone answering service, (601) 863-2433. The start and stop time for special hourly reports should be given and limited to 24-hour consecutive operation unless an emergency exists. The status and capability of data buoys can be obtained from the Systems Evaluation Division, NOAA Data Buoy Office (NDBO), National Space Technology Laboratories (NSTL) Station, MS 39529, telephone (601) 688-2836, FTS 494-2836.

b. Data Provided by Buoys. The parameters measured are sea level pressure, wind direction and speed, air and sea surface temperature, and wave spectral data. Significant wave height and period are obtained for standard reporting codes from wave spectral data.

NOAA DATA BUOYS

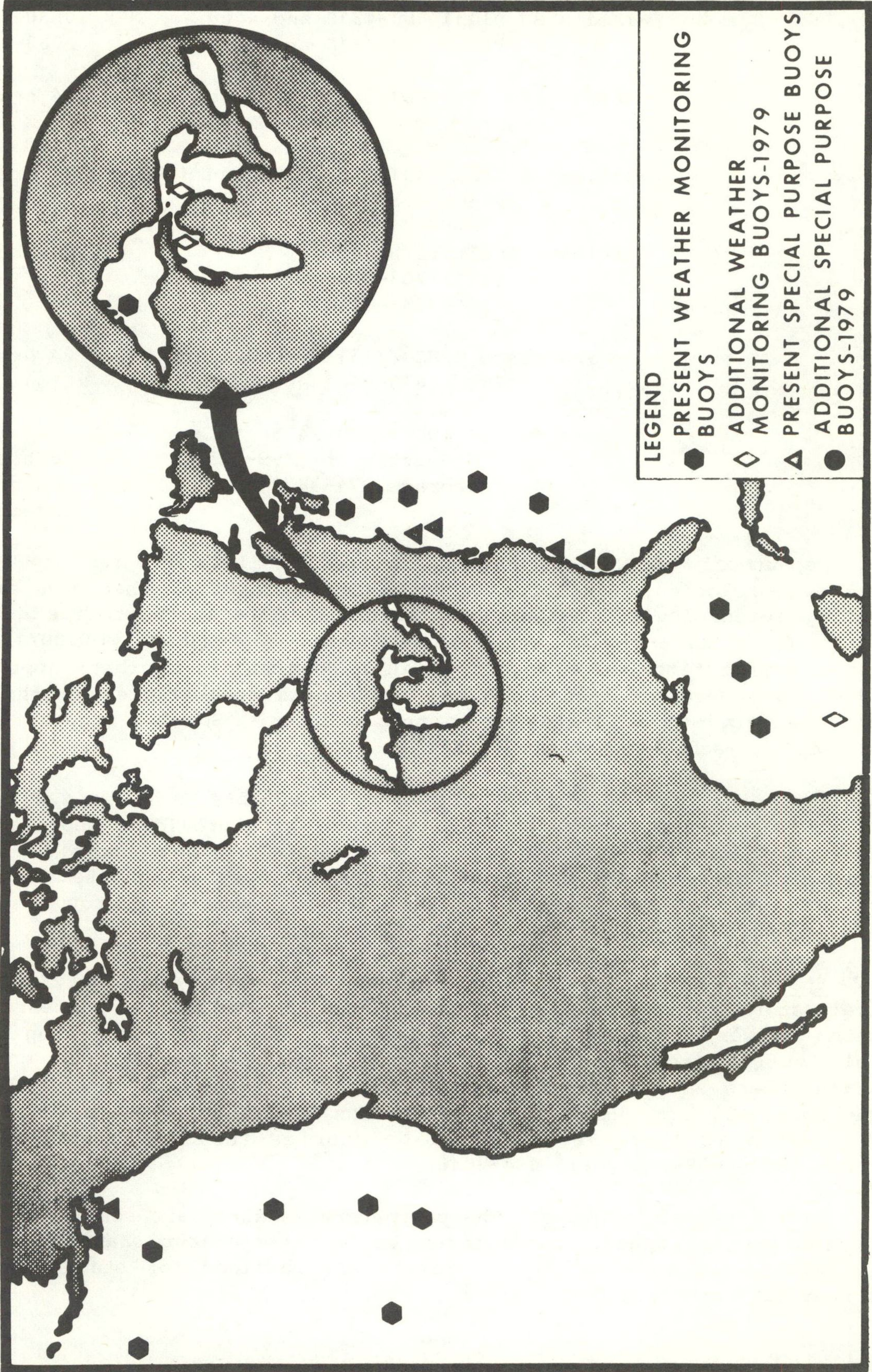


Table 3-1. SATELLITES AND SATELLITE DATA AVAILABILITY FOR NATIONAL WINTER STORMS OPERATIONS PLAN

Satellite	Type of Data	Local Time	
GOES East - 75.0°W	VISSR	Every 30 minutes (24 hr/day)	1. 1/2-, 1-, and 2-mi resolution visible standard sectors covering Western United States, Midwest, and Eastern United States (daylight).
GOES West - 135.0°W		(Limited scan for short-interval viewing available)	2. 1- and 2-mi equivalent IR standard sectors for the entire United States (night).
2 Spacecraft (standby)			3. Equivalent IR-enhanced imagery.
			4. Floating sectors at 1/2-, 1-, and 2-mi resolution (visible and equivalent IR).
			5. Full disc IR (day and night).
			6. Movie loops
			7. Wind analysis
<hr/>			
TIROS-N	GAC & LAC (stored) APT (direct) TOVS AVHRR	1500/0300	1. Mapped digitalized data (cloud cover imagery) 2. Sea-surface temperature analysis 3. Moisture analysis 4. Soundings
<hr/>			
DMSF	LF/TF LS/TS	0700/1900	1. Unmapped imager (all data types) 2. Mapped imagery (LS/TS data only)
<hr/>			
GAC - Global Area Coverage (recorded reduced resolution data for Central Processing)			LF - Light Fine (Visual Scanning Radiometer 0.3 nmi) TF - Thermal Fine (Infrared Scanning Radiometer 0.3 nmi)
LAC - Local Area Coverage (recorded high resolution data, limited amount)			LS - Flight Smooth (Visual Scanning Radiometer 1.5 nmi) TS - Thermal Smooth (Infrared Scanning Radiometer 1.5 nmi)
TOVS - TIROS Operational Vertical Sounder			
HRPT - High Resolution Picture Transmission (1.1 km)			
APT - Automatic Picture Transmission (4 km)			
AVHRR - Advanced Very High Resolution Radiometer			
VISSR - Visible-Infrared Spin Scan Radiometer			

COMMUNICATIONS1. 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 COMEDS Circuit will be used for collection and distribution of East Coast winter storms information received from WSFO Washington. The Air Force's Automated Weather Net (AWN) will be used for the exchange of data between NOAA and DOD.

b. The USAF National Winter Storms Reconnaissance Communications Support Plan is contained in Appendix 4-A.

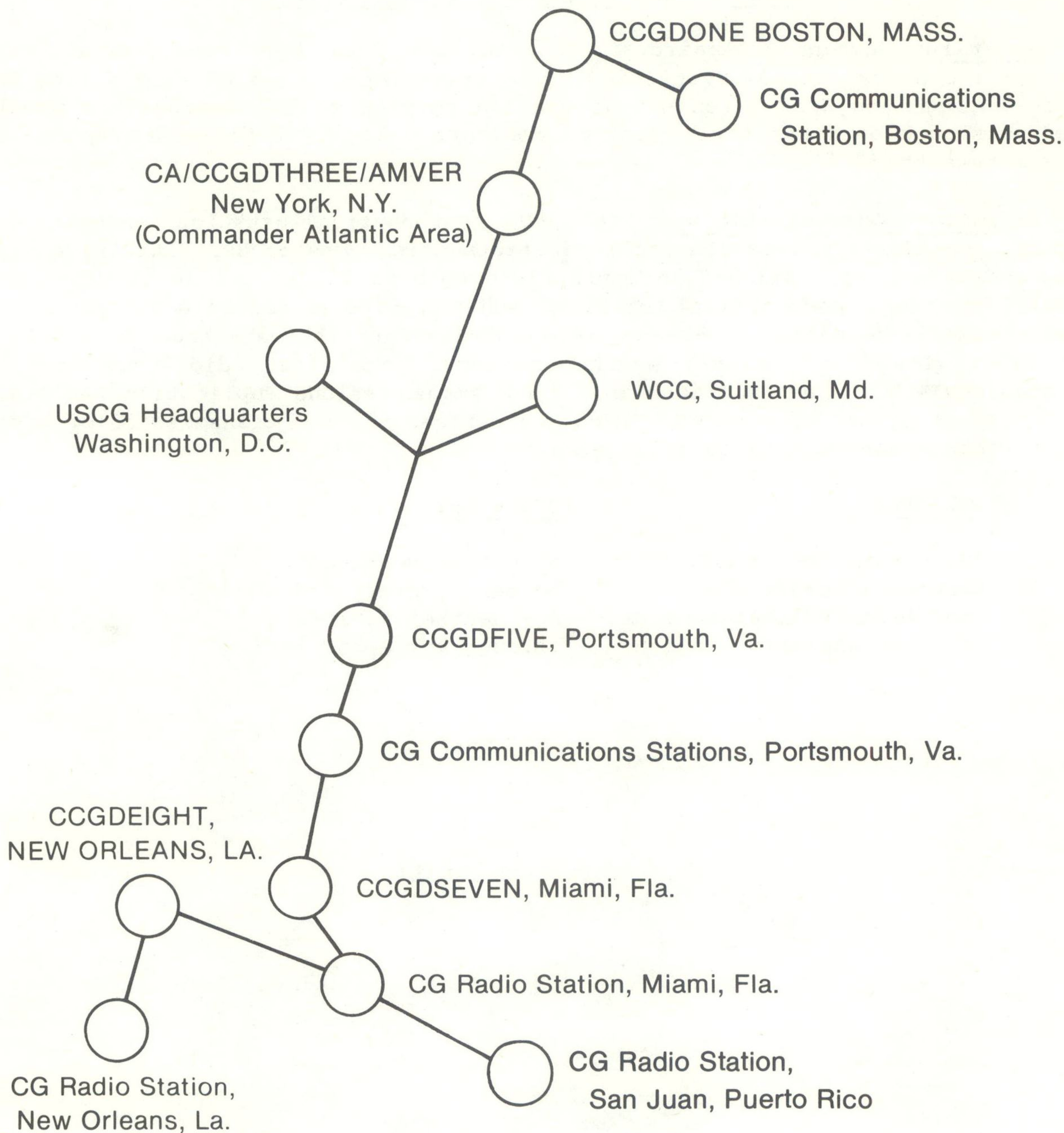
c. The Common Communication Capabilities of DOD and the National Weather Service are contained in Appendix 4-B.

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 communication facilities at Boston, Portsmouth (northwest), VA, Miami, New Orleans, 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 various teletypewriter circuits such as GT7990. Figure 4-1 shows the applicable East Coast commands which have terminations on this circuit.



- 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

AIRCRAFT RECONNAISSANCE COMMUNICATIONS

1. General. Except for aircraft-to-satellite data link equipped aircraft, weather reconnaissance observations will be transmitted using HF single side band radio through the USAF aeronautical station complex to the appropriate weather reconnaissance data monitor. Weather monitors will evaluate these reports and disseminate them.

2. Air/Ground Communications. The USAF aeronautical station contact will depend upon aircraft location and radio propagation conditions. Initial contact frequencies are as published in appropriate enroute flight publications. After initial contact, aeronautical stations will provide a discrete frequency for mission use if possible. Aircrew relay of weather reconnaissance data will be by direct phone-patch to the weather monitor. Specific radio procedures and terminology will be as described in Allied Communications Publication (ACP) 125. USAF has authorized the use of "Immediate" precedence for transmission of winter storm reconnaissance data as follows:

PRIMARY

Direct phone-patch
betwen aircraft and
the Miami Weather monitor
through any aero station.

SECONDARY

Direct phone-patch
betwen aircraft and
any weather monitor
through any aero station.

RECONNAISSANCE ORGANIZATIONAL COMMUNICATION CAPABILITIES

<u>STATION</u>	<u>ADDRESS</u>	<u>TELETYPE</u>	<u>PHONE</u>
CARCAH/MIAMI Monitor	OL-G, AWS, Coral Gables, FL	A B C	AV 894-3430 CO 305-666-4612 FTS 350-5547 AV 894-1150 (phone patch only)
Mather Weather Monitor	Det 7, 24 WS, Mather AFB, CA	B	AV 828-4377
Hickam Weather Monitor	Det 4, 1 WW, Hickam AFB, HI	B	AV 315-449-1279
SCC Miami	National Hurricane Center Coral Gables, FL	A B C	CO 305-667-3108 FTS 350-5547
SCC Washington	WSFO, Washington, DC	A C	CO 301-899-3152 FTS 763-8300
SCC New Orleans		A	FTS 682-6891, 682-6650 CO 504-525-0823
MacDill Aero Station	MacDill AFB, FL		AV 434-1750
Albrook Aero Station	Albrook AFB, CZ		AV 313-286-3272
Scott Aero Station	Scott AFB, IL		AV 631-3980
ARTCC Miami	Miami, FL	C	AV 894-1910
ARTCC Jacksonville	Jacksonville, FL		AV 434-3744
ARTCC New York	New York, NY		AV 938-3730
ARTCC Washington	Washington, DC		AV 937-1420
ARTCC Boston	Boston, MA		AV 881-1635
FWC Norfolk	FLEWEACEN, Norfolk, VA	B	AV 690-7750
ADWS	Det 7, AFGWC, Carswell AFB, TX	A B	AV 739-5559
NMC	Washington, DC	A	FTS 763-8146 CO 301-763-8076
RFC	Miami, FL	A	CO 305-526-2936
Det 5, AWS	Keesler AFB, MS		AV 868-2544
AF Global Weather Central	AFGWC, Offutt AFB, NE	B	AV 271-2586
CINCLANTFLT OAC	Ronkonkoma, NY	C	AV 938-1694
53 WRS	Keesler AFB, MS		AV 868-4540
920 WRG	Keesler AFB, MS		CO 601-377-4540 AV 868-4318
KWRCC	920 WRG, Keesler AFB, MS/KWRCC		CO 601-377-4318 AV 868-2409 CO 601-377-2409

A - GT7072
B - COMEDS
C - AFTN

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, DC 20301

Department of the Army
Attention: DAMI-TST-I
Washington, DC 20310

Director, Naval Oceanography Command
NSTL Station
Bay St. Louis, MS 39529

Military Airlift Command (MACOI)
Scott Air Force Base, IL 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, DC 20590

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

Commandant, Marine Corps
Headquarters, U.S. Marine Corps
Washington, DC 20380

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

Headquarters Air Force Reserve
AFRES/DO
Robins Air Force Base, GA 31098

Headquarters, Air Weather Service
(AWS/DO)
Scott Air Force Base, IL 62225

ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AFGWC	Air Force Global Weather Central
AFRES	Air Force Reserve
A/G	Air Ground
AIRMET	Airmen's Meteorological Information
AMVER	Automated Merchant Vessel Reporting
APT	Automatic Picture Transmission
ARINC	Aeronautical Radio Inc.
ARRS	Aerospace Rescue and Recovery Service
ARTCC	Air Route Traffic Control Center
AUTODIN	Automatic Digital Network
AUTOVON	Automatic Voice Network
AWN	Automated Weather Network
AWS	Air Weather Service
CARCAH	Chief, Aerial Reconnaissance Coordination, All Hurricanes
COMEDS	CONUS Meteorological Data System
DOC	Department of Commerce
DOD	Department of Defense
DMSP	Defense Meteorological Satellite Program
DRSR	Direct Readout Scanning Radiometer
ESSA	Environmental Survey Satellite
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
FAA	Federal Aviation Administration
FLEWEACEN	Fleet Weather Central
FSS	Flight Service Station
FTS	Federal Telecommunications System
GOES	Geostationary Operational Environmental Satellite
HF	High Frequency
ICMS	Interdepartmental Committee for Meteorological Services
MSD	Meteorological Services Division
NASA	National Aeronautics and Space Administration
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
NAVWEASERVFAC	Naval Weather Service Facility
NSSL	National Severe Storm Laboratory
NWS	National Weather Service
OSV	Ocean Station Vessel
OWS	Ocean Weather Station
PIREP	Pilot Report
RAREP	Radar Report
RAWARC	Internal RAREP
RECCO	Reconnaissance Code
RFC	Research Flight Center
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
SMS	Synchronous Meteorological Satellite
SSB	Single Side Band
USAF	United States Air Force
USCG	United States Coast Guard
USN	United States Navy
UTC	Coordinated Universal Time (Z)
VHRR	Very High Resolution Radiometer
VISSR	Visual-Infrared Spin-Scan Radiometer
VTPR	Vertical Temperature Profile Radiometer
WMO	World Meteorological Organization
WRG	Weather Reconnaissance Group
WRS	Weather Reconnaissance Squadron
WSFO	Weather Service Forecast Office
WSO	Weather Service Office
WSPOD	Winter Storm Plan of the Day