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OFCM

OFFICE OF THE FEDERAL COORDINATOR FOR
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

National Winter Storms Operations Plan

FCM-P13-1995

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NATIONAL WINTER STORMS

OPERATIONS PLAN

FCM-P13-1995

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CHANGE AND REVIEW LOG

Use this page to record changes and notices of reviews.

Change Number	Page Numbers	Date Posted	Initial
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Changes are indicated by a vertical line in the margin next to the change.

Review Date	Comments	Initial

FOREWORD

Within the interagency structure of the Office of the Federal Coordinator for Meteorology, the Working Group for Hurricane and Winter Storms Operations, operating under the Committee for Basic Services, is responsible for maintaining the National Winter Storms Operations Plan. This plan was developed to coordinate the efforts of the Nation's weather services to furnish weather observations used in providing adequate and timely warnings of severe winter storms along the coasts of the United States.

The Plan covers the period from November 1 to April 15 -- that time of year normally having the highest incidence of winter storms. This version is the twenty-second edition of the Plan and represents a general update of information published in previous editions. This edition has revised east coast storm tracks for CORONET COAST06 and 06R that were coordinated between the Federal Aviation Administration, U.S. Air Force Reserves and the National Oceanic and Atmospheric Administration.

Julian M. Wright, Jr.
Federal Coordinator for Meteorological
Services and Supporting Research

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1

RESPONSIBILITIES OF COOPERATING AGENCIES

1.1 General

1.1.1 National Weather Service (NWS). The National Weather Service is responsible for issuing winter weather forecasts, watches, and warnings to the public and various special user groups. Its responsibilities are documented in National Weather Service Operations Manual, Chapter A-02, "National Weather Service Mission," and in Chapter C-42, "Winter Weather Warnings."

1.1.2 U.S. Navy (USN). The U.S. Navy, through the Naval Meteorology and Oceanography Command (NAVMETOCCOM) is responsible for issuing gale, storm, high seas warnings, and winter weather forecasts for fleet operations and Navy shore installations and Marine Corps operations and installations, as elaborated in the NAVMETOCCOM Instruction 3140.1 series.

1.1.3 U.S. Air Force (USAF). The U.S. Air Force, through the local and centralized weather units, is responsible for issuing 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 local agreements (such as Memorandum of Agreements or local regulations).

1.2 Responsibilities.

1.2.1 The Department of Commerce (DOC). The DOC through the National Oceanic and Atmospheric Administration (NOAA) will

- provide basic surface, upper air, and radar observations from its network of stations making such observations;
- provide additional observations, when required, making available all reports to any requesting agency;
- provide basic analyses and forecasts through the National Centers fo Environmental Prediction (NCEP), Camp Springs, Maryland;
- provide products under a multi-tier concept consisting of Weather Service Forecast Offices (WSFO) and local Weather Service Offices (WSO) along

contiguous U.S. coastal areas, who will provide outlooks, statements, watches, and warnings when appropriate;

- provide advice on aircraft reconnaissance requirements forwarded through the National Hurricane Center (NHC) to the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH), from NCEP (the NCEP is the central coordinating office for this program for all reconnaissance requirements);

- operate satellite systems capable of providing coverage of the coastal areas of the contiguous United States during the winter storms season;

- coordinate with the National Aeronautics and Space Administration (NASA) to obtain pertinent meteorological data from NASA research and development experimental satellites;

- coordinate with the Department of Defense (DOD) to obtain pertinent meteorological data from the Defense Meteorological Satellite Program;

- provide satellite data for selected situations to authorized research facilities;

- furnish aircraft from the Aircraft Operations Center (AOC) to support the operational reconnaissance objectives of the National Winter Storms Program with

  - the primary objective 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 and

  - the secondary objective to provide data that will permit analyses and a better understanding of the structure and dynamics of these winter storm systems;

- provide oceanographic and meteorological surface data obtained from offshore buoy deployment, if possible, within existing facilities; and

- provide dissemination of weather observation data to appropriate agencies.

1.2.2 The Department of Defense (DOD). The DOD will

- make available to NOAA agencies, through the Automated Digital Weather Switch (ADWS), basic surface, upper air, and radar observations from those DOD stations making such observations, pilot reports (PIREPs), and aircraft reports (AIREPs) that become available;

- furnish to NWS, aircraft reconnaissance observations that are within its capabilities and in accordance with established reconnaissance priorities and special observations detailed in Chapter 2 of this plan;

- designate CARCAH as the point of contact for coordination with NCEP for aircraft reconnaissance required in support of this plan;

- provide weather reconnaissance data monitor services to evaluate and disseminate reconnaissance reports;

- provide USAF aeronautical station communications to relay reconnaissance reports from the aircraft to the Miami Weather Monitor; and

- provide warnings to all DOD facilities and military units of weather that threatens to inhibit their operations or to damage their installations.

1.2.3 Department of Transportation (DOT).

1.2.3.1 The Federal Aviation Administration (FAA). The FAA will provide for:

- Air Traffic Control (ATC) services as appropriate to support this plan;

- dissemination of PIREPs and AIREPs and

- hourly and special weather observations at selected terminal and flight service station locations.

1.2.3.2 The U.S. Coast Guard (USCG). The USCG will:

- provide surface observations to NWS from its coastal facilities and vessels;

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

- provide personnel, vessel, and communication support to the National Data Buoy Center for development, deployment, and operation of environmental data buoy systems.

CHAPTER 2

AIRCRAFT RECONNAISSANCE

2.1 General. All Department of Commerce (DOC) winter storm reconnaissance needs will be requested and provided in accordance with the procedures of this chapter. As outlined in the Air Force Reserve (AFRES)/National Oceanic and Atmospheric Administration (NOAA) Memorandum of Understanding, DOC has identified a requirement for, and the Department of Defense (DOD) maintains aircraft to support up to two operational weather reconnaissance sorties per day. In times of national emergency or war, some or all DOD reconnaissance resources may not be available to fulfill DOC needs.

2.2 Responsibilities.

2.2.1 DOD. The DOD is responsible for providing operational aircraft for winter storm synoptic tracks in response to DOC needs.

2.2.2 DOC. The DOC is responsible for aircraft operations that will be used (when available, on request) as backup for USAF aircraft reconnaissance, for a storm or storm threat. Additionally, DOC aircraft missions may be flown on storms of research interest as desired by the Environmental Research Laboratories. All such flights will be listed by the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH) in the Winter Storm Plan of the Day (WSPOD).

2.2.3 DOT. The DOT is responsible for providing air traffic control services to aircraft when within airspace controlled by the FAA. This includes offshore oceanic airspace. It should be noted that more expeditious handling of winter storm reconnaissance aircraft will result by following the procedures outlined in the FAA/AFRES Letter of Agreement entitled, Meteorological Reconnaissance Flights, as found in Appendix I.

2.3 Operational Control of Aircraft. Operational control of aircraft flying winter storm reconnaissance missions will remain with the operating agencies of DOC or DOD, as appropriate.

2.4 Reconnaissance Planning and Flight Notification.

2.4.1 Requirements. The National Centers for Environmental Prediction (NCEP) will forward mission requirements to CARCAH for tasking in the WSPOD within the responsibilities stated above. The CARCAH will advise NCEP of mission availability or nonavailability and expected responsiveness of DOD and DOC assets. The NCEP will be responsible for requesting all reconnaissance flights and will provide information as specified in paragraph 2.4.5. The NCEP will forward NWS mission requirements for the next 24-hour period (1100 UTC to 1100

UTC) and an outlook for the succeeding 24 hours to CARCAH not later than 1430 UTC each day. Vertical observation positions will be identified by NCEP through CARCAH and the WSPOD. CARCAH will pass all tasking, amendments and cancellations to the flying units.

2.4.2 Change to Requirements. Changes to mission requirements will be accepted by CARCAH based on the following guidelines:

- Early departures will not be requested.
- When notification is received more than 2.5 hours prior to scheduled aircraft departure:
  - Changes to tracks normally will be limited to substitution of one track for another.
  - Departure delays of up to six hours will be acceptable in accordance with MCR 55-130, volume 1, paragraph 3.10.
- 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.

2.4.3 Cancellation of Requirements. Missions should be canceled 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.

2.4.4 Satisfaction of Requirements.

2.4.4.1 Satisfied. 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 (control point) within the interval from 30 minutes prior to 30 minutes after scheduled time.

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

2.4.4.3 No Credit. Normally, no credit will be given for early missions.

2.4.4.4 Written Assessment. The requesting agency, NCEP and/or a WFSO, will provide CARCAH a written evaluation (Figure 2-1.) of the weather reconnaissance mission

DATE _____

TO: 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 _____ TIMELY _____ ACCURATE _____
INCOMPLETE _____ UNTIMELY _____ INACCURATE _____

4. VERTICAL DATA COVERAGE: COMPLETE _____ TIMELY _____ ACCURATE _____
INCOMPLETE _____ UNTIMELY _____ INACCURATE _____

III OVERALL MISSION EVALUATION

OUTSTANDING _____

UNSATISFACTORY ____ FOR: COMPLETENESS _____ ACCURACY ____ TIMELINESS ____
EQUIPMENT ____ PROCEDURES ____ OTHER _____

IV REMARKS (BRIEF BUT SPECIFIC)_____

_____

V. REPLY BY ENDORSEMENT ____ YES ____ NO

_____
(Forecaster's Signature)

Figure 2-1. Sample mission evaluation form.

any time its timeliness and quality are outstanding or substandard. Requirements levied as "resources permitting" will not be assessed for timeliness. These assessments should be mailed to CARCAH at:

CARCAH
National Hurricane Center
11691 SW 17th Street
Miami, FL 33165-2149

2.4.4.5 Reconnaissance Summaries. The CARCAH will maintain seasonal reconnaissance summaries detailing missions actually flown to satisfy levied requirements.

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

2.4.5.1 Coordination. The NCEP will coordinate with the appropriate National Weather Service (NWS) field offices as needed and provide WSPOD information (Figure 2-2.) to CARCAH by 1430 UTC. Direct discussion in weather situations is also encouraged between the Navy and NCEP with respect to storms or storm threats. The East Coast Navy point of contact is the Naval Atlantic Meteorology and Oceanography Center (NAVLANTMETOCCEN) through their Norfolk Command Duty Officer. NCEP will provide the following data to CARCAH when applicable:

- Track and flight level desired.
- Selected trackpoint (control point) and time the aircraft is required at the point.
- Dropsonde release points and special requirements.
- Expiration time of requirement (time at the control point when the mission is regarded as dropped).
- Succeeding day outlook (anticipated track, control point, control point time).

2.4.5.2 Preparation. Using requirements stated by NCEP, CARCAH will prepare the WSPOD as required throughout the season in coordination with DOD and DOC to effect maximum useful data from available resources. Format for the WSPOD is shown in Figure 2-3.

NWSOP COORDINATED REQUEST FOR AIRCRAFT RECONNAISSANCE

_____ 1. No flight is desired or previously requested flight is cancelled.

_____ 2. A flight is requested.

A. Track Number (CW or CCW) and altitude

_____

B. Control point and control point time

_____

C. Expiration time (at control point)

_____

D. Specific instructions (such as dropsonde positions)

_____

_____

3. Succeeding day outlook.

_____ A. Negative

_____ B. Possible Track Number _____CW/CCW

Control point and time _____

4. Coordination (initials)

NCEP _____ 53WRS _____

AOC _____ CARCAH _____

INSTRUCTIONS: Date and Time _____. Fill in appropriate spaces as required. Pass all requests, changes, or cancellations to CARCAH immediately.

Figure 2-2. National Winter Storms Operations Plan coordination request.

2.4.5.3 Dissemination. The WSPOD will be made available in message form to all appropriate agencies, such as FAA, DOD, and NOAA, that provide support or control reconnaissance aircraft. The CARCAH will be responsible for disseminating the WSPOD as soon as possible after DOC requirements, including changes, are received. If there are no current day or succeeding-day reconnaissance requirements, a negative report, which covers the appropriate time frame, will be disseminated. Amendments will be disseminated as required.

[NOTE: The WSPOD is disseminated under the header "MIAREPRPD" for AFOS users and "NOUS42 KNHC" for AWDS users.]

2.4.5.4 Responsiveness.

A. Notification of reconnaissance requirements should be made early enough to allow 16 hours plus enroute 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 "resource permitting."

2.5 Reconnaissance Flights.

2.5.1 General Storm Tracks.

2.5.1.1 East Coast and Gulf Coast. The Air Force mission name for winter storms is "CORONET COAST". Air Force tracks CORONET COAST 01 through 06 (Figures F-1 through F-6) normally will be flown during a storm or storm threat.

2.5.1.2 ATC Communications Backup. TEAL aircraft may utilize SATCOM to relay ATC communications through CARCAH or Alternate CARCAH/SOF when voice communications are unavailable or unusable. This capability should only be exercised to preclude an emergency or other safety-related situation. (See ATC Clearance procedures letter, Appendix G.)

2.5.1.3 Airborne Diversions. Within operational limitations and with prior FAA Air Route Traffic Control Center (ARTCC) approval, airborne diversions deemed advisable by the airborne meteorologist may be made from these tracks.

2.5.1.4 Permanent Changes to Tracks. Permanent changes to winter storm reconnaissance tracks must be coordinated with DOD, FAA and DOC at least 30 days in advance of the implementation date.

FM CARCAH, NATIONAL HURRICANE CENTER, MIAMI, FL

TO (AFRES/NOAA APPROVED ADDRESSEES)

SUBJECT: RECONNAISSANCE WINTER STORM PLAN OF THE DAY (WSPOD)
VALID _____Z (MONTH) TO _____ Z (MONTH) (YEAR)
WSPOD NUMBER.....(YR) - _____

1. FLIGHT ONE

A. _____ (CONTROL POINT/TIME)

B. _____ (MISSION IDENTIFIER)

C. _____ (ESTIMATED DEPARTURE TIME)

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)

Figure 2-3. Winter Storm Plan of the Day (WSPOD) format.

2.5.2 Flight Plans. Flight plans for reconnaissance flights will be filed with the FAA as soon as practicable before departure time.

2.5.2.1 Prior Coordination. The 53WRS/DO will ensure that an Altitude Reservation Approval Request (ALTRV APREQ) is submitted to the Central Altitude Reservation Function (CARF) at least 12 hours prior to planned departure at DSN 725-3333 or (703) 904-4427, FAX (703) 904-4460. Include the following information in the APREQ (see sample APREQ, Appendix H):

- Mission call-sign
- Track name/identifier
- Estimated time over start ALTRV point
- Location of dropsonde release points
- Requested altitudes/Flight Levels
- Any special requests or deviations from published routes

[Note: If the track to be flown is not a published storm track, the ALTRV APREQ shall be submitted as far in advance as possible, in standard ALTRV format as specified in FAA Handbook 7610.4, Special Military Operations.]

2.5.3 Flight Levels. Tracks are normally tasked for the 300 mb level (FL301). If unable to maintain the tasked altitude for any reason, fly as close to the tasked level as possible. When operating under an Instrument Flight Regulation (IFR) flight plan, reconnaissance aircraft will fly only at Air Traffic Control (ATC) assigned altitudes and will accept altitude changes as directed by ATC.

2.5.4 Dropsonde Releases. During winter storm operations, it is possible that other aircraft could be in the dropsonde release area. In other than Class G airspace, dropsonde instrument releases shall be coordinated with ATC by advising of a pending drop at least 10 minutes prior to drop when in direct radio contact with ATC. When contact with ATC is via Aeronautical Radio, Incorporated (ARINC), dropsonde release coordination shall be included with the position report prior to the point where the dropsonde will be released. EXAMPLE: *"TEAL 63, SLATN at 1215, FL310, estimating FLANN at 1250. CHAMP next, Dropsonde release at FLANN."*

2.5.4.1 Advisory Broadcasts. Commencing 5 minutes prior to release of a dropsonde, the aircraft commander will broadcast in the blind on 121.5 and 243.0 to advise any traffic in the area of the pending drop. These broadcasts should not be made when in ATC radar contact and ATC has provided a traffic advisory.

2.5.5 Air Traffic Control (ATC).

2.5.5.1 ATC Priority. If mission requirements dictate, crews may specifically request "Priorty Handling" from ATC in accordance with FAA Order 7110.65, Air Traffic Control, paragraph 2-4-4.L. (See ATC Clearance Letter, Appendix G).

2.5.5.2 ATC Separation. ATC will provide air traffic control separation between all aircraft operating on storm missions and between storm mission aircraft and nonparticipating aircraft operating on IFR within controlled airspace. Mission commanders should be aware that nonparticipating aircraft may be operating near storm areas; thus adherence to an ATC clearance is mandatory for safety purposes.

2.5.5.3 Assigned Altitudes. When storm aircraft cannot maintain assigned altitudes due to turbulence, ATC should be advised. Normal vertical separation of 1000 feet at flight level (FL) 290 and below and 2000 feet above FL 290 will be provided by ATC to aircraft operating in the storm area. Unless otherwise coordinated with ATC, the altitudes between storm-mission aircraft may be used by ATC for nonparticipating aircraft.

2.5.5.4 Military Clearance. For the east coast storms, the U.S. Navy through Commander in Chief, Atlantic Fleet Oceanic Aircraft Coordinator (CINCLANTFLT OAC) will review the WSPOD for each proposed flight to determine if clearance into a particular area will be required. For the west coast storm tracks, each mission will need to be coordinated with the regional controlling agencies for each warning area. The reconnaissance unit flying the mission will contact the appropriate clearance agencies prior to entry into any restricted airspace.

2.5.5.5 Coordination of Non-Standard Procedures. Any procedure desired by storm-mission commanders that is outside the above parameters must be coordinated with the appropriate ATC center.

2.5.6 Data Requirements. Data requirements are defined in Table 2-1. Data will be coded and transmitted in standard reconnaissance code (RECCO) for flight level observations (Appendix D) or World Meteorological Organization temporary dropsonde (WMO TEMP DROP) format for dropsonde soundings (Appendix E).

2.5.6.1 First Observation Remarks. A plain language remark stating the departure station (International Civil Aviation Organization (ICAO) four letter identifier), time of departure, and estimated time of arrival (ETA) at the coordinates of the control point will be appended to the first observation.

EXAMPLE: AF987 TRACK 01 OB 01 KNHC
97779...TEXT...
DPTD KBIX 10/0600Z. ETA 36.9N 72.7W 10/1210Z.

2.5.6.2 Last Observation Remarks. A plain language remark stating ETA and intended arrival station (ICAO four letter identifier), number of observations, and monitor that copied observations will be appended to the last observation.

EXAMPLE: NOAA2 TRACK 05R OB 19 KNHC
97779...TEXT...
ETA KMCF 17/1545Z. LAST REPORT OBS 01 THRU 18 TO KNHC.

Table 2-1. Requirement for aircraft reconnaissance data.

Data required	Altitudes where data are required	Areal portion of cyclone or environment where 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 300 nmi (550 km)). While over water, horizontal observations approximately every 20 minutes, at major turn points, and at the control point.	+- 5 kt (2.5 m/s) (wind speed) +- 10° (wind direction) +- 1°C +- 20m +- 2 mb (200 Pa) Position within 20 nmi (37 km)
Location and strength of radar echoes.	Any level.	All sectors	When available.	
*Ocean wave heights and wave lengths, sea surface wind estimates	Sea Surface.	All quadrants.	Every horizontal observation at or below 700 mb (70 kPa).	+-10% (Wave height) +- 10 ft. (3m) (wave length) 5 kt (2.5 m/s) (wind speed) 10° (wind direction)

*Ocean wave heights and wave lengths will not be reported by USAF aircraft.
**Includes dropwindsondes. If a sonde fails or vertical data are otherwise unobtainable at a specified position, make another release as soon as possible.

CHAPTER 3

OTHER OBSERVATIONS

3.1 General. In addition to aerial reconnaissance data, the observational system used in support of the National Winter Storms 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 Federal Meteorological Handbooks and plans:

- Federal Meteorological Handbook No. 1, Surface Aviation Observations
- Federal Meteorological Handbook No. 2, Synoptic Observations
- Federal Meteorological Handbook No. 4, Radiosonde Code
- Federal Meteorological Handbook No. 7, Weather Radar Observations
- Federal Meteorological Handbook No. 11, Doppler Radar (Part A, B, C, and D)
- Operations of the National Weather Service
- Federal Plan for Environmental Data Buoys
- The GOES User's Guide and operational amendments
- The NOAA Polar Orbiter Data Users Guide
- National Operations Plan for Drifting Data Buoys
- The Coastal Marine Automated (C-MAN) NWS Users Guide
- Tide/Water Level Information Data and Evaluation System (TIDES) NWS Users Guide

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 National Weather Service Operations Manual, Chapter B-90, "Special Warning Program Observations." The chapter covers observational programs of several agencies involved. The only two observational programs that will be covered in any detail here are the two data sources that provide unique capabilities to support winter storm analysis and forecasting.

3.2 Satellite Observations.

3.2.1 Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), the National Environmental Satellite, Data, and Information Service (NESDIS).

3.2.1.1. Geostationary Operational Environmental Satellite (GOES). The GOES system currently consists of a two operational satellite constellation over the U.S. and adjacent waters, not available since 1989. GOES-7, the last in a series of NOAA spin scan satellites is positioned at 135 degrees West and GOES-8, the first in a series of three axis stabilized satellites, is positioned at 75 degrees West. The principal GOES-7 and GOES-8 products (see Table 3-1) are one-half hourly pictures with implanted grids automatically applied to all sectors. During the daylight hours, one, two, and four kilometer resolution visible fixed standard sectors are produced for GOES-Tap distribution, and at night, equivalent infrared sectors of the same resolution are furnished. Additionally, certain IR pictures are enhanced at specific times to emphasize various features. Water vapor sectors at eight kilometer (GOES-8) and 14 kilometer (GOES-7) resolutions are also provided on an hourly basis.

A. The launch of GOES-I was accomplished in April 1994. Now GOES-8, the spacecraft is fully operational supporting a GOES-East platform at 75 degrees West. The launch of GOES-8 in April 1994 represents a new technological era of GOES satellites. Rather than the current VAS on GOES-7 which time shares imaging and sounding functions, the modern GOES-8 spacecraft boasts independent imager and sounder platforms. Simultaneous broadcast without schedule conflicts of imager and sounder data yields a significant increase in data volume and products to the user community.

B. GOES-9, launched in May 1995, is scheduled for full operations in October 1995. The spacecraft, next in the series of three axis stabilization, is virtually a clone of GOES-8. Currently at its check-out position of 90 degrees, GOES-9 will be relocated in a GOES-East or GOES-West position, pending scientific evaluation of the on-board instruments' performance. After an operational GOES-8 and GOES-9 spacecraft constellation is achieved sometime in fall 1995 (possibly January 1996 timeframe), a functioning GOES-7 will be placed in a back-up mode, location to be determined.

C. GOES-8 and GOES-9 host an imager capable of detecting atmospheric temperature and moisture measurements in five spectral bands at higher resolutions, including the new 3.9 micron and 12.0 micron wavelengths. Unlike GOES-7, GOES-8 and GOES-9 also have the feature of transmitting these five spectral bands simultaneously, affording the user community continuous views of atmospheric measurements in various wavelengths, each with its own meteorological and hydrological application. The GOES-8 and GOES-9 spacecraft were also designed for flexible scanning of the earth; any variation of scan or sector coverage at regular time intervals can be scheduled in a 30 minute time frame. The five channels and respective resolutions are as follows:

- Channel 1 (Visible, .55 to .75 microns) - one kilometer resolution.
- Channel 2 (Infrared, 3.8 to 4.0 microns) - four kilometer resolution.
- Channel 3 (Water vapor, 6.5 to 7.0 microns) - eight kilometer resolution.
- Channel 4 (Infrared, 10.2 to 11.2 microns) - four kilometer resolution.
- Channel 5 (Infrared, 11.5 to 12.5 microns) - four kilometer resolution.

D. For GOES-Tap applications, the flexible scanning of GOES-8 and GOES-9 allow transmissions of 15 minute imagery in combination with 30 minute imagery. Similar to GOES-7 products, GOES-8 products will have enhancement curves applied to the infrared data to better distinguish cloud features and signatures. During the daytime hours, one, two, four, and eight kilometer (full disk) resolution visible fixed sectors are produced for GOES-Tap distribution, and at night, depending on imager channel, equivalent infrared sectors of the same resolution are disseminated. A vast improvement over GOES-7 water vapor data, GOES-8 provides in the same channel, a resolution of eight kilometers. An important tool in forecasting stratus and fog trends, channel 2 data available from GOES-8 and GOES-9 have been added to the GOES-Tap product suite. NESDIS plans to further improve the value of channel 2 data by providing on GOES-Tap, an enhanced derived product image using a combination of channels 2 and 4. GOES-8 and GOES-9 products are outlined in Table 3-1.

E. The sounder on GOES-8 and GOES-9, consisting of 19 spectral channels (GOES-7 has 12 spectral channels), is used for measurements of atmospheric temperature and moisture profiles, surface and cloud top temperature, and ozone distribution. Products derived from the sounder include precipitable water and lifted index, a measurement of atmospheric stability. Comparable to the imager, the sounder is capable of providing various scan coverage such as full earth imagery, sectorized imagery, and local imagery. An independent sounder platform, governed under its own schedule, leads to an expansion of sounder data coverage and an increase in the frequency of transmissions.

F. In parallel with GOES-7, GOES-8 and future GOES-Next satellites will carry vital sub-systems such as the SEM, DCS, WEFAX, and SAR operations.

G. GOES-9 was launched in May 95 to replace GOES-7 at 135°W. GOES-9 is currently undergoing extensive on-orbit check-out prior to achieving operational capability.

3.2.1.2 NOAA Polar-Orbiting Satellites. Currently, NOAA-12 and NOAA-14 provide data for direct readout (Automatic Picture Transmission (APT)) and High Resolution Picture Transmission (HRPT). Digital data acquired from NOAA-14 are processed for the generation and dissemination of GOES-Tap products on NOAA's analog facsimile circuits. The GOES-Tap distribution system is the primary vehicle to deliver an abundant suite of near-real-time satellite products via the regional Satellite Field Distribution Facilities (SFDFs) to the NWS Weather Service Forecast Offices (WSFOs), and the private user community.

Table 3-1. Satellites and Satellite Data Availability for the National Winter Storms Operations Plan

Geosynchronous Orbit

SATELLITE	TYPE OF DATA	LOCAL TIME*	REMARKS
GOES-7	VISSR/VAS	Every 30 min (24 hours/day) Limited scan for short interval viewing available)	1. 1, 2, and 4 km resolution visible standard sectors covering Western, Midwest and E. Pacific Ocean 2. 7 km resolution equivalent IR standard sectors for entire U.S. (night) 3. Equivalent IR-enhanced imagery 4. Full disc IR (day/night) 5. Animated imagery 6. Wind analysis 7. Cloud top heights 8. Rainfall/snowfall estimates 9. Satellite information messages 10. VAS soundings 11. 14 km resolution water vapor imagery 12. Interactive Moisture Analysis
GOES-8	Imager and Sounder: 5 channels from the imager and 19 channels from the sounder.	Every 30 min partial full disk; CONUS views available every 15 mins (2 CONUS views/half-hour.) In rapid scan operations, for detection of rapidly changing weather conditions, 4 CONUS views are available/ half-hour including coverage to the equator.	1. 1, 2, 4, and 8 km visible standard sectors covering most of the Americas and the adjacent central and eastern Atlantic Ocean 2. 4 km resolution infrared imagery; 8 km resolution water vapor imagery 3. Same coverage in equivalent infrared sectors with special enhancement curves for primarily nighttime operations, at 1, 2, and 4 km resolutions 4. Independent imager and sounder platforms (eliminates time sharing) 5. Full disk IR imagery every 3 hours 6. Routine imagery animation at 15 minute and 30 minute intervals 7. Interactive wind analysis 8. Cloud top heights 9. Satellite precipitation estimates 10. Sounder data products including derived product imagery 11. Satellite Information Messages 12. Interactive moisture analysis
GOES-9 (Operational in October 1995)	Imager and Sounder: 5 channels from the imager and 19 channels from the sounder.	Dissemination schedule, currently being evaluated by NWS and NESDIS, available by September 1995.	
METEOSAT-3 (back-up mode)	IR	Every 30 min (24 hours/day)	1. 5.0 km visible resolution. 2. 5 km resolution equivalent IR. 3. Equivalent IR-enhanced imagery. 4. Cloud top heights. 5. Rainfall/snowfall estimates. 6. Satellite information messages. 7. 5 km resolution water vapor imagery. 8. Cloud Motion Winds. 9. Interactive Moisture Analysis. 10. No Sounder. 11. No RISOP.
	VI	Available every 30 min from 1100-2330 UTC.	
	WV	Every hour when visible data is available (1100-2330 UTC)	

Table 3-1. Satellites and Satellite Data Availability for the National Winter Storms Operations Plan (continued)

Polar Orbit

SATELLITE	TYPE OF DATA	LOCAL TIME*	REMARKS
NOAA-12	AVHRR GAC and LAC (recorded) HRPT and APT (direct) TOVS	0655D/1855A	1. Mapped digitized data (cloud cover) 2. Unmapped imagery (all data types) at Direct Readout sites 3. Sea-surface temperature analysis 4. Moisture analysis
NOAA-14	AVHRR GAC and LAC (recorded) HRPT and APT (direct) TOVS	0150D/1350A	5. Soundings 6. Remap GAC Sectors
DMSP F-11	OLS(SGDB), SSM/T-2, SSM/I, SSM/T-1	0551D/1751A	1. Unmapped imagery (DMSP sites only) 2. Mapped imagery (SGDB) 3. Snow and ice coverage
DMSP F-10	OLS(SGDB) deactivated, SSM/T-1, SSM/I	0948D/2148A	4. Precipitable water 5. Wind speeds 6. Precipitation rates
DMSP F-12	OLS, SSM/T-1, SSM/T-2	0915D/2115A	7. Moisture analysis

* Local time/equatorial crossing time
D = Daylight descending
A = Daylight ascending

A. In September 1994, the AVHRR instrument on NOAA-11 failed, precluding further HRPT and APT image transmissions. The spacecraft was placed in a stand-by mode following full operations of its replacement in April 1995.

B. Slated to replace NOAA-11, NOAA-J was launched in December 1994, becoming fully operational as NOAA-14 on April 10, 1995. NOAA-14 supports the afternoon (ascending) operational POES mission having an approximate equator crossing time of 1345 local time.

3.2.1.3 The European Geostationary Meteorological Satellites (Meteosat). Meteosat-5, stationed at 0 degrees, is presently the primary geostationary satellite supporting the European community. It also provides the U.S. user community with substantial and valuable coverage of the east and central Atlantic Ocean including Europe.

A. After GOES-8 became fully operational at 75 degrees West, Meteosat-3, formerly supporting the Extended Atlantic Data Coverage mission for NOAA, was moved to 70 degrees West and imaging function deactivated. In accordance with an international agreement, Meteosat-3 functions will be restored in the event of a prolonged GOES failure.

B. For meteorological application, digital Meteosat-5 data are transmitted to the National Hurricane Center in Miami, Florida, National Severe Storms Forecast Center, Kansas City, and to NESDIS' Synoptic Analysis Branch in Camp Springs, Maryland. Meteosat-5 WEFAX products generated in Europe are continuously available for retransmission on widely used GOES-Tap circuits and direct readout acquisition. Excluding specialized visible sectors of 2.5 kilometer resolution, standard resolution of Meteosat-5 data is 5 kilometers for all its image formats, visible, infrared, and water vapor.

3.2.1.4 Satellite Field Distribution Facilities (SFDF) and the Synoptic Analysis Branch (SAB). Under the NESDIS support concept, satellite imagery in support of the National Winter Storms Operations Plan is distributed by the Environmental Satellite Distribution/Interactive Processing Center at Camp Springs, Maryland, to the SFDFs, SAB, NCEP, and the WSFOs and WFOs of NWS.

A. The NESDIS operates 24 hours/day to provide a myriad of satellite services and products to the NCEP and NWS field sites. Internally, at the NOAA Science Center, SAB meteorologists provide satellite interpretation and analyses to NCEP meteorologists relating valuable information on present locations and intensities of winter storms, as well as the projected movement and development of all these storms. In addition, snowfall estimates are derived from satellite signatures and reported to NCEP and the NWS field sites to assist forecasters in determining rate and projected accumulations. As conditions warrant, winter storm precipitation analyses and estimates are disseminated to the appropriate NWS WSFOs and River Forecast Centers across the United States via the Automation of Field Operations and Services (AFOS).

B. Prior to full deployment of AWIPS products by the end of the decade via the communication avenue NOAAPORT, a point to multi-point broadcast, NOAA will conduct experimental transmissions of digital GOES products to selected NWS Weather Forecast Offices. The display medium, RAMSDIS, will be used to process digital GOES data from terrestrial networks and enable the user to perform a myriad of operations including designed overlays, local remapping, looping, and temperature retrievals. RAMSDIS, a viable workstation, affords the user a preview and familiarization of digital satellite data including its many applications. The evolution to these higher resolution data represent a break-through in satellite data quality, thereby improving observations, analysis, and forecasts of mid-latitude storm systems.

C. Satellite products and services to the NWS field offices are also provided by all of the regional SFDFs. In addition, Satellite Interpretation Messages (SIM) are available through the NWS AFOS communications system and the Federal Aviation Administration's (FAA) leased Service A and Radar Report and Warning Coordination (RAWARC) teletype circuits. All WSFOs receive these automatically as transmitted from the SFDFs. The heading and issue times for the SIMs are listed below. Times are subject to change and SIMs may be updated as required by changing weather.

NWS	FAA	ISSUE TIME (UTC)
MKCSIMMKC	TBSS6 KMKC	0000, 0530, NONE, 1730
MIASIMMIA	TBXX7 KNHC	0300, 0900, 1500, 2000

3.2.1.5 Points of contact 24 hours/day.

- Miami SFDF 305-229-4470
- Kansas City SFDF 816-426-3427
- NCEP Washington, DC 301-763-8298
- SAB 301-763-8444

3.2.2 Department of Defense (DOD) Defense Meteorological Satellite Program (DMSP). The DMSP constellation consists of at least two spacecraft placed in sun-synchronous orbits best suited to support military operations. In addition to the very high resolution visible and infrared imagery, DMSP provides a variety of remotely sensed terrestrial and space environmental data. A suite of microwave radiometers provides microwave imagery as well as surface characteristics and upper air temperature and moisture soundings. The DMSP data capabilities in the area of concern are provided in Table 3-1. Special requests for DMSP support will be addressed to CARCAH.

3.3 Automated Environmental Observations

3.3.1 General. Moored buoys in the Atlantic and Pacific Oceans, Gulf of Mexico, and Great Lakes obtain data on meteorological and oceanographic parameters for operational and research purposes. See Figure 3-1 for the location of moored buoys. Coastal Marine Automated Network (C-MAN) stations provide additional marine observations. See Figure 3-2 for locations of C-MAN sites. The status and capability of data buoys can be obtained from the Data Systems Division, National Data Buoy Center (NDBC), Stennis Space Center, MS 39529; telephone 601-688-1720.

3.3.2 Moored Data Buoys and Coastal Marine Automated Network.

3.3.2.1 Procedures. Moored buoy and C-MAN stations routinely acquire and transmit data every hour. Buoy observations include sea-level pressure, wind speed and direction, air temperature, sea-surface temperature, significant wave height and period, and wave spectral data. Reports from C-MAN locations typically include sea-level pressure, wind speed and direction, and air temperature. Some C-MAN stations measure sea-surface temperature, tide level, significant wave height and period, and wave spectral data. A description of the data from a typical moored buoy payload is provided in Table 3-2. Data from a typical C-MAN station are shown in Table 3-3.

3.3.2.2 Communications. Data are transmitted by ultra high frequency (UHF) communications via the GOES satellite to NESDIS and then are relayed to National Weather Service Telecommunications Gateway (NWSTG) for processing and dissemination. Data from buoys are formatted into World Meteorological Organization (WMO) FM13-IX SHIP code and from C-MAN sites in a modified form of the FM12-IX SYNOP code.

3.3.3 Drifting Data Buoys.

3.3.3.1 Procedures. These buoys are deployed by ship or aircraft in data-sparse areas. Their movements are largely dependent upon ocean currents. Data obtained can include position, sea-level pressure, wind speed and direction, air temperature, and sea-surface and subsurface temperature. Eight drifting buoys were deployed in the North Central Pacific in October 1994. They are expected to remain in the area of interest and continue transmitting through the spring of 1996.

3.3.3.2 Communications. Data are transmitted by UHF communications via the NOAA polar-orbiting satellites to NESDIS ground receiving stations and then relayed to the U.S. Argos Global Processing Center in Landover, Maryland for processing and dissemination to the NWSTG. Data from drifting buoys are formatted into WMO FM18-IX BUOY code.

NDBC MOORED BUOY LOCATIONS

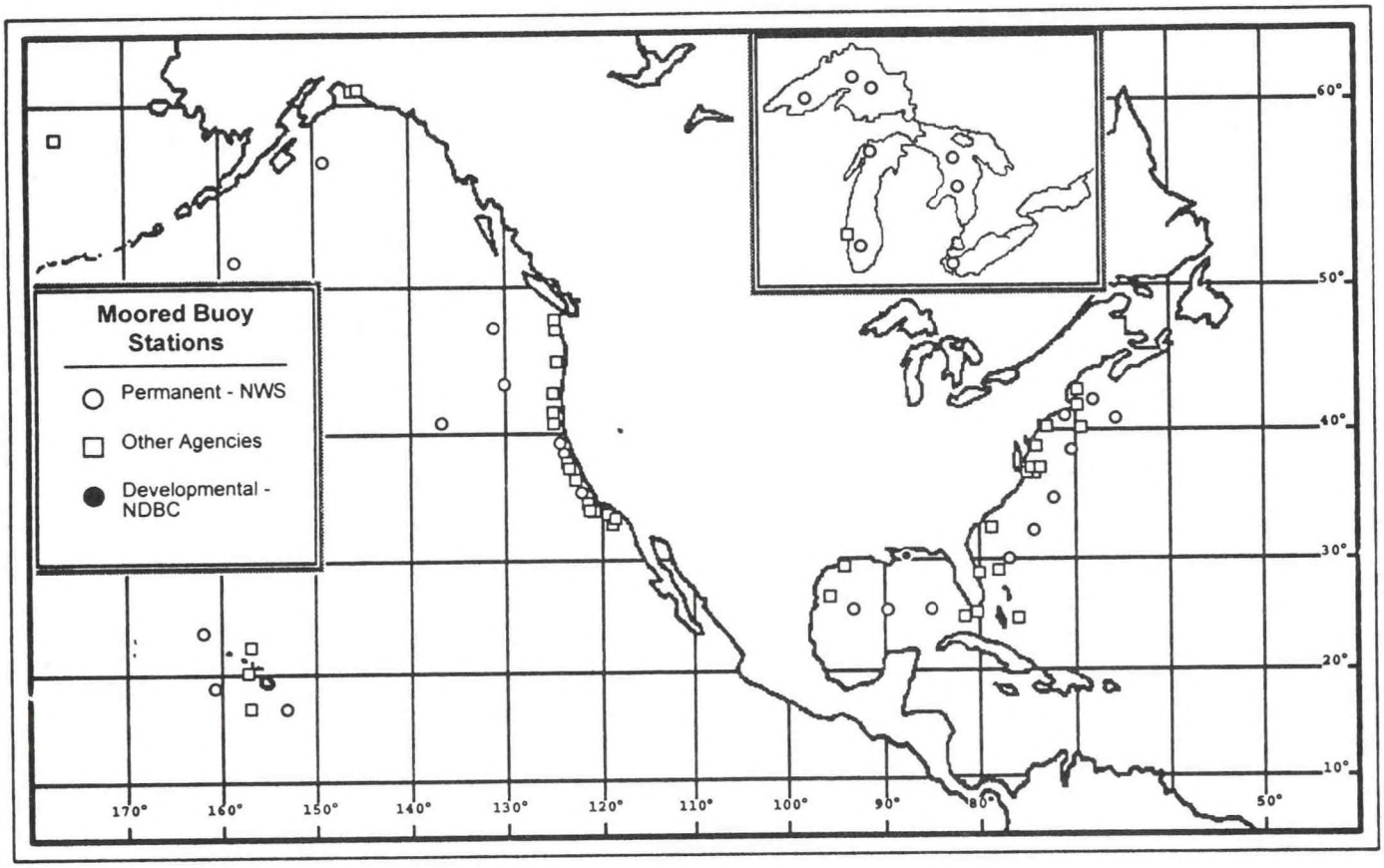

Figure 3-1. Map showing the location of NDBC moored buoys.

COASTAL-MARINE AUTOMATED NETWORK (C-MAN)

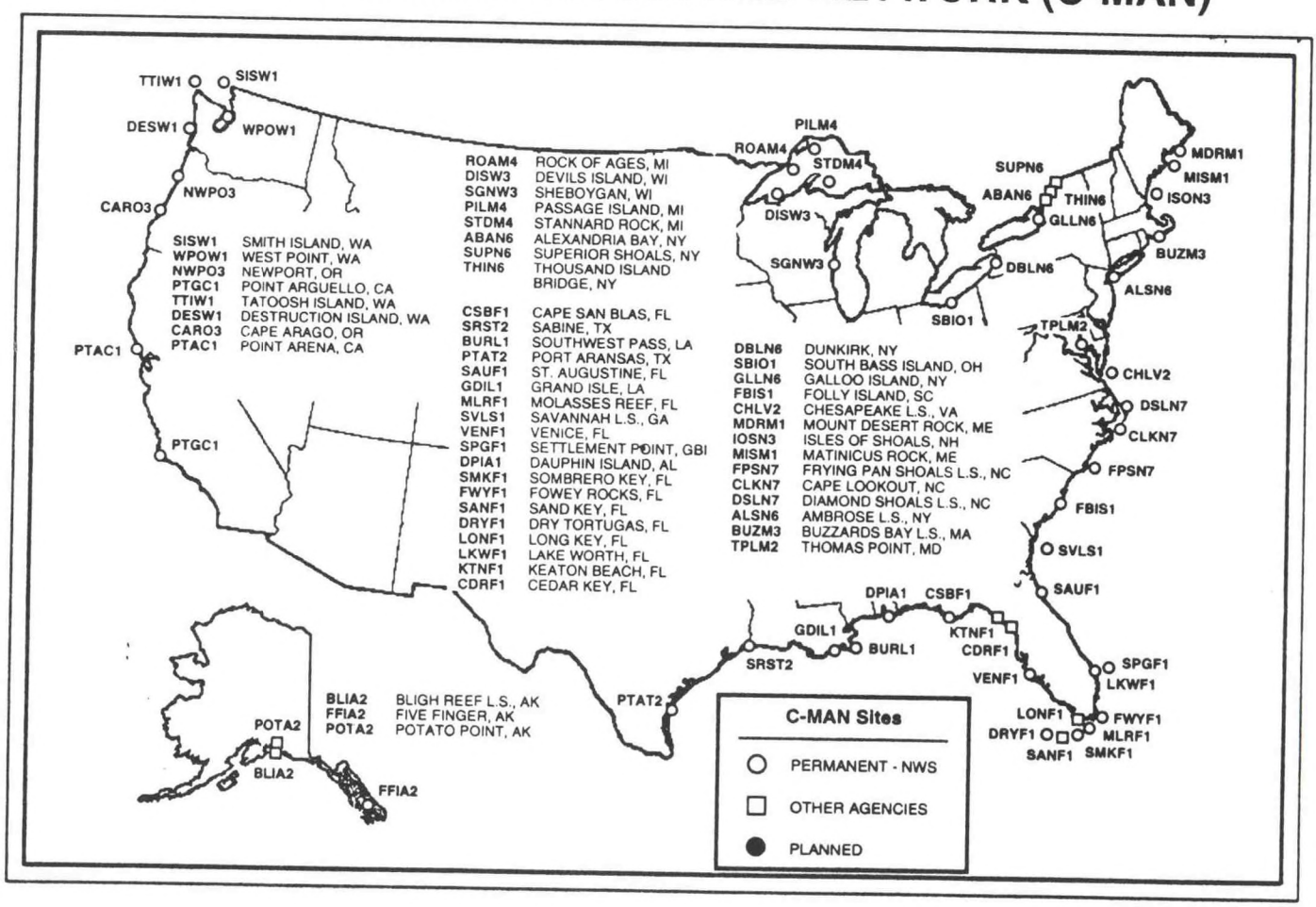

Figure 3-2. Map showing the location of NDBC fixed C-MAN stations in North America, including USCG Navigational Buoys.

Table 3-2. Moored buoy payload data.

Parameter	Reporting Range	Reporting Resolution	Sample Interval	Sample Period	Total System Accuracy
Wind Speed[1]	0 to 62 m/s	0.1 m/s	1 sec	8 min**	± 1m/s or 10%
Wind Direction[1]	0 to 360°	1°	1 sec	8 min**	± 10°
Peak Wind[1]	0 to 82 m/s	0.1 m/s	1 sec	8 min**	± 1m/s or 10%
Air Temperature[1]	-40° to 50°C	0.1°C	1 sec	8 min	± 1°C
Barometric pressure[1]	800 to 1100hPa	0.1 hPa	1 sec	8 min	± 1 hPa
Surface Water Temperature[1]	-7° to 41°C	0.1°C	1 sec	8 min	± 1°C
Solar Radiation*	0 to 2150 Watts/M^2	0.5 Watt/M^2	1 sec	8 min	± 5%
Relative Humidity*	0 to 100%	0.1%	1 sec	8 min	± 6%
Significant Wave Height	0 to 35 m	0.1 m	1 sec	20 min	± 0.2 m or 5%
Wave Period	3 to 30 sec	0.1 sec	1 sec	20 min	± 1 sec
Nondirectional wave spectra	0.03 to 0.35 Hz	0.01 Hz	1 sec	20 min	---
Directional Waves*,[2]	0.03 to 0.35 Hz	0.01 Hz	1 sec	20 min	± 5°

* Parameter reported on selected buoys

** Continuous winds measured on selected buoys with 10 minute sampling period

[1] Older GSBP payloads sample for 9 minutes

[2] New WPM directional wave system has a sample interval of 0.39 second, averages for 40 minutes, and has a reporting range from 0.030 - 0.495 Hz

Table 3-3. Data from a typical fixed C-MAN station.

Parameter	Reporting Range	Reporting Resolution	Averaging* Period	Total System Accuracy
Air Temperature	-40 to 50°C	0.1°C	2 min	± 1.0°C
Wind Direction	0° to 360°	1.0°	2 min	± 10°
Wind Speed	0 to 120 kt	0.1 kt	2 min	± 2.0 kt or 5%
Peak Wind (Highest 5-Sec Running Average)	0 to 160 kt	0.1 kt	2 min	± 2.0 kt or 5%
Barometric Pressure	800 to 1100 hPa	0.1 hPa	2 min	± 1.0 hPa
Sea Surface Temperature**	-5° to +40°C	0.1°C	2 min	± 1.0°C
Water Level**	0 to 99.99 ft	0.01 ft	2 min	± 0.1 ft
Significant Wave Height**	0 to 35 m	0.1 m	20 min	± 0.2 m or 5%
Wave Period**	3 to 30 sec	0.1 sec	20 min	± 1 sec
Non-directional Wave Spectra**	0.03 to 0.35 Hz	.01 Hz	20 min	± 5%

* All sampling rates ≥ 1 Hz
** Not measured at all C-MAN stations

CHAPTER 4

COMMUNICATIONS

4.1. Department of Commerce.

4.1.1 National Weather Service (NWS). All communication systems of the NWS are used in support of the data collection and warning program given in the plan (see Table 4.1). These communication systems are described in the publication, Operations of the National Weather Service.

4.1.2 Aircraft Operations Center (AOC). The AOC may use the communications facilities of the Air Force described in Paragraphs 4.2.1 and 4.2.2.

4.2 Department of Defense (DOD).

4.2.1 U.S. Air Force. The Air Force's Automated Weather Distribution System (AWDS) will be used for collection and dissemination of winter storms information received from the Weather Service Forecast Office, Washington. The Air Force's Automated Digital Weather System (ADWS) will be used for the exchange of data between the National Oceanic and Atmospheric Administration and the Air Force.

4.2.2 Weather Reconnaissance. Weather reconnaissance observations will be transmitted via satellite down link, checked for accuracy and then entered into the Air Force Automated Weather Switch. When the aircraft-to-satellite data link is inoperative, observations will be transmitted using high frequency single sideband radio to the Miami Weather Monitor. A summary of reconnaissance communication capabilities by organization is listed in Table 4.1.

4.2.3 U.S. Navy. The Navy Oceanographic Data Distribution System (NODDS), the Automated Digital Network (AUTODIN), the Navy High Frequency Facsimile Broadcast (NFAX), the Naval Oceanographic Data Distribution and Expansion System (NODDES), and the Joint Maritime Command Information System (JMCIS) will be used to disseminate gale, storm and high seas warnings. The Fleet Numerical Meteorology and Oceanography Center/National Centers for Environmental Prediction Data Link (FNDL) will be used for exchange of data between NWS and the Navy.

4.3 U.S. Coast Guard. The Coast Guard operates activities that routinely collect and/or report meteorological data. Those units that collect and transmit (or report) data for this program are Coast Guard Communications facilities at Boston, MA; Chesapeake, VA; Miami, FL; New Orleans, LA; Kodiak, AK; Honolulu, HI; and San Francisco, CA. These facilities collect Automated Mutual Assistance Vessel Rescue (AMVER) messages from merchant vessels and METEO messages from merchant and Coast Guard vessels on a routine basis. The METEO data are then passed directly to the NCEP on the Coast Guard Data Network (CGDN). NCEP has a receive only terminal and cannot transmit data on this network.

Table 4-1 Reconnaissance organization communications capabilities.

STATION	ADDRESS	TELETYPE	TELEPHONE
Federal Coordinator for Meteorology (OFCM)	Suite 1500, 8455 Colesville Rd. Silver Spring, MD 20910		DSN 851-1460 301-427-2002
CARCAH/Miami Monitor	National Hurricane Center 11691 SW 17th Street Miami, FL 33165-2149	A C	DSN 434-3420 305-229-4474
National Hurricane Center	11691 SW 17th Street Miami, FL 33165-2149	A C	305-229-4470
Alternate National Hurricane Center	NCEP/Met Ops Division Washington, DC	A B C	301-763-8201
Central Pacific Hurricane Center	P.O. Box 29879 Honolulu, HI	C	808-973-5284
Naval Atlantic Meteorology and Oceanography Center	NAVLANTMETOCCEN Norfolk, VA	A	DSN 564-7750/3770 804-444-7750/3770
Naval Pacific Meteorology and Oceanography Center	NAVPACMETOCCEN Pearl Harbor, HI	A	DSN 471-0004 808-471-0004
Aircraft Operations Center	AOC Tampa, FL		813-828-3310
AF Global Weather Central	AFGWC Offutt AFB, NE		DSN 271-2586 402-294-2586
FACSFAC VACAPES OAC	FACSFAC VACAPES, Oceana, VA		DSN 433-1233 804-433-1233
53 WRS	53 WRS 817 H Street - Suite 201 Keesler AFB, MS 39534-2453	A	DSN 597-5518/2409 601-377-5518/2409

A - COMEDS/AWDS B - AFTN C - AFOS

CHAPTER 5

PUBLICITY

5.1 News Media Releases. News media releases, other than warnings and advisories, for the purpose of informing the public of the operational and research activities of the Departments of Commerce, Defense, and Transportation should reflect the joint effort of these agencies by giving due credit to the participation of other agencies.

5.2 Distribution. Copies of these releases, along with any pertinent pictures, should be forwarded to the following agencies:

- NOAA Office of Public Affairs
  Herbert C. Hoover Building
  14th and Constitution Avenue, N.W.
  Washington, DC 20230

- Commander, Naval Meteorology and Oceanography Command
  1020 Balch Boulevard
  Stennis Space Center, MS 39529-5005

- Hq Air Force Reserve (AFRES/PA)
  Robins AFB, GA 31093

- Chief, Environmental Services Division (J-3)
  The Joint Chiefs of Staff
  Washington, DC 20318-3000

- Federal Aviation Administration (APA-310)
  800 Independence Avenue, S.W.
  Washington, DC 20591

- Federal Coordinator for Meteorology
  Suite 1500, 8455 Colesville Road
  Silver Spring, MD 20910

APPENDIX A

ABBREVIATIONS

-A-

ADWS	Automated Digital Weather Switch/System
AF	Air Force (U.S. Air Force)
AFB	Air Force Base
AFCC	Air Force Communications Command
AFGWC	Air Force Global Weather Central
AFOS	Automation of Field Operations and Services
AFRES	Air Force Reserve
AFTN	Aeronautical Fixed Telecommunications Network
A/G	Air to Ground
AIRMET	Airmen's Meteorological Information Bulletin
AIREP	Aircraft Report
ALTRV APREQ	Altitude Reservation Approval Request
AMVER	Automated Mutual Assistance Vessel
AOC	Aircraft Operations Center
APT	Automatic Picture Transmission
ARINC	Aeronautical Radio, Incorporated
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
AUTODIN	Automated Digital Network (DOD)
AVHRR	Advanced Very High Resolution Radiometer
AWDS	Automated Weather Distribution System
AWN	Automated Weather Network

-C-

C	Celsius
CA	Commander, Atlantic Area (USCG)
CARCAH	Chief, Aerial Reconnaissance Coordination, All Hurricanes
CARF	Central Altitude Reservations Function
CBS	Committee for Basic Services (OFCM)
CCGD	Commander, Coast Guard District
CG	Coast Guard
CINCLANTFLT	Commander-in-Chief, Atlantic Fleet
C-MAN	Coastal Marine Automated Network
COMEDS	CONUS Meteorological Data System (USAF)
CONUS	Continental United States
Class G Airspace	Uncontrolled airspace

-D-

DA	Daylight Ascending
DCS	Data Collection System
Det	Detachment
DMSP	Defense Meteorological Satellite Program
DOC	Department of Commerce
DOD	Department of Defense
DOT	Department of Transportation
DRSR	Direct Readout Scanning Radiometer
DSN	Defense Switched Network (Also called AUTOVON)
DTG	Date Time Group

-E-

ESA	European Space Agency
ESSA	Environmental Science Services Administration
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
EUMET SAT	European Meteorological Satellite

-F-

FAA	Federal Aviation Administration
FCMSSR	Federal Committee for Meteorological Services and Supporting Research
FL	Flight Level
FNDL	Fleet Numerical Meteorology and Oceanography Center/National Center for Environmental Prediction Data Link
FT	Foot, Feet
FSS	Flight Service Station
FTS	Federal Telecommunications System

-G-

GA	Global Area Coverage
GCCS	Global Command and Control System (USAF)
GOES	Geostationary Operational Environmental Satellite

-H-

HF	High Frequency
Hr	Hour
HRPT	High Resolution Picture Transmission

-I-

ICAO	International Civil Aviation Organization
ICMSSR	Interdepartmental Committee for Meteorological Services and Supporting Research
IFR	Instrument Flight Rules

J

JMCIS	Joint Maritime Command Information System

-K-

Km	Kilometer(s)
kPa	Kilopascal
kt	Knot(s)

-L-

LAC	Local Area Coverage
LF	Light Fine

-M-

m	meter(s)
M-3	METEOSAT-3
MAC	Military Airlift Command
mb	millibar(s)--see kPa
METEO	Cable Address for Ships
METEOSAT	European Geostationary Meteorological Satellites
METOC	Meteorology and Oceanography
mi	(statute) mile(s)
min	minute(s)
mph	mile(s) per hour
MSB	Meteorological Services Division
m/s	meter(s) per second

-N-

NASA	National Aeronautics and Space Administration
NAVLANTMETOCCEN	Naval Atlantic Meteorology and Oceanography Center
NAVMETOCCOM	Naval Meteorology and Oceanography Command
NAVMETOCCOMDET	Naval Meteorology and Oceanography Command Detachment
NAVMETOCCOMFAC	Naval Meteorology and Oceanography Command Facility

NAVPACMETOCCEN	Naval Pacific Meteorology and Oceanography Center
NAWAS	National Warning System
NCEP	National Centers for Environmental Prediction
NDBC	National Data Buoy Center
NESDIS	National Environmental Satellite, Data, and Information Service
NHC	National Hurricane Center
nmi	nautical miles(s)
NOAA	National Oceanic and Atmospheric Administration
NODDS	Naval Oceanographic Data Distribution System
NODDES	Naval Oceanographic Data Distribution and Expansion System
NSSFC	National Severe Storms Forecast Center
NSSL	National Severe Storms Laboratory (NOAA)
NWSTG	National Weather Service Telecommunications Gateway

-O-

OAC	Oceanic Aircraft Coordinator (USN)
OFCM	Office of the Federal Coordinator for Meteorology
ONR	Office of Naval Research
OSV	Ocean Station Vessel

-P-

Pa	Pascal
PIREP	Pilot Report

-R-

RAREP	Radar Report
RECCO	Reconnaissance Code

-S-

SAB	Synoptic Analysis Branch
SAR	Search and Rescue
SARLANT	Search and Rescue Atlantic Circuit
SCAT	Satellite Cloudtop and Tropopause
SEM	Solar Environmental Monitor
SFDF	Satellite Field Distribution Facility
SFSS	Satellite Field Service Station
SIGMET	Significant Meteorological Information
SSB	Single Sideband

SSC	Stennis Space Center
SSM/I	Special Sensor Microwave/Imagery

-T-

TEAL	Call Sign for State Operated Reconnaissance Aircraft
TESS	Tactical Environmental Support System
TOVS	TIROS-N Operational Vertical Sounder

-U-

UHF	Ultra High Frequency
USA	United States Army
USAF	United States Air Force
USCG	United States Coast Guard
USN	United States Navy
UTC	Universal Coordinated Time (Z)

-V-

VAS	VISSR Atmospheric Sounder
VISSR	Visible and Infrared Spin Scan Radiometer

-W-

WBC	Identifier for NCEP
WEFAX	Weather Encoded Facsimile Transmission
WG	Working Group
WG/HWSO	Working Group for Hurricane and Winter Storms Operations (OFCM)
WFO	Weather Forecast Office
WMO	World Meteorological Organization
WRS	Weather Reconnaissance Squadron
WS	Weather Squadron (USAF)
WSFO	Weather Service Forecast Office
WSO	Weather Service Office
WSPOD	Winter Storm Plan of the Day
WW	Weather Wing (USAF)

X

XADC	Extended Atlantic Data Coverage

-Z-

Z	Zulu Time (UTC)

APPENDIX B

DISTRIBUTION

DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Director, Office of Aircraft Operations (AOC)	5
Deputy Asst Administrator for Information Services (E)	2
Asst Admin for Environmental Satellite, Data, and Information Services (Ex2)	1
Director, National Climatic Data Center E/CC)	2
NOAA Central Library (E/OC4)	4
Chief, Satellite Services Division (E/SP2)	1
Asst Administrator for Ocean Services and Coastal Zone Management (N)	1
Director, Office of NOAA Corps (NC)	1
Director, Office of Public Affairs, NOAA (PA)	2
Director, Office of Climate and Atmospheric Research (R)	1
Director, Environmental Research Laboratories (R/E)	4
Director, Atlantic Oceanographic and Meteorological Laboratory (R/E/AO)	5
Director, Program Development and Coordination Staff (R/PDC)	1
Asst Administrator for Weather Services (W)	1
Director, National Data Buoy Center (W/DB)	3
Director, National Centers Environmental Prediction (W/NMC)	5
Chief, Development Division (W/NMC2)	1
Director, National Hurricane Center (W/NMC8)	20
Director, Office of Meteorology (W/OM)	1
Chief, Integrated Hydrometeorological Services Core (W/OM12)	20
Director, NWS Eastern Region (W/ER)	20
Director, NWS Central Region (W/CR)	2
Director, NWS Southern Region (W/SR)	5
Director, NWS Western Region (W/WR)	2
WSFO, Boston, MA (W/ER09)	2
WSFO, Sterling, VA (W/ER)	2
WSFO, San Juan, PR (W/SR72)	2
NOAA Budget Officer, Office of Management and Budget	1

DEPARTMENT OF DEFENSE

JOINT/UNIFIED/SPECIFIED COMMANDS

The Joint Staff/Director (J33 & J36)	2
USCINCPAC/J316 Env Group	1

USFORSCOM/FCJ2-WE	1
USSTRATCOM/J-3615	2
CINCUSACOM (J335WX)	1

DEPARTMENT OF THE AIR FORCE

HQ USAF/XOWX	3
HQ USAF/XOOOW	1
HQ USAFE/DOW	1
HQ PACAF/DOW	6
HQ ACC/DOW	1
HQ ACC/DOLT	2
HQ AFMC/DOW	1
HQ AFRES/DOTM	3
HQ AFSPACECOM/DOW	1
HQ AMC/XOW	2
HQ ATC/DOTW	1
HQ AWS/DO	6
AFGWC/DO	5
Det 7, AFGWC	1
AWS Technical Library	1
CARCAH (OL-A 53 WRS)	10
15 OS/OSW	1
25 ASOS/DOW	1
45 WS/CC	1
45 WS/SPW/XP/SE	3
53 WRS	50
334 TTS/PTMV	1
374 OSS/WE	1
403 AW/XP/CP	2
403 AW/CC/OSF	2
3246 TW/DOW	2
Det 4, 20 WS	1
Phillips Lab/GP	1

DEPARTMENT OF THE ARMY

Hq Department of the Army/DAMI-POI	2

DEPARTMENT OF THE NAVY

Oceanographer of the Navy	2
Commandant of the Marine Corps (DC/S Aviation)	5
Commanding Officer, Naval Oceanographic Office	50

Commanding Officer, NAVLANTMETOCCEN	1
CINCLANTFLT (N37, N526)	2
NRL Stennis Space Center	1
NRL Monterey	1
Office of Naval Research	1
Commander Operational Test and Evaluation Force/Staff Metoc Officer	1

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

Boston ARTCC	5
New York ARTCC	5
Washington ARTCC	5
Atlanta ARTCC	5
Jacksonville ARTCC	5
Miami ARTCC	5
Houston ARTCC	5
ATCSCC Herndon	6
ATM-200 (ATCSCC)	2
ATM-100	2
ATP-100	4
ANE-500	2
AEA-500	2
ASO-500	2
ASW-500	2

U.S. COAST GUARD

Commandant, USCG Headquarters (NIO)	2
Commandant, USCG Headquarters (TTM)	1
Commander, First Coast Guard District	1
Commander, Fifth Coast Guard District	2
Commander, Seventh Coast Guard District	2
Commander, Eighth Coast Guard District	1
Commanding Officer, USCG Reserve Training Center	1
Commanding Officer, USCG Air Station, Otis AFB, MA	1
Commanding Officer, USCG Air Station, Opa Locka , FL	1
Commanding Officer, USCG Air Station, Floyd Bennett Field, Brooklyn, NY	1
Commanding Officer, USCG Air Station, New Orleans, LA	1
Commanding Officer, USCG Air Station, Elizabeth City, NC	1
Commander, Atlantic Area, New York, NY	1
Commander, Pacific Area, Alemeda, CA	1

DEPARTMENT OF STATE

Office of Advanced Technology	1

DEPARTMENT OF THE INTERIOR

Chief, Science and Technology Staff	1
Office of Liaison, Bureau of Reclamation	1

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRC Region I	2

NATIONAL SCIENCE FOUNDATION

Director, Division of Atmospheric Sciences	1
Director, Meteorology Program	1

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Atmospheric Sciences Division, MSFC	1

OTHER U.S.

GSA Federal Information Center	1
Weather Coordinator, Cumberland Management Agency	2
Congressional Research Service, Library of Congress	1
University of Chicago Library, The Joseph Regenstein Library	1
Natural Hazards Research & Applications Information Center, University of Colorado	1

GOVERNMENT OF CANADA

Officer in Charge, METOC Centre, Maritime Command Headquarters, Halifax, NS	1
Director, Canadian Meteorological Centre, Downsview, Ontario	1
Base Meteorological Officer, CFB Greenwood, NS	1
Transport Canada, Ottawa	1
Transport Canada, New Brunswick	1

UNITED KINGDOM

Assistant Director, Head of Defense Services, Meteorological Office	1

APPENDIX C

DEFINITIONS

Area of Concern. The geographic area of concern for the National Winter Storms Operations Plan covers the Gulf of Mexico -----extending about 150 mi inland along the U.S. Gulf Coast. In the Atlantic, the area of concern ranges from latitudes 25 N to 48 N, west of longitude 55 W, extending about 150 mi inland along the eastern coast of the United States.

Blizzard Warning. A blizzard warning is a headline carried in NWS forecasts and special weather statements that serves notice to the public of a high probability for the occurrence of blizzard conditions (sustained or gust wind speeds of 35 mph or more, considerable falling and/or blowing snow causing poor visibility, frequently less than one-fourth mile).

Due Regard. Operation wherein state operated aircraft assume responsibility for separation from all other aircraft without ATC assistance.

Freezing Rain (or Drizzle). The freezing of rain or drizzle on objects as it strikes them. Winter storm warnings should be reserved for occasions when significant, and possibly damaging, accumulations of ice are expected. However, even small amounts are extremely dangerous to traffic when encountered unexpectedly, and these conditions frequently require the issuance of a travelers' advisory.

Heavy Snow Warning. A heavy snow warning, carried in NWS forecast and special weather statements, serves notice to the public of a high probability for the occurrence of heavy snow (four inches or more accumulation in 12 hours or six or more inches accumulation in 24 hours in most areas of the country, but some variation in the snowfall criterion is allowable on a regional basis).

Ice Storm Warning. This product may be issued when significant ice accumulations are expected and no other winter storm element is expected to occur.

Mission Identifier. The nomenclature assigned to winter storm aircraft reconnaissance missions for weather data identification. It comprises an agency-aircraft indicator followed by a CARCAH-assigned mission-system indicator.

Reconnaissance Aircraft Sortie. A flight that meets the requirements of the winter storm plan of the day.

Sleet. One form of ice pellet. Generally, solid grains of ice that form from the freezing of raindrops or the refreezing of largely melted snowflakes. Sleet, like small hail, usually bounces when hitting a hard surface. Heavy sleet is a fairly rare event in which the ground is covered to a depth of significance to motorists and others.

Storm Fix. For winter storms the process of determining overall synoptic features for a cyclone by flying a track as coordinated with the tasking agency.

Winter Storm Outlook. This product may be issued when there is a good chance of a major winter storm beyond the point normally covered by a watch. The intent of an outlook is to provide information to those who need considerable lead time to prepare for the event (i.e. 36 to 72 hours).

Winter Storm Plan of the Day. A coordinated mission plan that tasks operational weather reconnaissance requirements during the next 1100Z to 1100Z day; describes reconnaissance flights committed to satisfy operational requirements and identifies possible reconnaissance requirements for the succeeding 24-hour period.

Winter Storm Warning. A Winter Storm Warning is a headline carried in NWS forecasts and special statements. It is issued when hazardous weather or a hydrologic event is occurring, is imminent, or has a very high probability of occurrence. A warning is used for conditions posing a threat to life or property. The warning is issued for the same events (except for blizzard conditions) that serve as a basis for the issuance of a winter storm watch. An exception may be made in three special situations: one is the heavy snowfall that often occurs along the lee of the Great Lakes, two is locally heavy orographic snowfall in mountainous terrain, and the third when freezing precipitation is the only element expected. When any of these conditions cannot be directly connected to a synoptic-scale winter storm, the headlines **Heavy Snow Warning** and **Ice Storm Warning** may be used in forecasts.

Winter Storm Watch. A Winter Storm Watch is a headline carried in NWS forecasts and special statements. It is used when the risk of a hazardous weather or hydrologic event has increased significantly, but its occurrence, location, and/or timing is still uncertain. It is intended to provide enough lead time so those who need to set their plans in motion can do so. The watch will cover the possible occurrence of the following elements, either separately or in combination: blizzard conditions, heavy snow (or light snow in areas where snow is relatively rare), accumulations of freezing rain or freezing drizzle, and/or heavy sleet.

Winter Weather Advisories. Event-specific advisories are used to describe conditions that do not constitute a serious enough hazard to warrant a warning for the general public but; nevertheless, pose a significant threat to specified users. They are highlighted in forecasts and statements. These types of advisories include snow (less than 4 in), blowing snow, wind chill, freezing rain, dense fog, etc.

APPENDIX D

RECCO FORM, CODE TABLES AND REGULATIONS

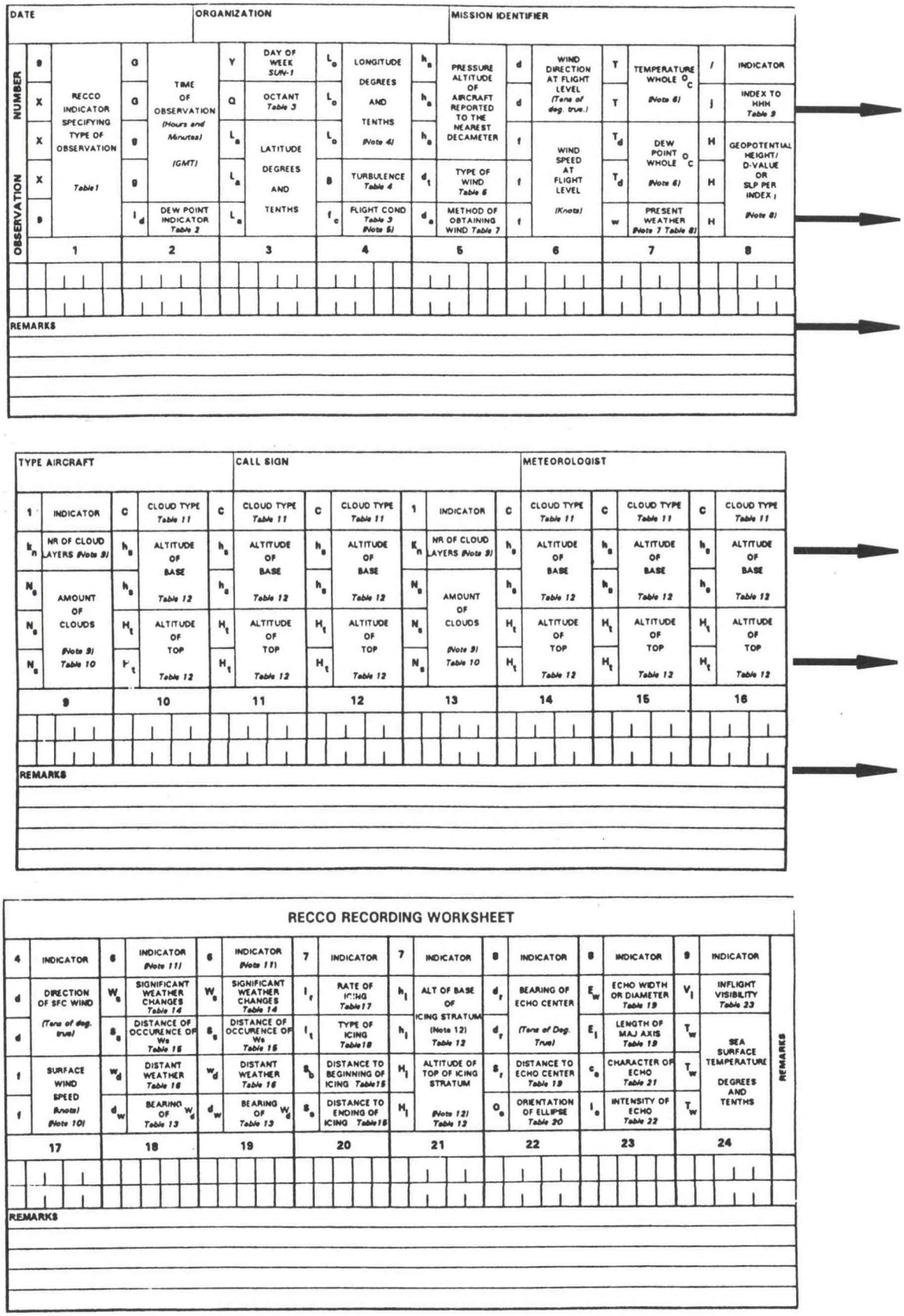

Figure D-1. Reconnaissance code recording form

Table D-1. Reconnaissance code tables

TABLE 1 XXX

222 Sec One Observation without radar capability
555 Sec Three (intermediate) observation with or without radar capability
777 Sec One Observation with radar capability

TABLE 2 i_d

0 No dew point capability/acft below 10,000 meters
1 No dew point capability/acft at or above 10,000 meters
2 No dew point capability/acft below 10,000 meters and flight lvl tem -50°C or colder
3 No dew point capability/acft at or above 10,000 meters and flight lvl temp -50°C or colder
4 Dew point capability/acft below 10,000 meters
5 Dew point capability/acft at or above 10,000 meters
6 Dew point capability/acft below 10,000 meters and flight lvl temp -50°C or colder
7 Dew point capability/acft at or above 10,000 meters and flight lvl temp -50°C or colder

TABLE 3 Q

0	0° -90° W	Northern
1	90° W - 180°	Northern
2	180° - 90° E	Northern
3	90° - 0° E	Northern
4	Not Used	
5	0° - 90° W	Southern
6	90° W - 180°	Southern
7	180° - 90° E	Southern
8	90° - 0° E	Southern

TABLE 4 B

0 None
1 Light turbulence
2 Moderate turbulence in clear air, infrequent
3 Moderate turbulence in clear air, frequent
4 Moderate turbulence in cloud, infrequent
5 Moderate turbulence in cloud, frequent
6 Severe Turbulence in clear air, infrequent
7 Severe Turbulence in clear air, frequent
8 Severe Turbulence in cloud, infrequent
9 Severe Turbulence in cloud, frequent

TABLE 5 f_c

0 In the clear
8 In and out of clouds
9 In clouds all the time (continuous IMC)
/ Impossible to determine due to darkness or other cause

TABLE 6 d_t

0 Spot of Wind
1 Average wind
/ No wind reported

TABLE 7 d_a

0 Winds obtained using doppler radar or inertial systems
1 Winds obtained using other navigation equipment and/or techniques
/ Navigator unable to determine or wind not compatible

TABLE 8 w

0 Clear
1 Scattered (trace to 4/8 cloud coverage)
2 Broken (5/8 to 7/8 cloud coverage)
3 Overcast/undercast
4 Fog, thick dust or haze
5 Drizzle
6 Rain (continuous or intermittent precip - from stratiform clouds)
7 Snow or rain and snow mixed
8 Shower(s) (continuous or intermittent precip - from cumuliform clouds)
9 Thunderstorm(s)
/ Unknown for any cause, including darkness

TABLE 9 j

0 Sea level pressure in whole millibars (thousands fig if any omitted)
1 Altitude 200 mb surface in geopotential decameters (thousands fig if any omitted)
2 Altitude 850 mb surface in geopotential meters (thousands fig omitted)
3 Altitude 700 mb surface in geopotential meters (thousands fig omitted)
4 Altitude 500 mb surface in geopotential decameters
5 Altitude 400 mb surface in geopotential decameters
6 Altitude 300 mb surface in geopotential decameters
7 Altitude 250 mb surface in geopotential decameters (thousands fig if any omitted)
8 D - Value in geopotential decameters; if negative 500 is added to HHH
9 Altitude 925 mb surface in geopotential meters
/ No absolute altitude available or geopotential data not within ± 30 meters/4 mb accuracy requirements

TABLE 10 N_s

0 No additional cloud layers (place holder)
1 1 okta or less, but not zero (1/8 or less sky covered)
2 2 oktas (or 2/8 of sky covered)
3 3 oktas (or 3/8 of sky covered)
4 4 oktas (or 4/8 of sky covered)
5 5 oktas (or 5/8 of sky covered)
6 6 oktas (or 6/8 of sky covered)
7 7 oktas or more but not 8 oktas
8 8 oktas or sky completely covered
9 Sky obscured (place holder)

TABLE 11 C

0 Cirrus (Ci)
1 Cirrocumulus (Cc)
2 Cirrostratus (Cs)
3 Altocumulus (Ac)
4 Altostratus (As)
5 Nimbostratus (Ns)
6 Stratocumulus (Sc)
7 Stratus (St)
8 Cumulus (Cu)
9 Cumulonimbus (Cb)
/ Cloud type unknown due to darkness or other analogous phenomena

TABLE 12 $h_s h_s H_t H_t h_i h_i H_i H_i$

00 Less than 100
01 100 ft
02 200 ft
03 300 ft
etc, etc
49 4,900 ft
50 5,000 ft
51-55 Not used
56 6,000 ft
57 7,000 ft
etc, etc
79 29,000 ft
80 30,000 ft
81 35,000 ft
82 40,000 ft
etc, etc
89 Greater than 70,000 ft
// Unknown

TABLE 13 d_w

0	No report	5	SW
1	NE	6	W
2	E	7	NW
3	SE	8	N
4	S	9	all directions

TABLE 14 W_s

0 No change
1 Marked wind shift
2 Beginning or ending or marked turbulence
3 Marked temperature change (not with altitude)
4 Precipitation begins or ends
5 Change in cloud forms
6 Fog or ice fog bank begins or ends
7 Warm front
8 Cold Front
9 Front, type not specified

TABLE 15 $S_b S_e S_s$

0 No report
1 Previous position
2 Present position
3 30 nautical miles
4 60 nautical miles
5 90 nautical miles
6 120 nautical miles
7 150 nautical miles
8 180 nautical miles
9 More than 180 nautical miles
/ Unknown (not used for S_s)

Table D-1. Reconnaissance code tables (continued)

TABLE 16 w_d

0 No report
1 Signs of a tropical cyclone
2 Ugly threatening sky
3 Duststorm or sandstorm
4 Fog or ice fog
5 Waterspout
6 Cirrostratus shield or bank
7 Altostratus or altocumulus shield or bank
8 Line of heavy cumulus
9 Cumulonimbus heads or thunderstorms

TABLE 17 I_r

7 Light
8 Moderate
9 Severe
/ Unknown or contrails

TABLE 18 I_t

0 None
1 Rime ice in clouds
2 Clear ice in clouds
3 Combination rime and clear ice in clouds
4 Rime ice in precipitation
5 Clear ice in precipitation
6 Combination rime and clear ice in precip
7 Frost (icing in clear air)
8 Nonpersistent contrails (less than 1/4 nautical miles long)
9 Persistent contrails

TABLE 19 S_r, E_w, E_l

0 0NM	5 50NM
1 10NM	6 60-80NM
2 20NM	7 80-100NM
3 30NM	8 100-150NM
4 40NM	9 Greater than 150NM
	/ Unknown

TABLE 20 O_e

0 Circular
1 NNE - SSW
2 NE - SW
3 ENE - WSW
4 E - W
5 ESE - WNW
6 SE - NW
7 SSE - NNW
8 S - N
/ Unknown

TABLE 21 c_e

1 Scattered Area
2 Solid Area
3 Scattered Line
4 Solid Line
5 Scattered, all quadrants
6 Solid, all quadrants
/ Unknown

TABLE 22 i_e

2 Weak
5 Moderate
8 Strong
/ Unknown

TABLE 23 V_i

1 Inflight visibility 0 to and including 1 nautical mile
2 Inflight visibility greater than 1 and not exceeding 3 nautical miles
3 Inflight visibility greater than 3 nautical miles

RECCO SYMBOLIC FORM

SECTION ONE (MANDATORY)

$9XXX9\ GGggi_d\ YQL_aL_aL_a\ L_oL_oL_oBf_c\ h_ah_ah_ad_td_a$

$ddfff\ TTT_dT_dw\ /jHHH$

SECTION TWO (ADDITIONAL)

$1k_nN_sN_sN_s\ Ch_sh_sH_tH_t$ 4ddff

$6W_sS_sW_dd_w\ 7I_rI_tS_bS_e\ 7h_ih_iH_iH_i\ 8d_rd_rS_rO_e$

$8E_wE_lc_ei_e\ 9V_iT_wT_wT_w$

SECTION THREE (INTERMEDIATE)

$9XXX9\ GGggi_d\ YQL_aL_aL_a\ L_oL_oL_oBf_c\ h_ah_ah_ad_td_a$

$ddfff\ TTT_dT_dw\ /jHHH$

Table D-2. Reconnaissance code regulations

1. At the time of the observation the aircraft observing platform is considered to be located on the axis of a right vertical cylinder with a radius of 30 nautical miles bounded by the earth's surface and the top atmosphere. Present weather, cloud amount and type, turbulence, and other subjective elements are reported as occurring within the cylinder. Flight level winds, temperature, dew point, and geopotential values are sensed or computed and reported as occurring at the center of the observation circle. Radar echoes, significant weather changes, distant weather, and icing are phenomena that may also be observed/reported. Code groups identifying these phenomena may be reported as necessary to adequately describe met conditions observed.

2. The intermediate observation (Section Three) is reported following Section One (or Section Two if appended to Section One) in the order that it was taken.

3. Plain language remarks may be added as appropriate. These remarks follow the last encoded portion of the horizontal or vertical observation and will clearly convey the intended message. Vertical observations will not include meteorological remarks. These remarks must begin with a letter or word-e.g. "FL TEMP" vice "700 MB FL TEMP." The last report plain language remarks are mandatory, i.e., "LAST REPORT. OBS 01 thru 08 to KNHC, OBS 09 and 10 to KBIX."

4. The hundreds digit of longitude is omitted for longitudes from 100° to 180°.

5. Describe conditions along the route of flight actually experienced at flight level by aircraft.

6. TT, T_dT_d. When encoding negative temperatures, 50 is added to the absolute value of the temperature with the hundreds figure, if any, being omitted. A temperature of -52°C is encoded as 02, the distinction between -52°C and 2°C being made from i_d. Missing or unknown temperatures are reported as //. When the dew point is colder than -49.4°C, Code T_dT_d as // and report the actual value as a plain language remark - e.g. "DEW POINT NEG 52°C".

7. When two or more types of w co-exist, the type with the higher code figure will be reported. Code Figure 1, 2 and 3 are reported based on the total cloud amount through a given altitude, above or below the aircraft, and when other figures are inappropriate. The summation principle applies only when two or more cloud types share a given altitude.

8. When j is reported as a /, HHH is encoded as ///.

9. If the number of cloud layers reported exceeds 3, k_n in the first 1-group reports the total number of cloud layers. The second 1-group reports the additional number of layers being reported exclusive of those previously reported. In those cases where a cloud layer(s) is discernible, but a descriptive cloud picture of the observation circle is not possible, use appropriate remarks such as "Clouds Blo" or "As Blo" to indicate the presence of clouds. In such cases, coded entries are not made for group 9. The sequence in which cloud amounts are encoded depends upon type of cloud, cloud base, and vertical extent of the cloud. The cloud with the largest numerical value of cloud type code (C) is reported first, regardless of coverage, base, or vertical extent. Among clouds of the same cloud type code, sharing a common base, the cloud of greatest vertical extent is reported first. The summation principle is not used; each layer is treated as though no other clouds were present. The total amount of clouds through one altitude shared by several clouds will not exceed 8 oktas. Only use code figure 0 as a place holder when you can determine that no additional cloud layers exist. In case of undercast, overcast, etc., use code figure 9 as a placeholder.

10. Due to limitations in the ability to distinguish sea state features representative of wind speeds above 130 knots, surface wind speeds in excess of 130 knots will not be encoded. Wind speeds of 100 to 130 knots inclusive will be encoded by deleting the hundreds figure and adding 50 to dd. For wind speeds above 130 knots, dd is reported without adding 50 and ff is encoded as // with a plain language remark added, i.e., "SFC WIND ABOVE 130 KNOTS."

11. Significant weather changes which have occurred since the last observation along the track are reported for W_s.

12. When aircraft encounters icing in level flight, the height at which the icing occurred will be reported for h_ih_i. The H_iH_i will be reported as //.

APPENDIX E

TEMP DROP CODE

EXTRACT FROM: WMO-No. 306 MANUAL ON CODES
FM 37-IX Ext. TEMP DROP - Upper-level pressure, temperature, humidity and wind report from a sonde released by carrier balloons or aircraft.

CODE FORM:

PART A

SECTION 1	$M_iM_iM_jM_j$	$YYGGI_d$ $99L_aL_aL_a$ $Q_cL_oL_oL_oL_o$ $MMMU_{La}U_{Lo}$
SECTION 2	$99P_oP_oP_o$	$T_oT_oT_{ao}D_oD_o$ $d_od_of_of_of_o$
	$P_1P_1h_1h_1h_1$	$T_1T_1T_{a1}D_1D_1$ $d_1d_1f_1f_1f_1$
	$P_nP_nh_nh_nh_n$	$T_nT_nT_{an}D_nD_n$ $d_nd_nf_nf_nf_n$
SECTION 3	$88P_tP_tP_t$	$T_tT_tT_{at}D_tD_t$ $d_td_tf_tf_tf_t$
	or	
	88999	
SECTION 4	$77P_mP_mP_m$	$d_md_mf_mf_mf_m$ $(4v_bv_bv_av_a)$
	or	
	$66P_mP_mP_m$	$d_md_mf_mf_mf_m$ $(4v_bv_bv_av_a)$
	or	
	77999	

PART A
SECTION 1 - IDENTIFICATION AND POSITION

M_iM_i	Identification letters of the report = XX
M_jM_j	Identification letters of the part of the report = AA
YY	Day of the month (GMT). When wind data are included 50 is added to YY.
GG	Actual time of the observation, to the nearest whole hour (GMT).
I_d	Highest mandatory level for which wind is available. 7=700mbs, 5=500mbs, etc. If flight level is above a standard surface, for example 495, report a 5 for 500mbs in the Id group. When no winds are reported in any part of the message encode as "/".
99	Indicator for data on position follow.

$L_aL_aL_a$ Latitude, in tenths of a degree.

Q_c Quadrant of the globe. The earth is divided by the Greenwich meridian and the equator into quadrants. The code figure reported depends on the latitude and longitude of the observation position.

$L_oL_oL_oL_o$ Longitude, in tenths of a degree.

MMM Marsden square. The number of the marsden square for aircraft position at the time of the observation is reported for MMM. Always report three digits for MMM, with zeros reported for the hundreds and tens digits when required. When an observation is within a depicted 10 degree square, report the number of that square. When on an even 10 degree latitude or longitude circle, the marsden square for MMM is obtained by moving in the direction of larger latitude and/or longitude. EXAMPLE: Assuming a position of 18.1N, 131.4W, MMM is 050; assuming a position of 30.0N, 140.0E, MMM is 130. At the equator or on the prime meridian, report the marsden square compatible with the Qc reported.

U_{La} Units digit in the reported latitude.

U_{Lo} Units digit in the reported longitude.

SECTION 2 - SURFACE AND STANDARD ISOBARIC SURFACES

99 Indicator for data for the surface level follow.

$P_oP_oP_o$ Pressure of specified levels in whole millibars, thousands digits omitted. ($P_oP_oP_o$ is always surface level.)

P_1P_1 Pressure of standard isobaric surfaces in units of tens of millibars. (1000mbs=00, 925mbs=92,
P_nP_n 850mbs=85, 700mbs=70, etc.)

$h_1h_1h_1$ Height of the standard pressure level in geopotential meters or decameters above the surface. Encoded in meters up to but not including 500mbs. Encoded in decameters at and above 500mbs omitting,
$h_nh_nh_n$ if necessary, the thousands or tens of thousands digits. Add 500 to hhh for negative 1000mb heights. Report 1000mb groups as 00/// ///// when surface pressure is less than 950mbs.

T_oT_o Tens and units digit of air temperature (not rounded off) in degrees Celsius, at specified levels
T_1T_1 beginning with surface.
T_nT_n

T_{ao} Approximate tenths value and sign (plus or minus) of the air temperature.
T_{al} Even = plus; Odd = minus.
T_{an}

D_oD_o Dewpoint depression (with respect to water) at standard isobaric surfaces beginning with surface
D_1D_1 level. When the depression is 4.9C or less encode the units and tenths digits of the depression. Encode
D_nD_n depressions of 5.0C through 5.4C as 50. Encode depressions of 5.5C through 5.9C as 56. Dewpoint depressions of 6.0C and above are encoded in tens and units with 50 added. Dewpoint depressions for relative humidities less than 20% are encoded as 80. When air temperature is below -40C report DnDn as two solidi.

d_od_o
d_1d_1
d_nd_n — True direction from which wind is blowing rounded to nearest 5 degrees. Report hundreds and tens digits. The unit digit (0 or 5) is added to the hundreds digit of wind speed.

$f_of_of_o$
$f_1f_1f_1$
$f_nf_nf_n$ — Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction, i.e. 295° at 125 kts encoded as 29625.

NOTE: When flight level is just above a standard surface and in the operator's best meteorological judgement, the winds are representative of the winds at the standard surface, then the operator may encode the standard surface winds using the data from flight level. If the winds are not representative, then encode /////.

SECTION 3 - DATA FOR TROPOPAUSE LEVELS

88 — Indicator for data for tropopause level(s) follow.

$P_tP_tP_t$ — Pressure at the tropopause level reported in whole millibars.

T_tT_t — Air temperature in whole degrees Celsius, at the tropopause level.

T_{at} — Approximate tenths value and sign (plus or minus) of the air temperature at the tropopause level.

D_tD_t — Dew point depression at the tropopause level.

d_td_t — True direction at the tropopause level rounded to nearest 5 degrees. Report hundreds and tens digits. The unit digit (0 or 5) is added to the hundreds digit of wind speed.

$f_tf_tf_t$ — Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction, i.e. 295° at 125 kts encoded as 29625.

88999 — Indicator that tropopause data have not been observed.

SECTION 4 - MAXIMUM WIND DATA

66 — Indicator that data for maximum wind level and for vertical wind shear follow when max wind occurs at flight level.

77 — Indicator that data for maximum wind level and for vertical wind shear follow when max wind level does not coincide with flight level.

$P_mP_mP_m$ — Pressure at maximum wind level in whole milibars.

d_md_m — True direction from which wind is blowing at the maximum wind level rounded to nearest 5 degrees. Report hundreds and tens digits. The unit digit (0 or 5) is added to the hundreds digit of wind speed.

$f_mf_mf_m$ — Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction, i.e. 295° at 125 kts encoded as 29625.

4 — Data for vertical wind sheer follow.

v_bv_b — Absolute value of vector difference between max wind and the wind 3000 feet BELOW the level of maximum wind, reported to the nearest knot. Use "//" if missing and 4 group is reported. A vector difference of 99 knots or more is reported with the code figure "99".

v_av_a — Absolute value of vector difference between max wind and the wind 3000 feet ABOVE the level of maximum wind, reported to the nearest knot. Use"//" if missing and 4 group is reported. A vector difference of 99 knots or more is reported with the code figure "99".

CODE FORM:

PART B

SECTION 1 $M_iM_iM_jM_j$ YYGG/ $99L_aL_aL_a$ $Q_cL_oL_oL_o$ $MMMU_{La}U_{Lo}$

SECTION 5 $n_on_oP_oP_oP_o$ $T_oT_oT_{ao}D_oD_o$

$n_1n_1P_1P_1P_1$ $T_1T_1T_{a1}D_1D_1$

$n_nn_nP_nP_nP_n$ $T_nT_nT_{an}D_nD_n$

SECTION 6 21212 $n_on_oP_oP_oP_o$ $d_od_of_of_of_o$

$n_1n_1P_1P_1P_1$ $d_1d_1f_1f_1f_1$

$n_nn_nP_nP_nP_n$ $d_nd_nf_nf_nf_n$

SECTION 9 51515 $101A_{df}$ A_{df} or

$101A_{df}$ A_{df} $0P_nP_nP'_nP'_n$. or

$101A_{df}$ A_{df} $P_nP_nh_nh_nh_n$

NOTE: Code groups to be developed regionally.

PART B

SECTION - 1 IDENTIFICATION AND POSITION

M_jM_j Identification letters of the part of the report = BB.

/ Filler figure for last digit of YYGG group. No wind groups reported for any of the significant isobaric surfaces.

All other groups are the same as reported in Part A - Section 1

SECTION 5 - DATA FOR SIGNIFICANT TEMPERATURE AND RELATIVE HUMIDITY LEVELS

n_on_o Number of level, starting with surface level. Only surface level will be numbered as "00". When a
n_1n_1 standard level is also selected as significant, repeat the level in section 5. Encode significant levels to
n_nn_n indicate missing data as nn/// /////.
$P_oP_oP_o$ Pressure at specified levels in whole millibars, beginning with surface.
$P_1P_1P_1$
$P_nP_nP_n$

Temperature and humidity data groups are reported in the same manner as the temperature and humidity data in Part A - Section 2.

SECTION 6 - DATA FOR SIGNIFICANT WIND LEVELS

21212 Data for significant levels with respect to wind follow. Wind data groups are reported in the same manner as the wind data in Part A - Section 2.

SECTION 9 - ADDITIONAL DATA GROUPS

$101A_{df}$ A_{df} Specifications of regional additional data being reported

0 Group indicator

P_nP_n Pressure of specified levels in tens of millibars. (1007 mb = 01, 945 mb = 95, 726 mb = 73)

$P'_nP'_n$

$P_nP_nh_nh_nh_n$ Data reported in the same manner as in Part A - Section 2.

51515 Additional data in regional code follow.

10166 Geopotential data are doubtful between the following levels, $0P_nP_nP'_nP'_n$. This code figure is used only when geopotential data are doubtful from a level to termination of the descent. NOTE: When radar altimeter is inoperative and surface reference is used, or if the ARWO advises that geopotential platform data is doubtful, a 10166 is reported for the entire run.

10167 Temperature data are doubtful between the following levels: $0P_nP_nP'_nP'_n$. This code figure shall be reported when only temperature data are doubtful for a portion of the descent. If a 10167 group is reported a 10166 will also be reported. EXAMPLE: Temperature is doubtful from 540mbs to 510mbs. SLP is 1020mbs. The additional data groups would be: 51515 10166 00251 10167 05451.

10190 Extrapolated altitude data follows:

1. When the sounding begins within 25mbs below a standard surface, the height of the surface is reported in the format 10190 $P_nP_nh_nh_nh_n$. The temperature group is not reported. EXAMPLE: Assume the release was made from 310mbs and the 300mb height was 966 decameters. The last reported standard level in Part A is the 400mb level. The data for the 300mb level is reported in Part B as 10190 30966.

2. When the sounding does not reach surface, but terminates within 25mbs of a standard surface, the height of the standard surface is reported in Part A of the code in standard format and in Part B of the code in the format 10190 $P_nP_nh_nh_nh_n$. EXAMPLE: Assume termination occurred at 980mbs and the extrapolated height of the 1000mb level was 115 meters. The 1000mb level would be reported in Part A of the code as 00115 ///// and in Part B as 10190 00115.

10191 Extrapolated surface pressure precedes. Extrapolated surface pressure is only reported when the termination occurs between 850mbs and surface. Surface pressure is reported in Part A as $99P_oP_oP_o$ ///// and in Part B as $00P_oP_oP_o$ /////. When surface pressure is extrapolated, the 10191 group is the last additional data group reported in Part B.

APPENDIX F

EAST AND GULF COAST STORM TRACKS

NOTES TO APPENDIX F, EAST AND GULF COAST STORM TRACKS:

- Flight Plans and maps depicted are for planning only; they are not to be used for navigation. Flight crews are responsible for "most current condition" flight plans and fuel computations.
- Flight Plans labeled with the suffix "R" are flown in reverse of the corresponding numbered missions.
- MPLAN (computer flight planning program) limitations prevent numbering of waypoints 13 through 17, which gives the appearance of missing waypoints. Therefore, disregard the numbering sequence on the flight plans which follow.
- No-wind Fuel Load requirements for CORONET COAST missions are as follows:

TRACK #	FUEL LOAD (x 1,000 #)
COAST 01	50
COAST 01R	50
COAST 02	55
COAST 02R	55
COAST 03	55
COAST 03R	55
COAST 04	50
COAST 04R	50
COAST 05	45
COAST 05R	45
COAST 06	36
COAST 06R	36

Flight Crews must re-compute fuel requirements prior to flight.

- Compare flight plan with Altitude Reservation (ALTRV) and resolve discrepancies prior to flight.

Table F-1a. Flight plans and logs for routes CORONET COAST01. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

HQ-AMC enhanced HQ-ACC FPLAN ver: 9.2 NGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 23 Jun 94 DATE SPUN: 09-04-1994 route name: CST01

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX/L APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.70 W088-55.40 1	N 30-24.70 W088-55.40	2639	9+43

ATC CLEARANCE — NAVIGATOR'S SIGNATURE

FIX WPT	ROUTING	STATION LAT LONG	ELEV	FREQ VAR	DOPP C-TK DIST	TC MC	TRUE W/V DRIFT	HDG TRUE VAR MAG	IAS TAS GS	SPN TEMP	ALT	DIST ZD TD TDR	TIME ZONE TT TTR	ETA RETA	ATA A/B
SJI	DCT	N 30-43.57 W088-21.55	190 5E	CH100 115.3		057	L / V	057		CLIMB		35	+10		
2					35	056	0	-1E 208T 056 208G		0C		35 2604	+10 9+33		
	Level off					049	L / V	049		CLIMB		3	+01		
						049	0	0E 208T 049 208G		0C		37 2602	+11 9+32		
MGM	J-37	N 32-13.33 W086-19.18	270 3E	CH58 112.1	L0.0	049	L / V	049			19000	136	+29		
3					138	049	0	0E 280T 049 280G		0C		173 2466	+40 9+03		
SPA	J-37	N 35-02.02 W081-55.62	910 2W	CH104 115.7		052	L / V	052			19000	277	+59		
4					277	055	0	3W 280T 055 280G		0C		450 2190	1+39 8+04		
RDU	DCT	N 35-52.35 W078-47.00	430 4W	CH119 117.2	R0.2	072	L / V	072			25000	162	+35		
5					162	078	0	7W 280T 078 280G		0C		611 2028	2+14 7+29		
TYI	J-209	N 35-58.60 W077-42.23	70 5W	CH125 117.8	R0.1	083	L / V	083			25000	53	+11		
6					53	091	0	8W 280T 091 280G		0C		664 1975	2+25 7+18		
SWL	DCT	N 38-03.40 W075-27.83	40 8W	CH71 112.4	L0.9	040	L / V	040			25000	165	+35		
7					165	050	0	10W 280T 050 280G		0C		829 1810	3+00 6+43		
HTO	J-174	N 40-55.13 W072-19.00	30 13W	CH83 113.6		040	L / V	040			25000	226	+48		
8					226	053	0	13W 280T 053 280G		0C		1054 1585	3+49 5+55		
ACK	DCT	N 41-16.92 W070-01.60	100 15W	CH109 116.2	R0.6	078	L / V	078			30000	106	+23		
9					106	094	0	16W 280T 094 280G		0C		1160 1479	4+11 5+32		
SONDE RELEAS	DCT	N 41-08.00 W067-00.00			R0.1	094	L / V	094			30000	137	+29		
10					137	111	0	17W 280T 111 280G		0C		1297 1342	4+41 5+03		
SLATN/DROP	DCT	N 39-07.01 W066-59.96			R3.0	181	L / V	181			30000	123	+26		
11					121	199	0	18W 280T 199 280G		0C		1420 1220	5+07 4+36		
FLANN/DROP	DCT	N 38-20.01 W069-56.96			R2.1	252	L / V	252			30000	147	+31		
12					146	268	0	16W 280T 268 280G		0C		1566 1073	5+38 4+05		
CHAMP	DCT/K2NY	N 37-31.01 W071-40.97			L0.1	239	L / V	239			30000	96	+20		
18					96	253	0	14W 280T 253 280G		0C		1662 977	5+59 3+44		
ZIBUT/DROP	DCT	N 36-56.30 W072-39.97				234	L / V	234			30000	59	+13		
19					59	246	0	13W 280T 246 280G		0C		1720 919	6+11 3+32		
ORF	AR-9	N 36-53.52 W076-12.02	20 7W	CH116 116.9	R0.6	269	L / V	269			30000	170	+36		
20					170	280	0	12W 280T 280 280G		0C		1890 749	6+48 2+55		
LIB	DCT	N 35-48.70 W079-36.75	830 3W	CH77 113	L0.2	248	L / V	248			30000	178	+38		
21					178	257	0	9W 280T 257 280G		0C		2067 572	7+26 2+17		
SPA	DCT	N 35-02.02 W081-55.62	910 2W	CH104 115.7		248	L / V	248			30000	123	+26		
22					123	253	0	6W 280T 253 280G		0C		2190 450	7+52 1+51		
MGM	J-37	N 32-13.33 W086-19.18	270 3E	CH58 112.1	L0.1	232	L / V	232			30000	277	+59		
23					277	235	0	3W 280T 235 280G		0C		2466 173	8+51 +52		
SJI	J-37	N 30-43.57 W088-21.55	190 5E	CH100 115.3		229	L / V	229			30000	138	+29		
24					138	229	0	0E 280T 229 280G		0C		2604 35	9+21 +22		
KBIX/L	DCT	N 30-24.70 W088-55.40			R0.0	237	L / V	237			30000	35	+07		
25					35	236	0	-1E 280T 236 280G		0C		2639 1	9+28 +15		
KBIX/L	approach	N 30-24.70 W088-55.40											+15 9+43 +00		

CST01

Table F-1b. Flight plans and logs for routes CORONET COAST01R. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

HQ-AMC enhanced HQ-ACC FPLAN ver: 9.2 NGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 23 Jun 94 DATE SPUN: 09-04-1994 route name: CST01R

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX/L DCT	TOTAL DIST	TOTAL TIME
		WPT N 30-24.70	N 30-24.70	2639	9+28
		1 W088-55.40	W088-55.40		

ATC CLEARANCE | NAVIGATOR'S SIGNATURE

FIX WPT	ROUTING LAT LONG	STATION ELEV FREQ VAR	DOPP C-TK DIST	TC MC	TRUE W/V DRIFT	HDG TRUE VAR MAG	IAS TAS GS	SPN TEMP	ALT	DIST ZD TD TDR	TIME ZONE TT TTR	ETA RETA	ATA A/B
SJI		DCT		057	L / V	057		CLIMB		35	+10		
	N 30-43.57	190 CH100				-1E	208T			35	+10		
2	W088-21.55	5E 115.3	35	056	0	056	208G	0C		2604	9+18		
		Level off		049	L / V	049		CLIMB		3	+01		
						0E	208T			37	+11		
				049	0	049	208G	0C		2602	9+17		
MGM		J37	L0.0	049	L / V	049			19000	136	+29		
	N 32-13.33	270 CH58				0E	280T			173	+40		
3	W086-19.18	3E 112.1	138	049	0	049	280G	0C		2466	8+48		
SPA		J37		052	L / V	052			25000	277	+59		
	N 35-02.02	910 CH104				3W	280T			450	1+39		
4	W081-55.62	2W 115.7	277	055	0	055	280G	0C		2189	7+49		
LIB		DCT	R0.1	068	L / V	068			25000	123	+26		
	N 35-48.70	830 CH77				6W	280T			572	2+05		
5	W079-36.75	3W 113	123	073	0	073	280G	0C		2067	7+23		
ORF		DCT		069	L / V	069			25000	178	+38		
	N 36-53.52	20 CH116				9W	280T			749	2+43		
6	W076-12.02	7W 116.9	178	077	0	077	280G	0C		1890	6+45		
ZIBUT/DROP		AR9	R0.2	089	L / V	089			30000	170	+36		
	N 36-56.30					12W	280T			919	3+19		
7	W072-39.97		170	100	0	100	280G	0C		1720	6+09		
CHAMP		DCT/KZNY	L0.6	053	L / V	053			30000	59	+13		
	N 37-31.01					13W	280T			977	3+32		
8	W071-40.97		59	066	0	066	280G	0C		1662	5+56		
FLANN/DROP		DCT		059	L / V	059			30000	96	+20		
	N 38-20.01					14W	280T			1073	3+53		
9	W069-56.96		96	073	0	073	280G	0C		1566	5+36		
SLATN/DROP		DCT	R0.1	071	L / V	071			30000	146	+31		
	N 39-07.01					16W	280T			1219	4+24		
10	W066-59.96		146	087	0	087	280G	0C		1420	5+04		
SONDE RELEAS		DCT	L2.2	000	L / V	000			30000	122	+26		
	N 41-08.00					18W	280T			1341	4+50		
11	W067-00.00		121	017	0	017	280G	0C		1299	4+38		
ACK		J62	L2.9	272	L / V	272			30000	139	+30		
	N 41-16.92	100 CH109				17W	280T			1479	5+20		
12	W070-01.60	15W 116.2	137	289	0	289	280G	0C		1160	4+08		
HTO		DCT	L0.1	258	L / V	258			30000	106	+23		
	N 40-55.13	30 CH83				16W	280T			1585	5+42		
18	W072-19.00	13W 113.6	106	273	0	273	280G	0C		1054	3+46		
SWL		J174	L0.6	220	L / V	220			30000	226	+48		
	N 38-03.40	40 CH71				13W	280T			1810	6+31		
19	W075-27.83	8W 112.4	226	233	0	233	280G	0C		829	2+58		
TYI		DCT		221	L / V	221			30000	165	+35		
	N 35-58.60	70 CH125				10W	280T			1975	7+06		
20	W077-42.23	5W 117.8	165	230	0	230	280G	0C		664	2+22		
RDU		DCT	R0.9	264	L / V	264			30000	54	+11		
	N 35-52.35	430 CH119				8W	280T			2028	7+17		
21	W078-47.00	4W 117.2	53	272	0	272	280G	0C		611	2+11		
SPA		DCT	L0.1	252	L / V	252			30000	162	+35		
	N 35-02.02	910 CH104				7W	280T			2189	7+52		
22	W081-55.62	2W 115.7	162	258	0	258	280G	0C		450	1+36		
MGM		J37	L0.2	232	L / V	232			30000	277	+59		
	N 32-13.33	270 CH58				3W	280T			2466	8+51		
23	W086-19.18	3E 112.1	277	235	0	235	280G	0C		173	+37		
SJI		J37		229	L / V	229			30000	138	+29		
	N 30-43.57	190 CH100				0E	280T			2604	9+21		
24	W088-21.55	5E 115.3	138	229	0	229	280G	0C		35	+07		
KBIX/L		DCT	R0.0	237	L / V	237			30000	35	+07		
	N 30-24.70					-1E	280T			2639	9+28		
25	W088-55.40		35	236	0	236	280G	0C		1	+00		

CST01R

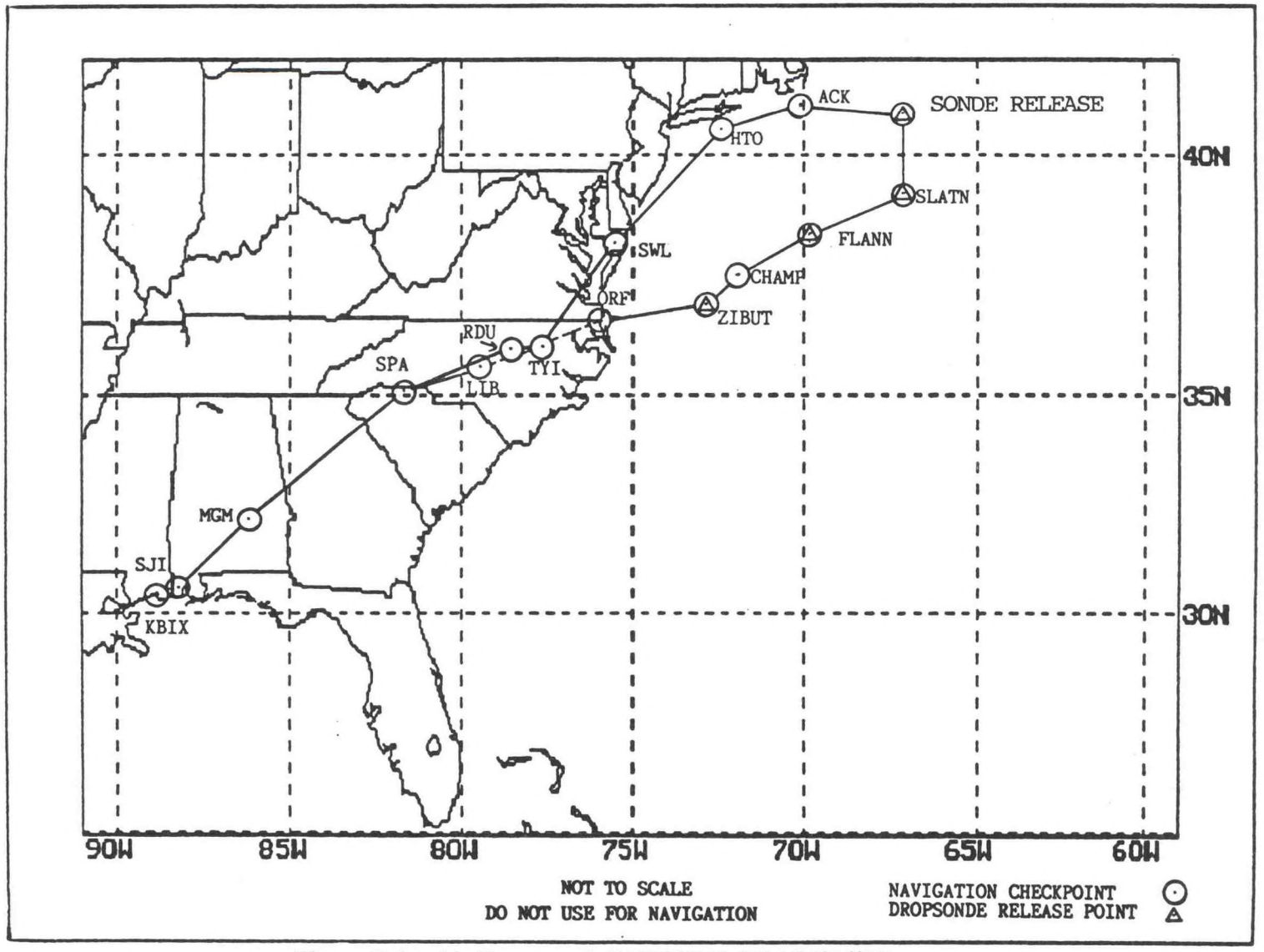

Figure F-1. Air Force track CORONET COAST01/01R.

Table F-2a. Flight plans and logs for routes CORONET COAST02. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

HQ-AMC enhanced HQ-ACC FPLAN ver: 9.2 HGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 23 Jun 96 DATE SPUN: 09-06-1994 route name: CST02

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX/L APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.70	N 30-24.70	2870	10+18
		1 W088-55.40	W088-55.40		

ATC CLEARANCE — NAVIGATOR'S SIGNATURE

FIX / WPT	ROUTING / LAT / LONG	STATION / ELEV / FREQ / VAR	DOPP C-TK / DIST	TC / MC	TRUE / W/V / DRIFT	HDG / TRUE / VAR / MAG	IAS / TAS / GS	SPH / TEMP	ALT	DIST TD / TDR	TIME ZONE / TT / TTR	ETA / RETA	ATA / A/B
SJI	DCT			057	L / V	057		CLIMB		35	+10		
	N 30-43.57	190 CH100				-1E 206T				35	+10		
2	W088-21.55	5E 115.3	35	056	0	056 206G	0C			2835	10+08		
	Level off			049	L / V	049		CLIMB		6	+01		
						0E 206T				40	+12		
				049	0	049 206G	0C			2830	10+06		
MGM	J-37		L0.0	049	L / V	049			19000	133	+28		
	N 32-13.33	270 CH58				0E 280T				173	+40		
3	W086-19.18	3E 112.1	138	049	0	049 280G	0C			2697	9+38		
SPA	J-37			052	L / V	052			19000	277	+59		
	N 35-02.02	910 CH104				3W 280T				450	1+39		
4	W081-55.62	2W 115.7	277	055	0	055 280G	0C			2420	8+39		
RDU	DCT		R0.2	072	L / V	072			25000	162	+35		
	N 35-52.35	430 CH119				7W 280T				611	2+14		
5	W078-47.00	4W 117.2	162	078	0	078 280G	0C			2259	8+04		
TYI	J209		R0.1	083	L / V	083			25000	53	+11		
	N 35-58.60	70 CH125				8W 280T				664	2+25		
6	W077-42.23	5W 117.8	53	091	0	091 280G	0C			2206	7+53		
SWL	DCT		L0.9	040	L / V	040			25000	165	+35		
	N 38-03.40	40 CH71				10W 280T				829	3+01		
7	W075-27.83	8W 112.4	165	050	0	050 280G	0C			2041	7+17		
HTO	J-174			040	L / V	040			25000	226	+48		
	N 40-55.13	30 CH83				13W 280T				1054	3+49		
8	W072-19.00	13W 113.6	226	053	0	053 280G	0C			1816	6+29		
ACK	DCT		R0.6	078	L / V	078			25000	106	+23		
	N 41-16.92	100 CH109				16W 280T				1160	4+12		
9	W070-01.60	15W 116.2	106	094	0	094 280G	0C			1710	6+06		
KZNY FIR	DCT		R0.8	121	L / V	121			30000	162	+35		
	N 39-54.00					17W 280T				1321	4+46		
10	W067-00.00		161	138	0	138 280G	0C			1549	5+32		
BRUNZ/DROP	DCT			120	L / V	120			30000	108	+23		
	N 39-00.00					18W 280T				1428	5+09		
11	W065-00.00		108	138	0	138 280G	0C			1442	5+09		
SONDE RELEAS	A699		R4.3	230	L / V	230			30000	140	+30		
	N 37-30.00					17W 280T				1568	5+39		
12	W067-10.00		137	247	0	247 280G	0C			1302	4+39		
DANER/DROP	A699		L0.1	214	L / V	214			30000	163	+35		
	N 35-16.00					15W 280T				1730	6+14		
18	W069-04.00		163	229	0	229 280G	0C			1140	4+04		
RUBIE/DROP	A699		R0.0	222	L / V	222			30000	193	+41		
	N 32-53.01					13W 280T				1923	6+55		
19	W071-39.96		193	235	0	235 280G	0C			947	3+23		
ADIZ	DCT		R0.0	230	L / V	230			30000	44	+09		
	N 32-25.00					12W 280T				1967	7+04		
20	W072-20.00		44	242	0	242 280G	0C			904	3+14		
GLIBS/DROP	DCT			228	L / V	228			30000	133	+28		
	N 30-56.00					11W 280T				2099	7+33		
21	W074-15.00		133	238	0	238 280G	0C			771	2+45		
TROUT/DROP	R14		R0.4	257	L / V	257			30000	146	+31		
	N 30-23.01					9W 280T				2245	8+06		
22	W076-59.98		146	265	0	265 280G	0C			626	2+14		
DINNS	AR-5		R0.1	271	L / V	271			30000	249	+53		
	N 30-27.90					6W 280T				2493	8+57		
23	W081-48.10		249	277	0	277 280G	0C			377	1+21		
TAY	DCT			274	L / V	274			30000	39	+08		
	N 30-30.28	140 CH76				4W 280T				2532	9+06		
24	W082-33.17	3W 112.9	39	277	0	277 280G	0C			338	1+12		
TLH	J-2			272	L / V	272			30000	95	+20		
	N 30-33.37	180 CH122				3W 280T				2626	9+26		
25	W084-22.43	2E 117.5	95	274	0	274 280G	0C			244	+52		
TLH288042	J-2		R0.2	290	L / V	290			30000	43	+09		
	N 30-47.60					2W 280T				2668	9+35		
26	W085-08.38		43	292	0	292 280G	0C			202	+43		
CEW	J-2		L0.2	271	L / V	271			30000	80	+17		
	N 30-49.57	254 CH106				1W 280T				2748	9+52		
27	W086-40.75	3E 115.9	80	272	0	272 280G	0C			123	+26		
SJI	J-2			266	L / V	266			30000	87	+19		
	N 30-43.57	190 CH100				0E 280T				2834	10+10		
28	W088-21.55	5E 115.3	87	266	0	266 280G	0C			36	+08		
BIX	DCT		L0.4	236	L / V	236			24000	36	+08		
	N 30-24.42	10 CH55				-1E 280T				2870	10+18		
29	W088-55.80	5E	36	235	0	235 280G	0C			1	+00		

CST02

CAUTION: THIS ROUTE TRANSITS W-506 BETWEEN ACK AND BRUNZ.

Table F-2b. Flight plans and logs for routes CORONET COAST02R. See figure F-2 for chart of track. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

MQ-AMC enhanced MQ-ACC FPLAN ver: 9.2 MGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 1 Jan 90 DATE SPUN: 09-06-1994 route name: CST02R

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX/L APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.70 W088-55.40 1	N 30-24.70 W088-55.40	2869	10+18

ATC CLEARANCE NAVIGATOR'S SIGNATURE

FIX WPT	ROUTING LAT LONG	STATION ELEV FREQ VAR	DOPP C-TK DIST	TC MC	TRUE W/V DRIFT	HDG TRUE VAR MAG	IAS TAS GS	SPN TEMP	ALT	DIST ZD TD TDR	TIME ZONE TT TTR	ETA RETA	ATA A/B
SJI		DCT		057	L / V	057		CLIMB		35	+10		
	N 30-43.57	190 CH100				-1E	206T			35	+10		
2	W088-21.55	5E 115.3	35	056	0	056	206G	0C		2834	10+08		
	Level off			086	L / V	086		CLIMB		6	+01		
						0E	206T			40	+12		
				086	0	086	206G	0C		2829	10+06		
CEW		J-2	RO.2	086	L / V	086		19000		82	+18		
	N 30-49.57	254 CH106				0E	280T			122	+29		
3	W086-40.75	3E 115.9	87	086	0	086	280G	0C		2748	9+49		
TLH288042		J-2		091	L / V	091		19000		80	+17		
	N 30-47.60					1W	280T			201	+46		
4	W085-08.38		80	092	0	092	280G	0C		2668	9+32		
TLH		J-2	RO.2	110	L / V	110		25000		43	+09		
	N 30-33.37	180 CH122				2W	280T			243	+55		
5	W084-22.43	2E 117.5	43	112	0	112	280G	0C		2626	9+23		
TAY		J-2	LO.2	092	L / V	092		25000		95	+20		
	N 30-30.28	140 CH76				3W	280T			338	1+15		
6	W082-33.17	3W 112.9	95	094	0	094	280G	0C		2532	9+02		
DINNS		DCT		094	L / V	094		25000		39	+08		
	N 30-27.90					4W	280T			377	1+24		
7	W081-48.10		39	097	0	097	280G	0C		2493	8+54		
TROUT/DROP		ARS/KZMY		091	L / V	091		25000		249	+53		
	N 30-23.01					6W	280T			625	2+17		
8	W076-59.98		249	097	0	097	280G	0C		2245	8+01		
GLIBS/DROP		R14	LO.1	077	L / V	077		25000		146	+31		
	N 30-56.00					9W	280T			771	2+48		
9	W074-15.00		146	085	0	085	280G	0C		2099	7+30		
RUBIE/DROP		DCT	LO.4	048	L / V	048		25000		177	+38		
	N 32-53.01					11W	280T			947	3+26		
10	W071-39.96		177	059	0	059	280G	0C		1923	6+52		
DANER/DROP		A699	LO.0	042	L / V	042		30000		193	+41		
	N 35-16.00					13W	280T			1140	4+07		
11	W069-04.00		193	055	0	055	280G	0C		1730	6+11		
SONDE RELEAS		A699	LO.0	034	L / V	034		30000		163	+35		
	N 37-30.00					15W	280T			1302	4+42		
12	W067-10.00		163	049	0	049	280G	0C		1568	5+36		
BRUNZ/DROP		A699	RO.1	049	L / V	049		30000		137	+29		
	N 39-00.00					17W	280T			1438	5+11		
18	W065-00.00		137	065	0	065	280G	0C		1432	5+07		
ACK		DCT	L4.1	300	L / V	300		30000		271	+58		
	N 41-16.92	100 CH109				17W	280T			1709	6+09		
19	W070-01.60	15W 116.2	269	317	0	317	280G	0C		1161	4+09		
MTO		DCT	LO.8	258	L / V	258		30000		106	+23		
	N 40-55.13	30 CH83				16W	280T			1815	6+32		
20	W072-19.00	13W 113.6	106	273	0	273	280G	0C		1055	3+46		
SWL		J174	LO.6	220	L / V	220		30000		226	+48		
	N 38-03.40	40 CH71				13W	280T			2040	7+20		
21	W075-27.83	8W 112.4	226	233	0	233	280G	0C		829	2+58		
TYI		DCT		221	L / V	221		30000		165	+35		
	N 35-58.60	70 CH125				10W	280T			2205	7+55		
22	W077-42.23	5W 117.8	165	230	0	230	280G	0C		665	2+22		
RDU		DCT	RO.9	264	L / V	264		30000		54	+11		
	N 35-52.35	430 CH119				8W	280T			2258	8+07		
23	W078-47.00	4W 117.2	53	272	0	272	280G	0C		612	2+11		
SPA		DCT	LO.1	252	L / V	252		30000		162	+35		
	N 35-02.02	910 CH104				7W	280T			2420	8+41		
24	W081-55.62	2W 115.7	162	258	0	258	280G	0C		450	1+36		
MGM		J-37	LO.2	232	L / V	232		30000		277	+59		
	N 32-13.33	270 CH58				3W	280T			2696	9+41		
25	W086-19.18	3E 112.1	277	235	0	235	280G	0C		173	+37		
SJI		J-37		229	L / V	229		30000		138	+29		
	N 30-43.57	190 CH100				0E	280T			2834	10+10		
26	W088-21.55	5E 115.3	138	229	0	229	280G	0C		36	+08		
BIX		DCT	RO.0	237	L / V	237		30000		36	+08		
	N 30-24.42	10 CH55				-1E	280T			2869	10+18		
27	W088-55.80	5E	36	236	0	236	280G	0C		1	+00		

CST02R

CAUTION: THIS ROUTE TRANSITS W-506 BETWEEN BRUNZ AND ACK.

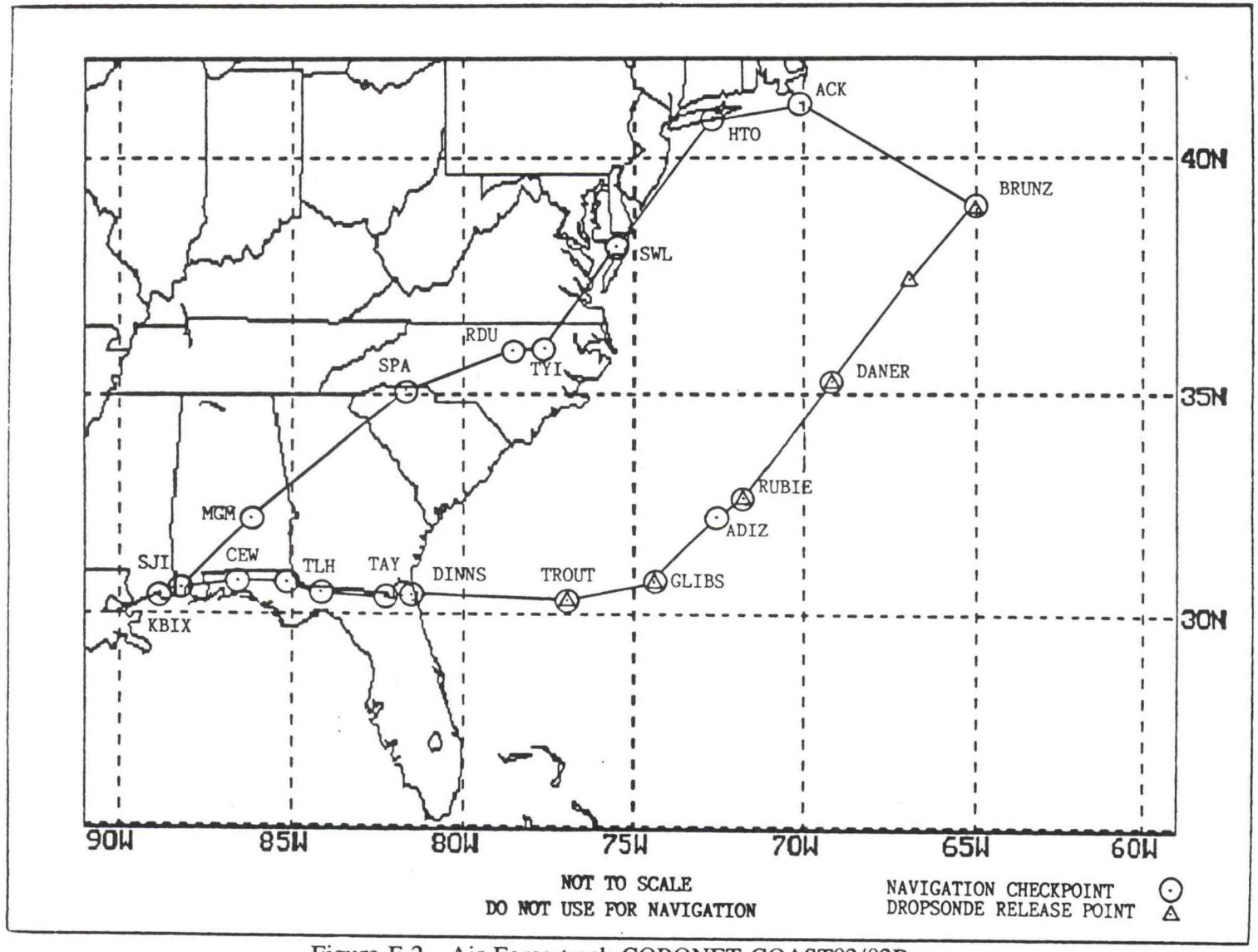

Figure F-2. Air Force track CORONET COAST02/02R.

Table F-3a. Flight plans and logs for routes CORONET COAST03. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

HQ-AMC enhanced HQ-ACC FPLAN ver: 9.2 NGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 23 Jun 94 DATE SPUN: 09-04-1994 route name: CST03

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX/L APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.70 W088-55.40 1	N 30-24.70 W088-55.40	2697	9+41

ATC CLEARANCE — NAVIGATOR'S SIGNATURE

FIX WPT	ROUTING	STATION LAT LONG	ELEV	FREQ	VAR	DOPP C-TK DIST	TC MC	TRUE W/V DRIFT	HDG TRUE VAR MAG	IAS TAS GS	SPN TEMP	ALT	DIST ZD TD TDR	TIME ZONE TT TTR	ETA RETA	ATA A/B
SJI		DCT					057	L / V	057		CLIMB		35	+10		
		N 30-43.57	190		CH100				-1E	206T			35	+10		
2		W088-21.55	5E		115.3	35	056	0	056	206G	0C		2662	9+31		
		Level off					049	L / V	049		CLIMB		6	+01		
									0E	206T			40	+12		
							049	0	049	206G	0C		2657	9+29		
MGM		J37				LO.0	049	L / V	049			19000	133	+28		
		N 32-13.33	270		CH58				0E	280T			173	+40		
3		W086-19.18	3E		112.1	138	049	0	049	280G	0C		2524	9+01		
SPA		J37					052	L / V	052			19000	277	+59		
		N 35-02.02	910		CH104				3W	280T			450	1+39		
4		W081-55.62	2W		115.7	277	055	0	055	280G	0C		2248	8+02		
RDU		DCT				RO.2	072	L / V	072			25000	162	+35		
		N 35-52.35	430		CH119				7W	280T			611	2+14		
5		W078-47.00	4W		117.2	162	078	0	078	280G	0C		2086	7+27		
TYI		J209				RO.1	083	L / V	083			25000	53	+11		
		N 35-58.60	70		CH125				8W	280T			664	2+25		
6		W077-42.23	5W		117.8	53	091	0	091	280G	0C		2033	7+16		
SWL		DCT				LO.9	040	L / V	040			25000	165	+35		
		N 38-03.40	40		CH71				10W	280T			829	3+01		
7		W075-27.83	8W		112.4	165	050	0	050	280G	0C		1868	6+40		
HTO		J-174					040	L / V	040			25000	226	+48		
		N 40-55.13	30		CH83				13W	280T			1054	3+49		
8		W072-19.00	13W		113.6	226	053	0	053	280G	0C		1643	5+52		
ACK		DCT				RO.6	078	L / V	078			25000	106	+23		
		N 41-16.92	100		CH109				16W	280T			1160	4+12		
9		W070-01.60	15W		116.2	106	094	0	094	280G	0C		1537	5+29		
SLATN/DROP		J97/KZNY				R1.3	134	L / V	134			30000	191	+41		
		N 39-07.01							17W	280T			1351	4+52		
10		W066-59.96				191	150	0	150	280G	0C		1347	4+48		
SONDE RELEAS		A700				R3.2	224	L / V	224			30000	176	+38		
		N 37-00.00							16W	280T			1526	5+30		
11		W069-30.00				174	239	0	239	280G	0C		1171	4+11		
MERCI/DROP		A700					222	L / V	222			30000	163	+35		
		N 35-00.01							14W	280T			1688	6+05		
12		W071-44.96				163	236	0	236	280G	0C		1009	3+36		
SONDE RELEAS		A700					225	L / V	225			30000	170	+36		
		N 33-00.00							12W	280T			1858	6+41		
18		W074-10.00				170	236	0	236	280G	0C		839	3+00		
TROUT/DROP		A700					223	L / V	223			30000	214	+46		
		N 30-23.01							9W	280T			2071	7+27		
19		W076-59.98				214	231	0	231	280G	0C		626	2+14		
DINNS		AR-5				R1.1	271	L / V	271			30000	249	+53		
		N 30-27.90							6W	280T			2320	8+20		
20		W081-48.10				249	277	0	277	280G	0C		377	1+21		
TAY		DCT					274	L / V	274			30000	39	+08		
		N 30-30.28	140		CH76				4W	280T			2359	8+28		
21		W082-33.17	3W		112.9	39	277	0	277	280G	0C		338	1+12		
TLH		J-2					272	L / V	272			30000	95	+20		
		N 30-33.37	180		CH122				3W	280T			2453	8+49		
22		W084-22.43	2E		117.5	95	274	0	274	280G	0C		244	+52		
TLH288042		J-2				RO.2	290	L / V	290			30000	43	+09		
		N 30-47.60							2W	280T			2495	8+58		
23		W085-08.38				43	292	0	292	280G	0C		202	+43		
CEW		J-2				LO.2	271	L / V	271			30000	80	+17		
		N 30-49.57	254		CH106				1W	280T			2575	9+15		
24		W086-40.75	3E		115.9	80	272	0	272	280G	0C		123	+26		
SJI		J-2					266	L / V	266			30000	87	+19		
		N 30-43.57	190		CH100				0E	280T			2661	9+33		
25		W088-21.55	5E		115.3	87	266	0	266	280G	0C		36	+08		
BIX		DCT				LO.4	236	L / V	236			24000	36	+08		
		N 30-24.42	10		CH55				-1E	280T			2697	9+41		
26		W088-55.80	5E			36	235	0	235	280G	0C		1	+00		

CST03

Table F-3b. Flight plans and logs for routes CORONET COAST03R. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

MD-AMC enhanced MD-ACC FPLAN ver: 9.2 MGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 23 Jun 94 DATE SPUN: 09-04-1994 route name: CST03R

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX/L APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.70 W088-55.40 1	N 30-24.70 W088-55.40	2697	9+41

ATC CLEARANCE — NAVIGATOR'S SIGNATURE

FIX WPT	ROUTING LAT LONG	STATION ELEV FREQ VAR	DOPP C-TK DIST	TC MC	TRUE W/V DRIFT	HDG TRUE VAR MAG	IAS TAS GS	SPN TEMP	ALT	DIST ZD TD TDR	TIME ZONE TT TTR	ETA RETA	ATA A/B
SJI		DCT		057	L / V	057		CLIMB		35	+10		
	N 30-43.57	190 CH100				-1E	206T			35	+10		
2	W088-21.55	5E 115.3	35	056	0	056	206G	0C		2662	9+31		
		Level off		086	L / V	086		CLIMB		6	+01		
						0E	206T			40	+12		
				086	0	086	206G	0C		2657	9+29		
CEW		J-2	R0.2	086	L / V	086			19000	82	+18		
	N 30-49.57	254 CH106				0E	280T			122	+29		
3	W086-40.75	3E 115.9	87	086	0	086	280G	0C		2575	9+12		
TLH288042		J-2		091	L / V	091			25000	80	+17		
	N 30-47.60					1W	280T			201	+46		
4	W085-08.38		80	092	0	092	280G	0C		2496	8+55		
TLH		J-2	R0.2	110	L / V	110			25000	43	+09		
	N 30-33.37	180 CH122				2W	280T			243	+55		
5	W084-22.43	2E 117.5	43	112	0	112	280G	0C		2454	8+46		
TAY		J-2	L0.2	092	L / V	092			25000	95	+20		
	N 30-30.28	140 CH76				3W	280T			338	1+15		
6	W082-33.17	3W 112.9	95	094	0	094	280G	0C		2359	8+25		
DINNS		DIR		094	L / V	094			25000	39	+08		
	N 30-27.90					4W	280T			377	1+24		
7	W081-48.10		39	097	0	097	280G	0C		2320	8+17		
TROUT/DROP		AR5/KZNY		091	L / V	091			25000	249	+53		
	N 30-23.01					6W	280T			625	2+17		
8	W076-59.98		249	097	0	097	280G	0C		2072	7+24		
SONDE RELEAS		A700	L1.1	042	L / V	042			25000	214	+46		
	N 33-00.00					9W	280T			839	3+03		
9	W074-10.00		214	051	0	051	280G	0C		1858	6+38		
MERCI/DROP		A700		045	L / V	045			25000	170	+36		
	N 35-00.01					12W	280T			1009	3+39		
10	W071-44.96		170	056	0	056	280G	0C		1688	6+02		
SONDE RELEAS		A700		042	L / V	042			30000	163	+35		
	N 37-00.00					14W	280T			1171	4+14		
11	W069-30.00		163	056	0	056	280G	0C		1526	5+27		
SLATN/DROP		A700		043	L / V	043			30000	174	+37		
	N 39-07.01					16W	280T			1344	4+51		
12	W066-59.96		174	058	0	058	280G	0C		1353	4+50		
ACK		J97	L3.1	312	L / V	312			30000	192	+41		
	N 41-16.92	100 CH109				17W	280T			1536	5+32		
18	W070-01.60	15W 116.2	191	328	0	328	280G	0C		1161	4+09		
HTO		DCT	L1.3	257	L / V	257			30000	107	+23		
	N 40-55.13	30 CH83				16W	280T			1642	5+55		
19	W072-19.00	13W 113.6	106	272	0	272	280G	0C		1055	3+46		
SWL		J174	L0.6	220	L / V	220			30000	226	+48		
	N 38-03.40	40 CH71				13W	280T			1868	6+43		
20	W075-27.83	8W 112.4	226	233	0	233	280G	0C		829	2+58		
TYI		DCT		221	L / V	221			30000	165	+35		
	N 35-58.60	70 CH125				10W	280T			2032	7+18		
21	W077-42.23	5W 117.8	165	230	0	230	280G	0C		665	2+22		
RDU		DCT	R0.9	264	L / V	264			30000	54	+11		
	N 35-52.35	430 CH119				8W	280T			2085	7+30		
22	W078-47.00	4W 117.2	53	272	0	272	280G	0C		612	2+11		
SPA		DCT	L0.1	252	L / V	252			30000	162	+35		
	N 35-02.02	910 CH104				7W	280T			2247	8+04		
23	W081-55.62	2W 115.7	162	258	0	258	280G	0C		450	1+36		
MGM		J37	L0.2	232	L / V	232			30000	277	+59		
	N 32-13.33	270 CH58				3W	280T			2524	9+04		
24	W086-19.18	3E 112.1	277	235	0	235	280G	0C		173	+37		
SJI		J37		229	L / V	229			30000	138	+29		
	N 30-43.57	190 CH100				0E	280T			2661	9+33		
25	W088-21.55	5E 115.3	138	229	0	229	280G	0C		36	+08		
BIX		DCT	R0.0	237	L / V	237			24000	36	+08		
	N 30-24.42	10 CH55				-1E	280T			2697	9+41		
26	W088-55.80	5E	36	236	0	236	280G	0C		1	+00		

CST03R

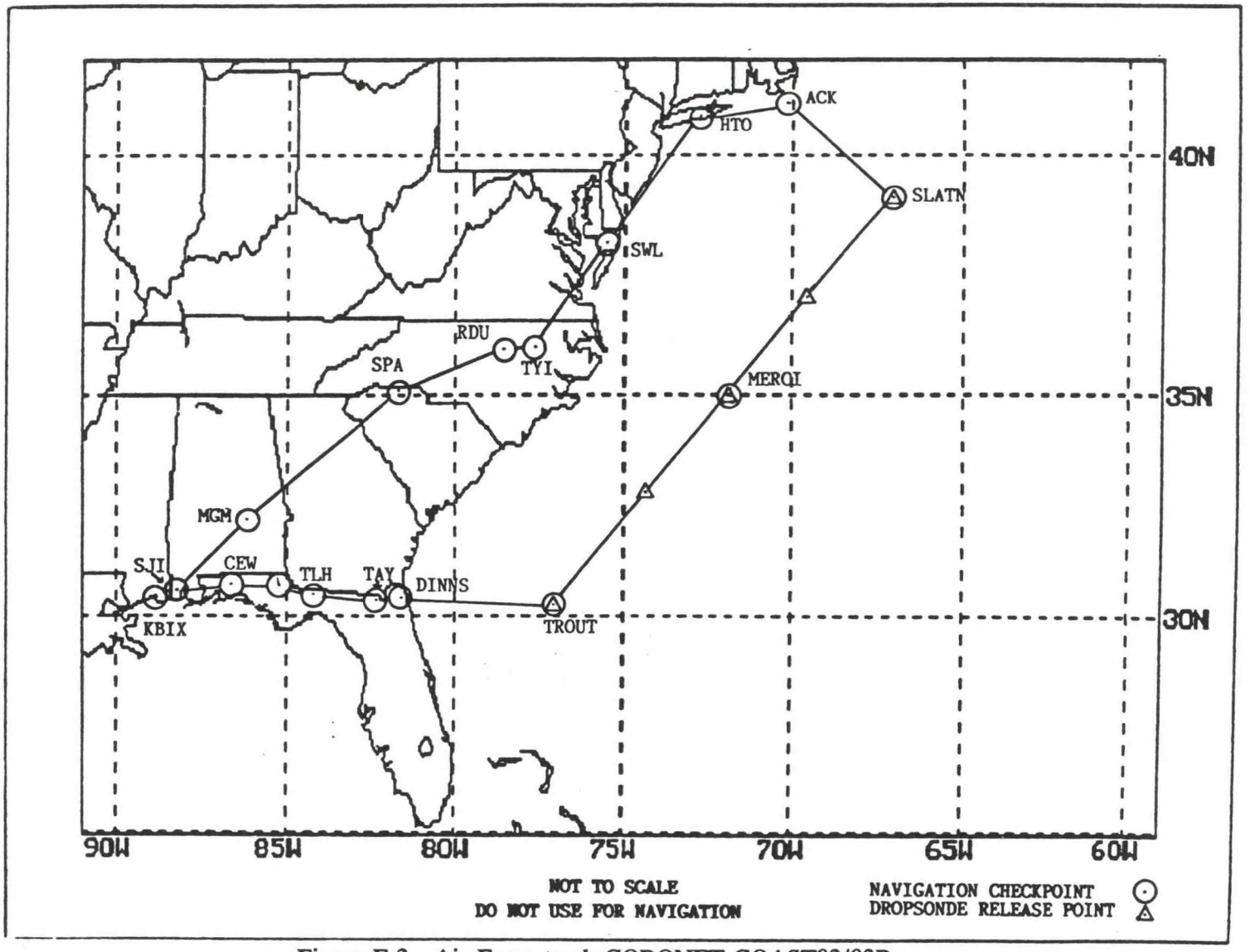

Figure F-3. Air Force track CORONET COAST03/03R.

Table F-4a. Flight plans and logs for routes CORONET COAST04. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

HQ-AMC enhanced HQ-ACC FPLAN ver: 9.2 HGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 23 Jun 94 DATE SPUN: 09-04-1994 route name: CST04

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX/L APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.70 W088-55.40 1	N 30-24.70 W088-55.40	2321	8+20

ATC CLEARANCE | NAVIGATOR'S SIGNATURE

FIX WPT	ROUTING / STATION LAT LONG	ELEV	FREQ	VAR	DOPP C-TK DIST	TC MC	TRUE W/V DRIFT	HDG TRUE VAR MAG	IAS TAS GS	SPN TEMP	ALT	DIST ZD TD TDR	TIME ZONE TT TTR	ETA RETA	ATA A/B
SJI	DCT					057	L / V	057		CLIMB		35	+10		
	N 30-43.57	190	CH100					-1E 208T				35	+10		
2	W088-21.55	5E	115.3		35	056	0	056 208G		0C		2287	8+10		
	Level off					049	L / V	049		CLIMB		3	+01		
								0E 208T				37	+11		
						049	0	049 208G		0C		2285	8+09		
HGM	J-37				LO.0	049	L / V	049			19000	136	+29		
	N 32-13.33	270	CH58					0E 280T				173	+40		
3	W086-19.18	3E	112.1		138	049	0	049 280G		0C		2149	7+40		
SPA	J-37					052	L / V	052			19000	277	+59		
	N 35-02.02	910	CH104					3W 280T				450	1+39		
4	W081-55.62	2W	115.7		277	055	0	055 280G		0C		1872	6+41		
RDU	DCT				RO.2	072	L / V	072			25000	162	+35		
	N 35-52.35	430	CH119					7W 280T				611	2+14		
5	W078-47.00	4W	117.2		162	078	0	078 280G		0C		1711	6+06		
TYI	DCT				RO.1	083	L / V	083			25000	53	+11		
	N 35-58.60	70	CH125					8W 280T				664	2+25		
6	W077-42.23	5W	117.8		53	091	0	091 280G		0C		1658	5+55		
SWL	DCT				LO.9	040	L / V	040			25000	165	+35		
	N 38-03.40	40	CH71					10W 280T				829	3+00		
7	W075-27.83	8W	112.4		165	050	0	050 280G		0C		1493	5+20		
SIE	DCT				LO.1	026	L / V	026			25000	70	+15		
	N 39-05.73	10	CH95					12W 280T				899	3+15		
8	W074-48.02	9W	114.8		70	038	0	038 280G		0C		1423	5+05		
MANTA	DCT				RO.3	050	L / V	050			30000	76	+16		
	N 39-54.12							13W 280T				974	3+31		
9	W073-32.53				76	063	0	063 280G		0C		1347	4+49		
OWENZ/DROP	DCT				R1.1	100	L / V	100			30000	34	+07		
	N 39-49.40							14W 280T				1008	3+39		
10	W072-49.83				34	113	0	113 280G		0C		1314	4+41		
BERGN	DCT				RO.7	140	L / V	140			30000	56	+12		
	N 39-07.95							14W 280T				1063	3+50		
11	W072-03.09				55	153	0	153 280G		0C		1259	4+30		
CHAMP/DROP	A-300/K2NY				RO.4	170	L / V	170			30000	99	+21		
	N 37-31.01							14W 280T				1161	4+12		
12	W071-40.97				99	184	0	184 280G		0C		1160	4+09		
MERCI/DROP	G-437				RO.1	181	L / V	181			30000	152	+32		
	N 35-00.01							13W 280T				1312	4+44		
18	W071-44.96				152	194	0	194 280G		0C		1009	3+36		
SONDE RELEAS	A-700				RO.9	225	L / V	225			30000	197	+42		
	N 32-40.00							11W 280T				1509	5+26		
19	W074-30.00				196	236	0	236 280G		0C		813	2+54		
TROUT/DROP	A-700					223	L / V	223			30000	188	+40		
	N 30-23.01							9W 280T				1696	6+06		
20	W076-59.98				188	231	0	231 280G		0C		626	2+14		
DINNS	AR-5				R1.1	271	L / V	271			30000	249	+53		
	N 30-27.90							6W 280T				1945	6+59		
21	W081-48.10				249	277	0	277 280G		0C		377	1+21		
TAY	DCT					274	L / V	274			30000	39	+08		
	N 30-30.28	140	CH76					4W 280T				1984	7+08		
22	W082-33.17	3W	112.9		39	277	0	277 280G		0C		338	1+12		
TLH	J-2					272	L / V	272			30000	95	+20		
	N 30-33.37	180	CH122					3W 280T				2078	7+28		
23	W084-22.43	2E	117.5		95	274	0	274 280G		0C		244	+52		
TLH288042	J-2				RO.2	290	L / V	290			30000	43	+09		
	N 30-47.60							2W 280T				2120	7+37		
24	W085-08.38				43	292	0	292 280G		0C		202	+43		
CEW	J-2				LO.2	271	L / V	271			30000	80	+17		
	N 30-49.57	254	CH106					1W 280T				2199	7+54		
25	W086-40.75	3E	115.9		80	272	0	272 280G		0C		123	+26		
SJI	J-2					266	L / V	266			30000	87	+19		
	N 30-43.57	190	CH100					0E 280T				2286	8+12		
26	W088-21.55	5E	115.3		87	266	0	266 280G		0C		36	+08		
BIX	DCT				LO.4	236	L / V	236			24000	36	+08		
	N 30-24.42	10	CH55					-1E 280T				2321	8+20		
27	W088-55.80	5E			36	235	0	235 280G		0C		1	+00		

CST04

Table F-4b. Flight plans and logs for routes CORONET COAST04R. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

MQ-AMC enhanced MQ-ACC FPLAN ver: 9.2 MGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 23 Jun 94 DATE SPUN: 09-04-1994 route name: CST04R

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX/L APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.70	N 30-24.70	2321	8+20
		1 W088-55.40	W088-55.40		

ATC CLEARANCE | NAVIGATOR'S SIGNATURE

FIX	ROUTING	STATION	DOPP	TC	TRUE	HDG	IAS	SPN	ALT	DIST	TIME	ETA	ATA
	LAT	ELEV FREQ	C-TK		W/V	TRUE VAR	TAS			ZD TD	ZONE TT		
WPT	LONG	VAR	DIST	MC	DRIFT	MAG	GS	TEMP		TDR	TTR	RETA	A/B
SJI		DCT		057	L / V	057		CLIMB		35	+10		
	N 30-43.57	190 CH100				-1E 208T				35	+10		
2	W088-21.55	5E 115.3	35	056	0	056 208G	0C			2287	8+10		
		Level off		086	L / V	086		CLIMB		3	+01		
						0E 208T				37	+11		
				086	0	086 208G	0C			2285	8+09		
CEW		J2	R0.2	086	L / V	086		19000		85	+18		
	N 30-49.57	254 CH106				0E 280T				122	+29		
3	W086-40.75	3E 115.9	87	086	0	086 280G	0C			2200	7+51		
TLH288042		J2		091	L / V	091		25000		80	+17		
	N 30-47.60					1W 280T				201	+46		
4	W085-08.38		80	092	0	092 280G	0C			2120	7+34		
TLN		J2	R0.2	110	L / V	110		25000		43	+09		
	N 30-33.37	180 CH122				2W 280T				243	+55		
5	W084-22.43	2E 117.5	43	112	0	112 280G	0C			2078	7+25		
TAY		J2	L0.2	092	L / V	092		25000		95	+20		
	N 30-30.28	140 CH76				3W 280T				338	1+15		
6	W082-33.17	3W 112.9	95	094	0	094 280G	0C			1984	7+05		
DINNS		DCT		094	L / V	094		25000		39	+08		
	N 30-27.90					4W 280T				377	1+23		
7	W081-48.10		39	097	0	097 280G	0C			1945	6+57		
TROUT/DROP		AR5/KZNY		091	L / V	091		25000		249	+53		
	N 30-23.01					6W 280T				625	2+17		
8	W076-59.98		249	097	0	097 280G	0C			1697	6+03		
SONDE RELEAS		A700	L1.1	043	L / V	043		25000		188	+40		
	N 32-40.00					9W 280T				813	2+57		
9	W074-30.00		188	051	0	051 280G	0C			1509	5+23		
MERCI/DROP		A700		044	L / V	044		30000		196	+42		
	N 35-00.01					11W 280T				1009	3+39		
10	W071-44.96		196	055	0	055 280G	0C			1313	4+41		
CHAMP/DROP		G437	L0.9	001	L / V	001		30000		152	+32		
	N 37-31.01					13W 280T				1160	4+11		
11	W071-40.97		152	014	0	014 280G	0C			1162	4+09		
BERGM		A300	L0.1	350	L / V	350		30000		99	+21		
	N 39-07.95					14W 280T				1258	4+32		
12	W072-03.09		99	003	0	003 280G	0C			1063	3+48		
OWENZ/DROP		DCT	L0.5	318	L / V	318		30000		56	+12		
	N 39-49.40					14W 280T				1313	4+44		
18	W072-49.83		55	332	0	332 280G	0C			1008	3+36		
MANTA		DCT	L0.8	277	L / V	277		30000		34	+07		
	N 39-54.12					14W 280T				1347	4+51		
19	W073-32.53		34	290	0	290 280G	0C			975	3+29		
SIE		DCT	L1.0	230	L / V	230		30000		76	+16		
	N 39-05.73	10 CH95				13W 280T				1423	5+07		
20	W074-48.02	9W 114.8	76	242	0	242 280G	0C			899	3+13		
SWL		J121	L0.2	206	L / V	206		30000		70	+15		
	N 38-03.40	40 CH71				12W 280T				1492	5+22		
21	W075-27.83	8W 112.4	70	218	0	218 280G	0C			829	2+58		
TYI		DCT	R0.1	221	L / V	221		30000		165	+35		
	N 35-58.60	70 CH125				10W 280T				1657	5+58		
22	W077-42.23	5W 117.8	165	230	0	230 280G	0C			665	2+22		
RDU		DCT	R0.9	264	L / V	264		30000		54	+11		
	N 35-52.35	430 CH119				8W 280T				1710	6+09		
23	W078-47.00	4W 117.2	53	272	0	272 280G	0C			612	2+11		
SPA		DCT	L0.1	252	L / V	252		30000		162	+35		
	N 35-02.02	910 CH104				7W 280T				1872	6+44		
24	W081-55.62	2W 115.7	162	258	0	258 280G	0C			450	1+36		
HGM		J37	L0.2	232	L / V	232		30000		277	+59		
	N 32-13.33	270 CH58				3W 280T				2148	7+43		
25	W086-19.18	3E 112.1	277	235	0	235 280G	0C			173	+37		
SJI		J37		229	L / V	229		24000		138	+29		
	N 30-43.57	190 CH100				0E 280T				2286	8+12		
26	W088-21.55	5E 115.3	138	229	0	229 280G	0C			36	+08		
BIX		DCT	R0.0	237	L / V	237		24000		36	+08		
	N 30-24.42	10 CH55				-1E 280T				2321	8+20		
27	W088-55.80	5E	36	236	0	236 280G	0C			1	+00		

CST04R

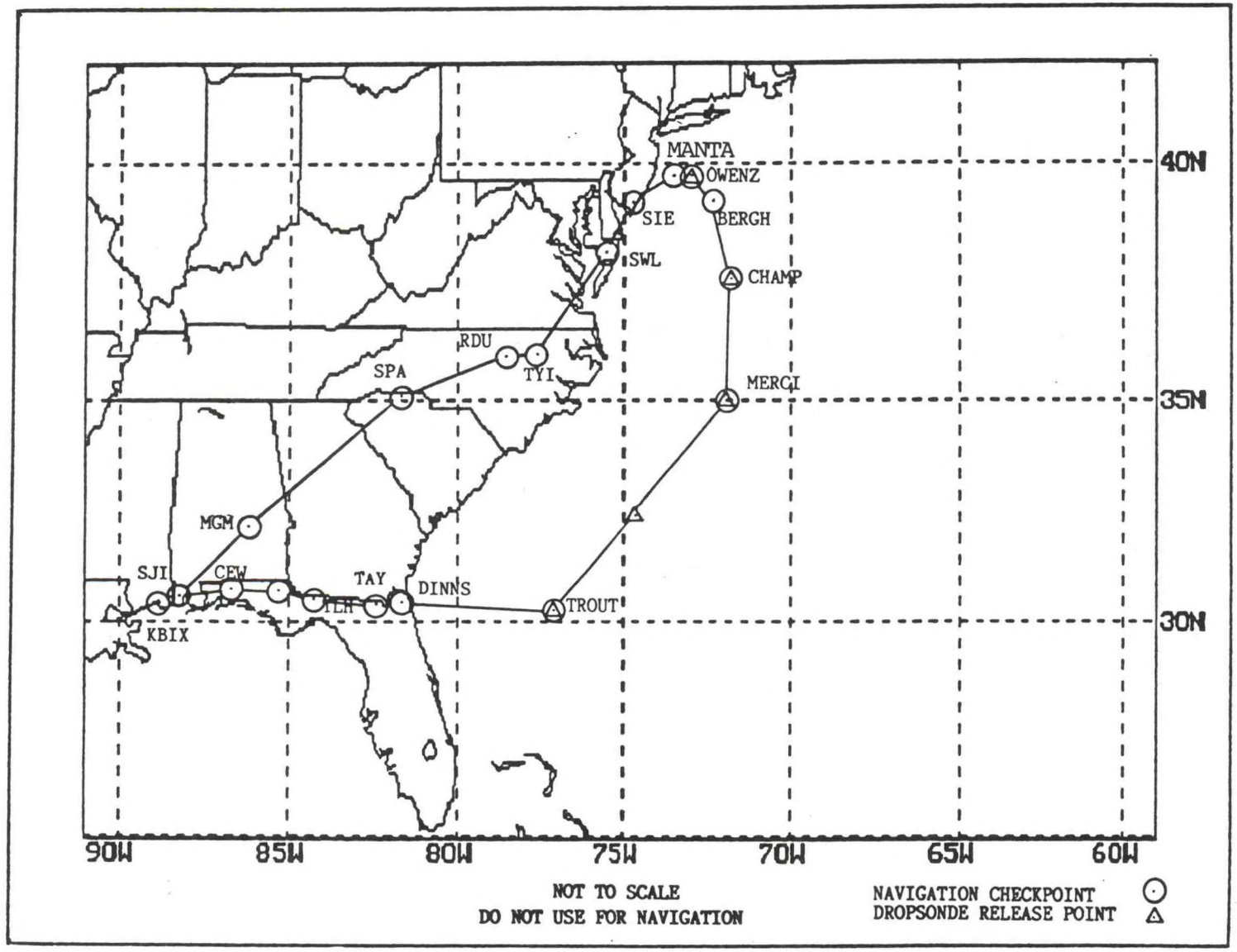

Figure F-4. Air Force track CORONET COAST04/04R.

Table F-5a. Flight plans and logs for routes CORONET COAST05. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

HQ-AMC enhanced HQ-ACC FPLAN ver: 9.2 HGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 23 Jun 94 DATE SPUN: 09-04-1994 route name: CST05

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX/L APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.70 W088-55.40	N 30-24.70 W088-55.40	2081	7+28

ATC CLEARANCE | NAVIGATOR'S SIGNATURE

FIX WPT	ROUTING LAT LONG	STATION ELEV FREQ VAR	DOPP C-TK DIST	TC MC	TRUE W/V DRIFT	HDG TRUE VAR MAG	IAS TAS GS	SPN TEMP	ALT	DIST ZD TD TDR	TIME ZONE TT TTR	ETA RETA	ATA A/B
	Level off			057	L / V	057		CLIMB		34	+10		
						-1E	208T			34	+10		
				056	0	056	208G	0C	2047		7+19		
SJI	DCT			057	L / V	057		19000		1	+00		
	N 30-43.57	190 CH100				-1E	280T			35	+10		
2	W088-21.55	5E 115.3	35	056	0	056	280G	0C	2047		7+18		
MGM	J37		LO.0	049	L / V	049		19000		138	+29		
	N 32-13.33	270 CH58				0E	280T			173	+39		
3	W086-19.18	3E 112.1	138	049	0	049	280G	0C	1909		6+49		
SPA	J37			052	L / V	052		19000		277	+59		
	N 35-02.02	910 CH104				3W	280T			450	1+39		
4	W081-55.62	2W 115.7	277	055	0	055	280G	0C	1632		5+50		
RDU	DCT		R0.2	072	L / V	072		19000		162	+35		
	N 35-52.35	430 CH119				7W	280T			611	2+13		
5	W078-47.00	4W 117.2	162	078	0	078	280G	0C	1470		5+15		
ECG	DCT		R0.0	080	L / V	080		25000		129	+28		
	N 36-15.45	10 CH72				9W	280T			740	2+41		
6	W076-10.53	7W 112.5	129	088	0	088	280G	0C	1342		4+47		
BACUS/DROP	AR8/KZNY		R1.3	134	L / V	134		30000		159	+34		
	N 34-26.01					11W	280T			898	3+15		
7	W073-50.97		158	144	0	144	280G	0C	1184		4+14		
CORAN/DROP	R763		R0.8	175	L / V	175		30000		146	+31		
	N 32-01.00					11W	280T			1044	3+46		
8	W073-36.00		146	186	0	186	280G	0C	1038		3+42		
GLIBS	G437		R0.5	207	L / V	207		30000		74	+16		
	N 30-56.00					10W	280T			1117	4+02		
9	W074-15.00		74	217	0	217	280G	0C	965		3+27		
JESSE/DROP	G437			206	L / V	206		30000		96	+21		
	N 29-30.00					9W	280T			1213	4+22		
10	W075-04.00		96	215	0	215	280G	0C	869		3+06		
LOUIZ	A699		R0.5	239	L / V	239		30000		120	+26		
	N 28-28.00					8W	280T			1332	4+48		
11	W077-00.00		119	246	0	246	280G	0C	750		2+41		
NUCAR/DROP	A699			239	L / V	239		30000		40	+08		
	N 28-07.56					7W	280T			1371	4+56		
12	W077-37.98		40	245	0	245	280G	0C	711		2+32		
BLUFI	A699			237	L / V	237		30000		139	+30		
	N 26-52.61					6W	280T			1509	5+26		
18	W079-49.04		139	242	0	242	280G	0C	572		2+03		
LBV	DCT		R0.5	268	L / V	268		30000		85	+18		
	N 26-49.68	30 CH41				4W	280T			1594	5+44		
19	W081-23.48	1E 110.4	85	272	0	272	280G	0C	488		1+44		
SRQ	DCT		R0.5	299	L / V	299		30000		71	+15		
	N 27-23.87	20 CH99				3W	280T			1665	5+59		
20	W082-33.25	2W 115.2	71	302	0	302	280G	0C	417		1+29		
COVIA/DROP	J58		LO.1	286	L / V	286		30000		121	+26		
	N 27-56.18					2W	280T			1785	6+25		
21	W084-44.16		121	287	0	287	280G	0C	297		1+03		
NEPTA/DROP	J58			285	L / V	285		30000		159	+34		
	N 28-36.63					1W	280T			1944	6+59		
22	W087-38.46		159	285	0	285	280G	0C	138		+29		
SEDAN	J58		R0.2	303	L / V	303		30000		61	+13		
	N 29-09.82					-1E	280T			2005	7+12		
23	W088-36.55		61	302	0	302	280G	0C	77		+16		
BIX	DCT		R0.9	348	L / V	348		30000		77	+16		
	N 30-24.42	10 CH55				-1E	280T			2081	7+28		
24	W088-55.80	5E	77	347	0	347	280G	0C	1		+00		

CST05

Table F-5b. Flight plans and logs for routes CORONET COAST05R. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

HQ-AMC enhanced HQ-ACC FPLAN ver: 9.2 NGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 23 Jun 94 DATE SPUN: 09-04-1994 route name: CST05R

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX/L APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.70 W088-55.40 1	N 30-24.70 W088-55.40	2082	7+29

ATC CLEARANCE — NAVIGATOR'S SIGNATURE

FIX / WPT	ROUTING / LAT / LONG	STATION / ELEV / FREQ / VAR	DOPP / C-TK / DIST	TC / MC	TRUE / W/V / DRIFT	HDG / TRUE / VAR / MAG	IAS / TAS / GS	SPN / TEMP	ALT	DIST / ZD / TD / TDR	TIME / ZONE / TT / TTR	ETA / RETA	ATA / A/B
		Level off		168	L / V	168		CLIMB		34	+10		
						-1E 208T				34	+10		
				166	0	166 208G		0C		2048	7+19		
SEDAN		DCT		168	L / V	168		19000		43	+09		
	N 29-09.82					-1E 280T				77	+19		
2	W088-36.55		77	166	0	166 280G		0C		2005	7+10		
NEPTA/DROP		J58	L0.9	122	L / V	122		19000		61	+13		
	N 28-36.63					-1E 280T				138	+32		
3	W087-38.46		61	121	0	121 280G		0C		1944	6+57		
COVIA/DROP		J58	L0.2	105	L / V	105		25000		159	+34		
	N 27-56.18					1W 280T				297	1+06		
4	W084-44.16		159	105	0	105 280G		0C		1786	6+23		
SRQ		J58		106	L / V	106		25000		121	+26		
	N 27-23.87	20 CH99				2W 280T				417	1+32		
5	W082-33.25	2W 115.2	121	107	0	107 280G		0C		1665	5+57		
LBV		DCT	R0.1	119	L / V	119		25000		71	+15		
	N 26-49.68	30 CH41				3W 280T				488	1+47		
6	W081-23.48	1E 110.4	71	122	0	122 280G		0C		1594	5+42		
BLUFI		DCT	L0.5	088	L / V	088		25000		85	+18		
	N 26-52.61					4W 280T				573	2+05		
7	W079-49.04		85	091	0	091 280G		0C		1510	5+23		
NUCAR/DROP		A699	L0.5	057	L / V	057		30000		139	+30		
	N 28-07.56					6W 280T				711	2+35		
8	W077-37.98		139	062	0	062 280G		0C		1372	4+54		
LOUIZ		A699/KZNY		059	L / V	059		30000		40	+08		
	N 28-28.00					7W 280T				750	2+43		
9	W077-00.00		40	065	0	065 280G		0C		1332	4+45		
JESSE/DROP		A699		059	L / V	059		30000		119	+25		
	N 29-30.00					8W 280T				869	3+09		
10	W075-04.00		119	066	0	066 280G		0C		1213	4+20		
GLIBS		G437	L0.5	026	L / V	026		30000		96	+21		
	N 30-56.00					9W 280T				965	3+29		
11	W074-15.00		96	035	0	035 280G		0C		1117	3+59		
CORAN/DROP		G437		027	L / V	027		30000		74	+16		
	N 32-01.00					10W 280T				1038	3+45		
12	W073-36.00		74	037	0	037 280G		0C		1044	3+44		
BACUS/DROP		R763	L0.5	355	L / V	355		30000		146	+31		
	N 34-26.01					11W 280T				1184	4+16		
18	W073-50.97		146	005	0	005 280G		0C		899	3+12		
ECG		AR8	L0.8	314	L / V	314		30000		159	+34		
	N 36-15.45	10 CH72				11W 280T				1342	4+50		
19	W076-10.53	7W 112.5	158	324	0	324 280G		0C		741	2+39		
RDU		DCT	L1.3	259	L / V	259		30000		129	+28		
	N 35-52.35	430 CH119				9W 280T				1471	5+18		
20	W078-47.00	4W 117.2	129	268	0	268 280G		0C		612	2+11		
SPA		DCT	L0.0	252	L / V	252		30000		162	+35		
	N 35-02.02	910 CH104				7W 280T				1632	5+52		
21	W081-55.62	2W 115.7	162	258	0	258 280G		0C		450	1+36		
MGM		J37	L0.2	232	L / V	232		30000		277	+59		
	N 32-13.33	270 CH58				3W 280T				1909	6+52		
22	W086-19.18	3E 112.1	277	235	0	235 280G		0C		173	+37		
SJI		J37		229	L / V	229		30000		138	+29		
	N 30-43.57	190 CH100				0E 280T				2047	7+21		
23	W088-21.55	5E 115.3	138	229	0	229 280G		0C		36	+08		
BIX		DCT	R0.0	237	L / V	237		24000		36	+08		
	N 30-24.42	10 CH55				-1E 280T				2082	7+29		
24	W088-55.80	5E	36	236	0	236 280G		0C		1	+00		

CST05R

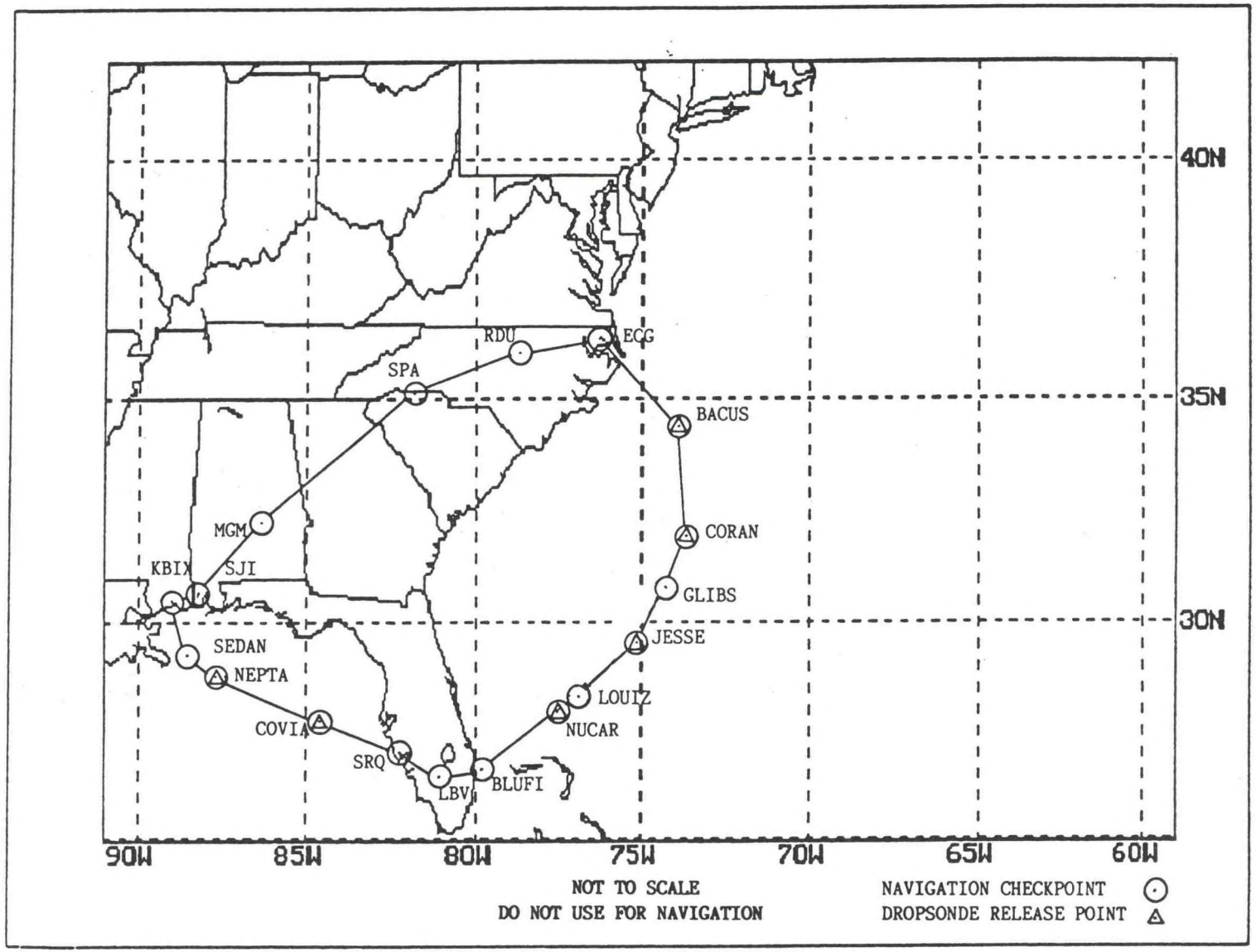

Figure F-5. Air Force track CORONET COAST05/05R.

Table F-6a. Flight plans and logs for routes CORONET COAST06. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

HQ-AMC enhanced HQ-ACC FPLAN ver: 9.2 HQS MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 11 Jul 95 DATE SPUN: 08-10-1995 route name: A:CST06

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.42 1 W088-55.80	N 30-24.42 W088-55.80	1542	5+36

ATC CLEARANCE — NAVIGATOR'S SIGNATURE

FIX WPT	ROUTING LAT LONG	STATION ELEV FREQ VAR	DOPP C-TK DIST	TC MC	TRUE W/V DRIFT	HDG TRUE VAR MAG	IAS TAS GS	SPN TEMP	DIST ZD TD TDR	TIME ZONE TT TTR	ETA RETA	ATA A/B
	Level off			232	L / V	232		CLIMB	29	+08		
						-1E	209T		29	+08		
				231	0	231	209G	-21C	1514	5+28		
PEARL	.DCT			232	L / V	232		18000	4	+01		
N 30-05.09						-1E	280T		32	+09		
2 W089-24.87			32	231	0	231	280G	-21C	1510	5+28		
SEDAN	.DCT		L3.5	135	L / V	135		18000	100	+21		
N 28-53.04						-1E	280T		132	+30		
3 W088-09.06			98	134	0	134	280G	-21C	1411	5+06		
.NEPTA/DROP	.J-58		L0.1	121	L / V	121		30000	32	+07		
N 28-36.63						-0E	280T		164	+37		
4 W087-38.46			32	120	0	120	280G	-44C	1379	4+59		
.TURN POINT	.J-58		L0.1	105	L / V	105		30000	40	+08		
N 28-26.10						-0E	280T		203	+45		
5 W086-55.07			40	105	0	105	280G	-44C	1339	4+51		
COVIA	.J-58			105	L / V	105		30000	120	+26		
N 27-56.18						1W	280T		322	1+11		
6 W084-44.16			120	105	0	105	280G	-44C	1220	4+25		
.CIGAR/DROP	.DCT/KZMA		R3.1	193	L / V	193		30000	30	+06		
N 27-28.02						2W	280T		352	1+17		
7 W084-47.99			29	194	0	194	280G	-44C	1190	4+19		
MINOW	.R-875		R0.2	211	L / V	211		30000	100	+21		
N 26-02.12						1W	280T		452	1+39		
8 W085-45.09			100	211	0	211	280G	-44C	1090	3+58		
.HOUSTON FIR	.A-509/KZMU		R0.5	244	L / V	244		30000	16	+03		
N 25-55.00						1	280T		467	1+42		
9 W086-00.00			16	244	0	244	280G	-44C	1075	3+54		
.ELTON/DROP	.A-509			238	L / V	238		30000	113	+24		
N 24-55.25						-0E	280T		580	2+06		
10 W087-45.81			113	237	0	237	280G	-44C	962	3+30		
SWORD	.A-509			238	L / V	238		30000	38	+08		
N 24-35.34						-1E	280T		618	2+14		
11 W088-20.82			38	236	0	236	280G	-44C	925	3+22		
.MULEY/DROP	.DCT		R0.6	273	L / V	273		30000	124	+26		
N 24-40.33						-2E	280T		741	2+41		
12 W090-36.12			124	270	0	270	280G	-44C	802	2+56		
COKER	.DCT			276	L / V	276		30000	183	+39		
N 25-00.02						-3E	280T		923	3+20		
13 W093-56.00			183	272	0	272	280G	-44C	619	2+17		
.LULIS/DROP	.DCT		R0.2	298	L / V	298		30000	37	+08		
N 25-17.02						-4E	280T		960	3+28		
14 W094-32.01			37	293	0	293	280G	-44C	583	2+09		
.ADIZ	.DCT		R0.1	309	L / V	309		30000	68	+15		
N 26-00.00						-5E	280T		1028	3+42		
15 W095-30.00			68	304	0	304	280G	-44C	515	1+54		
ALLBA	.DCT		R1.7	013	L / V	013		30000	96	+20		
N 27-32.76						-5E	280T		1123	4+03		
16 W095-07.82			95	008	0	008	280G	-44C	419	1+34		
SONDE RELEAS	.DCT			009	L / V	009		30000	43	+09		
N 28-15.00						-5E	280T		1166	4+12		
17 W095-00.00			43	004	0	004	280G	-44C	377	1+25		
EARMS	.DCT		R2.7	092	L / V	092		30000	68	+14		
N 28-15.02					- -	-4E	280T		1234	4+26		
18 W093-44.92			67	088	0	088	280G	-44C	309	1+10		
.BOGGY/DROP	.DCT			090	L / V	090		30000	121	+26		
N 28-15.03						-3E	280T		1354	4+52		
19 W091-27.76			121	086	0	086	280G	-44C	188	+44		
LEV	.DCT		L0.7	052	L / V	052		30000	91	+19		
N 29-10.52	2 CH82					-2E	280T		1445	5+12		
20 W090-06.23	2E 113.5		91	049	0	049	280G	-44C	98	+25		
PEARL	.DCT		L0.2	033	L / V	033		30000	66	+14		
N 30-05.09						-2E	280T		1510	5+26		
21 W089-24.87			66	031	0	031	280G	-44C	32	+11		
KBIX	APPR			052	L / V	052	1741	10	32	+11		
N 30-24.42	10 CH55					-1E	175T		1542	5+36		
23 W088-55.80	5E		32	051	0	051	175G	15C	1	+00		

A:CST06

Table F-6b. Flight plans and logs for routes CORONET COAST06R. These are for planning purposes only. Do not use for navigation.

Before flight, check coordinates with current FLIP products.

HQ-AMC enhanced HQ-ACC FPLAN ver: 9.2 NGB MPLAN MISSION PLANNER ver: 5.22a
FPLAN NAVAID ver: 11 Jul 95 DATE SPUN: 08-10-1995 route name: A:CST06R

NAVIGATOR	AIRCRAFT CDR	FROM: KBIX/L STTO	TO: KBIX APPR	TOTAL DIST	TOTAL TIME
		WPT N 30-24.42 1 W088-55.80	N 30-24.42 W088-55.80	1540	5+39

ATC CLEARANCE | NAVIGATOR'S SIGNATURE

FIX WPT	ROUTING LAT LONG	STATION ELEV FREQ VAR	DOPP C-TK DIST	TC MC	TRUE W/V DRIFT	HDG TRUE VAR MAG	IAS TAS GS	SPH TEMP	ALT	DIST TD TDR	TIME ZONE TT TTR	ETA RETA	ATA A/B
PEARL	.DCT			232	L / V	232		CLIMB		32	+09		
	N 30-05.09					-1E	220T			32	+09		
2	W089-24.87		32	231	0	231	220G	-44C		1508	5+30		
	Level off			213	L / V	213		CLIMB		57	+16		
						-2E	220T			89	+24		
				211	0	211	220G	-44C		1451	5+15		
LEV	.DCT		LO.1	213	L / V	213		30000		9	+02		
	N 29-10.52	2 CH82				-2E	280T			98	+26		
3	W090-06.23	2E 113.5	66	211	0	211	280G	-44C		1443	5+13		
.BOGGY/DROP	.DCT		RO.2	232	L / V	232		30000		91	+19		
	N 28-15.03					-2E	280T			188	+45		
4	W091-27.76		91	230	0	230	280G	-44C		1352	4+54		
EARNS	.DCT		RO.7	270	L / V	270		30000		121	+26		
	N 28-15.02					-3E	280T			309	1+11		
5	W093-44.92		121	266	0	266	280G	-44C		1231	4+28		
SONDE RELEAS	.DCT			270	L / V	270		30000		67	+14		
	N 28-15.00					-4E	280T			375	1+25		
6	W095-00.00		67	265	0	265	280G	-44C		1165	4+14		
ALLBA	.DCT/KZHU		L2.8	185	L / V	185		30000		45	+09		
	N 27-32.76					-5E	280T			419	1+35		
7	W095-07.82		43	180	0	180	280G	-44C		1121	4+04		
.W095-30	.DCT		RO.0	192	L / V	192		30000		95	+20		
	N 26-00.00					-5E	280T			514	1+55		
8	W095-30.00		95	187	0	187	280G	-44C		1026	3+44		
.LULIS/DROP	.DCT		L1.8	128	L / V	128		30000		69	+15		
	N 25-17.02					-5E	280T			583	2+10		
9	W094-32.01		68	123	0	123	280G	-44C		958	3+29		
COKER	.DCT		LO.1	117	L / V	117		30000		37	+08		
	N 25-00.02					-4E	280T			619	2+18		
10	W093-56.00		37	113	0	113	280G	-44C		921	3+21		
.MULEY/DROP	.DCT		LO.2	096	L / V	096		30000		183	+39		
	N 24-40.33					-3E	280T			802	2+57		
11	W090-36.12		183	092	0	092	280G	-44C		738	2+42		
SWORD	.DCT			092	L / V	092		30000		124	+26		
	N 24-35.34					-2E	280T			925	3+23		
12	W088-20.82		124	090	0	090	280G	-44C		615	2+16		
.ELION/DROP	.A-509		LO.6	057	L / V	057		30000		38	+08		
	N 24-55.25					-1E	280T			963	3+31		
13	W087-45.81		38	055	0	055	280G	-44C		578	2+08		
.MIAMI FIR	.A-509/KZMA			058	L / V	058		30000		113	+24		
	N 25-55.00					-0E	280T			1075	3+55		
14	W086-00.00		113	057	0	057	280G	-44C		665	1+44		
MINOW	.A-509			062	L / V	062		30000		16	+03		
	N 26-02.12					1	280T			1090	3+59		
15	W085-49.09		16	062	0	062	280G	-44C		450	1+40		
.CIGAR/DROP	.R-875		LO.5	030	L / V	030		30000		100	+21		
	N 27-28.02					1W	280T			1190	4+20		
16	W084-47.99		100	031	0	031	280G	-44C		350	1+19		
COVIA	.DCT		LO.3	006	L / V	006		30000		29	+06		
	N 27-56.18					2W	280T			1219	4+26		
17	W084-44.16		29	007	0	007	280G	-44C		322	1+13		
.TURN POINT	.J-58		L2.7	283	L / V	283		30000		121	+26		
	N 28-26.10				- -	1W	280T			1339	4+52		
18	W086-55.07		120	284	0	284	280G	-44C		201	+47		
.NEPTA/DROP	.J-58			285	L / V	285		30000		40	+08		
	N 28-36.63					-0E	280T			1379	5+01		
19	W087-38.46		40	285	0	285	280G	-44C		161	+39		
SEDAN	.J-58		RO.1	302	L / V	302		30000		32	+07		
	N 28-53.04					-0E	280T			1410	5+07		
20	W088-09.06		32	301	0	301	280G	-44C		130	+32		
PEARL	.DCT		RO.1	318	L / V	318		30000		98	+21		
	N 30-05.09					-1E	280T			1508	5+28		
21	W089-24.87		98	316	0	316	280G	-44C		32	+11		
KBIX	APPR			052	L / V	052	174I	10		32	+11		
	N 30-24.42	10 CH55				-1E	175T			1540	5+39		
23	W088-55.80	5E	32	051	0	051	175G	15C		1	+00		

A:CST06R

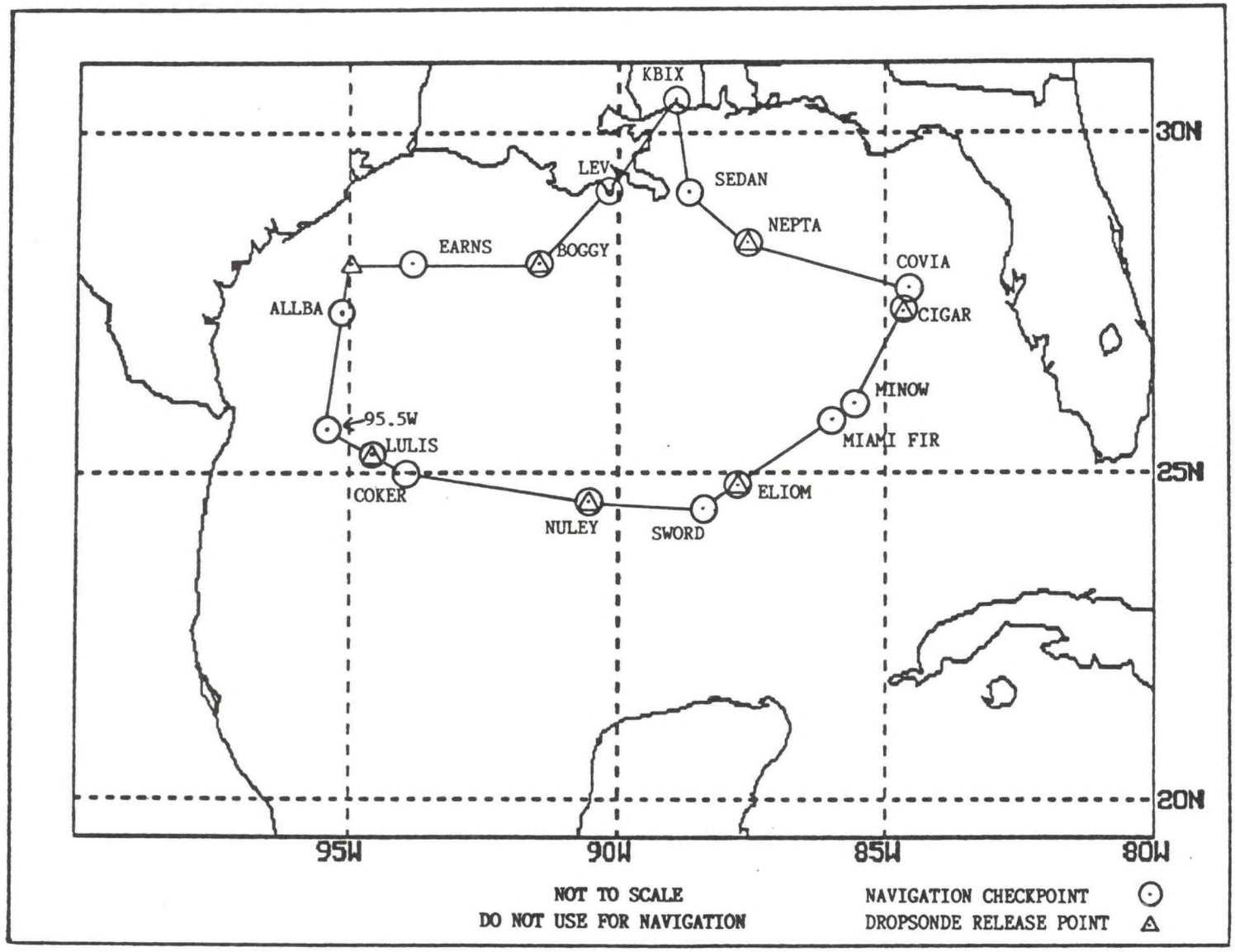

Figure F-6. Air Force track CORONET COAST06/06R.

APPENDIX G

DEPARTMENT OF THE AIR FORCE
UNITED STATES AIR FORCE RESERVE

7 July 94

MEMORANDUM FOR CARCAH

FROM: 53 WRS/DON (601) 377-2929 (MAJ KATZ)

SUBJECT: Air Traffic Control Clearances

CARCAH (alternate CARCAH/53WRS Operations) is authorized to relay Air Traffic Control (ATC) clearances to 53WRS aircraft using satellite communications (SATCOM). References for this authority are the Federal Aviation Administration/Air Force Reserve (FAA/AFRES) Memorandum of Agreement, SUBJECT: METEOROLOGICAL RECONNAISSANCE FLIGHTS, and the National Hurricane Operations Plan, paragraph 5.5.4 entitled Air Traffic Control Clearances.

PROCEDURES:

1. Clearance Request by TEAL Aircraft

   o Air Crews will send a SATCOM message to CARCAH and will provide the following information: present position and altitude/flight level, estimate to next navigation checkpoint and route of flight/altitude desired. Include any additional pertinent information. Use the following format:

     Please contact Houston ARTCC with the following clearance request:
     TEAL 40 PRESENTLY AT 25N 97W, ESTIMATE COKER 1430Z, LEVEL FIVE THOUSAND FT RQST DCT DOLPH DCT LEV DCT BIX, FL180.

   NOTE: If mission conditions warrant, crews may request Priority Handling. Use the following format:

     TEAL 40 PRESENTLY OVER LULIS FL180B190. RQST DCT 25N 92W, THEN FLT PLN RTE RQST PRIORITY HANDLING DUE TO NHOP MISSION TIMING TO HURRICANE FIRPO.

   o CARCAH will contact the appropriate ATC Center (see attachment for phone numbers) and speak to the Oceanic Supervisor (primary) or Military Missions Coordinator (secondary). Calls to these numbers are generally automatically recorded. When the clearance is issued to CARCAH, CARCAH must transmit the clearance to the aircraft verbatim, since it may differ from the requested clearance. CARCAH must preface the clearance with the words, "ATC clears..." such as in the example:

     ATC CLEARS TEAL 40 TO KEESLER AFB VIA DIRECT COKER DIRECT DOLPH DIRECT LEV DIRECT. CLIMB AND MAINTAIN FL180. CONTACT HOUSTON CENTER ON 123.4 CROSSING 26 DEGREES NORTH.

2. Clearances Relay Request from ATC

   o ATC Centers may contact CARCAH (305-229-4474) or alternate CARCAH/53WRS Operations (601) 377-2409/1939 to request a message relay to a TEAL aircraft. CARCAH will then relay the message or clearance, as appropriate.

ROBERT A. KATZ, Major, USAF
Airspace Manager

Attachment:
ATC Phone Numbers and Distribution List

PHONE NUMBERS AND DISTRIBUTION LIST

PHONE NUMBERS:

	OCEANIC SUPERVISOR	MISSIONS COORDINATOR
BOSTON ARTCC	N/A	(603) 836-7663 (DSN 881-1635)
HONOLULU ARTCC	(808) 739-7600 FAX (808) 739-7604	
HOUSTON ARTCC	(713) 230-5552	(713) 230-5563 (DSN 729-1491)
JACKSONVILLE ARTCC	(904) 549-1549 (GULF OF MEXICO) -1547 (ATLANTIC, S. OF JAX, All Altitudes) -1546 (ATLANTIC, N. OF JAX, FL240/BELOW) -1545 (ATLANTIC, N. OF JAX, ABOVE FL240)	DSN 434-3744
OAKLAND ARTCC	(501) 745-3342 / 3000 (SWITCHBOARD) FAX (510) 797-6519	
MIAMI ARTCC	(305) 716-1581 (GULF OF MEXICO) (305) 716-1584 (ATLANTIC)	(305) 716-1588 (DSN 434-1910)
NEW YORK ARTCC	(516) 468-1404	(516) 468-1429 (DSN 234--3730)
PIARCO Control	(809) 664-4852	(809) 664-4806
SAN JUAN ARTCC	(809) 253-8664	(809) 253-8650 (Weekdays only)
WASHINGTON ARTCC	N/A	(703) 771-3472 (DSN 937-1420)

ATC SYSTEM COMMAND CENTER: (703) 708-5144

DISTRIBUTION LIST:

OFCM

FEDERAL AVIATION ADMINISTRATION
- FAA/ATP-130
- FAA/ATM-400
- FAA/ASO-500 (AFREP)
- BOSTON ARTCC
- HONOLULU ARTCC
- HOUSTON ARTCC
- JACKSONVILLE ARTCC
- MIAMI ARTCC
- NEW YORK ARTCC
- OAKLAND ARTCC
- SAN JUAN ARTCC
- WASHINGTON ARTCC

AIR FORCE RESERVE
- HQ AFRES/DO
- HQ AFRES/DOTSA
- HQ 22AF/DO
- 403OG/CC
- 53WRC/DO/SOF/ARWO

APPENDIX H

DEPARTMENT OF THE AIR FORCE
UNITED STATES AIR FORCE RESERVE

28 November 1994

MEMORANDUM FOR FAA/CARF

FROM: 53 WRS/DON

SUBJECT: Altitude Reservation Approval Request

ALTRV APREQ CORONET COAST 04

A. TEAL 02

B. WC130/R

C. KBIX

D. ((PR FL250 [ALTRV BEGINS] SIE 0000 DCT CLMB FL290B310 PREPI 0015 OWENZ 0020 LVLOFF BY BERGH 0030 A300 CHAMP 0050 G437 MERCI 0120 A700 [3240N 7436W 0205] TROUT 0250 AR5 DINNS 0405 [ALTRV ENDS] IFPFP

E. KBIX

F. ETD ALTRV BEGINS OVER SIE AT 29 NOV/2245Z. AVANA 2345Z

G. TAS 250KTS/300KTS
PROJECT OFFICER: MAJ MADDOX DSN 597-5518
ALTERNATE PROJECT OFFICER: MAJ KATZ DSN 597-2929
ADDITIONAL INFORMATION: WX RECON MISSION IN SUPPORT OF NWS AND NWSOP. DROPSONDE RELEASE POINTS OWENZ CHAMP MERCI 3240N 7436W TROUT. AIRCREW WILL ADJUST AIRSPEED TO REACH CONTROL POINT MERCI AT 30 NOV/0000Z PLUS/MINUS 30 MINUTES. THE FOLLOWING IFPFP ROUTINGS ARE FOR INFO ONLY AND DO NOT CONSTITUTE AN ATC CLRNC OR PART OF THIS ALTRV REQ: KBIX DCT SJI J37 SPA DCT RDU J209 TYI DCT SWL DCT SIE (ALTRV). REQ: JA DCT TAY J2 SJI DCT BIX LAND (KBIX). NOTE: AFTER CROSSING 3240N 7436W CREW MAY BE RELEASED AND WILL END ALTRV AND REQ CLRNC TO KBIX. REQ ALTRV APVL FAX TO (601) 377-1923.

ROBERT A. KATZ, Major, USAFR
Airspace Manager

SAMPLE SAMPLE

(ROUTING MAY BE INCORRECT)
(USE AS REFERENCE FOR FORMAT ONLY - SEE FAA Handbook 7610.4)

APPENDIX I

OFFICIAL INTERAGENCY AGREEMENTS

The following enclosures are Memorandum of Agreement (MOA) between the Air Force Reserve (AFRES) and the National Oceanic and Atmospheric Administration (NOAA), dated May 4, 1992; Letter of Agreement (LOA) between the AFRES and Federal Aviation Administration, dated September 1, 1993; and a Letter of Agreement (LOA) between the AFRES and NOAA Corps Air Operations, dated August 3, 1993. The purpose of these MOA's and LOA's is to establish policies, principles, and procedures under which the FAA, AFRES and NOAA Corps will provide aircraft weather reconnaissance to NOAA. Although the AFRES/NOAA LOA only mentions Tropical storms, the procedures will be followed for winter storms.

MEMORANDUM OF AGREEMENT

BETWEEN

THE UNITED STATES AIR FORCE RESERVE

AND

THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PURPOSE: The National Oceanic and Atmospheric Administration (NOAA) does not have the capability to fully support all operational requirements in support of tropical storm reconnaissance. This memorandum establishes policies, principles, and procedures under which the Air Force Reserve (AFRES) will provide aircraft weather reconnaissance support to NOAA.

1. REFERENCES:

a. SAF/PAT Message, 312020Z JUL 90, Subj: Deactivation of WC-130 Mission

b. National Hurricane Operations Plan (NHOP)

2. BACKGROUND: The Air Force Reserve will maintain an aircraft weather reconnaissance force of 12 WC-130s (currently 8 PAA and 4 BAI, planned to become 10 PAA and 2 BAI with congressional approval) to meet the Department of Commerce (DOC) requirements for aircraft reconnaissance. NOAA has a requirement for up to five sorties per day in support of the NHOP. The Office of Management and Budget determined that the Department of Defense (DOD) should provide support to NOAA, and DOD will bear all costs directly attributable to providing this reconnaissance support. This support will be limited to congressional funding for hours of aircraft flying time per year.

3. IMPLEMENTATION: Implementation details are contained in "GENERAL PROVISION".

4. GENERAL PROVISION:

a. AFRES agrees:

(1) To meet NOAA's requirement to conduct, within the limits of military capability, aerial weather reconnaissance for purposes of providing tropical cyclone warning services.

(a) Total flying hours will not exceed 1600 hours annually. To date, Congress has fully funded 1600 hours for FY 92 only. Unless the congressional budget language is permanently changed for FY 93 and beyond, the flying hour program will consist of 1000 fully funded weather hours in addition to another 600 hours that may be taken from the tactical airlift program, as required.

(b) The operational area for AFRES weather reconnaissance will include the Atlantic Ocean, Gulf of Mexico, the Caribbean Sea, and the North

Pacific Ocean. AFRES will be able to support two deployed locations simultaneously with the required maximum of five sorties daily.

(2) To provide an aircraft operations interface [Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH)] with NOAA at the National Hurricane Center. To date, funding for the CARCAH position has not been forthcoming from HQ USAF. AFRES is prepared to provide the manpower positions out-of-hide through 1 Oct 92. AFRES reserves the right to review periodically the CARCAH function in order to see if we can save government funds by consolidating manpower positions and moving the operational functions of CARCAH to Keesler AFB.

b. NOAA agrees to notify AFRES promptly for flight scheduling in accordance with this implementing agreement. Tasking will be through the Director, National Hurricane Center.

c. AFRES has no obligation to support winter storm or other weather operations. However, subject to aircraft and aircrew availability, the 403 AW/CC may, at NOAA request, approve specific winter storm or other weather-related missions. These missions will fall under the purview and limitations of this agreement; i.e., 1600 hours annually for all weather reconnaissance, etc.

5. MOBILIZATION: This memorandum remains in effect during periods of mobilization subject to aircraft and Reserve personnel availability, in accordance with 33 U.S.C. 855. There is no wartime tasking for the 815 WOF. Upon mobilization, however, aircrews will be limited to the six primary assigned weather crews. In addition, maintenance support could be sharply limited. Therefore, after mobilization, weather operations may be severely curtailed or eliminated.

6. EFFECTIVE AND TERMINATION DATES: This memorandum is effective the date signed by the last approving official and will be reviewed every three years from the effective date. Changes or revisions to this memorandum require the approval of both parties involved.

FOR THE UNITED STATES
AIR FORCE RESERVE

JACK M. BLAIR, JR, Colonel, USAFR
Deputy Chief of Staff, Operations

Date 19 Jan 92

FOR THE NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION

JENNIFER JOY WILSON
Asst Secretary and Deputy Administrator
for Oceans and Atmosphere

Date MAY 4 1992

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FEDERAL AVIATION ADMINISTRATION (FAA)
UNITED STATES AIR FORCE RESERVE (AFRES)

LETTER OF AGREEMENT

EFFECTIVE: SEP - 1 1993

SUBJECT: METEOROLOGICAL RECONNAISSANCE FLIGHTS

1. PURPOSE: Establishes procedures to be used by the 815th Weather Squadron (815WS) and the FAA during winter storm missions in support of the NWSOP, and during hurricane/tropical cyclone missions in support of the NHOP.

2. CANCELLATION: This Letter of Agreement (LOA) remains in effect until expressly cancelled by one of the participating agencies with 30 days notification.

3. REFERENCES:

a. National Hurricane Operations Plan (NHOP)
b. National Winter Storm Operation Plan (NWSOP)

4. SCOPE: The responsibilities and procedures outlined herein are for use in the conduct of weather reconnaissance flights in support of the NHOP and the NWSOP within the airspace for which the FAA provides air traffic control (ATC) services.

5. RESPONSIBILITIES:

a. Aircraft commanders are the sole responsible party for all dropsonde or other sensor releases.

b. The aircraft commander is responsible for determining the content and duration of a broadcast concerning the release of a dropsonde or other sensor.

c. The FAA will provide ATC services and separation from nonparticipating aircraft to 815WS aircraft operating in other than Class G airspace. It is the responsibility of the aircraft commander to remain clear of obstacles and nonparticipating aircraft when operating in Class G airspace.

d. The 815WS is responsible for ensuring that air traffic clearances and messages are relayed to/from the FAA in an accurate manner when those relays are initiated by the 815WS and are routed through other than Aeronautical Radio Inc. (ARINC).

6. PROCEDURES:

a. The 815WS Current Operations (815WS/DOO) will contact the FAA Central Altitude Reservation Function (CARF) at DSN 851-1971/72 or commercial (202) 267-9416 and submit an Altitude Reservation Approval Request (ALTRV APREQ) at least 12 hours prior to an NWSOP mission, and pass the information

specified in the NWSOP within the paragraph entitled "Prior Coordination." Individual exceptions may be made to the 12 hour requirement on a case-by-case basis through coordination between the 815WS and CARF.

b. CARF will process the ALTRV APREQ, accomplishing coordination with impacted facilities. 815WS shall coordinate with using agencies to transit Special Use Airspace (restricted, warning, etc.) along their route of flight.

c. The 815WS/DOO will contact the Air Traffic Control System Command Center (ATCSCC) at (202) 267-5500 as soon as possible prior to an NHOP mission and pass the information specified in the NHOP, paragraph 5.5.4, Air Traffic Control (ATC), Prior Coordination. The ATCSCC will then coordinate this information with all FAA facilities impacted.

d. The 815WS shall only use the callsign "TEAL" and will only be given priority handling when specifically requested.

e. Tracks flown in support of the NWSOP shall be defined in supplements to this LOA. Changes, additions, and deletions to these tracks shall be coordinated between the 815WS and CARF. These tracks shall be reviewed annually, no later than June 1.

f. During NWSOP missions, dropsonde instrument releases shall be coordinated with ATC by advising of a pending drop at least 10 minutes prior to drop when in direct radio contact with ATC. When contact with ATC is via ARINC, dropsonde release coordination shall be included with the position report prior to the point where the dropsonde will be released. EXAMPLE: *"TEAL 63, SLATN at 1215, FL310, estimating FLANN at 1250, CHAMP next, Dropsonde release at FLANN."*

g. During NWSOP missions, commencing 5 minutes prior to release of dropsondes, the aircraft commander will broadcast in the blind on 121.5 and 243.0 to advise any traffic in the area of the pending drop.

h. When 815WS flights are unable to contact ATC to request an en route clearance, a clearance request may be relayed through Chief, Aerial Reconnaissance Coordinator, All Hurricanes (CARCAH). This relay may only be used to preclude an emergency or safety related situation.

i. ATC may request that CARCAH relay information to/from a mission aircraft when other methods of communications are not possible.

William H. Pollard
Federal Aviation Administration
Associate Administrator
for Air Traffic

James E. Sehorn, BRIG GEN, USAFR
United States Air Force Reserve
Director of Operations

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 403d AIRLIFT WING (AFRES)
KEESLER AIR FORCE BASE MISSISSIPPI 39534-5000

LETTER OF AGREEMENT

1. PURPOSE: This Letter of Agreement (LOA) establishes procedures whereby 815th Weather Squadron (815WS) and/or National Oceanic and Atmospheric Administration (NOAA) aircraft can operate within the same general airspace while conducting weather reconnaissance or weather research in a real or suspected tropical disturbance.

2. DEFINITIONS (for purposes of this LOA):

a. WEATHER RECONNAISSANCE and WEATHER RESEARCH will be considered synonymous terms during missions for the purpose of entering airspace defined below as an AREA OF INTEREST.

b. PARTICIPATING AIRCRAFT - those aircraft which operate under the parameters established by the National Hurricane Operations Plan (NHOP). NOAA aircraft will use the callsign "NOAA" such as "NOAA 42" and 815WS aircraft will use the callsign "TEAL" such as "TEAL 14."

c. CONTROLLING AGENCY - Air Traffic Control (ATC) facility issuing clearances to participating aircraft.

d. CARCAH - Chief, Aerial Reconnaissance Coordination, All Hurricanes.

e. AREA OF INTEREST - An area defined by latitude and longitude coordinates as a center point to include all airspace within a 250 nautical mile radius around that point and extending from the surface to 24,000 feet (AGL). Center coordinates are published by CARCAH in the TROPICAL CYCLONE PLAN OF THE DAY (TCPOD), item "E".

f. ALTITUDE CONFLICT - A flight condition during which participating aircraft operate within an AREA OF INTEREST within 2,000 feet (vertical separation) of each other.

g. QUADRANT OF OPERATIONS - Geographic area within the AREA OF INTEREST defined as Northeast, Southeast, Southwest or Northwest from the center coordinates. One-fourth of the AREA OF INTEREST.

3. RESPONSIBILITIES AND PROCEDURES:

a. The 815WS and/or NOAA will be tasked to fly a particular mission by CARCAH, or if not tasked, will advise CARCAH of intent to operate within the AREA OF INTEREST. Such advice should be given CARCAH at least twelve (12) hours before intended take-off and in no case less than three (3) hours before intended takeoff. Such advice shall include number of aircraft scheduled to fly, callsigns, scheduled takeoff times, estimated arrival time in the AREA OF INTEREST, altitudes to be flown, and estimated departure time from the AREA.

b. CARCAH will determine if a potential ALTITUDE CONFLICT exists and will advise the 815 WS and NOAA Operations centers and any airborne PARTICIPATING AIRCRAFT of the altitudes to be flown. PARTICIPATING AIRCRAFT will comply with the provisions of paragraphs 3d and 3e of this LOA to insure safe altitude separation.

c. CARCAH will advise the 815WS and NOAA operations centers whenever more than one PARTICIPATING AIRCRAFT will be in the AREA OF INTEREST at one time. Respective operations centers will advise the affected air crews. If notification by CARCAH occurs less than one hour before takeoff, CARCAH will advise the affected crew(s) by any means available.

d. PARTICIPATING AIRCRAFT crews will comply with the NHOP Chapter 5, AIRCRAFT RECONNAISSANCE. When advised that another PARTICIPATING AIRCRAFT will be operating within the same AREA OF INTEREST, crews will follow procedures in paragraph 5.9.3, AIR-TO-AIR COMMUNICATIONS.

e. PARTICIPATING AIRCRAFT crews will set 29.92 (inches hg) in at least one pressure altimeter. When contact is made with other PARTICIPATING AIRCRAFT, crews will confirm other aircraft's pressure altitude and geographic position as well as planned QUADRANT OF OPERATIONS and true heading. Crews will not deviate from the briefed QUADRANT and will not fly within 2,000 feet (vertical) of other participants without the concurrence of other PARTICIPATING AIRCRAFT.

f. PARTICIPATING AIRCRAFT experiencing loss of all radio communications will follow standard "LOST COMM" procedures.

4. EFFECTIVE AND TERMINATION DATES: This LOA is effective at 2359 (ZULU) on the date signed by the last approving official and will remain in effect until terminated in writing by either party. Changes to this LOA must be agreed to in writing by both parties.

FOR THE 403d AIRLIFT WING

JOE L. CAMPBELL, Brig Gen, USAFR
Commander

Date 29 Jul 93

FOR THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AIRCRAFT OPERATIONS CENTER

F.D. MORAN, RADM, NOAA
Director

Date 3 Aug 93

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