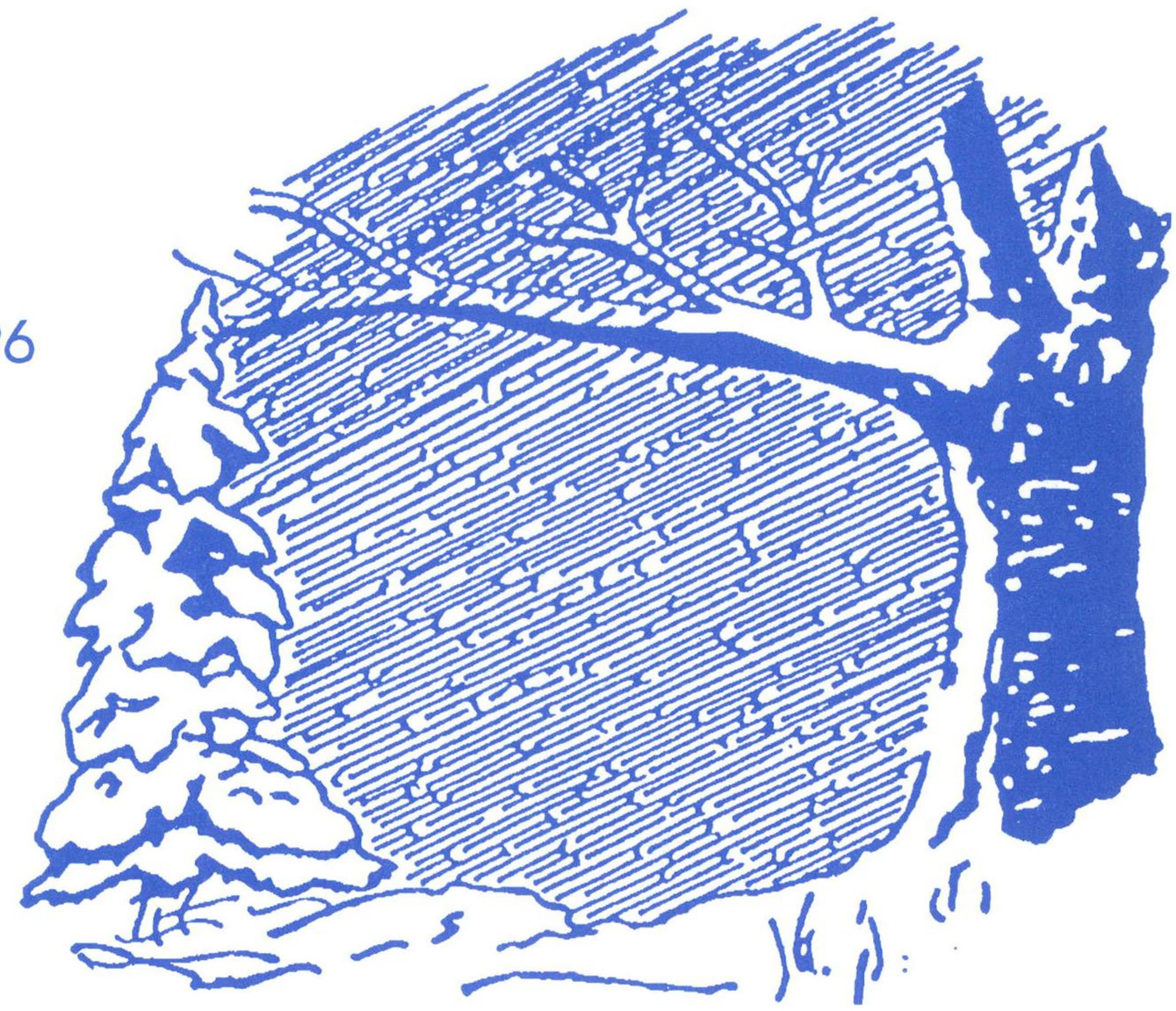
DEPARTMENT OF COMMERCE/ National Oceanic and Atmospheric Administration

OFCM

OFFICE OF THE FEDERAL COORDINATOR FOR
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

National Winter Storms Operations Plan



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Washington, DC
September 1996

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NATIONAL WINTER STORMS

OPERATIONS PLAN

FCM-P13-1996

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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-third edition of the Plan and represents a general update of information published in previous editions. This edition has revised flight plans in Appendix F 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 for 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 satellite communication (SATCOM) access to relay reconnaissance reports from the aircraft to the Miami Weather Monitor;

- 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) by the expiration time.

2.4.4.2 Missed. Requirements are either satisfied as per paragraph 2.4.4.1 or they are considered missed.

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

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.

2.4.4.4 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 (latest time at the control point when the mission requirement is regarded as satisfied).
- 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.

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.]

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 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 _____

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.

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.

2.4.5.4 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.

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 "Priority Handling" from ATC in accordance with FAA Order 7110.65, Air Traffic Control, paragraph 2-1-4.1. (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. 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 upper-level pressure, temperature, humidity and wind report from a sonde released by carrier balloons or aircraft (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 Weather Observations and Reports
- Federal Meteorological Handbook No. 2, Synoptic Observations
- Federal Meteorological Handbook No. 3, Rawinsonde and Pibal Observations
- 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. GOES-8 which introduced 3-axis stabilized geosynchronous satellite to NOAA operations is positioned at 75 degrees West and GOES-9, the successor to GOES-7, is positioned at 135 degrees West. The principal GOES-9 and GOES-8 products (see Table 3-1) are half-hourly pictures with implanted grids automatically applied to all sectors. During the daylight hours, one, two, four, and eight 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 resolution are also provided on an hourly basis.

A. GOES-9, launched in May 1995, completed its check-out at 90 degrees West and subsequently began drifting westward in November 1995 to ultimately replace GOES-7 at 135 degrees West. To supplement GOES-8 coverage, GOES-9 became fully operational at 135 degrees West on January 11, 1996. GOES-7 was then relocated to 95 degrees West in a back-up mode, to be possibly activated in the event of a catastrophic failure on GOES-8 or -9.

B. 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. 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.

C. 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. GOES-8 and GOES-9 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 (including full disk every three hours) 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. As compared to its predecessors, GOES-8 and GOES-9 provide double the resolution in water vapor imagery at 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.

D. The sounder on GOES-8 and GOES-9, consisting of 19 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.

E. GOES-8 and GOES-9 carry vital sub-systems such as the SEM, DCS, WEFAX, and SAR operations.

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.

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. Following certification of GOES-9 to support NOAA operations and in accordance with an international agreement, the mission of Meteosat-3 was terminated in November 1995. Meteosat-3 was deorbited, never to be reactivated again.

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-8	Imager and Sounder: 5 channels from the imager and 19 channels from the sounder.	Every 30 minutes partial full disk; CONUS views available every 15 minutes (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
GOES-9	Imager and Sounder: 5 channels from the imager and 19 channels from the sounder.	Every 30 minutes, northern hemisphere; PACUS (combination of western CONUS and Pacific) views every 15 minutes (2 PACUS views/half hour). In rapid scan operations, northern hemisphere views and 4 western CONUS views are provided every half-hour.	

Polar Orbit

SATELLITE	TYPE OF DATA	LOCAL TIME*	REMARKS
NOAA-12	AVHRR GAC and LAC (recorded) HRPT and APT (direct) TOVS	0635D/1835A	1. Mapped digitized data (cloud cover) 2. Unmapped imagery (all data types) at Direct Readout sites 3. Sea-surface temperature analysis 4. Moisture analysis 5. Soundings 6. Remap GAC Sectors
NOAA-14	AVHRR GAC and LAC (recorded) HRPT and APT (direct) TOVS	0208D/1408A	
DMSP F-11	OLS(SGDB), SSM/T-2, SSM/I, SSM/T-1	0643D/1843A	1. Unmapped imagery (DMSP sites only) 2. Mapped imagery (SGDB) 3. Snow and ice coverage 4. Precipitable water 5. Wind speeds 6. Precipitation rates 7. Moisture analysis
DMSP F-10	OLS(SGDB) deactivated, SSM/T-1, SSM/I	1018D/2218A	
DMSP F-12	OLS, SSM/T-1, SSM/T-2	0921D/2121A	
DMSP F-13	OLS, SSM/I, SSM/T-1	0544D/1744A	

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

B. 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.

C. For meteorological application, digital Meteosat-5 data are transmitted to the Tropical Prediction Center in Miami, Florida, Storm Prediction 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 Satellite 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 satellite 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. Due to resource limitations, the Satellite Interpretation Messages (SIM) have been canceled at the Storm Prediction Center and Tropical Prediction Center. Previously provided by the SIM, similar information has now been merged with the Tropical

Weather Discussion at the Tropical Prediction Center. The Tropical Weather Discussion is 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 Tropical Weather Discussion are listed below. Issuance times may change as weather conditions warrant.

NWS	FAA	ISSUE TIME (UTC)
MKCSIMMKC	TBSS6 KMKC	0000, 0530, NONE, 1730
MIATWDAT	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 Figures 3-1 and 3-2 for the location of moored buoys. Coastal Marine Automated Network (C-MAN) stations provide additional marine observations. See Figure 3-3 for locations of C-MAN sites. The status and capability of data buoys can be obtained from the National Data Buoy Center's (NDBC) home page, http://seaboard.ndbc. noaa.gov, or by calling 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 (peak 5-second wind) 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. Currently, 24 moored buoys, and 8 C-MAN stations in the existing network are unfunded and scheduled for removal in fiscal year 1997. Refer to figures 3-1, 3-2, and 3-3 for the locations and station identifiers of moored buoys and C-MAN stations currently scheduled for removal. Consult Sea Board for the latest station status.

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 fall 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 ATLANTIC BASIN LOCATIONS

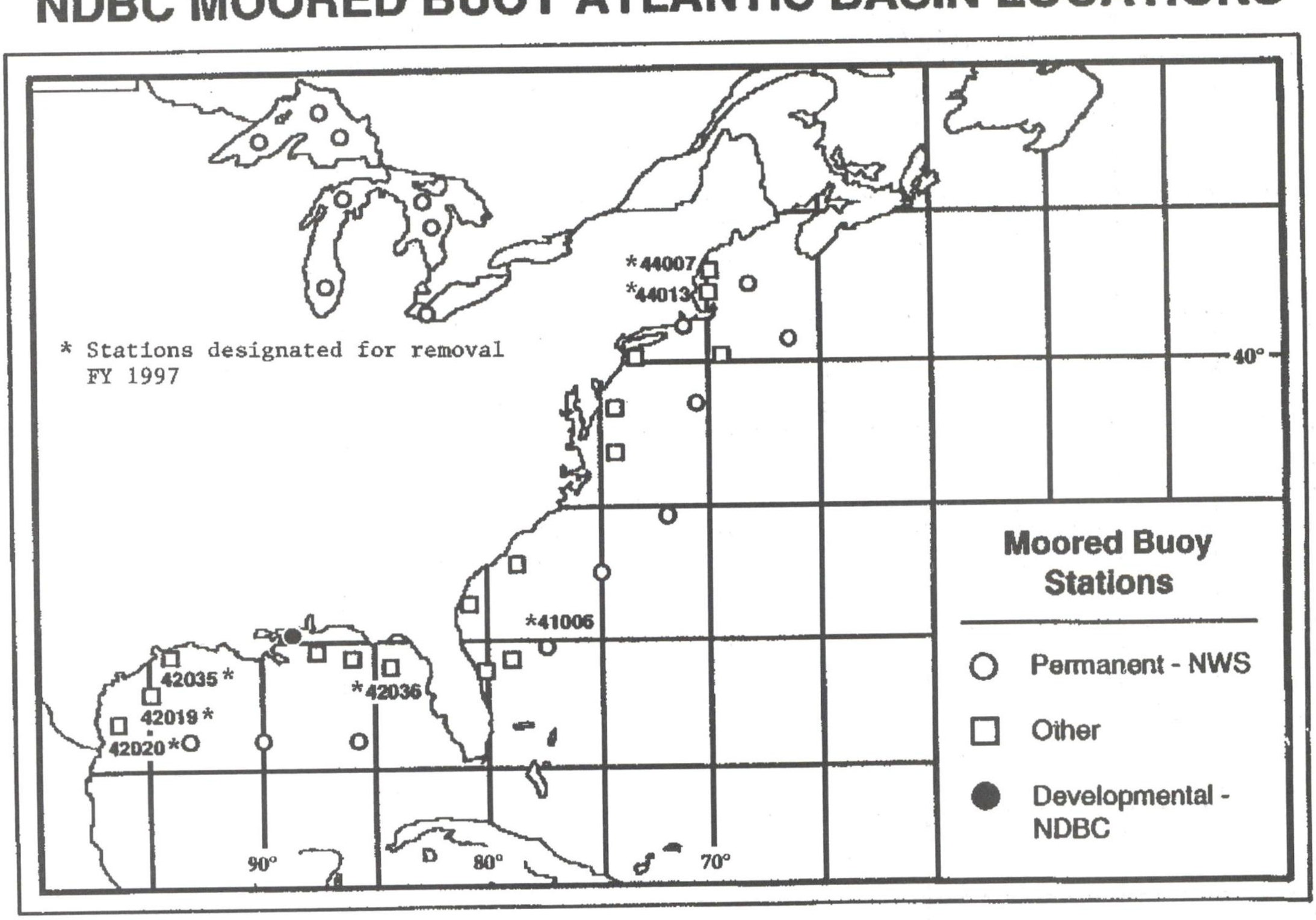

Figure 3-1. Map showing the location of NDBC moored buoys - Alantic basin.

NDBC MOORED BUOY PACIFIC BASIN LOCATIONS

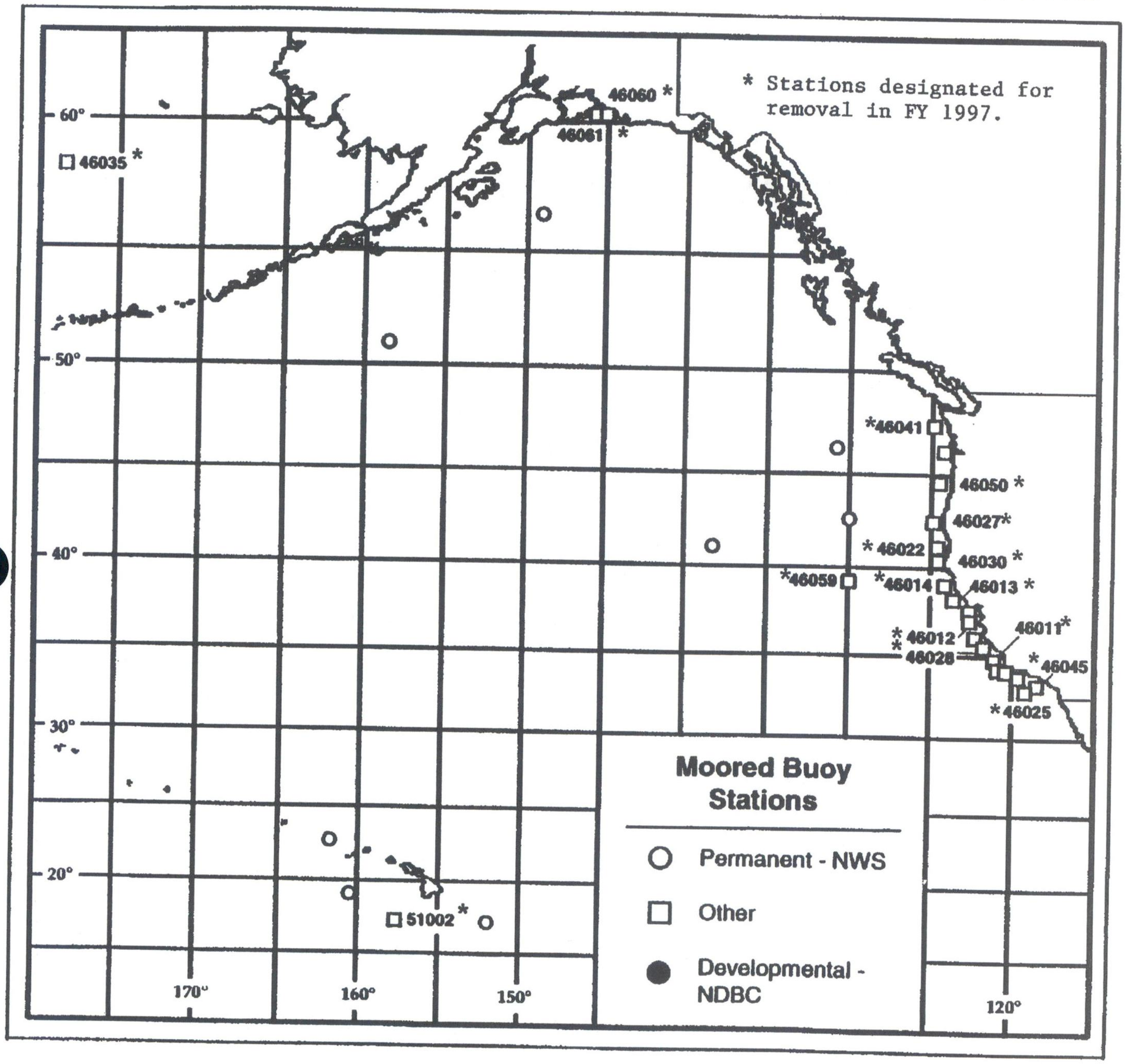

Figure 3-2. Map showing the location of NDBC moored buoys - Pacific basin.

COASTAL-MARINE AUTOMATED NETWORK (C-MAN)

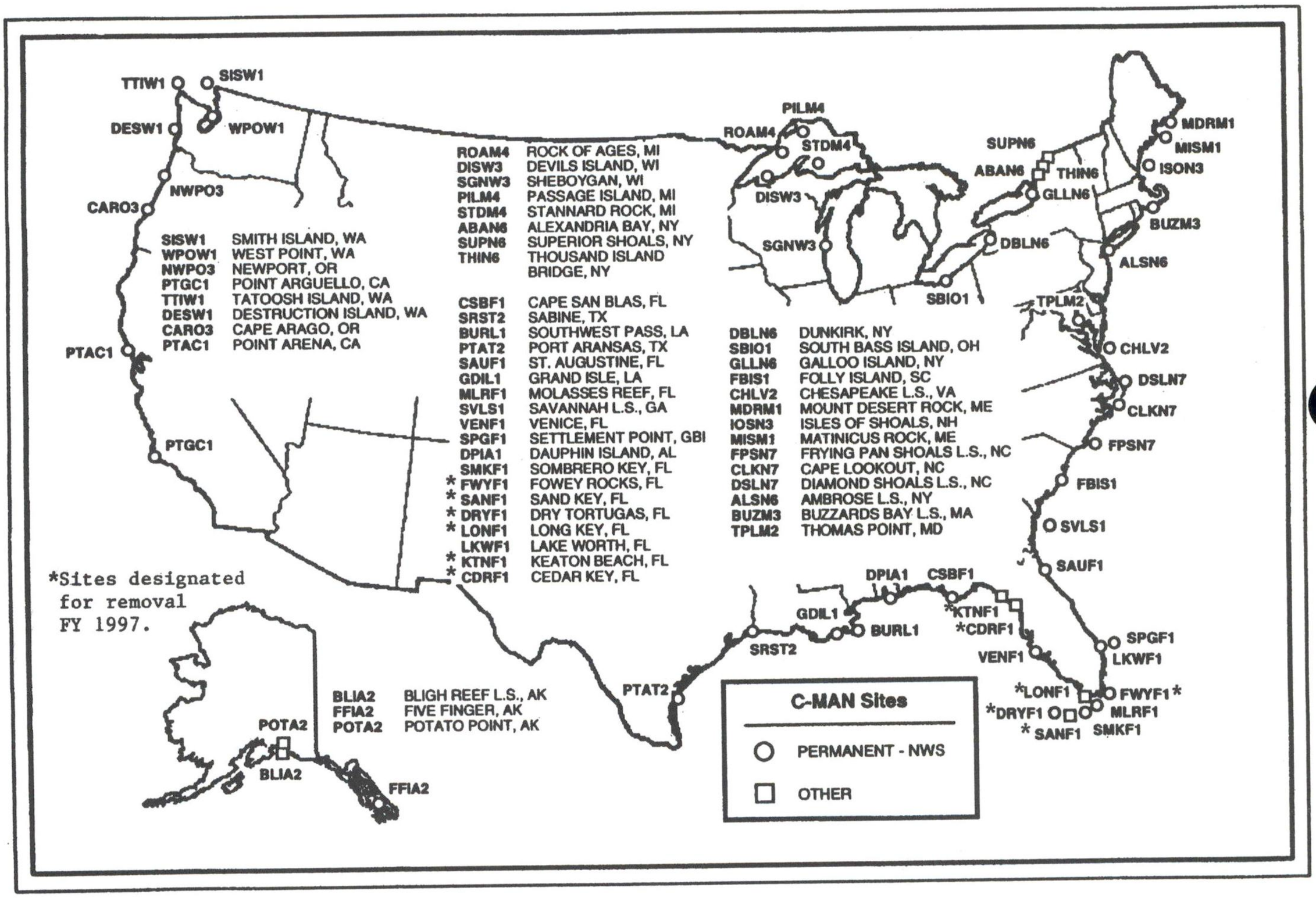

Figure 3-3. Map showing the location of NDBC fixed C-MAN stations in North America, including USCG Navigational Buoys.

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 B	DSN 434-3420 305-229-4474
National Hurricane Center	11691 SW 17th Street Miami, FL 33165-2149	A B	305-229-4470
Alternate National Hurricane Center	NCEP/HPC Washington, DC	A B	301-763-8201
Central Pacific Hurricane Center	P.O. Box 29879 Honolulu, HI	B	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 Center	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 - AFOS

CHAPTER 5

PUBLICITY

5.1 <u>News Media Releases</u>. 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 <u>Distribution</u>. 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
AFGWC	Air Force Global Weather Center
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
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 (previously called AUTOVON)
DTG	Date Time Group

-E-

ESA	European Space Agency
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-

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

-H-

HF	High Frequency
Hr	Hour

HPC	Hydrometeorological Prediction Center (NCEP)
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
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
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
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

-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 Assistant Administrator for Information Services (E)	2
Assistant Administrator for Environmental Satellite, Data, and Information Services (Ex1)	1
Chief, Information Service Division, National Climatic Data Center E/CC4)	2
NOAA Central Library (E/OC4)	4
Chief, Satellite Services Division (E/SP2)	1
Assistant 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
Assistant Administrator for Weather Services (W)	1
Director, National Data Buoy Center (W/DB)	3
Director, National Center for Environmental Prediction (W/NP)	5
Chief, Development Division (W/NP2)	1
Director, National Hurricane Center (W/NP8)	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 (J3-ROD and JRC)	2
USCINCPAC/J316 Env Group	1

USFORSCOM/FCJ2-WE	1
USSTRATCOM/J-3615	2
CINCUSACOM (J335)	1

DEPARTMENT OF THE AIR FORCE

HQ USAF/XOWX	3
HQ USAF/XOOOW	1
HQ USAF/REO	3
HQ USAFE/DOW	1
HQ PACAF/DOW	1
HQ ACC/DOW	1
HQ ACC/DOLT	2
HQ AFMC/DOW	1
HQ AFRES/DOO	2
HQ AFRES/DOTM	3
HQ AFSPACECOM/DOW	1
HQ AMC/DOW	2
HQ ATC/DOTW	1
HQ AWS/XO	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	75
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 (N2513)	75
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
ATO-100	2
ANE-500	2
AEA-500	2
ASO-500	2
ASW-500	2
SJU AIFSS	2

U.S. COAST GUARD

Commandant, USCG Headquarters (NIO, TTM)	3
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	
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, Atmospheric Environment Service, 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.

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

DATE	ORGANIZATION	MISSION IDENTIFIER

OBSERVATION NUMBER																								
9		RECCO INDICATOR SPECIFYING TYPE OF OBSERVATION *Table 1*	G	TIME OF OBSERVATION *(Hours and Minutes)* *(GMT)*	Y	DAY OF WEEK *SUN-1*	L_o	LONGITUDE DEGREES AND TENTHS *(Note 4)*	h_a	PRESSURE ALTITUDE OF AIRCRAFT REPORTED TO THE NEAREST DECAMETER	d	WIND DIRECTION AT FLIGHT LEVEL *(Tens of deg. true.)*	T	TEMPERATURE WHOLE °C *(Note 6)*	/	INDICATOR
X			G		Q	OCTANT *Table 3*	L_o		h_a		d		T		j	INDEX TO HHH *Table 9*
X			g		L_a	LATITUDE DEGREES AND TENTHS	L_o		h_a		f	WIND SPEED AT FLIGHT LEVEL *(Knots)*	T_d	DEW POINT WHOLE °C *(Note 6)*	H	GEOPOTENTIAL HEIGHT/ D-VALUE OR SLP PER INDEX j *(Note 8)*
X			g		L_a		8	TURBULENCE *Table 4*	d_t	TYPE OF WIND *Table 6*	f		T_d		H	
9			I_d	DEW POINT INDICATOR *Table 2*	L_a		f_c	FLIGHT COND *Table 3 (Note 5)*	d_a	METHOD OF OBTAINING WIND *Table 7*	f		w	PRESENT WEATHER *(Note 7 Table 8)*	H	
1			2		3		4		5		6		7		8	

REMARKS

TYPE AIRCRAFT	CALL SIGN	METEOROLOGIST

1	INDICATOR	C	CLOUD TYPE *Table 11*	C	CLOUD TYPE *Table 11*	C	CLOUD TYPE *Table 11*	1	INDICATOR	C	CLOUD TYPE *Table 11*	C	CLOUD TYPE *Table 11*	C	CLOUD TYPE *Table 11*
k_n	NR OF CLOUD LAYERS *(Note 9)*	h_s	ALTITUDE OF BASE *Table 12*	h_s	ALTITUDE OF BASE *Table 12*	h_s	ALTITUDE OF BASE *Table 12*	K_n	NR OF CLOUD LAYERS *(Note 9)*	h_s	ALTITUDE OF BASE *Table 12*	h_s	ALTITUDE OF BASE *Table 12*	h_s	ALTITUDE OF BASE *Table 12*
N_s	AMOUNT OF CLOUDS *(Note 9)* *Table 10*	h_s		h_s		h_s		N_s	AMOUNT OF CLOUDS *(Note 9)* *Table 10*	h_s		h_s		h_s	
N_s		H_t	ALTITUDE OF TOP *Table 12*	H_t	ALTITUDE OF TOP *Table 12*	H_t	ALTITUDE OF TOP *Table 12*	N_s		H_t	ALTITUDE OF TOP *Table 12*	H_t	ALTITUDE OF TOP *Table 12*	H_t	ALTITUDE OF TOP *Table 12*
N_s		H_t		H_t		H_t		N_s		H_t		H_t		H_t	
9		10		11		12		13		14		15		16	

REMARKS

RECCO RECORDING WORKSHEET

4	INDICATOR	6	INDICATOR *(Note 11)*	6	INDICATOR *(Note 11)*	7	INDICATOR	7	INDICATOR	8	INDICATOR	8	INDICATOR	9	INDICATOR	REMARKS
d	DIRECTION OF SFC WIND *(Tens of deg. true)*	W_s	SIGNIFICANT WEATHER CHANGES *Table 14*	W_s	SIGNIFICANT WEATHER CHANGES *Table 14*	I_r	RATE OF ICING *Table 17*	h_i	ALT OF BASE OF ICING STRATUM (Note 12) *Table 12*	d_r	BEARING OF ECHO CENTER *(Tens of Deg. True)*	E_w	ECHO WIDTH OR DIAMETER *Table 19*	V_I	INFLIGHT VISIBILITY *Table 23*	
d		S_s	DISTANCE OF OCCURENCE OF Ws *Table 15*	S_s	DISTANCE OF OCCURENCE OF Ws *Table 15*	I_t	TYPE OF ICING *Table 18*	h_i		d_r		E_l	LENGTH OF MAJ AXIS *Table 19*	T_w	SEA SURFACE TEMPERATURE DEGREES AND TENTHS	
f	SURFACE WIND SPEED *(knots)* *(Note 10)*	w_d	DISTANT WEATHER *Table 16*	w_d	DISTANT WEATHER *Table 16*	S_b	DISTANCE TO BEGINNING OF ICING *Table 15*	H_i	ALTITUDE OF TOP OF ICING STRATUM *(Note 12)* *Table 12*	S_r	DISTANCE TO ECHO CENTER *Table 19*	c_e	CHARACTER OF ECHO *Table 21*	T_w		
f		d_w	BEARING OF W_d *Table 13*	d_w	BEARING OF W_d *Table 13*	S_e	DISTANCE TO ENDING OF ICING *Table 15*	H_i		O_e	ORIENTATION OF ELLIPSE *Table 20*	I_e	INTENSITY OF ECHO *Table 22*	T_w		
17		18		19		20		21		22		23		24		

REMARKS

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

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

$h_1h_1h_1$
$h_nh_nh_n$ 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, 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
T_1T_1
T_nT_n Tens and units digit of air temperature (not rounded off) in degrees Celsius, at specified levels beginning with surface.

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

D_oD_o
D_1D_1
D_nD_n Dewpoint depression (with respect to water) at standard isobaric surfaces beginning with surface level. When the depression is 4.9C or less encode the units and tenths digits of the depression. Encode 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 D_nD_n 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. 29<u>5</u>° at <u>1</u>25 kts encoded as 29<u>6</u>25.

NOTE: 1. 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 /////.

2. The wind group relating to the surface level ($d_od_of_of_of_o$) will be included in the report; when the corresponding wind data are not available, the group will be encoded/////.

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. 29<u>5</u>° at <u>1</u>25 kts encoded as 29<u>6</u>25.

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. 29<u>5</u>° at <u>1</u>25 kts encoded as 29<u>6</u>25.

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".
n_1n_1 When a standard level is also selected as significant, repeat the level in section 5. Encode
n_nn_n significant levels to 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.

- 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	50
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.

- Tasked dropsonde release points may differ from those printed in this Appendix.

Table F-1a. Flight plans and logs for routes CORONET COASTO1. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CSTO1
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr			WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!											
Navigator			From: KBIX/L						TO:				Date	
WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	9+40.1 +00.0			1300
	SJI .DCT	N 3043.57 W08821.55	280T 19000	057 056		057 056	280G	35	35	+10.5	9+29.6 +10.5			1242
	L/O @ 19000	N 3046.52 W08814.25	280T 19000	049 044		049 044	280G	6	41	+01.9	9+27.7 +12.4			230
	MGM .J-37	N 3213.33 W08619.18	280T 19000	049 044		049 044	280G	131	172	+28.1	8+59.6 +40.5			4690 2198
	SPA .J-37	N 3502.02 W08155.62	280T 19000	051 048		051 048	280G	277	449	+59.3	8+00.3 1+39.8			4662 4608
	L/O @ 25000	N 3506.01 W08125.34	280T 25000	071 073		071 073	280G	24	474	+06.9	7+53.4 1+46.7			591
	RDU .DCT	N 3552.35 W07847.00	280T 25000	071 073		071 073	280G	137	611	+29.4	7+24.0 2+16.1			4039 1981
	TYI .J-209	N 3558.60 W07742.23	280T 25000	083 087		083 087	280G	53	664	+11.3	7+12.7 2+27.4			4005 755
	SWL .DCT	N 3803.40 W07527.83	280T 25000	040 045		040 045	280G	165	828	+35.3	6+37.4 3+02.7			3992 2350
	HTO .J-174	N 4055.13 W07219.00	280T 25000	039 047		039 047	280G	225	1054	+48.3	5+49.1 3+51.0			3953 3180
	L/O @ 30000	N 4100.64 W07138.83	280T 30000	078 091		078 091	280G	31	1085	+08.1	5+41.0 3+59.1			598
	ACK .J-62	N 4116.92 W07001.60	280T 30000	078 091		078 091	280G	75	1160	+16.0	5+25.0 4+15.2			3617 965
	SAILE/DROP .DCT	N 4111.13 W06753.75	280T 30000	093 108		093 108	280G	96	1256	+20.6	5+04.3 4+35.8			3596 1237
	SLATN/DROP .DCT	N 3907.00 W06700.00	280T 30000	161 178		161 178	280G	132	1388	+28.2	4+36.1 5+04.0			3570 1678
	FLANN/DROP .DCT	N 3820.00 W06957.00	280T 30000	253 270		253 270	280G	148	1535	+31.7	4+04.5 5+35.7			3534 1865
	CHAMP .DCT/KZNY	N 3731.00 W07141.00	280T 30000	240 255		240 255	280G	96	1631	+20.5	3+44.0 5+56.1			3495 1193
	ZIBUT/DROP .DCT	N 3656.30 W07239.97	280T 30000	234 247		234 247	280G	58	1689	+12.5	3+31.5 6+08.7			3473 725
	NTU .DCT	N 3649.45 W07602.22	280T 30000	269 281		269 281	280G	162	1851	+34.7	2+56.8 6+43.4			3460 2002
	LIB .DCT	N 3548.70 W07936.75	280T 30000	252 262		252 262	280G	183	2035	+39.3	2+17.5 7+22.6			3424 2240
	SPA .DCT	N 3502.02 W08155.62	280T 30000	248 251		248 251	280G	122	2157	+26.2	1+51.3 7+48.9			3383 1479
	MGM .J-37	N 3213.33 W08619.18	280T 30000	234 236		234 236	280G	277	2434	+59.3	+52.0 8+48.2			3356 3316
	SJI .J-37	N 3043.57 W08821.55	280T 30000	230 227		230 227	280G	138	2571	+29.5	+22.5 9+17.7			3300 1622
	KBIX/L .DCT	N 3024.68 W08855.42	280T 30000	237 232		237 232	280G	35	2606	+07.5	+15.0 9+25.1			3275 407
	KBIX/L APPR	N 3024.68 W08855.42	0	237 236		237 236		0	2606	+15.0	+00.0 9+40.1			1500
	Drag Index: -12 Burnoff: 39262								T Dist 2606		T Time 9+40.1		MIN OVHD 7000	FUEL REM 10738

Table F-1b. Flight plans and logs for routes CORONET COASTO1R. See figure F-1 for chart of track. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CSTO1R
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr		WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!		
Navigator	From: KBIX/L	TO:	Date	

WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	9+40.1 +00.0			1300
	SJI .DCT	N 3043.57 W08821.55	280T 19000	057 056		057 056	280G	35	35	+10.5	9+29.6 +10.5			1242
	L/O @ 19000	N 3046.52 W08814.25	280T 19000	049 044		049 044	280G	6	41	+01.9	9+27.6 +12.4			230
	MGM .J-37	N 3213.33 W08619.18	280T 19000	049 044		049 044	280G	131	172	+28.1	8+59.5 +40.5			4690 2198
	SPA .J-37	N 3502.02 W08155.62	280T 19000	051 048		051 048	280G	277	449	+59.3	8+00.2 1+39.8			4662 4608
	L/O @ 25000	N 3509.57 W08127.10	280T 25000	067 069		067 069	280G	24	474	+06.9	7+53.4 1+46.7			591
	LIB .DCT	N 3548.70 W07936.75	280T 25000	067 069		067 069	280G	98	572	+21.0	7+32.4 2+07.7			4039 1414
	NTU .DCT	N 3649.45 W07602.22	280T 25000	070 073		070 073	280G	183	755	+39.3	6+53.1 2+47.0			4015 2627
	L/O @ 30000	N 3647.98 W07517.13	280T 30000	087 097		087 097	280G	36	791	+09.1	6+44.0 2+56.1			682
	ZIBUT/DROP .DCT/KZNY	N 3656.30 W07239.97	280T 30000	087 097		087 097	280G	126	917	+27.0	6+16.9 3+23.1			3706 1670
	CHAMP .DCT	N 3731.00 W07141.00	280T 30000	053 065		053 065	280G	58	975	+12.5	6+04.4 3+35.7			3670 767
	FLANN/DROP .DCT	N 3820.00 W06957.00	280T 30000	059 072		059 072	280G	96	1071	+20.5	5+43.9 3+56.1			3654 1247
	SLATN/DROP .DCT	N 3907.00 W06700.00	280T 30000	070 085		070 085	280G	146	1217	+31.2	5+12.7 4+27.4			3627 1889
	SAILE/DROP .DCT	N 4111.13 W06753.75	280T 30000	341 358		341 358	280G	132	1349	+28.4	4+44.3 4+55.8			3586 1697
	ACK .J-62	N 4116.92 W07001.60	280T 30000	273 290		273 290	280G	97	1446	+20.8	4+23.5 5+16.6			3550 1232
	HTO .DCT	N 4055.13 W07219.00	280T 30000	259 274		259 274	280G	106	1552	+22.7	4+00.8 5+39.2			3523 1331
	SWL .J-174	N 3803.40 W07527.83	280T 30000	221 234		221 234	280G	225	1777	+48.3	3+12.5 6+27.5			3496 2813
	TYI .DCT	N 3558.60 W07742.23	280T 30000	221 229		221 229	280G	165	1942	+35.3	2+37.3 7+02.8			3445 2025
	RDU .DCT	N 3552.35 W07847.00	280T 30000	265 270		265 270	280G	53	1995	+11.4	2+25.9 7+14.2			3408 646
	SPA .DCT	N 3502.02 W08155.62	280T 30000	253 257		253 257	280G	162	2157	+34.7	1+51.3 7+48.8			3396 1961
	MGM .J-37	N 3213.33 W08619.18	280T 30000	234 236		234 236	280G	277	2433	+59.3	+52.0 8+48.1			3360 3321
	SJI .J-37	N 3043.57 W08821.55	280T 30000	230 227		230 227	280G	138	2571	+29.5	+22.5 9+17.6			3303 1624
	KBIX/L .DCT	N 3024.68 W08855.42	280T 30000	237 232		237 232	280G	35	2606	+07.5	+15.0 9+25.1			3279 407
	KBIX/L APPR	N 3024.68 W08855.42	0	237 236		237 236		0	2606	+15.0	+00.0 9+40.1			1500
	Drag Index: -12 Burnoff: 39022								T Dist 2606		T Time 9+40.1		MIN OVHD 7000	FUEL REM 10978

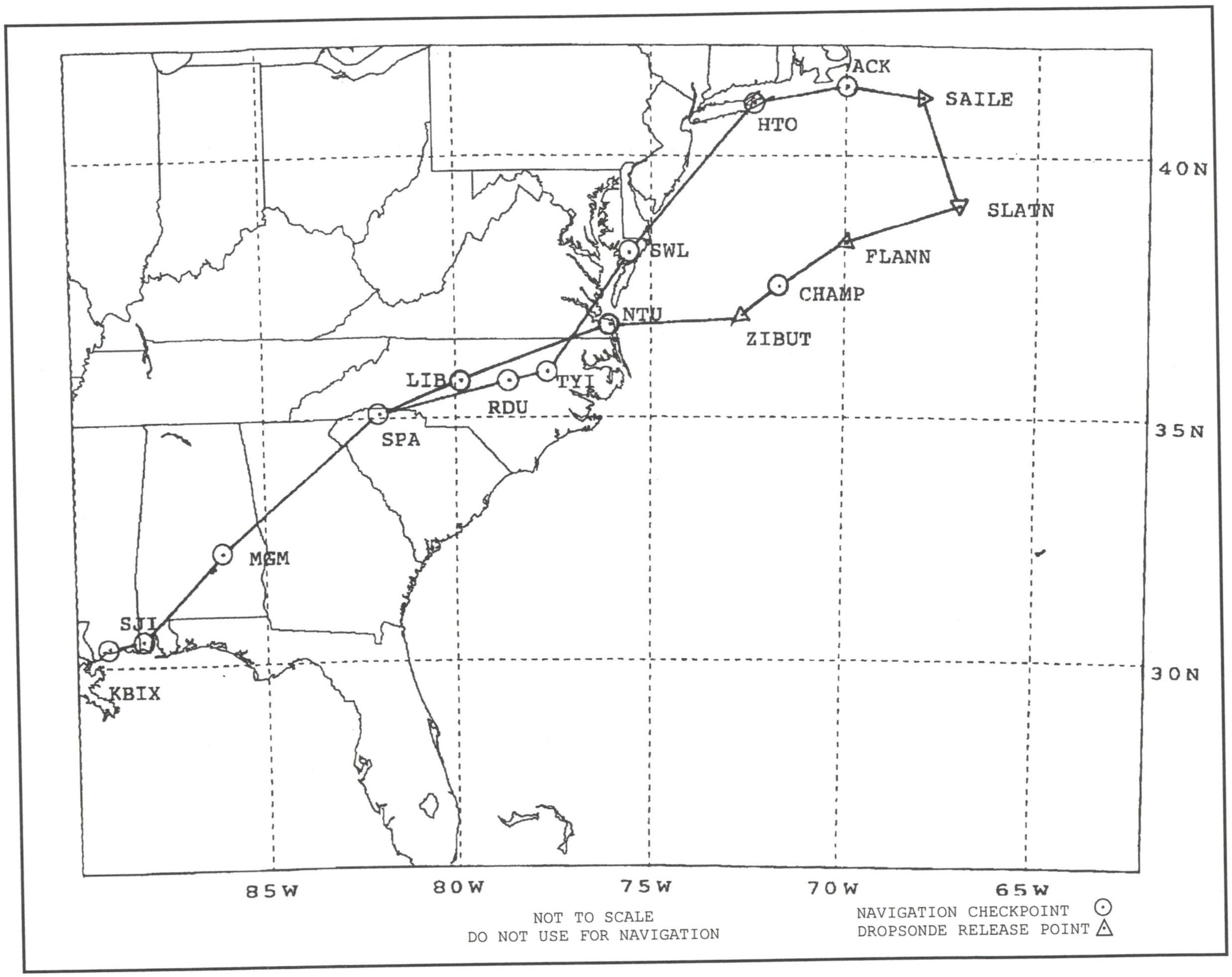

Figure F-1. Air Force track CORONET COAST01/01R

Table F-2a. Flight plans and logs for routes CORONET COASTO2. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CSTO2
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr	WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!		
Navigator	From: KBIX/L	TO:	Date

WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	10+39.1 +00.0			1300
	SJI .DCT	N 3043.57 W08821.55	280T 19000	057 056		057 056	280G	35	35	+10.4	10+28.7 +10.4			1227
	L/O @ 19000	N 3049.20 W08810.79	280T 19000	049 044		049 044	280G	10	45	+03.0	10+25.7 +13.4			359
	MGM .J-37	N 3213.33 W08619.18	280T 19000	049 044		049 044	280G	127	172	+27.3	9+58.3 +40.8			4754 2165
	SPA .J-37	N 3502.02 W08155.62	280T 19000	051 048		051 048	280G	277	449	+59.3	8+59.0 1+40.1			4726 4671
	L/O @ 25000	N 3507.06 W08121.91	280T 25000	071 073		071 073	280G	28	477	+07.6	8+51.4 1+47.7			663
	RDU .DCT	N 3552.35 W07847.00	280T 25000	071 073		071 073	280G	134	611	+28.6	8+22.8 2+16.3			4122 1967
	TYI .J-209	N 3558.60 W07742.23	280T 25000	083 087		083 087	280G	53	664	+11.3	8+11.5 2+27.6			4088 771
	SWL .DCT	N 3803.40 W07527.83	280T 25000	040 045		040 045	280G	165	828	+35.3	7+36.2 3+02.9			4075 2398
	HTO .J-174	N 4055.13 W07219.00	280T 25000	039 047		039 047	280G	225	1054	+48.3	6+47.9 3+51.2			4033 3244
	ACK .DCT	N 4116.92 W07001.60	280T 25000	078 091		078 091	280G	106	1160	+22.7	6+25.2 4+13.9			3977 1506
	L/O @ 30000	N 4049.74 W06933.21	280T 30000	132 147		132 147	280G	34	1194	+08.8	6+16.4 4+22.7			654
	SLATN .J-97/KZNY	N 3907.00 W06700.00	280T 30000	132 147		132 147	280G	156	1350	+33.5	5+42.9 4+56.2			3684 2055
	BRUNZ/DROP .DCT	N 3900.00 W06459.97	280T 30000	094 111		094 111	280G	94	1444	+20.1	5+22.9 5+16.2			3640 1216
	SONDE RELEAS .A-699	N 3705.00 W06710.00	280T 30000	224 242		224 242	280G	159	1602	+34.0	4+48.9 5+50.2			3614 2047
	CLXTN .A-699	N 3543.38 W06833.37	280T 30000	220 236		220 236	280G	106	1708	+22.7	4+26.2 6+12.9			3570 1348
	DANER/DROP .A-699	N 3516.00 W06904.00	280T 30000	222 236		222 236	280G	37	1745	+07.9	4+18.3 6+20.8			3541 468
	ODEAL/DROP .A-699	N 3325.85 W07128.93	280T 30000	228 242		228 242	280G	163	1908	+34.8	3+43.4 6+55.6			3530 2051
	BURTT/DROP .A-699	N 3140.13 W07312.97	280T 30000	220 232		220 232	280G	137	2045	+29.4	3+14.0 7+25.1			3489 1712
	TROUT/DROP .DCT	N 3023.00 W07700.00	280T 30000	249 260		249 260	280G	209	2254	+44.9	2+29.2 8+10.0			3458 2586
	JA/DINNS .AR-5	N 3027.91 W08148.08	280T 30000	272 279		272 279	280G	248	2503	+53.2	1+35.9 9+03.2			3411 3026
	TAY .DCT	N 3030.28 W08233.18	280T 30000	274 277		274 277	280G	39	2542	+08.3	1+27.6 9+11.5			3355 467
	TLH .J-2	N 3033.37 W08422.43	280T 30000	272 275		272 275	280G	94	2636	+20.2	1+07.4 9+31.7			3347 1126
	TLH288042 .J-2	N 3047.60 W08508.38	280T 30000	290 288		290 288	280G	42	2678	+09.0	+58.4 9+40.7			3326 499
	CEW .J-2	N 3049.57 W08640.75	280T 30000	272 270		272 270	280G	79	2757	+17.0	+41.4 9+57.7			3318 941
	SJI .J-2	N 3043.57 W08821.55	280T 30000	266 263		266 263	280G	87	2844	+18.6	+22.8 10+16.3			3304 1024
	S/D @ 30000	N 3031.21 W08843.73	280T 30000	237 232		237 232	280G	22	2866	+04.8	+18.0 10+21.1			3290 261
	KBIX/L .DCT	N 3024.68 W08855.42	280T 24000	237 232		237 232	280G	13	2879	+03.0	+15.0 10+24.1			3288 100
	KBIX/L APPR	N 3024.68 W08855.42	0	237 236		237 236		0	2879	+15.0	+00.0 10+39.1			1500
	Drag Index: -12 Burnoff: 43351								T Dist 2879		T Time 10+39.1		MIN OVHD 7000	FUEL REM 11649

Table F-2b. Flight plans and logs for routes CORONET COASTO2R. See figure F-2 for chart of track. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CSTO2R
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr	WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!		
Navigator	From: KBIX/L	TO:	Date

WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	10+38.9 +00.0			1300
	SJI .DCT	N 3043.57 W08821.55	280T 19000	057 056		057 056	280G	35	35	+10.4	10+28.5 +10.4			1227
	L/O @ 19000	N 3043.69 W08810.11	280T 19000	086 081		086 081	280G	10	45	+03.0	10+25.5 +13.4			359
	CEW .J-2	N 3049.57 W08640.75	280T 19000	086 081		086 081	280G	77	122	+16.5	10+09.0 +29.9			4754 1304
	TLH288042 .J-2	N 3047.60 W08508.38	280T 19000	091 088		091 088	280G	79	201	+17.0	9+52.0 +46.9			4737 1344
	L/O @ 25000	N 3037.12 W08434.44	280T 25000	110 108		110 108	280G	31	233	+08.4	9+43.6 +55.3			733
	TLH .J-2	N 3033.37 W08422.43	280T 25000	110 108		110 108	280G	11	243	+02.3	9+41.3 +57.6			4203 158
	TAY .J-2	N 3030.28 W08233.18	280T 25000	091 089		091 089	280G	94	337	+20.2	9+21.2 1+17.8			4200 1413
	JA/DINNS .DCT	N 3027.91 W08148.08	280T 25000	093 096		093 096	280G	39	376	+08.3	9+12.8 1+26.1			4171 580
	TROUT/DROP .AR-5/KZNY	N 3023.00 W07700.00	280T 25000	090 093		090 093	280G	248	625	+53.2	8+19.6 2+19.3			4159 3690
	BRUTT/DROP .DCT	N 3140.13 W07312.96	280T 25000	067 074		067 074	280G	209	834	+44.9	7+34.7 3+04.2			4092 3059
	ODEAL/DROP .A-699	N 3325.85 W07128.93	280T 25000	039 050		039 050	280G	137	971	+29.5	7+05.3 3+33.6			4039 1983
	DANER/DROP .A-699	N 3516.00 W06904.00	280T 25000	047 059		047 059	280G	163	1134	+34.8	6+30.4 4+08.5			4005 2326
	CLXTN .A-699	N 3543.38 W06833.37	280T 25000	042 056		042 056	280G	37	1171	+07.9	6+22.5 4+16.4			3965 524
	L/O @ 30000	N 3609.61 W06805.34	280T 30000	039 053		039 053	280G	34	1205	+08.8	6+13.6 4+25.3			659
	SONDE RELEAS .A-699	N 3705.00 W06710.00	280T 30000	039 053		039 053	280G	71	1277	+15.3	5+58.4 4+40.6			3690 939
	BRUNZ/DROP .A-699	N 3900.00 W06459.97	280T 30000	041 057		041 057	280G	154	1431	+33.0	5+25.4 5+13.6			3670 2018
	SLATN .DCT	N 3907.00 W06700.00	280T 30000	272 290		272 290	280G	98	1529	+21.0	5+04.4 5+34.6			3626 1269
	ACK .J-97	N 4116.92 W07001.60	280T 30000	314 331		314 331	280G	190	1719	+40.8	4+23.6 6+15.3			3599 2445
	HTO .DCT	N 4055.13 W07219.00	280T 30000	258 273		258 273	280G	106	1825	+22.8	4+00.8 6+38.1			3546 1347
	SWL .J-174	N 3803.40 W07527.83	280T 30000	221 234		221 234	280G	225	2051	+48.3	3+12.5 7+26.4			3517 2830
	TYI .DCT	N 3558.60 W07742.23	280T 30000	221 229		221 229	280G	165	2215	+35.3	2+37.3 8+01.7			3463 2036
	RDU .DCT	N 3552.35 W07847.00	280T 30000	265 270		265 270	280G	53	2268	+11.4	2+25.9 8+13.0			3426 649
	SPA .DCT	N 3502.02 W08155.62	280T 30000	253 257		253 257	280G	162	2430	+34.7	1+51.3 8+47.7			3414 1972
	MGM .J-37	N 3213.33 W08619.18	280T 30000	234 236		234 236	280G	277	2707	+59.3	+52.0 9+47.0			3378 3339
	SJI .J-37	N 3043.57 W08821.55	280T 30000	230 227		230 227	280G	138	2844	+29.5	+22.5 10+16.5			3318 1631
	KBIX/L .DCT	N 3024.68 W08855.42	280T 30000	237 232		237 232	280G	35	2879	+07.5	+15.0 10+23.9			3294 409
	KBIX/L APPR	N 3024.68 W08855.42	0	237 236		237 236		0	2879	+15.0	+00.0 10+38.9			1500
	Drag Index: -12 Burnoff: 43043								T Dist 2879		T Time 10+38.9		MIN OVHD 7000	FUEL REM 11957

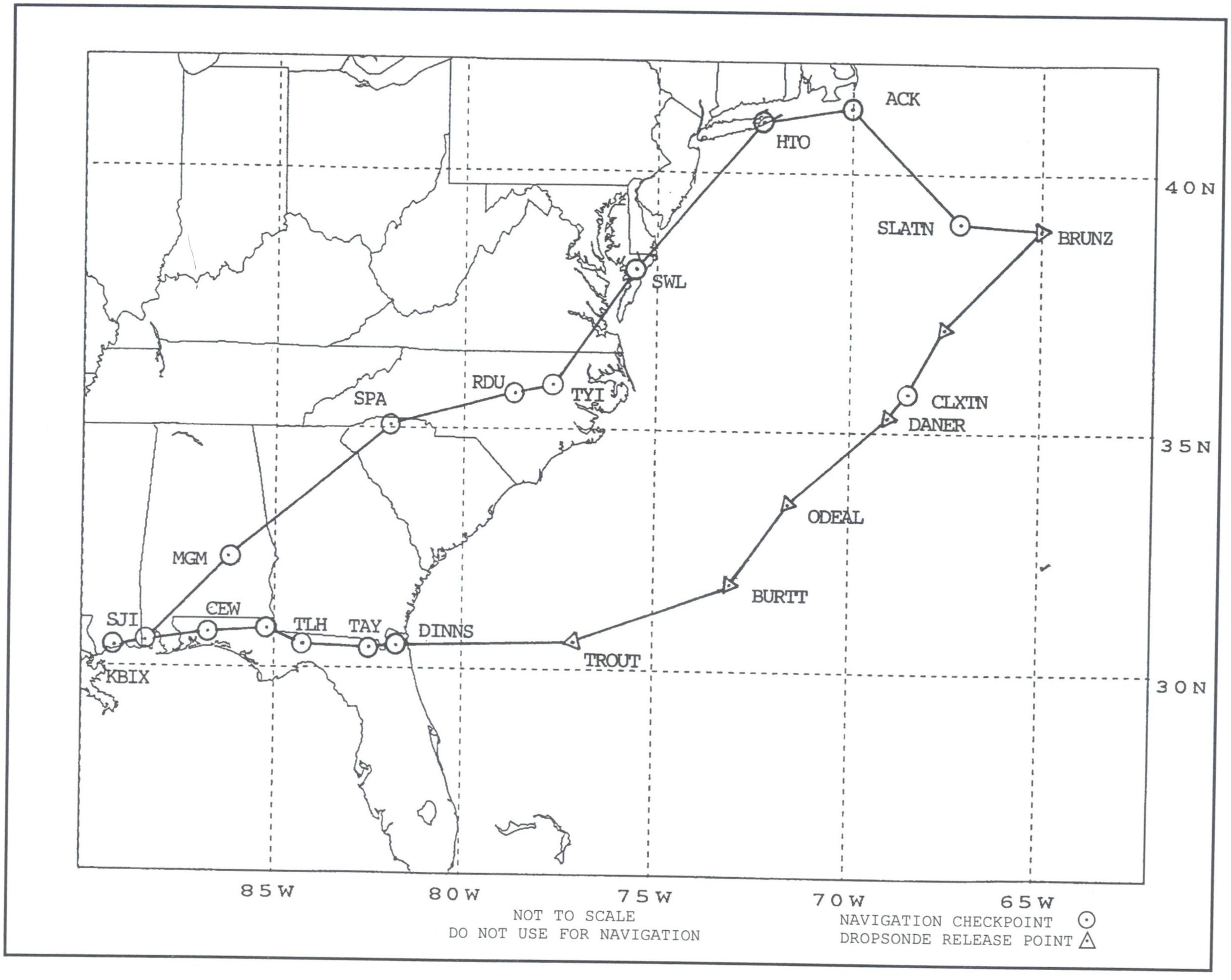

Figure F-2. Air Force track CORONET COAST02/02R

Table F-3a. Flight plans and logs for routes CORONET COASTO3. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CST03
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr	WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!		
Navigator	From: KBIX/L	TO:	Date

WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	9+57.6 +00.0			1300
	SJI .DCT	N 3043.57 W08821.55	280T 19000	057 056		057 056	280G	35	35	+10.4	9+47.2 +10.4			1227
	L/O @ 19000	N 3049.20 W08810.79	280T 19000	049 044		049 044	280G	10	45	+03.0	9+44.1 +13.4			359
	MGM .J-37	N 3213.33 W08619.18	280T 19000	049 044		049 044	280G	127	172	+27.3	9+16.8 +40.8			4754 2165
	SPA .J-37	N 3502.02 W08155.62	280T 19000	051 048		051 048	280G	277	449	+59.3	8+17.5 1+40.1			4726 4671
	L/O @ 25000	N 3507.06 W08121.91	280T 25000	071 073		071 073	280G	28	477	+07.6	8+09.9 1+47.7			663
	RDU .DCT	N 3552.35 W07847.00	280T 25000	071 073		071 073	280G	134	611	+28.6	7+41.3 2+16.3			4122 1967
	TYI .J-209	N 3558.60 W07742.23	280T 25000	083 087		083 087	280G	53	664	+11.3	7+30.0 2+27.6			4088 771
	SWL .DCT	N 3803.40 W07527.83	280T 25000	040 045		040 045	280G	165	828	+35.3	6+54.6 3+02.9			4075 2398
	HTO .J-174	N 4055.13 W07219.00	280T 25000	039 047		039 047	280G	225	1054	+48.3	6+06.4 3+51.2			4033 3244
	ACK .DCT	N 4116.92 W07001.60	280T 25000	078 091		078 091	280G	106	1160	+22.7	5+43.7 4+13.9			3977 1506
	L/O @ 30000	N 4049.74 W06933.21	280T 30000	132 147		132 147	280G	34	1194	+08.8	5+34.9 4+22.7			654
	SLATN/DROP .J-97/KZNY	N 3907.00 W06700.00	280T 30000	132 147		132 147	280G	156	1350	+33.5	5+01.4 4+56.2			3684 2055
	CREEQ/DROP .A-700	N 3710.32 W06919.12	280T 30000	225 242		225 242	280G	162	1512	+34.7	4+26.7 5+30.9			3640 2104
	DOWNT .A-700	N 3554.97 W07044.50	280T 30000	223 238		223 238	280G	102	1614	+21.8	4+04.9 5+52.7			3594 1308
	KATHY/DROP .A-700	N 3507.22 W07136.90	280T 30000	222 235		222 235	280G	64	1678	+13.7	3+51.2 6+06.4			3566 815
	FAIRR .A-700	N 3343.87 W07341.10	280T 30000	231 243		231 243	280G	132	1810	+28.3	3+22.9 6+34.7			3549 1674
	SONDE RELEAS .A-700	N 3318.00 W07418.00	280T 30000	230 241		230 241	280G	40	1850	+08.6	3+14.2 6+43.3			3513 504
	JAINS/DROP .A-700	N 3121.33 W07700.00	280T 30000	230 240		230 240	280G	180	2030	+38.5	2+35.7 7+21.9			3502 2250
	CARPS .A-700	N 3024.47 W07745.02	280T 30000	214 221		214 221	280G	69	2099	+14.7	2+21.0 7+36.6			3461 850
	JA/DINNS AR-5	N 3027.91 W08148.08	280T 30000	273 279		273 279	280G	210	2309	+45.0	1+35.9 8+21.6			3446 2586
	TAY .DCT	N 3030.28 W08233.18	280T 30000	274 277		274 277	280G	39	2348	+08.3	1+27.6 8+30.0			3398 473
	TLH .J-2	N 3033.37 W08422.43	280T 30000	272 275		272 275	280G	94	2442	+20.2	1+07.4 8+50.2			3390 1140
	TLH288042 .J-2	N 3047.60 W08508.38	280T 30000	290 288		290 288	280G	42	2484	+09.0	+58.4 8+59.2			3369 505
	CEW .J-2	N 3049.57 W08640.75	280T 30000	272 270		272 270	280G	79	2563	+17.0	+41.4 9+16.2			3360 953
	SJI .J-2	N 3043.57 W08821.55	280T 30000	266 263		266 263	280G	87	2650	+18.6	+22.8 9+34.8			3342 1036
	S/D @ 30000	N 3031.21 W08843.73	280T 30000	237 232		237 232	280G	22	2673	+04.8	+18.0 9+39.6			3325 264
	KBIX/L .DCT	N 3024.68 W08855.42	280T 24000	237 232		237 232	280G	13	2685	+03.0	+15.0 9+42.6			3323 100
	KBIX/L APPR	N 3024.68 W08855.42	0	237 236		237 236		0	2685	+15.0	+00.0 9+57.6			1500
	Drag Index: -12 Burnoff: 41044								T Dist 2685		T Time 9+57.6		MIN OVHD 7000	FUEL REM 13956

Table F-3b. Flight plans and logs for routes CORONET COASTO3R. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CST03R
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr			WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!											
Navigator			From: KBIX/L					TO:				Date		
WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	9+57.0 +00.0			1300
	SJI .DCT	N 3043.57 W08821.55	280T 19000	057 056		057 056	280G	35	35	+10.5	9+46.5 +10.5			1242
	L/O @ 19000	N 3043.35 W08814.75	280T 19000	086 081		086 081	280G	6	41	+01.9	9+44.5 +12.4			230
	CEW .J-2	N 3049.57 W08640.75	280T 19000	086 081		086 081	280G	81	122	+17.2	9+27.3 +29.7			4690 1349
	L/O @ 25000	N 3048.27 W08607.75	280T 25000	091 088		091 088	280G	29	150	+07.7	9+19.6 +37.4			672
	TLH288042 .J-2	N 3047.60 W08508.38	280T 25000	091 088		091 088	280G	51	201	+10.9	9+08.7 +48.2			4133 751
	TLH .J-2	N 3033.37 W08422.43	280T 25000	110 108		110 108	280G	42	243	+09.0	8+59.7 +57.2			4120 618
	TAY .J-2	N 3030.28 W08233.18	280T 25000	091 089		091 089	280G	94	337	+20.2	8+39.5 1+17.4			4109 1382
	JA/DINNS .DCT	N 3027.91 W08148.08	280T 25000	093 096		093 096	280G	39	376	+08.3	8+31.2 1+25.8			4085 568
	CARPS .AR-5	N 3024.47 W07745.02	280T 25000	090 093		090 093	280G	210	586	+44.9	7+46.3 2+10.7			4075 3051
	JAINS/DROP .A-700/KZNY	N 3121.33 W07700.00	280T 25000	033 039		033 039	280G	69	655	+14.8	7+31.4 2+25.5			4022 994
	SONDE RELEAS .A-700	N 3318.00 W07418.00	280T 25000	049 056		049 056	280G	180	835	+38.5	6+52.9 3+04.1			4005 2573
	L/O @ 30000	N 3340.65 W07345.70	280T 30000	050 060		050 060	280G	35	870	+08.9	6+44.0 3+13.0			664
	FAIRR .A-700	N 3343.87 W07341.10	280T 30000	050 060		050 060	280G	5	875	+01.2	6+42.8 3+14.2			3696 73
	KATHY/DROP .A-700	N 3507.22 W07136.90	280T 30000	050 061		050 061	280G	132	1007	+28.3	6+14.5 3+42.5			3694 1742
	DOWNT .A-700	N 3554.97 W07044.50	280T 30000	042 054		042 054	280G	64	1071	+13.7	6+00.8 3+56.2			3656 836
	CREEQ/DROP .A-700	N 3710.32 W06919.12	280T 30000	042 055		042 055	280G	102	1173	+21.8	5+39.0 4+18.0			3638 1324
	SLATN/DROP .A-700	N 3907.00 W06700.00	280T 30000	042 057		042 057	280G	160	1333	+34.3	5+04.7 4+52.3			3610 2063
	ACK J-97	N 4116.92 W07001.60	280T 30000	313 330		313 330	280G	192	1525	+41.1	4+23.6 5+33.4			3566 2441
	HTO .DCT	N 4055.13 W07219.00	280T 30000	258 273		258 273	280G	106	1631	+22.8	4+00.8 5+56.1			3513 1333
	SWL J-174	N 3803.40 W07527.83	280T 30000	221 234		221 234	280G	225	1856	+48.3	3+12.5 6+44.4			3487 2806
	TYI .DCT	N 3558.60 W07742.23	280T 30000	221 229		221 229	280G	165	2021	+35.3	2+37.3 7+19.7			3436 2020
	RDU .DCT	N 3552.35 W07847.00	280T 30000	265 270		265 270	280G	53	2074	+11.4	2+25.9 7+31.1			3399 644
	SPA .DCT	N 3502.02 W08155.62	280T 30000	253 257		253 257	280G	162	2236	+34.7	1+51.3 8+05.7			3387 1956
	MGM .J-37	N 3213.33 W08619.18	280T 30000	234 236		234 236	280G	277	2512	+59.3	+52.0 9+05.0			3352 3313
	SJI .J-37	N 3043.57 W08821.55	280T 30000	230 227		230 227	280G	138	2650	+29.5	+22.5 9+34.5			3297 1621
	KBIX/L .DCT	N 3024.68 W08855.42	280T 30000	237 232		237 232	280G	35	2685	+07.5	+15.0 9+42.0			3272 406
	KBIX/L APPR	N 3024.68 W08855.42	0	237 236		237 236		0	2685	+15.0	+00.0 9+57.0			1500
	Drag Index: -12 Burnoff: 39470								T Dist 2685		T Time 9+57.0		MIN OVHD 7000	FUEL REM 10530

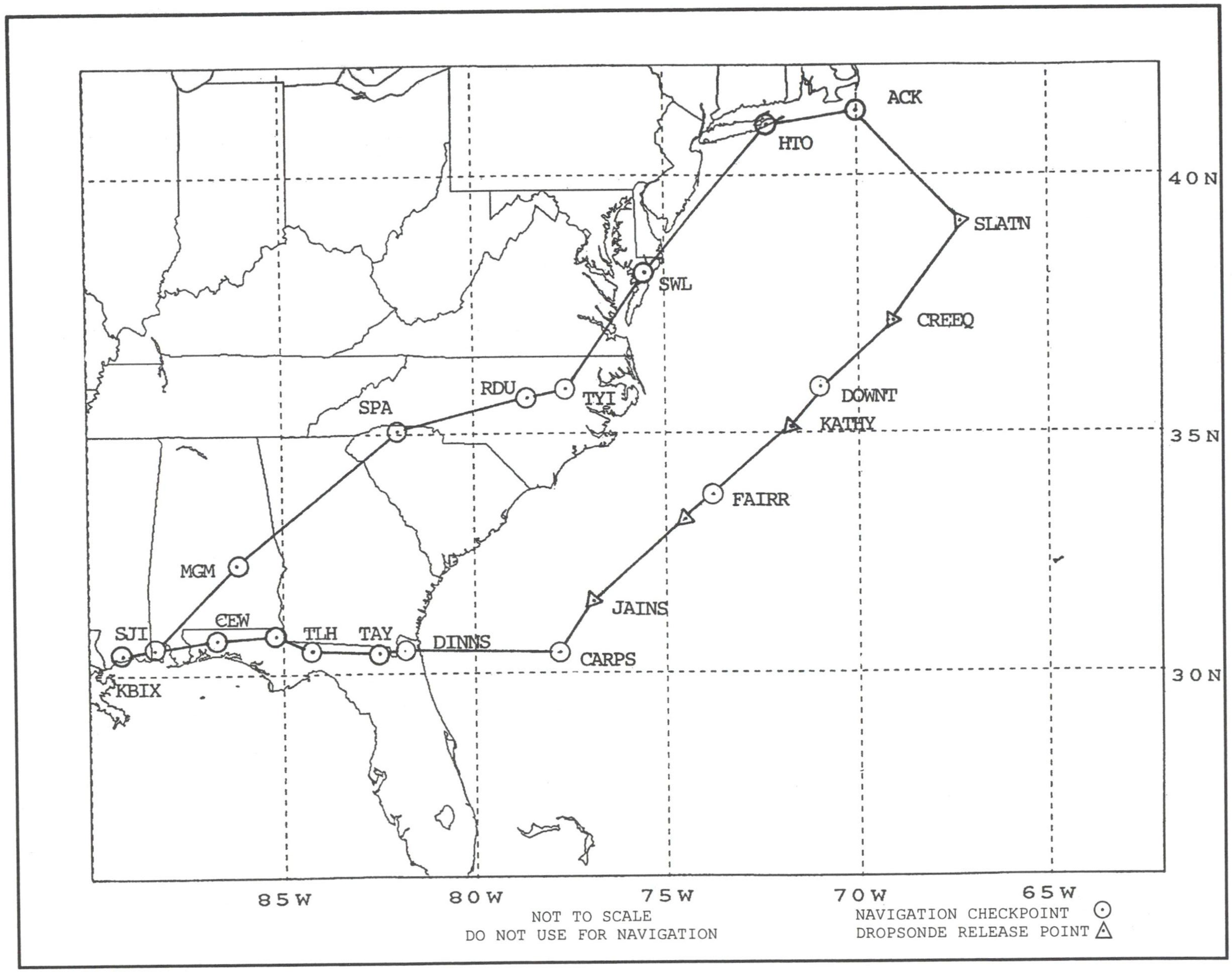

Figure F-3. Air Force track CORONET COAST03/03R

Table F-4a. Flight plans and logs for routes CORONET COASTO4. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CST04
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr		WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!		
Navigator	From: KBIX/L	TO:		Date

WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	 0							+00.0	8+37.2 +00.0			1300
	SJI .DCT	N 3043.57 W08821.55	280T 19000	057 056		057 056	280G	35	35	+10.5	8+26.7 +10.5			1242
	L/O @ 19000	N 3046.52 W08814.25	280T 19000	049 044		049 044	280G	6	41	+01.9	8+24.7 +12.4			230
	MGM .J-37	N 3213.33 W08619.18	280T 19000	049 044		049 044	280G	131	172	+28.1	7+56.6 +40.5			4690 2198
	L/O @ 25000	N 3221.70 W08544.68	280T 25000	051 048		051 048	280G	28	200	+07.6	7+49.1 +48.1			659
	SPA .J-37	N 3502.02 W08155.62	280T 25000	051 048		051 048	280G	249	449	+53.3	6+55.7 1+41.4			4118 3660
	RDU .DCT	N 3552.35 W07847.00	280T 25000	071 073		071 073	280G	162	611	+34.7	6+21.1 2+16.1			4054 2341
	TYI .J-209	N 3558.60 W07742.23	280T 25000	083 087		083 087	280G	53	664	+11.3	6+09.8 2+27.4			4014 757
	SWL .DCT	N 3803.40 W07527.83	280T 25000	040 045		040 045	280G	165	828	+35.3	5+34.5 3+02.7			4001 2355
	SIE .J-121	N 3905.73 W07448.02	280T 25000	026 034		026 034	280G	70	898	+14.9	5+19.5 3+17.6			3961 986
	L/O @ 30000	N 3927.00 W07414.20	280T 30000	050 059		050 059	280G	34	932	+08.7	5+10.8 3+26.3			646
	MANTA .J-121	N 3954.12 W07332.53	280T 30000	050 059		050 059	280G	42	974	+09.0	5+01.8 3+35.3			3674 551
	OWENZ/DROP .DCT	N 3949.40 W07249.83	280T 30000	100 113		100 113	280G	33	1007	+07.2	4+54.7 3+42.5			3663 437
	BERGH .DCT	N 3907.97 W07203.18	280T 30000	139 153		139 153	280G	55	1062	+11.8	4+42.9 3+54.3			3653 717
	CHAMP/DROP .A-300/KZNY	N 3731.00 W07141.00	280T 30000	170 184		170 184	280G	99	1161	+21.1	4+21.7 4+15.4			3638 1281
	KATHY/DROP .A-554	N 3507.22 W07136.90	280T 30000	179 192		179 192	280G	144	1305	+30.8	3+50.9 4+46.3			3610 1854
	FAIRR .A-700	N 3343.87 W07341.10	280T 30000	231 243		231 243	280G	132	1437	+28.4	3+22.5 5+14.6			3570 1689
	SONDE RELEAS .A-700	N 3230.00 W07530.00	280T 30000	232 243		232 243	280G	117	1555	+25.1	2+57.4 5+39.8			3534 1481
	JAINS .A-700	N 3121.33 W07700.00	280T 30000	228 237		228 237	280G	103	1657	+22.0	2+35.4 6+01.8			3502 1285
	CARPS/DROP .A-700	N 3024.47 W07745.02	280T 30000	214 221		214 221	280G	69	1726	+14.7	2+20.6 6+16.5			3479 854
	JA/DINNS .AR-5	N 3027.91 W08148.08	280T 30000	273 279		273 279	280G	210	1936	+45.0	1+35.6 7+01.6			3463 2599
	TAY .DCT	N 3030.28 W08233.18	280T 30000	274 277		274 277	280G	39	1975	+08.3	1+27.3 7+09.9			3416 475
	TLH .J-2	N 3033.37 W08422.43	280T 30000	272 275		272 275	280G	94	2069	+20.2	1+07.1 7+30.1			3407 1146
	TLH288042 .J-2	N 3047.60 W08508.38	280T 30000	290 288		290 288	280G	42	2111	+09.0	+58.1 7+39.1			3386 508
	CEW .J-2	N 3049.57 W08640.75	280T 30000	272 270		272 270	280G	79	2191	+17.0	+41.0 7+56.1			3377 958
	SJI .J-2	N 3043.57 W08821.55	280T 30000	266 263		266 263	280G	87	2278	+18.6	+22.5 8+14.7			3359 1041
	KBIX/L .DCT	N 3024.68 W08855.42	280T 30000	237 232		237 232	280G	35	2312	+07.5	+15.0 8+22.2			3340 415
	KBIX/L APPR	N 3024.68 W08855.42	 0	237 236		237 236		0	2312	+15.0	+00.0 8+37.2			1500
	Drag Index: -12 Burnoff: 35167								T Dist 2312		T Time 8+37.2		MIN OVHD 7000	FUEL REM 14833

Table F-4b. Flight plans and logs for routes CORONET COASTO4R. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CST04R
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr	WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!		
Navigator	From: KBIX/L	TO:	Date

WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	8+37.2 +00.0			1300
	SJI .DCT	N 3043.57 W08821.55	280T 19000	057 056		057 056	280G	35	35	+10.5	8+26.7 +10.5			1242
	L/O @ 19000	N 3043.35 W08814.75	280T 19000	086 081		086 081	280G	6	41	+01.9	8+24.8 +12.4			230
	CEW .J-2	N 3049.57 W08640.75	280T 19000	086 081		086 081	280G	81	122	+17.2	8+07.5 +29.7			4690 1349
	L/O @ 25000	N 3048.27 W08607.75	280T 25000	091 088		091 088	280G	29	150	+07.7	7+59.8 +37.4			672
	TLH288042 .J-2	N 3047.60 W08508.38	280T 25000	091 088		091 088	280G	51	201	+10.9	7+48.9 +48.2			4133 751
	TLH .J-2	N 3033.37 W08422.43	280T 25000	110 108		110 108	280G	42	243	+09.0	7+39.9 +57.2			4120 618
	TAY .J-2	N 3030.28 W08233.18	280T 25000	091 089		091 089	280G	94	337	+20.2	7+19.8 1+17.4			4109 1382
	JA/DINNS .DCT	N 3027.91 W08148.08	280T 25000	093 096		093 096	280G	39	376	+08.3	7+11.4 1+25.8			4085 568
	CARPS/DROP .AR-5	N 3024.47 W07745.02	280T 25000	090 093		090 093	280G	210	586	+44.9	6+26.5 2+10.7			4075 3051
	JAINS .A-700/KZNY	N 3121.33 W07700.00	280T 25000	033 039		033 039	280G	69	655	+14.8	6+11.7 2+25.5			4022 994
	SONDE RELEAS .A-700	N 3230.00 W07530.00	280T 25000	048 055		048 055	280G	103	758	+22.0	5+49.6 2+47.5			4005 1469
	L/O @ 30000	N 3253.15 W07455.13	280T 30000	051 060		051 060	280G	37	795	+09.4	5+40.2 2+57.0			703
	FAIRR .A-700	N 3343.87 W07341.10	280T 30000	051 060		051 060	280G	80	875	+17.3	5+23.0 3+14.2			3718 1069
	KATHY/DROP .A-700	N 3507.22 W07136.90	280T 30000	050 061		050 061	280G	132	1007	+28.3	4+54.7 3+42.5			3695 1743
	CHAMP/DROP .A-554	N 3731.00 W07141.00	280T 30000	359 011		359 011	280G	144	1151	+30.9	4+23.8 4+13.4			3658 1883
	BERGH .A-300	N 3907.97 W07203.18	280T 30000	350 003		350 003	280G	99	1250	+21.1	4+02.7 4+34.5			3617 1273
	OWENZ/DROP .DCT	N 3949.40 W07249.83	280T 30000	319 333		319 333	280G	55	1305	+11.8	3+50.9 4+46.3			3590 705
	MANTA .DCT	N 3954.12 W07332.53	280T 30000	276 290		276 290	280G	33	1338	+07.1	3+43.8 4+53.4			3575 425
	SIE .J-121	N 3905.73 W07448.02	280T 30000	231 244		231 244	280G	76	1414	+16.3	3+27.5 5+09.7			3566 967
	SWL .J-121	N 3803.40 W07527.83	280T 30000	206 215		206 215	280G	70	1484	+15.0	3+12.5 5+24.6			3545 883
	TYI .DCT	N 3558.60 W07742.23	280T 30000	221 229		221 229	280G	165	1648	+35.3	2+37.3 5+59.9			3526 2072
	RDU .DCT	N 3552.35 W07847.00	280T 30000	265 270		265 270	280G	53	1701	+11.4	2+25.9 6+11.3			3485 660
	SPA .DCT	N 3502.02 W08155.62	280T 30000	253 257		253 257	280G	162	1863	+34.7	1+51.3 6+45.9			3473 2005
	MGM .J-37	N 3213.33 W08619.18	280T 30000	234 236		234 236	280G	277	2140	+59.3	+52.0 7+45.2			3436 3396
	SJI .J-37	N 3043.57 W08821.55	280T 30000	230 227		230 227	280G	138	2278	+29.5	+22.5 8+14.7			3374 1659
	KBIX/L .DCT	N 3024.68 W08855.42	280T 30000	237 232		237 232	280G	35	2312	+07.5	+15.0 8+22.2			3344 415
	KBIX/L APPR	N 3024.68 W08855.42	0	237 236		237 236		0	2312	+15.0	+00.0 8+37.2			1500
	Drag Index: -12 Burnoff: 34984								T Dist 2312		T Time 8+37.2		MIN OVHD 7000	FUEL REM 15016

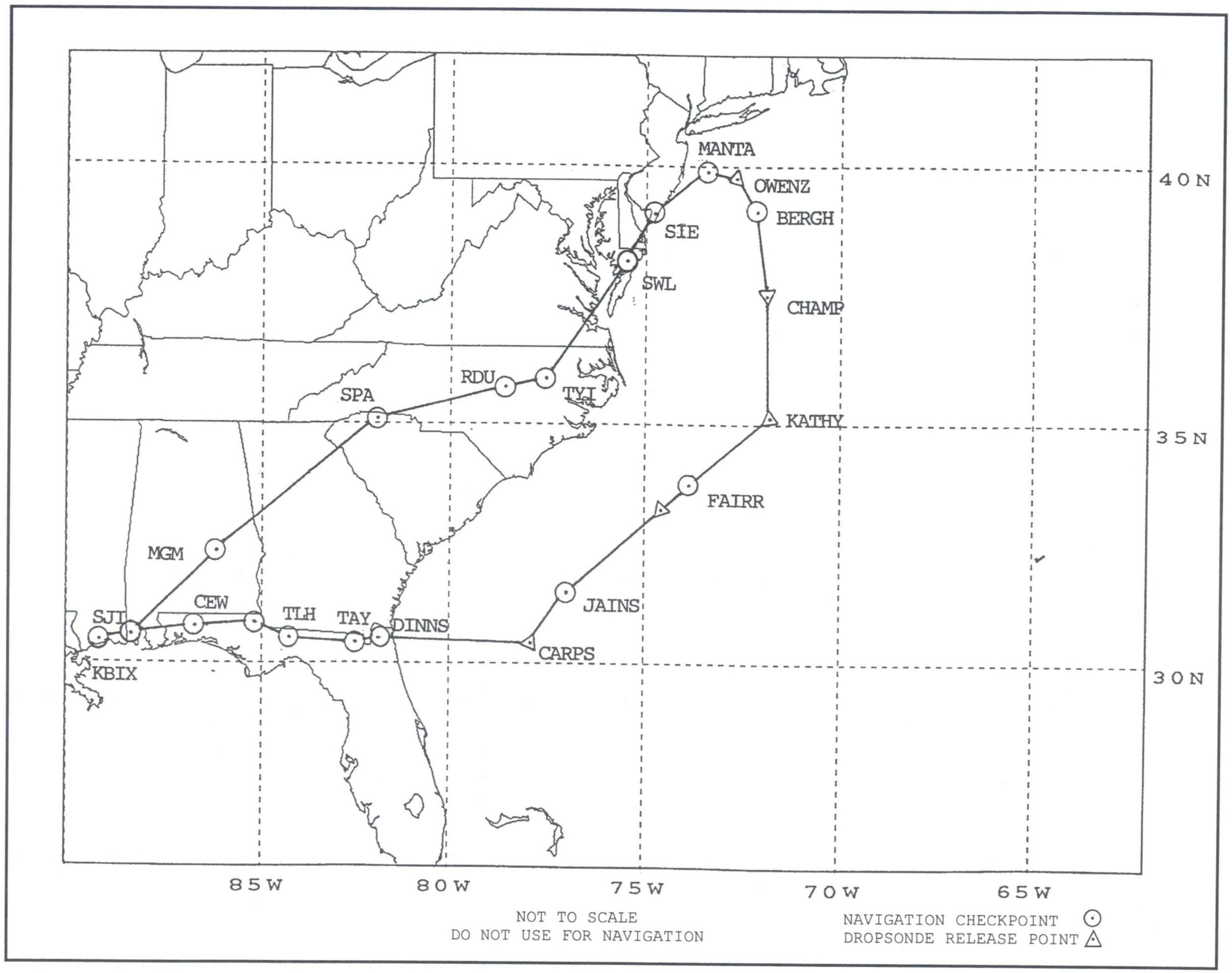

Figure F-4. Air Force track CORONET COAST04/04R

Table F-5a. Flight plans and logs for routes CORONET COASTO5. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CST05
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr	WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!		
Navigator	From: KBIX/L	TO:	Date

WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	7+59.6 +00.0			1300
	SJI .DCT	N 3043.57 W08821.55	280T 19000	057 056		057 056	280G	35	35	+10.6	7+49.0 +10.6			1256
	L/O @ 19000	N 3043.84 W08817.71	280T 19000	049 044		049 044	280G	3	38	+00.9	7+48.1 +11.5			109
	MGM .J-37	N 3213.33 W08619.18	280T 19000	049 044		049 044	280G	135	172	+28.9	7+19.2 +40.3			4632 2227
	SPA .J-37	N 3502.02 W08155.62	280T 19000	051 048		051 048	280G	277	449	+59.3	6+19.9 1+39.6			4606 4553
	RDU .DCT	N 3552.35 W07847.00	280T 19000	071 073		071 073	280G	162	611	+34.7	5+45.3 2+14.3			4555 2631
	L/O @ 25000	N 3553.44 W07822.62	280T 25000	079 083		079 083	280G	20	630	+05.7	5+39.5 2+20.0			495
	ECG .DCT	N 3615.45 W07610.53	280T 25000	079 083		079 083	280G	109	739	+23.4	5+16.2 2+43.4			3919 1524
	L/O @ 30000	N 3552.40 W07546.51	280T 30000	133 140		133 140	280G	31	770	+08.0	5+08.2 2+51.4			586
	BACUS/DROP .AR-8/KZNY	N 3426.00 W07350.98	280T 30000	133 140		133 140	280G	128	898	+27.3	4+40.8 3+18.7			3603 1642
	BURTT/DROP .R-763	N 3140.13 W07312.97	280T 30000	169 180		169 180	280G	169	1067	+36.2	4+04.6 3+55.0			3568 2154
	JESSE/DROP .A-699	N 2930.00 W07504.00	280T 30000	217 228		217 228	280G	162	1229	+34.7	3+29.9 4+29.6			3521 2035
	LOUIZ .A-699	N 2828.38 W07659.98	280T 30000	240 249		240 249	280G	119	1347	+25.5	3+04.5 4+55.1			3482 1477
	NUCAR/DROP .A-699	N 2807.57 W07737.98	280T 30000	238 245		238 245	280G	39	1387	+08.5	2+56.0 5+03.5			3455 487
	PBI .A-699	N 2640.80 W08005.20	280T 30000	237 243		237 243	280G	157	1544	+33.6	2+22.4 5+37.1			3446 1931
	LBV .DCT	N 2649.68 W08123.48	280T 30000	279 282		279 282	280G	71	1614	+15.1	2+07.3 5+52.3			3411 861
	LBV312038 .J-86	N 2715.54 W08154.75	280T 30000	314 313		314 313	280G	38	1652	+08.2	1+59.1 6+00.5			3395 462
	SRQ .J-86	N 2723.87 W08233.25	280T 30000	284 283		284 283	280G	35	1688	+07.5	1+51.6 6+08.0			3386 426
	COVIA/DROP .J-86	N 2756.18 W08444.17	280T 30000	286 288		286 288	280G	120	1808	+25.8	1+25.8 6+33.8			3379 1453
	.TURN POINT .J-86	N 2826.10 W08655.07	280T 30000	285 286		285 286	280G	119	1927	+25.6	1+00.2 6+59.4			3352 1427
	NEPTA/DROP .J-86	N 2836.63 W08738.60	280T 30000	286 286		286 286	280G	40	1967	+08.5	+51.7 7+07.9			3326 471
	SEDAN .J-58	N 2853.03 W08809.07	280T 30000	302 301		302 301	280G	31	1998	+06.7	+45.0 7+14.6			3318 371
	HRV111029 .DCT	N 2939.63 W08929.46	280T 30000	304 303		304 303	280G	84	2082	+18.1	+27.0 7+32.6			3313 997
	KBIX/L .DCT	N 3024.68 W08855.42	280T 30000	037 035		037 035	280G	56	2138	+12.0	+15.0 7+44.6			3298 657
	KBIX/L APPR	N 3024.68 W08855.42	0	033 032		033 032		0	2138	+15.0	+00.0 7+59.6			1500
	Drag Index: -12 Burnoff: 33031								T Dist 2138		T Time 7+59.6		MIN OVHD 7000	FUEL REM 11969

Table F-5b. Flight plans and logs for routes CORONET COASTO5R. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CST05R
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr			WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!											
Navigator			From: KBIX/L						TO:				Date	
WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	7+59.8 +00.0			1300
	L/O @ 19000	N 2953.04 W08919.41	280T 19000	213 212		213 212	280G	38	38	+11.5	7+48.3 +11.5			1365
	HRV111029 .DCT	N 2939.63 W08929.46	280T 19000	213 212		213 212	280G	16	54	+03.5	7+44.8 +14.9			4632 266
	SEDAN .DCT	N 2853.03 W08809.07	280T 19000	121 119		121 119	280G	86	140	+18.4	7+26.4 +33.4			4629 1422
	NEPTA/DROP .J-58	N 2836.63 W08738.60	280T 19000	121 120		121 120	280G	31	171	+06.7	7+19.7 +40.1			4612 516
	.TURN POINT .J-58	N 2826.10 W08655.07	280T 19000	104 103		104 103	280G	40	211	+08.5	7+11.2 +48.6			4607 654
	L/O @ 25000	N 2818.73 W08629.98	280T 25000	104 104		104 104	280G	24	235	+06.7	7+04.5 +55.3			577
	COVIA/DROP .J-58	N 2756.18 W08444.17	280T 25000	104 104		104 104	280G	96	330	+20.5	6+44.0 1+15.8			4023 1373
	SRQ .J-58	N 2723.87 W08233.25	280T 25000	105 106		105 106	280G	120	451	+25.8	6+18.2 1+41.6			3999 1720
	SRQ105036 .J-86	N 2715.68 W08153.79	280T 25000	103 105		103 105	280G	36	487	+07.7	6+10.5 1+49.3			3969 510
	LBV .J-86	N 2649.68 W08123.48	280T 25000	135 137		135 137	280G	38	524	+08.1	6+02.4 1+57.4			3961 531
	PBI .DCT	N 2640.80 W08005.20	280T 25000	096 095		096 095	280G	71	595	+15.1	5+47.3 2+12.5			3953 998
	L/O @ 30000	N 2657.43 W07933.31	280T 30000	056 059		056 059	280G	33	628	+08.6	5+38.7 2+21.1			637
	NUCAR/DROP .A-699	N 2807.57 W07737.98	280T 30000	056 059		056 059	280G	124	752	+26.5	5+12.2 2+47.6			3664 1620
	LOUIZ .A-699/KZNY	N 2828.38 W07659.98	280T 30000	058 064		058 064	280G	39	791	+08.5	5+03.7 2+56.1			3629 511
	JESSE/DROP .A-699	N 2930.00 W07504.00	280T 30000	058 065		058 065	280G	119	910	+25.4	4+38.3 3+21.5			3618 1534
	BRUTT/DROP .A-699	N 3140.13 W07312.96	280T 30000	036 045		036 045	280G	161	1072	+34.6	4+03.7 3+56.1			3585 2067
	BACUS/DROP .R-763	N 3426.00 W07350.98	280T 30000	349 000		349 000	280G	169	1241	+36.3	3+27.4 4+32.4			3540 2140
	ECG .AR-8	N 3615.45 W07610.53	280T 30000	315 326		315 326	280G	158	1399	+33.9	2+53.5 5+06.2			3496 1973
	RDU .DCT	N 3552.35 W07847.00	280T 30000	260 267		260 267	280G	129	1528	+27.6	2+25.9 5+33.9			3460 1593
	SPA .DCT	N 3502.02 W08155.62	280T 30000	253 257		253 257	280G	162	1689	+34.7	1+51.3 6+08.5			3431 1981
	MGM .J-37	N 3213.33 W08619.18	280T 30000	234 236		234 236	280G	277	1966	+59.3	+52.0 7+07.8			3394 3355
	SJI .J-37	N 3043.57 W08821.55	280T 30000	230 227		230 227	280G	138	2104	+29.5	+22.5 7+37.3			3333 1639
	KBIX/L .DCT	N 3024.68 W08855.42	280T 30000	237 232		237 232	280G	35	2139	+07.5	+15.0 7+44.8			3306 411
	KBIX/L APPR	N 3024.68 W08855.42	0	237 236		237 236		0	2139	+15.0	+00.0 7+59.8			1500
	Drag Index: -12 Burnoff: 32194								T Dist 2139		T Time 7+59.8		MIN OVHD 7000	FUEL REM 12806

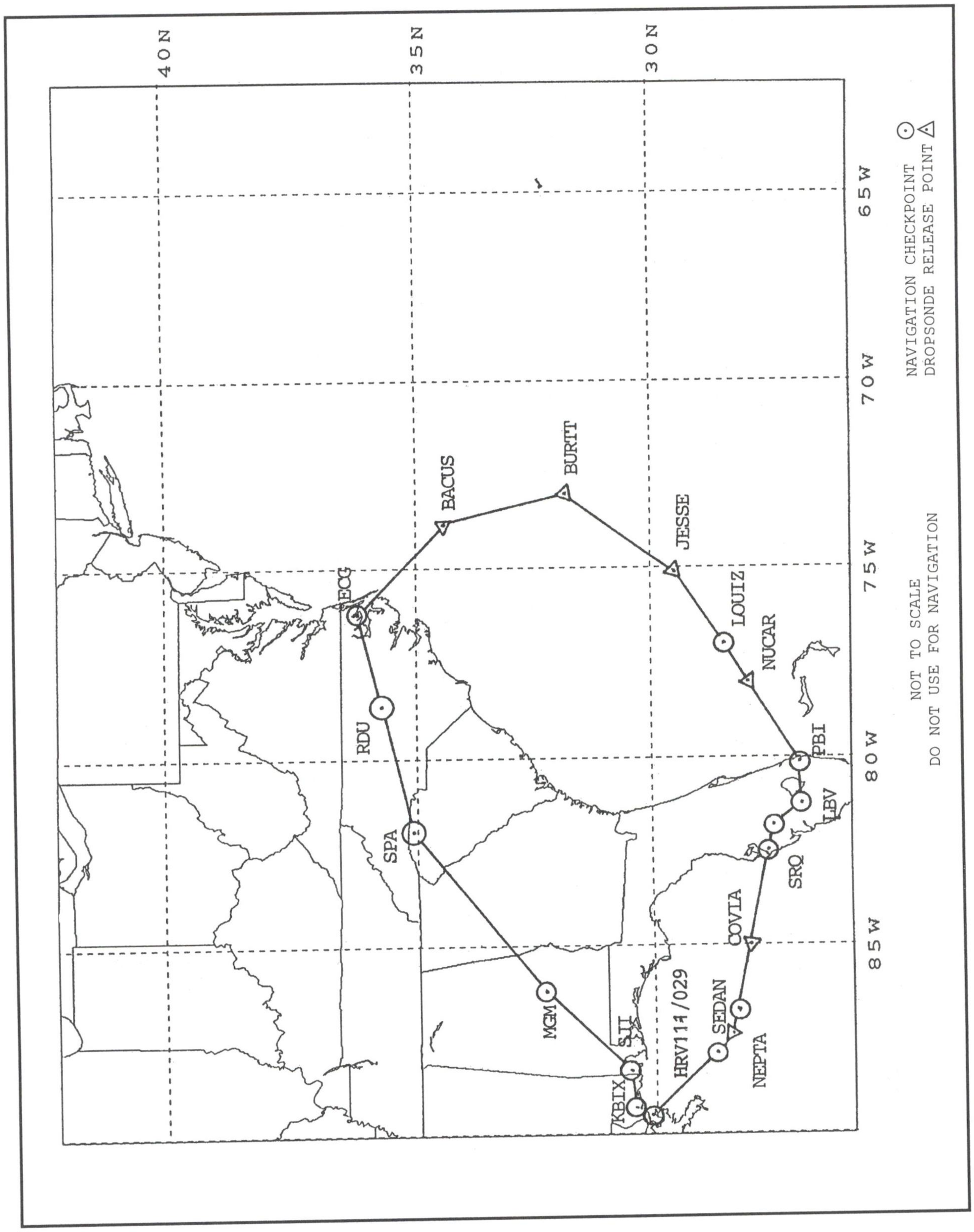

Figure F-5. Air Force track CORONET COAST05/05R

Table F-6a. Flight plans and logs for routes CORONET COASTO6. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CST06
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr	WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!		
Navigator	From: KBIX/L	TO:	Date

WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	5+48.7 +00.0			1300
	HRV111029 .DCT	N 2939.63 W08929.46	280T 30000	213 212		213 212	280G	54	54	+15.3	5+33.4 +15.3			1462
	L/O @ 30000	N 2920.16 W08901.18	280T 30000	121 119		121 119	280G	33	87	+09.5	5+23.9 +24.8			901
	SEDAN .DCT	N 2853.03 W08809.07	280T 30000	121 119		121 119	280G	53	140	+11.3	5+12.6 +36.1			3647 688
	NEPTA/DROP .J-58	N 2836.63 W08738.60	280T 30000	121 120		121 120	280G	31	171	+06.7	5+05.9 +42.8			3632 407
	.TURN POINT .J-58	N 2826.10 W08655.07	280T 30000	104 103		104 103	280G	40	211	+08.5	4+57.3 +51.4			3623 514
	COVIA .J-58	N 2756.18 W08444.17	280T 30000	104 104		104 104	280G	119	330	+25.6	4+31.8 1+16.9			3612 1538
	CIGAR/DROP .DCT/KZMA	N 2728.02 W08448.00	280T 30000	193 194		193 194	280G	30	360	+06.4	4+25.4 1+23.3			3579 384
	MINOW .R-875	N 2602.10 W08545.10	280T 30000	211 212		211 212	280G	100	460	+21.4	4+03.9 1+44.8			3571 1275
	.HOUSTON FIR .A-509/KZHU	N 2555.00 W08600.00	280T 30000	244 244		244 244	280G	15	475	+03.3	4+00.7 1+48.0			3543 193
	ELOIM/DROP .A-509	N 2459.00 W08739.07	280T 30000	238 238		238 238	280G	106	581	+22.6	3+38.1 2+10.6			3539 1334
	SWORD .A-509	N 2431.00 W08827.90	280T 30000	238 236		238 236	280G	52	633	+11.3	3+26.8 2+21.9			3510 658
	SONDE RELEAS .DCT	N 2430.00 W09027.60	280T 30000	271 269		271 269	280G	109	742	+23.4	3+03.4 2+45.3			3497 1362
	COKER .DCT	N 2458.00 W09353.30	280T 30000	279 276		279 276	280G	189	931	+40.5	2+23.0 3+25.7			3472 2343
	SONDE RELEAS .DCT	N 2517.02 W09432.03	280T 30000	300 295		300 295	280G	40	971	+08.6	2+14.4 3+34.3			3430 490
	SONDE RELEAS .DCT	N 2815.00 W09500.00	280T 30000	352 347		352 347	280G	180	1151	+38.6	1+35.8 4+12.9			3421 2201
	KLAMS .DCT	N 2815.00 W09249.65	280T 30000	091 086		091 086	280G	117	1269	+25.1	1+10.7 4+38.0			3381 1414
	BOGGY/DROP .DCT	N 2815.03 W09127.76	280T 30000	090 086		090 086	280G	72	1341	+15.5	+55.2 4+53.5			3355 865
	LEV .DCT	N 2910.52 W09006.25	280T 30000	052 049		052 049	280G	91	1431	+19.4	+35.8 5+12.9			3339 1081
	HRV111029 .DCT	N 2939.63 W08929.46	280T 30000	048 046		048 046	280G	43	1475	+09.3	+26.5 5+22.2			3320 514
	KBIX/L .DCT	N 3024.68 W08855.42	280T 30000	033 031		033 031	280G	54	1528	+11.5	+15.0 5+33.7			3312 637
	KBIX/L APPR	N 3024.68 W08855.42	0	033 032		033 032		0	1528	+15.0	+00.0 5+48.7			1500
	Drag Index: -12 Burnoff: 23058								T Dist 1528		T Time 5+48.7		MIN OVHD 7000	FUEL REM 12942

Table F-6b. Flight plans and logs for routes CORONET COASTO6R. These are for planning purpose only. Do not use for navigation.

FPLAN version 9.2: FLIGHT PLAN and LOG route: CST06R
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

Acft Cmdr	WC - 130 FLIGHT PLANNER & ARWO RECORD Navigator's are to use the MPLAN Flight Plans as they use average courses and headings!		
Navigator	From: KBIX/L	TO:	Date

WPT	Fix Point Route	Latitude Longitude	TAS ALT	TC MC	WV DA	TH MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TT REM TT	ETA RETA	ATA A/B	FF LEG FUEL
	KBIX/L STTO	N 3024.68 W08855.42	0							+00.0	5+48.8 +00.0			1300
	HRV111029 .DCT	N 2939.63 W08929.46	280T 30000	213 212		213 212	280G	54	54	+15.3	5+33.4 +15.3			1462
	L/O @ 30000	N 2917.20 W08957.73	280T 30000	228 226		228 226	280G	33	87	+09.5	5+24.0 +24.8			901
	LEV .DCT	N 2910.52 W09006.25	280T 30000	228 226		228 226	280G	10	97	+02.2	5+21.8 +27.0			3647 132
	BOGGY/DROP .DCT	N 2815.03 W09127.76	280T 30000	233 231		233 231	280G	91	188	+19.4	5+02.4 +46.4			3644 1178
	KLAMS .DCT	N 2815.00 W09249.65	280T 30000	271 268		271 268	280G	72	260	+15.5	4+46.9 1+01.9			3618 935
	SONDE RELEAS .DCT	N 2815.00 W09500.00	280T 30000	271 267		271 267	280G	115	375	+24.6	4+22.3 1+26.5			3598 1476
	.HOUSTON FIR .DCT/KZHU	N 2740.00 W09454.00	280T 30000	164 159		164 159	280G	38	413	+08.1	4+14.1 1+34.7			3567 484
	SONDE RELEAS .DCT	N 2517.02 W09432.03	280T 30000	172 167		172 167	280G	144	557	+30.9	3+43.2 2+05.6			3556 1833
	COKER .DCT	N 2458.00 W09353.30	280T 30000	116 111		116 111	280G	40	598	+08.6	3+34.5 2+14.2			3517 506
	SONDE RELEAS .DCT	N 2430.00 W09027.60	280T 30000	098 093		098 093	280G	189	786	+40.5	2+54.1 2+54.7			3506 2365
	SWORD .DCT	N 2431.00 W08827.90	280T 30000	089 086		089 086	280G	109	895	+23.3	2+30.7 3+18.0			3462 1346
	ELIOM/DROP .A-509	N 2459.00 W08739.07	280T 30000	057 055		057 055	280G	53	948	+11.3	2+19.5 3+29.3			3438 646
	.MIAMI FIR .A-509/KZMA	N 2555.00 W08600.00	280T 30000	058 056		058 056	280G	106	1053	+22.6	1+56.9 3+51.9			3426 1291
	MINOW .A-509	N 2602.10 W08545.10	280T 30000	062 062		062 062	280G	15	1069	+03.2	1+53.6 3+55.2			3402 184
	CIGAR/DROP .R-875	N 2728.02 W08448.00	280T 30000	030 030		030 030	280G	100	1169	+21.4	1+32.2 4+16.6			3399 1214
	COVIA .DCT	N 2756.18 W08444.17	280T 30000	006 007		006 007	280G	28	1197	+06.1	1+26.1 4+22.7			3377 343
	.TURN POINT .J-58	N 2826.10 W08655.07	280T 30000	283 284		283 284	280G	121	1318	+25.8	1+00.2 4+48.5			3371 1452
	NEPTA/DROP .J-58	N 2836.63 W08738.60	280T 30000	286 286		286 286	280G	40	1357	+08.5	+51.7 4+57.1			3344 474
	SEDAN .J-58	N 2853.03 W08809.07	280T 30000	302 301		302 301	280G	31	1389	+06.7	+45.0 5+03.8			3335 373
	HRV111029 .DCT	N 2939.63 W08929.46	280T 30000	304 303		304 303	280G	84	1473	+18.1	+27.0 5+21.8			3329 1001
	KBIX/L .DCT	N 3024.68 W08855.42	280T 30000	037 035		037 035	280G	56	1529	+12.0	+15.0 5+33.8			3312 660
	KBIX/L APPR	N 3024.68 W08855.42	0	033 032		033 032		0	1529	+15.0	+00.0 5+48.8			1500
	Drag Index: -12 Burnoff: 23058								T Dist 1529		T Time 5+48.8		MIN OVHD 7000	FUEL REM 12942

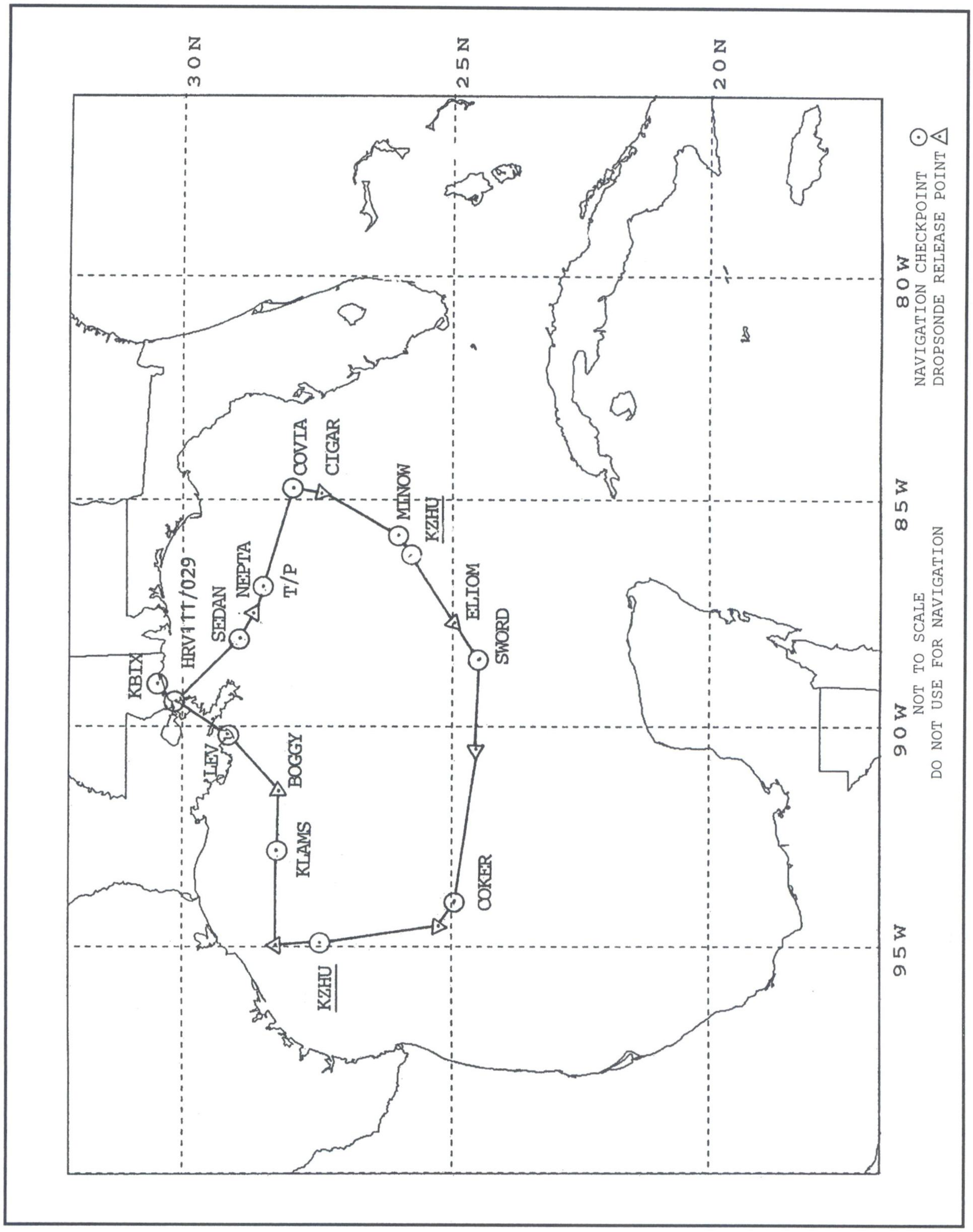

Figure F-6. Air Force track CORONET COAST06/06R

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:

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FEDERAL AVIATION ADMINISTRATION
- FAA/ATO-100
- FAA/ATO-130
- FAA/ATO-200
- FAA/ASO-500 (AFREP)
- BOSTON ARTCC
- HONOLULU ARTCC
- HOUSTON ARTCC
- JACKSONVILLE ARTCC
- MIAMI ARTCC
- NEW YORK ARTCC
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- 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, Federal Aviation Administration and NOAA, dated February 16, 1996; 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 W. BLAIR, JR, Colonel, USAFR
Deputy Chief of Staff, Operations

Date 16 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

1 Atch
Distribution List

FEDERAL AVIATION ADMINISTRATION (FAA)
UNITED STATES AIR FORCE RESERVE (AFRES)
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION (NOAA)

LETTER OF AGREEMENT

EFFECTIVE:

SUBJECT: METEOROLOGICAL RECONNAISSANCE FLIGHTS

1. PURPOSE: Establishes procedures to be used by the 53rd Weather Reconnaissance Squadron (53 WRS), the NOAA Aircraft Operations Center (AOC), 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 for 5 years from the date of the last signature heron, unless expressly canceled by one of the participating agencies with 30 days' notification.

3. REFERENCES:

a. National Hurricane Operations Plan (NHOP)

b. National Winter Storm Operations 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 53 WRS and AOC 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 53 WRS and AOC are 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 53 WRS or AOC and are routed through other than Aeronautical Radio (ARINC). Aircraft conducting weather reconnaissance flights in support of the NHOP and the NWSOP may communicate directly with the FAA via Satellite Communications (SATCOM) when practicable.

6. PROCEDURES:

a. The 53 WRS Current Operations (53 WRS/DOO) or the AOC Flight Operations Division, as appropriate, will contact the FAA Central Altitude Reservation Function (CARF) 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 53rd WRS, AOC and CARF.

b. CARF will process the ALTRV APREQ, accomplishing coordination with impacted facilities. The 53rd WRS and AOC shall coordinate with scheduling/using agencies to transit Special Use Airspace (restricted, warning, etc.) along their route of flight.

c. The 53 WRS/DOO and the AOC Flight Operations Division will contact the Air Traffic Control System Command Center (ATCSCC) as soon as possible prior to an NHOP mission and provide information specified in the NHOP in the paragraph entitled "Prior Coordination." The ATCSCC will then coordinate this information with all FAA facilities impacted.

d. The 53 WRS shall only use the call sign "TEAL," and AOC shall only use the call sign "NOAA," 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 53 WRS, AOC (if and when AOC is tasked to fly NWSOP missions) and CARF. These tracks shall be reviewed annually, no later than June 1.

f. During NHOP and 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. Weather instrument release at FLANN."

g. During NHOP and NWSOP missions, commencing 5 minutes prior to release of dropsondes from FL 190 or higher, 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 53 WRS and AOC flights are unable to contact ATC to request an en route clearance, a clearance request may be relayed through the Chief, Aerial Reconnaissance

Coordination, 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.

28 Sep 95

United States Air Force Reserve
Director of Operations

10/15/95

National Oceanic & Atmospheric Administration
Director, NOAA Corps Operations

2/16/96

Federal Aviation Administration
Director of Air Traffic

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

1 Atch
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