QC
959
.U6
N381
1993

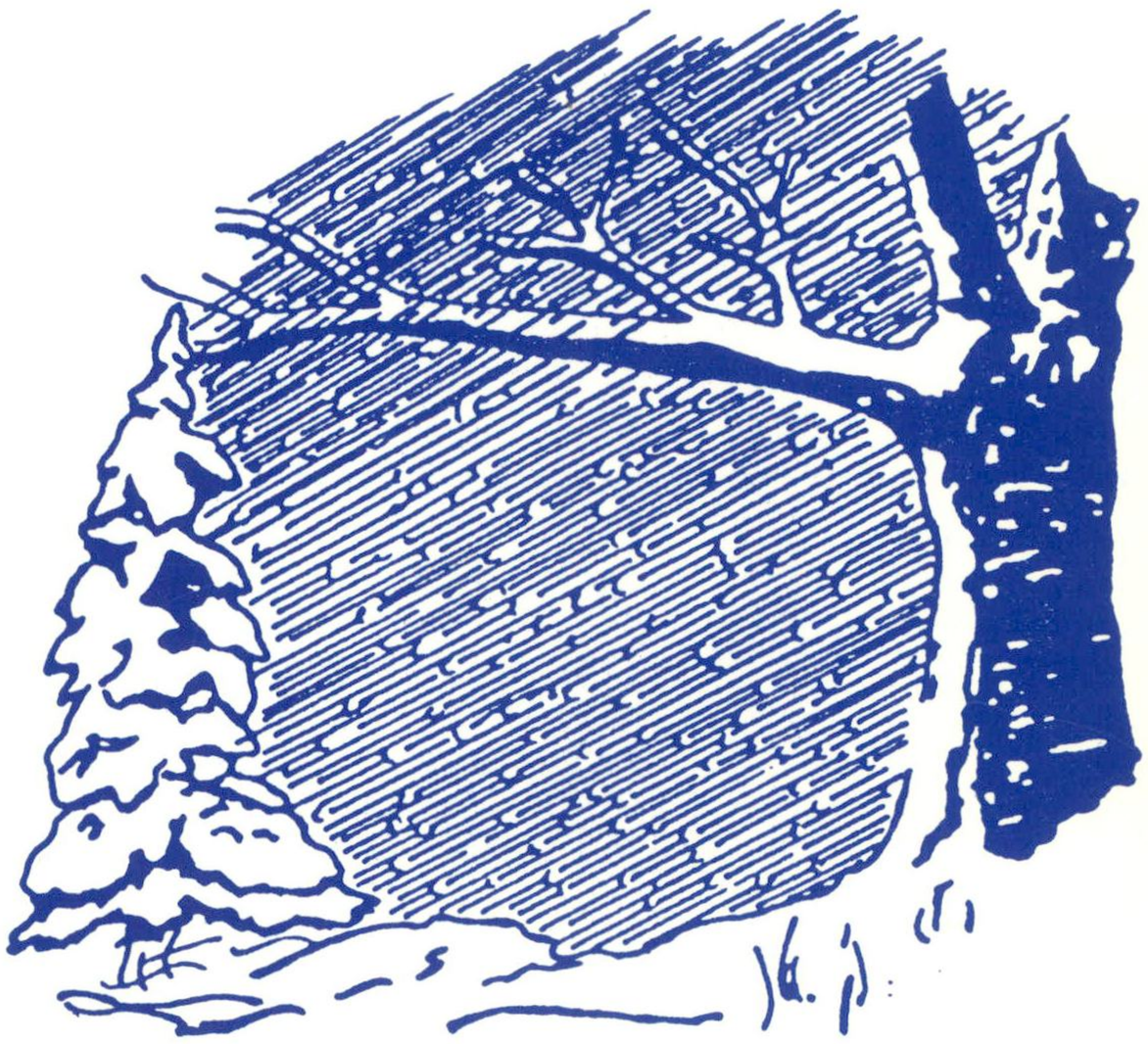
DEPARTMENT OF COMMERCE/ National Oceanic and Atmospheric Administration

OFCM

OFFICE OF THE FEDERAL COORDINATOR FOR
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

National Winter Storms Operations Plan

FCM-P13-1993



Washington, DC
October 1993

R/PDC-
ROOM ~~4350~~ 11362
~~SSMC-1~~ SSMC-3

P-13 1

I

THE FEDERAL COMMITTEE FOR METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH (FCMSSR)

DR. D. JAMES BAKER, Chairman
Department of Commerce

VACANT
Department of Agriculture

CAPT BRADLEY SMITH, USN
Department of Defense

DR. ARISTIDES PATRINOS
Department of Energy

DR. DEBRA KNOPMAN
Department of the Interior

VACANT
Department of State

MR. E. T. HARRIS
Department of Transportation

DR. JEFFREY PAYNE
Office of Management and Budget

MR. RICHARD W. KRIMM
Federal Emergency Management Agency

VACANT
National Aeronautics and Space Administration

DR. ROBERT W. CORELL
National Science Foundation

MR. WILLIAM G. LAYNOR
National Transportation Safety Board

DR. THEMIS P. SPEIS
U.S. Nuclear Regulatory Commission

MR. H. MATTHEW BILLS
Environmental Protection Agency

MR. JULIAN M. WRIGHT, JR.
Federal Coordinator

MR. JAMES B. HARRISON, Executive Secretary
Office of the Federal Coordinator for
Meteorological Services and Supporting Research

THE INTERDEPARTMENTAL COMMITTEE FOR METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH (ICMSSR)

MR. JULIAN M. WRIGHT, JR., Chairman
Federal Coordinator

DR. NORTON D. STROMMEN
Department of Agriculture

MR. ROBERT C. LANDIS
Department of Commerce

CAPT BRADLEY SMITH, USN
Department of Defense

DR. HARRY MOSES
Department of Energy

MR. LEWIS T. MOORE
Department of the Interior

MR. JEFFREY MACLURE
Department of State

MR. RICHARD HEUWINKEL
Federal Aviation Administration
Department of Transportation

MR. FRANCIS SCHIERMEIER
Environmental Protection Agency

MR. RICHARD W. KRIMM
Federal Emergency Management Agency

DR. SHELBY TILFORD
National Aeronautics and Space Administration

DR. RICHARD S. GREENFIELD
National Science Foundation

MR. JAMES SKEEN
National Transportation Safety Board

MR. ROBERT A. KORNASIEWICZ
U.S. Nuclear Regulatory Commission

DR. JEFFREY PAYNE
Office of Management and Budget

MR. JAMES B. HARRISON, Executive Secretary
Office of the Federal Coordinator for
Meteorological Services and Supporting Research

FEDERAL COORDINATOR
FOR
METEOROLOGY

6010 Executive Blvd., Suite 900
Rockville, Maryland 20852

NATIONAL WINTER STORMS OPERATIONS PLAN

QC
959
.U6
N381
1993

FCM-P13-1993

Washington, D.C.
October 1993

LIBRARY

N.O.A.A.
U S Dept of Commerce

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 twentieth edition of the Plan and represents a general update of information published in previous editions. This edition has revised east coast storm tracks that were coordinated with 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

CHANGE AND REVIEW LOG ii

FOREWORD iii

TABLE OF CONTENTS iv

LIST OF FIGURES vi

LIST OF TABLES vii

CHAPTER 1 RESPONSIBILITIES OF COOPERATING AGENCIES 1-1

1.1 General 1-1
1.2 Responsibilities 1-1

CHAPTER 2 AIRCRAFT RECONNAISSANCE 2-1

2.1 General 2-1
2.2 Responsibilities 2-1
2.3 Operational Control of Aircraft 2-1
2.4 Reconnaissance Planning and Flight Notification 2-1
2.5 Reconnaissance Flights 2-6

CHAPTER 3 OTHER OBSERVATIONS 3-1

3.1 General 3-1
3.2 Satellite Observations 3-1
3.3 Automated Environmental Observations 3-6

CHAPTER 4 COMMUNICATIONS 4-1

4.1. Department of Commerce 4-1
4.2 Department of Defense (DOD) 4-1
4.3 U.S. Coast Guard 4-1

CHAPTER 5 PUBLICITY 5-1

5.1 News Media Releases 5-1
5.2 Distribution 5-1

APPENDIX A ABBREVIATIONS A-1

APPENDIX B DISTRIBUTION B-1

APPENDIX C DEFINITIONS C-1

APPENDIX D RECCO FORM, CODE TABLES AND REGULATIONS D-1

APPENDIX E TEMP DROP CODE BREAKDOWN E-1

APPENDIX F EAST AND GULF COAST STORM TRACKS F-1

APPENDIX G OFFICIAL INTERAGENCY AGREEMENTS G-1

LIST OF FIGURES

Number	Figures	Page
Figure 2-1.	Sample mission evaluation form	2-3
Figure 2-2.	National Winter Storms Operations Plan coordination request	2-5
Figure 2-3.	Winter Storm Plan of the Day (WSPOD) format	2-7
Figure 3-1.	NDBC Buoy Locations	3-8
Figure 3-2.	C-MAN Sites	3-9
Figure 5-1.	Results of a strong winter storm--Albany, New York	5-2
Figure D-1.	Reconnaissance code recording form (AWS Form 32)	D-2
Figure F-1.	Air Force track CORONET COAST 01	F-3
Figure F-2.	Air Force track CORONET COAST 02	F-5
Figure F-3.	Air Force track CORONET COAST 03	F-9
Figure F-4.	Air Force track CORONET COAST 04	F-11
Figure F-5.	Air Force track CORONET COAST 05	F-13
Figure F-6.	Air Force track CORONET COAST 06	F-15

LIST OF TABLES

Number	Tables	Page
Table 2-1.	Requirement for aircraft reconnaissance data	2-10
Table 3-1.	Satellites and satellite data availability for the National Winter Storms Operations Plan	3-3
Table 3-2.	Moored buoy payload data	3-10
Table 3-3.	Data from a typical fixed C-MAN station	3-11
Table 4-1.	Reconnaissance organization communications capabilities	4-2
Table D-1.	Reconnaissance code tables	D-3
Table D-2.	Reconnaissance code regulations	D-5
Table F-1.	Flight Plans and Logs for routes CORONET COAST 01/01R	F-2
Table F-2a.	Flight Plans and Logs for route CORONET COAST 02	F-4
Table F-2b.	Flight Plans and Logs for route CORONET COAST 02R	F-6
Table F-3.	Flight Plans and Logs for routes CORONET COAST 03/03R	F-8
Table F-4.	Flight Plans and Logs for routes CORONET COAST 04/04R	F-10
Table F-5.	Flight Plans and Logs for routes CORONET COAST 05/05R	F-12
Table F-6.	Flight Plans and Logs for routes CORONET COAST 06/06R	F-14

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, "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 Oceanography Command (NAVOCEANCOM) is responsible for issuing gale, storm, and high seas warnings for fleet operations and Navy shore installations and Marine Corps operations and installations, as elaborated in the NAVOCEANCOM 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 Air Force Regulation 105-2, "Operational Weather Support".

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 Meteorological Center (NMC), 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 NMC (the NMC 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 data in the form of satellite pictures 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 the National Oceanic and Atmospheric Administration (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 3 of this plan;

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

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

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

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

1.2.3 Department of Transportation (DOT).

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

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

- dissemination of PIREPs and AIREPs and

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

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

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

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

- provide personnel, vessel, and communication support to the National Data Buoy Office 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, on a non-interference with primary mission basis, up to one operational weather reconnaissance sortie 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 on a non-interference with primary mission basis.

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 Coordinator, 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 G.

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 Meteorological Center (NMC) will forward sortie and alert needs to CARCAH through the National Hurricane Center's Tropical Satellite Analysis and Forecasting (TSAF) Unit for tasking in the WSPOD within the responsibilities stated above. The CARCAH will advise NMC of mission availability or nonavailability and expected responsiveness of DOD and DOC assets. The NMC will be responsible for requesting all reconnaissance flights and will provide information as specified in paragraph 2.4.5. The NMC

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 1430Z each day. Vertical observation positions will be identified by NMC 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 will be accepted provided the delay plus the flight plan time does not exceed 13.5 hours. Delays exceeding 13.5 hours may be accepted in extraordinary circumstances.
- When notification is received more than 4 hours prior to scheduled aircraft departure time, departure delay requests will be evaluated in accordance with appropriate flight management directives.

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

2.4.4 Satisfaction of Requirements.

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

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

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

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

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 INDORSEMENT _____ YES ____ NO

_____
(Forecasers Signature)

Figure 2-1. Sample mission evaluation form.

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
Gables One Tower, Room 631
1320 S. Dixie Highway
Coral Gables, FL 33146

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

2.4.5 Reconnaissance Winter Storm Plan of the Day.

2.4.5.1 Coordination. The NMC will coordinate with the appropriate National Weather Service (NWS) field offices as needed and provide WSPOD information (Figure 2-2.) to CARCAH through the TSAF unit by 1430 UTC. Direct discussion in weather situations is also encouraged between the Navy and NMC with respect to storms or storm threats. The East Coast Navy point of contact is the Naval Eastern Oceanography Center (NAVEASTOCEANCEN) through the Norfolk Command Duty Officer. The optimum time of contact is 11:00 a.m. local time. NMC will provide the following data to CARCAH when applicable:

- Track and flight level desired. Specify an alternate altitude to be flown in case the level desired is not feasible due to probable icing or other operational constraints.

- Selected trackpoint (control point) and time the aircraft is required at the point.

- Special observations or dropsonde release points.

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

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

NWSOP COORDINATED REQUEST FOR
AIRCRAFT RECONNAISSANCE

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

_____1. FLIGHT IS DESIRED

A. CONTROL POINT AND CONTROL POINT TIME

_____

B. TRACK NUMBER AND ALTITUDE

_____

C. EXPIRATION TIME OF FLIGHT REQUEST

_____

D. SPECIAL INSTRUCTIONS (SUCH AS DROPSONDE POSITIONS)

_____

_____2. NO FLIGHT IS DESIRED OR PREVIOUSLY REQUESTED FLIGHT IS CANCELED

_____3. SUCCEEDING DAY OUTLOOK

A. ANTICIPATED TRACK NUMBER _____

B. CONTROL POINT AND CONTROL POINT TIME _____

_____

II. TSAF/CARCAH COORDINATION _____

1. TSAF/INITIALS _____

2. NMC FORECASTER INITIALS _____

3. CARCAH DUTY OFFICER INITIALS _____

4. DATE AND TIME _____

III. TSAF DISTRIBUTION: PASS ALL AIRCRAFT RECON REQUESTS, CHANGES OR CANCELLATIONS TO CARCAH IMMEDIATELY.

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

2.4.5.2 Preparation. Using requirements stated by NMC, 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 TCPOD is disseminated under the header "MIA REPRPD."]

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

2.5.1.3 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 (see paragraph 2.5.2).

O/R _____ (DTG)

FM CARCAH CORAL GABLES FL/CARCAH

TO (AFRES/NOAA APPROVED ADDRESSEES)

BT

UNCLAS

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

1. FLIGHT NR ONE

A. _____ (CONTROL POINT/TIME)

B. _____ (MISSION IDENTIFIER)

C. _____ (ETD)

D. _____ (DEPARTURE POINT)

E. _____ (ENROUTE ALTITUDE)

F. _____ (TRACK)

G. _____ (EXPIRATION TIME OF REQUIREMENT)

H. _____ (DROPSONDE POSITIONS)

I. _____ (REMARKS)

_____

2. OUTLOOK FOR SUCCEEDING DAY

A. _____ (ANTICIPATED TRACK)

B. _____ (CONTROL POINT)

C. _____ (CONTROL POINT TIME)

BT

NNNN

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

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

2.5.2.1 Prior Coordination. In addition to filing a flightplan, Current Operation (815WS/DOO) will submit an Altitude Reservation Approval Request (ALTRV APREQ) to the FAA's Central Altitude Reservations Function (CARF) and DSN 851-1971/72 or commercial (202) 267-9416 at least 12 hours prior to departure and relay the following:

- Mission call-sign
- Estimated time over start six
- Storm track(s) to be flown (by designator ID)
- Location of dropsonde release points
- Requested altitude(s) if other than FL290B310
- Any requests for deviation 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. 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.

2.5.5 Air Traffic Control (ATC).

2.5.5.1 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.

2.5.5.2 Assigned Altitudes. When storm aircraft cannot maintain assigned altitudes due to turbulence, ATC should be advised. Normal vertical separation of 1000 ft. at flight level (FL) 290 and below and 2000 ft 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.

2.5.5.3 Military Clearance. For the east coast storms, the U.S. Navy through Commander in Chief, Atlantic Fleet Oceanic Aircraft Coordinator (CINCLANTFLT OAC) will review the WSPOD for each proposed flight to determine if clearance into a particular area will be required. For the west coast storm trails, 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.

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

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

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

EXAMPLE: AF987 TRACK 01 OB01
97779... 93/// DPTD KBIX 10/0845Z ETA 37.3N 72.3W
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 05 0&06
97779... 91///
95559...Last Report ETA KMIA 17/2300Z OBS 01 THRU 06 TO KMIA

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)). Horizontal observations are specified on the tracks. Intermediate observations will be appended to each horizontal observation. (No intermediate observations required on tracks 01-08)	+- 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 Observations
- Federal Meteorological Handbook No. 2, Synoptic Observations
- Federal Meteorological Handbook No. 4, Radiosonde Code
- Federal Meteorological Handbook No. 7, Weather Radar Observations
- Federal Meteorological Handbook No. 11, Doppler Radar (Part A, B, C, and D)
- Operations of the National Weather Service
- Federal Plan for Environmental Data Buoys
- The GOES User's Guide and operational amendments
- The NOAA Polar Orbiter Data Users Guide
- National Operations Plan for Drifting Data Buoys
- The Coastal Marine Automated (C-MAN) NWS Users Guide

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 consists of one operational satellite, GOES-7 located over the equator at 112 degrees west. Future movements of GOES-7 are being evaluated by NESDIS and NWS personnel. The principal GOES products (see Table 3-1) are one-half hourly pictures with implanted grids automatically applied to all sectors. During the daylight hours, 1, 2, 4 km 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. Also, 14km resolution sectors of Water Vapor are available half-hourly.

3.2.1.2 NOAA Polar-Orbiting Satellites. Currently, NOAA-12 and NOAA-11 provide data for direct readout (Automatic Picture Transmission (APT)) and High Resolution Picture Transmission (HRPT). Digital data acquired from the polar orbiting satellites 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-3 and Meteosat-4 are currently positioned to provide substantial geostationary satellite coverage of the Atlantic Ocean, and the Americas.

A. Through an international agreement with NOAA, ESA/EUMETSAT, Meteosat-3 was relocated to a viable position at 75°W, in late February 1993, yielding improved utility of the data. This new geostationary satellite support to NOAA is denoted as the Extended Atlantic Data Coverage (XADC) mission.

B. Meteosat-3 at 75°W will reflect in a limited fashion, a GOES-East operation, supplementing GOES-7 data and providing pertinent data of the CONUS and the abutting waters of the Atlantic and Pacific Oceans. Also as a result of this relocation, imagery employed from the Meteosat 3 spacecraft will also eliminate the parallax effect induced by a geostationary satellite situated at 75°W, particularly in the northeast U.S., where it is most evident.

C. For meteorological application, digital Meteosat-3 data are transmitted to the National Hurricane Center in Coral Gales, Florida, National Severe Storms Forecast Center, Kansas City, and to NESDIS' Synoptic Analysis Branch in Camp Springs, Maryland. Meteosat-3 WEFAX products generated in Europe are continuously available for retransmission on widely used GOES-Tap circuits and direct readout acquisition. Supplementing these WEFAX and existing GOES products is a suite of newly designed Meteosat-3 sectors generated by the new GOES Sectorizer System for GOES-Tap distribution in near-real-time. Excluding specialized visible sectors of 2.5 km resolution, standard resolution of Meteosat-3 data is 5 km for all its image formats, visible, infrared, and water vapor. For GOES-Tap application, infrared sectors of equivalent 2.5 km and 1.25 km resolutions are produced. Full disk Meteosat-3 GOES-Tap is set at 6.25 km resolution.

Table 3-1. Satellites and satellite data availability for the National Winter Storms Operations Plan

Geosynchronous Orbit

SATELLITE	TYPE OF DATA	LOCAL TIME*	REMARKS
GOES-7	VISSR/VAS	Every 30 min (24 hours/day) Limited scan for short interval viewing available)	1. 1, 2, and 4 km resolution visible standard sectors covering Western, Midwest and E. Pacific Ocean 2. 7 km resolution equivalent IR standard sectors for entire U.S. (night) 3. Equivalent IR-enhanced imagery 4. Full disc IR (day/night) 5. Animated imagery 6. Wind analysis 7. Cloud top heights 8. Rainfall/snowfall estimates 9. Satellite information messages 10. VAS soundings 11. 14 km resolution water vapor imagery 12. Interactive Moisture Analysis
METEOSAT-3 (Replaced by METEOSAT-5 in Feb. 1994)	IR	Every 30 min (24 hours/day)	1. 5.0 km visible resolution. 2. 5 km resolution equivalent IR. 3. Equivalent IR-enhanced imagery. 4. Cloud top heights. 5. Rainfall/snowfall estimates. 6. Satellite information messages. 7. 5 km resolution water vapor imagery. 8. Cloud Motion Winds. 9. Interactive Moisture Analysis. 10. No Sounder. 11. No RISOP. 12. 2.5 km visible resolution with METEOSAT-5.
	VI	Available every 30 min from 1100-2330 UTC.	
	WV	Every hour when visible data is available (1100-2330 UTC)	

Table 3-1. Satellites and satellite data availability for the National Winter Storms Operations Plan (continued)

Polar Orbit

SATELLITE	TYPE OF DATA	LOCAL TIME*	REMARKS
NOAA-12	AVHRR GAC and LAC (recorded) HRPT and APT (direct) TOVS	0735D/1935A	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-11		0314D/1514A	
DMSP F-11	OLS(SGDB), SSM/T-2, SSM/I, SSM/T	0500D/1700A	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
F-10	OLS(SGDB), SSM/T, SSM/I	0855D/2055A	

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

D. Due to the availability of a younger, healthier satellite, another spare back-up ESA/EUMETSAT spacecraft, Meteosat-5 will be moved and assume the XADC mission (75°W) in February 1994. An improvement over Meteosat-3, its two dissemination channels allow increased product transmissions of digital and WEFAX data. The formats and resolution of the broadcasted data are the same as Meteosat-3. When positioned, Meteosat-5 data will replace the GOES-Tap function of Meteosat-3.

3.2.1.4 SFDFs and the Synoptic Analysis Branch (SAB). Under the NESDIS support concept, satellite imagery in support of the National Winter Storms Operations Plan is distributed by the Environmental Satellite Distribution/Interactive Processing Center at Camp Springs, Maryland, to the SFDFs, SAB, NMC, 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 NMC and NWS field sites. Internally, at the NOAA Science Center, SAB meteorologists provide satellite interpretation and anaylyses to NMC 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 NMC 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. Satellite products and services to the NWS field offices are also provided by all of the regional SFDFs. In addition, Satellite Interpretation Messages (SIM) are available through the NWS AFOS communications system and the Federal Aviation Administration's (FAA) leased Service A and Radar Report and Warning Coordination (RAWARC) teletype circuits. All WSFOs receive these automatically as transmitted from the SFDFs. The heading and issue times for the SIMs are listed below. Times are subject to change and SIMs may be updated as required by changing weather.

NWS	FAA	ISSUE TIME (UTC)
NFDSIMPSM	TBXX6 KWBC	0100, NONE 1300, 1900
NFDSIMASM	TBXX6 KWBC	0100, NONE, 1300, 1900
MKCSIMMKC	TBSS6 KMKC	0030, 0600, NONE, 1800
MIASIMMIA	TBXX7 KMIA	0300, 0900, 1500, 2000

3.2.1.5 Points of contact 24 hours/day.

- Miami SFDF 305-665-4707
- Kansas City SFDF 816-426-5345
- NMC Washington, DC 301-763-8298
- SAB 301-763-8678

3.2.2 Department of Defense (DOD) Defense Meteorological Satellite Program (DMSP). The DMSP routinely has two satellites collecting meteorological imagery and vertical temperature profile data. One satellite is in an early morning-early evening orbit with approximately 0500/1700 local equator crossing time. The second is in a mid-morning/mid-evening orbit with approximately 0900/2100 local equator crossing time. The DMSP data capabilities in the area of concern are provided in Table 3-1. Special requests for DMSP support will be addressed to CARCAH.

3.3 Automated Environmental Observations

3.3.1 General. Moored buoys in the Atlantic and Pacific Oceans, Gulf of Mexico, and Great Lakes obtain data on meteorological and oceanographic parameters for operational and research purposes. See Figure 3-1 for the location of moored buoys. Coastal Marine Automated Network (C-MAN) stations provide additional marine observations. See Figure 3-2. for locations of C-MAN sites. The status and capability of data buoys can be obtained from the Data Systems Division, National Data Buoy Center (NDBC), Stennis Space Center, MS 39529; telephone 601-688-2836.

3.3.2 Moored Data Buoys and Coastal Marine Automated Network.

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

3.3.2.2 Communications. Data are transmitted by ultra high frequency (UHF) communications via the GOES satellite to NESDIS and then are relayed to National Weather Service Telecommunications Gateway (NWSTG) for processing and dissemination. Data from

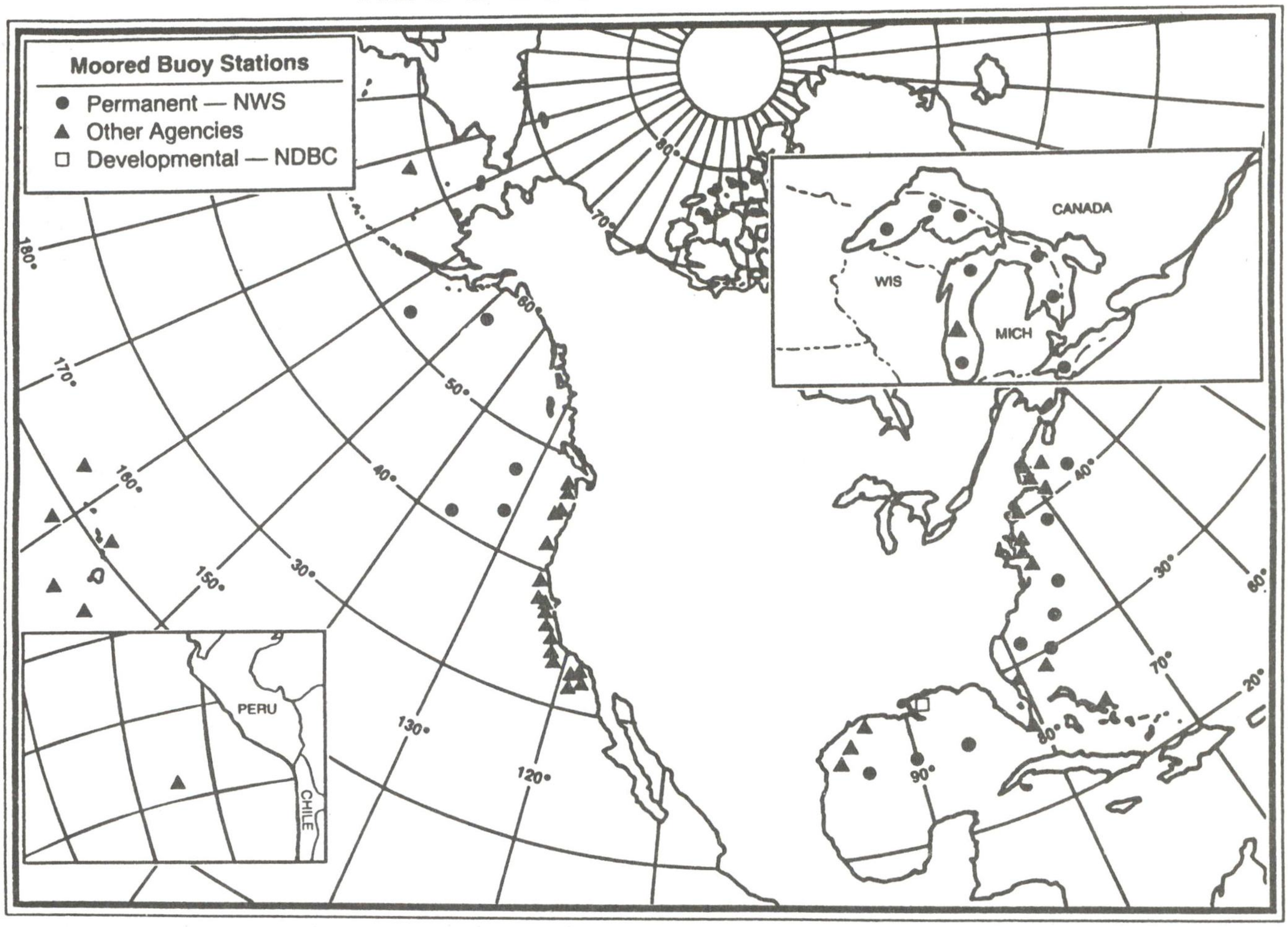
buoys are formatted into World Meteorological Organization (WMO) FM13-IX SHIP code and from C-MAN sites in FM12-IX SYNOP code.

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 are expected to be deployed in the North Central Pacific from 25°N to 45°N, and 170°W to 170°E in September 1993.

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 FM14-IX DRIBU code.

NDBC BUOY LOCATIONS



MKB 7/93

Figure 3-1. Map showing the location of NDBC moored buoys and USCG Navigational Buoys. Most stations denoted by ▲ are temporary buoys supported by other agencies for specific projects and time periods.

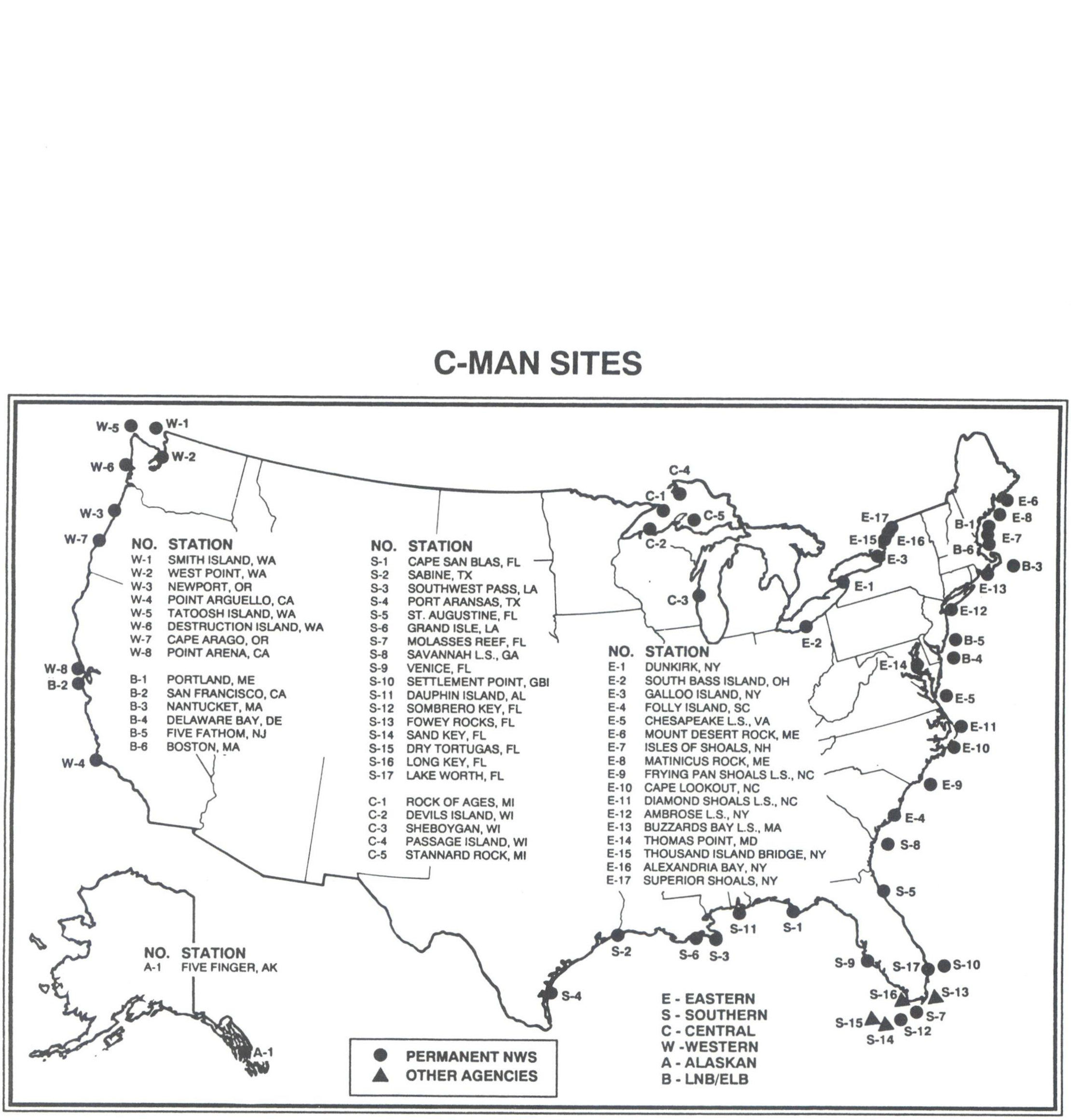


Figure 3-2. Map showing the location of NDBC fixed C-MAN stations in North America, including USCG Navigational Buoys.

Table 3-2. Moored buoy payload data.

Parameter	Reporting Range	Reporting Resolution	Sample Interval	Sample Period	Total System Accuracy
Wind Speed	0 to 62 m/s	0.1 m/s	1 sec	8-10 min**	± 1m/s or 10%
Wind Direction	0 to 360°	1°	1 sec	8-10 min**	± 10°
Peak Wind	0 to 82 m/s	1 m/s	1 sec	8-10 min**	± 1m/s or 10%
Air Temperature	-40° to 50°C	0.1°C	90 sec	8-10 min	± 1°C
Barometric pressure	900 to 1100hPa	0.1 hPa	4 sec	8-10 min	± 1 hPa
Surface Water Temperature	-7° to 41°C	0.1°C	1 sec	8-10 min	± 1°C
Solar Radiation*	0 to 2150 Watts/M^2	0.5 Watt/M^2	1 sec	8-10 min	± 5%
Relative Humidity*	0 to 100%	0.1%	1 sec	8-10 min	± 6%
Significant Wave Height	0 to 35 m	0.1 m	0.39 sec	20 min	± 0.2 m or 5%
Wave Period	3 to 30 sec	0.1 sec	0.39 sec	20 min	± 1 sec
Nondirectional wave spectra	0.03 to 0.35 Hz	0.01 Hz	0.39 sec	20 min	---
Directional Waves*	0.03 to 0.35 Hz	0.01 Hz	0.5 sec	20 min	± 5°

* Parameter reported on selected buoys
** Continuous winds measured on selected buoys

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	1.0 kt	2 min	± 2.0 kt or 5%
Peak Wind (Highest 5-Sec Running Average)	0 to 160 kt	1.0 kt	2 min	± 2.0 kt or 5%
Barometric Pressure	900 to 1100 hPa	0.1 hPa	2 min	± 1.0 hPa
Sea Surface Temperature**	-5° to +40°C	0.1°C	1 min	± 1.0°C
Water Level**	0 to 99.99 ft	0.01 ft	3 min	± 0.1 ft
Significant Wave Height**	0 to 35 m	0.1 m	20 min	0.5 m or ± 5%
Wave Period**	2.5 to 35 sec	1 sec	20 min	± 1 sec
Non-directional Wave Spectra**	0.01 to 0.40 Hz	.01 Hz	20 min	0.2 m or ± 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 Naval Oceanographic Data Distribution and Expansion System (NODDES), and the Joint Operational Tactical System (JOTS) will be used to disseminate gale, storm and high seas warnings. The Fleet Numerical Oceanography Center/National Meteorological Center 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 NMC on the Coast Guard Data Network (CGDN). NMC 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 900, 6010 Executive Blvd. Rockville, MD 20852		DSN 851-1460 301-770-3464
CARCAH/Miami Monitor	National Hurricane Center Gables One Tower, Rm. 631 1320 S. Dixie Highway Coral Gables, FL	A B C	305-661-5076 DSN 434-3420 (305-536-5547)
National Hurricane Center	Gables One Tower 1320 Dixie Highway Coral Gables, FL	A B C	305-667-3108
Alternate National Hurricane Center	NMC/Meteorological Operations Division Washington, DC	A B C	301-763-8201
Central Pacific Hurricane Center	P.O. Box 29879 Honolulu, HI	C	808-836-1831
Naval Eastern Oceanography Center[1]	NAVEASTOCEANCEN Norfolk, VA	A	DSN 564-7750/3770 804-444-7750/3770
Naval Western Oceanography Center[2]	NAVWESTOCEANCEN Pearl Harbor, HI	A	DSN 315-471-0145 808-471-0145
Aircraft Operations Center	AOC Tampa, FL		813-830-3310
AF Global Weather Central	AFGWC Offutt AFB, NE		DSN 271-2586 402-291-2586
FACSFAC VACAPES OAC	FACSFAC VACAPES, Oceana, VA		DSN 433-2851 (804) 433-2851 x-233
815 WS[3]	815 WS[1] Keesler AFB, MS	A	DSN 597-2409/4318 601-377-2409/4318

A - COMEDS/AWDS

B - AFTN

C - AFOS

[1] Will be renamed Naval Atlantic Meteorology and Oceanography Center in FY94.

[2] Will be renamed Naval Pacific Meteorology and Oceanography Center in FY94.

[3] 815 WS will be renamed 53WRS in FY 94

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 (see Figure 5-1), 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 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 900, 6010 Executive Boulevard
  Rockville, MD 20852



Figure 5-1. Results of a strong winter storm--Albany, New York.

APPENDIX A

ABBREVIATIONS

-A-

ADWS	Automated Digital Weather Switch/System
AF	Air Force (U.S. Air Force)
AFB	Air Force Base
AFCC	Air Force Communications Command
AFGWC	Air Force Global Weather Central
AFOS	Automation of Field Operations and Services
AFRES	Air Force Reserve
AFTN	Aeronautical Fixed Telecommunications Network
A/G	Air to Ground
AIRMET	Airmen's Meteorological Information Bulletin
AIREP	Aircraft Report
ALTRV APREQ	Altitude Reservation Approval Request
AMVER	Automated Mutual Assistance Vessel
AOC	Aircraft Operations Center
APT	Automatic Picture Transmission
ARINC	Aeronautical Radio, Incorporated
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
AUTODIN	Automated Digital Network (DOD)
AUTOVON	Automated Voice Network (DOD)
AV	AUTOVON (Also Defense Switched Network (DSN))
AVHRR	Advanced Very High Resolution Radiometer
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
Det	Detachment
DMSP	Defense Meteorological Satellite Program
DOC	Department of Commerce
DOD	Department of Defense
DOT	Department of Transportation
DRSR	Direct Readout Scanning Radiometer
DSN	Defense Switched Network (Also called AUTOVON)
DTG	Date Time Group

-E-

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

-F-

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

-G-

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

-H-

HF	High Frequency
Hr	Hour
HRPT	High Resolution Picture Transmission

-I-

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

J

JOTS	Joint Operational Tactical System

-K-

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

-L-

LAC	Local Area Coverage
LF	Light Fine

-M-

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

-N-

NASA	National Aeronautics and Space Administration
NAVEASTOCEANCEN	Naval Eastern Oceanography Center
NAVLANTMETOCCEN	Naval Atlantic Meteorology and Oceanography Center (Future name of Naval Eastern Oceanography Center)
NAVMETOCCOM	Naval Meteorology and Oceanography Command (Future name for NAVOCEANCOM)
NAVMETOCCOMDET	Naval Meteorology and Oceanography Command Detachment (Future name for Naval Oceanography Command Detachment)
NAVMETOCCOMFAC	Naval Meteorology and Oceanography Command Facility
NAVOCEANCOM	Naval Oceanography Command
NAVPACMETOCCEN	Naval Pacific Meteorology and Oceanography Center (Future name for Naval Western Oceanography Center)
NAWAS	National Warning System
NAVWESTOCEANCEN	Naval Western Oceanography Center
NDBC	National Data Buoy Center
NESDIS	National Environmental Satellite, Data, and Information Service
NHC	National Hurricane Center
NMC	National Meteorological Center
nmi	nautical miles(s)
NOAA	National Oceanic and Atmospheric Administration
NODDS	Naval Oceanographic Data Distribution System
NODDES	Naval Oceanographic Data Distribution and Expansion System
NSSFC	National Severe Storms Forecast Center
NSSL	National Severe Storms Laboratory (NOAA)
NWSTG	National Weather Service Telecommunications Gateway

-O-

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

-P-

Pa	Pascal
PIREP	Pilot Report

-R-

RAREP	Radar Report
RECCO	Reconnaissance Code

-S-

SAB	Synoptic Analysis Branch
SAR	Search and Rescue
SARLANT	Search and Rescue Atlantic Circuit
SCAT	Satellite Cloudtop and Tropopause
SFDF	Satellite Field Distribution Facility
SFSS	Satellite Field Service Station
SIGMET	Significant Meteorological Information
SSB	Single Sideband
SSC	Stennis Space Center
SSM/I	Special Sensor Microwave/Imagery

-T-

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

-U-

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

-V-

VAS	VISSR Atmospheric Sounder
VISSR	Visible and Infrared Spin Scan Radiometer

-W-

WBC	Identifier for NMC
WG	Working Group

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

X

XADC	Extended Atlantic Data Coverage

-Z-

Z	Zulu Time (UTC)

APPENDIX B

DISTRIBUTION

DEPARTMENT OF COMMERCE

Mr John Bunting, Regional Office of Audits	1

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Asst Administrator for Ocean Services and Coastal Zone Management (N)	1
Director, Office of Public Affairs, NOAA (PA)	2
Director, Office of Meteorology W(OM)	1
Chief, Warning and Forecast Branch	20
Director, Office of Climate and Atmospheric Research (R)	1
Director, Office of NOAA Corps (NC)	1
Director, Program Development and Coordination Staff (R/PDC)	1
NOAA Library	4
Director, National Meteorological Center	5
Chief, Development Division, NMC	1
Chief, Satellite Services Division, NESDIS (E SP2)	1
Director, National Data Buoy Center	3
Director, National Hurricane Center	5
Director, NWS Eastern Region	20
Director, NWS Central Region	2
Director, NWS Southern Region	5
Director, NWS Western Region	2
WSFO, Boston, MA	1
WSFO, San Juan, PR	1
WSFO, San Francisco, CA	1
WSFO, New Orleans, LA	5
Director, Office of Aircraft Operations	5
Director, Environmental Research Laboratories (R/E)	1
Director, Environmental Research Laboratories (Boulder)	3
Director, Environmental Research Laboratories (Miami)	3
Director, National Climatic Data Center	2
Deputy Asst Administrator for Information Services (E)	10
Asst Admin for Environmental Satellite, Data, and Information Services (FB4)	1
NOAA Budget Officer, Office of Management and Budget	1

DEPARTMENT OF DEFENSE

DEPARTMENT OF THE AIR FORCE

HQ USAF/XOWX	4
AQ AMC/XOW	2
HQ AWS/DO	6
HQ USAF/XOOOW	1
AWS Technical Library	1
HQ PACAF/DOW	1
374 OSS/WE	1
15 WS/CC	1
HQ USAFE/DOW	1
HQ USSTRATCOM/J-3615	1
HQ ATC/DOTW	1
HQ AFSPACECOM/DOW	1
HQ AFMC/DOW	1
45 WS/CC	3
45 SPW	1
45 XP	1
45 SE	1
HQ ACC/DOW	1
AFGWC/DO	5
Det 7, AFGWC	1
HQ AFRES/DOTM	3
HQ 4AF/DO	3
815 WS (Future name - 53WRS)	40
334 TTS/PTMV	1
Phillips Lab/GP	1
CARCAH (OLA, 815 WS)	10

DEPARTMENT OF THE ARMY

Hq Department of the Army/DAMI-POI	2

DEPARTMENT OF THE NAVY

NRL SSC	1
Commandant of the Marine Corps (DC/S Aviation)	5
Oceanographer of the Navy	2
Commanding Officer, Naval Oceanographic Office	50
Commander, Tactical Wing Atlantic	1
Commanding Officer, NAVEASTOCEANCEN	1
CINCLANT (J37)	1

CINCLANTFLT (N37, N526)	2
NRL Monterey	1
Mr William F. Cross, ONR	1

OFFICE OF THE JOINT CHIEF OF STAFF

The Joint Staff/Director (J33 & J36)	2

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

FT Worth ARTCC	3
Boston ARTCC	3
Seattle ARTCC	3
Atlanta ARTCC	3
Los Angeles ARTCC	3
FAA Air Traffic Manager, Nashua, NH	1
FAA Regional Air Traffic Division, ANE-500, Burlington MA	1
FAA Regional Air Traffic Division Manager, AEA-500, NY	1
FAA Air Traffic Manger, LI, NY	3
FAA ATM 200, Washington DC	5
FAA Air Traffic Service, ATR-130	12
FAA Air Traffic Manager, Leesburg, VA	3
FAA Air Traffic Division, ASO-500, Atlanta, GA	1
FAA Air Traffic Manager, Hillard, FL	3
FAA Air Traffic Manager, Miami ARTCC	3
FAA Regional Traffic Division, ASW-500	1
FAA Air Traffic Manager, Houston, TX	3
FAA Regional Air Traffic Division, AWP-500, LA, CA	1
FAA Air Traffic Manager (TMO, NWS, MLS) Albuquerque, NM	3
FAA Air Traffic Manager, Fremont, CA	3
FAA Regional Air Traffic Division, ANW-500, Renton, WA	1
Miami AIFSS (QAS)	2

U.S. COAST GUARD

Commandant, USCG Headquarters (NIO)	1
Commandant, USCG Headquarters (TTM)	1
Commander, Atlantic Area, USCG	1
Commander, First Coast Guard District	1
Commander, Fifth Coast Guard District	2
Commander, Seventh Coast Guard District	2
Commander, Eighth Coast Guard District	1

Commanding Officer, USCG Reserve Training Center	1
Commanding Officer, USCG Aviation 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, NJ	1
Commander, Pacific Area, U.S.C.G. (PO), Alemeda, CA	1

DEPARTMENT OF AGRICULTURE

Dr Thomas J. Jackson, USDA/ARS	1

DEPARTMENT OF STATE

Mr. Jeffrey Maclure	1

DEPARTMENT OF THE INTERIOR

Chief, Science and Technology Staff	1
Mr Lewis T. Moore, Bureau of Reclamation	1

FEDERAL EMERGENCY MANAGEMENT AGENCY

National Preparedness Programs	1
FRC Region I	1

NATIONAL SCIENCE FOUNDATION

Head, Atmospheric Research Section	1
Dr Ronald C. Taylor, Director, Meteorology Program	1

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Mr John W. Kaufman, Atmospheric Sciences Division, MSFC	1

OTHER U.S.

GSA Federal Information Center	1

Dr Richard A. Dirks, GALE Project Office, NCAR	1
Dr Carl W. Kreitzberg, ERICA Project Office, Drexell	2
Roddenbery Memorial Library, Cairo, GA	1
Dr Robert E. Morrison, 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

Atmospheric Environment Service	1
Officer in Charge, METOC Centre, Maritime Command Headquarters, Halifax, NS	1
Director, Canadian Meteorological Centre, Downsview, ON	1
Base Meteorological Officer, CFB Greenwood, NS	1

UNITED KINGDOM

Dr S.J. Caughey, Assistant Director, Head of Defence 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. Areas for Storm reconnaissance off the west coast are being coordinated by AFRES and NOAA for testing during the winter of 1991-92.

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 accumulation in 24 hours in most areas of the country, but some variation in the snowfall criterion is allowable on a regional basis).

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

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

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

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

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

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

Winter Storm Plan of the Day. A coordinated mission plan that tasks operational weather reconnaissance requirements during the next 050OZ to 050OZ day; describes reconnaissance flights committed to satisfy operational requirements and identifies possible reconnaissance requirements for the succeeding 24-hour period.

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

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

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

APPENDIX D

RECCO FORM, CODE TABLES AND REGULATIONS

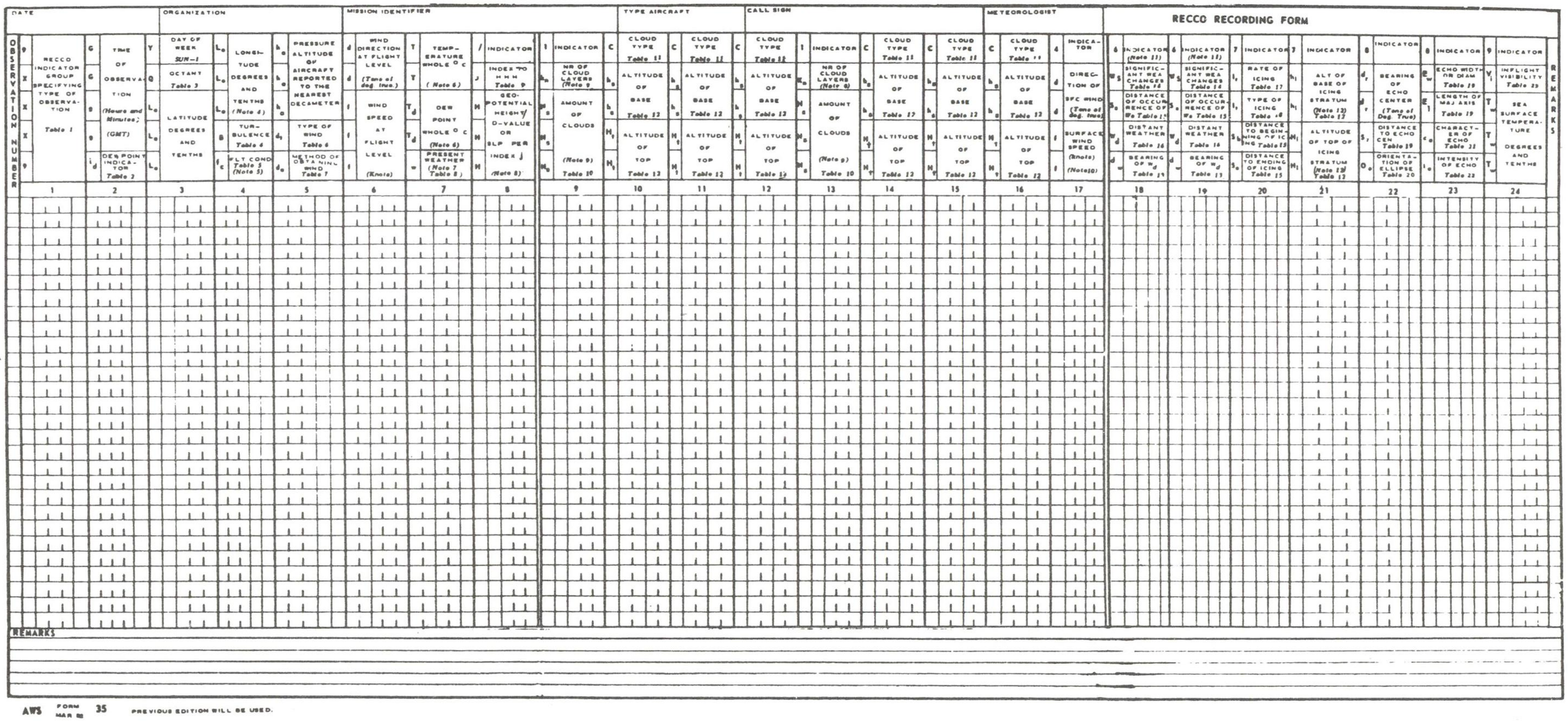


Figure D-1. Reconnaissance code recording form.

Table D-l. 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 capabilities

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° - 180° W	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

I 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 (continous or intermittent precip - from strata 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 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 Statocumulus (Sc)

7 Stratus (St)

8 Cumulus (Cu)

9 Cumulonimbus (Cb)

/ Cloud type unknown due to darkess 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 l00 ft

02 200 ft

03 300 ft

etc, etc

49 4,900 ft

50 5,000 ft

51-55 Not used

56 5,600 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		
1	NE	7	NW
2	E	8	N
3	SE	9	all directions
4	S		
5	SW		
6	W		

TABLE 14 W_s

0 No change

1 Marked wind shift

2 beginning or ending of marked turbulence

3 Marked temperature change (not with altitude)

4 Precipitation begins or ends

5 Change in cloud forms

6 Fog or ice fog bank begins or ends

7 Warm front

8 Cold Front

9 front, type not specified

TABLE 15 $S_b S_e S_s$

0 No report

1 Previous position

2 Present position

3 30 nautical miles

4 60 nautical miles

5 90 nautical miles

6 120 nautical miles

7 150 nautical miles

8 180 nautical miles

9 More than 180 nautical miles

/ Unknown (not used for S_s)

Table D-1. Reconnaissance code tables (continued)

TABLE 16 w_d

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

TABLE 17 I_r

7 Light
8 Moderate
9 Severe
/ Unknown or contrails

TABLE 18 I_t

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

TABLE 19 S_r, E_w, E_l

0 0NM
1 10NM
2 20NM
3 30NM
4 40NM
5 50NM
6 60-80NM
7 80-100NM
8 100-150NM
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 RJTY, OBS 09 and 10 to RPMK."

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 given as 02, the distinction between -52°C and 2°C being made from i_d. Missing 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 -52°C.

7. When two or more types of w co-exist, the type with the higher code figure will be reported. Code Figures 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 9, 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 BREAKDOWN

CODE FORM:

PART A

SECTION 1	$M_iM_iM_jM_j$	$YYGGI_d$	$99L_aL_aL_a$	$Q_cL_oL_oL_oL_o$	$MMMUL_aU_{Lo}$
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	$88P_tP_tP_t$ or 88999	$T_tT_tT_{at}D_tD_t$	$d_td_tf_tf_tf_t$		
SECTION 4	$77P_mP_mP_m$ or $66P_mP_mP_m$ or 77999	$d_md_mf_mf_mf_m$	$(4V_bv_bv_av_a)$		

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) = 01,02 etc. When wind data are included (Dropwindsonde observation), 50 is added to YY.

GG Actual time of the observation, to the nearest whole hour (GMT).

1_d Highest level for which wind is available. 7 = 700mbs, 5 = 5000mbs, etc. If flight level is above a standard surface, for example 495, report a 5 for 500 MBs in the 1_d group. When no winds are reported in any part of the message encode as "/"

99 Indicator for aircraft position

$L_aL_aL_a$ 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. i.e., 7 = NW, 1 = NE, 3 = SW, 5 = SE.

$L_oL_oL_oL_o$ 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 surface
$P_oP_oP_o$	Pressure in whole millibars, thousands digits omitted. ($P_oP_oP_o$ is always surface level)
P_1P_1 ... P_nP_n	Pressure of mandatory standard isobaric surfaces in units of tens of millibars. (1000mbs=00, 850mbs=85, 700mbs=70, etc.)
$h_1h_1h_1$ ... $h_nh_nh_n$	Height of the mandatory pressure level in geopotential meters or decameters above the surface. Encoded in meters up to 501mbs; Encoded in decameters above 501mbs. 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 degress. Celsius, at specified levels beginning with surface.
T_{ao}	Approximate tenths value and sign (plus or minus) of the air
T_{a1} ... T_{an}	temperature. Even = plus 0dd = 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 depression of 5.0 through 5.4 as 50; Encode depressions of 5.5 through 5.9 as 56. Dewpoint depressions of 6.0 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 -40°C report D_nD_n as two solidi.
d_od_o d_1d_1 ... d_nd_n	True direction (rounded off to nearest 5 degrees) in tens of degrees. from which the wind is blowing. (Dropwindsonde)
$f_of_of_o$ $f_1f_1f_1$ ... $f_nf_nf_n$	Wind speed in knots (Dropwindsonde)

[NOTE: When flight level is just above a mandatory surface (Dropwindonde) and, in the operator's best meterological judgement, the winds are representative of the winds at the mandatory surface, then the operator may encode the mandatory surface winds using the data from flight level. If the winds are not representative, then encode /////.]

SECTION 3 - DATA FOR TROPOPAUSE LEVELS

88	Indicator for tropopause data.
$P_tP_tP_t$	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	Dewpoint depression at the tropopause level.
d_td_d	True direction (rounded off to the nearest 5 degrees), in tens of degrees, from which the wind is blowing at the tropopause level.

$f_tf_tf_t$	Wind speed, in knots, at the tropopause level
88999	Tropopause data not available.

SECTION 4 - MAXIMUM WIND DATA

66	Indicator that data for maximum wind level and for vertical wind shear follow (the top of the wind sounding corresponds to the highest wind speed observed throughout the descent.)
77	Indicator that data for maximum wind level and for vertical wind shear follow (maximum wind level does not coincide with the top of the wind sounding.)
$P_mP_mP_m$	Pressure at maximum wind level in whole millibars
d_md_m	True wind direction (rounded off to nearest 5 degrees), in tens of degrees, from which the maximum wind is blowing.
$f_mf_mf_m$	Maximum wind speed in knots
4	Indicator for vertical wind shear data
v_av_a	Absolute value of vector difference between max wind and wind blowing 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.
v_bv_b	Absolute value of vector difference between max wind and wind blowing 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.

CODE FORM:

PART B

SECTION 1 $M_iM_iM_jM_j$ YYGG/ $99L_aL_aL_a$ $Q_cL_oL_oL_oL_o$ $MMMUL_aU_{Lo}$

SECTION 5

$n_0n_0P_0P_0P_0$ $T_0T_0T_{a0}D_0D_0$

$n_1n_1P_1P_1P_1$ $T_1T_1T_{a1}D_1D_1$

....

$n_nn_nP_nP_nP_n$ $T_nT_nT_{an}D_nD_n$

SECTION 6

21212 $n_0n_0P_0P_0P_0$ $d_0d_0f_0f_0f_0$

$n_1n_1P_1P_1P_1$ $d_1d_1f_1f_1f_1$

....

$n_nn_nP_nP_nP_n$ $d_nd_nf_nf_nf_n$

SECTION 9 51515 10166 10167 10190 10191

PART B

SECTION 1 - IDENTIFICATION AND POSITION

M_jM_j	Identification letters of the part of the report = BB
/	Filler figure for YYGG group

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

SECTION 5 - DATA FOR SIGNIFICANT TEMPERATURE AND RELATIVE HUMIDITY LEVELS

n_0n_0 Number of level, starting with surface level. Only surface level will be numbered as "00". When a mandatory level is also
n_1n_1 selected as significant, repeat the level in section 5. Encode significant levels n_nn_n to indicate missing data as nn/// /////.
...
n_nn_n

$P_0P_0P_0$ 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

51515 Additional data in regional code follow.

10166 Geopotential data are doubtful between the following levels. $P_nP_nP'_nP'_n$. 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 are doubtful, a 10166 is reported for the entire run.

10167 Temperature Data are doubtful between the following levels: $0P_1P_1P_2P_2$

This code figure shall be reported when only temperature data are doubtful for a portion(s) of the descent. If the 10167 group is reported a 10166 will also be reported.

EXAMPLE: Temperature is missing from 540mbs to 510mbs. SLP is 1020mbs. The code would be 10166 00251 10167 05451.

10190 Extrapolated altitude data follows:

(1) When the sounding begins within 25 mbs 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.

EXAMPLES: Assume the release was made from 310 mbs and the 300 mb height was 966 decameters. The last reported standard level in Part A is the 400 mb level. The data for the 300 mb level is reported in Part B as 10190 30966.

(2) When the sounding does not reach surface, but terminates within 25 mbs 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 PnPnhnhnhn (aircraft reference).

EXAMPLE: Assume termination occurred at 980 mbs and the extrapolated height of the 1000 mb level was 115 meters. The 1000 mb 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 850 mbs and surface pressure is reported in Part A as $99P_0P_0P_0$///// and Part B as $00PP_0P_0P_0$ /////. 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

Table F-1. Flight plans and logs for routes CORONET COAST01/01R. These are for planning purposes only. Do not use for navigation.

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST01
Ref: IC-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE	TAKE-OFF, CLIMB, CRUISE DATA Climb: 19000 Cruise: 280T temp: -23C wind: FF: 4772

FREQUENCIES

DEP FIELD DATA	TOT DIST	TOT ETE	TOT FUEL
	2638.9	9+47.4	40275

TP	ROUTE FIX	FREQ	LAT LON	MH MC	DIST	CAS GS	ETE ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		48700
	DIR	100	N 3043.55	055	34.7	211C	+10.6		1254
	SJI	115.3	W08821.55	055	34.7	280G	00:10.6		47446
	L/O @ 19000		N 3045.85	044	5.9	211C	+01.8		214
			W08815.11	044	40.6	280G	00:12.4		47231
	J37	58	N 3213.33	044	131.7	211C	+28.2		2245
	MGM	112.1	W08619.18	044	172.4	280G	00:40.7		44986
	J37	104	N 3502.02	048	276.7	211C	+39.3		4691
	SPA	115.7	W08155.63	048	449.1	280G	01:40.0		40296
	L/O @ 25000		N 3505.66	073	24.0	191C	+06.9		588
			W08126.50	073	473.1	280G	01:46.8		39708
	DIR	119	N 3552.35	073	137.7	191C	+29.5		2019
	RDU	117.2	W07847.02	073	610.8	280G	02:16.3		37689
	J209	125	N 3558.60	087	52.8	191C	+11.3		767
	TYI	117.8	W07742.25	087	663.6	280G	02:27.6		36921
	DIR	71	N 3803.38	045	164.8	191C	+35.3		2387
	SML	112.4	W07527.85	045	828.4	280G	03:02.9		34534
	J174	83	N 4055.13	047	225.2	191C	+48.3		3233
	HTO	113.6	W07219.03	047	1053.6	280G	03:51.2		31301
	DIR	109	N 4116.90	091	106.0	191C	+22.7		1503
	ACK	116.2	W07001.63	091	1159.6	280G	04:13.9		29798
	L/O @ 30000		N 4112.15	108	29.7	174C	+07.9		565
			W06922.00	108	1189.3	280G	04:21.8		29233
	J62		N 4108.00	108	107.3	174C	+23.0		1393
	POGGO/DROP		W06659.97	108	1296.6	280G	04:44.8		27840
	DIR		N 3907.02	201	122.7	174C	+26.3		1579
	SLATN/DROP		W06659.97	201	1419.3	280G	05:11.1		26261
	DIR		N 3820.02	268	146.8	174C	+31.4		1872
	FLANN/DROP		W06956.97	268	1566.1	280G	05:42.5		24389
	DIR/KZNY	95	N 3731.00	255	95.6	174C	+20.5		1208
	CHAMP	114.8	W07141.00	255	1661.6	280G	06:03.0		23182
	DIR		N 3656.30	248	58.4	174C	+12.5		733
	ZIBUT/DROP		W07239.97	248	1720.0	280G	06:15.5		22448
	AR9	116	N 3653.50	278	169.7	174C	+36.4		2122
	ORF	116.9	W07612.03	278	1889.7	280G	06:51.9		20326
	DIR	77	N 3548.68	257	177.2	174C	+38.0		2190
	LIB	113.0	W07936.77	257	2066.9	280G	07:29.9		18136
	DIR	104	N 3502.02	251	122.4	174C	+26.2		1496
	SPA	115.7	W08155.63	251	2189.3	280G	07:56.1		16640
	J37	58	N 3213.33	236	276.7	174C	+59.3		3355
	MGM	112.1	W08619.18	236	2466.1	280G	08:55.4		13285
	J37	100	N 3043.55	227	137.7	174C	+29.5		1644
	SJI	115.3	W08821.55	227	2603.7	280G	09:24.9		11642
	DIR	55	N 3024.40	232	35.1	174C	+07.5		417
	BIX		W08855.80	232	2638.9	280G	09:32.4		11225
	APPR		N 3024.70	232	0.0		+15.0		1500
	KBIX/L		W08855.40	232	2638.9		09:47.4		9725

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST01R
Ref: IC-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE	TAKE-OFF, CLIMB, CRUISE DATA Climb: 19000 Cruise: 280T temp: -23C wind: FF: 4772

FREQUENCIES

DEP FIELD DATA	TOT DIST	TOT ETE	TOT FUEL
	2638.1	9+32.3	38139

TP	ROUTE FIX	FREQ	LAT LON	MH MC	DIST	CAS GS	ETE ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		48700
	DIR	100	N 3043.55	055	34.7	211C	+10.6		1254
	SJI	115.3	W08821.55	055	34.7	280G	00:10.6		47446
	L/O @ 19000		N 3045.85	044	5.9	211C	+01.8		214
			W08815.11	044	40.6	280G	00:12.4		47231
	J37	58	N 3213.33	044	131.7	211C	+28.2		2245
	MGM	112.1	W08619.18	044	172.4	280G	00:40.7		44986
	L/O @ 25000		N 3221.70	048	27.8	191C	+07.6		662
			W08544.69	048	200.1	280G	00:48.3		44324
	J37	104	N 3502.02	048	249.0	191C	+53.3		3722
	SPA	115.7	W08155.63	048	449.1	280G	01:41.6		40602
	DIR	77	N 3548.68	069	122.4	191C	+26.2		1801
	LIB	113.0	W07936.77	069	571.5	280G	02:07.9		38800
	DIR	116	N 3653.50	071	177.2	191C	+38.0		2587
	ORF	116.9	W07612.03	071	748.7	280G	02:45.8		36213
	AR9		N 3656.30	095	169.6	191C	+36.3		2449
	ZIBUT/DROP		W07239.97	095	918.3	280G	03:22.2		33764
	DIR/KZNY	95	N 3731.00	061	58.5	191C	+12.5		837
	CHAMP	114.8	W07141.00	061	976.8	280G	03:34.7		32927
	L/O @ 30000		N 3747.24	073	32.9	174C	+08.6		625
			W07105.30	073	1009.6	280G	03:43.3		32301
	DIR		N 3820.02	073	62.7	174C	+13.4		829
	FLANN/DROP		W06956.97	073	1072.4	280G	03:56.8		31472
	DIR		N 3907.02	085	145.9	174C	+31.3		1919
	SLATN/DROP		W06659.97	085	1218.2	280G	04:28.0		29552
	DIR		N 4108.00	014	121.9	174C	+26.1		1585
	POGGO/DROP		W06659.97	014	1340.1	280G	04:54.2		27967
	J62	109	N 4116.90	293	138.5	174C	+29.7		1783
	ACK	116.2	W07001.63	293	1478.6	280G	05:23.8		26184
	DIR	83	N 4055.13	274	105.8	174C	+22.7		1349
	HTO	113.6	W07219.03	274	1584.4	280G	05:46.5		24835
	J174	71	N 3803.38	234	225.3	174C	+48.3		2853
	SML	112.4	W07527.85	234	1809.7	280G	06:34.8		21982
	DIR	125	N 3558.60	229	164.6	174C	+35.3		2053
	TYI	117.8	W07742.25	229	1974.3	280G	07:10.0		19929
	DIR	119	N 3552.35	270	53.0	174C	+11.4		654
	RDU	117.2	W07847.02	270	2027.3	280G	07:21.4		19275
	DIR	104	N 3502.02	257	161.7	174C	+34.7		1988
	SPA	115.7	W08155.63	257	2189.0	280G	07:56.0		17287
	J37	58	N 3213.33	236	276.7	174C	+59.3		3366
	MGM	112.1	W08619.18	236	2465.8	280G	08:55.3		13922
	J37	100	N 3043.55	227	137.7	174C	+29.5		1648
	SJI	115.3	W08821.55	227	2603.4	280G	09:24.8		12273
	DIR		N 3024.70	232	34.7	174C	+07.4		412
	KBIX/L		W08855.40	232	2638.1	280G	09:32.3		11861

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

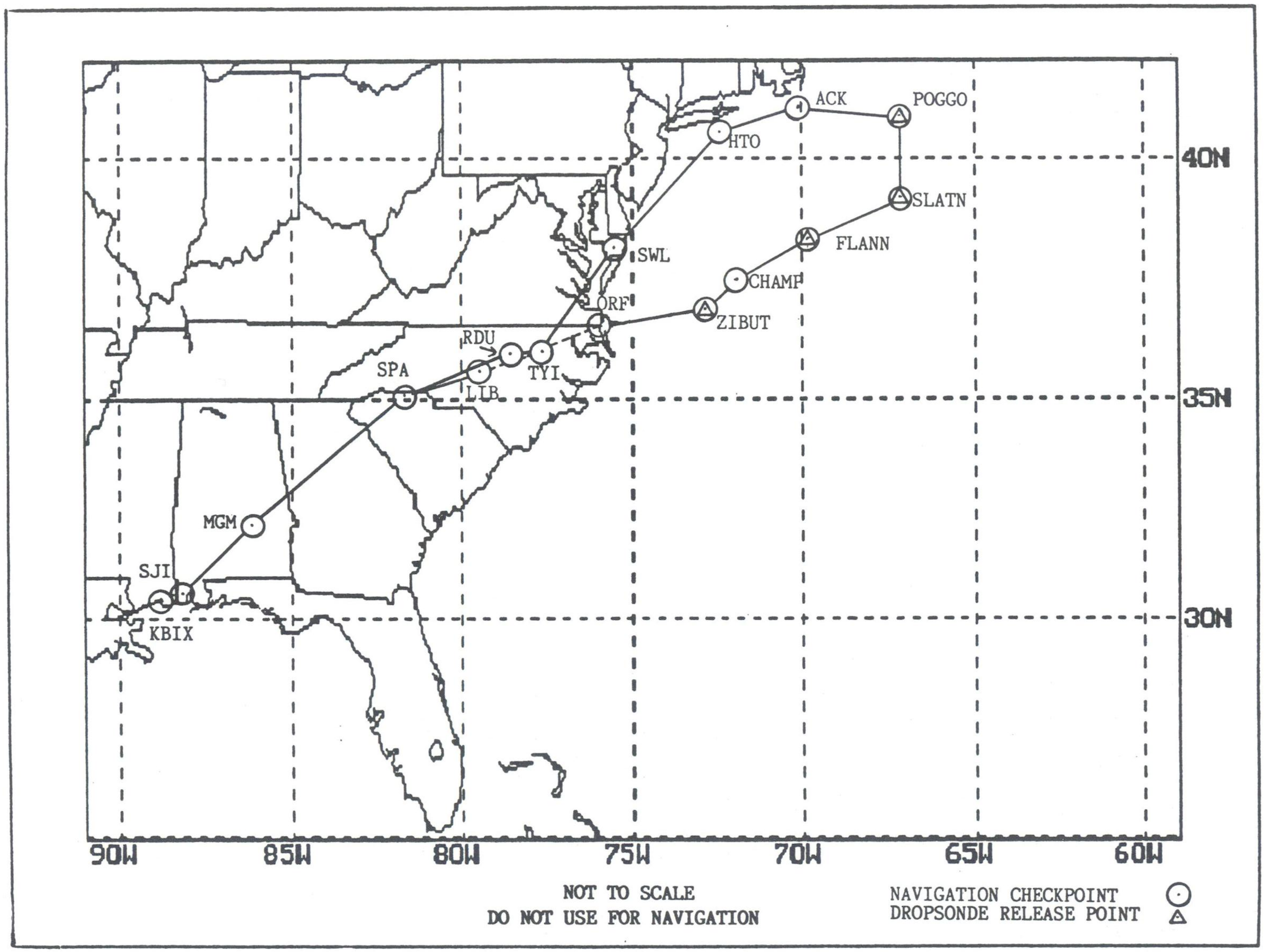


Figure F-1. Air Force track CORONET COAST01/01R.
Tracks 01R is flown in reverse of 01.

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

FPLAN version 9.0: FLIGHT PLAN and LOG route: coast02
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE	TAKE-OFF, CLIMB, CRUISE DATA Climb: 19000 Cruise: 280T temp: -23C winds: FF: 4837

FREQUENCIES

DEP FIELD DATA	TOT DIST	TOT ETE	TOT FUEL
	2869.1	10+37.4	43815

TP	ROUTE FIX	FREQ	LAT LON	MH MC	DIST	CAS GS	ETE ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		53700
	DIR	100	N 3043.55	055	34.7	211C	+10.5		1238
	SJI	115.3	W08821.55	055	34.7	280G	00:10.5		52462
	L/O @ 19000		N 3048.53	044	9.8	211C	+03.0		348
			W08811.65	044	44.5	280G	00:13.5		52113
	J-37	58	N 3213.33	044	127.9	211C	+27.4		2210
	MGM	112.1	W08619.18	044	172.4	280G	00:40.9		49903
	J-37	104	N 3502.02	048	276.7	211C	+59.3		4752
	SPA	115.7	W08155.63	048	449.1	280G	01:40.2		45152
	L/O @ 25000		N 3507.06	073	27.9	191C	+07.7		665
			W08121.92	073	477.0	280G	01:47.9		44487
	DIR	119	N 3552.35	073	133.8	191C	+28.7		2002
	RBW	117.2	W07847.02	073	610.8	280G	02:16.5		42485
	J209	125	N 3558.60	087	52.8	191C	+11.3		783
	TYI	117.8	W07742.25	087	663.6	280G	02:27.8		41702
	DIR	71	N 3803.38	045	164.8	191C	+35.3		2437
	SBL	112.4	W07527.85	045	828.4	280G	03:03.1		39265
	J-174	83	N 4055.13	047	225.2	191C	+48.3		3296
	HTO	113.6	W07219.03	047	1053.6	280G	03:51.4		35969
	DIR	109	N 4116.90	091	106.0	191C	+22.7		1530
	ACK	116.2	W07001.63	091	1159.6	280G	04:14.1		34439
	L/O @ 30000		N 4048.31	134	34.4	174C	+09.0		635
			W06930.45	134	1194.0	280G	04:23.1		33784
	DIR		N 3900.00	134	233.9	174C	+50.1		3120
	BRUNZ/DROP		W06500.00	134	1427.9	280G	05:13.2		30665
	A699		N 3730.00	230	139.2	174C	+29.8		1823
	SOMBE RELEAS		W06710.00	230	1567.1	280G	05:43.1		28842
	A699		N 3516.00	231	162.4	174C	+34.8		2103
	BAKER/DROP		W06904.00	231	1729.5	280G	06:17.9		26739
	A699	53	N 3353.02	223	112.9	174C	+24.2		1444
	UMANN	111.6	W07036.97	223	1842.5	280G	06:42.1		25295
	A699		N 3253.02	235	79.8	174C	+17.1		1013
	RUBIE/DROP		W07139.97	235	1922.3	280G	06:59.2		24282
	DIR		N 3224.00	238	43.8	174C	+09.4		353
	ADIZ		W07220.00	238	1966.1	280G	07:08.5		23729
	DIR		N 3056.00	239	132.3	174C	+28.3		1665
	GLIBS/DROP		W07415.00	239	2098.4	280G	07:36.9		22064
	R14		N 3023.02	258	145.8	174C	+31.2		1820
	TROUT/DROP		W07659.98	258	2244.2	280G	08:08.1		20244
	AR-5		N 3027.90	275	248.5	174C	+53.2		3071
	JA (DINNS)		W08148.10	275	2492.7	280G	09:01.4		17173
	DIR	76	N 3030.27	278	38.9	174C	+08.3		474
	TAY	112.9	W08233.18	278	2531.6	280G	09:09.7		16699
	J-2	122	N 3033.37	275	94.2	174C	+20.2		1142
	TLH	117.5	W08422.45	275	2625.8	280G	09:29.9		15557
	J-2	122	N 3047.60	288	42.0	174C	+09.0		507
	TLH288042	117.5	W08508.39	288	2667.8	280G	09:38.9		15051
	J-2	106	N 3049.57	270	79.4	174C	+17.0		935
	CEW	115.9	W08640.75	270	2747.1	280G	09:55.9		14096
	J-2	100	N 3043.55	263	86.8	174C	+18.6		1040
	SJI	115.3	W08821.55	263	2834.0	280G	10:14.5		13056
	S/D @ 30000		N 3030.93	232	22.6	174C	+04.8		270
			W08844.12	232	2856.6	280G	10:19.4		12785
	DIR	55	N 3024.40	232	12.5	174C	+03.0		100
	BIX		W08855.80	232	2869.1	280G	10:22.4		12685
	APPR		N 3024.70	232	0.0		+15.0		1500
	KBIX/L		W08855.40	232	2869.1		10:37.4		11185

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

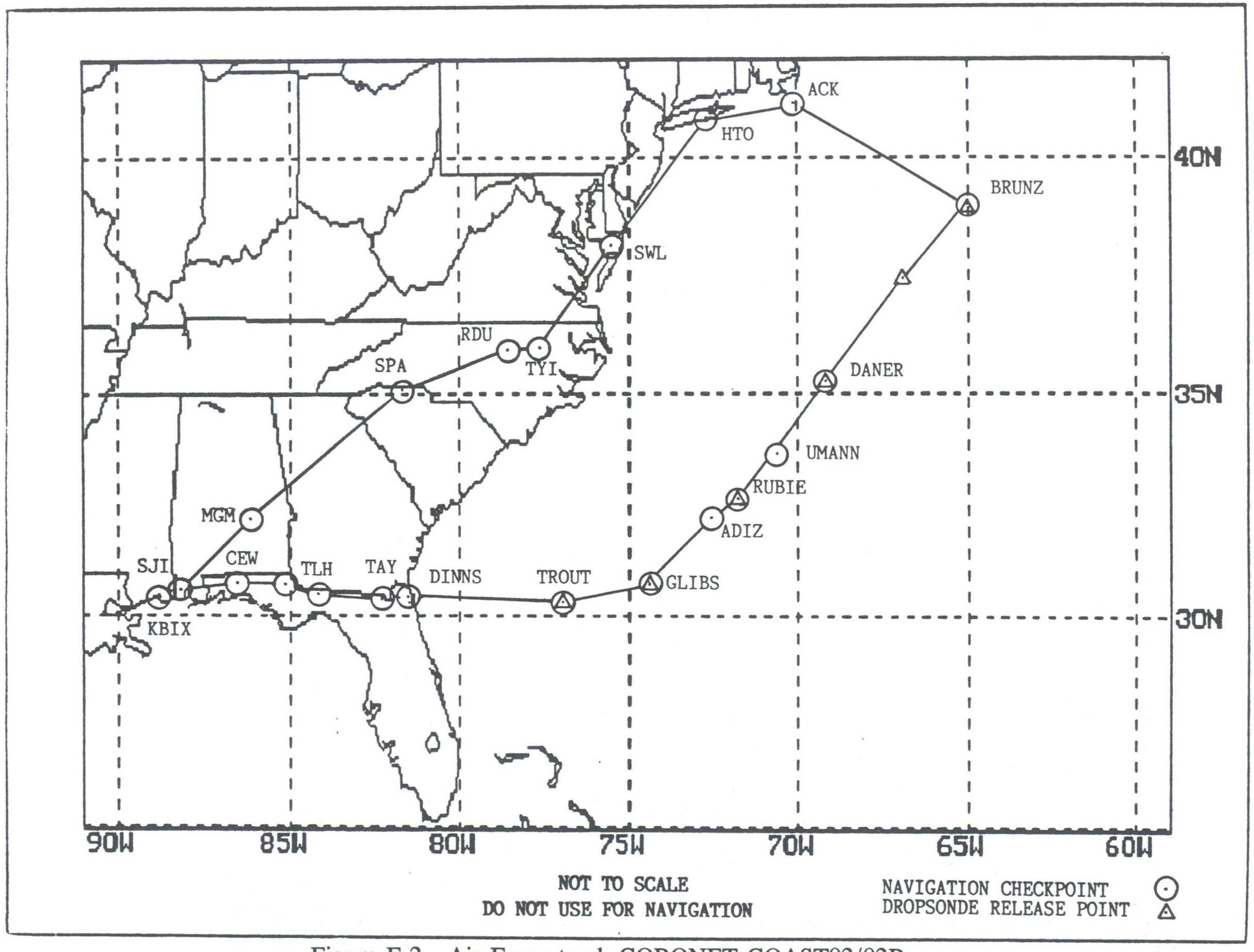


Figure F-2. Air Force track CORONET COAST02/02R.

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

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST02R
Ref: IC-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE | TAKE-OFF, CLIMB, CRUISE DATA

Climb: 19000 Cruise: 280T
temp: -23C wind:
FF: 4837

FREQUENCIES

DEP FIELD DATA | TOT DIST | TOT ETE | TOT FUEL
2868.3 | 10+22.4 | 41769

TP	ROUTE FIX	FREQ	LAT LON	MH MC	DIST	CAS GS	ETE ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		53700
	DIR	100	N 3043.35	055	34.7	211C	+10.5		1238
	SJI	115.3	W08821.55	055	34.7	280G	00:10.5		52462
	L/D @ 19000		N 3043.69	081	9.8	211C	+03.0		348
			W08810.11	081	44.5	280G	00:13.5		52113
	J-2	106	N 3049.57	081	77.2	211C	+16.5		1334
	CEW	115.9	W08640.75	081	121.6	280G	00:30.0		50780
	L/D @ 25000		N 3048.23	088	32.7	191C	+08.8		764
			W08603.11	088	154.4	280G	00:38.8		50015
	J-2	122	N 3047.60	088	46.6	191C	+10.0		715
	TLH288042	117.5	W08508.39	088	201.0	280G	00:48.8		49301
	J-2	122	N 3033.37	108	42.0	191C	+09.0		642
	TLH	117.5	W08422.45	108	243.0	280G	00:57.8		48659
	J-2	76	N 3030.27	089	94.2	191C	+20.2		1436
	TAY	112.9	W08233.18	089	337.2	280G	01:18.0		47223
	DIR		N 3027.90	096	38.9	191C	+08.3		589
	JA/DINNS		W08148.10	096	376.1	280G	01:26.3		46635
	AR5/KINY		N 3023.02	094	248.5	191C	+53.2		3751
	TROUT/DROP		W07659.98	094	624.5	280G	02:19.6		42883
	R14		N 3056.00	079	145.7	191C	+31.2		2165
	GLIBS/DROP		W07415.00	079	770.3	280G	02:50.8		40719
	DIR		N 3253.02	048	176.2	191C	+37.8		2595
	RUBIE/DROP		W07139.97	048	946.5	280G	03:28.5		38124
	A699	53	N 3353.02	049	79.8	191C	+17.1		1162
	LMANN	111.6	W07036.97	049	1026.3	280G	03:45.6		36962
	L/D @ 30000		N 3420.01	055	37.4	174C	+09.7		711
			W07004.77	055	1063.7	280G	03:55.3		36251
	A699		N 3516.00	055	75.5	174C	+16.2		1021
	DANER/DROP		W06904.00	055	1139.2	280G	04:11.5		35229
	A699		N 3730.00	034	162.4	174C	+34.8		2184
	SONDE RELEAS		W06710.00	034	1301.6	280G	04:46.3		33045
	A699		N 3900.00	064	136.1	174C	+29.2		1807
	BRUNZ/DROP		W06500.00	064	1437.7	280G	05:15.5		31238
	DIR	109	N 4116.90	301	270.9	174C	+58.0		3559
	ACK	116.2	W07001.63	301	1708.6	280G	06:13.5		27679
	DIR	83	N 4055.13	273	106.0	174C	+22.7		1363
	HTO	113.6	W07219.03	273	1814.6	280G	06:36.2		26316
	J174	71	N 3803.38	234	225.3	174C	+48.3		2875
	SNL	112.4	W07527.85	234	2039.9	280G	07:24.5		23441
	DIR	125	N 3558.60	229	164.6	174C	+35.3		2069
	TYI	117.8	W07742.25	229	2204.5	280G	07:59.8		21372
	DIR	119	N 3552.35	270	53.0	174C	+11.4		659
	RDU	117.2	W07847.02	270	2257.5	280G	08:11.1		20713
	DIR	104	N 3502.02	257	161.7	174C	+34.7		2003
	SPA	115.7	W08155.63	257	2419.2	280G	08:45.8		18709
	J-37	58	N 3213.33	236	276.7	174C	+59.3		3392
	MEM	112.1	W08619.18	236	2696.0	280G	09:45.1		15318
	S/D @ 30000		N 3051.26	227	125.2	174C	+26.8		1508
			W08810.84	227	2821.1	280G	10:11.9		13809
	J-37	100	N 3043.55	227	12.5	174C	+03.0		100
	SJI	115.3	W08821.55	227	2833.6	280G	10:14.9		13709
	DIR		N 3024.70	232	34.7	194C	+07.4		479
	KBIX/L		W08855.40	232	2868.3	280G	10:22.4		13231

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

(This page intentionally left blank)

Table F-3. Flight plans and logs for routes CORONET COAST03/03R. These are for planning purposes only. Do not use for navigation.

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST03
Ref: IC-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE	TAKE-OFF, CLIMB, CRUISE DATA
	Climb: 19000 Cruise: 280T
	temp: -23C wind:
	FF: 4837

FREQUENCIES

DEP FIELD DATA	TOT DIST	TOT ETE	TOT FUEL
	2696.3	10+00.4	41744

TP	ROUTE FIX	FREQ	LAT LON	MH MC	DIST	CAS GS	ETE ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		53700
	DIR	100	N 3043.55	055	34.7	211C	+10.5		1238
	SJI	115.3	W08821.55	055	34.7	280G	00:10.5		52462
	L/D @ 19000		N 3048.53	044	9.8	211C	+03.0		348
			W08811.65	044	44.5	280G	00:13.5		52113
	J37	58	N 3213.33	044	127.9	211C	+27.4		2210
	MEM	112.1	W08619.18	044	172.4	280G	00:40.9		49903
	J37	104	N 3502.02	048	276.7	211C	+59.3		4752
	SPA	115.7	W08135.63	048	449.1	280G	01:40.2		45152
	L/D @ 25000		N 3507.06	073	27.9	191C	+07.7		665
			W08121.92	073	477.0	280G	01:47.9		44487
	DIR	119	N 3552.35	073	133.8	191C	+28.7		2002
	RDU	117.2	W07847.02	073	610.8	280G	02:16.5		42485
	J209	125	N 3558.60	087	52.8	191C	+11.3		783
	TYI	117.8	W07742.25	087	663.6	280G	02:27.8		41702
	DIR	71	N 3803.38	045	164.8	191C	+35.3		2437
	SML	112.4	W07527.85	045	828.4	280G	03:03.1		39265
	J-174	83	N 4055.13	047	225.2	191C	+48.3		3296
	HTO	113.6	W07219.03	047	1053.6	280G	03:51.4		35969
	DIR	109	N 4116.90	091	106.0	191C	+22.7		1530
	ACK	116.2	W07001.63	091	1159.6	280G	04:14.1		34439
	L/D @ 30000		N 4049.75	147	34.4	174C	+09.0		655
			W06933.18	147	1194.0	280G	04:23.1		33784
	J97/KZNY		N 3907.02	147	156.0	174C	+33.5		2081
	SLATN/DROP		W06659.97	147	1350.1	280G	04:56.5		31703
	A700		N 3700.00	240	175.4	174C	+37.6		2310
	SONDE RELEAS		W06930.00	240	1525.4	280G	05:34.1		29393
	A700		N 3500.02	238	162.2	174C	+34.8		2108
	MERCI/DROP		W07144.97	238	1687.7	280G	06:08.9		27285
	A700		N 3300.00	234	169.9	174C	+36.4		2179
	SONDE RELEAS		W07410.00	234	1857.5	280G	06:45.3		25106
	A700		N 3023.02	233	213.4	174C	+45.7		2706
	TROUT/DROP		W07659.98	233	2071.0	280G	07:31.0		22400
	AR-5		N 3027.90	276	248.9	174C	+53.3		3111
	JA/DINNS		W08148.10	276	2319.9	280G	08:24.4		19288
	DIR	76	N 3030.27	278	38.9	174C	+08.3		479
	TAY	112.9	W08233.18	278	2358.8	280G	08:32.7		18809
	J-2	122	N 3033.37	275	94.2	174C	+20.2		1155
	TLH	117.5	W08422.45	275	2453.0	280G	08:52.9		17654
	J-2	122	N 3047.60	288	42.0	174C	+09.0		512
	TLH288042	117.5	W08508.39	288	2495.0	280G	09:01.9		17142
	J-2	106	N 3049.57	270	79.4	174C	+17.0		964
	CEW	115.9	W08640.75	270	2574.3	280G	09:18.9		16178
	J-2	100	N 3043.55	263	86.8	174C	+18.6		1050
	SJI	115.3	W08821.55	263	2661.2	280G	09:37.5		15128
	S/D @ 30000		N 3030.93	232	22.6	174C	+04.8		273
			W08844.12	232	2683.8	280G	09:42.4		14856
	DIR	55	N 3024.40	232	12.5	174C	+03.0		100
	BIX		W08855.80	232	2696.3	280G	09:45.4		14756
	APPR		N 3024.70	232	0.0		+15.0		1500
	KBIX/L		W08855.40	232	2696.3		10:00.4		13256

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST03R
Ref: IC-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE	TAKE-OFF, CLIMB, CRUISE DATA
	Climb: 19000 Cruise: 280T
	temp: -23C wind:
	FF: 4837

FREQUENCIES

DEP FIELD DATA	TOT DIST	TOT ETE	TOT FUEL
	2695.6	9+45.3	39671

TP	ROUTE FIX	FREQ	LAT LON	MH MC	DIST	CAS GS	ETE ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		53700
	DIR	100	N 3043.55	055	34.7	211C	+10.5		1238
	SJI	115.3	W08821.55	055	34.7	280G	00:10.5		52462
	L/D @ 19000		N 3043.69	081	9.8	211C	+03.0		348
			W08810.11	081	44.5	280G	00:13.5		52113
	J-2	106	N 3049.57	081	77.2	211C	+16.5		1334
	CEW	115.9	W08640.75	081	121.6	280G	00:30.0		50780
	L/D @ 25000		N 3048.23	088	32.7	191C	+08.8		764
			W08603.11	088	154.4	280G	00:38.8		50015
	J-2	122	N 3047.60	088	46.6	191C	+10.0		715
	TLH288042	117.5	W08508.39	088	201.0	280G	00:48.8		49301
	J-2	122	N 3033.37	108	42.0	191C	+09.0		642
	TLH	117.5	W08422.45	108	243.0	280G	00:57.8		48659
	J-2	76	N 3030.27	089	94.2	191C	+20.2		1436
	TAY	112.9	W08233.18	089	337.2	280G	01:18.0		47223
	DIR		N 3027.90	096	38.9	191C	+08.3		589
	JA/DINNS		W08148.10	096	376.1	280G	01:26.3		46635
	AR5/KZNY		N 3023.02	094	248.5	191C	+53.2		3751
	TROUT/DROP		W07659.98	094	624.5	280G	02:19.6		42883
	A700		N 3300.00	045	213.7	191C	+45.8		3176
	SONDE RELEAS		W07410.00	045	838.3	280G	03:05.4		39707
	A700		N 3500.02	054	169.9	191C	+36.4		2490
	MERCI/DROP		W07144.97	054	1008.2	280G	03:41.8		37217
	L/D @ 30000		N 3527.12	050	38.1	174C	+09.8		722
			W07111.85	050	1046.3	280G	03:51.6		36495
	A700		N 3700.00	050	124.2	174C	+26.6		1682
	SONDE RELEAS		W06930.00	050	1170.4	280G	04:18.2		34813
	A700		N 3907.02	057	173.5	174C	+37.2		2327
	SLATN/DROP		W06659.97	057	1343.9	280G	04:55.4		32486
	J97	109	N 4116.90	328	191.8	174C	+41.1		2537
	ACK	116.2	W07001.63	328	1535.6	280G	05:36.4		29948
	DIR	83	N 4055.13	273	106.2	174C	+22.7		1384
	HTO	113.6	W07219.03	273	1641.8	280G	05:59.2		28564
	J174	71	N 3803.40	234	225.3	174C	+48.3		2913
	SML	112.4	W07527.83	234	1867.1	280G	06:47.5		25651
	DIR	125	N 3558.60	229	164.6	174C	+35.3		2093
	TYI	117.8	W07742.25	229	2031.7	280G	07:22.7		23558
	DIR	119	N 3552.35	270	53.0	174C	+11.4		667
	RDU	117.2	W07847.02	270	2084.8	280G	07:34.1		22891
	DIR	104	N 3502.02	257	161.7	174C	+34.7		2027
	SPA	115.7	W08135.63	257	2246.4	280G	08:08.8		20865
	J37	58	N 3213.33	236	276.7	174C	+59.3		3431
	MEM	112.1	W08619.18	236	2523.2	280G	09:08.1		17434
	S/D @ 30000		N 3051.26	227	125.2	174C	+26.8		1523
			W08810.84	227	2648.4	280G	09:34.9		15910
	J37	100	N 3043.55	227	12.5	174C	+03.0		100
	SJI	115.3	W08821.55	227	2660.9	280G	09:37.9		15810
	DIR		N 3024.70	232	34.7	194C	+07.4		481
	KBIX/L		W08855.40	232	2695.6	280G	09:45.3		15329

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

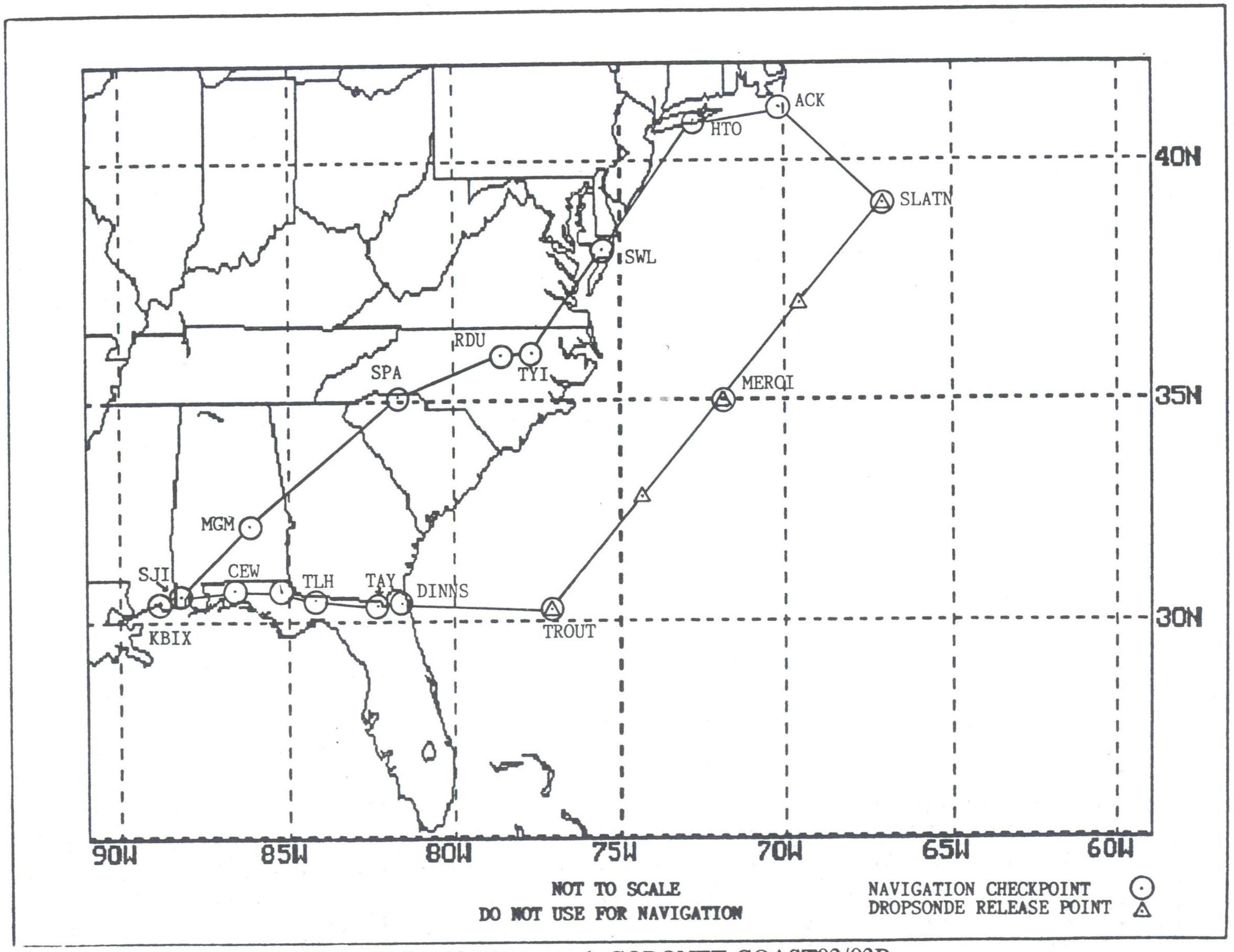


Figure F-3. Air Force track CORONET COAST03/03R.

Table F-4. Flight plans and logs for routes CORONET COAST04/04R. These are for planning purposes only. Do not use for navigation.

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST04
Ref: IC-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE | TAKE-OFF, CLIMB, CRUISE DATA
Climb: 19000 Cruise: 280T
temp: -23C wind:
FF: 4772

FREQUENCIES

DEP FIELD DATA | TOT DIST | TOT ETE | TOT FUEL
2315.3 | 8+38.5 | 36175

TP	ROUTE FIX	FREQ	LAT LON	MH MC	DIST	CAS GS	ETE ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		48700
	DIR	100	N 3043.55	055	34.7	211C	+10.6		1254
	SJI	115.3	W08821.55	055	34.7	280G	00:10.6		47446
	L/D @ 19000		N 3045.85	044	5.9	211C	+01.8		214
			W08815.11	044	40.6	280G	00:12.4		47231
	J37	58	N 3213.33	044	131.7	211C	+28.2		2245
	MEM	112.1	W08619.18	044	172.4	280G	00:40.7		44986
	J37	104	N 3502.02	048	276.7	211C	+59.3		4691
	SPA	115.7	W08155.63	048	449.1	280G	01:40.0		40296
	L/D @ 25000		N 3505.66	073	24.0	191C	+06.9		588
			W08126.50	073	473.1	280G	01:46.8		39708
	DIR	119	N 3552.35	073	137.7	191C	+29.5		2019
	RDU	117.2	W07847.02	073	610.8	280G	02:16.3		37689
	J209	125	N 3558.60	087	52.8	191C	+11.3		767
	TYI	117.8	W07742.25	087	663.6	280G	02:27.6		36921
	DIR	71	N 3803.38	045	164.8	191C	+35.3		2387
	SML	112.4	W07527.85	045	828.4	280G	03:02.9		34534
	DIR	95	N 3905.72	034	69.7	191C	+14.9		1000
	SIE	114.8	W07448.05	034	898.1	280G	03:17.9		33534
	DIR	81	N 3948.69	067	83.4	191C	+17.9		1192
	PREPI	113.4	W07315.68	067	981.5	280G	03:35.7		32341
	DIR		N 3949.40	100	20.0	174C	+05.2		380
	OMENZ/DROP		W07249.83	100	1001.4	280G	03:41.0		31961
	L/D @ 30000		N 3940.80	152	12.3	174C	+03.2		234
			W07239.01	152	1013.7	280G	03:44.2		31727
	DIR	106	N 3907.95	152	43.0	174C	+09.2		566
	BERGH	115.9	W07203.10	152	1056.7	280G	03:53.4		31162
	A300/KZNY		N 3731.02	182	98.6	174C	+21.1		1295
	CHAMP/DROP		W07140.97	182	1155.3	280G	04:14.6		29867
	G437		N 3500.02	190	151.0	174C	+32.4		1968
	MERCI/DROP		W07144.97	190	1306.3	280G	04:46.9		27899
	A700		N 3230.00	231	203.5	174C	+43.6		2620
	SONDE RELEAS		W07430.00	231	1509.8	280G	05:30.5		25279
	A700		N 3023.02	236	180.3	174C	+38.6		2288
	TROUT/DROP		W07659.98	236	1690.1	280G	06:09.1		22991
	ARS		N 3027.90	275	248.8	174C	+53.3		3120
	JA/DINNS		W08148.10	275	1938.9	280G	07:02.5		19871
	DIR	76	N 3030.27	278	38.9	174C	+08.3		481
	TAY	112.9	W08233.18	278	1977.8	280G	07:10.8		19390
	J2	122	N 3033.37	275	94.2	174C	+20.2		1159
	TLH	117.5	W08422.45	275	2072.0	280G	07:31.0		18231
	J2	122	N 3047.60	288	42.0	174C	+09.0		513
	TLH288042	117.5	W08508.39	288	2114.0	280G	07:40.0		17718
	J2	106	N 3049.57	270	79.4	174C	+17.0		967
	CEM	115.9	W08640.75	270	2193.3	280G	07:57.0		16751
	J2	100	N 3043.55	263	86.8	174C	+18.6		1053
	SJI	115.3	W08821.55	263	2280.1	280G	08:15.6		15698
	S/D @ 30000		N 3030.93	232	22.6	174C	+04.8		273
			W08844.12	232	2302.8	280G	08:20.5		15425
	DIR	55	N 3024.40	232	12.5	174C	+03.0		100
	BIX		W08855.80	232	2315.3	280G	08:23.5		15325
	APPR		N 3024.70	232	0.0		+15.0		1500
	KBIX/L		W08855.40	232	2315.3		08:38.5		13825

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST04R
Ref: IC-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE | TAKE-OFF, CLIMB, CRUISE DATA
Climb: 19000 Cruise: 280T
temp: -23C wind:
FF: 4772

FREQUENCIES

DEP FIELD DATA | TOT DIST | TOT ETE | TOT FUEL
2315.3 | 8+38.5 | 35532

TP	ROUTE FIX	FREQ	LAT LON	MH MC	DIST	CAS GS	ETE ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		48700
	DIR	100	N 3043.55	055	34.7	211C	+10.6		1254
	SJI	115.3	W08821.55	055	34.7	280G	00:10.6		47446
	L/D @ 19000		N 3043.35	081	5.9	211C	+01.8		214
			W08814.75	081	40.6	280G	00:12.4		47231
	J2	106	N 3049.57	081	81.0	211C	+17.4		1381
	CEM	115.9	W08640.75	081	121.6	280G	00:29.8		45850
	L/D @ 25000		N 3048.27	088	28.5	191C	+07.8		676
			W08607.76	088	150.1	280G	00:37.6		45174
	J2	122	N 3047.60	088	50.9	191C	+10.9		763
	TLH288042	117.5	W08508.39	088	201.0	280G	00:48.5		44411
	J2	122	N 3033.37	108	42.0	191C	+09.0		628
	TLH	117.5	W08422.45	108	243.0	280G	00:57.5		43783
	J2	76	N 3030.27	089	94.2	191C	+20.2		1405
	TAY	112.9	W08233.18	089	337.2	280G	01:17.6		42378
	DIR		N 3027.90	096	38.9	191C	+08.3		577
	JA/DINNS		W08148.10	096	376.1	280G	01:26.0		41801
	ARS/KZNY		N 3023.02	094	248.5	191C	+53.2		3676
	TROUT/DROP		W07659.98	094	624.5	280G	02:19.2		38126
	A700		N 3230.00	048	180.5	191C	+38.7		2627
	SONDE RELEAS		W07430.00	048	805.0	280G	02:57.9		35499
	L/D @ 30000		N 3253.94	052	35.5	174C	+09.2		676
			W07358.83	052	840.5	280G	03:07.1		34823
	A700		N 3500.02	052	167.8	174C	+36.0		2252
	MERCI/DROP		W07144.97	052	1008.3	280G	03:43.1		32572
	G437		N 3731.02	009	151.2	174C	+32.4		2003
	CHAMP/DROP		W07140.97	009	1159.6	280G	04:15.5		30568
	A300	106	N 3907.95	359	98.5	174C	+21.1		1288
	BERGH	115.9	W07203.10	359	1258.1	280G	04:36.6		29280
	DIR		N 3949.40	331	55.0	174C	+11.8		715
	OMENZ/DROP		W07249.83	331	1313.1	280G	04:48.4		28565
	DIR	81	N 3948.69	276	20.3	174C	+04.3		262
	PREPI	113.4	W07315.68	276	1333.4	280G	04:52.8		28303
	DIR	95	N 3905.72	249	83.3	174C	+17.9		1075
	SIE	114.8	W07448.05	249	1416.6	280G	05:10.6		27227
	J121	71	N 3803.38	215	69.8	174C	+15.0		895
	SML	112.4	W07527.85	215	1486.4	280G	05:25.6		26333
	DIR	125	N 3558.60	229	164.6	174C	+35.3		2100
	TYI	117.8	W07742.25	229	1651.0	280G	06:00.8		24233
	DIR	119	N 3552.35	270	53.0	174C	+11.4		670
	RDU	117.2	W07847.02	270	1704.0	280G	06:12.2		23563
	DIR	104	N 3502.02	257	161.7	174C	+34.7		2034
	SPA	115.7	W08155.63	257	1865.7	280G	06:46.8		21529
	J37	58	N 3213.33	236	276.7	174C	+59.3		3443
	MEM	112.1	W08619.18	236	2142.5	280G	07:46.1		18086
	S/D @ 30000		N 3051.26	227	125.2	174C	+26.8		1529
			W08810.84	227	2267.6	280G	08:12.9		16557
	J37	100	N 3043.55	227	12.5	174C	+03.0		100
	SJI	115.3	W08821.55	227	2280.1	280G	08:15.9		16457
	DIR	55	N 3024.42	232	35.1	194C	+07.5		489
	BIX		W08855.80	232	2315.3	280G	08:23.5		15968
	APPR	55	N 3024.42	232	0.0		+15.0		1500
	BIX		W08855.80	232	2315.3		08:38.5		14468

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

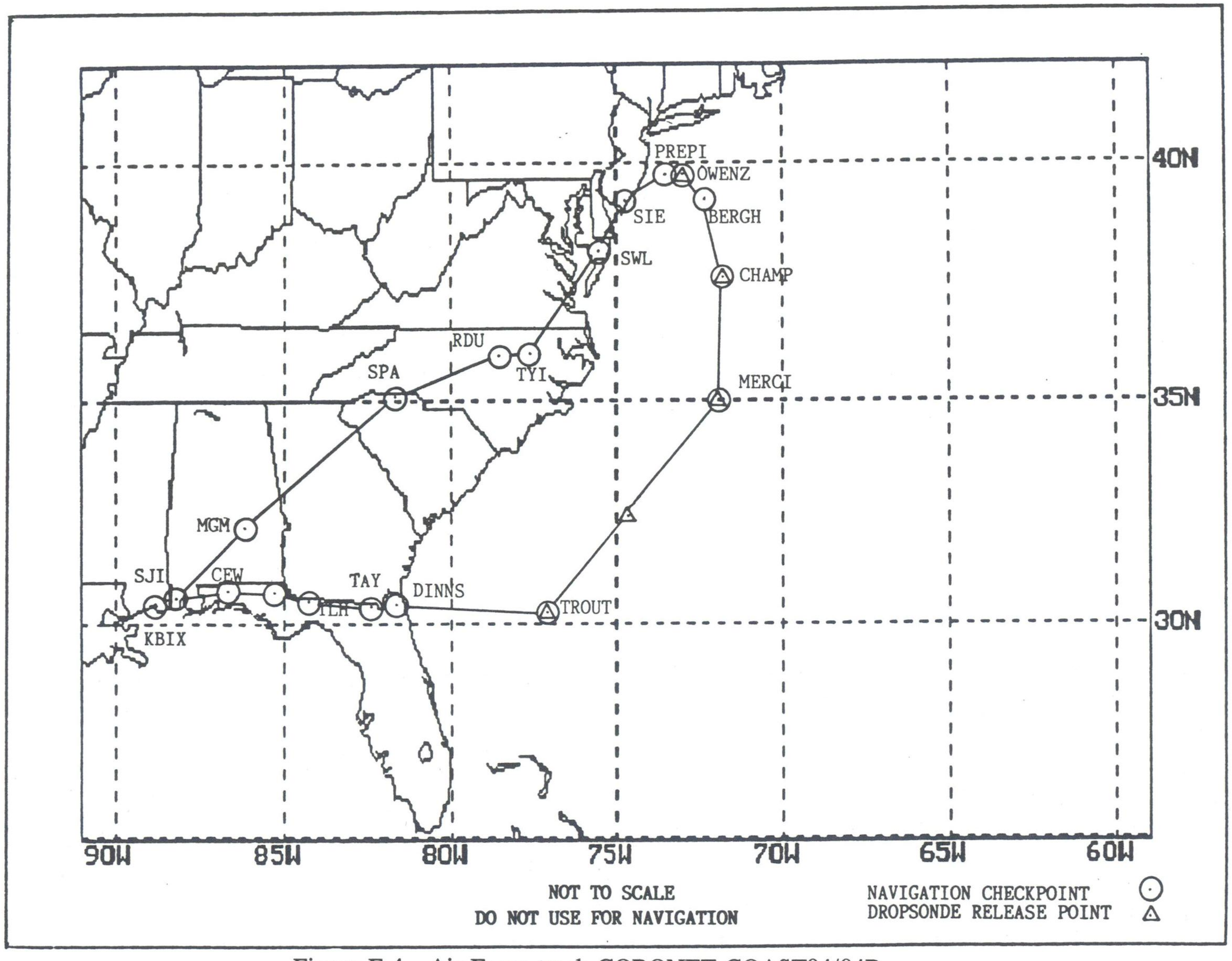


Figure F-4. Air Force track CORONET COAST04/04R.

Table F-5. Flight plans and logs for routes CORONET COAST05/05R. These are for planning purposes only. Do not use for navigation.

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST05
Ref: IC-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE	TAKE-OFF, CLIMB, CRUISE DATA
	Climb: 19000 Cruise: 280T
	temp: -23C wind:
	FF: 4772

FREQUENCIES

DEP FIELD DATA	TOT DIST	TOT ETE	TOT FUEL
	2081.1	7+48.0	33149

TP	ROUTE / FIX	FREQ	LAT / LON	MH / MC	DIST	CAS / GS	ETE / ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		48700
	DIR	100	N 3043.55	055	34.7	211C	+10.6		1254
	SJI	115.3	W08821.55	055	34.7	280G	00:10.6		47446
	L/D @ 19000		N 3045.85	044	5.9	211C	+01.8		214
			W08815.11	044	40.6	280G	00:12.4		47231
	J37	58	N 3213.33	044	131.7	211C	+28.2		2245
	MEM	112.1	W08619.18	044	172.4	280G	00:40.7		44986
	J37	104	N 3502.02	048	276.7	211C	+59.3		4691
	SPA	115.7	W08155.63	048	449.1	280G	01:40.0		40296
	L/D @ 25000		N 3505.66	073	24.0	191C	+06.9		588
			W08126.50	073	473.1	280G	01:46.8		39708
	DIR	119	N 3552.35	073	137.7	191C	+29.5		2019
	RDU	117.2	W07847.02	073	610.8	280G	02:16.3		37689
	DIR	72	N 3615.45	083	128.6	191C	+27.6		1868
	ECG	112.5	W07610.57	083	739.4	280G	02:43.9		35820
	L/D @ 30000		N 3549.07	140	35.8	174C	+09.3		682
			W07541.90	140	775.2	280G	02:53.2		35139
	ARB/KZNY		N 3426.02	140	122.5	174C	+26.2		1647
	BACUS/DROP		W07350.97	140	897.7	280G	03:19.4		33492
	R763		N 3201.00	183	145.8	174C	+31.2		1940
	CORAN/DROP		W07336.00	183	1043.5	280G	03:50.6		31551
	G437		N 3056.00	208	73.1	174C	+15.7		962
	GLIBS		W07415.00	208	1116.6	280G	04:06.3		30589
	G437		N 2930.00	206	95.9	174C	+20.6		1255
	JESSE/DROP		W07504.00	206	1212.4	280G	04:26.9		29334
	A699		N 2828.00	246	119.0	174C	+25.5		1546
	LOUIZ		W07700.00	246	1331.5	280G	04:52.4		27788
	A699		N 2807.57	246	39.2	174C	+08.4		504
	NUCAR/DROP		W07737.98	246	1370.7	280G	05:00.8		27284
	A699	104	N 2652.58	245	138.4	174C	+29.7		1775
	BLUFI	115.7	W07949.07	245	1509.1	280G	05:30.4		25509
	DIR	41	N 2649.67	271	84.4	174C	+18.1		1072
	LBV	110.4	W08123.50	271	1593.5	280G	05:48.5		24437
	DIR	99	N 2723.85	299	71.0	174C	+15.2		897
	SRQ	115.2	W08233.27	299	1664.5	280G	06:03.7		23539
	J58		N 2756.18	287	120.5	174C	+25.8		1515
	COVIA/DROP		W08444.17	287	1784.9	280G	06:29.5		22024
	J58		N 2836.68	287	158.9	174C	+34.0		1982
	NEPTA/DROP		W08738.60	287	1943.8	280G	07:03.6		20042
	J58	79	N 2909.80	297	60.6	174C	+13.0		748
	SEDAN	113.2	W08836.57	297	2004.4	280G	07:16.6		19294
	DIR	55	N 3024.40	345	76.7	174C	+16.4		943
	BIX		W08855.80	345	2081.1	280G	07:33.0		18351
	APPR		N 3024.70	342	0.0		+15.0		1500
	KBIX/L		W08855.40	342	2081.1		07:48.0		16851

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST05R
Ref: IC-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE	TAKE-OFF, CLIMB, CRUISE DATA
	Climb: 19000 Cruise: 280T
	temp: -23C wind:
	FF: 4772

FREQUENCIES

DEP FIELD DATA	TOT DIST	TOT ETE	TOT FUEL
	2081.9	7+48.5	32553

TP	ROUTE / FIX	FREQ	LAT / LON	MH / MC	DIST	CAS / GS	ETE / ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		48700
	L/D @ 19000		N 2945.01	166	40.6	211C	+12.4		1469
			W08845.19	166	40.6	280G	00:12.4		47231
	DIR	79	N 2909.80	166	36.0	211C	+07.7		615
	SEDAN	113.2	W08836.57	166	76.7	280G	00:20.2		46617
	J58		N 2836.68	116	60.9	211C	+13.1		1036
	NEPTA/DROP		W08738.60	116	137.6	280G	00:33.2		45581
	L/D @ 25000		N 2826.62	098	28.2	191C	+07.7		672
			W08708.73	098	165.8	280G	00:40.9		44909
	J58		N 2756.18	098	130.6	191C	+28.0		1938
	COVIA/DROP		W08444.17	098	296.5	280G	01:08.9		42951
	J58	99	N 2723.85	107	120.4	191C	+25.8		1790
	SRQ	115.2	W08233.27	107	416.8	280G	01:34.7		41161
	DIR	41	N 2649.67	122	71.0	191C	+15.2		1047
	LBV	110.4	W08123.50	122	487.8	280G	01:50.0		40114
	DIR	104	N 2652.58	087	84.4	191C	+18.1		1239
	BLUFI	115.7	W07949.07	087	572.2	280G	02:08.0		38875
	A699		N 2807.57	061	138.5	191C	+29.7		2022
	NUCAR/DROP		W07737.98	061	710.7	280G	02:37.7		36852
	L/D @ 30000		N 2826.94	065	37.2	174C	+09.6		707
			W07701.93	065	747.9	280G	02:47.3		36146
	A699/KZNY		N 2828.00	065	2.1	174C	+00.5		28
	LOUIZ		W07700.00	065	749.9	280G	02:47.7		36118
	A699		N 2930.00	065	118.9	174C	+25.5		1608
	JESSE/DROP		W07504.00	065	868.9	280G	03:13.2		34510
	G437		N 3056.00	032	96.0	174C	+20.6		1285
	GLIBS		W07415.00	032	964.8	280G	03:33.8		33225
	G437		N 3201.00	027	73.0	174C	+15.6		971
	CORAN/DROP		W07336.00	027	1037.9	280G	03:49.4		32254
	R763		N 3426.02	355	145.7	174C	+31.2		1925
	BACUS/DROP		W07350.97	355	1183.5	280G	04:20.7		30329
	ARB	72	N 3615.45	323	158.1	174C	+33.9		2066
	ECG	112.5	W07610.57	323	1341.7	280G	04:54.5		28263
	DIR	119	N 3552.35	267	129.0	174C	+27.6		1664
	RDU	117.2	W07847.02	267	1470.6	280G	05:22.2		26598
	DIR	104	N 3502.02	257	161.7	174C	+34.7		2066
	SPA	115.7	W08155.63	257	1632.3	280G	05:56.8		24532
	J37	58	N 3213.33	236	276.7	174C	+59.3		3498
	MEM	112.1	W08619.18	236	1909.1	280G	06:56.1		21034
	J37	100	N 3043.55	227	137.7	174C	+29.5		1708
	SJI	115.3	W08821.55	227	2046.7	280G	07:25.6		19325
	S/D @ 30000		N 3030.95	232	22.6	174C	+04.8		279
			W08844.12	232	2069.4	280G	07:30.5		19047
	DIR	55	N 3024.42	232	12.5	174C	+03.0		100
	BIX		W08855.80	232	2081.9	280G	07:33.5		18947
	APPR	55	N 3024.42	232	0.0		+15.0		1500
	BIX		W08855.80	232	2081.9		07:48.5		17447

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

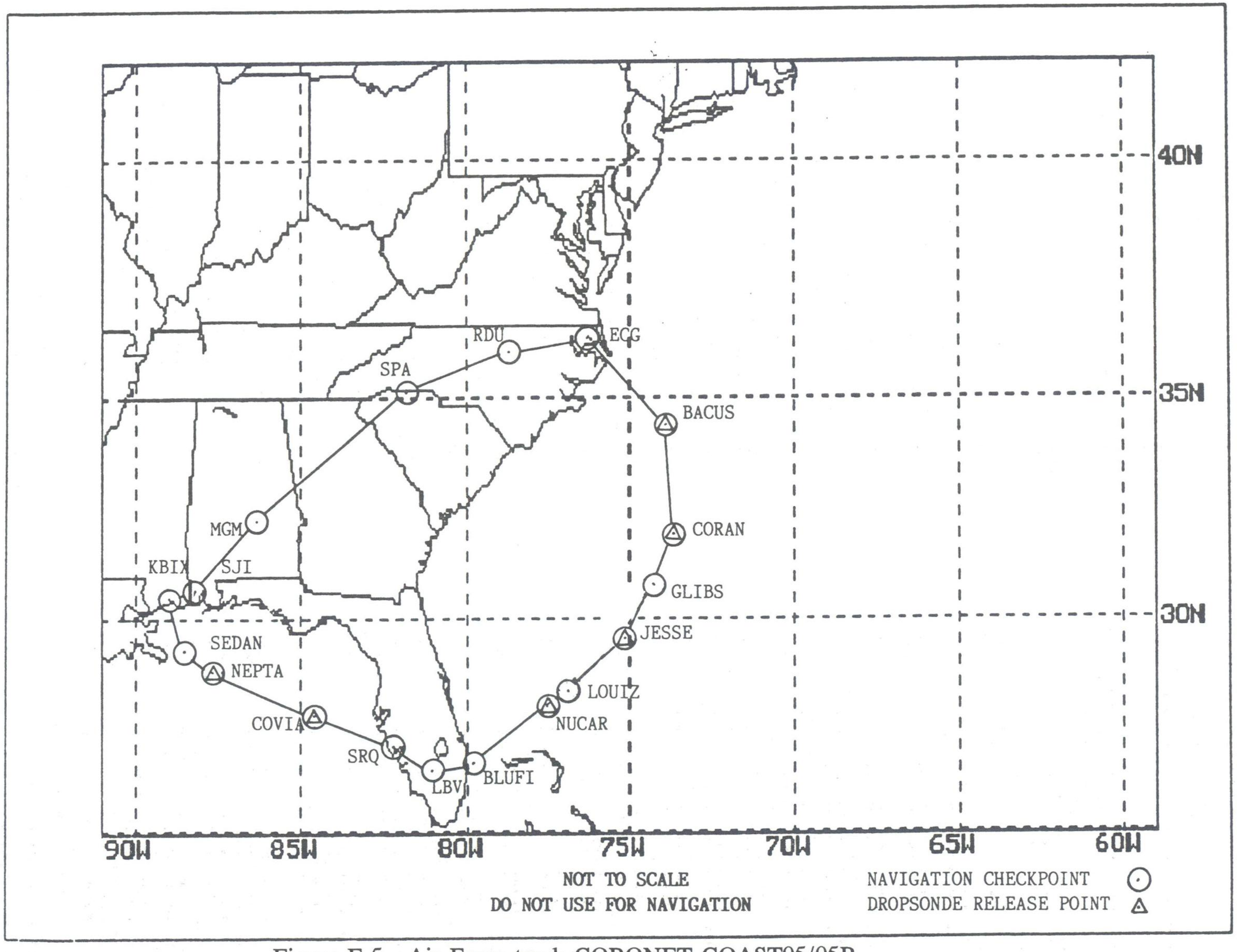


Figure F-5. Air Force track CORONET COAST05/05R.

Table F-6. Flight plans and logs for routes CORONET COAST06/06R. These are for planning purposes only. Do not use for navigation.

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST06
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE | TAKE-OFF, CLIMB, CRUISE DATA
Climb: 30000 Cruise: 280T
temp: -44C wind:
FF: 3702

FREQUENCIES

DEP FIELD DATA | TOT DIST: 1518.7 | TOT ETE: 5+47.2 | TOT FUEL: 23172

TP	ROUTE / FIX	FREQ	LAT / LON	MH / MC	DIST	CAS / GS	ETE / ETA	ATA	FUEL
	STTO		N 3024.70				+00.0		1300
	KBIX/L		W08855.40				00:00.0		34700
	DIR	79	N 2909.80	166	76.7	174C	+22.1		2087
	SEDAN	113.2	W08836.57	166	76.7	280G	00:22.1		32613
	L/O @ 30000		N 2903.04	116	10.4	174C	+03.0		283
			W08827.10	116	87.1	280G	00:25.1		32331
	J58		N 2836.68	116	50.4	174C	+10.8		667
	NEPTA/DROP		W08738.60	116	137.5	280G	00:35.9		31664
	J58	99	N 2756.17	098	158.9	174C	+34.0		2093
	COVIA	115.2	W08444.17	098	296.4	280G	01:10.0		29571
	DIR/KZMA		N 2728.02	192	29.3	174C	+06.3		380
	CIGAR/DROP		W08448.00	192	325.6	280G	01:16.2		29191
	R875	99	N 2602.10	210	99.9	174C	+21.4		1297
	MINON	115.2	W08545.10	210	425.6	280G	01:37.7		27894
	A509/KZHU		N 2555.00	244	15.2	174C	+03.2		195
	HOUSTON FIR		W08600.00	244	440.7	280G	01:40.9		27698
	A509		N 2455.25	238	112.7	174C	+24.2		1449
	ELION/DROP		W08745.80	238	553.4	280G	02:05.0		26249
	A509	76	N 2435.32	237	37.5	174C	+08.1		479
	SWORD	112.9	W08820.82	237	590.9	280G	02:13.1		25770
	DIR		N 2440.33	271	123.2	174C	+26.4		1568
	NULEY/DROP		W09036.12	271	714.2	280G	02:39.5		24202
	DIR	90	N 2500.02	276	182.5	174C	+39.1		2303
	COKER	114.3	W09356.00	276	896.6	280G	03:18.6		21900
	DIR		N 2517.02	291	36.8	174C	+07.9		459
	LULIS/DROP		W09432.00	291	933.4	280G	03:26.5		21441
	DIR		N 2548.00	295	60.8	174C	+13.0		756
	ADIZ		W09530.00	295	994.2	280G	03:39.5		20685
	DIR	90	N 2732.77	007	107.2	174C	+23.0		1329
	ALLBA	114.3	W09507.82	007	1101.5	280G	04:02.5		19356
	DIR		N 2815.00	002	42.8	174C	+09.2		526
	SONDE RELEAS		W09500.00	002	1144.3	280G	04:11.7		18830
	DIR	90	N 2815.02	087	67.1	174C	+14.4		822
	EARNS	114.3	W09344.92	087	1211.3	280G	04:26.0		18008
	DIR		N 2815.03	082	120.8	174C	+25.9		1476
	BOGGY/DROP		W09127.75	082	1332.2	280G	04:51.9		16532
	DIR	82	N 2910.50	049	90.6	174C	+19.4		1098
	LEV	113.5	W09006.23	049	1422.8	280G	05:11.4		15434
	S/D @ 30000		N 3015.09	033	83.4	174C	+17.9		1006
			W08904.54	033	1506.2	280G	05:29.2		14428
	DIR	55	N 3024.42	033	12.5	174C	+03.0		100
	BIX		W08855.80	033	1518.7	280G	05:32.2		14328
	APPR	55	N 3024.42	034	0.0		+15.0		1500
	BIX		W08855.80	034	1518.7		05:47.2		12828

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

FPLAN version 9.0: FLIGHT PLAN and LOG route: COAST06R
Ref: 1C-130H-1-1 T56-A-15 ENGINES (100%) MIL CLIMB, SPECIFIC RANGE

CLEARANCE | TAKE-OFF, CLIMB, CRUISE DATA
Climb: 30000 Cruise: 280T
temp: -44C wind:
FF: 3702

FREQUENCIES

DEP FIELD DATA | TOT DIST: 1518.5 | TOT ETE: 5+47.2 | TOT FUEL: 23170

TP	ROUTE / FIX	FREQ	LAT / LON	MH / MC	DIST	CAS / GS	ETE / ETA	ATA	FUEL
	STTO	55	N 3024.42				+00.0		1300
	BIX		W08855.80				00:00.0		34700
	L/O @ 30000		N 2917.39	215	87.0	174C	+25.1		2369
			W08959.60	215	87.0	280G	00:25.1		32331
	DIR	82	N 2910.50	215	8.9	174C	+01.9		117
	LEV	113.5	W09006.23	215	95.9	280G	00:27.0		32214
	DIR		N 2815.03	227	90.5	174C	+19.4		1196
	BOGGY/DROP		W09127.75	227	186.4	280G	00:46.4		31018
	DIR	90	N 2815.02	268	120.9	174C	+25.9		1587
	EARNS	114.3	W09344.92	268	307.4	280G	01:12.3		29431
	DIR		N 2815.00	263	66.2	174C	+14.2		860
	SONDE RELEAS		W09500.00	263	373.5	280G	01:26.5		28571
	DIR/KZHU	90	N 2732.77	181	43.7	174C	+09.4		565
	ALLBA	114.3	W09507.82	181	417.2	280G	01:35.9		28006
	DIR		N 2548.00	184	106.6	174C	+22.8		1374
	95.5 W		W09530.00	184	523.9	280G	01:58.7		26632
	DIR		N 2517.02	114	61.4	174C	+13.2		785
	LULIS/DROP		W09432.00	114	585.3	280G	02:11.9		25846
	DIR	90	N 2500.02	111	36.8	174C	+07.9		468
	COKER	114.3	W09356.00	111	622.1	280G	02:19.7		25378
	DIR		N 2440.33	088	182.5	174C	+39.1		2317
	NULEY/DROP		W09036.12	088	804.5	280G	02:58.8		23061
	DIR	76	N 2435.33	091	123.1	174C	+26.4		1544
	SWORD	112.9	W08820.82	091	927.6	280G	03:25.2		21517
	A509		N 2455.25	057	37.6	174C	+08.1		468
	ELION/DROP		W08745.80	057	965.2	280G	03:33.3		21048
	A509/KZMA		N 2555.00	057	112.7	174C	+24.2		1399
	MIAMI FIR		W08600.00	057	1077.9	280G	03:57.4		19650
	A509	99	N 2602.12	062	15.2	174C	+03.2		187
	MINON	115.2	W08545.10	062	1093.1	280G	04:00.7		19463
	R875		N 2728.02	032	100.0	174C	+21.4		1231
	CIGAR/DROP		W08448.00	032	1193.1	280G	04:22.1		18232
	DIR	99	N 2756.18	006	28.4	174C	+06.1		347
	COVIA	115.2	W08444.17	006	1221.5	280G	04:28.2		17885
	J58		N 2836.68	286	159.8	174C	+34.2		1949
	NEPTA/DROP		W08738.60	286	1381.3	280G	05:02.5		15936
	J58	79	N 2909.82	297	60.6	174C	+13.0		732
	SEDAN	113.2	W08836.57	297	1441.9	280G	05:15.4		15203
	S/D @ 30000		N 3012.68	342	64.1	174C	+13.8		773
			W08852.91	342	1506.0	280G	05:29.2		14430
	DIR	55	N 3024.42	342	12.5	174C	+03.0		100
	BIX		W08855.80	342	1518.5	280G	05:32.2		14330
	APPR		N 3024.70	342	0.0		+15.0		1500
	KBIX/L		W08855.40	342	1518.5		05:47.2		12830

WARNING FPLAN fuel computations do NOT satisfy MAC fuel requirements.

WARNING FPLAN computes courses out of the turnpoint (instead of average)!

Use MPLAN to overcome these and other problems.

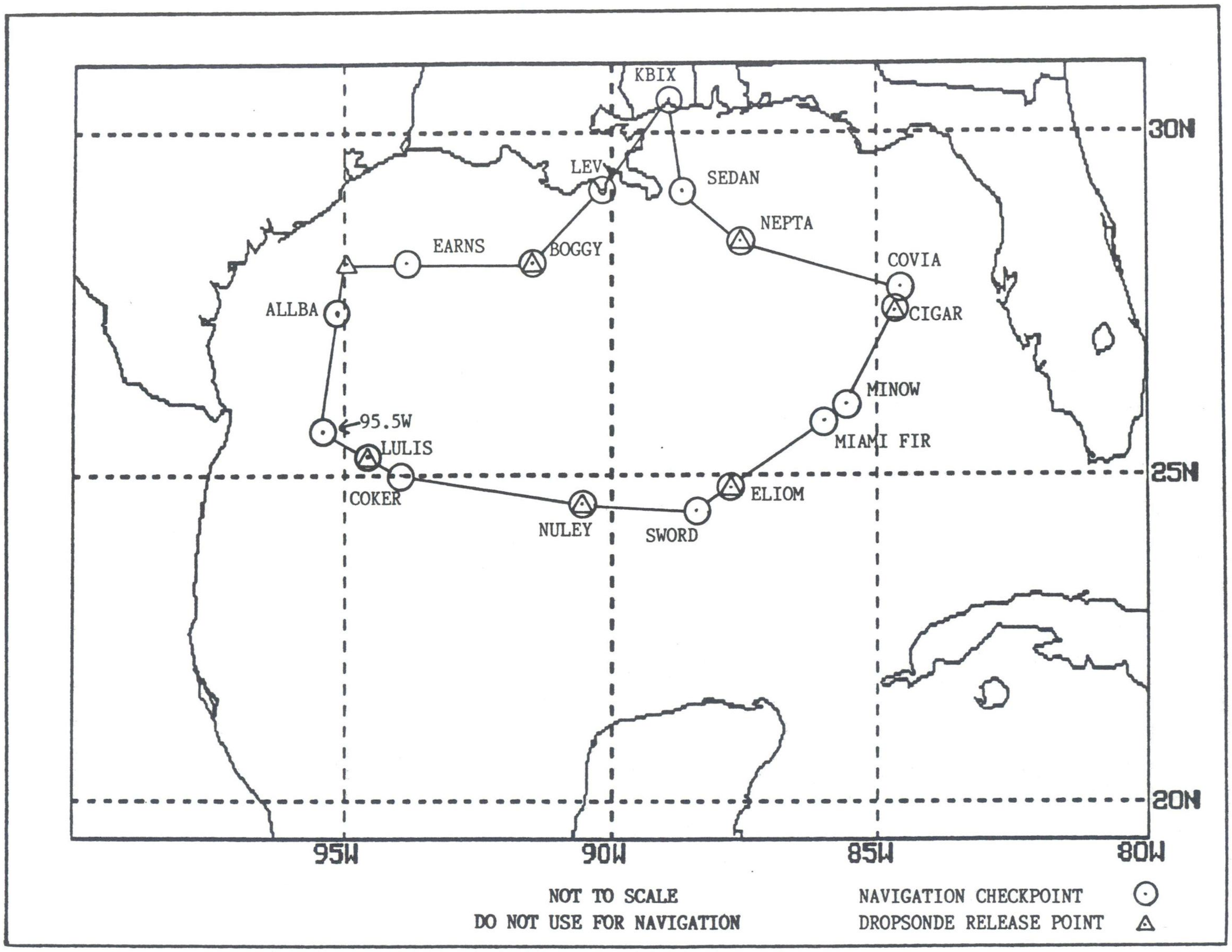


Figure F-6. Air Force track CORONET COAST06/06R.

APPENDIX G

OFFICIAL INTERAGENCY AGREEMENTS

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

MEMORANDUM OF AGREEMENT

BETWEEN

THE UNITED STATES AIR FORCE RESERVE

AND

THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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

1. REFERENCES:

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

b. National Hurricane Operations Plan (NHOP)

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

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

4. GENERAL PROVISION:

a. AFRES agrees:

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

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

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

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

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

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

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

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

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

FOR THE UNITED STATES
AIR FORCE RESERVE

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

Date 19 JAN 92

FOR THE NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION

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

Date MAY 4 1992

1 Atch
Distribution List

DISTRIBUTION LIST

HQ AFRES/DO/LGXS
Robins AFB, GA 31098-6001

14 AF/DO/LGX
Dobbins AFB, GA 30069-5002

403 AW/DO/XP
Keesler AFB, MS 39534-5000

Office of the Federal Coordinator for Meteorological
Services and Supporting Research
6010 Executive Boulevard, Suite 900
Rockville, MD 20852

NOAA/NWS/W
1325 East West Hwy, Rm 18130
Silver Spring, MD 20910-3233

Atch 1

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

LETTER OF AGREEMENT

EFFECTIVE: SEP - 1 1993

SUBJECT: METEOROLOGICAL RECONNAISSANCE FLIGHTS

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

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

3. REFERENCES:

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

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

5. RESPONSIBILITIES:

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

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

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

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

6. PROCEDURES:

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

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

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

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

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

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

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

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

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

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

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

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

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

LETTER OF AGREEMENT

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

2. DEFINITIONS (for purposes of this LOA):

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

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

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

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

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

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

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

3. RESPONSIBILITIES AND PROCEDURES:

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

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

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

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

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

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

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

FOR THE 403d AIRLIFT WING

JOE L. CAMPBELL, Brig Gen, USAFR
Commander

Date 29 Jul 93

FOR THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AIRCRAFT OPERATIONS CENTER

F.D. MORAN, RADM, NOAA
Director

Date 3 Aug 93

1 Atch
Distribution List

DISTRIBUTION LIST

HQ AFRES/DO/DOTSA/LGXS
ROBINS AFB, GA 31098-6001

22AF/DO/LGX
DOBBINS AFB, GA 30069-5002

403AW/DO/XP
Keesler AFB, MS 39534

OFCM
6010 Executive Boulevard - Suite 900
Rockville, MD 20852

Federal Aviation Administration
ATP-130
800 Independence Avenue, S.W.
Washington, D.C. 20591

CARCAH
National Hurricane Center
IRE Financial Building, Room 631
1320 S. Dixie Highway
Coral Gables, FL 33146

☆ U.S. GOVERNMENT PRINTING OFFICE: 1993 — 300-631/83099

WORKING GROUP FOR HURRICANE AND WINTER STORMS OPERATIONS

MR. RAINER DOMBROWSKY, Chairman
Department of Commerce
National Weather Service

MR. JEFFERY MACLURE
Department of State

MR. DANE CLARK
Department of Commerce
National Environmental Satellite,
Data, and Information Service

CDR CRAIG LILLY, USN
Department of Defense
United States Navy

MR. ERIC MEINDL
Department of Commerce
National Data Buoy Center

FAA OPERATIONS
Department of Transportation
The Air Traffic Control System Command Center
Washington, D.C.

FAA ADMINISTRATION AND PROCEDURES
Department of Transportation
Air Traffic Rules and Procedures Service
Procedures Division, ATP-100

LTCOL GALE CARTER, USAF
Department of Defense
Air Force Reservces

LCDR CYNTHIA NELSON, USN, Secretary
Office of the Federal Coordinator
for Meteorological Services and
Supporting Research