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. The DOC has identified a requirement for, and the Department of Defense (DOD) maintains aircraft to support up to two operational weather reconnaissance sorties per day. In times of national emergency or war, some or all DOD reconnaissance resources may not be available to fulfill DOC needs.

2.2 Responsibilities.

2.2.1 DOD. The DOD, through the Air Force Reserve Command's 53rd Weather Reconnaissance Squadron (53 WRS), is responsible for providing operational aircraft for winter storm synoptic tracks in the Atlantic Ocean, Gulf of Mexico, and North Pacific Ocean in response to DOC needs. The Global Decision Support System (GDSS) JCS Priority Code for tasked, operational weather reconnaissance is **1A3** (IAW DOD Regulation 4500.9-R and Joint Publications 4-01 and 4-04). The Force Activity Designator (FAD)/Urgency of Need Designator (UND) Supply Priority Designator Determination code is **IIA2** (IAW Joint Publication 4-01 and Air Force Manual 23-110, Volume 2, Part 13, Attachment 3A-2.)

2.2.2 DOC. The DOC, through the NOAA Aircraft Operations Center (AOC), is responsible for aircraft operations that will be used (when available, on request) as backup for 53 WRS aircraft reconnaissance, for a storm or storm threat. Additionally, NOAA AOC aircraft missions may be flown on storms of research interest as desired by the Environmental Research Laboratories. All such flights will be listed by the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH) in the Winter Storm Plan of the Day (WSPOD).

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

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. NCEP/HPC will forward mission requirements to CARCAH for tasking in the WSPOD within the responsibilities stated above. The CARCAH will advise

NCEP/HPC of mission availability or nonavailability and expected responsiveness of DOD and DOC assets. NCEP/HPC will be responsible for requesting all reconnaissance flights and will provide information as specified in paragraph 2.4.5. NCEP/HPC will also 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 1530 UTC each day. Vertical observation positions will be identified by NCEP/HPC 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 1/2 hours prior to scheduled aircraft departure:
  - Changes to tracks normally will be limited to substitution of one track for another.
  - Departure delays of up to 6 hours will be acceptable in accordance with MCR 55-130, volume 1, paragraph 3.10.
- When notification is received more than 4 hours prior to scheduled aircraft departure time, departure delay requests will be evaluated in accordance with appropriate flight management directives.

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

2.4.4 Satisfaction of Requirements.

2.4.4.1 Satisfied. Requirements are considered satisfied when an observation is or could have been taken (as in the case where aircraft are diverted from original track) at the specified location (control point) by the expiration time and a sufficient number of drops were accomplished to satisfy the customer's requirements.

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

2.4.4.3 Written Assessment. The requesting agency, NCEP/HPC and/or a WFSO, will provide CARCAH a written evaluation (Figure 2-1) of the weather reconnaissance mission any time its timeliness and quality are outstanding or substandard. Requirements levied as "resources permitting" will not be assessed for timeliness. These assessments should be

DATE _____

TO: CARCAH

FROM:

SUBJECT: MISSION _____ EVALUATION
(MISSION IDENTIFIER)

I. PUBLISHED REQUIREMENTS

1. CONTROL POINT AND TIME _____

2. FLIGHT TRACK _____

3. EXPIRATION TIME of REQUIREMENT _____

4. MISCELLANEOUS (DROP PSNS, ALTITUDES, etc.) _____

_____

II. RECONNAISSANCE MISSION PERFORMANCE

1. CONTROL PT TIME: _____ ON TIME _____ LATE _____ EARLY _____ MISSED

2. FLIGHT TRACK FLOWN: _____ COMPLETELY _____ PARTIALLY _____ OTHER

3. HORIZONTAL DATA COVERAGE: COMPLETE _____ TIMELY _____ ACCURATE _____
INCOMPLETE _____ UNTIMELY _____ INACCURATE _____

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

III. OVERALL MISSION EVALUATION

OUTSTANDING _____

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

IV. REMARKS (BRIEF BUT SPECIFIC) _____

_____

V. REPLY BY ENDORSEMENT ____ YES ____ NO

_____
(Forecaster's Signature)

Figure 2-1. Sample mission evaluation form.

mailed to CARCAH at:

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

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

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

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

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

2.4.5.2 Preparation. Using requirements stated by NCEP/HPC, 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. During the month of November, the WSPOD will be disseminated as a NOTE added to the Tropical Cyclone Plan of

the Day (TCPOD). *NOTE: The WSPOD is disseminated under the header "MIAREPRPD" for AWIPS users and "NOUS42 KNHC" for AWDS users. The WSPOD can also be accessed via Internet at www.hurricanehunters.com/wxdata.htm and clicking on Plan of the Day.*

Figure 2-2. National Winter Storms Operations Plan Coordination Request.

NWSOP COORDINATED REQUEST FOR AIRCRAFT RECONNAISSANCE

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

_____ 2. A flight is requested.

A. Track Number and altitude

_____

B. Control point and control point time

_____

C. Expiration time (at control point)

_____

D. Specific instructions (such as dropsonde positions)

_____

_____

3. Succeeding day outlook.

_____ A. Negative

_____ B. Possible Track Number _____

Control point and time _____

4. Coordination (initials)

NCEP/HPC _____ 53 WRS _____

AOC _____ CARCAH _____

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

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

FM: CARCAH, NATIONAL HURRICANE CENTER, MIAMI, FL

TO: (AFRC/NOAA APPROVED ADDRESSEES)

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

1. FLIGHT ONE

A. _____(TRACK/CONTROL POINT/TIME)

B. _____(MISSION IDENTIFIER)

C. _____(DEPARTURE POINT/ESTIMATED DEPARTURE TIME)

D. _____(DROP POSITIONS)

E. _____(ALTITUDE/EXPIRATION TIME)

F. _____(REMARKS, if needed)

2. OUTLOOK FOR SUCCEEDING DAY

A. _____(ANTICIPATED TRACK/CONTROL POINT/TIME)

B. _____(REMARKS, if needed)

2.4.5.4 Responsiveness.

- Notification of reconnaissance requirements should be made early enough to allow 16 hours plus en route flying time to the control point.

- The succeeding day outlook portion of the WSPOD is designed to allow advance notification.

- When circumstances do not allow the appropriate notification lead time, the mission will be levied as "resource permitting."

2.5 Reconnaissance Flights.

2.5.1 General Storm Tracks.

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

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

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

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

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

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

- Mission call-sign.
- Track name/identifier.

- Estimated time over start ALTRV point.
- Location of dropsonde release points.
- Requested altitudes/flight levels.
- Any special requests or deviations from published routes.

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

2.5.3 Flight Levels. Tracks are normally tasked for the 300 mb level (FL 310). If unable to maintain the tasked altitude for any reason, fly as close to the tasked level as possible. When operating under an Instrument Flight Regulation (IFR) flight plan, reconnaissance aircraft will fly only at Air Traffic Control (ATC) assigned altitudes and will accept altitude changes as directed by ATC.

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

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

2.5.5 Air Traffic Control (ATC).

2.5.5.1 ATC Priority. If mission requirements dictate, crews may specifically request "Priority Handling" from ATC in accordance with FAA Order 7110.65, Air Traffic Control, paragraph 2-1-4.1. (See ATC Clearance Letter, Appendix G).

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

2.5.5.3 Assigned Altitudes. When storm aircraft cannot maintain assigned altitudes due to turbulence, ATC should be advised. Normal vertical separation of 1000 feet at flight level (FL) 290 and below and 2000 feet above FL 290 will be provided by ATC to aircraft operating

in the storm area. Unless otherwise coordinated with ATC, the altitudes between storm-mission aircraft may be used by ATC for nonparticipating aircraft.

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

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

2.5.6 Data Requirements. Data requirements are defined in Table 2-1. Data will be coded and transmitted in standard reconnaissance code (RECCO) for flight level observations (Appendix D) or World Meteorological Organization upper-level pressure, temperature, humidity and wind report from a sonde released by carrier balloons or aircraft (WMO TEMP DROP) format for dropsonde soundings (Appendix E).

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

EXAMPLE: URNT10 KNHC 051845
97779…TEXT…
RMK AF986 TRACK 01 OB 01
DPTD KBIX 05/1800Z. ETA 36.9N 72.7W 06/0210Z.

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: URNT10 KNHC 060210
97779…TEXT…
RMK NOAA3 TRACK 02 OB 23
ETA KMCF 06/0330Z. LAST REPORT OBS 01 THRU 23 TO KNHC.

Table 2-1. Requirement for aircraft reconnaissance data.

Data required	Altitudes where data are required	Areal portion of cyclone or environment where data are needed	Time and frequency of observations	Accuracy required
Synoptic data --pressure (heights), temperature, moisture, and winds--for national weather prediction and medium range forecasting.	At altitudes indicated in the WSPOD.	Throughout the marine portion of area as defined in Chapter 1.	**Dropsondes as specified in Plan of the Day (drop interval approximately 300 nmi (550 km)). While over water, horizontal observations approximately every 20 minutes, at major turn points, and at the control point.	+- 5 kt (2.5 m/s) (wind speed) +- 10º (wind direction) +- 1ºC +- 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) 10º (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.