

## 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 currently defined, the winter storm season runs from 1 November through 15 April. 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 east of the international date line in response to DOC needs. In order to respond to DOC Pacific Winter Storm requirements, the 53 WRS routinely deploys to either Elmendorf AFB, Alaska, or Hickham AFB, Hawaii, during the January and February time frame. The amount of time deployed on station is precoordinated with DOC prior to the winter storm season.

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 in support of National Centers for Environmental Prediction/ Hydrometeorological Prediction Center (NCEP/HPC) or as backup for 53 WRS aircraft reconnaissance for an East Coast storm or storm threat. Additionally, NOAA AOC aircraft missions may be flown on West Coast storms and storms of research interest as requested by the NOAA line offices. 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. Detailed procedures for the expeditious handling of winter storm reconnaissance aircraft are outlined in paragraph 2.5, Reconnaissance Flights.

**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. 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 ½ 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 Air Force Instruction (AFI) 11-2C130 Volume 3, paragraph 3.4, Alerting Procedures.
  - < Delays affecting missions operating under Altitude Reservation (ALTRV) procedures may cause cancellation of the ALTRV in accordance with “AVANA” procedures, FAA Order 7610.4, Special Military Operations.
  - < 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 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 1530 UTC for East Coast requirements and 1830 UTC for West Coast requirements. 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).

DATE \_\_\_\_\_

TO: CARCAH

FROM:

SUBJECT: MISSION \_\_\_\_\_ EVALUATION  
(MISSION IDENTIFIER)

I. PUBLISHED REQUIREMENTS

1. CONTROL POINT AND TIME \_\_\_\_\_
2. FLIGHT TRACK \_\_\_\_\_
3. EXPIRATION TIME of REQUIREMENT \_\_\_\_\_
4. MISCELLANEOUS (DROP PSNS, ALTITUDES, etc.) \_\_\_\_\_  
\_\_\_\_\_

II. RECONNAISSANCE MISSION PERFORMANCE

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

III. OVERALL MISSION EVALUATION

OUTSTANDING \_\_\_\_\_  
UNSATISFACTORY \_\_\_ FOR: COMPLETENESS \_\_\_\_\_ ACCURACY \_\_\_\_\_ TIMELINESS \_\_\_\_\_  
EQUIPMENT \_\_\_\_\_ PROCEDURES \_\_\_\_\_ OTHER \_\_\_\_\_

IV. REMARKS (BRIEF BUT SPECIFIC) \_\_\_\_\_  
\_\_\_\_\_

V. REPLY BY ENDORSEMENT \_\_\_ YES \_\_\_ NO

\_\_\_\_\_  
(Forecaster's Signature)

**Figure 2-1. Sample mission evaluation form.**

**2.4.5.2 Preparation.** Using requirements stated by NCEP/HPC, CARCAH will prepare the WSPOD daily between November 1 and March 31, and at other times during the year as required. CARCAH will coordinate with DOD and DOC to effect maximum useful data from available resources. Format for the WSPOD is shown in Figure 2-3. *The 53 WRS and NOAA AOC flight operations planners will plan tasked missions to meet Control Point/Control Time criteria and will fly the route in the most efficient direction possible. If a specific direction is desired (clockwise or counterclockwise), it should be indicated in the WSPOD; e.g., Track WSRP-P32 CW or Track WSRP-A64 CCW. Tasking agencies should not use the terminology "Reverse" indicated by an "R" when requesting a track.*

**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 be accessed via Internet at [www.hurricanehunters.com/wxdata.htm](http://www.hurricanehunters.com/wxdata.htm) and clicking on Plan of the Day or via the Tropical Prediction Center/National Hurricane Center home page at [www.nhc.noaa.gov](http://www.nhc.noaa.gov)--click on aircraft reconnaissance and then on Plan of the Day.*

#### **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 Mission Track/Flight Plan Names.** *The nomenclature for winter storms aircraft reconnaissance is "Winter Storm Reconnaissance Program," and the tracks are labeled: "WSRP-A ##" for Atlantic Ocean and Gulf of Mexico tracks, and "WSRP-P ##" for Pacific Ocean tracks. For example, a mission to be flown from Hawaii might be tasked as "Track WSRP-P 33." The tracks are published in appendices to this document.*

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**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.

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

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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)

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

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**2.5.1.2 ATC Communications Backup.** When 53 WRS or AOC flights are unable to contact ATC to request an en-route clearance, a clearance request may be relayed through the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH) or the 53 WRS Mission Commander if the aircraft has the capability to communicate digitally through the satellite communications relay. This communications relay may only be used to preclude an emergency or safety-related situation. (See ATC Clearance procedures letter, Appendix C.)

**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 53 WRS Mission Commander or the AOC Operations Division, as appropriate, will contact the FAA Central Altitude Reservation Function (CARF) *at the Air Traffic Control System Command Center (ATCSCC) and, if appropriate,* submit an Altitude Reservation Approval Request (ALTRV APREQ) at least 12 hours prior to an NWSOP mission. Individual exceptions may be made to the 12-hour requirement on a case-by-case basis through coordination between the 53 WRS, AOC, and CARF. Include the following information in the APREQ (see sample APREQ, Appendix D):

- C Mission call-sign.
- C Track name/identifier.
- C Estimated time over start ALTRV point.
- C Location of dropsonde release points.
- C Requested altitudes/flight levels.
- C 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.)

**2.5.2.1.1** The 53 WRS Mission Commander and the AOC Flight Operations Division will contact *the National Operations Manager (NOM)* at the ATCSCC as soon as possible prior to the NWSOP reconnaissance, surveillance, or research mission and provide the information specified in paragraph 2.5.2.1 (Prior Coordination) above. *The ATCSCC will then coordinate this information with all FAA facilities impacted.* In addition, *the 53 WRS and/or AOC shall transmit via facsimile the information in Appendix E to the U.S. NOTAM office no later than 2 hours prior to departure or as soon as possible.*



**2.5.2.1.2** For Pacific Ocean NWSOP(*WSRP-P*) missions, 53 WRS or AOC officials *may*, upon receipt of tasking, coordinate directly with the affected ARTCC. An ALTRV APREQ *may* be submitted to CARF if the 53 WRS Mission Commander or the AOC Flight Operations Division deem it appropriate to increase the effectiveness of the flight planning process. When submitting an ALTRV APREQ, the procedures in paragraph 2.5.2.1 will be followed.

**2.5.2.1.3** CARF will process the ALTRV APREQ and coordinate it with the impacted ATC facilities. The 53 WRS and AOC *Project Officers shall coordinate with the agencies specified in FAA Order 7610.4 , Special Military Operations, Chapter 3, Section 5, Originator Responsibilities.*

**2.5.2.1.4** Tracks flown in support of the NWSOP shall be defined in appendices to the plan. Changes, additions, and deletions to these tracks shall be coordinated between the 53 WRS, AOC , NOAA, and the FAA. These tracks shall be reviewed annually, no later than 1 June.

**2.5.2.1.5** The 53 WRS shall only use the call sign “Teal ##,” and AOC shall only use “NOAA ##.” ATC will provide TEAL and NOAA aircraft priority handling when specifically requested.

**2.5.2.1.6** For NWSOP missions, 53 WRS crews may request one of five “discreet” Mode 3 Beacon Codes, as issued by the Department of Defense (DOD) Code Manager.

**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/Sensor Activations.** During NWSOP missions, when in other than Class G airspace, dropsonde instrument releases from FL 190 or higher and sensor activation shall be coordinated with the appropriate ATC by advising of a pending drop or sensor activation at least 10 minutes prior to the event when in direct radio contact with ATC. When contact with ATC is via Aeronautical Radio, Incorporated (ARINC), event coordination shall be included with the position report prior to the point where the action will take place, unless all instrument release points have been previously relayed to the affected ATC center(s). EXAMPLE: "TEAL 63, SLATN at 1215, FL310, estimating FLANN at 1250. CHAMP next, Weather instrument release at FLANN."

**2.5.4.1 Advisory Broadcasts.** During NWSOP missions, commencing 5 minutes prior to release of dropsondes from FL190 or higher, the aircraft commander will broadcast in the blind on 121.5 MHZ and 243.0 MHZ to advise any traffic in the area of the pending drop.

**2.5.4.2 Aircraft Commander Responsibilities.** Aircraft commanders are the sole responsible party for all dropsonde releases or sensor activations. They are also responsible for determining the content and duration of a broadcast, concerning a dropsonde release or sensor activation.

## **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 C).

**2.5.5.2 ATC Separation.** The FAA will provide ATC services and separation from nonparticipating aircraft flying on instrument flight rules (IFR) to the 53 WRS and AOC aircraft operating in other than Class G airspace. Aircraft not flying on instrument flight rules may be operating near the storm environment; therefore, adherence to ATC clearances is mandatory for safety purposes.

**2.5.5.2.1** It is the responsibility of the aircraft commander to remain clear of obstacles and nonparticipating aircraft when operating in Class G airspace.

**2.5.5.2.2** The 53 WRS and AOC are responsible for ensuring that air traffic clearances and messages are relayed to/from the FAA in an accurate manner when those relays are initiated by the 53 WRS or AOC and are routed by some other means other than ARINC.

**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 J) or World Meteorological Organization upper-level pressure, temperature, humidity, and wind report from a dropsonde released by carrier balloons or aircraft (WMO TEMP DROP) format for dropsonde soundings (Appendix K).

**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 AF980 WSWSA 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 WSWSC TRACK 02 OB 23  
ETA KMCF 06/0330Z. LAST REPORT OBS 01 THRU 23 TO KNHC.

**2.5.6.3 Mission Identifiers.** The identifiers issued by CARCAH will be based on the departure point and will include the aircraft number, track number, and a basin identifier-- WSWSA for the Atlantic, WSWSE for the Eastern Pacific, and WSWSC for the Central Pacific.

**Table 2-1. Requirement for aircraft reconnaissance data.**

<b>Data Required</b>	<b>Altitudes where data are required</b>	<b>Portion of environment where data are needed</b>	<b>Time and frequency of observations</b>	<b>Accuracy required</b>
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 nm (550 km)). While over water, horizontal observations approximately every 20 minutes, at major turn points, and at the control point.	+/- 5 kt (2.5 m/s) (wind speed)  +/- 10° (wind direction)  +/- 1°C  +/- 20m  +/- 2 mb (200 Pa) Position within 20 nm (37 km)
Location and strength of radar echoes.	Any level.	All sectors.	When available.	

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

\*\*Includes dropwindsondes. If a dropsonde fails or vertical data are otherwise unobtainable at a specified position, make another release as soon as possible.