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 November 1 through March 31. As outlined in the Air Force Reserve Command (AFRC)/National Oceanic and Atmospheric Administration's National Weather Service (NOAA/NWS) Memorandum of Agreement (see Appendix J), the DOC has identified a requirement for winter storm aerial reconnaissance. In this agreement, the Department of Defense (DOD)/AFRC maintains aircraft to support up to two operational weather reconnaissance sorties per day in the Atlantic. When aircraft are deployed to the Pacific, up to two additional operational sorties for the Pacific Theater may be requested, resources permitting. 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 (AFRC), 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. To respond to DOC Pacific Winter Storm requirements, the 53rd Weather Reconnaissance Squadron (53 WRS) typically deploys to Pacific locations during the January and February timeframe.

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).

At a minimum, combatant commanders (COCOMs) should maintain situational awareness of weather reconnaissance forces providing support to NOAA. The situational awareness should be maintained through the appropriate combatant commander whose area of responsibility the mission is being conducted.

2.2.2 DOC. The DOC, through the NOAA Aircraft Operations Center (AOC), is responsible for aircraft surveillance operations in the Pacific that will be used in support of National Centers for Environmental Prediction line offices or as backup for 53 WRS aircraft reconnaissance for an East Coast storm or storm threat. AOC provides operational aircraft for winter storm synoptic tracks in the North Pacific Ocean, and can deploy to Alaska, Hawaii, Japan, or other locations. 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) when provided to CARCAH before 1830 UTC.

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. The NCEP/NCO SDM will monitor all operational model guidance using tools developed by EMC, with particular attention on North America, Hawaii, and Alaska. Regions upstream of the US over the North Pacific Ocean, where the models have a higher degree of disagreement, are then examined and it is determined if additional target observations supplied by aircraft would positively affect the forecast. After consultation and coordination with other NCEP units, NWS field offices, and/or DOD forecasters, the SDM determines whether or not a flight would be beneficial and then forward all DOC/NOAA mission requirements to CARCAH for tasking in the WSPOD within the responsibilities stated above. This coordinated request will be considered the agency's request for assistance (RFA) to DOD.

The SDM will be responsible for requesting all East Coast/Atlantic and West Coast/Pacific reconnaissance flights and will provide information as specified in paragraph 2.4.5 for the next 24-hour period (1100 UTC of the next day to 1100 UTC of the following day) and an outlook for the succeeding 24 hours to CARCAH before 1830 UTC (preferably by 1600 UTC). 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:

2.4.2.1 53 WRS.

- 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) 11-2C-130J Vol. 3, paragraph 3.11.2.2.
  - 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.

2.4.2.2 NOAA AOC.

- Recommend the use of published NWSOP tracks whenever possible.
- 'Track 99' or customized tracks are permitted; however, they are to be limited to 3,500 nautical miles in length. AOC will determine the direction of flight around the pattern for maximum efficiency.

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, and/or an NWS WFO, may 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 or emailed to CARCAH at:

CARCAH
National Hurricane Center
11691 SW 17th Street
Miami, FL 33165-2149
ncep.nhc.carcah@noaa.gov

MISSION EVALUATION FORM

DATE:

TO: CARCAH

FROM:

SUBJECT: MISSION _____ EVALUATION
(Mission Identifier)

I. PUBLISHED REQUIREMENTS

1. CONTROL POINT AND TIME _____

2. FLIGHT TRACK _____

3. EXPIRATION TIME of REQUIREMENT _____

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

_____
—

II. RECONNAISSANCE MISSION PERFORMANCE

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

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

3. HORIZONTAL DATA COVERAGE: COMPLETE _____ TIMELY _____ ACCURATE

INCOMPLETE _____ UNTIMELY _____ INACCURATE

4. VERTICAL DATA COVERAGE: COMPLETE _____ TIMELY _____ ACCURATE

INCOMPLETE _____ UNTIMELY _____ INACCURATE

III. OVERALL MISSION EVALUATION

OUTSTANDING

UNSATISFACTORY ___ FOR: COMPLETENESS _____ ACCURACY ____ TIMELINESS

EQUIPMENT____ PROCEDURES ____ OTHER

IV. REMARKS (BRIEF BUT SPECIFIC) _____

_____

_____

V. REPLY BY ENDORSEMENT ____ YES ___ NO

(Forecaster's Signature)

Figure 2-1. Sample Mission Evaluation Form.

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

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

2.4.5.1 Coordination. The NCEP/NCO SDM will coordinate with other NCEP units and the appropriate NWS field offices as needed and provide WSPOD information (Figure 2-2) to CARCAH before 1830 UTC for both Atlantic and Pacific 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. The NCEP/NCO SDM will provide the following data to CARCAH when applicable:

- Track number.
- Selected track point (control point) and time (control time) the aircraft is required to be at the point. (Note: On Atlantic tracks, the second to last required drop position will be the control point.)
- Dropsonde release and special requirements.
- Expiration time of requirement (latest time at the control point when the mission requirement is regarded as satisfied).
- Succeeding day outlook and optional additional day outlook (anticipated tracks, control points, control times if available).

2.4.5.2 Preparation. Using requirements stated by NCEP/NCO SDM, the 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, unless specified otherwise. If a specific direction is desired (clockwise or counterclockwise), it should be indicated in the WSPOD (e.g., Track 32 CW or Track 64 CCW). Tasking agencies should <u>not</u> use the terminology "Reverse" indicated by an "R" when requesting a track. Amendments to the WSPOD will only be published when requirements change. When amended, the impact on each flight listed will be identified (i.e., No Changes, Change Added, or Canceled).

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

_____

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/NCO SDM _____ 53 WRS _____

AOC _____ CARCAH _____

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

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

- The coordinated WSPOD is NOAA's Request for Assistance (RFA) to DOD. Since DOD's support to NOAA is congressionally mandated and funded through the DOD Appropriations Act, the coordinated WSPOD is considered a validated and approved RFA.

- Combatant command headquarters and their air component command headquarters will coordinate on missions by reviewing the proposed WSPOD posted at http://www.nhc.noaa.gov/recon.php link, and then click "For Tomorrow" under "Plan of the Day."

- Combatant command headquarters and their air component command headquarters will pull current DOD missions from http://www.nhc.noaa.gov/recon.php link, and then click "For Today" under "Plan of the Day."

2.4.5.3 Dissemination. The WSPOD will be made available in message form to all appropriate agencies, such as the 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. Normally, this should be by 1830 UTC each day, including weekends and holidays. If there are no current day or succeeding-day reconnaissance requirements, a negative report, which covers the appropriate time frame, will be disseminated. Transmitted WSPODs will be serially numbered each winter storm season. 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 TCPOD is disseminated under the header "MIAREPRED" for AWIPS users and "NOUS42 KNHC" for AWDS users. The TCPOD can be accessed via the Internet at the National Hurricane Center homepage at http://www.nhc.noaa.gov/, then 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 "resources permitting."
- If requirements beyond the succeeding day are anticipated, an additional day outlook may be included.

2.5 Reconnaissance Flights.

2.5.1 General Storm Tracks.

2.5.1.1 Mission Track/Flight Plan Names. Established winter storms aircraft reconnaissance tracks are published in Appendices E - I and are available from the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM) upon request from an authorized user. The nomenclature for the storm tracks is "WSRP-A##" for Atlantic basin tracks and "WSRP-P##" for Pacific basin tracks, where WSRP is an abbreviation for "Winter Storm Reconnaissance Program." In WSPOD tasking specifications (Figure 2-3), this will be shortened to "A##" or "P##" in Item A and "TRACK##" for the mission identifier in Item B. Track numbers are currently assigned as follows:

- A61-66: Western Atlantic and Gulf of Mexico tracks (see Appendix E)
- P01-30: Central Pacific—Alaskan tracks (see Appendix F & G)
- P31-56: Central Pacific—Hawaiian tracks (see Appendix F & H)
- P68-90: Western Pacific—Japanese tracks (see Appendix F & I)

For example, a mission to be flown might be "WSRP-P33" and tasked as "TRACK33" in the WSPOD. Unpublished tracks will be assigned a track number of 99.

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 established winter storm reconnaissance tracks in Appendices E - I 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.

Winter Storm Plan of the Day (WSPOD)

NOUS42 KHNC _____ (DATE/UTC TIME)
WEATHER RECONAISSANCE FLIGHTS
CARCAH, NATIONAL HURRICANE CENTER, MIAMI, FL
_____ (LOCAL TIME) _____ (DAY) _____ (MONTH/DATE), _____ (YEAR)

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

I. ATLANTIC REQUIREMENTS

1. FLIGHT ONE – TEAL or NOAA _____ (number) or (NEGATIVE RECON RQMTS)

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

   B. _____ (MISSION IDENTIFIER)

   C. _____ (ESTIMATED DEPARTURE TIME)

   D. _____ (DROPS REQUIRED/ADDED POSITIONS)

   E. _____ (ALTITUDE/EXPIRATION TIME)

   F. _____ (REMARKS, if needed)

   FLIGHT TWO (if applicable, same format as FLIGHT ONE)

2. OUTLOOK FOR SUCCEEDING DAY

   A. _____ (ANTICIPATED TRACKS/CONTROL POINTS/CONTROL TIMES OR (NEGATIVE))

   B. _____ (REMARKS, if needed)

II. PACIFIC REQUIREMENTS (same format as Atlantic if requested NCEP/NCO SDM)

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

2.5.2.1 Prior Coordination. The 53 WRS or the AOC Operations Division Project Officers, as appropriate, will contact the International Operations Manager (IOM) at the Air Traffic Control System Command Center (ATCSCC). The 53 WRS or AOC officials may, upon receipt of tasking, coordinate directly with the affected ARTCCs.

- Mission call-sign.
- WSPOD number.
- Departure airfield / ETD.
- Route of flight.
- Aircraft SATCOM #.
- HF Selcal (if applicable).
- Requested NORAD transponder code.
- ARTCCs, FIRs Affected.
- Any special requests or deviations from published routes.
- Point of contact information.

2.5.2.1.1 The ATCSCC will then coordinate this information with all FAA facilities impacted.

2.5.2.1.2. The 53 WRS and/or AOC shall transmit the information in Appendix D to the U.S. NOTAM office no later than 2 hours prior to departure or as soon as possible.

2.5.2.1.3 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 planned and flown at the highest altitude feasible. 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), the 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 aircrew 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.

2.5.6.1 Recco and Dropsonde Observations. Manual flight-level observations will be encoded and transmitted as standard reconnaissance code (RECCO) messages. Dropsonde sounding data consisting of upper-level pressure, temperature, humidity, and wind observations will be encoded and transmitted in World Meteorological Organization TEMP DROP format. See Appendix K for details on these aircraft messages.

2.5.6.2. High-Density/High-Accuracy Aircraft Observations. The HD/HA data include UTC time, aircraft latitude, longitude, static pressure, geopotential height, extrapolated sea-level pressure or D-Value. air temperature, dew point temperature, flight-level (FL) wind direction, FL wind speed, peak 10-second (10-s) average FL wind speed, peak 10-s average surface wind speed from the stepped frequency microwave radiometer (SFMR), SFMR-derived rain rate, and quality control flags. Except for the peak values noted above, all data provided in HDOB messages are 30-second averages, regardless of the interval at which the HDOB messages are reported. See Appendix K for HDOB message formats.

Note: Although HDOB aircraft messages are received by NCEP, there is currently no capability of ingesting the data into its Global Data Assimilation System (GDAS) for forecast model initialization.

2.5.6.3 Accuracy. The accuracy requirements for elements of the vertical sounding are as follows:

- Pressure: within 2 hPa.
- Geopotential Height of Each Mandatory Level:
  - Within 10 meters at or below 500 hPa.
  - Within 20 meters above 500 hPa.
- Temperature: within 1ºC.
- Dew point temperature:
  - From -20º to +40ºC: within 1ºC.
  - Less than -20ºC: within 3ºC.
- Wind direction: within 10 deg.
- Wind speed: within 5 kt.

2.5.6.4. Observational Frequency. Vertical atmospheric soundings will be obtained via dropsonde at or near the geographical positions or the time intervals specified in the flight track. CARCAH should be notified of deviations to the drop requirements and coordinate all modifications.

RECCOs sent during pattern execution are recommended to be staggered approximately midway between the drop points. High-density observation records will be created at 30-second intervals and transmitted in bursts every 10 minutes from aircraft capable of sending them.

2.5.7 Mission Identifiers. All weather messages will include the five-character agency/ aircraft indicator, followed by the CARCAH-assigned mission indicator, followed by the track number. The five-character CARCAH-assigned mission indicator will consist of the sequential number of the mission being flown in the given basin, followed by the letters "WS" to signify a winter storm mission, followed by a location identifier based on the mission departure point: A = Atlantic; E = Eastern Pacific; C = Central Pacific; and W = Western Pacific. Due to computer requirements for processing the data, there is no space between "Track" and the number signifying the track being flown.

--EXAMPLES--

AF302 03WSA TRACK64	(USAF aircraft 5302 on the 3rd winter storm mission in the Atlantic basin flying track 64)
NOAA9 11WSC TRACK35	(NOAA aircraft 49RF on the 11th winter storm mission in the Central Pacific basin flying track 35)

2.5.8 Transmission of Observations.

2.5.8.1. Observation Numbering and Content. All RECCO and TEMP DROP messages from the first to the last during a mission will be numbered sequentially. HDOBs will also be numbered sequentially but separately from other observations. Air Force movement information (i.e., departure time and location and ETAs to locations) will not be included in observation remarks. That information should be passed to CARCAH via SATCOM administrative messages. The mission identifier will be the first mandatory remark, followed by the observation number.

2.5.8.2. Corrections to Observations. A correction indicator should be appended to the WMO abbreviated header after the date/time group and to any lines containing the mission identifier and observation number within corrected aircraft messages. This includes the first remark line in a RECCO, each of the 61616 lines in a sonde TEMP DROP code, and the second line in an HDOB data message. The first corrected message will have an indicator of CCA; subsequent corrections will have indicators of CCB, CCC, etc. Examples of corrected observations are in Table 2-1 below:

Table 2-1. Examples of Corrected Observations

URNT10 KNHC 051233 CCA 97779 12235 60363 71600 00600 28116 94//3 /7058 RMK AF307 04WSA TRACK64 OB 12 CCA SWS = 16 KTS DEW POINT NEG 55 DEGREES C	(Correction for RECCO message OB 12 from the AF307 04WSA TRACK64 mission.)
UZPN13 KWBC 262303 CCA XXAA 76222 99468 71449 15964 99994 07256 22540 00551 ///// ///// 92584 01440 22547 85257 04524 23052 70758 14563 23548 50521 34369 23057 40674 40977 22590 30867 48386 22105 25988 46387 20578 20136 50178 21556 88302 48186 22104 88267 47386 21082 77359 22122 44311 31313 09608 82157 51515 10190 15326 61616 NOAA9 54WSC TRACK99 OB 07 CCA 62626 SPL 4703N14465W 2212 MBL WND 22544 AEV 20801 DLM WND 22561 993169 WL150 22042 084 REL 4684N14493W 215704 SPG 4702N14466W 221 134 = XXBB 76228 99468 71449 15964 00994 07256 11850 04524 22837 05150 33805 07356 44755 10365 55715 13163 66601 23164 77548 29162 88500 34369 99431 39774 11376 41184 22307 47986 33260 47586 44238 43188 55202 50183 66184 46566 77169 47560 21212 00994 22540 11953 22546 22897 22546 33850 23052 44779 24051 55618 23041 66447 23057 77359 22122 88291 22105 99245 20076 11233 22073 22208 22555 33182 19554 44169 21557 31313 09608 82157 51515 10190 15326 61616 NOAA9 54WSC TRACK99 OB 07 CCA 62626 SPL 4703N14465W 2212 MBL WND 22544 AEV 20801 DLM WND 22561 993169 WL150 22042 084 REL 4684N14493W 215704 SPG 4702N14466W 221 134 =	(Correction for sonde TEMP DROP code message OB 07 from the NOAA9 54WSC TRACK99 mission.)

2.6 Aircraft and Ground Station Communications Systems Used to Transmit Observations.

2.6.1 General. The 53 WRS WC-130J aircraft will normally transmit reconnaissance observations via the Air Force Satellite Communications System (AFSATCOM) while the NOAA G-IV will normally transmit them via commercial SATCOM. NOAA WP-3D aircraft will generally use the Aircraft-to-Satellite Link (ASDL) system for transmissions. Flight meteorologists should contact CARCAH periodically throughout the mission.

2.6.2 Backup Air-to-Ground Communications. The weather reconnaissance crew may relay weather data via SATPHONE or HF phone patch to the weather data monitor. Monitors will evaluate these reports and disseminate them through the Air Force's Automated Weather Network (AWN) or to the weather communications facility at Suitland, Maryland. Specific radio procedures and terminology will comply with Allied Communications Publication 125, Standard Telephone and Radio Procedures.

2.6.3 Backup CARCAH Procedures. Satellite ground stations, which are used to receive and process the data from AFRC reconnaissance aircraft, are installed at CARCAH (located with NHC) and the 53 WRS (located at Keesler Air Force Base). The 53 WRS ground station has a similar configuration and communications capability as the satellite ground station installed at CARCAH. The ground station at the 53 WRS can fully transmit data using SATCOM and land line to the CARCAH ground station. Both can send data to AFWA's Weather Product Management and Distribution System (WPMDS)—WPMDS then relays all AFRC/53 WRS reconnaissance data to the NWS Gateway for world-wide distribution. In the event that backup procedures are required due to severe communications failures, severe weather conditions, or other extreme events affecting NHC,

some or all CARCAH responsibilities will be transferred to the 53 WRS, ensuring reconnaissance service is uninterrupted.

2.6.3.1 Satellite Antenna Communications Failure at NHC. If an outage occurs, CARACH will coordinate with the 53 WRS to have operators man the ground station located at the backup site. They will be responsible for maintaining contact with airborne reconnaissance aircraft and relaying data via land line to the CARCAH ground station. In the event communications lines between the backup site and NHC are also severed, the 53 WRS ground station will be configured to transmit data directly to the WPMDS server.

2.6.3.2 Internet Communications Failure. In the event there is a long-term network communications outage between NHC and AFWA, the CARCAH ground station will still be able to receive aircraft data. If Internet access problems originate at NHC, the CARCAH ground station will be configured to relay the data to the backup site ground station via SATCOM. The 53 WRS ground station will in turn be configured to automatically transmit them to the AFWA WPMDS server. However, if Internet disruptions occur at AFWA, no data can be sent to the AWN, NWS servers, and external users until service is restored.