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ARTMENT OF COMMERCE/ National Oceanic and Atmospheric Administration

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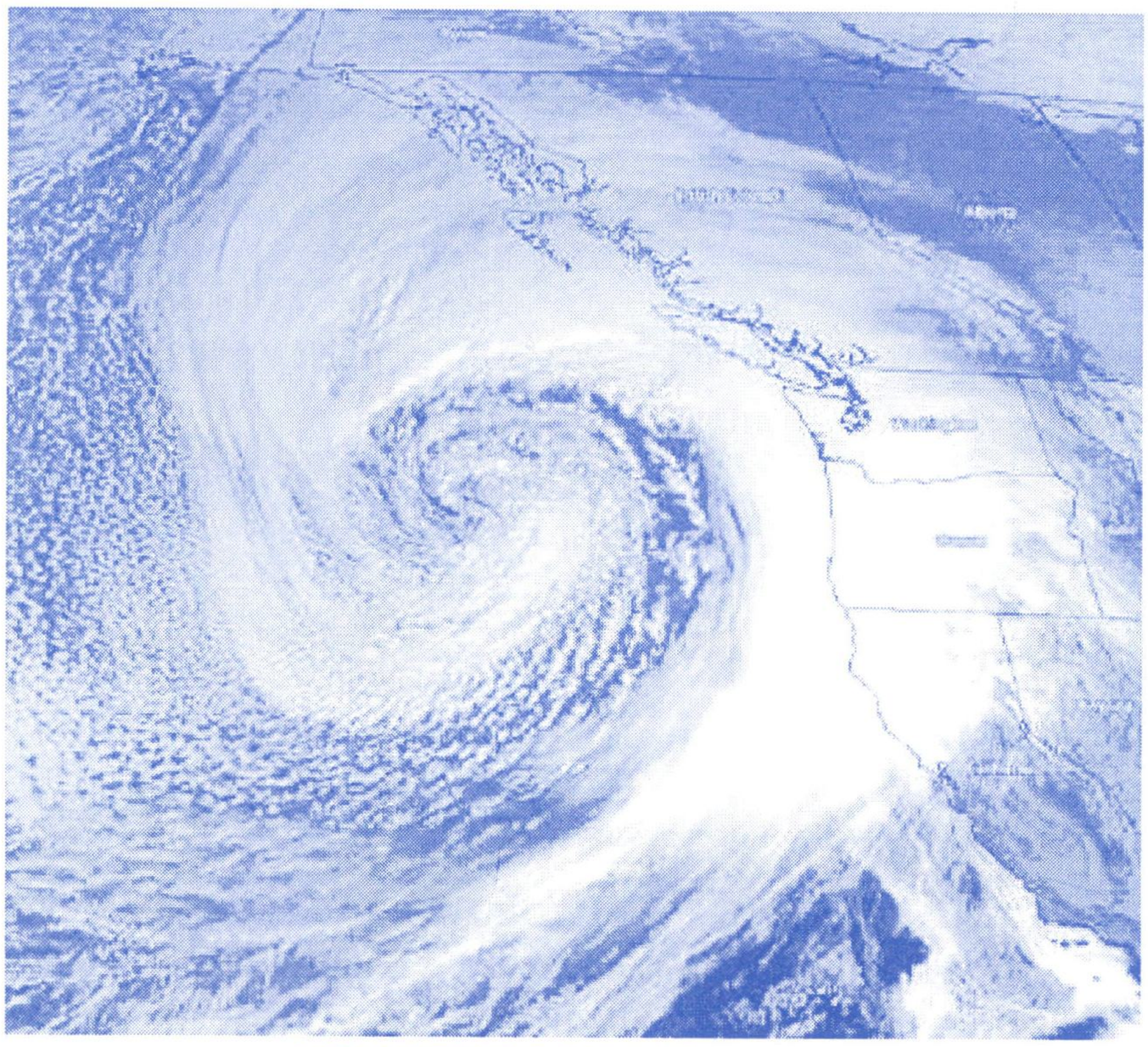
OFFICE OF THE FEDERAL COORDINATOR FOR
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

National Winter Storms Operations Plan



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NATIONAL WINTER STORMS

OPERATIONS PLAN

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November 2000

CHANGE AND REVIEW LOG

Use this page to record changes and notices of reviews.

Change Number	Page Numbers	Date Posted	Initial
1			
2			
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Changes are indicated by a vertical line in the margin next to the change.

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FOREWORD

This is the 25th edition of the *National Winter Storms Operations Plan*. The purpose of the plan is to coordinate the efforts of the federal meteorological community to provide enhanced weather observations of severe winter storms that impact the coastal regions of the United States. The goal is to improve the accuracy and timeliness of severe winter storm forecast and warning services provided by the Nation's weather service organizations. These forecast and warning responsibilities are shared by the National Weather Service, within the Department of Commerce and the National Oceanic and Atmospheric Administration (NOAA), and the weather services of the United States Air Force and the United States Navy, within the Department of Defense. While the plan documents requirements for surface, upper air, and satellite observations of all types, it focuses on the coordination of requirements for aircraft weather reconnaissance observations provided by the Air Force Reserve Command's 53rd Weather Reconnaissance Squadron and NOAA's Aircraft Operations Center.

Within the organizational infrastructure of the Office of the Federal Coordinator for Meteorological Services and Supporting Research, the Working Group for Hurricane and Winter Storms Operations and Research (WG/HWSOR) is responsible for maintaining the plan. All of the chapters in this edition have minor updates or changes. In Chapter 2, *Aircraft Reconnaissance*, the section on Reconnaissance Flights was revised to incorporate the procedures that are documented in a letter of agreement between the Federal Aviation Administration (FAA), the National Oceanic and Atmospheric Administration (NOAA), and the Air Force Reserve Command (AFRC). The information on satellite and data buoy observations in Chapter 3 has also been extensively updated.

During January and February of 1998, winter storm missions were flown in the Northeast Pacific Ocean in support of an adaptive observing strategy experiment called NORPEX 98. Similar missions were successfully flown during 1999 and 2000 seasons, and the continuing requirements to conduct winter storm missions in the North Pacific Ocean east of the international date line are now documented in Chapter 2, *Aircraft Reconnaissance*. The memorandum of agreement (MOA) between AFRC and NOAA was recently updated to reflect AFRC's requirement to support winter storm operations and associated research as delineated in the Department of Defense Appropriations Act and *National Winter Storms Operations Plan*. A copy of the new MOA can be found in Appendix I.

Samuel P. Williamson
Federal Coordinator for Meteorological
Services and Supporting Research

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CHAPTER 1

RESPONSIBILITIES OF COOPERATING AGENCIES

1.1 General.

1.1.1 National Weather Service (NWS). The National Weather Service (NWS) is responsible for issuing winter storm forecasts, watches, warnings, and advisories to the public and various special user groups. Its responsibilities are documented in *National Weather Service Operations Manual*, Chapter A-02, "National Weather Service Mission," and in Chapter C-42, "Winter Weather Warnings." For further details on Chapter C-42, consult the NWS web site at *www.nws.noaa.gov/wsom/index.html#CHAPTERC*, and click on "Part C - Basic Public Weather Services." Once there, files NC429205, NC420499, NC420498, and NC420594 address the NWS winter storm program. NC429205 is the chapter, and the other three files are operational manual letters.

1.1.2 U.S. Navy (USN). The U.S. Navy, through the Naval Meteorology and Oceanography Command (NAVMETOCCOM), is responsible for issuing gale, storm, high seas warnings, and winter weather forecasts for fleet operations and Navy shore installations and Marine Corps operations and installations, as elaborated in the NAVMETOCCOM Instruction 3140.1 series.

1.1.3 U.S. Air Force (USAF). The U.S. Air Force, through local and centralized weather units, is responsible for issuing military weather warning advisories and point warnings to all Air Force and Army (including Reserve and National Guard) installations, facilities, and operations related to winter storms for those hazardous phenomena specified in local agreements (such as Memorandum of Agreements or local regulations).

1.2 Responsibilities.

1.2.1 The Department of Commerce (DOC). The DOC, through the National Oceanic and Atmospheric Administration (NOAA), will:

- Provide basic surface, upper air, and radar observations from its network of stations making such observations.
- Provide additional observations, when required, making available all reports to any requesting agency.
- Provide basic analyses and forecasts through the National Centers for Environmental Prediction (NCEP), Camp Springs, Maryland.

- Provide products under a multi-tier concept consisting of Weather Service Forecast Offices (WSFO) and local Weather Service Offices (WSO) along contiguous U.S. coastal areas, who will provide outlooks, statements, advisories, watches, and warnings, when appropriate.

- Provide advice on aircraft reconnaissance requirements forwarded through NCEP's Tropical Prediction Center/National Hurricane Center (TPC/NHC) to the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH), from NCEP's Hydrometeorological Prediction Center (HPC) (the HPC is the central coordinating office for all winter storm reconnaissance requirements).

- Operate satellite systems capable of providing coverage of the coastal areas of the contiguous United States during the winter storm season.

- Coordinate with the National Aeronautics and Space Administration (NASA) to obtain pertinent meteorological data from NASA research and development experimental satellites.

- Coordinate with the Department of Defense (DOD) to obtain pertinent meteorological data from the Defense Meteorological Satellite Program.

- Provide satellite data for selected situations to authorized research facilities.

- Furnish aircraft from the NOAA Aircraft Operations Center (AOC) to support the following operational reconnaissance objectives:

  - The primary objective is to provide additional real-time meteorological data to operational forecasters in an attempt to improve the quality of forecasts associated with winter coastal storms.

  - The secondary objective is to provide the data and analyses to better understand 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.

- Provide dissemination of weather observations to appropriate agencies.

1.2.2 The Department of Defense (DOD). The DOD will:

- Make available to NOAA agencies, through Detachment 7, Air Force Weather Agency (AFWA), basic surface, upper air, and radar observations from those DOD stations

making such observations, pilot reports (PIREP), and aircraft reports (AIREP) that become available.

- Furnish to NWS, aircraft reconnaissance observations that are within its capabilities and in accordance with established reconnaissance priorities, and special observations detailed in Chapter 2 of this plan.

- Designate CARCAH as the point of contact for coordination with NCEP/HPC for aircraft reconnaissance required in support of this plan.

- Provide weather reconnaissance data monitor services to evaluate and disseminate reconnaissance reports.

- Provide satellite communications (SATCOM) access to relay reconnaissance reports from the aircraft to CARCAH.

- Provide USAF aeronautical station communications to relay reconnaissance reports from the aircraft to CARCAH.

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

1.2.3 Department of Transportation (DOT).

1.2.3.1 The Federal Aviation Administration (FAA). The FAA will:

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

- Disseminate PIREPs and AIREPs.

- Provide 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.

- Collect special weather observations from surface ships of opportunity and provide them to the NWS.

- Provide personnel, vessel, and communications support to the National Data Buoy Center for development, deployment, and operation of environmental data buoy systems.

CHAPTER 2

AIRCRAFT RECONNAISSANCE

2.1 General. All Department of Commerce (DOC) winter storm reconnaissance needs will be requested and provided in accordance with the procedures of this chapter. As 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).

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.

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.

2.4.5.3 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 and clicking on Plan of the Day or via the Tropical Prediction Center/National Hurricane Center home page at www.nhc.noaa.gov--chick 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.*

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.

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

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)

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

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):

- 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.)

2.5.2.1.1 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.

Data Required	Altitudes where data are required	Portion of 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 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, 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 dropsonde 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 systems used in support of the *National Winter Storms Operations Plan* include land surface, ship, radar, buoy, upper air, and satellite data. The routine operations of these various data sources are detailed in the following Federal Meteorological Handbooks and plans:

- Federal Meteorological Handbook No. 1, *Surface Weather Observations and Reports*
- Federal Meteorological Handbook No. 2, *Surface Synoptic Codes*
- Federal Meteorological Handbook No. 3, *Rawinsonde and Pibal Observations*
- Federal Meteorological Handbook No. 11, *Doppler Radar (Parts 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 Network (C-MAN) NWS Users Guide*
- *Tide/Water Level Information Data and Evaluation System (TIDES) NWS Users Guide*

Procedures for obtaining special or non-routine observations required in support of winter storm detection and forecasting, while covered to some extent in these documents, are described in detail in *National Weather Service Operations Manual*, Chapter B-90, "Special Warning Program Observations." The chapter covers observational programs of several agencies involved. The only two observational programs that will be covered in any detail here are the two data sources that provide unique capabilities to support winter storm analysis and forecasting.

3.2 Satellite Observations.

3.2.1 Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Environmental Satellite, Data, and Information Service (NESDIS).

3.2.1.1 Geostationary Operational Environmental Satellite (GOES). The GOES system consists of two operational spacecraft: GOES-8 at 75 degrees west longitude and GOES-10 (the successor to GOES-9) at 135 degrees west longitude. GOES-8 introduced a 3-axis stabilized geosynchronous satellite to NOAA operations. These satellites ushered in a new era of products and services, providing improved real-time satellite data to the National Weather Service forecast offices and national centers. GOES-11 was launched on May 3, 2000. This new satellite will provide the same capabilities as GOES-8 and GOES-10, and it is stored on orbit at 104 degrees west longitude until required to replace either of the older operational satellites. GOES-9 is located at 106 degrees west longitude as a short term replacement in the event of a catastrophic failure of the other 3 satellites.

3.2.1.1.1 GOES Scan Operations. The spacecraft routinely scans the United States every 15 minutes. A full disk image is scanned every 3 hours and takes nearly 30 minutes to complete. Forecasters now view digital GOES data more frequently and with greater spatial resolution. The digital data provide the user with the flexibility to customize gridding and enhancement curves for the data. The GOES-8 and GOES-10 spacecraft were also designed for flexible scanning of the earth. Any variation of scan or sector coverage at regular time intervals can be scheduled in a 30-minute time frame. Rapid Scan Operations (RSO) and Super-Rapid Scan Operations (SRSO) are available on the current generation of satellites. RSO and SRSO allow for small sections of the earth to be scanned more frequently, at up to 1 minute intervals. However, by doing so, other portions of the earth are scanned with less regularity. Definitions of the GOES RSO and SRSO scanning coverage and scanning times can be found at *www.ssd.noaa.gov*; "click on" GOES Scanning Schedules.

3.2.1.1.1.1 Requests for Special Satellite Sectors. Special RSO and SRSO GOES data on critical severe storm days may be requested via the NCEP Senior Duty Meteorologist (SDM). The SDM will coordinate operational requests through the NESDIS Satellite Services Division (SSD), Satellite Analysis Branch (SAB). The details of these procedures are described in the NESDIS/NWS Satellite Schedule Coordination and Dissemination Procedures Plan which is available on the SSD web site (*www.ssd.noaa.gov*) for government users and selected other users, like SSEC, CIRA, and COMET. Click on "Satellite Schedule Coordination and Dissemination Procedures."

3.2.1.1.1.2 Special Products. Requirements for GOES dissemination schedules (special products) are coordinated and provided through the NESDIS Satellite Services Division (SSD) and are described in the NESDIS/NWS Satellite Schedule Coordination and Dissemination Procedures provided by the Satellite Services Division by calling 301-763-8051 or on the Internet at *www.ssd.noaa.gov/satops.*

3.2.1.1.2 GOES Imager and Sounder. GOES-8 and GOES-10 host an imager capable of detecting atmospheric temperature and moisture measurements in five spectral bands at high resolutions, including the new 3.9 micron and 12.0 micron wavelengths. GOES-8 and GOES-10 also have the feature of transmitting these five spectral bands simultaneously, affording the user community continuous views of atmospheric measurements in various wavelengths, each with its own meteorological and hydrological applications. The five channels and respective resolutions are as follows:

- Channel 1 (Visible, 0.55 to 0.75 microns) - one kilometer resolution.
- Channel 2 (Infrared, 3.8 to 4.0 microns) - four kilometer resolution.
- Channel 3 (Water vapor, 6.5 to 7.0 microns) - eight kilometer resolution.
- Channel 4 (Infrared, 10.2 to 11.2 microns) - four kilometer resolution.
- Channel 5 (Infrared, 11.5 to 12.5 microns) - four kilometer resolution.

The sounder on GOES-8 and GOES-10, consisting of 19 spectral channels, is used for measurements of atmospheric temperature and moisture profiles, surface and cloud-top temperature, and ozone distribution. Products derived from the sounder include precipitable water and the lifted index--a measure of atmospheric instability. Comparable to the imager, the sounder is capable of providing various scan coverages, such as full earth imagery, sectorized imagery, and local imagery. An independent sounder platform, governed under its own schedule, provides an expansion of sounder data coverage and an increase in the frequency of transmissions. GOES-8 and GOES-10 also carry vital subsystems; such as, the SEM, DCS, WEFAX, and SAR operations.

3.2.1.1.3 GOES Products. 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 in Camp Springs, Maryland, to the national centers (NCEP), NWS field offices, and to the Satellite Analysis Branch (SAB) and other NESDIS units. Data from the polar-orbiting satellites is available to SAB and the NCEP national centers, but not to NWS field sites.

NESDIS operates 24 hours a day to provide a myriad of satellite services and products to NCEP and NWS field sites. Internally at the NOAA Science Center, SAB meteorologists provide satellite interpretation and analyses to NCEP meteorologists, relating valuable information on present locations and intensities of winter storms, as well as the projected movement and development of all these storms. In addition, snowfall estimates are derived from satellite signatures and reported to NCEP and the NWS field sites to assist forecasters in determining fall rates and projected accumulations. As conditions warrant, winter storm precipitation analyses and estimates are disseminated to the appropriate NWS forecast offices and River Forecast Centers (RFC) across the United States.

All WFOs have access to the digital GOES data stream through AWIPS workstations. The satellite data feed to AWIPS/NOAAPORT is performed at the Satellite Central Data Distribution Facility (CDDF) in Camp Springs, MD. A large amount of satellite data are also available on a number of web site servers, both government operated and in the private sector.

The principal GOES-8 and GOES-10 products (see Table 3-1) are half-hourly pictures with navigation and calibration files included. During daylight hours, one, two, four, and eight kilometer resolution visible fixed standard sectors are produced for AWIPS/NOAAPORT distribution. Equivalent infrared sectors (4 kilometer), including water vapor (8 kilometer), for all available channels are available 24 hours a day. Satellite raw and remapped imagery, with navigation and calibration, is available to RAMSDIS users within the NWS and NESDIS community. Using the 3.9 micron and 10.7 micron channels together, a low-level cloud/fog product is produced, which the WFOs now use routinely. This is a new capability since these were the first geostationary satellites to use the 3.9 micron channel.

3.2.1.1.4 24-Hour Points of Contact.

- NCEP/NCO Senior Duty Forecaster (SDM)--301-763-8298
- NCEP/HPC Senior Branch Forecaster--301-763-8201
- NESDIS/SAB--301-763-8444

3.2.1.2 NOAA Polar-Orbiting Satellites. Each of these satellites crosses the U.S. twice per day at 12-hour intervals near the equatorial crossing times listed in Table 3-1. The current primary polar-orbiting satellites are NOAA-12, NOAA-14, and NOAA-15. Older satellites on orbit still have limited capabilities. NOAA-15 provides the same capabilities as previous NOAA satellites, plus an Advanced Microwave Sounder Unit (AMSU) was added. As of August 1, 2000, the AVHRR instrument on NOAA-12 has been used in place of the NOAA-15 AVHRR because of problems with NOAA-15's AVHRR instrument. NOAA-16 was launched on September 21, 2000, and has the same capabilities as NOAA-15.

3.2.2 Department of Defense (DOD) Defense Meteorological Satellite Program (DMSP). The DMSP constellation consists of at least two spacecraft placed in sun-synchronous orbits best suited to support military operations. In addition to the very high resolution visible and infrared imagery, DMSP provides a variety of remotely sensed terrestrial and space environmental data. A suite of microwave radiometers provides microwave imagery as well as surface characteristics and upper air temperature and moisture soundings. The DMSP data capabilities in the area of concern are provided in Table 3-1. Special requests for DMSP support will be addressed to CARCAH.

Table 3-1. Satellites and Satellite Data Availability for the National Winter Storms Operations Plan.

Geosynchronous Orbit

SATELLITE	TYPE OF DATA	LOCAL TIME	REMARKS
GOES-8 at 75°W GOES-9 at 106°W (on orbit storage) GOES-10 at 135°W GOES-11 at 104°W (on orbit storage)	Multispectral Imager and Sounder 5 channels for the Imager 19 channels for the Sounder	Every 30 minutes, in Routine Scan Mode, provides 3 sectors with prescribed coverages: Northern Hemisphere (NH) or Extended NH, CONUS or PACUS, and Southern Hemisphere (SH). Exception is transmission of a full disk every 3 hours. Available Rapid Scan Operations (RSO) yield increased transmissions to 7.5 minute intervals to capture rapidly changing, dynamic weather events.	1. 1, 2, 4, and 8 km visible standard sectors. 2. 4 km equivalent resolution IR sectors. 3. Equivalent and full resolution IR enhanced imagery. 4. Full disk IR imagery every 3 hours. 5. 8 km resolution water vapor sectors. 6. Quantitative precipitation estimates, high density cloud and water vapor motion wind vectors, and experimental visible and sounder winds. 7. Operational moisture sounder data (precipitable water) in four levels for inclusion in NCEP numerical models. Other sounder products include: gradient winds, vertical temperature and moisture profiles, mid-level winds, and derived product imagery (precipitable water, lifted index, and surface skin temperature. 8. Tropical storm monitoring and derivation of intensity analysis. 9. Volcanic ash monitoring and dissemination of volcanic ash advisory statements. 10. Daily Northern Hemisphere snow cover analysis. 11. Twice daily fire and smoke analysis over specific areas within CONUS.

Polar Orbiting

SATELLITE	TYPE OF DATA	LOCAL TIME*	REMARKS
NOAA-15	AVHRR (experiencing difficulties) GAC and LAC (recorded) HRPT and APT (direct) RTOVS and AMSU	0729D/1929A	1. 1 k m resolution HRPT/ Local Area Coverage (LAC) data. 2. 4 km resolution APT/ Global Area Coverage (GAC) data. 3. Mapped imagery. 4. Unmapped imagery (all data types) at DMSP sites. 5. Sea-surface analysis. 6. Soundings. 7. Moisture profiles. 8. Remapped GAC sectors. 9. Sounding-derived products: total precipitable water, rain rate, and surface winds under sounding (NOAA-15). 10. Daily northern hemisphere snow cover analysis 11. Twice daily fire and smoke analysis over specific areas within CONUS.
NOAA-14	Same as NOAA-15, except no AMSU	0403D/1603A	
NOAA-12	AVHRR , GAC and LAC (recorded) HRPT and APT (direct), TOVS	0519D/1719A	
DMSP F-15	OLS Imagery (recorded and direct) SSM/I, SSM/T-1, SSM/T-2	0925D/2125A	1. 0.3 nm (regional) and 1.5 nm (global) resolution (visual and infrared) imagery available via stored data recovery through AFWA. 2. Regional coverage at 0.3 nm and 1.5 nm (visual and infrared) imagery available from numerous DOD tactical terminals. 3. SSM/T-1, SSM/T-2, and SSM/I data transmitted to NESDIS and FNMOC from AFWA.
DMSP F-14	Same as F-15, except SSM/T-1 non-functional	0845D/2045A	
DMSP F-13	Same as F-15, except no SSM/T-2	0600D/1800A	
DMSP F-12	Same as F-15, except SSM/I and SSM/T-1 non-functional	0820D/2020A	

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

3.3 Automated Coastal Marine and Ocean Observations.

3.3.1 Moored Data Buoys and Coastal Marine Automated Network.

3.3.1.1 Procedures. Moored buoy and C-MAN stations routinely acquire and transmit data every hour. Buoy observations include sea-level pressure, wind speed, peak 5-second wind, wind direction, air temperature, sea-surface temperature, 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. Refer to figures 3-1, 3-2, and 3-3 for the locations and station identifiers of moored buoys and C-MAN stations. Consult NDBC's web site at *www.ndbc.noaa.gov* for the latest station status or more site-specific information.

3.3.1.2 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 moored buoys are formatted into World Meteorological Organization (WMO) FM13-IX SHIP code. From C-MAN sites, the data are formatted in a modified form of the FM12-IX SYNOP code.

3.3.1.3 Point of Contact (Daytime). The NDBC Data Analyst can be reached at 228-688-3134.

3.3.2 Drifting Data Buoys.

3.3.2.1 Procedures. These buoys are deployed by ship or aircraft in data-sparse areas. Their movements are largely dependent upon ocean currents and winds. Data available include position, sea-level pressure, wind speed and direction, air temperature, and sea-surface temperature. Several drifting buoys were deployed in the North Central Pacific by AES Canada. They are expected to continue transmitting through the winter of2001. Additional drifting buoys are expected to be deployed by AES in 2001to maintain an observation network.

3.3.2.2 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, and to the NWSTG for processing and dissemination. Data from drifting buoys are formatted into WMO FM18-IX BUOY code.

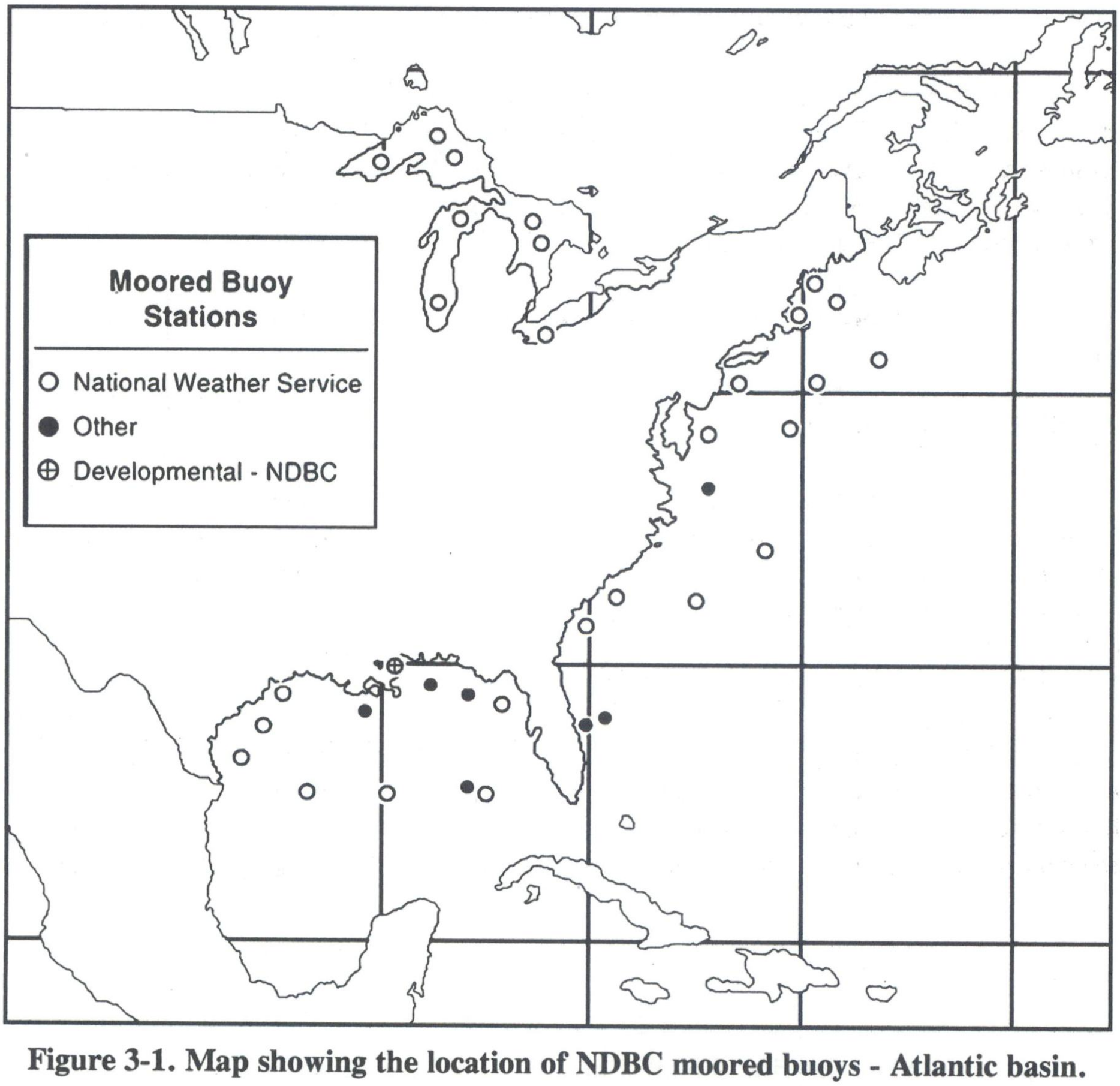

Figure 3-1. Map showing the location of NDBC moored buoys - Atlantic basin.

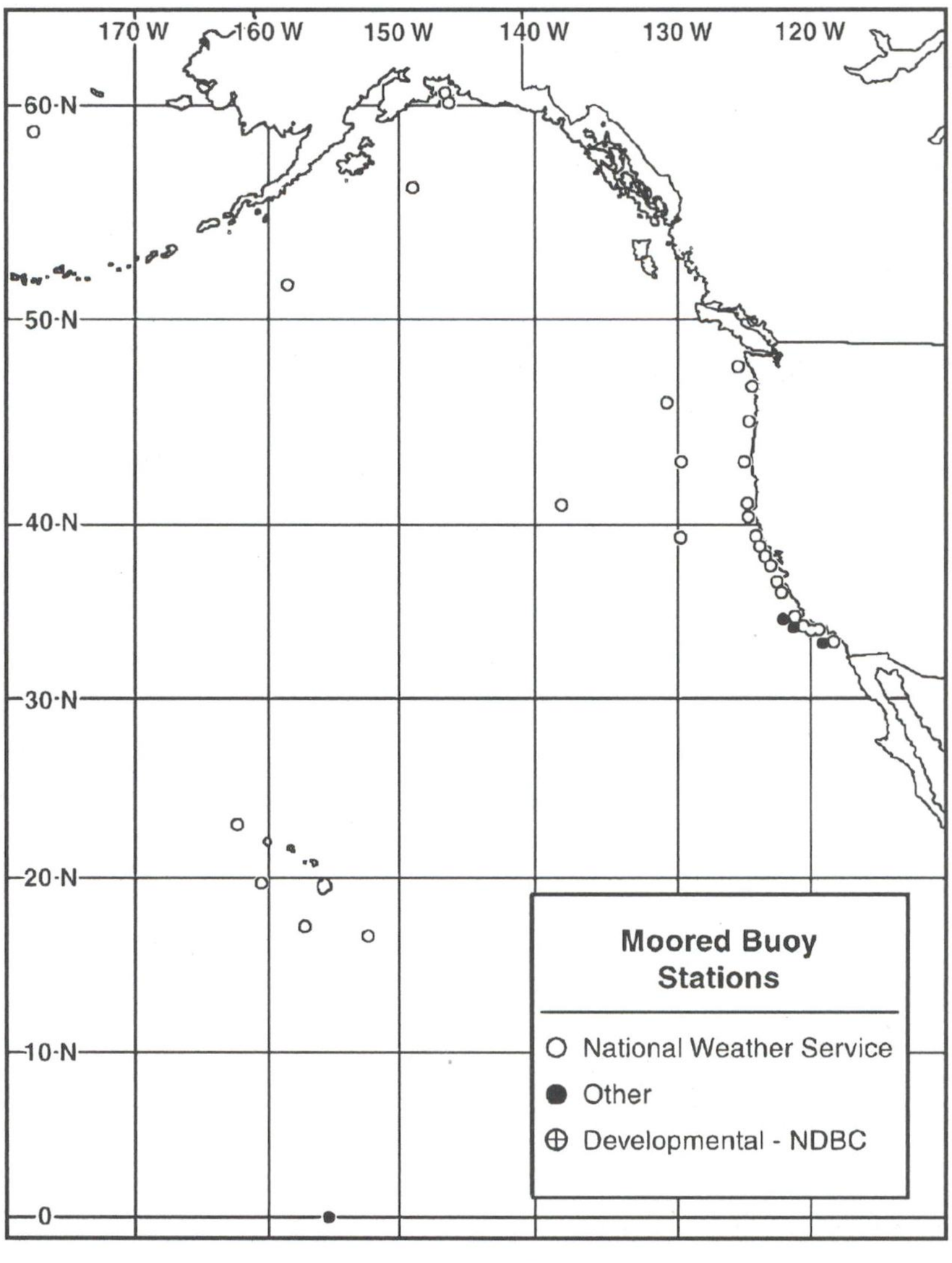

Figure 3-2. Map showing the location of NDBC moored buoys - Pacific basin.

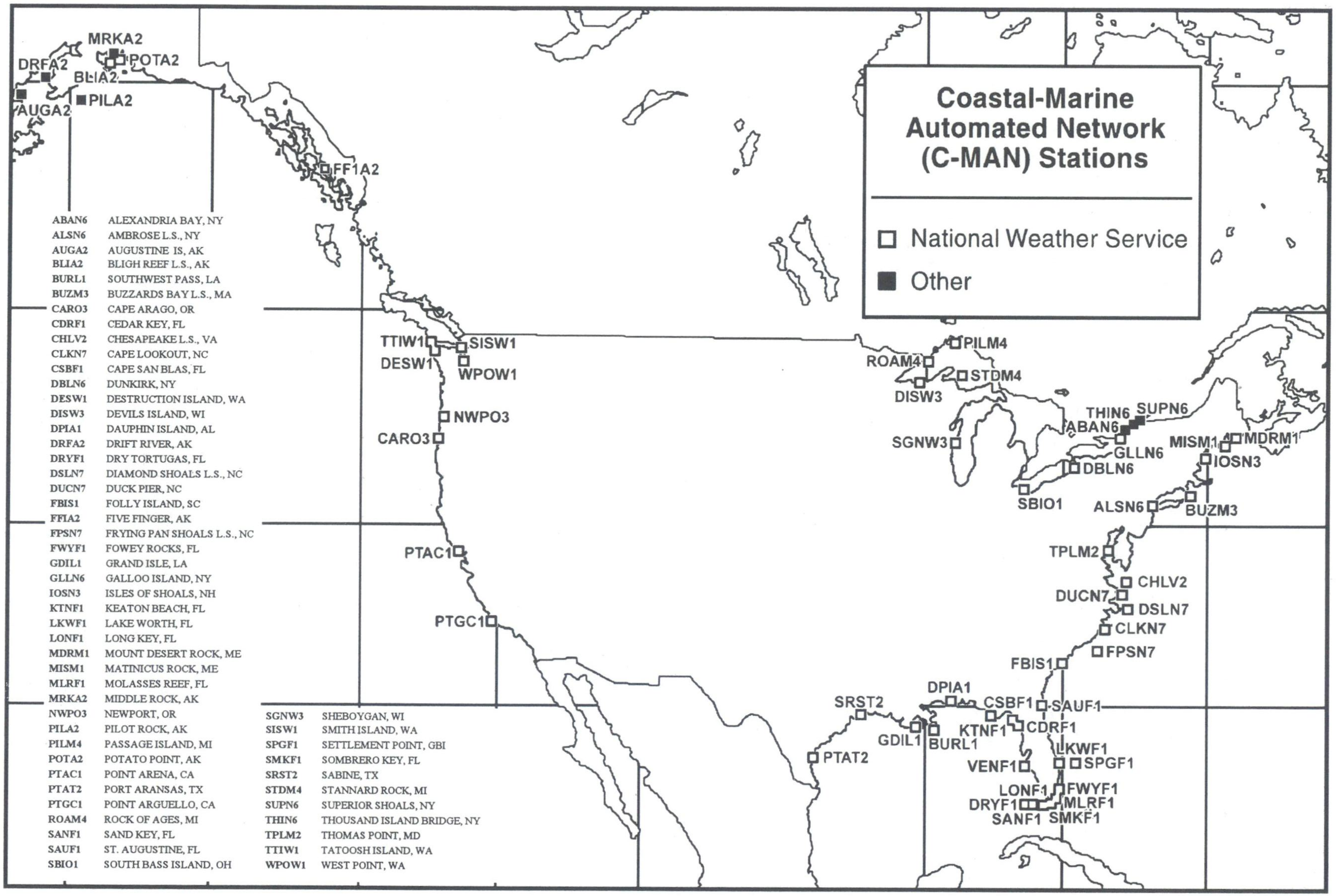

Figure 3-3. Map showing the location of NDBC fixed C-MAN stations in North America, including USCG Navigational Buoys.

Table 3-2. Moored buoy payload data.

PARAMETER	REPORTING RANGE	REPORTING RESOLUTION	SAMPLE INTERVAL	SAMPLE PERIOD	TOTAL SYSTEM ACCURACY
WIND SPEED	0 TO 60 m/s	0.1 m/s	1 s	8 min	±1 m/s or 10%
WIND DIRECTION	0 TO 360°	1°	1 s	8 min	±10°
PEAK WIND	0 TO 82 m/s	1 m/s	1 s	5 s	±1 m/s or 10%
AIR TEMPERATURE	-30 TO 70 °C	0.1 °C	90 s	8 min	±1 °C
ATMOSPHERIC PRESSURE	800 TO 1100 hPa	0.1 hPa	4 s	8 min	±1 hPa
SEA SURFACE TEMPERATURE	-7 TO 41 °C	0.1 °C	1 s	8 min	±1 °C
SIGNIFICANT WAVE HEIGHT	0 TO 35 m	0.1 m	0.39 s	20 min	±0.2 m or 5%
WAVE PERIOD	3 TO 30 s	0.1 s	0.39 s	20 min	±1 s
NONDIRECTIONAL WAVE SPECTRA	0.03 TO 0.40 Hz	0.01 Hz	0.39 s	20 min	—
DEW POINT TEMPERATURE*	-35 TO 30 °C	0.1 °C	1 s	8 min	±1 °C
SOLAR RADIATION*	0 TO 2150 W/m^2	0.5 W/m^2	1 s	8 min	±5%
PRECIPITATION RATE*	1 TO 1600 mm/hr	1 mm	1 s	15 min	±5%
DIRECTIONAL WAVES*	0 TO 360°	1.0°	0.5 s	20 min	±5°
OCEAN CURRENTS (ADCP)*	0 TO 1000 cm/s	0.5 cm/s	1.5 s	20 min	±2 cm/s

*PARAMETER REPORTED ON SELECTED BUOYS

Table 3-3. Data from a typical fixed C-MAN station.

MEASURANDS	REPORTED DATA	REPORTING RANGE	REPORTING RESOLUTION	MINIMUM AVERAGING PERIOD (SELECTABLE)	TOTAL SYSTEM ACCURACY
WIND DIRECTION	TRUE WIND DIRECTION	0° – 360°	1.0°	2 min	±15° TRUE (±10° DESIRED)
WIND SPEED	AVG. WIND SPEED	0 – 120 kn	1.0 kn	2 min	±2.0 kn or 5%
	PEAK WIND GUST	0 – 160 kn	1.0 kn	(SELECTABLE)	±2.0 kn or 5%
WAVES	SIGNIFICANT WAVE HEIGHT ($H_{1/3}$)	0 – 49 m	0.5 m	(SELECTABLE)	0.5 m
	WAVE PERIOD (T)	2.5 – 5 s	1 s	(SELECTABLE)	±1 s
	PROBABLE MAXIMUM WAVE HEIGHT	0 – 49 m	0.5 m	(SELECTABLE)	0.5 m
BAROMETRIC PRESSURE	SEA LEVEL PRESSURE	900 – 1100 hPa	0.2 hPa	2 min	±1.0 hPa ABSOLUTE
AIR TEMPERATURE	AIR TEMPERATURE	-30 to +70 °C	0.1 °C	1 min	±1.0 °C
SEA SURFACE TEMPERATURE*	SEA SURFACE TEMPERATURE	-6 to +40 °C	0.5 °C	1 min	±1.0 °C
DEW POINT*	DEW POINT TEMPERATURE	-35 to +30 °C	0.5 °C	1 min	-35 to -24°C: ±2 °C -23.5 to -1.5°C: ±1.5 °C -1.5 to +30 °C: ±1.0 °C
SECTOR VISIBILITY*	VISIBILITY RANGE	0 – 8 statute mi		2 min	0 to 3 mi: ±10% 3 to 8 mi: ±1 mi
WATER LEVEL*	WATER LEVEL	0 – 99.99 ft	0.01 ft	(PERIODICALLY RESET TO ZERO)	TBD

* PARAMETER REPORTED ON SELECTED 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 to collect and disseminate information on winter storms received from the National Weather Service. The AF's Automated Weather Network (AWN) will be used for the exchange of data between NOAA 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 AWN. When the aircraft-to-satellite data link is inoperative, observations will be transmitted using high frequency single sideband radio to CARCAH. A summary of reconnaissance communications capabilities by organization is listed in Table 4.1.

4.2.3 U.S. Navy. In the Atlantic, the primary means of dissemination for gale, storm, high seas warnings, other winter storm advisories, and special observations is via the Naval Atlantic Meteorology and Oceanography Center's unclassified (NLMOC.NAVY.MIL) and classified homepages. Data for the Pacific basin is posted on the Naval Pacific Meteorology and Oceanography Center's homepage at METOC.NPMOC.NAVY.MIL. Both graphic and alphanumeric warnings are posted. In addition, the Automated Digital Network (AUTODIN) is also used to distribute alphanumeric data, and gale, storm, and high seas graphics products are posted on the Joint Maritime Command Information System. The Fleet Numerical Meteorology and Oceanography Center/National Centers for Environmental Prediction Data Link (FNDL) will be used for exchange of data between NWS and the Navy.

4.3 U.S. Coast Guard. The Coast Guard operates activities that routinely collect and/or report meteorological data. Those units that collect and transmit (or report) data for this program are Coast Guard Communications facilities at Boston, MA; Chesapeake, VA; Miami, FL; New Orleans, LA; Kodiak, AK; Honolulu, HI; and San Francisco, CA. These facilities collect Automated Mutual Assistance Vessel Rescue (AMVER) messages from merchant vessels and METEO messages from merchant and Coast Guard vessels on a routine basis. The METEO data are then passed directly to the NCEP on the Coast Guard Data Network (CGDN).

Table 4-1. Reconnaissance organization communications capabilities.

STATION	ADDRESS	TELETYPE	TELEPHONE
Federal Coordinator for Meteorology (OFCM)	Suite 1500 8455 Colesville Rd. Silver Spring, MD 20910		DSN 851-1460 301-427-2002
CARCAH	National Hurricane Center 11691 SW 17th Street Miami, FL 33165-2149	A B	DSN 434-3420 305-229-4474
National Hurricane Center	11691 SW 17th Street Miami, FL 33165-2149	A B	305-229-4470
Alternate National Hurricane Center	NCEP/HPC Camp Springs, MD	A B	301-763-8201
Central Pacific Hurricane Center	P.O. Box 29879 Honolulu, HI	B	808-973-5284
Naval Atlantic Meteorology and Oceanography Center	NAVLANTMETOCCEN Norfolk, VA	A	DSN 564-7750/3770 757-444-7750/3770
Naval Pacific Meteorology and Oceanography Center	NAVPACMETOCCEN Pearl Harbor, HI	A	DSN 471-0004 808-471-0004
Aircraft Operations Center	AOC Tampa, FL		813-828-3310
Air Force Weather Agency	AFWA Offutt AFB, NE	A	DSN 271-2586 402-294-2586
FACSFAC VACAPES OAC	FACSFAC VACAPES, Oceana, VA		DSN 433-1233 757-433-1233
53 WRS	53 WRS 817 H Street - Suite 201 Keesler AFB, MS 39534-2453	A	DSN 597-5518/2409 601-377-5518/2409

A - AWDS

B - AWIPS

CHAPTER 5

PUBLICITY

5.1 <u>News Media Releases</u>. News media releases, other than warnings and advisories, for the purpose of informing the public of the operational and research activities of the Departments of Commerce, Defense, and Transportation should reflect the joint effort of these agencies by giving due credit to the participation of other agencies.

5.2 <u>Distribution</u>. Copies of these releases, along with any pertinent pictures, should be forwarded to the following agencies:

- NOAA Office of Public Affairs
  Herbert C. Hoover Building
  14th and Constitution Avenue, N.W.
  Washington, DC 20230

- Commander, Naval Meteorology and Oceanography Command
  1020 Balch Boulevard
  Stennis Space Center, MS 39529-5005

- Hq Air Force Reserve Command (AFRC/PA)
  Robins AFB, GA 31093

- Chief, Environmental Services Division (J-3)
  The Joint Chiefs of Staff
  Washington, DC 20318-3000

- Federal Aviation Administration (APA-310)
  800 Independence Avenue, S.W.
  Washington, DC 20591

- Federal Coordinator for Meteorology
  Suite 1500, 8455 Colesville Road
  Silver Spring, MD 20910

APPENDIX A

ABBREVIATIONS

-A-

ADWS	Automatic Digital Weather Switch
AF	Air Force (U.S. Air Force)
AFB	Air Force Base
AFRC	Air Force Reserve Command
AFTN	Aeronautical Fixed Telecommunications Network
AFW	Air Force Weather
AFWA	Air Force Weather Agency
A/G	Air to Ground
AIRMET	Airmen's Meteorological Information Bulletin
AIREP	Aircraft Report
ALTRV APREQ	Altitude Reservation Approval Request
AMVER	Automated Mutual Assistance Vessel
AOC	Aircraft Operations Center
APT	Automatic Picture Transmission
ARINC	Aeronautical Radio, Incorporated
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
AVHRR	Advanced Very High Resolution Radiometer
AWDS	Automated Weather Distribution System
AWIPS	Advanced Weather Interactive Processing System
AWN	Automated Weather Network

-C-

C	Celsius
CA	Commander, Atlantic Area (USCG)
CARCAH	Chief, Aerial Reconnaissance Coordination, All Hurricanes
CARF	Central Altitude Reservations Function
CCGD	Commander, Coast Guard District
CG	Coast Guard
CINCLANTFLT	Commander-in-Chief, Atlantic Fleet
C-MAN	Coastal Marine Automated Network
CONUS	Continental United States
Class G Airspace	Uncontrolled airspace

-D-

DA	Daylight Ascending
DCS	Data Collection System
Det	Detachment
DMSP	Defense Meteorological Satellite Program
DOC	Department of Commerce
DOD	Department of Defense
DOT	Department of Transportation
DRSR	Direct Readout Scanning Radiometer
DSN	Defense Switched Network (AUTOVON)
DTG	Date Time Group

-E-

ESA	European Space Agency
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure

-F-

FAA	Federal Aviation Administration
FAD	Force Activity Designator
FCMSSR	Federal Committee for Meteorological Services and Supporting Research
FL	Flight Level
FNDL	Fleet Numerical Meteorology and Oceanography Center/ National Center for Environmental Prediction Data Link
ft	Foot, Feet
FSS	Flight Service Station
FTS	Federal Telecommunications System

-G-

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

-H-

HF	High Frequency
hr	Hour

HPC	Hydrometeorological Prediction Center (NCEP)
HRPT	High Resolution Picture Transmission

-I-

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

-J-

JCS	Joint Chiefs of Staff
JMCIS	Joint Maritime Command Information System
JP	Joint Publication

-K-

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

-L-

LAC	Local Area Coverage
LF	Light Fine

-M-

m	meter(s)
M-3	METEOSAT-3
mb	millibar(s)--see kPa
METEO	Cable Address for Ships
METOC	Meteorology and Oceanography
mi	(statute) mile(s)
min	minute(s)
MIST	Meteorological Instrument Standard Terminal
mph	mile(s) per hour
MSD	Meteorological Services Division
m/s	meter(s) per second

-N-

NASA	National Aeronautics and Space Administration
NAVLANTMETOCCEN	Naval Atlantic Meteorology and Oceanography Center
NAVMETOCCOM	Naval Meteorology and Oceanography Command
NAVMETOCCOMDET	Naval Meteorology and Oceanography Command Detachment
NAVMETOCCOMFAC	Naval Meteorology and Oceanography Command Facility
NAVPACMETOCCEN	Naval Pacific Meteorology and Oceanography Center
NAWAS	National Warning System
NCEP	National Centers for Environmental Prediction
NDBC	National Data Buoy Center
NESDIS	National Environmental Satellite, Data, and Information Service
NHC	National Hurricane Center
nm	nautical mile(s)
NOAA	National Oceanic and Atmospheric Administration
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
OLS	Operational Line Scan System
ONR	Office of Naval Research
OSV	Ocean Station Vessel

-P-

Pa	Pascal
PIREP	Pilot Report

-R-

RAREP	Radar Report
RECCO	Reconnaissance Code

-S-

SAB	Synoptic Analysis Branch
SAR	Search and Rescue

SARLANT	Search and Rescue Atlantic Circuit
SCAT	Satellite Cloudtop and Tropopause
SEM	Solar Environmental Monitor
SGDB	Satellite Global Database
SIGMET	Significant Meteorological Information
SSB	Single Sideband
SSC	Stennis Space Center
SSM/I	Special Sensor Microwave/Imagery
SSM/T-1	Special Sensor Microwave/Temperature
SSM/T-2	Special Sensor Microwave/Water Vapor

-T-

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

-U-

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

-V-

VAS	VISSR Atmospheric Sounder
VISSR	Visible and Infrared Spin Scan Radiometer

-W-

WBC	Identifier for NCEP
WEFAX	Weather Encoded Facsimile Transmission
WG	Working Group
WG/HWSOR	Working Group for Hurricane and Winter Storms Operations and Research (OFCM)
WFO	Weather Forecast Office
WMO	World Meteorological Organization
WRS	Weather Reconnaissance Squadron
WS	Weather Squadron (USAF)

WSFO	Weather Service Forecast Office
WSO	Weather Service Office
WSPOD	Winter Storm Plan of the Day

-X-

XADC	Extended Atlantic Data Coverage

-Z-

Z	Zulu Time (UTC)

APPENDIX B

DEFINITIONS

Area of Concern. The geographic area of concern for the *National Winter Storms Operations Plan* covers the Gulf of Mexico and extends about 150 miles 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 miles inland along the eastern coast of the United States. *It also includes the North Pacific Ocean east of the international date line.*

Blizzard Warning. A blizzard warning is a headline carried in NWS forecasts and special weather statements that serves notice to the public of a high probability for the occurrence of blizzard conditions (sustained or gust wind speeds of 35 mph or more, considerable falling and/or blowing snow causing poor visibility, frequently less than one-fourth mile).

Due Regard. Operation wherein state operated aircraft assume responsibility for separation from all other aircraft without ATC assistance.

Freezing Rain (or Drizzle). The freezing of rain or drizzle on objects as it strikes them. Winter storm warnings should be reserved for occasions when significant, and possibly damaging, accumulations of ice are expected. However, even small amounts are extremely dangerous to traffic when encountered unexpectedly, and these conditions frequently require the issuance of a travelers' advisory.

Heavy Snow Warning. A heavy snow warning, carried in NWS forecast and special weather statements, serves notice to the public of a high probability for the occurrence of heavy snow (four inches or more accumulation in 12 hours or six or more inches accumulation in 24 hours in most areas of the country, but some variation in the snowfall criterion is allowable on a regional basis).

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

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

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

Sleet. One form of ice pellet. Generally, solid grains of ice that form from the freezing of raindrops or the refreezing of largely melted snowflakes. Sleet, like small hail, usually bounces when

hitting a hard surface. Heavy sleet is a fairly rare event in which the ground is covered to a depth of significance to motorists and others.

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

Winter Storm Plan of the Day. A coordinated mission plan that tasks operational weather reconnaissance requirements during the next 1100Z to 1100Z day; describes reconnaissance flights committed to satisfy operational requirements and identifies possible reconnaissance requirements for the succeeding 24-hour period.

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

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

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

APPENDIX C

DEPARTMENT OF THE AIR FORCE
UNITED STATES AIR FORCE RESERVE COMMAND

15 October 2000

MEMORANDUM FOR CARCAH

FROM: 53 WRS/DON (228) 377-2929 (Lt Col Katz)

SUBJECT: Air Traffic Control Clearances

CARCAH (alternate CARCAH/53WRS Operations) is authorized to relay Air Traffic Control (ATC) clearances to 53WRS aircraft using satellite communications (SATCOM). References for this authority are the Federal Aviation Administration/Air Force Reserve (FAA/AFRC) Memorandum of Agreement, SUBJECT: METEOROLOGICAL RECONNAISSANCE FLIGHTS, and the National Hurricane Operations Plan, paragraph 5.5.4 entitled Air Traffic Control Clearances.

PROCEDURES:

1. Clearance Request by TEAL Aircraft

   o Air Crews will send a SATCOM message to CARCAH and will provide the following information: present position and altitude/flight level, estimate to next navigation checkpoint and route of flight/altitude desired. Include any additional pertinent information. Use the following format:

   Please contact Houston ARTCC with the following clearance request:
   TEAL 40 PRESENTLY AT 25N 97W, ESTIMATE COKER 1430Z, LEVEL FIVE THOUSAND FT RQST DCT DOLPH DCT LEV DCT BIX, FL180.

   NOTE: If mission conditions warrant, crews may request Priority Handling. Use the following format:

   TEAL 40 PRESENTLY OVER LULIS FL180B190. RQST DCT 25N 92W, THEN FLT PLN RTE RQST PRIORITY HANDLING DUE TO NHOP MISSION TIMING TO HURRICANE FIRPO.

   o CARCAH will contact the appropriate ATC Center (see attachment for phone numbers) and speak to the Oceanic Supervisor (primary) or Military Missions Coordinator (secondary). Calls to these numbers are generally automatically recorded. When the clearance is issued to CARCAH, CARCAH must transmit the clearance to the aircraft verbatim, since it may differ from the requested clearance. CARCAH must preface the clearance with the words, "ATC clears..." such as in the example:

   ATC CLEARS TEAL 40 TO KEESLER AFB VIA DIRECT COKER DIRECT DOLPH DIRECT LEV DIRECT. CLIMB AND MAINTAIN FL180. CONTACT HOUSTON CENTER ON 123.4 CROSSING 26 DEGREES NORTH.

2. Clearances Relay Request from ATC

   o ATC Centers may contact CARCAH (305-229-4474) or alternate CARCAH/53WRS Operations (228) 377-2409 to request a message relay to a TEAL aircraft. CARCAH will then relay the message or clearance, as appropriate.

//signed//
ROBERT A. KATZ, Lt Col, USAF
Airspace Manager

Attachment: ATC Phone Numbers

AIR TRAFFIC CONTROL PHONE NUMBERS

	OCEANIC SUPERVISOR	MISSIONS COORDINATOR
BOSTON ARTCC	N/A	(603) 879-6666 (DSN 881-1635)
HONOLULU ARTCC	(808) 739-7600 FAX (808) 739-7604	(808) 739-7605
HOUSTON ARTCC	(281) 230-5552 FAX (281) 230-5561	(281) 230-5563 (DSN 885-1491)
JACKSONVILLE ARTCC	(904) 549-1549 (GULF OF MEXICO) FAX (904) 549-1843 -1547 (ATLANTIC, S. OF JAX, All Altitudes) -1546 (ATLANTIC, N. OF JAX, FL240/BELOW) -1545 (ATLANTIC, N. OF JAX, ABOVE FL240)	(904)549-1542 (DSN 434-3744)
OAKLAND ARTCC	(501) 745-3342 / 3000 (SWITCHBOARD) FAX (510) 745-3411	(510) 745-3334 (DSN 730-1595)
MIAMI ARTCC	(305) 716-1781 (GULF OF MEXICO) FAX (305) 716-1511 (305) 716-1784 (ATLANTIC) (305) 716-1784 (**BAHAMAS & SOUTH**) (305) 716-1782 (BAHAMAS & NORTH)	(305) 716-1589 (DSN 434-1910)
NEW YORK ARTCC	(631) 468-1496	(516) 468-1429 (DSN 881-3730) FAX (631) 468-1428
PIARCO Control	(868) 669-4852 FAX (868) 669-4529	(868) 669-4806 (Chief Controller)
SAN JUAN ARTCC	(787) 253-8664/8665 FAX (787) 253-8685	(787) 253-8650 (Weekdays only)
WASHINGTON ARTCC	N/A	(703) 771-3472 (DSN 937-1420) FAX (703) 771-3590

ATC SYSTEM COMMAND CENTER	(703) 904-4525
CARF	(703) 904-4426 (DSN 725-3331)

APPENDIX D

DEPARTMENT OF THE AIR FORCE
UNITED STATES AIR FORCE RESERVE COMMAND

28 November 2000

MEMORANDUM FOR FAA/CARF

FROM: 53 WRS/DON

SUBJECT: Altitude Reservation Approval Request

ALTRV APREQ CORONET COAST 04

A. TEAL 02

B. WC130/I

C. KBIX

D. ((PR FL250 [ALTRV BEGINS] SIE 0000 DCT CLMB FL290B310 PREPI 0015 OWENZ 0020 LVLOFF BY BERGH 0030 A300 CHAMP 0050 G437 MERCI 0120 A700 [3240N 7436W 0205] TROUT 0250 AR5 DINNS 0405 [ALTRV ENDS] IFPFP

E. KBIX

F. ETD ALTRV BEGINS OVER SIE AT 29 NOV/2245Z. AVANA 2345Z

G. TAS 250KTS/300KTS
PROJECT OFFICER: MAJ MADDOX DSN 597-5518
ALTERNATE PROJECT OFFICER: LT COL KATZ DSN 597-2929

ADDITIONAL INFORMATION: WX RECON MISSION IN SUPPORT OF NWS AND NWSOP. DROPSONDE RELEASE POINTS OWENZ CHAMP MERCI 3240N 7436W TROUT. AIRCREW WILL ADJUST AIRSPEED TO REACH CONTROL POINT MERCI AT 30 NOV/0000Z PLUS/MINUS 30 MINUTES. THE FOLLOWING IFPFP ROUTINGS ARE FOR INFO ONLY AND DO NOT CONSTITUTE AN ATC CLRNC OR PART OF THIS ALTRV REQ: KBIX DCT SJI J37 SPA DCT RDU J209 TYI DCT SWL DCT SIE (ALTRV). REQ: JA DCT TAY J2 SJI DCT BIX LAND (KBIX). NOTE: AFTER CROSSING 3240N 7436W CREW MAY BE RELEASED AND WILL END ALTRV AND REQ CLRNC TO KBIX. REQ ALTRV APVL FAX TO (601) 377-1923.

ROBERT A. KATZ, Lt Col, USAFR
Airspace Manager

SAMPLE SAMPLE

(ROUTING MAY BE INCORRECT)
(USE AS REFERENCE FOR FORMAT ONLY - SEE FAA Handbook 7610.4)

APPENDIX E

FORMAT FOR NHOP/NWSOP FLIGHT INFORMATION FOR INTERNATIONAL AND DOMESTIC NOTAM ISSUANCE

Flight information shall be sent to the NOTAM office via facsimile to (703) 904-4437 for dissemination as an International and Domestic NOTAM in the following format (Note: The request is made for a domestic NOTAM which will then automatically makes its way into the international NOTAM system):

Header

Request a Domestic NOTAM be Issued

A. **Affected Center(s)**. This field will include all affected ARTCCs in 3-letter identifier format; e.g., ZNY, ZOA, ZAN. Synoptic track flights will probably utilize more than one ARTCC, and any adjacent ARTCC should be included when the flight track is within 100 miles of the adjacent center's airspace. Flights that are flying in the storm environment will utilize the ARTCC whose airspace is mostly affected.

B. **Start Time (YYMMDDZZZZ)**. For example, 0006011600. This time would correspond to the entry time on a reconnaissance track or time at the storm fix latitude/longitude.

C. **Ending Time (YYMMDDZZZZ)**. This would be the completion time of reconnaissance track or the time exiting the storm environment.

E.* **Text**. This field is free form and should include the following information: route of flight for the mission portion (latitude/longitude, fixes, airways), type of activity (laser, dropsonde, etc.), frequency/location of deployment, broadcast frequencies, any other pertinent information that may concern other flights.

F. **Lower Altitude (during mission)**. Use "Surface" since the dropsonde is the "reason" for the NOTAM as much or more so than the aircraft altitude.

G. **Upper Altitude (during mission)**. For example, FL450.

If only one altitude is to be used, then F and G may be combined. If altitude is going to vary throughout the mission, utilize "see text" and the information can be inserted there and the altitudes may be explained in field E.

* Note that there is no paragraph "D". It is reserved for FAA use.

NOTES:

1. Include a unit/agency phone number and point of contact for possible questions from the NOTAM office.
2. Only ICAO approved contractions may be used.
3. Using this format will help ensure timely and accurate information dissemination.

APPENDIX F

EAST AND GULF COAST STORM TRACKS

NOTES TO APPENDIX F, EAST AND GULF COAST STORM TRACKS:

- Flight Plans and maps depicted are for planning only; they are not to be used for navigation. Flight crews are responsible for *most current condition* flight plans and fuel computations.

- Flight Plans labeled with the suffix "R" are flown in reverse of the corresponding numbered missions.

- No-wind Fuel Load requirements for **CORONET COAST** missions are as follows:

TRACK #	FUEL LOAD (x 1,000 #)
COAST 01	50
COAST 01R	50
COAST 02	50
COAST 02R	50
COAST 03	50
COAST 03R	50
COAST 04	45
COAST 04R	45
COAST 05	45
COAST 05R	45
COAST 06	36
COAST 06R	36

Flight Crews must recompute fuel requirements prior to flight.

- Compare flight plan with Altitude Reservation (ALTRV) and resolve discrepancies prior to flight.

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

Table F-1a. No-Wind Flight Plan for route **CORONET COAST 01**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 6 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST01.rte
AC EMPTY WT=84300 STORE WT=0 FUEL WT (INT/EXT):44000 6000

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/T	N 30 24.41	10		10M	+15C	360	00+00	0	1000
	KEESLER	W088 55.80	0.6E				360	00:00	0	49000
2	KSJI/R	N 30 43.56	190	N/A	15736M	-16C	056	00+11	35	1303
DCT	SEMMES	W088 21.56	0.1E			7317	056	00:11	35	47697
3	KMGM/R	N 32 13.34	270	280	19000M	-23C	049	00+30	138	2503
J37	MONTGOMERY	W086 19.18	1.6W			4800	049	00:41	173	45194
4	AJFEB/W	N 33 38.42	unk	280	19000M	-23C	053	00+30	138	2346
J37	(AJFEB)	W084 10.23	3.5W			4771	053	01:10	310	42848
5	KSPA/R	N 35 02.02	910	280	19000M	-23C	056	00+30	139	2355
J37	SPARTANBURG	W081 55.62	5.6W			4742	056	01:40	450	40493
6	KGSO/R	N 36 02.74	879	280	25000M	-35C	063	00+26	113	1963
J14	GREENSBORO	W079 58.58	7.4W			4154	063	02:06	563	38530
7	KFKN/R	N 36 42.85	90	280	25000M	-35C	081	00+32	149	2189
DCT	FRANKLIN	W077 00.74	9.8W			4123	081	02:38	711	36341
8	KORF/R	N 36 53.51	20	280	25000M	-35C	084	00+09	40	592
DCT	NORFOLK	W076 12.02	10.4W			4098	084	02:47	752	35749
9	SAWED/W	N 37 32.01	unk	280	25000M	-35C	033	00+09	42	611
J121	SAWED	W075 51.49	10.9W			4087	033	02:56	793	35138
10	KALDA/W	N 37 50.51	unk	280	25000M	-35C	042	00+05	22	314
J121	KALDA	W075 37.59	11.1W			4079	042	03:00	815	34824
11	KSWL/R	N 38 03.40	40	280	25000M	-35C	042	00+03	15	218
J121	SNOW HILL	W075 27.84	11.3W			4075	042	03:04	830	34606
12	KSIE/R	N 39 05.73	10	280	25000M	-35C	038	00+15	70	1011
J121	SEA ISLE	W074 48.02	12.1W			4064	038	03:18	900	33595
13	MANTA/W	N 39 54.11	unk	280	25000M	-35C	062	00+16	76	1094
J121	MANTA	W073 32.53	13.3W			4046	062	03:35	975	32501
14	KHTO/R236018	N 40 41.96	unk	280	25000M	-35C	055	00+14	65	933
J121	HAMPTON	W072 35.19	14.2W			4029	055	03:49	1040	31568
15	ACK/W	N 41 16.91	unk	280	30000M	-44C	088	00+28	121	1852
J62	KACK/E	W070 01.60	16.0W			3729	088	04:16	1161	29716
16	.SAILE/DROP	N 41 11.14	unk	280	30000M	-44C	109	00+21	96	1273
DCT	SAILE WP	W067 53.74	17.0W			3702	109	04:37	1258	28443
17	.SLATN/DROP	N 39 07.01	unk	280	30000M	-44C	178	00+28	131	1713
DCT	SLATN	W066 59.96	16.6W			3668	178	05:05	1388	26730
18	.FLANN/DROP	N 38 20.01	unk	280	30000M	-44C	269	00+31	146	1890
DCT	FLANN	W069 56.96	14.9W			3628	269	05:36	1534	24840
19	CHAMP/W	N 37 31.00	unk	280	30000M	-44C	255	00+20	96	1227
DCT	CHAMP	W071 41.00	13.6W			3594	255	05:57	1630	23613
20	.ZIBUT/DROP	N 36 56.30	unk	280	30000M	-44C	247	00+13	58	745
DCT	ARTCC/WASHTN	W072 39.97	12.8W			3573	247	06:09	1688	22868
21	CROAK/W	N 36 56.31	unk	280	30000M	-44C	283	00+03	16	204
AR9	CROAK	W073 00.00	12.6W			3564	283	06:13	1704	22664
22	OUTES/W	N 36 55.69	unk	280	30000M	-44C	283	00+15	69	873
AR9	OUTES	W074 26.06	11.6W			3553	283	06:27	1773	21791
23	ATLIC/W	N 36 55.06	unk	280	30000M	-44C	281	00+08	37	472
AR9	ATLIC	W075 12.79	11.1W			3539	281	06:35	1810	21319
24	KORF/R	N 36 53.51	20	280	30000M	-44C	280	00+10	47	597
AR9	NORFOLK	W076 12.02	10.4W			3528	280	06:46	1858	20722
25	KFKN/R	N 36 42.85	90	280	30000M	-44C	265	00+09	40	508
DCT	FRANKLIN	W077 00.74	9.8W			3517	265	06:54	1898	20214
26	KGSO/R	N 36 02.74	879	280	30000M	-44C	265	00+32	149	1856
DCT	GREENSBORO	W079 58.58	7.4W			3494	265	07:26	2047	18358
27	KSPA/R	N 35 02.02	910	280	30000M	-44C	245	00+24	113	1397
J14	SPARTANBURG	W081 55.62	5.6W			3463	245	07:50	2160	16961
28	AJFEB/W	N 33 38.42	unk	280	30000M	-44C	239	00+30	139	1706
J37	(AJFEB)	W084 10.23	3.5W			3435	239	08:20	2299	15255
29	KMGM/R	N 32 13.34	270	280	30000M	-44C	236	00+30	138	1674
J37	MONTGOMERY	W086 19.18	1.6W			3405	236	08:50	2437	13581
30	KSJI/R	N 30 43.56	190	N/A	8027M	-1C	231	00+24	138	115
J37	SEMMES	W088 21.56	0.2E			0	231	09:14	2574	13466
31	KBIX/T	N 30 24.41	10	N/A	2000M	+11C	237	00+06	35	0
DCT	KEESLER	W088 55.80	0.6E			0	237	09:20	2609	13466
32	KBIX/A	N 30 24.68	34		34M	+15C	050	00+15	0	500
APPR	KEESLER AFB	W088 55.42	0.6E				050	09:35	2610	12966

Table F- 1b. No-Wind Flight Plan for route **CORONET COAST 01R**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 6 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST01R.rte
AC EMPTY WT=84300 STORE WT=0 FUEL WT (INT/EXT):44000 6000

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/T	N 30 24.41	10		10M	+15C	360	00+00	0	1000
	KEESLER	W088 55.80	0.6E				360	00:00	0	49000
2	KSJI/R	N 30 43.56	190	N/A	15736M	-16C	056	00+11	35	1303
DCT	SEMMES	W088 21.56	5.0E			7317	056	00:11	35	47697
3	KMGM/R	N 32 13.34	270	290	19000M	-23C	049	00+29	138	2554
J-37	MONTGOMERY	W086 19.18	3.0E			5089	049	00:40	173	45143
4	AJFEB/W	N 33 38.42	unk	290	19000M	-23C	048	00+28	138	2403
J-37	(AJFEB)	W084 10.23	3.4W			5062	048	01:08	310	42740
5	KSPA/R	N 35 02.02	910	290	19000M	-23C	056	00+29	139	2415
J-37	SPARTANBURG	W081 55.62	2.0W			5036	056	01:37	450	40325
6	KGSO/R	N 36 02.74	879	290	25000M	-35C	063	00+25	113	1980
J-14	GREENSBORO	W079 58.58	3.0W			4369	063	02:03	563	38345
7	KFKN/R	N 36 42.85	90	290	25000M	-35C	076	00+31	149	2225
DCT	FRANKLIN	W077 00.74	9.0W			4340	076	02:33	711	36120
8	KORF/R	N 36 53.51	20	290	25000M	-35C	083	00+08	40	602
DCT	NORFOLK	W076 12.02	7.0W			4317	083	02:42	752	35518
9	ATLIC/W	N 36 55.06	unk	N/A	29898M	-44C	095	00+12	47	880
AR-9	ATLIC	W075 12.79	11.1W			4416	095	02:54	799	34638
10	OUTES/W	N 36 55.69	unk	290	30000M	-44C	100	00+08	37	515
AR-9	OUTES	W074 26.06	11.6W			3999	100	03:01	836	34123
11	CROAK/W	N 36 56.31	unk	290	30000M	-44C	101	00+14	69	945
AR-9	CROAK	W073 00.00	12.6W			3982	101	03:16	905	33178
12	.ZIBUT/DROP	N 36 56.30	unk	290	30000M	-44C	103	00+03	16	219
AR-9	.FIR KZNY	W072 39.97	12.8W			3969	103	03:19	921	32959
13	CHAMP/W	N 37 31.00	unk	290	30000M	-44C	066	00+12	58	797
DCT	.NY CENTER	W071 41.00	13.6W			3957	066	03:31	980	32162
14	.FLANN/DROP	N 38 20.01	unk	290	30000M	-44C	072	00+20	96	1296
DCT	FLANN	W069 56.96	14.8W			3933	072	03:51	1075	30866
15	.SLATN/DROP	N 39 07.01	unk	290	30000M	-44C	085	00+30	146	1960
DCT	SLATN	W066 59.96	16.6W			3897	085	04:21	1221	28906
16	.SAILE/DROP	N 41 11.14	unk	290	30000M	-44C	359	00+27	131	1739
DCT	SAILE	W067 53.74	17.0W			3857	359	04:48	1352	27167
17	KACK/E	N 41 16.91	100	290	30000M	-44C	291	00+20	96	1271
DCT	NANTUCKET	W070 01.60	15.0W			3826	291	05:08	1448	25896
18	KHTO/R236018	N 40 41.96	unk	290	30000M	-44C	269	00+25	121	1585
J-62	HAMPTON	W072 35.19	14.2W			3797	269	05:33	1569	24311
19	MANTA/W	N 39 54.11	unk	290	30000M	-44C	237	00+13	65	843
J-121	MANTA	W073 32.53	13.3W			3773	237	05:46	1634	23468
20	KSIE/R	N 39 05.73	10	290	30000M	-44C	244	00+16	76	980
J-121	SEA ISLE	W074 48.02	9.0W			3755	244	06:02	1710	22488
21	KSWL/R	N 38 03.40	40	290	30000M	-44C	216	00+14	70	898
J-121	SNOW HILL	W075 27.84	8.0W			3737	216	06:17	1779	21590
22	KALDA/W	N 37 50.51	unk	290	30000M	-44C	219	00+03	15	193
J-121	KALDA	W075 37.59	11.1W			3727	219	06:20	1794	21397
23	SAWED/W	N 37 32.01	unk	290	30000M	-44C	222	00+04	22	276
J-121	SAWED	W075 51.49	10.8W			3723	222	06:24	1816	21121
24	KORF/R	N 36 53.51	20	290	30000M	-44C	214	00+09	42	536
J-121	NORFOLK	W076 12.02	7.0W			3715	214	06:33	1858	20585
25	KFKN/R	N 36 42.85	90	290	30000M	-44C	262	00+08	40	517
DCT	FRANKLIN	W077 00.74	9.0W			3705	262	06:41	1898	20068
26	KGSO/R	N 36 02.74	879	290	30000M	-44C	264	00+31	149	1889
DCT	GREENSBORO	W079 58.58	3.0W			3684	264	07:12	2047	18179
27	KSPA/R	N 35 02.02	910	290	30000M	-44C	241	00+23	113	1423
J-14	SPARTANBURG	W081 55.62	2.0W			3655	241	07:35	2160	16756
28	AJFEB/W	N 33 38.42	unk	290	30000M	-44C	236	00+29	139	1740
J-37	(AJFEB)	W084 10.23	3.4W			3628	236	08:04	2299	15016
29	KMGM/R	N 32 13.34	270	N/A	26600M	-38C	233	00+28	138	1464
J-37	MONTGOMERY	W086 19.18	3.0E			0	233	08:32	2437	13552
30	KSJI/R	N 30 43.56	190	N/A	3000M	+9C	227	00+24	138	0
J-37	SEMMES	W088 21.56	5.0E			0	227	08:55	2574	13552
31	KBIX/T	N 30 24.41	10	290	2000M	+11C	232	00+07	35	988
DCT	KEESLER	W088 55.80	1.0E			8152	232	09:03	2609	12564
32	KBIX/T	N 30 24.41	10		10M	+15C	236	00+15	0	500
APPR	KEESLER	W088 55.80	1.0E				236	09:18	2609	12064

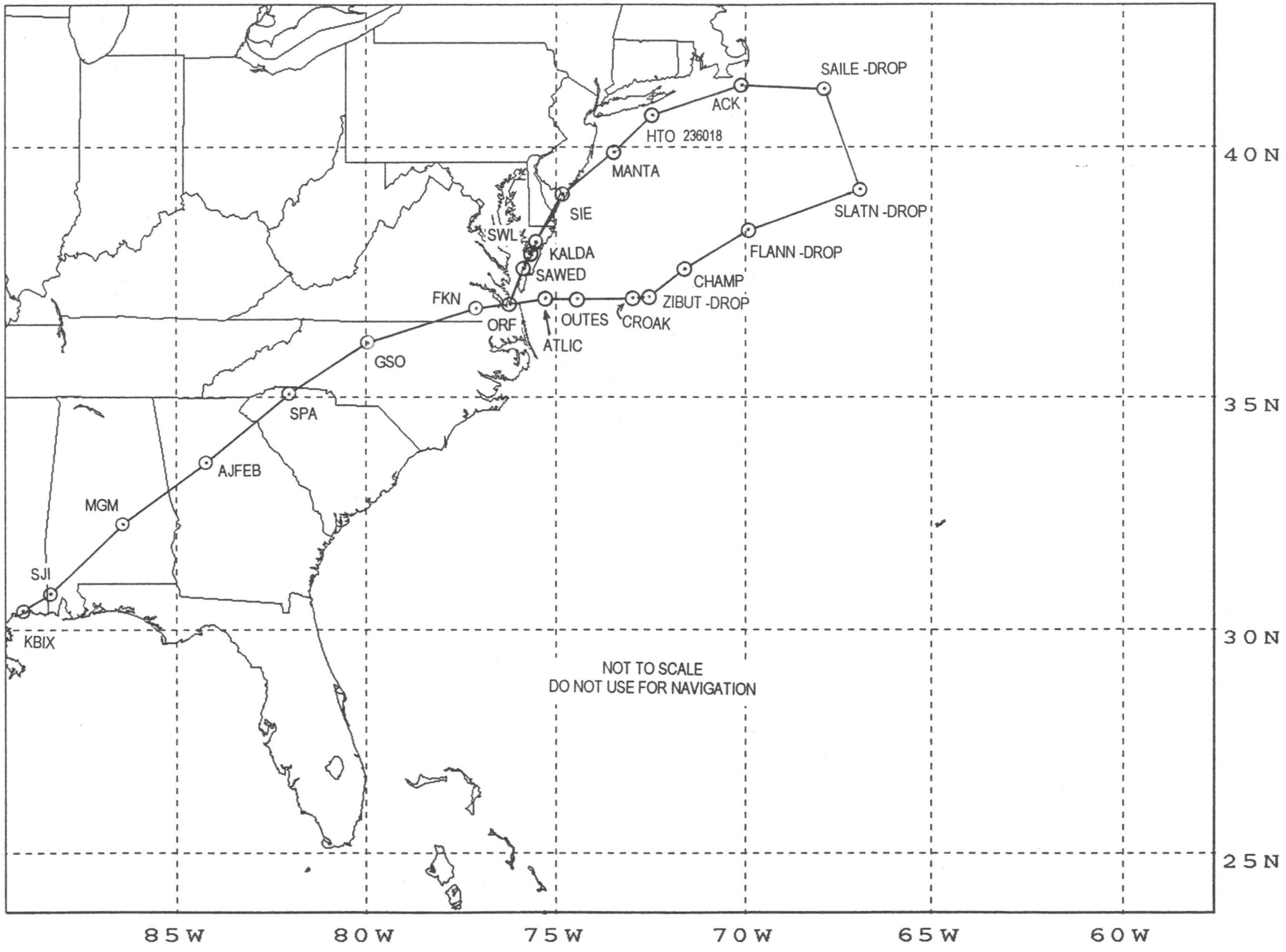

Figure F-1. Air Force track **CORONET COAST 01/01R**

Table F-2a. No-Wind Flight Plan for route **CORONET COAST 02**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 8 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST02.rte
AC EMPTY WT-84300 STORE WT-0 FUEL WT (INT/EXT):44000 6000

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/T	N 30 24.41	10		10M	+15C	360	00+00+00	0.0	1000
	KEESLER	W088 55.80	1.0E				360	00:00:00	0.0	49000
2	SJI/W	N 30 43.56	unk	N/A	15736M	-16C	056	00+10+41	35.2	1303
DCT	KSJI/R	W088 21.56	0.1E			7317	056	00:10:41	35.2	47697
	.level off	N 30 52.29	unk	N/A	19000M	-23C	049	00+03+35	13.3	371
		W088 09.93	0.1W			7045	049	00:14:16	48.4	47326
3	KMGM/R	N 32 13.34	270	280	19000M	-23C	049	00+26+39	124.4	2132
J37	MONTGOMERY	W086 19.18	3.0E			4800	049	00:40:55	172.8	45194
4	AJFEB/W	N 33 38.42	unk	280	19000M	-23C	048	00+29+30	137.7	2346
J37	(AJFEB)	W084 10.23	3.6W			4771	048	01:10:25	310.5	42848
5	KSPA/R	N 35 02.02	910	280	19000M	-23C	056	00+29+48	139.1	2355
J37	SPARTANBURG	W081 55.62	2.0W			4742	056	01:40:13	449.6	40493
	.level off	N 35 19.35	unk	N/A	25000M	-35C	059	00+08+36	31.9	760
		W081 22.89	6.1W			5304	059	01:48:49	481.4	39733
6	KGSO/R	N 36 02.74	879	280	25000M	-35C	063	00+17+22	81.1	1203
J14	GREENSBORO	W079 58.58	3.0W			4154	063	02:06:11	562.5	38530
7	KFKN/R	N 36 42.85	90	280	25000M	-35C	076	00+31+52	148.7	2189
DCT	FRANKLIN	W077 00.74	9.0W			4123	076	02:38:03	711.2	36341
8	KORF/R	N 36 53.51	20	280	25000M	-35C	083	00+08+40	40.4	592
DCT	NORFOLK	W076 12.02	7.0W			4098	083	02:46:43	751.6	35749
9	SAWED/W	N 37 32.01	unk	280	25000M	-35C	030	00+08+58	41.8	611
J121	SAWED	W075 51.49	10.9W			4087	030	02:55:41	793.5	35138
10	KALDA/W	N 37 50.51	unk	280	25000M	-35C	042	00+04+37	21.5	314
J121	KALDA	W075 37.59	11.2W			4079	042	03:00:18	815.0	34824
11	KSWL/R	N 38 03.40	40	280	25000M	-35C	042	00+03+13	15.0	218
J121	SNOW HILL	W075 27.84	8.0W			4075	042	03:03:31	830.0	34606
12	KSIE/R	N 39 05.73	10	280	25000M	-35C	034	00+14+56	69.7	1011
J121	SEA ISLE	W074 48.02	9.0W			4064	034	03:18:27	899.7	33595
13	MANTA/W	N 39 54.11	unk	280	25000M	-35C	059	00+16+14	75.7	1094
J121	MANTA	W073 32.53	13.3W			4046	059	03:34:41	975.4	32501
14	KHTO/R236018	N 40 41.96	unk	280	25000M	-35C	055	00+13+53	64.8	933
J121	HAMPTON	W072 35.19	14.2W			4029	055	03:48:34	1040.2	31568
	.level off	N 40 54.10	unk	N/A	30000M	-44C	087	00+10+31	40.8	782
		W071 43.80	14.8W			4464	087	03:59:05	1081.0	30786
15	ACK/W	N 41 16.91	100	280	30000M	-44C	088	00+17+13	80.3	1070
J62	NANTUCKET	W070 01.60	15.0W			3729	088	04:16:18	1161.3	29716
16	LACKS/W	N 40 00.00	unk	280	30000M	-44C	147	00+24+17	113.3	1497
J97	LACKS	W068 11.96	16.4W			3699	147	04:40:35	1274.6	28219
17	.SLAIN/W	N 39 07.01	unk	280	30000M	-44C	150	00+16+27	76.7	1006
J97	.FIR KZNY	W066 59.96	16.6W			3671	150	04:57:02	1351.3	27213
18	BRUNZ/W	N 39 00.00	unk	280	30000M	-44C	110	00+20+01	93.4	1216
DCT	DROP	W065 00.00	17.3W			3646	110	05:17:03	1444.7	25997
19	.TURNPOINT	N 37 05.45	unk	280	30000M	-44C	240	00+32+59	153.9	1985
DCT	DROP	W067 10.51	15.8W			3611	240	05:50:02	1598.6	24012
20	CLXTN/W	N 35 43.38	unk	280	30000M	-44C	235	00+22+40	105.7	1350
A699	CLXTN	W068 33.36	14.7W			3575	235	06:12:42	1704.4	22662
21	DANER/W	N 35 16.00	unk	280	30000M	-44C	237	00+07+56	37.0	470
A699	DROP	W069 04.00	14.3W			3557	237	06:20:38	1741.4	22192
22	ODEAL/W	N 33 25.85	unk	280	30000M	-44C	242	00+34+51	162.6	2051
A699	DROP	W071 29.93	12.4W			3531	242	06:55:29	1904.0	20141
23	BURTT/W	N 31 40.13	unk	280	30000M	-44C	233	00+29+26	137.3	1714
A699	DROP	W073 12.96	10.9W			3494	233	07:24:55	2041.4	18427
24	TROUT/W	N 30 23.00	unk	280	30000M	-44C	260	00+44+51	209.3	2582
DCT	DROP/JAX CTR	W077 00.00	8.0W			3454	260	08:09:46	2250.6	15845
25	CARPS/W	N 30 24.48	unk	280	30000M	-44C	280	00+08+19	38.8	475
AR-5	CARPS	W077 45.00	7.6W			3426	280	08:18:05	2289.5	15370
26	OZENA/W	N 30 25.17	unk	280	30000M	-44C	279	00+06+38	31.0	378
AR-5	OZENA	W078 20.90	7.2W			3419	279	08:24:43	2320.5	14992
27	TORRY/W	N 30 25.33	unk	280	30000M	-44C	278	00+05+43	26.7	325
AR-5	TORRY	W078 51.83	6.8W			3412	278	08:30:26	2347.1	14667
28	DINNS/W	N 30 27.91	unk	280	30000M	-44C	279	00+32+34	152.0	1842
AR-5	KJA/N	W081 48.08	4.6W			3394	279	09:03:00	2499.1	12825
29	TAY/W	N 30 30.28	unk	280	30000M	-44C	278	00+08+21	38.9	469
DCT	KTAY/R	W082 33.17	4.1W			3374	278	09:11:21	2538.0	12356
30	CAPPS/W	N 30 32.72	unk	280	30000M	-44C	276	00+14+59	69.9	840
J2	CAPPS	W083 54.30	3.1W			3364	276	09:26:20	2607.9	11516
31	SZW/W	N 30 33.37	unk	280	30000M	-44C	275	00+05+12	24.2	290
J2	KSZW/R	W084 22.44	2.7W			3354	275	09:31:32	2632.2	11226
32	OJHAP/W	N 30 47.63	unk	280	30000M	-44C	293	00+08+59	41.9	501
J2	(OJHAP)	W085 08.24	2.2W			3348	293	09:40:31	2674.1	10725
	.descent pt	N 30 48.59	unk	280	30000M	-44C	274	00+08+10	38.1	455
		W085 52.61	1.8W			3341	274	09:48:41	2712.2	10270
33	DEFUN/W	N 30 48.86	unk	N/A	27750M	-40C	273	00+02+15	13.1	0
J2	DEFUN	W086 07.89	1.6W			0	273	09:50:56	2725.3	10270
34	KCEW/R	N 30 43.57	254	N/A	22910M	-30C	273	00+04+50	28.2	0
J2	CRESTVIEW	W086 40.75	3.0E			0	273	09:55:46	2753.6	10270
35	SJI/W	N 30 43.56	unk	N/A	8027M	-1C	263	00+14+53	86.8	0
J2	KSJI/R	W088 21.56	0.1E			0	263	10:10:39	2840.4	10270
36	KBIX/T	N 30 24.41	10	N/A	2000M	+11C	237	00+06+02	35.2	0
DCT	KEESLER	W088 55.80	1.0E			0	237	10:16:41	2875.5	10270
37	KBIX/A	N 30 24.68	34		34M	+15C	050	00+15+00	0.4	500
APPR	KEESLER AFB	W088 55.42	0.5E				050	10:31:41	2876.0	9770

Table F-2b. No-Wind Flight Plan for route **CORONET COAST 02R**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 8 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST02R.rte
AC EMPTY WT=84300 STORE WT=0 FUEL WT (INT/EXT):44000 6000

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/T	N 30 24.41	10	280	2000M	+11C	056	00+00+00	0.0	0
	KEESLER	W088 55.80	1.0E			0	056	00:00:00	0.0	50000
2	SJI/W	N 30 43.56	unk	N/A	16309M	-17C	056	00+10+32	35.2	1237
DCT	KSJI/R	W088 21.56	0.1E			7048	056	00:10:32	35.2	48763
	.level off	N 30 44.41	unk	N/A	19000M	-23C	086	00+03+01	11.3	315
		W088 08.49	0.1W			6871	086	00:13:33	46.4	48448
3	KCEW/R	N 30 49.57	254	280	19000M	-23C	086	00+16+11	75.6	1301
J2	CRESTVIEW	W086 40.75	3.0E			4820	086	00:29:44	122.0	47147
4	DEFUN/W	N 30 48.86	unk	280	19000M	-23C	088	00+06+03	28.2	485
J2	DEFUN	W086 07.89	1.6W			4808	088	00:35:47	150.2	46662
5	OJHAP/W	N 30 47.63	unk	280	19000M	-23C	093	00+10+59	51.2	878
J2	(OJHAP)	W085 08.24	2.2W			4799	093	00:46:46	201.5	45784
	.level off	N 30 35.15	unk	N/A	25000M	-35C	112	00+09+50	36.7	860
		W084 28.09	2.7W			5251	112	00:56:36	238.2	44924
6	SZW/W	N 30 33.37	unk	280	25000M	-35C	113	00+01+07	5.2	79
J2	KSZW/R	W084 22.44	2.7W			4265	113	00:57:43	243.3	44845
7	CAPPS/W	N 30 32.72	unk	280	25000M	-35C	094	00+05+12	24.2	369
J2	CAPPS	W083 54.30	3.1W			4261	094	01:02:55	267.6	44476
8	TAY/W	N 30 30.28	unk	280	25000M	-35C	095	00+14+59	69.9	1060
J2	KTAY/R	W082 33.17	4.1W			4247	095	01:17:54	337.5	43416
9	DINNS/W	N 30 27.91	unk	280	25000M	-35C	097	00+08+21	38.9	588
DCT	KJA/N	W081 48.08	4.6W			4230	097	01:26:15	376.4	42828
10	TORRY/W	N 30 25.33	unk	280	25000M	-35C	095	00+32+34	152.0	2281
AR-5	TORRY	W078 51.83	6.8W			4202	095	01:58:49	528.4	40547
11	OZENA/W	N 30 25.17	unk	280	25000M	-35C	097	00+05+43	26.7	398
AR-5	OZENA	W078 20.90	7.2W			4177	097	02:04:32	555.1	40149
12	CARPS/W	N 30 24.48	unk	280	25000M	-35C	098	00+06+38	31.0	461
AR-5	CARPS	W077 45.00	7.6W			4168	098	02:11:10	586.1	39688
13	TROUT/W	N 30 23.00	unk	280	25000M	-35C	100	00+08+19	38.8	577
AR-5	DROP / KZNY	W077 00.00	8.0W			4159	100	02:19:29	624.9	39111
14	BURTT/W	N 31 40.13	unk	280	25000M	-35C	075	00+44+51	209.3	3083
DCT	DROP	W073 12.96	10.9W			4125	075	03:04:20	834.2	36028
15	ODEAL/W	N 33 25.85	unk	280	25000M	-35C	050	00+29+26	137.3	2001
A699	DROP	W071 28.93	12.4W			4080	050	03:33:46	971.5	34027
16	DANER/W	N 35 16.00	unk	280	25000M	-35C	059	00+34+51	162.6	2348
A699	DROP	W069 04.00	14.3W			4043	059	04:08:37	1134.1	31679
17	CLXTN/W	N 35 43.38	unk	280	25000M	-35C	056	00+07+56	37.0	532
A699	CLXTN	W068 33.36	14.7W			4019	056	04:16:33	1171.2	31147
	.level off	N 36 14.44	unk	N/A	30000M	-44C	054	00+10+22	40.1	771
		W068 02.10	15.1W			4469	054	04:26:55	1211.2	30376
18	.TURNPOINT	N 37 05.00	unk	280	30000M	-44C	054	00+14+03	65.6	872
A699	DROP	W067 10.00	15.8W			3722	054	04:40:58	1276.8	29504
19	BRUNZ/W	N 39 00.00	unk	280	30000M	-44C	057	00+33+00	154.0	2028
DCT	DROP	W065 00.00	17.3W			3688	057	05:13:58	1430.8	27476
20	.SLATN/W	N 39 07.01	unk	280	30000M	-44C	292	00+20+01	93.4	1218
DCT	NEW YORK CTR	W066 59.96	16.6W			3652	292	05:33:59	1524.2	26258
21	LACKS/W	N 40 00.00	unk	280	30000M	-44C	331	00+16+27	76.7	994
J97	LACKS	W068 11.96	16.4W			3627	331	05:50:26	1600.9	25264
22	ACK/W	N 41 16.91	100	280	30000M	-44C	330	00+24+17	113.3	1457
J97	NANTUCKET	W070 01.60	15.0W			3601	330	06:14:43	1714.2	23807
23	KHTO/R236018	N 40 41.96	unk	280	30000M	-44C	269	00+25+57	121.1	1543
J62	HAMPTON	W072 35.19	14.2W			3569	269	06:40:40	1835.3	22264
24	MANTA/W	N 39 54.11	unk	280	30000M	-44C	237	00+13+53	64.8	821
J121	MANTA	W073 32.53	13.3W			3545	237	06:54:33	1900.1	21443
25	KSIE/R	N 39 05.73	10	280	30000M	-44C	244	00+16+14	75.7	954
J121	SEA ISLE	W074 48.02	9.0W			3527	244	07:10:47	1975.9	20489
26	KSWL/R	N 38 03.40	40	280	30000M	-44C	216	00+14+56	69.7	873
J121	SNOW HILL	W075 27.84	8.0W			3509	216	07:25:43	2045.5	19616
27	KALDA/W	N 37 50.51	unk	280	30000M	-44C	219	00+03+13	15.0	187
J121	KALDA	W075 37.59	11.2W			3499	219	07:28:56	2060.5	19429
28	SAWED/W	N 37 32.01	unk	280	30000M	-44C	222	00+04+37	21.5	269
J121	SAWED	W075 51.49	10.9W			3494	222	07:33:33	2082.1	19160
29	KORF/R	N 36 53.51	20	280	30000M	-44C	214	00+08+58	41.8	521
J121	NORFOLK	W076 12.02	7.0W			3487	214	07:42:31	2123.9	18639
30	KFKN/R	N 36 42.85	90	280	30000M	-44C	262	00+08+40	40.4	502
DCT	FRANKLIN	W077 00.74	9.0W			3477	262	07:51:11	2164.3	18137
31	KGSO/R	N 36 02.74	879	280	30000M	-44C	264	00+31+52	148.7	1835
DCT	GREENSBORO	W079 58.58	3.0W			3455	264	08:23:03	2313.0	16302
32	KSPA/R	N 35 02.02	910	280	30000M	-44C	241	00+24+12	112.9	1382
J14	SPARTANBURG	W081 55.62	2.0W			3426	241	08:47:15	2426.0	14920
33	AJFEB/W	N 33 38.42	unk	280	30000M	-44C	236	00+29+48	139.1	1688
J37	(AJFEB)	W084 10.23	3.6W			3399	236	09:17:03	2565.0	13232
34	KMGM/R	N 32 13.34	270	280	30000M	-44C	236	00+29+30	137.7	1658
J37	MONTGOMERY	W086 19.18	3.0E			3371	236	09:46:33	2702.7	11574
35	SJI/W	N 30 43.56	unk	280	30000M	-44C	227	00+29+30	137.7	1644
J37	KSJI/R	W088 21.56	0.1E			3345	227	10:16:03	2840.4	9930
36	KBIX/T	N 30 24.41	10		10M	+15C	237	00+08+00	35.2	500
DCT	KEESLER	W089 55.80	1.0E				237	10:24:03	2875.5	9430
37	KBIX/T	N 30 24.41	10		10M	+15C	236	00+15+00	0.0	500
APPR	KEESLER	W088 55.80	1.0E				236	10:39:03	2875.5	8930

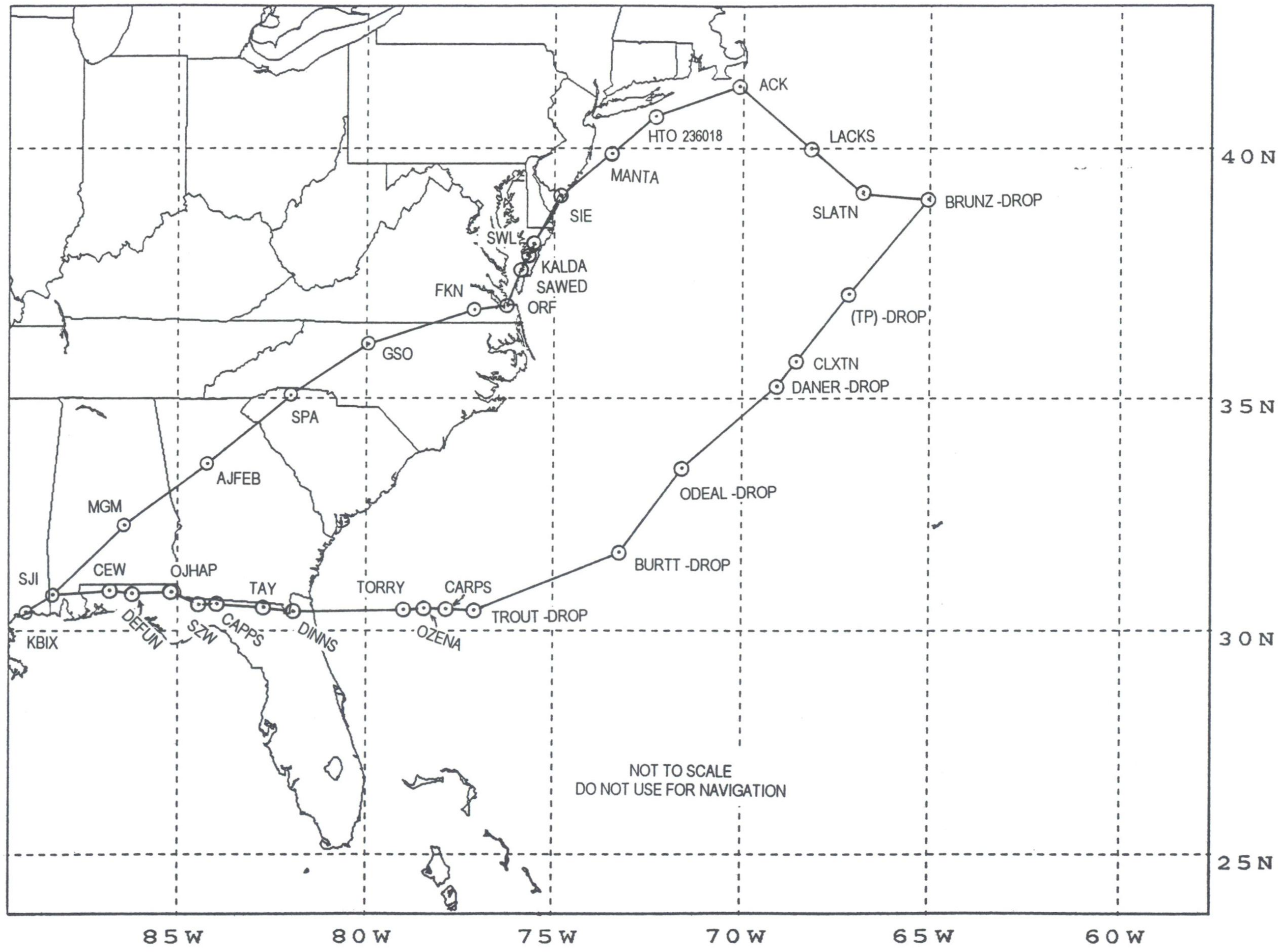

Figure F-2. Air Force track **CORONET COAST 02/02R**

Table F-3a. No-Wind Flight Plan for route **CORONET COAST 03**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 8 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST03.rte
AC EMPTY WT=84300 STORE WT=0 FUEL WT (INT/EXT):44000 6000

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/T	N 30 24.41	10		10M	+15C	360	00+00+00	0.0	1000
	KEESLER	W088 55.80	1.0E				360	00:00:00	0.0	49000
2	SJI/W	N 30 43.56	unk	N/A	15736M	-16C	056	00+10+41	35.2	1303
DCT	KSJI/R	W088 21.56	0.1E			7317	056	00:10:41	35.2	47697
	.level off	N 30 52.29	unk	N/A	19000M	-23C	049	00+03+35	13.3	371
		W088 09.93	0.1W			7045	049	00:14:16	48.4	47326
3	KMGM/R	N 32 13.34	270	280	19000M	-23C	049	00+26+39	124.4	2132
J37	MONTGOMERY	W086 19.18	3.0E			4800	049	00:40:55	172.8	45194
4	AJFEB/W	N 33 38.42	unk	280	19000M	-23C	048	00+29+30	137.7	2346
J37	(AJFEB)	W084 10.23	3.6W			4771	048	01:10:25	310.5	42848
5	KSPA/R	N 35 02.02	910	280	19000M	-23C	056	00+29+48	139.1	2355
J37	SPARTANBURG	W081 55.62	2.0W			4742	056	01:40:13	449.6	40493
	.level off	N 35 19.35	unk	N/A	25000M	-35C	059	00+08+36	31.9	760
		W081 22.89	6.1W			5304	059	01:48:49	481.4	39733
6	KGSO/R	N 36 02.74	879	280	25000M	-35C	063	00+17+22	81.1	1203
J14	GREENSBORO	W079 58.58	3.0W			4154	063	02:06:11	562.5	38530
7	KFKN/R	N 36 42.85	90	280	25000M	-35C	076	00+31+52	148.7	2189
DCT	FRANKLIN	W077 00.74	9.0W			4123	076	02:38:03	711.2	36341
8	KORF/R	N 36 53.51	20	280	25000M	-35C	083	00+08+40	40.4	592
DCT	NORFOLK	W076 12.02	7.0W			4098	083	02:46:43	751.6	35749
9	SAWED/W	N 37 32.01	unk	280	25000M	-35C	030	00+08+58	41.8	611
J121	SAWED	W075 51.49	10.9W			4087	030	02:55:41	793.5	35138
10	KALDA/W	N 37 50.51	unk	280	25000M	-35C	042	00+04+37	21.5	314
J121	KALDA	W075 37.59	11.2W			4079	042	03:00:18	815.0	34824
11	KSWL/R	N 38 03.40	40	280	25000M	-35C	042	00+03+13	15.0	218
J121	SNOW HILL	W075 27.84	8.0W			4075	042	03:03:31	830.0	34606
12	KSIE/R	N 39 05.73	10	280	25000M	-35C	034	00+14+56	69.7	1011
J121	SEA ISLE	W074 48.02	9.0W			4064	034	03:18:27	899.7	33595
13	MANTA/W	N 39 54.11	unk	280	25000M	-35C	059	00+16+14	75.7	1094
J121	MANTA	W073 32.53	13.3W			4046	059	03:34:41	975.4	32501
14	KHTO/R236018	N 40 41.96	unk	280	25000M	-35C	055	00+13+53	64.8	933
J121	HAMPTON	W072 35.19	14.2W			4029	055	03:48:34	1040.2	31568
	.level off	N 40 54.10	unk	N/A	30000M	-44C	087	00+10+31	40.8	782
		W071 43.80	14.8W			4464	087	03:59:05	1081.0	30786
15	ACK/W	N 41 16.91	100	280	30000M	-44C	088	00+17+13	80.3	1070
J62	NANTUCKET	W070 01.60	15.0W			3729	088	04:16:18	1161.3	29716
16	LACKS/W	N 40 00.00	unk	280	30000M	-44C	147	00+24+17	113.3	1497
J97		W068 11.96	16.4W			3699	147	04:40:35	1274.6	28219
17	SLATN/W	N 39 07.01	unk	280	30000M	-44C	150	00+16+27	76.7	1006
J97	DROP	W066 59.96	16.6W			3671	150	04:57:02	1351.3	27213
18	CREEQ/W	N 37 10.32	unk	280	30000M	-44C	240	00+34+17	160.0	2077
A700	DROP	W069 19.12	14.8W			3636	240	05:31:19	1511.3	25136
19	DOWNT/W	N 35 54.96	unk	280	30000M	-44C	238	00+21+50	101.9	1310
A700		W070 44.49	13.6W			3600	238	05:53:09	1613.2	23826
20	KATHY/W	N 35 07.22	unk	280	30000M	-44C	236	00+13+43	64.0	818
A700	DROP	W071 36.90	12.9W			3577	236	06:06:52	1677.2	23008
21	FAIRR/W	N 33 43.86	unk	280	30000M	-44C	244	00+28+18	132.1	1675
A700		W073 41.09	11.2W			3551	244	06:35:10	1809.3	21333
22	.RELEASE PT	N 33 18.00	unk	280	30000M	-44C	241	00+08+37	40.2	507
A700	DROP	W074 18.00	10.7W			3529	241	06:43:47	1849.5	20826
23	JAINS/W	N 31 21.33	unk	280	30000M	-44C	241	00+38+32	179.8	2250
A700	JAINS	W077 00.00	8.3W			3502	241	07:22:19	2029.3	18576
24	CARPS/W	N 30 24.48	unk	280	30000M	-44C	223	00+14+44	68.7	852
A700	CARPS	W077 45.00	7.6W			3473	223	07:37:03	2098.0	17724
25	OZENA/W	N 30 25.17	unk	280	30000M	-44C	279	00+06+38	31.0	383
AR-5	OZENA	W078 20.90	7.2W			3461	279	07:43:41	2129.0	17341
26	TORRY/W	N 30 25.33	unk	280	30000M	-44C	278	00+05+43	26.7	329
AR-5	TORRY	W078 51.83	6.8W			3455	278	07:49:24	2155.7	17012
27	DINNS/W	N 30 27.91	unk	280	30000M	-44C	279	00+32+34	152.0	1864
AR-5	KJA/N	W081 48.08	4.6W			3435	279	08:21:58	2307.7	15148
28	TAY/W	N 30 30.28	unk	280	30000M	-44C	278	00+08+21	38.9	475
DCT	KTAY/R	W082 33.17	4.1W			3414	278	08:30:19	2346.6	14673
29	CAPPS/W	N 30 32.72	unk	280	30000M	-44C	276	00+14+59	69.9	850
J2	CAPPS	W083 54.30	3.1W			3402	276	08:45:18	2416.5	13823
30	SZW/W	N 30 33.37	unk	280	30000M	-44C	275	00+05+12	24.2	294
J2	KSZW/R	W084 22.44	2.7W			3393	275	08:50:30	2440.7	13529
31	OJHAP/W	N 30 47.63	unk	280	30000M	-44C	293	00+08+59	41.9	507
J2	(OJHAP)	W085 08.24	2.2W			3386	293	08:59:29	2482.6	13022
	.descent pt	N 30 47.87	unk	280	30000M	-44C	274	00+01+53	8.8	106
		W085 18.48	2.2W			3381	274	09:01:22	2491.4	12916
32	DEFUN/W	N 30 48.86	unk	N/A	22723M	-30C	274	00+07+17	42.5	0
J2	DEFUN	W086 07.89	1.6W			0	274	09:08:39	2533.9	12916
33	KCEW/R	N 30 49.57	254	N/A	17883M	-20C	273	00+04+50	28.2	0
J2	CRESTVIEW	W086 40.75	3.0E			0	273	09:13:29	2562.1	12916
34	SJI/W	N 30 43.56	unk	N/A	3000M	+9C	263	00+14+53	86.8	0
J2	KSJI/R	W088 21.56	0.1E			0	263	09:28:22	2648.9	12916
35	KBIX/T	N 30 24.41	10	280	2000M	+11C	237	00+07+32	35.2	951
DCT	KEESLER	W088 55.80	1.0E			7572	237	09:35:54	2684.1	11965
36	KBIX/A	N 30 24.68	34		34M	+15C	050	00+15+00	0.4	500
APPR	KEESLER AFB	W088 55.42	0.5E				050	09:50:54	2684.5	11465

Table F-3b. No-Wind Flight Plan for route **CORONET COAST 03R**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 8 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST03R.rte
AC EMPTY WT-84300 STORE WT-0 FUEL WT (INT/EXT):44000 6000

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/T	N 30 24.41	10	280	10M	+15C	056	00+00+00	0.0	0
	KEESLER	W088 55.80	1.0E			0	056	00:00:00	0.0	50000
2	SJI/W	N 30 43.56	unk	N/A	15500M	-16C	056	00+10+41	35.2	1306
DCT	KSJI/R	W088 21.56	0.1E			7333	056	00:10:41	35.2	48694
	.level off	N 30 44.63	unk	N/A	19000M	-23C	086	00+03+49	14.2	396
		W088 05.08	0.1W			7043	086	00:14:30	49.4	48298
3	KCEW/R	N 30 49.57	254	280	19000M	-23C	086	00+15+34	72.6	1250
J2	CRESTVIEW	W086 40.75	3.0E			4819	086	00:30:04	122.0	47048
4	DEFUN/W	N 30 48.86	unk	280	19000M	-23C	088	00+06+03	28.2	485
J2	DEFUN	W086 07.89	1.6W			4807	088	00:36:07	150.2	46563
5	OJHAP/W	N 30 47.63	unk	280	19000M	-23C	093	00+10+59	51.2	878
J2	(OJHAP)	W085 08.24	2.2W			4798	093	00:47:06	201.5	45685
	.level off	N 30 35.18	unk	N/A	25000M	-35C	112	00+09+48	36.6	858
		W084 28.20	2.7W			5252	112	00:56:54	238.1	44827
6	SZW/W	N 30 33.37	unk	280	25000M	-35C	113	00+01+08	5.3	80
J2	KSZW/R	W084 22.44	2.7W			4263	113	00:58:02	243.3	44747
7	CAPPS/W	N 30 32.72	unk	280	25000M	-35C	094	00+05+12	24.2	369
J2	CAPPS	W083 54.30	3.1W			4259	094	01:03:14	267.6	44378
8	TAY/W	N 30 30.28	unk	280	25000M	-35C	095	00+14+59	69.9	1060
J2	KTAY/R	W082 33.17	4.1W			4245	095	01:18:13	337.5	43318
9	DINNS/W	N 30 27.91	unk	280	25000M	-35C	097	00+08+21	38.9	588
DCT	KJA/N	W081 48.08	4.6W			4228	097	01:26:34	376.4	42730
10	TORRY/W	N 30 25.33	unk	280	25000M	-35C	095	00+32+34	152.0	2280
AR-5	TORRY	W078 51.83	6.8W			4200	095	01:59:08	528.4	40450
11	OZENA/W	N 30 25.17	unk	280	25000M	-35C	097	00+05+43	26.7	398
AR-5	OZENA	W078 20.90	7.2W			4175	097	02:04:51	555.1	40052
12	CARPS/W	N 30 24.48	unk	280	25000M	-35C	098	00+06+38	31.0	461
AR-5	CARPS	W077 45.00	7.6W			4167	098	02:11:29	586.1	39591
13	.JAINS / KZ	N 31 21.33	unk	280	25000M	-35C	042	00+14+44	68.7	1019
A700	DROP	W077 00.00	8.3W			4153	042	02:26:13	654.8	38572
14	.RELEASE PT	N 33 18.00	unk	280	25000M	-35C	057	00+38+32	179.8	2646
A700	DROP	W074 18.00	10.7W			4119	057	03:04:45	834.6	35926
15	FAIRR/W	N 33 43.86	unk	N/A	29271M	-43C	060	00+10+30	40.2	776
A700	FAIRR	W073 41.09	11.2W			4434	060	03:15:15	874.8	35150
	.level off	N 33 49.98	unk	N/A	30000M	-44C	061	00+01+56	9.6	137
		W073 32.22	11.3W			4405	061	03:17:11	884.4	35013
16	KATHY/W	N 35 07.22	unk	280	30000M	-44C	062	00+26+15	122.5	1673
A700	DROP	W071 36.90	12.9W			3825	062	03:43:26	1006.9	33340
17	DOWNT/W	N 35 54.96	unk	280	30000M	-44C	054	00+13+43	64.0	867
A700	DOWNT	W070 44.49	13.6W			3793	054	03:57:09	1070.9	32473
18	CREEQ/W	N 37 10.32	unk	280	30000M	-44C	055	00+21+50	101.9	1371
A700	DROP	W069 19.12	14.8W			3766	055	04:18:59	1172.8	31102
19	SLATN/W	N 39 07.01	unk	280	30000M	-44C	057	00+34+17	160.0	2128
A700	DROP	W066 59.96	16.6W			3724	057	04:53:16	1332.8	28974
20	LACKS/W	N 40 00.00	unk	280	30000M	-44C	331	00+16+27	76.7	1011
J97	LACKS	W068 11.96	16.4W			3688	331	05:09:43	1409.5	27963
21	ACK/W	N 41 16.91	100	280	30000M	-44C	330	00+24+17	113.3	1481
J97	NANTUCKET	W070 01.60	15.0W			3660	330	05:34:00	1522.8	26482
22	KHTO/R236018	N 40 41.96	unk	280	30000M	-44C	269	00+25+57	121.1	1568
J62	HAMPTON	W072 35.19	14.2W			3626	269	05:59:57	1643.9	24914
23	MANTA/W	N 39 54.11	unk	280	30000M	-44C	237	00+13+53	64.8	833
J121	MANTA	W073 32.53	13.3W			3600	237	06:13:50	1708.7	24081
24	KSIE/R	N 39 05.73	10	280	30000M	-44C	244	00+16+14	75.7	968
J121	SEA ISLE	W074 48.02	9.0W			3581	244	06:30:04	1784.4	23113
25	KSWL/R	N 38 03.40	40	280	30000M	-44C	216	00+14+56	69.7	886
J121	SNOW HILL	W075 27.84	8.0W			3562	216	06:45:00	1854.1	22227
26	KALDA/W	N 37 50.51	unk	280	30000M	-44C	219	00+03+13	15.0	190
J121	KALDA	W075 37.59	11.2W			3551	219	06:48:13	1869.1	22037
27	SAWED/W	N 37 32.01	unk	280	30000M	-44C	222	00+04+37	21.5	273
J121	SAWED	W075 51.49	10.9W			3546	222	06:52:50	1890.6	21764
28	KORF/R	N 36 53.51	20	280	30000M	-44C	214	00+08+58	41.8	528
J121	NORFOLK	W076 12.02	7.0W			3538	214	07:01:48	1932.5	21236
29	KFKN/R	N 36 42.85	90	280	30000M	-44C	262	00+08+40	40.4	509
DCT	FRANKLIN	W077 00.74	9.0W			3527	262	07:10:28	1972.9	20727
30	KGSO/R	N 36 02.74	879	280	30000M	-44C	264	00+31+52	148.7	1861
DCT	GREENSBORO	W079 58.58	3.0W			3504	264	07:42:20	2121.6	18866
31	KSPA/R	N 35 02.02	910	280	30000M	-44C	241	00+24+12	112.9	1401
J14	SPARTANBURG	W081 55.62	2.0W			3473	241	08:06:32	2234.5	17465
32	AJFEB/W	N 33 38.42	unk	280	30000M	-44C	236	00+29+48	139.1	1711
J37	(AJFEB)	W084 10.23	3.6W			3444	236	08:36:20	2373.6	15754
	.descent pt	N 32 25.73	unk	280	30000M	-44C	236	00+25+15	117.8	1438
		W086 00.86	1.9W			3416	236	09:01:35	2491.4	14316
33	KMGM/R	N 32 13.34	270	N/A	26600M	-38C	233	00+03+24	19.8	0
J37	MONTGOMERY	W086 19.18	3.0E			0	233	09:04:59	2511.3	14316
34	SJI/W	N 30 43.56	unk	N/A	3000M	+9C	227	00+23+36	137.7	0
J37	KSJI/R	W088 21.56	0.1E			0	227	09:28:35	2648.9	14316
35	KBIX/T	N 30 24.41	10		10M	+15C	237	00+15+00	35.2	500
DCT	KEESLER	W088 55.80	1.0E				237	09:43:35	2684.1	13816

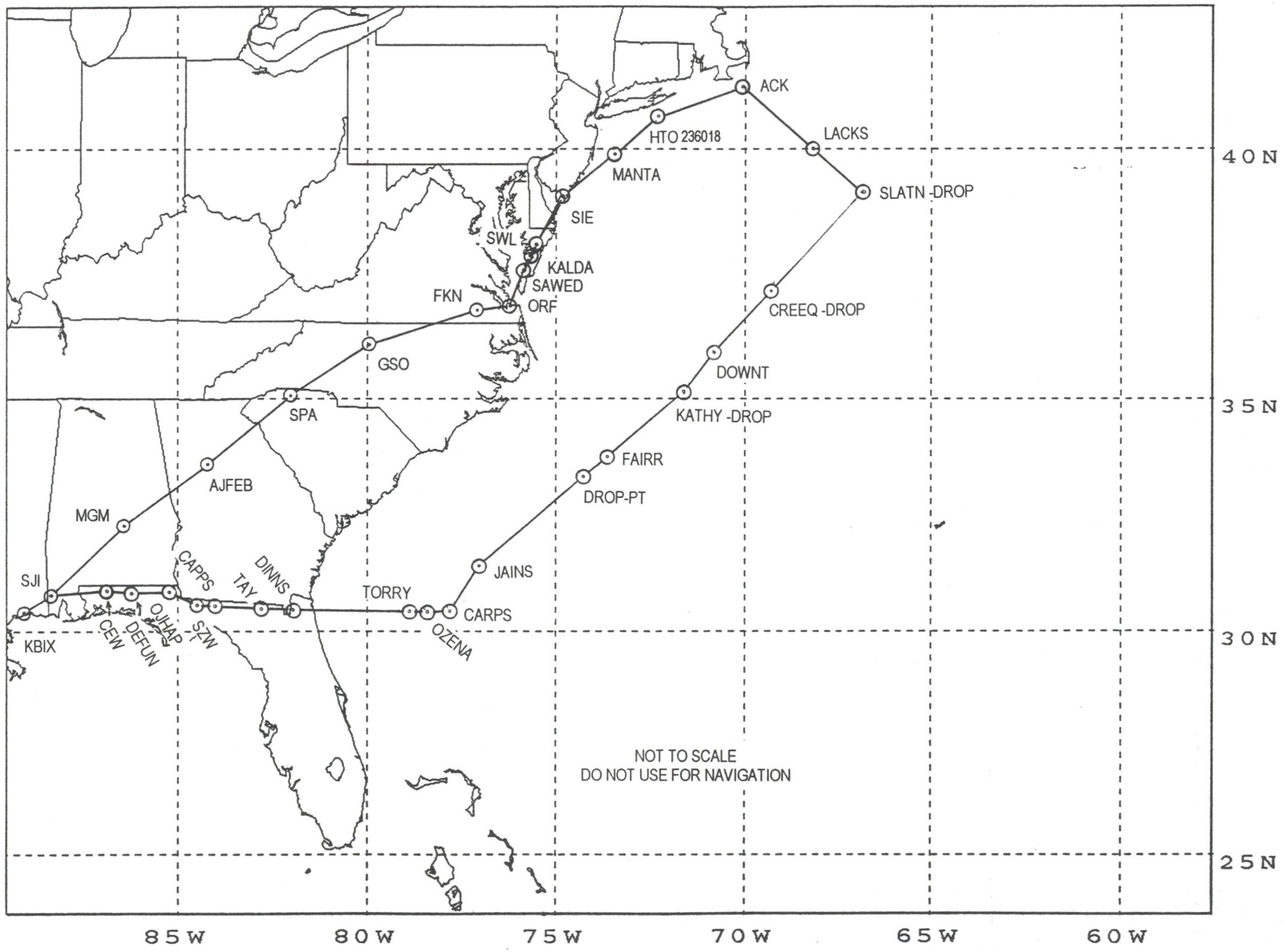

Figure F-3. Air Force track **CORONET COAST 03/03R**

Table F-4a. No-Wind Flight Plan for route **CORONET COAST 04**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 8 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST04.rte
AC EMPTY WT=84300 STORE WT=0 FUEL WT (INT/EXT):39000 6000

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/T	N 30 24.41	10		10M	+15C	360	00+00+00	0.0	1000
	KEESLER	W088 55.80	1.0E				360	00:00:00	0.0	44000
2	SJI/W	N 30 43.56	unk	N/A	16498M	-18C	056	00+10+41	35.2	1291
DCT	KSJI/R	W088 21.56	0.1E			7249	056	00:10:41	35.2	42709
	.level off	N 30 49.49	unk	N/A	19000M	-23C	049	00+02+29	9.0	257
		W088 13.67	0			7054	049	00:13:10	44.2	42452
3	KMGM/R	N 32 13.34	270	280	19000M	-23C	049	00+27+34	128.7	2177
J37	MONTGOMERY	W086 19.18	3.0E			4738	049	00:40:44	172.8	40275
4	AJFEB/W	N 33 38.42	unk	280	19000M	-23C	048	00+29+30	137.7	2316
J37	(AJFEB)	W084 10.23	3.6W			4711	048	01:10:14	310.5	37959
5	KSPA/R	N 35 02.02	910	280	19000M	-23C	056	00+29+48	139.1	2327
J37	SPARTANBURG	W081 55.62	2.0W			4685	056	01:40:02	449.6	35632
	.level off	N 35 17.27	unk	N/A	25000M	-35C	059	00+07+39	28.0	677
		W081 26.85	6.1W			5312	059	01:47:41	477.6	34955
6	KGSO/R	N 36 02.74	879	280	25000M	-35C	063	00+18+12	84.9	1234
J14	GREENSBORO	W079 58.58	3.0W			4068	063	02:05:53	562.5	33721
7	KFKN/R	N 36 42.85	90	280	25000M	-35C	076	00+31+52	148.7	2145
DCT	FRANKLIN	W077 00.74	9.0W			4040	076	02:37:45	711.2	31576
8	KORF/R	N 36 53.51	20	280	25000M	-35C	083	00+08+40	40.4	580
DCT	NORFOLK	W076 12.02	7.0W			4017	083	02:46:25	751.6	30996
9	SAWED/W	N 37 32.01	unk	280	25000M	-35C	030	00+08+58	41.8	599
J121	SAWED	W075 51.49	10.9W			4007	030	02:55:23	793.5	30397
10	KALDA/W	N 37 50.51	unk	280	25000M	-35C	042	00+04+37	21.5	308
J121	KALDA	W075 37.59	11.2W			4000	042	03:00:00	815.0	30089
11	KSWL/R	N 38 03.40	40	280	25000M	-35C	042	00+03+13	15.0	214
J121	SNOW HILL	W075 27.84	8.0W			3996	042	03:03:13	830.0	29875
12	KSIE/R	N 39 05.73	10	280	25000M	-35C	034	00+14+56	69.7	992
J121	SEA ISLE	W074 48.02	9.0W			3986	034	03:18:09	899.7	28883
	.level off	N 39 29.25	unk	N/A	30000M	-44C	059	00+09+37	36.7	719
		W074 11.70	12.7W			4488	059	03:27:46	936.3	28164
13	MANTA/W	N 39 54.11	unk	280	30000M	-44C	063	00+08+22	39.1	513
J121	MANTA	W073 32.53	13.3W			3675	063	03:36:08	975.4	27651
14	OWENZ/W	N 39 49.40	unk	280	30000M	-44C	111	00+07+06	33.1	433
DCT	DROP	W072 49.83	13.7W			3664	111	03:43:14	1008.5	27218
15	BERGH/W	N 39 07.96	unk	280	30000M	-44C	152	00+11+46	54.9	716
DCT		W072 03.19	13.9W			3651	152	03:55:00	1063.4	26502
16	.CHAMP/ KZNY	N 37 31.00	unk	280	30000M	-44C	184	00+21+07	98.5	1277
A300	DROP	W071 41.00	13.6W			3629	184	04:16:07	1161.9	25225
17	KATHY/W	N 35 07.22	unk	280	30000M	-44C	192	00+30+49	143.8	1847
A554	DROP	W071 36.90	12.9W			3596	192	04:46:56	1305.7	23378
18	FAIRR/W	N 33 43.86	unk	280	30000M	-44C	244	00+28+18	132.1	1679
A700		W073 41.09	11.2W			3559	244	05:15:14	1437.8	21699
19	.RELEASE PT	N 32 30.00	unk	280	30000M	-44C	243	00+25+09	117.4	1478
A700	DROP	W075 30.00	9.7W			3527	243	05:40:23	1555.1	20221
20	JAINS/W	N 31 21.33	unk	280	30000M	-44C	238	00+22+01	102.7	1284
A700	JAX CTR	W077 00.00	8.3W			3500	238	06:02:24	1657.9	18937
21	CARPS/W	N 30 24.48	unk	280	30000M	-44C	223	00+14+44	68.7	854
A700	DROP	W077 45.00	7.6W			3479	223	06:17:08	1726.6	18083
22	OZENA/W	N 30 25.17	unk	280	30000M	-44C	279	00+06+38	31.0	384
AR-5	OZENA	W078 20.90	7.2W			3468	279	06:23:46	1757.6	17699
23	TORRY/W	N 30 25.33	unk	280	30000M	-44C	278	00+05+43	26.7	330
AR-5	TORRY	W078 51.83	6.8W			3461	278	06:29:29	1784.2	17369
24	DINNS/W	N 30 27.91	unk	280	30000M	-44C	279	00+32+34	152.0	1868
AR-5	KJA/N	W081 48.08	4.6W			3441	279	07:02:03	1936.2	15501
25	TAY/W	N 30 30.28	unk	280	30000M	-44C	278	00+08+21	38.9	475
DCT	KTAY/R	W082 33.17	4.1W			3420	278	07:10:24	1975.1	15026
26	CAPPS/W	N 30 32.72	unk	280	30000M	-44C	276	00+14+59	69.9	851
J2	CAPPS	W083 54.30	3.1W			3408	276	07:25:23	2045.1	14175
27	SZW/W	N 30 33.37	unk	280	30000M	-44C	275	00+05+12	24.2	294
J2	KSZW/R	W084 22.44	2.7W			3399	275	07:30:35	2069.3	13881
28	OJHAP/W	N 30 47.63	unk	280	30000M	-44C	293	00+08+59	41.9	507
J2	(OJHAP)	W085 08.24	2.2W			3392	293	07:39:34	2111.2	13374
	.descent pt	N 30 47.87	unk	280	30000M	-44C	274	00+01+53	8.8	106
		W085 18.48	2.2W			3387	274	07:41:27	2120.0	13268
29	DEFUN/W	N 30 48.86	unk	N/A	22723M	-30C	274	00+07+17	42.5	0
J2	DEFUN	W086 07.89	1.6W			0	274	07:48:44	2162.4	13268
30	KCEW/R	N 30 49.57	254	N/A	17883M	-20C	273	00+04+50	28.2	0
J2	CRESTVIEW	W086 40.75	3.0E			0	273	07:53:34	2190.7	13268
31	SJI/W	N 30 43.56	unk	N/A	3000M	+9C	263	00+14+53	86.8	0
J2	KSJI/R	W088 21.56	0.1E			0	263	08:08:27	2277.5	13268
32	KBIX/T	N 30 24.41	10	280	2000M	+11C	237	00+07+32	35.2	951
DCT	KEESLER	W088 55.80	1.0E			7571	237	08:15:59	2312.6	12317
33	KBIX/A	N 30 24.68	34		34M	+15C	050	00+15+00	0.4	500
APPR	KEESLER AFB	W088 55.42	0.5E				050	08:30:59	2313.1	11817

Table F-4b. No-Wind Flight Plan for route **CORONET COAST 04R**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 8 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST04R.rte
AC EMPTY WT=84300 STORE WT=0 FUEL WT (INT/EXT):39000 6000

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/T	N 30 24.41	10	280	34M	+15C	056	00+00+00	0.0	0
	KEESLER	W088 55.80	1.0E			7571	056	00:00:00	0.0	45000
2	SJI/W	N 30 43.56	unk	N/A	16345M	-17C	056	00+10+41	35.2	1292
DCT	KSJI/R	W088 21.56	0.1E			7259	056	00:10:41	35.2	43708
	.level off	N 30 44.30	unk	N/A	19000M	-23C	086	00+02+41	9.8	278
		W088 10.20	0.1W			7050	086	00:13:22	44.9	43430
3	KCEW/R	N 30 49.57	254	280	19000M	-23C	086	00+16+30	77.0	1308
J2	CRESTV1EW	W086 40.75	3.0E			4755	086	00:29:52	122.0	42122
4	DEFUN/W	N 30 48.86	unk	280	19000M	-23C	088	00+06+03	28.2	478
J2	DEFUN	W086 07.89	1.6W			4744	088	00:35:55	150.2	41644
5	OJHAP/W	N 30 47.63	unk	280	19000M	-23C	093	00+10+59	51.2	867
J2	(OJHAP)	W085 08.24	2.2W			4736	093	00:46:54	201.5	40777
	.level off	N 30 36.72	unk	N/A	25000M	-35C	112	00+08+39	32.1	765
		W084 33.11	2.7W			5302	112	00:55:33	233.6	40012
6	SZW/W	N 30 33.37	unk	280	25000M	-35C	113	00+02+06	9.8	146
J2	KSZW/R	W084 22.44	2.7W			4169	113	00:57:39	243.3	39866
7	CAPPS/W	N 30 32.72	unk	280	25000M	-35C	094	00+05+12	24.2	360
J2	CAPPS	W083 54.30	3.1W			4164	094	01:02:51	267.6	39506
8	TAY/W	N 30 30.28	unk	280	25000M	-35C	095	00+14+59	69.9	1037
J2	KTAY/R	W082 33.17	4.1W			4151	095	01:17:50	337.5	38469
9	DINNS/W	N 30 27.91	unk	280	25000M	-35C	097	00+08+21	38.9	575
DCT	KJA/N	W081 48.08	4.6W			4136	097	01:26:11	376.4	37894
10	TORRY/W	N 30 25.33	unk	280	25000M	-35C	095	00+32+34	152.0	2231
AR-5	TORRY	W078 51.83	6.8W			4111	095	01:58:45	528.4	35663
11	OZENA/W	N 30 25.17	unk	280	25000M	-35C	097	00+05+43	26.7	389
AR-5	OZENA	W078 20.90	7.2W			4088	097	02:04:28	555.1	35274
12	CARPS/W	N 30 24.48	unk	280	25000M	-35C	098	00+06+38	31.0	451
AR-5	DROP	W077 45.00	7.6W			4080	098	02:11:06	586.1	34823
13	JAINS/W	N 31 21.33	unk	280	25000M	-35C	042	00+14+44	68.7	998
A700	KZNY	W077 00.00	8.3W			4068	042	02:25:50	654.8	33825
14	.RELEASE PT	N 32 30.00	unk	280	25000M	-35C	056	00+22+01	102.7	1484
A700	DROP	W075 30.00	9.7W			4047	056	02:47:51	757.5	32341
	.level off	N 32 56.68	unk	N/A	30000M	-44C	060	00+10+48	42.1	802
		W074 51.27	10.2W			4456	060	02:58:39	799.6	31539
15	FAIRR/W	N 33 43.86	unk	280	30000M	-44C	061	00+16+08	75.3	1007
A700		W073 41.09	11.2W			3748	061	03:14:47	874.9	30532
16	KATHY/W	N 35 07.22	unk	280	30000M	-44C	061	00+28+18	132.1	1752
A700	DROP	W071 36.90	12.9W			3715	061	03:43:05	1006.9	28780
17	.CHAMP/ W	N 37 31.00	unk	280	30000M	-44C	012	00+30+49	143.8	1887
A554	NYCTR/ DROP	W071 41.00	13.6W			3673	012	04:13:54	1150.7	26893
18	BERGH/W	N 39 07.96	unk	280	30000M	-44C	004	00+21+07	98.5	1280
A300		W072 03.19	13.9W			3638	004	04:35:01	1249.3	25613
19	OWENZ/W	N 39 49.40	unk	280	30000M	-44C	333	00+11+46	54.9	709
DCT	DROP	W072 49.83	13.7W			3616	333	04:46:47	1304.2	24904
20	MANTA/W	N 39 54.11	unk	280	30000M	-44C	292	00+07+06	33.1	426
DCT	MANTA	W073 32.53	13.3W			3604	292	04:53:53	1337.3	24478
21	KSIE/R	N 39 05.73	10	280	30000M	-44C	244	00+16+14	75.7	971
J121	SEA ISLE	W074 48.02	9.0W			3589	244	05:10:07	1413.0	23507
22	KSWL/R	N 38 03.40	40	280	30000M	-44C	216	00+14+56	69.7	888
J121	SNOW HILL	W075 27.84	8.0W			3570	216	05:25:03	1482.7	22619
23	KALDA/W	N 37 50.51	unk	280	30000M	-44C	219	00+03+13	15.0	191
J121	KALDA	W075 37.59	11.2W			3559	219	05:28:16	1497.7	22428
24	SAWED/W	N 37 32.01	unk	280	30000M	-44C	222	00+04+37	21.5	273
J121	SAWED	W075 51.49	10.9W			3554	222	05:32:53	1519.2	22155
25	KORF/R	N 36 53.51	20	280	30000M	-44C	214	00+08+58	41.8	530
J121	NORFOLK	W076 12.02	7.0W			3546	214	05:41:51	1561.0	21625
26	KFKN/R	N 36 42.85	90	280	30000M	-44C	262	00+08+40	40.4	511
DCT	FRANKLIN	W077 00.74	9.0W			3535	262	05:50:31	1601.4	21114
27	KGSO/R	N 36 02.74	879	280	30000M	-44C	264	00+31+52	148.7	1865
DCT	GREENSBORO	W079 58.58	3.0W			3512	264	06:22:23	1750.1	19249
28	KSPA/R	N 35 02.02	910	280	30000M	-44C	241	00+24+12	112.9	1404
J14	SPARTANBURG	W081 55.62	2.0W			3480	241	06:46:35	1863.1	17845
29	AJFEB/W	N 33 38.42	unk	280	30000M	-44C	236	00+29+48	139.1	1714
J37	(AJFEB)	W084 10.23	3.6W			3451	236	07:16:23	2002.2	16131
	.descent pt	N 32 25.73	unk	280	30000M	-44C	236	00+25+15	117.8	1440
		W086 00.86	1.9W			3423	236	07:41:38	2120.0	14691
30	KMGM/R	N 32 13.34	270	N/A	26600M	-38C	233	00+03+24	19.8	0
J37	MONTGOMERY	W086 19.18	3.0E			0	233	07:45:02	2139.8	14691
31	SJI/W	N 30 43.56	unk	N/A	3000M	+9C	227	00+23+36	137.7	0
J37	KSJI/R	W088 21.56	0.1E			0	227	08:08:38	2277.5	14691
32	KBIX/T	N 30 24.41	10	290	2000M	+11C	237	00+07+16	35.2	988
DCT	KEESLER	W088 55.80	1.0E			8150	237	08:15:54	2312.6	13703
33	KBIX/T	N 30 24.41	10		10M	+15C	236	00+15+00	0.0	500
	KEESLER	W088 55.80	1.0E				236	08:30:54	2312.6	13203

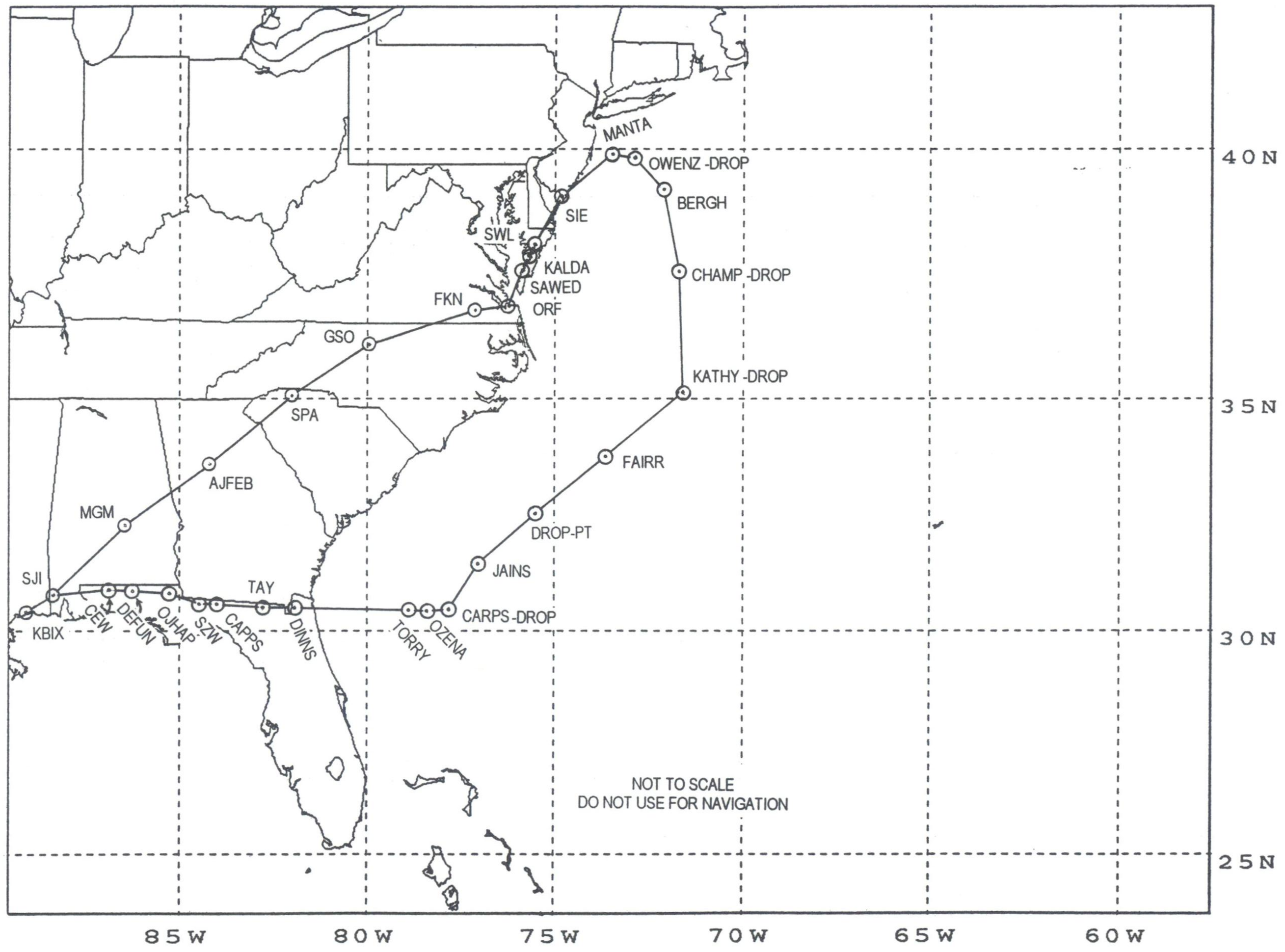

Figure F-4. Air Force track **CORONET COAST 04/04R**

Table F-5a. No-Wind Flight Plan for route **CORONET COAST 05**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 8 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST05.rte
AC EMPTY WT=84300 STORE WT=0 FUEL WT (INT/EXT):39000 6000

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/T	N 30 24.41	10		10M	+15C	360	00+00+00	0.0	1000
	KEESLER	W088 55.80	1.0E				360	00:00:00	0.0	44000
2	SJI/W	N 30 43.56	unk	N/A	16498M	-18C	056	00+10+41	35.2	1291
DCT	KSJI/R	W088 21.56	0.1E			7249	056	00:10:41	35.2	42709
	.level off	N 30 49.49	unk	N/A	19000M	-23C	049	00+02+29	9.0	257
		W088 13.67	0			7054	049	00:13:10	44.2	42452
3	KMGM/R	N 32 13.34	270	280	19000M	-23C	049	00+27+34	128.7	2177
J37	MONTGOMERY	W086 19.18	3.0E			4738	049	00:40:44	172.8	40275
4	AJFEB/W	N 33 38.42	unk	280	19000M	-23C	048	00+29+30	137.7	2316
J37	(AJFEB)	W084 10.23	3.6W			4711	048	01:10:14	310.5	37959
5	IRQ/W	N 33 42.44	unk	280	19000M	-23C	091	00+21+30	100.4	1680
J4	KIRQ/R	W082 09.72	5.1W			4688	091	01:31:44	410.9	36279
6	CAE/W	N 33 51.43	unk	280	19000M	-23C	086	00+12+00	56.0	935
J4	KCAE/R	W081 03.23	6.0W			4674	086	01:43:44	466.8	35344
	.level off	N 34 00.14	unk	N/A	25000M	-35C	078	00+07+36	27.8	672
		W080 31.38	6.5W			5311	078	01:51:20	494.7	34672
7	FLO/W	N 34 13.98	unk	280	25000M	-35C	078	00+09+41	45.2	657
J4	KFLO/R	W079 39.43	7.1W			4068	078	02:01:01	539.9	34015
8	ISO/W	N 35 22.25	unk	280	25000M	-35C	063	00+26+33	123.9	1791
DCT	KISO/R	W077 33.50	9.0W			4047	063	02:27:34	663.8	32224
9	OHPEA/W	N 35 51.45	unk	280	25000M	-35C	081	00+20+53	97.5	1400
DCT	OHPEA	W075 39.08	10.5W			4021	081	02:48:27	761.2	30824
	.level off	N 35 24.15	unk	N/A	30000M	-44C	144	00+10+15	39.5	764
		W075 03.90	10.8W			4472	144	02:58:42	800.8	30060
10	BACUS/W	N 34 26.01	unk	280	30000M	-44C	145	00+17+52	83.4	1106
AR-8	KZNY / DROP	W073 50.98	11.3W			3712	145	03:16:34	884.2	28954
11	FAIRR/W	N 33 43.86	unk	280	30000M	-44C	180	00+09+12	42.9	566
R763		W073 41.09	11.2W			3692	180	03:25:46	927.1	28388
12	BURTT/W	N 31 40.13	unk	280	30000M	-44C	180	00+27+00	126.0	1650
R763	DROP	W073 12.96	10.9W			3667	180	03:52:46	1053.1	26738
13	JESSE/W	N 29 30.00	unk	280	30000M	-44C	228	00+34+36	161.5	2091
DCT	DROP	W075 04.00	9.2W			3626	228	04:27:22	1214.5	24647
14	SARJE/W	N 29 07.17	unk	280	30000M	-44C	248	00+09+30	44.4	570
DCT		W075 47.61	8.6W			3597	248	04:36:52	1258.9	24077
15	LOUIZ/W	N 28 28.39	unk	280	30000M	-44C	247	00+15+56	74.3	951
A699	MIAMI CTR	W076 59.98	7.6W			3581	247	04:52:48	1333.2	23126
16	NUCAR/W	N 28 07.55	unk	280	30000M	-44C	246	00+08+27	39.4	502
A699	DROP	W077 37.97	7.1W			3566	246	05:01:15	1372.6	22624
17	STIFF/W	N 27 36.29	unk	280	30000M	-44C	247	00+13+20	62.2	789
A699		W078 38.79	6.3W			3553	247	05:14:35	1434.8	21835
18	PERMT/W	N 27 24.85	unk	280	30000M	-44C	241	00+04+13	19.7	249
A699		W078 56.84	6.0W			3542	241	05:18:48	1454.5	21586
19	PBI/W	N 26 40.80	unk	280	30000M	-44C	240	00+16+06	75.1	947
A699		W080 05.19	5.1W			3530	240	05:34:54	1529.7	20639
20	PHK/W	N 26 46.96	unk	280	30000M	-44C	286	00+07+04	33.0	414
DCT		W080 41.49	4.6W			3517	286	05:41:58	1562.7	20225
21	LBV/W	N 26 49.69	unk	280	30000M	-44C	279	00+08+03	37.6	471
DCT	KLBV/R	W081 23.49	4.2W			3508	279	05:50:01	1600.2	19754
22	ROGAN/W	N 27 15.05	unk	280	30000M	-44C	318	00+07+54	36.9	461
J86	ROGAN	W081 53.57	3.9W			3499	318	05:57:55	1637.1	19293
23	SRQ/W	N 27 23.87	unk	280	30000M	-44C	288	00+07+47	36.3	453
J86	KSRQ/R	W082 33.26	3.5W			3490	288	06:05:42	1673.5	18840
24	BOXKR/W	N 27 35.16	unk	280	30000M	-44C	290	00+08+50	41.2	512
J58		W083 17.93	3.0W			3481	290	06:14:32	1714.7	18328
25	COVIA/W	N 27 56.18	unk	280	30000M	-44C	289	00+16+58	79.2	980
J58	DROP	W084 44.16	2.0W			3467	289	06:31:30	1793.8	17348
26	OJVAB/W	N 28 26.15	unk	280	30000M	-44C	287	00+25+34	119.3	1468
J58		W086 55.21	0.6W			3444	287	06:57:04	1913.2	15880
27	NEPTA/W	N 28 36.62	unk	280	30000M	-44C	286	00+08+27	39.4	482
J58	DROP	W087 38.47	0.1W			3427	286	07:05:31	1952.6	15398
	.descent pt	N 28 39.16	unk	280	30000M	-44C	302	00+01+02	4.8	59
		W087 43.18	0.1W			3422	302	07:06:33	1957.4	15339
28	SEDAN/W	N 29 07.55	unk	N/A	20645M	-26C	302	00+09+21	54.6	0
J58		W088 36.40	0.5E			0	302	07:15:54	2012.0	15339
29	KHRV/R111029	N 29 39.62	unk	N/A	11000M	-7C	304	00+09+39	56.3	0
DCT	HARVEY	W089 29.46	1.0E			0	304	07:25:33	2068.3	15339
	.descent pt	N 29 40.41	unk	280	11000M	-7C	032	00+00+12	0.9	19
		W089 28.88	1.0E			5748	032	07:25:45	2069.2	15320
30	KBIX/T	N 30 24.41	10	N/A	2000M	+11C	032	00+09+00	52.5	0
DCT	KEESLER	W088 55.80	1.0E			0	032	07:34:45	2121.7	15320
31	KBIX/A	N 30 24.68	34		34M	+15C	050	00+15+00	0.4	500
APPR	KEESLER AFB	W088 55.42	0.5E				050	07:49:45	2122.1	14820

Table F-5b. No-Wind Flight Plan for route **CORONET COAST 05R**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 8 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST05R.rte
AC EMPTY WT=84300 STORE WT=0 FUEL WT (INT/EXT):39000 6000

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/T	N 30 24.41	10		10M	+15C	359	00+00+00	0.0	1300
	KEESLER	W088 55.80	1.0E				359	00:00:00	0.0	43700
	.level off	N 29 47.60	unk	N/A	19000M	-23C	212	00+13+06	43.9	1540
		W089 23.50	0.9E			7054	212	00:13:06	43.9	42160
2	KHRV/R111029	N 29 39.62	unk	280	19000M	-23C	212	00+02+02	9.5	161
DCT	HARVEY	W089 29.46	1.0E			4746	212	00:15:08	53.4	41999
3	SEDAN/W	N 29 07.55	unk	280	19000M	-23C	124	00+12+03	56.3	952
DCT		W088 36.40	0.5E			4740	124	00:27:11	109.7	41047
4	NEPTA/W	N 28 36.62	unk	280	19000M	-23C	121	00+12+44	59.4	1003
J58	DROP	W087 38.47	0.1W			4728	121	00:39:55	169.1	40044
5	OJVAB/W	N 28 26.15	unk	280	19000M	-23C	105	00+08+27	39.4	664
J58		W086 55.21	0.6W			4718	105	00:48:22	208.5	39380
	.level off	N 28 18.57	unk	N/A	25000M	-35C	105	00+08+22	31.0	740
		W086 21.09	1.0W			5310	105	00:56:44	239.5	38640
6	COVIA/W	N 27 56.18	unk	280	25000M	-35C	105	00+18+56	88.4	1304
J58	DROP	W084 44.16	2.0W			4133	105	01:15:40	327.9	37336
7	BOXKR/W	N 27 35.16	unk	280	25000M	-35C	107	00+16+58	79.2	1162
J58		W083 17.93	3.0W			4110	107	01:32:38	407.0	36174
8	SRQ/W	N 27 23.87	unk	280	25000M	-35C	109	00+08+50	41.2	603
J58	KSRQ/R	W082 33.26	3.5W			4095	109	01:41:28	448.2	35571
9	ROGAN/W	N 27 15.05	unk	280	25000M	-35C	107	00+07+47	36.3	530
J86	ROGAN	W081 53.57	3.9W			4085	107	01:49:15	484.6	35041
10	LBV/W	N 26 49.69	unk	280	25000M	-35C	137	00+07+54	36.9	537
J86	KLBV/R	W081 23.49	4.2W			4076	137	01:57:09	521.5	34504
11	PHK/W	N 26 46.96	unk	280	25000M	-35C	098	00+08+03	37.6	546
DCT		W080 41.49	4.6W			4066	098	02:05:12	559.0	33958
12	PBI/W	N 26 40.80	unk	280	25000M	-35C	105	00+07+04	33.0	478
DCT		W080 05.19	5.1W			4057	105	02:12:16	592.0	33480
	.level off	N 27 06.83	unk	N/A	30000M	-44C	059	00+11+16	44.3	834
		W079 25.02	5.7W			4442	059	02:23:32	636.3	32646
13	PERMT/W	N 27 24.85	unk	280	30000M	-44C	060	00+06+37	30.9	417
A699		W078 56.84	6.0W			3782	060	02:30:09	667.2	32229
14	STIFF/W	N 27 36.29	unk	280	30000M	-44C	060	00+04+13	19.7	265
A699		W078 38.79	6.3W			3773	060	02:34:22	686.9	31964
15	NUCAR/W	N 28 07.55	unk	280	30000M	-44C	066	00+13+20	62.2	835
A699	DROP	W077 37.97	7.1W			3760	066	02:47:42	749.1	31129
16	LOUIZ/W	N 28 28.39	unk	280	30000M	-44C	065	00+08+27	39.4	527
A699	KZNY	W076 59.98	7.6W			3744	065	02:56:09	788.5	30602
17	SARJE/W	N 29 07.17	unk	280	30000M	-44C	066	00+15+56	74.3	989
A699		W075 47.61	8.6W			3726	066	03:12:05	862.8	29613
18	JESSE/W	N 29 30.00	unk	280	30000M	-44C	067	00+09+30	44.4	587
DCT	DROP	W075 04.00	9.2W			3707	067	03:21:35	907.2	29026
19	BURTT/W	N 31 40.13	unk	280	30000M	-44C	045	00+34+36	161.5	2120
DCT	DROP	W073 12.96	10.9W			3676	045	03:56:11	1068.6	26906
20	FAIRR/W	N 33 43.86	unk	280	30000M	-44C	360	00+27+00	126.0	1635
R763		W073 41.09	11.2W			3634	360	04:23:11	1194.6	25271
21	BACUS/W	N 34 26.01	unk	280	30000M	-44C	360	00+09+12	42.9	554
R763	WASH / DROP	W073 50.98	11.3W			3611	360	04:32:23	1237.5	24717
22	OHPEA/W	N 35 51.45	unk	280	30000M	-44C	326	00+26+21	122.9	1575
AR-8		W075 39.08	10.5W			3588	326	04:58:44	1360.5	23142
23	ISO/W	N 35 22.25	unk	280	30000M	-44C	264	00+20+53	97.5	1239
DCT	KINSTON	W077 33.50	9.0W			3559	264	05:19:37	1457.9	21903
24	FLO/W	N 34 13.98	unk	280	30000M	-44C	246	00+26+33	123.9	1562
DCT	FLORENCE	W079 39.43	7.1W			3530	246	05:46:10	1581.8	20341
25	CAE/W	N 33 51.43	unk	280	30000M	-44C	260	00+15+39	73.0	914
J4	COLUMBIA	W081 03.23	6.0W			3506	260	06:01:49	1654.9	19427
26	IRQ/W	N 33 42.44	unk	280	30000M	-44C	267	00+12+00	56.0	698
J4	COLLIERS	W082 09.72	5.1W			3490	267	06:13:49	1710.8	18729
27	AJFEB/W	N 33 38.42	unk	280	30000M	-44C	273	00+21+30	100.4	1244
J4	TURNPT	W084 10.23	3.6W			3472	273	06:35:19	1811.2	17485
28	KMGM/R	N 32 13.34	270	280	30000M	-44C	236	00+29+30	137.7	1694
J37	MONTGOMERY	W086 19.18	3.0E			3445	236	07:04:49	1948.9	15791
	.descent pt	N 32 07.21	unk	280	30000M	-44C	227	00+02+02	9.5	116
		W086 27.75	1.5W			3428	227	07:06:51	1958.4	15675
29	SJI/W	N 30 43.56	unk	N/A	8027M	-1C	231	00+21+58	128.2	0
J37	KSJI/R	W088 21.56	0.1E			0	231	07:28:49	2086.5	15675
30	KBIX/T	N 30 24.41	10	N/A	2000M	+11C	237	00+06+02	35.2	0
DCT	KEESLER	W088 55.80	1.0E			0	237	07:34:51	2121.7	15675
31	KBIX/T	N 30 24.41	10		10M	+15C	236	00+15+00	0.0	500
APPR	KEESLER	W088 55.80	1.0E				236	07:49:51	2121.7	15175

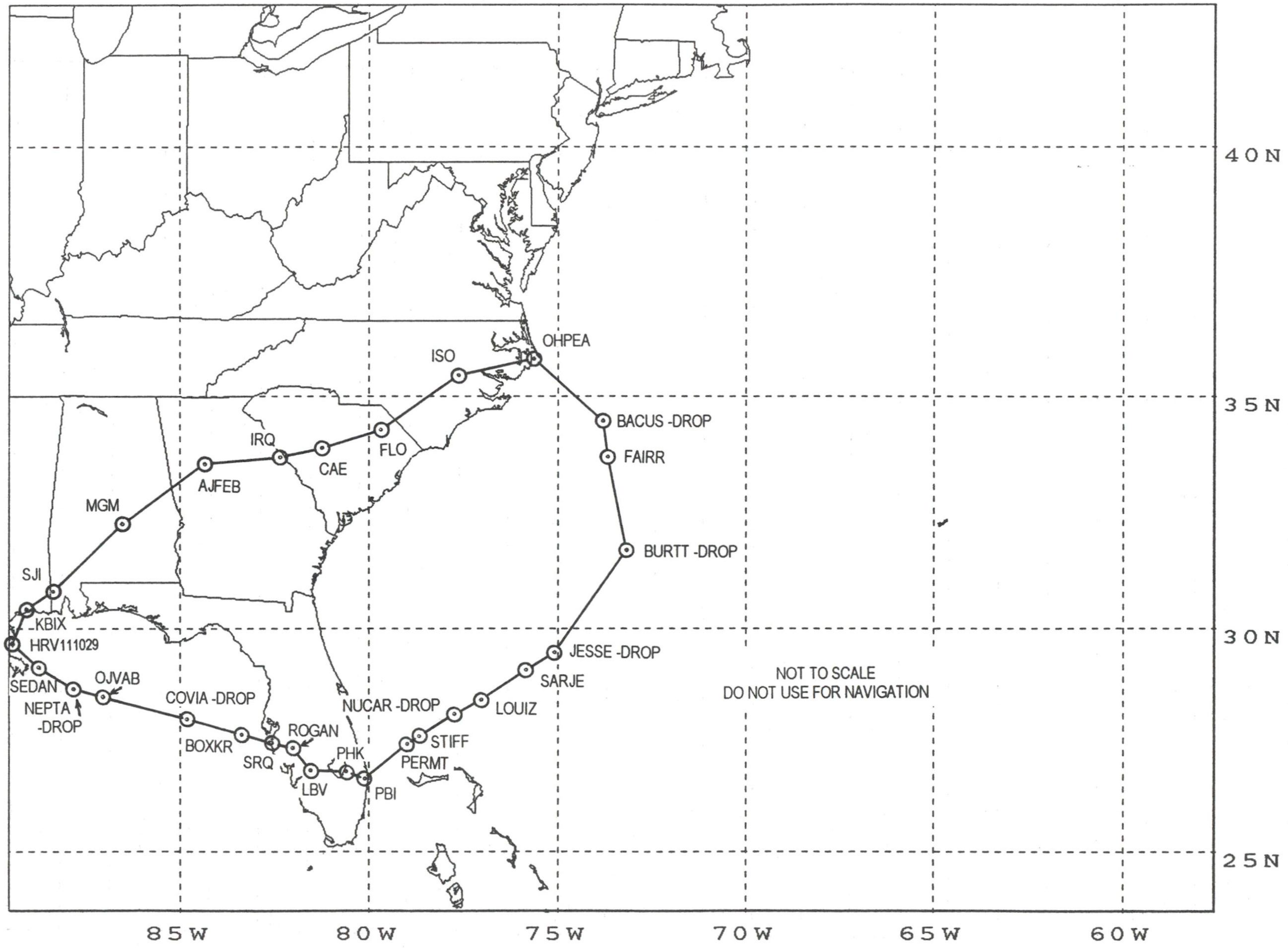

Figure F-5. Air Force track **CORONET COAST 05/05R**

Table F-6a. No-Wind Flight Plan for route **CORONET COAST 06**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 8 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CSTO6.rte
AC EMPTY WT=84300 STORE WT=0 FUEL WT (INT/EXT):36000 0

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	STTO	N 30 24.68	0		0M	+15C	360	00+00+00	0.0	1000
	KBIX/L	W088 55.42	0.8E	20			360	00:00:00	0.0	35000
2	HRV111029	N 29 39.63	0	N/A	22971M	-31C	209	00+15+37	57.8	1802
DCT		W089 29.46	1.3E	20		6437	209	00:15:37	57.8	33198
	.level off	N 29 11.44	unk	N/A	30000M	-44C	121	00+12+56	50.1	1000
		W088 43.22	0.5E			5593	121	00:28:33	107.9	32198
3	SEDAN/W	N 29 07.55	unk	280	30000M	-44C	123	00+01+31	7.1	96
DCT		W088 36.40	0.5E	20		3775	123	00:30:04	115.0	32102
4	NEPTA/W	N 28 36.62	unk	280	30000M	-44C	121	00+12+44	59.4	799
J58	DROP	W087 38.47	0.1W	20		3764	121	00:42:48	174.4	31303
5	OJVAB/W	N 28 26.15	unk	280	30000M	-44C	105	00+08+27	39.4	528
J58		W086 55.21	0.6W	20		3748	105	00:51:15	213.8	30775
6	COVIA/W	N 27 56.18	unk	280	30000M	-44C	105	00+25+34	119.3	1587
J58	.	W084 44.16	2.0W	20		3723	105	01:16:49	333.2	29188
7	CIGAR/W	N 27 28.02	unk	280	30000M	-44C	195	00+06+24	29.9	395
DCT	DROP	W084 47.99	2.0W	20		3700	195	01:23:13	363.1	28793
8	.FIR/ADIZ	N 26 30.00	0	280	30000M	-44C	219	00+15+34	72.7	956
A758	KZNY	W085 37.00	0.8W	20		3684	219	01:38:47	435.7	27837
9	MINOW/W	N 26 02.79	unk	280	30000M	-44C	217	00+07+12	33.6	440
A758		W085 58.98	0.9W	20		3668	217	01:45:59	469.3	27397
10	ELIOM/W	N 25 03.46	unk	280	30000M	-44C	239	00+23+29	109.6	1427
A509	DROP	W087 41.03	0.4E	20		3647	239	02:09:28	578.9	25970
11	SWORD/W	N 24 30.00	unk	280	30000M	-44C	236	00+13+02	60.8	787
A509		W088 37.00	1.1E	20		3623	236	02:22:30	639.7	25183
12	KEHLI/W	N 24 29.17	unk	280	30000M	-44C	269	00+14+20	66.9	862
DCT	KEHLI	W089 50.42	1.8E	20		3605	269	02:36:50	706.6	24321
13	.SONDE	N 24 30.00	unk	280	30000M	-44C	270	00+07+43	36.0	462
DCT	DROP	W090 30.00	2.2E	20		3591	270	02:44:33	742.7	23859
14	MARTE/W	N 24 30.03	unk	280	30000M	-44C	268	00+15+01	70.1	895
DCT		W091 47.00	3.0E	20		3577	268	02:59:34	812.7	22964
15	COKER/W	N 24 58.02	unk	280	30000M	-44C	281	00+25+18	118.1	1498
DCT		W093 53.30	4.2E	20		3552	281	03:24:52	930.8	21466
16	.SONDE	N 25 20.00	unk	280	30000M	-44C	300	00+08+32	39.9	503
DCT	DROP	W094 30.00	4.5E	20		3532	300	03:33:24	970.7	20963
17	.SONDE	N 28 15.00	0	280	30000M	-44C	347	00+38+00	177.3	2220
DCT	DROP	W095 00.00	4.8E	20		3505	347	04:11:24	1148.0	18743
18	MUSYL/W	N 28 10.23	unk	280	30000M	-44C	096	00+10+32	49.1	610
DCT		W094 07.75	4.1E	20		3478	096	04:21:56	1197.1	18133
19	KLAMS/W	N 28 15.00	unk	280	30000M	-44C	082	00+14+47	69.0	854
DCT	HOUSTON	W092 49.66	3.3E	20		3464	082	04:36:43	1266.1	17279
20	.SONDE	N 28 15.00	unk	280	30000M	-44C	086	00+15+02	70.2	864
DCT	DROP	W091 30.00	2.5E	20		3448	086	04:51:45	1336.3	16415
21	LEV	N 29 10.52	2	280	30000M	-44C	050	00+19+46	92.2	1130
DCT		W090 06.25	1.8E	20		3430	050	05:11:31	1428.5	15285
22	KBIX/L	N 30 24.68	0	280	30000M	-44C	038	00+20+39	96.3	1173
DCT		W088 55.42	0.8E			3410	038	05:32:10	1524.8	14112
23	KBIX/A	N 30 24.68	34		34M	+15C	149	00+15+00	0.0	500
APPR	KEESLER AFB	W088 55.42	0.5E				149	05:47:10	1524.8	13612

Table F-6b. No-Wind Flight Plan for route **CORONET COAST 06R**. (These plans are for planning purposes only. Do not use for navigation.)

FPM VERSION: 3.040 WC-130H Date: 8 OCT 98
ROUTE NAME: C:\PFPS\data\ROUTES\98CST06R.rte
AC EMPTY WT=84300 STORE WT=0 FUEL WT (INT/EXT):36000 0

TP DTD#	Fix/Point Description	Latitude Longitude	Elev Var	A/S Bank	Alt Wind	*Temp FF	MH MC	Time	Dist	Fuel
1	KBIX/L	N 30 24.68	0		0M	+15C	358	00+00+00	0.0	1300
DCT	STTO	W088 55.42	0.8E				358	00:00:00	0.0	34700
2	LEV	N 29 10.52	2	N/A	29009M	-42C	219	00+27+26	96.3	2614
DCT		W090 06.25	1.8E	20		5719	219	00:27:26	96.3	32086
	.level off	N 29 04.11	unk	N/A	30000M	-44C	231	00+02+16	10.6	159
		W090 15.97	1.6E			5596	231	00:29:42	107.0	31927
3	.SONDE	N 28 15.00	unk	280	30000M	-44C	232	00+17+27	81.4	1092
DCT	DROP	W091 30.00	2.5E	20		3756	232	00:47:09	188.4	30835
4	KLAMS/W	N 28 15.00	unk	280	30000M	-44C	268	00+15+04	70.3	937
DCT	KZNY	W092 49.66	3.3E	20		3732	268	01:02:13	258.7	29898
5	MUSYL/W	N 28 10.23	unk	280	30000M	-44C	263	00+14+47	69.0	914
DCT		W094 07.75	4.1E	20		3710	263	01:17:00	327.7	28984
6	.SONDE	N 28 15.00	0	280	30000M	-44C	272	00+09+55	46.3	610
DCT	DROP	W095 00.00	4.8E	20		3693	272	01:26:55	374.0	28374
7	.SONDE	N 25 20.00	unk	280	30000M	-44C	165	00+38+31	179.8	2349
DCT	DROP	W094 30.00	4.5E	20		3659	165	02:05:26	553.8	26025
8	COKER/W	N 24 58.02	unk	280	30000M	-44C	117	00+08+36	40.1	520
DCT		W093 53.30	4.2E	20		3627	117	02:14:02	593.9	25505
9	MARTE/W	N 24 30.03	unk	280	30000M	-44C	099	00+25+18	118.1	1521
DCT		W091 47.00	3.0E	20		3605	099	02:39:20	712.0	23984
10	.SONDE	N 24 30.00	unk	280	30000M	-44C	087	00+15+01	70.1	896
DCT	DROP	W090 30.00	2.2E	20		3580	087	02:54:21	782.1	23088
11	KEHLI/W	N 24 29.17	unk	280	30000M	-44C	089	00+07+43	36.0	459
DCT	KEHLI	W089 50.42	1.8E	20		3565	089	03:02:04	818.1	22629
12	SWORD/W	N 24 30.00	unk	280	30000M	-44C	087	00+14+19	66.8	848
DCT		W088 37.00	1.1E	20		3552	087	03:16:23	884.9	21781
13	ELIOM/W	N 25 03.46	unk	280	30000M	-44C	055	00+13+04	60.9	770
A509	DROP	W087 41.03	0.4E	20		3536	055	03:29:27	945.9	21011
14	MINOW/W	N 26 02.79	unk	280	30000M	-44C	056	00+23+28	109.5	1375
A509		W085 58.98	0.9W	20		3514	056	03:52:55	1055.4	19636
15	.FIR/ADIZ	N 26 30.00	0	280	30000M	-44C	036	00+07+12	33.6	420
A758	MIAMI CTR	W085 37.00	0.8W	20		3497	036	04:00:07	1089.0	19216
16	CIGAR/W	N 27 28.02	unk	280	30000M	-44C	038	00+15+34	72.6	904
A758	DROP	W084 47.99	2.0W	20		3484	038	04:15:41	1161.6	18312
17	COVIA/W	N 27 56.18	unk	280	30000M	-44C	008	00+06+06	28.4	353
DCT		W084 44.16	2.0W	20		3472	008	04:21:47	1190.1	17959
18	OJVAB/W	N 28 26.15	unk	280	30000M	-44C	286	00+25+52	120.7	1489
J58		W086 55.21	0.6W	20		3455	286	04:47:39	1310.8	16470
19	NEPTA/W	N 28 36.62	unk	280	30000M	-44C	286	00+08+27	39.4	484
J58	DROP	W087 38.47	0.1W	20		3437	286	04:56:06	1350.2	15986
	.descent pt	N 28 41.18	unk	280	30000M	-44C	302	00+01+54	8.9	109
		W087 47.17	0.1W			3432	302	04:58:00	1359.1	15877
20	SEDAN/W	N 29 07.55	unk	N/A	21338M	-27C	302	00+08+40	50.5	0
J58		W088 36.40	0.5E	20		0	302	05:06:40	1409.6	15877
21	HRV111029	N 29 39.63	0	N/A	11683M	-8C	304	00+09+39	56.3	0
DCT		W089 29.46	1.3E	20		0	304	05:16:19	1465.9	15877
22	KBIX/T	N 30 24.41	10	N/A	2000M	+11C	035	00+09+41	55.4	0
DCT	KEESLER	W088 55.80	1.0E	20		0	035	05:26:00	1521.3	15877
23	KBIX/T	N 30 24.41	10		10M	+15C	036	00+15+00	0.0	500
APPR	KEESLER	W088 55.80	1.0E	20			036	05:41:00	1521.3	15377

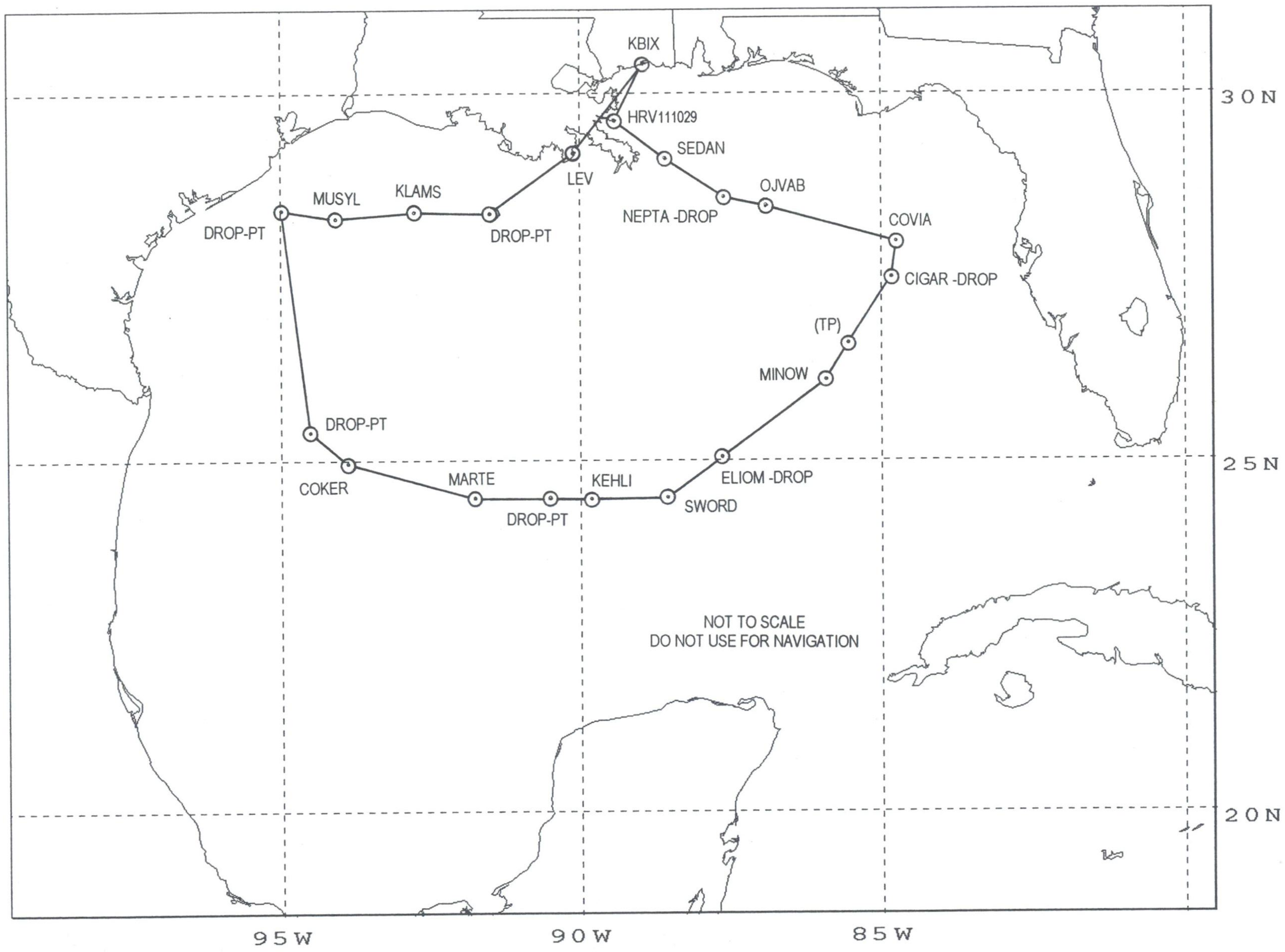

Figure F-6. Air Force track **CORONET COAST 06/06R**

APPENDIX G
ALASKAN STORM TRACKS

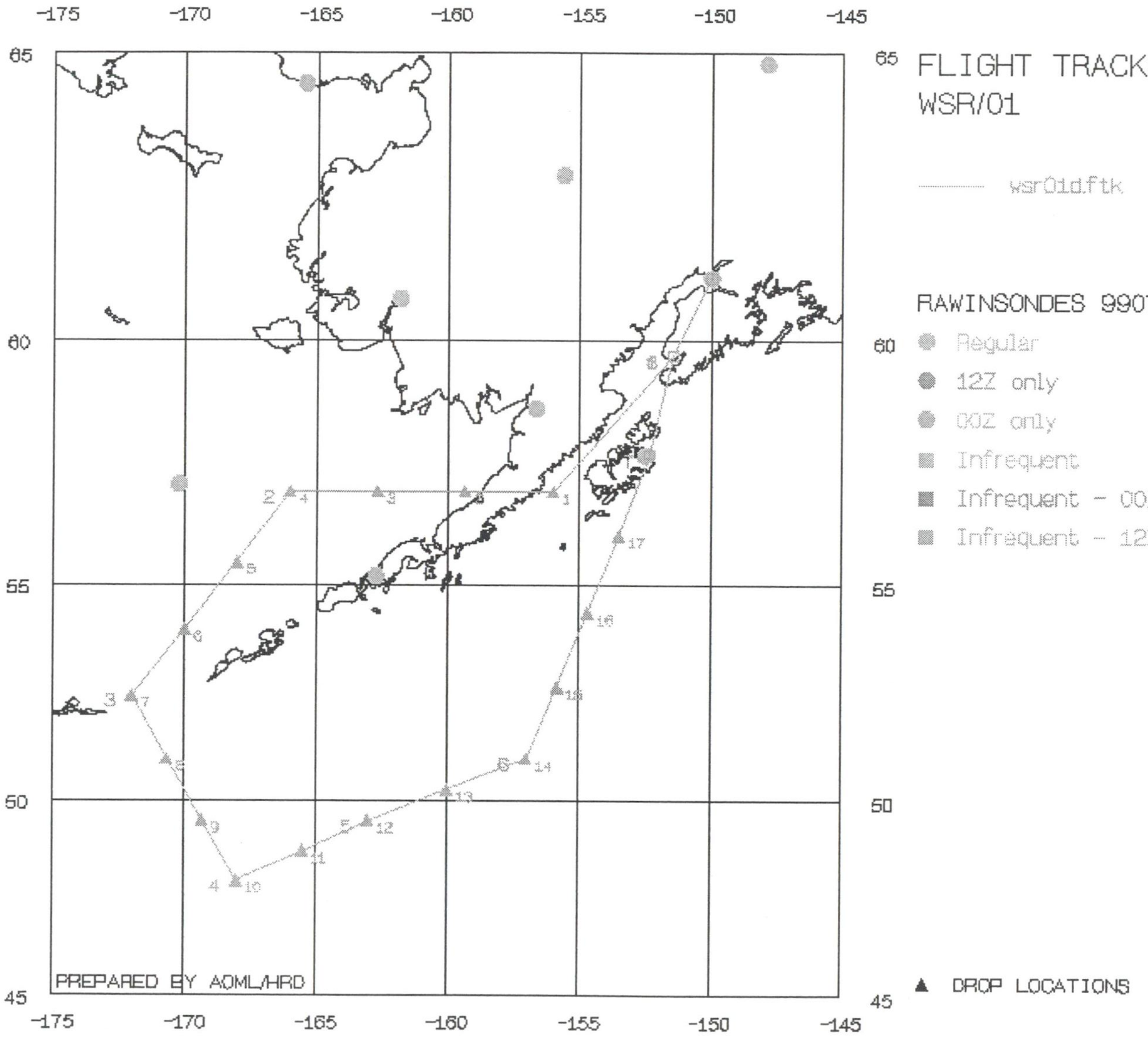

Figure G-1. Alaskan Flight Track WSR/01.

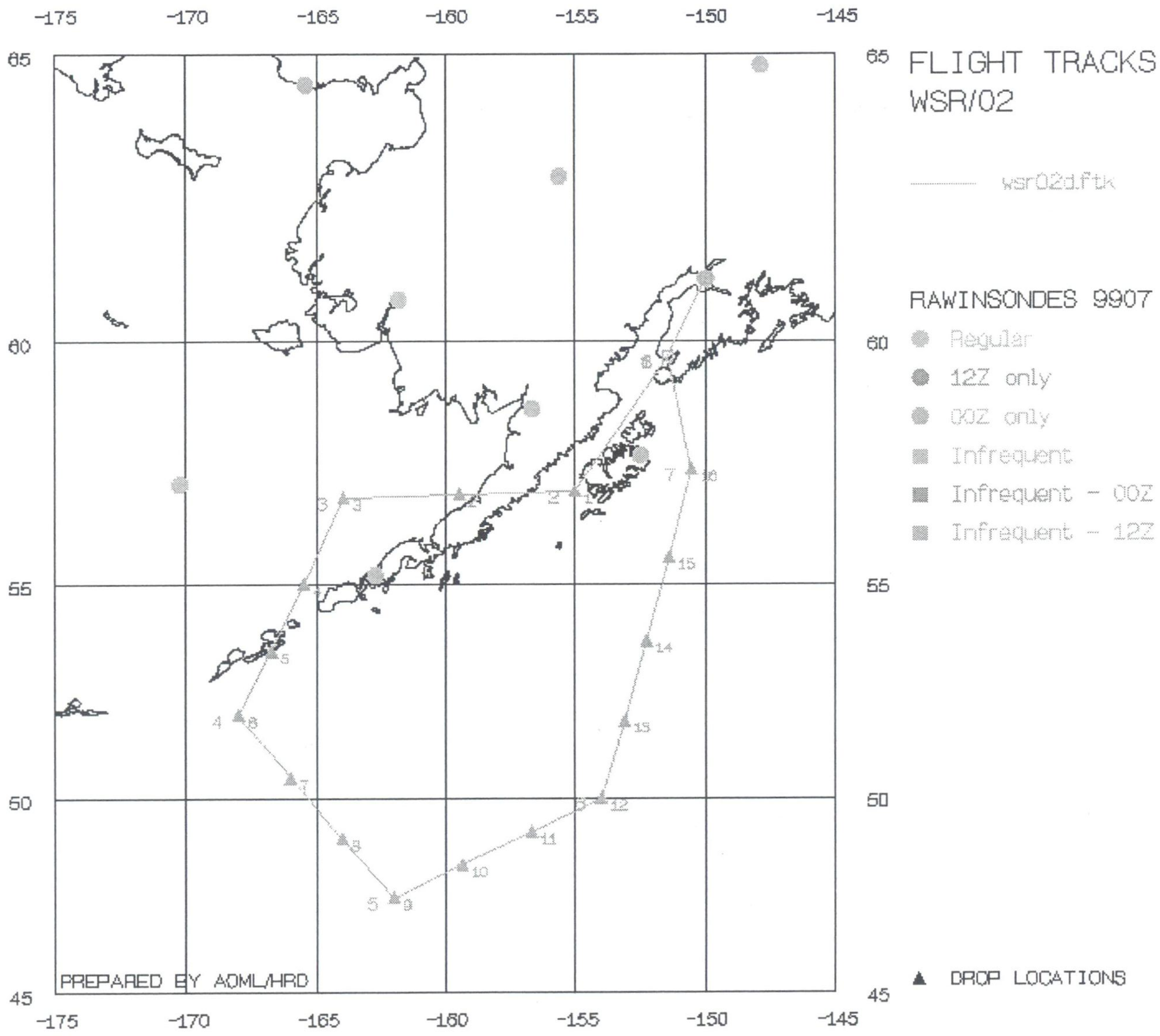

Figure G-2. Alaskan Flight Track WSR/02.

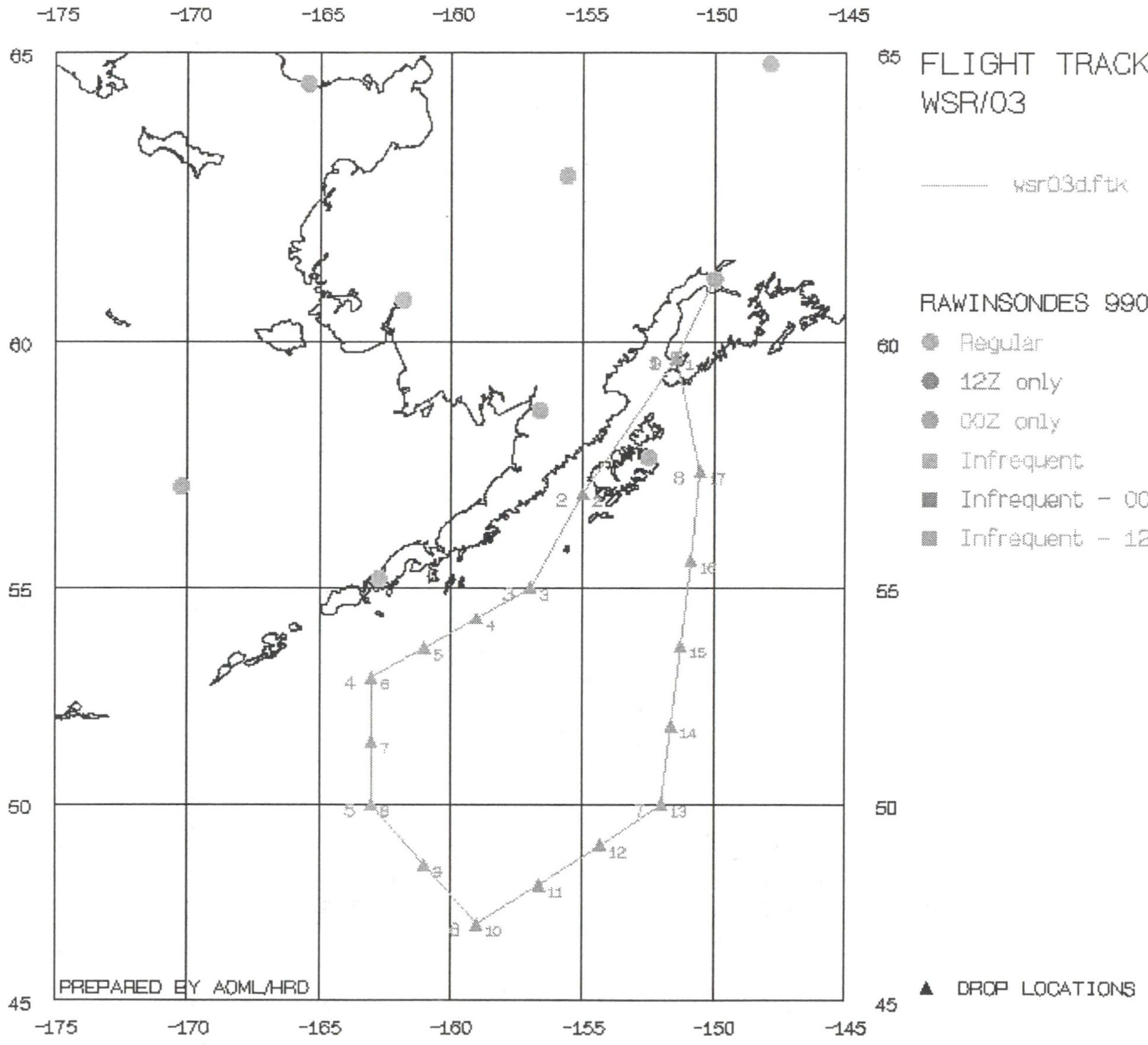

Figure G-3. Alaskan Flight Track WSR/03.

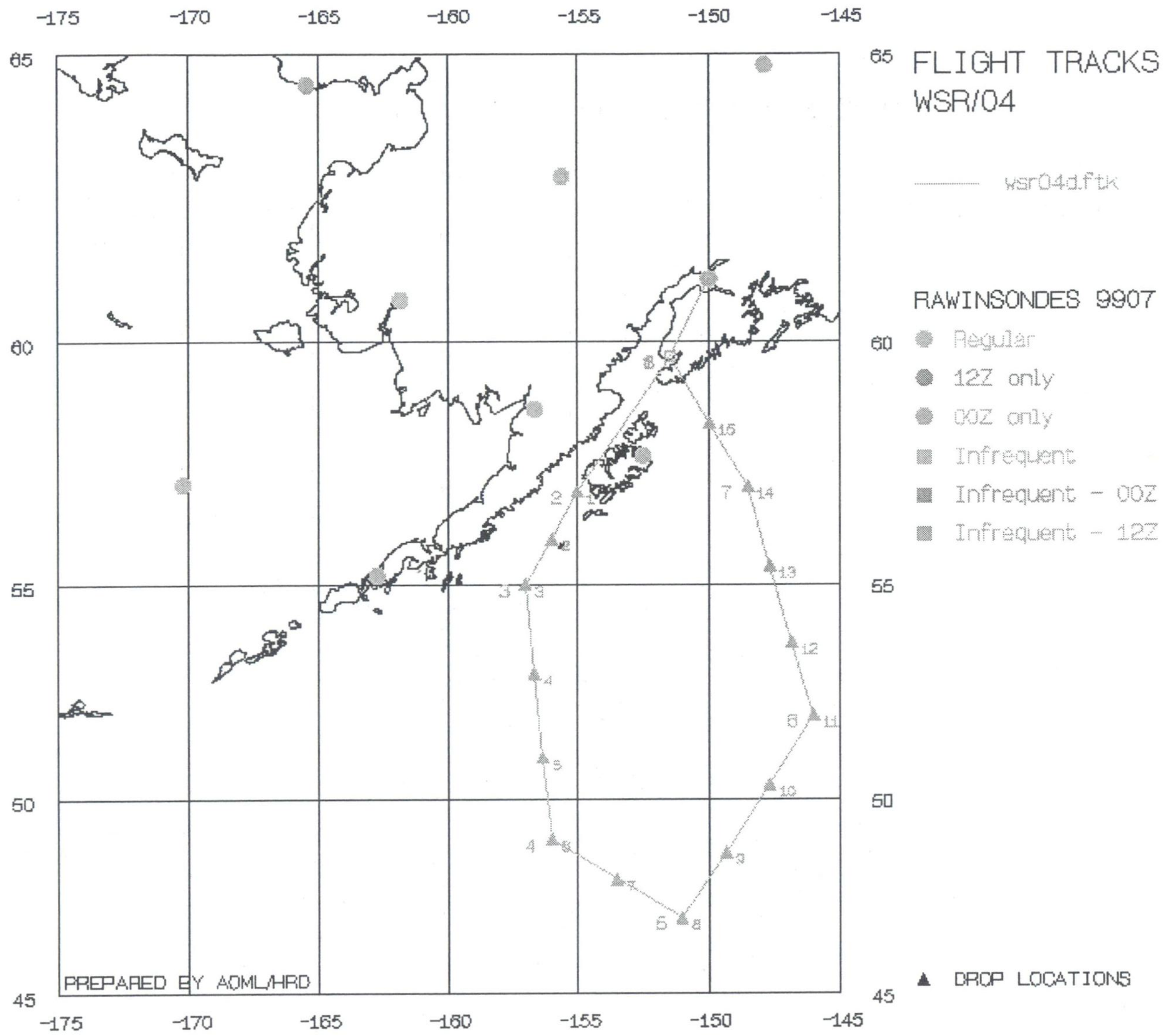

Figure G-4. Alaskan Flight Track WSR/04.

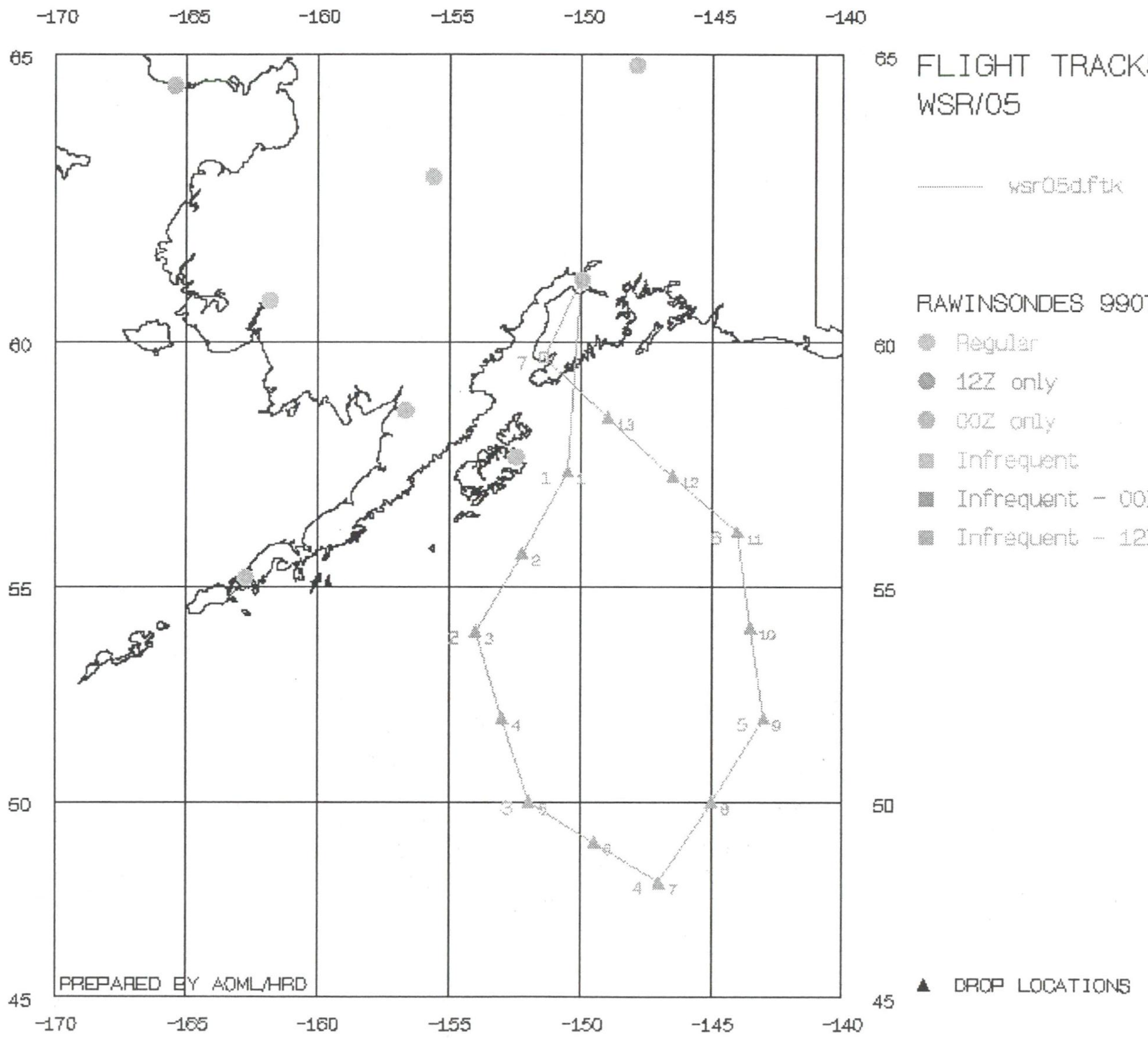

Figure G-5. Alaskan Flight Track WSR/05.

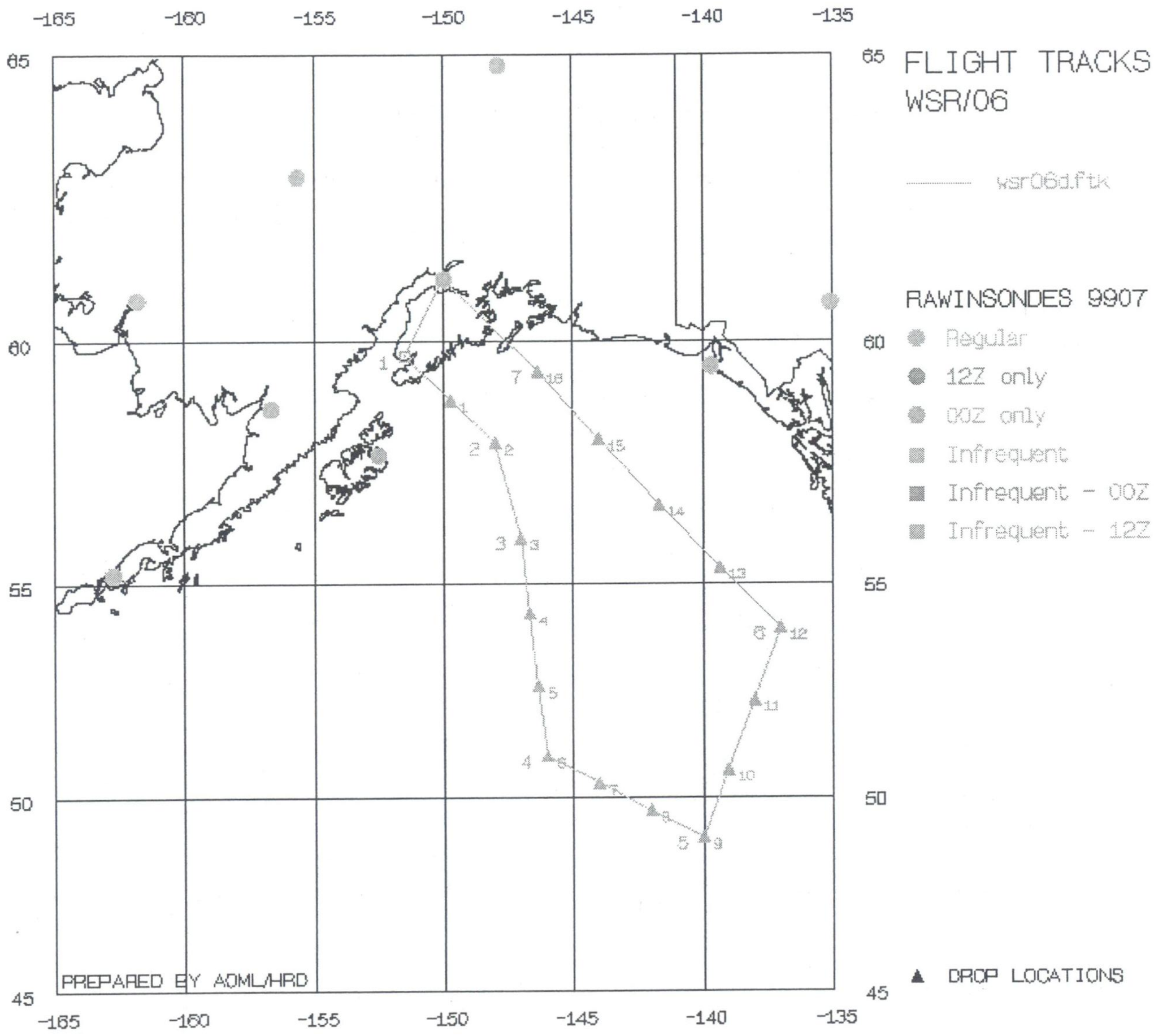

Figure G-6. Alaskan Flight Track WSR/06.

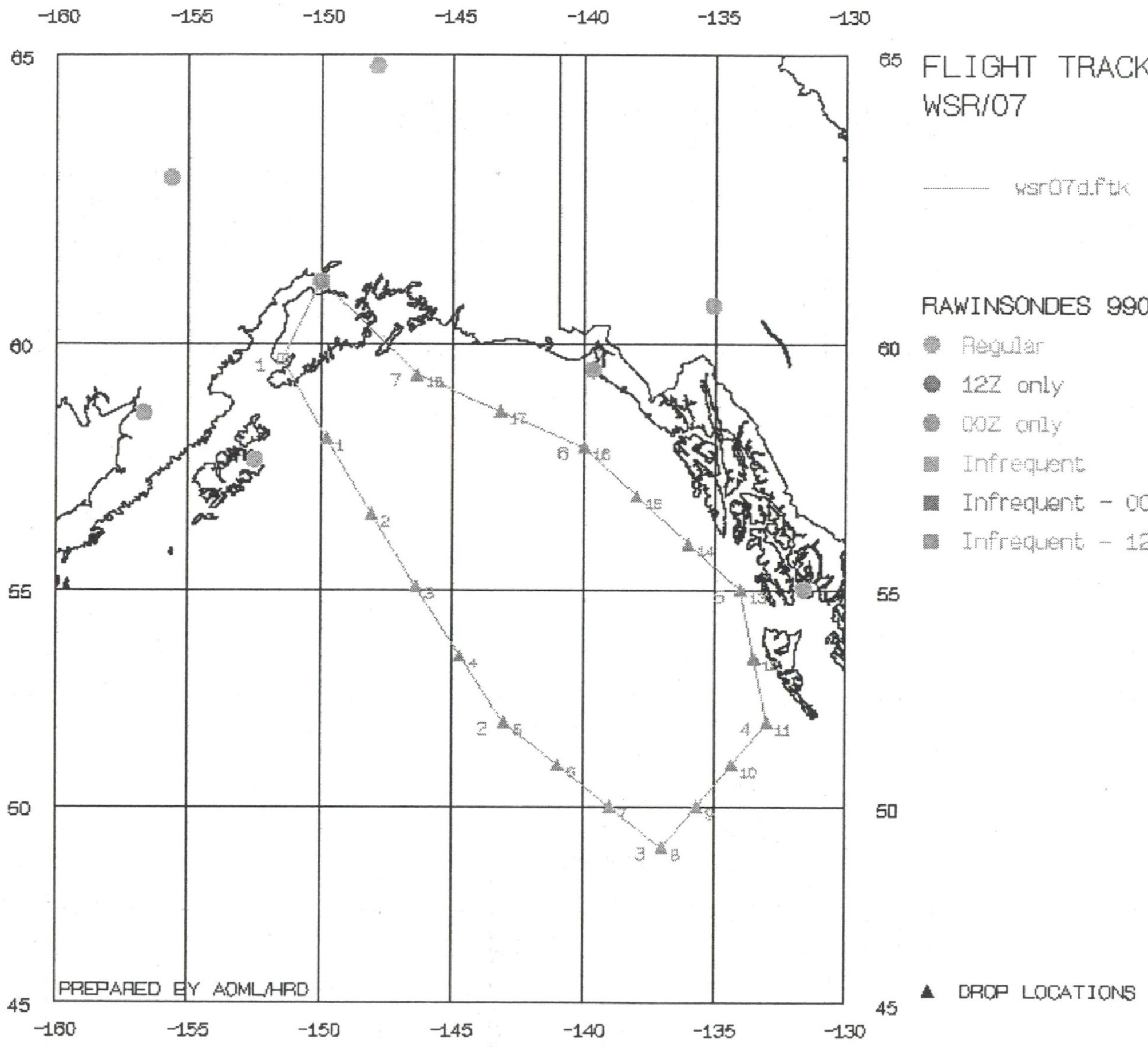

Figure G-7. Alaskan Flight Track WSR/07.

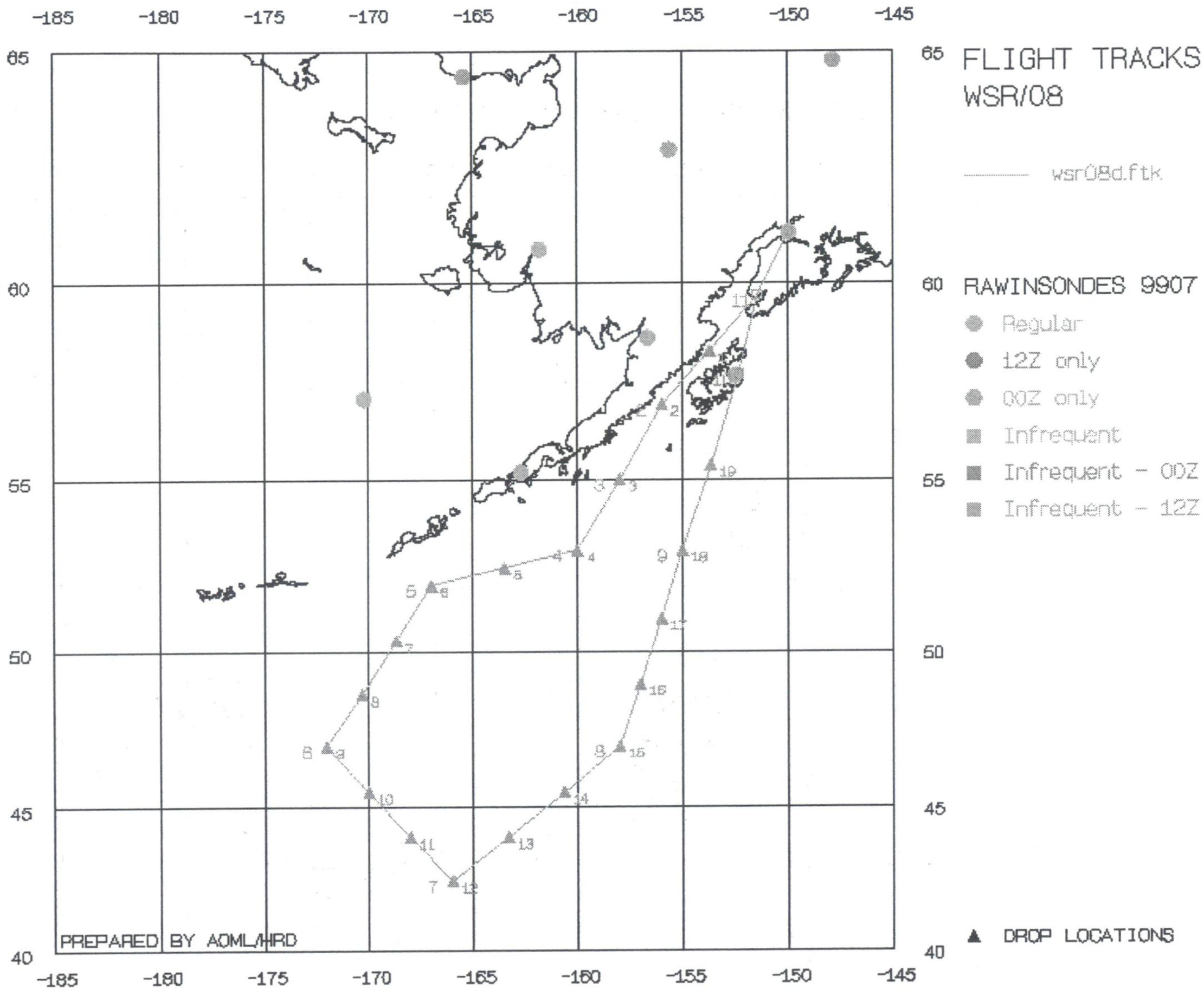

Figure G-8. Alaskan Flight Track WSR/08.

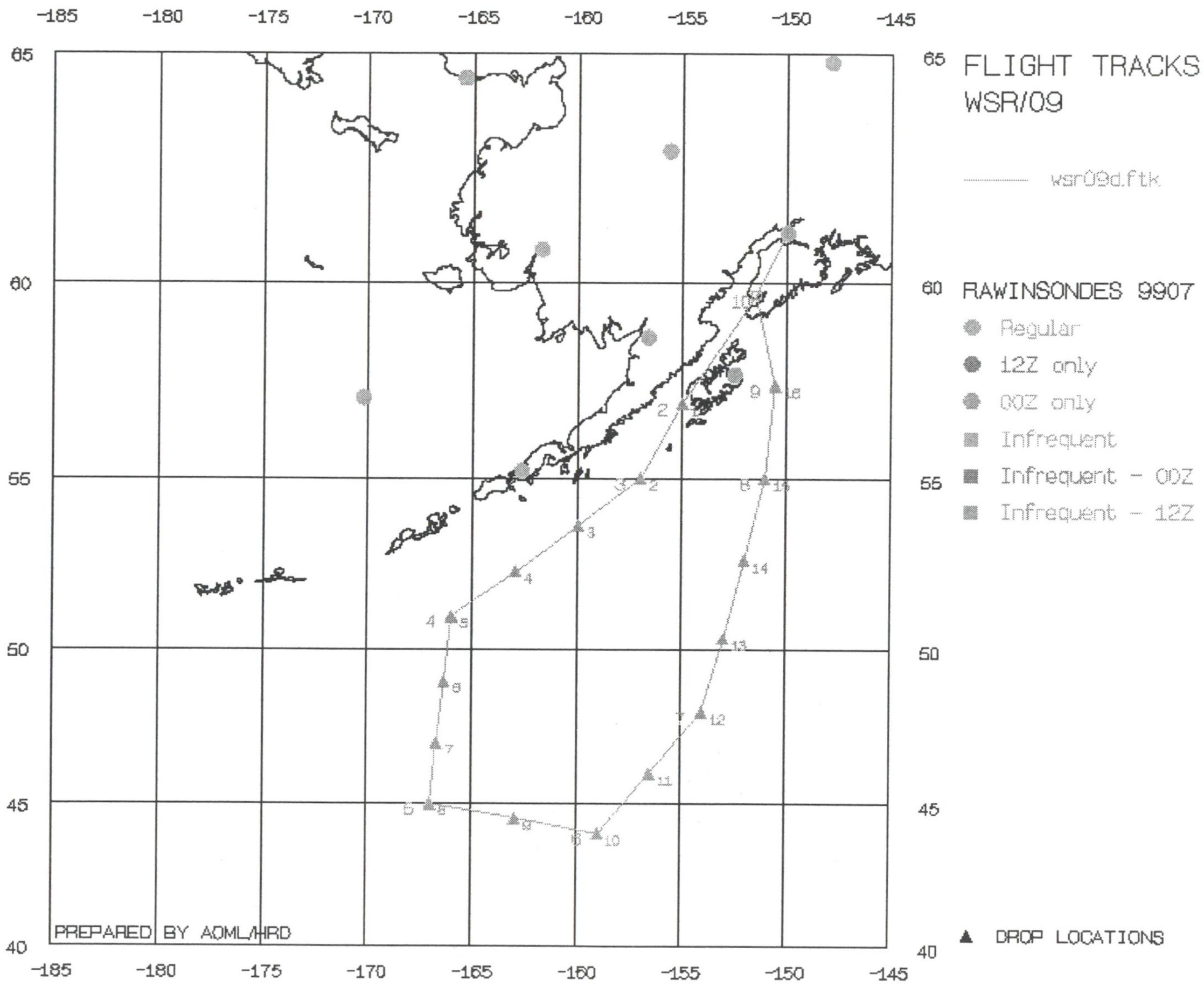

Figure G-9. Alaskan Flight Track WSR/09.

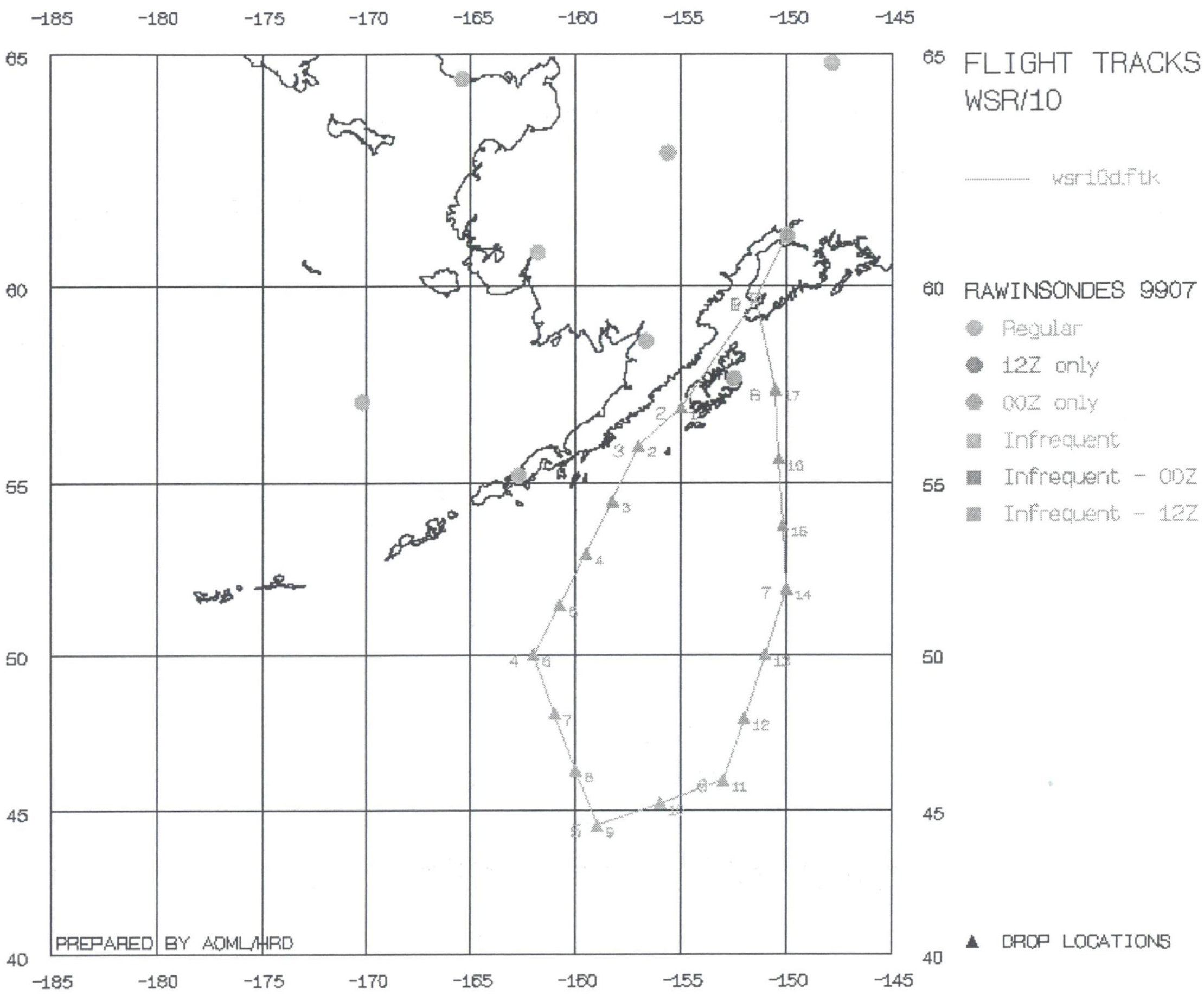

Figure G-10. Alaskan Flight Track WSR/10.

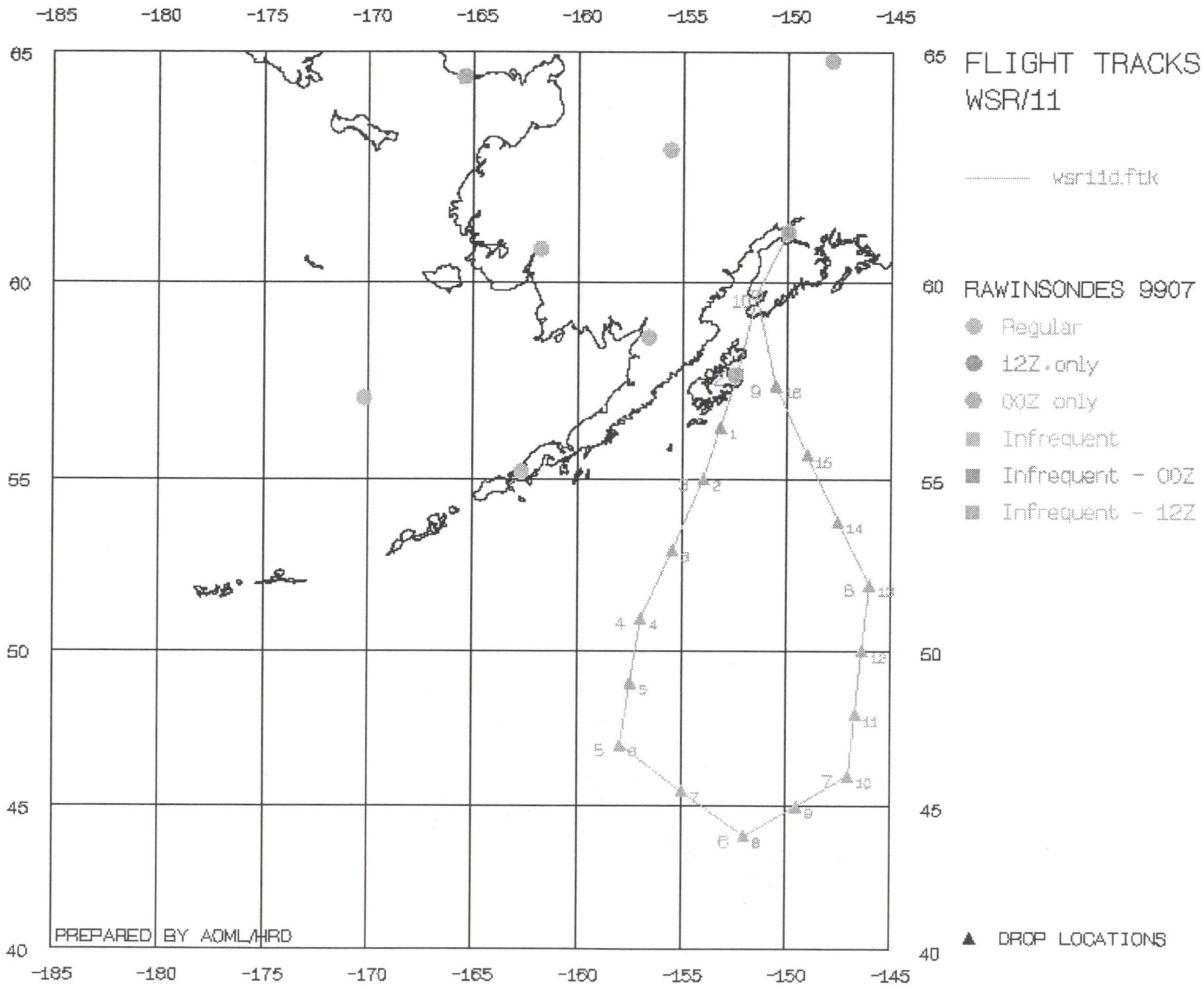

Figure G-11. Alaskan Flight Track WSR/11.

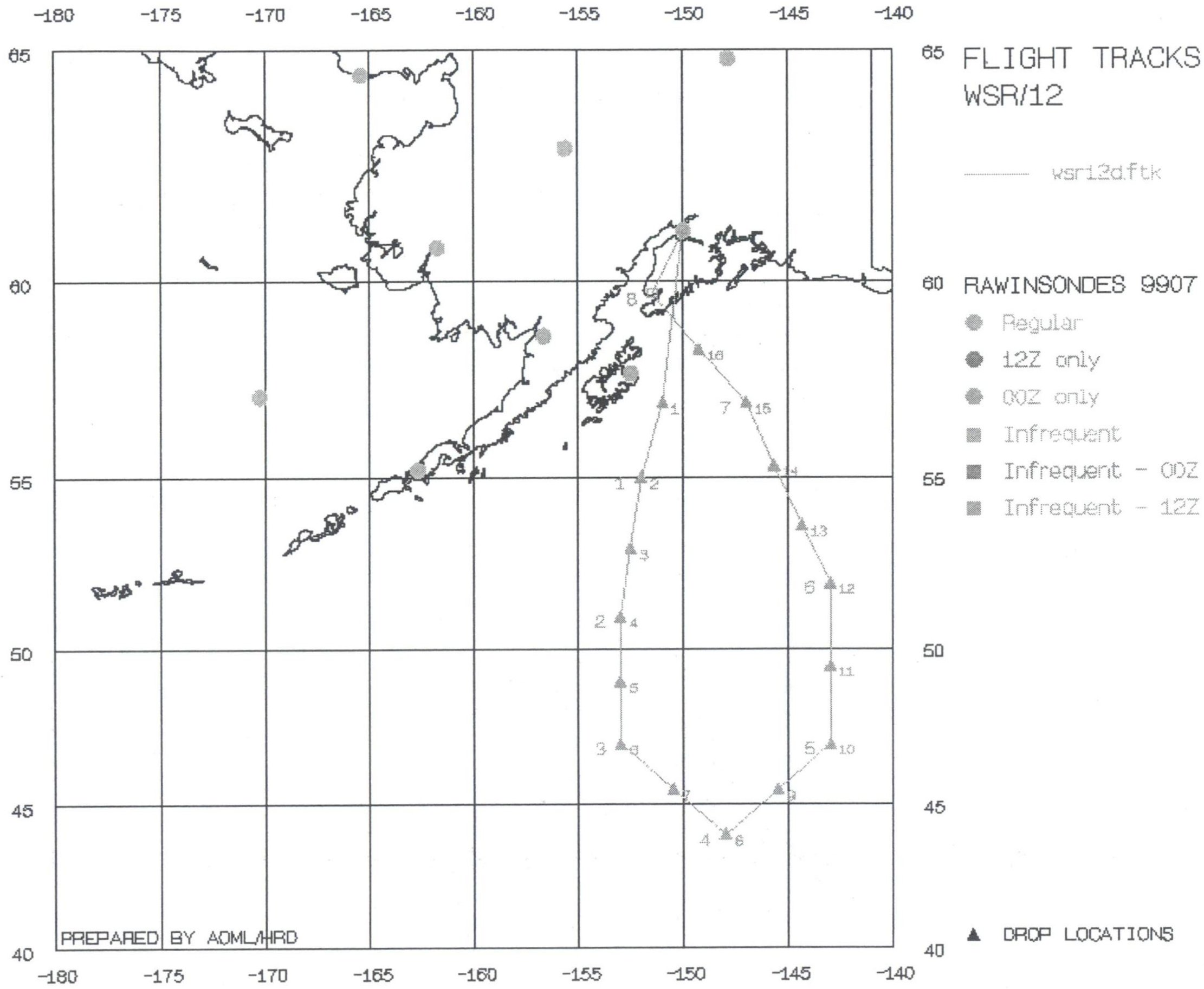

Figure G-12. Alaskan Flight Track WSR/12.

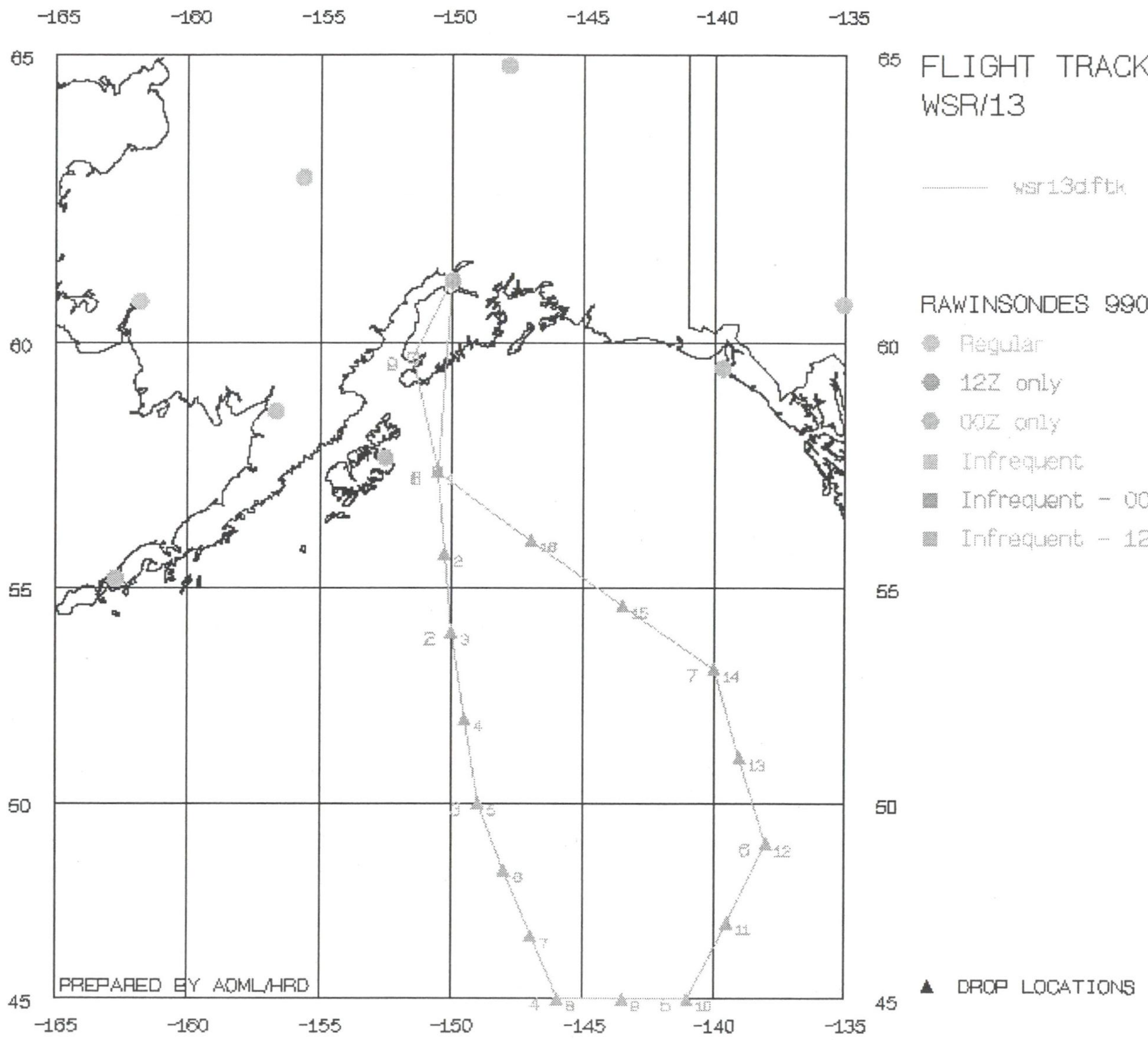

Figure G-13. Alaskan Flight Track WSR/13.

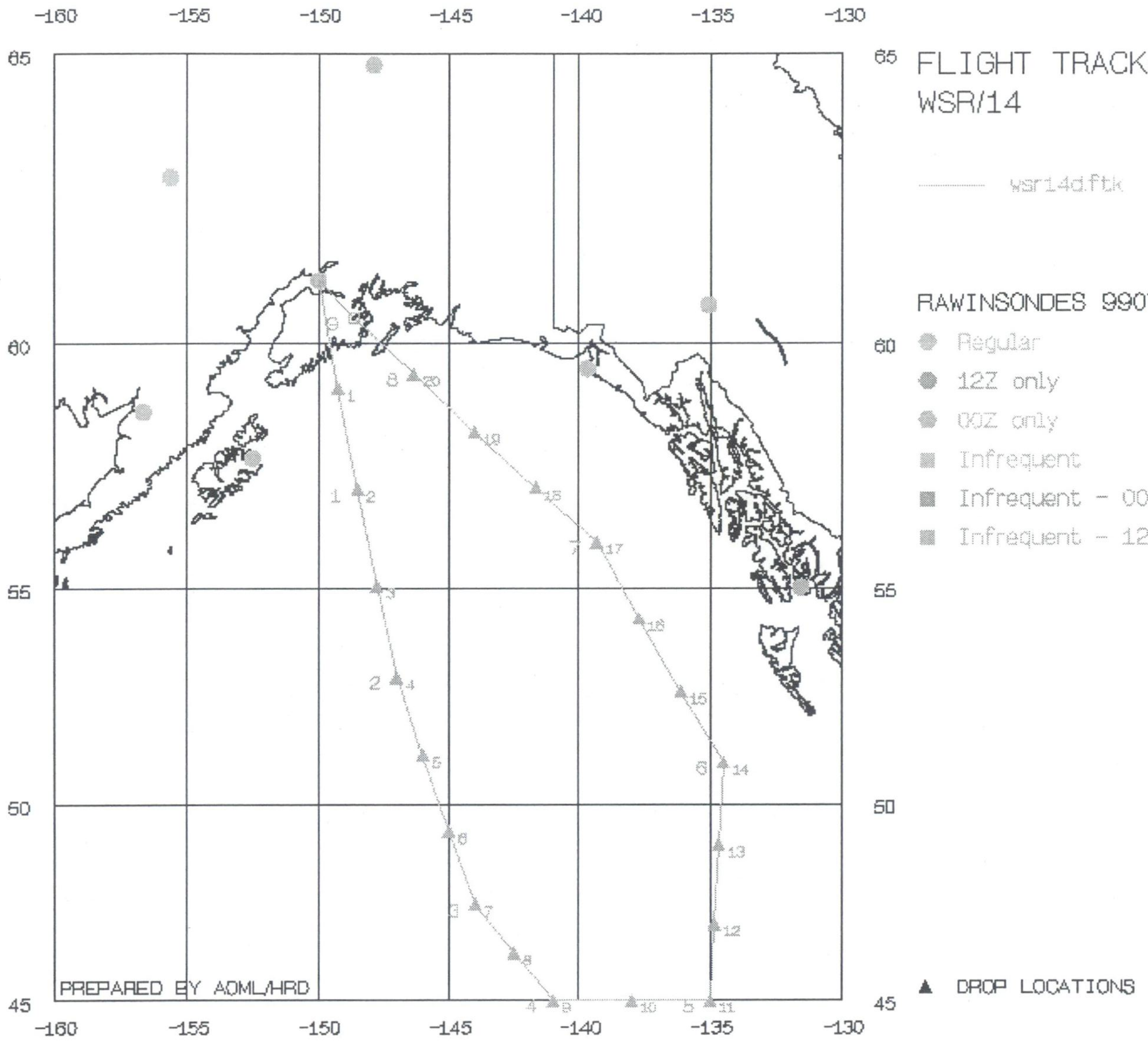

Figure G-14. Alaskan Flight Track WSR/14.

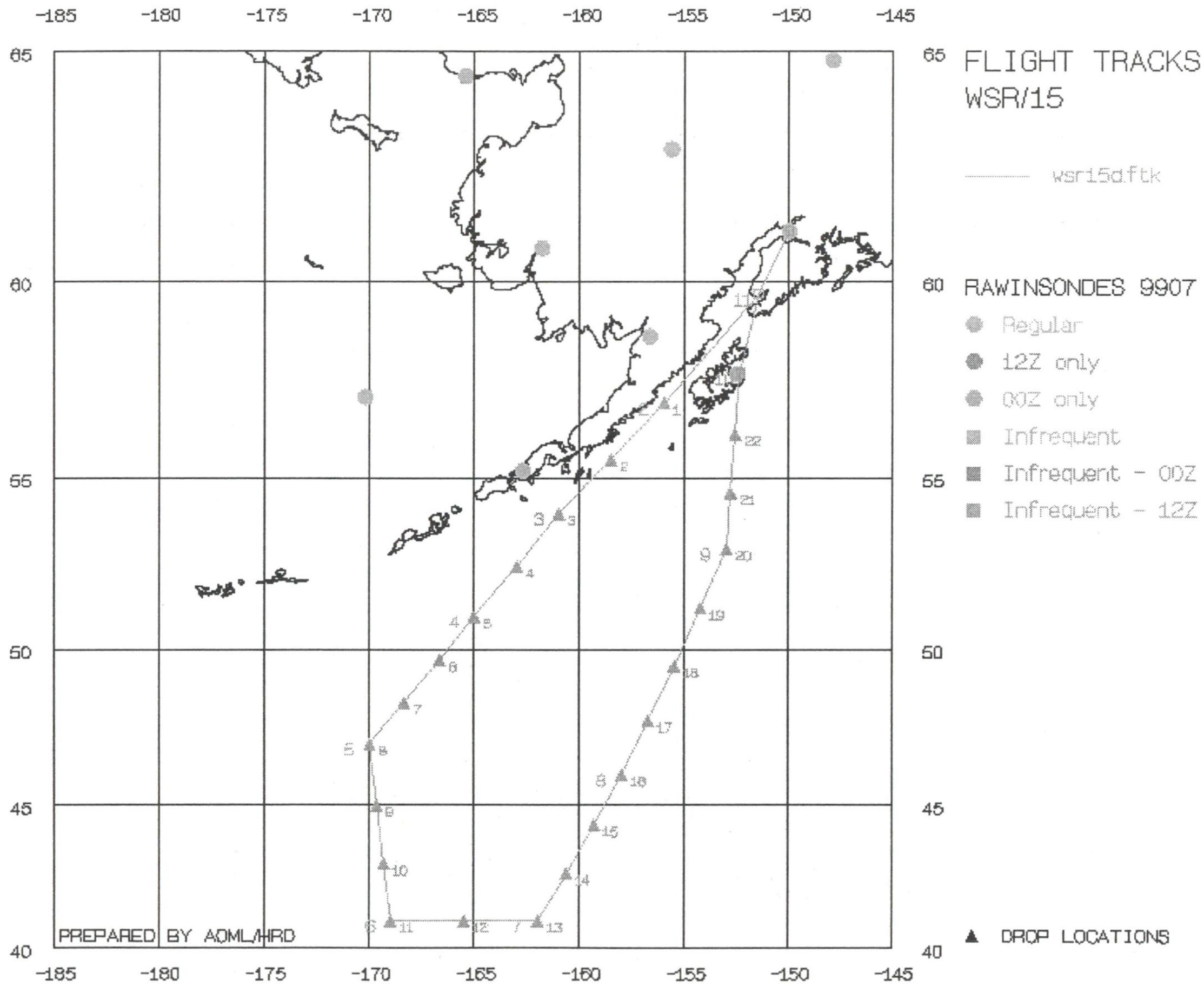

Figure G-15. Alaskan Flight Track WSR/15.

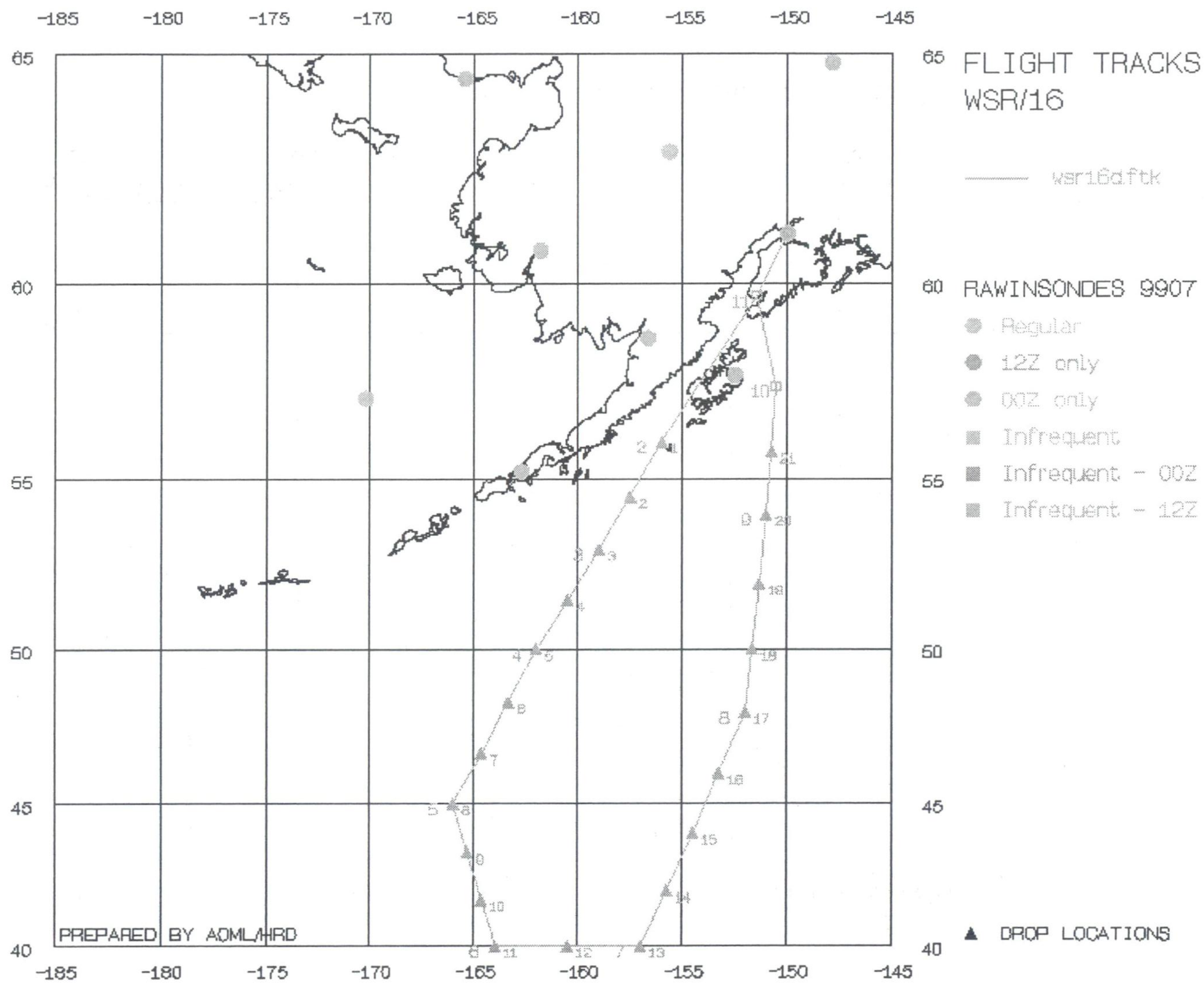

Figure G-16. Alaskan Flight Track WSR/16.

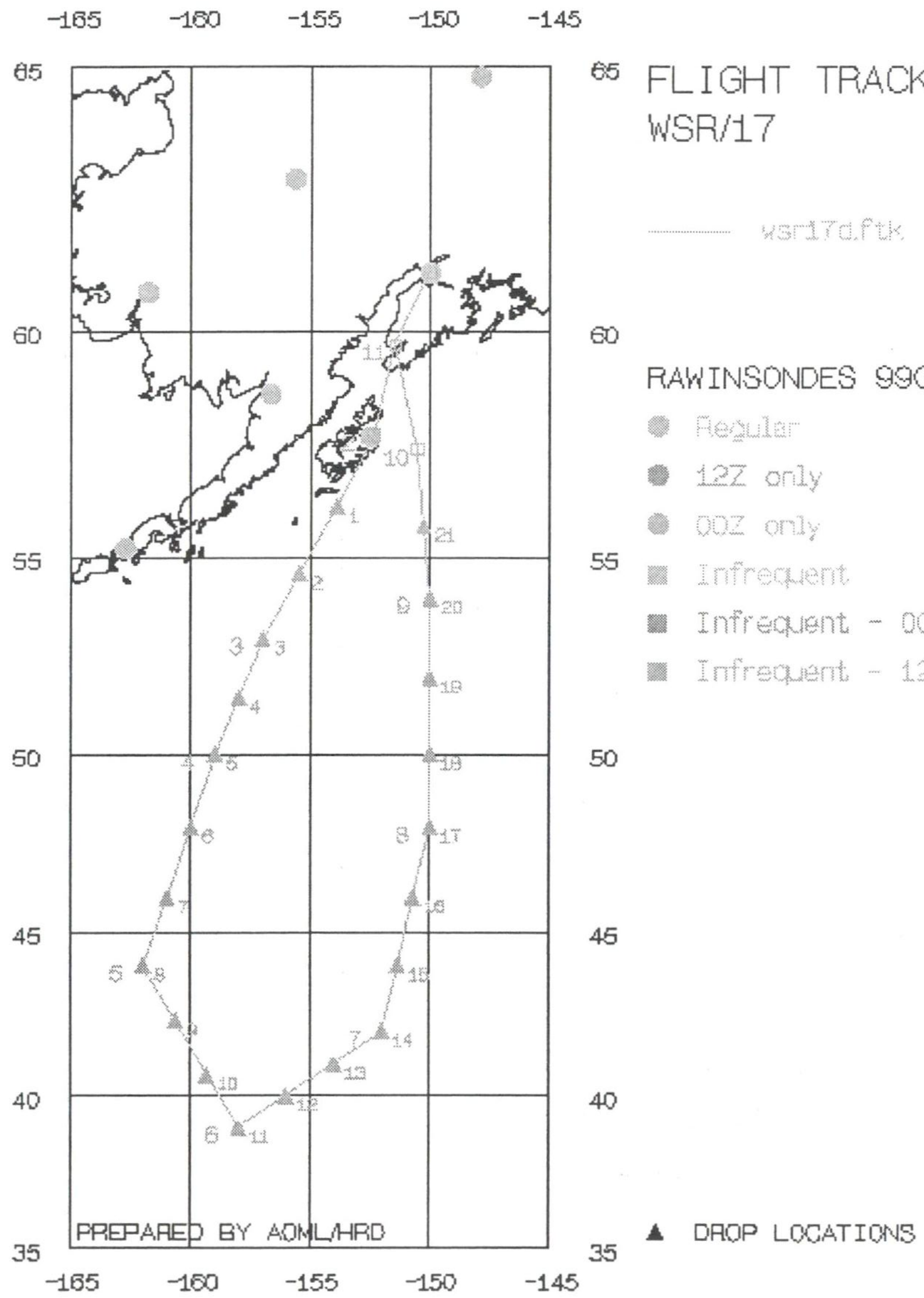

Figure G-17. Alaskan Flight Track WSR/17.

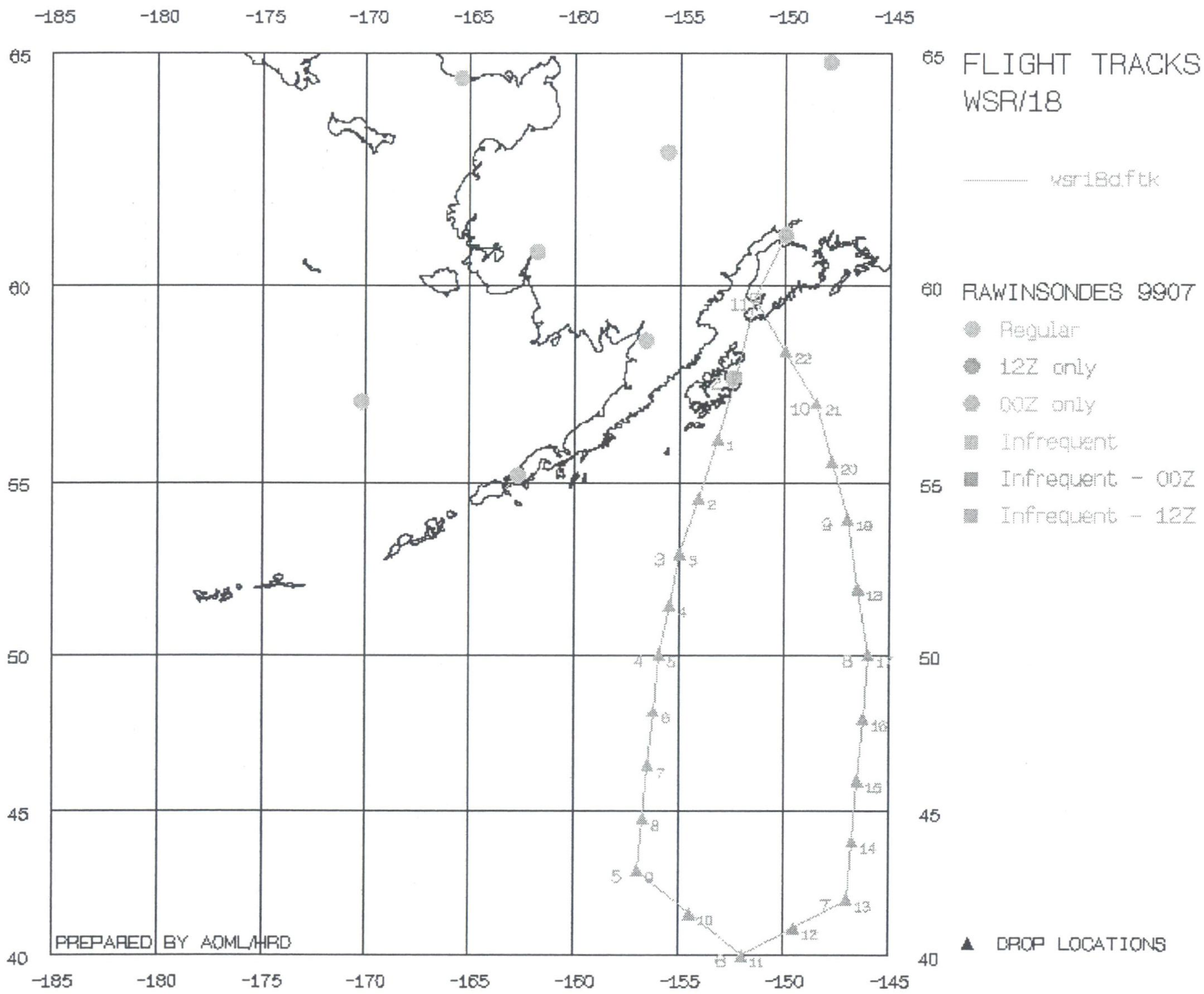

Figure G-18. Alaskan Flight Track WSR/18.

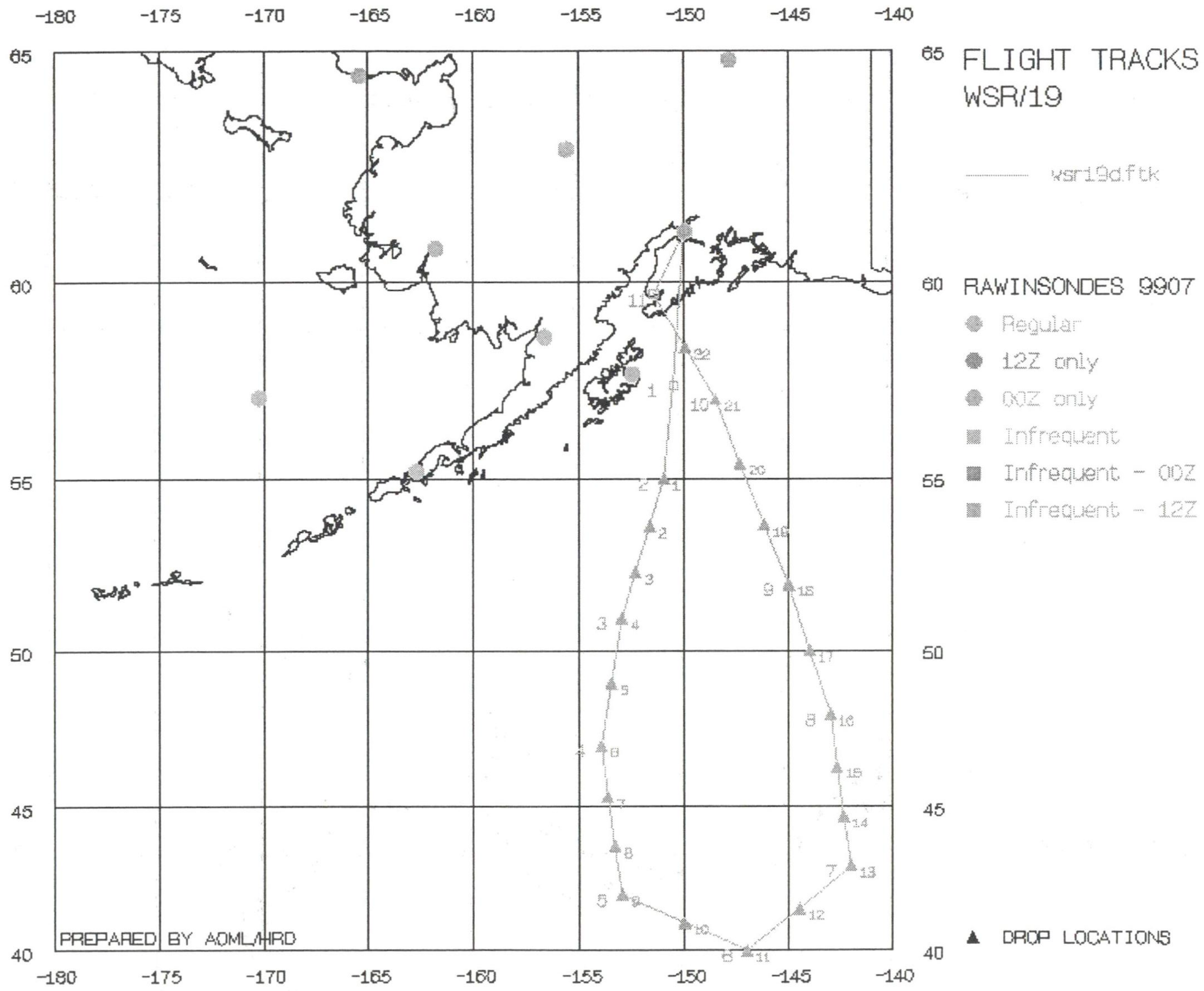

Figure G-19. Alaskan Flight Track WSR/19.

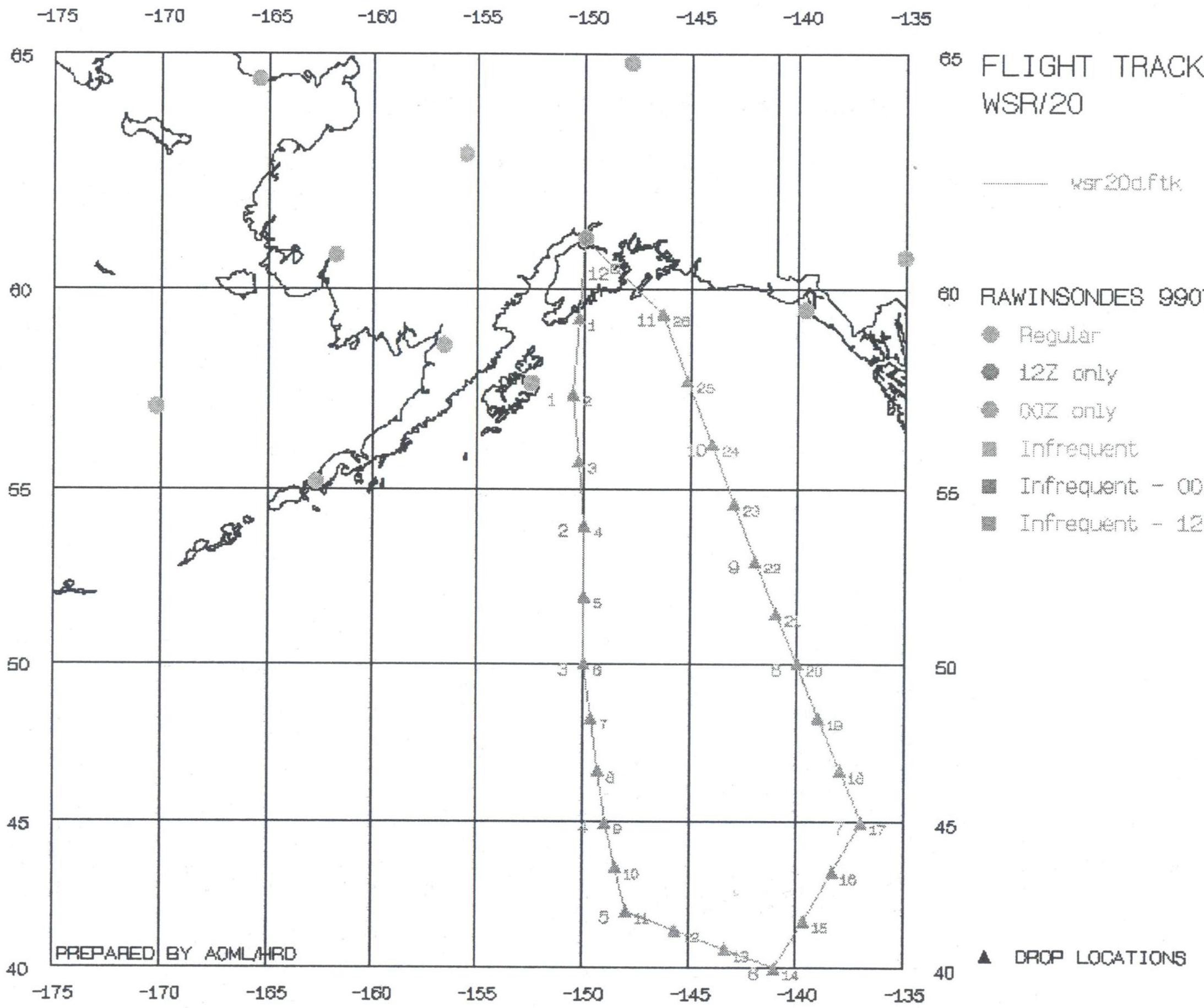

Figure G-20. Alaskan Flight Track WSR/20.

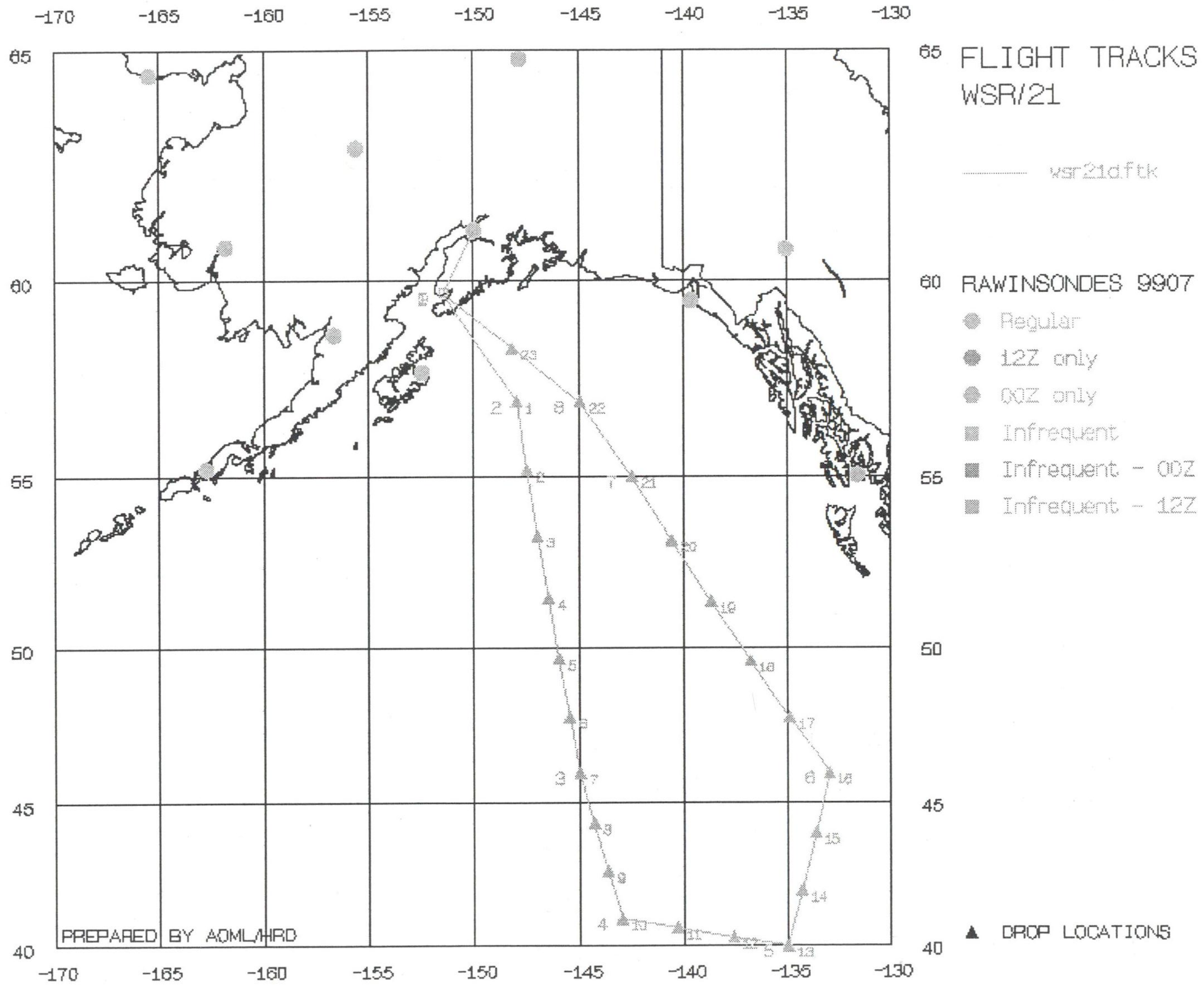

Figure G-21. Alaskan Flight Track WSR/21.

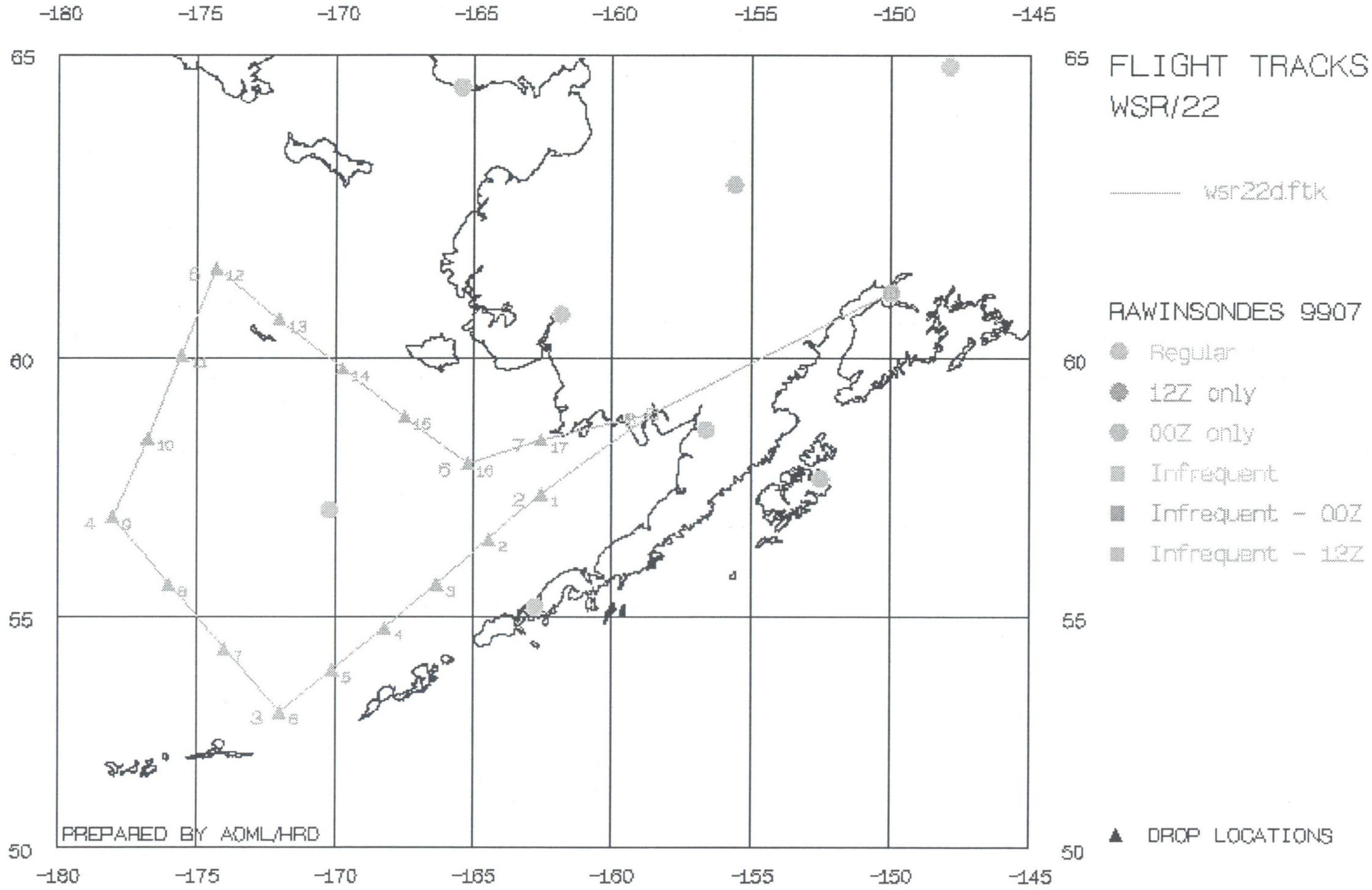

Figure G-22. Alaskan Flight Track WSR/22.

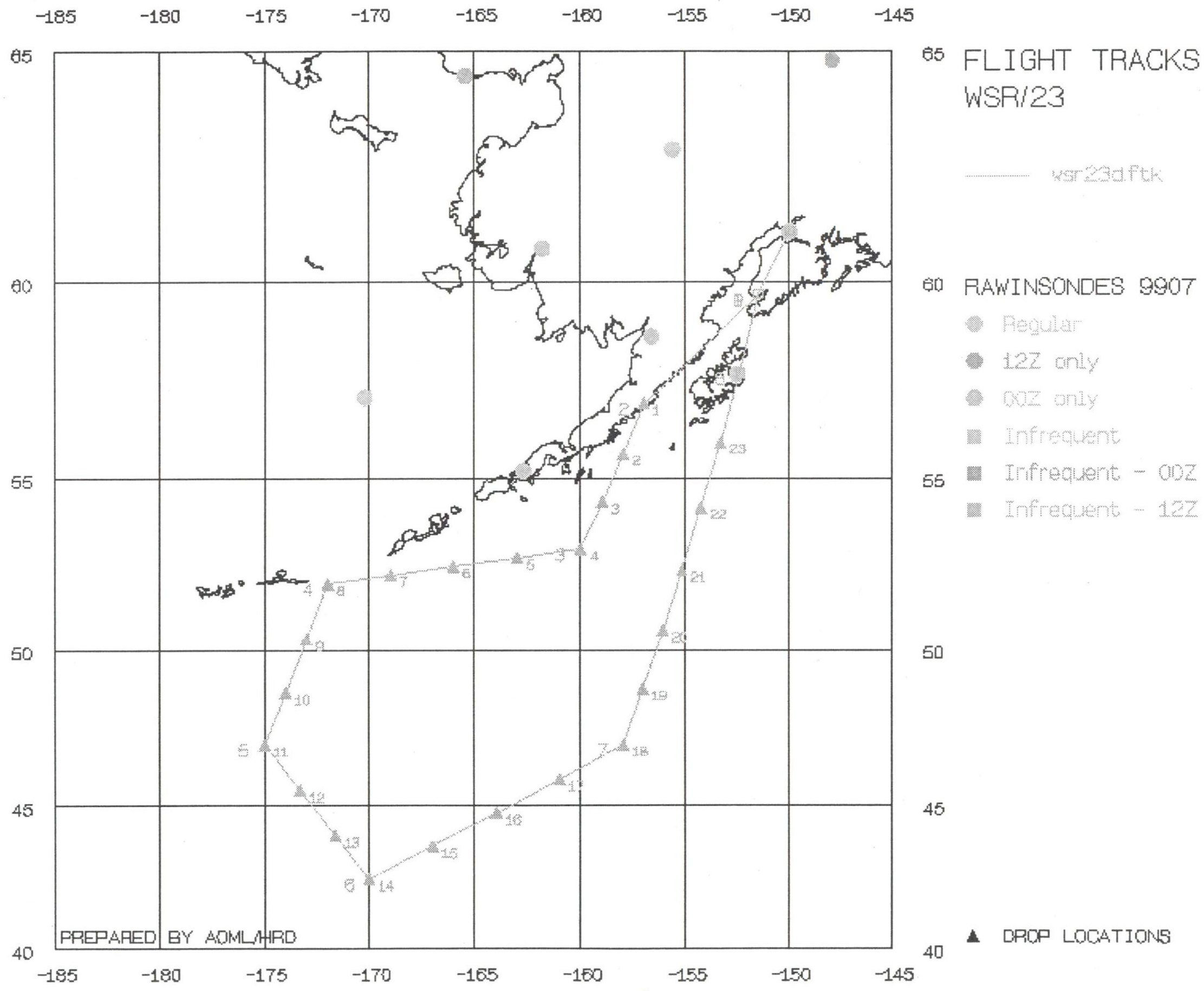

Figure G-23. Alaskan Flight Track WSR/23.

APPENDIX H
HAWAIIAN STORM TRACKS

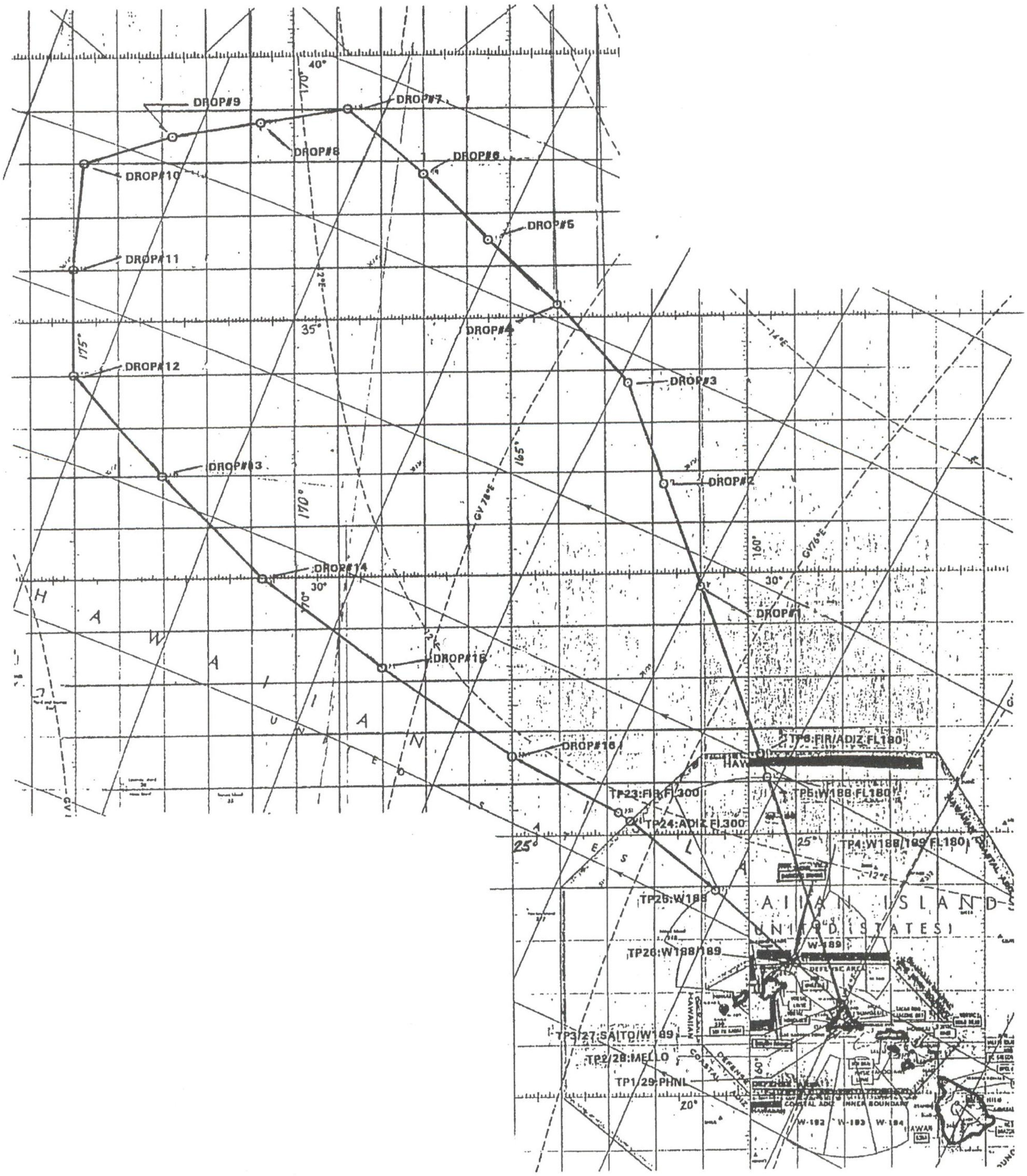

Figure H-1. Air Force Track WSRP31.

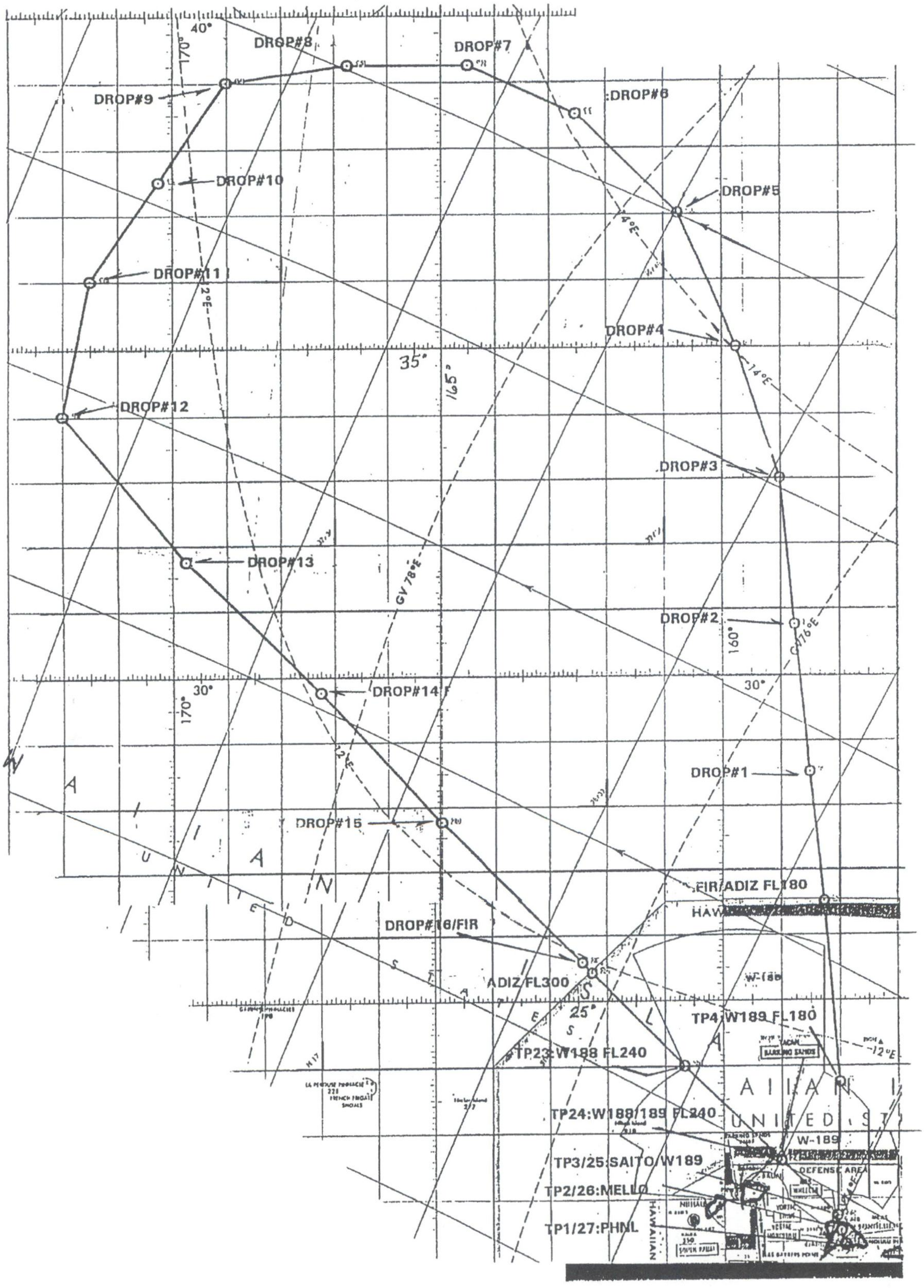

Figure H-2. Air Force Track WSRP32.

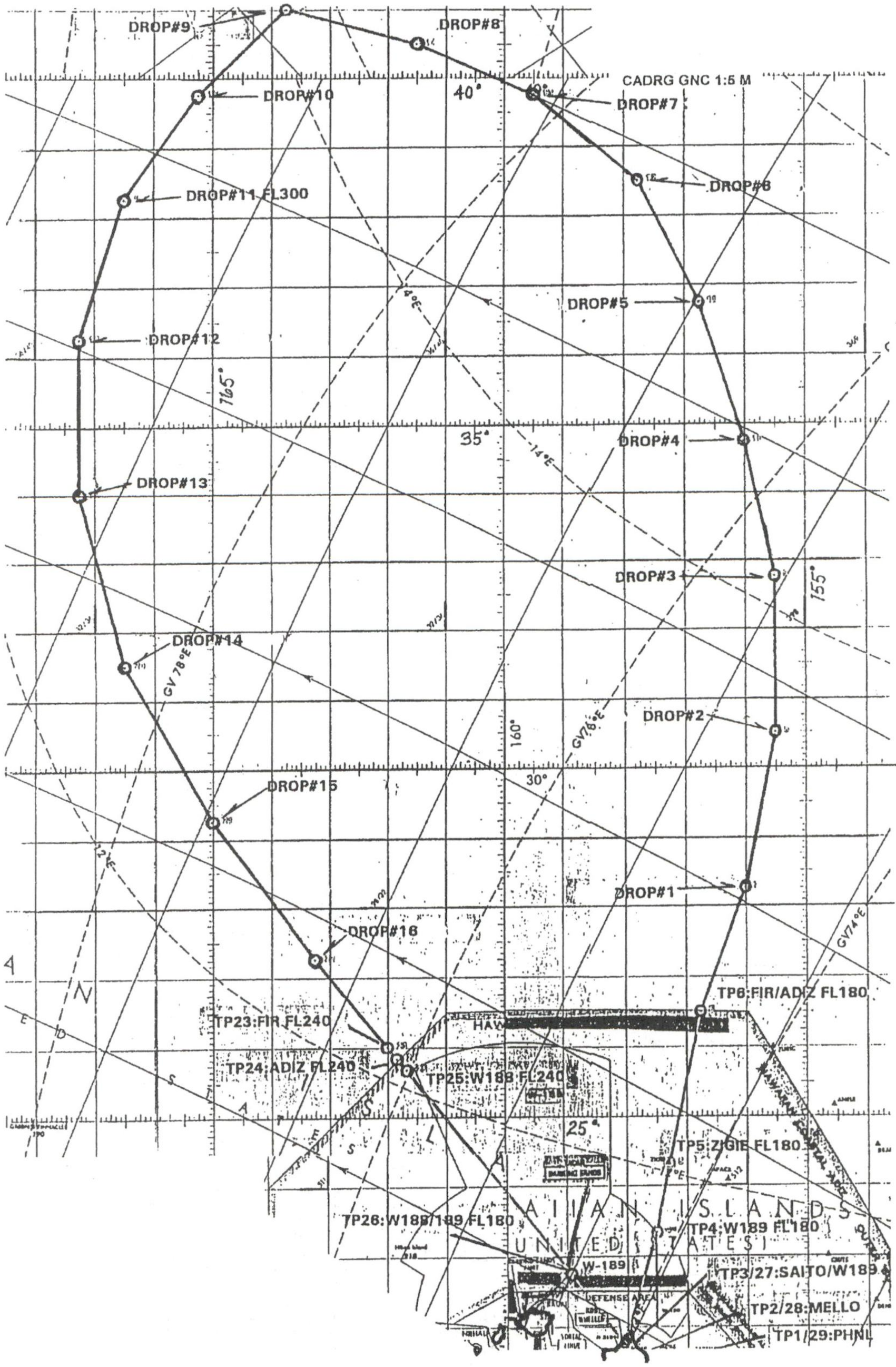

Figure H-3. Air Force Track WSRP33.

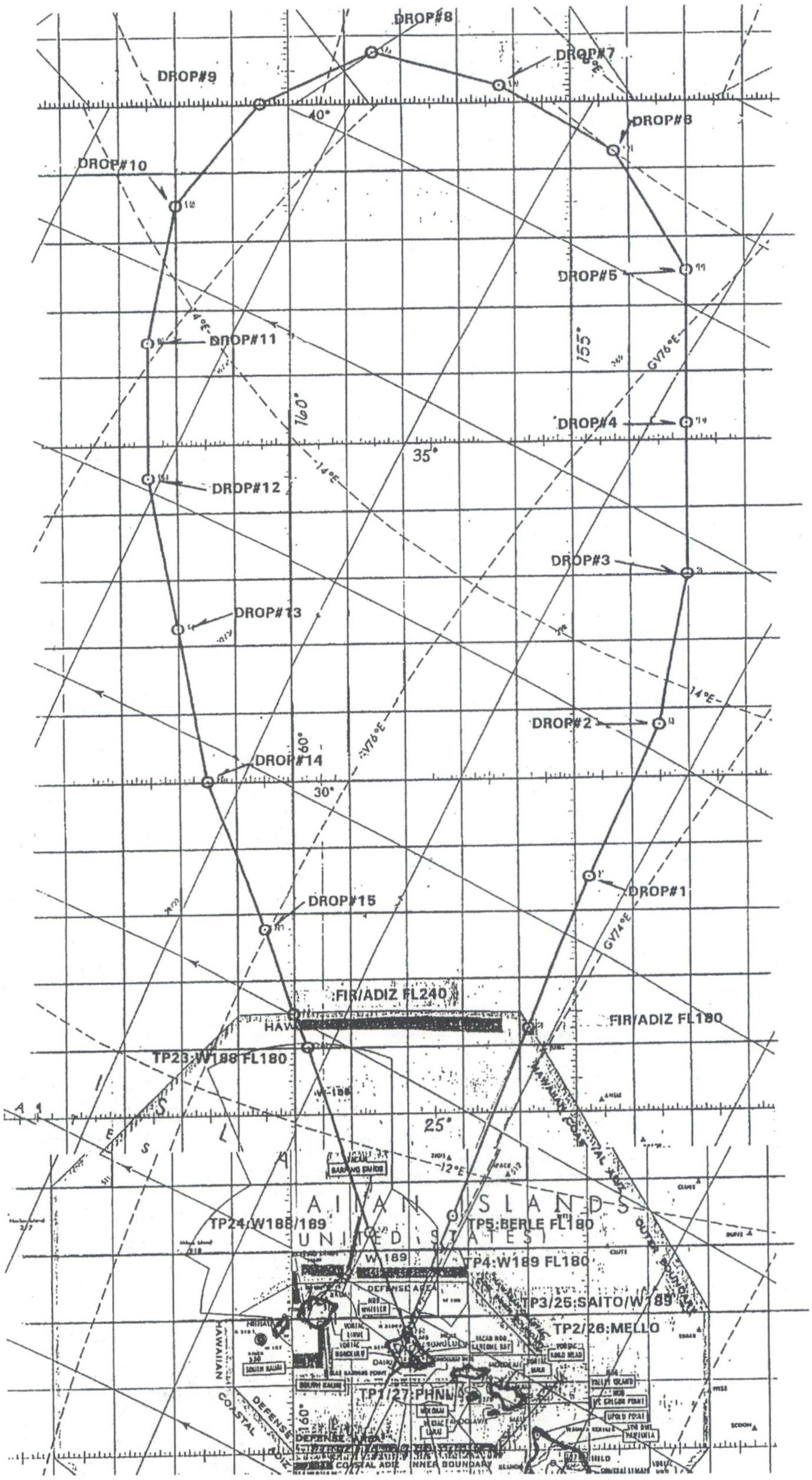

Figure H-4. Air Force Track WSRP34.

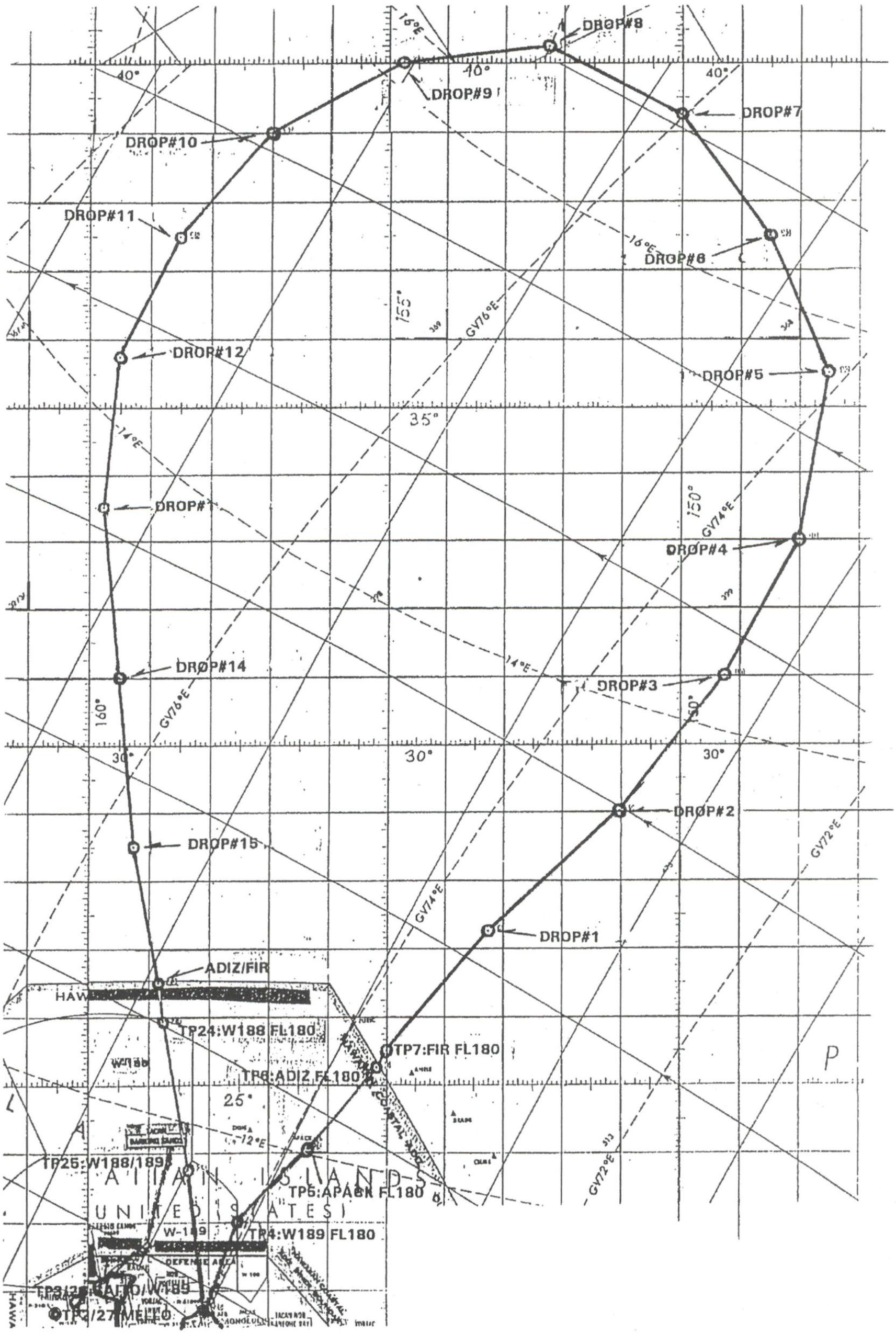

Figure H-5. Air Force Track WSRP35.

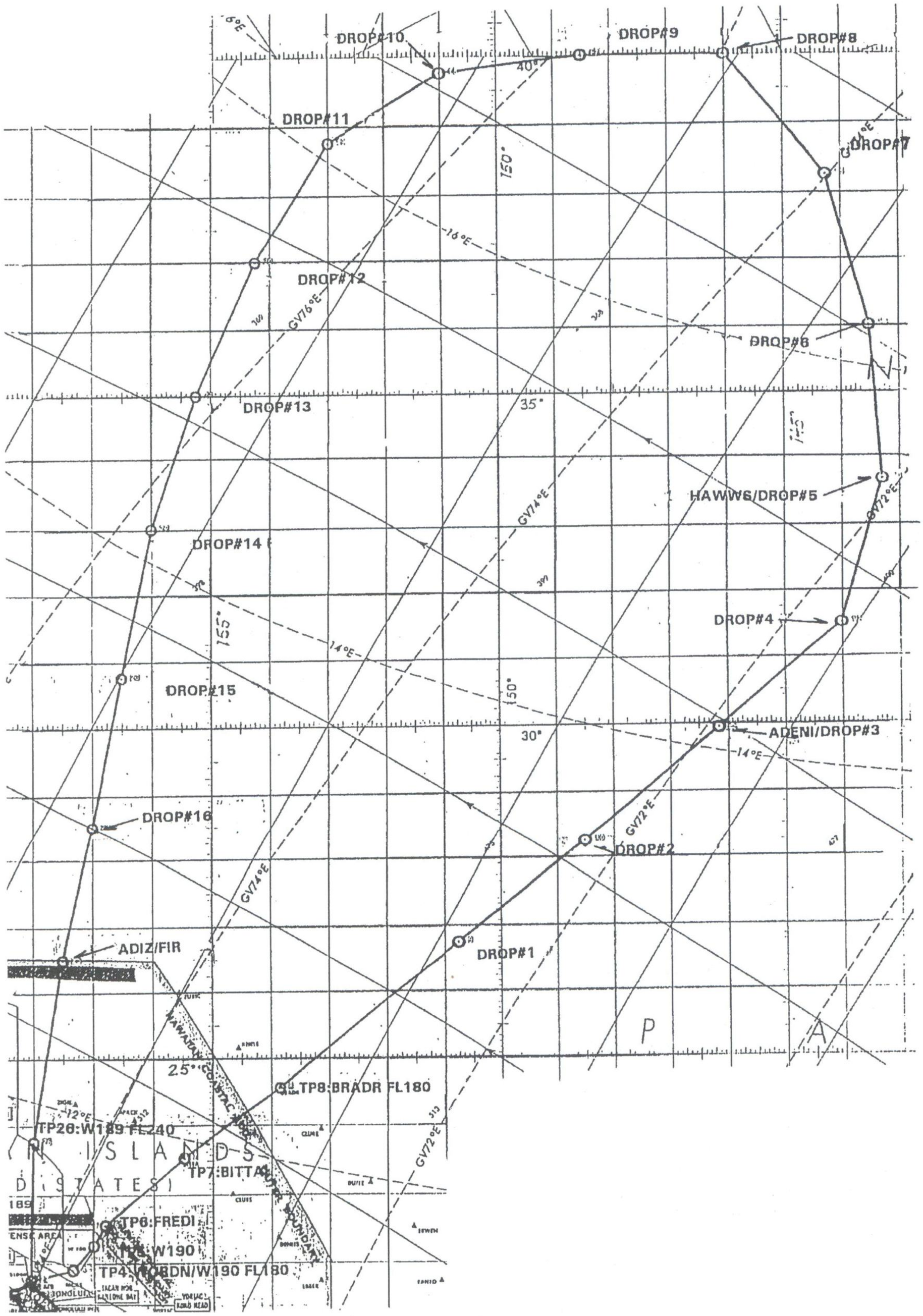

Figure H-6. Air Force Track WSRP36.

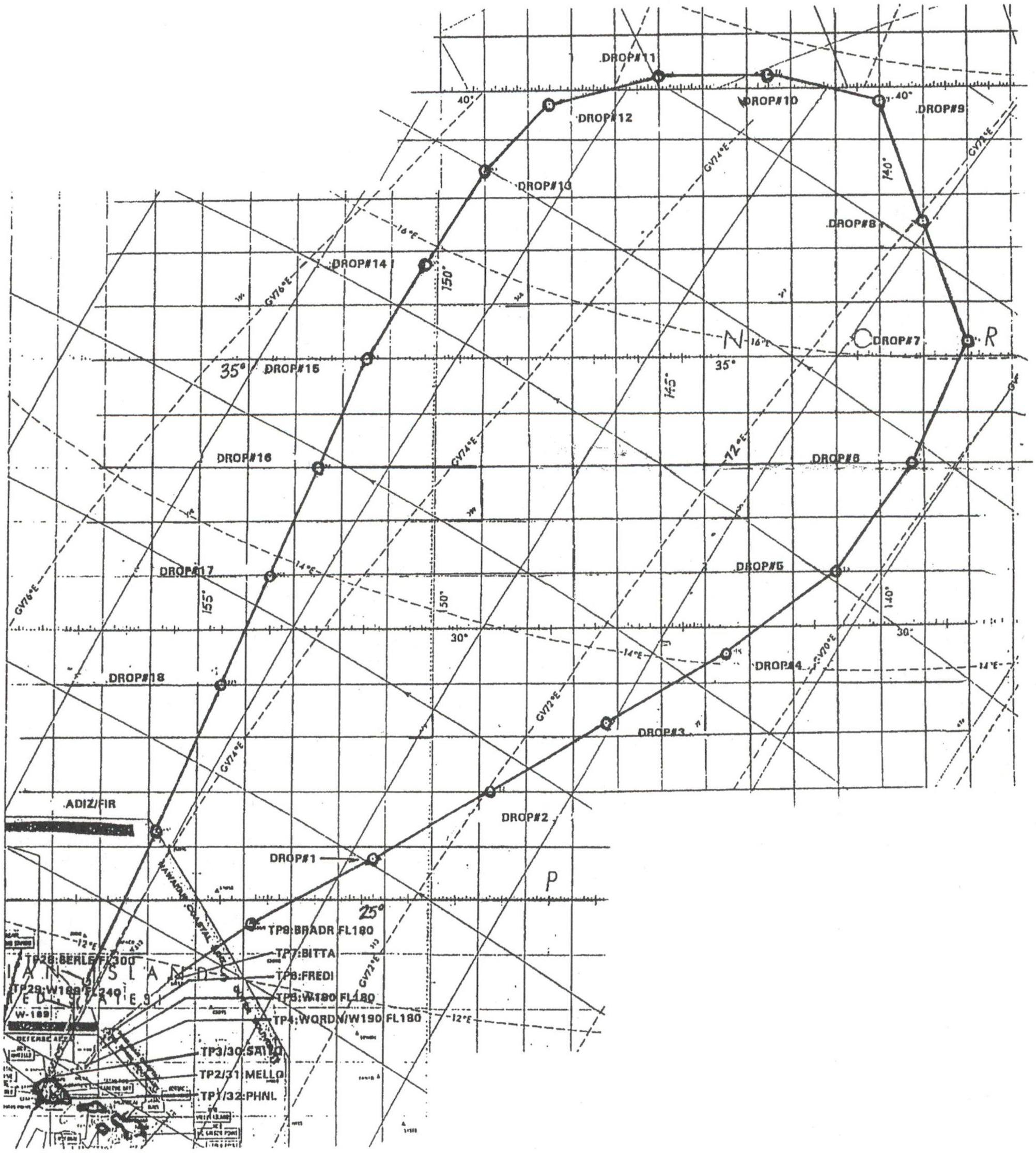

Figure H-7. Air Force Track WSRP37.

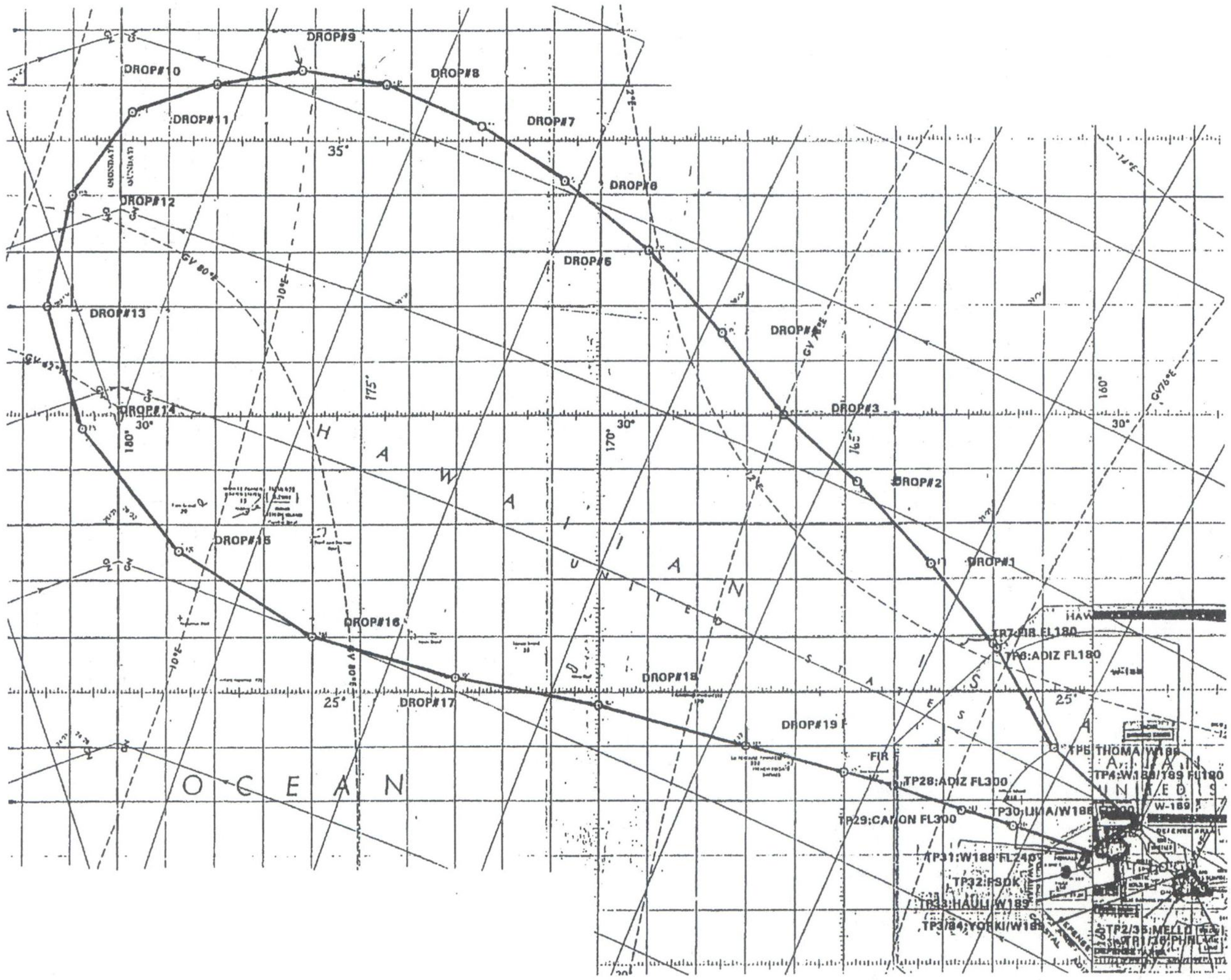

Figure H-8. Air Force Track WSRP38.

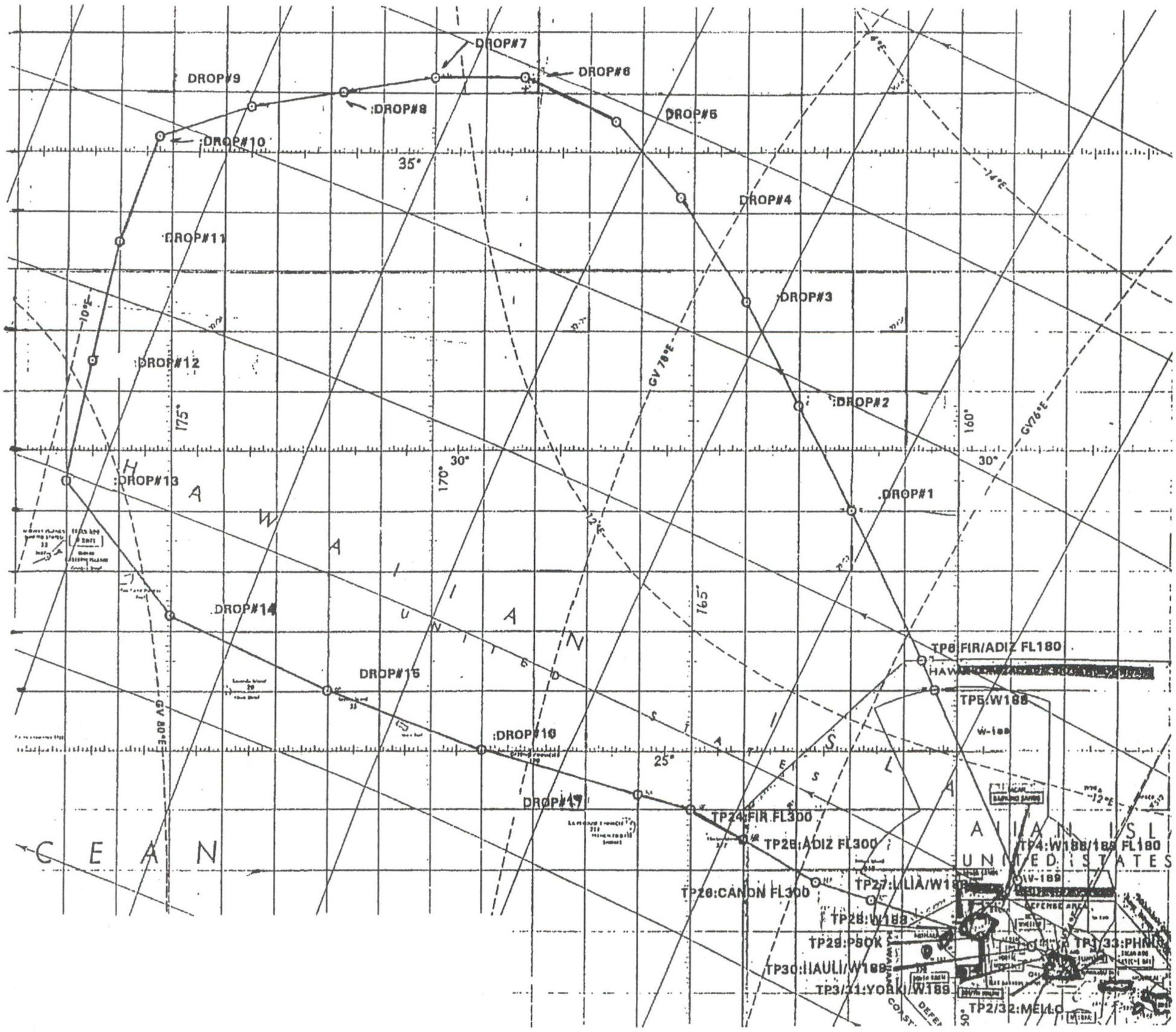

Figure H-9. Air Force Track WSRP39.

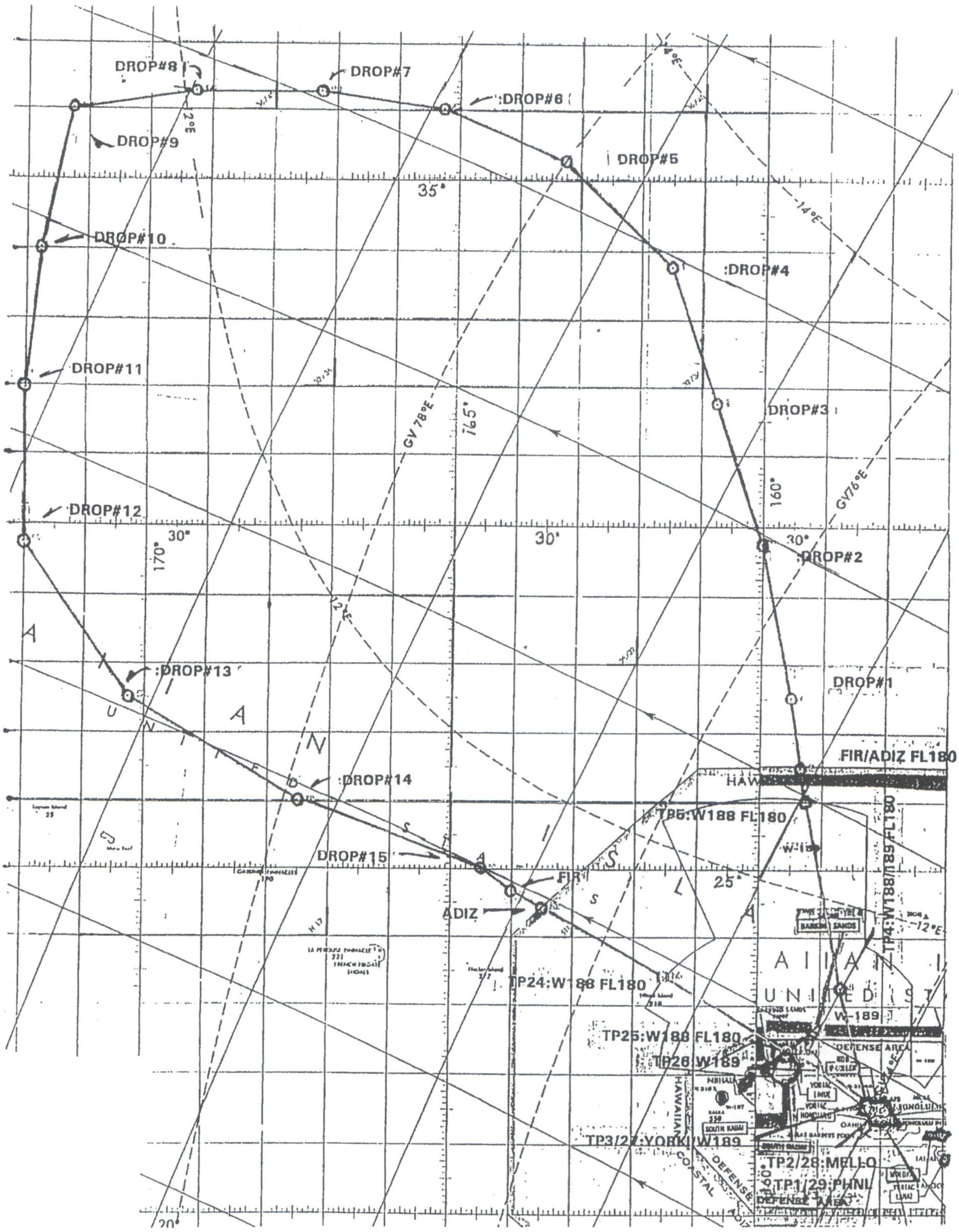

Figure H-10. Air Force Track WSRP40.

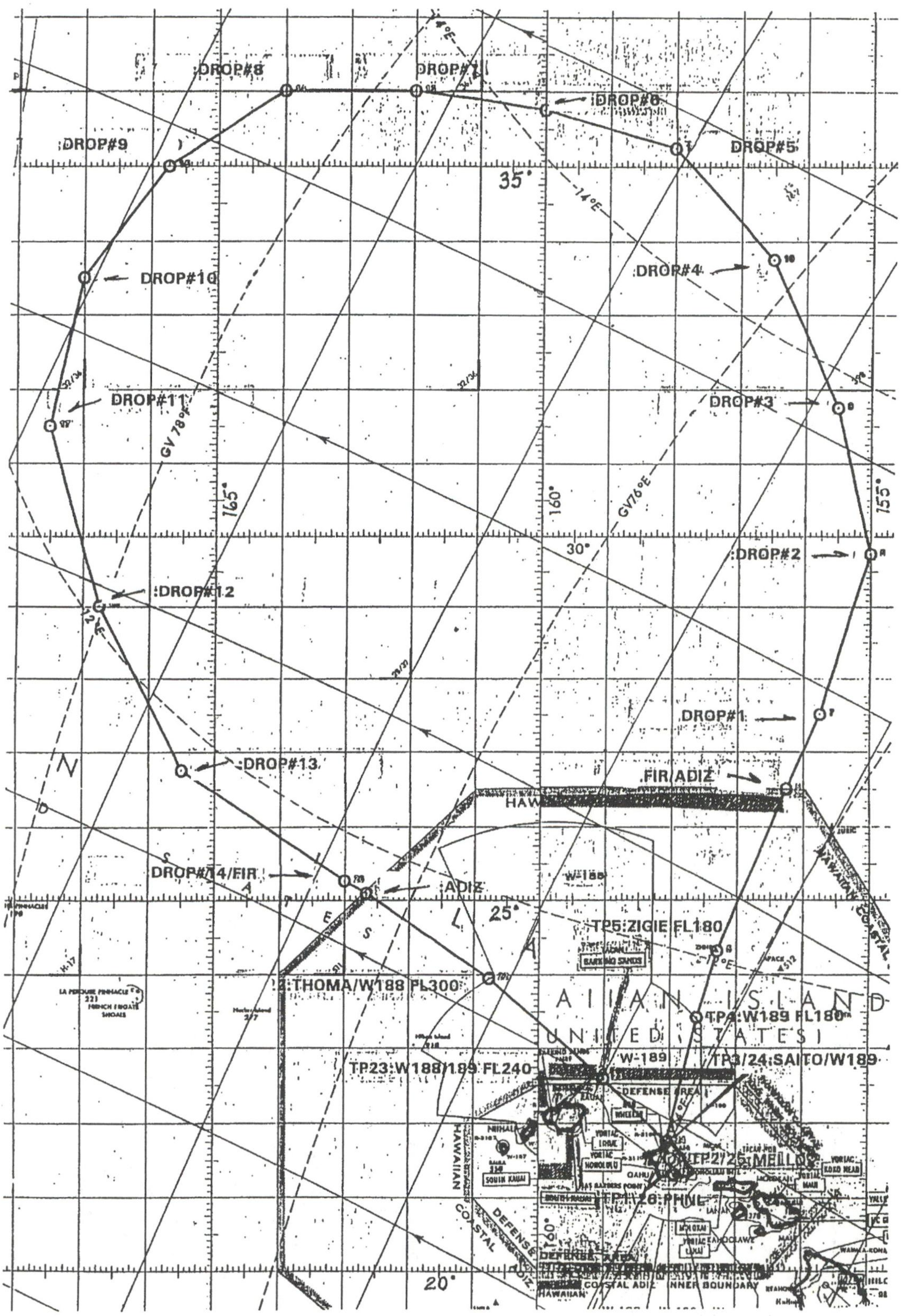

Figure H-11. Air Force Track WSRP41.

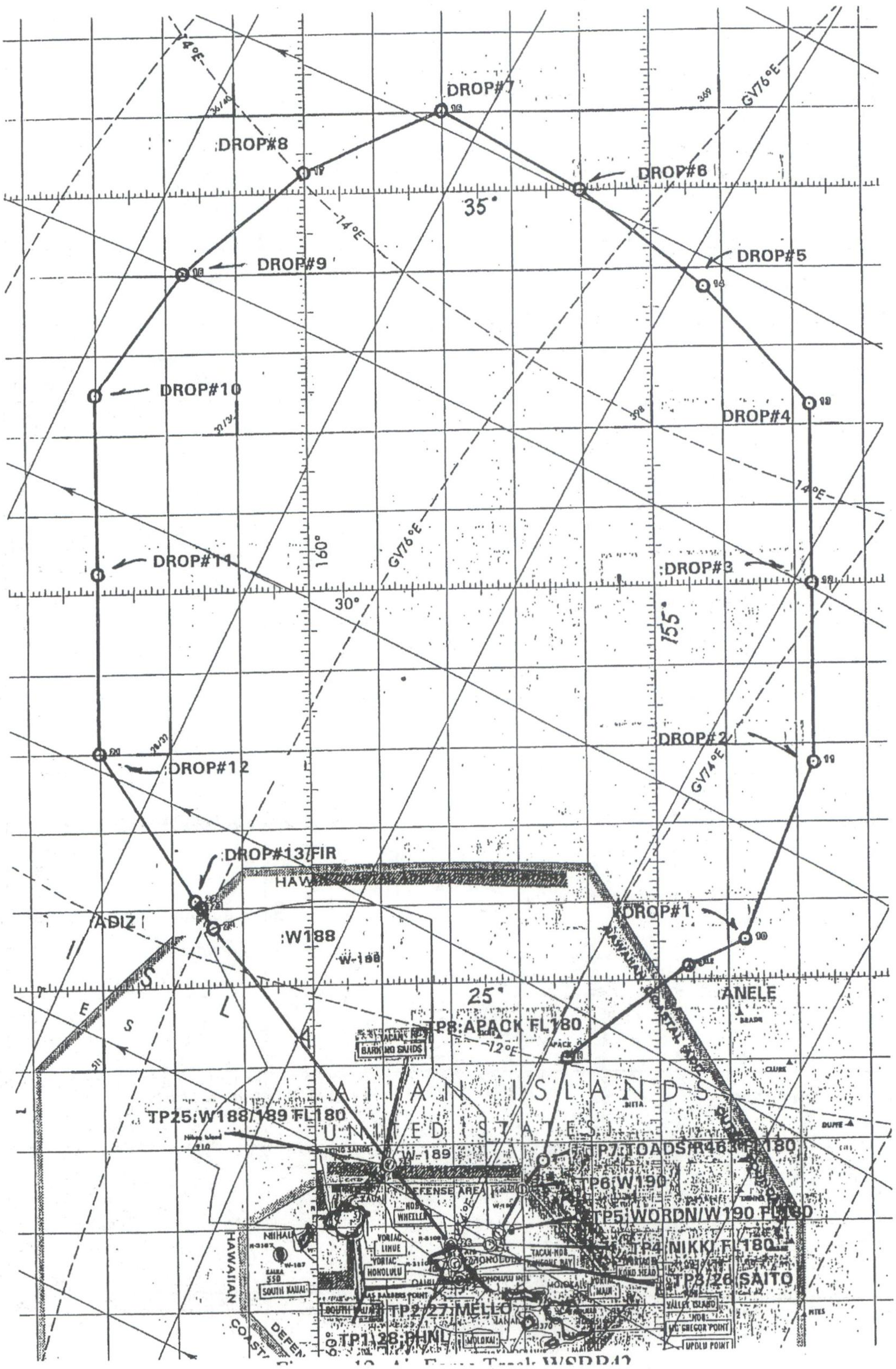

Figure H-12. Air Force Track WSRP42.

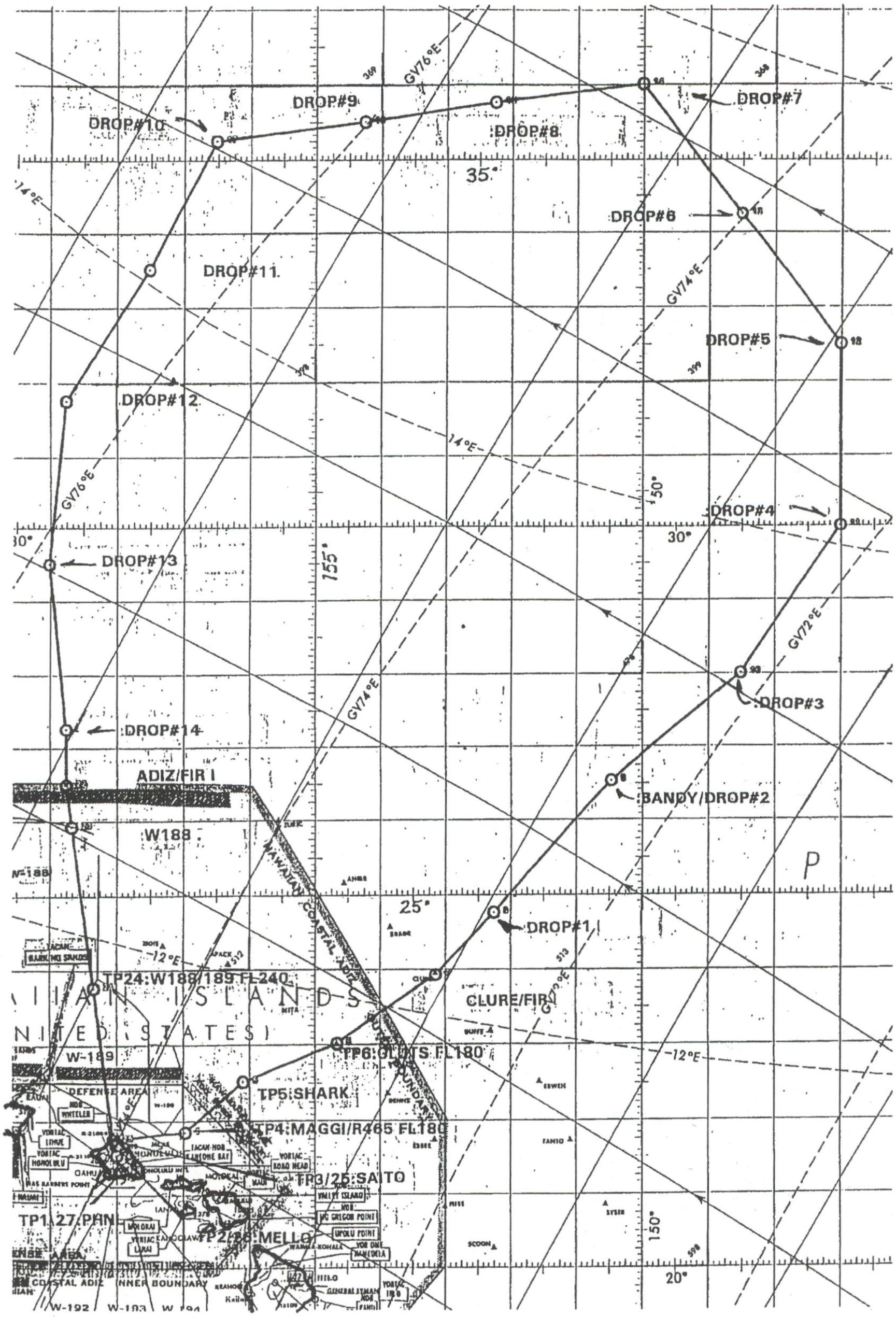

Figure H-13. Air Force Track WSRP43.

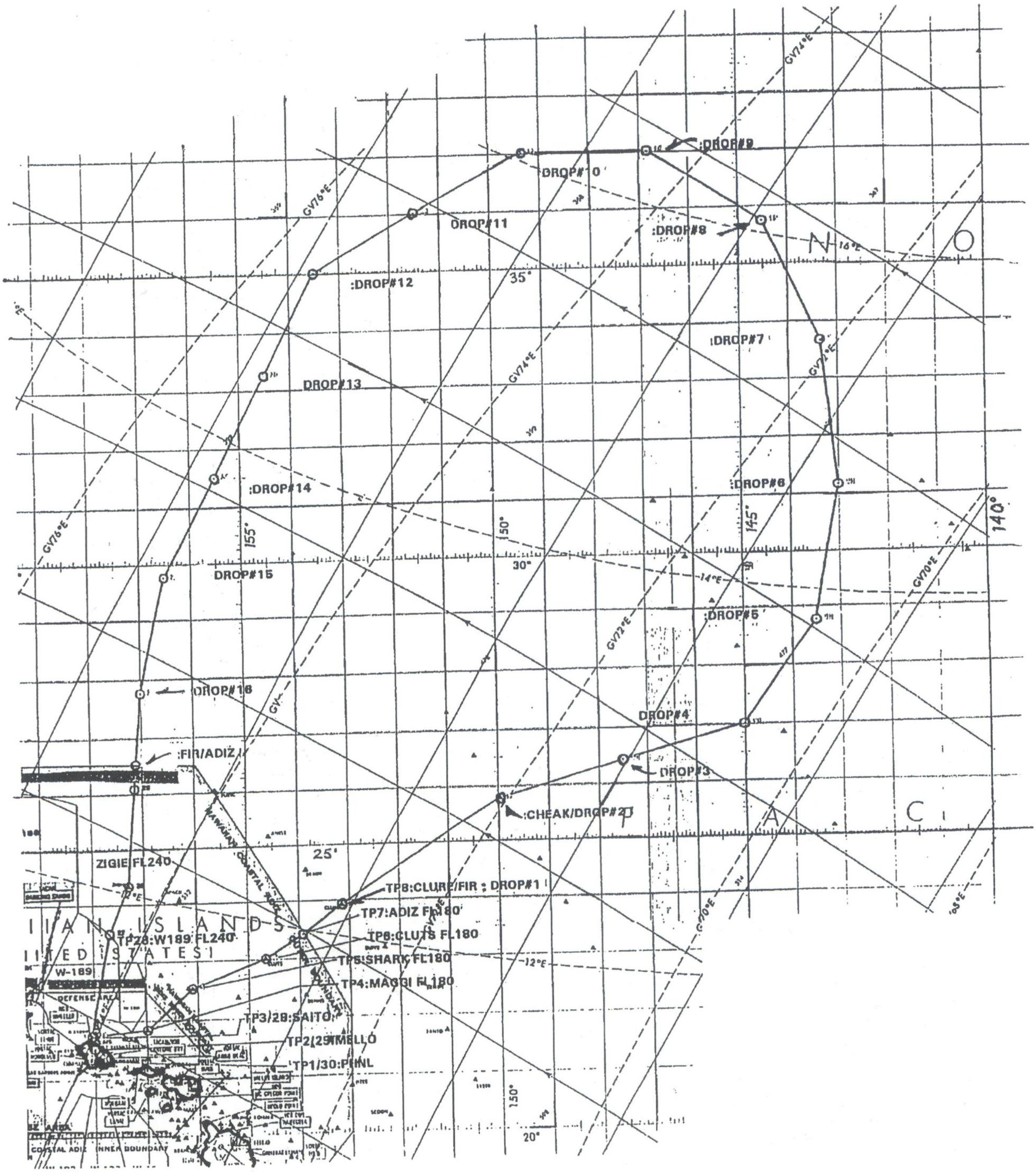

Figure H-14. Air Force Track WSRP44.

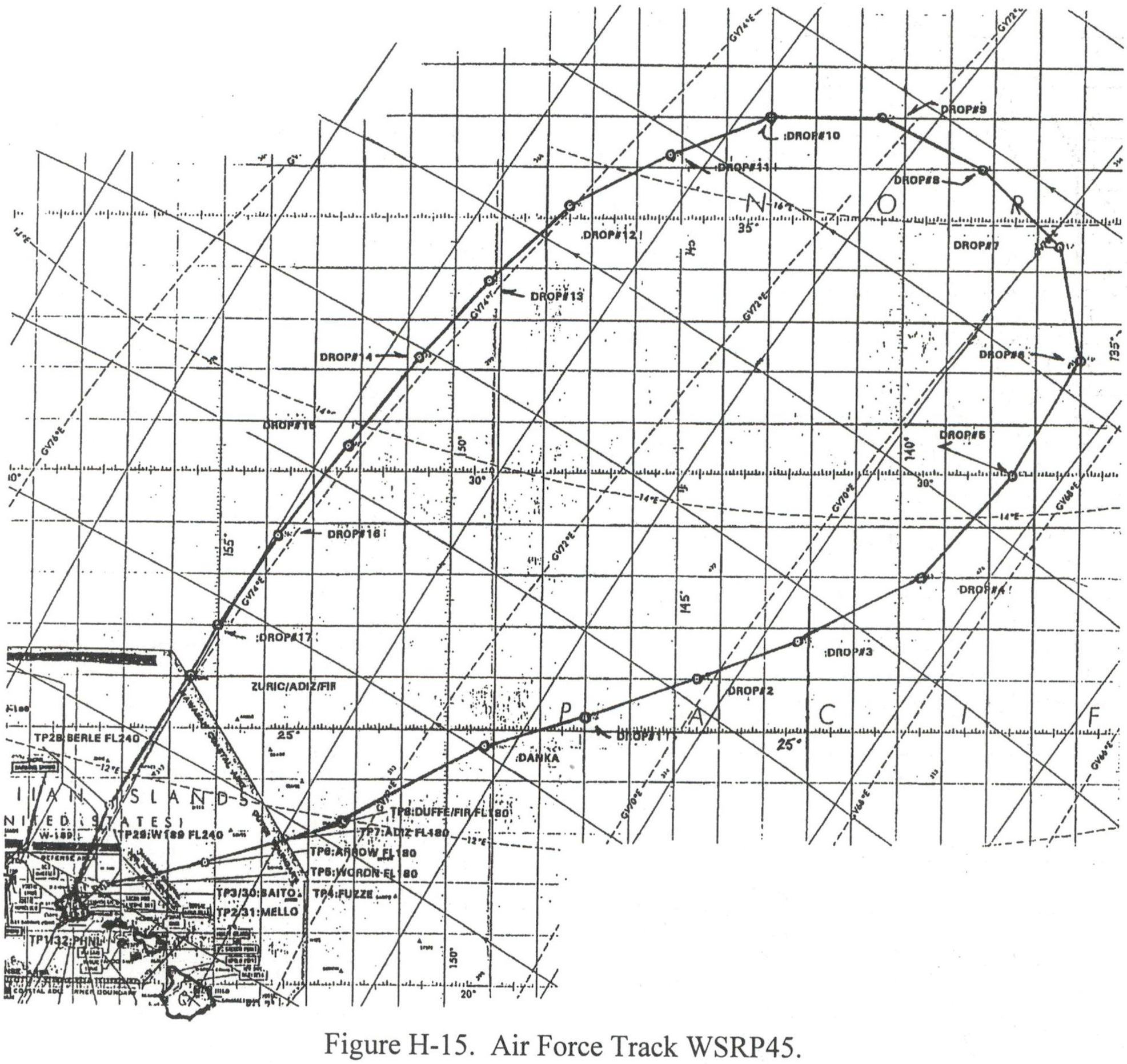

Figure H-15. Air Force Track WSRP45.

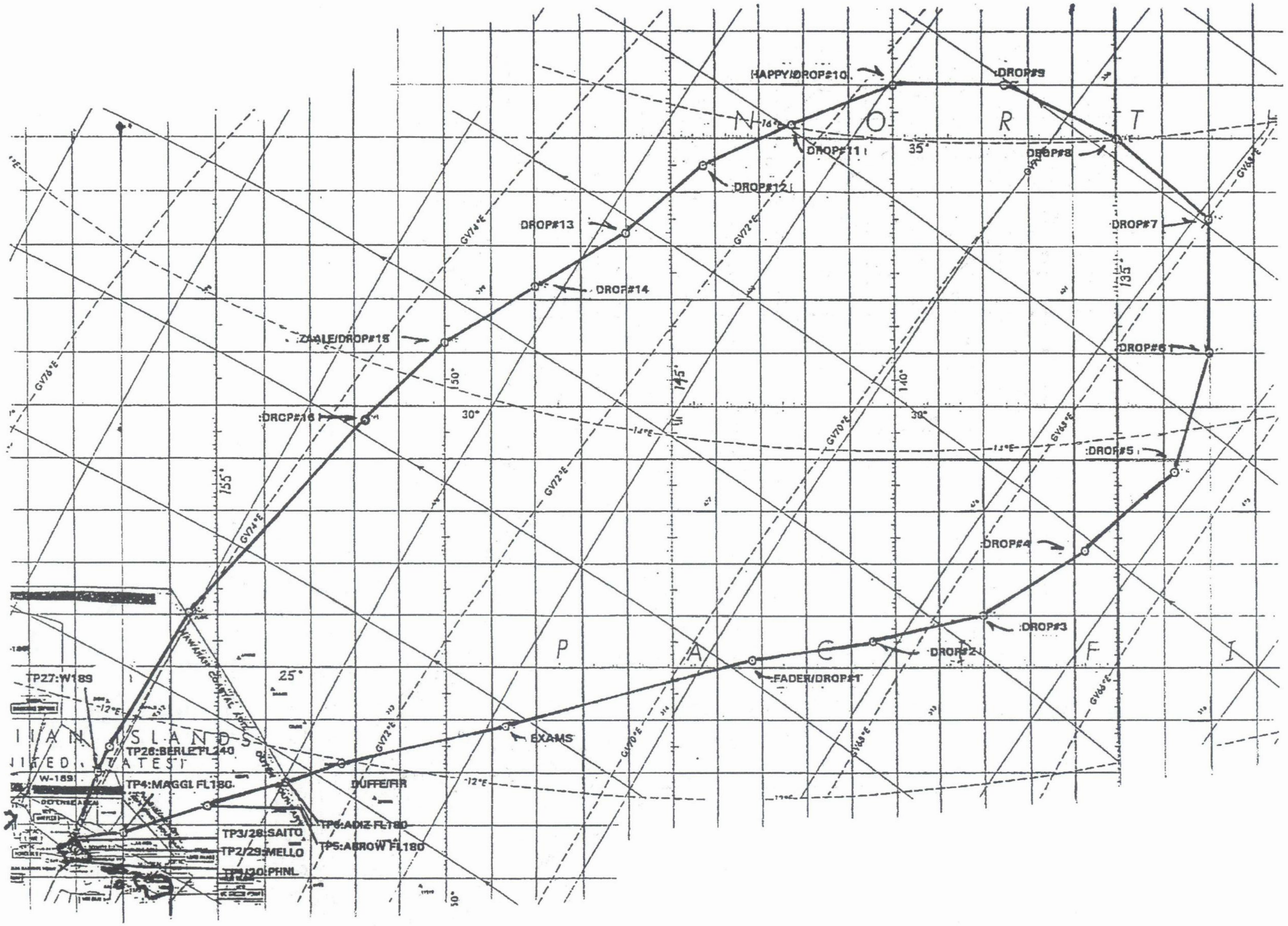

Figure H-16. Air Force Track WSRP46.

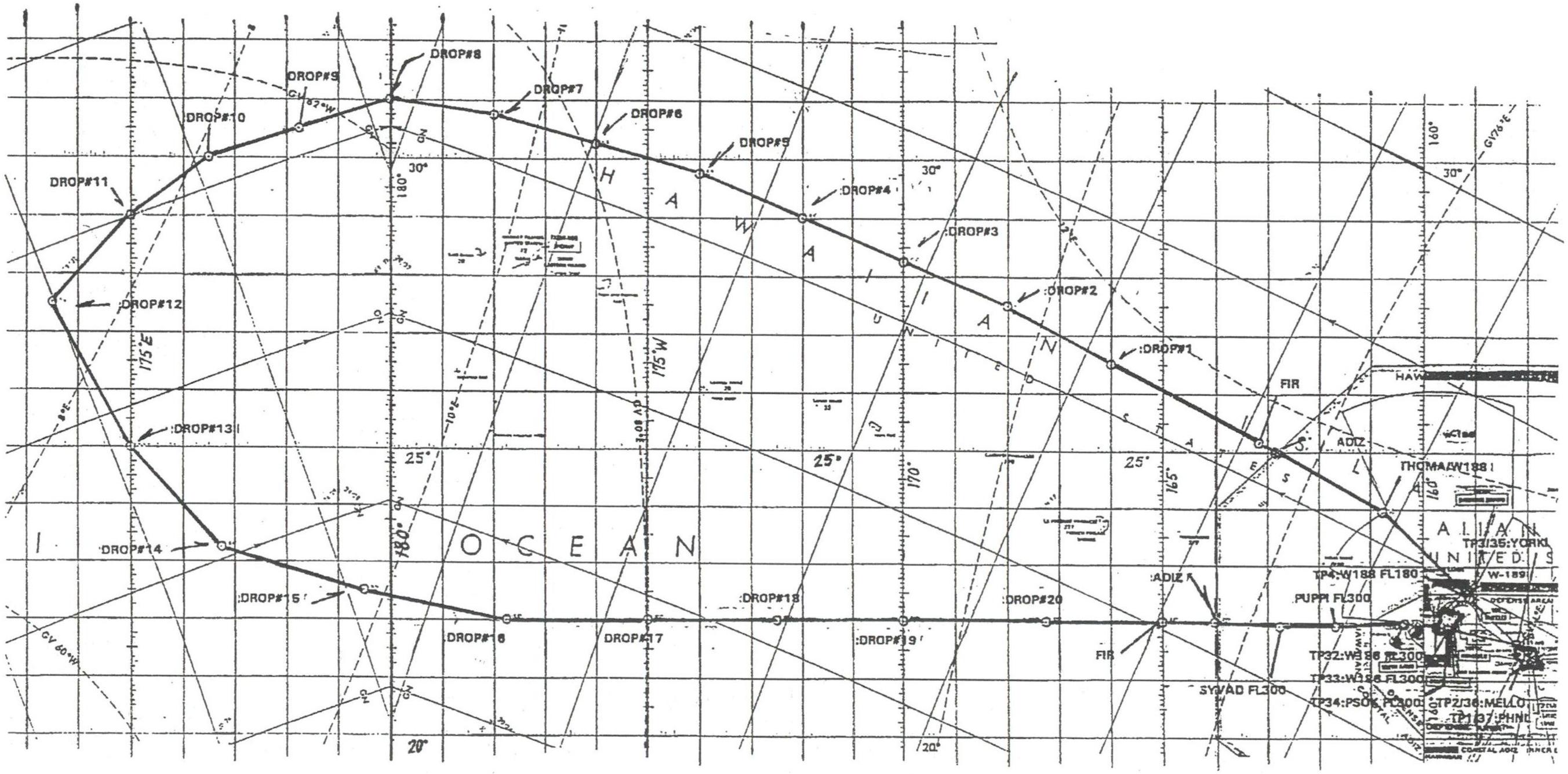

Figure H-17. Air Force Track WSRP47.

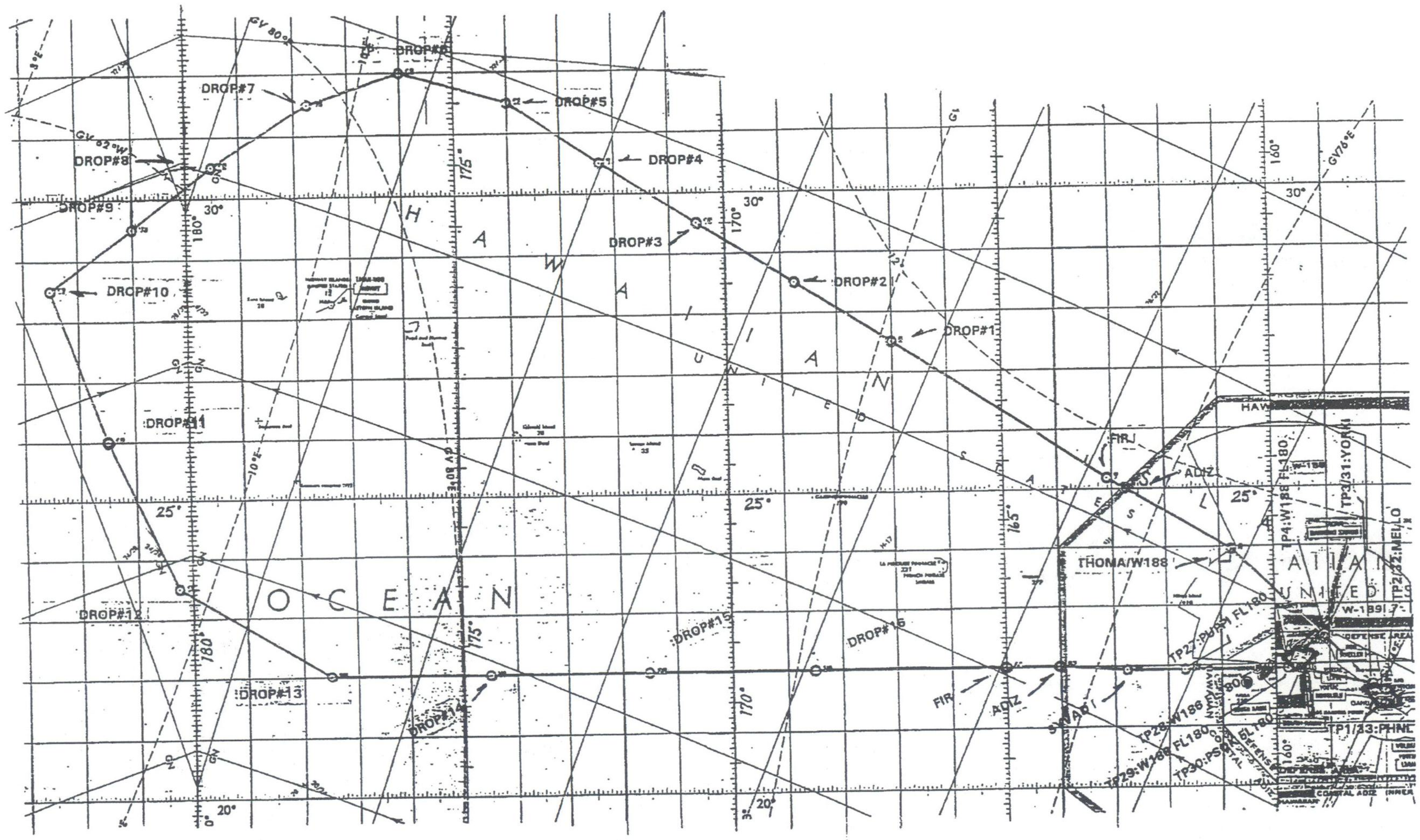

Figure H-18. Air Force Track WSRP48.

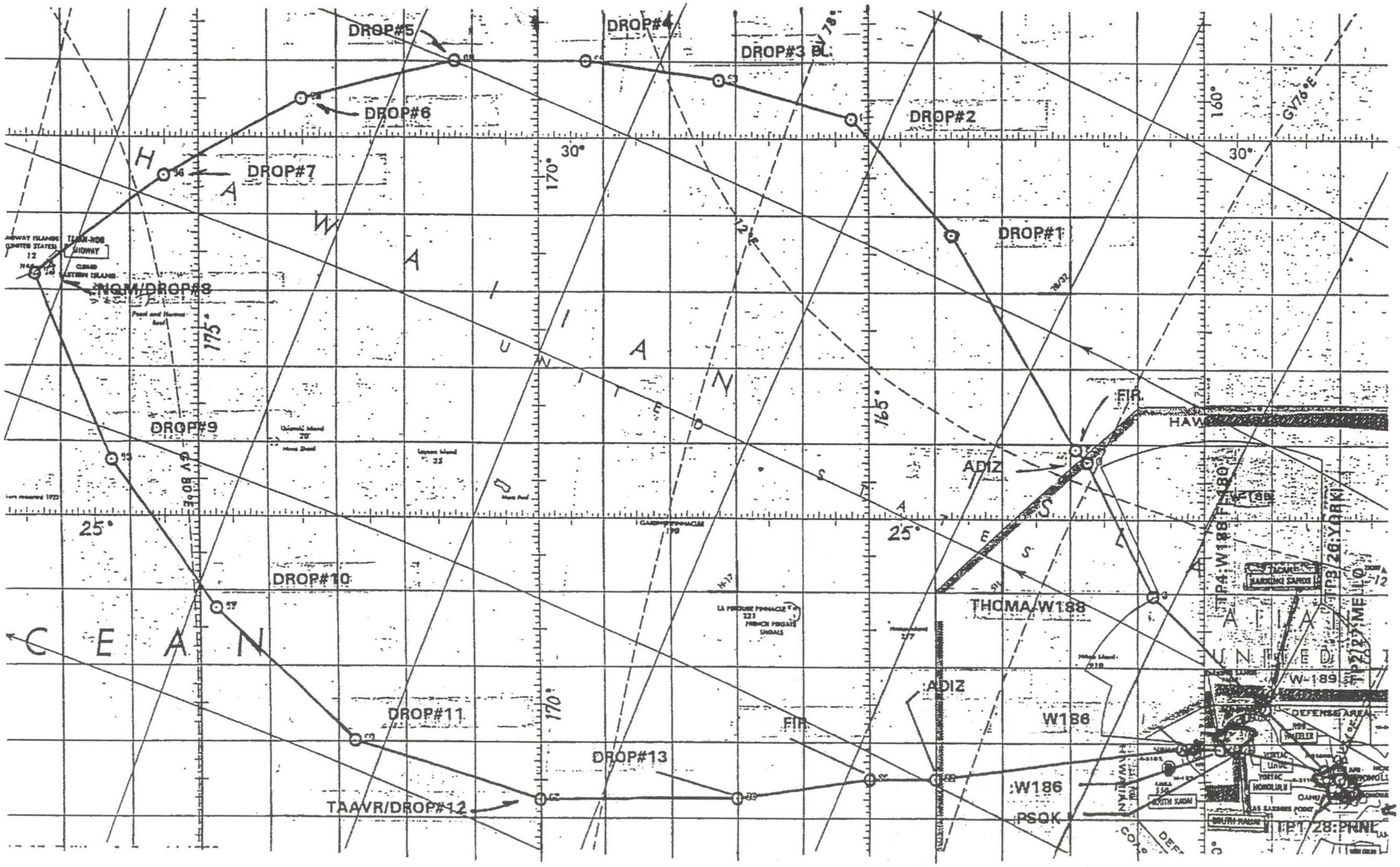

Figure H-19. Air Force Track WSRP49.

APPENDIX I

OFFICIAL INTERAGENCY AGREEMENTS

The following agreements are included:

- *Memorandum of Agreement (MOA) between the Air Force Reserve Command (AFRC) and the National Oceanic and Atmospheric Administration (NOAA), dated October 12, 2000.*

- Letter of Agreement (LOA) between the AFRC, Federal Aviation Administration, and NOAA, dated February 16, 1996.

- Letter of Agreement (LOA) between the 403rd Wing and the NOAA Aircraft Operations Center, dated August 3, 1993.

The purpose of these agreements is to establish policies, principles, and procedures under which the FAA, AFRC, and the NOAA Aircraft Operations Center will provide aircraft weather reconnaissance in support of NOAA's requirements.

MEMORANDUM OF AGREEMENT

BETWEEN

THE UNITED STATES AIR FORCE RESERVE COMMAND

AND

THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PURPOSE: The National Oceanic and Atmospheric Administration (NOAA), an agency of the Department of Commerce, does not have the capability to fully support all operational requirements in support of tropical cyclone and winter storm aerial reconnaissance. This memorandum of agreement establishes policies, principles, and procedures under which the Air Force Reserve Command (AFRC) will provide aircraft weather reconnaissance support to NOAA. NOAA and AFRC enters into this agreement pursuant to its authority under 15 U.S.C. 313.

1. REFERENCES:

   a. *National Hurricane Operations Plan* (NHOP)

   b. *National Winter Storms Operations Plan* (NWSOP)

   c. Department of Defense Appropriations Act, 2000

2. BACKGROUND: The Air Force Reserve Command (AFRC) maintains 10 WC-130s to meet the Department of Commerce (DOC) aircraft reconnaissance requirements. AFRC will conduct up to five (5) sorties per day in support of NHOP requirements and up to two (2) sorties per day in support of NWSOP requirements. The Department of Defense (DOD), through AFRC, will bear all costs directly attributed to providing aircraft weather reconnaissance support. Support will be limited to the number of AFRC congressionally funded aircraft flying hours per year.

   a. Total flying hours used to support the weather reconnaissance mission are set annually in the DOD Appropriations Act. The 53rd Weather Reconnaissance Squadron (53 WRS) manages the flying hour program.

   b. The operational area for AFRC weather reconnaissance includes the Atlantic Ocean, Gulf of Mexico, the Caribbean Sea, and the North Pacific Ocean east of the international date line, as outlined in the NHOP and the NWSOP.

   c. The 53 WRS will be capable of operating from two (2) deployed locations, as well as from home station, simultaneously, supporting a maximum of five tropical cyclone

sorties per day or two winter storm sorties per day.

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

4. GENERAL PROVISIONS:

   a. AFRC agrees:

      1) Within the limits of military capability, to meet NOAA's requirements for aerial weather reconnaissance in accordance with the NHOP and NWSOP.

      2) To provide at the Tropical Prediction Center/National Hurricane Center (TPC/NHC) the staff and equipment required to support the mission of the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH). CARCAH provides 24-hour telecon/aircraft SATCOM operational interface between NOAA/TPC/NHC and AFRC/53WRS for NHOP and NWSOP taskings. CARCAH is a subunit of and reports directly to the 53WRS.

   b. NOAA agrees to promptly notify AFRC/53WRS of the requirements for tropical cyclone or winter storm mission taskings in accordance with the NHOP and the NWSOP. Tropical cyclone missions will be tasked by the Director, TPC/NHC. Winter storm missions will be tasked by the Director, National Centers for Environmental Prediction.

   c. AFRC recognizes the obligation to support winter storm operations and associated research projects as delineated by the DOD Appropriations Act and the NWSOP. Support to research projects will be contingent upon aircraft availability.

5. MOBILIZATION: In times of national emergency or war, some or all AFRC/53WRS reconnaissance resources may not be available to fulfill DOC/NOAA needs.

6. EFFECTIVE AND TERMINATION DATES: This memorandum will become effective on the date signed by the last approving official. The parties will review this memorandum of agreement at least once every three years to determine whether it should be revised, amended, or cancelled. Amendments or revisions to this agreement require the mutual consents of the parties.

7. COORDINATION:

The agency contacts for coordination of the activities under this MOU are:

AOC: CAPT Robert W. Maxson, NOAA, Aircraft Operations Center, DOC, MacDill AFB, Florida; phone: (813) 828-3310 ext. 3001; fax: (813) 828-3266 E-mail Bob.W.Maxson@NOAA.gov

Ms. Julie Robertson, (813) 828-3310 ext. 3010; fax: (813) 828-8923 E-mail
Julie.A.Robertson@NOAA.gov

AFRC:

HQ AFRC/DOOX
DSN 497-1161; Commercial (228)327-1161

403 WG/XPL
SSgt Clarence Hester Jr., Logistics Plans Manager
Keesler AFB, MS
DSN 597-3521; Commercial (228) 377-3521
Fax DSN 597-4624; Commercial (228) 377-3521
Email: Clarence.Hester@keesler.af.mil

53 WRS
Lt Col Dennis L. Price, Director of Operation
817 H Street, Keesler AFB, MS 39534
DSN 597-8510; Commercial (228) 377-8510
Fax DSN 597-1923; Commercial (228) 337-1923
Email: Dennis.Price@keesler.af.mil

8. RESOLUTION OF DISAGREEMENTS

Nothing herein is intended to conflict with current DOC or the NOAA Aircraft Operations Center directives. If the terms of this agreement are inconsistent with existing directives of either of the agencies entering into this agreement, then those portions of this agreement which are determined to be inconsistent shall be invalid, but the remaining terms and conditions not affected by the inconsistency shall remain in full force and effect. At the first opportunity for review of the agreement, all necessary changes will be accomplished either by an amendment to this agreement or by entering into a new agreement, whichever is deemed expedient to the interest of both parties.

Should disagreement arise on the interpretation of the provisions of this agreement, or amendments and/or revisions thereto, that cannot be resolved at the operating level, the area(s) of disagreement shall be stated in writing by each party and presented to the other party for consideration. If agreement on interpretation is not reached within thirty (30) days, the parties shall forward the written presentation of the disagreement to respective higher officials for appropriate resolution.

FOR THE UNITED STATES
AIR FORCE RESERVE COMMAND

Date: 20 Oct 2000

FOR THE NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION

RW Maxson Capt NOAA

Date: 10/12/2000

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

LETTER OF AGREEMENT

EFFECTIVE:

SUBJECT: METEOROLOGICAL RECONNAISSANCE FLIGHTS

1. PURPOSE: Establishes procedures to be used by the 53rd Weather Reconnaissance Squadron (53 WRS), the NOAA Aircraft Operations Center (AOC), and the FAA during Winter storm missions in support of the NWSOP, and during hurricane/tropical cyclone missions in support of the NHOP.

2. CANCELLATION: This Letter of Agreement (LOA) remains in effect for 5 years from the date of the last signature heron, unless expressly canceled by one of the participating agencies with 30 days' notification.

3. REFERENCES:

a. National Hurricane Operations Plan (NHOP)

b. National Winter Storm Operations Plan (NWSOP)

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

5. RESPONSIBILITIES:

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

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

c. The FAA will provide ATC services and separation from nonparticipating aircraft to 53 WRS and AOC aircraft operating in other than Class G airspace. It is the responsibility of the aircraft commander to remain clear of obstacles and nonparticipating aircraft when operating in Class G airspace.

d. The 53 WRS and AOC are responsible for ensuring that air traffic clearances and messages are relayed to/from the FAA in an accurate manner when those relays are initiated by 53 WRS or AOC and are routed through other than Aeronautical Radio (ARINC). Aircraft conducting weather reconnaissance flights in support of the NHOP and the NWSOP may communicate directly with the FAA via Satellite Communications (SATCOM) when practicable.

6. PROCEDURES:

a. The 53 WRS Current Operations (53 WRS/DOO) or the AOC Flight Operations Division, as appropriate, will contact the FAA Central Altitude Reservation Function (CARF) and submit an Altitude Reservation Approval Request (ALTRV APREQ) at least 12 hours prior to an NWSOP mission, and pass the information specified in the NWSOP within the paragraph entitled "Prior Coordination." Individual exceptions may be made to the 12 hour requirement on a case-by-case basis through coordination between the 53rd WRS, AOC and CARF.

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

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

d. The 53 WRS shall only use the call sign "TEAL," and AOC shall only use the call sign "NOAA," and will only be given priority handling when specifically requested.

e. Tracks flown in support of the NWSOP shall be defined in supplements to this LOA. Changes, additions and deletions to these tracks shall be coordinated between the 53 WRS, AOC (if and when AOC is tasked to fly NWSOP missions) and CARF. These tracks shall be reviewed annually, no later than June 1.

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

g. During NHOP and NWSOP missions, commencing 5 minutes prior to release of dropsondes from FL 190 or higher, the aircraft commander will broadcast in the blind on 121.5 and 243.0 to advise any traffic in the area of the pending drop.

h. When 53 WRS and AOC flights are unable to contact ATC to request an en route clearance, a clearance request may be relayed through the Chief, Aerial Reconnaissance

Coordination, All Hurricanes (CARCAH). This relay may only be used to preclude an emergency or safety-related situation.

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

28 Sep 95

United States Air Force Reserve
Director of Operations

10/15/95

National Oceanic & Atmospheric Administration
Director, NOAA Corps Operations

2/16/96

Federal Aviation Administration
Director of Air Traffic

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

LETTER OF AGREEMENT

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

2. DEFINITIONS (for purposes of this LOA):

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

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

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

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

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

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

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

3. RESPONSIBILITIES AND PROCEDURES:

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

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

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

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

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

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

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

FOR THE 403d AIRLIFT WING

JOE L. CAMPBELL, Brig Gen, USAFR
Commander

Date 29 Jul 93

FOR THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AIRCRAFT OPERATIONS CENTER

F.D. MORAN, RADM, NOAA
Director

Date 3 Aug 93

1 Atch
Distribution List

APPENDIX J

RECCO FORM, CODE TABLES AND REGULATIONS

DATE	ORGANIZATION	MISSION IDENTIFIER

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

REMARKS

TYPE AIRCRAFT	CALL SIGN	METEOROLOGIST

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

REMARKS

RECCO RECORDING WORKSHEET

4	INDICATOR	6	INDICATOR *(Note 11)*	6	INDICATOR *(Note 11)*	7	INDICATOR	7	INDICATOR	8	INDICATOR	8	INDICATOR	9	INDICATOR	
d	DIRECTION OF SFC WIND *(Tens of deg. true)*	W_s	SIGNIFICANT WEATHER CHANGES *Table 14*	W_s	SIGNIFICANT WEATHER CHANGES *Table 14*	I_r	RATE OF ICING *Table17*	h_i	ALT OF BASE OF ICING STRATUM (Note 12) *Table 12*	d_r	BEARING OF ECHO CENTER *(Tens of Deg. True)*	E_w	ECHO WIDTH OR DIAMETER *Table 19*	V_I	INFLIGHT VISIBILITY *Table 23*	
d		S_s	DISTANCE OF OCCURENCE OF Ws *Table 15*	S_s	DISTANCE OF OCCURENCE OF Ws *Table 15*	I_t	TYPE OF ICING *Table18*	h_i		d_r		E_l	LENGTH OF MAJ AXIS *Table 19*	T_w	SEA SURFACE TEMPERATURE DEGREES AND TENTHS	REMARKS
f	SURFACE WIND SPEED *(knots)* *(Note 10)*	w_d	DISTANT WEATHER *Table 16*	w_d	DISTANT WEATHER *Table 16*	S_b	DISTANCE TO BEGINNING OF ICING *Table15*	H_i	ALTITUDE OF TOP OF ICING STRATUM *(Note 12)* *Table 12*	S_r	DISTANCE TO ECHO CENTER *Table 19*	c_e	CHARACTER OF ECHO *Table 21*	T_w		
f		d_w	BEARING OF W_d *Table 13*	d_w	BEARING OF W_d *Table 13*	S_e	DISTANCE TO ENDING OF ICING *Table15*	H_i		O_e	ORIENTATION OF ELLIPSE *Table 20*	I_e	INTENSITY OF ECHO *Table 22*	T_w		
17		18		19		20		21		22		23		24		

REMARKS

Figure J-1. Reconnaissance code recording form.

Table J-1. Reconnaissance code tables.

TABLE 1 XXX

222 Sec One Observation without radar capability
555 Sec Three (intermediate) observation with or without radar capability
777 Sec One Observation with radar capability

TABLE 2 i_d

0 No dew point capability/acft below 10,000 meters
1 No dew point capability/acft at or above 10,000 meters
2 No dew point capability/acft below 10,000 meters and flight lvl tem -50°C or colder
3 No dew point capability/acft at or above 10,000 meters and flight lvl temp -50°C or colder
4 Dew point capability/acft below 10,000 meters
5 Dew point capability/acft at or above 10,000 meters
6 Dew point capability/acft below 10,000 meters and flight lvl temp -50°C or colder
7 Dew point capability/acft at or above 10,000 meters and flight lvl temp -50°C or colder

TABLE 3 Q

0	0° -90° W	Northern
1	90° W - 180°	Northern
2	180° - 90° E	Northern
3	90° - 0° E	Northern
4	Not Used	
5	0° - 90° W	Southern
6	90° W - 180°	Southern
7	180° - 90° E	Southern
8	90° - 0° E	Southern

TABLE 4 B

0 None
1 Light turbulence
2 Moderate turbulence in clear air, infrequent
3 Moderate turbulence in clear air, frequent
4 Moderate turbulence in cloud, infrequent
5 Moderate turbulence in cloud, frequent
6 Severe Turbulence in clear air, infrequent
7 Severe Turbulence in clear air, frequent
8 Severe Turbulence in cloud, infrequent
9 Severe Turbulence in cloud, frequent

TABLE 5 f_c

0 In the clear
8 In and out of clouds
9 In clouds all the time (continuous IMC)
/ Impossible to determine due to darkness or other cause

TABLE 6 d_t

0 Spot of Wind
1 Average wind
/ No wind reported

TABLE 7 d_a

0 Winds obtained using doppler radar or inertial systems
1 Winds obtained using other navigation equipment and/or techniques
/ Navigator unable to determine or wind not compatible

TABLE 8 w

0 Clear
1 Scattered (trace to 4/8 cloud coverage)
2 Broken (5/8 to 7/8 cloud coverage)
3 Overcast/undercast
4 Fog, thick dust or haze
5 Drizzle
6 Rain (continuous or intermittent precip - from stratiform clouds)
7 Snow or rain and snow mixed
8 Shower(s) (continuous or intermittent precip - from cumuliform clouds)
9 Thunderstorm(s)
/ Unknown for any cause, including darkness

TABLE 9 j

0 Sea level pressure in whole millibars (thousands fig if any omitted)
1 Altitude 200 mb surface in geopotential decameters (thousands fig if any omitted)
2 Altitude 850 mb surface in geopotential meters (thousands fig omitted)
3 Altitude 700 mb surface in geopotential meters (thousands fig omitted)
4 Altitude 500 mb surface in geopotential decameters
5 Altitude 400 mb surface in geopotential decameters
6 Altitude 300 mb surface in geopotential decameters
7 Altitude 250 mb surface in geopotential decameters (thousands fig if any omitted)
8 D - Value in geopotential decameters; if negative 500 is added to HHH
9 Altitude 925 mb surface in geopotential meters
/ No absolute altitude available or geopotential data not within ± 30 meters/4 mb accuracy requirements

TABLE 10 N_s

0 No additional cloud layers (place holder)
1 1 okta or less, but not zero (1/8 or less sky covered)
2 2 oktas (or 2/8 of sky covered)
3 3 oktas (or 3/8 of sky covered)
4 4 oktas (or 4/8 of sky covered)
5 5 oktas (or 5/8 of sky covered)
6 6 oktas (or 6/8 of sky covered)
7 7 oktas or more but not 8 oktas
8 8 oktas or sky completely covered
9 Sky obscured (place holder)

TABLE 11 C

0 Cirrus (Ci)
1 Cirrocumulus (Cc)
2 Cirrostratus (Cs)
3 Altocumulus (Ac)
4 Altostratus (As)
5 Nimbostratus (Ns)
6 Stratocumulus (Sc)
7 Stratus (St)
8 Cumulus (Cu)
9 Cumulonimbus (Cb)
/ Cloud type unknown due to darkness or other analogous phenomena

TABLE 12 $h_s h_s H_t H_t h_i h_i H_i H_i$

00 Less than 100
01 100 ft
02 200 ft
03 300 ft
etc, etc
49 4,900 ft
50 5,000 ft
51-55 Not used
56 6,000 ft
57 7,000 ft
etc, etc
79 29,000 ft
80 30,000 ft
81 35,000 ft
82 40,000 ft
etc, etc
89 Greater than 70,000 ft
// Unknown

TABLE 13 d_w

0	No report	5	SW
1	NE	6	W
2	E	7	NW
3	SE	8	N
4	S	9	all directions

TABLE 14 W_s

0 No change
1 Marked wind shift
2 Beginning or ending or marked turbulence
3 Marked temperature change (not with altitude)
4 Precipitation begins or ends
5 Change in cloud forms
6 Fog or ice fog bank begins or ends
7 Warm front
8 Cold Front
9 Front, type not specified

TABLE 15 $S_b S_e S_s$

0 No report
1 Previous position
2 Present position
3 30 nautical miles
4 60 nautical miles
5 90 nautical miles
6 120 nautical miles
7 150 nautical miles
8 180 nautical miles
9 More than 180 nautical miles
/ Unknown (not used for S_s)

Table J-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	5 50NM
1 10NM	6 60-80NM
2 20NM	7 80-100NM
3 30NM	8 100-150NM
4 40NM	9 Greater than 150NM
	/ Unknown

TABLE 20 O_e

0 Circular
1 NNE - SSW
2 NE - SW
3 ENE - WSW
4 E - W
5 ESE - WNW
6 SE - NW
7 SSE - NNW
8 S - N
/ Unknown

TABLE 21 c_e

1 Scattered Area
2 Solid Area
3 Scattered Line
4 Solid Line
5 Scattered, all quadrants
6 Solid, all quadrants
/ Unknown

TABLE 22 i_e

2 Weak
5 Moderate
8 Strong
/ Unknown

TABLE 23 V_i

1 Inflight visibility 0 to and including 1 nautical mile
2 Inflight visibility greater than 1 and not exceeding 3 nautical miles
3 Inflight visibility greater than 3 nautical miles

RECCO SYMBOLIC FORM

SECTION ONE (MANDATORY)

9XXX9 $GGgg i_d$ $YQL_aL_aL_a$ $L_oL_oL_oBf_c$ $h_ah_ah_ad_td_a$

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 $GGgg i_d$ $YQL_aL_aL_a$ $L_oL_oL_oBf_c$ $h_ah_ah_ad_td_a$

ddfff TTT_dT_dw /jHHH

Table J-2. Reconnaissance code regulations.

1. At the time of the observation the aircraft observing platform is considered to be located on the axis of a right vertical cylinder with a radius of 30 nautical miles bounded by the earth's surface and the top atmosphere. Present weather, cloud amount and type, turbulence, and other subjective elements are reported as occurring within the cylinder. Flight level winds, temperature, dew point, and geopotential values are sensed or computed and reported as occurring at the center of the observation circle. Radar echoes, significant weather changes, distant weather, and icing are phenomena that may also be observed/reported. Code groups identifying these phenomena may be reported as necessary to adequately describe met conditions observed.

2. The intermediate observation (Section Three) is reported following Section One (or Section Two if appended to Section One) in the order that it was taken.

3. Plain language remarks may be added as appropriate. These remarks follow the last encoded portion of the horizontal or vertical observation and will clearly convey the intended message. Vertical observations will not include meteorological remarks. These remarks must begin with a letter or word-e.g. "FL TEMP" vice "700 MB FL TEMP." The last report plain language remarks are mandatory, i.e., "LAST REPORT. OBS 01 thru 08 to KNHC, OBS 09 and 10 to KBIX."

4. The hundreds digit of longitude is omitted for longitudes from 100° to 180°.

5. Describe conditions along the route of flight actually experienced at flight level by aircraft.

6. TT, T_dT_d. When encoding negative temperatures, 50 is added to the absolute value of the temperature with the hundreds figure, if any, being omitted. A temperature of -52°C is encoded as 02, the distinction between -52°C and 2°C being made from i_d. Missing or unknown temperatures are reported as //. When the dew point is colder than -49.4°C, Code T_dT_d as // and report the actual value as a plain language remark - e.g. "DEW POINT NEG 52°C".

7. When two or more types of w co-exist, the type with the higher code figure will be reported. Code Figure 1, 2 and 3 are reported based on the total cloud amount through a given altitude, above or below the aircraft, and when other figures are inappropriate. The summation principle applies only when two or more cloud types share a given altitude.

8. When j is reported as a /, HHH is encoded as ///.

9. If the number of cloud layers reported exceeds 3, k_n in the first 1-group reports the total number of cloud layers. The second 1-group reports the additional number of layers being reported exclusive of those previously reported. In those cases where a cloud layer(s) is discernible, but a descriptive cloud picture of the observation circle is not possible, use appropriate remarks such as "Clouds Blo" or "As Blo" to indicate the presence of clouds. In such cases, coded entries are not made for group 9. The sequence in which cloud amounts are encoded depends upon type of cloud, cloud base, and vertical extent of the cloud. The cloud with the largest numerical value of cloud type code (C) is reported first, regardless of coverage, base, or vertical extent. Among clouds of the same cloud type code, sharing a common base, the cloud of greatest vertical extent is reported first. The summation principle is not used; each layer is treated as though no other clouds were present. The total amount of clouds through one altitude shared by several clouds will not exceed 8 oktas. Only use code figure 0 as a place holder when you can determine that no additional cloud layers exist. In case of undercast, overcast, etc., use code figure 9 as a placeholder.

10. Due to limitations in the ability to distinguish sea state features representative of wind speeds above 130 knots, surface wind speeds in excess of 130 knots will not be encoded. Wind speeds of 100 to 130 knots inclusive will be encoded by deleting the hundreds figure and adding 50 to dd. For wind speeds above 130 knots, dd is reported without adding 50 and ff is encoded as // with a plain language remark added, i.e., "SFC WIND ABOVE 130 KNOTS."

11. Significant weather changes which have occurred since the last observation along the track are reported for W_s.

12. When aircraft encounters icing in level flight, the height at which the icing occurred will be reported for h_ih_i. The H_iH_i will be reported as //.

APPENDIX K

TEMP DROP CODE

EXTRACT FROM: WMO-No. 306 MANUAL ON CODES
FM 37-IX Ext. TEMP DROP - Upper-level pressure, temperature, humidity and wind report from a sonde released by carrier balloons or aircraft. Figure E-1 is an example TEMP DROP message.

CODE FORM:

PART A

SECTION 1 $M_iM_iM_jM_j$ $YYGGI_d$ $99L_aL_aL_a$ $Q_cL_oL_oL_oL_o$ $MMMU_{La}U_{Lo}$

SECTION 2 $99P_oP_oP_o$ $T_oT_oT_{ao}D_oD_o$ $d_od_of_of_of_o$

$P_1P_1h_1h_1h_1$ $T_1T_1T_{a1}D_1D_1$ $d_1d_1f_1f_1f_1$

$P_nP_nh_nh_nh_n$ $T_nT_nT_{an}D_nD_n$ $d_nd_nf_nf_nf_n$

SECTION 3 $88P_tP_tP_t$ $T_tT_tT_{at}D_tD_t$ $d_td_tf_tf_tf_t$
or
88999

SECTION 4 $77P_mP_mP_m$ $d_md_mf_mf_mf_m$ $(4v_bv_bv_av_a)$
or
$66P_mP_mP_m$ $d_md_mf_mf_mf_m$ $(4v_bv_bv_av_a)$
or
77999

SECTION 9 51515 (through 59595) Code groups to be developed <u>regionally</u>.

SECTION 10 61616 (through 69696) Code groups to be developed <u>nationally</u>.

PART A
SECTION 1 - IDENTIFICATION AND POSITION

M_iM_i Identification letters of the report = XX

M_jM_j Identification letters of the part of the report = AA

YY Day of the month (GMT). When wind data are included 50 is added to YY.

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

I_d Highest mandatory level for which wind is available. 7=700 mb, 5=500 mb, etc. If flight level is above a standard surface, for example 495, report a 5 for 500 mb in the I_d group.

Note the following clarification was approved at the 52d IHC: I_d will specify in hundreds of mb (Part A) or tens of mb (Part C) the highest mandatory isobaric level for which the wind is reported. For example, in Part A, $I_d = 7$ indicates 700 mb, but in Part C, $I_d = 7$ indicates 70 mb. $I_d = 0$ refers to the 1000 mb level. The surface wind group should always be present.

(1) The wind group shall be omitted at all levels above the level specified by I_d, except as noted in (3) and (4) below.

(2) The wind group shall be present at all levels at and below the level specified by I_d. At levels below that specified by I_d for which the wind is missing, encode the wind group as "/////."

(3) When the highest mandatory level for which the wind is reported is 250 mb, encode I_d as 2. If other information is available above 250 mb, encode the 200 mb wind group as "/////."

(4) When the highest mandatory level for which the wind is reported is 150 mb, encode I_d as 1. If other information is available above 150 mb, encode the 100 mb wind group as "/////."

(5) When no winds are reported for any level, encode I_d as "/," encode the surface wind group as "/////," and omit all wind groups above the surface.

99 Indicator for data on position follow.

$L_aL_aL_a$ Latitude, in tenths of a degree.

Q_c Quadrant of the globe. The earth is divided by the Greenwich meridian and the equator into quadrants. The code figure reported depends on the latitude and longitude of the observation position.

$L_oL_oL_oL_o$ Longitude, in tenths of a degree.

MMM Marsden square. The number of the marsden square for aircraft position at the time of the observation is reported for MMM. Always report three digits for MMM, with zeros reported for the hundreds and tens digits when required. When an observation is within a depicted 10 degree square, report the number of that square. When on an even 10 degree latitude or longitude circle, the marsden square for MMM is obtained by moving in the direction of larger latitude and/or longitude. EXAMPLE: Assuming a position of 18.1N, 131.4W, MMM is 050; assuming a position of 30.0N, 140.0E, MMM is 130. At the equator or on the prime meridian, report the marsden square compatible with the Q_c reported.

U_{La} Units digit in the reported latitude.

U_{Lo} Units digit in the reported longitude.

SECTION 2 - SURFACE AND STANDARD ISOBARIC SURFACES

99 Indicator for data for the surface level follow.

$P_oP_oP_o$ Pressure of specified levels in whole millibars, thousands digits omitted. ($P_oP_oP_o$ is always surface level.)

P_1P_1 Pressure of standard isobaric surfaces in units of tens of millibars. (1000mbs=00,

P_nP_n 925mbs=92, 850mbs=85, 700mbs=70, etc.)

$h_1h_1h_1$ Height of the standard pressure level in geopotential meters or decameters above the surface. Encoded in meters up to but not including 500mbs. Encoded in decameters at and

$h_nh_nh_n$ above 500mbs omitting, if necessary, the thousands or tens of thousands digits. Add 500to hhh for negative 1000mb heights. Report 1000mb groups as 00/// ///// when surface pressure is less than 950mbs.

T_oT_o Tens and units digit of air temperature (not rounded off) in degrees Celsius, at specified

T_1T_1 levels beginning with surface.

T_nT_n

T_{ao} T_{al} T_{an}	Approximate tenths value and sign (plus or minus) of the air temperature. Even = plus; Odd = minus.
D_oD_o D_lD_l D_nD_n	Dewpoint depression (with respect to water) at standard isobaric surfaces beginning with surface level. When the depression is 4.9C or less encode the units and tenths digits of the depression. Encode depressions of 5.0C through 5.4C as 50. Encode depressions of 5.5C through 5.9C as 56. Dewpoint depressions of 6.0C and above are encoded in tens and units with 50 added. Dewpoint depressions for relative humidities less than 20% are encoded as 80. When air temperature is below -40C report D_nD_n as two solidi.
d_od_o d_ld_l d_nd_n	True direction from which wind is blowing rounded to nearest 5 degrees. Report hundreds and tens digits. The unit digit (0 or 5) is added to the hundreds digit of wind speed.
$f_of_of_o$ $f_lf_lf_l$ $f_nf_nf_n$	Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction, i.e. 295° at 125 kts encoded as 29625. (Notes 1&2)

NOTE: 1. When flight level is just above a standard surface and in the operator's best meteorological judgement, the winds are representative of the winds at the standard surface, then the operator may encode the standard surface winds using the data from flight level. If the winds are not representative, then encode /////.

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

SECTION 3 - DATA FOR TROPOPAUSE LEVELS

88	Indicator for data for tropopause level(s) follow.
$P_tP_tP_t$	Pressure at the tropopause level reported in whole millibars.
T_tT_t	Air temperature in whole degrees Celsius, at the tropopause level.
T_{at}	Approximate tenths value and sign (plus or minus) of the air temperature at the tropopause level.
D_tD_t	Dew point depression at the tropopause level.
d_td_t	True direction at the tropopause level rounded to nearest 5 degrees. Report hundreds and tens digits. The unit digit (0 or 5) is added to the hundreds digit of wind speed.
$f_tf_tf_t$	Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction, i.e. 295° at 125 kts encoded as 29625.
88999	Indicator that tropopause data have not been observed.

SECTION 4 - MAXIMUM WIND DATA

66	Indicator that data for maximum wind level and for vertical wind shear follow when max wind occurs at flight level.
77	Indicator that data for maximum wind level and for vertical wind shear follow when max wind level does not coincide with flight level.

$P_mP_mP_m$ Pressure at maximum wind level in whole millibars.

d_md_m True direction from which wind is blowing at the maximum wind level rounded to nearest 5 degrees. Report hundreds and tens digits. The unit digit (0 or 5) is added to the hundreds digit of wind speed.

$f_mf_mf_m$ Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction, i.e. 295° at 125 kts encoded as 29625.

4 Data for vertical wind sheer follow.

v_bv_b Absolute value of vector difference between max wind and the wind 3000 feet BELOW the level of maximum wind, reported to the nearest knot. Use "//" if missing and 4 group is reported. A vector difference of 99 knots or more is reported with the code figure "99".

v_av_a Absolute value of vector difference between max wind and the wind 3000 feet ABOVE the level of maximum wind, reported to the nearest knot. Use"//" if missing and 4 group is reported. A vector difference of 99 knots or more is reported with the code figure "99".

77999 Indicator that maximum wind data have not been observed.

SECTION 10 - NATIONAL PRACTICES

61616 Mission identifier followed by the observation number (e.g., AF968 WSWSC TRACK 51 OB 23)

- Agency/Aircraft Identifier (first group): For the U.S. Air Force, use AF plus the last three digits of the aircraft's tail number; for NOAA, use NOAA plus the last digit of the aircraft registration number.

- Mission Indicator (type of mission being flown) (second group): For a training mission, the mission indicator is WXWXX; for an operational mission, the indicator is WSWSX. The fifth letter "X" is used to distinguish where the mission is being flown. The "A" indicates that the flight is in the Atlantic basin. The letter "C" indicates the Central Pacific area, and the letter "E" indicates the Eastern Pacific.

- Third group will be TRAIN (for a training mission) or the flight track tasked (TRACK XX).

- The fourth group is the observation number (both vertical and horizontal) as transmitted from the aircraft (OB XX).

62626 National practice group indicator preceding a free form character string containing specific sonde or mission-related remarks. Remarks include:

- SPL XXXXNXXXXXW - Impact location of the sonde based on its last GPS position.
- MBL WND dddff - The mean wind in the lowest 500 meters of the sounding.
- LAST WND XXX - Height of the last reported wind. If a surface wind is reported, the Last Wind remark is omitted. XXX will never be less than 13 meters.
- AEV XXXXX - This is the software version being used for the sounding.
- DLM WND ddfff bbbttt - the average wind over the depth of the sounding. Where ddfff is the wind averaged from the first to the last available wind (these would correspond to the first and last significant levels for wind); ttt is the pressure at the top of the layer, and bbb is the pressure at the bottom of the layer (in whole mbs, with thousands digit omitted).
- WL150 ddfff zzz - Average wind over the lowest available 150 m of the wind sounding. Where ddfff is the mean wind over the 150 m layer centered at zzz m.

CODE FORM:

PART B

SECTION 1 $M_iM_iM_jM_j$ YYGG/ $99L_aL_aL_a$ $Q_cL_oL_oL_o$ $MMMU_{La}U_{Lo}$

SECTION 5 $n_on_oP_oP_oP_o$ $T_oT_oT_{ao}D_oD_o$

$n_1n_1P_1P_1P_1$ $T_1T_1T_{a1}D_1D_1$

$n_nn_nP_nP_nP_n$ $T_nT_nT_{an}D_nD_n$

SECTION 6 21212 $n_on_oP_oP_oP_o$ $d_od_of_of_of_o$

$n_1n_1P_1P_1P_1$ $d_1d_1f_1f_1f_1$

$n_nn_nP_nP_nP_n$ $d_nd_nf_nf_nf_n$

SECTION 7 31313 $s_nr_ar_as_as_a$ 8GGgg

SECTION 9 51515 $101A_{df}$ A_{df} or

$101A_{df}$ A_{df} $0P_nP_nP'_nP'_n$. or

$101A_{df}$ A_{df} $P_nP_nh_nh_nh_n$

SECTION 10 61616 Repeat national practice encoded in Part A.
62626 Repeat national practice encoded in Part A.

PART B

SECTION - 1 IDENTIFICATION AND POSITION

M_jM_j Identification letters of the part of the report = BB.

/ Filler figure for last digit of YYGG group. No wind groups reported for any of the significant isobaric surfaces.

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

SECTION 5 - DATA FOR SIGNIFICANT TEMPERATURE AND RELATIVE HUMIDITY LEVELS

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

$P_oP_oP_o$ Pressure at specified levels in whole millibars, beginning with surface.
$P_1P_1P_1$
$P_nP_nP_n$

Temperature and humidity data groups are reported in the same manner as the temperature and humidity data in Part A - Section 2.

SECTION 6 - DATA FOR SIGNIFICANT WIND LEVELS

21212 Data for significant levels with respect to wind follow. Wind data groups are reported in the same manner as the wind data in Part A - Section 2.

SECTION 7 - SOUNDING SYSTEM INDICATION

31313 Data on sounding system.

s_r Identifies solar and infrared radiation correction. Always report as zero--no correction.
$r_a r_a$ Identifies dropsonde/sounding system used. Always report as "96"--descending radiosonde.
$s_a s_a$ Identifies tracking technique/status of system used. Reported as "00" or "08."
"0" - Aircraft system has no windfinding capability.
"8" - Automatic satellite navigation.

8 Indicator for time of observation.
GGgg Actual time of dropsonde launch in hours (GG) and minutes (gg) UTC.

SECTION 9 - ADDITIONAL DATA GROUPS

$101A_{df}\ A_{df}$ Specifications of regional additional data being reported.

0 Group indicator.
P_nP_n Pressure of specified levels in tens of millibars. (1007 mb=01, 945 mb=95, 726 mb=73).
$P'_nP'_n$

$P_nP_nh_nh_nh_n$ Data reported in the same manner as in Part A - Section 2.

51515 Additional data in regional code follow.

10166 Geopotential data are doubtful between the following levels, $0P_nP_nP'_nP'_n$. This code figure is used only when geopotential data are doubtful from a level to termination of the descent. NOTE: When radar altimeter is inoperative and surface reference is used, or if the ARWO advises that geopotential platform data is doubtful, a 10166 is reported for the entire run.

10167 Temperature data are doubtful between the following levels: $0P_nP_nP'_nP'_n$. This code figure shall be reported when only temperature data are doubtful for a portion of the descent. If a 10167 group is reported a 10166 will also be reported. EXAMPLE: Temperature is doubtful from 540mbs to 510mbs. SLP is 1020mbs. The additional data groups would be: 51515 10166 00251 10167 05451.

10190 Extrapolated altitude data follows:

1. When the sounding begins within 25mbs below a standard surface, the height of the surface is reported in the format 10190 $P_nP_nh_nh_nh_n$. The temperature group is not reported. EXAMPLE: Assume the release was made from 310mbs, and the 300mb height was 966 decameters. The last reported standard level in Part A is the 400mb level. The data for the 300mb level is reported in Part B as 10190 30966.

2. When the sounding does not reach surface but terminates within 25mbs of a standard surface, the height of the standard surface is reported in Part A of the code in standard format and in Part B of the code in the format 10190 $P_nP_nh_nh_nh_n$. EXAMPLE: Assume termination occurred at 980mbs, and the extrapolated height of the 1000mb level was 115 meters. The 1000mb level would be reported in Part A of the code as 00115 ///// and in Part B as 10190 00115.

10191 Extrapolated surface pressure precedes. Extrapolated surface pressure is only reported when the termination occurs between 850mbs and surface. Surface pressure is reported in Part A as $99P_oP_oP_o$ ///// and in Part B as $00P_oP_oP_o$ /////. When surface pressure is extrapolated, the 10191 group is the last additional data group reported in Part B.

61616 Same as Part A.

62626 Same as Part A.

FIGURE K-1. Example TEMP DROP Message.

UZPN13 KNHC 010211
XXAA 51023 99450 71352 15855 99994 08635 24030 00548 ///// /////
92592 03817 23552 85273 00916 24555 70803 06366 25055 50539 16957
24631 40702 29757 24634 30900 465// 25148 88999 66298 25149 419//
61616 AF968 WSWSC TRACK 51 OB 23
62626 SPL 4510N13483W MBL WND 23542 AEV 20108 DLM WND 23035 994314
WL150 2335 075=
XXBB 51028 99450 71352 15855 00994 08635 11850 00916 22742 07124
33729 05162 44664 07396 55640 06599 66562 12598 77557 12777 88551
12961 99538 13561 11481 18957 22449 23346 33406 28757 44356 36756
55298 46732
21212 00994 24030 11983 23037 22967 24040 33957 23548 44946 24046
55892 24558 66850 24555 77742 24045 88656 24079 99575 24588 11497
24632 22314 25136 33298 25149
31313 09608 80158
61616 AF968 WSWSC TRACK 51 OB 23
51515 10166 09430
62626 SPL 4510N13483W MBL WND 23542 AEV 20108 DLM WND 23035 994314
WL150 23535 075=

APPENDIX L

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Director, NWS Central Region (W/CR)	2
Director, NWS Southern Region (W/SR)	5
Director, NWS Western Region (W/WR)	2
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HQ AFMC/DOW	1
HQ AFRC/DOO	2
HQ AFRC/DOT/DOTA	3
HQ AFSPACECOM/DOW	1
HQ AMC/DOW	2
HQ AETC/DOSW	1
HQ AFWA/XO	6
HQ 22AF/DOT	2
HQ 22 AF/XP	1
HQ 22 AF/XPL	1
Det 7, AFWA	1
AFW Technical Library	1
403 WG/DO/XP	2
53 WRS	75
CARCAH (OL-A 53 WRS)	8
15 OSS/OSW	1
25 ASOS/DOW	1
45 WS/CC	1
45 WS/SPW/XP/SE	3
334 TTS/TTMV	1
374 OSS/WE	1
3246 TW/DOW	2
Det 4, 20 WS	1
Phillips Lab/GPAS	1

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NRL Monterey	1
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Air Traffic System Requirements Service/Weather ARW-1	1
Air Traffic Operations ATO-1	3
Air Traffic Operations ATO-110	1
Air Traffic Operations ATO-120	3
Air Traffic Resource Management Program ATX-100/ATX-400	2
Air Traffic Control System Command Center (ATCSCC) ATO-200	9
FAA Regional Air Traffic Division Managers	
AAL-500 Anchorage	1
ACE-500 Kansas City	1
AEA-500 New York	1
AGL-500 Chicago	1
ANE-500 Boston	1
ANM-500 Seattle	1
ASO-500 Atlanta	1
ASW-500 Dallas/Fort Worth	1
AWP-500 Los Angeles	1
Albuquerque ARTCC	2
Atlanta ARTCC	3
Boston ARTCC	3
Honolulu ARTCC	3
Houston ARTCC	3
Jacksonville ARTCC	3
Los Angeles ARTCC	2
Memphis ARTCC	1
Miami ARTCC	3
New York ARTCC	3
Oakland ARTCC	2
San Juan ARTCC	3
Seattle ARTCC	2
Washington ARTCC	2

AMA-500, Oklahoma City, OK	1
AIA-100/AIA-200	3
AOP-4	1
APA-300	3
ARW-100/ARW-200	2
Houston AIFSS	3
Miami (QAS) AIFSS	2
New York AIFSS	1
San Juan AIFSS	2

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Commander, Maintenance and Logistics Command Pacific	1
Commander, First Coast Guard District	1
Commander, Fifth Coast Guard District	2
Commander, (RE) Seventh Coast Guard District	3
Commander, Eighth Coast Guard District	3
Commander, Eleventh Coast Guard District	1
Commander, Fourteenth Coast Guard District	2
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Commanding Officer, USCG Air Station, Atlantic City, NJ	1
Commanding Officer, USCG Air Station, Kapolei, HI	1
Commanding Officer, USCG Air Station, Cape Cod, MA	1
Commanding Officer, USCG Air Station, Clearwater, FL	1
Commanding Officer, USCG Air Station, Corpus Christi, TX	1
Commanding Officer, USCG Air Station, Elizabeth City, NC	1
Commanding Officer, USCG Air Station, Kodiak, AK	1
Commanding Officer, USCG Air Station, McClellan AFB, CA	1
Commanding Officer, USCG Air Station, New Orleans, LA	1
Commanding Officer, USCG Air Station, North Bend, OR	1
Commanding Officer, USCG Air Station, Opa Locka, FL	1
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