

**BY ORDER OF THE COMMANDER  
36TH WING**

**36 WING INSTRUCTION 15-101**

**28 MAY 2010**



**Weather**

**WEATHER SUPPORT**

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This instruction implements Air Force Policy Directive (AFPD) 15-1, *Atmospheric and Space Environmental Support*, *Air Force Strategic Plan on Weather Reengineering* (8 Aug 97); Air Force Instruction (AFI) 10-229, *Responding to Severe Weather Events*; AFI 15-114, *Functional Resource and Weather Technical Performance Evaluation*; AFI 15-128, *Aerospace Weather Operations – Roles and Responsibilities*; Air Force Manual (AFMAN) 15-111, *Surface Weather Observations*; AFMAN 15-124, *Meteorological Codes*; AFMAN 15-129, and *Air and Space Weather Operations – Processes and Procedures*. It establishes responsibilities and weather support procedures. It provides general information for weather services, including weather observations and forecasts; weather warnings, watches, and advisories; space weather supported services, dissemination of information and reciprocal support. It applies to units assigned to 36th Wing and subordinate units, and units assigned or attached to, or supported by Andersen Air Force Base.

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## Chapter 1

### GENERAL INFORMATION

**1.1. General.** This plan establishes requirements and procedures for weather support, which must be coordinated at the local level to meet mission needs. It consolidates weather support requirements and procedures for peacetime operations and eliminates the need for written agreements between the weather unit and supported operations. It does not cover weather support procedures for emergency war operations or certain other special operations and procedures as these are covered in applicable OPLANS. The 36th Operations Support Squadron Weather Flight (36 OSS/OSW) referred to as Weather Flight (WF), and the 17th Operational Weather Squadron (17 OWS) at Hickam AFB, Hawaii are the official weather information agencies providing weather services to the 36th Wing (36 WG) and other units assigned to Andersen AFB.

1.1.1. Andersen AFB WF Mission. The Andersen AFB WF conducts timely, accurate, and relevant local airfield observing and reporting. Produces tailored Mission Execution Forecasts (MEFs), performs MISSIONWATCH, METWATCH, and acts as "eyes forward" for the 17 OWS. The WF is organized, trained, and equipped to conduct weather operations, provide weather support to deployed/contingency, and exercise combat operators, 36<sup>th</sup> Wing leadership, and associated agencies on Andersen AFB.

**Note:** "Eyes Forward" Role. WF will relay significant, time-sensitive meteorological information to the technicians conducting forecasting and METWATCH operations at the 17 OWS. The WF integrates weather radar data, meteorological satellite imagery, lightning detection readouts, and non-standard weather data systems to create an integrated weather picture and near-term trend forecast for the 17 OWS. Eyes forward yields meaningful meteorological information not contained in coded observations to the 17 OWS and is an integral part of the Andersen AFB METWATCH.

1.1.2. General Responsibilities: The WF is responsible for providing environmental support to 36 WG, and other tenant and deployed units at Andersen AFB (AAFB), Guam. The WF also provides specialized radar support to the USPACOM Typhoon Warning System in accordance with PACAFI 15-102 and National Weather Service-36 OSS/OSW MOA. Other DoD agencies on Guam may receive environmental support upon request.

1.1.3. The WF Flight Commander also functions as the Staff Weather Officer (SWO) for the Commander, 36th Wing (36 WG/CC).

**1.2. Geographic Area of Responsibility.** The area of responsibility for products and services provided by the WF is the terminal area, which is the area located within a 5 nautical mile radius around the center of the AAFB airfield complex. WF also conducts MISSIONWATCH for all areas and routes in which AAFB flying units are conducting operations. The 17 OWS Area of Responsibility (AOR), along with all the other OWS AOR's are depicted in [Attachment 12](#).

**1.3. Location and Hours of Operation.** The WF is located in Building 17002, Andersen AFB, Guam. The WF provides or arranges for weather support 24 hours a day, 7 days a week. Staff services are available from 0730L to 1630L, Monday through Friday (except federal holidays).

**1.4. Contact Information.** Telephone numbers: Flight Commander (DSN 366-3176) and NCOIC (DSN 366-1407). Operational weather personnel are on duty 24 hours a day, 7 days a week (DSN 366-5230).

**1.5. Concept of Operations.** The AAFB WF and the 17 OWS work as a “team” to provide weather services and resource protection for AAFB. Guidelines for this team support are outlined in the 17 OWS-36 OSS Memorandum of Agreement (MOA).

1.5.1. The 17 OWS will disseminate all AAFB forecast weather watches, warnings and advisories to the 36 WG/CP and the WF. These products, along with AAFB observed weather warnings and advisories, will be available to local customers via the 17 OWS web site: <https://17ows.hickam.af.mil/>.

1.5.2. The WF, in conjunction with the 17 OWS, provides weather information to all supported agencies for operational and decision-making purposes, as well as protection of base resources. The WF tailors weather information to the specific mission requirements of supported agencies and provides weather services for military and military-related uses as listed below:

1.5.3. Routine Weather Products and Support:

1.5.3.1. Forecasts and observations for AAFB, which are transmitted for local and worldwide use. (International Civil Aviation Organization (ICAO) location indicator for AAFB is *PGUA*)

1.5.3.1.1. Observations and forecasts are issued in the format described in [Attachment 7](#).

1.5.3.1.2. Andersen AFB reports winds and visibility in the following units:

1.5.3.1.2.1. Winds are reported and encoded in knots. Wind Direction and speed are based on 2-minute averages.

1.5.3.1.2.2. Visibility is reported and encoded in statute miles

1.5.3.2. Mission Execution Forecasts (MEF) and aircrew weather briefing support to U.S. assets and its Allies.

1.5.3.3. Forecast Weather Watches

1.5.3.4. Forecast/Observed Weather Warnings

1.5.3.5. Forecast/Observed Weather Advisories

1.5.3.6. Staff Weather Support: The WF Commander, and/or NCOIC will perform both staff weather functions and operational weather functions. In addition to leadership and management of 36 OSS/OSW activities, these members will function as a direct interface with the 36 WG and associate units to provide direct support to command, control, and planning functions. Weather forecasters will be utilized to provide staff weather briefings when possible. Briefing types include but are not limited to: 36 WG and 36 OG standup briefings, 36 WG daily status of aircraft briefings, pre-deployment briefings, deployment planning briefings, Installation Control Center briefings, and Mobility Concept briefings.

1.5.3.7. Contingency, Exercise and Wartime Support. The WF will provide contingency, exercise and wartime weather briefings, products, and information on an as-required

basis. Since the WF is organized to function in peacetime as it does in wartime, the weather products and information provided on a routine basis will closely mirror the weather products and information required during pre-deployments, deployments, or contingencies. The WF will coordinate any additional weather support requirements to ensure mission tailored products are available to meet contingency, exercise or wartime needs.

#### 1.5.4. Non-routine support/services:

1.5.4.1. Consultant Services: The WF Commander will advise on weather problems or requirements, prepare necessary weather annexes/appendices to planning and operations documents, and prepare changes to this instruction.

1.5.4.2. Climatological Services: As requested by units, the WF will provide routine climatic data for planning purposes only. The WF will also obtain climatological data or studies to improve mission planning as needed.

1.5.4.3. Aircraft Accident/Incident and Investigation: The WF Commander, or a designated representative, will serve as the weather member of investigation boards whenever weather events, services, personnel, or resources are involved in an aircraft accident/incident. Additionally, the WF Commander or a designated representative can be appointed to the investigation board at the direction of the commander of the agency, activity, unit involved, board president, and/or HQ PACAF/A3AW (PACAF/SWO).

1.5.4.4. Environmental Protection Committee: The WF Commander will provide inputs to, and serve on, the Environmental Protection Committee as required.

1.5.4.5. Air Operations Board (AOB): The WF Commander or designated representative will attend AOB meetings.

1.5.4.6. Seasonal Weather Briefings: The WF Commander or designated representative will present an annual typhoon climatology briefing to the 36 Wing/CC in association with a 36 WG/IG Tropical Cyclone Exercise or the first tropical cyclone of the year, whichever comes first.

**1.6. Terms and Abbreviations.** [Attachment 1](#) contains a complete list of all definitions of terms and abbreviations used in this document.

**1.7. Duty Priorities.** Not all WF tasks can be accomplished simultaneously. Therefore, duty priorities are established to ensure tasks are accomplished in order of relative importance and publicized to avoid misunderstanding among supported agencies. Duty priorities will ensure timely response to situations under normal conditions; however, the list will not replace good judgment. The weather technician may deviate in the best interest of flight safety and/or protection of personnel or property. The weather technician will use the following priority list in [Table 1.1](#) as a guide for accomplishing duties. The OWS duty priorities are listed in [Table 1.2](#)

**Table 1.1. WF Duty Priorities.**

<b>Order Of Priority</b>	<b>Duties</b>
1	Perform Emergency War Order (EWO) Taskings.
2	Execute Emergency Action Procedures (e.g. evacuation, Force Protection, fire/bomb threat, volcano, earthquake etc.)
3	Respond to Aircraft/Ground Emergencies.
4	Respond to Pilot to Metro Service (PMSV) Contacts.
5	Disseminate Observed Weather Warnings and Advisories locally.
6	Provide Supervisor of Flying (SOF) Support.
7	Take and Disseminate Surface Weather Observations Locally/Provide "Eyes Forward" Support to 17 OWS.
8	Disseminate PIREPs Locally.
9	Relay Urgent PIREPs and Special AIREPs to 17 OWS.
10	Perform Coordinated METWATCH Support.
11	Severe Weather Action Plan (SWAP) Operations.
12	Tropical Cyclone Procedures
13	Produce and Disseminate MEFs.
14	Transmit Surface Observations and PIREPs/AIREPs Longline.
15	Perform MISSIONWATCH.
16	Provide other Briefing Support.
17	Weather Function Training.
18	Accomplish Administrative Tasks.

**Table 1.2. 17 OWS Duty Priorities.**

<b>Order Of Priority</b>	<b>Duties</b>
1	Perform Emergency War Order (EWO) Taskings
2	Respond to Aircraft Emergencies/Mishaps
3	Execute OWS Evacuation.
4	Provide Products and Services for Combat, Contingencies and Military Operations Other than War (MOOTW) (e.g., graphics, text bulletins, MOAFs)
5	Provide Airborne Aircrew Support/respond to PMSV contacts.
6	Transmit Urgent/Severe Pilot Weather Reports (PIREPs) and Air Reports (AIREPs) longline
7	Perform Severe Weather Action Procedures (SWAP) Operations
8	Provide Flight Weather Briefings.
9	Provide Weather Protection for Force Protection (forecast weather watches, warnings, advisories, etc.)
10	Prepare and Disseminate Peacetime/Exercise Regional- and Operational-Level Graphics and Alphanumeric Products
11	Perform and Disseminate Aerodrome Forecasts (TAFs)
12	Perform MISSIONWATCH Activities
13	Provide other Air and Space Weather Products, Information and Weather Briefings
14	Accomplish other Routine Weather Requirements
15	Accomplish Recurring Training
16	Accomplish Administrative Tasks
17	Transmit PIREPs and AIREPs longline

**1.8. Communication Systems.** The WF utilizes and depends on a variety of communication systems to receive and transmit data in performance of weather duties. These systems are listed as follows:

1.8.1. Primary Communication Systems: New Tactical Forecast System (N-TFS), 36 WG NIPR/SIPR Local Area Network (LAN), WSR-88D weather radar (NEXRAD), UHF (PMSV) radio and Mark-IVB Meteorological Satellite (METSAT) program. The LAN provides internet connectivity between the WF and 17 OWS and is critical to the timely execution of mission weather services and airfield resource protection to AAFB.

1.8.2. Secondary Communication Systems: These systems include the Defense Switching Network (DSN), and Automated Messaging Handling System (AMHS). Secondary

communications systems (e.g. telephone/facsimile) serve as back-up when primary systems are limited or inaccessible.

**1.9. Assumptions and Limitations.** The WF and 17 OWS rely heavily on network communication systems and cannot effectively conduct weather support operations without access to network communications for receiving/transmitting data. Interruption in network service severely degrades WF's capability to provide effective timely support to 36 WG operations to include, aircrew mission weather briefs and the dissemination of weather watches, warnings, and advisories to wing agencies. A specific listing of dissemination procedures and backup support in coordination with the 17 OWS, are listed in [Attachment 3](#).

**1.10. Release of Weather Information.** Support to non-DOD agencies and the public will not be provided unless approved by the 36 WG Public Affairs (PA) office. The National Weather Service (NWS), Guam is responsible for public service to civilians and non-military agencies. WF will provide or arrange for day-to-day weather support to civilian contractors who request weather information to support government-funded projects on AAFB. WF will honor requests for weather information for use in legal claims actions against the government only after receiving approval from 36 WG Judge Advocate (JA) office.

**1.11. Weather Station Evacuation and Alternate Observing Location (AOL) Operations.**

1.11.1. In the event that the weather station has to be evacuated, WF personnel will relocate to and re-establish weather services in the 36 WG Command Post (36 WG/CP), Bldg 23028. The contact number at the AOL is 366-2439.

1.11.2. Weather observing will be conducted at the AOL in the 36 WG/CP Annex. The area approximately 25 feet from the parking lot on the flight line side of the building will serve as the official point of observation.

1.11.3. If the 36 WG/CP is unavailable or the communications systems at the AOL are inoperable, the AOL will be located in the Air Traffic Control Tower (ATC). If the tower is unavailable, then the AOL will be located in another suitable facility with available communications, (i.e. telephone, LAN connection and a view of the airfield complex).

1.11.4. AOL Limitations:

1.11.4.1. The observing view at the AOL is restricted from the SE-S and partially restricted from the E by building 23008. Visibility in all other directions is unrestricted. Only the western halves of south runways are clearly visible from the observation point. However, since the views of these areas are not completely restricted, the majority of weather and sky conditions occurring over the runway complex can still be distinguished.

1.11.4.2. Weather occurring SE-S of the AOL observation point may not be fully reflected in the official weather observation. A Cooperative Weather Watch (see section [2.4](#)), in which the Air Traffic Control, tower controllers are trained as limited weather observers, reduces the impact of this limitation.

1.11.5. Pilot-to-Metro Service (PMSV) capability does not exist at the AOL. ATC tower personnel will monitor the PMSV frequency (344.6).

1.11.6. Timeliness and quality of services provided from the AOL may be degraded due to use of backup equipment/data sources.

**1.12. Changes to this Base Instruction.** To request changes to this wing instruction, contact the WF at 366-3176/1408/1407 or send written requests/inquiries to: 36 OSS/OSW, Unit 14035, APO AP 96543-4035.

**1.13. Weather Station Closure.** AAFB WF will notify the 17 OWS WXR Flight Commander of any periods when the airfield and weather station will be closed (e.g. a holiday). Details of the handover to 17 OWS will be documented in the 17 OWS-36 OSS Memorandum of Agreement (MOA) prior to the closure. Exceptions to normal operating procedures are as follows:

1.13.1. 17 OWS will issue all observed lightning warnings during the hours the WF is closed on the condition the OWS is able to remotely access the AAFB lightning sensing equipment. During periods when the OWS cannot remotely access the lightning sensing equipment, the OWS can only provide a forecast weather watch for lightning.

1.13.2. 17 OWS will call the WF stand-by forecaster and the 36 WG/CP as listed in the Notification Diagram, [Attachment 4](#) for any weather warnings or watches issued when WF is closed. If unable to contact the stand-by forecaster, 17 OWS will call the Weather Flight Commander or NCOIC.

1.13.3. WF will ensure personnel remain on duty anytime the severe weather watch and/or warning for winds GTE 50 knots is in effect. In addition, they will ensure personnel remain on duty when the warning for 35 knots is in effect but the Automated Observing System is not providing current winds to 17 OWS.

1.13.4. WF will ensure procedures are in place to recall personnel when the severe weather watch and/or warning for winds GTE 50 knots is issued. In addition, they will ensure procedures are in place to recall personnel when the warning for 35 knot is issued but the Automated Observing System is not providing current winds to 17 OWS.

1.13.5. When the AAFB WF is scheduled to close, 17 OWS will include the remark "LIMITED METWATCH YYGG TIL YYGG" to indicate forecast is not amendable except when a weather warning is issued, canceled, or updated, and is not correctly reflected in the current TAF.

1.13.6. 17 OWS will provide phone patch services (DSN 315-449-7926) during times when the AAFB WF is closed.

## Chapter 2

### AIRFIELD SERVICES

**2.1. General.** Trained and certified weather forecasters monitor weather conditions and disseminate observations when specific regulatory and locally established weather thresholds are met. The weather forecaster will relay all pertinent information, such as changing weather conditions; to the 17 OWS as part of the “eyes forward” function and to designated base agencies for resource protection (see [attachment 4](#)). Weather forecasters take all observations IAW AFMAN 15-111, *Surface Weather Observations* and AFMAN 15-129, *Air and Space Weather Operations-Processes and Procedures*.

#### 2.2. Observation Sites

2.2.1. Primary Observation Site. The location of the AN/FMQ-19, Automated Meteorological Observing Station (AMOS), primary sensor group and the discontinuity sensor group is the primary observation site. The automated sensor groups are sited in accordance (or as close to as practicable) with the *Federal Standard for Siting Meteorological Sensors at Airports*. The primary sensor group is located on 06R and the discontinuity sensors are on 24L, 24R, and 06L. The automated sensor groups are the primary observation data for the airfield. In the case of system failure or elements that cannot be detected, weather forecasters will *augment* the system from the backup observation site.

2.2.2. Backup Observation Site. The backup observation site is located behind building 17002. The point of observation is 55 feet from the west side of the building.

**2.3. Weather Watch.** The AMOS performs an automatic, Continuous Weather Watch (CWW). When augmentation is required, weather forecasters will perform a Basic Weather Watch (BWW).

2.3.1. Basic Weather Watch. Due to other weather duties, weather forecasters on duty may not detect and report all weather changes as they occur. The BWW observing program has been implemented to establish the minimum requirements needed to ensure the proper level of weather watch is maintained.

2.3.2. During a BWW, weather forecasters will recheck weather conditions, at intervals not to exceed 20 minutes since the last observation/recheck, to determine the need for a SPECI or LOCAL observation, when any of the following conditions are observed to be occurring or are forecast to occur within 1 hour:

2.3.2.1. Ceiling forms below or decreases to less than 1,500 feet.

2.3.2.2. Ceiling dissipates, or increases to equal or exceed 1,500 feet.

2.3.2.3. Visibility decreases to less than 3 miles (4800 meters).

2.3.2.4. Visibility increases to equal or exceed 3 miles (4800 meters).

2.3.2.5. Precipitation (any form).

2.3.2.6. Fog or Mist.

2.3.2.7. In addition to the above minimum requirements, weather personnel will remain alert for any other changes in weather conditions that will require a SPECI or LOCAL

observation. Weather personnel will also monitor local area observational and forecast products as often as necessary to keep abreast of changes expected to affect their area of responsibility.

**2.4. Cooperative Weather Watch.** WF has established a Cooperative Weather Watch with Air Traffic Control (ATC), and other appropriate base/post agencies, as required. Of primary concern is the report of tower visibility different from the prevailing surface visibility, local PIREPs, and any occurrence of previously unreported weather conditions that could affect flight safety or be critical to the safety or efficiency of other local operations and resources. The cooperative weather watch will define, at a minimum, the following:

2.4.1. The process for ATC personnel certified to evaluate tower visibility to report changes in tower prevailing visibility and sector visibility to the WF when tower visibility is less than 4 statute miles (6000 meters) and different from the surface prevailing visibility.

2.4.2. The requirement for weather technicians to reevaluate the weather conditions whenever a reliable source (i.e., ATC, pilots, local law enforcement, etc.) reports weather conditions different from the last disseminated observation (e.g., different ceiling height, visibility, present weather). Based on reevaluation of the different weather conditions reported and local policy, weather personnel will:

2.4.2.1. Generate a SPECI or LOCAL (when in manual mode) observation if the different conditions warrant immediate dissemination.

2.4.2.2. Include the differing conditions in the next required METAR, SPECI, or LOCAL observation if the conditions alone do not warrant immediate dissemination.

2.4.3. WF will coordinate with ATC to leave runway lights on during airfield closure to allow the AMOS to continue reporting RVR. This is recommended in case of emergency aircraft divert.

2.4.4. WF will coordinate cooperative weather watch requirements and changes with the Control Tower, Chief Controller. WF develops and maintains certification tests IAW USAF ATC guidelines. WF trains and certifies ATC Tower controllers on PIREPs and on evaluating/reporting tower and prevailing and sector visibility.

2.4.5. Control Tower Observations and Weather Observing Location Actions.

2.4.5.1. ATC Personnel. IAW FAA JO 7110.65, *Air Traffic Control*), Tower personnel shall take prevailing visibility observations and apply the observations when the prevailing visibility at the usual point of observation, or at the tower level is less than 4 miles. Tower personnel certified to take visibility observations shall:

2.4.5.1.1. Notify the WF forecaster when they observe tower prevailing visibility to decrease to less than, or increase to equal or exceed **4 miles (6000 meters)**, and is different from the surface prevailing visibility.

2.4.5.1.2. When the prevailing visibility at the tower or the surface is less than 4 miles (6000 meters), report all changes of one or more reportable values to the weather forecaster.

2.4.5.1.3. Re-evaluate surface prevailing as soon as practicable, upon initial receipt of a differing control tower value, and upon receipt of subsequent reportable changes at the control tower level.

2.4.5.2. Weather forecasters will perform the following when augmenting the AMOS:

2.4.5.2.1. Notify the tower as soon as possible, whenever the prevailing visibility at the backup observation site decreases to less than, or increases to equal or exceed 4 miles (6000 meters).

2.4.5.2.2. Re-evaluate surface prevailing visibility, as soon as practicable, upon initial receipt of a differing control tower value, and upon receipt of subsequent reportable changes at the control tower level.

2.4.5.2.3. Use control tower values of prevailing visibility as a guide in determining the surface visibility when the view of portions of the horizon is obstructed by buildings, aircraft, etc.

**2.5. Weather Observations.** AFMAN 15-111, *Surface Weather Observations*, and AFMAN 15-129, *Air and Space Weather Operations-Processes and Procedures* govern all aspects of observing. For primary observation site, see section 2.2 Observations will be taken and disseminated over the N-TFS hourly and when Local or Special criteria dictate.

2.5.1. Primary Observation Equipment. The AN/FMQ-19 Automated Meteorological Observing Station (AMOS) is the primary piece of equipment used to take weather observations at Andersen AFB.

2.5.2. Augmentation of Primary Observation Equipment.

2.5.2.1. **Augmentation** is the process of having certified weather observers manually add or edit data to an observation generated by a properly sited automated observing system. The two augmentation processes used are *supplementing* and *back-up*. Supplementing is a method of manually adding meteorological information to an automated observation that is beyond the capabilities of the automated observing system to detect and/or report. Back-up is the method of manually providing meteorological data and/or dissemination to an automated weather observation when the primary automated method (through the AMOS) is not operational or unavailable due to sensor and/or communication failure.

2.5.2.2. Weather forecasters will supplement data from the AN/FMQ-19 when the following criteria are met, and will be ready to supplement if the conditions are forecast to occur within two hours:

**NOTE:** (\*) Denotes mandatory supplementation elements IAW AFMAN 15-111.

2.5.2.2.1. When the Severe Weather Action Procedures (SWAP) are implemented for:

2.5.2.2.1.1. \* Tornadoes, Waterspout, Funnel Cloud

2.5.2.2.1.2. \* Hail one half inch or greater

2.5.2.2.1.3. High winds (> 49kts) (Winds are backed-up/edited if the FMQ-19 reported value is not representative of current conditions). For safety purposes,

weather personnel WILL NOT backup winds during TCCOR 1E.

2.5.2.2.2. \* Volcanic ash is observed from the airfield.

2.5.2.2.3. Any weather elements considered operationally significant by the weather technician

2.5.2.3. Weather technicians will backup the following functions during AMOS outages or during unavailability of AMOS sensor data:

2.5.2.3.1. Wind speed and direction

2.5.2.3.2. Visibility

2.5.2.3.3. Present Weather

2.5.2.3.4. Cloud heights and coverage

2.5.2.3.5. Temperature and dew point temperature

2.5.2.3.6. Altimeter setting

**2.6. Pilot-to-Metro Service (PMSV).** The WF monitors ultra-high frequency (UHF) 344.6 MHz continuously to assist aircraft (either airborne or on the ground). Range is approximately 200 nautical miles (NM) at normal operating altitudes. The WF will solicit aircrews to provide PIREPs of weather conditions over this frequency. Significant PIREPS received by the WF will be disseminated over the N-TFS system. See [Attachment 10](#) for elements specific to PIREPs. The WF will notify the 17 OWS when aircrews report any urgent PIREP or significant weather phenomena within 200 nm of Andersen AFB. During periods when the AAFB forecast counter is closed or the technician is not available, the 17 OWS will provide phone patch support (DSN 315-449-7926) for AAFB.

2.6.1. Short-Term PMSV Outages: WF forecasters will notify ATC of any PMSV outage and expected time of return to service. Aircrews will be briefed PMSV outages during their flight weather (MEF) brief. Aircrews can contact 36 Wing/CP or AMCC for a phone patch to the WF for metro service. ATC will monitor the frequency and advise aircrew on UHF 344.6 to contact Airfield Ops at UHF 372.2 for weather service. During PMSV outages, ATC personnel will relay all PIREPs to the WF forecaster as time and resources permit.

2.6.2. Long-Term PMSV Outages: Long-term PMSV outages will be documented in the current airfield NOTAMS and/or FLIPs as appropriate. WF forecasters will ensure that ATC is aware of the current PMSV status and expected time of return to service. Aircrews will be briefed PMSV outages during their MEF aircrew brief. A phone patch through the 36 WG/CP or AMCC to weather may be used during extended PMSV outages. During PMSV outages, ATC personnel will relay all PIREPs to the weather forecaster as time and resources permit."

**2.7. Toxic Corridors and Chemical Downwind Messages.** Upon notification of any incident that involves a toxic spill or base emergency, the WF will provide wind direction and speed, along with any other required information, for toxic corridor calculations (worst case) performed by 36th Wing Disaster Response Force. Updates will be provided as required. The WF will provide Chemical Downwind Messages (CDM's) upon request.

## Chapter 3

### MISSION WEATHER SERVICES

**3.1. General.** The WF provides or arranges for tailored Mission Weather Services (MWS) and subsequent MISSIONWATCH for all flying units assigned/deployed to AAFB. The WF works cooperatively with the 17 OWS to develop a TAF and issue subsequent weather watches, warnings, and advisories for AAFB when conditions warrant.

#### **3.2. Terminal Aerodrome Forecast (TAF).**

3.2.1. A TAF is a forecast of required weather elements for a particular terminal covering a period up to 24 hours. Forecast elements in the forecast text refer to an area within 5 NM of the center of the runway complex. The term “VC” (vicinity) appended to a weather event refers to an area 5-10 NM from that center.

3.2.2. TAFs will be amended when unforecasted predetermined values of phenomena occur or are expected to occur. **Attachment 8** lists what elements will be specified in the TAF and specific thresholds requiring TAF amendments.

3.2.3. 17 OWS issues the official Andersen TAF three times each day at 02Z, 10Z, and 18Z. The forecast elements in the body of the TAF apply to the area within a 5 NM radius of AAFB. 17 OWS will disseminate the TAF via standard communication systems (e.g., NIPRNET, SIPRNET) and AFW meteorological communication systems (i.e. N-TFS).

#### **3.3. Mission Execution Forecast (MEF).**

3.3.1. Definition: A MEF is a forecast product derived from all available weather data, which are applicable to a unit’s mission criteria. A MEF can be anything from a flight weather briefing to a forecast product designed to support a specific weapon system.

3.3.2. The WF will issue MEFs tailored to mission requirements. The requirements are coordinated with WF Flight Commander or NCOIC during the mission planning cycle.

3.3.3. The 17 OWS produces a 5-day planning forecast daily and is available at [https://ows.hickam.af.mil/ows\\_unique/17/floor\\_products/5dayForecastPGUA.pdf](https://ows.hickam.af.mil/ows_unique/17/floor_products/5dayForecastPGUA.pdf).

**3.4. Flight Weather Briefings.** The WF produces tactical-level flight weather MEFs, and arranges with the 17 OWS for coordinated flight weather briefings to transient aircrew. Briefings will be conducted IAW AFMAN 15-129.

3.4.1. The 17 OWS will provide flight briefing services to USAF and USA transient aircrews via the 17 OWS web page. Pilots can access the web at <https://17ows.hickam.af.mil>. At any time, the aircrew can contact the 17 OWS at DSN 449-8333/8335 (voice) or DSN 449-8336 (fax) with questions or for information. Transient aircrews should request routine flight weather briefings a minimum of two hours prior to briefing time to give the 17 OWS adequate time to examine the weather conditions and complete the required documentation.

3.4.2. The 17 OWS will complete no-notice and short-notice briefings as time permits depending on the current workload, available manpower, and duty priorities. The 17 OWS will prioritize no-notice flight weather briefing requests behind existing requests unless

special circumstances warrant a higher priority (e.g., alert, search and rescue, medical evacuation).

3.4.3. The WF will arrange for transient aircrew weather briefings when required by providing access to the 17 OWS Briefing Cell. Materials provided will include:

3.4.3.1. Computer (with access to the OWS web page) and printer.

3.4.3.2. Class A (DSN/Commercial capable) telephone and fax machine.

3.4.3.3. Pertinent information (i.e. web site instructions and OWS Briefing Cell phone numbers/instructions, AFVA 15-136 and 15-137) to assist the transient aircrews in completing their briefings.

3.4.4. The WF will provide flight briefing services to transient aircrews based on duty priorities and workload constraints. Transient aircrews need to request from the 17 OWS (as identified in 3.4.1. above), their flight weather briefings a minimum of two hours prior to brief time.

3.4.5. The WF will provide or arrange for USN and USMC transient aircrew briefings based on duty priorities and workload constraints. If duty priorities or workload does not permit, the aircrew or WF will request the transient briefing through the Naval Aviation Forecast Detachment, Atsugi NAS (DSN: 315-264-3280).

3.4.6. The WF will conduct both scheduled and unscheduled briefings for local customers and aircraft staged at AAFB 24 hours a day. Briefings will include a discussion of weather affecting the flight's departure, route, and destination(s).

3.4.7. Out-of-Station Briefings: Mass briefings can be presented at a location specified by the requesting agency. Agencies should provide at least a 24-hour notice and coordinate them with the WF Flight Commander or NCOIC. However, contingent upon personnel availability and mission requirements, these briefings may be requested at any time. Changes to the briefing schedule or route changes should be promptly passed on to the duty technician by the requesting agency.

**3.5. MISSIONWATCH.** The WF will maintain a MISSIONWATCH tailored to the mission(s) of the day. The purpose is to ensure the most accurate weather information is provided to the customer and to improve the mission execution forecast process. The objective of MISSIONWATCH is mission success. The WF should be a part of mission planning and execution to exploit weather conditions and ensure weather is a force multiplier. The following procedures will be used to focus on limiting meteorological impacts to ongoing military operations:

3.5.1. The WF should be a part of the operational decision cycle; the WF can improve the probability of success of a mission by notifying operational customers as significant unforecasted changes to mission-critical parameters occur prior to mission execution.

3.5.2. During the mission, the WF will continuously monitor for mission-critical weather thresholds. If a mission-critical threshold is crossed, the WF technician will update the MEF, notify the mission director, mission commander, and/or supervisor of flying (SOF) via phone or in person immediately, and then inform the 17 OWS of the situation, as required. In emergencies or rapidly changing weather conditions, mission support comes first; the

customer will be notified by any means necessary of any mission limiting weather conditions.

3.5.3. WF leadership will coordinate with the customer to determine *windows of opportunity* in which updated weather information could influence the outcome of ongoing missions. These windows of opportunity will vary from mission to mission. Methods of contact may include, but are not limited to, verbal relay of information to the SOF or mission commander, updating the MEF, a PMSV contact, a phone patch (366-5230), or by using command and control systems. The operations center, SOF, or mission commander will be the central dissemination point to update the aircrews on mission weather conditions.

3.5.4. WF is not required to MISSIONWATCH for any aircraft not receiving a briefing by the WF.

**3.6. Pilot Reports (PIREPS) and Air Reports (AIREPS).** The WF can receive PIREPS/AIREPS via global airways facilities, relayed from the tower, the 36 Wing/CP or AMCC, or over the PMSV. Dissemination format will be IAW AFMAN 15-129. (See **Attachment 10** for PIREP/AIREP format and explanation)

3.6.1. Aircrews should be encouraged to provide timely PIREPS/AIREPS when those reports include:

3.6.1.1. Meteorological elements observed that may be of operational significance to other aircraft or to surface activities (i.e. low-level wind shear, tornadic activity, etc.).

3.6.1.2. Specific data to fill a gap in the meteorological collecting system; for example, cloud bases and/or tops when departing/arriving, upper winds, or turbulence/icing at a point or between two points

3.6.2. A severe PIREP (UUA) or AIREP Special (ARS) will be transmitted longline for one or more of the following phenomena:

3.6.2.1. Tornadoes, funnel clouds, and water spouts.

3.6.2.2. Thunderstorms when along a line with little or no space between individual storms, or thunderstorms embedded in cloud layers or concealed by haze.

3.6.2.3. Tropical Cyclones.

3.6.2.4. Squall lines.

3.6.2.5. Severe or extreme turbulence.

3.6.2.6. Severe icing.

3.6.2.7. Low-level wind shear.

3.6.2.8. Hail.

3.6.2.9. Volcanic ash cloud.

3.6.3. All routine AIREPS received will be disseminated longline. All routine PIREPS received will be disseminated longline unless they:

3.6.3.1. Contain only cloud base heights which are incorporated in the surface observation.

3.6.3.2. Include substantially the same data already transmitted within the past 30 minutes.

3.6.3.3. Contain only negative reports of icing and/or turbulence from locations outside forecast areas for these phenomena.

3.6.4. All applicable PIREPs/AIREPs will be locally disseminated.

**3.7. Instrument Refresher Course (IRC).** The only on-island flying unit the WF supports is HSC-25 (Navy). The Navy does not require IRC Support. IRC support to deployed AF units permanently staged at AAFB, or other TDY flying units at AAFB, will be determined upon their arrival. Reference **Chapter 7**, “Reciprocal Support” for more information regarding IRC support.

**3.8. Space Weather Support.** The WF, in conjunction with the 17 OWS, will provide a generalized situation awareness of past and future space environment impacts to war fighters and weapons systems via space weather products tailored to the mission requirements. These products will be hosted on the 17 OWS web page at <https://17ows.hickam.af.mil> or JAAWIN, <https://weather.afwa.af.mil>. A brief definition follows:

3.8.1. HF Communication: Depicts degradation of HF communications due to changes in the ionosphere where long-range HF signals are usually reflected.

3.8.2. UHF SATCOM Communications: Depicts degradation of UHF SATCOM communications due to changes in the ionosphere. UHF signals are transmitted through the ionosphere for communications to satellites.

3.8.3. Satellite Operations Health: Depicts the potential for or observed degradation or damage to satellites themselves. This damage or degradation usually results from particle interaction with the spacecraft. This can affect satellites such as GPS, communication, weather, or surveillance.

3.8.4. Space Object Tracking/Satellite Drag: Indicates the observed and forecast potential for unexpected changes in the orbits of satellites. Changes in satellite orbits may result from an increase or decrease in the drag normally experienced at a satellite’s orbit. This change in drag results from the heating or cooling of the upper atmosphere due to changes in the sun’s radiation output, or to geomagnetic activity.

3.8.5. Hi-Altitude Flight: Indicates the maximum level of radiation exposure at an altitude of 67,000 ft. It will be YELLOW for dose rates greater than 10 millirems/hr and RED for dose rates exceeding 100 millirems/hr. This radiation is a product of cosmic rays from outside the solar system as well as very high-energy protons occasionally produced by explosive events on the sun.

3.8.6. Radar Interference: Depicts observed and forecast degraded operation of radars used to track objects in space. Radio frequency bursts from the sun can cause interference to radars when the sun is in their field of view.

3.8.7. Space Weather Impact and Forecasts. The WF in conjunction with the 17 OWS will provide the following space weather impact and forecast products, as needed, tailored to mission requirements:

- 3.8.7.1. HF Communication reported impact (previous 6 hr analysis) and 6 hr forecast (Pacific).
- 3.8.7.2. UHF SATCOM 6 hr forecast, and 00-72 hr Climatological Scintillation Maps at 177.5 E (Pacific)
- 3.8.7.3. Satellite Operations Health reported impact and forecast through 72 hrs (Global)
- 3.8.7.4. Space Object Tracking/Satellite Drag reported impact and forecast through 72 hrs (Global).
- 3.8.7.5. Hi-Altitude Flight reported impact and forecast through 72 hrs (Global).
- 3.8.7.6. Radar Interference reported impact and forecast through 72 hrs (Global).

## Chapter 4

### TROPICAL CYCLONE SUPPORT

**4.1. Joint Typhoon Warning Center (JTWC).** The U.S. Naval Pacific Meteorology and Oceanography Center/Joint Typhoon Warning Center (NPMOC/JTWC) at Pearl Harbor, Hawaii, provides forecasts and warnings for tropical cyclones located from the international dateline westward to the eastern coast of Africa.

#### **4.2. Tropical Cyclone Categories.**

4.2.1. Invest: A weather system for which JTWC is interested in collecting specialized data sets (e.g., microwave imagery) and/or running model guidance. Once a system has been designated as an invest, data collection and processing is initiated. The designation of a system as an invest does not correspond to any particular likelihood of development of the system into a tropical cyclone.

4.2.2. Poor: An area of convection or low level inflow where conditions are not favorable for a tropical cyclone to develop within 24 hours.

4.2.3. Fair: A tropical disturbance for which conditions have improved but development has not yet commenced.

4.2.4. Good: A tropical disturbance where conditions are favorable for development and development has begun. "Good" descriptions are applied to tropical disturbances covered by a Tropical Cyclone Formation Alert (TCFA).

4.2.5. TCFA: designates an area where JTWC is most likely to begin issuing tropical cyclone warnings within the next 24 hours. This information is provided to the DoD and other U.S. government agencies for operations planning.

4.2.6. Tropical Disturbance: Disorganized area of convection with sustained wind speed less than 25 knots.

4.2.7. Tropical Depression: Tropical cyclone with sustained wind speed 25 to 34 knots.

4.2.8. Tropical Storm: Tropical cyclone with sustained wind speed of 34 to 63 knots.

4.2.9. Typhoon: Tropical cyclone with sustained wind speed of 64 to 129 knots.

4.2.10. Super Typhoon: Tropical cyclone with sustained wind speed of at least 130 knots.

#### **4.3. Tropical Cyclone Products.**

4.3.1. The following applies to all tropical cyclone products: *The 48-hour and 72-hour tropical forecasts/outlooks (or longer if issued) contain a high degree of uncertainty, are for planning purposes only, and are subject to change.*

4.3.2. Tropical Cyclone Warning Bulletins: are generated by the JTWC and provide forecasts for identified tropical cyclones. The current position, intensity, past movement, and 5-day forecast tracks are plotted. (See [Attachment 5.4](#))

4.3.2.1. JTWC warnings are updated a minimum of every six hours in the Western Pacific and every 12 hours in the Indian Ocean until the storm has dissipated or becomes extra-tropical (loses characteristics of a tropical cyclone).

4.3.2.2. All JTWC tropical cyclone warning bulletins forecasting a tropical cyclone to affect Guam will be briefed to 36 WG leadership immediately with a recommendation for an Installation Control Center (ICC) recall if 50 knot winds (sustained) are forecast for Guam.

4.3.3. AAFB WF Bulletins: when storms are forecast to, or are affecting the 36 WG AOR, the WF will issue to AAFB agencies, tropical cyclone updates incorporating JTWC forecasts. These tropical cyclone update bulletins will be emailed to 36 WG agencies (IAW [Attachment 5.6](#)) every six hours or when an update warning from JTWC becomes available.

4.3.4. Also, for tropical systems upstream and within 900 nm of AAFB, the WF will e-mail tropical cyclone update bulletins following receipt of a JTWC warning/bulletin (if issued) and when updates are issued by JTWC. Storms outside of 900 nm will be updated via email whenever they are upgraded, downgraded, cancelled, and/or are expected to affect a 36 WG asset listed below:

4.3.4.1. Canberra, Australia

4.3.4.2. Diego Garcia, British Indian Ocean Territory

4.3.4.3. Singapore

4.3.4.4. Any deployed location of 36 WG assets (36 CRG, deployed fighters, deployed bombers).

4.3.5. 17 OWS Bulletins: the 17 OWS will produce a Tropical Cyclone Threat Assessment Product (TC-TAP) when AAFB is expected to receive sustained winds > 35-knots during the next 96 hours as a result of a JTWC tropical cyclone update. The TC-TAP will be updated w/in 90 minutes upon receipt of a new JTWC tropical cyclone forecast.

4.3.5.1. The TC-TAP is based off JTWC warning data, and depicts forecasted peak sustained wind speed and direction, peak wind gust, onset and duration of destructive winds (sustained winds of 50 knots or more), onset and duration of crosswinds, and closest point of approach (CPA) information. (See [Attachment 5.5](#))

4.3.5.2. The 17 OWS will first coordinate with AAFB WF prior to issuing the TC-TAP bulletins. Every effort will be made to have a fully coordinated TC-TAP in effect NLT 45 minutes after the latest JTWC warning is posted.

4.3.6. AAFB Tropical Cyclone Wind Forecast: The WF will develop an AAFB wind forecast based on the TC-TAP generated by the 17 OWS. The wind forecast will be briefed to 36 WG/CC and the ICC to help establish optimum aircraft evacuation windows and to determine Condition of Readiness (COR) timelines. (See [Attachment 5.7](#))

#### **4.4. Tropical Cyclone Condition of Readiness (COR) Criteria and WF Actions.**

##### **4.4.1. TCCOR Conditions:**

4.4.1.1. TCCOR 4: Sustained winds of 50 knots or greater from a tropical cyclone are possible within the next 72 hours. (AAFB is always in COR 4 unless changed by 36 WG/CC due to an approaching tropical cyclone)

4.4.1.2. TCCOR 3: Sustained winds of 50 knots or greater from a tropical cyclone are possible within the next 48 hours on AAFB.

4.4.1.3. TCCOR 2: Sustained winds of 50 knots or greater from a tropical cyclone are possible within the next 24 hours on AAFB.

4.4.1.4. TCCOR 1 (Caution): Sustained winds of 50 knots or greater from a tropical cyclone are possible within the next 12 hours on AAFB.

4.4.1.5. TCCOR 1 (Emergency): In effect when sustained winds of 50 knots from a tropical cyclone are observed to occur on AAFB.

4.4.1.6. TCCOR 1 (Recovery): When sustained winds of 50 knots or greater from a tropical cyclone are no longer observed or expected for AAFB.

#### 4.4.2. **WF TCCOR Actions:**

4.4.2.1. TCCOR 4: Normal operations

4.4.2.2. TCCOR 3, TCCOR 2 and TCCOR 1 (Caution):

4.4.2.2.1. Brief the ICC on current JTWC warning, satellite imagery, AAFB wind forecasts and regional base forecasts (possible evacuation bases).

4.4.2.3. TCCOR 1 (Emergency) and TCCOR 1 (Recovery):

4.4.2.3.1. No TAF, Warnings/Watches or Advisories will be issued until the ALL CLEAR is given and the Wing returns to TCCOR 4. The TC-TAP becomes the official weather product and will continue to be issued at scheduled times, if at all possible.

4.4.2.3.2. Weather personnel will not take outside observations during TCCOR 1 (Emergency). The automated observation system will be set to Auto mode and will be the official observation.

4.4.2.3.3. Collect as much weather data as possible for later reports and studies. Data will include, at a minimum, satellite imagery, hard and/or soft copies of all available radar products, and Internet data that may be useful. During all tropical cyclones that may cause damage to the base or the island, archive as much radar data as possible.

4.4.2.3.4. Provide OPREP-3 reports to 36 WG/CP as required.

## Chapter 5

### VOLCANIC ASH SUPPORT

#### 5.1. Volcano Monitoring.

5.1.1. Air Force Weather Agency (AFWA) monitors volcanic ash activity globally and issues advisory products tailored for DOD support and is responsible for production and dissemination of alphanumeric and graphical ash advisory products to DOD units operating in the Marianas region. In addition, AFWA is responsible for backup of the Washington Volcanic Ash Advisory Center (W-VAAC). AFWA provides text and graphical forecast products to civilian users during W-VAAC outage periods via NWS communication channels.

5.1.2. Separately, the United States Geological Survey (USGS) monitors volcanoes throughout the Marianas region and provides a separate warning system. USGS focuses on volcano unrest and advises on the potential to interfere with aviation.

5.1.2.1. Example of USGS bulletin:

**Anatahan Weekly Update issued Feb 18, 2008 13:57 MPT Volcanic-Alert Level WATCH - Aviation Color Code ORANGE**

Report prepared by the U.S. Geological Survey. Reports and observations from satellite of a low-level plume of steam, ash, and sulfur dioxide extending from Anatahan persisted through the past week. A satellite image from 0145 Feb. 12 UTC (11:45 MPT) showed a broad aerosol and diffuse ash plume extending almost 500 km (300 mi), from west of Guam to east of Pagan. Winds blew the plume over Saipan and Tinian Feb. 13 and the CNMI Emergency Management Office issued a Volcanic Haze and Sulfur Advisory at 9:45 am MPT Feb. 13. The EMO also received a report from Rota of haze but no sulfur smell.

5.1.2.2. Marianas Islands USGS Website, <http://volcano.wr.usgs.gov/cnmistatus.php>

#### 5.2. Volcanic Ash Products.

5.2.1. Volcanic Ash Eruption Updates are prepared by AFWA at least every 6 hours and more frequently pending new information about the eruption. The bulletin contains volcano name, location, and summit elevation as well as eruptions to include height of the ash plume and trajectory of the ash. Once published, AFWA will send these bulletins to the 36 OSS/OSW.

5.2.1.1. Example of a volcanic ash eruption update:

FVAW41 KGWC 301849  
VOLCANIC ASH ERUPTION UPDATE

VOLCANO: ANATAHAN 0804-20

LOCATION: 1621N 14540E AREA: MARIANA IS

SUMMIT ELEVATION: 2585 FT (788 M)

1. ACTIVITY SUGGESTS ASH EMISSIONS LIKELY, BUT ASH IS NOT IDENTIFIABLE IN LATEST METSAT IMAGE.

2. ERUPTION DETAILS: CONTINUOUS ASH/STEAM EMISSIONS.  
TRAJECTORY: ASH TO FL340 MOVG NW AT 20KTS.

3. REMARKS: AT 30/0920Z A PILOT REPORTED ASH TO FL340 MOVING NW AT 20KTS. CLOUD COVER HAS OBSCURED THE VOLCANO AND MADE ASH DETECTION DIFFICULT.

FOR METSAT ANALYSIS AND PUFF MODEL FORECAST BASED ON GFS DATA  
SEE:  
[HTTPS://WEATHER.AFWA.AF.MIL/ENVIRONMENTAL\(UNDERSCORE\)EVENTS.HTML](https://weather.afwa.af.mil/environmental(underscore)events.html)  
(LOWER-CASE ONLY).

4. FOR FURTHER INFORMATION SEE LATEST FVXX KNES BULLETIN, WVPA PHFO SIGMET AND PGZU GUAM CERAP NOTAM.

5. THIS BULLETIN WILL BE UPDATED BY 31JUL2005 AT 0100Z.

PREPARED BY ARCHULETTA/QC BY PERSINGER

For eruption details, see products at:

[https://weather.afwa.af.mil/environmental\\_events.html](https://weather.afwa.af.mil/environmental_events.html)

For questions about eruptions call:  
HQ AFWA METSAT Applications Branch (Duty Analyst)  
DSN: 271-7264 or Comm (402)294-7264

5.2.2. AFWA also produces an animated graphic depicting ash dispersion in the atmosphere. The PUFF model shows direction and progression of movement of ash at different levels of the atmosphere. This slide will be included in staff briefs when available and pertinent to the situation.

5.2.3. Satellite imagery analyzing flight level and directional movement of ash are emailed to the 36 OSS/OSW inbox on a routine basis and will be included in staff briefs when appropriate.

### **5.3. Notification of Ash Expected to Affect Andersen.**

5.3.1. All ash eruption bulletins which lead to forecasting ash over the AAFB airfield within 6 hours are briefed to Wing leadership immediately in order to begin resource protection actions.

5.3.2. AFWA and National Weather Service volcanic ash bulletins may be e-mailed as a service to Wing agencies (similar to [A5.1.1](#)). The bulletins are emailed during times when

the information contained on the bulletin would force an Ash Condition Color Code change. (See [attachment 12](#) for an example.)

#### 5.3.3. Andersen Ash Condition Color Codes.

5.3.3.1. Green: Volcano is in normal **non-eruptive state**. **No volcanic ash expected above AAFB**. *Or after a change from a higher alert level:* Volcanic activity has ceased or volcanic ash has evacuated the area above AAFB.

5.3.3.2. Yellow: Volcano is in an elevated state of unrest with a detectable ash plume/emission. **No ash is expected above AAFB within the next 24 hours**. *Or after a change from a higher alert level:* Volcanic activity has decreased significantly but continues to be closely monitored for possible renewed release.

5.3.3.3. Orange: Volcanic eruption/emission is occurring. **Ash expected over AAFB within the next 12 hours**. Begin preparations for protection of aircraft. *Or after a change from a higher alert level:* Volcanic ash has evacuated the area above AAFB but may still be present in the local flying area.

5.3.3.4. Red: Volcanic eruption/emission is occurring. **Ash expected over AAFB within 3 hours**. Volcanic ash considered imminent. Consider termination of flying, post airfield advisories, seal or shelter assets as required.

5.3.3.5. Black: Ash has been *observed* on or above the AAFB airfield.

#### 5.4. Ash Reporting.

5.4.1. Observations will include the VA remark only if ash is observed in the AAFB aerodrome either suspended in the air or accumulating on the surface. Smelling sulfur is not a consideration except to indicate the observer should be on the lookout for the presence of ash.

5.4.2. WF will collect as much weather data as possible for later reports and studies. Data will include, at a minimum, satellite imagery, hard and/or soft copies of all available radar products, and Internet data that may be useful.

#### 5.5. USGS Warning Schemes

5.5.1. There are two warning schemes produced by the USGS. These warning schemes are generally what the WF will monitor when the volcanoes are not producing ash.

5.5.1.1. USGS ranks the level of activity at a U.S. volcano using the terms "Normal", for typical volcanic activity in a non-eruptive phase; "Advisory", for elevated unrest; "Watch", for escalating unrest or a minor eruption underway that poses limited hazards; and, "Warning", if a highly hazardous eruption is underway or imminent. These levels reflect conditions at a volcano and the expected or ongoing hazardous volcanic phenomena. When an alert level is assigned by an observatory, accompanying text will give a fuller explanation of the observed phenomena and clarify hazard implications to affected groups.

5.5.1.2. As part of the alert-level system, color codes (Green, Yellow, Orange, Red) are used to provide succinct information about volcanic-ash hazards to the aviation sector. Volcanic activity threatens safe air travel when finely pulverized, glassy, abrasive volcanic material is explosively erupted into the atmosphere and dispersed as airborne

clouds in flight paths of jet aircraft. The color codes are in accord with recommended ICAO (International Civil Aviation Organization) procedures to help pilots, dispatchers, and air-traffic controllers who are planning or executing flights over broad regions of the globe quickly ascertain the status of numerous volcanoes and determine if continued attention, re-routing, or extra fuel is warranted.

**Figure 5.1. Volcano Alert Levels and Aviation Color Codes**

Aviation Color Codes
<p><b>GREEN</b> Volcano is in typical background, noneruptive state or, <i>after a change from a higher level</i>, volcanic activity has ceased and volcano has returned to noneruptive background state.</p>
<p><b>YELLOW</b> Volcano is exhibiting signs of elevated unrest above known background level or, <i>after a change from a higher level</i>, volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.</p>
<p><b>ORANGE</b> Volcano is exhibiting heightened or escalating unrest with increased potential of eruption, timeframe uncertain, <b>OR</b> eruption is underway with no or minor volcanic-ash emissions [ash-plume height specified, if possible].</p>
<p><b>RED</b> Eruption is imminent with significant emission of volcanic ash into the atmosphere likely <b>OR</b> eruption is underway or suspected with significant emission of volcanic ash into the atmosphere [ash-plume height specified, if possible].</p>

## Chapter 6

### WEATHER WATCHES, WARNINGS, AND ADVISORIES

**6.1. General.** The 17 OWS or WF will issue forecast and observed weather warnings, watches, or advisories for the base when conditions warrant. The term “base” is defined as an area 5 nautical miles in radius centered on the AAFB runway complex. Weather watches, warnings, and advisories for the wing will be issued 24 hours a day, 7 days a week. The WF will coordinate all requirements for and ensure timely issuance of weather watches, warnings, and advisories in accordance with AFMAN 15-129, *Air and Space Weather Operations-Processes and Procedures*.

**6.2. Forecast Weather Watches.** A special notice provided to advise of the potential for weather conditions that might pose a threat to property or life. When a weather watch is issued, customers must take preparatory actions, including reviewing applicable checklists to ensure rapid response in the event a subsequent weather warning is issued.

6.2.1. \* Forecast weather watches are issued IAW the guidance in AFI 10-229 and AFMAN 15-129. The 17 OWS will issue a forecast weather watch for Andersen AFB when the potential for the criteria defined in **Table 6.1** exists within 5 nautical miles (NM) of the center of the runway. The forecast lightning watch is an exception. The watch area is 5 nm around the entire AAFB complex (AAFB, 36 MXS munitions complex, Det 5, 22 SOPS, and Northwest Field). See **attachment 6** for weather impacts on customers and **attachment 13** for the watch area for AAFB complex.

**Table 6.1. \* Forecast Weather Watch Criteria and Minimum Desired Lead-Times.**

Criteria	Desired Lead-Time
Winds $\geq$ 50 Knots (including gusts)	4 hours
Lightning within 5 NM of AAFB Complex	30 minutes
Hail $\geq$ ½ inch	As potential warrants
Tornado/Funnel Cloud/Waterspout within 5 NM of AAFB complex	As potential warrants

6.2.2. The following are examples of message text for weather watches:

6.2.2.1. Lightning Watch: WEATHER WATCH

VALID 21/0134Z (21/1134L) TO 21/0534Z (21/1534L)  
THE POTENTIAL EXISTS FOR LIGHTNING W/IN 5 NM OF THE ANDERSEN AFB  
COMPLEX. A WARNING WILL BE ISSUED IF REQUIRED.

6.2.2.2. Severe Wind Watch (Winds GTE 50 knots): WEATHER WATCH

VALID 21/0134Z (21/1134L) TO 21/1334Z (21/2334L)  
THE POTENTIAL EXISTS FOR SURFACE WIND GUSTS TO GREATER THAN OR  
EQUAL TO 50KTS AT ANDERSEN AFB. A WARNING WILL BE ISSUED IF REQUIRED.

6.2.3. 17 OWS will not issue weather watches for winds 35-49 knots, heavy rain or snow, freezing precipitation, blizzard conditions, or sandstorms. AAFB leadership, as owner of the ORM process, has elected to tailor the criteria to the items in **Table 6.1**, above.

**6.3. Forecast/Observed Weather Warnings.** A special notice is provided when an established weather condition is occurring or imminent and poses a threat to property or life. When a weather warning is issued, customers must take immediate action in accordance with their established weather checklists to safeguard property and lives. There are two types of weather warnings: Observed warnings, which require no Desired Lead Time (DLT), and forecasted warnings, which require a DLT.

6.3.1. Weather warnings are issued IAW the guidance in AFI 10-229 and AFMAN 15-129 and local requirements. 17 OWS will issue forecast weather warnings for Andersen AFB when the criteria defined in **Table 6.2** occurs, or are expected to occur, within 5 NM of center of runway. The observed lightning warning is an exception; the warning area is 5nm around the entire AAFB Complex (AAFB, 36MXS munitions complex, Det 5 and Northwest Field). See **attachment 14** for the warning area for AAFB complex. The Andersen forecaster will issue observed warnings as defined in **Table 6.2**. See **attachment 6** for weather impacts on customers.

**Table 6.2. Weather Warning Criteria and Associated Minimum Desired Lead-Times.**

Criteria	Desired Lead-Time
Winds $\geq$ 50 Knots (including gusts)	2 hours
Winds 35-49 Knots (including gusts)	60 minutes
Hail $\geq$ ½ inch	90 minutes
Heavy Rain (GTE 4 Inches in 6 Hours)	60 minutes
Tornado/Funnel Cloud/Waterspout within 5 NM of AAFB complex	30 minutes
Lightning within 5 NM of AAFB complex	Observed

6.3.2. The following are examples of message text for both forecast and observed weather warnings:

6.3.2.1. Severe Wind Warning (Winds GTE 50 Kts):

FORECAST WEATHER WARNING  
 VALID 21/0133Z (21/1133L) TO 21/0433Z (21/1433L)  
 SURFACE WIND GUSTS TO GTE 50 KTS ARE EXPECTED AT ANDERSEN AFB MAX  
 WINDS EXPECTED ARE 54 KTS.

6.3.2.2. Wind Warning (Winds from 35-49 Kts):

FORECAST WEATHER WARNING  
 VALID 21/0133Z (21/1133L) TO 21/0333Z (21/0533L)  
 SURFACE WIND GUSTS FROM 35-49 KNOTS ARE EXPECTED AT ANDERSEN AFB.  
 MAX WINDS EXPECTED ARE 38 KTS.

6.3.2.3. Heavy Rain Warning (Heavy Rain GTE 4 inches in 6 hours):

FORECAST WEATHER WARNING

VALID 21/0133Z (21/1133L) TO 21/0333Z (21/0533L) HEAVY RAIN IS EXPECTED AT ANDERSEN AFB WITH AN ACCUMULATION OF GREATER THAN 4 INCHES IN 6 HOURS.

6.3.2.4. Lightning Warning:

OBSERVED WEATHER WARNING

VALID 21/0133Z (21/1133L) TO UFN (UFN)

LIGHTNING OBSERVED WITHIN 5 NM OF THE ANDERSEN AFB COMPLEX WITH AN ESTIMATED DURATION TIL 0215Z (1215L).

6.3.3. Weather warnings will:

6.3.3.1. Not be issued if there is an unforecasted occurrence that has stopped and is not expected to reoccur.

6.3.3.2. Be canceled or downgraded when the warning criteria is no longer expected to occur.

6.3.4. Forecast weather warnings/watches with a specified lead-time will have a forecast valid period. A warning/watch may be canceled early or extended based on evaluation by the technician.

6.3.5. Observed lightning weather warnings will be issued with an end time of “Until Further Notice (UFN),” but the text will state an estimated duration time. Lightning warnings will be canceled when criteria are no longer observed IAW **AFMAN 15-111**.

6.3.6. There will be at most one warning valid at any one time. If multiple criteria are valid, they will be encompassed into one warning to reduce the number of warnings valid at the same time. EXCEPTION: Observed lightning warning may be issued when other warnings are valid.

6.3.7. 17 OWS will not issue weather warnings for, heavy snow, freezing precipitation, blizzard conditions, or sandstorms. AAFB leadership, as owner of the ORM process, has elected to tailor the criteria to the items in **Table 6.2** above.

6.3.8. If the WF evacuates its primary duty location, and is unable to provide observed weather warning support from its alternate location, 17 OWS will assume responsibility for observed weather warnings if the capability to METWATCH exists (e.g. the radar must be operational).

6.3.9. OWS will issue all observed lightning warnings during hours the AAFB WF is closed on the condition the OWS is able to remotely access the AAFB lightning sensing equipment. During periods when the OWS cannot remotely access the AAFB lightning sensing equipment, the OWS can only provide a forecast weather watch for lightning.

**6.4. Forecast/Observed Weather Advisories.** Weather advisories (WAs) are special notices provided to a supported agency when an established weather condition that could affect its operation is occurring or is expected to occur. A dissemination diagram is contained in **Attachment 4**. Forecast advisories are issued based on required lead-times. Observed advisories are issued based on observation of advisory criteria.

6.4.1. Forecast weather advisories (FWA) are issued IAW the guidance in AFMAN 15-129 and local requirements. 17 OWS will issue forecast weather advisories for Andersen AFB when the criteria defined in [Table 6.3](#) occur, or are expected to occur within 5 NM of center of runway. See [attachment 6](#) for weather impacts on customers.

**Table 6.3. Forecast Weather Advisory Criteria and Associated Minimum Desired Lead-Times**

Criteria	Desired Lead-Time
Winds 25-34 Knots (including gusts)	30 minutes

6.4.2. The following is an example of message text for a FWA:

6.4.2.1. Wind Advisory:

FORECAST WEATHER ADVISORY  
 VALID 21/0131Z (21/1131L) TO 21/1530Z (22/0130L)  
 SURFACE WIND GUSTS FROM 25-34 KNOTS ARE EXPECTED AT ANDERSEN AFB.  
 MAX WINDS EXPECTED ARE 28 KTS.

6.4.2.2. FWA's with a specific lead-time will have to include a forecast valid end time. An advisory may be cancelled early or extended based on evaluation by the technician.

6.4.3. Observed weather advisories (OWA) will be issued by Andersen IAW the guidance in AFMAN 15-129 and local requirements when the criteria defined in [Table 6.4](#) occur. For crosswinds and low-level convective shear, they are issued when observed within 5 NM of center of runway. For lightning occurring greater than 5 NM but less than 25 NM, issuance will occur when observed using a combination of lightning detection sensors and radar. Anytime a waterspout is observed outside of 5 NM of the AAFB complex, or reported by reliable personnel (Base Tower, Security Forces, Aircrew, etc.), a waterspout advisory will be issued. See [attachment 6](#) for weather impacts on customers. Anytime a tornado, funnel cloud, or waterspout is within 5 NM of the AAFB complex, or reported by reliable personnel (Base Tower, Security Forces, Aircrew, etc.), a tornado warning will be issued.

**Table 6.4. Observed Weather Advisory Criteria and Associated Minimum Desired Lead-Times**

Criteria	Desired Lead-Time
Crosswinds $\geq$ 20kts (including gusts)	Observed
Crosswinds 15-19kts (including gusts)	Observed
Non-convective LLWS (surface-2,000ft AGL)	Observed
Observed Lightning within 25 NM but outside 5 NM of AAFB complex	Observed
Observed Waterspout outside 5 NM of AAFB complex	Observed
Ceiling below 1000ft with runway 24 in use	Observed
Ceiling below 500ft with runway 06 in use	Observed

6.4.3.1. If the WF evacuates its primary duty location, and is unable to provide OWA support from its alternate location, 17 OWS will assume responsibility for OWA if the capability to METWATCH exists (e.g. the wind sensor must be operational).

6.4.3.2. The following are examples of message text for OWA's:

6.4.3.2.1. Crosswind Advisory:

OBSERVED WEATHER ADVISORY  
VALID 21/0131Z (21/1131L) TO UFN (UFN)  
CROSSWINDS OF 15-19 KNOTS ARE OBSERVED AT ANDERSEN AFB.

6.4.3.2.2. Crosswind Advisory:

OBSERVED WEATHER ADVISORY  
VALID 21/0131Z (21/1131L) TO UFN (UFN)  
CROSSWINDS OF GTE 20 KNOTS ARE OBSERVED AT ANDERSEN AFB.

6.4.3.2.3. Wind Shear Advisory:

OBSERVED WEATHER ADVISORY  
VALID 21/0131Z (21/1131L) TO UFN (UFN)  
WINDSHEAR BELOW 2000FT HAS BEEN OBSERVED AT ANDERSEN AFB.

6.4.3.2.4. Lightning occurring greater than 5 NM but less than 25 NM Advisory:

OBSERVED WEATHER ADVISORY  
VALID 21/0131Z (21/1131L) TO UFN (UFN)  
LIGHTNING GREATER THAN 5 NM BUT LESS THAN 25 NM FROM AAFB HAS BEEN OBSERVED..

6.4.3.3. OWA's with "As Observed" listed lead-times will have UFN as a valid end time until cancelled. They will be terminated when criteria are no longer observed.

6.4.3.3.1. Tornado, Funnel Cloud, or Waterspout Advisory outside of 5 NM of AAFB complex:

OBSERVED WEATHER ADVISORY  
VALID 21/0131Z (21/1131L) TO UFN (UFN).  
A WATERSPOUT HAS BEEN OBSERVED OUTSIDE OF 5 NM OF AAFB COMPLEX.

**6.5. Dissemination of Forecast Weather Watches/Warnings/Advisories.** The 17 OWS Operations floor will disseminate forecast weather watches, warnings, and advisories via AFW meteorological communications systems (i.e. N-TFS, IWWC). The 17 OWS will make key agency confirmation calls to the Andersen forecaster and to the 36 WG Command Post for forecast weather watches, warnings and advisories. The Andersen WF will issue observed weather warnings and advisories via AFW meteorological communications systems (i.e. N-TFS). The Andersen WF will make key agency confirmation calls to the 17 OWS, 36 OSS Airfield Management and Air Traffic Control, and the 36 WG Command Post for observed weather warnings and advisories. Watches/Warnings/Advisories are also posted to the 17 OWS website on both NIPRNET and SIPRNET.

6.5.1. The dissemination diagram for weather watches, warnings, and advisories affecting AAFB is contained in [attachment 4](#).

6.5.2. AAFB WF may issue weather warnings for forecast phenomena when imminent weather conditions pose a hazard to life and property. AAFB WF will contact 17 OWS as soon as possible after local dissemination is made for 17 OWS to assume responsibility/accountability for the warning. If the WF leadership determines a forecast review is needed, then the review will be a collaborative effort led by the WF.

6.5.3. Backup Dissemination Procedures.

6.5.3.1. Confirmation calls by 17 OWS to the Andersen WF and the 36 WG Command Post, are used as backup in case N-TFS fails to electronically disseminate forecast weather watches, warnings and advisories.

6.5.3.2. Confirmation calls by the Andersen WF to 17 OWS and 36 WG Command Post, are used as backup in case N-TFS fails to electronically disseminate observed warnings and advisories.

**6.6. Severe Weather Action Procedures (SWAP).** The WF and 17 OWS will cooperatively initiate and maintain a heightened meteorological watch and implement severe weather action procedures IAW AFMAN 15-129 whenever a severe weather warning or watch is issued.

6.6.1. Severe Weather at AAFB is defined as winds gusting to 50 knots or more, hail greater than or equal to ½ inch and tornadic activity. See [attachment 6](#) for weather impacts on customers.

6.6.2. When a severe weather watch or warning is issued, 17 OWS personnel will coordinate with AAFB WF on-duty forecaster for proper implementation of the following actions at AAFB WF:

6.6.2.1. Recall the AAFB WF forecaster if the station is currently closed.

6.6.2.2. Recommend additional forecaster assistance be recalled to augment the WF.

6.6.2.3. Increase radar, METSAT, Lightning Detection System, METWATCH at WF.

6.6.2.4. Increase Observational METWATCH at WF.

6.6.3. When a severe weather watch or warning is issued 17 OWS personnel (Zone Supervisor) will:

6.6.3.1. Inform the Lead Meteorologist.

6.6.3.2. The Lead Meteorologist will determine which extra forecaster will provide assistance.

6.6.3.3. The extra forecaster will man the radar and answer Tropics Forecast phones.

6.6.3.4. The Tropics Forecaster will be the single POC for all information and decisions for the team. He/she will amend TAFs, conduct an intensified METWATCH, issue warnings and advisories as needed, and be the main interface with the AAFB WF.

6.6.4. In case of unforeseen circumstances such as communications lines failure, a critical equipment outage at either the OWS or WF, etc., the WF is obligated to institute, at a minimum, actions defined in paragraph 6.6.2.1.

6.6.5. When severe weather is forecasted to occur on Andersen AFB, the 17 OWS will contact the AAFB WF forecaster, who will initiate SWAP actions as soon as practical by

contacting the Flight Commander or NCOIC by phone or cell phone. The 17 OWS will contact the AAFB Flight Commander or NCOIC if unable to contact the duty forecaster. Phone numbers will be maintained in 17 OWS' Tropics Forecaster Procedures. The 17 OWS and AAFB WF staff will review procedures/numbers on a quarterly basis.

6.6.6. The WF and 17 OWS will conduct and document exercises of the SWAP procedures on an annual basis. An actual severe weather event can be documented instead of the review exercise.

6.6.7. Post-severe weather event procedures will include a verbal review of the actions taken by the WF and OWS. This review will be held over a conference phone between the senior WF forecaster and the 17 OWS/WXR. If deemed necessary by the WF or OWS, or if damage occurs requiring an OPREP-3 report, a full forecast review will be accomplished IAW WF and OWS SOPs.

6.6.8. AAFB will provide 17 OWS severe weather reports not normally available through standard observations. These include reports from indigenous sources, local law enforcement, local news media, and unit personnel. These reports will be passed immediately after fulfilling any local distribution requirement (e.g. special or local weather observation). If this is not possible, then pass the reports as soon as possible, so the 17 OWS can use reports in post-analysis and verification. Pass reports to the 17 OWS Tropics Forecaster at DSN 449-8334.

**6.7. Weather Watch/Warning/Advisory Numbering.** 17 OWS and AAFB WF will issue weather watches, warnings, and advisories using the N-TFS or IWWCs numbering convention. The first two digits represent the current month and the following three digits represent the number of the watch, warning, or advisory that month. All will be numbered sequentially and independent of one another. Example: WW 07-011 would be the 11th warning issued during July. WA 06-005 would be the 5th advisory issued during June. When IWWCS (Integrated Weather Warning Control System) software is used by the 17<sup>th</sup> OWS, it will annotate an "A" instead of "0" as the first digit of the second group. Example: WW07-A11.

## Chapter 7

### RECIPROCAL SUPPORT

**7.1. General.** For effective weather support, the WF provides weather support to and receives support from various agencies on AAFB and Guam. Supported agencies will:

7.1.1. Establish all weather support requirements with the WF. This must be done with sufficient advance notice to allow for necessary adjustments and preclude adverse impact on the WF’s ability to support pre-existing requirements. This includes coordinating changes in mission impacting weather thresholds for flying and non-flying operations.

7.1.2. For units that have access to the base network, PC based N-TFS software will be used to the greatest extent possible as a source of weather data. Data provided on the system includes: AAFB current observations, weather watches, warnings, and advisories.

7.1.3. For units requiring access to N-TFS software should contact the WF as soon as possible to arrange installation and set-up.

**7.2. 36 WG.**

7.2.1. The WF will:

7.2.1.1. Advise the 36 WG/CC and staff in all matters pertaining to weather. This is the primary responsibility of the WF Flight Commander (or designated representative) to ensure notifications are made in accordance with [Figure 7.1](#)

**Figure 7.1.**

Attachment 1 - As of 28 May 2008					
ITEM	Notification Chain (Note 1)				
	NCOIC	Flt/CC	SQ/DO	SQ/CC	OG/CC
Designation of Good/Fair/Poor areas, TCFAs, Tropical Storms within 300nm <b>expected</b> to affect Andersen or off-island 36 Wg units	I	I	I	I	I
Designation of Good/Fair/Poor areas, TCFAs, Tropical Storms in Western Pacific <b>not expected</b> to affect Andersen or off-island 36 Wg units	X	X	X	X	X
New volcanic eruptions or change in winds driving on-going volcanic ash	I	I	I	I	I
Cross-winds ≥ 15 kts	X	X	X	X	X
Forecast wx advisory for winds ≥ 25kts or forecast wind warning ≥ 35kts	X	X	X	X	X
Observed warning for lightning within 5nm	X	X	X	X	X
Forecast wx watch for lightning within 5nm	X	X	X	X	X
Observed advisory ceilings < 500' AGL (Rwy 06) or <1000' AGL (Rwy	X	X	X	X	X
Forecast warning for heavy precipitation (≥4 inches within 6 hours)	X	X	X	X	X
Tornado warning	I	I	I	I	I
Tsunami warning for region issued by Tsunami Warning Center	X	X	X	X	X
Earthquake ≥6.0 w/ 100NM of Guam	X	X	X	X	X
Waterspout, Tornado, or Funnel Cloud outside of 5nm advisory	I	I	I	I	I
Workcenter relocation to alternate & eventual return to primary	I	I	I	I	I
Workcenter equipment failure causing signif loss in capability (NTFS, Mark IVE, internet, radio, etc.) (if est ≥ 1 hr)	I	I	X	X	X
NEXRAD equipment failure or shutdown by NWS (if est ≥ 1 hr)	I	I	I	I	I
Loss of all wind / lightning sensors	I	I	I	I	I
<b>I = Immediately</b>					
<b>X = From 0730-1700L (conditions permitting). Timelines apply to weekends &amp; holidays also. See Note 2</b>					
<b>Notes:</b>					
#1) PERSONNEL ARE EXPECTED TO PERFORM CRITICAL/REQUIRED SOP ITEMS FIRST, NOTIFICATIONS SECOND! WF member on-shift is responsible for ensuring NCOIC is notified. If he cannot be reached, continue calling the next person until someone is contacted. Previously contacted person will notify next in order until SQ/CC is notified. <b>ALL CONTACTS WILL BE ACCOMPLISHED VIA RADIO, TELEPHONE, OR IN PERSON; NOT BY E-MAIL!!!</b>					
#2) Notify chain IMMEDIATELY during normal duty hours (0730-1700L). During non-duty hours, comply with stipulations for ( X ). SQ/CC & SQ/DO will respond on RAMPNET after AMOPS announcement to acknowledge; WF personnel contact SQ/DO & CC via notification chain if not acknowledged.					

7.2.1.2. Provide inputs to environmental support annexes in 36 WG operations plans and orders and provide support IAW those annexes.

7.2.1.3. Present staff weather briefings at 36 WG staff, ICC meetings and at the commander's request. This will include pre-deployment briefings, deployment planning briefings and Mobility Concept briefings as required.

7.2.1.4. Keep the 36 WG/CC continuously informed of the status of significant weather phenomena (particularly tropical cyclones) threatening 36 WG resources.

7.2.1.5. Keep the 36 WG/CC advised of capabilities and limitations of the WF's facilities and personnel.

7.2.1.6. Inform the 36 WG/CP of any situation involving weather service, personnel, or resources, to include severe weather or natural disaster events, which may need OPREP-3 reporting IAW AFI 13-202, *Overdue Aircraft* and AFMAN 10-206, *Operational Reporting* (See [attachment 16](#) for OPREP-3 example and criteria).

7.2.1.7. Provide the following products and services to the 36 WG/CP:

7.2.1.7.1. Current observations, weather watches, warning and advisory support via N-TFS IAW [Attachment 3](#) and [Attachment 4](#).

7.2.1.7.2. Telephone notification of all observed weather warnings and advisories IAW [Attachment 4](#).

7.2.1.7.3. AAFB Tropical cyclone update bulletins or JTWC warning bulletins to include wind forecasts for the 36 WG AOR via email.

7.2.1.7.4. Contact 36 WG/CP if a severe weather event or significant change in the forecast occurs.

7.2.1.8. Provide current wind direction and speed to 36 WG Disaster Response Force upon request when notified of toxic chemical spills. Requested weather data will be relayed to the Emergency Operations Center on-scene incident commander via any available means (36 WG/CP, secondary crash net, telephone, etc.).

7.2.2. 36 WG will:

7.2.2.1. Provide (to properly cleared weather personnel) access to 36 WG plans, programs, and operations to ensure complete consideration of weather factors.

7.2.3. 36 WG/CP will:

7.2.3.1. Disseminate warnings/watches and advisories to AAFB associate or subordinate agencies IAW [Attachment 3](#) and [Attachment 4](#).

7.2.3.2. Provide work space at the command post (table, two chairs, telephone, NIPR connectivity, and access to a fax machine) when the WF evacuates primary facility and must temporarily relocate (due to bomb threats, fire, etc.).

7.2.3.3. Notify the WF immediately of N-TFS software outages.

7.2.3.4. Provide a copy of weather related OPREP-3 reports to WF after transmittal.

### **7.3. Airfield Management (36 OSS/OSAM).**

7.3.1. The WF will:

7.3.1.1. Provide weather watches, warning and advisory support IAW [Attachment 3](#) and [Attachment 4](#).

7.3.1.2. Notify OSAM of weather conditions occurring that may cause a change in Runway Surface Conditions (RSC) and/or Runway Condition Readings (RCR).

7.3.1.3. Notify OSAM when changes affecting the weather station/operations are required to be posted in the DoD FLIP manual and/or NOTAMS (ex., long-term equipment outages, etc.).

7.3.1.4. Provide information to the Airfield Manager for FLIP entries. Data includes, but is not limited to, operating hours, PMSV frequency, supporting 17 OWS contact information, and pertinent observing information such as use of automated equipment and limitations hindering unobstructed visibility observations.

7.3.1.5. The WF will review and validate the accuracy of the information each time the FLIP is published and take immediate steps to correct erroneous data.

7.3.1.6. Notify OSAM when a WF evacuation is required.

7.3.2. 36 OSS/OSAM will:

7.3.2.1. Promptly disseminate warnings/watches and advisories IAW [Attachment 3](#) and [Attachment 4](#).

7.3.2.2. Notify the WF weather personnel of changes in RSC.

7.3.2.3. Notify the WF via the secondary crash net of all calls received over the primary crash net.

7.3.2.4. Notify the WF via secondary crash net of any changes to exercise or contingency conditions.

7.3.2.5. Notify the WF of locally initiated changes to the DoD FLIP that affect landing minimums.

7.3.2.6. Notify the WF of changes to structures on the airfield that may affect WF visibility maps.

7.3.2.7. Notify the WF when evacuation of the facility is required.

#### **7.4. Tower (36 OSS/OSAT).**

7.4.1. The WF will:

7.4.1.1. Disseminate all observations, TAFs, watches, warnings and advisories to the tower cab via N-TFS IAW [Attachment 3](#). If the tower is evacuated, WF personnel will relay weather information to their alternate site via the Tower's fly-away cell-phone, Airfield Operations, or by any other means available.

7.4.1.2. Notify tower controllers of any N-TFS, PMSV radio, or FMQ-19 Automated Meteorological Station outages/problems, long or short-term and expected time of return to service.

7.4.1.2.1. Request tower controllers to monitor PMSV radio frequency 344.6 during short-term PMSV outages or whenever the WF encounters short-term PMSV problems.

7.4.1.2.2. Tower will conduct a PMSV radio check with the WF when requested by the duty weather forecaster.

7.4.1.3. Verify the current Altimeter Setting (ALTSG) when requested by air traffic control personnel.

7.4.1.4. Take an observation of all weather elements when notified by the control tower of a weather change outlined under paragraph 2.4, of Cooperative Weather Watch. An observation will be disseminated if it meets the criteria outlined in paragraph 2.4.

7.4.1.5. When notified of a runway change, weather personnel will enter the appropriate runway changes to the FMQ-19 system.

7.4.1.6. Schedule weather personnel for an Air Traffic Indoctrination Briefing with the Chief, Air Traffic Control Training or alternate as required.

7.4.1.7. Provide initial visibility observation training and certification to all controllers IAW AFI 13-203 *Air Traffic Control*.

7.4.1.8. When different reportable values exist between Tower's and the WF's observation, the WF shall report the lower of the two observations on the METAR.

7.4.2. AAFB Tower (36 OSS/OSAT) will:

7.4.2.1. Perform Cooperative Weather Watch IAW paragraph 2.4.

7.4.2.2. Relay all local PIREPS to the WF.

7.4.2.3. Notify WF of any changes in active runway.

7.4.2.4. Notify WF of any N-TFS terminal or FMQ-19 sensor outages or problems.

7.4.2.5. Allow weather personnel to temporarily relocate to the tower during weather station evacuation. The tower is not the primary evacuation site, but weather personnel could evacuate to the tower in the event the 36 WG/CP is unavailable.

7.4.2.6. Schedule all air traffic controllers for the ATC Weather Familiarization and Visibility Observation Training with the WF NCOIC or designated representative.

7.4.2.7. Provide weather personnel an Air Traffic Indoctrination Briefing.

7.4.2.8. Monitor the PMSV frequency (344.6) if the WF PMSV is inoperative for short-term outages (normally less than one hour) and relay all PIREPs to WF weather personnel as time and resources permit.

7.4.2.8.1. Monitor the WF PMSV frequency and advise aircrew on UHF 344.6 to contact Airfield Operations at UHF 372.2 for weather service.

7.4.2.8.2. Perform radio checks and relay PMSV system problems to the WF.

7.4.2.9. Relay weather warnings, watches, and advisories verbatim to aircraft under ATC control.

## 7.5. 734 AMS (AMCC).

7.5.1. The WF will:

7.5.1.1. Notify the AMCC of any N-TFS communication problems.

7.5.1.2. Disseminate forecasts, observations, weather warnings/watches and advisories over the N-TFS and significant weather notification IAW [Attachment 3](#) and [Attachment 4](#).

7.5.1.3. Relay landing forecasts for AMC aircraft via telephone when requested.

7.5.1.4. Arrange briefing support for AMC transients to request/obtain flight weather briefing support through the transient briefing terminal.

7.5.1.5. Input CFP/mission data into 17 OWS aircrew briefing system based upon established duty priorities (see [Table 1.1](#)). If unable to, the WF will inform AMC transient aircrew to use the transient briefing terminal to request and obtain their flight weather briefing from their servicing OWS.

7.5.2. The 734 AMS will:

7.5.2.1. Serve as the central point of contact for all scheduled and unscheduled AMC flights into and out-of Andersen AFB.

7.5.2.2. Enter Computer Flight Plan (CFP) into the 17 OWS aircrew briefing system for all AMC scheduled departures NLT two hours prior to aircraft takeoff. During exercises, real world contingencies, or increased flight operations when the 734<sup>th</sup> is task saturated, the 734<sup>th</sup> will provide a copy of the CFP to the WF at least two hours prior to aircraft takeoff.

**Note:** Due to the large number of units supported by the 17 OWS and the high volume of requests received, if briefings are entered with less than 2 hours notice, the requests may not arrive at the requested brief time due to previously entered requests. High priority missions (i.e. Medical Evacuations) will take precedence over all other briefings.

7.5.2.3. Alert the WF when a hazard report involving weather service might be filed.

7.5.2.4. Notify the WF of N-TFS communication problems.

7.5.2.5. Notify AMC transient aircrew to request weather support via the 17 OWS website or from the OWS responsible for their area of responsibility. See Para. 6.5.1.4.

7.5.2.6. Allow aircrews to phone patch the WF (DSN 315-366-5230) for metro service.

## 7.6. HSC-25.

7.6.1. The WF will:

7.6.1.1. Produce tactical MEF's three times daily at 0500L, 1300L, and 2100L. These daily briefs will include: local area forecasts, lower-level winds, weather, flight hazards and other significant data as requested. The MEF will be posted to the WF intranet page and will also be made available to HSC-25 via e-mail. See Para 3.4.2.1.

7.6.1.2. Provide mission weather briefs either in person, e-mail, fax or phone as requested.

7.6.1.3. Provide weather warnings/watches and advisories notification IAW [Attachment 3](#) and [Attachment 4](#).

7.6.1.4. Provide weather inputs to IRC briefings if requested. **Note:** HSC-25 currently does not require IRC briefings.

7.6.2. HSC-25 will:

- 7.6.2.1. Contact the WF and request mission briefs before flights.
- 7.6.2.2. Provide a daily flight schedule to the WF via fax or email.
- 7.6.2.3. Provide PIREPs on request to the WF.
- 7.6.2.4. Provide monthly sortie statistics to the WF.
- 7.6.2.5. Provide debrief mission data to the WF when available..

**7.7. 36 CES.**

7.7.1. The WF will:

- 7.7.1.1. Provide quarterly weather data (cooling degree days) to 36 CES/CEOE, as requested.

7.7.2. 36 CES will:

- 7.7.2.1. Provide routine facility repairs and maintain back-up power generators at the NEXRAD site, and at the 36 OSS Facility, Bldg 17002.

**7.8. 36 CS.**

7.8.1. The WF will:

- 7.8.1.1. Contact 36 CS JOB CONTROL with any outages.
- 7.8.1.2. Log all outages and track outage status.

7.8.2. Meteorological/Navigation Aids (METNAV) will:

- 7.8.2.1. Coordinate with the WF prior to performing preventive maintenance.
- 7.8.2.2. Maintain continuous response capability and respond within 30 minutes for significant impact outages and during normal duty hours for minimal impact outages of FMQ-19 sensors as listed in [Attachment 9](#).

7.8.3. Radar Maintenance section will:

- 7.8.3.1. Coordinate with the WF prior to performing maintenance or repairs.
- 7.8.3.2. Maintain continuous response capability for the WSR-88D, NEXRAD Doppler Weather Radar.
- 7.8.3.3. In the event of Radar outages, Radar Maintenance Section repair priorities are as follows:

- 7.8.3.3.1. WSR-88D, NEXRAD: Radar Data Acquisition (RDA), Transmitter and Open Principal User Processor (OPUP)

7.8.4. Radio Maintenance section will:

- 7.8.4.1. Coordinate with the WF prior to performing maintenance or repairs.
- 7.8.4.2. Maintain continuous response capability and respond to PMSV radio outages.

7.8.5. Mark-IVB Maintenance section will:

- 7.8.5.1. Coordinate with the WF prior to performing maintenance or repairs.

7.8.5.2. Maintain continuous response capability and respond to Mark-IVB outages.

7.8.6. 36 CS/SCN section maintaining the Joint Environmental Toolkit (JET) System will:

7.8.6.1. Coordinate with the WF prior to performing maintenance or repairs.

7.8.6.2. Maintain continuous response capability and respond to JET outages.

### **7.9. 36 MXG Maintenance Operations Center (MOC) and 36 MUNS Munitions Control.**

7.9.1. The WF will:

7.9.1.1. Provide weather warning/watch and advisory support IAW **Attachment 3**, **Attachment 4** and **Attachment 6**.

7.9.2. 36 MXG MOC and 36 MUNS Munitions Control will:

7.9.2.1. Notify the WF, via hotline or telephone, of any observed lightning in the area.

### **7.10. 36 LRS/LGRF (Fuels).**

7.10.1. The WF will:

7.10.1.1. Provide weather warning/watch and advisory support IAW **Attachment 3** and **Attachment 4**.

7.10.2. 36 LRS/LGRF (Fuels) will:

7.10.2.1. Notify the WF, via hotline or telephone, of any observed lightning in the area.

### **7.11. Detachment 5, 22d Space Operations Squadron (AFSPC).**

7.11.1. The WF will:

7.11.1.1. Provide weather warning/watches and advisories notification IAW **Attachment 3** and **Attachment 4**.

7.11.1.2. Have available the space weather products listed in Section **3.8**

7.11.1.3. Provide weather support and climatology data as requested.

7.11.1.4. Provide updates to any changes in T-COR conditions.

7.11.1.5. Provide for an N-TFS client or software to be installed at their location so they can better monitor current and forecast weather conditions.

7.11.1.6. Provide lightning warning support as determined by observed lightning within 5NM of Andersen Air Force Base Complex. Notifications will be made IAW Attachment 4.

7.11.2. Det 5, 22 SOPS will:

7.11.2.1. Provide monthly statistics on space tracking missions as requested by the WF.

7.11.2.2. Access the 17 OWS's web page at [https://17ows.hickam.af.mil/index.cfm?fuseaction=by\\_type.space.opsii\\_space&UID=&BW=H&UF=M&AOR=1&AOI=3&sc=222332](https://17ows.hickam.af.mil/index.cfm?fuseaction=by_type.space.opsii_space&UID=&BW=H&UF=M&AOR=1&AOI=3&sc=222332) to view space forecasts for HF, UHF, and Spacecraft Tracking, and then provide feedback to the 17 OWS on their usefulness/validity.

7.11.2.3. As needed, inform the WF if/when any space event/anomaly causes impact to operations

7.11.2.4. As needed, contact the WF to request additional and/or new space weather products hosted on the WF's web page.

#### **7.12. 36th Contingency Response Group.**

7.12.1. The WF will:

7.12.1.1. Provide weather warning/watches and advisories notification IAW **Attachment 3** and **Attachment 4**.

7.12.1.2. Provide weather support, climatology, and light data as requested.

7.12.2. 36th Contingency Response Group will:

7.12.2.1. Provide the WF with information on contingency and exercise locations for specific climatology and light data support.

#### **7.13. 36 MDOS/SGOAB (Bioenvironmental Engineering).**

7.13.1. The WF will:

7.13.1.1. If required by fighter aircrews, contact Bioenvironmental Engineering for heat stress prevention/ Flight Index of Thermal Stress (FITS) IAW AFPAM 48-151, **Attachment 3**.

7.13.2. Bioenvironmental will:

7.13.2.1. Provide heat stress prevention guidance and recommendations and Flight Index of Thermal Stress (FITS) IAW AFPAM 48-151, **Attachment 3**, as requested by the WF.

#### **7.14. Support to TDY Unit(s).**

7.14.1. The WF will:

7.14.1.1. Coordinate with TDY unit's weather flight to ensure weather support is made available through reach back support IAW AFMAN 15-129. In the event, the home weather unit cannot provide the necessary weather support, then the WF will provide the weather support as listed below.

7.14.1.2. The WF will coordinate mission weather requirements with TDY unit and provide weather support as manpower dictates, to include:

7.14.1.2.1. MEFs

7.14.1.2.2. Weather Watches, Warnings, and Advisories

7.14.1.2.3. Mass or pre-takeoff operations briefings

7.14.1.2.4. FITS data through 36 MDG/SGOAB

7.14.1.2.5. Tactical Decision Aids (TAWS)

7.14.1.2.6. Space weather updates

7.14.1.3. Maintain metrics on all long-term TDY unit(s) flying missions.

7.14.1.4. Provide weather inputs to IRC briefings if requested.

7.14.2. TDY Flying unit(s) will:

7.14.2.1. Request all weather support, in a timely manner, as necessary to accomplish their mission.

7.14.2.2. Provide the WF with PIREPs, AIREPs, and any other feedback that helps verify MEF's and other mission tailored forecast weather products.

7.14.2.3. Provide the WF with monthly statistics on missions flown.

7.14.2.4. Notify the WF to provide weather inputs to IRC briefings if required.

7.14.2.5. TDY flying units assigned to AAFB will coordinate directly with WF leadership for weather support. This support will be formalized through a Memorandum/Letter of Agreement coordinated by the 36 OSS/CC.

**7.15. Expeditionary Bomber Support:**

7.15.1. Background. Since March 2004, a deployed, AEF bomber presence has been in place on Andersen AFB (AAFB), Guam until further notice. The 36 OSS/OSW (WF) is the host base weather service provider and will provide weather support, services, and data to deployed units for the duration of their deployment.

7.15.2. The WF will provide:

7.15.2.1. A dedicated Mission Weather Services, Planning/Execution Cell. This weather cell will integrate with the deployed unit, as manpower permits, and provide full weather support at both the deployed location and from the WF's location in Bldg 17002.

7.15.2.2. Tactical MEF's three times daily at 0400L, 1200L, and 2000L; or as missions dictate. This MEF will include, amongst other things: local area/ranges/track forecasts, upper-level winds, AAFB take-off and recovery weather, flight hazards, forecast low level altimeters and altitude variations for low altitude training areas, and other significant data for mission planning and execution. The MEF will be posted to the WF intranet page and made available to the deployed unit.

7.15.2.3. Pre-Take-Off Briefings (PTOB's) or 175-1's either in person, over fax, or phone as dictated by the flight schedule or as requested.

7.15.2.4. Weather inputs to Feasibility/Capability (FEASCAP) meetings as requested.

7.15.2.5. Provide 24-hour mission planning weather slides each weekday, and a day prior to a break for the next flying mission. This slide will be posted to the WF intranet page and made available to the deployed unit.

7.15.2.6. Current weather observations and local area TAF's/forecasts as requested.

7.15.2.7. Updates/changes to briefed mission forecasts to the Supervisor of Flying (SOF), and/or the Mission Planning Cell (MPC) for dissemination to flight crews.

7.15.2.8. PMSV services and weather updates as requested.

7.15.2.9. Continuous METWATCH and MISSIONWATCH to help ensure mission success (including development of Thunderstorms or significant weather in the local flying area).

7.15.2.10. Forecast/Mission Verification metrics on all missions flown.

- 7.15.2.11. Weather inputs to IRC briefings as requested.
- 7.15.2.12. Reported steady state surface winds exceeding 45 knots to the SOF and/or MPC Ops desk.
- 7.15.2.13. Reported sea height which exceeds 10 feet to the SOF and/or MPC Ops desk.
- 7.15.2.14. Notification to the SOF and/or MPC Ops desk if weather falls below 1000 ft ceiling and 3 mile visibility.
- 7.15.2.15. Notification to the SOF and/or MPC Ops desk if weather falls below 500 ft ceiling and 1 mile visibility.
- 7.15.2.16. Weather warnings, watches and advisories based on the criteria listed in Chapter 6.
  - 7.15.2.16.1. The 17 OWS will issue all Forecast Weather Watches, Warnings, and Advisories for AAFB, while the WF will issue all Observed Weather Warnings and Advisories.
  - 7.15.2.16.2. The WF will ensure the deployed unit is notified of all Weather Watches, Warnings, and Advisories. The weather notification diagram for AAFB is shown in [Attachment 4](#).
- 7.15.3. EBS will provide:
  - 7.15.3.1. Contact information for the SOF and MPC Ops desk, with updates as needed.
  - 7.15.3.2. A daily or weekly flight schedule to the WF via internet, fax, or email.
  - 7.15.3.3. PIREPs/AIREP's on request to the WF.
  - 7.15.3.4. Feedback to the WF in the form of the Weather Debrief form given to aircrews and attached to each PTOB/175-1.
  - 7.15.3.5. Direct one-on-one debrief with weather cell member(s) as requested by the WF, or whenever aircrew requests this action.
  - 7.15.3.6. Updates to the WF on all changes to the flight schedule and briefing schedule.
  - 7.15.3.7. Mission weather brief requests before flights not listed on the flight schedule.
  - 7.15.3.8. Documentation and visual aids showing all mission operating areas, to include ranges, MOA's, IR, and AR Tracks, ATCAA's, and any other operating areas.
- 7.15.4. Weather Impacts to Operations (also refer to [Attachment 6](#) and [Attachment 9](#)).
  - 7.15.4.1. Instrument Procedures.
    - 7.15.4.1.1. If thunderstorms or significant weather is in the local area the preference is to hold and recover at Andersen AFB in lieu of diverting.
  - 7.15.4.2. Abnormal Operating Procedures.
    - 7.15.4.2.1. Ground Operations with lightning in the Local Flying Area.
    - 7.15.4.2.2. Lightning Watch: Does not require evacuation of the ramp; however, maintenance will begin preparing their equipment to ensure they can evacuate as soon as a Lightning Warning is announced.

7.15.4.2.3. Lightning Warning: Aircrews will evacuate the ramp with maintenance or remain in the aircraft with all hatches and windows closed (it is not necessary to ground the aircraft with grounding wires if engines are started). If persistent lightning is expected for an extended duration, crews may shut down engines.

7.15.4.2.4. Airborne Operations with Thunderstorms in the Local Flying Area.

7.15.4.2.4.1. Every effort will be made to recover crews at Andersen AFB rather than divert due to thunderstorms.

7.15.4.3. Low Altitude Operations. All aircrew will fly no lower than 5000ft AGL (other than takeoff, transition or landing) if they are not low-altitude qualified. Once low-altitude qualified, aircrew will fly no lower than the Minimum Safe Altitude (MSA) for Special Use Airspace and Military Training Routes. Over the open ocean, crews will fly no lower than 500ft AGL. Flying these minimum altitudes is authorized only when conditions permit 3 nm visibility, operating clear of clouds and visual contact with the ground. Aircrew will comply with AFI 11-2B-52V3 low-altitude equipment restrictions and limitations.

7.15.4.4. Length of Support.

7.15.4.4.1. Section 7.15 of this document will be in effect until the deployed unit's presence is removed from AAFB, or the terms in this document are significantly changed by future rotations and a complete revision is required. Other assigned rotational units with differing weather requirements or parameters (ex. Tankers, Fighters, B-2s, B-1s, etc.), will coordinate directly with the WF leadership for tailored weather support. This weather support will be formalized via a Memorandum/Letter of Agreement coordinated by the 36 OSS/CC.

## **7.16. Prescribed and Adopted Forms.**

7.16.1. Prescribed Forms:

No forms prescribed.

7.16.2. Adopted Forms:

AF Form 847, *Recommendation for Change of Publication*

PHILIP M. RUHLMAN, Brigadier General, USAF  
Commander

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFMAN 15-111, *Surface Weather Observations*  
AFMAN 15-111, PACAF Supplement 1, *Surface Weather Observations*  
AFMAN 15-124, *Meteorological Codes*  
AFMAN 15-125, *Weather Station Operations*  
AFMAN 15-128, *Aerospace Weather Operations – Roles and Responsibilities*  
AFMAN 15-129, *Air and Space Weather Operations-Processes and Procedures*  
PACAFI 15-101, *Weather Support for PACAF*  
PACAFI 15-102, *Tropical Cyclone Reconnaissance*  
AFI 10-206, *Operational Reporting*  
AFI 10-229, *Responding to Severe Weather Events*  
AFI 11-202 Vol 3, *General Flight Rules*  
AFI 13-202, *Overdue Aircraft*  
AFI 15-114, *Functional Resources and Weather Technical Performance Evaluation*  
AFI 25-201, *Support Agreement Procedures*  
AFPD 15-1, *Atmospheric and Space Environmental Support, Air Force Strategic Plan on Weather Reengineering*

***Abbreviations and Acronyms***

**AAFB**— Andersen Air Force Base  
**ADS**— Automated Dissemination System  
**AGL**— Above Ground Level  
**ALSTG**— Altimeter Setting  
**AMOS**— Automated Meteorological Observing System  
**AOL**— Alternate Operating Location  
**ATC**— Air Traffic Control  
**BWW**— Basic Weather Watch  
**CFP**— Computer Flight Plan  
**CPA**— Closest Point of Approach  
**CWW**— Cooperative Weather Watch  
**DoD**— Department of Defense

**FLIPs**— Flight Landing Information Publications  
**IAW**— In Accordance With  
**JTWC**— Joint Typhoon Warning Center  
**LWIN**— Local Weather Information System  
**MEF**— Mission Execution Forecast  
**MOOTW**— Military Operations Other Than War  
**MSL**— Mean Sea Level  
**TFS**— New-Tactical Forecast System  
**OWS**— Operational Weather Squadron  
**PA**— Pressure Altitude  
**PIREPS**— Pilot Reports  
**PMSV**— Pilot to Metro Service  
**OPUP**— Open Systems Principal User Processor  
**RSC**— Runway Surface Condition  
**SCN**— Secondary Crash Net  
**SOPS**— Space Operations Squadron  
**SWO**— Staff Weather Officer  
**TACC**— Tanker Airlift Control Center  
**TAF**— Terminal Aerodrome Forecast  
**TCFA**— Tropical Cyclone Formation Alert  
**TCCOR**— Tropical Cyclone Condition of Readiness  
**VIS**— Visibility  
**WA**— Weather Advisory  
**WDPN**— Bulletin Heading for Tropical Cyclone Wind Forecast  
**WSCOND**— Wind Shear Conditions (Low Level Wind Shear)  
**WW**— Weather Warning or Weather Watch

## Attachment 2

### SPECI (SPECIAL) AND LOCAL OBSERVATION CRITERIA.

#### A2.1. SPECI Weather Observation Criteria.

A2.1.1. SPECI observations are taken to report significant changes in weather elements, specified below. The actual time of a SPECI is the time the element requiring the special was observed to occur.

A2.1.1.1. Ceiling. A ceiling (5/8 or more sky coverage) forms below, decreases to less than, or if below, increases to equal or exceed:

3,000 ft	800 ft	500 ft	*200 ft
1,500 ft	700 ft	*400 ft	
1,000 ft	*600 ft	300 ft	

**NOTE:** All criteria preceded with an \* are from DoD FLIPs only

A2.1.1.1.1. Sky condition. A layer of clouds or obscuring phenomena aloft (not reported in the previous observation) is observed below 700 ft and not previously reported below this height.

A2.1.1.2. Visibility. If prevailing visibility decreases to less than, or if below, increases to equal or exceed the criteria listed below:

3 miles	2 miles	1 mile
2 ½ miles	1 ½ miles	¾ mile
2 ¼ miles	1 ¼ miles	½ mile

#### A2.1.1.3. Runway Visual Range (RVR)

A2.1.1.3.1. Prevailing visibility first observed  $\leq$ 1SM/1600 meters, again when prevailing visibility goes above 1SM/1600 meters. (AFMAN 15-111)

A2.1.1.3.2. RVR for active runway decrease to less than or, if below, increase to equal or exceed:

6,000 feet (AFMAN 15-111)  
 5,000 feet (AFMAN 15-111)  
 2,400 feet (AFMAN 15-111)  
 2,000 feet (AFMAN 15-111)

A2.1.1.3.3. First determined as unavailable (RVRNO) for the runway in use, and when it is first determined that the RVRNO report is no longer applicable, provided the conditions for reporting RVR exist.

A2.1.1.4. A tornado, funnel cloud, or waterspout: (Preceded by an "urgent" alert)

A2.1.1.4.1. Is first observed.

A2.1.1.4.2. Disappears from sight or ends.

A2.1.1.5. Hail begins or ends

A2.1.1.6. Thunderstorm:

A2.1.1.6.1. Begins.

A2.1.1.6.2. Ends (*15 minutes* after last occurrence of lightning).

A2.1.1.7. Precipitation:

A2.1.1.7.1. Any type of precipitation (hail, ice pellets, rain) begins or ends.

A2.1.1.7.2. Except for hail and ice pellets, a SPECI is not required for changes in type or the beginning or ending of one type while another is in progress.

A2.1.1.8. Wind and Wind Shifts:

A2.1.1.8.1. Squall (SQ). The speed suddenly increases by at least 16 knots and is sustained at 22 knots or more for at least 1 minute.

A2.1.1.8.2. Wind Shift (WSHFT). A change in wind direction of 45 degrees or more in less than 15 minutes with sustained winds of 10 knots or more throughout the wind shift.

A2.1.1.9. Volcanic Eruption. When eruption or volcanic ash is first observed.

A2.1.1.10. Any meteorological situation, which, in the opinion of the technician, is critical to the safety of aircraft operations.

A2.1.1.11. If manually observing after a period of no observations, disseminate SPECI within 15 minutes after returning to duty if a METAR was not filed during the 15 min. Or, if augmenting observations after a period of AUTO observations, SPECI is not required.

## **A2.2. LOCAL Weather Observation Criteria.**

A2.2.1. LOCAL observations are used to disseminate information that does not need to be shared outside of the local area. They are issued when the automated system is being augmented for elements beyond its sensing capability or component(s) are not functioning.

A2.2.1.1. Aircraft Mishap. During FMQ-19 augmentation and immediately following notification or sighting of an aircraft mishap at or near the station, unless there has been an intervening METAR or SPECI observation taken. These observations consist of elements normally included in a METAR observation.

A2.2.1.2. Altimeter Setting. At an interval not to exceed 35 minutes, disseminate single element LOCAL when there has been a change of at least 0.01 Hg or more since the observation. Required for Tower and RAPCON. Pressure measured with backup equipment is annotated ALSTG/SLP ESTMD in the observation remarks.

A2.2.1.3. Change in Runway. Following notification of a change in the runway in use, where the runway is dual-instrumented, weather sensors must be changed and allowed sufficient time to update with current information before taking the observation.

A2.2.1.4. Any meteorological situation, which, in the opinion of the technician, is critical to the safety of aircraft operations.

### Attachment 3

## WEATHER PRODUCTS AND SUPPORT DISSEMINATION PROCEDURES INCLUDING BACK-UP.

**A3.1.** Weather watches, warnings, advisories, observations, and TAFs, will be disseminated via AFW primary meteorological communication system ( N-TFS) and can be viewed over the base network using N-TFS client software available from the WF. The weather information listed above is also posted on the 17 OWS webpage.

A3.1.1. In addition to electronically transmitting products via N-TFS, weather warnings, watches, and advisories for AAFB will be voice disseminated through the 36 WG/CP, Airfield Operation's Secondary Crash Net (SCN), Tower hotline, and RAMP Net (as needed).

A3.1.1.1. The 17 OWS will contact the 36 WG/CP and the WF for all forecast warnings, watches, and advisories.

A3.1.1.2. The WF will contact the 36 WG/CP, Airfield Operations, and 17 OWS for all observed advisories and warnings. All watches, warnings, and advisories will also be posted and available on the 17 OWS website.

A3.1.2. 36 WG/CP will disseminate weather watches, warnings and advisories IAW [Attachment 4](#) with one exception (noted below).

A3.1.2.1. EXCEPTION: 36 MUNS Munitions Control will get backup notification for the observed warning for lightning within 5 nm of the Andersen AFB complex via telephone notification from the WF.

A3.1.3. Airfield Operations will disseminate weather watches, warnings and advisories IAW [Attachment 4](#).

### **A3.2. BACKUP DISSEMINATION PROCEDURES.**

**A3.2.1. 17 OWS Weather Information, Products and Services Backup Dissemination Procedures.**

A3.2.1.1. If Andersen AFB loses base network connectivity, and/or access to N-TFS or the 17 OWS web site, the 17 OWS will fax selected weather products and information. The following list contains the minimum standard products suite the 17 OWS will provide the Andersen WF:

A3.2.1.1.1. All Forecaster-in-the-Loop (FITL) graphics for the Andersen AFB local area, including the Horizontal Weather Depiction (HWD) and standard level analyses

A3.2.1.1.2. All applicable hazard charts

A3.2.1.1.3. Standard flight level winds

A3.2.1.1.4. Local area TAF's, to include PGUM, PGSN, PGRO, RODN, and RJTY

A3.2.1.1.5. Weather Watches, Warnings, and Advisories

A3.2.1.1.6. In addition to the standard products listed above, 17 OWS will provide other products as requested by the WF forecaster.

A3.2.1.2. If the weather dissemination system and fax methods of dissemination are not operational, 17 OWS will *verbally* pass weather products and information to the Andersen WF.

### **A3.3. Andersen AFB WF Information, Products and Services Backup Dissemination Procedures.**

A3.3.1. If the WF cannot transmit an airfield observation longline, or if network connectivity with the 17 OWS is lost, the AAFB WF will communicate all observations via telephone to 17 OWS. The 17 OWS is available to enter observations into the Automated Weather Network database. Additionally, during periods of lost network connectivity with the 17 OWS, the WF will disseminate the following products to the 17 OWS through whichever means available (i.e telephone or fax): Observed weather warnings/advisories,

A3.3.2. For local back-up dissemination if the N-TFS is inoperative, WF products (i.e. observations, weather warnings, warnings, advisories) will be disseminated by phone in the following priority: ATC Tower, SOF, HSC-25 Ops Desk, Deployed Wx Ops Cell, AMOPS and 36 WG/CP; contacts will be logged on AF Form 3130. (Refer to atch7, paragraph A7.1.1. for local observation format)

A3.3.2.1. If AAFB WF cannot produce or disseminate their tactical MEFs due to unforeseen (emergency) situations, then the WF will contact the OWS to coordinate MEF production and dissemination. This will minimize interruption of current customer MEF support provided by the WF.

### **A3.4. WF SUPPORT DURING OWS OUTAGES/EVACUATIONS.**

A3.4.1. Sources of Products and Services to AAFB WF.

A3.4.1.1. The AAFB WF will assume responsibility for providing all weather support for AAFB in the event that 17 OWS operations are impaired due to lost communications, system failure, evacuation or any termination of service at Hickam AFB.

A3.4.1.2. The WF will retain this responsibility until such time that 17 OWS is ready to reassume its weather responsibilities role for the AAFB WF after activation of its alternate location.

A3.4.2. AAFB WF-Required Products and Services.

A3.4.2.1. 17 OWS will provide all forecast products listed in paragraph A3.2.1.1 from its alternate location. In addition, 17 OWS will produce regional graphic charts listed below:

A3.4.2.2. All Forecaster-in-the-Loop (FITL) graphics for the Andersen AFB local area, including the HWD, standard level analyses, all applicable hazard charts and standard flight level winds. Generation of these products may be significantly delayed due to limited processing capability and bandwidth at the alternate location.

A3.4.3. The primary method to disseminate products listed in paragraph A3.2.1.1 will be via N-TFS and 17 OWS website (<http>). The backup method for dissemination for both types of products will be via facsimile.

### **A3.5. 17 OWS SUPPORT DURING WF OUTAGES/EVACUATIONS.**

### A3.5.1. Sources of Products and Services to 17 OWS.

A3.5.1.1. The 17 OWS will reassume responsibility for providing all weather support for AAFB in the event that the WF's operations are impaired due to lost communications, system failure, evacuation or any termination of service at Andersen AFB.

A3.5.1.2. The 17 OWS will retain this responsibility until such time that the WF is ready to reassume its weather responsibilities role for AAFB, either after activation of its alternate location or resumption of normal operating services at the primary WF location.

A3.5.1.3. The 17 OWS will provide back-up products and services to AAFB customers according to the three-tiered order as outlined in AFM 15-129, [Table 1.1](#):

**Table 9.1. Three-Tier Back-Up Support.**

Mission Tier	Type of Products & Services	Back-Up Priority
Tier 1a. Wartime, Contingencies, and Military Operations Other Than War	Flight Weather Hazards, MWAs, CMEFs, MOAFs, JOAFs, TAFs, Flight Weather MEFs, and classified products and services.	Must back-up. Immediate transfer to back-up unit.
Tier 1b. Resource Protection	Forecast Weather Watches, Warnings, Advisories, and Space Weather Warnings.	
Tier 2. Peacetime and Exercise Operations	Flight Weather Hazards, MWAs, CMEFs, MOAFs, JOAFs, TAFs, Flight Weather MEFs, and other products and services as resources allow.	Back-up to the greatest extent possible after satisfying Tier 1a & b requirements.
Tier 3. Mission Planning	Long Range Forecasts, Space Weather Support, Climatology, Staff Support, etc.	Back-up as resources are or become available after satisfying Tier 1 & 2 requirements.

### A3.5.2. 17 OWS-Required Products and Services.

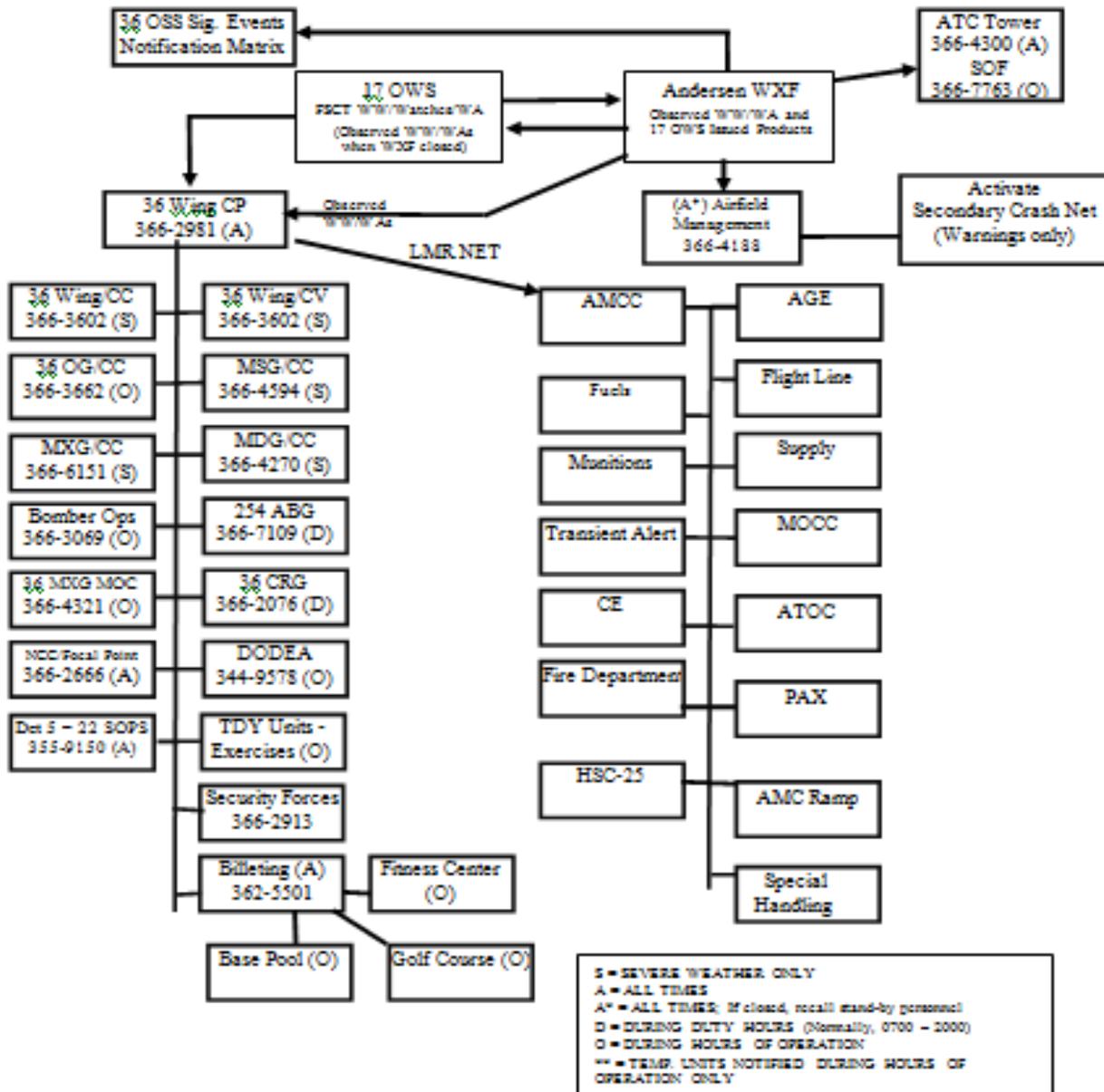
A3.5.2.1. The WF will provide copies of the latest MEF, SOPs, Bomber PTOBs and Bomber planning weather packages to the 17 OWS via the WF's local web page hosted by the 17 OWS. Additionally, the WF will send soft copies of these products to the 17 OWS to keep as back-up.

A3.5.2.2. The 17 OWS will produce AAFB MEF(s) and MEF related products IAW WF SOPs and disseminate to the WF via fax and/or post to the 17 OWS web page (if network is working) until such time the WF is able to resume operations.

A3.5.2.3. In addition to above, 17 OWS will provide back-up support as described in A3.2 and A3.3.

Attachment 4

WEATHER WARNING (WW), WATCH, AND ADVISORY (WA) NOTIFICATION DIAGRAM\*



\* For simplicity and ease of use, one flowchart is used for all watches, warnings, and advisory notifications. If you receive notification of weather criteria, which does not affect your operations, simply ignore the notification. Please do not call to get removed from the notification list.

Attachment 5

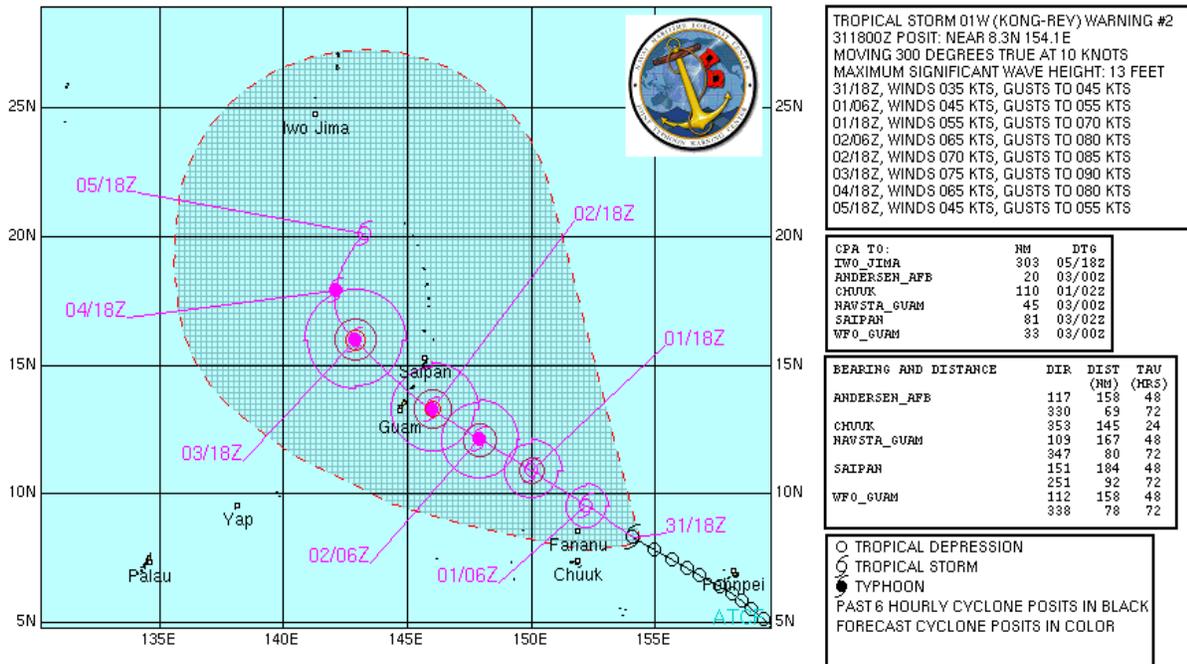
TROPICAL CYCLONE INFORMATION DISSEMINATION PROCEDURES.

**A5.1.** AAFB Tropical Cyclone Update warnings will be emailed to base agencies listed below. Additional agencies, key personnel, and deployed units to AAFB can coordinate with the WF to receive the tropical cyclone update emails. In the event of a base email outage and a tropical cyclone is forecast to affect AAFB within 72 hours, all tropical cyclone information will be briefed at ICC meetings. The latest graphical storm track is also available on the JTWC website. (<https://metocph.nmci.navy.mil/jtwc.php>)

**A5.2.** AAFB Tropical Cyclone Update Bulletin e-mail distribution list: 36 WG/CC, 36 WG/CV, 36 WG/CCE, 36WG/GROUP CC'S, 36 WG/SE, 36 WG/SQUADRON CC'S, 36 WG/STAFF-DIVISION CHIEFS, 36EOG EBS/CC, 36OSS, 36OSS/CC, 36OSS/DO, 36OSS/OSW (mailbox), 36OSS-ALL USERS, 734AMS/ALL CC STAFF, HSC-25 OPS & SCHEDULERS, 22 SOPS DET 5, 17 OWS/CC, and WX.Briefers 17 OWS (mailbox).

**A5.3.** The AAFB TC-TAP bulletin will be disseminated longline over the N-TFS by the 17<sup>th</sup> OWS. The information contained in the WDPN will be briefed in Wing Battle Staff Meetings to help set COR conditions, if required.

Figure A5.1. Example of a JTWC Warning Bulletin:



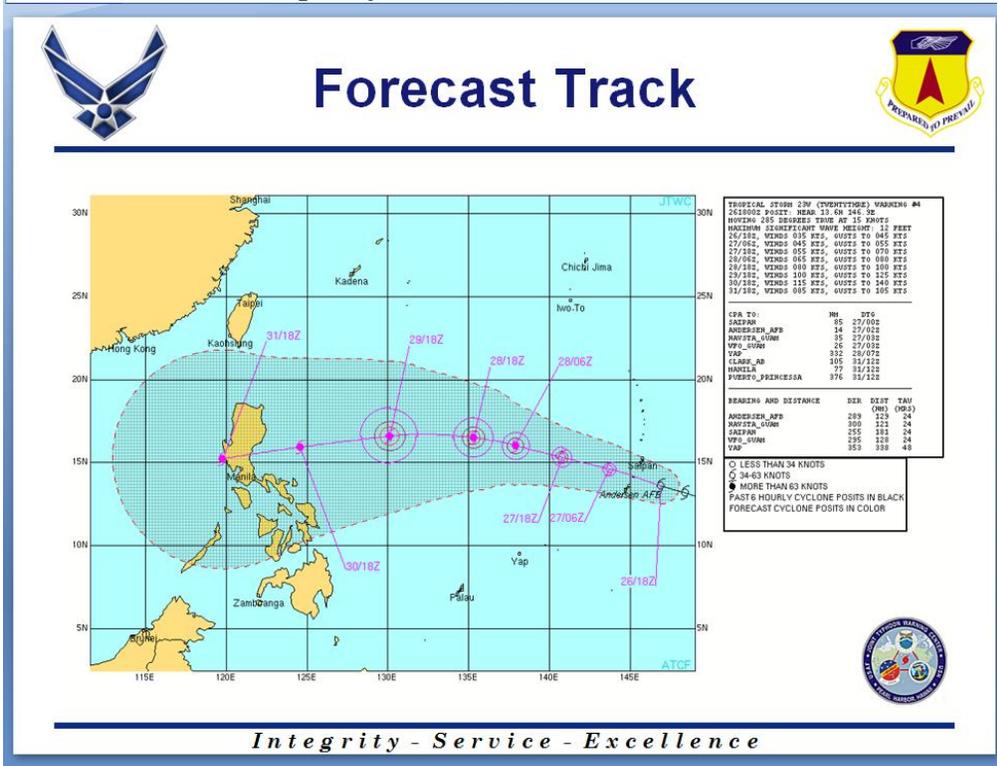
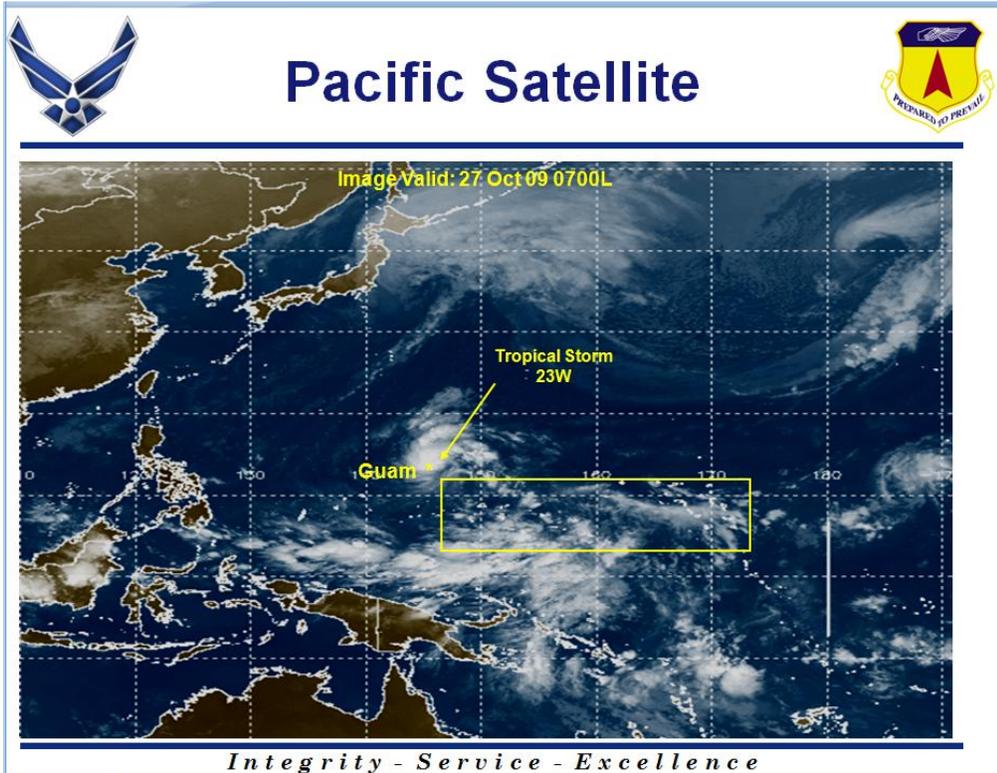
**Figure A5.2. Example of a 17 OWS TC-TAP Bulletin:****FXXX11 PHIK 281200Z****TROPICAL CYCLONE-THREAT ASSESSMENT PRODUCT****TYPHOON 01W****BASED ON JTWC WARNING #: 12****ANDERSEN AFB, GUAM**

MAX SUSTAINED WIND:	75KTS
MAX GUSTS:	105KTS
MAX WIND DATE/TIME:	26/1800Z
CLOSEST POINT OF APPROACH:	32NM NE at 26/1700Z
50-KT WINDS BEGIN-END:	25/2000Z-26/2000Z
15-KT CROSSWINDS BEGIN-END:	24/0000Z-27/0000Z
20-KT CROSSWINDS BEGIN-END:	24/0300Z-26/2000Z
25-KT CROSSWINDS BEGIN-END:	24/0800Z-26/0500Z
PRECIP BEGIN-END:	23/0300Z-25/0500Z
REMARKS:MAX PRECIP	2-4"

REMARKS: FOR MORE INFORMATION AND FOR GRAPHICAL PRODUCTS,  
PLEASE REFER TO <https://metoc.npmoc.navy.mil/jtwc.html>

FORECASTER/QC: PS/CRH

Figure A5.3. Example of an AAFB Tropical Cyclone Update Bulletin: The bulletin will contain the following Powerpoint slides:





## Discussion



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**Valid Time:** 26/2100Z (27/0700L)

**Area:** Tropical Storm 23W

**Location/ Movement:**  
TROPICAL STORM 23W (TWENTYTHREE), POSITION NEAR 13.4N 147.7E, LOCATED APPROXIMATELY 82 NM EAST NORTHEAST OF GUAM, HAS TRACKED WEST-NORTHWEST AT 15 KNOTS OVER THE PAST SIX HOURS.

**Discussion:**  
TS 23W IS JUST SOUTH OF THE SUBTROPICAL RIDGE AXIS IN AN AREA OF LOW VERTICAL WIND SHEAR. ANIMATED WATER VAPOR IMAGERY SHOWS A GOOD POLEWARD OUTFLOW ENHANCED BY THE TROPICAL UPPER TROPOSPHERIC TROUGH TO THE NORTHEAST. TS 23W IS TRACKING ALONG THE SOUTHERN PERIPHERY OF A LOW- TO MID-LEVEL SUBTROPICAL RIDGE TO THE NORTH. IT IS EXPECTED TO CONTINUE ALONG THIS TRAJECTORY THROUGHOUT THE FORECAST PERIOD AND GRADUALLY INTENSIFY, PEAKING AS IT DRIFTS ACROSS THE WARMER WATERS OF THE PHILIPPINE SEA.

**General Forecast:**  
EXPECT CONTINUED INCREASED CLOUDINESS, RAINSHOWERS, AND ISOLATED THUNDERSTORMS TODAY. BY 1000L WINDS WILL INCREASE TO 25 KNOTS SUSTAINED GUSTING TO 35 KNOTS. BY 1200L MAX EXPECTED WINDS ASSOCIATED WITH TS 23W WILL BE 35 KNOTS SUSTAINED GUSTING TO 40 KNOTS DURING HEAVY SHOWER ACTIVITY. WINDS WILL BEGIN TO DECREASE BACK DOWN TO 25 KNOTS SUSTAINED WITH GUSTS TO 30 KNOTS AFTER 1900L. MAX CROSSWINDS ARE EXPECTED TO BEGIN TUESDAY MORNING THROUGH WEDNESDAY EVENING AT MINIMUM 15 AND MAXIMUM CROSSWIND OF 34 KNOTS. RAIN SHOWERS WILL BEGIN TO TAPER OFF WEDNESDAY MORNING.

**Next Update:**  
27/0300Z (27/1300L) OR IF UPGRADED OR DOWNGRADED BY JTWC.

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**A5.4. Example of an AAFB Wind Forecast Bulletin:** This slide will be included with the slides in A5.6 when significant winds/crosswinds are forecast to impact AAFB.



## Forecast Conditions



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TIME	TIME	DIRECTION	SPEED	GUST	X-WIND-MIN	X-WIND-MAX	WX	RCR
LOCAL	ZULU	(DEGREES)	(KTS)	(KTS)	(KTS)	(KTS)		
08/22L	08/12Z	90	25	35	13	18	SHRA/TS	WET
09/04L	08/18Z	90	25	35	13	18	SHRA/TS	WET
09/10L	09/00Z	90	25	35	13	18	SHRA/TS	WET
09/16L	09/06Z	110	25	35	19	27	SHRA/TS	WET
09/22L	09/12Z	120	25	35	22	30	SHRA/TS	WET
10/04L	09/18Z	130	25	35	23	33	SHRA/TS	WET
10/10L	10/00Z	130	30	45	28	42	SHRA/TS	WET
10/16L	10/06Z	130	25	35	23	33	SHRA/TS	WET
10/22L	10/12Z	130	25	30	23	28	SHRA/TS	WET
11/04L	10/18Z	150	20	25	20	25	SHRA/TS	WET
11/10L	11/00Z	170	15	20	14	19	SHRA/TS	WET

- 15KT X-Winds w/wet twy
- 16-25KT X-Winds w/wet twy
- >25KT X-Winds w/wet twy

CPA: 230NM @ 09/1200Z (09/2200L)  
Max Wind: 30G45KTS @ 10/0000Z (10/1000L)

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## Attachment 6

## WEATHER IMPACTS ON BASE AGENCIES

**NOTE:** The information listed in this attachment does not govern the actions of units on AAFB and the responsibility to perform customer action rests solely with the units listed below. This attachment is provided to ensure weather personnel understand the impact of their products on base operations. The information contained in this attachment is current as of the date this plan was signed.

Watch Criteria	Agency	Customer Action
Forecast Weather Watch for Lightning within 5 NM of AAFB Complex	734 AMS	Work with caution.
	HSC-25	Operate with caution.
	36 MXS/36 MUNS 36 EAMXS	Proceed with caution.
	GS-21	Proceed with caution.
	36 OSS/OSAM	Document in Event Log. Activate SCN, notify tower, and pass over ramp net.
	36 WG/CP	Relay info to WG agencies including 36 OG.
	36 MDG/SOAS	Alert all disaster response teams of weather conditions.
	36 CES	Proceed with caution.
	36 SFS	Proceed with caution and have patrols avoid munitions area, if possible.
	36 SVS	Proceed with caution.
	AAFES	Dispatch notification to other facilities; begin events log and review checklist
	DECA	Notify food services personnel and facilities
	DODEA	Notify Elementary and Middle school administrators, and Superintendent's office to take precautionary measures
	36 CS Andersen Com Focal Point	Email and announce to outside personnel working on electrical equipment and antennas
	254 ABG	Notify Readiness personnel
	Det 5, 22 SOPS	Proceed with caution.
36 OG	Does not require evacuation of the ramp, however, maintenance will begin preparing their equipment to ensure they can evacuate as soon as a Lightning Warning is announced. MUTES – no action taken	
Forecast Weather Watch for Tornado, Funnel Cloud, or Waterspout within 5 NM of AAFB	36 OSS/OSAM	Document in Event Log. Activate SCN, notify tower, and pass over ramp net.
	36 WG/CP	Notify agencies according to <b>Attachment 4</b>
	All Agencies	Take immediate precautionary actions to protect equipment and personnel from flying debris. Secure all

complex		loose items as quickly as possible if deemed safe.
Forecast Weather Watch for Winds 50 knots or greater  Cont. Forecast Weather Watch for Winds 50 knots or greater	734 AMS	Work with caution. Move all unnecessary support equipment away from aircraft. Follow all applicable tech order guidance for maintenance and loading operations for each MDS and required support equipment.
	HSC-25	Place aircraft in hangars. 60 knot winds can cause significant damage to helicopters on the tarmac.
	36 WG/PA	Consider placing info onto the Commander's Information Channel.
	36 OSS/OSAM	Document in Event Log. Activate SCN, notify tower, and pass over ramp net.
	36 WG/CP	Relay info to WG agencies including EBS.
	36 MXS/36 MUNS 36 EAMXS	Remove non-essential equipment from flightline.
	36 LRS	Proceed with caution for all refueling operations.
	GS-21	Proceed with caution. Secure loose items near work areas and on flightline.
	36 WG/Safety	Conduct spot checks around the WG to ensure that agencies have secured equipment and personnel (both as needed).
	AAFES	Dispatch notification to other facilities; begin events log and review checklist
	DECA	Notify food services personnel and facilities
	DODEA	Notify Elementary and Middle school administrators, and Superintendent's office to take immediate action.
	36 CS Andersen Com Focal Point	Email to all personnel, and announce to outside personnel working on equipment, outside projects, and antennas
	254 ABG	Notify Readiness personnel
	Det 5, 22 SOPS	Consider stowing antenna(s) as required.
36 OG	MUTES – Keep operating	
<b>Warning Criteria</b>	<b>Agency</b>	<b>Customer Action</b>
Forecast Weather Warning for Winds 50 knots or Greater	734 AMS	In addition to the watch actions, no work can be done on the flightline or inside the aircraft without approval of the Maintenance Supervisor/Maintenance superintendent. No loading/unloading of equipment permitted.
	HSC-25	In addition to watch actions, flight operations are severely limited.
	36 WG/PA	Place the info on the Commander's Access Channel.
	36 MXS/36 MUNS 36 EAMXS	Pull in most flightline equipment if able to. All personnel pulled from flightline.

	36 LRS	All flight line refueling activities are halted.
	GS-21	Vehicle ops and maintenance are limited to essential tasks.
	36 WG/Safety	Conduct spot checks around the WG to ensure agencies have secured equipment and personnel (both as needed).
	36 OSS/OSAM	Activate Secondary Crash Net. Document in Event Log. Inform airfield contractors to secure equipment and evacuate flightline. Notify tower, and pass over ramp net.
	36 WG/CP	Relay info to WG agencies including 36 OG.
	AAFES	Dispatch notification to other facilities; begin events log and review checklist
	DECA	Notify food services personnel and facilities – take immediate action
	DODEA	Notify Elementary and Middle school administrators, and Superintendent’s office to take immediate action
	36 CS Andersen Com Focal Point	Email and announce to outside personnel working on electrical equipment, projects, and antennas – take immediate protective action
	254 ABG	Notify Readiness personnel to take immediate protective action.
	Det 5, 22 SOPS	Stow antenna(s) as required.
	36 OG	MUTES – Park Antenna “bird bathing”
<b>Warning Criteria</b>	<b>Agency</b>	<b>Customer Action</b>
Forecast Weather Warning for Winds 35-49 knots	734 AMS	Cannot load/unload aircraft and no repair work can be done outside the aircraft without approval of the Maintenance Supervisor/ Maintenance superintendent. Aircraft WG flaps will be raised when wind gusts exceed 35 knots.
	HSC-25	If/when wind speeds near 45 knots, HSC-25 helicopters will be put in hangars as rotor blades can’t be folded at 45 knots
	36 MXS/36 MUNS 36 EAMXS	Proceed with caution
	GS-21	Vehicle maintenance is limited in some work areas.
	36 OSS/OSAM	Activate Secondary Crash Net. Document in Event Log. Inform airfield contractors to secure equipment and

		evacuate flightline. Notify tower, and pass over ramp net.
	36 WG/CP	Relay info to WG agencies including 36 OG.
	36 MDG/ SGOAS	Alert Ambulatory and disaster response teams of weather conditions. Secure PLA tent located on flight line
	36 CES	Place advisory on net, provide some precautions, and take down tent cities if they are up.
	36 CS	When winds go above 40 knots work crews are not allowed to perform maintenance on towers or roofs.
	36 SFS	Proceed with caution.
	36 SVS	Proceed with caution.
	AAFES	Dispatch notification to other facilities; begin events log and review checklist
	DECA	Notify food services personnel and facilities – take protective action
	DODEA	Notify Elementary and Middle school administrators, and Superintendent’s office to take immediate action
	36 CS Andersen Com Focal Point	Email and announce to outside personnel working on electrical equipment, projects, and antennas – take immediate protective action
	254 ABG	Notify Readiness personnel to take protective action.
	Det 5, 22 SOPS	Proceed with caution. Consider stowing antennas as needed.
	36 OG	MUTES – Keep Operating
Observed Weather Warning for Lightning within 5 NM of AAFB Complex	734 AMS	No work can be done on the flightline and no loading/unloading of aircraft permitted.
	HSC-25	Flightline personnel evacuated indoors and pilots will land if there isn’t an alternate work area over the island outside of thunderstorms.
	36 MXS/36 MUNS 36 EAMXS	Immediate termination of all fuel and LOX servicing Ops. Immediate termination of all external aircraft maintenance. Flight line evacuated by maintenance. Munitions site evacuated.
	GS-21	All fuels activities on flight line are halted and some work areas are evacuated until all clear is given.
	36 OSS/OSAM	Activate Secondary Crash Net. Document in Event Log. Inform airfield contractors to secure equipment and evacuate flightline. Notify tower, and pass over ramp net.
	36 WG/CP	Relay info to WG agencies including 36 OG.
	36 MDG/ SGOAS	Alert all disaster response teams of wx conditions.
	36 CES	Shut down all CE computers, CE outdoor activities

Cont. Observed Weather Warning for Lightning within 5 NM of AAFB Complex		severely limited.
	36 LRS	Pull fuels personnel out of tank areas
	36 CS	All outdoor maintenance suspended.
	36 SFS	Patrols no longer allowed to proceed to the munitions area.
	36 SVS	Cease outdoor activities including temporarily closing the pool and golf course.
	AAFES	Dispatch notification to other facilities; begin events log and review checklist
	DECA	Notify food services personnel and facilities – take immediate action
	DODEA	Notify Elementary and Middle school administrators, and Superintendent’s office to take immediate action
	36 CS Andersen Com Focal Point	Email and announce to outside personnel working on electrical equipment, projects, and antennas – take immediate protective action
	254 ABG	Notify Readiness personnel to take immediate protective action.
	Det 5, 22 SOPS	Proceed with caution.
36 OG	Aircrews will evacuate ramp with maintenance or remain in aircraft with all hatches and windows closed (it is not necessary to ground the aircraft with grounding wires if engines are started). If persistent lightning is expected for an extended duration, crews may shut down engines. MUTES – Bring power down and evacuate area.	
Forecast Weather Warning for Heavy Rain $\geq 4''$ in 6 hrs	734 AMS	MOC and ATOC make appropriate notifications via LMR Net
	HSC-25	Flightline personnel evacuated indoors and pilots will land if there isn’t an alternate work area over the island outside of thunderstorms.
	36 MXS/36 MUNS 36 EAMXS	Consider Flight line evacuation by maintenance and munitions site evacuation.
	GS-21	Consider halting all fuels activities on flight line; some work areas are evacuated until all clear is given.
	36 OSS/OSAM	Activate Secondary Crash Net. Document in Event Log. Inform airfield contractors to secure equipment and evacuate flightline. Notify tower, and pass over ramp net.
	36 WG/CP	Relay info to WG agencies including 36 OG.
	36 MDG/SGOAS	Alert all disaster response teams of wx conditions.
	36 CES	Notify environmental contractors to obtain access to the flightline for purposes of collecting water storm samples. Contractor personnel must proceed with extreme caution. In addition, CE personnel must severely limit outdoor

		activities
	36 CS	All outdoor maintenance suspended.
	36 SFS	Consider suspending Patrols to the munitions area.
	36 SVS	Cease outdoor activities including temporarily closing the pool and golf course.
	AAFES	Dispatch notification to other facilities; begin events log and review checklist
	DECA	Notify food services personnel and facilities – take immediate action
	DODEA	Notify Elementary and Middle school administrators, and Superintendent’s office to take immediate action
	36 CS Andersen Com Focal Point	Email and announce to outside personnel working on electrical equipment, projects, and antennas – take immediate protective action
	254 ABG	Notify Readiness personnel to take immediate protective action.
	Det 5, 22 SOPS 36 OG	Proceed with caution. MUTES – No action taken
	36 OSS/OSAM	Activate Secondary Crash Net. Document in Event Log. Inform airfield contractors to secure equipment and evacuate flightline. Notify tower, and pass over ramp net.
Observed Weather Warning for Tornado, Funnel Cloud, or Waterspout within 5 NM of AAFB complex	36 WG/CP	Notify agencies according to <b>Attachment 4</b>
	All Agencies	Take immediate precautionary actions to protect equipment and personnel from flying debris. Secure all loose items as quickly as possible if deemed safe.
<b>Advisory Criteria</b>	<b>Agency</b>	<b>Customer Action</b>
Forecast Weather Advisory for Winds 25-34 knots	734 AMS	Work with caution. Move all unnecessary support equipment away from aircraft. Follow all applicable technical orders/guidance for maintenance and loading/unloading operations for each MSD and required support equipment.
	36 MXS/36 MUNS 36 EAMXS	Proceed with caution.
	36 OSS/OSAM	Activate SCN, notify tower, and pass over ramp net. Key agencies on SCN (Fire Dept, AMCC, Fuels, Ambulance services, SFs, TA, Bomber MOC, HSC-25, Safety, EOD, CE, Disaster Prep, and Munitions) will take necessary precautions deemed critical to protecting

		aircraft, personnel, and airfield ops.
	36 WG/CP	Relay info to other Wing agencies including 36 OG.
	36 MDG/SGOAS	Alert Ambulatory and disaster response teams of weather conditions. Secure PLA tent located on flight line
	36 SFS	Proceed with caution.
	AAFES	Dispatch notification to other facilities; begin events log and review checklist
	DECA	Notify food services personnel and facilities
	DODEA	Notify Elementary and Middle school administrators, and Superintendent's office to take precautionary measures
	36 CS JOB CONTROL	Email to all personnel, and announce to outside personnel working on electrical equipment, projects, and antennas
	254 ABG	Notify Readiness personnel
	Det 5, 22 SOPS	Consider stowing small antenna(s) as required.
	36 OG	MUTES – No action taken
Observed Weather Advisory for Crosswinds $\geq 20$ kts	36 OSS/OSAM	Activate SCN, notify tower, and pass over ramp net. Selected agencies on SCN (AMCC, Fuels, HSC-25, Safety, and Disaster Prep) will take necessary precautions deemed critical to protecting aircraft, safety of flight.
	36 WG/CP	Relay info to Wing agencies including 36 OG
Observed Weather Advisory for Crosswinds 15-19 kts	36 OSS/OSAM	Activate SCN, notify tower, and pass over ramp net. Selected agencies on SCN (AMCC, Fuels, HSC-25, Safety, and Disaster Prep) will take necessary precautions deemed critical to protecting aircraft, safety of flight.
	36 WG/CP	Relay info to Wing agencies including 36 OG
Observed Weather Advisory for Non-Convective LLWS (Sfc-2,000 ft)	36 OSS/OSAM	Activate SCN, notify tower, and pass over ramp net. Selected agencies on SCN (AMCC, Fuels, HSC-25, Safety, and Disaster Prep) will take necessary precautions deemed critical to protecting aircraft, safety of flight.
	36 WG/CP	Relay info to Wing agencies including 36 OG
<b>Advisory Criteria</b>	<b>Agency</b>	<b>Customer Action</b>
Observed Advisory for Lightning within 25 NM but outside 5 NM of AAFB Complex	36 OSS/OSAM	Activate Secondary Crash Net. Document in Event Log.
	36 WG/CP	Relay info to WG agencies including 36 OG.
	36 EAMXS/ 36 MUNS/36 MXS	Cease all fuel cell maintenance. Ensure all stands are moved away from aircraft and stowed. Evaluate all maintenance actions that will be adversely affected if storms come within 5 NM.

		Do not start any refuel or LOX servicing operations. Prepare for early termination if lightning is expected within 5 NM. No aircraft departures or arrivals.
Observed Tornado, Funnel Cloud, Waterspout outside 5 NM of AAFB complex	36 OSS/OSAM	Activate SCN, notify tower, and pass over ramp net. Selected agencies on SCN (AMCC, Fuels, HSC-25, Safety, and Disaster Prep) will take necessary precautions deemed critical to protecting aircraft and ensuring safety of flight. Protection of personnel, and continuity/disruption of airfield ops will be assessed with appropriate actions taken as needed.
	36 WG/CP	Relay info to Wing agencies including 36 OG
<b>Observed</b> Ceilings below 1000ft when on Runway 24	EBS	Limited takeoff and landings
<b>Observed</b> Ceilings below 500ft when on Runway 06	EBS	Limited takeoff and landings
<b>Criteria</b>	<b>Agency</b>	<b>Customer Impact / Customer Action</b>
Visibility $\leq$ ¼ statute mile (Observed)	SFS	Restricted Visibility/Hazardous Driving Conditions. Increased security vigilance. Patrols provide extra coverage in restricted areas and increase checks on sentries. Extra light-all units as needed. Vehicle operators advised to limit driving.

## Attachment 7

### WEATHER IMPACTS TO AIR OPERATIONS, AIRCRAFT LIMITATIONS AND THRESHOLDS/SENSITIVITIES AND SPACE WEATHER IMPACTS

#### A7.1. General Impacts on Air Operations:

A7.1.1. Ceiling/Cloud and Sky Cover: Limits operations requiring aircraft clear of clouds. May preclude landings or increase danger in takeoffs and landings. May preclude bombing missions, rescue operations, UAV flights, etc.

A7.1.2. Visibility: Affects landing and takeoff capabilities, and reconnaissance and target acquisition. Affects reconnaissance and target acquisition. Low visibility increases flight hazards. Affects target designation and terminally guided munitions.

A7.1.3. Electrical Storms and Thunder: Hazardous to in-flight operations. Hazardous to refueling operations. Hazardous to rearming operations.

A7.1.4. Precipitation: Affects visibility and safety of flight. Affects density altitude by the change in temperature when it rains.

A7.1.5. Icing: Affects aerodynamics of aircraft. Any intensity of icing can preclude aviation operations.

A7.1.6. State-Of-The-Ground: Impacts effectiveness of aerial delivered munitions.

A7.1.7. Turbulence: Affects reconnaissance and surveillance--shear affects systems performance. May cause aircraft structural damage. May affect aircraft control. Severe turbulence may cancel operations.

A7.1.8. Wind (Surface): Affects aircraft control near the ground. Affects landing and takeoff, and ground speed for low-level flights.

A7.1.9. Wind (Aloft): Affects navigation, and ground speed at higher flight altitudes.

A7.1.10. Density Altitude: Affects lift capabilities and reciprocating engine performance. Limits fuel and weapons load.

A7.1.11. Pressure Altitude: Affects reciprocating engine performance.

A7.1.12. Temperature (Surface): High temperatures reduce lift capabilities. Cold temperatures increase maintenance requirements and time to perform. Reduces personnel carried due to weight and bulk of protection gear.

A7.1.13. Dew point: Affects engine efficiency calculations. Serves as warning of possible fog formation or icing conditions.

A7.1.14. Illumination: Affects operations using night vision devices.

A7.1.15. Refractive Index: Affects optical, radar, laser, and infrared range-finding techniques.

A7.1.16. Volcanic Ash: Affects engine efficiency.

A7.1.17. Information on aircraft or systems can be found on the 26 OWS Operational Weather Limiters web site at: [https://26ows.barksdale.af.mil/by\\_type/owl/index.cfm?UID=&BW=H&UF=M&AOR=1](https://26ows.barksdale.af.mil/by_type/owl/index.cfm?UID=&BW=H&UF=M&AOR=1)

A7.1.18. In particular, when defining thresholds, consider locations and systems being used for the specific operations. Minimum thresholds are different for takeoff and landings, drop-zones, and sling operations.

**Table A7.1. UH-60 Terminal Aircraft Thresholds and Sensitivities.**

<b>Weather Sensitivities</b>	
<b>Max X-Wind Comp:</b> > 15Kts. <b>Note:</b> Hovering in Crosswinds > 45 Knots Exceeds Operating Limits and is Prohibited. Hovering in Crosswinds is Limited by Directional Control.	
<b>RCR</b>	N/A
<b>Max X-Wind for RCR #:</b>	N/A
<b>Induction Icing Thresholds:</b> N/A	
<b>Icing:</b> > MDT - Exceeds Maximum Icing Limit for Flight.	<b>Turbulence:</b> > MDT - Exceeds Maximum Turbulence Limit for Flight.
<b>Lightning/TSTMS:</b> Flight into Thunderstorms is Prohibited. Therefore a Delay in Mission Completion May Result.	<b>In-Flight Refueling:</b> N/A
<b>Radar:</b> N/A	
<b>Remarks:</b> Surface Temperature > 100 F Reduces Aircraft Lift Capability, Overall Performance, and Number of Personnel Carried on Aircraft.	
<b>Mission Limiting:</b>	
<b>PERSONNEL AIRDROPS</b>	
<b>TYPE PERSONNEL DROP</b>	<b>SURFACE WIND LIMITS (KNOTS)</b>
Static Line (Land) (Rounds)	13 KNOTS
Static Line (Water)	17.5 KNOTS
HALO/HAHO (Squares)	13 KNOTS
Squares w/ Water Landing	17.5 KNOTS
<b>Go</b>	<b>No Go</b>
Surface Wind < 17 kts	Surface Wind > 17.5 kts
<b>JUMPS AND HOIST TRAINING</b>	
<b>Go</b>	<b>No Go</b>
<b>HIGH ALTITUDE HIGH OPENING (HAHO) JUMPS</b>	
Cig > 10000 ft AGL	Cig < 10000ft AGL
<b>STATIC LINE JUMPS</b>	
Cig > 1500 ft AGL	Cig < 1500 ft AGL
<b>HOIST TRAINING</b>	
Cig > 1000 ft AGL / Vis 3 NM	Cig <1000 ft AGL / Vis 3 NM

**Table A7.2. B-52 Terminal Aircraft Thresholds and Sensitivities.**

<b>Weather Sensitivities</b>				
<b>Max X-Wind Comp:</b> 45Kts (Dry), ≥ 11-17Kts (Wet)				
<b>RCR</b>	0 to 5	6 to 8	> 8	
<b>Max X-Wind for RCR #:</b>	No Ops	15	20	
<b>Induction Icing Thresholds:</b> Temp ≤ +47°F and visible moisture. Visible moisture includes fog (vsby ≤ 1NM), rain, wet snow, etc. Temp ≤ +47°F and the Tdp is within +40°F of the temp even though visible moisture is not present.				
<b>Icing:</b> May operate for short periods in MDT icing.		<b>Turbulence:</b> Avoid MDT/SVR, prohibited from MDT/SVR Mountain Waves		
<b>Lightning/TSTMS:</b> Avoid by 10NM below FL250, 20NM at and above		<b>In-Flight Refueling:</b> FL180 to FL210, vsby ≥ .5NM		
<b>Radar:</b> Radar has weather depiction mode				
<b>Remarks:</b> Crew may ask for Low Level and Aerial Refueling (AR) route forecasts.				
<b>Mission Limiting:</b>				
<b>PHENOMENA</b>	<b>AIRCRA FT OR OPS</b>	<b>INTENSITY</b>	<b>IMPACT</b>	<b>IMPACT STOPLIGHT</b>
<b>VISIBILITY</b>	B-52	AV <400	Unable to see terrain	Low-level mission
<b>WAVE HEIGHTS</b>	B-52	≥10 FT	Sea rescue limited	All missions

**Table A7.3. B-2 Aircraft Sensitivities and Thresholds.**

<b>Weather Sensitivities</b>				
<b>Max X-Wind Comp:</b> 30Kts. 25Kt X-wind – limits touch and goes				
<b>RCR</b>				
<b>Max X-Wind for RCR #:</b>				
<b>Icing:</b> May not operate in known/forecast icing. May climb and descend through LGT icing only.		<b>Turbulence:</b> Avoid SVR turbulence, prohibited from MDT/SVR Mountain Waves		
<b>Lightning/TSTMS:</b> Avoid by 20NM laterally below FL200, 40NM at and above FL200		<b>In-Flight Refueling:</b>		
<b>Radar:</b> Radar has weather depiction mode				
<b>Remarks:</b> Take-off/Landing CIG/VIS mins: 200/1.5				

Table A7.4. B-1 Aircraft Sensitivities and Thresholds.

Weather Sensitivities				
<b>Max X-Wind Comp:</b> 30Kts				
<b>RCR</b>	0 to 5	6 to 8	> 8	
<b>Max X-Wind for RCR #:</b>	No Ops	15	20	
<b>Induction Icing Thresholds:</b> Critical for engine start: Temp $\leq +47^{\circ}\text{F}$ with RH $\geq 50\%$ and visible moisture present. Visible moisture includes fog (vsby $< 1\text{NM}$ ), rain, wet snow, etc.				
<b>Icing:</b> Icing limits operations		<b>Turbulence:</b> Avoid MDT/SVR, prohibited from MDT/SVR Mountain Waves		
<b>Lightning/TSTMS:</b> Avoid by 10NM below FL250, 20NM at and above		<b>In-Flight Refueling:</b> FL180 to FL210, vsby $\geq .5\text{NM}$		
<b>Radar:</b> Radar has weather depiction mode				
<b>Remarks:</b> Very sensitive to induction icing. Crew may ask for Low Level and Aerial Refueling (AR) route forecasts				

Table A7.5. KC-135 Sensitivities and Thresholds.

Max X-Wind Comp: 25Kts																							
<b>RCR</b>																							
<b>Max X-Wind for RCR #:</b>																							
<b>RVR:</b>	<table border="1"> <thead> <tr> <th colspan="2">KC-135 Takeoff Minimums</th> </tr> </thead> <tbody> <tr> <td colspan="2"><b>RUNWAY VISUAL RANGE (RVR)</b> For any takeoff below 1600 Feet RVR, the aircrew must be fully qualified (NO TRAINING MISSIONS when RVR <math>&lt; 1600\text{ft}</math>).</td> </tr> <tr> <td colspan="2">When less than RVR 1600FT, but <math>\geq 1000\text{FT}</math>, the crew may take off if mission priority dictates, provided the runway has dual RVR readouts and displays (minimum RVR 1000FT on both) and runway centerline lighting is operational.</td> </tr> <tr> <td colspan="2">If the previous conditions cannot be satisfied but visibility is at or above 1000FT RVR, the agency responsible for mission execution may authorize takeoff.</td> </tr> <tr> <td colspan="2">All others RVR 1600FT. For runways with more than one operating RVR readouts, the RVR must read 1600FT minimum on all.</td> </tr> <tr> <td><b>Go</b></td> <td><b>No Go</b></td> </tr> <tr> <td>RVR <math>\geq 1000\text{ft}</math></td> <td>RVR <math>&lt; 1000\text{ft}</math></td> </tr> <tr> <th colspan="2">KC-135 Landing Minimums</th> </tr> <tr> <td><b>Go</b></td> <td><b>No Go</b></td> </tr> <tr> <td>RVR <math>\geq 2400\text{ft}</math></td> <td>RVR <math>&lt; 1800\text{ft}</math></td> </tr> <tr> <td colspan="2">RVR 1800FT-2400ft with centerline lighting</td> </tr> </tbody> </table>	KC-135 Takeoff Minimums		<b>RUNWAY VISUAL RANGE (RVR)</b> For any takeoff below 1600 Feet RVR, the aircrew must be fully qualified (NO TRAINING MISSIONS when RVR $< 1600\text{ft}$ ).		When less than RVR 1600FT, but $\geq 1000\text{FT}$ , the crew may take off if mission priority dictates, provided the runway has dual RVR readouts and displays (minimum RVR 1000FT on both) and runway centerline lighting is operational.		If the previous conditions cannot be satisfied but visibility is at or above 1000FT RVR, the agency responsible for mission execution may authorize takeoff.		All others RVR 1600FT. For runways with more than one operating RVR readouts, the RVR must read 1600FT minimum on all.		<b>Go</b>	<b>No Go</b>	RVR $\geq 1000\text{ft}$	RVR $< 1000\text{ft}$	KC-135 Landing Minimums		<b>Go</b>	<b>No Go</b>	RVR $\geq 2400\text{ft}$	RVR $< 1800\text{ft}$	RVR 1800FT-2400ft with centerline lighting	
KC-135 Takeoff Minimums																							
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When less than RVR 1600FT, but $\geq 1000\text{FT}$ , the crew may take off if mission priority dictates, provided the runway has dual RVR readouts and displays (minimum RVR 1000FT on both) and runway centerline lighting is operational.																							
If the previous conditions cannot be satisfied but visibility is at or above 1000FT RVR, the agency responsible for mission execution may authorize takeoff.																							
All others RVR 1600FT. For runways with more than one operating RVR readouts, the RVR must read 1600FT minimum on all.																							
<b>Go</b>	<b>No Go</b>																						
RVR $\geq 1000\text{ft}$	RVR $< 1000\text{ft}$																						
KC-135 Landing Minimums																							
<b>Go</b>	<b>No Go</b>																						
RVR $\geq 2400\text{ft}$	RVR $< 1800\text{ft}$																						
RVR 1800FT-2400ft with centerline lighting																							
<b>Induction Icing Thresholds:</b> Engine anti-icing must be used with temperatures below $50^{\circ}\text{F}$ with visible moisture																							
<b>Icing:</b> May operate for 10 minutes in MDT; never in observed or forecast SVR	<b>Turbulence:</b> Will avoid areas of SVR and MDT MTN wave																						
<b>Lightning/TSTMS:</b> Avoid by 10NM below FL230 and 20NM at and above	<b>In-Flight Refueling:</b> Vsby $\geq 1\text{NM}$																						
<b>Radar:</b> Limited																							
<b>Remarks:</b> Cannot Take-off $>.5$ inches of slush or water on the runway. Pilots may need height/temp of tropopause and temp at flight level. Crew may need Aerial Refueling (AR) route forecast. AR orbit altitude 22,000 to 24,000 feet																							

Mission Limiting:				
PHENOMENA	AIRCRA FT OR OPS	INTENSITY	IMPACT	IMPACT STOPLIGHT
THUNDERSTORMS	KC135	ANY	AVOID BY 20NM ABOVE 23000FT AND 10NM BELOW 23000FT IF UNABLE TO VERTICALLY CLEAR BY 2000FT	A/R MISSIONS
		RECENTLY DISSIPATED TSTMS	AVOID	A/R MISSIONS
TURBULENCE	KC135	MDT CAT	AVOID AND NO A/R	A/R MISSIONS
VISIBILITY	KC135	FLT VIS < 1/2	NO A/R	A/R MISSION

Table A7.6. F-15 Aircraft Sensitivities and Thresholds.

Weather Sensitivities						
Max X-Wind Comp: 30Kts						
RCR						
Max X-Wind for RCR #:						
Induction Icing Thresholds:						
Icing: May penetrate, no loitering			Turbulence: Avoid observed MDT/SVR			
Lightning/TSTMS: Avoid by 10NM below FL250, 20NM at and above			In-Flight Refueling: Vsby $\geq$ 1NM			
Radar: Weather depiction radar installed						
Remarks: Take-off/Landing CIG/VIS mins: 300/1 or less than pilot category						

Table A7.7. F-16 Aircraft Sensitivities and Thresholds.

Weather Sensitivities						
Max X-Wind Comp: >25Kts						
RCR						
Max X-Wind for RCR #:						
Induction Icing Thresholds:						
Icing: Avoid observed SVR areas			Turbulence: Avoid observed SVR areas			
Lightning/TSTMS: Avoid by 10NM below FL250, 20NM at and above			In-Flight Refueling: Vsby $\geq$ 1NM			
Radar: Weather depiction radar installed						
Remarks: Take-off/Landing CIG/VIS mins: 300/1 or less than pilot category						

**Table A7.8. F-22 Aircraft Sensitivities and Thresholds.**

<b>Weather Sensitivities</b>						
<b>Max X-Wind Comp:</b> 30Kts w/o tanks and 25Kts w/tanks (wet or dry)						
<b>RCR</b>						
<b>Max X-Wind for RCR #:</b>						
<b>Induction Icing Thresholds:</b>						
<b>Icing:</b> Avoid observed SVR areas			<b>Turbulence:</b> Avoid observed SVR areas			
<b>Lightning/TSTMS:</b> Avoid by 10NM below FL250, 20NM at and above			<b>In-Flight Refueling:</b> Vsby $\geq$ 1NM			
<b>Radar:</b> No Weather depiction radar installed						
<b>Remarks:</b> Take-off/Landing CIG/VIS mins: 200/ ½ or less than pilot category						

**Table A7.9. RQ-4 Aircraft Sensitivities and Thresholds.**

<b>Weather Sensitivities</b>						
<b>Max X-Wind Comp:</b> 15Kts (wet or dry)						
<b>Winds:</b>	$\geq$ 25kt Tail Wind: Marginal Impact	$\geq$ 30kts: Marginal Impact	$\geq$ 50 kts: No Go	$\geq$ 30kts at >30 degrees off runway heading: Marginal Impact		
<b>Induction Icing Thresholds: N/A</b>						
<b>Icing:</b> Trace and Greater: Avoid			<b>Turbulence:</b> > Moderate – Marginal Impact			
<b>Lightning/TSTMS:</b> Avoid w/in 20 NM at and above FL230 and avoid w/in 10 NM below FL230			<b>In-Flight Refueling:</b> N/A			
<b>Radar:</b> No Weather depiction radar installed						
<b>Remarks:</b> Take-off/Landing CIG/VIS mins: $\geq$ 1000/2						

**A7.2. Space Weather Impacts:** Types of communications used during missions should be considered as well as knowing critical thresholds for space weather and its effects on these communication systems. Aircrews need to know when HF/UHF communications might be degraded or interrupted by solar activity. This allows crews to be proactive and prepared for possible outages of critical communication equipment. Provided below are space weather impact tables with specific systems and potential impacts listed. If the customer has a unique space weather requirement, WF will request assistance from AFWA or supporting OWS for any identified requirements which cannot be satisfied by current suite of space weather products.

Figure A7.1. Navigation Systems Table.

System Name	Capability	Space Weather Effects	Mitigation Possible
Global Positioning Systems General Description	Special receiver used to navigate. Network of satellites transmit UHF radio signals from multiple satellites. Locks onto 4 GPS satellites at one time.	Accuracy effected as space weather slows down and distorts signal as it traverses the ionosphere. Effects vary with single and dual channel GPS systems. Ionospheric effects depend on frequency; scintillation in UHF in high latitudes and Equatorial areas effect GPS, especially in mountains.	Knowing forecast of GPS wander of 70 ft warns those who use system of increased error to expect in advance. Target planning cells can eliminate GPS guided rounds when wander exceeds allowable tolerances.
Single Channel GPS	Single Channel at 1.6 Ghz. Ground navigation aid.	Total Electron Count (TEC) determines how much wander; with greater TEC, the slower signal goes and exceeds built-in error correction. TEC errors cause up to 70 ft errors for Precise Positioning System (PPS).	Warning of increased solar activity. Helps plan in advance for operations requiring full capability of system specifications. Enables users to know wander jumps around from second to second.
Dual Channel GPS	Double channel at 1.2 Ghz and 1.6 Ghz. Ground and aviation navigational aid. Replacing single channel in future.	Same errors in TEC as for single channel but dual channel eliminates much of the problem because it accesses more satellites. Less wander than single channel.	Less wander. Has very limited impact except pinpoint weapon accuracy of precision guided munitions that depend on GPS navigational aids.
AN/PSN-11 Precision Light Weight GPS Receiver (PLGR)/Stand Alone GPS Receiver (SAGR)	Hand-held and mounted single channel GPS. Provides lat/long, altitude/elevations, velocity, time, and direction of movement.	Errors increase in 2 year window at solar maximum period. Operators, now more dependent on GPS, do not expect wander.	Enables planning for backup systems as alternates, or increase timing of operations to help synchronization, and or delay/cancel.
Miniature Airborne GPS Receiver (MAGR)	Aircraft mounted for supplemental aviation navigational aid.	Same as dual channel, but not as a significant effect on aviation.	Enable preflight planning using other navigational aids and recognize in advance potential problems. Eliminates dependence on intermittent capability (if critical).
Army Tactical Missile System (ATACMS) Dual GPS Guidance Weapon.	Weapon is guided to pre-located target coordinates for pinpoint PGM strikes.	Limited wander but may need to consider during solar maximum. May lose pinpoint accuracy and not destroy target.	Added factor to consider before very expensive PGMs are launched, adjust launch time to reduced effects of solar activity, increase probability of first strike kill.

Figure A7.2. Radio System Table.

System Name	Capability	Space Weather Effects	Mitigation Possible
AN/TSQ-152 Trackwolf AN/TSQ-199 E-Trackwolf	Mobile, ground based HF intercept to collect/process/analyze and identify locations.	Part/full absorption of wave trying to intercept.	Identify time and locations when unable to collect.
AN/TRQ-32A(V) 2 Team-mate AN/TSQ-138 Trailblazer	Tactical, ground based Receive and record HF/UHF/VHF ID direction.	HF skywave they are trying to intercept penetrates straight through the ionosphere and the fact that threat is transmitting is unknown.	Identify time periods when the threat cannot use HF/UHF/VHF.
AN/PRD-12 Lightweight, Manportable Radio Direction Finding (RDF) System	Manportable Intercept/Receive Record HF/UHF/VHF.	Trapped within ionosphere. Causes gross changes in locations and frequency: 1) cannot intercept 2) incorrect interpretation, 3) determine incorrect location.	Identify time when threat HF radio may be transmitting but space weather prevents intercept.
AN/ALQ15 Quickfix and Advanced Quickfix	UH-60 Helicopter borne. Intercept electronic attack.	For Quickfix only, space weather may disrupt capability to intercept threat HF electronic attack.	Identify where to position SIGINT collector for optimum intercept.
RC-12 Guardrail	RC-12 Aircraft intercepts HF/VHF/UHF. Identifies direction of intercepted signal.	RC-12 limited in HF intercept, other capabilities are not limited by space weather.	Direct other assets to collect when planned system is limited by space weather activity.
Airborne Reconnaissance Low (ARL)	Modified DHC-7 DeHavilland intercepts HF/VHF/UHF.	ARL limitation to capability to intercept is primarily in HF.	Use knowledge of threat HF vulnerabilities for commanders tactical advantage when included in collection plan, Info Operations.
AN/MLQ-39 Ground Based Common Sensor (GBCS) (Radio only, also see Jamming)	Receive and record HF/VHF/UHF. Identify location of emitters.	Limited intercept of HF/VHF/UHF.	Mitigation capabilities above apply to most of the systems listed in first column.

## Attachment 8

## WEATHER OBSERVATION AND FORECAST CODE FORMATS

**A8.1. Longline Observation Code.** The longline observation format is the required format for transmission of information between bases. Observations for bases other than Andersen AFB viewed on N-TFS are in this format. A sample is below. See [Table A8.1](#) for complete decoding information.

**PGUA 290555Z 27007G13KT 5SM HZ SCT040 BKN200 35/23 A2992 RMK A02A TWR VIS 3**

A8.1.1. Format (letters in italics appear in actual observation)

CCCC YYGGggZ (COR) dddff(f)Gfmfm(fm)KT dndndnVdxdxdx VVSM RDD/VVVV WW  
NNNhhh or VVhhh or SKC TT/DD APPPP RMK

**Table A8.1. Weather Dissemination Decode Table.**

<i>Reference</i>	<i>Description</i>	<i>Explanation</i>	<i>Examples</i>
CCCC	Location Identifier	Airfield Observation	PGUA - Andersen AFB
YYGGggZ	Time of observation	Consists of the current date (YY), hour (GG), and minute (gg) of the observation in Zulu time. Corrected (COR) if necessary	290555Z, Observation taken on the 29th at 0555Z
dddff(f)Gfmfm(fm)KT	Wind Indicator ( <i>Direction and speed based on 2-min average</i> )	ddd is direction the wind is from, ff(f) is the speed in knots, Gfmfm(fm) is the gust speed if applicable. KT = units indicator meaning knots	27007G13KT 270 = West wind VRB = variable with speed 6 knots or less 10 = 10 knots G25 = gusts to 25 knots
DndndnVdxdxdx	Variable winds with speed > 6 knots and direction varying by 60 degrees or more in preceding 10 minutes	Dndndn and dxdxdx are the two extremes of the variability going clockwise around the compass	180V270 = winds are varying from 180 to 270
VVSM	Visibility indicator	Visibility in statute miles	5SM = Furthest predominate visibility marker seen at observing location
RDD/VVVV	Runway visual range	RDD gives the active runway, VVVV gives runway visual range in feet	R27/6000 = Runway visual range on runway 27 is 6000 feet
WW...	Weather/ Obstruction to Visibility Indicator(s)  <b>NOTE:</b> In weather observations and forecast code, the WW groups will be constructed by considering items 1-5 in sequence, that is; Intensity/Proximity,	<b>1. Intensity/Proximity (Qualifier)</b> LIGHT = - MODERATE = No Indicator HEAVY = + VC = In the vicinity (5-10 miles) <b>2. Descriptor (Qualifier)</b> BL = Blowing      DR = Low Drifting SH = Showers      FZ = Freezing	TSRA = Thunderstorm with Moderate Rain  -RA = Light Rain  + SHRA = Heavy Rain Showers  BLDU = Moderate Blowing Dust

	<p>followed by a Descriptor, followed by Weather Phenomena. They are reported with the most significant on the left, progressing to least significant. However, FC (Funnel Cloud) takes precedence over all codes.</p>	<p>TS = Thunderstorm MI = Shallow                  PR = Partial BC = Patches  <b>3. Precip Type (Weather Phenomena)</b>                  RA = Rain SN = Snow                  SG = Snow Grains IC = Ice Crystals DZ = Drizzle                  PL = Ice Pellets GR = Hail                  GS = Small Hail and/or Snow Pellets  <b>4. Obscuration (Weather Phenomena)</b>                  BR = Mist FG** = Fog                  FU = Smoke VA = Volcanic Ash                  DU = Widespread Dust                  SA = Sand HZ = Haze                  PY = Spray  <b>5. Other (Weather Phenomena)</b>                  PO = Well-developed Dust/Sand Whirls                  SQ = Squalls                  FC = Funnel Cloud (Tornado or Waterspout)                  SS = Sandstorm                  DS = Duststorm</p>	<p>NSW = No significant weather                  VCSH = Showers between 5 and 10 statute miles of the airfield                  ** FG (Fog) used when visibility is restricted to less than 5/8 of a mile. Otherwise, the abbreviation BR is used.                  *VCTS = Thunderstorm between 5 and 10 miles of the airfield                  *Only used with the Aerodrome Forecast (TAF) code.</p>
<p>NNNhhhCC</p>	<p>Cloud indicator  <b>NOTE:</b> may have more than one layer</p>	<p>NNN = Cloud coverage                  hhh = base of cloud layer in hundreds of feet                  CC = Cloud type (TCU for Towering Cumulus and CB for Cumulonimbus)                  VVhhh is used when there is a total obscuration                  VV = vertical visibility indicator                  hhh = vertical visibility in feet  <b>NOTE:</b> BKN or OVC indicate a ceiling, partial obscurations are denoted as FEW000, SCT000, or BKN000</p>	<p>FEW = 1-25% Cover                  SCT = 26-50% Cover                  BKN = 51-99% Cover                  OVC = 100% Cover                  SKC = No clouds</p>
<p>TT/DD</p>	<p>Temperature and dew point</p>	<p>Listed in whole degrees Celsius</p>	<p>15/05 = temperature is 15 and the dew point is 5 degrees Celsius</p>
<p>APPPP</p>	<p>Altimeter setting</p>	<p>In inches of mercury</p>	<p>A2992 = Altimeter is 29.92</p>
<p>RMK</p>	<p>Remarks</p>	<p>Plain language remarks</p>	<p>A02A = Observation is taken via automated observing system but augmented by a human observer for accuracy.</p>

			A02 = Observation is fully automatic. TWR VIS 4800 = tower visibility is 4800 meters
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A8.1.2. **Local Observation Code.** This is the code seen on local N-TFS terminals. It is the same as longline with the following exception: winds are reported as magnetic rather than true.

**A8.2. Longline Aerodrome Forecast (TAF) Code.** The longline forecast format is the required format for transmission of information *between bases*. Forecast for bases *other than Andersen AFB* viewed on N-TFS are in this format. See [Table A7.2](#) for details on decoding the TAF code. A sample TAF is shown below:

PGUA TAF 1818 VRB03KT 8000 HZ SCT020 BKN030 BKN200 QNH2992INS  
 BECMG 2021 VRB03KT 3200 BR FU BKN020 QNH2997INS WSCONDS  
 BECMG 2324 05005KT 3200 BR BKN020 BKN200 520003 620505 QNH3005INS  
 TEMPO 0006 VRB15KT 6000 HZ  
 BECMG 1213 24005KT 9999 NSW SCT025 SCT100 BKN200 QNH2987INS T25/06Z  
 T14/21Z;

A8.2.1. **Format (letters in italics appear in actual forecast).** CCCC TAF (AMD, COR, RTD) *YYG1G1G2G2 VTVT dddff(f)Gfmfm(fm)KT VVVV*

WW NNNHHHCC or VVHHH.6TB BBD 5TB BBD *QNHAAAAINS (Remarks)*  
 T##/##Z or TTGG AMD/COR GGGG

**Table A8.2. Longline Forecast Decoder.**

<i>Reference</i>	<i>Description</i>	<i>Explanation</i>	<i>Examples</i>
CCCC	Location Identifier	Airfield forecast	RKJK - Kunsan AB
YYG1G1G2 G2	Valid Period	Consists of the current date (YY) and 24 hour period of the forecast (G1G1G2G2), except for amended (AMD) TAFs. Amended TAFs are valid from the current hour to the end of original TAF. COR is corrected TAF if necessary. RTD is routine delay if necessary.	270303 AMD 270603
VTVT	Group Time Indicator	Time of forecasted change	1617 = 16Z - 17Z
dddff(f)Gfm fm(fm)KT	Wind Indicator	See <a href="#">Table A7.1</a> .	See <a href="#">Table A7.1</a> .
VVVV	Visibility Indicator	Visibility in meters	8000 = 5 statute miles
WW...	Weather/ Obstruction to Visibility Indicator(s)	See observation WW group for code explanation.	See observation WW group for code examples.
NNNhhhCC	Cloud indicator	Same as Longline observation format.	Same as Longline observation format.

WS $hh$ / D $ddff$ ( $f$ )KT or WSCONDS	Wind shear for airfield	WS = wind shear $hhh$ = height at which the wind shear threshold is reached $ddd$ = direction, degrees true, of the forecast wind above the indicated height $ff$ = speed, in knots, of the forecast wind above the indicated height	WS015/30035KT = wind shear conditions at 1,500 feet with the wind from 300 true at a speed of 35 knots
5TB $BBDD$	Turbulence Indicator(s)  <b>NOTE:</b> May have multiple layers.	5 = Identify group as turbulence forecast T = Turbulence type 1 = Light 2 = Moderate in clear air, occasional 3 = Moderate in clear air, frequent 4 = Moderate in cloud, occasional 5 = Moderate in cloud, frequent 6 = Severe in clear air, occasional 7 = Severe in clear air, frequent 8 = Severe in cloud, occasional 9 = Severe in cloud, frequent X = Extreme Occasional = Occurs < 1/3 of the time BBB = Base of phenomena D = Extent of Phenomena from Base (in thousands of feet MSL)	530005 indicates moderate Clear Air Turbulence (CAT) from the Surface to FL050 feet  570804 indicates Severe CAT from FL080 to FL120
6TB $BBDD$	Icing Indicator(s)  <b>NOTE:</b> May have multiple layers.	6 = Identifies group as an icing forecast T = Icing type 0 = Trace 1 = Light (mixed) 2 = Light in cloud (rime) 3 = Light in precip (clear) 4 = Moderate (mixed) 5 = Moderate in cloud (rime) 6 = Moderate in precip (clear) 7 = Severe (mixed) 8 = Severe in cloud (rime) 9 = Severe in precip (clear) BBB = Base of phenomena D = Extent of phenomena from base (in hundreds of feet MSL)	630005 indicates light icing in precipitation from the Surface to FL050 feet  670804 indicates severe mixed icing from FL080 to FL120 feet
<i>QNH</i> A $AAAA$ <i>INS</i>	Minimum Altimeter Setting	A $AAAA$ = Minimum altimeter setting during the next period (Period means from the start of that BECMG group to the start of the next BECMG group)  NOTE 1: Altimeter setting forecasts are not used on TEMPO lines	<i>QNH</i> 2992 <i>INS</i> on a BECMG 1617 line, with the next forecast line BECMG 2223, means the lowest altimeter setting from 17 to 23Z is forecast to be $\geq$ 29.92

<i>Remarks</i>	Plain Language Remarks  <b>NOTE:</b> May have more than one remark.	WND AFT = Wind will change to 5 knots after the indicated time  T##/##Z = High and low temperature forecast for the period of the forecast <b>Note:</b> M is used to indicate negative temperatures (i.e. TM09/21Z)  AUTOMATED SENSOR METWATCH XXXX TIL XXXX	WND 18005KT AFT 21 means the wind will be out of the south at 5 KT after 21Z  T30/06Z T12/21Z means the high temperature is forecast to be 30°C at 06Z and the low is 12°C at 21Z  During times of no mission flying and the Andersen AFB Weather Station is closed, the system is placed into fully automated mode.
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**A8.3. Local Forecast Code.** This is the code seen when viewed on local N-TFS terminals. It is the same as longline with the following exceptions:

A8.3.1. Visibility is listed in statute miles instead of meters.

A8.3.2. Turbulence and icing will be listed in plain language with the flight level instead of the 5TBBBD and 6TBBBD groups (example- LGT TURBC SFC-040 and MDT RME ICG 050-100).

**Table A8.3. Winds are reported as magnetic rather than true.**



## Attachment 9

**TAF SPECIFICATION AND AMENDMENT CRITERIA.**

**A9.1. Specification Criteria.** The elements in the TAF will be specified IAW the guidance in AFMAN 15-129 and general flight rules stated in AFI 11-202 Vol. 3. 17 OWS will issue the TAF using the criteria listed in [Table A9.1](#)

**Table A9.1. AAFB Terminal Aerodrome Forecast Specification Criteria.**

<b>Forecast Element/Occurrence</b>	<b>TAF Specification Criteria</b>
Ceiling observed or later expected to decrease to less than, or if below, increase to equal or exceed:	3,000 feet 1,000 feet <b>800 feet</b> <b>700 feet</b> <b>500 feet</b> 200 feet
Prevailing visibility observed or later expected to decrease to less than, or if below, increase to equal or exceed:	3 miles 2 miles <b>1 mile</b> 1/2 mile
Surface Winds	Speed change of $\geq 10$ knots and/or the difference between the observed gust is $\geq 10$ knots from the forecast gust.  Direction change $> 30$ degrees when the predominant wind speed or gusts are expected to be over 15 knots.
Icing, not associated with thunderstorms, from the surface to 10,000 feet AGL	The beginning or ending of icing first meets, exceeds, or decreases below moderate or greater thresholds and was not specified in the forecast.
Turbulence (for Cat II aircraft), not associated with thunderstorms, from the surface to 10,000 feet AGL	The beginning or ending of turbulence first meets, exceeds, or decreases below moderate or greater thresholds (for CAT II aircraft) and was not specified in the forecast.
Non-convective low level wind shear	Begins or ends.
Thunderstorms	Begins or ends.
Weather Warning criteria and/or Weather Advisory criteria	A forecast weather warning and/or advisory has been issued (ensures consistency between forecast weather warnings and/or advisories and the TAF).

A9.1.1. Deviations from standard Air Force Weather Criteria. The ceiling/visibility categories for support of various airframes periodically deployed to Andersen AFB are different from the Air Force Weather standard. Andersen AFB WF needs ceiling thresholds of 800, 700, 500, and visibility threshold of 1 SM in its TAF specification criteria. Low Level Wind Shear (LLWS) also presents a significant hazard to the various airframes periodically deployed to Andersen AFB, which is why LLWS has been added to the TAF specification criteria as well.

**A9.2. Forecast Amendments.** 17 OWS will ensure the TAF is representative of expected or actual conditions. 17 OWS forecasters may amend the TAF anytime they consider it advisable in the interest of safety, efficiency of aircraft operations, flight planning, operational control, or in-flight assistance to aircraft to ensure the forecast is representative of actual or expected conditions. As a minimum, the elements in the TAF will be amended IAW the guidance in AFMAN 15-129 and general flight rules stated in AFI 11-203 Vol. 3. The 17 OWS will amend the TAF IAW the list in **Table 8.2**

A9.2.1. Anytime an unforecasted change occurs, is expected to occur or is expected to last more than 59 minutes and is not correctly forecast by the next whole hour from the time of occurrence. (e.g., if the time is 2147Z, the next whole hour is 2200Z).

A9.2.2. Anytime a forecast condition does not occur by the specified hour and is not expected to occur within the next 30 minutes.

A9.2.3. Anytime a temporary (TEMPO) group becomes predominant or is not expected to occur.

### A9.3. Amendment Criteria.

A9.3.1. At a minimum, the 17 OWS will amend the TAF IAW **Table 8.2**

**Table A9.2. AAFB Terminal Aerodrome Forecast Amendment Criteria.**

Forecast Element/Occurrence	TAF Amendment Criteria
Ceiling observed or later expected to decrease to less than, or if below, increase to equal or exceed:	3,000 feet 1,000 feet 200 feet
Prevailing visibility observed or later expected to decrease to less than, or if below, increase to equal or exceed:	3 miles 2 miles 1/2 mile
Surface Winds	The difference between the predominant wind speed and the forecast wind speed is $\geq 10$ knots and/or the difference between the observed gust is $\geq 10$ knots from the forecast gust. For example, a forecast of 23018G25KT must be amended if observed predominant wind speed is 28 knots or more, or if the observed gusts are 35 knots or higher. Similarly, amend the TAF if predominate winds are 8knots or less, or gusts are 15 knots or less.  Direction change $> 30$ degrees when the predominant wind speed or gusts are expected to be over 15 knots.
Icing, not associated with thunderstorms, from the surface to 10,000 feet AGL	The beginning or ending of icing first meets, exceeds, or decreases below moderate or greater thresholds and was not specified in the forecast.

Turbulence (for Cat II aircraft), not associated with thunderstorms, from the surface to 10,000 feet AGL	The beginning or ending of turbulence first meets, exceeds, or decreases below moderate or greater thresholds (for CAT II aircraft) and was not specified in the forecast.
Weather Warning criteria and/or Weather Advisory criteria including non-convective low level wind shear	Occurs, or are expected to occur, during the forecast period, but were not specified in the TAF.  Were specified in the TAF but are no longer occurring or expected to occur during the forecast period.
Thunderstorms	Incorrect by forecast start or end time
Additional Conditions	Any condition the 17 OWS forecaster considers will hinder safe operations.
Specification of Temporary Conditions	Forecast conditions specified as temporary become predominant conditions. Forecast conditions specified as temporary do not occur as forecast. Forecast conditions specified as temporary are no longer expected to occur.
Changes to Predominant Conditions	Forecast change conditions (BECMG or FM group) occur before the beginning of the specified period of change and are expected to persist. Forecast change conditions (BECMG or FM group) do not occur by the specified time. Forecast change conditions (BECMG or FM group) are no longer expected to occur.
Representative Conditions	Forecast conditions are considered unrepresentative of existing or forecast conditions and amending the forecast improves safety, flight planning, operations efficiency, or assistance to in-flight aircraft.

## Attachment 10

## BASE WEATHER EQUIPMENT

Table A10.1. Base Weather Equipment.

<b>If the outage affects:</b>	<b>And the situation is:</b>	<b>Then the impact is:</b>	<b>And the mission impact is:</b>
AN/FMQ-19	All sensors inoperable	<u>Significant</u>	Weather warning support is severely degraded.
	One or more (but not all) sensors inoperable	<i>Minimal</i>	Use MOS Kit equipment or TMQ-53 as backup to primary weather. Wind and pressure values will be estimated.
N-TFS	Internet connection is down	<u>Significant</u>	Reception and Relay of essential weather information is delayed.
	Internet connection is up	<i>Minimal</i>	Weather data is relayed to customers, back-up procedures used.
	Server is not operational	<u>Significant</u>	Reception and Relay of essential weather information is delayed. All information must be submitted through the internet
Mark IVB	No data being received and no other sources available	<u>Significant</u>	Restricts terminal METWATCH, weather briefing, and capabilities.
	Internet operational	<i>Minimal</i>	Other sources used for satellite imagery.
WSR-88D RDA/RPG	RDA or RPG is down.	<u>Significant</u>	Weather warning support is severely degraded.
WSR-88D OPUP	OPUP is down and Internet is unavailable	<u>Significant</u>	Weather warning support is severely degraded.
	All other outages	<i>Minimal</i>	Local flight and terminal METWATCH ability degraded.
TMQ-53 Tactical Meteorological Observation Station	System inoperative	<u>Significant</u>	Equipment is not available for its UTC tasking
	One or more (but not all) sensors inoperable	<i>Minimal</i> (if backup equipment is available)	Certain weather elements may be estimated.

Facsimile	Any outage	<i>Minimal</i>	Weather briefings to remote locations are delayed and degraded.
Telephone	Outage to Technician, Weather technician or Global Hotlines	<u>Significant</u>	Weather support to airborne aircraft, Wing, and remote customers delayed and severely degraded.
	Any other outage	<i>Minimal</i>	Weather support customers delayed.
PMSV	Any outage	<u>Significant</u>	Unable to support airborne aircraft directly, PMSV responsibility for WF frequency transferred to tower or via phone patch from AMC CP
FMQ-19 Lightning Detection Sensor (LDS)	Not operational and backup equipment is unavailable	<u>Significant</u>	Lightning Watch/Warning severely degraded
	Not operational and backup equipment available	<i>Minimal</i>	Observers more alert looking for strikes outside; work with Tower as part of CWW; interrogate Radar and increase METWATCH & MISSIONWATCH

**Attachment 11****PILOT REPORTS (PIREPS)**

**A11.1.** PIREPs are weather observations from airborne or recently landed aircraft concerning in-flight conditions. They are obtained from flight crews via PMSV or relayed from the CP/ATC. Significant PIREPs will be disseminated both locally and longline. Significant PIREPs are reports issued whenever the criteria listed below the example exist within the local flying area (200NM of AAFB). They will contain at least the type report, location, time, flight level, type of aircraft and at least one other element.

PGUA PIREP TIME 2213 150120 PGUA FL 230 TP C135 WX FV99 TA M15  
WND 26034KT TURB NEG ICG NEG;

Content breakdown

Identifier of Sending station: PGUA (Andersen AFB)

Observation Type: PIREP (Pilot Report)

Time: TIME 2213 (2213Z)

Location of aircraft: 150120 RDR (120 nautical miles southeast of AAFB)

Aircraft flight level: FL 230 (23,000 feet)

Type of aircraft: TP C135 (KC-135)

Weather: WX (none)

Flight Visibility: FV99 (flight visibility unrestricted)

Temperature at aircraft altitude: TA M15 (-15°C)

Wind: WND 26034 (winds from 260 degrees true at 34 knots)

Remarks: TURB NEG (negative turbulence), ICG NEG (negative icing)

A11.1.1. Aircraft icing, any intensity.

A11.1.2. Turbulence, moderate or greater.

A11.1.3. Low-level wind shear (less than 2,000 feet) reported on climb or descent. This is indicated by air speed fluctuations of 10 or more knots of air speed.

A11.1.4. Thunderstorms.

A11.1.5. Hail.

A11.1.6. Tornadoes/funnel clouds.

A11.1.7. Any criteria that, in the judgment of weather personnel receiving the PIREP, presents a danger to aircraft operations.

## Attachment 12

## VOLCANIC ASH PRODUCTS

You forwarded this message on 2/7/2008 4:39 PM.

From: Bridgham Christopher J TSgt 36 OSS/OSW Sent: Wed 2/6/2008 6:11 PM  
 To: 36 OSS-OSW-TYPHOON  
 Cc:  
 Subject: Andersen Ash Condition Changed to Yellow  
 Attachments: 06 Feb 08 - 1700L Update.ppt (1 MB)

ALCON,

Andersen AFB Ash Condition is changed to Yellow. USGS Aviation Status remains Orange. Anatahan Volcano is in an elevated period of unrest with a detectable ash plume. No Ash is expected over AAFB within the next 24 hours. Volcanic activity continues but ash is expected to remain 100-200NM west-northwest of Anatahan at 3,000ft above sea level. Current model projections continue to show westerly to northwesterly progression of the ash in line with the trade winds.

OSW will continue to monitor the status of the volcano. Pending any change in the status of the USGS Aviation or Alert levels or the Andersen Ash condition, this will be the final update. We encourage all aircraft flying in the vicinity to increase vigilance and report progression of the ash cloud or any other significant features to UHF frequency 344.6MHZ or their nearest FAA/ATC center.

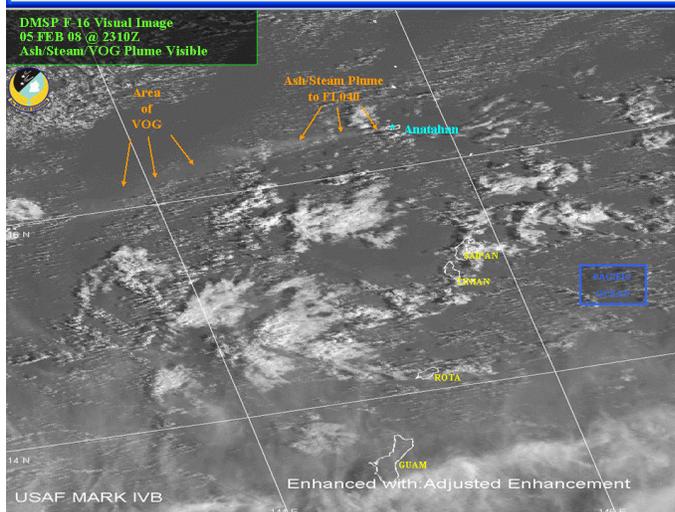
Please see attached PowerPoint for further details.

Very Respectfully,  
 TSgt Bridgham

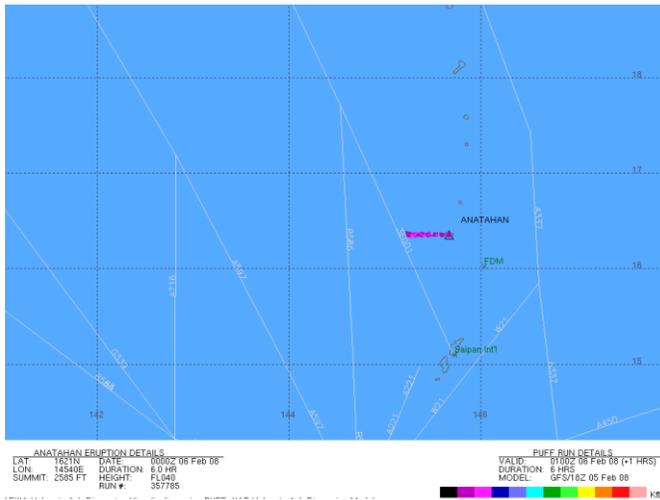
FVAW41 KGWC 060724  
 VOLCANIC ASH ERUPTION UPDATE

VOLCANO: ANATAHAN 0804-20

LOCATION: 1621N 14540E AREA: MARIANA IS



### Ash Model Forecast



## Anatahan Status



- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>■ <b>AAFB Ash Condition</b> <ul style="list-style-type: none"> <li>■ <b>Yellow</b></li> <li>■ <b>No ash is expected above AAFB within the next 24 hours.</b></li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>■ <b>USGS Aviation Condition</b> <ul style="list-style-type: none"> <li>■ <b>Orange</b></li> <li>■ <b>Volcanic eruption underway with minor ash emission to 4,000ft.</b></li> </ul> </li> <li>■ <b>USGS Alert Level</b> <ul style="list-style-type: none"> <li>■ <b>Watch</b></li> <li>■ <b>A minor eruption underway that poses limited hazards.</b></li> </ul> </li> </ul> |
|--|---|

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## Andersen Ash Condition Color Code



### Andersen Ash Condition Color Code

**Green**

Volcano is in normal **non-eruptive state**. **No volcanic ash** expected above AAFB. *Or after a change from a higher alert level:* Volcanic activity has ceased or volcanic ash has evacuated the area

**Yellow**

Volcano is in an elevated state of unrest with a detectable ash plume/emission. **No ash is expected above AAFB within the next 24 hours**. *Or after a change from a higher alert level:* Volcanic activity has decreased significantly but continues to be closely monitored for possible renewed release.

**Orange**

Volcanic eruption/emission is occurring. **Ash expected over AAFB within the next 12 hours**. Begin preparations for protection of aircraft. *Or after a change from a higher alert level:* Volcanic ash has evacuated the area above AAFB but may still be present in the local flying area.

**Red**

Volcanic eruption is occurring. **Ash expected over AAFB within 3 hours**. Volcanic ash considered imminent. Consider termination of flying, post airfield advisories, seal or shelter assets as required

**Black**

Ash has been *observed* on or above the AAFB airfield.

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# Volcano Alert Levels & Aviation Color Codes



### Volcano Alert Levels

**Normal**  
 Volcano is in typical background, noneruptive state or, *after a change from a higher level*, volcanic activity has ceased and volcano has returned to noneruptive background state.

**Advisory**  
 Volcano is exhibiting signs of elevated unrest above known background level or, *after a change from a higher level*, volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.

**Watch**  
 Volcano is exhibiting heightened or escalating unrest with increased potential of eruption, timeframe uncertain, **OR** eruption is underway but poses limited hazards.

**Warning**  
 Hazardous eruption is imminent, underway, or suspected.

### Aviation Color Codes

**GREEN**  
 Volcano is in typical background, noneruptive state or, *after a change from a higher level*, volcanic activity has ceased and volcano has returned to noneruptive background state.

**YELLOW**  
 Volcano is exhibiting signs of elevated unrest above known background level or, *after a change from a higher level*, volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.

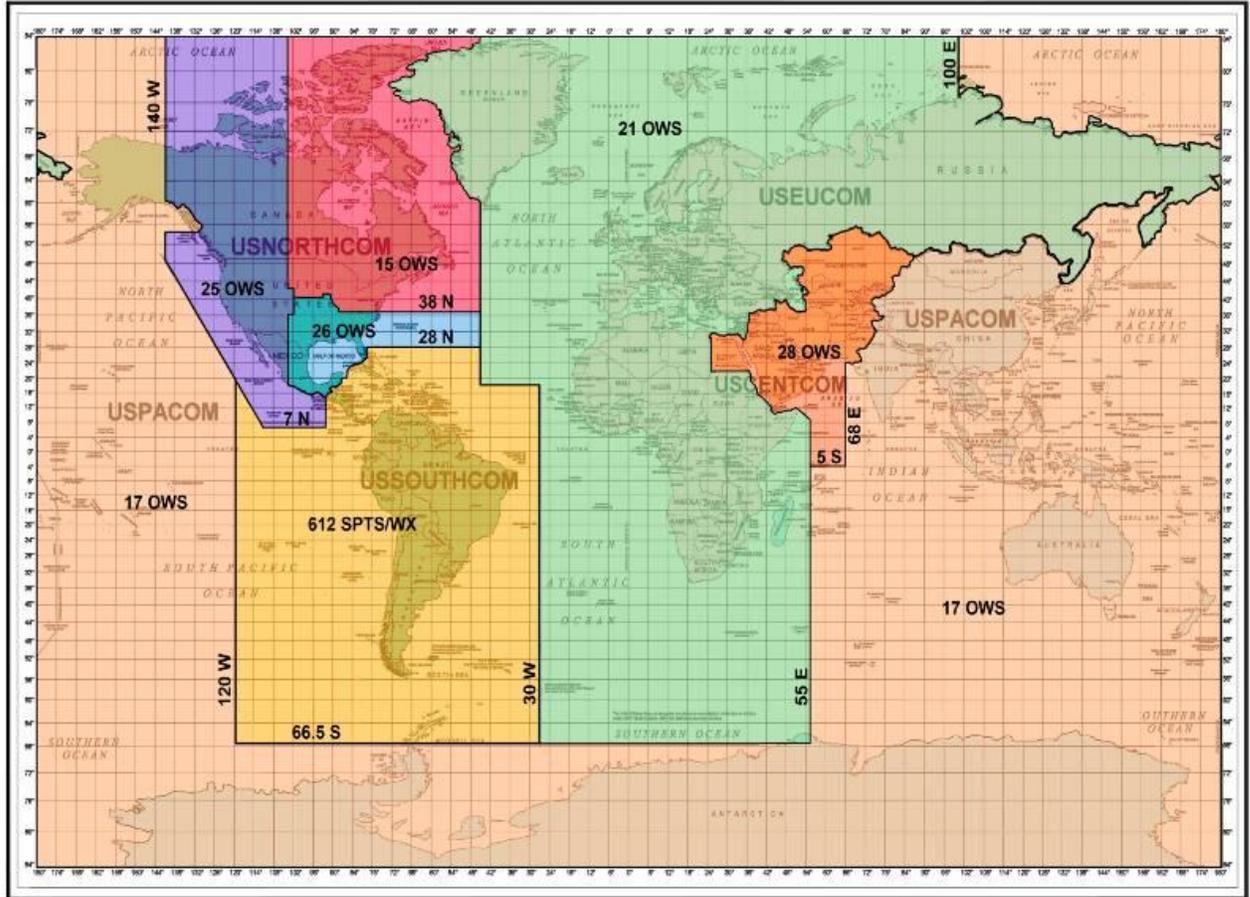
**ORANGE**  
 Volcano is exhibiting heightened or escalating unrest with increased potential of eruption, timeframe uncertain, **OR** eruption is underway with no or minor volcanic-ash emissions [ash-plume height specified, if possible].

**RED**  
 Eruption is imminent with significant emission of volcanic ash into the atmosphere likely **OR** eruption is underway or suspected with significant emission of volcanic ash into the atmosphere [ash-plume height specified, if possible].

Attachment 13

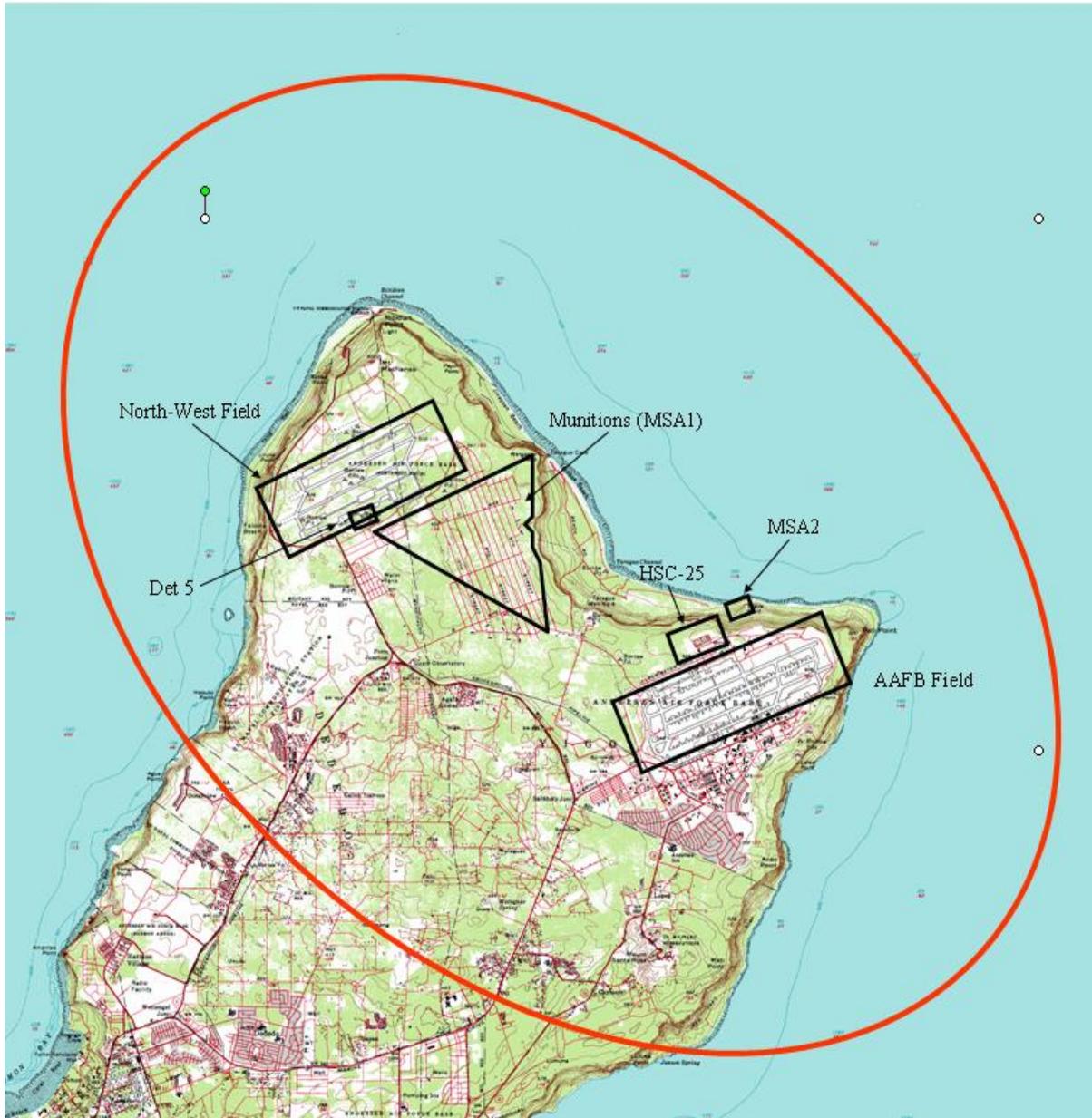
AF WEATHER OWS' AREAS OF RESPONSIBILITY

Figure A13.1. AF Weather OWS AORs.



Attachment 14

LIGHTNING WATCH/WARNING AREA FOR AAFB COMPLEX



## Attachment 15

### MISSION EXECUTION FORECASTS (MEF)

#### A15.1. MEF Specification Criteria

A15.1.1. Specification criteria is a rule set based on mission limiting thresholds for each airframe. The purpose of using the criteria is to inform mission planners and decision makers of potential weather limiting factors that may occur during the mission window. Specification criteria are only used in the initial writing of the MEF. Any necessary changes after publication are dealt with using Amendment criteria.

A15.1.2. Specification criteria for the Bomber MEF are dependent on the airframes deployed to AAFB at the time. Thus, the Bomber MEF will use the SPECI criteria listed in [Attachment 2](#) and the Mission-Limiting Thresholds in [Attachment 7](#).

A15.1.3. Specification criteria for the Airfield MEF (AMEF) are as follows:

##### A15.1.3.1. Ceilings

A15.1.3.1.1. 3000 feet

A15.1.3.1.2. 1500 feet

A15.1.3.1.3. 200 feet

##### A15.1.3.2. Visibility

A15.1.3.2.1. 3 miles

A15.1.3.2.2. 1/2 mile

##### A15.1.3.3. Combined Seas

A15.1.3.3.1. 10 feet

A15.1.3.3.2. 12 feet

##### A15.1.3.4. Space Weather

A15.1.3.4.1. Minor Communications/Targeting Errors

A15.1.3.4.2. Severe Communications/Targeting Errors

##### A15.1.3.5. Crosswinds

A15.1.3.5.1. 15 knots

A15.1.3.5.2. 25 knots

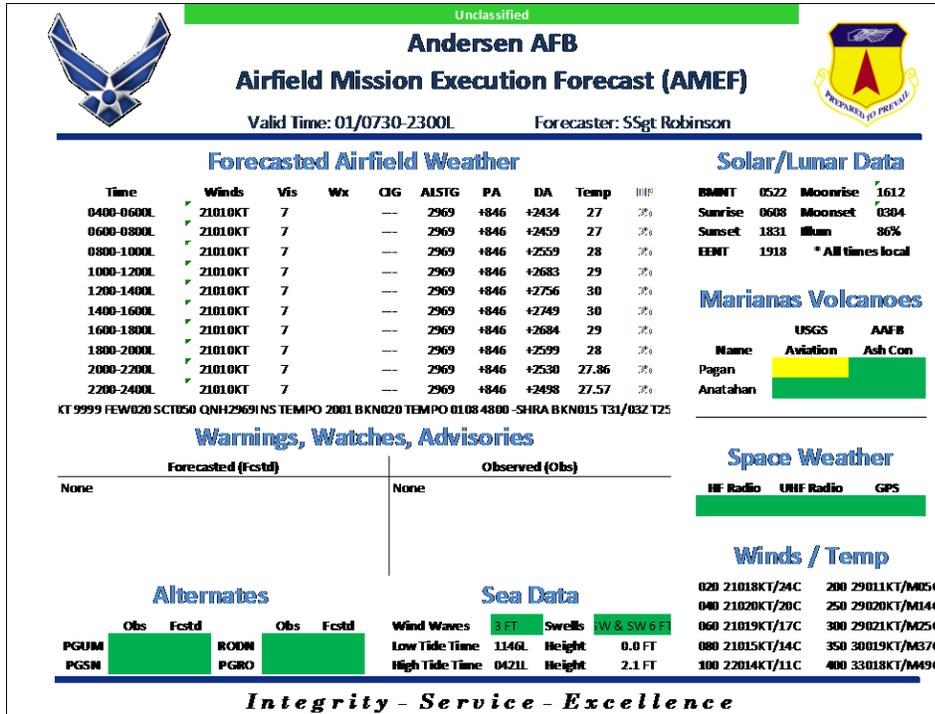
#### A15.2. MEF Amendment Criteria

A15.2.1. Amendment criteria is a rule set using ORM and tailored based on mission parameters to update mission planners on previously un-forecasted parameters that, presently or in the future, will affect the mission. The MEF is corrected to account for this criteria and resubmitted to the mission planners.

A15.2.2. Amendment criteria for the Bomber MEF are dependent on the airframes deployed to AAFB at the time. Thus, the Bomber MEF will use the SPECI criteria listed in **Attachment 2** and the Mission-Limiting Thresholds in **Attachment 7**.

A15.2.3. Amendment criteria for the Airfield MEF are the same as the specification criteria. Any un-forecasted change where the conditions are worse than forecast, will drive the forecaster to amend the AMEF.

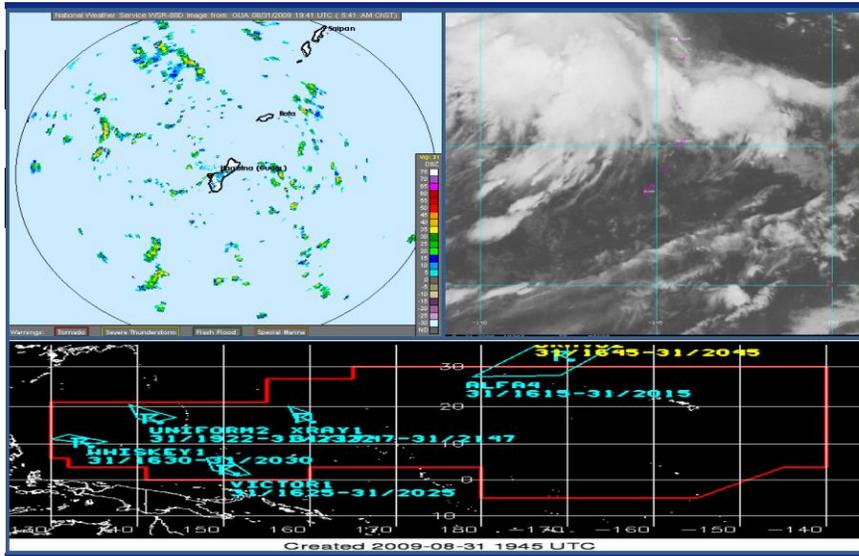
Figure A15.1. Airfield MEF.





Unclassified

### Andersen AFB Airfield Mission Execution Forecast (AMEF)



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Unclassified

### Andersen AFB Airfield Mission Execution Forecast (AMEF)

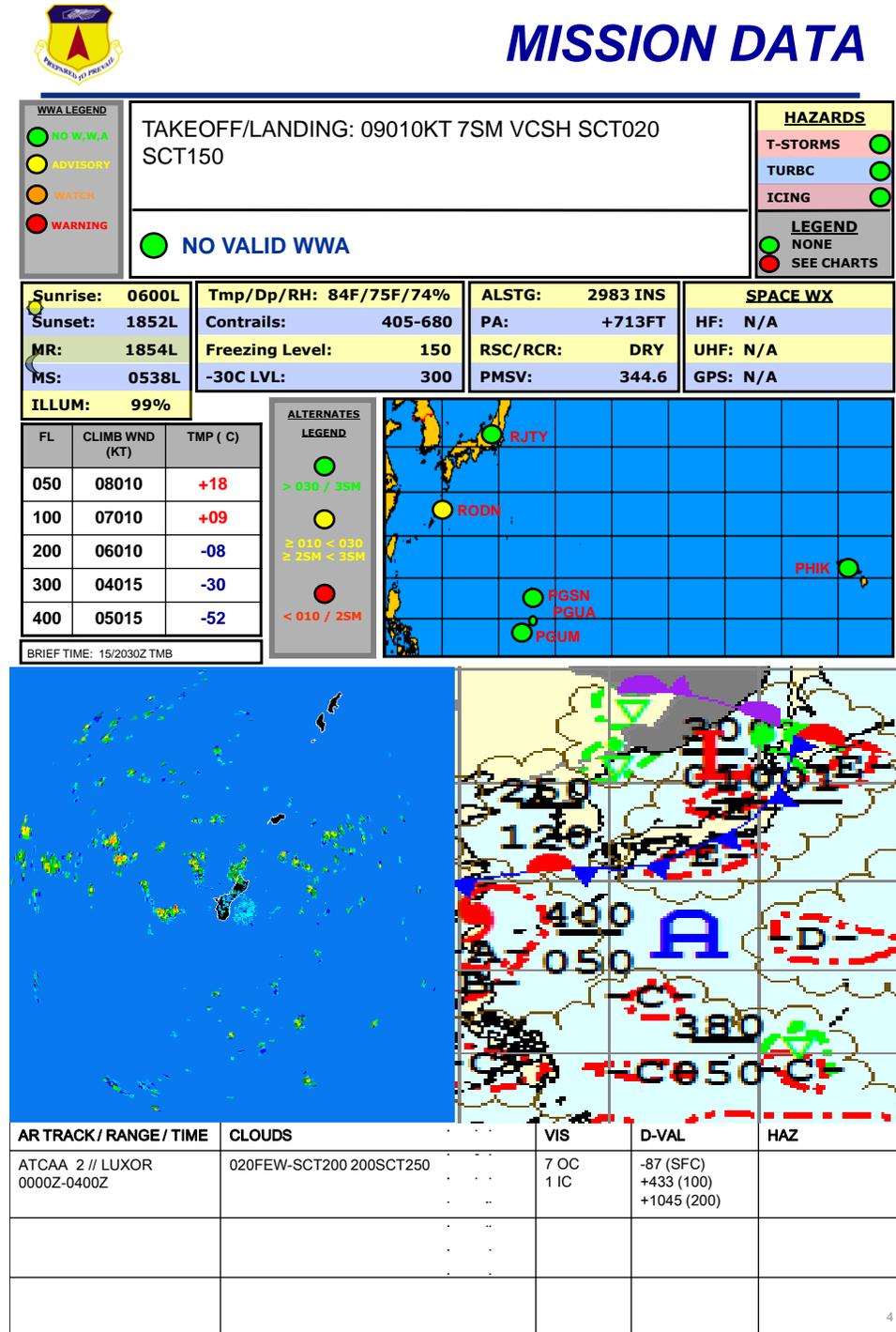


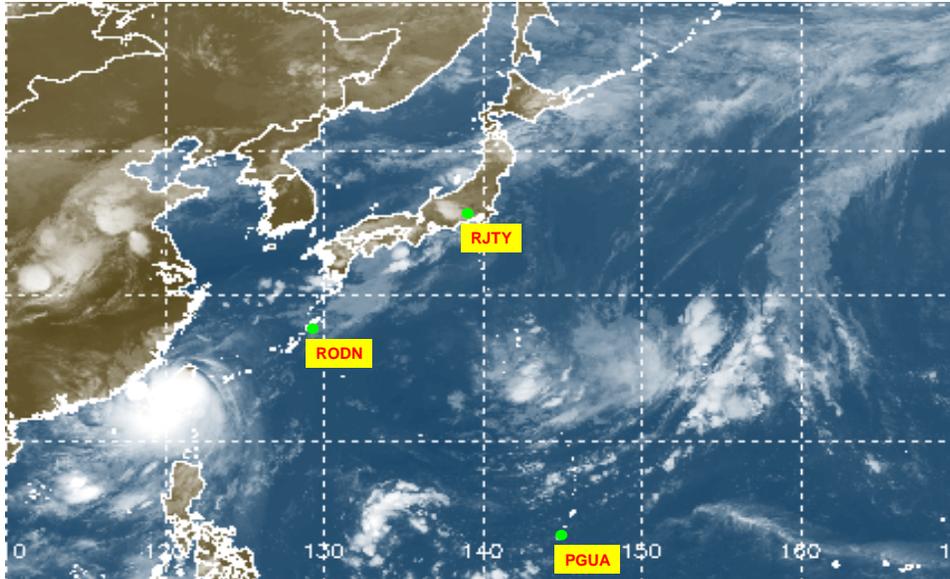
#### Hazard Thresholds

Space Weather	Green: No Impacts	Yellow: Minor degradation	Red: Severe	<b>Aviation Color Codes</b> <b>GREEN</b> Volcano is in typical background, noneruptive state or, after a change from a higher level, volcanic activity has ceased and volcano has returned to noneruptive background state. <b>YELLOW</b> Volcano is exhibiting signs of elevated unrest above known background level, after a change from a higher level, volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase. <b>ORANGE</b> Volcano is exhibiting heightened or escalating unrest with increased potential of eruption, timeframe uncertain, OR eruption is underway with no or minor volcanic-ash emissions [ash-plume height specified, if possible]. <b>RED</b> Eruption is imminent with significant emission of volcanic ash into the atmosphere likely OR eruption is underway or suspected with significant emission of volcanic ash into the atmosphere [ash-plume height specified, if possible].
Sea Data	Green: Combined Seas <10 FT	Yellow: >10 & <12 FT	Red: >12 FT	
Ceiling Height	Green: >015	Yellow: <015 & >002	Red: <002	
Visibility	Green: >3	Yellow: <3 & >1/2	Red: <1/2	
Winds (XWND)	Green: <15	Yellow: >15 & <25	Red: >25	
Alternates	Green: CIG/VIS >015/3	Yellow: CIG/VIS <015/3 & >002/.5	Red: CIG/VIS <002/.5	
<b>Andersen Ash Condition Color Code</b> <b>Green</b> Volcano is in normal non-eruptive state. No volcanic ash expected above AAFB. Or after a change from a higher alert level; Volcanic activity has ceased or volcanic ash has evacuated the area. <b>Yellow</b> Volcano is in an elevated state of unrest with a detectable ash plume/emission. No ash is expected above AAFB within the next 24 hours. Or after a change from a higher alert level; Volcanic activity has decreased significantly but continues to be closely monitored for possible renewed release. <b>Orange</b> Volcanic eruption/emission is occurring. Ash expected over AAFB within the next 12 hours. Begin preparations for protection of aircraft. Or after a change from a higher alert level; Volcanic ash has evacuated the area above AAFB but may still be present in the local flying area. <b>Red</b> Volcanic eruption is occurring. Ash expected over AAFB within 3 hours. Volcanic ash considered imminent. Consider termination of flying, post airfield advisories, seal or shelter assets as required. <b>Black</b> Ash has been observed on or above the AAFB airfield.				

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Figure A15.2. Sample Deployed Bomber MEF.





LOC	VALID TIME	SFC WIND	VIS / WX	CLOUD LAYERS	ALSTG	TEMP (F/C)	PA
RODN	0000Z To 0400Z	18015G20KT	7SM VCSH	BKN020 OVC150	2967 INS	84/29	+375 FT
RJTY	0000Z To 0400Z	20015G30KT	3SM - TSRA	BKN015CB OVC060	2966 INS	84/29	+704 FT
PGUM	0000Z To 0400Z	10010KT	7SM VCSH	SCT020	2983 INS	83/28	+317 FT

Attachment 16

AAFB OPREP WEATHER INPUT

OPREP To Command Post (Fax x7027)

Date:(MM/DD/YY)\_\_\_\_\_

Location:

Date/Time of event: \_\_\_\_\_

Type of Phenomena: (Check as Required)

- 1. WINDS GTE 50KTS \_\_\_\_\_
- 2. TORNADOES \_\_\_\_\_
- 3. HAIL GTE 1/2 INCH \_\_\_\_\_
- 4. TROPICAL CYCLONES \_\_\_\_\_
- 5. VOLCANIC ACTIVITY \_\_\_\_\_
- 6. EARTHQUAKES \_\_\_\_\_
- 7. OTHER:\_\_\_\_\_

Forecast required? (YES / NO / NA) If YES attach forecast.

Weather Warning Required? (YES / NO / NA)

Desired Leadtime? (YES / NO / NA)

Actual Leadtime: \_\_\_\_\_

Degraded Weather Equipment? (YES / NO).

Type: \_\_\_\_\_

Degraded Resources? (YES / NO).

Type: \_\_\_\_\_

MISSION IMPACT: Affected Flight Operations? (YES / NO)

Affected Ground Operations? (YES / NO)

Duration: \_\_\_\_\_

COMMENTS:\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

36 OSS/OSW Duty Forecaster: \_\_\_\_\_

Tel Extension: 366-5230