

**BY ORDER OF THE COMMANDER
MARCH AIR RESERVE BASE (AFRC)**

**MARCH AIR RESERVE BASE
INSTRUCTION 15-101**



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WEATHER

**BASE OPERATIONAL WEATHER
SUPPORT**

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This instruction implements *Air Force Policy Directive (AFPD) 15-1, Air Force Weather Operations*; *Air Force Instruction (AFI) 10-206, Operational Reporting*; *AFI 10-229, Responding to Severe Weather Events*; *AFI 15-114, Functional Resource and Weather Technical Performance Evaluation*; *AFI 15-128, Air Force Weather Roles and Responsibilities*; *AFI 10-2501, Air Force Emergency Management (EM) Program Planning and Operations*; *Air Force Manual (AFMAN) 15-111, Surface Weather Observations*; *AFMAN 15-124, Meteorological Codes*; *AFMAN 15-129v1, Air and Space Weather Operations – Characterization*; *AFMAN 15-129v2, Air and Space Weather Operations – Exploitation*. It establishes responsibilities and weather support procedures. It also provides general information for weather services, including weather observations and forecasts; weather warnings, watches and advisories; space weather data, information dissemination and base-wide reciprocal support. It outlines weather support provided by the March Air Reserve Base (ARB) weather station to the 452d Air Mobility Wing (AMW), the 163d Attack Wing (ATKW), US Customs and Detachment 1, 144th Fighter Wing (FW). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through Major Command (MAJCOM) publications/forms managers. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records* and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/gcss-af61a/afrims/afrims/>. The use of the name or mark of any specific

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SUMMARY OF CHANGES

This document is substantially revised and must be completely reviewed. Explanation of terms has been moved to an attachment.

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Chapter 1

CHARACTERIZATION UNIT (CU) AND EXPLOITATION UNIT (EU) INTERACTIONS

1.1. General. The 25 Operational Weather Squadron (25 OWS) and the 452nd Operations Support Squadron Weather Flight (452 OSS/OSAW) are the official weather information agencies for March Air Reserve Base, California. Operating from Base Operations, building 395, Room 110, the 452 OSS/OSAW provides weather services to the 452d Air Mobility Wing (AMW), the 163d Attack Wing (ATKW), U.S. Customs, Detachment 1, 144th Fighter Wing (FW), transients, federal agencies and U.S. government contractors assigned to, working on, or operating from, March Air Reserve Base (MARB). The Weather Flight (WF) provides surface weather observations; mission execution forecasts; observed weather watches, warnings and advisories; pilot-to-metro-service; climatic and environmental services; meteorological assessments for plans and operations; and staff weather support and terminal aerodrome forecasts (issued by 25 OWS, Davis-Monthan AFB AZ); flight weather briefings and weather forecasts (25 OWS).

1.1.1. The 25 OWS is considered the characterization unit. Characterization encompasses the “collect, analyze and predict” weather core competencies. Characterization depends on Air Force Weather’s ability to collect accurate data, correctly analyze that data and use the results to produce a coherent picture of the present and future state of the air and space environment.

1.1.2. The 452 OSS/OSAW is considered an exploitation unit. Exploitation is the ability to minimize the impact of environmental threats to friendly forces while simultaneously capitalizing on environmental conditions that maximize the operational advantage over enemy forces. Exploitation units tailor the characterization provided by the characterization unit. Tailoring is the extraction of data that is pertinent to a specific mission profile from the overall characterization of the air and space environment. Tailoring does not mean changing the characterization. To the greatest extent possible exploitation units will use the characterized data provided by 25 OWS.

1.2. Concept of Operations.

1.2.1. The 25 OWS at Davis-Monthan AFB, Arizona, provides regional and operational-level weather products and information to Air Force and Army units in the western region of the continental United States (CONUS).

1.2.2. Meteorological Watch (METWATCH). The 25 OWS performs a continuous METWATCH for March ARB. METWATCH is a deliberate, continuous process for monitoring terrestrial weather or the space environment in an area or region. The purpose of a METWATCH is to identify when and where observed conditions significantly diverge from forecast conditions, determine courses of action to update or amend a forecast product or group of products and notify designated agencies.

1.2.3. The weather flight (WF) is the primary source of tailored weather services in support of the 452 AMW and subordinate units outlined above. The WF will make every effort to

ensure that mission-limiting weather is anticipated and exploited and that safety and resource protection are maintained.

1.2.4. Agencies requiring special weather support should contact the WF to coordinate support requirements and provide any pertinent details as early as possible (72 hours notice is preferred). Agencies requiring recurring support should contact the weather supervisor (DSN 447-5114). Users should pick up special products that cannot be disseminated via JET, email or fax at the weather station in building 395.

1.2.5. Adequate notice and close coordination are essential for optimal support. The WF must be kept informed of all changes to the weather sensitivities of assigned aircraft, weapons and guidance systems, as well as any other weather criterion affecting operations.

1.3. Responsibilities.

1.3.1. General responsibilities of the 25 OWS and WF are outlined in AFI 15-128, para 4.1 and para 6.1, respectively.

1.3.1.1. The 25 OWS issues the March ARB Terminal Aerodrome Forecasts (TAFs), forecast weather warnings and watches and may provide flight weather briefings to transient aircrews passing through March ARB.

1.3.1.2. The WF will create Mission Weather Products (MWP) that fuse theater scale products with local mission requirements to enable the direct inject of weather impacts into war fighter planning and/or execution. The WF's local MWP are referred to as Mission Execution Forecasts (MEFs), Planners, verbal briefings and 175-1s. The WF will also provide flight weather briefings for transient aircrews IAW the WF duty priorities listed in Table 1.1.

1.3.2. March ARB Installation Data Page. The 25 OWS and WF will coordinate and maintain a March ARB Installation Data Page detailing TAF specification and amendment criteria, WWA thresholds, desired lead times, mission impacts, unit information, Joint Environmental Toolkit (JET) back-up contacts and local outage back-up information.

1.3.3. Eyes Forward and Collaboration. The WF will act as the eyes forward for the OWS by relaying significant, time-sensitive meteorological information not found in coded meteorological reports to the 25 OWS to assist forecast operations.

1.4. Duty Priorities. 452 OSS/OSAW Duty Priorities. IAW AFMAN 15-129V2, para 1.3.3.1, the WF has created the following duty priorities based on mandated weather instruction.

Table 1.1. 452 OSS/OSAW Duty Priority Listing.

Priority	Duties
1	Perform Emergency War Order (EWO) taskings.
2	Execute WF Evacuation.
3	Respond to Aircraft/Ground emergencies.
4	Provide products and services in support of combat operations, contingency operations and military operations other than war (MOOTW).
5	Respond to Pilot to Metro Service Airborne Aircrew Support (PMSV/phone patch).
6	Augment AN/FMQ-19 observations for mandatory elements.
7	Provide "Eyes Forward" support to OWS.

8	Provide resource protection forecasts (SWAP, weather watches, warnings and advisories).
9	Mission execution forecast process – produce and disseminate forecasts.
10	Relay UUA Pilot Reports to OWS/disseminate PIREPS
11	Provide scheduled flight mission weather products (MWP or DD 175-1) and tactical-level, non-contingency MWP.
12	Perform MISSIONWATCH activities.
13	Provide aerospace weather products, information and weather briefings (climatology, plain language requests).
14	Accomplish weather training as required.
15	Accomplish other routine weather support/administrative tasks.

1.5. Hours of Operation and Contact Information.

1.5.1. WF. Normal airfield and mission service hours of operation are 24/7, 365 days a year.

1.5.2. Contact Information.

1.5.2.1. WF (951) 655-3602/2804/5114 / DSN 447-3602/2804/5114

1.5.2.2. WF AOL (951) 655-2428 / DSN 447-2428

1.5.2.3. PMSV 239.8 MHz

1.5.2.4. 25 OWS Regional Forecaster DSN 228-7652

1.5.2.5. 25 OWS Flight Weather Briefer DSN 228-6598/6599/6588

1.5.2.6. 25 OWS Senior Duty Officer DSN 228-7655

1.6. Continuity of Operations Plan (COOP). Continuity of support to the installation is susceptible to communication outages at the 25 OWS and WF.

1.6.1. WF COOP and WF Alternate Operating Location (AOL). In the event of a building evacuation, the WF will move to building 385, Comm (951) 655-2428 or DSN 447-2428. WF members will follow duty-specific standard operating procedures (SOPs) and evacuation checklists (including a list of required back-up equipment) and resume services at the AOL as soon as possible. The flight will continue operational support and resume eyes forward responsibilities for the OWS. If access to observing sensing equipment readouts is lost, a Kestrel will be used to take observations and to back-up/augment the AN/FMQ-19 (Automated Meteorological Observing System). Most WF services/support will be provided, but will require a case-by-case assessment depending on communication line status, equipment status, etc. Expect most services to be somewhat degraded (weather products, pilot briefings, etc.) due to limited facilities and loss of dedicated data services, including sensors and various data types (meteorological satellite (METSAT), radar imagery, etc.). For flight safety reasons, the WF will not evacuate during exercises. However, the WF will perform an AOL evacuation annually to maintain certification.

1.6.1.1. Observations taken from building 385 do not allow the observer to see the entire aerodrome. The 14-end (northwest) of the runway is limited due to aircraft and aircraft hangars. Visibility on the 32-end (southeast) of the runway is limited due to blast fences and aircraft.

1.6.1.2. If the 452 OSS/OSW experiences full communication/electrical outages (network, phone, cell phone, power), the 25 OWS will take full responsibility for all weather watches, warnings and advisories, TAFs and flight weather briefings until outages can be corrected or overcome. Note that "eyes forward" capabilities may be delayed or omitted based on the situation. Further support, if needed, will be decided upon cooperatively by the 452 OSS/OSW flight leadership and 25 OWS leadership.

1.6.2. 25 OWS COOP.

1.6.2.1. For short term outages (up to 72 hours), the WF will assume local TAF and weather watch, warning and advisory responsibility.

1.6.2.2. For long-term outages (greater than 72 hours), the 25 OWS' plan is to resume all support from an alternate location.

1.6.2.3. Exercises. In coordination with WFs, 25 OWS conducts monthly/quarterly COOP exercises.

Chapter 2

AIRFIELD SERVICES

2.1. General. Airfield services include those actions affecting the March ARB aerodrome (defined as 5NM ring from the center of the airfield) or the installation as a whole.

2.2. Observations. Observations are taken, recorded and disseminated IAW AFMAN 15-111, *Surface Weather Observations*, utilizing the AN/FMQ-19 Automated Meteorological Observing System (AMOS). Most observations are taken automatically by the AN/FMQ-19 with no human intervention. At times, it is necessary for a weather forecaster to augment the system. Automated and augmentation processes are outlined in [para 2.3.2](#) and [2.3.3](#). The following observations are created and disseminated:

2.2.1. Aviation Routine Weather Report (METAR). METARs are disseminated both locally and longline between 55 and 59 minutes after the hour.

2.2.2. Aviation Selected Special Weather Report (SPECI). SPECI is an unscheduled observation completed and transmitted when any of the March ARB special criteria listed in Attachment 2 have been observed or sensed. SPECI will contain all data elements found in a METAR plus additional remarks that elaborates on data in the body of the report. All SPECI reports will be prepared and transmitted as soon as possible after the relevant criteria are observed. Attachment 4 contains an example weather observation.

2.3. Capabilities and Limitations.

2.3.1. Surface Weather Observing Limitations:

2.3.1.1. Observations taken from building 395 do not allow the observer to see the entire aerodrome. The 14-end (northwest) of the runway is limited due to aircraft and aircraft hangars. Visibility on the 32-end (southeast) of the runway is limited due to blast fences and aircraft.

2.3.1.2. High intensity night security lights on the flight line reflect from heavy haze and/or fog, further limiting nighttime visual observing. There are no limitations of airfield weather sensors.

2.3.1.3. In the event that a plane is parked over the observation point (during manual observing operations), the airfield services personnel will move to the safest location possible without interfering with aircraft operations or endangering themselves while taking an observation.

2.3.2. Automated FMQ-19 Observation. An automated observation is any observation having been evaluated, prepared and transmitted by an observing system without human intervention. In automated mode, the FMQ-19 observing system will record and disseminate weather observations. The FMQ-19 uses time averaging of sensor data. In an automated observation, sky condition will be an evaluation of sensor data gathered during the 30-minute period ending at the actual time of the observation. All other elements evaluated are based on sensor data that is within 10 minutes or less of the actual time of the observation.

2.3.3. Forecaster FMQ-19 Augmentation. Augmentation is the process of having a certified weather technician manually add or edit data to an observation generated by the FMQ-19. The two augmentation processes used are supplementing and back up.

2.3.3.1. Supplementing (definition). Manually adding meteorological information to an observation generated by the FMQ-19 that is beyond that system's capability to measure and report. For example, the sensor cannot sense a tornado or hail.

2.3.3.2. Supplementing procedures. WF personnel will supplement observations when the airfield is open and the weather conditions in [Table 2.1](#) are observed. WF personnel will be ready to supplement observations if the conditions in Table 2.1 are forecast to occur within 2 hours. Weather personnel are required to log on to an AMOS and be prepared to supplement whenever a watch or warning has been issued for tornadic activity.

Table 2.1. Mandatory Supplementary Weather Conditions.

Mandatory Supplementary Weather Conditions – Body of Report (Note 1.)
Tornado (+FC) (Note 2)
Funnel Cloud (FC) (Note 2)
Waterspout (+FC) (Note 2)
Hail (GS or GR)
Volcanic Ash (VA)
Ice Pellets (PL)
Mandatory Supplementary Weather Conditions – Remarks Section of Report (Note 1.)
Funnel Cloud (Tornadic Activity_B/E(hh)mm_LOC/DIR_(MOV)) (Note 2)
Snow Depth (Note 3)(only during airfield operating hours and if heavy snow warning has been issued and snowfall is occurring)
Notes:
1. References for coding augmentable weather conditions are located in AFMAN 15-111.
2. The immediate reporting of funnel clouds takes precedence over any other phenomenon.
3. All Remarks and Additive Data references are provided in AFMAN 15-111, Attachment 3.

2.3.3.3. Back-up (definition). The process of providing meteorological data and/or dissemination of an FMQ-19 generated observation when the primary automated method is not operational or unavailable due to sensor and/or communication failure.

2.3.3.4. Back-up procedures. In the event of FMQ-19 malfunction or failure, back-up procedures will be implemented only during airfield operating hours. They will also be provided when tornadic activity is occurring or forecast to occur. WF personnel will use alternate observing procedures when performing back-up operations. A Kestrel will be used to take observations while performing back-up procedures. When required, the WF will encode and disseminate METAR and SPECI observations IAW AFMAN 15-111 Table 3.2. All element entries must be observed within 15 minutes of the actual time of the observation with the exception of wind gusts and squalls, which are reported only if they are observed within 10 minutes of the time of the observation. When utilizing back-up equipment, all wind and pressure values will be estimated.

2.4. TAF Support. March ARB TAFs are produced and disseminated by the 25 OWS IAW AFI 15-128, AFMAN 15-124, AFMAN 15-129V1 and the March ARB Installation Data Page. Attachment 3 lists forecast specification and amendment criteria. TAFs are valid for 30 hours and apply to the area within the 5NM area of the March ARW airfield complex. TAFs are issued at 0400, 1200 and 2000 Zulu time. Attachment 4.2 contains an example of a typical TAF.

2.5. Resource Protection (RP) Support and Warnings, Watches and Advisories (WWA). The 25 OWS conducts a continuous meteorological watch to identify and assess emerging and imminent threats to March ARB. Special Weather Statements (SWS) and Watches, Warnings and Advisories are special notices provided by the 25 OWS resulting from both the forecast and METWATCH processes to assist military decision makers with resource and RP decisions. Watches and warnings provide notice of weather events posing a hazard to life or property. Advisories provide specific notice to an operational agency of environmental phenomena with the potential to impact operations. Customer responses to WWAs are listed in **Attachment 5**.

2.5.1. SWS. SWSs are special notices issued by the 25 OWS to assist military decision makers with RP decisions.

2.5.2. Weather Watches. A weather watch is a special notice to installation personnel/supported units of a potential for environmental conditions of such intensity as to pose a hazard to life or property. They are used by installation personnel/supported units to make force protection and risk management decisions. Watches are issued for a 5NM radius of the center point of the March ARB runway complex and are defined in **Table 2.2**.

Table 2.2. Weather Watches.

Watch Type	Criteria	Desired Lead Time
Tornado	Potential for Tornado or Funnel Cloud exists	As potential warrants
High Winds	Potential for High Winds > = 50 knots	As potential warrants
Freezing Precipitation	Potential for Freezing Rain exists	As potential warrants
Lightning	Potential for Lightning within 5NM exists	30 minutes
Severe Hail	Potential for Severe Hail >= 3/4 inches	As potential warrants

2.5.3. Weather Warnings. A Weather Warning is a special notice to notify installation personnel when an established weather condition of such intensity as to pose a hazard to life or property is occurring or is expected to occur. Weather warnings provide concise information outlining environmental threats and are used by commanders and personnel to make RP decisions and take protective action. Warnings are issued for a 5NM radius at the center point of the runway, unless otherwise specified and are defined in **Table 2.3**.

Table 2.3. Weather Warnings.

Warning Type	Criteria	Desired Lead Time
Tornado	Tornado or Funnel Cloud expected	30 minutes
High Winds	Forecasted High Wind \geq 50 knots	120 minutes
Strong Winds	Forecasted High Wind \geq 35 but $<$ 50 knots	90 minutes
Severe Hail	Forecasted Severe Hail \geq $\frac{3}{4}$ inch	120 minutes
Hail	Forecasted Hail \geq $\frac{1}{2}$ inch but $<$ $\frac{3}{4}$ inch	90 minutes
Freezing Precipitation	Freezing Precipitation expected	90 minutes
Heavy Snow	Forecasted Heavy Snow \geq 2 inches within 12 hours	90 minutes
Heavy Rain	Forecasted Heavy Rain \geq 2 inches within 12 hours	90 minutes
Lightning	Observed Lightning within 5 nm of WADS Location Runway Complex	Observed

2.5.4. Observed Weather Warnings. Lightning warnings are the only observed warning issued for March ARB and extends 5 NM in all directions from the airfield. Lightning warnings are not issued until lightning is observed, either visually or via the National Lightning Detection Network. The lightning warning will remain valid until lightning is no longer observed within 5 NM for at least 15 minutes. Exception: A lightning warning will not be cancelled if a thunderstorm is within 5 NM (as indicated on radar).

2.5.5. Weather Advisories. A weather advisory is a special product notifying an end user when an established environmental condition affecting operations is occurring or is expected to occur on March ARB. Observed weather advisories will remain valid until the criteria is no longer occurring and has not occurred in the last 30 minutes. March ARB advisories are defined in **Table 2.4**.

Table 2.4. Weather Advisories.

Criteria	Forecast/Observed
Forecasted Winds ≥ 25 and < 35 knots	Forecast
Observed Ceiling < 300 FT AGL and/or Visibility < 1 SM	Observed
Observed Crosswinds > 15 but < 25 knots	Observed
Observed Crosswinds > 25 knots	Observed
Observed Lightning within 10 NM	Observed
Observed Severe or Greater Turbulence below 10,000 FT AGL	Observed
Observed Moderate or Greater icing below 10,000 FT AGL	Observed
Observed Low Level Wind Shear $< 2,000$ FT	Observed
Observed Visibility $\leq 1/8$ SM	Observed
Observed ICE FOD Temperature ≤ 7 C and Dewpoint depression < 5 C	Observed

2.5.6. WWA Numbering Scheme. Advisories, watches and warnings are numbered consecutively by identifying the type of weather message (watch, warning, or advisory) followed by a five-digit number. The first two numbers indicate the current month while the second three numbers indicate the sequence number. For example, the message “Weather Warning 02-005” means the month is February (02) and this is the fifth (005) warning issued in the month. The message “Weather Advisory 12-013” means the month is December (12) and this is the thirteenth (013) advisory issued in the month. Examples of different messages are contained in **Attachment 4**.

2.5.7. WWA Upgrades/Downgrades. WWAs will be upgraded (i.e., winds increase from 35 knots to 50 knots) or downgraded as required. Upgrades should meet the desired lead times specified in **Table 2.2**, **2.3** and **2.4**. Only one warning will be in effect at a given time (and will include multiple warning criteria as required) except for forecast tornado warnings and/or observed lightning warnings. Tornado and lightning will be separate warnings. With the exception of tornado and lightning warnings, if a warning is issued for one criteria and it becomes necessary to warn for another criteria, a new warning and new number will be issued, to include all criteria expected. Separate valid times may be specified for each criterion, if necessary.

2.5.8. WWA Amendments. When WWAs no longer adequately describe the phenomenon's expected occurrence, a completely new WWA with a new number will be issued. The amendment will clearly state how the amendment or extension affects any previously issued notices.

2.5.9. WWA Extensions. WWAs may be extended, provided the extension is issued prior to the expiration of the original notice.

2.5.10. WWA Cancellation. Warnings and watches are canceled when the weather phenomena is no longer occurring or expected to occur. Warnings not extended or canceled will automatically expire at the end of the valid period. Observed warnings will be canceled when the criteria is no longer occurring and has not occurred in the last 15 minutes. Observed

advisories will be canceled when the criteria is no longer occurring and has not occurred in the last 30 minutes.

2.6. Dissemination Process.

2.6.1. Observations. Observations taken by either the FMQ-19 automated observing system or with back-up equipment are disseminated via JET. When JET is nonoperational, the WF will relay observations to the following local organizations in order of priority listed in local SOPs.

2.6.2. TAFs. The 25 OWS disseminates TAFs via JET. If JET is non-operational, the WF will disseminate TAFs to ATC, via telephone, provided fax number, or provided e-mail.

2.6.3. SWSs. SWSs provide advance notice of widespread hazardous weather conditions that have the potential to affect March ARB. 25 OWS posts SWSs to the 25 OWS webpage. The WF leadership will forward tailored information from the SWSs to March ARB senior leadership, as requested.

2.6.4. WWAs. The 25 OWS or WF will enter WWAs into JET which will disseminate the information to ATC. The WF contacts 452 AMW/CP and 452 OSS/OSAA Airfield Management to verify receipt prior to their required dissemination procedures. If JET is out-of-service, the WF and/or the 25 OWS will make back-up calls to the Air Traffic Control Tower and Ground Approach Control.

2.6.4.1. Lightning Warnings. All lightning warnings are disseminated by the 452 AMW/CP to the base populace via phone call, LMRs and UHF Radio.

2.6.4.2. Tornado Warnings. The 452 AMW/CP has the primary responsibility for sounding the base siren for a tornado warning issuance.

2.7. Cooperative Weather Watch. The Cooperative Weather Watch is a program in which Air Traffic Control personnel are trained by March ARB weather personnel to assist in monitoring local weather conditions for significant changes. Due to their location in the tower, they have a full 360-degree field of view of the horizon. Under the Cooperative Weather Watch, weather technicians will reevaluate weather conditions whenever a reliable source reports weather conditions differing from the current observation. Although secondary to the function of air traffic control, the tower will contact March ARB Weather at a minimum whenever the following conditions occur:

2.7.1. March ARB Tower personnel will notify Weather personnel when:

2.7.1.1. Tower visibility is less than 4 statute miles or when tower visibility increases to 4 statute miles or more. However, this information is not included in observations produced by JET. The WF will add the TWR VSBY remark whenever augmenting surface observations.

2.7.1.2. A thunderstorm is observed.

2.7.1.3. Lightning is first observed.

2.7.1.4. A tornado or funnel cloud is observed or disappears.

2.7.1.5. Precipitation begins or ends.

2.7.1.6. Any other meteorological situation exists that, in the opinion of the air traffic controller, is critical to safety of flight.

2.7.1.7. Notify the weather technician of changes in the operational status of the High Intensity Runway Light (HIRL) system.

2.7.1.8. Notify the weather technician of active runway changes and corresponding changes to wind sensor equipment.

2.7.1.9. Respond to WF requests for radio checks of the Pilot-to-Metro Service (PMSV) frequency 239.8 MHz and provide back-up, as able, when the PMSV is out of service. Back up will be provided when Tower workload permits or upon request (if Tower workload permits) if WF knows a customer is trying to contact the forecaster.

2.7.1.10. Obtain pilot weather reports (PIREPs) when conditions warrant, or upon request and relay the reports to the WF within 5 minutes of receipt, unless higher priority duty exists.

2.7.1.11. Provide indoctrination training for weather personnel, as requested.

2.7.1.12. Give weather personnel sufficient time to switch over appropriate weather sensors if an observation on an inactive runway is required.

2.7.1.13. Inform WF personnel of runway light setting changes during times when RVR observations are required.

2.7.2. ATC Limited Observation Training. The 452 OSS/OSW oversees the March ARB Limited Observation Training Program. ATC personnel requiring training should contact the WF Manager at DSN 447-5114/Commercial (951) 655-5114 to schedule an appointment. To satisfy Limited Observation Training requirements, personnel are required to receive an orientation of the weather facilities, attend a weather observer briefing and be certified on observing procedures.

2.8. PMSV Support. Weather information is available via PMSV during duty hours on frequency 239.8 MHz. The duty forecaster will monitor PMSV traffic for all aircraft contacts. For aircraft outside the range of our PMSV system, the WF or 25 OWS can provide PMSV support through a phone patch to the 452 AMW/CP (DSN 447-4665 COMM (951) 655-4665). PMSV outages are discussed in **para 5.3.2**.

2.9. Emergency Action(s) Response.

2.9.1. Aircraft Mishap. When notified of an aircraft mishap, the WF will initiate a save of applicable data used in the development of any weather products provided and provide this data to investigating agencies upon request.

2.9.1.1. If the WF provided the MWP, the WF will notify the 25 OWS Operations Floor Production Supervisor of all aircraft mishaps as soon as possible after notification of the event. The WF will coordinate with 25 OWS to save all applicable data and products. If products from other OWSs were used, the WF will coordinate with all applicable OWSs to ensure data is saved. Enough data covering weather conditions before and after the mishap will be saved to fully reconstruct environmental conditions.

2.9.1.2. If an OWS or another WF provided the MWP, they will conduct the data save in coordination with any other Air Force Weather units involved.

2.9.2. SWAP. The WF will initiate SWAP in accordance with criteria listed in **Table 2.5**. SWAP ensures sufficient manpower is available to meet the increased demand for timely weather information from its supported unit(s) during significant weather events. It is imperative that timely and accurate weather watches, warnings and advisories are disseminated to all agencies to ensure personnel and RP. The WF will initiate a heightened METWATCH. The WF forecaster will notify the WF Manager of SWAP activation during normal staff duty hours.

Table 2.5. Conditions Requiring SWAP Activation.

SWAP ACTIVATION CRITERIA
Forecasted or Tornadoes occurring
Forecasted or Winds occurring ≥ 35 knots
Forecasted or Hail occurring $\geq \frac{3}{4}$ inch
Forecasted or Freezing Precipitation occurring

2.9.3. Chemical, Biological, Radiological, Nuclear and High-yield Explosive (CBRNE) Response.

2.9.3.1. The WF Manager will serve as the CBRNE SME for the installation and routinely meet with EM, Fire Emergency Services and BEE to ensure WF integration. The WF SME will recommend the most appropriate weather data type for EM and other ESFs to run their chosen CBRNE assessment model. If surface observations or alphanumeric forecasts are requested, make sure that observations and forecasts provided are representative of the location/time of the CBRNE event.

2.9.3.2. Work closely with Emergency Management or other functions to ensure the supported commander gets a consistent picture.

2.9.3.3. Upon request from Disaster Preparedness or any other agency, obtain/provide Chemical Downwind Messages from the servicing CU.

2.10. Smog Episodes. The term “smog” was originally coined to describe a combination of smoke and fog in the atmosphere. More recently, it has been applied to a mixture of pollutants from automobiles and industrial wastes and their reaction to products having accumulated in the atmosphere to the point of being noticed visually. The South Coast Air Quality Management District (SCAQMD) is responsible for air pollution control, forecast and enforcement of air pollution control laws for the Los Angeles Basin.

2.10.1. Notification. When a Stage 1 Episode or higher is issued, the weather station will notify the 452 AMW and 163 ATKW Command Posts, who will notify their appropriate personnel.

2.10.2. The following explains Stage 1 or higher episodes and Air Quality Index (AQI):

2.10.2.1. Stage 1- Unhealthy (AQI 151-200). Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.

2.10.2.2. Stage 2 - Very Unhealthy (AQI 201-300). Health alert: everyone may experience more serious health effects.

2.10.2.3. Stage 3 - Hazardous (AQI 301-500). Health warnings of emergency conditions. The entire population is more likely to be affected.

2.11. Hurricane Conditions.

2.11.1. Hurricane Conditions (HURCON). Special forecasts for high winds associated with hurricanes or tropical storms. When storms threaten southern California, the 452 AMW/CC declares HURCON levels based on information provided by WF personnel.

2.11.1.1. HURCON IV - Declared 72 hours prior to the onset of 50 knot or greater winds.

2.11.1.2. HURCON III - Declared 48 hours prior to the onset of 50 knot or greater winds.

2.11.1.3. HURCON II - Declared 24 hours prior to the onset of 50 knot or greater winds.

2.11.1.4. HURCON I - Declared 12 hours prior to the onset of 50 knot or greater winds.

Chapter 3

MISSION SERVICES

3.1. General. The WF and 25 OWS support the 452 AMW flying and non-flying missions. This chapter identifies the flying and non-flying missions and the weather support provided.

3.2. Flying Missions. The WF provides weather support to all associated flying units identified in **Attachment 6**.

3.3. Mission Weather Product (MWP). MWPs fuse theater scale products with local mission requirements enabling the direct inject of weather impacts into warfighter planning and/or execution. The result is a product designed to provide timely, accurate and relevant environmental information for planning and execution. The MWPs must be horizontally consistent with (but not necessarily mirror) products issued by any OWS and 557 Weather Wing.

3.3.1. Flight Weather MWPs. The 452 OSS/OSAW posts the March ARB Mission Execution Forecast to the INFO Drive. This is the primary source to receive weather briefings for supported flying units on March ARB. Requests, briefings and updates can be obtained by calling the WF at DSN 447-3602/2804 or at Commercial (951) 655-3602/2804. An example of the MWP can be found in **Attachment 6**.

3.4. MISSIONWATCH. This is a deliberate process for monitoring terrestrial weather and/or the space environment for specific mission-limiting environmental factors.

3.4.1. WF Briefed Missions. It is through MISSIONWATCH that MWP amendments/updates are accomplished. When potential hazards are identified, missions will be monitored continuously by the weather technician. The WF will utilize operational risk management processes during all stages of the forecast process. By utilizing proper risk management principles, technicians will remain situationally aware of weather criteria or system outages that might require augmentation of the system to provide the most accurate weather data for safety of flight and ground personnel. During rapidly changing weather, the WF will inform the 25 OWS when weather products issued by the 25 OWS do not accurately reflect observed conditions and impact flight safety. Upon detecting a significant un-forecast change based on a mission-limiting weather threshold (See **Table 3.2**) affecting the operation, the technician will amend the forecast, contact the customer and then inform the OWS (if an OWS product contributed to the un-forecast conditions). The WF will amend/update the MWP as necessary. In addition, when previously un-forecasted weather conditions develop that place a mission at risk, the WF will contact the associated wing agency with updates. These agencies will pass this information to the aircrews. See **Table 3.1** for flying wings and associated agencies. MISSIONWATCH will be conducted and logged. NOTE: MISSIONWATCH is only conducted for missions that receive weather briefings from 452 OSS/OSAW.

Table 3.1. Flying Units and Associated Agencies.

FLYING UNIT	CONTACTS
729 AS	Comm (951) 655-5614, DSN 447-5614
336 ARS	Comm (951) 655-2125, DSN 447-2125
912 ARS	Comm (951) 655-2125, DSN 447-2125
163 ATKW	Comm (951) 655-3737, DSN 447-3737
Det 1, 144 FW	Comm (951) 655-4351, DSN 447-4351
Transient Units	Aircrews will be requested to provide contact information for weather briefings and updates.

Table 3.2. ORM MISSIONWATCH Procedures.

1) Determine the mission(s) placed at risk due to terrestrial or space weather conditions.
2) Continuously monitor at risk mission routes, areas, installations, etc., for significant changes. Spot-check low risk missions.
3) Focus on mission-limiting weather thresholds for specific missions.
4) Evaluate for change in risk category and reprioritize MISSIONWATCH as appropriate. Notify operational users of weather conditions crossing mission-limiting thresholds.
5) Integrate weather impacts into operational alternatives decision process.
6) Update MWP as necessary
7) Continue to monitor missions based on MISSIONWATCH threat.

3.5. Post-Mission Analysis/Feedback. Aircrews should contact the WF with post-mission information and/or follow-up support. The WF will utilize customer feedback to improve internal processes and enhance training, forecast proficiency and product accuracy. Formal/informal feedback methods include:

3.5.1. Phone call or an e-mail to the WF.

3.5.2. Face-to-face feedback after briefing and/or mission completion.

3.6. Transient Aircrew Support. Weather technicians will provide or arrange for weather support for transient aircrews IAW the duty priorities list **Table 1.1**. The WF may provide flight weather briefings (175-1s) and/or updates to aircrews. Weather technicians may arrange for weather support from the 25 OWS briefing cell when greater duty priorities take precedence. Transient aircrews can request and receive briefings in person at the WF or via the WF contact information listed in **3.3.1**. The 25 OWS briefing cell can be reached at DSN 228-6598/6599/6588, Commercial (520) 228-6598/6599/6588, or via web access from the aircrew briefing terminal located in the flight planning room. (<https://ows.dm.af.mil/>).

3.7. Non-Flying Missions. The WF and 25 OWS support various non-flying missions (e.g., Wing Picnic, change of command ceremonies, Morale Welfare and Recreation) through RP (WWAs). Specific support to non-flying missions is identified in Chapter 4. Specialized weather information can be provided to support any non-flying mission upon request. Non-governmental agencies should request weather information and support through 452 AMW Public Affairs (PA) Office at DSN 447-2862/4137, Commercial (951) 655-2862/4137.

3.8. Space Weather Impacts. March ARB’s missions have a wide-variety of parameters affected by various space-weather conditions (High Frequency and Ultra High Frequency

communication, radar, Global Positioning System communications, etc.). The WF provides space impacts on their MWP. More detailed products are available at <https://weather.af.mil/confluence/display/AFWWEBSTBT/Space+Weather+Main+Page>.

3.9. Alert Aircraft Repositioning Plan (AARP) Active Runway Changes. The technician will take and disseminate a SPECI observation in support of AARP when the following occurs:

- 3.9.1. Upon initial notification.
- 3.9.2. When the mean wind speed or gusts increase by 5 knots or more, or if the wind direction changes by 30 degrees or more.
- 3.9.3. When the visibility decreases to or, if below, increases to equal or exceed 1/8 mile.

Chapter 4

STAFF SERVICES

4.1. General. Staff services are typically accomplished by WF leadership and include meteorological functions (briefings), ensuring the WF is trained and equipped for day-to-day operations and cultivating relationships with base agencies to ensure WF support is optimal.

4.2. Staff Meteorological Functions. Staff meteorological functions aid leadership in identifying and understanding specific weather and environmental impacts. The WF is available to assist commanders in determining weather support requirements and impacts to operations. Examples of staff meteorological functions provided are:

4.2.1. 452 AMW Staff Briefings. Staff weather briefings for 452 AMW will be provided as required. Standard information includes current weather, current satellite imagery, next-day weather and 5-day March ARB outlook. Other information including radar imagery, tropical weather, local weather stories/information, space weather, volcanic ash information, etc. will be included if expected to impact March ARB, at the discretion of the weather staff or by request of the 452 AMW. Climatology will be briefed as requested but is emailed within the first 5 workdays of the next month.

4.2.2. OG Stand-Up Briefings. Stand-Up briefings for 452 OG will be provided weekly or as required. Standard information includes current weather, current satellite and a 5-day Airfield forecast weather outlook.

4.2.3. Installation Control Center (ICC)/Crisis Action Team (CAT) Briefings. The WF will provide weather support as required for ICC/CAT briefings. This includes real-world emergency, exercise and deployment briefings. Each briefing will be tailored to provide the appropriate weather intelligence required by the 452 AMW.

4.2.4. Pre-deployment Planning Briefings. The WF will provide pre-deployment weather briefings as requested. Briefing content will be tailored to meet customer requirements. For example, an aviation unit will receive weather impacts at the deployed location on their flying mission, in addition to the standard surface weather information usually presented to ground units. A ground-based unit will receive a briefing on surface temperatures, wind speed, potential for blowing sand and dust and precipitation.

4.2.5. Climatology Services. WF will provide climatology information when requested, for example end of month climatology or historical climatology.

4.3. Staff Integration Functions. WF leadership will ensure their unit is adequately resourced to meet both operational and staff requirements. In addition to leadership and management of unit activities, these unit members will also function as a direct interface with the supported unit commander and staff and provide direct support to command, control and planning functions. Specific integration with base agencies is outlined below.

4.3.1. 452 AMW, 729 AS and 336 ARS CCs (XP). The WF will assist in periodic exercises tailored to upcoming seasonal weather or other environmental concerns and will educate base agencies on the purpose and applicability of weather watches, warnings and advisories.

4.3.2. 452 AMW/CP. The WF will notify the CP whenever the base weather station is evacuated and/or the AOL is activated.

4.3.3. 452 AMW/PA. The WF provides tours of the base weather station for community groups and others (including non-government agency weather requests) when coordinated by PA.

4.3.3.1. Release of Weather Information. Support to non-Federal agencies and the public will generally not be provided, unless authorized in writing by the 452 AMW Public Affairs and Legal offices.

4.3.4. 452 OSS/OSAA. The WF or the 25 OWS provides notification of all forecasted weather watches, warnings and advisories via Integrated Weather Warnings Capability (IWWC), telephone, e-mail or in-person during airfield hours of operations.

4.3.4.1. The WF will notify the 452 OSS/OSAA whenever the base weather station is evacuated and/or the AOL is activated.

4.3.4.2. WF leadership will participate as a member of the Airfield Operations Board (AOB) as directed in AFI 13-204 Vol III, Airfield Operations Procedures and Programs.

4.3.5. 452 OSS/OSAT. The WF provides notification of all weather watches, warnings and advisories via IWWC (IDS5)/telephone/or e-mail.

4.3.5.1. The WF will notify the 452 OSS/OSAT whenever the base weather station is evacuated and/or the AOL is activated.

4.3.6. 452 CES/CE. The WF will provide a monthly climatology report and yearly climatology sheets containing maximum and minimum temperature for each day, the number of heating and cooling degree days per month and the reported amount of precipitation per day to the following organizations no later than the 5th calendar day of the following month: 452 MSG/LGC, 452 MXS/MXM, 452 MSG/CEV, 452 MSG/CECE, 452 MSG/SGPB, 752 AMS/MXAA and Riverside National Cemetery.

4.3.7. 452 MSG/CE. Provide rainfall information when requested.

4.3.8. OPREP-3 Reporting. The WF will submit OPREP-3 reports to the 452 AMW/CP in accordance with AFI 10-229; AFI 10-206, *Operational Reporting*; AFMAN 15-129; and unit SOPs.

4.3.8.1. When the following significant weather occurs and results in damage:

4.3.8.1.1. Winds 50 knots or greater (to include gusts).

4.3.8.1.2. Hail $\frac{3}{4}$ inch or larger.

4.3.8.1.3. Tornadoes.

4.3.8.1.4. Lightning strikes.

4.3.8.2. An earthquake, flood, volcanic eruption or any other natural phenomenon that may impair the operational capability of an official Air Force activity.

4.3.8.3. The WF is responsible for notification of the reported weather event OPREP-3 to the 25 OWS and parent MAJCOM Functional Manager as soon as is practical.

4.4. Reciprocal Support.

4.4.1. 452 AMW/CP.

4.4.1.1. Ensure dissemination of weather watches, warnings and advisories as outlined in Chapter 2 of this instruction.

4.4.1.2. Notify the WF forecaster-on-duty immediately of all aircraft emergencies, incidents, or accidents.

4.4.1.3. CP will run applicable Quick Reaction Checklists (QRCs) to notify wing leadership and various base agencies of severe weather when notified by the OWS or the WF.

4.4.1.4. Serve as the primary agency to activate the sirens for a tornado when a tornado WARNING is issued.

4.4.2. 452 AMW/PA. Coordinate tours of the WF by community groups and others and non-governmental agency weather requests with the WF Manager.

4.4.3. 452 OSS/OSAA.

4.4.3.1. Notify WF personnel of in-flight, ground emergencies, or mishaps and termination via the secondary crash network.

4.4.3.2. Ensure dissemination of weather warnings and advisories as outlined in [Chapter 2](#) of this instruction.

4.4.4. 452 OSS/OSAT.

4.4.4.1. Participate in Cooperative Weather Watch.

4.4.4.2. Notify the WF of all changes in active runway.

4.4.4.3. Notify the WF of any light setting changes on the high-intensity runway lights.

4.4.4.4. Relay pilot weather reports to weather personnel.

4.4.4.5. Provide control tower orientation training for weather personnel.

4.4.4.6. Initiate radio checks upon weather's request to ensure proper PMSV operation and maintenance.

4.4.5. 452 AMW/SE. Request a March ARB WF briefer for seasonal weather briefings and provide 2 weeks advance notice when possible.

4.4.6. 452 OSS/OSM will:

4.4.6.1. Provide, coordinate or arrange for the installation, maintenance and repair of all weather communication and meteorological sensing equipment. When any meteorological equipment becomes inoperative or is suspected to be in error, the WF will contact Airfield Systems (655-4989) during normal duty hours. After normal duty hours and if said equipment causes a significant impact to operations, the WF will notify one of the AIRFIELD SYSTEMS technicians on call. Significant impact to operations will be based upon backup equipment availability and weather conditions occurring or expected to occur during the outage.

4.4.6.2. Maintain and update all technical orders and advise operators of any significant changes, as received.

4.4.6.3. Utilize the restoration priorities for weather communications and meteorological sensing equipment outlined in the MARB Operations Letter. NOTE: The weather shift supervisor, dependent on the weather conditions and mission requirements, may alter restoration priority.

4.4.7. 452 CS and OSS will:

4.4.7.1. Notify the responsible service agents for outages.

4.4.7.2. Coordinate with off-base agencies to repair off-base lines.

4.4.7.3. Perform necessary follow-up actions as required until full service is restored.

4.4.7.4. Ensure weather data and telephone circuits are assigned repair priorities.

4.4.7.5. Ensure that established maintenance response times are met.

4.4.7.6. Coordinate with March WF Manager prior to taking any equipment down for scheduled maintenance.

4.4.7.7. Expedite the transfer of communications and access to the base LAN in the event of evacuation to the alternate forecast site.

4.4.8. 452 MSG/CE. Contact the WF Manager to request climatological data and specialized support for projects on March ARB.

4.4.9. 452 SFS. Promptly inform the WF of any hazardous weather reported by Security Forces personnel (tornado, hail, etc.).

4.4.10. All Supported Flying Units.

4.4.10.1. Notify weather technician of current and planned weather airfield alternates and any special considerations affecting duration of tour (i.e., weather categories, exercise/deployment considerations, etc.).

4.4.10.2. Notify the WF of required additional support as soon as it becomes known, to include monitoring of alternate observations/forecast and tracking of weather conditions affecting local flying operations.

4.4.10.3. Provide timely notification of changes to scheduled operations affecting weather support requirements as soon as the change is identified.

4.4.10.4. Provide PIREPS either directly to the WF or through the PMSV, tower, or Supervisor of Flying (SOF).

4.4.10.5. Provide feedback on all weather briefings via e-mail or survey to the WF.

4.4.10.6. Provide guidance (at least 2 weeks in advance) to the WF regarding any weather training/educational requirements (or changes in requirements) if applicable.

4.4.10.7. Briefing requests are to be received with at least 2 hours' notice.

4.4.10.8. Det 1, 144 FW: In-station weather briefings (or by phone) will be provided as requested. The 144th will provide at least 24-hours' notice to the WF for any specialized requirement or support. In turn, the WF will provide specialized weather support when required.

- 4.4.10.8.1. Request a WF briefer for seasonal weather briefings. 144 FW will give WF 72 hours advance notice when a briefer will be needed.
- 4.4.10.8.2. Notify weather duty Forecaster of current and planned weather airfield alternates and any special considerations affecting duration of tour (i.e., weather categories, exercise/deployment considerations, etc.).
- 4.4.10.8.3. Notify the WF of required additional support as soon as it becomes known, to include monitoring of alternate observations/forecasts and tracking of weather conditions that may affect local flying operations.
- 4.4.10.8.4. Provide timely notification of changes to scheduled operations that affect weather support requirements as soon as the change is identified.
- 4.4.10.9. U.S. Customs and Border Patrol Air: Provide in-station weather briefings or by phone as requested. U.S. Customs/Border Patrol Air will provide at least 24-hours' notice to the WF for any specialized requirements or support. In turn, the WF will provide specialized weather support when required.
- 4.4.11. Airfield Management Flight Information Publication (FLIP) Manager. The FLIP manager will submit FLIP updates provided by the WF to Air Force Flight Standards Agency/Operating Location-D (AFFSA)/OL-D.
- 4.4.12. 452 MSG/SGPB (Bioenvironmental Flight). WBGT readings are called into the 452 AMW/CP and 163 ATKW/CP for base wide distribution.
 - 4.4.12.1. Perform Wet Bulb Globe Temperature (WBGT) Heat Stress Index readings Monday through Friday and on 452 AMW Unit Training Assembly (UTA) weekends. WBGT readings will be accomplished May through October and as required by unusual weather patterns.
 - 4.4.12.2. The 163 ATKW/SGPB Bioenvironmental Section will provide WBGT readings during Air National Guard training weekends, when not performed with 452 AMW UTAs.
 - 4.4.12.3. Inform the WF when unable to issue WBGT Heat Stress Index readings.
- 4.4.13. All Weather Support Recipients.
 - 4.4.13.1. Notify WF through proper chain of command when new weather support requirements are identified.
 - 4.4.13.2. Coordinate changes/additions to weather support requirements as soon as they are foreseen.
- 4.4.14. 452 OSS/OSTX will:
 - 4.4.14.1. Provide WF with timely information to develop Deployed Concept Briefings.

4.5. Lead Weather Unit.

- 4.5.1. Coordinated Weather Operations. Coordinated weather operations ensure all technicians, war fighters and decision makers receive the weather information they need at the right time. It also ensures a coherent set of weather data is used at all command levels. The weather supervisor, or his designated representative, will act as the Lead Weather Unit

(LWU) point of contact for the WF to coordinate on how to provide weather services to missions involving more than one unit or service and when March flying customers operate away from home base.

4.5.1.1. Aircrew and weather personnel should use the guidance provided below to determine the primary weather information provider for those missions that are not multi-unit tasked. Aircrew and weather personnel should use **Table 4.1** to determine the primary weather information provider of the multi-unit portion of a particular mission.

4.5.1.2. AMC Flight Managed Sorties. All Integrated Flight Management sorties receive flight information from the 618 AOC (TACC). Flight managed aircrews should work through their assigned flight manager to resolve weather issues/concerns. A team of experienced forecasters work directly with flight managers in the TACC AOC. The March WF updates takeoff weather and provides access to weather products upon request. All Coronet tanker support missions are under 618 AOC (TACC). Note: Details regarding mission limiting weather must be worked in concert with the TACC (DSN 779-0308).

4.5.1.3. Air Refueling (AR) Sorties. The Mission Weather unit servicing the lead receiving aircraft unit is the LWU for and provider of, the AR portion of a mission forecast. In some cases, such as ANG and AFR units, an OWS is the assigned weather unit. In other cases, command and control (C2) mission visibility is limited and the receiver's weather unit cannot be readily determined. In these cases and others similar, the March EU should ensure departing March crews have the information they need to complete AR missions.

Table 4.1. Determination of Lead Weather Unit.

<i>Rule</i>	<i>Type of Mission</i>	<i>Designated Lead Weather Unit</i>
1.	Joint Missions	Joint METOC Officer (JMO) defines weather support for Joint Operations in Joint Operations LOI or support message
2.	Global Power	Weather unit providing the Combat Air Force element C2 with weather information.
3.	Coronet	Weather unit supporting the ACC C2 element with weather information
4.	IFM Missions	Weather unit assigned to the IFM C2
5.	Global Reach	Weather unit integrated with the AMC C2 element
6.	Air Refueling (AR)	Mission weather unit servicing the lead receiving aircraft unit
7.	Unmanned Aircraft	Weather unit assigned to the Unmanned Aircraft Operational-Level C2 element
8.	JA/ATTs & DZ	Weather unit servicing the lead airlift aircraft unit
9.	LZ and Land Maneuver	Weather unit supporting the lead Army unit
10.	Deployed or Transient	Weather unit assigned/attached to the unit at home station
11.	Special Operations	Lead weather unit depends on nature of the operation

Chapter 5

WEATHER EQUIPMENT

5.1. General. This chapter provides a brief description of the meteorological and communications equipment used by the WF. Additionally, it provides information on backup systems, maintenance and restoring priorities.

5.2. Meteorological Equipment. The WF uses the FMQ-19, GR2Analyst/GR3 weather radar to determine the current state of the atmosphere. These critical systems provide customers the most timely, accurate and relevant weather intelligence possible.

5.2.1. FMQ-19. The FMQ-19 samples, measures and reports: temperature, wind speed and direction, visibility, cloud base height and amount of coverage, pressure, liquid equivalent precipitation accumulation and ice accretion during freezing precipitation. These measurements are processed to create properly formatted, fully automated observations that comply with applicable various reporting standards and protocols defined in the Federal Meteorological Handbook (FMH-1), the World Meteorological Organization (WMO), the Federal Aviation Administration (FAA), National Weather Service (NWS) and military reporting standards. See [Attachment 7](#) for the March Airfield sensor locations for the FMQ-19.

5.2.2. GR2Analyst/GR3. The WF utilizes the GR2Analyst/GR3 as its primary source of radar data. Weather technicians make use of this software to analyze complex radar signatures, indicate lightning positions and obtain detailed information on storm intensity, movement, internal circulation and general wind flow. Weather technicians will routinely incorporate the latest radar information into all mission execution forecasts and RP products.

5.3. Communications Equipment. The following systems are the backbone of the WF communications network:

5.3.1. JET. As discussed in para 2.6 of this instruction, JET is the primary system for disseminating forecast, observations, warnings, watches and advisories. Telephones are used as a backup for key aircraft controlling agencies. JET access is available to nearly everyone on March ARB with real time weather data from the March Airfield as a guest via this link: <https://owsjet25.us.af.mil/portal/private/GuestMarchARB/Sensor>

5.3.2. PMSV Radio. The PMSV Radio (239.8 MHz) allows the WF to communicate with aircrews, both on the ground and flying, as well as tower personnel. If the PMSV is out-of-service, aircrews can contact March ARB Tower at 121.75 or 335.8 MHz, 452 AMW/CP at 349.4 and 311.0 MHz, or the 25 OWS via phone patch (where possible) to get weather data.

5.3.3. Phones/Hotlines. Phones and hotlines serve primarily for rapidly passing along critical, time-sensitive information, as well as to serve for backup services.

5.3.4. Local Area Network (LAN). The WF relies heavily on the LAN to improve the timeliness and accuracy of weather intelligence to our customers.

5.4. Maintenance.

Table 5.1. Equipment Maintenance List.

Organization	Equipment
452 OSS/OSM	FMQ-19, PMSV Radio
557 WW/GMSC	JET
452 CS/SCX (Telephone Systems)	Phones/Hotlines
452 CS/SCBN (Network Maintenance)	LAN/Internet Connectivity

5.4.1. Restoral Priorities. Priorities for restoring critical systems exist in the event of natural disasters or any other anomaly, simultaneously impacting systems base wide. Significant indicates a situation where the equipment is completely inoperative, while minimal means the equipment is in limited operation. The priorities for weather equipment are listed in **Table 5.2** below (priorities may be adjusted based on forecasted weather):

Table 5.2. Equipment Restoral Priorities.

Equipment	Organization	Response Times Significant/Minimal Outage
FMQ-19	452 OSS/OSM	Immediate/12 hours
PMSV Radio	452 OSS/OSM	Immediate/12 hours
JET	557 WW/GMSC	Immediate/12 hours
Phones/Hotlines	452 CS/SCX	Immediate/12 hours
LAN/Internet Connectivity	452 CS/SCBN	Immediate/12 hours

5.5. Building Power. In the event of a commercial power interruption, Bldg. 395 will automatically switch to a backup generator.

RUSSELL A. MUNCY, Brig Gen, USAFR
Commander

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

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AFMAN 33-363, Management of Records, 1 March 2008

ATP-56(B), Air-to-Air Refueling, Part 2 – Fixed Wing Procedures, 14 December 2008

AFI 10-229, Responding to Severe Weather Events, 15 Oct 2003

AFI 91-203, Air Force Consolidated Occupational Safety Instruction

Adopted Forms

DD FORM 175-1, *Flight Weather Briefing*

AF FORM 1098, *Special Task Certification and Recurring Training*

AF FORM 3622, *Air Traffic Control/Weather Certification*

AF FORM 3805, *Pilot Report*

AF FORM 3813, *Weather Observations*

AF FORM 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AARP—Alert Aircraft Repositioning Plan

AFB—Air Force Base

AFFSA—Air Force Flight Standards Agency

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFRIMS—Air Force Records Information Management System

AFSC—Air Force Sustainment Center

AFW WEBS—Air Force Weather Web Services

AGL—Above Ground Level

AMC—Air Mobility Command

AMOS—Automated Meteorological Observing System

AMW—Air Mobility Wing

ANG—Air National Guard

AOL—Alternate Operating Location

AOR—Area of Responsibility

AQI—Air Quality Index

ARB—Air Reserve Base

ATC—Air Traffic Control

AZ—Arizona

BECMG—Becoming

BEE—Bioenvironmental Engineering

BWW—Basic Weather Watch

CAT—Crisis Action Team

CB—Cumulonimbus

CBRNE—Chemical, Biological, Radiological, Nuclear and High-yield Explosive

CC—Commander

CE—Civil Engineering

CONUS—Continental United States

COOP—Continuity of Operations

CP—Command Post
CU—Characterization Unit
CWW—Continuous Weather Watch
DSNT—Distant
EM—Emergency Management
ESTMD—Estimated
EU—Exploitation Unit
EWO—Emergency War Orders
FLIP—Flight Information Publication
FW—Fighter Wing
GCA—Ground Control Approach
GPS—Global Positioning System
HF—High Frequency
HURCON—Hurricane Conditions
IFM—Integrated Flight Management
IAW—In Accordance With
ICC—Installation Control Center
IRC—Instrument Refresher Course
IWWC—Integrated Weather Warnings Capability
FRQ—Frequent
JET—Joint Environmental Toolkit
KT—Knot
LAN—Local Area Network
LLWS—Low-Level Wind Shear
LTG—Lightning
MAJCOM—Major Command
MARB—March Air Reserve Base
MEF—Mission Execution Forecast
MEFP—Mission Execution Forecast Process
METAR—Aviation Routine Weather Report
METCON—Meteorological Conference
METSAT—Meteorological Satellite

METWATCH—Meteorological Watch
MOA—Memorandum of Agreement
MOOTW—Military Operations other than War
MOV—Moving
MOVD—Moved
MSL—Mean Sea Level
MWP—Mission Weather Product
NM—Nautical Mile
NOTAMS—Notice to Airmen
OPR—Office of Primary Responsibility
OPREP—Operational Report
OSAA—Airfield Management
OSAT—Tower
OSS—Operations Support Squadron
OWS—Operational Weather Squadron
PA—Public Affairs
PA—Pressure Altitude
PIREP—Pilot Report
PMSV—Pilot-to-Metro Service
POC—Point of Contact
QRC—Quick Reference Checklist
RDS—Records Disposition Schedule
RON—Remain Overnight
RVR—Runway Visual Range
RW—Reconnaissance Wing
RWY—Runway
SC—Communications Directorate
SCAQMD—Southern California Air Quality Management District
SE—Safety
SFS—Security Forces
SOF—Supervisor of Flight
SOP—Standard Operating Procedure

SPECI—Aviation Special Weather Report

SM—Statute Mile

SME—Subject Matter Expert

SWAP—Severe Weather Action Plan

TACC—Tanker Airlift Control Center

TAF—Terminal Aerodrome Forecast

TEMPO—Temporary Weather Conditions in a TAF

TWR—Tower

UFN—Until Further Notice

UHF—Ultra High Frequency

UNKN—Unknown

VFR—Visual Flight Rules

VHF—Very High Frequency

VIS—Visibility

WA—Weather Advisory

WF—Weather Flight

WW—Weather Warning

Terms

Aircraft Mishap—Used to denote the occurrence of an aircraft accident or incident. It does not include in-flight emergencies.

AMOS—Automated Meteorological Observing System. It observes sky conditions, temperature and dewpoint, wind direction and speed and barometric pressure.

Cumulonimbus Cloud—A vertically developed cloud, often capped by an anvil shaped cloud. Also called a thunderstorm cloud, it is frequently accompanied by heavy showers, lightning, thunder and sometimes hail or gusty winds.

Joint Environmental Toolkit (JET)—The new weather dissemination system.

Basic Weather Watch (BWW)—Forecasters will recheck weather conditions, at intervals not to exceed 20 minutes since the last observation/recheck, to determine the need for a SPECI observation when any of the following conditions are observed to be occurring or are forecast to occur within 1 hour: ceiling forms below, decreases to less than, dissipates or increases to equal or exceed 1,500 feet; visibility decreases to less than, increases to equal or exceed 3 miles (4,800 meters); precipitation (any form); thunderstorms; or fog or mist.

Ceiling—The height above ground level of the lowest broken (5/8ths coverage or more) or overcast (8/8ths coverage) cloud layer or the vertical visibility into an indefinite ceiling.

Continuous Weather Watch (CWW)—At automated Weather Flights, the observing system performs an automatic CWW, but if in augmentation, the EU will continuously monitor weather conditions under a CWW.

Cooperative Weather Watch—The name given to the cooperative effort between weather and control tower personnel, in identifying significant weather changes. Due to the forecaster's limited view of the horizon and the need to perform other duties, tower personnel notify the forecaster of the occurrence of previously unreported weather conditions which could affect flight safety or could be critical to the safety of other local operations and resources.

Desired Lead Time—The amount of advance notice an agency requires prior to the onset of a particular weather phenomenon.

Indefinite Ceiling—The vertical visibility, reported in feet, into a surface based total obscuration which hides the celestial dome (8/8ths coverage).

METWATCH—The process of monitoring the weather and informing designated agencies when certain weather conditions could impact operations or pose a hazard to life or property.

Mission Execution Forecast—A forecast used for the execution of a specific military mission or activity.

MISSIONWATCH—Is a deliberate process for monitoring terrestrial weather or the space environment for specific mission-limiting environmental factors.

Planning Forecast—A forecast usually provided well in advance, for the planning of a military mission or activity. This forecast is intended solely for mission planning only and should never be used for operational purposes.

Prevailing Visibility—The greatest visibility equaled or exceeded throughout at least one-half the horizon circle. The visibility does not have to be continuous throughout 180 consecutive degrees; i.e., it may be composed of sectors distributed anywhere around the horizon circle.

Runway Visual Range (RVR)—The maximum distance at which the runway, or specified lights or markers delineating it, can be seen from a position above a specified point on its center line at a height corresponding to the average eye level of pilots at touch-down.

Terminal Aerodrome Forecast (TAF)—The TAF is the summation of the 30-hour projected forecast. Pertinent data and meteorological reasoning are combined into a concise text depiction of what the atmosphere is expected to do for a 30-hour period. The TAF is used primarily to support flight operations and general base activities.

Weather Advisory (WA)—A special notice provided to supported customers that alerts them to weather conditions that could affect their operation.

Weather Warning (WW)—A special notice provided to supported customers that alerts them to weather conditions of such intensity as to pose a hazard to life or property.

Weather Watch (WATCH)—A special notice issued to advise affected agencies of the potential for warning level weather conditions before actually issuing the warning.

Attachment 2

SPECIAL WEATHER OBSERVATION CRITERIA

A2.1. A Special weather observation will be taken and disseminated for listed criteria:

A2.1.1. Ceiling. When the ceiling forms below, decreases to less than or, if below, increases to equal or exceed: (All criteria listed below are subject to change as new FLIPs are published).

Table A2.1. Ceiling.

2,300 feet (FLIP)	800 feet (FLIP/AFMAN 15-111)
2,000 feet (AFMAN 15-111)	700 feet (FLIP/AFMAN 15-111)
1,500 feet (AFMAN 15-111)	600 feet (FLIP)
1,400 feet (FLIP)	500 feet (FLIP/AFMAN 15-111)
1,300 feet (DOD FLIP)	400 feet (FLIP)
1,200 feet (FLIP)	300 feet (AFMAN 15-111)
1,000 feet (FLIP/AFMAN 15-111)	200 feet (FLIP)

A2.1.2. Sky Condition. A layer of clouds or obscuring phenomena aloft is present below 1,300 feet (DOD FLIP) and no layer was reported below this level in a preceding observation.

A2.1.3. Prevailing Visibility. Decreases to less than or, if below, increases to equal or exceed: (All criteria listed below are subject to change as new FLIPs are published).

Table A2.2. Prevailing Visibility.

3 SM (FLIP/AFMAN 15-111)	1 ½ SM (FLIP)
2 ¼ SM (FLIP)	1 1/8 SM (FLIP)
2 SM (AFMAN 15-111)	1 SM (FLIP/AFMAN 15-111)
1 7/8 SM (FLIP)	¾ SM (FLIP)
1 ¾ SM (FLIP)	½ SM (FLIP/AFMAN 15-111)
1 5/8 SM (FLIP)	1/8 SM (AARP, Local Procedure)

A2.1.4. Runway Visual Range. RVR for active runway decreases to less than or if below, increases to equal or exceed (AFMAN 15-111, Table A2.1.10): (All criteria listed below are subject to change as new FLIPs are published).

Table A2.3. Runway Visual Range.

6,000 feet (FLIP/AFMAN 15-111)	2,400 feet (FLIP/AFMAN 15-111)
5,500 feet (FLIP)	2,000 feet (AFMAN 15-111)
5,000 feet (AFMAN 15-111)	1,600 feet (11 Series AFI)
4,000 feet (FLIP)	1,000 feet (11 Series AFI)
3,500 feet (FLIP)	

A2.1.5. NOTE: Always check current March ARB NOTAMs for changes due to runway construction.

A2.1.6. Tornado, Funnel Cloud or Waterspout. When observed, or disappears from sight or ends.

A2.1.7. Thunderstorm.

A2.1.7.1. Begins *NOTE*: A Special observation is not required to report the beginning of a new thunderstorm if one is currently reported as in progress at the airfield.

A2.1.7.2. Ends *NOTE*: 15 minutes after the last occurrence of criteria for a thunderstorm; an audible sound of thunder, lightning within five NM of the airfield, etc.

A2.1.8. Automated/Augmented Observing: If the thunderstorm location cannot be determined while performing backup during a lightning sensor outage, the weather technician will manually begin a thunderstorm and report it as occurring at the station.

A2.1.9. Precipitation.

A2.1.9.1. Hail begins or ends. Encode Hailstone size \geq local warning criteria ($1/4 - <3/4$) and ($\geq 3/4$ ") where GR is the remark identifier and size is the diameter of the largest hailstone. If GS is encoded in the body of the report, no hailstone size remark is required. (Supplemental Operations)

A2.1.9.2. Freezing precipitation begins ends or changes in intensity. (Supplemental and Backup Operations)

A2.1.9.3. Ice pellets begin, end, or change in intensity

A2.1.9.4. Any other type of precipitation begins or ends. Note: Except for freezing rain, freezing drizzle, hail and ice pellets, a SPECI is not required for changes in type (e.g., drizzle changing to snow grains) or the beginning or ending of one type while another is in progress (e.g., snow changing to rain and snow). (Automated and Backup Operations)

A2.1.10. Wind.

A2.1.10.1. Squall (SQ). When a squall occurs. A strong wind characterized by a sudden onset, duration on the order of minutes and rather sudden decrease in speed. For reporting purposes, the term is applied to any sudden onset in which the wind speed increases at least 16 knots and is sustained at 22 knots or more for at least 1 minute. (Automated and Backup Operations)

A2.1.10.2. Wind Shift. Wind direction changes by 45 degrees or more in less than 15 minutes and the wind speeds reach 10 knots or more throughout the wind shift. (Automated and Backup Operations)

A2.1.11. Volcanic Eruption. Report the following information, if known: (1) name of volcano, (2) latitude and longitude or direction and distance from the flight, (3) date/time UTC of eruption, (4) size description, approximate height and direction of movement of the ash cloud and (5) any other pertinent data. (Supplemental Operations)

A2.1.12. Aircraft Mishap. Take an aircraft mishap SPECI immediately following notification or sighting of an aircraft mishap at or near the observing location, unless there has been an intervening observation.

A2.1.13. Upon Resumption of Observing Services. Take, disseminate and record a SPECI within 15 minutes after returning to duty following a break in hourly coverage, if a METAR was not filed as scheduled during the 15-minute period.

A2.1.14. Miscellaneous. Any other meteorological condition which the technician determines is significant to local operations.

A2.1.15. Tower Visibility. Transmit a SPECI with the tower visibility remark when notified by the tower that the tower visibility has decreased to less than or, if below, increased to equal or exceed 1, 2, or 3 statute miles and the control tower visibility differs from the prevailing visibility.

Attachment 3

FORECAST SPECIFICATION AND AMENDMENT CRITERIA

A3.1. Specification and Amendment Criteria. The TAF will specify the time of occurrence, duration and the intensity (if applicable) of expected weather conditions. If the TAF does not meet the specified criteria listed, an amendment will be issued. The following weather criteria will be specified in TAFs if expected to occur during the forecast period:

A3.1.1. Ceiling and/or visibility is forecast to decrease less than or if below, is forecast to equal or exceed any of the following levels (NOTE: Additional SPECI observations are produced when 800FT (1 1/2 SM) and 300FT thresholds are crossed but are not mandatory amendments to the TAF):

Table A3.1. Ceiling/Visibility Forecast levels.

Ceiling	Visibility	Category
≥ 2,000 ft	≥ 3 SM	E
< 2,000 ft but ≥ 1000 ft	< 3 SM but ≥ 2 SM	D
< 1,000 ft but ≥ 700 ft	< 3 SM but ≥ 2 SM	C
< 700 ft but ≥ 200 ft	< 2 SM but ≥ 3/8 SM	B
< 200 ft	< 3/8 SM	A

A3.1.2. Wind:

A3.1.2.1. Wind Speed. A change in wind speed of 10 knots or more.

A3.1.2.2. Wind Gusts. An onset, duration and intensity of wind gusts by 10 knots or more.

A3.1.2.3. Wind Direction. A change in prevailing wind direction of more than 30 degrees when the predominant wind speed or gusts are expected to be more than 15 knots.

A3.1.3. Icing, not associated with thunderstorms, that meets, exceeds, or decreases to less than moderate (or greater) from the surface to 10,000 feet Above Ground Level (AGL).

A3.1.4. Turbulence (for Cat II aircraft), not associated with thunderstorms, that meets, exceeds, or decreases to less than moderate (or greater) from the surface to 10,000 feet AGL.

A3.1.5. Any weather warning or forecast advisory criteria (that can be specified in the TAF) that is expected to occur during the forecast period.

A3.1.6. The onset of altimeter settings meeting, exceeding, or dropping below 31.00 INS. The onset of altimeter settings meeting, dropping below, or increasing above 28.00 INS or less.

A3.1.7. Thunderstorms change in beginning or end time.

A3.1.8. Temporary Conditions:

A3.1.8.1. Amend if temporary conditions become predominant.

A3.1.8.2. Amend if temporary conditions do not occur as forecast.

A3.1.8.3. Amend if temporary conditions are no longer expected to occur.

A3.1.9. A change to predominate conditions. Amend if forecast changes conditions occur before the specified period of change, do not occur, or are no longer expected to occur.

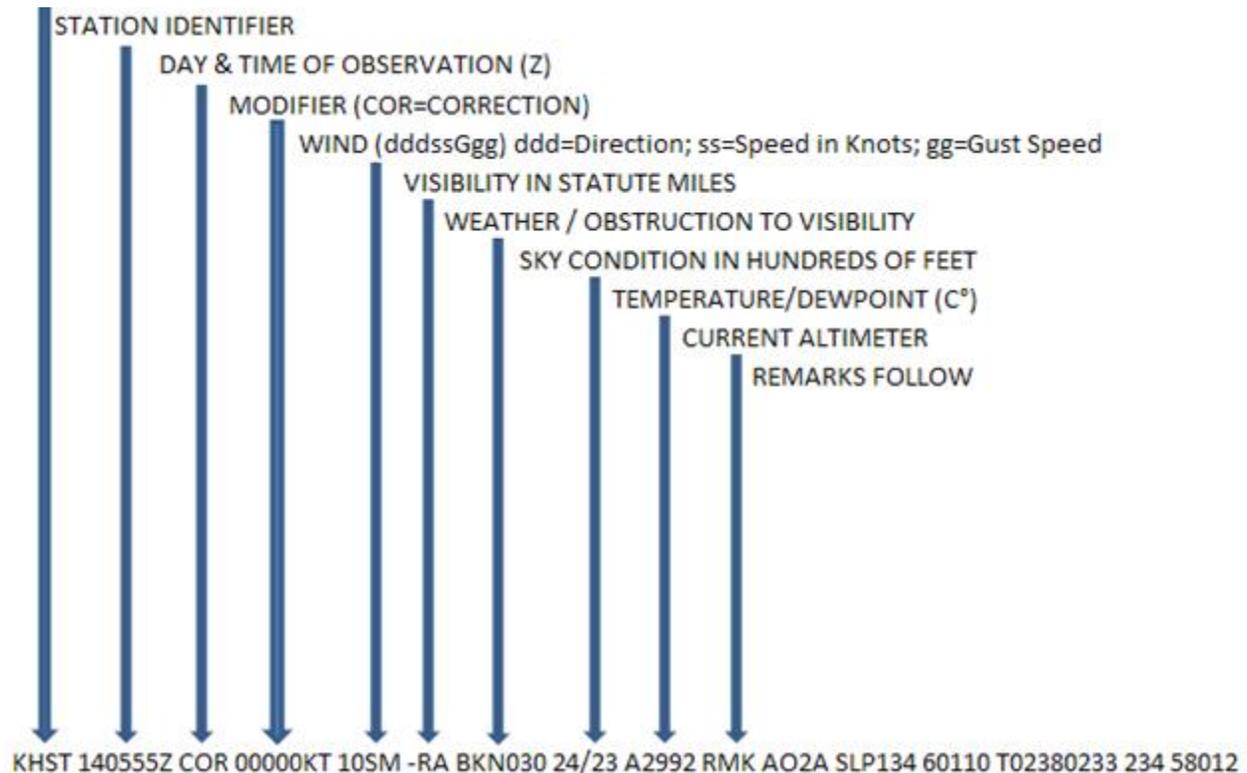
A3.1.10. Representative Conditions. Amend if forecast conditions are not considered representative of the characterized state of the atmosphere and an amendment improves safety, flight planning, operational efficiency, or assists in-flight aircraft.

Attachment 4

**SAMPLE WEATHER PRODUCT DISSEMINATION FORMAT/INTERPRETATION
OBSERVATION/TAF/WWAS/PIREP**

A4.1. Content of observations as seen locally.

Table A4.1. Sample Weather Observations.



A4.1.1. Station Identifier – KRIV, also called the ICAO.

A4.1.2. Type of report – METAR or SPECI.

A4.1.3. Date and Time of report in Zulu time (Z).

A4.1.4. Report Modifiers – COR (if a correction is sent).

A4.1.4.1. COR is entered into the report modifier group when a corrected METAR or SPECI is transmitted.

A4.1.4.2. AUTO identifies the report as a fully automated report with no human intervention.

A4.1.4.2.1. AUTO is automatically included in reports when the weather technician signs off the AMOS indicating the observations are no longer being augmented.

A4.1.4.2.2. AUTO and COR will not be seen in the same observation. If the term COR is used, the observation cannot be reported as AUTO, since a weather technician is manually correcting the observation.

A4.1.5. Wind. The true direction the wind is blowing from is encoded in tens of degrees using three figures. Directions less than 100 degrees are preceded with a "0." The wind speed is entered as a two or three digit group immediately following the wind direction.

A4.1.5.1. Gust. The wind gust is encoded in two or three digits immediately following the wind speed. The wind gust is encoded in whole knots using the units and tens digits and if required, the hundreds digit.

A4.1.5.2. Variable Wind Direction (speeds 6 knots or less). Variable wind direction with wind speed 6 knots or less may be encoded as VRB in place of the direction.

A4.1.5.3. Variable Wind Direction (speeds greater than 6 knots). Wind direction varying 60 degrees or more with wind speed greater than 6 knots will be encoded. The variable wind direction group will immediately follow the wind group. The directional variability will be encoded in a clockwise direction. For example, if the wind is variable from 180 degrees to 240 degrees at 10 knots, it would be encoded 21010KT 180V240.

A4.1.5.4. Calm Wind. Calm wind is encoded as 00000KT.

A4.1.6. Visibility in statute miles.

A4.1.7. Weather and/or obstructions to vision (when applicable).

A4.1.8. Sky Condition and Cloud Height. Describes the amount of clouds present at the airfield and the base of each cloud deck. They fall into the following categories:

A4.1.8.1. SKC – Sky Clear.

A4.1.8.2. FEW – 1/8 to 2/8 coverage.

A4.1.8.3. SCT – Scattered; 3/8 to 4/8 coverage.

A4.1.8.4. BKN – Broken; 5/8 to 7/8 coverage.

A4.1.8.5. OVC – Overcast; 8/8 coverage.

A4.1.8.6. VV – Vertical visibility; normally used during heavy fog, indicates how far up into the fog can be seen.

A4.1.8.7. FEW000, SCT000, BKN000, OVC000 – Surface-based obscuration which is clarified in the remarks. For example, fog obscuring 5/8 of the sky would be encoded BKN000 with a remark of FG BKN000.

A4.1.8.8. Cloud Height. Three-digit number provides the height of the base of the cloud in hundreds of feet (e.g., 015 equals 1,500 feet). The CB and TCU descriptors may be appended to the cloud height to indicate the cloud is a cumulonimbus or towering cumulus.

A4.1.9. Temperature and dewpoint in degrees Celsius.

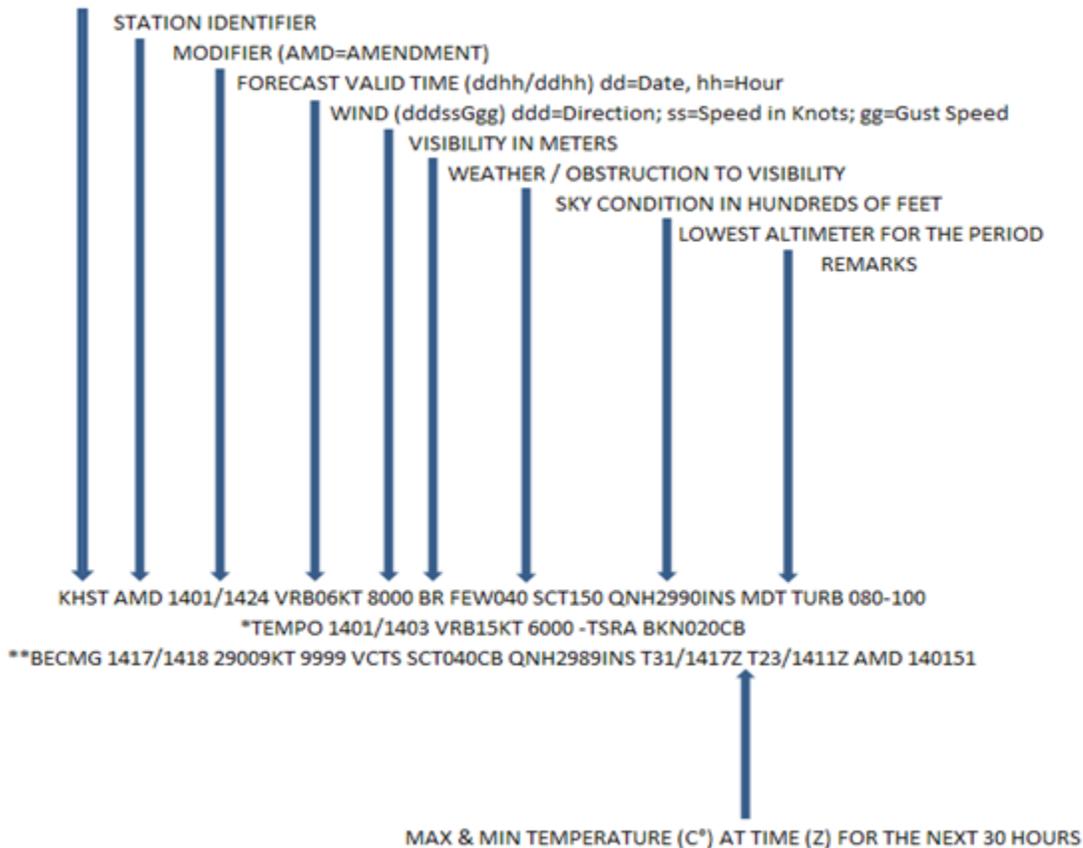
A4.1.10. Altimeter setting.

A4.1.11. Remarks as appropriate.

A4.1.12. All observations at the end will have the time sent in minutes past the hour. Augmented or manual observations will contain the forecaster's initials.

A4.2. TAF.

Table A4.2. Sample TAF.



A4.2.1. The forecast follows the same general format as the observation with the following exceptions noted:

A4.2.1.1. Valid Date/Time. Forecasts are valid for a 30-hour period. In this example, the forecast is valid from the first at 0800Z until the second at 1400Z.

A4.2.1.2. BECMG – This is a code to indicate the predominant conditions will change to (or become) the conditions listed in the line of the forecast. The conditions will change during the time period follows the BECMG code (1700 to 1800Z in the example above).

A4.2.1.3. TEMPO – This code means the conditions listed on the line may occur for periods of an hour or less (1 hour and 15 minutes or less for thunderstorms) anytime between the time frame following the TEMPO code (1900Z to 2200Z in this example).

A4.2.1.4. Max Temp/Min Temp. T24 indicates a maximum temperature in Celsius to occur at 20Z. T10 indicates a minimum temperature of 10 Celsius to occur at 10Z (**Note:** M indicates a minus sign in front of the number: M05 = -5 C).

A4.3. Weather Warnings, Watches and Advisories.

Table A4.3. Example Observed Weather Warning.

MARCH ARB WEATHER WARNING 09-003 VALID 17/1921Z (17/1421L)
TO UFN
OBSERVED LIGHTNING IS OCCURRING WITHIN 5NM OF MARCH ARB
21/AH

Table A4.4. Example Forecast Weather Warning.

MARCH ARB WEATHER WARNING 05-003
VALID 17/1921Z (17/1421L) TO UFN
TORNADO OR FUNNEL CLOUD WITHIN 5NM
FORECAST VALUE: 5NM OF MARCH ARB
21/MAM

Table A4.5. Example Weather Watch.

MARCH ARB WEATHER WATCH 02-014
VALID 17/1921Z (17/1421L) TO UFN
POTENTIAL FOR LIGHTNING EXISTS WITHIN 5NM OF MARCH ARB
21/JP

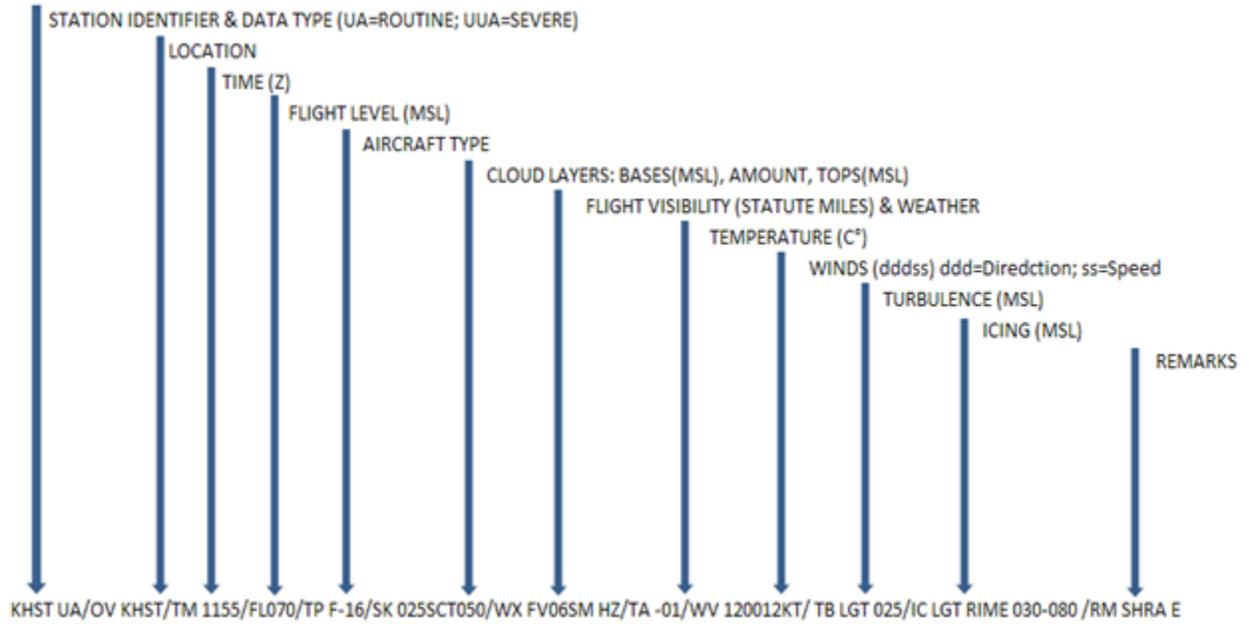
Table A4.6. Example Observed Weather Advisory.

MARCH ARB WEATHER ADVISORY 04-007
VALID 17/1921Z (17/1421L) TO UFN
OBSERVED CROSSWIND GREATER THAN OR EQUAL TO 25 KTS.
OBSERVED 25 KTS AT MARCH ARB
21/AG

Table A4.7. Example Forecast Weather Advisory.

MARCH ARB WEATHER ADVISORY 01-019
VALID 17/1921Z (17/1421L) TO UFN
SURFACE WIND GREATER THAN OR EQUAL TO 25 KNOTS BUT LESS
THAN 35 KNOTS
21/BH

Table A4.8. Sample PIREP.



Attachment 5

CUSTOMER RESPONSE MATRIX

Table A5.1. Customer Response Matrix.

Weather Watches	Agency	Agency Actions	Operational Impacts
Tornado Watch ** All agencies alert personnel and run internal checklists**	WF	Notify 452 AMW/CP	Contact 452 AMW/CC for possible CAT activation.
	452 AMW/CP	Run appropriate QRC	
	452 OSS/OSAA	Run appropriate QRC	
High Winds (GTE 50 KTS)	WF	Notify 452 AMW/CP	Contact 452 AMW/CC for possible CAT activation.
	452 AMW/CP	Run appropriate QRC	
	452 OSS/OSAA	Run appropriate QRC	
Freezing Precipitation	WF	Notify 452 AMW/CP	Ground operations delayed/curtailed as per AFI 91-203
	452 AMW/CP	Run appropriate QRC	
	452 OSS/OSAA	Run appropriate QRC	
Lightning Watch	WF	Notify 452 AMW/CP	Ground operations delayed/curtailed, the flight line maintenance supervisor will inform all personnel to be prepared to implement lightning warning procedures without delay.
	452 AMW/CP	Run appropriate QRC	
	452 OSS/OSAA	Run appropriate QRC	
Severe Hail	WF	Notify 452 AMW/CP	Contact 452 AMW/CC for possible CAT activation.
	452 AMW/CP	Run appropriate QRC	
	452 OSS/OSAA	Run appropriate QRC	
Weather Warnings	Agency	Agency Actions	Operational Impacts
Tornado Warning ** All agencies alert personnel and run internal checklists**	WF	Notify 452 AMW/CP Coordinate OPREP 3 w/ 452 AMW/CP	All airfield and base operations immediately cease. Personnel seek shelter until all clear given. Account for personnel. ABW consider
	452 AMW/CP	Sound Base Sirens, Run appropriate QRC	
	452 OSS/OSAA	Run appropriate QRC	

			activating EOC for coordination.
High Winds (GTE 50 kts) Warning	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Coordinate OPREP 3 w/ 452 AMW/CP Run appropriate QRC Run appropriate QRC	Consider aircraft tie-down
Strong Winds (35-49 kts) Warning	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Consider aircraft tie-down
Severe Hail (GTE 3/4") Warning	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Coordinate OPREP 3 w/ 452 AMW/CP Run appropriate QRC Run appropriate QRC	Ground operations delayed/curtailed as per AFI 91-203
Hail (GTE 1/4" but LT 3/4") Warning	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Ground operations delayed/curtailed as per AFI 91-203
Freezing Precipitation Warning	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Delay or Cancel shifts
Heavy Snow Warning (Snow accumulation GTE 2 inches expected within 12 hours)	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Delay or Cancel shifts
Heavy Rain Warning (Accumulation GTE 2 inches expected within 12 hours)	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Possible flooding
Lightning w/in 5NM (Observed) Warning	WF 452 AMW/CP	Notify 452 AMW/CP Run appropriate QRC	Cease all outdoor activities, seek shelter.

	452 OSS/OSAA	Run appropriate QRC	
Weather Advisories	Agency	Agency Actions	Operational Impacts
Forecasted Winds >= 25 and < 35 kts	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Ground operations delayed/curtailed as per AFI 91-203
Observed Ceiling <300 ft AGL and or Visibility < 1SM	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Aircraft restricted from Take-off/Landings except OG approval
Observed Crosswinds >15 but < 25 kts	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Possible no take-offs/Landings
Observed Crosswinds >25 kts	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Aircraft restricted from Take-off/Landings except OG approval
Observed Lightning within 10 NM	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Prepare for possible lightning within 5NM
Observed Severe or Greater Turbulence below 10,000 AGL	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	If forecasted during route of flight, AR or DZ (No Go) contact AC for possible changes
Observed Moderate or Greater Icing below 10,000 AGL	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	If forecasted during route of flight, AR or DZ (No Go) contact AC for possible changes
Observed Low-Level Windshear <2,000 ft AGL	WF 452 AMW/CP 452 OSS/OSAA	Notify 452 AMW/CP Run appropriate QRC Run appropriate QRC	Dependent on weight/strength of low-level Windshear
Observed Visibility <= 1/8 sm	WF 452 AMW/CP	Notify 452 AMW/CP Run appropriate QRC	WADS Mission Implication; imposes flight line driving visibility restriction

	452 OSS/OSAA	Run appropriate QRC	(No Go)
Observed Ice FOD Temperature $\leq 7C$ and Dewpoint depression $< 5C$	WF	Notify 452 AMW/CP	WADS Mission Implication
	452 AMW/CP	Run appropriate QRC	
	452 OSS/OSAA	Run appropriate QRC	

Attachment 6

FLYING UNITS SUPPORTED AND MISSION LIMITING ENVIRONMENTAL CONDITIONS

A6.1. MISSION-LIMITING ENVIRONMENTAL CONDITIONS.

Table A6.1. Flying Units Supported.

Organization	Mission
336 ARS (KC-135)	Provides air-refueling services for war, peacetime and contingency operations.
912 ARS (KC-135)	Provides air-refueling services for war, peacetime and contingency operations.
729 AS (C-17)	Provides airlift for war, peacetime and contingency operations.
Det 1, 144 FW (F-16)	WADS

A6.1.1. Mission-limiting terrestrial parameters define weather thresholds for flying missions. The following are parameters for March ARB aircraft:

Table A6.2. Mission Limiting Parameters.

CRITERIA	IMPACT
Takeoff Minimum – Runway Visual Range less than 1,600 feet and ceiling/visibility is less than 200 feet or ½ mile <u>and</u> takeoff alternate’s weather is less than the same criteria	Takeoff of aircraft not allowed (No Go)
Takeoff Minimum – Maximum allowable headwind for takeoff is 40 knots; maximum allowable tailwind is 10 knots	Takeoff of aircraft not allowed (No Go)
Ceilings below 2,000 feet AGL at destination	Alternate required with CIG ABV 1,000 feet
Visibility below 3 miles at destination	Alternate required with VIS ABV 2 miles
Crosswinds of 25 knots or greater at destination	Alternate required.
Moderate or greater icing or turbulence during takeoff, landing, over the drop zone (DZ) and within 10NM of air refueling (AR) track	If forecasted during route of flight, AR or DZ (No Go) contact AC for possible changes
Thunderstorms at station or drop zone, in flight path or within 10NM of air refueling path	If destination weather – alternate is required; enroute, contact AC for possible changes
Volcanic Ash	If enroute, contact AC for possible changes

CRITERIA	IMPACT
Thunderstorms with wind speeds 25-34 knots and/or hail less than ½” in diameter expected	Ground operations delayed/curtailed as per AFI 91-203
Surface wind speeds 35 knots or greater and/or expected hail greater than or equal to ½” in diameter within 10 miles	Ground operations delayed/curtailed as per AFI 91-203
Electrical storm within 5 miles of March ARB (Lightning Watch)	Ground operations delayed/curtailed, the flight line maintenance supervisor will inform all personnel to be prepared to implement lightning warning procedures without delay.
Electrical storm (lightning observed) within a 5 nm radius of March ARB, lightning warning in effect.	Ground operations curtailed, the flight line maintenance supervisor will clear the flight line of all personnel and direct the discontinuance of all aircraft refueling/defueling and servicing. (No Go)
Heavy Fog/Visibility Restrictions (visibility below ½ mile).	Imposes flight line driving visibility restriction (No Go)

Attachment 7

MISSION EXECUTION FORECAST EXAMPLE

Figure A7.1. March Mission Execution Forecast Example.

MARCH ARB WEATHER MISSION EXECUTION FORECAST (MEF)									
ISSUE TIME (Z)		VALID TIME (Z)			MEF #		NEXT UPDATE (Z)		
03 JUN 2015 - 1200		12			03A		03 JUNE 2015 - 2000		
WARNING OPS PERSONNEL/PILOTS: March Weather continually updates this briefing package. This is not an official weather briefing without first discussing the information with a technician and obtaining a weather brief time and initials. All weather data entries are WORST CASE for the indicated periods and are amended for established criteria. Winds and temperatures are the MAXIMUM values for the indicated valid periods.									
MARCH ARB TAKE-OFF/LANDING DATA (TOLD) (ALL TIMES GMT)							NOTES/REMARKS		
TIME	CIG	VIS	WX	WINDS (M)	T @	ALSTG	PA		
16-18Z	100	7	VCSH	09009	28	2988	1575		
18-20Z	100	7	VCSH	09009	31	2985	1605	** TEMPO 21 - 01Z 2T012G18(M) 6SM -SHRA	
20-22Z	080	7	VCSH	09009	33	2982	1630		
MISC DATA		CLIMB WINDS		MARCH ARB SOLAR/LUNAR DATA (ALL TIMES LOCAL)				SPACE WX IMPACTS	
F2 LVL	140	SFC-050	03010	BMNT	0433	MOONRISE	0050	FREQ	NONE
HGT M20C	230	050-100	16015	SUNRISE	0538	MOONSET	1255	GPS	N/A
2K TEMP	24C	100-200	19015	SUNSET	1953	ILLUM	54%	RAD	N/A
TROP	320	200-300	21040	EENT	2104				
AR/YR MISSIONS (ALL TIMES GMT)									
LOCATION	CLOUDS			WINDS	VISIBILITY	HAZARDS		VALID TIME	
AR 6N	200 BKN 350 (LYRD)			SEE ATTACHED	I/C 1	ISOLD/FEW TS (E OF TRACK)		1830-2100Z	
MARGINAL	090 BKN - OVC 200				O/C 7	LGT RIME ICG (TO FL240)			
FL	260								
LOCATION	CLOUDS			WINDS	VISIBILITY	HAZARDS		VALID TIME	
FL									
LOCATION	CLOUDS			WINDS	VISIBILITY	HAZARDS		VALID TIME	
FL									
MARCH ARB WEATHER WARNING, WATCHES, AND ADVISORIES									
NONE									
FLIGHT WEATHER DESTINATIONS/ALTERNATES/TAKE OFF ALTERNATE IF NECESSARY (ALL TIMES GMT)									
STATION	VALID TIME	WINDS (T)	VIS	WX	SKY CONDITION		TEMP @	ALSTG	PA
KSUU	1900-2200Z	24015G25	7	NONE	BKN150 BKN300		32C	2972	250
EDWARDS WEATHER (ALL TIMES GMT)							LIGHT WEATHER HAZARDS; AIRMETS/SIGMETS; PIREPS		
TIME	CIG	VIS	WX	WINDS (T)	T @	ALSTG	PA		
16-18Z	080	7	-SHRA	VRB06	29	2988	2340	ISOLD/FEW TSTMS MT350 (SEE ATTACHED)	
18-20Z	080	7	-SHRA	25012	31	2985	2370		
20-22Z	080	7	-SHRA	25012	33	2982	2400	LGT RIME ICG 140 - 240	
								N CA / ALONG OR WEST OF THE CA COAST MOYVG NO	
PALMDALE WEATHER (ALL TIMES GMT)							LGT TURB SFC - 120 (DURGC & DURGD OVR SRN CA)		
TIME	CIG	VIS	WX	WINDS (T)	T @	ALSTG	PA		
16-18Z	060	7	-SHRA	VRB04	29	2993	2295		
18-20Z	060	7	-SHRA	22008	31	2990	2320		
20-22Z	060	7	-SHRA	24014	33	2987	2350		
ADDITIONAL COMMENTS/REMARKS									
NONE									
CONTACT INFORMATION (OBTAIN A VERBAL WEATHER BRIEFING PRIOR TO DEPARTURE FOR POSSIBLE SERIOUS WEATHER UPDATES)									
MARCH WX DSN: 447-3602/2804 (COMM) 351-655-3602/2804				REQUEST PIREPS: RIV 239.8		ALTERNATE PMSV: KEDW 342.4, KSUU 271.1			
BRIEF TIME:	E1315	REBRIEF TIME		AH		MISSIONS		BAJA 21	SLAM98
AIRCREW INITIALS		WX BRIEFER INITIALS							

Attachment 8

LOCATION OF AIRFIELD WEATHER SENSORS

Figure A8.1. Map of FMQ-19 weather sensors on March ARB airfield.

