BY ORDER OF THE COMMANDER,
319TH AIR REFUELING WING (AMC)

GRAND FORKS AIR FORCE BASE
INSTRUCTION 15-101

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Weather

WEATHER SUPPORT

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFMAN 15-129, *Aerospace Weather Operations - Processes and Procedures*, and AMCI 15-101, *AMC Weather Operations.* This instruction establishes responsibilities and procedures for providing and using meteorological services at Grand Forks Air Force Base (GFAFB), North Dakota. It applies to all personnel assigned to the Base Weather Station (BWS) who provide meteorological services and to all agencies on GFAFB that receive meteorological services from the BWS.

SUMMARY OF REVISIONS

This document is substantially revised and must be completely reviewed.

Chapter 1

GENERAL INFORMATION

1.1. General. The 319th Operations Support Squadron Weather Flight (319 OSS/OSW) provides or arranges for weather support to the 319th Air Refueling Wing (319 ARW) and tenant units assigned to GFAFB when in garrison or deployed/repositioned worldwide. Weather products are tailored to meet criteria important to flying operations (airborne aircraft, Air Traffic Control (ATC) Tower, etc.), base support agencies (Maintenance Aircraft Control Center (MACC), Snow Control, etc.), and command and control authorities (e.g., 319 ARW Command Post (319 ARW/CP)). This instruction establishes weather support requirements and procedures outlined in Air Force directives and as directed by supported customers. For the remainder of this document, BWS nomenclature will take the place of all 319 OSS/OWS references.

1.2. Location and Hours of Operation. The BWS is located in building 528 and provides or arranges for weather support 24 hours a day, 7 days a week. BWS services include: weather observation, issuing observed warnings, Mission Execution Forecasts (MEF) and tailored weather support for local GFAFB and worldwide operations. As a reengineered BWS, the weather flight works as a "team" with the 15th Operational Weather Squadron (15 OWS) located at Scott AFB to provide weather services and resource protection for GFAFB. Guidelines for this team support are outlined in the 15 OWS and 319 ARW Memorandum of Agreement (MOA). The 15 OWS provides GFAFB with Terminal Aerodrome Forecasts (TAFs) and forecast weather watches and warnings 24 hours a day, 7 days a week. During airfield closure periods and with 319th Operations Group Commander approval, the BWS, IAW AMCI 15-101, *AMC Weather Operations*, will initiate standby operations and suspend weather services in accordance with established station operating instructions, to include: observation services, MEF and tailored weather support products. During BWS standby operations, the 15 OWS will assume responsibility for issuing all observed warnings for GFAFB. If the 15 OWS should be unable to provide adequate resource protection to the 319 ARW, then the BWS will provide or arrange for all these products and services. The BWS retains the ability and responsibility for changing the forecast and issuing all weather watch and warnings where weather threatens life or property and it is impractical to get the 15 OWS involved.

1.3. Concept of Operations. The BWS, in conjunction with the 15 OWS, provides weather information to all supported agencies for operational and decision-making purposes, as well as for the protection of base resources. The BWS tailors weather information to the specific mission requirements of supported agencies. The BWS provides weather services for military or military-related use only. This support mainly consists of:

1.3.1. Forecasts and observations made and transmitted for local and worldwide use.

1.3.2. Aircrew weather briefings to support wing and transient aircrews.

1.3.3. Specialized products on an unscheduled basis including:

1.3.3.1. Weather Watches.

1.3.3.2. Weather Warnings.

1.3.4. Regularly scheduled briefings.

1.3.5. Non-routine support to include, but not limited to:

1.3.5.1. Climatology briefings.

1.3.5.2. Special mission briefings.

1.3.5.3. Instrument Refresher Course (IRC) briefings.

1.3.5.4. Other special briefings and data required by supported units.

1.3.6. Support to off-base agencies (**Attachment 2**) for which there are Letters of Agreement (LOAs) or Host/Tenant Support Agreements (HTSAs).

1.4. Terms and Abbreviations. **Attachment 1** contains a complete list of all definitions of terms and abbreviations used in this document.

1.5. BWS Duty Priorities. Due to limited resources and manning, the BWS must prioritize duties. The BWS will adhere to the following list and deviations to this list are acceptable only in the most extreme circumstances. The shift supervisor will use judgment in complying with these priorities, especially where there is imminent danger to life and/or property

1.5.1. Complete Single Integrated Operational Plan (SIOP) taskings.

1.5.2. Respond to aircraft/ground emergencies or mishaps.

1.5.3. Take and disseminate surface weather observations locally.

1.5.4. Answer Pilot-to-Metro Service (PMSV) radio calls.

1.5.5. Disseminate observed lightning warnings to include those for Cavalier AS.

1.5.6. Disseminate forecast weather watches and warnings locally when the regional 15 OWS is inoperative or when time does not permit 15 OWS to issue.

1.5.7. Disseminate observed non-lightning weather warnings locally.

1.5.8. Disseminate Pilot Reports (PIREPs) locally.

1.5.9. Disseminate surface observations and PIREPs longline.

1.5.10. Collaborate with 15 OWS on weather watches and warnings.

1.5.11. Provide MEF briefings.

1.5.12. Collaborate with 15 OWS on terminal (GFAFB) forecasts.

1.5.13. Prepare and issue terminal (GFAFB) forecasts when the regional 15 OWS is inoperative or amend when 15 OWS does not have time to respond.

1.5.14. Prepare and disseminate mission planning data.

1.5.15. Provide other unscheduled briefings.

1.5.16. Conduct mission essential training.

1.5.17. Complete other duties as required, to include administrative and base details.

1.6. 15 OWS Duty Priorities. Due to limited resources and manning, the 15 OWS prioritizes duties. The 15 OWS will adhere to the following list and deviations to this list are acceptable only in the most extreme

circumstances. The shift supervisor will use judgment in complying with these priorities, especially where there is imminent danger to life and/or property

1.6.1. Perform 15 OWS Emergency War Order (EWO) taskings.

1.6.2. Execute 15 OWS evacuation.

1.6.3. Provide products and services in support of combat, contingency, and military operations other than war (MOOTW) operations.

1.6.4. Provide airborne aircrew support.

1.6.5. Provide resource protection products (forecast weather watches, warnings, and advisories).

1.6.6. Prepare and disseminate peacetime/exercise regional and operational-level graphics and alpha-numeric products.

1.6.7. Prepare and disseminate TAFs.

1.6.8. Provide scheduled flight weather MEFs and tactical-level, non-contingency MEFs.

1.6.9. Provide other aerospace weather products, information, and weather briefings.

1.6.10. Accomplish other routine weather requirements.

1.6.11. Accomplish recurring training.

1.6.12. Accomplish administrative tasks.

1.7. Limitations. The BWS and 15 OWS cannot conduct effective weather support operations without access to communications for receiving and transmitting data. These communications systems include, but are not limited to: the New Tactical Forecast System (NTFS), 319 ARW Local Area Network (LAN), WSR-88D storm detection radar (NEXRAD), PMSV radio, a Meteorological Satellite (METSAT) imagery receiver, and various telephone services including the Defense Switching Network (DSN), and Defense Messaging Service (DMS). The base LAN provides internet connectivity between the BWS and 15 OWS. This LAN network is vital to the timely execution of mission weather services and airfield resource protection to GFAFB. Interruption in internet service to the BWS severely degrades the weather flight's ability to support wing operations to include, but not limited to: aircrew mission weather briefings or weather watch and warning dissemination to wing agencies. An interruption in service to any of the above mentioned communication systems proportionately degrade the BWS capability to provide effective support. Backup procedures utilize tactical meteorological and communications equipment, facsimile machines, and any other method available for access to required resources.

1.8. Release of Weather Information. Support to non-DOD agencies and the general public will not be provided until the 319 ARW Public Affairs (PA) office has granted permission or a LOA/HTSA is in effect. Deviations are authorized only in the event of imminent danger to life and/or property is involved. The local National Weather Service (NWS) office is responsible for service to civilians and non-military agencies. The BWS will provide or arrange for day-to-day weather support to civilian contractors who request weather information to support government-funded, on-base projects. The BWS will honor requests for weather information for use in legal claims actions against the government only after receiving approval from 319 ARW Judge Advocate (JA) office. All information requests will be honored within the context of duty priorities listed in paragraph **1.5.**

1.9. Relocation Site. In the event of an evacuation of the primary airfield weather services location (building 528), BWS personnel will take appropriate measures to establish an alternate airfield weather services site in the aircraft control tower (building 634). The minimum requirements for any alternate site are availability of power, a Class A telephone, a PC and a data/modem connection with Class A or base LAN connectivity. The relocation site must be within two statute miles of the center of the runway.

1.10. Changes to this Base Instruction. To request changes to this base instruction, contact the BWS at 747-4371/4354/4396 or send written requests/inquiries to: 319OSS/OSW, 695 Steen Avenue, Suite 118, Grand Forks AFB, ND 58205-6244.

Chapter 2

AIRFIELD SERVICES

2.1. General. Trained and certified weather technicians monitor weather conditions and disseminate observations when specific regulatory and locally established thresholds are met. The weather technician will relay all pertinent information, such as changing weather conditions, to the 15 OWS as part of the "eyes forward" function. Weather technicians take all observations IAW AFMAN 15-111, *Surface Weather Observations*, AFMAN 15-129, *Aerospace Weather Operations-Processes and Procedures*, and AMCI 15-101, *AMC Weather Operations*, while the airfield is open. When ATC tower operations are closed and the BWS is in standby mode of operation (paragraph **1.2.**), the current airfield Notice to Airman (NOTAM) will correctly reflect that airfield observation and PMSV services are closed.

2.2. Observation Site. Observations are taken at the official observation site unless safety considerations (or other unforeseen situations) dictate otherwise. The official observation site is at the intersection of the sidewalk and the aircraft parking ramp on the west side of building 528 (**Attachment 3**). The weather technician's main point of observation is confined to an area within two miles (3200 meters) of the center point of the runway to include phenomena affecting the airfield complex. The weather technician may also include weather phenomena outside of this radius in the remarks portion of the observation (i.e., VCSH NW would indicate showers can be seen 5-10 miles to the northwest of the observation point).

2.3. Basic Weather Watch (BWW). Weather technicians function under the BWW concept. Due to additional essential duties and logistical restrictions, the weather technician cannot monitor the weather on a continuous basis. Because of the lack of a 360-degree view of the runway complex, the weather technician cannot detect and report all weather changes as they occur. The BWW Program involves the following minimum requirements as the basis for the detection of significant changes in weather conditions.

2.3.1. When the airfield is open, the weather technician will recheck weather conditions at intervals not to exceed 20 minutes to determine the need for a local or special observation when any of the following conditions are occurring, or are forecast to occur within 1 hour:

2.3.2. Ceiling 1,500 feet or less.

2.3.3. Visibility 3 miles or less.

2.3.4. Precipitation (any form).

2.3.5. Fog/mist.

2.3.6. Equivalent Chill Temperatures (ECTs) -15°F or colder.

2.4. Cooperative Weather Watch (CWW). A CWW is a program wherein qualified non-weather personnel assist weather technicians in monitoring the weather conditions. CWW assists in the reporting of weather conditions which could affect flight safety or which could be critical to the safety or efficiency of other local operations. Since tower controllers have a complete 360-degree view of the airfield complex, a CWW agreement exists between ATC and the BWS. Assistance is provided IAW AFI 13-203, *Air Traffic Control*. The BWS provides initial weather training to all ATC controllers in support of this program. When informed by ATC personnel of significant weather events, the BWS weather technician will verify/

validate weather conditions and disseminate appropriately as a Local, Special, or within-the-hour observation.

2.5. Weather Observations. All aspects of observing weather are governed by AFMAN 15-111, *Surface Weather Observations*, AFMAN 15-129, *Aerospace Weather Operations-Processes and Procedures*, and AMCI 15-101, *AMC Weather Operations* (see **Attachment 4** for observed elements). Observations will be taken and disseminated over the NTFS hourly and when Local or Special criteria dictate. During an evacuation of the BWS, the weather technician will relocate to the Alternate Observing Site (AOS) with tactical observing equipment (MOS kit). Observations will be taken from the ATC Tower, building 634, and disseminated over the NTFS hourly and when Local or Special criteria dictate. In the event building 634 is not a suitable AOS site, observations will be taken and disseminated from an AOS meeting requirements outlined in paragraph **1.8.**

2.6. Alternate Observing Site (AOS) Operations.

2.6.1. AOS operations from ATC Tower (building 634).

2.6.1.1. Airfield sensors and NTFS operations. The weather technician will make observations using the ATC Tower wind sensor display (FMQ-13) and the readouts from the remaining airfield sensors via the NTFS AOS software display. The MOS kit will be used to augment any airfield sensor data not available through NTFS. Dissemination of the observations will be accomplished using NTFS.

2.6.1.2. In the event that the NTFS is not operational, the weather technician will use the MOS kit for observational data and will call the 15 OWS with the required observations. The 15 OWS will then enter the observations for longline dissemination. Local backup dissemination is outlined in paragraph **6.3.**

2.6.1.3. In the event the NTFS and 15 OWS are not operational, the weather technician will take observations using the MOS kit and will make every attempt to contact another CONUS BWS to disseminate the GFAFB observation longline. Local backup dissemination is outlined in paragraph **6.3.**

2.6.2. Secondary AOS operations.

2.6.2.1. The weather technician will use the MOS kit for observational data and will call the 15 OWS with the required observations. The 15 OWS will then enter the observations for longline dissemination. Local backup dissemination is outlined in paragraph **6.3.**

2.6.2.2. In the event that the 15 OWS is not operational, the weather technician will take observations using the MOS kit and will make every attempt to contact another CONUS BWS to disseminate the GFAFB observation longline. Local backup dissemination is outlined in paragraph **6.3.**

2.7. Observing Limitations (Primary Location).

2.7.1. After significant snowfalls, drifts or piles of snow, from runway or taxiway snow removal operations, may obstruct vision in any direction.

2.7.2. Low-level weather phenomena to the north, east, and south of the observation point may be obstructed by buildings and trees.

2.7.3. Weather technicians operate under the BWW and CWW concepts. See paragraphs **2.3.** and **2.4.** for descriptions of these programs.

2.7.4. Laser Beam Ceilometer (FMQ-8) becomes inoperable at temperatures below -25°F.

2.7.5. Automated wind sensor (FMQ-13) may become inoperable during winds in excess of 99 knots or during heavy rain events (i.e. 0.13 inches per hour). If the FMQ-13 report is determined to be inaccurate, the weather technician will estimate winds IAW AFMAN 15-111, *Surface Weather Observations*.

2.7.6. During events in which snow falls horizontally, Runway Visual Range (RVR) values may become unreliable. This is due to snow accumulating on the lenses of the RVR equipment. Every effort will be made to correct this problem in a timely manner; however, safety, manning constraints, and duty priorities of weather maintenance personnel may delay any corrective action.

2.7.7. Events involving high winds during snowfall may result in inaccurate snowfall measurements due to drifting. During this type of condition, weather technicians will derive estimated snowfall measurements by using a combination of the average measurement of snow on the ground from several points along with the liquid water collected in the precipitation gauge and temperature relationship.

2.7.8. In the event a weather sensor malfunctions during hazardous weather, maintenance personnel will assess weather and safety concerns along with current flying operations before attempting repair actions. This may result in significant delays in the repair actions and the impacting accuracy of weather products dependent on that equipment.

2.8. Automated Telephone Answering Device (ATAD). The BWS provides a telephone recording of forecast weather for GFAFB at (701)747-4387. It will be updated regularly, time permitting. The forecast is intended for non-operational use only and provides agencies and individuals the opportunity to monitor weather of interest to them. During the winter months, this data, as well as updates on school closures and road conditions, can be reached at (701)747-SNOW (747-7669).

2.9. Pilot-to-Metro Service (PMSV). The BWS continuously monitors ultra-high frequency (UHF) 344.6 MHz to assist aircraft (either airborne or on the ground). The range is approximately 200 nautical miles (NM) at normal operating altitudes. The BWS will solicit aircrews to provide PIREPs of weather conditions over this frequency. All PIREPS received by the BWS will be disseminated over the NTFS system. See **Attachment 4** for elements specific to PIREPs. Relay all forecast or unforecast Urgent (UUA) encoded PIREPs for weather phenomena encountered in the NE CONUS verbally to the 15 OWS .

2.9.1. BWS Closure periods. PMSV service will not be available during BWS closure periods. Weather station closure periods are addressed in current airfield NOTAMS.

2.9.2. Short-Term PMSV Outages. BWS personnel will notify ATC of any PMSV outage and expected time of return to service. Aircrews will be briefed on PMSV outages during their flight weather MEF brief. Aircrews can contact 319 ARW/CP for a telephone patch to the BWS for metro service. ATC will monitor the frequency and advise aircrew on UHF 344.6 to contact Base Ops at UHF 372.2 for weather service. During PMSV outages, ATC/RAPCON personnel will relay all PIREPs to the BWS weather technician as time and resources permit. Additional PMSV service can be obtained from Minot AFB, ND, at UHF 342.5.

2.9.3. Long-Term PMSV Outages. Long-term PMSV outages will be documented in the current airfield NOTAMS and/or FLIPs as appropriate. BWS personnel will ensure that ATC is aware of the cur-

rent PMSV status and expected time of return to service. Aircrews will be briefed on PMSV outages during their MEF aircrew brief. ATC will monitor the frequency and advise aircrew about operating on UHF 344.6 to contact Base Operations at UHF 372.2 for metro/weather service as time and resources permit. A telephone patch through the 319 ARW/CP to the BWS may be used during extended PMSV outages. During PMSV outages, ATC/RAPCON personnel will relay all PIREPs to the weather technician as time and resources permit. Additional PMSV service can be obtained from Minot AFB Weather (5 OSS/OSW) at UHF 342.5.

2.10. Toxic Corridors/Chemical and Effective Downwind Messages. Upon notification of any incident that involves a toxic spill or base emergency, the BWS will provide wind direction and speed, along with any other required information, for toxic corridor calculations (worst case) performed by 319 CES/CEX Readiness. Updates will be provided as required. Chemical Downwind Messages (CDM) and Effective Downwind Messages (EDM) are available upon request.

Chapter 3

MISSION WEATHER SERVICES

3.1. General. The BWS provides Mission-tailored Weather Services (MWS) and subsequent Mission Watch for all GFAFB agencies. The BWS works in conjunction with the 15 OWS to develop a Terminal Aerodrome Forecast (TAF), and issues subsequent weather watches and warnings for GFAFB when conditions warrant.

3.2. Limitations.

3.2.1. NTFS Operability. An NTFS outage impairs the ability of BWS and 15 OWS to communicate and issue products supporting MWS. Reference paragraphs **1.7.** and **6.3.**

3.2.2. LAN Connectivity. Reference paragraph **1.7.**

3.2.3. 15 OWS Operability. In the event that 15 OWS operations are impaired due to lost communications, system failure or other issues at Scott AFB, the BWS will reassume responsibility for providing all weather support to the 319 ARW. The BWS will retain responsibility for all products until the 15 OWS is ready to reassume its weather responsibilities role for the 319 ARW. Reference paragraph **1.2.**

3.3. Terminal Aerodrome Forecast (TAF). The 15 OWS will issue a TAF every 8 hours to cover a 24 hour period. AFMAN 15-124, *Meteorological Codes*, AFMAN 15-129, *Aerospace Weather Operations-Processes and Procedures*, AFI 15-128, *Aerospace Weather Operations-Roles and Responsibilities*, and AMCI 15-101, *AMC Weather Operations*, govern all aspects of forecasting. GFAFB TAFs are disseminated over NTFS at 0100Z, 0900Z, and 1700Z.

3.3.1. Forecast elements represent the most probable conditions expected during the forecast period and in the forecast area. Unless otherwise specified, the forecast weather elements in the main body of the TAF (clouds, present weather, wind, etc.) apply to the area within a 5 statute mile radius of the airfield complex.

3.3.2. TAFs are amended as conditions warrant. See **Attachment 5** for elements specific to TAFs.

3.4. Mission Execution Forecast (MEF) Products. There are several MEF products produced by the BWS for different base agencies. These MEF products provide commanders and staff, operations, and aircrew personnel with valuable weather information for planning and decision making purposes. New requirements, format, and/or medium changes for existing briefings should be coordinated with the BWS at least 5 working days prior to their implementation.

3.4.1. Aircrew Flight Weather MEF Product. Weather briefings will be provided to aircrews IAW AMCI 15-101, *AMC Weather Operations*, and AFMAN 15-129, *Aerospace Weather Operations-Processes and Procedures*, using AF Form 175-1, AMC Form 181, or other approved documentation. Unless previously arranged via LOA/HTSA, aircrews that receive a faxed weather briefing form must contact the duty weather technician either by telephone or in person prior to takeoff for the briefing to be considered valid. All aircrew flight weather briefings will have access to weather graphic products using an intranet based aircrew product suite. All 319 ARW aircrews will have access to MEF products and briefings no earlier than the published aircrew bus time in the daily flight schedule. Transient

aircrew will have MEF product support available on a walk-in basis and will be prioritized according to BWS priorities listed in paragraph **1.5.** If the BWS is unavailable to support transient aircrews, computer access will be available to access the 15 OWS transient aircrew briefing system (PGS). At a minimum, aircrews MEF briefing produced by the BWS will include:

3.4.1.1. Take-off and landing weather tailored to each mission.

3.4.1.2. Overview of current GFAFB issued weather watches and warnings.

3.4.1.3. Overview of the current synoptic situation at time of MEF brief.

3.4.1.4. Latest satellite imagery for mission route.

3.4.1.5. Latest radar and lightning depiction for mission route.

3.4.1.6. Review of current AIRMETS, SIGMETS, and current PIREPS/AIREPS.

3.4.1.7. Review of AF Weather Agency (AFWA) and/or 15 OWS forecast flight level hazards to include thunderstorms, turbulence, and icing.

3.4.1.8. Flight level wind direction and speed charts for mission route.

3.4.1.9. Solar activity impact on UHF/HF frequencies chart.

3.4.2. 319 ARW Mission Planning MEF Products.

3.4.2.1. The BWS provides a daily flight weather operations MEF product via the intranet to 319th Operations Group Staff and Wing Scheduling outlining the current day's flight weather. This MEF provides at a minimum, but not limited to, the following information:

3.4.2.1.1. Local forecast wind direction and speed, visibility and present weather, ceiling, and local hazards.

3.4.2.1.2. Hazards and effective time periods for predetermined alternate airfields. The predetermined alternates are: Minot AFB, ND; Offutt AFB, NE; Ellsworth AFB, SD; Fairchild AFB, WA; and Fargo International Airport, ND.

3.4.2.1.3. Hazards and effective times for the air refueling tracks used for the current flying day.

3.4.2.2. The BWS provides a next day mission planning weather MEF product available to all aircrews via the intranet. This MEF provides as a minimum the following information, but is not limited to:

3.4.2.2.1. Next day local forecast conditions in 6 hour increments for maximum temperature, minimum pressure altitude, surface wind direction and speed, climb wind speed and direction, and inversion temperature and height Above Ground Level (AGL).

3.4.2.2.2. Next day's sortie weather tailored to each individual sortie. This MEF product provides a go/no-go weather conditions for departure, air refueling track, landing, and transition work if it part of the mission profile. Criteria for each portion of the mission profile are outlined in paragraph **7.3.**

3.4.3. 319th Alert Weather MEF Briefings. MEF packages for alert aircrews will be available as needed after the assumption of alert briefings.

3.4.4. Ground Support MEF Weather Briefings and Instructional Briefings. The BWS provides many routine weather briefings, both in and out of the weather station. Non-routine briefings such as Mobility Concept, Special Missions, Instrument Refresher Course (IRC), pre-deployment, climatological, and Crisis Action Team (CAT) briefings are coordinated by the requesting agency. A requesting agency will provide the BWS information on the time and location of the briefing with a minimum of 24 hours notice when possible. These briefings provide commanders and staff, operations, and aircrew personnel with valuable weather information for planning and decision making. New briefing requirements, format, and/or medium changes for existing briefings should be coordinated with the BWS at least 3 working days prior to implementation when possible. Listed below are the routine briefings provided by the BWS.

3.4.5. Wing stand-up briefings are provided weekly or as requested. Content determined by the 319 ARW/CC.

3.4.6. In the event that BWS personnel cannot be reached to coordinate the required weather briefing support, contact the 319 ARW/CP. The 319 ARW/CP will contact the required personnel to meet a weather support request/requirement.

3.5. Mission Watch. Mission Watch will focus on the supported customer's predefined mission-limiting environmental threshold values for a specific mission. The BWS conducts Mission Watch from the beginning to the end of every customer's mission support IAW AFMAN 15-129, *Aerospace Weather Operations-Processes and Procedures*, and AFI 15-128, *Aerospace Weather Operations-Roles and Responsibilities*. Transient aircrews are the exception to this policy.

3.5.1. Aircrew Flight Weather MEFs. During periods of rapidly changing weather conditions or for emergency situations, BWS personnel will make every possible attempt to update the affected mission's aircrew before take-off with the MEF update. In the event that the mission has already launched, MEF updates will be passed to the 319 ARW/CP.

3.5.2. Ground Support MEFs. During periods of rapidly changing weather conditions, or for emergency situations, BWS personnel will make every possible attempt to update the supported agency with the MEF update. In the event that the agency cannot be reached and an emergency situation is apparent, MEF updates will be passed to the 319 ARW/CP.

Chapter 4

WEATHER WATCHES AND WARNINGS

4.1. General. The 15 OWS or BWS will issue weather watches and warnings when conditions warrant. The term "base" is defined as an area 5 statute miles in radius centered on the GFAFB runway complex. Weather watches and warnings for the base will be issued 24 hours a day, 7 days a week. The BWS will coordinate all requirements for and ensure timely issuance of weather watches and warnings in accordance with AFMAN 15-129, *Aerospace Weather Operations-Processes and Procedures*.

4.2. Severe Weather Action Procedures (SWAP)

4.2.1. The BWS and 15 OWS will initiate and maintain a heightened meteorological watch and implement severe weather action procedures IAW HQ USAF/XOWP policy whenever a weather warning or watch is issued.

4.2.2. Whenever a weather watch or warning is issued, BWS personnel will coordinate with 15 OWS personnel to implement one or several of the following actions: recall CWT forecaster if station is currently closed (options A), recommend additional forecaster assistance be recalled to augment the BWS (option B), increase radar METSAT, LDS, Metwatch at CWT (option C), or increase observational Metwatch at CWT (option D).

4.2.3. In case of unforeseen circumstances such as communications lines failure, the BWS is obligated to institute at a minimum SWAP option A as defined in paragraph **4.2.2.**

4.2.4. **Attachment 8** of this document is a comprehensive response matrix for BWS customers, which includes a comprehensive list of offices and actions for each weather watch or warning.

4.2.5. Upon implementation of any of the above SWAP actions, the 15 OWS or BWS weather technician will contact one of the BWS staff members listed below at their home telephone number, personal cellular telephone number, or by their government issued pager by dialing 7-PAGE (DSN 362-4243 or COMM (701)-747-4243): Weather Flight Commander at pager extension 1220, Wing Weather Officer at pager extension 1224, or the Chief, Weather Station Operations at pager extension 1221. Staff recall procedure will be reviewed on a quarterly basis by the 15 OWS and BWS staff.

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

4.3.1. The following watches will be issued by the 15 OWS or BWS for GFAFB:

Criteria	Desired Lead-Time	SWAP
Tornadic Activity	As potential warrants	A, B, C, D
Hail greater than or equal to 3/4 inch	240 minutes	A, B, C, D
Winds greater than or equal to 50 Kts	240 minutes	A, B, C, D
Lightning W/I 5 NM	30 minutes	A, C, D
Freezing Precipitation	As potential warrants	A, C, D
Blizzard (wind greater than or equal to 30 kts and visibility less than or equal to 1/2 NM and lasting more than 3 hours)	As potential warrants	A, C
Heavy Rain (greater than or equal to 2 inches in 12 hours)	As potential warrants	A
Heavy Snow (greater than or equal to 2 inches in 12 hours)	As potential warrants	A
Crosswinds greater than or equal to 25 Kts	60 minutes	N/A

4.3.2. Weather watch example:

GRAND FORKS AFB WEATHER WATCH 6-3

VALID 03/2000Z (03/1500L) TO 04/0100Z (03/2000L)

CONDITIONS ARE FAVORABLE FOR WIND SPEEDS OF 60 KNOTS TO OCCUR AT THE BASE FROM 300PM (03/2000Z) ON 3 JUN UNTIL 800PM (04/0100Z) ON 4 JUN. 45/CC

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

4.4.1. The following observed warnings will be issued by the 15 OWS or BWS. It is important to note that wind chill temperatures are calculated using the observed maximum gust wind speed, not on sustained wind speed.

Criteria	Desired Lead-Time	Severe Weather Impact to Customers	SWAP
Lightning within 5 NM	observed	Cease flightline operations and most outdoor activities	A, C
Lightning Outside of 5 NM, but within 15NM	observed	Prepare for impact to flightline operations	A, C

Crosswinds 15-24 Kts	observed	Divert aircraft or increase flight spacing	D
Crosswinds greater than or equal to 25 Kts	observed	Divert aircraft	D
Wind 25 Kts	observed	Impact to flightline operations	D
Wind Chill –15°F to –33°F	observed	Limit personnel exposure time. Initiate buddy system	D
Wind Chill –34°F to –47°F	observed	Limit personnel exposure time. Suspend low priority outdoor work	D
Wind Chill –48°F or less	observed	Terminate outdoor activities	D

4.4.2. Observed Weather Warning example:

GRAND FORKS AFB WEATHER WARNING 7-1 VALID 03/2000Z (03/1500L) TO UFN.
LIGHTNING IS OBSERVED WITHIN 5 NAUTICAL MILES OF GFAFB. BL/00

4.4.3. The 15 OWS or BWS will issue the following forecast warnings. As defined in AFMAN 15-111, *Surface Weather Observations*, freezing precipitation is liquid precipitation that freezes *upon impact* with the ground, with objects in flight, or with objects on the ground.

Criteria	Desired Lead-Time	Severe Weather Impact to Customers	SWAP
Tornado	*10 minutes	Potential damage to wing resources. Possible threat to life on installation	A, B, C, D
Hail greater than or equal to 3/4 inch	*90 minutes	Potential damage to wing resources.	A, B, C, D
Winds greater than or equal to 50 Kts	*90 minutes	Potential damage to wing resources.	A, B, C, D
Wind 35-49 Kts	90 minutes	Damage to aircraft/buildings/ vehicles. Possible injury to personnel outside.	A, C, D
Freezing Precipitation	*60 minutes	Potential damage to wing resources. Possible delayed reporting for duty or early release.	A, C, D
Heavy Rain (greater than or equal to 2 inches in 12 hours)	90 minutes	Localized flooding	A, C
Heavy Snow (greater than or equal to 2 inches in 12 hours)	90 minutes	Potential damage to wing resources. Possible delayed reporting for duty or early release.	A, C

Blizzard (surface winds greater than or equal to 30 Kts and visibility less than or equal to 1/2 NM and lasting more than three hours)	90 minutes	Potential damage to wing resources. Possible delayed reporting for duty or early release.	A, C

* Denotes a deviation from the Air Force Weather Standard Desired Lead-time

4.4.4. Forecast Weather Warning example:

GRAND FORKS AFB WEATHER WARNING 11-1

VALID 10/1500Z (10/0900L) TO 11/0300Z (10/2100L)

A BLIZZARD IS EXPECTED OR IS OCCURING AT THE BASE FROM 900AM (10/1500Z) ON 10 NOV UNTIL 900PM (11/0300Z) ON 10 NOV. WIND SPEEDS OF 30 KNOTS OR GREATER AND VISIBILITY LESS THAN 1/2 MILE ARE ASSOCIATED WITH THIS STORM. 10/BL

4.5. Distribution of Weather Watches and Warnings. The BWS will assume responsibility for disseminating all weather watches and warnings. In the event that the BWS is closed, the 15 OWS will assume responsibility to disseminate watch and warning information to the 319 ARW. The primary mode of dissemination will include NTFS and the wing's automated Dialogic "Communicator" mass recall and information notification system. The BWS will confirm receipt of all issued watches and warnings by the 319 ARW/CP and Airfield Management (319 OSS/OSAA). At a minimum, but not limited to, all weather watches and warnings will be disseminated to agencies listed in **Attachment 6**. In the event that the "Communicator" system is inoperable, manual notification will be accomplished using the notification tree depicted in **Attachment 6**.

4.6. Responding to Severe Weather Events. IAW AFI 10-229, *Response to Severe Weather Events*, supported agencies will create and document pre-severe weather protective measures as well as post-severe weather response plans for their operations. At a minimum, procedures developed will address:

4.6.1. Procedures to safeguard personnel and locations to seek shelter from severe weather when required.

4.6.2. Actions for safeguarding and securing aircraft, equipment, and other supplies stored outdoors, as required to minimize damage to wing resources.

4.6.3. Actions for protection of facilities.

4.6.4. Precautions to take prior to resuming operations following a severe weather episode.

Chapter 5

RECIPROCAL SUPPORT

5.1. General. For effective weather support, the BWS requires reciprocal support from several key agencies and individuals on base. Supported agencies will establish all weather support requirements with the BWS. This must be done with sufficient advance notice to allow for necessary adjustments and preclude adverse impact on the BWS's ability to support pre-existing requirements, both flying and non-flying operations.

5.2. 319th Air Refueling Wing Command Post (319 ARW/CP). The 319 ARW/CP will:

5.2.1. Activate base peacetime emergency sirens when notified of a Tornado Warning for GFAFB.

5.2.2. Warn base agencies and general base populace of weather watches and warnings for GFAFB issued by 15 OWS or BWS. In the event that the "Communicator", referenced in paragraph **4.5.** fails or is deemed not operational, the 319 ARW/CP will disseminate all weather watches verbally. See paragraphs **4.3.** and 4.4 for a listing of watches and warnings and **Attachment 6** for the weather warning notification diagram. Below is a listing of appropriate verbage should it become necessary to disseminate a weather watch or warning. Note that underlined text in the watches and warnings listed below denote entries that will vary with each notification.

5.2.2.1. For a Tornado Watch at the base: "Base Weather has issued a Tornado Watch for Grand Forks AFB. Conditions are favorable for a tornado to occur at the base from hhmm am/pm on Day Month until hhmm am/pm on Day Month."

5.2.2.2. For a Tornado Warning at the base: "A tornado is expected or is occurring at the base from hhmm am/pm Day Month until hhmm am/pm Day Month. TAKE SHELTER IMMEDIATELY."

5.2.2.3. For a Severe Thunderstorm Watch (Hail) at the base: "Conditions are favorable for severe thunderstorms to occur at the base from hhmm am/pm Day Month until hhmm am/pm Day Month. Hail sizes of 3/4 inch or greater can occur with these storms."

5.2.2.4. For a Severe Thunderstorm Warning (Hail) at the base: "Severe thunderstorms are expected at the base from hhmm am/pm Day Month until hhmm am/pm Day Month. Hail sizes of x inch(es) can occur with these storms."

5.2.2.5. For a High Wind Watch (50-knots or greater) at the base: "Base Weather has issued a Weather Watch. Conditions are favorable for wind speeds of 50 knots or greater to occur at the base from hhmm am/pm on Day Month until hhmm am/pm on Day Month."

5.2.2.6. For a High Wind Warning (50-knots or greater) at the base: "Wind speeds of x knots are expected at the base from hhmm am/pm Day Month until hhmm am/pm Day Month."

5.2.2.7. For a Freezing Precipitation Watch at the base: "Conditions are favorable for freezing rain/drizzle to occur at the base from hhmm am/pm Day Month until hhmm am/pm Day Month."

5.2.2.8. For a Freezing Precipitation Warning at the base: "Freezing rain/drizzle is expected to occur at the base from hhmm am/pm Day Month until hhmm am/pm Day Month."

5.2.2.9. For a Blizzard Watch at the base: “Conditions are favorable for blizzard conditions at the base from hhmm am/pm Day Month until hhmm am/pm Day Month. Wind speeds of 30 knots or greater and visibility less than 1/2 mile may be associated with this storm."

5.2.2.10. For a Blizzard Warning at the base: “A blizzard is expected at the base from hhmm am/pm Day Month until hhmm am/pm Day Month. Wind speeds of 30 knots or greater and visibility less than 1/2 mile are associated with this storm."

5.2.2.11. For an Excessive Snow Watch at the base: “Base Weather has issued a Weather Watch. Conditions are favorable for x inches of snow to occur at the base from hhmm am/pm on Day Month until hhmm am/pm on Day Month."

5.2.2.12. For an Excessive Snow Warning at the base: “X inches of snow are expected at the base from hhmm am/pm Day Month until hhmm am/pm Day Month."

5.2.2.13. For an Excessive Rain Watch at the base: “Base Weather has issued a Weather Watch. Conditions are favorable for x inches of rain to occur at the base from hhmm am/pm on Day Month until hhmm am/pm on Day Month."

5.2.2.14. For an Excessive Rain Warning at the base: “X inches of rain are expected at the base from hhmm am/pm Day Month until hhmm am/pm Day Month."

5.2.2.15. For an Observed Lightning within 15 Miles Warning for the base: “Base Weather has issued a Weather Warning. Lightning is occurring outside of 5 miles but within 15 miles of GFAFB."

5.2.2.16. For a Lightning Watch at the base: “Conditions are favorable for lightning to occur within 5 miles of the base from hhmm am/pm Day Month until hhmm am/pm Day Month."

5.2.2.17. For an Observed Lightning within 5 Miles Warning for the base: “Lightning is occuring within 5 miles of GFAFB."

5.2.2.18. For an Observed 15 Knot Crosswind Warning at the base: “15 knot crosswinds are occuring at GFAFB."

5.2.2.19. For an Observed 25 Knot Crosswind Warning at the base: “25 knot crosswinds are occuring at GFAFB.”

5.2.2.20. For a Forecast 25 Knot Crosswind Watch at the base: “Base Weather has issued a Weather Watch. Conditions are favorable for 25 knot crosswinds to occur at the base from hhmm am/pm Day Month until hhmm am/pm Day Month."

5.2.2.21. For a Forecast 35 Knot Surface Wind Warning at the base: “35 knot surface winds are expected at the base from hhmm am/pm Day Month until hhmm am/pm Day Month."

5.2.2.22. For an Observed 25 Knot Surface Wind Warning at the base: “25 knot surface winds are occurring at GFAFB."

5.2.2.23. For an Observed -15°F to -33°F Wind Chill (ECT) Warning at the base: “-15°F to -33°F wind chills (ECT) are occurring at GFAFB."

5.2.2.24. For an Observed -34°F to -47°F Wind Chill (ECT) Warning at the base: “-34°F to -47°F wind chills (ECT) are occurring at GFAFB."

5.2.2.25. For an Observed -Wind Chills (ECT) colder than -48°F Warning at the base: “Wind chills (ECT) colder than -48°F are occurring at GFAFB."

5.2.3. Notify base agencies and general base populace of the cancellation of Weather Watches/ Warnings for GFAFB issued by 15 OWS or BWS. See **Attachment 6** for notification diagram.

5.2.4. Include BWS in openings of all SKYHOOK conference calls.

5.2.5. Pass to BWS all PIREPs received from airborne aircraft or aircraft which have recently landed.

5.2.6. Time and manning permitting, coordinate all reports involving weather, weather service, and weather equipment with the BWS flight commander or designated representative prior to submission. A copy of all such reports will be provided to BWS.

5.2.7. In the event of winds 50 knots or greater, hail 3/4 inch or greater, and/or tornadoes at GFAFB, submit OPREP-3 report IAW AFMAN 10-206, *Operational Reporting*, regardless of the extent of damage. Additionally, if any weather phenomena, regardless of magnitude, caused damage to a wing asset, notify the BWS Flight Commander or designated representative. Weather information contained within an OPREP-3 must be coordinated with BWS and a copy of all such OPREPs will be provided to the BWS and 15 OWS.

5.2.8. Communicate mission critical forecast changes via HF radio or other available means to any 319 ARW sortie outside radio range of RAPCON/ATC.

5.3. 319th Air Refueling Wing Safety (319 ARW/SE). 319 ARW/SE will provide the BWS, at a minimum, 24 hours advanced notification of any requirement to present a climatology briefing or any other seasonal weather topics of interest for flight safety meetings.

5.4. 319th Air Refueling Wing Inspector General (319 ARW/IG). 319 ARW/IG staff will conduct a semi-annual exercise of the SWAP, **Chapter 4**, paragraph **4.2.** An actual weather event, if properly documented, meets the intent of an exercise. An exercise must evaluate the coordinated efforts of the 15 OWS and BWS.

5.5. 319th Air Refueling Wing Plans (319 LG/LGX). 319 LG/LGX will:

5.5.1. Ensure BWS is included in distribution of any plans that have either a weather or environmental services annex.

5.5.2. Ensure prompt notification of scheduled Crisis Action Team (CAT), Mobility Concept, and Assumption of Alert (AOA) briefings.

5.6. 319th Operations Support Squadron Airfield Management Element (319 OSS/OSAA). 319 OSS/OSAA will:

5.6.1. Provide the latest Runway Condition Reading (RCR) to BWS for transmission.

5.6.2. Provide access to current Flight Information Publications (FLIP) and update required FLIPs with any pertinent BWS service information (i.e. PMSV outages and limitations)

5.6.3. Allow access to the trunk radio system during outages of the NTFS and telephones enabling BWS to relay pertinent weather data.

5.6.4. Notify BWS of any aircraft mishaps, in-flight emergencies (IFEs), major accidents, inbound Very Important Persons (VIPs)/Distinguished Visitors (DVs), and VIP/DV diverts.

5.6.5. Notify BWS of any exercise/alert messages.

5.6.6. Notify BWS of planned power switches (i.e., backup generator tests) so appropriate actions can be taken.

5.6.7. Provide BWS personnel with access to the keys for the Airfield Management's truck or other suitable transportation in the event that the BWS must evacuate building 528 to establish operations at the alternate observation site (AOS).

5.6.8. Provide BWS with a list of standby personnel during runway closures.

5.6.9. Share janitorial and sidewalk snow removal duties with BWS for building 528 as mutually agreed upon.

5.7. 319th Operations Support Squadron Air Traffic Control Tower (319 OSS/OSAB) and Radar Approach Control Elements (319 OSS/OSAD). 319 OSS/OSAB and 319 OSS/OSAD will:

5.7.1. Notify BWS of changes in active runway to coordinate runway dependent sensor changes. In the event that the tower is closed, the BWS will continue change runway dependent sensors commensurate with what the applicable runway would be if the airfield were open.

5.7.2. Solicit aircrews for PIREPs, whenever able, and relay information to BWS.

5.7.3. Notify BWS of all runway lighting status changes when the prevailing visibility is 1 mile or less or the RVR is 6,000 feet or less.

5.7.4. Provide a daily PMSV radio check on UHF frequency 344.6. Time permitting, 319 OSS/OSAB will monitor PMSV when BWS transmitter/receiver becomes inoperative.

5.7.5. Provide BWS leadership with access codes and keys to the 319 OSS/OSAB Tower for use in the event of a BWS evacuation.

5.7.6. As part of the Cooperative Weather Watch program (see paragraph **2.4.**), advise BWS via hotline when the following conditions occur and are not in the latest observation, or when they dissipate. Please note that these taskings will be accomplished as time permits and will not interfere with the primary function of 319 OSS/OSAB.

5.7.6.1. Visibility increases/decreases.

5.7.6.2. A ceiling forms/dissipates/lowers/raises.

5.7.6.3. A tornado, funnel cloud, lightning, or thunderstorm is initially observed.

5.7.6.4. Precipitation begins or ends.

5.7.6.5. An obstruction to vision exists which was not previously reported.

5.7.6.6. Any condition that threatens flying safety is observed.

5.7.7. Describe radar-detected weather echoes within 40 miles of airfield to BWS or permit a weather representative to view displays directly, workload permitting. This will be coordinated with the watch supervisor, used only when normal weather radar is unavailable, and recorded as an additional service IAW FAAH 7110.65, *Air Traffic Control*.

5.7.8. Relay weather watches and warnings and mission critical weather forecast changes verbatim to any aircraft under their control.

5.7.9. Upon requests, provide tower and approach control indoctrination training to weather personnel upon request.

5.8. 319th Operations Support Squadron Mission Employment Flight (319 OSS/OSK). Mission Employment will provide BWS with computerized flight plans (CFPs) for all overwater flights originating from GFAFB. These must be received no less than 3 hours prior to aircrew show time.

5.9. 319th Operations Support Squadron Current Operations Flight (319 OSS/OSO). 319 OSS/OSO will:

5.9.1. Notify BWS of any special mission briefing requirements well in advance (24 hours preferred) of the required briefing times.

5.9.2. Promptly notify BWS whenever changes to the daily flying schedule occur which will impact weather support. This includes changes to takeoff and landing times, bus times, and air refueling track locations and times.

5.10. Air Refueling Squadrons (905 ARS, 906 ARS, 911 ARS, and 912 ARS). Air Refueling Squadrons will:

5.10.1. Provide orientation flights to BWS personnel when mission requirements allow.

5.10.2. Provide PIREPs to BWS via METRO, the 319 ARW/CP, ATC, or RAPCON.

5.10.3. Provide post-mission weather debriefings to the BWS to the maximum extent possible.

5.11. 319th Communications Squadron (319 CS). 319 CS will:

5.11.1. Provide support to the BWS as directed within coordinated Service Level Agreements or Memorandums of Agreement.

5.11.2. Maintain applicable weather equipment technical orders (TOs) in either the Meteorological/Navigational Aids (METNAV) or ATC Radar Elements and will, upon request to the appropriate elements, make them available to 319 OSS personnel for technical support.

5.11.3. Maintain weather equipment in accordance with applicable directives using priorities listed in the 319 OSS and 319 CS's Operations Letter (see **Attachment 7**). The 319 CS's Communications Control Center will ensure weather equipment responses and restoral times are in accordance with these priorities. In the event that weather sensor equipment malfunctions during hazardous weather, maintenance personnel will assess weather and safety concerns along with current flying operations before attempting repair actions.

5.11.4. Notify BWS of any maintenance or alterations to the radio tower/amplifier that received UHF frequency 344.6. Alterations to this tower may affect the effective range of PMSV service to aircrews.

5.11.5. Backup Communications with CAT. Backup communications between BWS and the CAT will be provided over trunk radios located at 319 OSS/OSAA and the 319 ARW/CP.

5.11.6. Provide high priority maintenance and repair service if LAN connectivity is disrupted. While internet use is non-critical to many workcenters, it is an absolute necessity to weather support and

integral to resource protection. A LAN connectivity outage severely degrades the BWS's ability to provide required weather information to aircrews and poses a safety of flight issue that limits the wing's ability to execute the flying mission. BWS personnel are authorized to contact the NCC Administrations directly when an network/server outage impacts BWS mission critical systems.

5.12. 319th Civil Engineering Squadron (319 CES). 319 CES will:

5.12.1. Maintain electrical generators for BWS and will test the backup generator on a monthly basis.

5.12.2. Maintain real property (shelters, towers, etc.,) installed in support of meteorological equipment.

5.12.3. Complete civil engineering work orders supporting the installation of meteorological equipment by installation teams when those work orders are prioritized, and as funds and manpower become available.

5.12.4. Appoint a primary Point of Contact (POC) to establish weather requirements for 319 CES contractor support. Notify BWS of appointed POC.

5.13. 319th Contracting Squadron (319 CONS). 319 CONS will appoint a primary (POC) to establish weather requirements for contractors needing weather support to completed contracted support. Notify BWS of appointed POC.

Chapter 6

WEATHER DISSEMINATION SYSTEM

6.1. GFAFB New Tactical Forecast System (NTFS). The NTFS is a software-based weather data dissemination system that resides on an approved 319 ARW base LAN-PC based computer system running the Windows NT operating system (or newer compatible version). Data transmitted over the NTFS originates at the 15 OWS or BWS and is sent to selected customers throughout GFAFB.

6.1.1. Data transmitted over the NTFS is disseminated via the base LAN. An end-user on the NTFS system has the ability to display 15 OWS and BWS products. A weather customer having access to the NTFS software has read-only permissions and is not authorized access to generate or disseminate weather products.

6.1.1.1. NTFS Software. Customers desiring access to the NTFS software for displaying GFAFB specific weather products must have base LAN access. Potential users must obtain a user id and password to access the read/display only system. Requests for user accounts can only be obtained by submitting an email to: “GF Base Weather" with name, organization, a contact phone number, and with NTFS PASSWORD in the email subject line. After an account is issued, the new user will receive an email with the user account ID and password along with basic operating instructions for the NTFS software. After receiving the new account information, the user must contact their respective Workgroup Administrator (WGA) to coordinate the NTFS software installation. Once access is gained, the new user must change their password immediately. User account passwords must be changed every 90 days.

6.1.1.2. Units with NTFS hardware/software must provide the BWS with a point of contact.

6.1.1.2.1. Units must coordinate all location changes of NTFS FCF/FO terminals with appropriate agencies. Supported agencies will submit an AF Form 3215, **C4 Systems Requirement Document**, to the Communications Squadron for relocation of communications lines. Supported agencies will notify the BWS of their intention to move NTFS terminals no less than 1 week prior to actual physical relocation of the equipment, providing new location information (building number, room number, etc.). All hardware, software, communications cables, and junction boxes must be accounted for and moved together by the supported agency–the terminal will not operate without all of this equipment.

6.1.1.2.2. Units will not place NTFS equipment on Automated Data Processing Equipment (ADPE) accounts or on Custodian Authorization/Custody Receipt Listing (CA/CRL) listings as the BWS has ultimate accountability for it. However, in the event of missing equipment, supported agencies will assist in the Report of Survey (ROS) process to the maximum extent possible.

6.1.1.3. ATC NTFS FCF/FO terminals. ATC terminals receive surface weather observations, weather watches and warnings for GFAFB on a 9" monochrome installed in the tower cab.

6.2. Maintenance. Agencies with NTFS software problems must contact their WGM for assistance. For lost passwords and user IDs, email" "GF Base Weather" with name, organization, a contact phone number, and with LOST NTFS PASSWORD in the email subject line. For FCF/FO terminal support, BWS personnel will perform or arrange for maintenance on the NTFS system.

6.3. NTFS Back-up Operations. In the event that the NTFS becomes inoperative or the BWS must be evacuated, the duty weather technician will activate the NTFS Back-up Plan. In accordance with AFMAN 15-111, *Surface Weather Observations*, and AMCI 15-101, *AMC Weather Operations*, ATC/RAPCON elements and 319 ARW/CP will receive priority notification.

6.3.1. Primary NTFS Backup Plan. The weather technician will contact ATC/RAPCON elements and 319 ARW/CP via telephone communications with required observations, weather watches, and weather warnings until the NTFS system is restored. 15 OWS will be notified by telephone when the NTFS is inoperable. 15 OWS will receive all observational data and observed warning information by telephone until the NTFS is restored.

6.3.2. Communications Outage Backup Plan. Should all telecommunications methods fail, either the trunk radio in 319 OSS/OSAA or runners will be used to disseminate weather information. If runners are used, weather information will be delivered to ATC, RAPCON, and the Command Post only. All other agencies must arrange for pick-up of weather information.

6.4. Evacuation of the BWS. The BWS will not be evacuated during exercises. The BWS may be evacuated due to a real-world natural disaster, bomb threat, fire, etc. Forecasts, watches, and warnings will continue to be input to the BWS by 15 OWS. Observations and observed warnings will be passed via telephone to the 15 OWS where they will be input into the NTFS.

Chapter 7

SPECIAL MISSION REQUIREMENTS

7.1. General. The BWS provides weather support concurrent with established requirements to execute the mission. The BWS works in conjunction with 15 OWS to ensure 319 ARW customer requirements are meet to protect valuable wing personnel and assets. The BWS and 15 OWS will issue all watches and warnings and adhere to requirements outlined in GFAFB OPLAN 32-1, *319 ARW Disaster Preparedness Operations Plan*.

7.2. Limitations.

7.2.1. NTFS Operability. An NTFS outage impairs the BWS's and 15 OWS's ability to disseminate weather information required by 319 ARW customers. In the event of an outage, BWS will notify centralized points of contact to ensure critical information is disseminated. See group level requirements for alternate points of contact.

7.2.2. Weather sensor outage. In the event of weather sensor(s) outages, BWS personnel will revert to using tactical systems to observe conditions for dissemination to 319 ARW customers. Reference paragraph **1.7.**

7.3. Operations Group Requirements. The BWS will monitor weather and provide information to operators and planners in support of the flying mission.

7.3.1. KC-135 Mission Requirements. Limitations are designed around basic aircrew complement (Aircraft Commander-Pilot (A/C), Co-Pilot, Navigator, Boom Operator). Thresholds may be higher for aircrews with higher qualifications (instructor (IP)/evaluator).

CONDITIONS - YELLOW (Some A/C training events may not be accomplished)

Departure/Recovery	*A/R Track*	*Transitioning*
15KT Crosswinds	Light Icing	10KT Crosswinds
35-49KT Surface Winds	Light to Moderate Turbulence	1000 FT/ 2 Mile (IP)
Light to Moderate Turbulence	General Thunderstorms	3000 FT/ 3 Mile (A/C)
Light Icing	In-Cloud Visibility less than .5 Mile	Light to Moderate Turbulence
General Thunderstorms		Low-Level Wind Shear
200FT/ .5 Mile to 3000FT/ 3 Mile		

CONDITIONS - RED (Some flying events may not be accomplished)

Departure/Recovery	*A/R Track*	*Transitioning*
25KT or greater Crosswinds	Moderate or greater Icing/ Turbulence	10KT Crosswinds (A/C)
50KT or greater Surface Winds	Severe Thunderstorms	15KT Crosswinds (IP)

Moderate or greater Icing/ Turbulence		1000 FT/ 2 Mile (A/C)
Severe Thunderstorms		300 FT/ 1 Mile (IP)
Tornadoes		Moderate or greater Icing/ Turbulence
200FT/ .5 Mile Visibility (Recovery)		
1600FT RVR Visibility (Departure)		

7.3.2. Operations and Personnel Special Thresholds. Below are threshold for Operations Group operations/personnel in addition to established weather watch and warning criteria in which actions are taken if any one or several of the criteria are met.

Operations/Personnel

-7ºC OR COLDER WITHIN LAST 24 HOURS (Hydraulic warm-up)

7.4. Logistics Group Requirements. Based on LGOI 20-7, *Adverse Weather Operations*, the criteria listed below are thresholds outside of the scope of weather watches and warnings outlined in GFAFB OPLAN 32-1, *319 ARW Disaster Preparedness Operations Plan*, and in **Chapter 4** of this document. Meeting or exceeding any of the below thresholds results in a change to Logistics Group operations. The BWS will monitor weather and provide information to operators/maintainers and planners for the Logistics Group's mission.

Logistics/MACC Operations

13-17KT WINDS

7.5. Support Group Requirements. The criteria listed below are thresholds outside of the scope of weather watches and warnings outlined in GFAFB OPLAN 32-1, *319 ARW Disaster Preparedness Operations Plan*, and in **Chapter 4** of this document. Meeting or exceeding any of the below thresholds results in a change to Support Group operations. The BWS will monitor weather and provide information to operators and planners for the Support Group's mission.

Support Group Operations

1/8 Mile Visibility or less

15°F AMBIENT

10°F AMBIENT

7.6. Medical Group Requirements. Based on MDGI 15-001, *Severe Weather Operations*, the criteria listed below are thresholds outside of the scope of weather watches and warnings outlined in GFAFB OPLAN 32-1, *319 ARW Disaster Preparedness Operations Plan*, and in **Chapter 4** of this document.

Meeting or exceeding any of the below thresholds results in a change to Medical Group operations. The BWS will monitor weather and provide information to operators in support of the Medical Group's mission.

Medical Group Operations/Personnel

1 Mile Visibility or less

MARSHALL K. SABOL, Colonel, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 13-203, *Air Traffic Control*.

AFI 15-128, *Aerospace Weather Operations-Roles and Responsibilities*,

AFI 10-229, *Response to Severe Weather Events*

AFI 11-2KC-135, Volume 3, Chapter 6

AFMAN 15-129, *Aerospace Weather Operations - Processes and Procedures*,

AFMAN 15-111, *Surface Weather Observations*,

AFMAN 15-124, *Meteorological Codes*

AFMAN 10-206, *Operational Reporting*

AMCI 15-101, *AMC Weather Operations*

Abbreviations and Acronyms

AFI—Air Force Instruction

AGL—Above Ground Level

AFMAN—Air Force Manual

AFWA—Air Force Weather Agency

ALSTG—Altimeter Setting

AMC—Air Mobility Command

AMCI—Air Mobility Command Instruction

AOA—Assumption of Alert

AOS—Alternate Observing Site

ARS—Air Refueling Squadron

ATC—Air Traffic Control

ATAD—Automated Telephone Answering Device

AWN—Automated Weather Network

ARW—Air Refueling Wing

BECMG—Becoming

BKN—Broken

BWS—Base Weather Station

BWW—Basic Weather Watch

C—Celsius

CB—Cumulonimbus

CAT—Crisis Action Team

CFP—Computerized Flight Plan

CP—Command Post

CS—Communications Squadron

CWW—Cooperative Weather Watch

DLT—Desired Lead Time

DSN—Defense Switching Network

DV—Distinguished Visitor

ECT—Equivalent Chill Temperature (Wind Chill Temperature)

EWO—Emergency War Order

F—Fahrenheit

FAAH—Federal Aviation Administration Handbook

FCF—Flight Control Facility

FCST—Forecast

FLIP—Flight Information Publication

FM—From

FO—Flight Operations

GFAFB—Grand Forks Air Force Base

HTSA—Host/Tenant Support Agreement

IAW—In Accordance With

IFE—In-flight Emergency

IFR—Instrument Flight Rules

IRC—Instrument Refresher Course

JA/ATT—Joint Airborne/Air Transportability Training

KRDR—International Civil Aviation Organization (ICAO) Identifier for GFAFB.

LAN—Local Area Network

LGOI—Logistics Group Operating Instruction

LLWS—Low-Level Wind Shear

LOA—Letter of Agreement

LWDS—Local Weather Dissemination System

M—Minus

MACC—Maintenance Aircraft Control Center

MCF—Mission Control Forecast

MEF—Mission Execution Forecast

METAR—Aviation Routine Weather Report

METNAV—Meteorological/Navigational Aids

METSAZ—Meteorological Satellite

METWATCH—Meteorological Watch

MOA—Memorandum of Agreement

MOOTW—Military Operations Other Than War

MWS—Mission Weather Services

NEXRAD—Next Generation Radar

NM—Nautical Mile

NOAA—National Oceanic and Atmospheric Administration

NOTAM—Notice to Airmen

NTFS—New Tactical Forecast System

NWS—National Weather Service

OAT—Outside Air Temperature

OWS—Operational Weather Squadron

PA—Pressure Altitude

PIREP—Pilot Report

POC—Point of Contact

PMSV—Pilot-To-Metro Service

RAPCON—Radar Approach Control

RCR—Runway Condition Reading

RH—Relative Humidity

RSC—Runway Surface Condition

ROS—Report of Survey

RTD—Routine Transmission Delayed

RVR—Runway Visual Range

SCT—Scattered

SKC—Sky Clear

SIOP—Single Integrated Operational Plan

SM—Statute Miles

SOF—Supervisor of Flying

SPECI—Special Observation

SWAP—Severe Weather Action Procedures

TAF—Terminal Aerodrome Forecast

TCU—Towering Cumulus

TEMPO—Temporary

TN—Technical Note

TO—Technical Order

UFN—Until Further Notice

UHF—Ultra-High Frequency

VIP—Very Important Person

WX—Weather

Terms

BASE—An area 5 statute miles in radius centered on building 528, Grand Forks AFB, ND.

METEOROLOGICAL WATCH (METWATCH)—The process of monitoring observed and forecast weather and informing supported agencies when certain established weather conditions that could affect their operations and/or pose a hazard to property or life occur or are expected to occur.

MISSION WATCH—The BWS will watch weather along routes of flight or other special interest areas/ items as required, by mutual arrangement with the supported customer.

WEATHER WATCH—A special notice provided to advise of the potential for weather conditions that may pose a hazard to property or life. When a Weather Watch is issued, customers must take preparatory actions to ensure rapid response in the event a subsequent Weather Warning is issued.

WEATHER WARNING—A special notice provided when an established weather condition is occurring or imminent and poses a hazard to property or life. When a Weather Warning is issued, customers must take immediate action to safeguard property and lives. There are two types of Weather Warnings–those with no Desired Lead Time (i.e., observed warnings) and those with Desired Lead Times (i.e., forecast warnings).

Attachment 2

SUPPORTED OUTSIDE AGENCIES

Below is a list of agencies not directly associated with the 319 ARW or GFAFB for which the 319OSS/OSW provides meteorological and other support. This support is documented in separate Letters of Agreement (LOAs), or Memorandum of Agreement (MOA), or Host/Tenant Support Agreements (HTSAs). This listing is provided for reference purposes only.

10th Space Warning Squadron (AFSPC)
Cavalier AFS, ND

Grand Forks Public Schools
Director, Buildings and Grounds Department
Grand Forks AFB, ND

Attachment 3

AIRFIELD METEOROLOGICAL EQUIPMENT

= FMQ-13 (Wind Sensor Equipment)
= GMQ-32 (Transmissometer - RVR)
= GMQ-34 (Laser Beam Ceilometer - LBC)
= FMQ-8 (Temperature/Dew Point Set)
= Base Weather Station (BWS - Building 528)

Attachment 4

OBSERVATION COMPONENTS AND CRITERIA

A4.1. Elements of Surface Observations.

A4.1.1. Sky condition and ceiling. Amount and height of clouds above ground level (AGL). Amount is expressed as clear (SKC), few (FEW, 1/8 to 2/8 of the sky covered), scattered (SCT, 3/8 to 4/8 of the sky covered), broken (BKN, 5/8 to 7/8 of the sky covered), or overcast (OVC, covering all of the sky). The lowest broken or overcast layer is defined as the ceiling. When phenomena such as fog completely block the view of the sky, the ceiling is defined by the vertical visibility into the obscuration (VV). If it is partially obscured (one can not see all of the horizon), sky condition will be reported and a remark will be made to show what is obscuring the horizon. There are two additional items that may be used to further define the sky condition: CB—cloud likely containing a thunderstorm; and TCU—cloud that has moderate vertical development which could later develop into thunderstorms and indicates potential turbulence.

A4.1.2. Prevailing visibility and obstructions to vision. The prevailing visibility is the greatest unobstructed viewing distance over half or more of the horizon circle, not necessarily in contiguous sectors. The weather technician measures prevailing visibility using known landmarks during the day or unfocused lights of moderate intensity at night. Obstructions to visibility such as dust, haze, or smoke are reported whenever they reduce the prevailing visibility to less than seven statute miles. Precipitation is always reported when observed. Use the following table to interpret the observation:

QUALIFIER		WEATHER PHENOMENA		
INTENSITY OR PROXIMITY	**DESCRIPTOR**	**PRECIPITATION**	**OBSCURATION**	**OTHER**
- Light	**MI** Shallow	**DZ** Drizzle	**BR** Mist	**PO** Well-developed Dust/Sand Whirls
Moderate	**PR** Partial (covering part of the sky)	**RA** Rain	**FG** Fog	**SQ** Squalls
+ Heavy well-developed in the case of dust/sand devils and tornadoes/ waterspouts	**BC** Patches	**SN** Snow	**FU** Smoke	**FC** Funnel cloud(s) (Tornado(es), Waterspout(s))
VC In the Vicinity	**DR** Low Drifting	**SG** Snow Grains	**VA** Volcanic Ash	**SS** Sandstorm
	BL Blowing	**IC** Ice Crystals	**DU** Widespread Dust	**DS** Duststorm
	SH Shower(s)	**PL** Ice Pellets	**SA** Sand	
	TS Thunderstorm	**GR** Hail	**HZ** Haze	
	FZ Freezing	**GS** Small Hail and/or Snow Pellets	**PY** Spray	
		UP Unknown Precip		

A4.1.3. Runway Visual Range (RVR). RVR is an instrumentally derived value that represents the horizontal distance (i.e., not slant range) an aircrew will see down the runway from the approach end. RVR is measured by transmissometers at both ends of the runway. The weather technician increases awareness of RVR values within 3 hours of a prevailing visibility forecast of 2 SM or less or if it is already occurring. RVR is reported when the prevailing visibility is less than or equal to one statute mile and/or the RVR is 6,000 feet or less. The lowest reported RVR is “less than 1,000 feet” (M1000). If RVR sensor/system is inoperative on the active runway, RVR will be reported as “RVRNO.” The RVR from the inactive end of the runway will not be reported in the event that the active end's system is inoperative.

A4.1.4. Temperature and dew point. Reported to the nearest degree Celsius. An “M” preceding the number indicates a negative temperature (e.g. M05 is -5°C).

TEMPERATURE CONVERSION TABLE—°Celsius to °Fahrenheit

TEMPERATURE IN TENS OF DEGREES CELSIUS

TEMPERATURE IN DEGREES CELSIUS														
		50	40	30	20	10	0	M0	M10	M20	M30	M40	M50	
	0	122	103	86	68	50	32	32	14	M4	M22	M40	M58	0
	1	123	105	87	69	51	33	30	12	M6	M24	M42	M60	1
	2	125	107	89	71	53	35	28	10	M8	M26	M44	M62	2
	3	127	109	91	73	55	37	26	8	M10	M28	M45	M63	3
	4	129	111	93	75	57	39	24	6	M12	M30	M47	M65	4
	5	131	113	95	77	59	41	23	5	M13	M31	M49	M67	5
	6	132	115	97	78	60	42	21	3	M15	M33	M51	M69	6
	7	134	117	98	81	62	44	19	1	M17	M35	M53	M71	7
	8	136	119	100	82	64	46	17	M1	M19	M37	M54	M72	8
	9	138	121	101	84	66	48	15	M3	M21	M39	M56	M74	9
		50	40	30	20	10	0	M0	M10	M20	M30	M40	M50	

A4.1.5. Winds. Reported locally to the nearest 10 degrees from magnetic north and transmitted worldwide in degrees from true north (the correction factor at GFAFB is to add 10 degrees to the magnetic direction) with speed in knots. The direction in degrees can be compared to a compass divided into 16ths with the winds coming from the direction provided (north winds are from 0 or 360 degrees, northeast winds are from 45 degrees, east winds are from 90 degrees, etc.).

A4.1.6. Altimeter Setting (ALSTG) and Pressure Altitude (PA). Readings of current atmospheric pressure measured in inches of mercury and feet above standard sea level pressure, respectively.

A4.1.7. Equivalent Chill Temperature (ECT). This is also known as wind chill temperature. ECT will be appended to each observation when the outside air temperature (OAT) is less than or equal to 2ºC (35ºF). To calculate ECT, the weather technician takes the current highest reported wind speed, gust or sustained as appropriate (2 minute average), and the OAT in degrees F and uses a mathematical algorithm to derive the ECT.

A4.1.8. Remarks. Remarks will include relative humidity (RH), a conversion from Celsius to Fahrenheit, and the ECT remark in degrees Fahrenheit as appropriate for local transmission only. If after an initial runway condition report (RCR) of anything other than "dry" is filed, the weather technician will include and disseminate the report locally and off-base in each successive hourly observation until the runway is dry again, at which time it is dropped from the observation. All subsequent observations, except the hourly, will only carry this report for local dissemination. Other remarks include distance/direction of thunderstorms, sector visibility, occurrence of frontal passage, or other phenomena that may serve to clarify the current weather conditions for transmission locally or off-base as appropriate.

A4.1.9. Corrections. Corrections will be made anytime the observation contains an error and another observation has not been sent. The remark "COR" will follow the time of the observation.

A4.2. Types of Surface Weather Observations. The following types of observations are taken and disseminated locally by the BWS weather technician:

A4.2.1. Record Observation (METAR). This observation is taken 15 minutes before each hour and is transmitted locally 1 to 5 minutes before that hour. The following is an example:

KRDR METAR 1855Z 34012KT 7 -SHRA FEW005CB SCT015TCU BKN030 OVC100 01/01 ALSTG 30.15 RMK CB N MOV E TCU ALQDS WR// (RH=100/01C=34F/ECT=15F)PA +700 55/TJL;

Content breakdown

KRDR	Station identifier
METAR	Observation type (Record Observation)
1855Z	Time of observation
34012KT	Winds direction 340 degrees magnetic, speed 12 knots
7 –SHRA	7 miles visibility in light rain showers
FEW005CB	Few thunderstorm (CB) clouds (1/8 to 2/8 sky cover) at 500 feet AGL
SCT015TCU	Scattered clouds with moderate vertical development (3/8 to 4/8 sky cover)

	at 1,500 feet AGL
BKN030	Broken clouds (5/8 to 7/8 sky cover) at 3,000 feet AGL – This is a ceiling
OVC100	Overcast clouds (8/8 sky cover) at 10,000 feet AGL
01/01	Temperature/Dewpoint (01°C and 01°C)
ALSTG 30.15	Altimeter setting (30.15 inches of mercury)
RMK	Start of remarks section
CB N MOV E	Cloud capable of thunderstorms (cumulonimbus) to north moving east
TCU ALQDS	Clouds of moderate development (towering cumulus) in all quadrants of the horizon
WR//	Runway is wet
RH=100	Relative humidity is 100%
01C=34F	Temperature is converted from Celsius to Fahrenheit
ECT=15F	Equivalent Chill Temperature (ECT) in degrees Fahrenheit based on highest winds, either gusts or sustained
PA +700 feet	Pressure altitude
55/TJL	Minutes after hour the observation was taken along with observer's initials

A4.2.2. Special Observation (SPECI). This is an observation using the same elements as the METAR except when a delay in reporting all elements would cause immediate threat to life or property, e.g., " TORNADO SW MOV NE," then a single-element SPECI will be taken. Below is an example of a full-element SPECI and is taken any time the weather technician becomes aware of significant changes in the criteria listed immediately following the example. For that criteria, the directive driving the requirement is indicated in brackets [ ]. AFMAN 15-111, *Surface Weather Observations*, identifies the criteria common to all USAF weather observing units. FLIP refers to the information specific to GFAFB published in the Instrument Approach Procedures DoD Flight Information Publication.

Regular Special Observation (SPECI)

KRDR SPECI 2210Z 34012G19KT 290V010 1 R35/4000FT –SN VV002 00/M01 ALSTG 30.55 RMK(RH=90/00C=32F/ECT=15F)PA +290 12/JB;

Content breakdown

KRDR	Station identifier
SPECI	Observation type (Special Observation)
2210Z	Time of observation
34012G19KT	Wind direction 340 degrees magnetic, speed 12 knots gusts at 19 knots
290V010	Wind direction varying between 290 and 010 degrees magnetic

1	1 mile visibility
R35/4000FT	Horizontal visibility on runway 35 is 4,000 feet
-SN	Light snow
VV002	Sky is totally obscured, vertically visibility is 200 feet
01/M01	Temperature/Dewpoint (01°C and -01°C)
ALSTG 30.55	Altimeter Setting (30.55 inches of mercury)
RMK	Start of remarks section
RH=90	Relative humidity is 90%
00C=32F	Temperature is converted from Celsius to Fahrenheit
ECT=15F	Equivalent Chill Temperature (ECT) in degrees Fahrenheit based on highest winds, either gusts or sustained
PA +290 feet	Pressure altitude
12/JB	Minutes after hour the observation was taken along with observer's initials

Single Element Special Observation (SPECI)

KRDR SPECI 1942Z +FC ALSTG M RMK TORNADO SW MOV NE PA M;

Content breakdown

KRDR	Station identifier
SPECI	Observation type (Special Observation)
1942Z	Time of observation
+FC	Tornado
ALSTG M	Altimeter setting not reported
RMK	Start of remarks section
TORNADO	Tornado to the southwest moving northeast
SW MOV NE	
PA M	Pressure altitude not reported

A4.2.2.1. Ceiling. Observed to form below, decreases to less than or, if below, increases to equal or exceed:

A4.2.2.1.1. 3,000 feet [AFMAN 15-111].

A4.2.2.1.2. 1,500 feet [AFMAN 15-111].

A4.2.2.1.3. 1,000 feet [AFMAN 15-111].

A4.2.2.1.4. 700 feet [AFMAN 15-111, FLIP].

A4.2.2.1.5. 600 feet [FLIP].

A4.2.2.1.6. 500 feet [AFMAN 15-111, FLIP].

A4.2.2.1.7. 400 feet [FLIP].

A4.2.2.1.8. 200 feet [FLIP].

A4.2.2.2. Sky condition. Any clouds or obscuring phenomenon observed below 700 feet and not reported in the preceding METAR or SPECI observation.

A4.2.2.3. Prevailing visibility. Decreases to less than or, if below, increases to equal or exceed:

A4.2.2.3.1. 3 statute miles [AFMAN 15-111].

A4.2.2.3.2. 2 1/4 statute miles [FLIP].

A4.2.2.3.3. 2 statute miles [AFMAN 15-111, FLIP].

A4.2.2.3.4. 1 1/2 statute miles [FLIP, Local Requirement].

A4.2.2.3.5. 1 1/4 statute miles [FLIP].

A4.2.2.3.6. 1 statute mile [AFMAN 15-111, FLIP].

A4.2.2.3.7. 3/4 statute mile [FLIP].

A4.2.2.3.8. 1/2 statute mile [FLIP].

A4.2.2.4. Tornado or funnel cloud [AFMAN 15-111]. When observed by BWS personnel, or having been observed, it dissipates.

A4.2.2.5. Thunderstorm [AFMAN 15-111]. Begins (a SPECI is not required to report the beginning of a new thunderstorm if one is currently reported as in progress at the station) or ends (15 minutes after last occurrence of criteria for a thunderstorm).

A4.2.2.6. Hail [AFMAN 15-111]. Begins or ends.

A4.2.2.7. Freezing precipitation or ice pellets [AFMAN 15-111]. Begins, ends, or changes in intensity.

A4.2.2.8. Any other type of precipitation [AFMAN 15-111]. Begins or ends. Except for freezing precipitation, hail, and ice pellets, a SPECI is not required for changes in type or the beginning or ending of one type while another is in progress.

A4.2.2.9. Squall [AFMAN 15-111]. The wind speed increases at least 16 knots and is sustained at 22 knots or more for at least one minute.

A4.2.2.10. Wind shift [AFMAN 15-111]. Any shift in wind direction of 45 degrees or more in less than 15 minutes when wind speed throughout the shift is 10 knots or more.

A4.2.2.11. Upon resumption of observing services [AFMAN 15-111]. Disseminate a SPECI within 15 minutes of returning to duty if a required METAR was missed (due to evacuation, attack, etc.).

A4.2.2.12. Runway Surface Condition (RSC)/ Runway Condition Report (RCR) [AFMAN 15-111]. Official RCR will be determined by airfield management personnel only. If a METAR observation is being taken at the time of the RCR observation, the RSC/RCR will be appended to it instead of a SPECI just for that criterion. Disseminate longline when an RSC/RCR is:

A4.2.2.12.1. First received from Airfield Management.

A4.2.2.12.2. Changed by Airfield Management.

A4.2.2.12.3. RCRNR (RCR Not Reported) is reported when base operations is closed and runway is suspected to be other than dry.

A4.2.2.13. Miscellaneous [AFMAN 15-111].

A4.2.2.13.1. Upon receipt of reportable tower visibility value when either the tower or BWS visibility is less than 4 statute miles and they differ by a reportable SPECI criterion (**A4.2.2.3.**, above) value.

A4.2.2.13.2. The RVR value decreases to less than or, if below, increases to equal or exceed 2,400 feet.

A4.2.2.13.3. When volcanic ash is first observed.

A4.2.2.13.4. When notified of a real-world nuclear accident, a full-element special will be disseminated. The remark "AEROB" will be included as the last remark on the disseminated observation.

A4.2.2.13.5. Any other meteorological situation that, in the opinion of the duty weather technician, is critical to GFAFB functions.

A4.2.3. Local Observation (LOCAL). These observations are taken to report changes in conditions significant to the airfield or installation, but do not meet SPECI criteria (and therefore do not require longline dissemination). Criteria for these observations are listed below in paragraphs **A4.2.3.2.**,**A4.2.3.3.**, **A4.2.3.4.**, **A4.2.3.5.**, and **A4.2.3.6.** LOCALs may contain one or all of the elements of a METAR. Note: An Alert Weather Observation (AWO) is a special form of LOCAL. As before, the references are noted in brackets [ ].

KRDR LOCAL 2225Z ALSTG 29.52 RMK PA +1310 27/EP;

Content breakdown

KRDR	Station identifier
LOCAL	Observation type (Local)
2225Z	Time of observation
ALSTG 29.52	Altimeter setting (29.52 inches of mercury)
RMK	Start of remarks section (none for this particular observation)
PA +1310 feet	Pressure altitude
27/EP	Minutes after hour the observation was taken along with observer's initials

Wind, Visibility, Sky Condition, Temperature, and Dew Point: Not required as this is not a full-element local.

A4.2.3.1. Alert Weather Observation (AWO). [AFMAN 15-111] NOTE: The BWS is required to disseminate an AWO each time the klaxon sounds, or upon request from the 319 ARW/CP. The ability to meet this requirement becomes questionable when the FMQ-13 wind equipment or the MQ-8 temperature/dew point equipment becomes inoperative. Should either of these pieces of equipment become inoperative, the BWS will provide the latest available data (not older than 30

minutes), as estimated data (prefixed with an E). They will then manually compute the estimated data, and retransmit the AWO. The following is an example of an alert observation:

KRDR LOCAL 2235Z	
WIND:	32017KT
TEMP:	34F
PA:	+792
ALTSG:	30.05
ALERT WX OBS;	

Content breakdown

KRDR	Station identifier
LOCAL	Observation type (Local)
2253Z	Time of observation
WIND: 32017KT	Wind direction 320 degrees magnetic at 17 knots
PA: +792	Pressure altitude
ALTSG: 30.05	Altimeter setting (30.05 inches of mercury)
ALERT WX OBS	Alert weather observation

A4.2.3.2. Active runway change [AFMAN 15-111]. A full-element local observation will be disseminated shortly after active runway change, immediately after runway sensors have updated (approximately 2-5 minutes).

A4.2.3.3. Aircraft mishap [AFMAN 15-111]. A full-element local observation will be disseminated when an aircraft mishap occurs or is reported to have occurred within 10 NM of GFAFB. A local observation will not be required if a record observation was disseminated since the time the mishap occurred.

A4.2.3.4. Inflight Emergency (IFE) [Local Requirement]. A full-element local observation will be disseminated when the weather technician is notified of an IFE. A local observation will not be required if a record observation was disseminated since the IFE began. The weather technician will increase their awareness and check on conditions in intervals not to exceed 10 minutes.

A4.2.3.5. Runway Visual Range (RVR). A full-element local observation will be disseminated when the RVR value decreases to less than or, if below, increases to equal or exceed the following:

A4.2.3.5.1. 6,000 feet [AFMAN 15-111].

A4.2.3.5.2. 5,000 feet [AFMAN 15-111].

A4.2.3.5.3. 4,000 feet [FLIP].

A4.2.3.5.4. 1,600 feet [AFI 11-2KC-135, Volume 3, Chapter 6].

A4.2.3.5.5. 1,000 feet [AFI 11-2KC-135, Volume 3, Chapter 6].

A4.2.3.5.6. RVRNO (RVR Not Operational) is first required or canceled [AFMAN 15-111].

A4.2.3.6. Single-element altimeter settings [AFMAN 15-111]. A local observation will be disseminated any time there has been a change of 0.01 inch of mercury (in HG) or more since the last observation not to exceed 35 minutes.

A4.2.3.7. Weather Warning criteria met [Local requirement]. A full-element local observation will be disseminated any time criteria for a Weather Warning issued at GFAFB is met or exceeded.

A4.2.3.8. Significant LOCALs [AFMAN 15-111]. A full-element local observation will be disseminated when, in the judgment of the duty weather technician, meteorological conditions warrant it.

A4.3. Pilot Reports (PIREPs). PIREPs are weather observations from airborne or recently landed aircraft concerning in-flight conditions. They are obtained from flight crews via PMSV or relayed from the 319 ARW/CP or ATC/RAPCON. Significant PIREPs will be disseminated both locally and longline. Significant PIREPs are reports issued whenever the criteria listed below the example exist within 100 NM of GFAFB. They will contain at least the type report, location, time, flight level, type of aircraft, and at least one other element.

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

Content breakdown

KRDR	Station identifier
PIREP	Type of report (Pilot Report)
TIME 2213	Type of observation
150120 RDR	Location relative to RDR, 150 degree radial 120 miles from RDR
FL 230	Flight level (23,000 ft)
TP C135	Type of aircraft (KC-135)
WX	Weather at altitude (None)
FV99	Unrestricted visibility
TA M15	Temperature at altitude (-15ºC)
WND 26034	Winds from 260 degrees true at 34 knots
TURB NEG	Negative turbulence
ICG NEG	Negative icing

A4.3.1. Aircraft icing, any intensity.

A4.3.2. Turbulence, moderate or greater.

A4.3.3. Low-level wind shear (less than 2,000 feet) reported on climb or descent. This is indicated by air speed fluctuations of 10 or more knots of air speed.

A4.3.4. Thunderstorms.

A4.3.5. Hail.

A4.3.6. Tornadoes/funnel clouds.

A4.3.7. Any criteria that, in the judgment of weather personnel receiving the PIREP, presents a danger to aircraft operations.

Attachment 5

FORECAST COMPONENTS AND CRITERIA

A5.1. Elements of a Terminal Aerodrome Forecast (TAF). A TAF contains several elements and applies to the area within a 5 statute mile radius of the runway complex. A TAF is issued every 8 hours and is valid for a 24 hour period. GFAFB TAF file times are 0100Z, 0900Z, and 1700Z. Each TAF must be transmitted no later than 15 minutes past the file time and will specify the time of occurrence to the nearest hour, duration, and intensity (where applicable) of expected weather conditions. Guidance for this product is specified in AFMAN 15-124 and AMC supplements. See instruction at the end of this Attachment for a specific breakdown of the TAF code. **Attachment 4**, paragraph **A4.1.2.** contains a decoding of forecast weather phenomena, as the same codes are used to encode observations. A TAF will contain the forecast for the winds, visibility and weather restricting that visibility, clouds to include ceilings, turbulence (to include low-level wind shear) or icing affecting Category II aircraft (as defined in AFWA TN-98/002, Table 2-7, Pages 2-21), minimum altimeter setting, and maximum/minimum temperatures. Forecast heights are identified in feet above ground level (AGL), as appropriate. Additionally, each line can contain remarks to better clarify the weather forecast. The first line of every TAF will reflect conditions at the time of transmission. A Routine Transmission Delayed (RTD) remark will preface the file time of any scheduled TAF if the transmission is delayed beyond 15 minutes past the file time. Additional lines are required in a TAF whenever the following is expected to occur and will be prefaced by BECMG (becoming by time specified), FM (from time specified) or TEMPO (temporarily) remarks with the time of expected occurrence and duration:

A5.1.1. Wind. Speed, including gusts (when wind speeds are 10 knots or more and the gust exceeds the sustained winds by 5 knots or more), is forecast to be different by 10 knots or more, or the direction will change by more than 30 degrees when the speed (including gusts), is above 15 knots.

A5.1.2. Prevailing visibility. Forecast to decrease to less than or, if below, increases to equal or exceed 3 statute miles, 2 statute miles, or 1/2 statute mile.

A5.1.3. Precipitation and/or thunderstorm. Forecast to begin or end.

A5.1.4. Ceiling. Forecast to decrease to less than or, if below, increase to equal or exceed 3,000 feet, 1,500 feet, 1,000 feet, or 200 feet.

A5.1.5. Aircraft icing or turbulence. For Category II aircraft (the KC-135 is a Category II aircraft) not associated with thunderstorms, from the surface to 10,000 feet above mean sea level (MSL).

A5.1.6. Low-level wind shear. Not associated with thunderstorms.

A5.1.7. Maximum/minimum temperatures.

A5.1.8. Any elements that are in a base Weather Warning and can be forecast in a TAF.

A5.1.9. Remarks: There can be remarks about any condition that in the judgment of weather personnel are significant to airfield operations to include those beyond 5 SM of the runway (surface-based partial obscurations, precipitation to west, etc.). On the last line of the TAF in the remarks Section, if the weather station is scheduled to close for any length of time, a remark "LAST NO AMDS AFT $D_1D_1T_1T_1$ NEXT DDTT," where D_1D_1 denotes the day the station closes; T_1T_1 denotes the time the station closes; DD denotes the day the station reopens; TT denotes the time the station reopens. For example, LAST NO AMDS AFT 2512 NEXT 2818 is translated as the station closes on the 25th of

month at 12Z and reopens on the 28th at 18Z. Additionally, a remark to list any amendment times (AMD 0205 indicates an amendment at 0205Z) or corrections (COR 0205 indicates a correction at 0205Z) will be the last remark of any TAF so affected. In a corrected amendment, AMD COR 0205 indicates a correction to an amendment at 0205Z.

A5.2. Forecast Amendment Criteria. Weather personnel will ensure that the TAF is always representative of actual conditions. They will amend the TAF when the conditions described below occur and were not forecast, or were forecast and did not occur, and the occurrence or lack of occurrence lasts for 30 minutes or more.

A5.2.1. Weather Warning criteria. Not in the original forecast, and the criteria have occurred or a Weather Warning has been issued. An amendment will also be issued when the criteria were included in the forecast and the Weather Warning was canceled. If the potential for the criteria continues to exist, the Weather Warning will remain issued and the TAF will not be amended unless it does not contain the criteria.

A5.2.2. Ceiling/prevailing visibility. Decreases to less than or, if below, increases to equal or exceed 3,000 feet/3 statue miles, 1,000 feet/2 statute miles, or 200-feet/1/2-statue mile.

A5.2.3. Wind. Observed winds are 10 knots different from the forecast wind speed (including gusts) or the wind direction changes by more than 30 degrees when the observed or forecast wind speed (including gusts) are expected to be over 15 knots. For a forecast wind of 23012G17KT, an amendment will be issued if the direction changes by more than 30 degrees or if the speeds were 2 knots (or less) or 22 knots (or more) sustained; 7 knots (or less) or 27 knots (or more) gusts.

A5.2.4. Unforecast freezing precipitation. Begins or ends.

A5.2.5. Aircraft icing or turbulence (for CAT II aircraft). Beginning or ending, not associated with thunderstorms, from surface to 10,000 feet MSL which first meets, exceeds, or decreases below moderate or greater thresholds.

A5.2.6. Low-level wind shear. Not associated with thunderstorms is occurring and is expected to continue, or is expected to begin.

A5.2.7. Thunderstorms. Incorrect start or ending times.

A5.2.8. Representativeness. The forecaster determines the forecast to no longer be representative of the existing or expected conditions, even though it may not meet formal amendment thresholds.

A5.2.9. TEMPO (temporary) group. Becomes predominant (lasts for more than an hour [1 hour and 15 minutes for thunderstorms] and occurs 1/2 or more of the entire period) or doesn't occur at all.

A5.3. TAF example. Here is a TAF example as it would appear on an NTFS terminal and then a description of the elements of the TAF:

KRDR FCST 16-16 15015G20KT 7 VCSH BKN070 OVC250 LGT RME ICG 070-110
LGT TURB SFC-030 ALSTG29.30INS
TEMPO 17-20 BKN020 1/2 SHRA
FM 20 12010KT 7 NSW BKN025 LGT RME ICG 050-110 ALSTG29.29INS

BECMG 21-23 16015KT 7 OVC040 LGT RME ICG 040-080 ALSTG29.29INS
WND 23014KT AFT 04
BECMG 09-11 26014KT 7 BKN070 OVC250 LGT RME ICG 070-110
TEMP 03C AT 2100Z TEMP M01C AT 1100Z ALSTG29.44INS
LAST NO AMDS AFT 2323 NEXT 2823 07/ASH

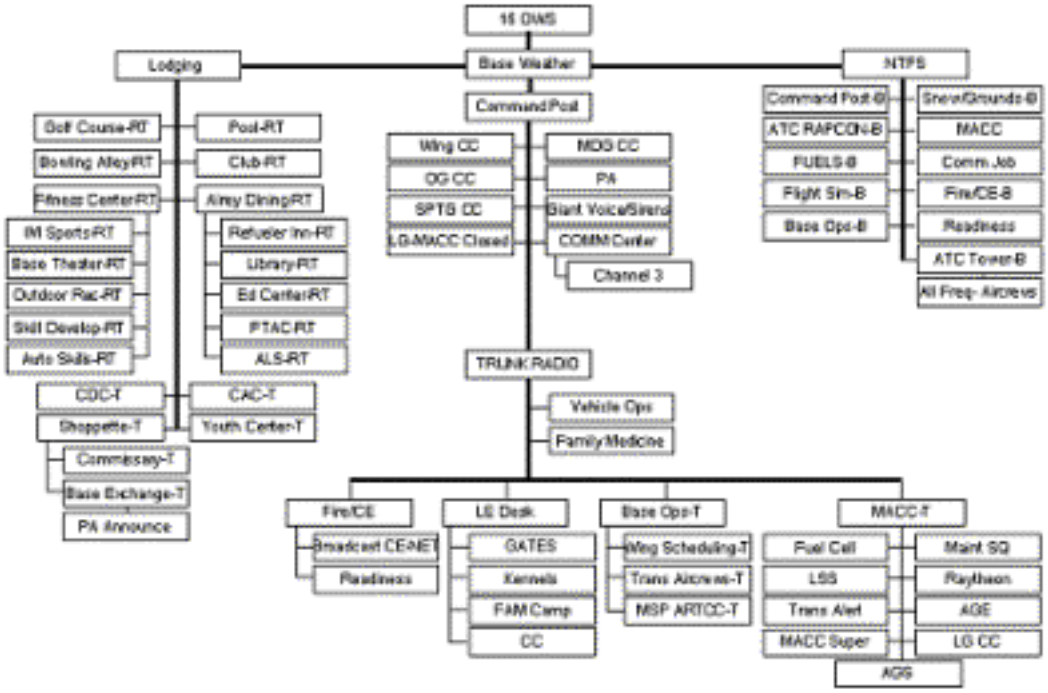
Content breakdown

KRDR	Station identifier
FCST	24 hour weather forecast
16-16	Forecast valid from 1600Z today until 1600Z tomorrow
15015G20KT	Winds from 150 degrees magnetic at 15 knots gusting to 20 knots
7 VCSH	7 statute miles visibility with showers in the vicinity
BKN070	Broken clouds (5/8 to 7/8 sky cover) at 7,000 feet
OVC250	Overcast clouds (8/8 sky cover) at 25,000 feet
LGT RME ICG 070-110	Light rime icing from 7,000 to 11,000 feet
LGT TURB SFC-030	Light turbulence from surface to 3,000 feet
ALSTG29.30INS	Altimeter setting (minimum of 29.30 inches of mercury)
TEMPO 17-20	Expect some or all of the conditions to intermittently change, not lasting more than 59 minutes and not half or more of the temporary period (in example, a 3 hour period is forecast, so 90 minutes is 1/2 total time) between 17 and 20Z. All other weather elements will remain the same.
BKN020	Broken clouds at 2,000 feet
1/2 SHRA	One-half statute mile visibility in moderate rain showers
FM 20	Expect the conditions above including any TEMPO group to change immediately at 2000Z
12010KT	Winds from 120 degrees magnetic at 10 knots
7 NSW	7 statute miles visibility with “No Significant Weather”
BKN025	Broken clouds at 2,500 feet
LGT RME ICG 050-110	Light rime icing from 5,000 to 11,000 feet
ALSTG29.29INS	Altimeter setting (minimum of 29.29 inches of mercury)
BECMG 21-22	Expect the conditions above to begin to change at 2100Z to the following by 2200Z
16015KT	Winds from 160 degrees magnetic at 15 knots
7	7 statute miles visibility

OVC040	Overcast clouds at 4,000 feet
LGT RME ICG 040-080	Light rime icing from 4,000 to 8,000 feet
ALSTG29.29INS	Altimeter setting (minimum of 29.29 inches of mercury)
WND 23014KT AFT 04	Winds will be from 230 degrees magnetic at 14 knots after 0400Z
BECMG 11-12	Expect the conditions above to begin to change at 1100Z to the following by 1200Z. These conditions are expected to remain until the end of the TAF valid time (i.e., 1800Z)
26014KT	Winds from 260 degrees magnetic at 14 knots
7	7 statute miles visibility
BKN070	Broken clouds at 7,000 feet
OVC250	Overcast clouds at 25,000 feet
LGT RME ICG 070-110	Light rime icing from 7,000 to 11,000 feet
TEMP 03C AT 2100Z	Expect a maximum temperature of 3°C at 2100Z
TEMP M01C AT 1100Z	Expect a minimum temperature of -1°C at 0300Z
ALSTG29.44INS	Altimeter setting (minimum of 29.44 inches of mercury)
LAST NO AMDS AFT 2323 NEXT 2823	The forecast function is closing at 2300Z on the 23rd of the month and not reopening until the 28th of the month at 2300Z. No amendments will be issued during this time 07/ASH (time the forecast was transmitted and the initials of the forecaster issuing the TAF).

Attachment 6

WEATHER WARNING NOTIFICATION PROCESS



B = Backup of NTFS requires manual contact
R = Restricted watch/warning criteria to summer events - Lightning, Severe Thunderstorms, Tornadoes
T = Ops time restricted: not always 24 hour operation - checklists will reflect

Attachment 7

WEATHER EQUIPMENT RESTORAL PRIORITIES

WEATHER EQUIPMENT RESTORAL PRIORITIES/MULTIPLE SYSTEM RESPONSE PRIORITIES		
SYSTEM	ELEMENT	RESPONSE TIMES SIGNIFICANT/MINIMAL
LAN/Internet Connectivity	CS/SCBN	Immediate/12 hours
FMQ-13 (Wind Equipment)	METNAV	Immediate/24 hours
WSR-88D PUP (Storm Detection Radar)	Radar Maint	Immediate/24 hours
GMQ-32 (Transmissometer) / FMN-1A (RVR Computer)	METNAV	Immediate/24 hours
ML-658 (Digital Altimeter-Barometer)	METNAV	Immediate/24 hours
GMQ-34 (Laser Beam Ceilometer)	METNAV	Immediate/24 hours
FMQ-8 (Temperature/Dew Point Set)	METNAV	Immediate/24 hours
PMSV Radio	Radio Maint	Immediate/24 hours
TMQ-34 (Tactical Observing System)	METNAV	48 hours/72 hours
TMQ-36 (Tactical Wind Equipment)	METNAV	48 hours/72 hours
GMQ-33 (Tactical Laser Ceilometer)	METNAV	48 hours/72 hours
ML-102 (Aneroid Barometer)	METNAV	72 hours/96 hours
ML-17 (Rain Gauge)	METNAV	72 hours/96 hours
ML-24 (Sling Psychrometer)	METNAV	72 hours/96 hours

SIGNIFICANT: Equipment totally unusable
MINIMAL: Equipment is in limited operation

Attachment 8

CUSTOMER RESPONSE TO ISSUED WATCHES AND WARNINGS

Table A8.1. Response to Tornado Watch Issue.

Agency	Customer Response to Watch or Warning
Youth Center	All youth and staff are to take shelter immediately. The location of shelter varies for each facility. For most facilities it would be in the interior bathrooms.
Fitness Center	Notify all personnel immediately. Secure building and equipment. Take shelter in the Fitness Center as directed.
Lodging	Contact everyone on weather notification tree. Notify guests.
CE Readiness	Notify all CE personnel utilizing electronic mail. Consider moving GOVs under cover. Review all applicable unit checklists.
Outdoor Rec	Notify all personnel immediately. Secure building and equipment. Notify Fam-Camp patrons of condition and shelter location. Take shelter in the Fitness Center as directed
MACC	LG/CC Notified, Key personnel notified in accordance with MACC Checklist #10.
LG	If aircraft is shifting due to wind, use caution when using K-Loader and consider parking aircraft into the wind.
ATC RAPCON	Information on ATIS is updated. Notify personnel.
Med Group	Notify personnel are notified. Review checklists for tornado warning.
SFS	Dispatch patrols to notify, via vehicle PA system, the following areas in order: trailer park, family camp, schools, Sunflake/Dakota housing, baseball fields, rest of base housing, dorms/lodging and rest of base. The desk sergeant will initiate Giant Voice as directed. All SF patrols and posts are briefed of the situation and squadron leadership is notified if on-duty.

Table A8.2. Response to Severe TS Hail Watch Issue.

Youth Center	All youth and staff are to take shelter immediately and stay away from the windows.
Fitness Center	Notify all personnel in building.
Lodging	Contact everyone on weather notification tree. Notify guests.
CE Readiness	Notify all CE personnel utilizing electronic mail. Consider moving GOVs under cover. Review all applicable unit checklists.
Outdoor Rec	Notify all personnel in building. Notify Fam-Camp patrons of condition and shelter location. Take shelter at Fitness Center.
MACC	LG/CC and key personnel notified.
LG	Personnel notified.
ATC RAPCON	Information updated on ATIS, key personnel notified.
Med Group	MDG/CC and key personnel notified.
SFS	Dispatch patrols to notify, via vehicle PA system, the following areas in order: trailer park, family camp, schools, Sunflake/Dakota housing, baseball fields, rest of base housing, dorms/lodging and rest of base. The desk sergeant will initiate Giant Voice as directed. All SF patrols and posts are briefed of the situation and squadron leadership is notified if on-duty.

Table A8.3. Response to High Wind (50+ Kts) Watch Issue

Youth Center	All youth and staff are to take shelter immediately. Everyone notified to stay away from the windows and take cover in the interior bathrooms.
Fitness Center	Notify all personnel in building. Secure building and equipment.
Lodging	Contact everyone on weather notification tree. Notify guests.
CE Readiness	Notify all CE personnel utilizing electronic mail. Complete the following as required: - Ensure base areas are policed and loose objects secured. - Ensure facilities are properly secured. - Release personnel as directed by 319 ARW/CC. - Monitor local Emergency Broadcast System (ESB) and local radio/television announcements for off-base traffic conditions and other important information.
Outdoor Rec	Notify all personnel in building. Secure building and equipment. Notify Fam-Camp patrons of conditions.
MACC	LG/CC and key personnel notified.
LG	Notify key personnel. Review checklist for high winds.
ATC RAPCON	Information on ATIS updated and key personnel notified (tower evacuates if winds reach 64 knots).
Med Group	MDG/CC and key personnel notified.
SFS	Dispatch patrols to notify, via vehicle PA system, the following areas in order: trailer park, family camp, schools, Sunflake/Dakota housing, baseball fields, rest of base housing, dorms/lodging and rest of base. The desk sergeant will initiate Giant Voice as directed. All SF patrols and posts are briefed of the situation and squadron leadership is notified if on-duty.

Table A8.4. Response to Lightning Watch Issue.

Youth Center	All youth and staff are to take shelter immediately. Everyone notified to stay away from windows and cease use of electronic equipment.
Fitness Center	Notify all personnel of conditions. Get all patrons out of pool area.
Lodging	Contact everyone on weather notification tree.
CE Readiness	Notify all CE personnel utilizing electronic mail.
Outdoor Rec	Notify all personnel of conditions.
MACC	Notify LG/CC and key personnel.
LG	All personnel must be prepared to implement lightning warning procedures without delay. Be alert for lightning activity.
ATC RAPCON	Information updated on ATIS.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Notify building custodians during the duty day to ensure electrical equipment is turned off and unplugged.

Table A8.5. Response to Freezing Precip Watch Issue.

Youth Center	All youth and staff are to come indoors. Everyone warned of the conditions. Check road conditions.
Fitness Center	Notify all personnel of conditions.
Lodging	Notify personnel.
CE Readiness	Notify all CE personnel utilizing electronic mail. Review all applicable unit checklists. Consider releasing non-essential personnel.
Outdoor Rec	Notify all personnel of conditions.
MACC	LG/CC and key personnel notified.
LG	Key personnel notified. Specific guidance depends on ambient temperature.
ATC RAPCON	Information on ATIS updated.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper cold weather gear. Contact CE for outdoor heaters as needed.

Table A8.6. Response to Blizzard Watch Issue.

Youth Center	All youth and staff are to stay indoors. Youth will have to have transportation home. Staff will be notified (depending on their home location) on when they may leave or make arrangements to stay on base.
Fitness Center	Notify all personnel of conditions.
Lodging	Notify personnel.
CE readiness	Notify all CE personnel utilizing electronic mail. Review all applicable unit checklists. Consider releasing non-essential personnel.
Outdoor Rec	Notify all personnel of condition.
MACC	LG/CC and key personnel notified.
LG	High reach baskets will not be used; loose equipment will be secured and unnecessary stands will be removed from the flightline; all open crew entry doors will be secured. All aircraft will have flaps up, coweling closed and latched; windows doors and hatches closed; engine dues covers and pitot covers installed, and at least a 56 K fuel load on board. Avoid using cargo door; when winds in excess or 64 knots, tow a/c hangared in nose docks clear of the structure and park.
ATC RAPCON	Information on ATIS updated and key personnel notified.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper cold weather gear. Contact CE for outdoor heaters as needed.

Table A8.7. Response to Blizzard Watch Issue.

Youth Center	All youth and staff are to stay indoors. Youth will have to have transportation home. Staff will be notified (depending on their home location) on when they may leave or make arrangements to stay on base.
Fitness Center	Notify all personnel of condition.
Lodging	Notify personnel.
CE readiness	Notify all CE personnel utilizing electronic mail. Review all applicable unit checklists. Consider releasing non-essential personnel.
Outdoor Rec	Notify all personnel of condition.
MACC	LG/CC and key personnel notified.
LG	High reach baskets will not be used; loose equipment will be secured and unnecessary stands will be removed from the flightline; all open crew entry doors will be secured. All aircraft will have flaps up, coweling closed and latched; windows doors and hatches closed; engine dues covers and pitot covers installed, and at least a 56 K fuel load on board. Avoid using cargo door; when winds in excess or 64 knots, tow a/c hangared in nose docks clear of the structure and park.
ATC RAPCON	Information on ATIS updated and key personnel notified.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper cold weather gear. Contact CE for outdoor heaters as needed.

Table A8.8. Response to Heavy Rain Watch Issue.

Youth Center	All youth and staff are warned of the situation and kept indoors if possible. Check for road conditions before departing in case of flash flooding.
Fitness Center	None.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail.
Outdoor Rec	None.
MACC	LG/CC and key personnel notified.
LG	See Blizzard Watch conditions.
ATC RAPCON	Information on ATIS updated and key personnel notified.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper foul weather gear.

Table A8.9. Response to Heavy Snow Watch Issue.

Youth Center	All youth and staff are warned of the situation and kept indoors if possible. Check for road condition before departing anywhere.
Fitness Center	None.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail. Review all applicable unit checklists. Consider releasing non-essential personnel.
Outdoor Rec	None.
MACC	LG/CC and key personnel notified.
LG	See Blizzard Watch.
ATC RAPCON	Information on ATIS updated and key personnel notified.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper cold weather gear. Contact CE for outdoor heaters as needed.

Table A8.10. Response to Tornado Watch Issue.

Youth Center	All youth and staff are to take shelter immediately—interior bathrooms are the shelter areas.
Fitness Center	Notify all personnel of condition. Close all doors and windows--secure area and take shelter.
Lodging	Contact everyone on weather notification tree. Notify guests.
CE Readiness	Personnel take cover and/or shelter upon issue of the warning. Respond to DCG upon recall by Command Post. Recall Shelter Management Team.
Outdoor Rec	Notify all personnel of condition. Close all door and windows--secure area and take shelter. Notify Fam-Camp patrons of condition and location of shelter. Take shelter at Fitness Center.
MACC	LG/CC and key Personnel notified.
LG	See Wind Watch. Advise all personnel seek shelter.
ATC RAPCON	Information updated on ATIS, Tower evacuated.
Med Group	All hospital personnel seek shelter in center of building. Front desk evacuated.
SFS	Dispatch patrols to notify, via vehicle PA system, the following areas in order: trailer park, family camp, schools, Sunflake/Dakota housing, baseball fields, rest of base housing, dorms/lodging and rest of base. The desk sergeant will initiate Giant Voice as directed. Initiate Inmate evacuation, if needed. All SF patrols and posts are briefed of the situation and advised to take cover if tornado is confirmed. Squadron leadership is notified and a telephone-standby recall may be initiated if directed by SFS/CC.

Table A8.11. Response to Tornado Warning Issue.

Youth Center	All youth and staff are to take shelter immediately and stay away from windows.
Fitness Center	Notify all personnel of condition – stay away from all door and windows and take shelter.
Lodging	Contact everyone on weather notification tree. Notify guests.
CE Readiness	Notify all CE personnel utilizing electronic mail. Move GOVs under cover.
Outdoor Rec	Notify all personnel of condition – stay away from all door and windows- take shelter. Notify Fam-Camp patrons of condition and location of shelter at Fitness Center.
MACC	LG/CC and key personnel notified.
LG	See actions for High Wind Watch.
ATC RAPCON	Information on ATIS updated.
Med Group	MDG/CC and key personnel notified.
SFS	Dispatch patrols to notify, via vehicle PA system, the following areas in order: trailer park, family camp, schools, Sunflake/Dakota housing, baseball fields, rest of base housing, dorms/lodging and rest of base. The desk sergeant will initiate Giant Voice as directed. All SF patrols and posts are briefed of the situation and advised to take cover if confirmed. Squadron leadership is notified and a telephone-standby recall may be initiated if directed by SFS/CC.

Table A8.12. Response to Severe TS Hail Warning Issue.

Youth Center	All youth and staff are to take shelter immediately and stay away from windows.
Fitness Center	Notify all personnel of condition – stay away from all door and windows and take shelter.
Lodging	Contact everyone on weather notification tree. Notify guests.
CE Readiness	Notify all CE personnel utilizing electronic mail. Move GOVs under cover.
Outdoor Rec	Notify all personnel of condition – stay away from all door and windows and take shelter. Notify Fam-Camp patrons of condition and location of shelter at Fitness Center.
MACC	LG/CC and key personnel notified.
LG	See actions for High Wind Watch.
ATC RAPCON	Information on ATIS updated.
Med Group	MDG/CC and key personnel notified.
SFS	Dispatch patrols to notify, via vehicle PA system, the following areas in order: trailer park, family camp, schools, Sunflake/Dakota housing, baseball fields, rest of base housing, dorms/lodging and rest of base. The desk sergeant will initiate Giant Voice as directed. All SF patrols and posts are briefed of the situation and advised to take cover if confirmed. Squadron leadership is notified and a telephone-standby recall may be initiated if directed by SFS/CC

Table A8.13. Response to High Wind (50+Kts) Warning Issue.

Youth Center	All youth and staff are take shelter immediately and stay away from the windows and take cover in the interior bathrooms.
Fitness Center	None.
Lodging	Contact everyone on weather notification tree. Notify guests.
CE Readiness	Notify all CE personnel utilizing electronic mail. Move all vehicles away from power lines and trees. Discontinue all routine outside activity.
Outdoor Rec	Notify personnel – Secure buildings and equipment. Notify Fam-Camp patrons of condition and location of shelter.
MACC	LG/CC and key personnel notified.
LG	Cargo doors will not be opened or left open and open doors will be closed immediately. All AGE and other assorted loose equipment will be secured inside a hangar or other covered facility to minimize aircraft damage by flying debris. If directed, ensure crew chiefs and AFE are available to support aircraft survival launch or dispersal procedures when MACC indicates there are flight crews available.
ATC RAPCON	If winds greater than 64 knots are forecast, evacuate tower. Information updated on ATIS.
Med Group	MDG/CC and key personnel notified.
SFS	Dispatch patrols to notify, via vehicle PA system, the following areas in order: trailer park, family camp, schools, Sunflake/Dakota housing, baseball fields, rest of base housing, dorms/lodging and rest of base. The desk sergeant will initiate Giant Voice as directed. All SF patrols and posts are briefed of the situation and advised to take cover if wind is too severe. Squadron leadership is notified and a telephone-standby recall may be initiated if directed by SFS/CC.

Table A8.14. Response to Wind (35-49 Kts) Warning Issue.

Youth Center	All youth and staff are take shelter and stay away from the windows.
Fitness Center	None.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail. Consider terminating outdoor activity. Ensure base areas are policed and loose objects secured. Ensure facilities are properly secured.
Outdoor Rec	Notify personnel of condition - Secure building and equipment outside. Notify Fam-Camp patrons of condition.
MACC	LG/CC and key personnel notified.
LG	See High Wind Watch.
Med Group	MDG/CC and key personnel notified.
ATC RAPCON	Information on ATIS updated.
SFS	Dispatch patrols to notify, via vehicle PA system, the following areas in order: trailer park, family camp, schools, Sunflake/Dakota housing, baseball fields, rest of base housing, dorms/lodging and rest of base. The desk sergeant will initiate Giant Voice as directed. All SF patrols and posts are briefed of the situation and advised to take cover if wind is too severe. Squadron leadership is notified and a telephone-standby recall may be initiated if directed by SFS/CC.

Table A8.15. Response to Freezing Precip Warning Issue.

Youth Center	All youth and staff are to come indoors and warned of conditions. Check road conditions.
Fitness Center	Advise personnel.
Lodging	Notify everyone on weather notification tree. Notify guests.
CE Readiness	Notify all CE personnel utilizing electronic mail. Review all applicable unit checklists. Consider releasing non-essential personnel.
Outdoor Rec	Advise personnel.
MACC	LG/CC and key personnel notified.
LG	See High Wind Watch.
ATC RAPCON	Information on ATIS updated.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper cold weather gear. Contact CE for outdoor heaters as needed.

Table A8.16. Response to Heavy Rain Warning Issue.

Youth Center	All youth and staff are warned of the conditions, kept indoors, and warned of road conditions before departing in case of flash flooding.
Fitness Center	None.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail.
Outdoor Rec	None.
MACC	LG/CC and key personnel notified.
LG	See High Wind Watch.
ATC RAPCON	Information on ATIS updated.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper foul weather gear.

Table A8.17. Response to Heavy Snow Warning Issue.

Youth Center	All youth and staff are warned of the conditions, kept indoors, and warned of road conditions before departing in case of flash flooding.
Fitness Center	None.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail. Review all applicable unit checklists. Consider releasing non-essential personnel.
Outdoor Rec	None.
ATC RAPCON	Information on ATIS updated and key personnel notified.
MACC	LG/CC and key personnel notified.
LG	See High Wind Watch.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper cold weather gear. Contact CE for outdoor heaters as needed.

Table A8.18. Response to Blizzard Warning Issue.

Youth Center	All youth and staff are warned of the condition. Kept indoors and have parents pick up youth to get home. Staff who live off base will be released according to the base plan. Other staff will be released as base command decides.
Fitness Center	Advise personnel.
Lodging	Notify everyone on weather notification tree. Notify guests.
CE Readiness	Notify all CE personnel utilizing electronic mail. Review all applicable unit checklists. Consider releasing non-essential personnel.
Outdoor Rec	Advise personnel.
MACC	LG/CC and key personnel notified.
LG	See Wind Watch.
ATC RAPCON	Information on ATIS updated and key personnel notified.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper cold weather gear. Contact CE for outdoor heaters as needed.

Table A8.19. Response to Lightning w/in 15 Warning Issue (Observed).

Youth Center	All staff and youth will be warned of the situation and made aware that if it comes within 5 miles, all will be brought indoors.
Fitness Center	Advise personnel of possible pool closure.
Lodging	Notify everyone on weather notification tree. Notify guests.
CE Readiness	Notify all CE personnel utilizing electronic mail.
Outdoor Rec	Advise personnel of possible closure of pool. Notify patrons at Fam-Camp of condition.
ATC RAPCON	Information on ATIS updated and key personnel notified.
MACC	LG/CC and key personnel notified.
LG	Personnel in affected locations or engaged in affected activities will take the following actions: Cease all outside activity and seek shelter inside a building or an enclosed vehicle/aircraft until the storm passes beyond the 5-mile limit. Enclosed hangar maintenance may continue. Nose dock aircraft maintenance will stop due to the exposure of the aircraft tail to lightning strikes. When base weather has downgraded the weather warnings, production supervisors will visually determine the actual safe operating conditions accordingly.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Notify building custodians during the duty day to ensure electrical equipment is turned off and unplugged.

Table A8.20. Response to Lightning w/in 5 Warning Issue (Observed).

Youth Center	All staff and youth will come indoors. All will stay away from windows and not use electrical equipment unless necessary.
Fitness Center	Remove all patrons from the water--close until condition passes.
Lodging	Notify everyone on weather notification tree. Notify guests.
CE Readiness	Notify all CE personnel utilizing electronic mail. Consider terminating outdoor activities.
Outdoor Rec	Remove all patrons from the water--close until condition passes. Notify patrons at Fam-Camp of condition.
ATC RAPCON	Information on ATIS updated and key personnel notified
MACC	LG/CC and key personnel notified.
LG	Personnel in affected locations or engaged in affected activities will take the following actions: Cease all outside activity and seek shelter inside a building or an enclosed vehicle/aircraft until the storm passes beyond the 5-mile limit. Enclosed hangar maintenance may continue. Nose dock aircraft maintenance will stop due to the exposure of the aircraft tail to lightning strikes. When base weather has downgraded the weather warnings, production supervisors will visually determine the actual safe operating conditions accordingly.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Notify building custodians during the duty day to ensure electrical equipment is turned off and unplugged.

Table A8.21. Response to 15-24 Kt Crosswind Warning Issue (Observed).

Youth Center	All staff and youth will be warned of the situation. Depending on the outside location youth will be moved indoors.
Fitness Center	None.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail.
Outdoor Rec	None.
MACC	LG/CC and key personnel notified.
LG	No specific actions.
ATC RAPCON	Information on ATIS updated and key personnel notified.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure personnel are advised about parking the vehicle into the wind to prevent the doors from being blown open when they depart the vehicle.

Table A8.22. Response to 25+ Kt Crosswind Warning Issue (Observed).

Youth Center	All staff and youth will be warned of the situation. Depending on the outside conditions and location, youth will be moved indoors or activities will be canceled.
Fitness Center	None.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail.
Outdoor Rec	None.
ATC RAPCON	Information on ATIS updated and key personnel notified.
MACC	LG/CC and key personnel notified.
LG	No specific actions dictated.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure personnel are advised about parking the vehicle into the wind to prevent the doors from being blown open when they depart the vehicle.

Table A8.23. Response to High Wind (25-34 Kts) Warning Issue (Observed).

Youth Center	All staff and youth will be sent indoors. All will be warned about flying debris if they have to depart. Parents will pick up youth: none are allowed to walk home.
Fitness Center	None.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail.
Outdoor Rec	None.
ATC RAPCON	Information on ATIS updated and key personnel notified.
MACC	LG/CC and key personnel notified.
LG	Loose equipment will be secured and unnecessary stands will be removed from the flightline. Production supervisors will ensure radome stands will be removed from the flightline and not used during winds of 24 knots or greater, unless directed/coordinated with maintenance supervision. All open crew entry doors will be properly secured with the support strut or closed entirely.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure personnel are advised about parking the vehicle into the wind to prevent the doors from being blown open when they depart the vehicle.

Table A8.24. Response to Wind Chill –15°F to –33°F Warning Issue (Observed).

Youth Center	Youth will not be allowed outdoors to play. Arriving and departing youths will be checked to ensure they are wearing proper attire. Parents will be contacted if youths are not properly dressed and the child will be brought items or picked up. Staff will be warned of the conditions and ensure they are properly dressed and have winter kits in their vehicles.
Fitness Center	Advise personnel.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail. Consider terminating outdoor activity.
Outdoor Rec	Advise personnel.
ATC RAPCON	Information on ATIS updated.
MACC	LG/CC and key personnel notified. MACC will broadcast temperature information on the maintenance radio nets and notify all squadron maintenance supervisions by telephone.
LG	Supervisors will alert personnel to the potential for cold injuries. Ensure workers are adequately dressed, and ensure workers are provided the opportunity to eat and drink properly. Provisions must be made to warm hands periodically. Anti-contact gloves should be used whenever possible. Bare metal must be sufficiently warmed prior to performing work. Head cover is mandatory. Initiate buddy system. Check buddy for cold injuries. Increase flightline supervision. Anti-contact gloves should be used whenever possible, work performed with bare hands may not exceed 1 minute. Use appropriate gloves when working with fluids. Begin work rest cycles. Workers must rest in a sufficiently warm area. Workers must be given 45 minutes breaks every 4 hours.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper cold weather gear. Contact CE for outdoor heaters as needed.

Table A8.25. Response to Wind Chill –34°F to –47°F Warning Issue (Observed).

Youth Center	Youth will not be allowed outdoors to play and youth arriving and departing will be checked to ensure they are wearing proper attire. Parents will be contacted if youth are not properly dressed and the child will be brought items or picked up. Staff will be warned of the conditions and ensure they are properly dressed and have winter kits in their vehicles.
Fitness Center	Advise personnel.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail. Consider terminating outdoor activity.
Outdoor Rec	Advise personnel.
ATC RAPCON	Information on ATIS updated and key personnel notified.
MACC	LG/CC and key personnel notified.
LG	Supervisors will alert personnel to the potential for cold injuries and ensure workers are adequately dressed and are provided the opportunity to eat and drink properly. Provisions must be made to warm hands periodically. Anti-contact gloves should be used whenever possible. Bare metal must be sufficiently warmed prior to doing the work. Head cover is mandatory. Initiate buddy system--check buddy for cold injuries. Increase flight line supervision. Anti-contact gloves should be used whenever possible, work performed with bare hands may not exceed 1 minute. Used appropriate gloves when working with fluids. Begin work rest cycles--recommend working 50 minutes with a 10-minute break. Workers must rest in a sufficiently warm area. Workers must be given 45 minutes breaks every 4 hours.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper cold weather gear. Contact CE for outdoor heaters as needed.

Table A8.26. Response to Wind Chill Below -48°F Warning Issue (Observed).

Youth Center	Youth will not be allowed outdoors to play and youths arriving and departing will be checked to ensure they are wearing proper attire. Parents will be contacted if they are not properly dressed and the child will be brought items or picked up. Staff will be warned of the conditions and ensure they are properly dressed and have winter kits in their vehicles. Unless base closes due to the temperature, the program will continue to be open. Youth will only be dropped off or picked up only by vehicle: NO walking home allowed. If parents can not do it, LE will be called to take children home.
Fitness Center	Advise personnel.
Lodging	None.
CE Readiness	Notify all CE personnel utilizing electronic mail. Terminate outdoor activity.
Outdoor Rec	Advise personnel.
ATC RAPCON	Information on ATIS updated and key personnel notified.
MACC	LG/CC and key personnel notified.
LG	Suspend all outdoor work.
Med Group	MDG/CC and key personnel notified.
SFS	Advise SF posts and patrols. Ensure posts have adequate heat and proper cold weather gear. Contact CE for outdoor heaters as needed.