BY ORDER OF THE COMMANDER
914TH AIRLIFT WING

914th AIRLIFT WING INSTRUCTION 15-102

10 May 2000

Weather

WEATHER SUPPORT FOR NIAGARA FALLS AIR RESERVE STATION

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This Instruction implements AFPD 15-1, *Atmospheric and Space Environmental Support.* It outlines weather support provided and received by the Niagara Falls ARS weather observing station to the 914 Airlift Wing (914 AW), 107 Air Refueling Wing (107 ARW), Niagara Falls Air Traffic Control Tower (ATCT), and other miscellaneous agencies.

1. General Responsibilities . Niagara Falls Weather (GSI/OSW), also referred to as the Base Weather Station (BWS) takes and disseminates weather observations; issues and disseminates observed weather advisories; disseminates weather warnings except for lightning warnings, which are issued and disseminated by the observer on duty; and provides other miscellaneous services requested by the 914 AW, 107 ARW, Niagara Falls ATCT, and other miscellaneous agencies.

1.1. Terms Explained:

1.1.1. Base Weather Station (BWS). The official weather-observing site for the USAF at Niagara Falls AFB, New York.

1.1.2. Continuous Weather Watch (CWW). Observers will monitor weather conditions continuously and perform no other significant duties. In addition to taking METAR observations, these observers take and disseminate observations as conditions occur that meet SPECI and LOCAL observation criteria.

1.1.3. Weather Warning (WW). A special notice provided to a supported agency when an established weather condition of such intensity, so as to pose a hazard to property or life, for which the supported agency must take protective action(s), is occurring or is imminent.

1.1.4. Weather Advisory (WA). A special notice provided to a supported agency when an established weather condition that could affect its operation is occurring.

1.1.5. Ceiling. The height of the lowest broken or overcast layer aloft, or the vertical visibility into a surface-based layer of obscuring phenomena.

1.1.6. Cumulonimbus (CB). A very dense, vertically developed cloud comprised of water droplets, ice crystals, and, possibly, hail. Associated with this cloud type are severe icing, wind shear, severe turbulence, microburst, and, often, lightning. A CB becomes a thunderstorm at the BWS when a certified weather observer hears thunder or assumes that thunder could be heard, but cannot be because the local noise level is too high.

1.1.7. Low Level Wind Shear (LLWS). A sudden change in wind speed and/or direction from the surface to 2000 feet, causing a detrimental change in aircraft performance.

1.1.8. Prevailing Visibility. The greatest horizontal visibility equaled or exceeded throughout at least 180 degrees of the horizon circle, not necessarily continuous. This visibility is evaluated from the BWS.

1.1.9. Airport Weather Information System (AWIS). A computerized information system utilized by the BWS to disseminate weather observations locally.

1.1.10. Meteorological Information Standard Terminal (MIST). A computerized information system, similar to a personal computer, utilized to disseminate weather observations longline.

1.2. Duty Priorities:

1.2.1. Complete Emergency War Order tasking.

1.2.2. Respond to aircraft/ground emergencies.

1.2.3. Take and disseminate surface observations locally.

1.2.4. Disseminate weather warnings and advisories locally.

1.2.5. Transmit surface observations longline.

1.2.6. Provide other services.

1.3. Weather Dissemination Systems:

1.3.1. AWIS. AWIS is the primary method of local dissemination for Niagara Falls Weather. The following is a list of online AWIS terminal recipients. See Attachment 1 for sample AWIS copies that the BWS produces.

1.3.1.1. Terminal #1. Buffalo Flight Service Station.

1.3.1.2. Terminal #2. Not online.

1.3.1.3. Terminal #3. Not online.

1.3.1.4. Terminal #4. Buffalo Terminal Radar Approach Control Facility (TRACON).

1.3.1.5. Terminal #5. Buffalo Air Traffic Control Tower.

1.3.1.6. Terminal #6. Buffalo National Weather Service Forecast Office.

1.3.1.7. Terminal #7. Niagara Falls Air Traffic Control Tower (ATCT).

1.3.1.8. Terminal #8. Niagara Falls Base Weather Station (BWS).

1.3.1.9. Terminal #9. Not online.

1.3.1.10. Terminal #10. 914 Airlift Wing Operations (GSI/OSA).

1.3.1.11. Terminal #11. 914 Airlift Wing Command Post (914 AW/CP).

1.3.1.12. Terminal #12. 107 Air Refueling Wing Operations Dispatch Center (107 ARW/ODC).

1.3.1.13. Terminal #13. Niagara Frontier Transportation Authority Field Office.

1.3.2. AWIS Backup. When AWIS is inoperative, observations will be disseminated via telephone to the Niagara Falls ATCT, Buffalo TRACON, 914 AW/CP, GSI/OSA, 107 ARW/ODC and Buffalo National Weather Service or to any terminal online that has the capability to transmit the entire observation to, at least, all of the other terminals listed above. NOTE: All agencies are responsible for care of their own AWIS's.

1.3.3. MIST. MIST is the primary method of longline dissemination for Niagara Falls Weather. The computer system is physically located in the BWS and is utilized to transmit weather observations, via dial-up modem, to longline customers. The computer system is also used to retrieve weather data relevant to BWS operations.

1.3.4. MIST backup. When MIST is inoperative, observations will still be available, locally, over the AWIS. However, longline observations will upload to the Air Force Weather Agency (AFWA) Web Server if available or called in to another Air Force Base Weather Office that has the ability to transmit observations longline.

1.4. Equipment Restoral Priorities. Due to the fact that the BWS has a potpourri of owners of its equipment, the National Weather Service, Federal Aviation Administration, as well as, the Air Force are involved in equipment restoral. When dysfunctional or suspected to be non-representative, equipment is logged out and the appropriate agency is contacted for repair.

1.4.1. The National Weather Service owns and services the hygrothermometer, direct-dial wind indicator, laser-beam ceilometers, 8" rain gauge, and various back-up equipment associated with the Automated Surface Observing System (ASOS). NOTE: The ASOS is owned by the Federal Aviation Administration, though maintenance is performed on the equipment by the National Weather Service.

1.4.2. The Federal Aviation Administration owns and services the AWIS.

1.4.3. The Air Force owns the Digital Barometer Altimeter Setting Indicator (DBASI), though maintenance is performed on the barometer by the Army TMDE Support Team. Additionally, the Air Force owns the Lightning Detection Network and MIST workstation and their associated software and maintenance is performed on the equipment in conjunction with Global Atmospherics Incorporated and the Air Force Weather Agency (AFWA), respectively.

1.5. Release of weather information to Non-DOD agencies/individuals:

1.5.1. Present Day's Weather. Current weather information may be given out to non-DOD customers provided they have a Letter of Agreement (LOA) on file with the Niagara Falls AFB Public Affairs Office. A listing of non-DOD customers who may receive weather information is located in the BWS.

1.5.2. Statistical Information. If data requested requires going in to the record, non-DOD customers will be referred to the United States Air Force Combat Climatological Center (AFCCC) or Air Force Weather Agency (AFWA), depending on the timeframe of the request.

1.5.3. Miscellaneous Weather Information. Non-DOD customers requesting miscellaneous weather data will be referred to the appropriate agency, depending upon the request. Agencies

most often referred to are the Buffalo National Weather Service Office, Buffalo Flight Service Station, or New York State Thruway Authority.

2. Observing Services. The BWS provides weather support to the military from 0700L to 2300L, 7 days a week, including holidays. The weather station (building 735) is located on the civilian side of the airfield, next to and west of the ATCT.

2.1. Surface Weather Observation:

2.1.1. Continuous Weather Watch (CWW). The weather observer will monitor weather conditions continuously and perform no other significant duties. A METAR observation will be taken, recorded, and disseminated once an hour. When changes to the current weather are detected, the observer will evaluate the need to take a SPECI or LOCAL observation. The process of taking a weather observation will include a physical check of observable weather conditions and reading and recording of instrumentation. The data will be encoded in METAR code for local and longline dissemination as required. Hourly observations are taken and disseminated between H+55 and H+59 and all observations require anywhere from 7 to 10 minutes to accomplish. The criterion for SPECI observations is listed in section 2.5; LOCAL observations in section 2.6.

2.2. Limitations:

2.2.1. Weather observers have a limited view of the horizon surrounding the base weather station. From the landing outside the weather station, which is the official observing site, the observer's view is obstructed in the southeastern quadrant by the ATCT, as well as the weather station itself.

2.2.2. Because of the uniqueness of job duties and single-man operation at the Niagara Falls BWS, the weather observer on duty may become unavoidably detained and may not be able to answer phone calls in a prompt manner. If this situation occurs, be patient, and try calling back a short while later.

2.3. Alternate Observing Site (AOS). The AOS, which is located in 107 ARW Operations, room 161 of building 912, will be used in the event of a BWS evacuation.

2.3.1. Reasons for a BWS evacuation may include, but is not limited to, fire, high winds, or obstruction to the BWS or otherwise unsafe conditions.

2.3.2. When evacuating or evacuation is imminent, a local message will be sent over the AWIS stating intention to evacuate as time and conditions permit. Transportation to the AOS will be provided by the 107 ODC or security police, if needed.

2.3.3. When the AOS is used, precise meteorological sensors will not be available. All data will be highly representative with the following limitations:

2.3.3.1. Wind speed and direction, cloud layer heights, and pressure will be estimated.

2.4. Special (SPECI) Observation Criteria. The following are the SPECI observation criteria at Niagara Falls and will be taken when the following conditions occur:

2.4.1. Ceiling**.** When the ceiling is observed to form below, decrease to less than or, if below, increase to equal or exceed:

2.4.1.1. 3,000 feet.

2.4.1.2. 1,500 feet.

2.4.1.3. 1,000 feet.

2.4.1.4. 800 feet.

2.4.1.5. 700 feet.

2.4.1.6. 600 feet.

2.4.1.7. 500 feet.

2.4.1.8. 400 feet.

2.4.1.9. 200 feet.

2.4.2. Sky Condition. A layer of clouds or obscuring phenomena aloft is observed below 800 feet and no layer was reported below this level in a preceding observation.

2.4.3. Visibility**.** The prevailing visibility is observed too decrease to less than, or if below, increases to equal or exceed:

2.4.3.1. 3 miles.

2.4.3.2. 2 ½ miles

2.4.3.3. 2 miles.

2.4.3.4. 1 1/2 miles.

2.4.3.5. 1 mile.

2.4.3.6. 3/4 mile.

2.4.3.7. 1/2 mile.

2.4.4. Tornado, Funnel Cloud or Waterspout**.** When observed, disappears from sight, or ends.

2.4.5. Thunderstorms**.** When a thunderstorm begins or ends (15 minutes since thunder is last heard).

2.4.6. Precipitation.

2.4.6.1. Hail begins or ends.

2.4.6.2. Freezing precipitation begins, ends, or changes in intensity.

2.4.6.3. Ice pellets begin, end, or change in intensity.

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

2.4.7. Wind.

2.4.7.1. Squall (SQ). A strong wind characterized by a sudden onset in which the wind speed increases at least 16 knots and is sustained at 22 knots or more for at least one minute. A SPECI is not required to report a squall if one is currently in progress.

2.4.7.2. Wind Shift. The wind direction changes by 45 degrees or more in less than 15 minutes with sustained winds of 10 knots or more throughout the wind shift.

2.4.8. Runway Conditions**.** Upon receipt, the observer will transmit runway condition readings as a SPECI or append to a METAR or SPECI being taken at the time of notification.

2.4.9. Tower Visibility. Upon receipt of a reportable tower visibility value, when either tower or weather's visibility is less than 4 miles and they differ by a reportable SPECI criteria value, transmit a SPECI with the tower visibility as a remark.

2.4.10. Miscellaneous:

2.4.10.1. Real-World Nuclear Accident. When notified of a real-world nuclear accident, the observer will take and disseminate (locally and longline) a SPECI. The observer will append the remark "AEROB" as the last remark on the longline disseminated observations.

2.4.10.2. Volcanic Ash. When first observed.

2.4.10.3. Any other meteorological situation which, in the opinion of the observer, is critical to the safety of aircraft operation.

2.4.11. Single Element SPECI. Single element SPECIs will be taken only when a delay in reporting all elements of the SPECI would cause an immediate threat to life or property, e.g.: "TORNADO SW MOV NE."

2.4.12. SPECI Upon Resumption of Observing Services. The observer will take, disseminate, and record a SPECI within 15 minutes after returning to duty following a break in hourly coverage if a METAR was not filed as scheduled during that 15-minute period.

2.5. Local Observation Criteria. The following are the local observation criteria at Niagara Falls that will be taken when the following conditions occur:

2.5.1. Aircraft Mishap. Immediately following notification or sighting of an aircraft mishap at or near the station unless there has been an intervening METAR or SPECI.

2.5.1.1. These observations consist of elements normally included in a locally disseminated METAR with the exception of sea level pressure and are identified in remarks as "(ACFT MSHP)." This remark is not disseminated locally or longline.

2.5.1.2. Local observations are not required for in-flight emergencies; i.e., those declared to reflect an unsafe condition, which could adversely affect the safety of the aircraft. However, such in-flight emergencies should alert the observer on duty to intensify their weather watch to ensure maximum support to the aircraft in distress. If the in-flight emergency results in an accident or incident, the aircraft mishap LOCAL is then required. NOTE: In case of doubt, the observer should take the observation.

2.5.2. Ceiling. When the ceiling is observed to increase to or decrease to less than 300 feet, provided there is no intervening SPECI or METAR observation.

2.5.3. Altimeter Setting. At a frequency not to exceed 35 minutes, when there has been a change of 0.01 inch Hg (0.3 hPa) or more since the last locally disseminated value. This element may be taken and disseminated as a "single element" local.

2.5.4. Winds**.** A single element local containing the current winds and current crosswind component value will be issued upon the initial occurrence of the critical crosswind component of 10 knots and, also, upon the initial occurrence of 25 knots.

2.5.5. Miscellaneous**.** Any other meteorological situation that, in the opinion of the observer, is significant to local operations.

3. Weather Warnings and Advisories. Certain weather conditions can cause loss of life, damage property, create a safety hazard, or significantly hinder a supported agencies operations. The base weather station provides supported base agencies with notice of these conditions or the possibility for these conditions to exist. It is then up to the supported agencies to take the appropriate actions. NOTE: A certified weather observer is on duty to support military operations from 0700L to 2300L, 7 days a week, including holidays.

3.1. Weather Warning Criteria:

3.1.1. Scott Air Force Base 15th Operational Weather Squadron relays all weather warnings issued by Air Force Global Weather Central (AFGWC) to the Niagara Falls BWS, with the exception of lightning warnings, which are issued by BWS personnel. On occasion, a weather warning will be issued from AFGWC via the MIST workstation. In any case, these warnings are disseminated via telephone to the 914 AW/CP, GSI/OSA, 107 ARW/ODC, and the Niagara Falls ATCT (lightning warnings only). The area covered by these warnings will not be greater than a 5 nautical mile radius from the center of the runway complex. Weather warnings will include the elements of concern; forecast time of occurrence, and duration. Desired lead times for notification are listed next to each of the following criteria, except for the lightning within 5 nautical miles warning, which is an observed warning, and, thus, does not require a lead-time.

3.1.1.1. Tornadoes (30 minutes).

3.1.1.2. Severe Thunderstorms. Thunderstorms are defined as severe when winds are 50 knots or greater, and/or hail 3/4 inch or greater in diameter (120 minutes).

3.1.1.3. Moderate Thunderstorms. Thunderstorms are defined as moderate when winds are between 35 knots and 49 knots, and/or hail between 1/2 inch but less than 3/4 inch in diameter (120 minutes).

3.1.1.4. Thunderstorms. Winds less than 35 knots and/or hail less than 1/2 inch (120 minutes).

3.1.1.5. Surface Winds 50 knots or greater (non-convective) (120 minutes).

3.1.1.6. Surface Winds between 35 knots and 49 knots (non-convective) (120 minutes).

3.1.1.7. Freezing Precipitation. (120 minutes).

3.1.1.8. Rain 2 inches or more in 12 hours (120 minutes).

3.1.1.9. Snow 2 inches or more in 12 hours (120 minutes).

3.1.1.10. Lightning within 5 nautical miles.

3.1.2. During non-duty hours (including weekends), when unable to contact the 914 AW/CP or GSI/OSA, the observer will contact the 914 AW Security Forces (SF) and Fire Department. The observer will then contact selected personnel from the 914 AW after duty hours weather notification list, provided by the Base Wing Commander (914 AWI 15-101), until someone is reached. The after duty hours weather notification list is implemented for the following warning criteria:

3.1.2.1. Tornadoes.

3.1.2.2. Severe Thunderstorms.

3.1.2.3. Moderate Thunderstorms.

3.1.2.4. Surface Winds 50 knots (non-convective).

3.1.2.5. Snow 2 inches or more in 12 hours.

3.1.3. For the following weather warning criteria, when unable to contact the 914 AW/CP or GSI/OSA, the observer will contact the 914 AW/SF and Fire Department and then end notification:

3.1.3.1. Thunderstorms.

3.1.3.2. Surface Winds 35 to 49 knots (non-convective).

3.1.3.3. Freezing Precipitation.

3.1.3.4. Rain 2 inches or more in 12 hours.

3.1.3.5. Lightning within 5 nautical miles.

3.1.4. A weather warning issued during non-duty hours that is still in effect at 0730L will be re-disseminated to all agencies.

3.1.5. Upon the occurrence of severe weather at the Niagara Falls Air Reserve Station the observer on duty will fill out an OPREP 3 - BEELINE REPORT severe weather occurrence worksheet IAW AFMAN 10-206. Severe weather includes:

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

3.1.5.2. Hail ¾ inch or larger.

3.1.5.3. Tornadoes.

3.1.5.4. The observer will then contact the 914 AW/CP and forward them the information listed on the BEELINE REPORT.

3.2. Weather Advisory Criteria:

3.2.1. The Niagara Falls BWS personnel have the responsibility for the issuance of observed weather advisories when certain criteria exist. The area covered will not be greater than a 5 nautical mile radius from the center of the runway complex (except for thunderstorm first observed) and the advisories will include the elements of concern. Next to each advisory listed below is the agency or agencies contacted.

3.2.1.1. Notification by Niagara Falls ATCT or other appropriate agency of an aircraft experiencing low-level wind shear (LLWS) (914 AW/CP, GSI/OSA, 107 ARW/ODC).

3.2.1.2. Equivalent wind chill temperature of -25 degrees (F) or less (914 AW/CP, GSI/OSA, 107 ARW/ODC). NOTE: Wind chill will be calculated by the observer on duty using the average wind speed and a standard wind chill chart available at the BWS.

3.2.1.3. Thunderstorm first observed (914 AW/CP, GSI/OSA, 107 ARW/ODC). NOTE: A thunderstorm is first observed when thunder is heard by the observer on duty, usually at or around 10 nautical miles distance from the station.

3.2.1.4. Crosswind component first reaches the critical level of 10 knots and also upon the initial occurrence of 25 knots (107 ARW/ODC). Additionally, hourly updates will be given if the

107 ARW/ODC AWIS is inoperative. NOTE: Crosswind values available in tabular form in the BWS are based on mathematical calculation of crosswinds relative to runway 28R.

3.2.1.5. Ceiling and/or visibility first equal to or below 500 feet and/or ¾ mile, respectively (914 AW/CP). NOTE: This procedure will be accomplished as soon as humanly possible during adverse weather situations.

3.2.2. A weather advisory issued during non-duty hours that is still in effect at 0730L will be re-disseminated to the appropriate agencies (914 AW/CP, GSI/OSA, 107 ARW/ODC).

4. Reciprocal Support . This section defines support from various base agencies, required by the BWS in order to provide optimal customer support.

4.1. 914 AW Command Post will:

4.1.1. Notify proper base agencies, upon receipt from BWS, of a weather warning or advisory listed in chapter 3 IAW 914 AWI 15-101.

4.1.2. Relay runway surface condition/runway condition readings upon receipt to the BWS IAW 914 AWI 13-201.

4.1.3. Notify BWS of all alerts and exercises.

4.2. 914 AW Base Operations will:

4.2.1. Notify proper base agencies, upon receipt from BWS, of a weather warning or advisory listed in chapter 3 IAW AFI 13-213.

4.2.2. Provide BWS with runway surface condition/runway condition readings when required IAW 914 AWI 13-201.

4.3. 107 ARW/ODC will:

4.3.1. Provide runway surface condition/runway condition readings upon receipt to the BWS IAW 914 AWI 13-201 whenever they have flying operations and 914 AW Base Operations is not manned.

4.3.2. Provide access to the alternate observing site (AOS) located in room 161, building 912. Additionally, provide transportation to the AOS if needed.

4.3.3. Notify BWS of all alerts and exercises.

4.3.4. Notify the BWS of any last second changes to flying schedule.

4.4. Niagara Falls Air Traffic Control Tower will:

4.4.1. Notify the BWS of any significant weather in the southeastern quadrant that cannot be seen by the BWS.

4.4.2. Notify the BWS whenever the tower visibility differs from BWS visibility by one or more reportable values and the prevailing visibility is less than 4 miles.

4.5. 914 AW/SFS will:

4.5.1. Relay weather warnings to base agencies between 2300 – 0700 LST, IAW 914 AWI 15-101, that are issued to them by the 15 Operational Weather Squadron, Scott AFB, IL.

4.5.2. Call the BWS by 0715 LST when a weather warning was issued between 2300 – 0700 LST, whether the warning is currently in effect or not.

4.5.3. Provide back-up transportation to the AOS if the 107 ARW/ODC cannot be reached (see section 2.4.2 of this instruction).

GERALD C. VONBERGE, Colonel, USAFR
Commander

Attachment 1

SAMPLE AWIS COPIES

A1.1. METAR

A1.1.1.

METAR KIAG 061155Z

35011KT 5SM –TSRA BR

SCT030CB SCT080 OVC110

18/15 A2970

RMK OCNL LTGICCG TS W-NW MOV E SLP057 60010 70020 8/97/ 9/35/

53030 WR//

XW 10KT

TS

A1.1.2.

METAR KIAG COR 061555Z

25009KT 20SM

FEW150 FEW250

17/12 A3001

RMK SLP178 8/078 9/011

COR SENT FOR…

JF

A1.2. SPECI

A1.2.1.

SPECI KIAG 062210Z

04015G27KT 1/2SM SHSN BLSN

VV005

M07/M07 A2960

GP

A1.2.2.

SPECI KIAG 061302Z

36005KT 20SM

FEW025

M12/M18 A3040

RMK LSRIR10PWET

JW

A1.3. LOCAL

A1.3.1.

LOCAL KIAG 061930Z

WND 19010KT

XW 10KT

JA

A1.3.2.

LOCAL KIAG 062010Z

CIG OVC003

TS

A1.4. URGENT.

A1.4.1.

URGENT

SPECI KIAG 061720Z

TORNADO NW MOV UNKN

RW