

3^d Weather Squadron

Integrity - Service - Excellence



Air Traffic Control Weather Certification

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Current as of: 18 August 2015



Overview

- Requirements/References
- RGAAF (KGRK) Observations
- HAAF (KHLR) Observations
- Cooperative Weather Watch
- Visibility
- Significant Weather
- Dissemination of Weather Information
- METAR Observation Code & SPECI Criteria
- PIREP Code
- Terminal Aerodrome Forecast
- Weather Watches/Warnings/Advisories





Training Objectives

- **Ensure ATC personnel are able to take limited surface weather observations**
- **Ensure ATC personnel understand the Cooperative Weather Watch (CWW) Program**
- **Educate ATC personnel on weather observations and other weather products produced/disseminated in support of Fort Hood aviation/ground operations**



Requirements/References

- **TC 3-04.81** *Air Traffic Services Facility Operations, Training, Maintenance, and Standardization (6-3 and 6-4)*
 - All controllers should complete initial qualification (Q) weather training before starting phase II but must have completed this weather training prior to being rated
 - Weather training is valid for a 12-month period and must be renewed by or prior to the anniversary month of their previous training
 - As part of these certifications, the ATC chief/facility chief will ensure comprehensive training is given to controllers by weather personnel on tower (prevailing) visibility



Requirements/References

- **TC 3-04.81** *Air Traffic Services Facility Operations, Training, Maintenance, and Standardization (6-3 and 6-4)*
 - Tower visibility training will include—
 - **Definitions**
 - **Visibility determination criteria and procedures**
 - **Reporting procedures**
 - **METARS training includes—**
 - **Reading aviation weather reports**
 - **Abbreviations**
 - The results of initial (Q) and annual training (P) will be entered on DA Form 3479 in section II
 - Required entries in section II include the date training was completed, total training time, and test results if applicable



Requirements/References

- **AR115-10 (AFI15-157)** *Weather Support for the U.S. Army, “The AF trains Army--Personnel to take and disseminate supplemental weather observations in support of Army operations. This training includes, but is not limited to, **air traffic controllers**, military intelligence, aviation support, and Special Operations Forces personnel assigned supplemental observing duties.”*



Requirements/References

- **AFMAN15-111** (Change 1) - *Surface Weather Observations* (2.4.2.)
 - Weather technicians will task-certify ATC personnel to evaluate prevailing visibility values from the control tower
 - Weather technicians will also ensure ATC personnel can operate the applicable weather equipment in ATC facilities



Requirements/References

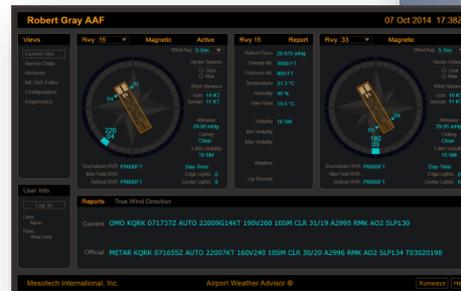
- **FH Reg 115-1** *Weather Support to III Corps and Fort Hood*
 - Defines responsibilities of:
 - 3 WS (RGAAF Weather Station)
 - Directorate of Aviation Operations (DAO)
 - Defines the Cooperative Weather Watch (CWW) Program





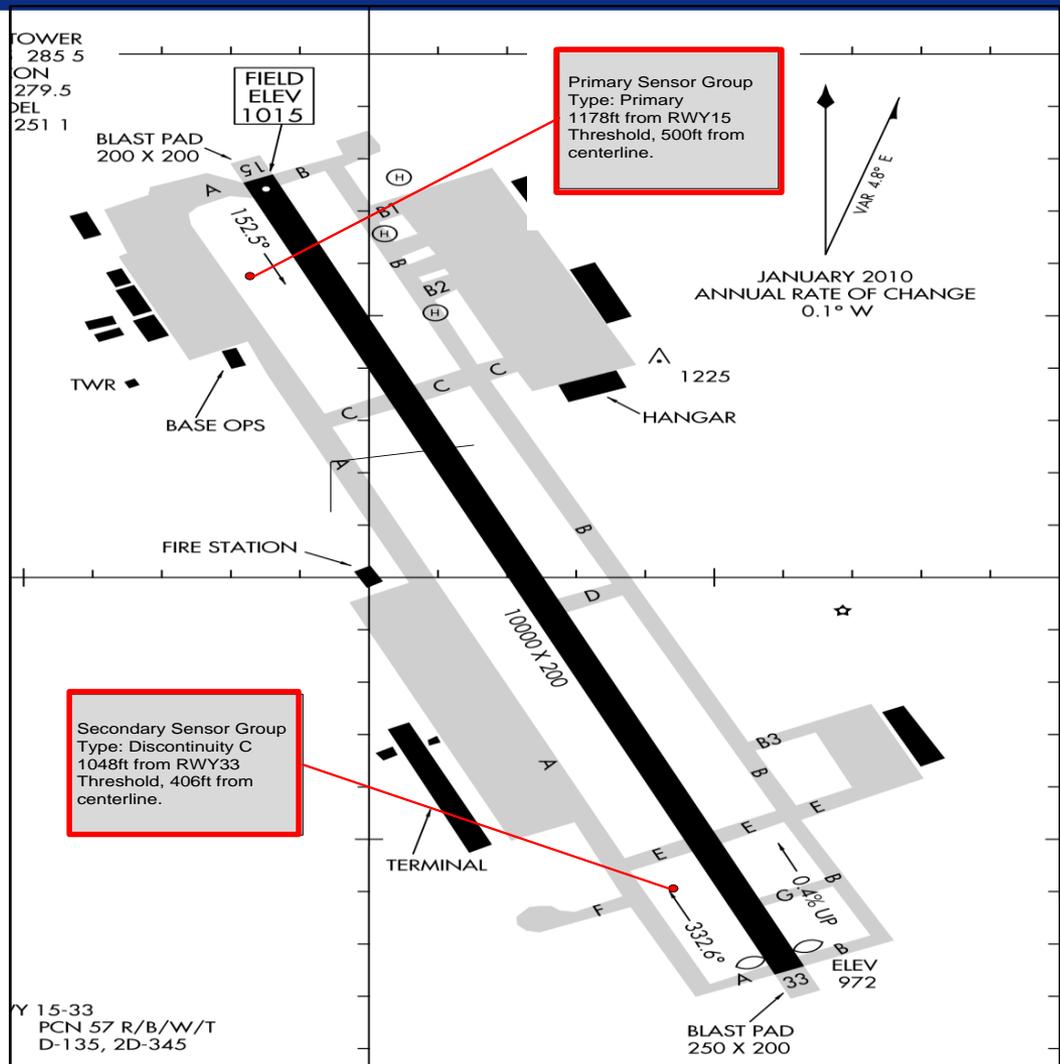
RGAAF (KGRK) Observations

- RGAAF FMQ-23 Automated Meteorological Observing System (AMOS) provides automated weather observations for **KGRK** IAW AFMAN15-111
 - Observations are automatically encoded/disseminated continuously
 - A position qualified weather technician is available to augment (supplement/back-up) system 24/7
 - SPECI criteria can be found in III Corps & Fort Hood Regulation 115-1, Appendix C





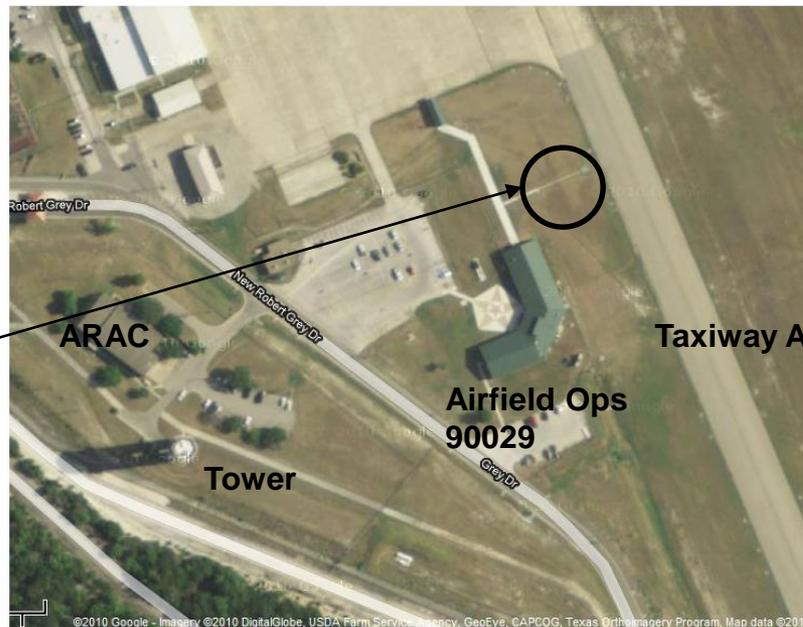
RGAAF (KGRK) FMQ-23 Sensor Locations





RGAAF (KGRK) Augmentation

- During augmentation operations, the official observation point is north of Bldg 90029 (Airfield Ops) midpoint of sidewalk (vicinity of rain gauge)



- This location has a 360-degree view of the airfield complex, but hills, airfield buildings, and slope of the runway to the south through northwest restrict view of the sky and/or horizon and horizontal visibility in those directions
- Glare from medium/high intensity lights may limit ability to make accurate reports of sky conditions at night



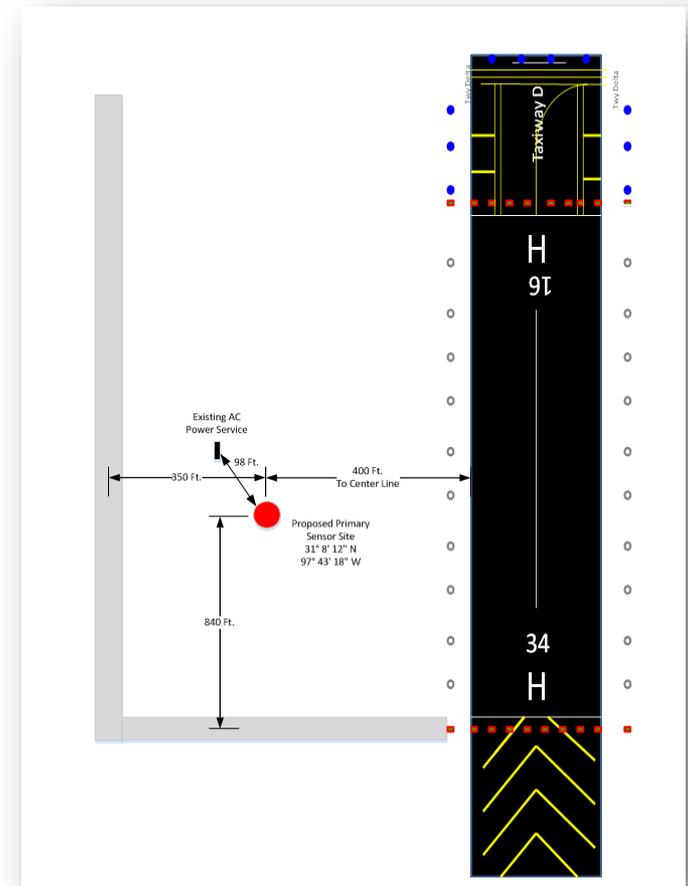
RGAAF (KGRK) Observations

- The FMQ-23 disseminates observations continuously
- When weather technicians are required to augment observations, they conduct a Basic Weather Watch (BWW)
 - Weather technicians cannot monitor weather continuously
 - They may not detect and report all weather changes as they occur, so the BWW program IAW AFMAN 15-111 has been implemented to establish minimum requirements to ensure proper level of weather watch is maintained for flight safety
- **It is important tower personnel notify the weather station anytime they observe conditions different from the current observation or spot significant weather (i.e., tornadoes, lightning, hail, decreasing visibility/ceiling)**



HAAF (KHLR) Observations

- HAAF (**KHLR**) observations also fully automated via FMQ-23 AMOS
- Augmentation only for Back-up of sensors/system
- Weather technician must travel from RGAAF to HAAF to augment
- Official observation point for augmentation is from the HLR ATC Tower





Automated Observations Limitations / Disadvantages

- Inherit limitations especially during rapidly changing weather conditions when some delay in reporting cloud ceilings/visibilities may occur
- Limited area representation (~3-5 km around the sensor)
- Clouds only detected over sensor(s); not representative of entire sky from horizon to horizon as seen by humans
- Visibility determination limited by small sampling volume; does not account for all sectors



Automated Observations Advantages

- Sensor location at the touchdown zone of the runway
- Consistency of observations—eliminates human subjectivity
- Real-time continuous measuring of parameters 24/7
(forecasters conduct basic weather watch...)
- Generally more accurate/reliable
- Generally free of reading errors
- Automatic QC applied during collection and reporting
- Automatic message generation and transmission



What is Augmentation?

- The process of having position-qualified weather technicians manually **add or edit data** to an observation generated by a properly sited AMOS
- Two augmentation processes: **supplement & back-up**
 - **Supplementing** is a method of manually adding meteorological information to an automated observation that is beyond the capabilities of the AMOS to detect and/or report (i.e, tornadoes, funnel clouds, hail)
 - **Back-up** is the method of manually providing meteorological data and/or dissemination to an AMOS observation when the primary automated method is not operational or unavailable due to sensor and/or communication failure



Mandatory Supplement Weather Conditions

Mandatory Supplementary Weather Conditions – Body of Report (Note 1) ☐

Tornado (+FC) (Note 2) (Note 3) ☐

Funnel Cloud (FC) (Note 2) (Note 3) ☐

Waterspout (+FC) (Note 2) (Note 3) ☐

Hail (GR) (1/4" or greater—warning criteria) ☐

Volcanic Ash (VA) ☐

Ice Pellets (PL) ☐

Mandatory Supplementary Weather Conditions – Remarks Section of Report (Note 1) ☐

Funnel Cloud (Tornadoic Activity: B/E(hh)mm LOC/DIR (MOV)) (Note 2) ☐

Snow Depth (Note 4) ☐

Tower Visibility (see AFMAN15-111, 2.16.2.3.) (Note 5) ☐

NOTES: ¶

1. References for coding of augmentable weather conditions are located in AFMAN15-111, Chapter 13. ¶
2. The immediate reporting of funnel clouds takes precedence over any other phenomena. ¶
3. Log on to JET and be prepared to supplement for tornadoic activity whenever a weather warning is issued or a watch is valid for the phenomena. ¶
4. All Remarks and Additive Data references are provided in AFMAN15-111, Attachment 3. ¶
5. Augment the KGRK, and KHLR* (only during HAAF operating hours) to include a tower visibility remark in the next METAR or SPECI when either the surface prevailing visibility or the control tower visibility is less than 4 SM and the control tower visibility differs from the surface prevailing visibility by a reportable value. Refer to AFMAN15-111, Atch 3 (Rmk #6) for proper format. ☐

Modified from AFMAN15-111 (Table 3.1), 27 February 2013 and IC-1, 13 January 2015 ¶

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Mandatory Supplement

Tower Visibility – Cooperative Weather Watch

- Weather Technicians will:
 - Re-evaluate surface prevailing visibility, as soon as practicable, upon initial receipt of a differing control tower value and upon receipt of subsequent reportable changes at the control tower level
 - Use control tower values of prevailing visibility as a guide in determining the surface visibility when the view of portions of the horizon is obstructed by buildings, aircraft, etc.
 - **Augment the KGRK and KHLR (only during HAAF operating hours) to include a tower visibility remark in the next METAR or SPECI when either the surface prevailing visibility or the control tower visibility is less than 4SM and the control tower visibility differs from the surface prevailing visibility by a reportable value**



Local ORM-based Augmentation Procedures

- **Forecasters will augment the KGRK AMOS for the visibility threshold of 3SM and/or ceiling of 3,000 FT**
 - Meaning, unless the reported or actual visibility is less than **3SM**, or reported or actual ceiling is less than **3,000 feet**, do not augment the observation
 - For example, if the KGRK AMOS is reporting visibility as 10SM, but manual observing procedures indicate the visibility is 4SM, do not augment
 - On the other hand, if the sensor is reporting 1/2SM, but manual observing procedures indicate the visibility is 7SM, augment the KGRK AMOS



Local ORM-based Augmentation Procedures

- Forecasters will augment (back-up) the KGRK AMOS anytime it reports “**UP**” (**Unknown Precipitation**) and will encode the actual present weather occurring
- Forecasters will augment (back-up) the KGRK AMOS anytime it does not accurately encode **the occurrence (beginning/ending) of thunderstorms**
- Forecasters will augment (back-up) the AMOS anytime RGAAF or HAAF ATC notifies the forecaster the AUTO observation does not accurately reflect current conditions **and ATC personnel believe flight safety is at risk**



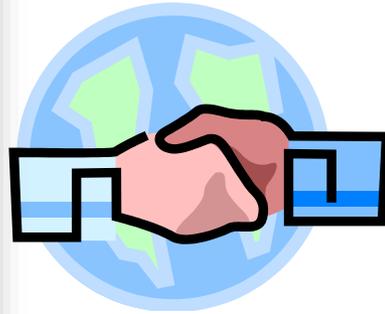
HAAF (KHLR) AMOS Back-up Procedures

- A forecaster will proceed to the HAAF Tower to back-up the KHLR AMOS during airfield operating hours (Mon-Fri, 0800-2400, except federal holidays) when:
 - The KHLR AMOS ceiling and/or visibility sensor are inoperative AND weather conditions are/or forecast (within 2 hours) to be **IFR (ceiling <1000FT or visibility <3SM)**
 - The KHLR AMOS **system is fully inoperative** or a **communication failure**
- HAAF ATC Tower personnel may request on-site augmentation by a weather forecaster due to any condition that would adversely impact flight/ground operations
- **Flight safety will always be the highest priority**



Cooperative Weather Watch

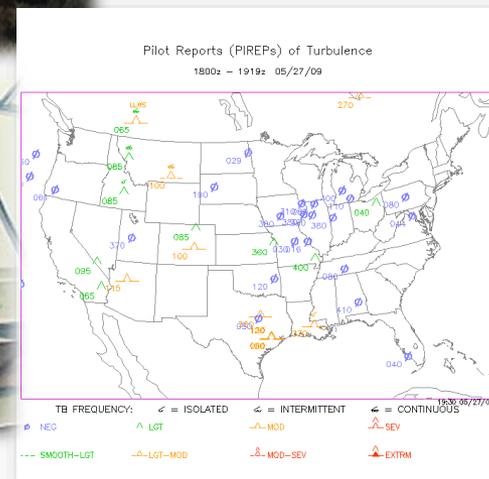
- AFMAN15-111 requires AF weather units to establish a ***cooperative weather watch*** with ATC and other appropriate base/post agencies





Cooperative Weather Watch

- **Of primary concern:**
 - Report of **tower visibility** different from prevailing surface visibility
 - Local PIREPs
 - Any occurrence of previously unreported weather conditions that could affect flight safety or be critical to the safety or efficiency of other local operations and resources





3 WS Responsibilities

- Re-evaluate surface prevailing visibility, as soon as practicable, upon initial receipt of a differing control tower value and upon receipt of subsequent reportable changes at the control tower level
- Use control tower values of prevailing visibility as a guide in determining the surface visibility when the view of portions of the horizon is obstructed by buildings, aircraft, etc.

NOTE: Presence of a surface-based obscuration, uniformly distributed to heights above the level of the tower, is sufficient reason to consider the prevailing visibility the same as at the control tower level



3 WS Responsibilities

- Augment KGRK and KHLR (only during HAAF operating hours) automated observation as applicable to include a tower visibility remark in the next METAR or SPECI when either the surface prevailing visibility or the control tower visibility is less than 4 statute miles (SM) and the control tower visibility differs from the surface prevailing visibility by a reportable value
- Disseminate a SPECI observation with the tower visibility remark when notified by the control tower that tower visibility has decreased to less than or, if below, increased to equal or exceed 1,2, or 3 statute miles (per FAA JO 7110.65V Air Traffic Organization Policy) and the control tower visibility differs from the prevailing visibility (KGRK only).



Cooperative Weather Watch

- ATC directives (i.e., FAAO JO 7110.65, Air Traffic Control) require task certified control tower personnel to make tower prevailing visibility observations when the prevailing visibility at the usual point of observation, or at the tower level, is less than **4 miles**
- Control tower personnel task certified to take visibility observations are instructed by their agency to **notify** the weather technician when the observed tower prevailing visibility decreases to less than, or increases to equal or exceed **4 miles**



ATC Responsibilities

- Notify the RGAAF weather station when the RGAAF and/or HAAF ATC tower prevailing visibility decreases to less than or, increases to equal or exceed, 4 SM
- Report all changes of one or more reportable visibility values to the RGAAF weather station when the prevailing visibility at the tower or the surface is less than 4 SM
- Relay PIREPs to the RGAAF weather station not later than 5 minutes after receipt (or as ATC duties allow); in addition, relay any occurrence of previously unreported weather conditions that affect flight safety or be critical to the safety or efficiency of other local operations and resources



Visibility

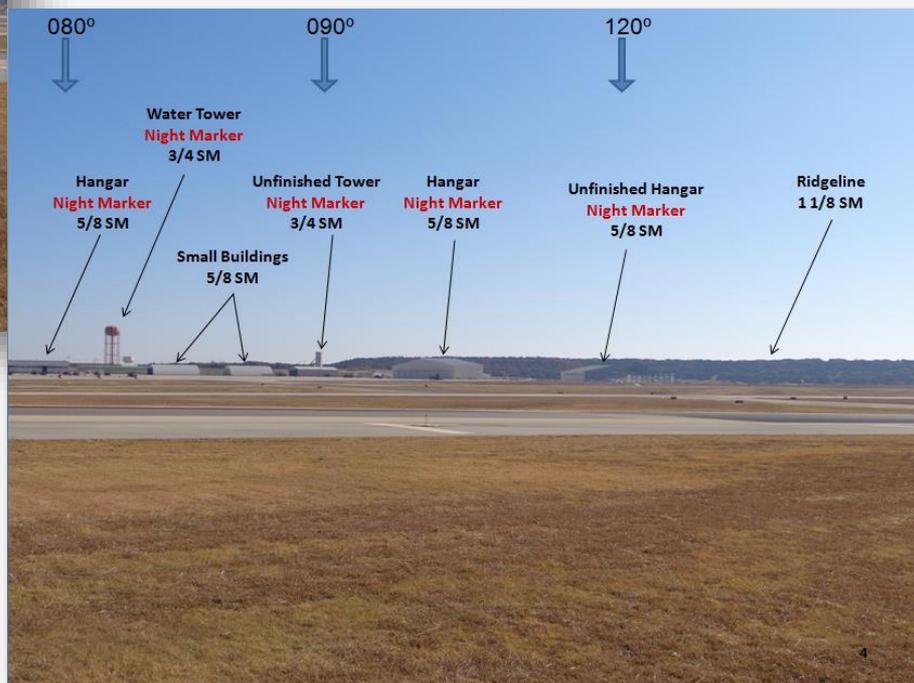
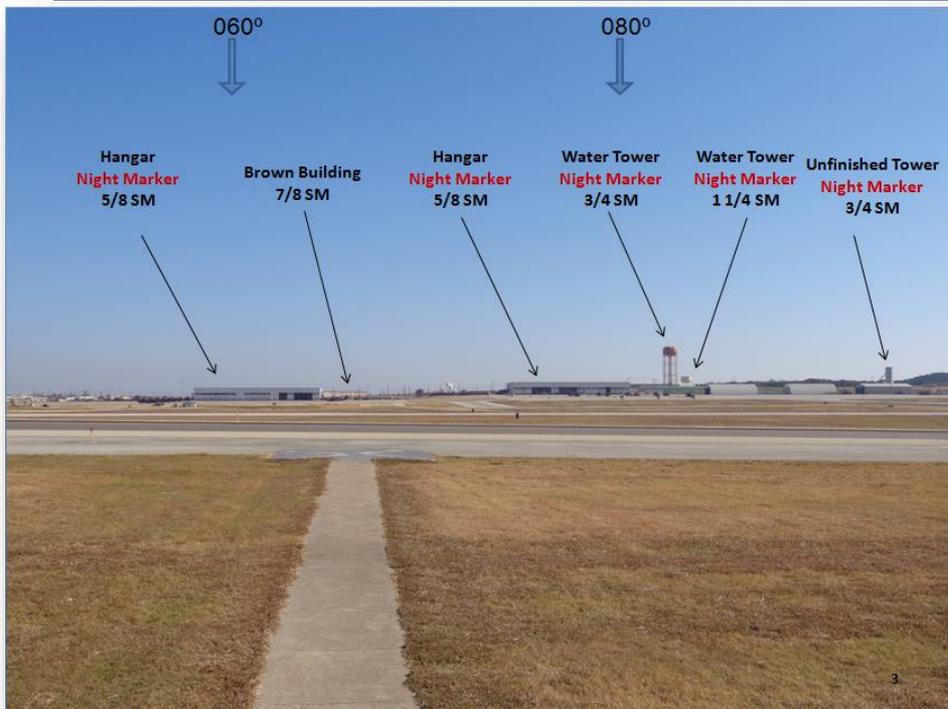
- ATC regulations require control towers to maintain a visibility checkpoint chart or list of visibility markers posted in the tower
- Upon request, weather units will provide whatever assistance is necessary to help prepare a chart or markers of suitable objects for determining tower visibility





Visibility Photos

KGRK Weather Station Visibility Photos





Visibility Definitions

- **Visibility:** Greatest horizontal distance at which selected objects can be seen and identified
- **Prevailing Visibility:** The visibility considered to be representative of the visibility conditions at the official observing point. It is the **greatest** visibility equaled or exceeded throughout at least half the horizon circle, not necessarily continuous (e.g., it may be composed of sectors distributed anywhere around the horizon circle)
- **Sector Visibility:** Visibility in a specified direction that represents at least a 45 degree arc (portion) of the horizon circle
- **Surface Visibility:** Prevailing visibility determined from the designated point(s); normally represents a value observed at a height of 6 feet above the ground level
- **Tower Visibility:** Prevailing visibility determined from the control tower



Visibility Determination

- IAW AFMAN15-111 Tower Visibility will be reported in remarks of observations when surface or tower visibility is **< 4 miles** and differs by a reportable value from surface visibility
 - Example: TWR VIS 1 ½
- Mandatory augmentation (supplement criteria)





Visibility Determination

- Use all available markers to determine greatest visibility in each direction around the horizon circle
- Before taking visibility observations at night, spend as much time as practicable in the darkness to allow your eyes to become accustomed to limited light
- Evaluate visibility as frequently as practical; using all available visibility markers, determine the greatest distances that can be seen in all directions around the horizon circle

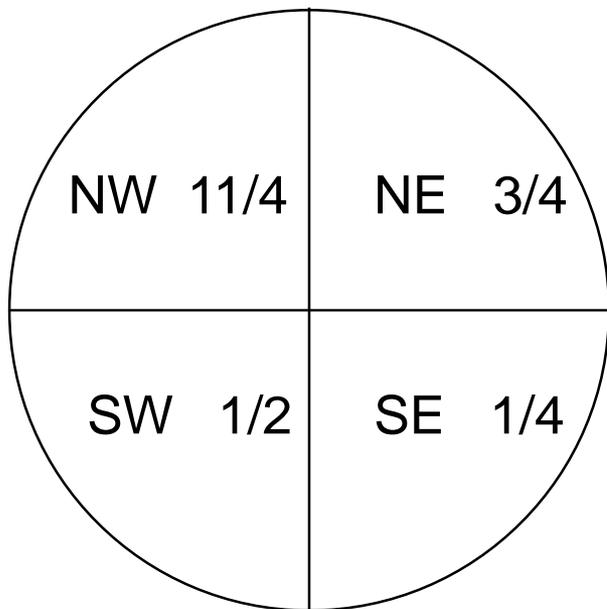


Visibility Determination

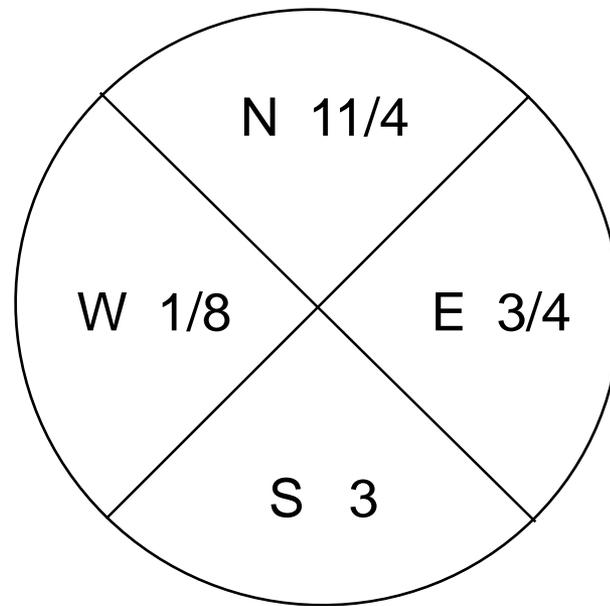
- Estimate farthest distance seen in each direction when visibility is greater than the farthest marker(s)
 - Base this estimate on appearance of all visibility markers
 - If they are visible with sharp outlines and little blurring of color, the visibility is much greater than the distance to them
 - If a marker can barely be seen and identified, the visibility is about the same as the distance to the marker
 - The silhouette of mountains and hills against the sky and the brilliance of stars near the horizon may provide a useful guide to the general clarity of the atmosphere



Visibility Determination



PREVAILING VIS IS: 3/4
SECTOR VIS IS:
SE 1/4 SW 1/2 NW 1 1/4



PREVAILING VIS IS: 1 1/4
SECTOR VIS IS:
E 3/4 S 3 W 1/8



Visibility Determination

– VIS reportable values

- 0 -- 3/8 in 1/16 mile increments
- 1/2 -- 2 in 1/8 mile increments
- 2 -- 3 in 1/4 mile increments
- 3 -- 7 in 1 mile increments





Significant Weather

- Tornado – A violent, rotating column of air **touching the ground**; it forms a pendant, usually from a cumulonimbus cloud
- Funnel Cloud – A violent rotating column of air that **does not touch the ground**





Significant Weather

Tornado, Killeen TX, 25 May 07



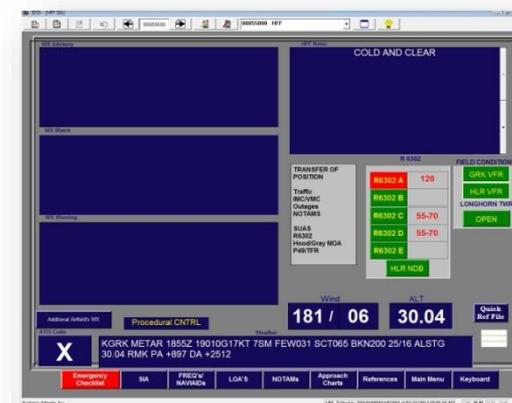
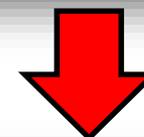
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Dissemination of Weather Information

- Weather observations for RGAAF and HAAF, and all Fort Hood weather watches / warnings / advisories are disseminated to ATC via the AF weather system called JET (Joint Environmental Toolkit)
- JET is connected to IDS5—an ATC communication system
 - Displays weather data (and other ATC information) in RGAAF Tower, ARAC, HLR Tower, and Airfield Ops (RGAAF)
 - The IDS5 display is customizable by the local system manager (DAO-ATC)

JET



IDS5



Types of Observations

- METAR
 - A routine scheduled observation--contains a complete report of wind, visibility, runway visual range, present weather and obscurations, sky condition, temperature, dew point, and altimeter
 - Reported between 55 and 59 past each hour
- SPECI
 - An unscheduled observation completed/disseminated as soon as possible when special criteria has been observed
 - Contain all data elements found in a METAR plus additional remarks that elaborate on data in the body of the report
 - Decode just like a METAR



Observations

Let's look at an example:

KGRK METAR 1858Z AUTO 15012G18KT 3SM -TSRA BR SCT003
OVC015 25/21 ALSTG 30.02 RMK AO2 PA +888 DA +2388



Observations

Let's look at an example:

KGRK METAR 1858Z AUTO 15012G18KT 3SM -TSRA BR SCT003
OVC015 25/21 ALSTG 30.02 RMK AO2 PA +888 DA +2388

This is an hourly (METAR) report for RGAAF (KGRK)



Observations

Let's look at an example:

KGRK METAR **1858Z** AUTO 15012G18KT 3SM -TSRA BR SCT003
OVC015 25/21 ALSTG 30.02 RMK AO2 PA +888 DA +2388

Time of this observation is 1858Z



Observations

Let's look at an example:

KGRK METAR 1858Z **AUTO** 15012G18KT 3SM -TSRA BR SCT003
OVC015 25/21 ALSTG 30.02 RMK **AO2** PA +888 DA +2388

(AUTO) and (AO2) indicate the observation is generated from an automated system with no human intervention (AO2A would indicate the observation is being augmented by a weather technician)

\$ = Maintenance indicator—maintenance required on the system (*does not necessarily mean any data is bad*)



Observations

Let's look at an example:

KGRK METAR 1858Z AUTO **15012G18KT** 3SM -TSRA BR SCT003
OVC015 25/21 ALSTG 30.02 RMK AO2 PA +888 DA +2388

**Wind is from the southeast (150 deg) magnetic at 12
knots with gusts (G) to 18 knots**



Observations

Let's look at an example:

KGRK METAR 1858Z AUTO 15012G18KT **3SM** -TSRA BR SCT003
OVC015 25/21 ALSTG 30.02 RMK AO2 PA +888 DA +2388

Prevailing Visibility is 3 statute miles (SM)



Observations

Let's look at an example:

KGRK METAR 1858Z AUTO 15012G18KT 3SM **-TSRA BR** SCT003
OVC015 25/21 ALSTG 30.02 RMK AO2 PA +888 DA +2388

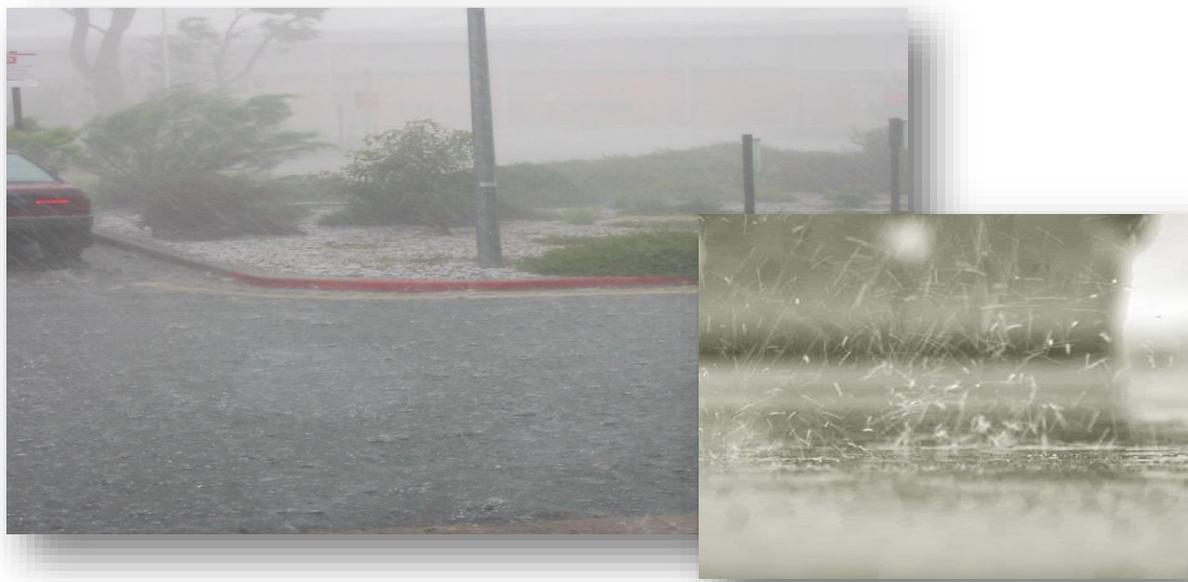
**Present weather is thunderstorm with light rain (-) and
mist (BR) (fog)**



Decoding Observations

Present Weather

- ***Intensity of Precipitation***
 - (-) = Light
 - (no symbol) = Moderate
 - (+) = Heavy
 - (**VC**) = In the Vicinity (within 10 SM of KGRK)





Decoding Observations

Present Weather

- ***Descriptors***

MI	Shallow
PR	Partial
BC	Patches
DR	Drifting
BL	Blowing

SH	Showers
TS	Thunderstorm
+FC	Tornado or Waterspout
FC	Funnel Cloud
FZ	Freezing



Decoding Observations

Present Weather

- Types of Present Weather:**

Type of Present Weather	Reporting Notation	Type of Present Weather	Reporting Notation
Drizzle	DZ	Smoke	FU
Rain	RA	Volcanic Ash	VA
Freezing Rain	FZRA	Dust	DU
Freezing Drizzle	FZDZ	Blowing Dust	BLDU
Snow	SN	Blowing Sand	BLSA
Blowing Snow	BLSN	Haze	HZ
Snow Grains	SG	Blowing Spray	BLPY
Ice Crystals	IC	Well-developed Dust/Sand Whirls	PO
Ice Pellets	PL	Squalls	SQ
Hail 1/4 inch diameter or larger	GR	Funnel Cloud (Tornadoic Activity)	FC
Small Hail and/or Snow Pellets	GS	Sandstorm	SS
Mist Visibility 5/8 SM or greater	BR	Duststorm	DS
Fog Visibility less than 5/8 SM	FG	Thunderstorm (See Note)	TS
Freezing Fog	FZFG		

NOTE: Thunderstorm (TS) is actually a descriptor, but may be reported alone if there is no precipitation associated with it.

less than 1/4 inch diameter



Observations

Let's look at an example:

KGRK METAR 1858Z AUTO 15012G18KT 3SM -TSRA BR **SCT003**
OVC015 25/21 ALSTG 30.02 RMK AO2 PA +888 DA +2388

The sky condition is scattered clouds at 300 feet AGL (SCT003) and overcast at 1,500 feet AGL (OVC015); the ceiling is 1,500 feet



Decoding Observations Sky Condition

- ***Sky Condition:***

SKC	Sky Clear
FEW	Trace to 2/8 coverage
SCT	3/8 to 4/8 coverage
BKN	5/8 to 7/8 coverage
OVC	8/8 coverage

Cloud Ceiling



Ceiling Definition

The lowest layer reported as broken or overcast indicates a ceiling layer; or if the sky is totally obscured, the vertical visibility is the ceiling.





Observations

Let's look at an example:

KGRK METAR 1858Z AUTO 15012G18KT 3SM -TSRA BR SCT003
OVC015 **25/21** ALSTG 30.02 RMK AO2 PA +888 DA +2388

**The temperature is 25 degrees Celsius and the dew
point is 21 degrees Celsius**



Observations

Let's look at an example:

KGRK METAR 1858Z AUTO 15012G18KT 3SM -TSRA BR SCT003
OVC015 25/21 **ALSTG 30.02** RMK AO2 PA +888 DA +2388

The altimeter is 30.02 inches



Observations

Let's look at an example:

KGRK METAR 1858Z AUTO 15012G18KT 3SM -TSRA BR SCT003
OVC015 25/21 ALSTG 30.02 RMK AO2 **PA +888 DA +2388**

**Pressure Altitude is +888 feet and Density Altitude is
+2388 feet**



SPECI Criteria

- ***A SPECI observation is required when:***
 - **VISIBILITY:** Surface visibility (statue miles) as reported in the body of the report decreases to less than or if below, increases to equal or exceed:

RGAAF·(GRK)α		HAAF·(HLR)α	
3 miles α	AFMAN15-111α	3 miles α	AFMAN15-111α
2 1/2 miles α	FLIPα	2 miles α	AFMAN15-111α
2 1/4 miles α	FLIPα	1 mile α	AFMAN15-111α
2 miles α	AFMAN15-111, FLIPα	3/4 mile α	FLIPα
1 3/4 miles α	FLIPα	1/2 mile α	FLIP·(Airfield·Minimum)α
1 1/2 miles α	FLIPα	1/4 mile α	AR95-1α
1 3/8 miles α	FLIPα	α	
1 1/4 miles α	FLIPα		
1 1/8 miles α	FLIPα		
1 mile α	AFMAN15-111, FLIPα		
3/4 mile α	FLIPα		
1/2 mile α	FLIP·(Airfield·Minimum)α		
1/4 mile α	AR95-1, FLIPα		



SPECI Criteria

- ***A SPECI observation is required when:***
 - **CEILING:** The ceiling (rounded off to reportable values) forms or dissipates below, decrease to less than or if below, increases to equal or exceed:

RGAAF·(GRK)α		HAAF·(HLR)α	
3000 feetα	15MI-SOP (Hunter-UAS)α	3000 feetα	Local Req--MVFRα
2000 feetα	AFI11-202Vol3α	1500 feetα	AFMAN15-111α
1500 feetα	AFMAN15-111α	1000 feetα	AFMAN15-111α
1000 feetα	AFMAN15-111α	700 feetα	AFMAN15-111, FLIPα
800 feetα	AFMAN15-111, FLIPα	500 feetα	AFMAN15-111, FLIP· (Airfield·Minimum)α
700 feetα	AFMAN15-111, FLIPα	100 feetα	AR95-1α
600 feetα	FLIPα	α	
500 feetα	AFMAN15-111, FLIPα		
400 feetα	FLIPα		
300 feetα	FLIPα		
200 feetα	FLIP (Airfield·Minimum)α		
100 feetα	AR95-1α		



SPECI Criteria

- ***A SPECI observation is required when:***
 - **SKY CONDITION:** A layer of clouds or obscuring phenomena aloft is observed below **800 feet AGL** (700 feet AGL for HLR), and no layer aloft was reported below **800 feet AGL** (700 feet AGL for HLR) in the previous METAR or SPECI



SPECI Criteria

- ***A SPECI observation is required when:***
 - **WIND SHIFT:** Wind direction change by 45 degrees or more in less than 15 minutes and the wind speed is 10 knots or more throughout the wind shift
 - **SQUALL:** When squalls occur--A strong wind characterized by a sudden onset, a duration on the order of minutes, then a rather sudden decrease in speed in which the wind speed increases at least 16 knots and is sustained at 22 knots or more for at least one minute
 - **VOLCANIC ERUPTION:** Eruption or volcanic ash cloud first noted



SPECI Criteria

- ***A SPECI observation is required when:***
 - **THUNDERSTORM** (Occurring at the station): A SPECI is not required to report the beginning of a new thunderstorm if one is currently reported
 - Begins
 - Ends



SPECI Criteria

- ***A SPECI observation is required when:***
 - **PRECIPITATION:** Except for freezing rain, freezing drizzle, hail, and ice pellets, a SPECI is not required for changes in type (i.e., drizzle changing to snow grains) or the beginning or ending of one type while another is in progress (i.e., snow changing to rain and snow)
 - Hail begins or ends (*Mandatory Supplementary Criteria*)
 - Freezing precipitation begins, ends, or changes in intensity
 - Ice Pellets begin, end, or change in intensity (*Mandatory Supplementary Criteria*)
 - Any other type of precipitation begins or ends



SPECI Criteria

- ***A SPECI observation is required when:***
 - **TORNADO, FUNNEL CLOUD, OR WATER SPOUT**
(Mandatory Supplementary Criteria): If a Tornado, Funnel Cloud, or Water Spout:
 - Is observed
 - Disappears from sight or ends



SPECI Criteria

- ***A SPECI observation is required when:***

- **RUNWAY VISUAL RANGE (RVR) - KGRK Only.** Highest value during the preceding 10 minutes from the designated RVR runway decreases to less than, or if below, increases to equal or exceed

- Prevailing visibility first observed < 1SM, again when prevailing visibility goes above 1SM

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

RGAAF(GRK)☐		HAAF(HLR)☐
6000 feet☐	AFMAN15-111, FLIP☐	No RVR capability and no published RVR minima☐
5500 feet☐	FLIP☐	
5000 feet☐	AFMAN15-111, FLIP☐	
4000 feet☐	FLIP☐	
2400 feet☐	AFMAN15-111, FLIP☐	
2000 feet☐	AFMAN15-111☐	

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



SPECI Criteria

- ***A SPECI observation is required when:***
 - **Tower Visibility (KGRK and KHLR) (*Mandatory Supplementary Criteria*)**. Transmit a SPECI with the tower visibility as a remark:
 - When notified by the control tower that tower visibility has decreased to less than or, if below, increased to equal or exceed **1, 2, or 3 statute miles**
 - Per FAA JO 7110.65V *Air Traffic Organization Policy*) and the control tower visibility differs from the prevailing visibility



SPECI Criteria

- ***A SPECI observation is required when:***
 - **UPON RESUMPTION OF OBSERVING FUNCTIONS:** A special (SPECI) observation will be taken within 15-minutes after the weather technician returns to duty following a break in observing coverage at the observing location unless a METAR is filed during that 15-minute period
 - **AIRCRAFT MISHAP:** *(Only required if AMOS is in Augment or Back-up mode)*. Take an aircraft mishap SPECI immediately following notification or sighting of an aircraft mishap **at or near** the observing location unless there has been an intervening observation.
 - **MISCELLANEOUS:** Any other meteorological situation that in the weather technician's opinion is critical.



Pilot Report (PIREP)

- Required information to properly encode and disseminate a PIREP include:
 - Message Type (Routine-UA or Urgent-UUA)
 - Location
 - Time
 - Flight Level
 - Aircraft Type
 - One other element such as (Sky Cover, Weather, Temperature, Wind, Hazards (i.e., Turbulence, Icing, Low-Level Wind Shear))



Pilot Report (PIREP)

- A PIREP is defined as a report of meteorological phenomena encountered by aircraft in flight
- All PIREPS received by ATC should be passed to the RGAAF weather station within **5 minutes** of receipt
- Required information to properly encode/disseminate:
 - Message Type (Routine-UA or Urgent-UUA)
 - Location
 - Time
 - Flight Level
 - Aircraft Type
 - One other element such as (Sky Cover, Weather, Temp, Wind, Hazards (i.e., Turb, Icing, LLWS))



Pilot Report (PIREP)

- **EXAMPLE:**

KGRK UUA OV/KGRK360005/TM 1510/FL015/TP
UH60/WX FV02SM BR/TA 15/WV 18050KT/RM LLWS -
15KT SFC-015 DURC HLR



Pilot Report (PIREP)

- **EXAMPLE:**

KGRK UUA OV/KGRK360005/TM 1510/FL015/TP
UH60/WX FV02SM BR/TA 15/WV 18050KT/RM LLWS -
15KT SFC-015 DURC HLR

Severe PIREP disseminated by RGAAF (KGRK)



Pilot Report (PIREP)

- **EXAMPLE:**

KGRK UUA **OV/KGRK360005**/TM 1510/FL015/TP
UH60/WX FV02SM BR/TA 15/WV 18050KT/RM LLWS -
15KT SFC-015 DURC HLR

**The PIREP was reported by an aircraft located 5 miles
north of KGRK**



Pilot Report (PIREP)

- **EXAMPLE:**

KGRK UUA OV/KGRK360005/**TM 1510**/FL015/TP
UH60/WX FV02SM BR/TA 15/WV 18050KT/RM LLWS -
15KT SFC-015 DURC HLR

The time of the PIREP is 1510Z



Pilot Report (PIREP)

- **EXAMPLE:**

KGRK UUA OV/KGRK360005/TM 1510/**FL015**/TP
UH60/WX FV02SM BR/TA 15/WV 18050KT/RM LLWS -
15KT SFC-015 DURC HLR

The flight level of the aircraft was 1,500 feet MSL



Pilot Report (PIREP)

- **EXAMPLE:**

KGRK UUA OV/KGRK360005/TM 1510/FL015/**TP**
UH60/WX FV02SM BR/TA 15/WV 18050KT/RM LLWS -
15KT SFC-015 DURC HLR

The type of aircraft was a UH-60



Pilot Report (PIREP)

- **EXAMPLE:**

KGRK UUA OV/KGRK360005/TM 1510/FL015/TP
UH60/**WX FV02SM BR**/TA 15/WV 18050KT/RM LLWS -
15KT SFC-015 DURC HLR

The flight level visibility was 2 statute miles in mist (fog)



Pilot Report (PIREP)

- **EXAMPLE:**

KGRK UUA OV/KGRK360005/TM 1510/FL015/TP
UH60/WX FV02SM BR/TA 15/WV 18050KT/RM LLWS -
15KT SFC-015 DURC HLR

The temperature is 15 degrees Celsius



Pilot Report (PIREP)

- **EXAMPLE:**

KGRK UUA OV/KGRK360005/TM 1510/FL015/TP
UH60/WX FV02SM BR/TA 15/**WV 18050KT**/RM LLWS -
15KT SFC-015 DURC HLR

The wind is from the south (180 deg) at 50 knots



Pilot Report (PIREP)

- **EXAMPLE:**

KGRK UUA OV/KGRK360005/TM 1510/FL015/TP
UH60/WX FV02SM BR/TA 15/WV 18050KT/**RM LLWS**
-15KT SFC-015 DURC HLR

Remarks can include anything else the pilot added. In this example, the pilot reported low-level wind shear between the surface and 1,500 feet MSL with a loss in airspeed of 15 knots during climb from Hood AAF



PIREP

- Further information concerning the PIREP code can be found in [AFMAN15-124](#) *Meteorological Codes*, (Chapter 2)





Terminal Aerodrome Forecast (TAF) CODE

**KGRK FCST 0916/1022 16015KT 9999 FEW030 SCT250 QNH3010INS
BECMG 0921/0922 16015G25KT 8000 -SHRA BKN030 OVC250 510003
QNH3005INS
TEMPO 1000/1003 VRB25G35KT 1600 +TSRA BKN015CB OVC030
BECMG 1003/1004 17006KT 9999 NSW SCT050 QNH3008INS
T24/22Z T16/12Z**

- **KGRK**: Location identifier for RGAAF
 - **FCST**: 30-hour forecast
 - **1316-1416**: Forecast valid 9th 1600Z to the 10th 2200Z (UTC)
 - **16015KT**: Forecast wind direction (from) and speed (knots)
 - **9999**: Forecast prevailing visibility (unrestricted in meters = 7+ statute miles)
 - **FEW030**: Clouds less than 3/8th total cloud cover at 3,000 feet AGL
 - **SCT250**: Clouds 3/8 to 4/8ths total cloud cover at 25,000 feet AGL
 - **QNH3010INS**: Forecast minimum altimeter setting (inches of mercury)
 - **BECMG 0921/0922** : Forecast gradual change between 2100 and 2200Z
 - **16015G25KT**: Forecast wind direction/speed/gusts (knots)
 - **8000 -SHRA**: Prevailing visibility (meters = 5 statute miles) in light rain showers
 - **BKN030**: Clouds 5/8 to 7/8ths total cloud cover at 3,000 feet AGL
-



Terminal Aerodrome Forecast (TAF) CODE

**KGRK FCST 0916/1022 16015KT 9999 FEW030 SCT250 QNH3010INS
BECMG 0921/0922 16015G25KT 8000 -SHRA BKN030 OVC250 510003
QNH3005INS
TEMPO 1000/1003 VRB25G35KT 1600 +TSRA BKN015CB OVC030
BECMG 1003/1004 17006KT 9999 NSW SCT050 QNH3008INS
T24/22Z T16/12Z**

- **OVC250**: Clouds 8/8 total cloud cover at 25,000 feet AGL
- **510003**: Turbulence code (Light Turbulence Surface-3,000 feet AGL)
- **QNH3005INS**: Forecast minimum altimeter setting (inches of mercury)
- **TEMPO 1000/1003** : Forecast temporary condition between 0000Z and 0300Z
- **VRB25G35KT**: Forecast wind direction/speed/gusts (knots)
- **1600 +TSRA**: Prevailing visibility (meters = 1 statute mile) in thunderstorm with heavy rain
- **BKN015CB**: Clouds 5/8 to 7/8ths total cloud cover at 1,500 feet AGL with cumulonimbus cloud (thunderstorm)
- **OVC030**: Clouds 8/8 total cloud cover at 3,000 feet AGL



Terminal Aerodrome Forecast (TAF) CODE

**KGRK FCST 0916/1022 16015KT 9999 FEW030 SCT250 QNH3010INS
BECMG 0921/0922 16015G25KT 8000 -SHRA BKN030 OVC250 510003
QNH3005INS
TEMPO 1000/1003 VRB25G35KT 1600 +TSRA BKN015CB OVC030
BECMG 1003/1004 17006KT 9999 NSW SCT050 QNH3008INS
T24/22Z T16/12Z**

- **BECMG 1003/1004:** Forecast gradual change between 0300Z and 0400Z
- **17006KT:** Forecast wind direction/speed/gusts (knots)
- **9999:** Forecast prevailing visibility (unrestricted in meters = 7+ statute miles)
- **NSW:** No significant weather (indicates significant weather no longer expected)
- **SCT050:** Clouds 3/8 to 4/8ths total cloud cover at 5,000 feet AGL
- **QNH3008INS:** Forecast minimum altimeter setting (inches of mercury)
- **T24/22Z:** Forecast maximum temperature and time
- **T16/12Z:** Forecast minimum temperature and time



Terminal Aerodrome Forecast (TAF) CODE

- Further information concerning the TAF code can be found in [AFMAN15-124](#) *Meteorological Codes*, (Chapter 1)





Weather Watch

WEATHER WATCH 09-006 FOR FORT HOOD (KGRK)

VALID 02/1500Z (02/1000L) TO 02/2300Z (02/1800L)

POTENTIAL EXISTS FOR SEVERE THUNDERSTORMS WITH DAMAGING WINDS GREATER THAN OR EQUAL TO 45 KTS. FORECAST VALUE 45 KTS. AND/OR DAMAGING HAIL GREATER THAN OR EQUAL TO 1/2 IN. FORECAST VALUE 1/2 IN. ON THE FORT HOOD RESERVATION.

- **WEATHER WATCH 09-006 FOR FORT HOOD (KGRK):** Sixth weather watch for month of September
- **VALID 02/1500Z (02/1000L) TO 02/2300Z (02/1800L):** Forecast valid time of the watch conditions
- **POTENTIAL EXISTS FOR SEVERE THUNDERSTORMS WITH DAMAGING WINDS GREATER THAN OR EQUAL TO 45 KTS. FORECAST VALUE 45 KTS. AND/OR DAMAGING HAIL GREATER THAN OR EQUAL TO 1/2 IN. FORECAST VALUE 1/2 IN. ON THE FORT HOOD RESERVATION.:** Specific Watch criteria.



Weather Warning

WEATHER WARNING 04-005 FOR FORT HOOD (KGRK)
VALID 09/1500Z (09/0900L) TO 09/2300Z (09/1700L)
SEVERE THUNDERSTORMS WITH DAMAGING WINDS GREATER THAN OR
EQUAL TO 45 KTS. FORECAST VALUE 45 KTS. AND/OR DAMAGING HAIL
GREATER THAN OR EQUAL TO 1/2 IN. FORECAST VALUE 1/2 IN. ON THE
FORT HOOD RESERVATION. WEATHER WATCH 09-006 REMAIN IN EFFECT

- **WEATHER WARNING 04-005 FOR FORT HOOD (KGRK):** Fifth weather warning issued for month of April
- **VALID 09/1500Z (09/1000L) TO 09/2300Z (09/1800L):** Forecast valid time of warning conditions
- **SEVERE THUNDERSTORMS WITH DAMAGING WINDS GREATER THAN OR EQUAL TO 45 KTS. FORECAST VALUE 45 KTS. AND/OR DAMAGING HAIL GREATER THAN OR EQUAL TO 1/2 IN. FORECAST VALUE 1/2 IN. ON THE FORT HOOD RESERVATION. WEATHER WATCH 09-006 REMAIN IN EFFECT:** Specific warning criteria to include maximum forecast.



Weather Warning

WEATHER WARNING 07-010 FOR FORT HOOD (KGRK)

VALID 25/1500Z (09/0900L) TO UFN (UFN)

A LIGHTNING WARNING IS ISSUED FOR THE ENTIRE FORT HOOD RESERVATION. (THIS INCLUDES LIGHTNING WITHIN 5N/M OF HOOD AND GRAY AAF). LIGHTNING HAS BEEN OBSERVED IN THIS AREA.

- **WEATHER WARNING 07-010 FOR FORT HOOD (KGRK) #07-010:** Tenth weather warning issued for month of July
- **VALID 25/1500Z (25/1000L) TO UFN (UFN):** Warning valid until further notice (observed condition)
- **A LIGHTNING WARNING IS ISSUED FOR THE ENTIRE FORT HOOD RESERVATION. (THIS INCLUDES LIGHTNING WITHIN 5N/M OF HOOD AND GRAY AAFS). LIGHTNING HAS BEEN OBSERVED IN THIS AREA.:** Specific warning criteria



Weather Advisory

WEATHER ADVISORY 03-003 FOR FORT HOOD (KGRK)
VALID 20/1830Z (20/1330L) TO UFN (UFN)
SURFACE WIND GREATER THAN OR EQUAL TO 25 KNOTS AT FORT
HOOD.

- **WEATHER ADVISORY 03-003 FOR FORT HOOD (KGRK):** Third weather advisory issued for month of March
- **VALID 20/1830Z (20/1330L) TO UFN (UFN):** Advisory valid until further notice (observed condition)
- **SURFACE WIND GREATER THAN OR EQUAL TO 25 KNOTS AT FORT HOOD:** Specific advisory criteria



3 WS Webpage

www.hood.army.mil/3ws

Links to current RGAAF / HAAF observation and weather watches, warnings, and advisories

Primary Flight Weather Forecast Product

The screenshot shows the homepage of the 3d Weather Squadron website. At the top, there is the squadron's logo and the text "3d Weather Squadron Fort Hood, Texas". Below this are the U.S. Air Force and U.S. Army logos. A navigation bar includes a "HOME" link, a "Please give us feedback" link, and a "To contact us... 3 WS DIRECTORY" link. The date "TUESDAY, OCTOBER 21" is displayed on the right. A central banner reads "WEATHER STATION E-MAIL" with a note: "IMAGES BELOW DO NOT DEPICT ACTUAL CONDITIONS CLICK ON THUMBNAILS FOR CURRENT INFORMATION". The main content area is divided into several sections:

- FORT HOOD WEATHER**: Contains links for "FORT HOOD WEATHER WATCHES, WARNINGS, AND ADVISORIES (WWA)", "KGRK OBSERVATION & TAF", and "KHLR OBSERVATION".
- AVIATION WEATHER**: Includes "PILOT REPORTS (PIREPS)", "AIRMETS/SIGMETS", and "SPACE WEATHER IMPACTS".
- MISSION WEATHER PRODUCTS (MWP)**: Divided into "FORT HOOD FORECAST FLIMSY" (with a thumbnail and "Explanation of Format" link) and "FORT HOOD 5-DAY FORECAST" (with a thumbnail and "Breakdown of Weather Impacts" link).
- SATELLITE/RADAR/LIGHTNING/HAZARDS**: Divided into "SATELLITE" (with a satellite image thumbnail) and "CENTRAL TEXAS (FORT HOOD) RADAR" (with a radar image thumbnail).
- BRIEFINGS**: Lists "SEMI-ANNUAL AVIATION WEATHER BRIEF (SUMMER)", "SEMI-ANNUAL AVIATION WEATHER BRIEF (WINTER)", "AIR TRAFFIC CONTROL WEATHER TRAINING", "DAILY METCON QUESTION", and "2nd QTR FY14 TRAINING MEETING".
- DoD WEATHER**: Lists "AIR FORCE WEATHER WEB SERVICES (AFW-WEBS)", "26th OPERATIONAL WEATHER SQUADRON (OWS)", "15th OPERATIONAL WEATHER SQUADRON (OWS)", "25th OPERATIONAL WEATHER SQUADRON (OWS)", and "14th WEATHER SQUADRON-STRATEGIC CLIMATIC INFORMATION SERVICE".

 At the bottom, there are links for "HURRICANE/TROPICAL STORM INFO" and "NATIONAL HURRICANE CENTER".

ATC Training Briefing



JET ATC Webpage

<https://143.72.252.130/atc/>

15/03 TAF WX Alternates

RWY In Use

33

15

Wind

066/04 350V120

046/05 028V060

Altimeter

30.11

33 RVR

P6000FT

Dep RVR

P6000FT

Weather

KQRK METAR 1658Z AUTO 09004KT 8SM FEW028 22/15 ALSTG
30.11 RMK AO2 PA +831 DA +2077

WARNING

WATCH

ADVISORY

Sensor Data Last Updated: 17:40:56 UTC

TKX OOR SDY SDD SCS ACS SLS

Alphanumeric Data Last Updated: 17:40:19 UTC

Integrity - Service - Excellence



Summary

- **Today you have learned:**
 - RGAAF & HLR Weather Observation Procedures
 - Cooperative Weather Watch
 - Visibility
 - Definitions
 - Determination methods
 - Significant Weather
 - Dissemination of Weather Information
 - How to read...
 - Observations
 - PIREPs
 - TAFs
 - Weather Watches/Warnings/Advisories



Questions?





Feedback

- Any feedback you can provide will be greatly appreciated and will help us improve your training and the safety of all of our customers; aircraft or otherwise

3 WS/ DOV: 288-4259

Weather Forecaster(s): **288-9620 or 288-9400**

usarmy.hood.3-asog.mbx.3w3-woc@mail.mil