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A Communication from the
Vice President, Mission Support Services

***In this Issue**:*

Spring and Summer Operations

Thunderstorms, Pilot Weather Reports (PIREPS), Best Practices, Summer Operations

/*TREF During typical spring and summer operations, with a high volume of air traffic, construction activity, and increased convective activity, there is a need for heightened awareness.

Rapidly changing weather and PIREPS can result in a controller being the last and only source of new weather information as a pilot approaches severe conditions. Failure to provide available weather information to a pilot may result in dire consequences from poor decisions based on UUinadequate information.

Planning

Good planning goes a long way to ensure safe and efficient air traffic operations during spring and summer weather conditions. Contact information and procedures for coordination with adjacent facilities and airport operators should be reviewed and updated. Many smaller airports see minimal traffic during the winter months with a significant increase in the spring. With increased traffic, the need for correct contact and airport information becomes even more crucial.

Summer Operations and Runway Incursions

Circumstances that typically occur during summer months require our attention to prevent runway incursions. Keep the following factors in mind, and use caution when:

- Mowing operations are in progress adjacent to the runways and other movement areas.
- Various forms of precipitation or obstructions reduce controller and pilot visibility.
- Vegetation may create blind spots for aircraft.
- Glare caused by bright sunlight may reduce the visibility of a pilot or vehicle operator.
- Heavy rain and areas of standing water have the potential to cause hydroplaning that can adversely affect aircraft and vehicle stopping distances.

Thunderstorms

Although thunderstorms occur during the winter, their frequency and intensity greatly increase during the spring and summer months.

The abundant energy in thunderstorms can cause interference with equipment. Within facilities, this might often be noticed in the clarity of radio communications.

Another example of interference is magnetic disturbances that affect an aircraft's magnetic compass. However, thunderstorms are not the

only cause of this type of error. Magnetic disturbances may also be created by buildings, equipment, and rebar-reinforced surfaces. If it appears that an aircraft is not flying the assigned heading, advise the pilot. It could be that the pilot has made a mistake, but it is also possible that the aircraft is experiencing equipment errors due to magnetic disturbances.

Turbulence

- Weather fronts with their associated change in wind direction and temperatures create turbulence, impacting aircraft close to the ground as well as at higher altitudes.
- As thunderstorms build, the internal up and down drafts create turbulence that can cause severe gain or loss of altitude, sometimes both in quick succession.
- Turbulence can affect the ability of an aircraft to maintain a steady altitude. "Assign an altitude to an aircraft only after the aircraft previously at that altitude is observed at or passing through another altitude separated from the first by the appropriate minima when severe turbulence is reported." (FAA Order JO 7110.65, Par. 5-5-6.b.1. and Par 6-6-2.a.).

Wind shear and Microbursts

- Low level wind shear (LLWS) is caused by a rapid change in wind speed and/or direction. Most commonly found in the gust front, which is the leading edge of cool air from downdraft. The gust front is most dangerous within 10 miles of the parent thunderstorm. Wind gusts along the gust front can be strong enough to damage aircraft.
- A downburst, also known as a microburst, is an intense downdraft from the base of a thunderstorm (up to 6,000 feet per minute). Downbursts are generally 1 to 3 miles in diameter and last about 10 minutes. The most intense wind shear usually lasts about 2 minutes. LLWS occurs within 2,000 feet of the ground.
- Aircraft preparing to land or depart are in a crucial phase of flight. Due to the aircraft's proximity to the ground, there is very little time to either react to or recover from a loss of altitude, power, or control caused by wind shear or microburst activity.
- Aircraft are increasingly being equipped with onboard wind shear detection systems. When the system detects wind shear, controllers may expect pilots to execute a maneuver to escape the effects of wind shear by commencing a maximum rate of climb until the conditions no longer exist.
- The pilot is counting on controllers, PIREPS, weather system processor, terminal doppler weather radar, and LLWS equipment to provide the information necessary to make safety related decisions.

Tornadoes

- Many tornadoes are abrupt, short-lived, and often obscured by rain or darkness. Tornadoes can take on different appearances as they develop, mature, and dissipate. Tornadoes can occur with single cell thunderstorms, but are most common within squall lines and super cells.
- An aircraft entering a tornadic vortex is almost certain to suffer structural damage. Since the vortex extends well into the cloud, any pilot inadvertently caught on instruments in a severe thunderstorm could encounter a hidden vortex.

Icing Conditions

- Aircraft icing is a significant hazard and can still occur in spring and summer. Cumuliform clouds are more likely to produce clear ice formation than other clouds, particularly if freezing rain is present. However, at altitudes above the freezing level, any layer of air with a narrow temperature dew point spread is a potential icing zone. Aircraft icing includes clear, rime, and mixed types.
- There are several forecasts that contain warnings of icing. PIREPs are the only means of obtaining real-time information concerning icing conditions.
- Some aircraft are extremely sensitive to airframe icing of any degree. Keep in mind that many smaller aircraft do not have deicing equipment.
- Pilots may also experience carburetor icing during spring and summer. The warm air carries more moisture, increasing the potential for this scenario. This could be a factor in some of those rough running engine reports.

Lightning

- Lightning may strike an aircraft or a tower and send a surge of power through the equipment. This can damage communications and electronic navigational equipment on the aircraft, knock out the power supply to airports, navigational aids, or lighting equipment, and induce permanent errors in the magnetic compass. Most control towers have lightning protection equipment, but that does not negate the need for reasonable precautions when working in the tower during a storm.
- Another hazard is night blindness. A pilot may experience a temporary inability to see after exposure to a flash of lightning. If this should happen during a crucial phase of flight, the pilot may request an alternative action. For example, a pilot on approach may elect to go around rather than try to land with compromised vision.

PIREPS

Always solicit PIREPS when the following conditions exist or are forecast for your area of jurisdiction: ceilings at or below 5,000 feet, visibility at or less than 5 miles, thunderstorms and related phenomena, turbulence of moderate degree or greater, icing of light degree or greater, wind shear, and volcanic ash.

Radar Navigational Guidance and Weather Avoidance Assistance

Not all aircraft are equipped with weather radar. The information available to the controller may be more current and specific than the information available to a pilot. When requested by the pilot, provide radar navigational guidance and/or approve deviations around weather or chaff areas.

Best Practices & Techniques

- Become familiar with pertinent weather information when coming on duty, and stay aware of current weather information needed to perform ATC duties.
- In situations where weather is a factor, consider using altitude separation standards as the primary means of separation, followed by longitudinal. Use lateral as a last resort. Even though headings are assigned, in evolving weather scenarios, lateral separation will most likely be the first safety margin to be infringed upon.
- A best practices technique during weather events is to restrict aircraft deviations and "pin" the pilot down to a defined range of headings when deviating through weather.
- Always scan before issuing control instructions, route changes, or approving deviations, and monitor compliance.

Phraseology

Phraseology emphasizes communications. Radio communications are a critical link in the ATC system. The link can be a strong connection between pilot and controller, or it can be broken with surprising speed and devastating results. Transcript reviews will always reflect poor phraseology as less than professional.

Following are a few examples of standard phraseology from FAA Order JO 7110.65, Par. 2-6-4, denoting some of the prescribed words and/or phrases to be used in air traffic communications associated with weather dissemination.

PHRASEOLOGY: *WEATHER/CHAFF AREA BETWEEN (number) O'CLOCK AND (number) O'CLOCK (number) MILES, or (number) MILE BAND OF WEATHER/CHAFF FROM (fix or number of miles and direction from fix) TO (fix or number of miles and direction from fix).*

PHRASEOLOGY: *DEVIATION APPROVED, (restrictions if necessary), ADVISE WHEN ABLE TO: RETURN TO COURSE, or RESUME OWN NAVIGATION, or FLY HEADING (heading), or PROCEED DIRECT (name of NAVAID).*

Use the term "precipitation" when describing radar-derived weather. Issue the precipitation intensity from the lowest descriptor (LIGHT) to the highest descriptor (EXTREME) when that information is available. Do not use the word "turbulence" in describing radar-derived weather.

1. LIGHT.
2. MODERATE.
3. HEAVY.
4. EXTREME.

EN ROUTE. When issuing air route surveillance radar (ARSR) precipitation intensity use the following:
1. Describe the lowest displayable precipitation intensity as MODERATE.
2. Describe the highest displayable precipitation intensity as HEAVY to EXTREME.

PHRASEOLOGY: *AREA OF (Intensity) PRECIPITATION BETWEEN (number) O'CLOCK AND (number) O'CLOCK, (number) MILES, MOVING (direction) AT (number) KNOTS, TOPS (altitude) AREA IS (number) MILES IN DIAMETER.*

En Route Fourth Line Data Block Usage

The en route fourth line data block is a tool used to forward specified control information. Additional control information must be forwarded via other communication methods. Restrictions on fourth line data block usage can be found in FAA Order JO 7110.65, Par. 5-4-11.

When using fourth line data block, aircraft authorized specific weather deviation or lateral weather deviation, until able to proceed direct to a fix, must be designated with the identified characters: D-deviation, L-left, R-right, N-north, E-east, S-south, W-west.

EXAMPLE- *DN, D20L, DR/ATL, D30R/ATL*

The Air Traffic Bulletin (ATB) is a means for headquarters to remind field facilities of proper application of procedures and other instructions. It is published and distributed quarterly, with special issues published as necessary.

Articles must be submitted electronically in Microsoft® Word by the offices of primary responsibility with approval at the group level or above. Quarterly articles must be received by the end of September, December, March, and June of each year.

*In this publication, the option(s) for which a briefing is required is indicated by an asterisk followed by one or more letter designators, i. e., * T – Tower, *E – ARTCC, *R – TRACON, or *F – AFSS/FSS.*
(Reference FAA Order JO 7210.3, Facility Operation and Administration, paragraph 2-2-9)
Archived ATB issues are available online: www.faa.gov/air_traffic/publications/