Minutes of TUG Meeting – January 21, 2015

Dave Belastock – TUG President

- Dave welcomed the group and facilitated introductions, and kicked off a busy meeting agenda.

Pam Phillips & Renee Spann

- TEB saw 161,842 movements in 2014, up 4.4% over 2013.
- Several days in 2014 saw over 700 operations, with the highest on Dec. 12 with 755 operations.
- There were 44 days over 600 ops in 2014 vs. only 26 days over 600 ops in 2013.
- Wednesdays and Thursdays are typically the busiest days.
- The busiest month in 2014 was May, with 15,609 operations – the busiest May since 2008.
- It has been a quiet snow season so far, with only 7 precipitation events and 5.5" of snow.
- 63,000 gallons of potassium acetate have been used on runways so far.

Gary Palm – Manager, TEB Tower

- Pilot deviations at TEB have been occurring when instructed to hold short of Runway 1 on Taxiway Bravo. Most deviations have been stopped by controllers.
- When airport is on a north flow, Runway 6 is used for arrivals, and Runway 1 for departures.
- Taxiway B will be eliminated, and replaced with a taxiway leading from Runway 6 to the Taxiway Alpha pad. Construction due to begin in 2016.
- Time studies were done on Runway 6 landings, and it was actually much faster for aircraft to exit at the end of Runway 6 than to exit on Bravo. Based on these results, aircraft landing on Runway 6 will be instructed to exit at the end of the runway.
- Also, controller will keep aircraft on Tower frequency on the Alpha pad, and Tower will issue the Runway 1 crossing instruction.
- Aircraft landing on Runway 6 and bound for the west end of airport will exit at the end of Runway 6.
- Aircraft going to east side of airport can vacate the runway earlier if able.
- A Letter to Airmen on this new procedure was scheduled to be published on Jan. 21.
- RSAT (Runway Safety Action Team) meeting will be incorporated into the next Chief Pilot Webinar.
- There has been a spate of recent lateral and vertical deviation in the RUUDY 5 departure. Crews are reminded to thoroughly brief all TEB departures and execute them with vigilance and care.
- VFR aircraft flying just north of TEB (and not communicating with the Tower) has caused Traffic Advisories and Resolution Advisories with IFR aircraft approaching the airport.
- FAA is investigating the possibility of expanding the size of TEB Class D airspace by an additional 3.5 NM "bump-out" to the north.
- Aug. 20, 2015 – RNAV transition from the west to join approaches to Runway 19.
- See the Taxiway B presentation here: http://teterborousersgroup.org/wp-content/uploads/2015/01/Taxiway-B-LTA.ppt

Ralph Tamburro – Port Authority NY/NJ Delay Reduction Program Manager

- Individual release delays have decreased from 2013 to 2014. Delays in NY area are down significantly, despite an increase in EWR/JFK/LGA operations.
- Typically 4500 operations per day in NY area.
- Some new departure and arrival flows are under development to help further reduce delays.
- Operators have expressed concern at the lengthy TEB delays that occur when LGA and JFK are on a southeast Runway 13 flow.
- Ralph also discussed some other delay reduction initiatives, including San Juan and Caribbean airspace.
- One project involves the NASA Ames Research Center. Initiatives include:
    - Terminal Sequencing and Spacing (TSS) – has been transferred to FAA for implementation.
    - Spot and Runway Departure Advisor (SARDA) – experimental surface tool, currently in Charlotte.
    - SOAR – assists in sequencing departure over the same fix from different airports.
    - Departure Sensitive Arrival Spacing (DSAS)
- Time Based Flow Management (TBFM) – tells enroute controller to delay an aircraft so that it will be in-sequence upon arrival in the terminal environment. Currently very successful at EWR and LGA.
- See Ralph's presentation here: http://teterborousersgroup.org/wp-content/uploads/2015/01/Airport-Delay-Reduction.pptx

Walter Randa – President, Leading Edge Deicing Specialists

- Walter is a pilot with an extensive background in deicing and aviation maintenance.
- His company performs extensive deicing training, and produces WingArmor™ anti-ice application equipment.
- Using traditional methods, it can take extensive amounts of time to have deicing fluid applied.
- Insufficient quantities of anti-ice fluids have sometimes been applied, leading to a temporary yet dramatic losses of control. Such events were often preceded by indoor anti-icing. A Falcon would typically require 27 gallons of deice fluid; but in one case, only 4 gallons were applied, .
- Using Walter's system, a 75-minute deicing procedure can be safely reduced to only 15 minutes.
- A single anti-icing application for large business jets can cost $10,000 to $15,000. Leading Edge's unit uses only $300 of fluid per application, and is so economical that it can easily pay for itself in 1 or 2 anti-icing events.
- Fluid used is biodegradable propylene glycol.
- Contaminated wing
    - Frost – responsible for 80% of accidents during takeoff.
    - Freezing fog – supercooled droplets of water in the air that freeze upon contact.
    - Snow – grains, pellets, or regular snow. After removing snow with a broom or other means, a tactile inspection must be done.
    - Freezing rain – anti-ice fluids will not last long in these conditions. In moderate or heavy freezing rain, departure is not possible.

    - Rain on cold-soaked wing – leads to clear ice. Fuel in the wing is cold, facilitating the freezing of rain on the wing.
- Accidents were typically caused by frost. Temperature was always close to 0 degrees C with a high relative humidity.
- In 71% of 32 accidents, no deicing was performed. In 13 of the 32, the pilot was aware of wing contamination on the wings, yet still elected to take off.
- FAA has canceled the "polished frost" rule.
- If fluid fails prior to takeoff, a 30% reduction of lift will occur. In 1/3 of the cases, a sudden bank to the left or right was observed just after takeoff. A significant number of aircraft involved were <u>not</u> equipped with slats.
- Fine particles of frost/ice the size of a grain of table salt, distributed as sparsely as *1 grain per square centimeter* can be enough to prevent the aircraft from taking off.
- The minimum amount of Type IV fluid on the wing for takeoff is the thickness of a dime.
- Clean aircraft concept must be adhered to at all times, and supported by company management.
- The following surfaces MUST be clear prior to takeoff:
    - Upper surfaces of wing and tail
    - Top of fuselage (to prevent FOD damage to engines)
    - Engine inlets
    - Gaps between surfaces – contaminants can slide into these gaps. Old anti-ice fluids can accumulate here, and possibly freeze, resulting in loss of control.
    - Bottom of horizontal stabilizer – the tail is an upside-down wing.
    - Probes – pitot, static, AOA, etc.
    - Windshield – Type IV will cause poor visibility
    - Main doors and emergency exits
    - APU inlet
    - Landing gear (brakes, micro-switches, hydraulic lines). NEVER force fluid into the brakes. This could cause premature failure.
- Up to 3mm (3x the thickness of a dime) is allowed underneath the wing, provided the frost is smooth and uniform thickness. This is a DRAG issue.
- Deicing – the removal of ice, snow, slush or frost from an aircraft surface. It is a THERMAL process. The heat melts the ice, whereas the glycol (when cooled to freezing temperatures) provides anti-ice protection. While spraying, the average fluid temperature loss is 10 deg. C for every 3 feet that the fluid flies through the air. This is why so much fluid is required.
- Anti-ice – application of fluid to protect it from snow/ice contamination.
- In freezing fog, Type I fluid provides only 3 minutes of protection. Type II would provide 30 minutes; Type III provides 20 minutes; and Type IV provides 80 (green) minutes.
- Types II and IV cannot be used on aircraft that rotate at less than 100 knots. Type IV is good down to minus 24 deg. C.
- Type I – 50/50 mix of glycol and water
- Type II – thick fluid that shears off during takeoff

- How much anti-ice fluid should be applied?
    - For every 100 sq. ft. of surface – 2 gallons minimum, 6 gallons maximum.
    - Fluid thickness is greatest in middle of wing, but is reduced drastically on the leading and trailing edges.
    - A Challenger 604 would require 13 to 39 gallons.
    - In the first 23 seconds of the takeoff roll, 75% of the fluid should have been shed off.
- Indoor anti-icing
    - Pilots sometimes request fluid application HOURS prior to departure. A heated hangar causes the water in the Type IV to evaporate, which prevents the fluid from shearing off.
    - Holdover time begins as soon as the fluid is applied.
- **Walter's product, WingArmor™, can anti-ice super-large business jets (100-ft. wingspan) very rapidly, which increases the remaining holdover time that pilots require for safe takeoffs.**
- Using WingArmor™, corporate flight departments can be freed from the excessive cost, FBO facility constraints, and lost time associated with traditional anti-icing techniques.
- Traditional anti-icing techniques cost $2000 to $3000 *per minute!* WingArmor™ provides the same performance at only a fraction of the cost.
- Anyone interested in Leading Edge Deicing Specialists' training or products are welcome to contact Walter Randa at wranda@iceangels.ca, or visit their website http://www.iceangels.ca/