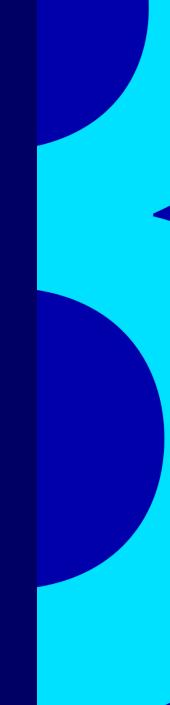
jetBlue

## JFK Winter Ops Prep



## Objectives.



Intro: Around the Room | Meet the Teams



**Winter Operations: Safety First** 



**JetBlue Cold Weather Program** 



**Deicing Roles & Responsibilities** 



Deicing at JFK: When? Where? & How?



**Deicing Event Preparation** 

## Objectives.



Intro: Around the Room | Meet the Teams



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## Winter Operations: Safety First, The Event Review and Mitigation





Winter Operations carries with it a level of risk that is unparalleled throughout the operation. During our 2024-25 Season, we incurred a damage, event details below:

At approximately 0940L, employees from BP Prime Flight were de-icing aircraft N3132J in the de-icing pad at PZ when a section of the boom's arm clipped the left horizontal stabilizer while turning between two aircraft. This results in the tip of the horizontal stabilizer being damaged close to the static wicks.

Since Then Prime Flight has instituted mitigating actions including the revision of the guide back process, ensuring boom centering and solidifying the bucket operator as the final voice in movement control.







Deicing Roles & Responsibilities

Deicing at JFK: When? Where? & How?

Deicing Event Preparation

# JetBlue Cold Weather Program: Protecting our Assets

The winter season is often accompanied by cold weather conditions. Temperatures in our region typically range between 30 – 43°F, with extreme weather being reported below these norms.

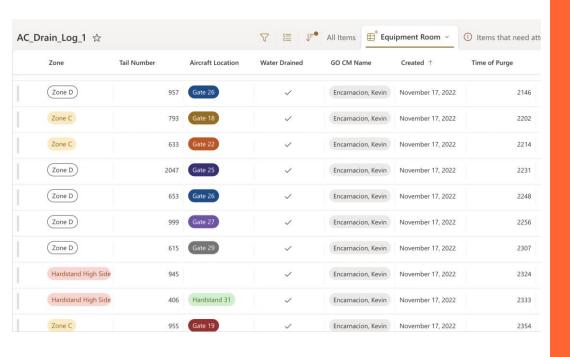
Exposure to freezing temps present unique risks to our fleet, our ground equipment and our crewmembers alike.

The cold weather program developed by our Safety & Senior Leadership teams, aims to mitigate the risks associated with seasonal lows.

The most vulnerable are our AC, which are susceptible to frozen pipes for both lavs and water, as well as cracked water tanks. These are highly problematic issues to fix, resulting in lost revenue for extended periods.



# JetBlue Cold Weather Program: Protecting our Assets at JFK



The program outlines practices and steps that are taken when temperatures are below freezing in our stations.

At JFK we focus on two major operational areas to avoid the painful effects:

- Pre-RON
- RON

During the offseason, we sanitized all 7 water trucks, converting 5 to drain and 2 to fill. This allows for us to manage Pre-RON draining in a zoned/coordinated approach for AC that have long sits on the ground exceeding an hour in 32 degrees or below.

While RON AC procedures are similar, we must navigate remote parking areas, hardstands and non-bay hangar spots.

The use of our lav/water drain logs via powerapps adds a layer of checks and balances to the winter ops drain operation. Mx is notified of each drain action and dispatched to purge. Each entry is reconciled by our GO team based on time in and time of departure to double down on our protection.

# JetBlue Cold Weather Program: Protecting our Assets at JFK

Draining is only the first safeguard, AC need to be kept warm, with an inside temperature of no less than 50°F.

Aircraft On-Gate: All aircraft should have PC Air connected immediately upon arrival.

Aircraft On a Hardstand: Must either be supplied by external pre-conditioned air or Apu on and monitored periodically by an airports' CM (every 30-60 mins).

#### Exceptions:

- Aircraft that RON inside of the H81 are not required to have PC Air attached.
- During high wind events, PC Air may be suspended, and APU usage will be the primary strategy in keeping aircraft warm.
- If GO/AGR is instructed not to connect PC Air by a Tech Ops crewmember or if it is disconnected throughout the night to complete required MX work, Tech Ops is responsible for reconnecting the air once work is completed. Our GO Blue Chiefs will review on gate as an added insurance.





JetBlue Cold Weather Program

Deicing Roles & Responsibilities

Deicing at JFK: When? Where? & How?

Deicing Event Preparation

# Team Roles & Responsibilities

## **Prime Flight**

## Prime for the active Deicing Process

Controls Deicing Pads and manpower. Liaises with Ops via the Tower Coordinator to ensure throughput is maintained.

Reports equipment issues and pad conditions in real time. Oversees the process for alignment with the clean air concept.

## **Operations**

## Coordination of AC Movement

Plans remote parking, AC gate staging & will coordinate movement on "Blue ramp." Focus on flow control and maximizing pad efficiency.

Monitor Tarmac & MOT

## **Aero**

## Maintain Safe Ramp Conditions

Clean the ramp, deicing pads and gate areas of snow build up. Allows for safe movement into all listed locations. Coordination with Ops.

## **Ground Ops**

## Active in asset protection

During cold weather and active precip, GSE charging, fueling and staging are the responsibility of Ground Operations CMs.

## **GSE**

#### **Equipment Reliability**

Focuses on ensuring equipment is event ready and troubleshoots issues in the field. Resolves mechanical failures so that the deicing process is not hindered.



## Team Roles & Responsibilities: Prime Flight

**The Tower Coordinator (TC)** – This role works in tandem with the JFK Ops ramp control to direct aircraft traffic to the active deicing locations (North/PZ); they must consider the amount of AC already in queue, average spray times (throughput table), AC with time restraints (MOT) and ramp congestion. To achieve this, the tower coordinator liaises with the pad commander(s) routinely to understand movement on both pads.

Using flight table resources such as GMS sent by the Ops team and departures per hour, must proactively review the pushback timelines of AC in each Zone (North/South) to determine the best deicing location. Communication with the Ramp Controller is pivotal to avoid over saturation.

The tower coordinator will retrieve spray times from the pad commander(s) and update the required hourly update to relay to the ops team via email. Spray times will also be used to determine flow control. Recommendations must be made to the ramp controller as to departing flight's deice locations if challenges are foreseeable.

In the event of MOT flights, return to pad AC or emergency deice instances, the ramp controller and tower coordinator will confer on the safest, most efficient pad/location for expedited handling.

During gate deicing, the TC will liaise with ramp control and the pad commander ahead of the process to ensure alignment and proper handling.

The Pad Commander/PC (Lead) – is responsible for all movement within the active deicing location/pad. This includes designating where AC will park for spraying (with the use of Ground to Air communication), deicing truck formations and placement, as well as coordination with AGR for repositions in/out of the deicing field.

During the deicing process, the commander will remain the point of contact to the flight deck, overseeing the type I deice and type IV application (Clean Aircraft Concept compliance). Upon completion, the PC will provide the read back for holdover calculations by the flight deck.

# Team Roles & Responsibilities: PF TC

#### Tower Coordinator Resources: JFK Flight Table | Scheduled Departures Per Hour

The flight activity table is used to identify the arrivals & departures per hour for an operating day. In this role, the departures are most relevant. A flight table will be provided at the beginning of the day(s) for which an event is scheduled.

- This region will specify the flight activity date; additional grouped rows can be added to capture information for multiple days in a range.
- The Total Scheduled Departures for the operating day can be found to the right of this tab/cell labelled "total departures."
- The Flight Hour & Interval Columns provides the time and hour range (also known as bank) for scheduled departures –

  i.e. In the 5<sup>th</sup> Flight hour; the range 5:00 05:59 would capture the count of all flights departing after 0500 but before 0600.
- The Departure Count is most crucial; it indicates how many AC/Flights intend to depart for the time range denoted by the flight interval column to the left. i.e during the 2000 2059 bank/interval

| Station | Flight Date | Flight Hour | Flight Interval | Departure Flight cou |
|---------|-------------|-------------|-----------------|----------------------|
| JFK     | 25-Sep      | 0           | 0:00 - 0:59     |                      |
|         | 1           | 1           | 1:00 - 1:59     |                      |
|         |             | 4           | 4:00 - 4:59     | 1                    |
|         |             | 5           | 5:00 - 5:59     | 2                    |
|         |             | 6           | 6:00 - 6:59     | 10                   |
|         |             | 7           | 7:00 - 7:59     | 10                   |
|         |             | 8           | 8:00 - 8:59     | 13                   |
|         |             | 9           | 9:00 - 9:59     | 19                   |
|         |             | 10 3        | 10:00 - 10:59   | 10                   |
|         |             | 11          | 11:00 - 11:59   | 7                    |
|         |             | 12          | 12:00 - 12:59   | 6                    |
|         |             | 13          | 13:00 - 13:59   | 5                    |
|         |             | 14          | 14:00 - 14:59   | 4                    |
|         |             | 15          | 15:00 - 15:59   | 7                    |
|         |             | 16          | 16:00 - 16:59   | 8                    |
|         |             | 17          | 17:00 - 17:59   | 5                    |
|         |             | 18          | 18:00 - 18:59   | 8                    |
|         |             | 19          | 19:00 - 19:59   | 6                    |
|         |             | 20          | 20:00 - 20:59   | 11                   |
|         |             | 21          | 21:00 - 21:59   | 8                    |
|         |             | 22          | 22:00 - 22:59   | 9                    |
|         |             | 23          | 23:00 - 23:59   |                      |
|         |             | 2 Total D   | epartures       | 149                  |



# Team Roles & Responsibilities: PF TC

#### Tower Coordinator Resources: Throughput Table

The Throughput Table is a breakdown of required spray times based on surface conditions (frost, snow/heavy snow etc.) and active number of deice pads in use.

For example, on a day where there is light snow, North and South are in use (North 2 pads, South two lanes). The average deice time expected is 15 minutes.

Given the above scenario, DI 14 & 15 on the North Side are active, 2 Lanes on the South for a total of 4 pads on the South. Together we have 6 pads in use. The throughput is 30. This means we anticipate 30 planes to be sprayed per hour.

#### Throughput may be impacted by:

- AC departure post deice from the pad
- AC traffic on the ramp
- · AC returning to the pad for additional deicing
- MOT flight movement in/out of the pad

Communication is necessary between the tower coordinator and the pad commander to ensure there isn't oversaturation in one area, also to avoid improper staging.

#### Average # of AC de/anti-iced per hour based on a 24hr truck operation

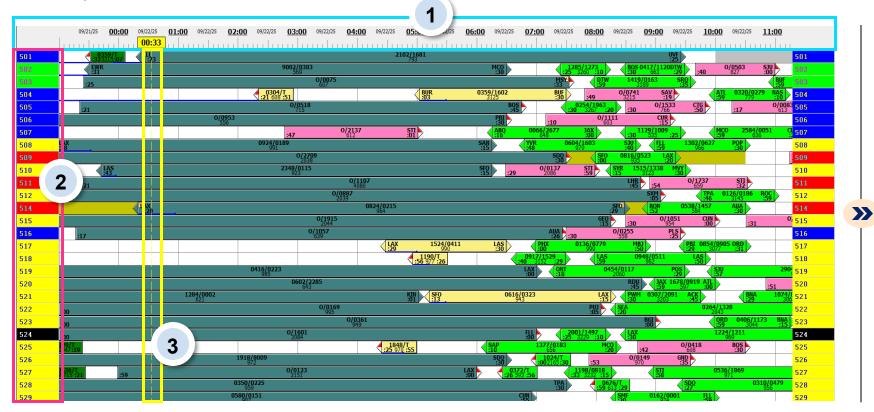
| # of Pads | Frost Deice Time: 5<br>minutes | Light to Moderate Snow<br>Deice Time: 15 minutes | Heavy Snow/Freezing<br>Rain/Ice Pellets Time: 30<br>minutes |  |  |
|-----------|--------------------------------|--|---|--|--|
| 2         | 6                              | 4  | 2   |  |  |
| 3         | 9                              | 6  | 3   |  |  |
| 4         | 12                             | 8  | 4   |  |  |
| 5         | 15                             | 10   | 5   |  |  |
| 6         | 18                             | 12   | 6   |  |  |
| 7         | 21                             | 14   | 8   |  |  |



# Team Roles & Responsibilities: PF TC

#### Tower Coordinator Resources: Throughput Table

- Gate Management Systems (GMS) provides the gate staging for departing/arriving flights.
- GMS is a liquid resource; it is impacted by gate changes due to return to gate flights, delays and OOS AC, to name a few disruptions.



Date and Time bar – Local Time from left to right 0000L – 2359L on the date in the gray bar.

Terminal and Gate Location –

Numbered from 501 – 530, IAT/PZ, shows the location of the plane its inbound time scheduled departure time often abbreviated STD (Scheduled Time of Departure).

Dashed Line indicating the current time on the date. Allows you to estimate gate departures with relation to STD.

# Team Roles & Responsibilities: JFK Ops



Time management is critical during Winter Operations. Ops is tasked with ensuring we avoid issues and possible fines related to flights that have closed their doors but are not yet airborne.

For this, they must monitor the "Tarmac" times, this is the amount of time allotted to a departure before the delay on the ground is deemed a violation.

For Domestic Departures and Arrivals the t-mac time is: **3 hours**For International Departures and Arrivals: **4 hours**\*If an aircraft has INOP LAV's, regardless of DOM/INTL, the tarmac time is **2 hours**.

If a flight exceeds the allotted tarmac time, JetBlue is fined up to \$27,500 per customer on that flight. See how the numbers add up:

A220: 140 seats = **\$3.85 million** A320: 162 seats = **\$4.45 million** A321: 200 seats = **\$5.50 million** 

To avoid a tarmac violation, the return to an open and available gate must be initiated prior to the prescribed times. Upon return to the gate, the option to deplane must be offered to the customers onboard.

Tarmac Challenges & Considerations:

- Human error (forgetting about the flight / not realizing a tarmac is taking place)
- Lack of communication surrounding long taxis / No gates available
- No GO team available to park
- No AO crewmember available to meet
- Jetbridge issues upon arrival
- Misunderstanding that tarmac begins when the aircraft blocks out. Tarmac begins at aircraft door close.





JetBlue Cold Weather Program

Deicing Roles & Responsibilities

Deicing at JFK: When? Where? & How?

Deicing Event Preparation

Governed by the "Clean Aircraft Concept" (a principle that requires all AC to be air worthy by ensuring all contaminants are removed), Deicing occurs whenever critical surfaces an AC show signs of contamination. These include:

"wings, control surfaces, engine inlets, winglets, sharklets, wing fence, crown radome, fairing vents, and other critical surfaces of the aircraft must be free of any contamination prior to beginning takeoff roll."

The flight crew must inspect these outlined areas prior to departure, during their walkaround sequence. Surface conditions alone do not dictate a need for deicing, hidden dangers may not be easily apparent, frost is one of them.

#### Limited exceptions apply:

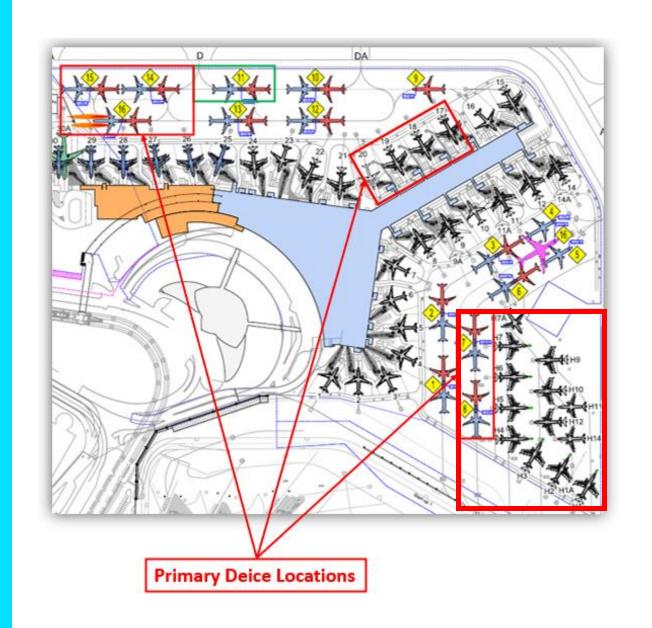
- A light coating of frost, up to 1/8 inch on the lower surfaces of the wing due to cold fuel, will not affect takeoff performance, and is therefore acceptable. (Ref. A220, A320/A321 and E190 FCOM Vol.1).
- Thin hoarfrost is acceptable on the upper surface of the fuselage. Thin hoarfrost is a white crystalline deposit, which usually develops uniformly on exposed surfaces on cold and cloudless nights; it is so thin a person can distinguish surface features (lines or markings) beneath it.

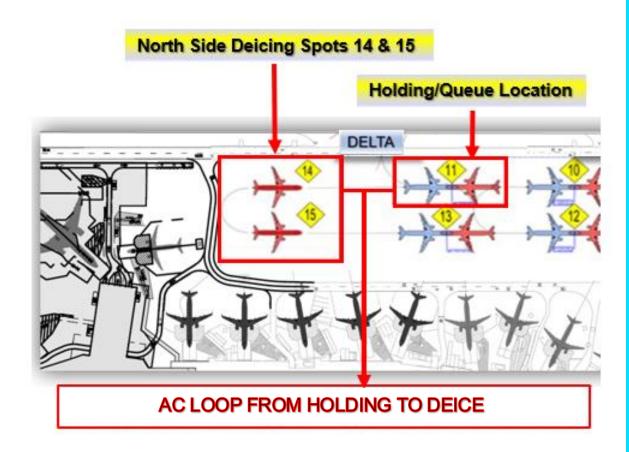
#### 3 Zones for active deicing:

- North Side Spots 14 & 15 Use for Spot Deicing
  - Allows for flow in and out of the high side
  - Exits available D or around to DA
- 2. PZ Deicing Lane Deicing
- 3. Gate Deicing (9 -14, 18 & 19)

\*Unattended AC Deicing and Prep

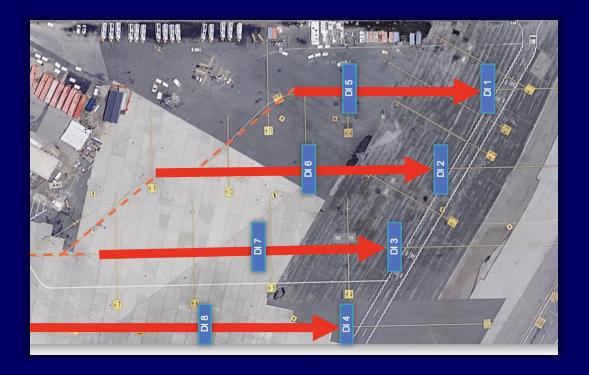
 2 Techs (Configure flaps High to Low/Low to High Meet by 14 based on flight activity and departures)





#### North Side Pad:

- 1. Usage Plan includes Gates 15 30, MOT Flights and PZ pad Overflow control.
- 2. Considerations & Operational Impact:
  - There are limited holding locations
  - AC movement is restricted between Gates 26 – 30 with one lane rotation in to out.
  - Operations Gate Staging plan is important
  - Delays on gate (26 30) impact deicing plan to pad
    - Mitigation plan: Tower Coordinator
  - Deicing Truck Staging is adjacent to Gate 30 with space for up to 8 trucks
  - Fuel & Deicing Fluid Refill stations located at PZ
  - Trucks must maneuver between active lanes and avoid taxing AC into pad locations



#### Parcel Zulu (PZ) South Pad:

- Usage Plan is dictated by event precipitation predication, schedule (reduction/full) AC movement and RON parking
  - Frost/Light Passing Precip 1 Lane active
  - Moderate Precip 2 Lanes active
  - Full Event 3 active lanes
  - Overflow & Special use (MOT, Route etc.)
     4<sup>th</sup> Lane under coordination with Ops
- 1. Considerations & Operational Impact:
  - Pad exit is controlled by IAT tower
    - Mitigation plan to loop back into t5 where possible
  - Mild precip calls for AGR OPS & PF increased coordination for movement in and out of PZ. Reposition times increased.
  - Swaps to AC parked here (if stacked or buried) require additional time.

#### Gate Deicing:

Gates Eligible based on measurements supplied by the Engineers (ARUP) are 8 – 14 & 17 -20

Deicing gate SOP is activated during use.

#### Considerations:

- Operational closure of gates 21
- VSR closure while deicing on Gates 17-20
- AC taxi time from gate to actives
- Gates 10 & 11 wing spacing
- GSE Staging across gates and Charging terminals (8-14)



The application of deicing fluid on critical surfaces performs two functions:

- Removal of contaminants
- Prevention of buildup of contaminants prior to takeoff

We use Type 1 Fluid in a sweeping process along with forced air to "clean" the aircraft. While there is limited holdover from its use, Type 1 is not used as an anti-icing agent.

Type 4, is thick and concentrated, this adds a thin layer of protection against precipitation that may compromise lift during takeoff.

The use of type 1 alone is known as a 1 Step and the use of Type 1 & 4, is known as a 2 Step. Type 4 is never applied with out the completion of a Type 1 procedure.

Holdover times are calculated by the pilot using a hot table for reference, this is the acceptable window or period of effectiveness of the deicing fluid prior to takeoff.

| FLUID TANK STATUS (OCT) |          |               |          |                 |  |  |  |
|-------------------------|----------|---------------|----------|-----------------|--|--|--|
| Tank                    | Mix      | Capacity      | Gallons  | Percentage Full |  |  |  |
| A-DILUTE                | 44%      | 21,000        | 17,694   | 84%             |  |  |  |
| B-DILUTE                | 46%      | 21,000        | 21,875   | 104%            |  |  |  |
| D-DILUTE                | 46%      | 21,000        | 21,875   | 104%            |  |  |  |
| G-DILUTE                | 43%      | 21,000        | 21,038   | 100%            |  |  |  |
| I-DILUTE                | 43%      | 21,000        | 19,522   | 93%             |  |  |  |
| L-DILUTE                | 45%      | 21,000        | 20,254   | 96%             |  |  |  |
| TOTAL                   |          | 126,000       | 122,258  | 97%             |  |  |  |
| C-CON                   | 100%     | 21,000        | 11,023   | 52%             |  |  |  |
| F-CON                   | 100%     | 21,000        | 21,000   | 100%            |  |  |  |
| H-CON                   | 100%     | 21,000        | 16000    | 76%             |  |  |  |
| K-CON                   | 100%     | 21,000        | 0        | 0%              |  |  |  |
| TOTAL                   |          | 84,000        | 48,023   | 57%             |  |  |  |
| IF BLEND                | TOTAL    | 168,000       | 169,446  | 101%            |  |  |  |
| E-IV                    | 100%     | 21,000        | 12,492   | 59%             |  |  |  |
| J-IV                    | 100%     | 21,000        | 6,934    | 33%             |  |  |  |
| TOTAL                   |          | 42,000        | 19,426   | 46%             |  |  |  |
|                         |          |               |          |                 |  |  |  |
|                         |          |               |          |                 |  |  |  |
|                         |          | Deliveries    |          | _               |  |  |  |
| Concentrate             | Type 1   | 6             | Type 4   | 1 1             |  |  |  |
|                         |          | 30000         |          | 5000            |  |  |  |
| RATE                    | Type 1   | \$ 9.12       | Type 4   | \$ 8.37         |  |  |  |
| IVIL                    | Турст    | \$ 273,600.00 | Турст    | \$ 41,850.00    |  |  |  |
| LAST YEAR COST          | \$ 11.39 | \$ 341,700.00 | \$ 10.58 | \$ 52,900.00    |  |  |  |
|                         |          |               |          |                 |  |  |  |
|                         |          |               | Water    | Dilute          |  |  |  |
|                         |          | 45%           | 55       | Mix             |  |  |  |
| Blend                   | TANK L   | 9000          | 11000    | 20000           |  |  |  |
|                         | TANK A   | 5000<br>COST  | 6111     | 11111           |  |  |  |
| RATE                    | WATER    | 6031          |          | \$ 25,000.00    |  |  |  |
| 1041                    | MAILIN   |               | <u> </u> | 20,000.00       |  |  |  |

Fluid on Hand of each deicing agent is closely monitored. Storage tanks are inspected regularly to avoid degradation.

Pre-season and daily event checks are conducted to fluid samples; this is done with use of a refractometer – a device that measures the viscosity/light absorption of deicing fluids to determine the freezing point, concentration and effectiveness.

At JFK we 12 tanks; 10 Type 1 tanks broken down further into 6 dilute and 4 concentrate, as well as 2 Type 4 concentrate tanks.

Our aim is to keep our reserves at 75-80 percent full (roughly 64k Type 1 and 31k of Type 4). This can yield up to an additional 143k of Type 1 once diluted.

Usage is determined on precipitation types, accumulation amounts and flight activity.

This years' glycol index is favorable and pricing has been low on orders to date.





JetBlue Cold Weather Program

Deicing Roles & Responsibilities

Deicing at JFK: When? Where? & How?

Deicing Event Preparation

## Deicing Event Prep: Pre Event Meeting(s)



Winter Preparedness takes constant communication and alignment. The forecast changes quickly and without warning, to combat this, we have developed a regular cadence of Winter Operations Meetings.

These calls are held daily at 1200L and the participants include a representative from:

- Prime Flight
- JFK OPS
- JFK Deicing (The AGR, Deicing and GSE MOD)
- System Deicing (System Deicing Manager)

Topics for these calls include the upcoming forecast – minimum 3 day outlook, event timelines, staffing, equipment status and deicing fluid on hand/ordering. Fluid tank maintenance has surfaced this year due to the overhaul that was completed.

At the 72 hour mark, staffing numbers are discussed for any imminent risk of precipitation. The plan is sharpened during the 48 hour call and solidified by the 24.

# **Deicing Event Prep: RON Parking Plan(s)**

Our Primary Deicing Pad at JFK doubles as our RON Parking Location. During "regular" Ops, this location, Parcel Zulu/PZ, houses up to 12 AC that will remain overnight.

The event type, forecasted precipitation amounts, active flight schedule and RON counts will impact the use of PZ for RON parking.

Typical parking plans start with 21 AC at the Gate, 12 AC at PZ, 6 AC at H81 & 6 AC at H87 with a saturation point of 45 RONs.



## Parcel Zulu Deicing 1 Lane Layout

1 Deicing (Outer) Lane w/ 2 Spray Locations / DI Spots | 12 Parking Locations





#### **Layout Considerations**

D4 & D8 occupies the outer lane and reduces the flow of traffic on the lower gates to the inner lane for both inbound and outbound traffic; Startup positions 7& 8 are unusable for pushback.

Primary Flow is out to Gulf which is under T4/IAT Tower control. Heavy periods of activity we need to monitor for possible DI 1 – 4 ramp reentry and exit Fox.

## Parcel Zulu Deicing 2 Lane Layout

1 PZ Deicing Lane w/ 2 Spray Locations / DI Spots | 7 Parking Locations



#### **Layout Considerations**

D7 & D3 occupies the first PZ lane and as a result, 5 parking spaces are lost. H3 – 7A. (Excluded from the count is the restricted location PZ 6)

7/12 Parking Spots remain. H1, 2, 8 - 12

## Parcel Zulu Deicing 3 Lane Layout

2 PZ Deicing Lanes w/ 4 Spray Locations / DI Spots | 3 Parking Locations



#### **Layout Considerations**

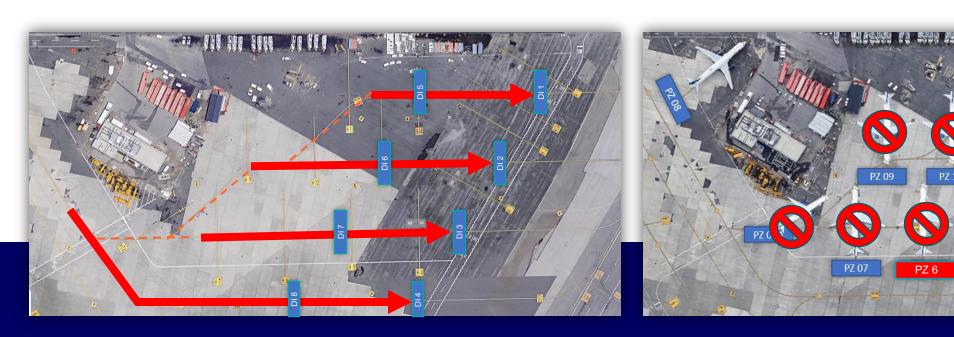
D7 & D3 occupies the first PZ lane and as a result, 5 parking spaces are lost. H3 – 7A. (Excluding the restricted location PZ 6)

D6 & D2 occupies the second PZ lane and as a result, an additional 4 parking spaces are lost. H2, H9, H10, H12. **(Excluding the restricted location PZ 14)** 

3/12 Parking Spots remain. H1, 2, 8 - 12

## Parcel Zulu Parking & Deicing Layout

4 Deicing Lanes Max w/ 8 Spray Locations / DI Spots | 1 Parking Location



#### **Layout Considerations**

D7 & D3 - 5 parking spaces are lost. H3 –7A.

D6 & D2 - 4 parking spaces are lost. H2, H9, H10, H12.

D5 & D1 occupies the third PZ lane and as a result, an additional 2 parking spaces are lost. H1, H11.

1/12 Parking Spots remain. H8

## **Deicing Event Prep: Station Notifications**

Within 24 hours of an event, a deicing event brief is sent to the station and all stakeholders, providing the following details:

- The forecast, including accumulation amounts and field conditions
- Deicing locations, activated lanes at PZ, manpower and Equipment Status
- RON parking estimations and parking plan
- **Ground Equipment Staging and Pad** conditions
- Ice Melt if needed
- Advisories as operationally pertinent
- Contact numbers for deicing leaders
- Cold weather reminders as needed

The brief sets the tone for the operational plan, startup and flow.

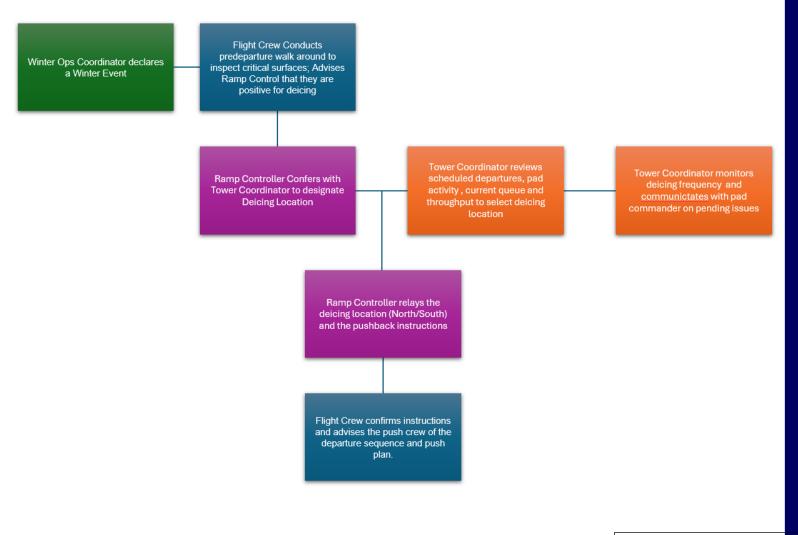


#### TOTAL 123,089 98 C-CON 99 F-CON 100% 21,000 4,338 21 100% 21,000 99 20.873 TOTAL 45.992 8,664 41

Estimated RON Count for 01.18 is currently 49 AC.

We will maximize Gate space with an aim of 22 RONS. Hangar 81 will support for 7 A/C

## Deicing Event Prep: Communication Tree Review



- Using the resources provided, the TC will monitor AC deicing and advise the ramp controller of flow concerns.
- To achieve this, the TC must remain alert and review spray times on each pad
- Coordination with the pad commanders ensures that issues which are not easily identifiable, may be relayed in real time.
- The pad commander can also ask for relief in the event the departure/release is prevented via IAT (South).
- The TC will ask for a fox exit (return to South ramp) where the plane can exit via the inner lane.
- TC can relay to the ramp controller the need to use the outer lane (DI 4 & DI 8)
- Spray times must be recorded accurately for throughput calculation and reporting

### Deicing Event Prep: Resource Review

FAA Holdover Table Review

Type 4 Fluid Holdover Times are calculated based on the specific brand and type of fluid that is being used. Remember, holdover clock begins once Type 4 <u>STARTS</u> spraying.

TABLE 30: TYPE IV HOLDOVER TIMES FOR CLARIANT SAFEWING MP IV LAUNCH

| Outside Air<br>Temperature <sup>1</sup>        | Fluid<br>Concentration<br>Fluid/Water<br>By % Volume | Miet2 or Ico | Snow<br>mixed with<br>Freezing Fog⁴ | Very Light<br>Snow, Snow<br>Grains or<br>Snow<br>Pellets <sup>5,6,7</sup> | Light<br>Snow, Snow<br>Grains or<br>Snow<br>Pellets <sup>5,6,7</sup> | Moderate<br>Snow, Snow<br>Grains or<br>Snow<br>Pellets <sup>5,7</sup> | Freezing<br>Drizzle <sup>8</sup> | Light<br>Freezing Rain | Rain on<br>Cold-Soaked<br>Wing <sup>9</sup> | Other <sup>10</sup> |
|--|--|--------------|-------------------------------------|---|--|---|----------------------------------|------------------------|---|---------------------|
| -3 °C and above<br>(27 °F and above)           | 100/0  | 4:00 - 4:00  | 0:50 - 1:20                         | 2:50 - 3:00   | 1:45 - 2:50  | 1:05 - 1:45   | 1:30 - 2:00                      | 1:00 - 1:40            | 0:15 - 1:40                                 |                     |
|  | 75/25  | 3:40 - 4:00  | 0:45 - 1:20                         | 3:00 - 3:00   | 1:45 - 3:00  | 1:00 - 1:45   | 1:40 - 2:00                      | 0:45 - 1:15            | 0:10 - 1:45                                 |                     |
|  | 50/50  | 1:25 - 2:45  | 0:20 - 0:35                         | 1:25 - 1:40   | 0:45 - 1:25  | 0:25 - 0:45   | 0:30 - 0:50                      | 0:20 - 0:25            |   |                     |
| below -3 to -8 °C<br>(below 27 to 18 °F)       | 100/0  | 1:00 - 1:55  | 0:40 - 1:05                         | 2:25 - 2:50   | 1:30 - 2:25  | 0:55 - 1:30   | 0:35 - 1:40                      | 0:25 - 0:45            |   |                     |
|  | 75/25  | 0:40 - 1:20  | 0:40 - 1:10                         | 2:40 - 3:00   | 1:30 - 2:40  | 0:50 - 1:30   | 0:25 - 1:10                      | 0:25 - 0:45            |   |                     |
| below -8 to -14 °C<br>(below 18 to 7 °F)       | 100/0  | 1:00 - 1:55  | 0:35 - 1:00                         | 2:10 - 2:30   | 1:20 - 2:10  | 0:50 - 1:20   | 0:35 - 1:4011                    | 0:25 - 0:4511          | 044171041                                   |                     |
|  | 75/25  | 0:40 - 1:20  | 0:35 - 1:00                         | 2:25 - 2:55   | 1:25 - 2:25  | 0:45 - 1:25   | 0:25 - 1:1011                    | 0:25 - 0:4511          | CAUTION:<br>No holdover time                |                     |
| below -14 to -18 °C<br>(below 7 to 0 °F)       | 100/0  | 0:30 - 0:50  | 0:05 - 0:15                         | 1:15 - 1:45   | 0:20 - 1:15  | 0:06 - 0:20   |                                  | guidelines exist       |   |                     |
| below -18 to -25 °C<br>(below 0 to -13 °F)     | 100/0  | 0:30 - 0:50  | 0:02 - 0:06                         | 0:30 - 0:45   | 0:09 - 0:30  | 0:02 - 0:09   |                                  |                        |   |                     |
| below -25 to -28.5 °C<br>(below -13 to -19 °F) | 100/0  | 0:30 - 0:50  | 0:01 - 0:04                         | 0:20 - 0:30   | 0:06 - 0:20  | 0:01 - 0:06   |                                  |                        |   |                     |

## **Deicing Event Prep: Resource Review**

#### **Event Deicing Activity Reporting**

This Form is used to relay spray times to the Operations Center during an active event. The Tower Coordinator will retrieve the following and update on the 45 of every hour (i.e 0445, 0545 etc.):

- Number of Pads in use
- Number of Trucks available
- Total Number of AC Sprayed
- Count of 1 Step
- Count of 2 Step (if any)
- Average Spray times
- Update on Deicing OOS trucks

Once filled, the form will email to the Operations Center for station reporting to the SOC. It is important to keep the cadence as prescribed to ensure that we can make operational adjustments as needed (delays or cancellations).

The form is stored on the SharePoint for process tracking and can be accessed via the shared link:

**Deicing Event Activity Update** 

Only users added to the permission list can access the form.

