Southwest Airlines
Lightning Procedures

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Rick Curtis
rick.curtis@wnco.com
SWA Lightning Detection

- Sources:
  - Airport Authority
  - WSI Lightning Feed

- Communication methods:
  - Sparky
  - Pop-up Messages
  - Graphical Displays
SWA Lightning Procedures Overview

- Storms containing lightning within 15 miles of a station are monitored.
- Ramp preparation begins when lightning is within 8 miles of a station (code yellow).
- Fueling is ceased when lightning is within 5 miles of a station (code yellow).
- All ramp operations cease when lightning is within 3 miles of a station (code red).
- 6 minutes must pass from the last lightning strike in order to resume operations (code green).
Lightning Communication System - Sparky

- SWA adheres to the local airport authority’s policy regarding lightning detection/ramp closure, and in addition, utilizes the Sparky system as an added Safety measure.
- Not all airports have a local lightning policy or procedures in place, therefore Sparky is essential.
- An airport’s policy may be more stringent than SWA’s - therefore the airport policy is followed.
- Sparky consists of audible and visual alarms that help notify all Employees of approaching lightning.
- Sparky is used in conjunction with either airport authority “warnings” or the WSI lightning feed for alerting station personnel.
Once a lightning message is received via the airport authority or WSI, a handheld and base unit is used to notify Employees of lightning within the area – operated by Station Leadership. This enables the lightning detection display/audible located on the Ramp. Units are located on light poles or other highly visible structures at the airport.
Considerations and Location Selection

- An internal study conducted in 2007-2008 determined which stations would receive Sparky to help increase our lightning safety.
- Determination factors included:
  - Frequency of lightning at a station
  - Layout of the station
  - Communication capabilities at the station
United States Precision Lightning Network™ (USPLN™)
Cloud-to-Ground Lightning Stroke Density 2007-2011

Lightning data provided by the United States Precision Lightning Network
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United States Precision Lightning Network™ (USPLN™)
Cloud-to-Ground Lightning Stroke Density Animation - 2007

Lightning data provided by the United States Precision Lightning Network
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## Top Ten SWA Stations with holds due to Lightning 2001-2005

<table>
<thead>
<tr>
<th>Station</th>
<th># of lightning events</th>
<th>Airport Provided System</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCO</td>
<td>1326</td>
<td>No</td>
</tr>
<tr>
<td>HOU</td>
<td>944</td>
<td>No</td>
</tr>
<tr>
<td>TPA</td>
<td>915</td>
<td>Yes</td>
</tr>
<tr>
<td>BWI</td>
<td>869</td>
<td>No</td>
</tr>
<tr>
<td>MSY</td>
<td>566</td>
<td>No</td>
</tr>
<tr>
<td>MDW</td>
<td>503</td>
<td>No</td>
</tr>
<tr>
<td>FLL</td>
<td>501</td>
<td>No</td>
</tr>
<tr>
<td>BNA</td>
<td>485</td>
<td>No</td>
</tr>
<tr>
<td>LAS</td>
<td>417</td>
<td>No</td>
</tr>
<tr>
<td>DAL</td>
<td>364</td>
<td>No</td>
</tr>
</tbody>
</table>
SWA Stations with Sparky as a result of internal study

(Provisions already in place for SAT and IAD via airport authority)
Additional Communication

- Dispatching Alerts are displayed on Operations workstations at the impacted station.
- These alerts are received at the station.
- Range rings on the display indicate 15, 8, 5, and 3 miles from the station.
Condition Red

- Lightning detected within 3 miles of the station.
- A blue light flashes until the Condition Red is canceled or changed back to Condition Yellow.
- A two-tone alarm will sound for three minutes.
- Ramp activity ceases.
- Employees remain in vehicles or move to a secure location until Condition Red is lifted.
- Employees contact Flight Crews and Dispatch to communicate ground services are suspended.
Condition Yellow

- Lightning detected within 8 miles of the station
- Amber light flashes until the Condition Yellow is canceled or changed to Condition Red.
- A single-tone alarm will sound for 1 minute.
- Headset communication ceases and hand signals are used.
- Ramp secures all equipment and closes all aircraft doors not being worked.
- Terminating aircraft have main gear chocked and jet bridge pulled away.
Condition Green

- The storm has moved beyond the field.
- 6 minutes from the last lightning strike must pass in order to resume operations.
- Condition Yellow or Condition Reds are replaced with Condition Green.
- Station personnel resume normal operations at the airport.
Other Carrier Policies

- All carriers fall within a 3-10 mile range for issuing a Code Yellow.
- All carriers fall within a 2-5 mile range for issuing a Code Red.
- In order to resume operations:
  - a storm must be 3+ miles away from a station
  - And/or 6-10 minutes must pass without additional lightning strikes.
- For lightning detection, other carriers use:
  - WSI, ThorGuard, airport tower/station personnel, airline in-house meteorologists, Vaisala, and National Lightning Detection Network.

Source A4A
Thank you!