ADS-B, MLAT, TCAS Tracking

Maritime Information Systems, Inc.

‘MotionInfo’
Clients

Development & Report Clients Include:

- El Paso International Airport (ELP), Oregon Department of Aviation, Rouge Valley Airport (MFR), Watsonville Municipal Airport (WVI), Marathon Petroleum - Andeavor/Tesoro, LAS – SWIM Data & OAG integration for DDMT, Surface ADS-B

Data Feed Clients Include:

- Department of Transportation – Maritime Administration (MARAD)
- USCG – Inland Waterways Data Feed
- I.H.S. Markit, Lloyds Maritime Intelligence Unit
<table>
<thead>
<tr>
<th>Reports &amp; Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface tracking at public airports</td>
</tr>
<tr>
<td>Excel Operations Reports</td>
</tr>
<tr>
<td>Custom Web-based Dashboard Reports</td>
</tr>
<tr>
<td>Airport Noise and Operations System</td>
</tr>
<tr>
<td>Departure Delay Mitigation Tool – (PACER)</td>
</tr>
<tr>
<td>Real-time data feeds</td>
</tr>
<tr>
<td>Historical Data (ADS-B &amp; FAA SWIM)</td>
</tr>
</tbody>
</table>
Sensor Network

- Full surface overage of 375+ airport surfaces & nearby airspace
- Live ADS-B Display
- Live data feeds
- 600+ site locations in the U.S. and overseas
Surface Tracking

- Multi-user Real Time Tracking Display
- Movement & Non-Movement Areas
  - To & From the Gate
- Non-Blocked Tail Numbers
  - No FAA or Subscriber Blocks
  - Commercial, GA, & Vehicle Operations
Currently at 17 Wisconsin Airports:

- Baraboo-Wisconsin Dells Regional (DLL)
- Capitol Airport (02C)
- Chippewa Valley Regional Airport (EAU)
- Cumberland Municipal Airport (UBE)
- Green Bay Austin Straubel International Airport (GRB)
- John H Batten International Airport (RAC)
- La Crosse Regional Airport (LSE)
- Mauston-New Lisbon Union Airport (82C)
- Monroe Municipal Airport (EFT)

- New Richmond Regional Airport (RNH)
- Richard I Bong Airport (SUW)
- Sheboygan County Memorial Airport (SBM)
- Southern Wisconsin Regional Airport (JVL)
- Three Lakes Municipal Airport (40D)
- Wausau Downtown Airport (AUW)
- West Bend Airport (ETB)
- Watertown Municipal Airport (RYV)
Surveillance Network

Duel Frequency ADS-B, MLAT, TCAS, ACARS, AIS
MIS Tracking Installation Instructions

This kit contains complete instructions for installation and setup of the MIS Tracking System.

Call for Activation and Technical Support: 401-247-7780

Equipment List

A 3' Fiberglass Aviation Antenna
B 4' Fiberglass Aviation Antenna
C 3' Wire Whip Tram Antenna
D 2 Soft Install Test Antennae
E MIS Receiver
F Power Supply
G 1 10' CAT5 Cable
H 3 50' Cables
I 2 Multi-Brackets (pre-attached)
J 1 "L" Bracket (pre-attached)
K 4 U-Bolts, Washers, Nuts

Equipment Specifications

A 3' Fiberglass Aviation Antenna
Frequency 1090 MHz, has a bracket / pole mount fitting of 6.35cm by 6.1cm x 3/4" x 3/8" (25x24 x .75 x .36)

D Soft Install Test Antennae
968MHz/935MHz / GSM / 3G Small Omnidirectional High-gain Antenna

Antennae Mounting

Brackets are included for flush or pole and stantion mounting of antennae.

Use Multi-Bracket for flush mount to board or building side

Use U-Bolts with Multi-Bracket for pole or stantion mounting

Receiver Wiring

MIS Receiver

[Diagram showing MIS Receiver connections and ports]
Receiver connections

- Ethernet
- USB Power
- BNC (VHF)
- SMA1 (1090 MHz ADS-B)
- SMA2 (978 MHz ADS-B)
Install Instructions

- Line of sight to tarmac
- Locate box inside within 10 feet of an ethernet internet connection and power.
- Locate antenna mounting location within 50 feet of the receiver box.
- Longer coax lengths up to 100 ft are available
- Run cable without kinks. Coil as needed.
- Install receiver box using mounting screw holes or store on shelf
- Connect all antenna cables and internet/ethernet cable.
- Power up after all other cables are connected
- If reboot is necessary, unplug power adapter from wall socket as Micro USB fitting is fragile
- Contact MIS
Installation & Examples

ROOF, POLE AND SIDEWALL MOUNTS, WEATHERTIGHT ENCLOSURE
Sedona Airport (SEZ)

- Tripod Mount on metal roof.
- 16,000 ADS-B messages per minute
False River
(HZR)
New Roads, LA

Custom side mount
Interior Install
Network Requirements

DETAILS & NOTES
Network
Diagram
<table>
<thead>
<tr>
<th>Network Setup - MIS Receiver outgoing ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>adsb.mgn.com, 23.253.55.224:[4 digit box number]</td>
</tr>
<tr>
<td>ais.mgn.com, 104.130.23.199:5[4 digit box number]</td>
</tr>
<tr>
<td>jump.mgn.com, 23.92.17.176:22</td>
</tr>
<tr>
<td>tux.mgn.com, 45.79.185.127:1883</td>
</tr>
<tr>
<td>mlat2.mgn.com, 69.164.222.158:40147</td>
</tr>
<tr>
<td>mlat3.mgn.com, 35.186.245.196:40147</td>
</tr>
<tr>
<td>Outbound ADS-B/MLAT data feed - Port &amp; IP address</td>
</tr>
</tbody>
</table>
Receiver MAC IDs start with B8:AE:ED

1

For flexibility, please use the destination host name instead of destination IP in the firewall if possible, as the IPs could change in the future.

2

Please allow all outgoing traffic on port 80 from our devices.

3

There may be a need for additional outgoing ports.

4
Installed Equipment Information

- DHCP or Static IP
- Internet Connection (Hardwired, WIFI, or Cellular)
- Survey Grade Coordinates (Latitude, Longitude, Altitude)
- Pictures of Installation
- Code or Identifier for each Site
Network Monitoring
<table>
<thead>
<tr>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gates</td>
</tr>
<tr>
<td>Non-Movement Areas</td>
</tr>
<tr>
<td>Taxiways</td>
</tr>
<tr>
<td>Runways</td>
</tr>
<tr>
<td>Vehicle Zones/Routes</td>
</tr>
<tr>
<td>The Spots</td>
</tr>
<tr>
<td>Other...</td>
</tr>
<tr>
<td>Parameter</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>datetime</td>
</tr>
<tr>
<td>accuracyHorizontal</td>
</tr>
<tr>
<td>accuracyVertical</td>
</tr>
<tr>
<td>course</td>
</tr>
<tr>
<td>speedKts</td>
</tr>
<tr>
<td>altitude</td>
</tr>
<tr>
<td>bank</td>
</tr>
<tr>
<td>ptch</td>
</tr>
</tbody>
</table>
Uses

ADS-B, MLAT
Uses of ADS-B Data

- Airport Marketing
- Airspace Planning
- Detect runway incursions
- Landing Fee Management
- Master Plan Data Source
- Noise Management
- Operations Counts
- Situational Awareness

- Accident Investigations
- ATS conformance monitoring
- Customer Service - Radio Check
- Display in Pilot Lounge
- Lighting Control Automation & Operation
- Airport ground vehicle and aircraft rescue and firefighting vehicle operational needs
Reports

Customizable Web Based Interactive Reports
Data Sources

• MIS Network:
  • ACARS (VHF)
  • ADS-B (978 & 1090 MHz)
  • AIS (VHF)
  • MLAT (1090 MHz)
  • TCAS (1090 MHz)
  • ATSC (Advanced Train Control System)
    *Under development

• External Data Sources:
  • FAA SWIM – Flight Plans & Tracks
  • NOAA Weather Data
  • OAG – Commercial Schedule Date
<table>
<thead>
<tr>
<th>RUNWAY</th>
<th>% Arr</th>
<th>% Dep</th>
</tr>
</thead>
<tbody>
<tr>
<td>26L</td>
<td>39.18%</td>
<td>39.01%</td>
</tr>
<tr>
<td>08R</td>
<td>59.41%</td>
<td>60.99%</td>
</tr>
<tr>
<td>26R</td>
<td>0.71%</td>
<td>0.12%</td>
</tr>
<tr>
<td>08L</td>
<td>0.85%</td>
<td>0.12%</td>
</tr>
<tr>
<td>Total</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Runway Usage by Body Type

Arrival & Departure lines are illustrative only and do not represent actual operations.
### Runway 33 Arrivals

<table>
<thead>
<tr>
<th>Oper ID</th>
<th>Time</th>
<th>ACTYPE</th>
<th>Class</th>
<th>SubClass</th>
<th>ACID</th>
<th>DAI</th>
<th>ALCODE</th>
<th>RUNWAY</th>
<th>Mode5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1542123986</td>
<td>11/17/2018 13:46:26</td>
<td>FW00</td>
<td>U</td>
<td>U</td>
<td>N297GB</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A31013</td>
</tr>
<tr>
<td>1541965934</td>
<td>11/10/2018 16:05:34</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td>A</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1541862357</td>
<td>11/10/2018 15:55:57</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4727</td>
</tr>
<tr>
<td>1541854703</td>
<td>11/10/2018 12:58:23</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>N449RU</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1541683322</td>
<td>11/8/2018 10:22:02</td>
<td>C110</td>
<td>U</td>
<td>U</td>
<td>N4295GB</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1541492747</td>
<td>11/6/2018 09:40:47</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1541496250</td>
<td>11/6/2018 09:24:10</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1541421113</td>
<td>11/5/2018 12:31:53</td>
<td>PC12</td>
<td>U</td>
<td>U</td>
<td>N88YU</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1540744559</td>
<td>10/28/2018 16:35:58</td>
<td>C182</td>
<td>U</td>
<td>U</td>
<td>N5005S</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>15407491924</td>
<td>10/28/2018 15:52:04</td>
<td>DA44</td>
<td>U</td>
<td>U</td>
<td>N141HL</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1540730936</td>
<td>10/28/2018 12:48:56</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>N305SN</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1540579795</td>
<td>10/27/2018 16:23:15</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>A</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1540563317</td>
<td>10/27/2018 14:44:57</td>
<td>PC12</td>
<td>U</td>
<td>U</td>
<td>N1655B</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1540572301</td>
<td>10/26/2018 18:06:41</td>
<td>C110</td>
<td>U</td>
<td>U</td>
<td>N108P</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1540569977</td>
<td>10/26/2018 13:52:57</td>
<td>H258</td>
<td>U</td>
<td>U</td>
<td>N523WG</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1540567466</td>
<td>10/26/2018 13:24:28</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>N300HM</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1540472263</td>
<td>10/25/2018 12:58:23</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>A</td>
<td>33</td>
<td>A4427</td>
</tr>
<tr>
<td>1540468629</td>
<td>10/25/2018 11:47:09</td>
<td>PC12</td>
<td>P</td>
<td>S</td>
<td>N5165B</td>
<td>A</td>
<td>U</td>
<td>33</td>
<td>A4427</td>
</tr>
</tbody>
</table>

### Date Business M-Prop S-Prop Unit Total
<table>
<thead>
<tr>
<th>Date</th>
<th>Business</th>
<th>M-Prop</th>
<th>S-Prop</th>
<th>Unit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/13/18</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11/16/18</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>11/19/18</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>11/26/18</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>11/29/18</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>12/2/18</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

Total: 2 + 1 = 18 22
## Noise Events

**Nbr of Events by DBA**

| DBAMAX | 45.10 | 109.80 |

### Narrow
- **United Airlines**
  - Max Time: 6/14/2017 6:40:44 PM
  - ACTYPE: A320
  - DAO: ARR
  - RUNWAY: 9L
  - DBAMAX: 109.60

### Regional
- **Skywest Airlines**
  - ACTYPE: E75L
  - DAO: DEP
  - RUNWAY: 22L
  - DBAMAX: 108.70

- **United Airlines**
  - Max Time: 5/17/2017 11:22:37 AM
  - ACTYPE: B753
  - DAO: ARR
  - RUNWAY: 9L
  - DBAMAX: 108.10

- **Spirit Airlines**
  - Max Time: 4/4/2017 10:00:40 AM
  - ACTYPE: A319
  - DAO: ARR
  - RUNWAY: 27L
  - DBAMAX: 107.60

### Wide
- **Polar Air Cargo**
  - Max Time: 3/5/2017 11:22:20 PM
  - ACTYPE: B744
  - DAO: DEP
  - RUNWAY: 28R
  - DBAMAX: 107.60

- **Asiana Airlines**
  - Max Time: 3/17/2017 10:24:58 PM
  - ACTYPE: B744
  - DAO: DEP
  - RUNWAY: 28R
  - DBAMAX: 107.00

- **Cathay Pacific**
  - Max Time: 3/25/2017 12:34:36 AM
  - ACTYPE: B748
  - DAO: DEP
  - RUNWAY: 32L
  - DBAMAX: 106.60

- **Delta Air Lines**
  - Max Time: 5/2/2017 10:00:51 AM
  - ACTYPE: A319
  - DAO: ARR
  - RUNWAY: 27R
  - DBAMAX: 106.60

- **Skywest Airlines**
  - Max Time: 6/14/2017 11:43:39 PM
  - ACTYPE: CRJ2
  - DAO: DEP
  - RUNWAY: 28R
  - DBAMAX: 106.30

- **Lufthansa Cargo**
  - Max Time: 4/5/2017 10:06:09 AM
  - ACTYPE: MD11
  - DAO: ARR
  - RUNWAY: 28C
  - DBAMAX: 106.10

- **Atlantic Southeast Airlines**
  - Max Time: 4/5/2017 5:56:51 PM
  - ACTYPE: E145
  - DAO: ARR
  - RUNWAY: 10C
  - DBAMAX: 105.60

- **GoJet**
  - ACTYPE: CRJ7
  - DAO: ARR
  - RUNWAY: 9R
  - DBAMAX: 105.60

- **Skywest Airlines**
  - Max Time: 6/12/2017 12:55:09 PM
  - ACTYPE: E75L
  - DAO: DEP
  - RUNWAY: 22L
  - DBAMAX: 105.40

- **Asiana Airlines**
  - Max Time: 6/12/2017 12:16:03 PM
  - ACTYPE: B744
  - DAO: DEP
  - RUNWAY: 28R
  - DBAMAX: 105.40

- **China Cargo Airlines**
  - Max Time: 6/12/2017 1:24:03 AM
  - ACTYPE: B744
  - DAO: DEP
  - RUNWAY: 28R
  - DBAMAX: 105.10

- **Lufthansa Cargo**
  - Max Time: 2/12/2016 10:52:16 PM
  - ACTYPE: MD11
  - DAO: ARR
  - RUNWAY: 28R
  - DBAMAX: 105.10

- **United Airlines**
  - Max Time: 5/10/2017 10:53:38 AM
  - ACTYPE: A320
  - DAO: DEP
  - RUNWAY: 10L
  - DBAMAX: 104.90

- **Asiana Airlines**
  - Max Time: 1/1/2017 12:41:34 AM
  - ACTYPE: B744
  - DAO: DEP
  - RUNWAY: 28R
  - DBAMAX: 104.60

- **American Airlines**
  - Max Time: 4/5/2017 5:30:40 PM
  - ACTYPE: B738
  - DAO: ARR
  - RUNWAY: 9L
  - DBAMAX: 104.70

- **United Airlines**
  - Max Time: 5/18/2017 7:05:39 PM
  - ACTYPE: B737
  - DAO: DEP
  - RUNWAY: 27R
  - DBAMAX: 104.60

- **Envoy**
  - Max Time: 2/9/2017 3:37:40 PM
  - ACTYPE: E145
  - DAO: DEP
  - RUNWAY: 30L
  - DBAMAX: 104.60

- **Alaska Airlines**
  - Max Time: 4/5/2017 5:48:40 PM
  - ACTYPE: B739
  - DAO: ARR
  - RUNWAY: 9L
  - DBAMAX: 104.20

- **Skywest Airlines**
  - Max Time: 3/20/2017 7:45:59 PM
  - ACTYPE: CRJ2
  - DAO: ARR
  - RUNWAY: 9L
  - DBAMAX: 104.10

- **Skywest Airlines**
  - Max Time: 5/13/2017 1:59:41 PM
  - ACTYPE: CRJ2
  - DAO: ARR
  - RUNWAY: 28R
  - DBAMAX: 104.10

- **Federal Express**
  - Max Time: 1/6/2017 4:37:23 AM
  - ACTYPE: DC-10
  - DAO: ARR
  - RUNWAY: 28R
  - DBAMAX: 104.10

- **American Airlines**
  - Max Time: 3/1/2017 12:13:20 PM
  - ACTYPE: B738
  - DAO: DEP
  - RUNWAY: 28R
  - DBAMAX: 103.90

- **United Airlines**
  - Max Time: 2/1/2017 207:36 PM
  - ACTYPE: A319
  - DAO: DEP
  - RUNWAY: 22L
  - DBAMAX: 103.90
## Predicted fleet health - overview

### Issue details

<table>
<thead>
<tr>
<th>Tail Number</th>
<th>Type</th>
<th>MessageSummary</th>
<th>Part ref...</th>
</tr>
</thead>
<tbody>
<tr>
<td>1AODT</td>
<td>Recom.</td>
<td>Fuel consumption increase predicted, engine was...</td>
<td>3620</td>
</tr>
<tr>
<td>1AOIF</td>
<td>Anomaly</td>
<td>Significant engine second stage pressure anomaly</td>
<td>3840</td>
</tr>
<tr>
<td>1AOIF</td>
<td>Recom.</td>
<td>Fuel consumption increase predicted, engine was...</td>
<td>3620</td>
</tr>
<tr>
<td>1AOIF</td>
<td>Anomaly</td>
<td>Significant engine second stage pressure anomaly</td>
<td>3840</td>
</tr>
<tr>
<td>1AOIE</td>
<td>Maintenance mes...</td>
<td>Maintenance Message combination suggests sign...</td>
<td>2784</td>
</tr>
<tr>
<td>1AOIE</td>
<td>M1, model forecast</td>
<td>Bled air anomaly prediction</td>
<td>7390</td>
</tr>
<tr>
<td>1AOIA</td>
<td>Maintenance mes...</td>
<td>Maintenance Message combination suggests sign...</td>
<td>2784</td>
</tr>
<tr>
<td>1AOIF</td>
<td>Recom.</td>
<td>Fuel consumption increase predicted, engine was...</td>
<td>3620</td>
</tr>
<tr>
<td>1AOFA</td>
<td>Anomaly</td>
<td>Significant engine second stage pressure anomaly</td>
<td>3840</td>
</tr>
<tr>
<td>1ABYF</td>
<td>Maintenance mes...</td>
<td>Maintenance Message combination suggests sign...</td>
<td>2784</td>
</tr>
<tr>
<td>1ABYE</td>
<td>Anomaly</td>
<td>Significant engine second stage pressure anomaly</td>
<td>3840</td>
</tr>
<tr>
<td>1ABYE</td>
<td>Recom.</td>
<td>Fuel consumption increase predicted, engine was...</td>
<td>3620</td>
</tr>
<tr>
<td>1ABYD</td>
<td>Anomaly</td>
<td>Significant engine second stage pressure anomaly</td>
<td>3840</td>
</tr>
</tbody>
</table>

Click on any aircraft to see its location and warnings.

### Flight schedule

<table>
<thead>
<tr>
<th></th>
<th>StartDate</th>
<th>EndDate</th>
<th>Origin</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1ABAO</td>
<td>SYD 13:13</td>
<td>MAD 09:19</td>
<td>SYD 10:11</td>
<td>DXB 06:21</td>
</tr>
<tr>
<td>1ABBC</td>
<td>HRG 15:37</td>
<td>HRG 10:15</td>
<td>HRG 10:15</td>
<td>SYD 16:24</td>
</tr>
<tr>
<td>1ABKO</td>
<td>SYD 14:15</td>
<td>LAX 06:59</td>
<td>LAX 12:01</td>
<td>NRT 06:21</td>
</tr>
<tr>
<td>1ABGO</td>
<td>HRG 03:46</td>
<td>LAX 02:46</td>
<td>LAX 02:46</td>
<td>LHR 02:46</td>
</tr>
<tr>
<td>1AOJD</td>
<td>LAX 20:36</td>
<td>AXL 07:02</td>
<td>AXL 07:02</td>
<td>SEA 06:18</td>
</tr>
</tbody>
</table>

- **Maintenance**
- **OnGround**
- **InFlight**
<table>
<thead>
<tr>
<th>DAO</th>
<th>Airline</th>
<th>Aircraft ID</th>
<th>Aircraft ID</th>
<th>Owner</th>
<th>street</th>
<th>City</th>
<th>State</th>
<th>MFR</th>
<th>Ops</th>
<th>MGLW</th>
<th>Landing Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAY</td>
<td>Sunrise Asset Management Llc</td>
<td>N317NV</td>
<td>1201 N TOWN CENTER DR</td>
<td>Las Vegas NV</td>
<td>Airbus</td>
<td>17</td>
<td>137,800</td>
<td>$2,653</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAY</td>
<td>Sunrise Asset Management Llc</td>
<td>N319NV</td>
<td>1201 N TOWN CENTER DR</td>
<td>Las Vegas NV</td>
<td>Airbus</td>
<td>11</td>
<td>137,800</td>
<td>$4,942</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GA</td>
<td>Horizon Air Industries Inc</td>
<td>N426QX</td>
<td>C/O LEGAL DEPT SEAZL</td>
<td>Seatac WA</td>
<td>Bombardier</td>
<td>16</td>
<td>60,500</td>
<td>$4,104</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QXE</td>
<td>Horizon Air Industries Inc</td>
<td>N430QX</td>
<td>C/O LEGAL DEPT - SEAZL</td>
<td>Seatac WA</td>
<td>Bombardier</td>
<td>17</td>
<td>60,500</td>
<td>$3,353</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GA</td>
<td>Horizon Air Industries Inc</td>
<td>N432QX</td>
<td>C/O LEGAL DEPT SEAZL</td>
<td>Seatac WA</td>
<td>Bombardier</td>
<td>13</td>
<td>60,500</td>
<td>$3,335</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GA</td>
<td>Horizon Air Industries Inc</td>
<td>N441QX</td>
<td>C/O LEGAL DEPARTMENT - SEAZL</td>
<td>Seatac WA</td>
<td>Bombardier</td>
<td>13</td>
<td>60,500</td>
<td>$3,335</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QXE</td>
<td>Horizon Air Industries Inc</td>
<td>N436QX</td>
<td>C/O LEGAL DEPT SEAZL</td>
<td>Seatac WA</td>
<td>Bombardier</td>
<td>16</td>
<td>60,500</td>
<td>$3,156</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QXE</td>
<td>Horizon Air Industries Inc</td>
<td>N446QX</td>
<td>C/O LEGAL DEPARTMENT - SEAZL</td>
<td>Seatac WA</td>
<td>Bombardier</td>
<td>16</td>
<td>60,500</td>
<td>$3,156</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QXE</td>
<td>Horizon Air Industries Inc</td>
<td>N447QX</td>
<td>C/O LEGAL DEPT - SEAZL</td>
<td>Seatac WA</td>
<td>Bombardier</td>
<td>16</td>
<td>60,500</td>
<td>$3,156</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPZ</td>
<td>Delta Air Lines Inc</td>
<td>N623CZ</td>
<td>1775 M H JACKSON SERVICE RD</td>
<td>Atlanta GA</td>
<td>EMBRAER</td>
<td>13</td>
<td>72,320</td>
<td>$3,065</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAY</td>
<td>Sunrise Asset Management Llc</td>
<td>N336NV</td>
<td>1201 N TOWN CENTER DR</td>
<td>Las Vegas NV</td>
<td>Airbus</td>
<td>5</td>
<td>137,800</td>
<td>$2,246</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QXE</td>
<td>Bcc Equipment Leasing Corp</td>
<td>N412QX</td>
<td>PO BOX 3707 McC. 20-63</td>
<td>Seattle WA</td>
<td>Bombardier</td>
<td>11</td>
<td>60,500</td>
<td>$2,170</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QXE</td>
<td>Horizon Air Industries Inc</td>
<td>N440QX</td>
<td>C/O LEGAL DEPT - SEAZL</td>
<td>Seatac WA</td>
<td>Bombardier</td>
<td>11</td>
<td>60,500</td>
<td>$2,170</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPZ</td>
<td>Delta Air Lines Inc</td>
<td>N633CZ</td>
<td>1775 M H JACKSON SERVICE RD</td>
<td>Atlanta GA</td>
<td>EMBRAER</td>
<td>9</td>
<td>72,320</td>
<td>$2,122</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPZ</td>
<td>Delta Air Lines Inc</td>
<td>N602CZ</td>
<td>1775 M H JACKSON SERVICE RD</td>
<td>Atlanta GA</td>
<td>EMBRAER</td>
<td>8</td>
<td>72,320</td>
<td>$1,886</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPZ</td>
<td>Delta Air Lines Inc</td>
<td>N627CZ</td>
<td>1775 M H JACKSON SERVICE RD</td>
<td>Atlanta GA</td>
<td>EMBRAER</td>
<td>8</td>
<td>72,320</td>
<td>$1,886</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPZ</td>
<td>Delta Air Lines Inc</td>
<td>N632CZ</td>
<td>1775 M H JACKSON SERVICE RD</td>
<td>Atlanta GA</td>
<td>EMBRAER</td>
<td>8</td>
<td>72,320</td>
<td>$1,886</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SKW</td>
<td>Skywest Airlines Inc</td>
<td>N153SY</td>
<td>444 S RIVER RD</td>
<td>St George UT</td>
<td>EMBRAER</td>
<td>8</td>
<td>72,320</td>
<td>$1,886</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QXE</td>
<td>Horizon Air Industries Inc</td>
<td>N435QX</td>
<td>C/O LEGAL DEPT SEAZL</td>
<td>Seatac WA</td>
<td>Bombardier</td>
<td>9</td>
<td>60,500</td>
<td>$1,775</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QXE</td>
<td>Horizon Air Industries Inc</td>
<td>N435QX</td>
<td>C/O LEGAL DEPT SEAZL</td>
<td>Seatac WA</td>
<td>Bombardier</td>
<td>9</td>
<td>60,500</td>
<td>$1,775</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAY</td>
<td>Sunrise Asset Management Llc</td>
<td>N319NV</td>
<td>1201 N TOWN CENTER DR</td>
<td>Las Vegas NV</td>
<td>Airbus</td>
<td>11</td>
<td>60,500</td>
<td>$1,666</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAY</td>
<td>Sunrise Asset Management Llc</td>
<td>N319NV</td>
<td>1201 N TOWN CENTER DR</td>
<td>Las Vegas NV</td>
<td>Airbus</td>
<td>7</td>
<td>72,320</td>
<td>$1,650</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAY</td>
<td>Sunrise Asset Management Llc</td>
<td>N319NV</td>
<td>1201 N TOWN CENTER DR</td>
<td>Las Vegas NV</td>
<td>Airbus</td>
<td>7</td>
<td>72,320</td>
<td>$1,650</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAY</td>
<td>Sunrise Asset Management Llc</td>
<td>N319NV</td>
<td>1201 N TOWN CENTER DR</td>
<td>Las Vegas NV</td>
<td>Airbus</td>
<td>7</td>
<td>72,320</td>
<td>$1,650</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Curtis Hedgepeth
LAS-McCarran International Airport
Communications Control Manager
O: 702-261-4014
C: 702-480-5256
curtish@mccarran.com
Clark County Department of Aviation – Las Vegas (LAS)

- ADS-B installed at LAS, HEN & NLV
- Departure Delay Mitigation Tool (DDMT) (GA EOBT)
  - FAA SWIM Data (FDPS/TFMS)
  - OAG Scheduling Data
  - ADS-B verifies departures of Blocked Tail Numbered aircraft
- Kiosk Developed for use at FBOs
- Interactive Text Messaging
- MITRE integration - work in progress (PACER)
Noise Monitoring Management System

• Noise Complaint Database
  • Web based complaint form
  • Automatic Email Notifications
  • Web based statuses & complaint archiving

• Complaint Investigation Data
  • FAA SWIM
  • ADS-B Tracks
  • MLAT
  • Mode S

• Complaint Investigation Process
  • Filter for incident date and time
  • Zoom in to find aircraft on map
  • Choose aircrafts of interest
  • Click for Google Earth replay view
  • Save file for future reference
  • Record results in complaint database
  • Close the case
Goals

- Work with all Wisconsin Public Use Airports with over 500 operations
- Provide full coverage at low altitude
- Full tracking for flight school aircraft operations, EMS, etc.
- Search & Rescue Coverage
Terrestrial ADS-B Network

- Surface tracking at public airports
- Excel Operations Reports
- Custom Web-based Dashboard Reports
- Airport Noise and Operations System
- Departure Delay Mitigation Tool – (PACER)
- Real-time data feeds
- Historical Data (ADS-B & FAA SWIM)
Contact Us

• Moses Calouro
• MIS Project Lead
• mjc@mgn.com
• 401-247-7780 x 804
• http://www.motioninfo.net