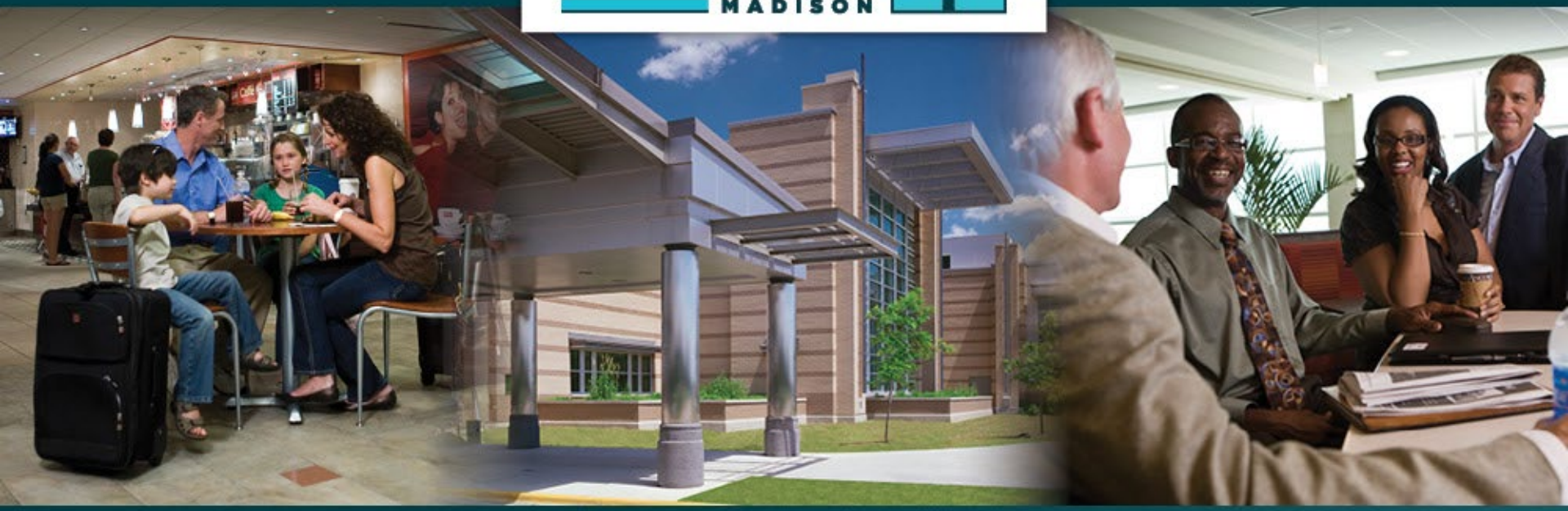
DANE COUNTY
REGIONAL AIRPORT
MADISON



Understanding Your AWOS/ASOS

2022 WAMA CONFERNECE

Presenters: Marcia Cronce, NWS & Michal Junik, MSN

It's all about the journey.

Bio

- Marcia is a meteorologist at the National Weather Service Milwaukee/Sullivan (serving Madison too)
  - Issues routine forecasts for aviation, public, fire weather, and marine
  - Issues warnings for thunderstorms, tornadoes, winter storms
  - Aviation Program Leader – Creates partnerships with airport managers and operations, advises coworkers based on customer feedback and forecast verification, leads efforts to develop digital aviation forecasts
- Atmospheric Sciences: Bachelors degree from UND and Masters degree from UIUC

Bio

- Michal Junik is currently an Airport Operations Supervisor at Dane County Regional Airport. Michal's responsibilities can be summarized to the safe, efficient, and secure operation of the airport on a day to day basis.
- Prior to joining DCRA, Michal worked as an Airport Operations Specialist at Central Illinois Regional Airport from May 2017 to January 2019. Michal graduated from Southern Illinois University – Carbondale in May 2017 and has a Bachelor in Applied Science majoring in Aviation Management and minoring in Airport Planning and Air Traffic Control .

Discussion Outline

- Marcia Cronce will be discussing how the automated weather observation system works, their varieties, and what can be done should an outage occur.

- Michal Junik, who was on duty for the event, will be giving a detailed explanation of the incident, what was done, who was contacted, and lessons learned.

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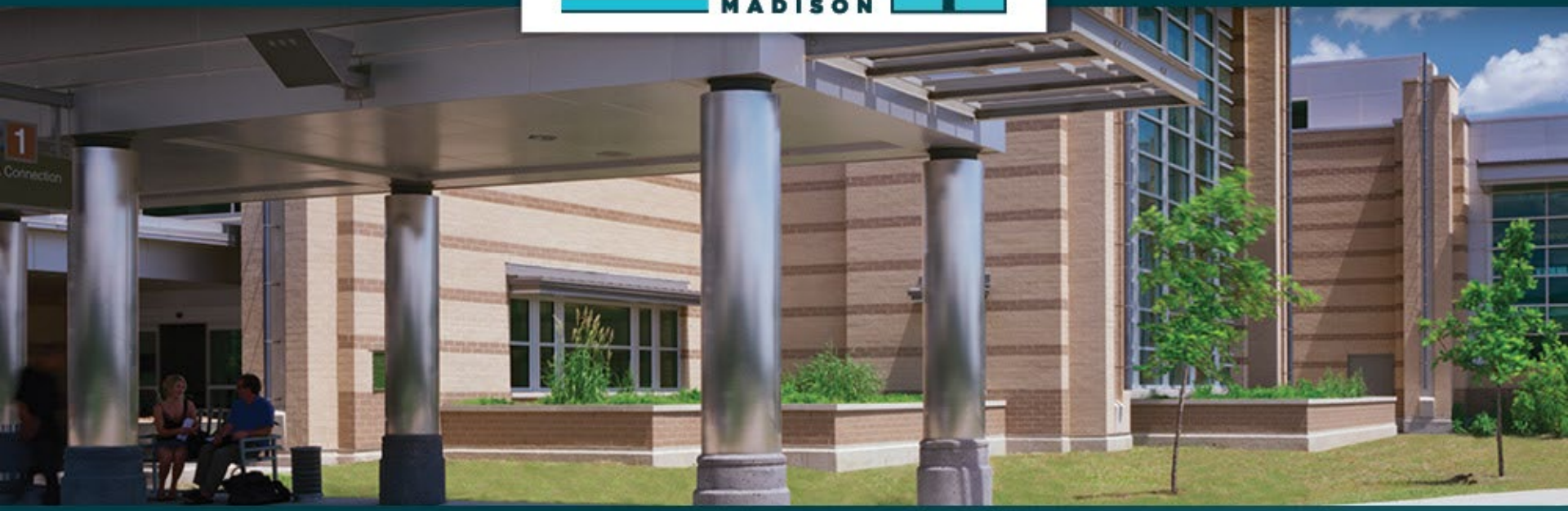


Automated Observation Stations

Fast Facts

It's all about the journey.

Automated Surface Weather Observation Stations

Surface

ASOS

- NWS Owned and Maintained
- Primary climatology network for observing and reporting weather in U.S.
- Reports released hourly
- No longer produced- any new equipment would be AWOS or AWSS (FAA operated Automated Weather Sensor System)

Weather

AWOS

- FAA controlled and operated, owned by airport or county/state
- Many (9) levels of AWOS, each providing different amounts and types of weather data
- Reports released every 20 minutes

Both may be augmented by FAA-contracted weather observers at airports with control towers

Automated Weather Observation Stations

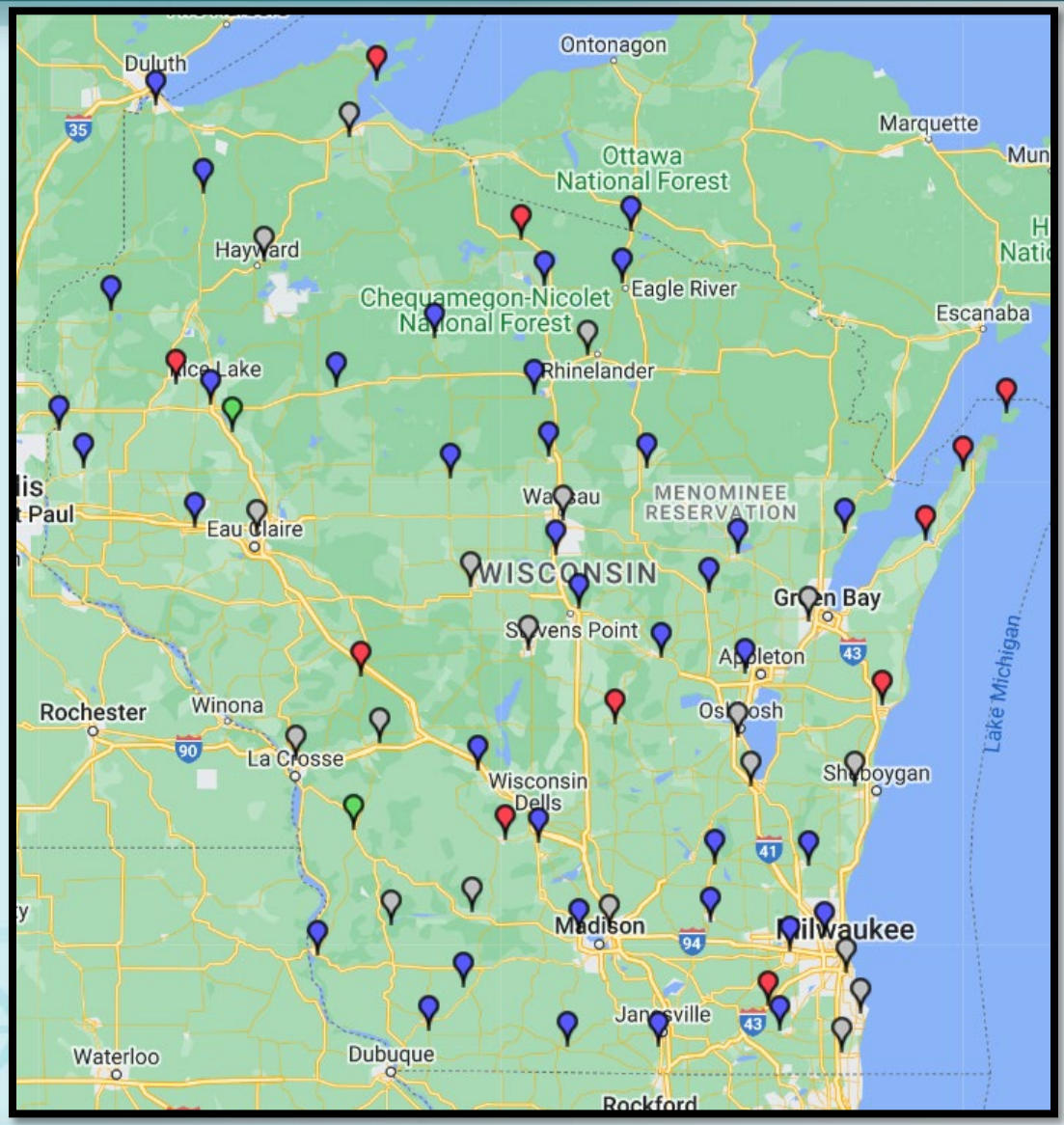
- Levels of AWOS
  - AWOS A, AWOS A/V (altimeter and visibility)
  - AWOS I (altimeter, density altitude, dew point, temperature, wind)
  - AWOS II (AWOS I + visibility)
  - AWOS III (AWOS II + cloud/ceiling)
  - AWOS IIIP, IIIT, IIIP/T (+ precipitation type identification, thunderstorm/lightning)
  - AWOS IV (AWOS III + precip occurrence/type/accum, freezing rain, thunderstorm/lightning, runway surface condition

Wisconsin Automated Observation Stations

https://www.faa.gov/air_traffic/weather/asos/?state=WI

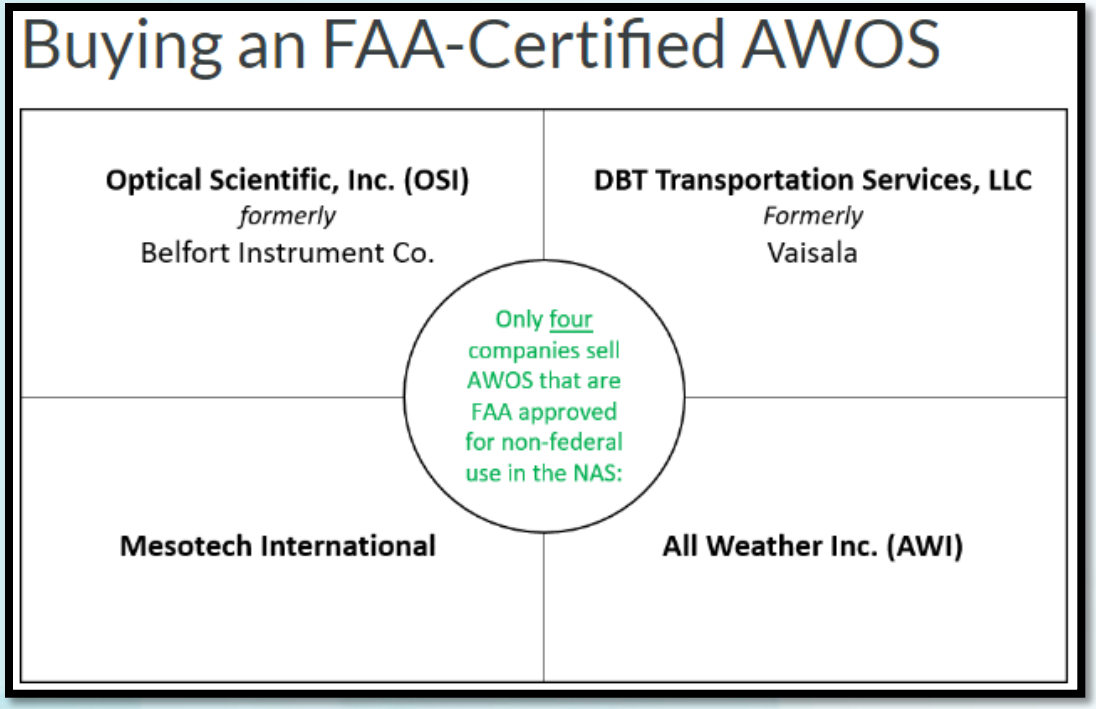
- AWOS III
- AWOS IIIP/T
- AWOS IIIP
- ASOS

Access up to 5 days of past observations on this site



So You Would Like to Install an AWOS?

- If thinking about purchasing/installing an AWOS at your airport…
  - Contact the FAA first so it gets included in the National Airspace System (NAS) data
  - Only 4 vendors authorized that meet FAA criteria/specifications for non-federal AWOSs



https://www.faa.gov/airports/planning_capacity/non_federal/awos

Budgeting for an AWOS

- Start-up Cost
- Budget for annual routine maintenance and calibration (must have FAA-certified technician)
- Budget for equipment part failures and technician costs

Avoid Costly Mistakes!

The non-federal process can be complicated, as can the associated rules and policies.

Avoid wasting time and money: always consult your Non-Federal Program liaison (PDF) before:

- Purchasing or installing a new non-federal system.
- Relocating or upgrading/replacing an existing non-federal system
- Seeking qualifications to maintain a non-federal system.
- Marketing a system as "non-federal."

For additional tips, read our guide on how to Avoid Costly Mistakes: What You Should Know Before Buying a NavAid, AWOS or Other System (PDF)

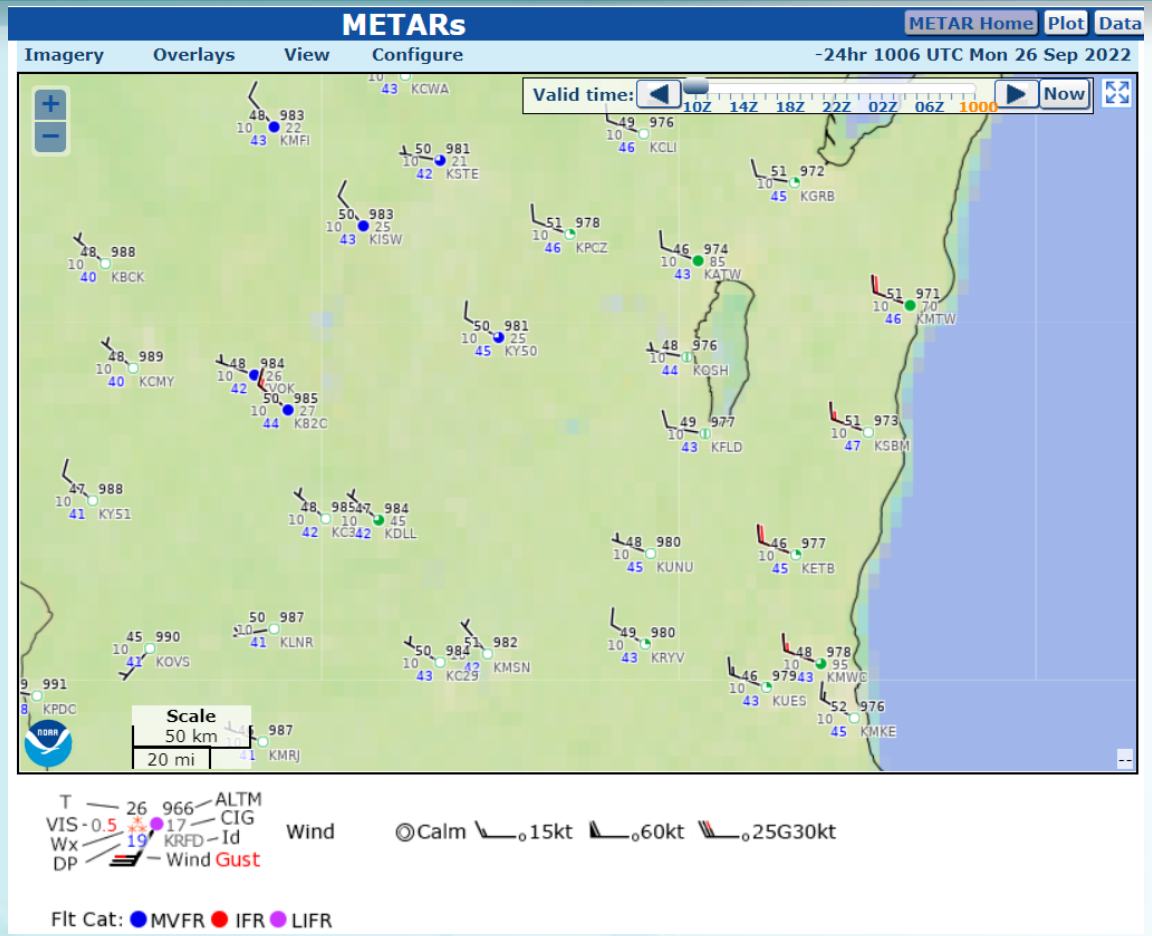
https://www.faa.gov/airports/planning_capacity/non_federal

How Are Observations Used by the NWS?

https://aviationweather.gov/metar

METAR = Meteorological Aerodrome Report

- Monitor trends
- Short-term forecasts, TAFs
- Ingested into models



Another site to view observations:
(up to 7 days, 15 min for AWOS, 5 min for ASOS)
https://www.weather.gov/wrh/timeseries?site=KMSN

How Are Observations Used by Pilots?

- Predominantly used by pilots in fulfillment of part of a pre-flight weather briefing
- Available on ATIS, ACARS, ADS-B, flight apps, etc
- Supplies at least hourly SURFACE weather conditions and the Altimeter setting at the point (airport)
- Review how to read/understand METARs
- RMK (Remarks) section can be useful

What if an AWOS (or part) fails?

- Issue NOTAM as specified in:
  https://www.faa.gov/air_traffic/publications/atpubs/notam_html/chap5_section_5.html
  - Total system failure
  - Entire observation missing and no backup ob available
  - Altimeter setting missing and not backed up
  - Date/time group erroneous and not corrected
  - Unreliable (intermittent) or inaccurate (erroneous elements)
- Report to FAA-authorized technician for maintenance

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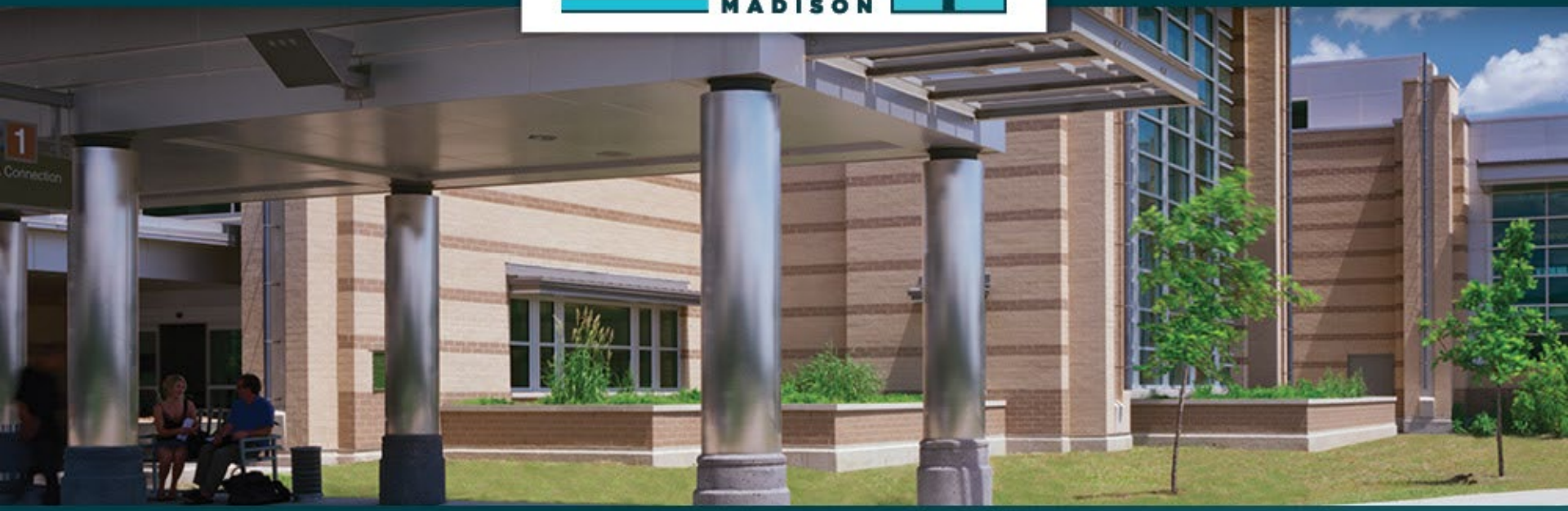

Promptly Communicating Issues

Best Practices

It's all about the journey.

Event Synopsis

- On February 4th, 2020 Dane County Regional Airport (DCRA) experienced an outage with their Automated Surface Observation System (ASOS) during the overnight hours going into their morning rush. The outage caused diversions, and delayed departures both at the airport and cargo operations attempting to come in. ATC services are only provided from 0600 – 2300.

MSN ASOS Outage Timeline

- 02:10 – DAL 8831, charter flight, diverts from DCRA due to altimeter pressure not being available.
- 02:14 – Airport Ops inspects the ASOS and sees no physical issue or wildlife obstruction with the equipment. NWS-Sullivan contacted and informed to expect technicians around 0600-0700.
- 02:20 – FedEx dispatch contacted due to expected early morning arrivals, verified Airport Ops weather equipment (Desktop Weather Station) is insufficient as it is not certified.
- 02:32 – Wisconsin Aviation (FBO) notified of charter diversion.

MSN ASOS Outage Timeline

- 02:50 – FedEx dispatch calls with request to have a Certified Weather Observer present for their arrival.
- 02:54 – Director of Operations and Security contacted (Ops 3, my supervisor), instructed to call NWS Tech Ops directly and confirm whether air carriers will not be able to depart MSN prior to Air Traffic Control Tower opening.
- 02:58 – Delta dispatch confirms aircraft unable to depart without altimeter information.
- 03:08 – NWS is contacted and Tech Ops is requested to come in sooner than 0600.

MSN ASOS Outage Timeline

- ---- Other job duties conducted
- 03:31 – Ops 3 updated on situation
- 03:35 – ATC Tower Manager contacted, they will be in to let NWS Tech Ops into ATC facilities.
- 03:43 – FedEx updated with game plan. NWS Tech Ops expected to be in at 05:15.
- ---- Other job duties conducted
- 04:14 – NWS Sullivan informs Tech Ops is on the way, expected to arrive at 05:15.
- ---- Other job duties conducted

MSN ASOS Outage Timeline

- 05:12 – SkyWest dispatch contacts airport ops, briefed on current situation.
- ---- 3 air carrier departures scheduled prior to 0600 delayed due to no altimeter information.
- 05:25 – FedEx dispatch calls for update, informed NWS Tech Ops not on site yet.
- ---- 1 FedEx aircraft decides to land with altimeter information of airport that is 9 NM away, the other delays departure. Both are usually in by 05:30.
- 05:49 – NWS Tech Ops on site.
- 06:00 – Air Traffic Control services resume.

MSN ASOS Lessons Learned

- Streamlined order of notification in events of ASOS outage after hours.
- Better diagnosing and issue reporting by contract tower to NWS for proper prioritization of work order requests.
  - Initial issue occurred at 19:36 the evening prior and prompted a priority 3 issue which has a 72 hour response time.
  - When the issue reoccurred an hour later it became a priority 1 issue with a 24 hour response time. However, the controllers sidestepped the trouble reporting system by making augmented reports until tower closed (4 reports).
  - The issue wasn't communicated to the technicians by the system until the ASOS made its first autonomous report an hour later after tower closed (midnight).

Any Questions

Thank you !