An Update on the ASOS Program and What's New with Non-Fed AWOS'

Victor Murphy

February 25, 2023

Gulf Coast Aviation Weather Safety Workshop

ASOS Began as a Tri-Agency Project Between NWS, FAA, and the 3 Branches of the DOD

- NWS/FAA sites are either “owned” by the NWS or the FAA.
- Of the nearly 1000 ASOS sites in the CONUS, about 650 are “owned” by the FAA, and about 350 are owned by NWS.
- No real differences between the two. They all exist to meet FAA Surface Aviation Weather observation requirements.
- NWS requirements are climate data and hydrologic data. Cloud height and vsby sensors are used by both aviation users and NWS forecasters to prepare TAFs.
- The US Air Force Dropped out of ASOS ~2011. They now use FMQ-23 systems developed by Mesotech, Inc.
- US Navy still in the program. They fund NWS to transmit METARs via our PACE systems at 5 WFOs across SR.
- US Army has about 6 or 7 sites in LA and southeast AL (Ft. Polk and Ft. Rucker area) that the NWS maintains via a MOA with the US Army.

Some Subtle but Significant Nuances to Know

- Up until ~1998, NWS employees and/or NWS contractors did nearly all ASOS augmentation/backup.
- NWS goal was to have ASOS as a completely stand alone system. FAA demurred, stating that the reporting of TS and LTNG was a requirement. The Automated Lightning Detection and Ranging System (ALDARS) was not fielded at this time, but was in the works.
- Neither FAA nor NWS agreed on which agency would fund the CWOs who were doing ASOS augmentation/backup. NWS stated that a stand alone ASOS met all our requirements when used with satellites and the "total observation concept". FAA had TS and LTNG reporting requirement.
- Dispute went to OMB. OMB sided with NWS. From this point forward, all ASOS augmentation/backup costs are borne by the FAA.

Some Subtle but Significant Nuances to Know

- Based on this, the FAA devises the ASOS Service Level concept. Airports/ASOS' are defined as Service Level A, B, C, or D.
- D sites are stand alone ASOS'. The FAA has determined that a stand alone ASOS ***with ALDARS enabled*** meets all FAA Aviation Wx requirements.
- C sites are sites where FAA Air Traffic Control Specialists (ATCS) augment/backup ASOS when staffed.
- There are about 130 Service Level A and B sites. All of these have FAA funded CWOs. These are the larger commercial airports.
- FAA devises an ingenious system to "score" each airport based on air traffic, a "bad weather" score based on # of tstm days and IFR days, and distance to nearest alternate airport.

Some Issues

- ***FAA has not updated its Service Levels in about 10 years.*** When the FAA first promulgated the Service Level concept, we were told they would update it every 1-2 yrs.

- Some sites clearly should no longer have 24x7 CWO support, while others likely merit this. Ft. Myers Regional Apt (RSW) is a glaring example. Service Level C, yet has international flights and a high traffic count. Sanford, FL (SFB) is another.
- Inability to have the CWO at these Service Level A/B airports augment for snowfall when needed. Big gaps in NWS snowfall data until the NWS SNOWPAID program is implemented.

Additional Issues

- ***In ~2016, the FAA assumed <u>full responsibility and oversight</u> for the Surface Aviation Weather Observation Program.***
- On the surface, this is logical. METARs exist to meet FAA aviation/safety requirements. All augmentation/backup is done by FAA employees or contractors. FAA is responsible for all ASOS comms via the ASOS/AWOS Data Acquisition System (ADAS). FAA funds the ALDARs.
- ***But…..where is the FAA infrastructure for day to day management and oversight of the program?***
- No “hotline” to report problems to?
- Little, if any, day to day QC.
- Users (airlines, media, etc.) still contact NWS WFOs to report issues or problems. Outside of NWS ASOS maintenance responsibility, we are ***users of the data, just like they are.***

ASOS Life Cycle Sustainment Plan for FY23-FY32

- By the end of FY24

  Complete 432 remaining Ice Free Wind Sensor installs.

  Complete T/Td/RH sensor replacement deployment.

- By the end of FY26
  - *Design, validate, and deploy all ACU/DCP/SCA replacements (i.e. ASOS 2.0).*
  - *Replace all copper voice & data lines w/IP comms.*
  - *Deploy new ceilometer across ASOS 2.0 network.*
  - *Deploy new AWPAG across NWS ASOS 2.0 network*
  - *Deploy new barometer across ASOS 20.0 network.*

Questions?

- When will existing ceilometer be “unleashed” to report clouds up to 25,000 feet. It is capable of doing this. Capability has been turned “off” due to no concurrence from the FAA. However, new AWOS-III PTs are already reporting this. Doesn’t this imply FAA approval? They approve all AWOS vendors and algorithms!
- Will the new LEDWI/Present Wx Sensor be able to report drizzle? Newer AWOS sites also are already doing this.
- Will the IP comms protocol for the dissemination of data include the ability to access one minute observations (OMO)?

Overall Best Practices

- You should NEVER see a “TSNO” remark. The ALDARS data/info is crucial for aviation safety. If seen, contact AOMC ASAP.
- AOMC has just now started monitoring the “TSNO” remarks, like they do the “$” sign. If they see one, they will clear it. 99% of these are due to the ALDARS Report Processing being “OFF”.
- For Service Level A thru C sites, have the phone numbers easily accessible for the CWO or ATCT. In the case of 2 hours or more missing METARs, give them a call and ask them to initiate backup procedures if needed.

The Passing of the Torch: From ASOS to (Non-Fed) AWOS

- NWS has installed ZERO new ASOS' in the past 10 years or so. Meanwhile, the installations and commissioning of non-fed AWOS' continue.
- Usually 1 or 2 per month in SRH.
- The aviation departments of many state have set up a cost sharing plan or used FAA Airport Improvement Plan (AIP) grant money to help fund the cost of the AWOS.
- Usually a 75/25 cost share, with local airports only having to provide ~25% of the total cost of the AWOS.
- TXDOT has installed over 100(!) in TX using this approach.

Various Flavors of AWOS

- AWOS-C: FAA owned and maintained. About 25 of these across SR. Just like an ASOS. Have an OID, and full suite of additive remarks.
  - a. AWOS A. The AWOS A system measures and reports altimeter only.
  - b. AWOS I. The AWOS I system measures and reports wind data, e.g., speed, direction, and gusts; temperature; dew point; altimeter; and density altitude.
  - c. AWOS II. The AWOS II system measures and reports all the parameters of AWOS I system plus visibility.
  - d. AWOS III. The AWOS III system measures and reports all the parameters of AWOS II system plus precipitation accumulation (rain gauge) and cloud height. These can have optional sensors, such as precipitation identifier (P), or thunderstorm sensors (T). ***Hence, a state of the art system should be an AWOS-IIIPT.***

FAA Rules and Policies

- https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_150_5220-16E.pdf
- FAA Circular for AWOS in non-federal applications. The Bible.

AWOS Facts and Best Practices

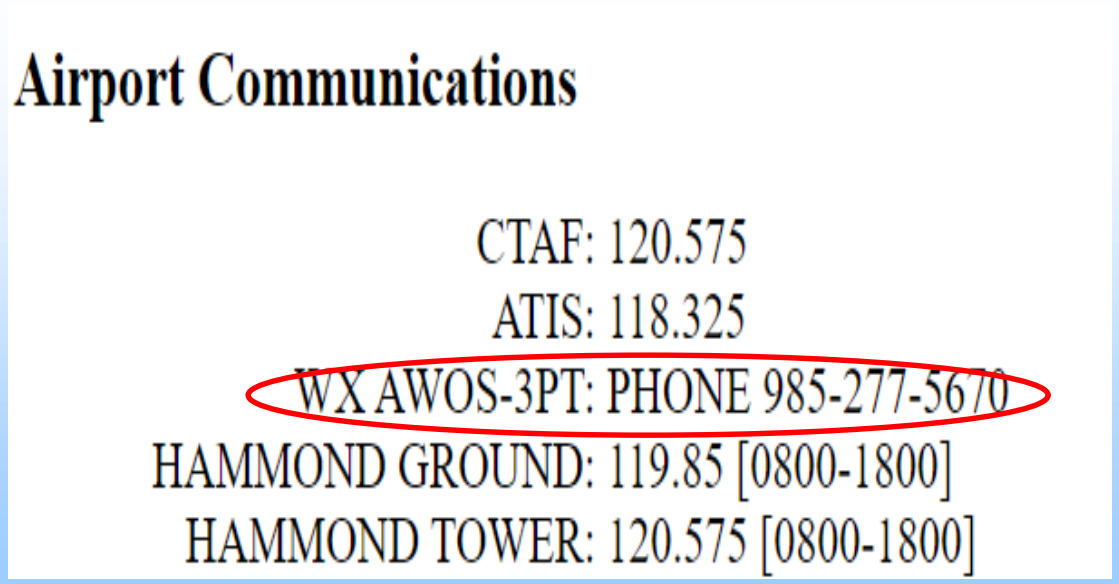
- An AWOS is next to worthless if it doesn't have the NADIN interface installed. This is what xmits the data to the FAA WMSCR. From the FAA WMSCR, it goes to the NWSTG for national distribution to EVERYBODY.
- This is an additional small cost. ~$1000 one time fee, and then $50/month recurring. The cost of an ISP.
- No sense spending $150k on an AWOS if the data isn't available to everyone.
- The FAA ***will only allow the transmission of data to the WMSCR from AWOS-III systems.***
- Hence, it is WORTHLESS for someone to purchase an AWOS-II. No data transmission.

AWOS Facts and Best Practices

- ***Please*** tell your state agency or the local airport to include the precipitation identifier (P) sensor and tstm sensor (T) as part of their purchase.
- ***YUGE*** safety component and forecast component to having these installed. ***They are optional!***
- Many airports will try to save a dime and not include these in their purchase.

How Do I tell What Type of AWOS is Installed Somewhere?

- http://airnav.com/airports
- Enter 3 digit SID or city/state of the airport. Scroll down to the “Airport Communications” section.
- Here, the AWOS at Hammond, LA (HDC) has an AWOS-3PT. Phone Number is also listed.



Best Practices

- From the airnav.com website, scroll down to the “AIRPORT Ownership & Management” section. This is your POC for missing data/bad data.
- Establish relationship/rapport with these folks. They are REQUIRED by FAA to have a maintenance contract in place.

Airport Ownership and Management from official FAA records

Ownership: Publicly-owned
Owner: CITY OF HAMMOND
PO BOX 2788
HAMMOND, LA 70404-2788
Phone (985) 277-5601
Manager: DAVID LOBUE
600 JUDGE LEON FORD DRIVE
HAMMOND, LA 70401
Phone 985-277-5667

Summary

- Build relationships with your local CWOs and FAA LAWRS Towers, and with airport owners/airport managers at AWOS sites.
- These will be your POCs for resolving issues.
- Again, the FAA has ZERO infrastructure to assist you in day to day issues.