Airport GIS and FAA Order 5010.4A update

Meeting 09-02

Mr. Charles Adler, under contract by FAA/AAS-100 represented Mr. Robert Bonanni, FAA/AAS-100, provided the attached briefing on the collection, storage, maintenance, input and output of airport GIS data; otherwise referred to as “airport features”.

The referenced FAA website is https://airports-gis.faa.gov

The FAA’s electronic Airport Layout Plans (eALPs) are the first output of AAS’ new GIS system. The new GIS system is linked to other FAA databases and includes

satellite imagery. The new GIS system is based on the AIXM/XML data model format.

The system design is approximately 75% complete and is expected to be completed in Fall 2010. Currently, the new GIS database includes 10-12 airports.

One aspect uncovered by the Airport’s division was the need to come to consensus on a single set of symbols specifically used to represent airport features, not only aeronautical elements but also a variety of surface types and topographical features.

Eventually the data will be provided to the NFDC. The Airport GIS data is not yet publicly available and a policy on public access and dissemination will have to be established. The goal is to provide individual airport authorities the capability to electronically enter information about their airport (alphanumeric data, graphical data, and imagery).

Mr. Dave Goehler, Jeppesen, asked if the Airport GIS work is being coordinated with the development of the new Airport-related Advisory Circular. Mr. Adler responded that, although the system provides the means to collect very precise airport data, the ability of each airport authority to provide compatible data (electronic access to the system) varies widely.

Mr. Roy Maxwell, Delta Airlines, spoke about the need to have processes in place for maintaining the data, including a “temporal” environment (change management in X, Y & Z axis). He also asked if the new system would be capable of automatically “pushing” change data to a user via a user interface. The response was “changes would be provided by the NFDC and that actual processes have yet to be defined.”

The sentiment expressed by several interested users in attendance was “don’t develop a highly capable electronic airport GIS database but then provide information in the form of ‘dumb paper’ output”.

Ms. Valerie Watson, FAA/AeroNav Services, asked how detailed data for 16,000 airports in the U.S. would be collected, populated and maintained in a timely manner. This sentiment was expressed in light of existing backlogs and resource constraints evident in the NFDC. Other than that data received from surveys, the data sources have not been defined. Ms. Watson also asked whether SMGCS data would be included in Airports GIS. Mr. Hunnicutt mentioned that though new data attributes were still being added, he was not sure that this particular information would be included.

Mr. Ted Thompson, Jeppesen, asked if there would be processes in place to reconcile relationships and changes to individual features, such as runway end changes affecting approach procedures.

Given the amount of interest, especially about availability, access, and coordination of change management, Mr. John Moore, FAA/AeroNav Services, asked if the Airports group (Charles Adler or EC Hunnicutt) would continue to provide updates to the ACF. Subject will remain on the agenda for future ACF meetings.

It was acknowledged that designing the Airport GIS system is one thing – actually collecting and populating the system is an entirely different matter.

(See Attachment # 3 – Airport Source Data Committee Brief)

ACTION: Mr. E.C. Hunnicutt or Mr. Charles Adler will provide an update at the next ACF.

Meeting 10-01

Mr. John Moore noted that there are four sources of data and they need to be consolidated to one.

Mr. Brad Rush, FAA/AeroNav Svcs, agreed and stated AGIS should be the only source for airport data and that Airports should be the steward. He also noted that all airport data in AGIS is validated by NGS.

Mr. Henry Felices, FAA/AAS-100 noted there is a funding and staffing issue for the collection of the data.

Mr. Chris Criswell, FAA/ATO-R, said that approximately 850 projects have been started for airports with 100 delivered.

Mr. Moore wants to include regular updates on the new Airport GIS project. He recommended NFDC and Airports collaborate to provide status updates at future ACF's.

ACTION: Mr. Chris Criswell and Mr. Markus Rouhani, FAA/AJR-32, will brief on the status of AGIS at the next ACF.

Meeting 10-02

Mr. Chris Criswell, FAA/AJR-32, demonstrated the new AGIS system. The system allows airports and contract survey companies to upload airport survey data. Uploaded data is then validated and verified for accuracy. To date there have been 176 completed surveys.

Mr. Roy Maxwell, Delta Airlines, asked if this data was available to the public. Mr. Criswell said that safety critical data was available to the public after Flight Standards has formally accepted the data and is sent to NFDC.

FAA AGIS website: https://airports-gis.faa.gov

ACTION: Mr. Chris Criswell will continue to brief the status of AGIS.

Meeting 11-01

Dr. Michael McNerney, FAA/AAS-100, provided a general oversight briefing of how the program is to roll out over the next 5 years. Dr. McNerney stated that the implementation plan had been approved but that that given the current and future budget challenges within the FAA, funding levels will impact the program. In the next 5 years, 825 airports are to go through the full GIS package, i.e., everything at those airports would be surveyed. The goal is to survey all federally funded airports by 2025. Dr. McNerney stated that the collection of such vast volumes of data brings with it unique and huge data maintenance challenges.

Dr. McNerney stated that to date only 1 airport has gone through the complete Survey program and that the average expected time from start to finish, per airport, is 2 years.

Dr. McNerney discussed the challenges in gathering data from airports. He went on to state that FAA grant money was being used as a ‘carrot/stick’ with airports to secure data whenever new construction or other changes funded by FAA grant takes place at a given airport. Language has been added within legal documents that stipulate that airports are now required to provide GIS data to the FAA.

Dr. McNerney looks to have an automated process in place by the end of FY12. New survey data would be available via existing FAA web services.

FAA AGIS website: https://airports-gis.faa.gov

ACTION: Dr. Michael McNerney, FAA/AAS-100, will continue to brief the status of AGIS.

Meeting 11-02

Dr. Michael McNerney, FAA/AAS-100, gave a detailed presentation on the FAA's Airport GIS Program outlining the complexities associated with system development, system ownership and funding of data collection/maintenance due to the multiple stakeholders involved within the FAA. Presentation included schematics that illustrated the flow of Airport GIS information. Dr McNerney stated that the data is now driven through satellite imagery/aerial photography of an airport. The adding of 5010/NASR program, the collection of data of non-grant airports, will take effect January 2013.

Dr. McNerney went on to state that it will take at least 5 years to survey all the commercial service and tower serviced airports, provided funding exists.

The FAA is working with airport authorities to develop the capability to enable airports to provide/report changes directly to the FAA using FAA-developed web based interface and applications.

Mr. John Moore, FAA/AJV-3B, inquired as to whether the GIS Program airport mapping standards for accuracy comply with standards developed by RTCA SC-193/217. Dr. McNerney stated that it was the intent of the GIS program to comply with RTCA DO-272. It is intended that airports that receive FAA grants will meet RTCA accuracy requirements, however, non-FAA grant airports (5010 program airports), would not meet those accuracy requirements.

Ms. Valerie Watson, FAA/AJV-3B, inquired as to whether accuracy will be indicated within the GIS database. No answer was given.

There was an inquiry as to whether the GIS program intended to capture SMGCS data. Mr. Chris Criswell, FAA/AJR-21, replied that the physical airport elements (hold bars, lights, spots, etc.) supporting SMGCS operations have placeholders within Airports GIS, but that the routes/procedures could not at this time be accommodated. The SMGCS office is working on the issue to find a way for SMGCS data to be included in the GIS program.

ACTION: Dr. Michael McNerney, FAA/AAS-100, will provide an update at the next forum.

Meeting 12-01

Dr. Michael McNerney, FAA/AAS-100, was not in attendance and no update was provided.

ACTION: Dr. Michael McNerney, FAA/AAS-100, will provide an update at the next forum.

Meeting 12-02

No update was provided at this ACF.

ACTION: Michael McNerney, FAA/AAS-100, will provide an update at the next forum.

Meeting 13-01

Dr. Michael McNerney, AAS-100, provided an update on the progress made within the Airport Surveying-GIS program. Last update was provided at ACF 11-01, in April of 2011. Dr. McNerney reviewed the actions taken by the Office of Airports since the last update. He reported that significant progress has been made since 2011. The following ACs were updated and released since last ACF:

- AC 150/1500-13A Airport Design
- AC 150/5300-17C Standards for Using Remote Sensing Technologies in Airport Surveys
- AC 150/5300-18B General Guide and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards

Dr. McNerney reviewed how airport data has historically been collected and the ways in which the Airports GIS Program is intended to change how that information is collected, managed, maintained and distributed in the future. He described various efficiencies generated by the new program.

Dr. McNerney stated that by September 2013, airports will submit their data electronically. Access to Airports GIS data is currently restricted to the airport, those airport consulting firms designated by the airport, and offices within the FAA. Tom

Schneider, AFS-420, inquired as to whether there were future plans to allow the public to have read-only access to the data. Dr. McNerney replied yes, adding that the release point would be through the FAA Aeronautical Information Management (AIM) Office.

Ray Lewis, USN, inquired as to whether the Department of Defense (DoD) would have full access to the data. Dr. McNerney replied in the affirmative.

Dr. McNerney reported that to date, full data has been gathered on 30 to 40 airports. He added that the program is on track to having full data on 825 airports by FY2016. Ultimately, the plan includes over 19,000 airports entered into the program, of which 3,330 airports will have full GIS data. Work is being done to enter supporting information, i.e. aerial/satellite photography, and data into a cloud server environment. Dr. McNerney stated that by 2014-15, Airports GIS will become the main source for airport data.

Dr. McNerney commented on the different tools being considered to allow users to pull information out of the database and display information; however, the development of such tools (software) awaits funding.

ACTION: Dr. McNerney, AAS-100, will continue to keep the ACF apprised of the status of this initiative.

Meeting 13-02

Dr. Michael McNerney, AAS-100, provided an update on the progress made within the Airport Surveying-GIS program. Since the last ACF, the cloud server is up and running, work is advancing on an airspace evaluation tool, data continues to be gathered and problems with the digital airport GIS system, which is not yet fully operational, are being addressed.

Bob Lamond, NBAA, inquired about accessibility to digital airport GIS data. Dr. McNerney replied that currently, only airports providing data, the FAA and other U.S. Government agencies, have access to the data. Bob asked when this access would be expanded to all stakeholders and suggested that 'Read Only' access to data be granted to a wider audience. "Read Only" ability would provide access to the wealth of data housed in the system, but would prevent its corruption.

Dr. McNerney explained that his office is working with the AIM offices to provide access; however, an agreement is not yet in place. Chris Criswell, AJV-22, added that the AIM office is working with AAS-100 on a process to validate the data prior to its release, but that these processes are not yet in place. Until such time, AIM does not plan to disseminate the digital airport GIS data.

Bob referred to an open transparency document signed a year ago, as he reiterated his request for access to the data.

Valerie Watson, AJV-3, inquired as to whether there could be an ability to add some type of caveat or metadata to the data that would indicate whether it has been verified or not. She suggested this might enable the release of the data, but with the clear stipulation that it has not been verified or sanctioned by the FAA.

Bob supported Valerie's idea and added that the data, even if not fully verified by the FAA would be extremely useful.

Dr. McNerney replied that because many airports do not wish their data disseminated, the Airports GIS office has to secure permissions to be able to release information.

Chris suggested that there be a means to allow industry to use and leverage the data with a caveat that the data is not official. It was emphasized that Airport GIS collects the data; however, it is the AIM office that is the public point of contact and distribution point for aeronautical data.

Dr. McNerney reviewed the data flow of information submitted to Airports GIS. He stated that the aerial photography data is reviewable and eventually the data would be uploaded and available. Work is ongoing regarding the importing of legacy airport data information into the system from NASR.

Dr. McNerney next commented on the work being done on the Airport 20:1 Penetration Visualization Tool that AAS-100 is developing to verify and identify 20:1 penetrations. AAS-100 is working on procedures and processes for obtaining access to such information, which they hope to have finalized by November 2013.

John Moore, Jeppesen, inquired as to whom was leading the development work on the 20:1 Tool. Dr. McNerney replied that the work is being carried out in-house by AAS-100, and involves the collection of data stored within ESRI, the Digital Obstacle Database, the Airport GIS database and utilization of Google Earth.

Gary Fiske, AJV-8, inquired as to whether a list of airports with current 20:1 penetrations could be obtained. Dr. McNerney replied that the work remains in progress and that a partial listing, including only those with verified penetrations, could be obtained at this time.

Dr. McNerney reviewed work on AC 150/5300-18B, Change 1, which is due out soon. He demonstrated the Draw and Measure tool that is part of the eALP toolbox.

Dr. McNerney discussed future collection of data, including a proposed grant that will fund collection of data to 1 foot elevation degree of precision and collection of aerial photography. He stated that AAS-100 has a goal for the provision of full data for 825 airports by the end of FY2018.

In the coming years, there will be a migration of airport data from NASR to Airports GIS. It is anticipated that all existing data on airport runways will be migrated into the test database in CY 2014. Dr. McNerney stated that in 2014, the Airports GIS database will be the authoritative source for airport data for all subscribers.

ACTION: Dr. McNerney, AAS-100, will provide an update at the next ACF.

Meeting 14-01

Dr. Mike McNerney, AAS-100, provided an update on the progress made on the FAA's Airports GIS program. Since the last ACF, AAS-100 has continued to make improvements on the electronic Airport Layout Plans (ALP) with the goal being to provide a custom printed ALP. Dr. McNerney reported that testing of the Modification of Standards tool has begun with the ASW and ASO regions. He also reported that improvements have continued to the repository for aerial photography on the cloud server and the number of ortho-rectified aerial imaging continues to grow.

A new feature highlighted by Dr. McNerney is the Airport 20:1 Penetration Visualization Tool. This new tool will be expanded in the future to other obstacle penetration surfaces.

Dr. McNerney also reported that the planned data migration from NASR into Airports GIS is to take place in September 2015. Once that migration takes place, Airports GIS will be the authoritative source for airport data.

Terry Rhea, AAS-100, then provided a demonstration of the Surface Analysis and Visualization Tool (SAVT). SAVT allows users to analyze, review, edit, and mitigate surface penetrations. The tool utilizes Google Earth images and enables the user to zoom in and look at the obstacle surface and see the objects attribute data. The data is then compiled into a Penetration Report which can be used by the airport to generate a compliance plan detailing how the airport plans to mitigate the penetrations. A mitigation summary report can be viewed to check on the status of all objects in the penetration report. Once the mitigation report has been submitted by the airport, the flight procedures office can see the report and the mitigation actions that have been taken.

Kel Christianson, AFS-470, inquired as to the various sources of obstacle data being used. Dr McNerney stated that currently the tool is pulling obstacle data from AirNav, FAA's Digital Obstacle File, airport surveys, etc. However, they are working toward having a single authoritative source for all obstacle data.

Bob Lamond, NBAA, praised the new tool. Bob suggested that that a column be added for object type (antenna, water tower, etc.,) on the penetration report. He also stated that he would like to see this made publicly available as soon as possible. Dr. McNerney stated that they are in the process of making the tool available primarily to airports. Eventually it will be available for public use as read-only. Bob expressed concern about the server limitations and how that will affect public access. Brad Rush, AJV-3, stated that, based on his interaction with the Advisory and Rulemaking Committee (RTCA), the FAA will release this data, and yes, it will be available to be viewed by the public. The server limitations are expected to be resolved soon.

Rob Goodson, NGA, inquired as to the datum being used in the database. Dr. McNerney was not sure about the datum and said that he would get that answer.

Valerie Watson, AJV-3, asked how the airport data will be verified. Dr. McNerney stated that once the database is established as the authoritative source, airports will be required to enter their data into the website and the airport will be the source. Valerie asked if there are requirements for the airports to verify the originally imported airport data from NASR, much of which is old. Dr. McNerney said that the data will be sent to the airports, they will be required to verify the data, and then submit it with a digital signature.

Post meeting Update. “The deployment to the Eastern Service Center has been put on hold because of user issues with the RAPT teams. A version is expected to be released to the Eastern Service Area airports that only allows the Visualization and Analysis portion but no pushing of data to the RAPT within 30 days. An expected test of 50 airports in the Eastern Service Area with pushing of mitigation plans to the RAPT in 60-120 days is anticipated. All schedules are very preliminary.”

ACTION: Dr. Mike McNerney, AAS-100, will provide an update at the next ACF.

Meeting 14-02

Dr. Mike McNerney, AAS-100, provided an update on the progress made on the FAA Airports GIS program. Since the last ACF, AAS-100 has been focused on delivering several projects that will enable airports to upload their data directly to the Airports GIS server. Dr. McNerney added that by the end of the fiscal year, AAS-100 plans to have approximately 1000 airports, legacy ALPS, PDF data, Part 139 airport signage and marking plans uploaded to the cloud server. Work continues to improve the 20:1 tool, which is currently available. Work is also being done to push data out to the three FAA Centers. The Eastern Center will be the first, with the remaining two centers expected to have data pushed to them around March 2015.

Dr. McNerney next briefed on the transition work from current FAA databases to the Airports GIS database and the establishment of Airports GIS as the authoritative source for airport information. One key issue associated with the change in authoritative source pertains to the validity of source information. As has been previously reported at the ACF, data will be entered directly by the airport and only the airport providing the information will have the means to change the information. Once the data is in the Airports GIS database, it will be verified. The release of airport data is still planned to be through NFDC for official publication. The process, from start to finish, will be electronic and should reduce the number errors.

Next Dr. McNerney gave an update on the FAA Order 5010.4A. He mentioned that airport lighting information will be collected in more detail, including the lighting fixture

name and presence of LEDs. For instance, a MIRL system using LEDs will be identified as MIRL-L. Charting requirements of these LED systems has yet to be determined.

Dr. McNerney reported that airport survey information, for at least the larger airports, will be routed through NGS for validation. AAS-100 is investigating alternative methods for smaller airports to be validated without the NGS step required. The goal is maintain airport survey information to an accuracy of one meter.

Rich Boll, NBAA, inquired as to how the airports data would be available to those outside the FAA. Dr. McNerney responded that those outside of the federal government would need to seek access through the FAAs Aeronautical Information Services (AIM) office. Details of external access have yet to be finalized.

Lynette Jamison, AJR-B1, asked for clarification about exactly who is authorized to change airport data. Are state airport inspectors authorized to revise the data? Dr. McNerney stated that state Inspectors can request a change by sending the data to the airport, then the airport would be required (and authorized) to formally submit the data electronically to Airports GIS. If an airport is abandoned and the last point of contact cannot be reached, the state inspector may submit the data change request.

Brad Rush, AJV-344, inquired when AC 150/5300-18C would be published. Dr. McNerney stated that the Order is scheduled to be out for comment in March 2015.

Valerie Watson, AJV-344, asked for more detail about the plan for Airports GIS to database the presence of LED lighting at airports and what might be expected for charting. Coby Johnson, AFS-410, stated that there is an FAA workgroup that is looking into the issue of LED lighting. Coby stressed that there are huge implications to switching over to LEDs and the workgroup is looking into the infrastructure requirements and working on a test plan. They are also considering alternatives to LEDs. Valerie stated that should charting of LEDs be a requirement, the issue should be brought to the ACF as a new agenda item.

Ted Thompson, Jeppesen, asked about the value of collecting and potentially publishing LED lighting for an airport. He stated that for pilots with Enhanced Vision System (EVS) devices, knowing this information might be useful, but for the average pilot, it would be useless information.

ACTION: Dr. Mike McNerney, AAS-100, will provide an update at the next ACF.

Meeting 15-01:

Dr. Mike McNerney, AAS-100, provided an update on the progress made on the FAA Airports GIS program. Since the last ACF, several new developments have taken place (See Slides 5 – 7 for complete details):

- The Surface Analysis and Visualization Tool (Airport 20:1 Tool) is now live to all Service Centers. Education efforts are ongoing via Webinar to all centers on how to utilize the 20:1 Tool.
- The Airports GIS web site (URL: www.airports-gis.info) is now live and updates are provided quarterly.
- The Airports GIS Cloud server is live and includes aerial photography with the goal of 1000 airports by September. 1600 legacy ALP files have been uploaded to the cloud server.
- Part 139 airport signage diagrams have been uploaded to the cloud server.
- Airports can do self-analysis of data uploaded to the cloud service, enabling a more pro-active means to providing and insuring accurate data.

John Collins, GA Pilot, inquired as to whether the public and interested airport stakeholders could access the airport data. Dr. McNerney replied that AAS-100 can only release information to the FAA and Government agencies. He explained that AJV-5 would be responsible for release of the data and added that currently individual airports have the means to give permission to individuals to access their specific airport data. Several members of the audience expressed their displeasure at the lack of public accessibility. Dr. McNerney said that he would look into the possibility of public access to some of the airport GIS data.

Dr. McNerney stated that FAA Airport Planners were unsatisfied with the systems inability to print out detailed Airport Layout Plans (ALPs). He reported that this issue is being worked on and that six of the eight standard sheets of the ALP set should be available via print by June 2015 and the remaining two would be available via print in FY 2016.

Dr. McNerney stated that it is still the intent of the FAA to establish the Airports GIS to become the authoritative source for airport data by 30 September 2015. However, this date is only the initial operating capability. There will be a period of additional testing until April 2016 before it goes into production.

Delta Air Lines expressed their desire to have access to the airport GIS data to enable their engineering teams to develop and maintain engine out procedures. Others in the audience echoed Delta's desire to have access to the data. Dr. McNerney acknowledged the need for such access for engine out procedures and stated that there has been some work on trying to establish a tool specifically for engine out procedures, but reiterated that the Office of Airports is not authorized to publicly disseminate the data.

Dr. McNerney commented on several new Documents that were officially released since last ACF (See Slide #11).

Justin Nahlik, NGA, inquired if Surface Movement Guidance Control System (SMGCS) data would be collected and stored in Airports GIS. Dr. McNerney stated that SMGCS data would be collected and the Airports GIS Database would eventually serve as the central repository for the data.

ACTION: AAS-100, will provide an update at the next ACF.

Meeting 15-02:

Dr. Mike McNerney, AAS-100, provided an update on the progress made on the FAA Airports GIS program.

He began by reviewing the FY 2015 deliverables. The Surface Analysis & Visualization (SAV) Tool is now fully automated and has been made accessible to all three service areas. The Modification of Standards (MOS) tool is now fully electronic and is currently being tested by the SW region. The Electronic Airport Layout Plan (eALP) tool is still being worked and is now moving forward with electronic signatures and is rapidly approaching a fully digital eALP process.

Dr. McNerney then discussed progress of the NAV Lean 5010 Airport Data Update Tool. He stated that AC 150/5300-19, Airport Data and Information Program was signed on 30 September 2015, but has yet to be implemented. Data is provided and maintained by the airports through the use of the 5010 Web tool. The data is transmitted to NFDC using XML, minimizing the chance of error because the data does not require manual input.

Next, Dr. McNerney gave an update on the implementation process associated with the Cloud Server. The cloud server now has aerial photography for over 900 airports, 2266 airports have their legacy ALPS in PDF format stored on the server and 576 airports have their airport signage and marking plans on the server.

Dr. McNerney stated the next safety issue that will be looked at is runway incursion data. The Office of Airports have geolocated runway incursion data from 2007-2014. Airport managers/personnel will be able to graphically view and analyze the data. This tool will also allow for a system-wide analysis to look at the frequency of runway incursions.

Ted Thompson, Jeppesen, inquired about public access to the Airports GIS tools and data. This generated vigorous discussion regarding the desire for public access. Rune Duke, AOPA, Chris Hill, Delta Air Lines, Mike Stromberg, Air Wisconsin, John Collins, GA Pilot, Lev Prichard, APA, and others expressed their desire for access to the data and the tools associated. All agreed that an FAA-populated and maintained central repository for airport information in the NAS is desirable, but is of limited use if not made available.

Dr. McNerney stated that currently, though Airports GIS will be the designated source for Airport data, the Office of Airports is not the authorized dissemination point for the data. He explained that Aeronautical Information Services (AIS) remains the office of dissemination for aeronautical data in the NAS. He also said that there is not currently a plan for public access to the tools, only the data. How AIS will eventually make the data available, in addition to currently available NFDD, eNASR and subscriber files has yet to be determined.

Dr. McNerney acknowledged ACF consensus for public access to Airports GIS in its entirety (data and tools). Jill Olson, AJV-553, stated that she would explore the issue of public access with AIS Director Abby Smith.

ACTION: AAS-100, will provide an update at the next ACF.

ACTION: Jill Olson, AJV-553, will provide an update on outcome of discussion with FAA Management regarding public access to Airports GIS.

Meeting 16-01:

No briefing was given.