



**Federal Aviation
Administration**

Remote Towers Project Status Including Leesburg & Colorado Monthly Update 35 & 36

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1 Remote Tower Services (RTS) Background

Currently in the National Airspace System (NAS) many non-towered airports interested in offering air traffic control (ATC) services cannot afford to construct and operate a traditional brick and mortar tower. The goal of the Federal Aviation Administration (FAA) is to provide these airports with a less expensive alternative; the FAA is evaluating Remote Tower Services (RTS) as a solution. Under the direction of the FAA's Executive Council, the FAA is building a systematic approach to RTS deployment using the non-federal certification strategy instead of the traditional FAA Acquisition Management System (AMS) procurement process. To support this deployment strategy there is an overarching effort to develop RTS Service Levels, a qualified non-federal vendor/system approval process, and to identify target candidate airports. In conjunction to the activities above, there are two Remote Tower (rTWR) system evaluation efforts currently underway in the FAA at Leesburg Executive Airport (JYO) and Northern Colorado Regional Airport (FNL). These current projects are informing the overarching effort to develop and document a non-federal RTS approval process for the FAA.

The Leesburg project is sponsored by Virginia Small Aircraft Transportation System (VSATS) Laboratory, Inc. and the Saab Sensis Corporation. The FAA signed a Memorandum of Understanding (MOU) with VSATS. The FAA has committed to evaluate Saab's Remote Tower system in order to provide a decision to VSATS on operational approval of the system for JYO only.

The Colorado Remote Tower project is sponsored by the Colorado Department of Transportation (CDOT). In coordination with CDOT, the FAA's Portfolio Management & Technology Development Office (ANG-C) is managing the project. This current effort is an extension of the previous work sponsored by CDOT, performed by the FAA's Air Traffic Organization (ATO) Surveillance Services, under the "Blended Airspace" concept. The goal of this second phase is to install, evaluate, and approve a vendor's remote tower system to provide tower services at FNL.

The current statuses of the overarching remote tower work as well as the Leesburg and Colorado projects are provided in individual executive summaries in the following pages. Additional details for each project are also provided following the executive summaries. This Remote Towers Status Report is published monthly.

This status report can be found on the [Colorado KSN site](#) and on AJI's Basecamp (Leesburg Remote Towers). Please email, Summer.Guerrero@faa.gov (Leesburg) or Robert.Higginbotham@faa.gov (Colorado) for KSN site access.

2 RTS Status - Executive Summary

2.1 Overarching

The Remote Tower team conducted the second and final Remote Tower Service Level (SL) Workshop on May 25, 2017. During this Workshop the team presented the SME participants the proposed SLs. These proposed SLs were prepared in advance with input from the participants, which was provided during a series of telcon meetings held throughout April 2017. The Remote Tower team continues to develop the draft Service Level Technical Document which will be delivered July 31, 2017. The team is also developing a plan to validate the SLs following delivery of the draft SL document.

As a follow up to the development of the list of airport characteristics to identify non-towered airports that may be good candidates for a non-federal remote tower implementation, the team developed a list of characteristics to identify Federal Contract Tower (FCTs) that may be good candidates for a remote tower implementation. The team will use this information to identify a set of airports to perform an in depth cost analysis comparing the cost of a remote tower operation to current day costs to operate the brick and mortar tower. This information will validate the trade study analysis (comparing costs of traditional towers to remote towers) and identify potential airports for future remote tower implementations.

2.2 Leesburg

FAA Status

The Leesburg rTWR core team was very busy during the month of May in preparation for Phase 2 testing.

During the week of May 5, 2017, ANG-C members of the Leesburg rTWR core team discussed logistics with the FAA's Flight Program Office. Portions of the Leesburg rTWR Phase 2 Evaluation Plan pertaining to supplemental testing, scripted scenarios, and general scripted scenarios were discussed in an effort to determine and match aircraft requirements, aircrew availability, and make refinements to the proposed daily test schedule as necessary to support the evaluation plan. A follow-on meeting with the Flight Program Office was conducted on May 19, 2017 to finalize the flight test schedule.

The Leesburg rTWR core team also met with Saab Sensis Corporation to discuss the current technical/operational status of the Mobile Airport Traffic Control Tower (MATCT) and rTWR.

The team tested the Real Time Tracking Surveillance (RTTS) tool, developed by the William J. Hughes Technical Center, which will provide traffic information to the FAA Safety and NATCA Observers in order to maintain the specified increment threshold during testing.

The Leesburg rTWR test team met on May 23, 2017 to receive further training on the use of the RTTS software. FAA evaluators, safety observers and NATCA observers designated to participate in the Phase 2 evaluation were also trained on the functions of the RTTS software. This meeting gave everyone the opportunity to ask questions and become familiar with this tool before Phase 2 testing begins.

On May 26, 2017 ANG-C members assigned to the Leesburg rTWR core team met with the Potomac Terminal Radar Approach Control Facility (TRACON), Washington Dulles Airport Traffic Control Tower (ATCT), and the National Capital Region Command Center (NCRCC). They discussed the Leesburg Phase 2 Evaluation Plan and the core team answered questions about Phase 2 testing. The main topic of discussion centered on the requirements needed by the test aircraft during scripted scenarios.

The Leesburg rTWR core team also held an internal dry run on May 31, 2017 to go over procedures related to supplemental testing, scripted scenarios, general scripted scenarios, data gathering, surveys and the use of the RTTS.

Phase 2 of the Leesburg r-TWR project began on June 8, 2017. During the first two weeks of the evaluation, the test team conducted supplemental testing. Supplemental testing consisted of a series of tests that involved observation and distance estimate measurements. This data was compiled for review by the SRMP and was presented in the progress briefing for Increment 1 on June 30, 2017 for informational purposes.

The test team, having completed supplemental testing, began actively controlling traffic on June 19, 2017 for specific periods of time as defined in the Phase 2 Evaluation Plan dated May 24, 2017.

Over the course of the next 12 weeks, the team will take an incremental approach to controlling air traffic, starting with one aircraft, and gradually increasing that number to five or more in order to test the system in reference to traffic workload and complexity. The project is scheduled to progress through six increments as approved by FAA management in the Phase 2 Evaluation Plan.

VSATS/Saab Status

Members of the Leesburg rTWR core team took advantage of a site visit to Leesburg Executive Airport on May 10, 2017 to test the RTTS software. The Leesburg rTWR core team also met with Saab Sensis Corporation on May 23, 2017 to continue assessing testing needs and outline the dry run sessions in anticipation of Phase 2 testing.

Robinson Aviation, Inc. (RVA) controllers were trained during the month of May in order to obtain their Control Tower Operator (CTO) certificate for the Phase 2 evaluation period. In addition, a second pan-tilt-zoom camera was installed as a backup.

The Leesburg rTWR core team along with Saab Sensis and contract controllers from Robison Aviation, Inc. met at Leesburg Executive Airport on June 6 and 7, 2017 for dry runs. The dry runs were performed so that each of the participants in the evaluation could visualize their roles and responsibilities and the test team could practice the execution of some of the supplemental testing. These dry runs also helped the team members in understanding the logistics and surveys to be filled out.

2.3 Colorado

On May 23, 2017 the Contracting Officer (CO) and remote tower team started initial OTA discussions with the preferred remote tower vendor for Northern Regional Airport (FNL). The CO and vendor are still in discussion to finalize an agreement. The goal for the signing date has been pushed back to July 21, 2017. If the vendor and FAA do not come to final agreement, the FAA reserves the right to negotiate with another vendor.

The team will visit Northern Colorado Regional Airport (FNL) the week of June 24th, 2017 to conduct a site survey and brief the local stakeholders the on the project status.

3 Overarching RTS Status Details

3.1 Completed Tasks

ID	Description of Activity	Date Completed	Owner(s)	Comments
1	Identified Characteristics for Remote Tower Target Airports	06/30/2017	MITRE	The list will be shared with vendors after it is reviewed/approved by FAA management.

3.2 Upcoming Tasks

ID	Description of Activity	Owner(s)	Comments
1	Develop Draft RTS SL Technical Document	MITRE/ANG	Document due date is July 2017.
2	Develop RTS Requirements	ATO	ANG will help facilitate this effort.
3	Develop RTS Approval Process Document (e.g., Advisory Circular)	ANG	ATO requirements and current RTS evaluations will inform this document. Draft outline was developed.
4	Level 3 ConOps	ANG	Comments received by human factors/ATC SMEs were adjudicated. Will be shared with other FAA LOBs for comment.

3.3 Meeting Summaries

ID	Description	Date	Facilitator(s)	Meeting Recap
1	Discuss cost estimates/lessons learned in regard to funding for tech op tail with GBAS team	05/02/2017	Matt Richardson	GBAS is working on finding a solution to address the funding shortfalls for 1) certifying new systems, 2) training FAA inspectors to verify systems, and 3) providing travel for annual verifications. Like GBAS, Remote towers will be non-federal systems that will face the same funding issues. FAA needs to work with vendors to identify the appropriate solution.
2	Remote Tower SL Workshop #2	05/25/2017	Matt Richardson/Kurt Rammelsberg	Workshop participants met to discuss the SL structure and 5 proposed SLs. General consensus was that there should be three services levels. Two tower advisory SLs and one full Class D air traffic control SL. Majority felt the “hybrid” SL which included control on the ground and advisory in the air is confusing and would requirement a lot of pilot training. Although this concept exists in Europe, the U.S. has a lot more GA pilots with various skill levels. The participants did not see a great benefit to only providing control on the surface. The team will vet the original five SLs with a broader audience of stakeholder and airport/pilot community. These workshops will drive the Draft Service Level Technical Document.
3	Discuss Characteristics of Remote Tower Airport Candidates	05/30/2017	Matt Richardson/MITRE	The Remote Tower team met with ANG management to review the list of airport characteristics.
4	Operational Requirements for RTS	06/07/2017	Matt Richardson/Adel Ellessawy	Met with MITRE to develop the initial approach to developing the RTS operational requirements. The team will leverage the evaluation plan developed for Leesburg.
5	Recap of SL Workshop and Next Steps	06/08/2017	Matt Richardson/Kurt Rammelsberg	Team met to discuss observations, thoughts and take-away from workshop #2. The team also discuss the format of the July 31 st deliverable and the development of an EC briefing to complement the formal deliverable.

6	SL Review	06/20/2017	Matt Richardson/Kurt Rammelsberg	Bill Payne presented a white paper he created on SL concept and the team briefed him on the FAA draft SLs. After comparing the concepts the team found the proposals were very similar.
7	Operational Requirements/Functional Requirements Discussion	06/21/2017	Matt Richardson/Adel Elessawy	As a follow up to the 6/7/2017 meeting, MITRE presented preliminary operational requirements for feedback. MITRE will incorporate the feedback and map the applicable activities on the job analysis to the requirements.
8	Remote Tower Trade Study Briefing	06/23/2017	Ron Stevens	MITRE presented an updated trade study analysis to compare costs of operating FCTs to remote tower FCTs. The original trade study was based on FAA towers. Both trade studies found that the remote towers provide a cost savings over a traditional tower. However, when comparing the FCTs to the remote tower FCTs, cross training had less of an impact to the savings since the FCTs are already staffed relatively low.
9	Characteristics of FCTs for Remote Tower Candidate Sites	06/27/2017	Elaine Morin	As a follow up to identifying characteristics of non-towered airports that are good candidates for remote towers, the presented a list of characteristics for FCTs which are good candidates for remote towers. Additional characteristics such as facility condition index should be considered when selecting FCT sites. Next steps are to use this list to identify a set of specific airports to perform an in depth cost analysis comparing remote tower costs to current day costs.
10	Remote Trade Study Briefing (FCT to FCT RTS)	06/28/2018	Jack McQueston	See #5. MITRE briefed the Remote tower trade study to Paul. As a follow up Paul will brief the findings to Jim Eck.

3.4 Upcoming Meetings

ID	Description	Date	Facilitator(s)
1	Remote Tower SL Validation Plan	07/11/2017	Matt Richardson/Emily Stelzer
2	Brief Remote Tower FCT Characteristics List to Upper Management	07/18/2017	Matt Richardson/Elaine Morin

4 Leesburg RTS Status Details

4.1 Completed Tasks

ID	Description of Activity	Date Completed	Owner(s)	Comments
1	Obtained signed SRMD	6/1/2017	AJI	ATO's Safety and Technical Training, Safety Risk Management team obtained final signatures and approvals on Leesburg Remote Towers' Safety Risk Management Document for Phase 2.
2	Sent Decision Point #2 Approval Letter to VSATS	6/2/2017	AJT	ATO's Air Traffic Services team obtained their Vice-Presidents' signature for the approval letter to VSATS authorizing them to proceed with Phase 2, active testing. This signature completed Decision Point #2 in Leesburg Remote Towers' sequence of events.

4.2 Upcoming Tasks

ID	Description of Activity	Owner(s)	Comments
1	Phase 2 Evaluation Dry Run at JYO	ANG	To prepare for the Phase 2 evaluation, the Leesburg rTWR core team, Saab Sensis representatives, and contract controllers from Robinson Aviation, Inc. met at JYO to perform two days of dry runs.
2	Phase 2 rTWR Active Testing	ANG	Saab Sensis' rTWR system will be evaluated in increments for twelve weeks concluding on September 8, 2017.

4.3 Meeting Summaries

ID	Description	Date	Facilitator(s)	Meeting Recap
1	Leesburg Flight Program Coordination Meeting	5/17/17	ANG	The Leesburg Core Team further discussed logistics with the FAA Flight Program and the lead pilots who will be involved in Leesburg rTWR Phase 2 evaluation. Supplemental testing and scripted scenarios were reviewed to determine aircraft needs and the daily schedule.

2	Real Time Tracking Surveillance (RTTS) Discussion	5/23/17	ANG	The Leesburg Core Team met on May 23, 2017 to review the software that will provide surveillance information to the FAA Safety Observer and NATCA Observer during the Phase 2 evaluation. Each of the FAA Evaluators, FAA Safety Observers and NATCA Observers present were informed on the functions of the RTTS software. This software will assist the FAA test team in maintaining the increment threshold during the evaluation. Additionally, this meeting gave each person the opportunity to ask questions and become familiar with this tool before Phase 2 testing begins.
3	Leesburg Remote Tower Discussion	5/23/17	ANG	ANG members from the Leesburg Core Team met with Potomac Terminal TRACON, Washington Dulles ATCT, and the NCRCC. During this meeting, the Leesburg Phase 2 Evaluation Plan was discussed to review the details of the Phase 2 evaluation. The main area of discussion was centered on the requirements for the test aircraft during scripted scenarios.
4	Leesburg Internal Dry Run Meeting	5/31/17	ANG	The Leesburg core team held an internal dry run to finalize all discussions related to supplemental testing, scripted scenarios, general scripted scenarios, data gathering, surveys, and the use of RTTS.
5	Leesburg Directors' Meeting	6/5/17	ANG	This meeting was a final review of the status of the Leesburg Remote Tower Project before starting Phase 2, Active Testing.
6	Leesburg Lessons Learned, Roles and Responsibilities, and Process Review	6/27/17	ANG	This meeting assembled the FAA's Leesburg rTWR testing team to discuss the lessons learned from Increment 1 of Phase 2, Active Testing. This meeting also reviewed the specifics of individuals' roles and responsibilities during active testing.
7	Leesburg Internal Decision Level 2 Progress Briefing – Increment 1	6/30/17	ANG	In this meeting, the core team and test team reviewed the supplemental data and active test data gathered during Increment 1 and sought approval to proceed to Increment 2.

8	Leesburg External Decision Level 2 Progress Briefing – Increment 1	6/30/17	ANG	In this meeting, the test team met with Saab Sensis to review the supplemental data and active test data gathered during Increment 1 of Phase 2, Active Testing and provided a summary of the decision to proceed with Increment 2 based on the Internal Decision Level 2 Progress Briefing.
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4.4 Upcoming Meetings

ID	Description	Date	Facilitator(s)
1	Leesburg Internal Decision Level 2 Progress Briefing – Increment 2	7/14/17	ANG
2	Leesburg External Decision Level 2 Progress Briefing – Increment 2	7/14/17	ANG

5 Colorado RTS Status Details

5.1 Upcoming Tasks

ID	Description of Activity	Owner(s)	Comments
1	Develop/Enter into an OTA with Vendor	ANG/AGC/AAQ	Goal is to have a signed OTA by July 21, 2017.
2	Refine Work Plan/Schedule	ANG	Once remote tower vendor is selected, work plan will be refined.
3	Site Survey Report	ANG/Vendor	FNL visit scheduled 7/24-28/2017.

5.2 Watch List

ID	Description	Owner(s)	Action Plan
1	Connecting a Non-fed Radar Display System to STARS Data Feed	ANG	Meet with SMEs from STARS and SWIM programs to research STARS data feed options. Develop a list of feasible options and finalize the plan forward.

5.3 Meeting Summaries

ID	Description	Date	Facilitator(s)	Meeting Recap
1	OTA Discussions with Vendor	06/07/2017 06/12/2017 06/13/2017 06/16/2017 06/26/2017 06/28/2017 06/30/2017	Rob Higginbotham/ Linwood Gillette	Various meetings were conducted throughout the month to discuss the terms of an OTA with a Remote Tower vendor.

5.4 Upcoming Meetings

ID	Description	Date	Facilitator(s)
1	Visit FNL to conduct site survey/Project Planning	07/24-28/2017	Rob Higginbotham

Appendix A: Acronyms and Abbreviations

AAQ-100	Director of Acquisition and Contracting
AFS	Flight Standards Service
AGC-510	Contracts and Litigation Branch
AJI	Air Traffic Organization, Safety and Technical Training
AJT	Air Traffic Organization, Air Traffic Services
ANG-C	Portfolio Management & Technology Development Office
ATO	Air Traffic Organization
CDOT	Colorado Department of Transportation
CO	Contracting Officer
FAA	Federal Aviation Administration
JYO	Leesburg Executive Airport
MATCT	Mobile Air Traffic Control Tower
MOU	Memorandum of Understanding
NATCA	National Air Traffic Controllers Association
NAS	National Airspace System
NCRCC	National Capital Region Command Center
OTA	Other Transaction Agreement
rTWR	Remote Tower
RFI	Request for Information
RTTS	Real Time Tracking Surveillance
RVA	Robinson Aviation, Inc.
SFRA	Special Flight Rules Area
SL	Service Level
SME	Subject Matter Expert
STDDS	SWIM Terminal Data Distribution System
TOC	Technical Operations Committee
ToO	Target of Opportunity
TRACON	Terminal Radar Approach Control Facility
VSATS	Virginia Small Aircraft Transportation System