

May 7, 2018

By email

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RE: Guidance for Using Remote Connectivity Technology and Tools

Dear Ms. Baker and Mr. Duncan:

The undersigned industry representatives submit the attached draft Advisory Circular (AC), "Guidance for Using Remote Connectivity Technology and Tools" for consideration.

Technologies such as satellite or internet, which provide reliable connectivity through video, live-stream and other visual and audio delivery methods have become ubiquitous. However, using available technology for certification and compliance-related activities traditionally accomplished in-person-on-premises requires updated FAA guidance to delineate acceptable practices.

After coordination with agency personnel and review of the pending Policy Statement, "Remote Witnessing Using Video," this draft AC was developed for submission. Considering the FAA's own use of remote technologies for both internal and external oversight as well as congressional direction to encourage innovation, adoption of the AC would provide the baseline for compliance with 14 CFR by the agency, its applicants and certificate holders. We urge adoption of the attachment in lieu of the pending policy; we believe basic guidance for all applications of this technology is required.

We appreciate your assistance with this issue and look forward to your timely response.

Sincerely,

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May 7, 2018

Ms. Dorenda Baker and Mr. John S. Duncan

Page 2

RE: Guidance for Using Remote Connectivity Technology and Tools

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May 7, 2018

Ms. Dorenda Baker and Mr. John S. Duncan

Page 3

RE: Guidance for Using Remote Connectivity Technology and Tools

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Attachment: Draft Advisory Circular – Guidance for using Remote Connectivity  
Technology and Tools

 U.S. Department of Transportation  Federal Aviation Administration	<h1 style="margin: 0;">Advisory Circular</h1>
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**Subject:** Guidance for Using Remote Connectivity Technology and Tools

**Date:**  
**Initiated by:**

**AC No:**  
**Change:**

## 1. What is the purpose of the Advisory Circular (AC)?

This AC describes the regulations and procedures that enable a task or activity to be accomplished remotely using connectivity technologies, tools and equipment such as internet or satellite connections, video and live streaming. This AC includes, but is not limited to, oversight, inspections and tests used to establish, validate or oversee compliance with 14 CFR.

Like all advisory material, this AC is not in itself mandatory and does not constitute a regulation. It provides a means, but not the only means to comply with regulatory requirements. When this AC uses mandatory language (e.g., “must” or “may not”) it is quoting or paraphrasing a regulatory requirement or prohibition. When this AC uses permissive language (e.g., “should” or “may”), it describes an acceptable means. Instead of following this method, you may elect an alternate, provided your method is acceptable to the FAA. Because the method of compliance that is presented in this AC is not mandatory, the term “should” applies only if you choose to follow this particular method.

## 2. To whom does this AC apply?

The FAA has concluded that remote technology is a viable option for the agency, applicants and certificate holders to achieve oversight, inspections, tests or training activities or tasks under 14 CFR.

Remote connectivity and associated tools and equipment used to accomplish and/or validate tasks, inspections and tests and to provide oversight and training have expanded since the regulations were originally adopted. The agency is using some of these technologies, tools and equipment to accomplish training as well as to perform oversight tasks and communications. It recognizes the validity of technological advancements that provide levels of assurance equivalent to or better than on-premise or in-person observation or performance.

The agency acknowledges the capability of new technology in its rulemaking activities, for example, the Part 23 Aviation Rulemaking Committee (ARC) recommended the FAA develop policy regarding remote tests observation and validation. The agency provides remote training for its workforce and allows certificate holders to accomplished required tasks by live-streaming or video. Furthermore, Congress has passed laws that direct executive agencies to allow and encourage the use and recognition of innovative and new technology.

These technologies enable the agency and the industry to: 1) be more cost effective (e.g., reducing travel costs); 2) improve timeliness; and 3) reduce oversight burdens.

Generally, use of remote technology to accomplish oversight, design, production, operation or maintenance tasks and activities is acceptable for establishing or showing compliance. Specifically, tasks and activities traditionally accomplished in-person-on-premise may be conducted through technologies such as satellite or internet connectivity, video, live-stream or other devices provided the same level of assurance or safety is attained.

### **3. What are the related 14 CFR parts?**

Any section of 14 CFR that requires oversight, testing, inspection or supervision.

Any section of 14 CFR that prohibits the falsification of applications, reports or records used to show compliance.

Examples include but are not limited to:

Section [21.2](#) – Falsification of applications, reports, or records.

Section [21.33](#) – Inspection and tests.

Section [21.137\(e\)-\(g\)](#) – Quality system.

Section [21.310](#) – Inspections and tests.

Section [21.610](#) – Inspections and tests.

Section [43.3](#) – Persons authorized to perform maintenance, preventive maintenance, rebuilding, and alterations.

Section [43.5](#) – Approval for return to service after maintenance, preventive maintenance, rebuilding, or alteration.

Section [43.7](#) – Persons authorized to approve aircraft, airframes, aircraft engines, propellers, appliances, or component parts for return to service after maintenance, preventive maintenance, rebuilding, or alteration.

Section [43.9](#) – Content, form, and disposition of maintenance, preventive maintenance, rebuilding, and alteration records (except inspections performed in accordance with part 91, part 125, § 135.411(a)(1), and § 135.419 of this chapter).

Section [43.12](#) – Maintenance records: Falsification, reproduction, or alteration.

Applicable sections in parts 61, 65, 91, 121, 125, 129, 135, 145, 147 – including any policies, procedures for conducting oversight and inspection tasks associated with inspecting or auditing, quality assurance requirements, recordkeeping and the falsification, reproduction or alteration of records required by each part.

### **4. What additional guidance material is available?**

Any advisory circulars, orders, policies or notices that involve oversight, inspection, testing or supervision.

### **5. What are the general requirements for using remote connectivity?**

The technology, tool and/or equipment must enable the person performing the operation to:

- Verify required elements, and
- Properly address any non-compliance or anomalies.

The technology, tools or equipment, e.g., a video or live-stream application must provide adequate coverage, fidelity, and integrity to enable proper accomplishment and oversight of the task or activity.

Assurance that the technology, tool or equipment are properly used, the task or activity is properly accomplished and the results are valid and documented as required by the regulations, must be the same as if conducted in-person-on-premise. If the technology, tool or equipment malfunctions or the required record does not enable a proper determination, the non-compliance aspects must be repeated with properly working tools or equipment or conducted in-person-on-premise.

The technology and associated tool or equipment must be set up in a manner that provides the same level of acumen and capability as if the oversight, inspection, test or training task or activity was conducted on-premises. Depending upon the task or activity those elements may be:

- A complete field of view—if multiple tools or equipment are required, the number and placement must be controlled and stable.
- Display or displays capable of providing the same (or better) visual acuity as would be the case of an in-person-on-premise observation.
- Two-way audio communication with enough consistency to ensure the task or activity is accomplished in accordance with the law, regulation, FAA or company requirements.
- Ability to make the record required by the law, regulation or company policies and procedures. If the record is a recording, video and/or audio, it must be saved without degradation.

Other elements to consider when setting up the connectivity, tool or equipment:

- Weather, environment and/or special lighting conditions required to ensure viewability and integrity of the oversight, task or outcome.
- Resolution and other characteristics (e.g., fast frame or long duration slow motion).
- When a recording is used to fulfill the record creation and retention requirements of the regulations, law or company policy, it should be time stamped to ensure integrity.
- Training of personnel in the proper set up, validation and use of the technology, tool and/or equipment.

## **6. What is required to use using remote connectivity for design testing and validation tasks?**

Engineering aspects of developing and approving design data, overseeing and witnessing tests and inspections that are currently conducted on-premise may be accomplished using connectivity technology and associated tools and equipment. The setup, execution, and results must be validated to the same extent and with the same assurance as is required when activities or tasks are accomplished in-person-on-premise.

The same standards for planning, set up, conducting, viewing parameters and other elements that are required for any on-premise test or inspection apply. When the oversight, inspection, test, test

parameters and test results must be approved, a description of the method of observation will detail how the remote witnessing, supervision or validation will be conducted to the extent necessary to duplicate the elements that would be present if the test was witnessed in-person-on-premise.

The oversight, witnessing or validation method will be made part of an approved test and/or inspection plan as is the case when in-person-on-premise tasks or activities are conducted. The description of the production element or article being inspected and/or tested, necessary parameters, equipment or tool to be used, set up, validation, recording, schedule of events, individual qualifications, designated engineering representatives or organizational designation authorization (ODA) unit members involved in setup review; and individual(s) who will ensure the tests will be and are done in accordance with the accepted-approved plan procedures.

In sum, the use of technology and associated tools and equipment does not differ from in-person-on-premise oversight, test, production and inspection procedures. The FAA authorized witness must agree that the connectivity technology and setup provide adequate coverage, fidelity, and integrity to enable proper witnessing. The FAA authorized witness must also verify that the necessary conformity inspections have been accomplished, that the test article is in conformity, or that all unsatisfactory conditions have been dispositioned.

All necessary records of the task or activity, including those of inspections/tests not accepted by the FAA, are part of the compliance data and will be retained as part of the project file.

## **7. What is required to use using remote connectivity for production tasks?**

The method of accomplishing inspections or test used in or required by production must be explained in the production approval holder's quality system required by section [21.137](#). This will include, as necessary, elements in:

- Manufacturing process control. If a process uses remote technology of manufacturing processes, an explanation of the methodologies that ensure each product and article conforms to its approved design.
- Inspecting and testing. If an inspection or test uses remote technology, an explanation of how the methodology will be performed and verified.
- Inspection, measuring, and test equipment control. Procedures to ensure the remote technology associated with any inspection, measuring, and test tool or equipment used in determining conformity of each product and article to its approved design is used properly and establishes the intended result.
- Inspection and test status. Procedures for how the remote technology associated with equipment or tool will be used to document the inspection and test status of products and articles supplied or manufactured to the approved design.
- Nonconforming product and article control. If the remote technology is used to confirm or control nonconforming products or articles is used, the methodology must be explained.
- Control of quality records. Procedures for identifying, storing, protecting, retrieving, and retaining quality records, including those that use remote technology and associated tools and equipment.

- Internal audits. Procedures for conducting, and documenting internal audits using remote technology and associated tools and equipment.

#### **8. What is required to use using remote connectivity for operational tasks?**

Testing of operational capability must be accomplished with the same assurance that would be available if done in-person-on-premise. The technology and associated tools and equipment must be set up to create a view and audio connection that will enable validation of the operational capability.

#### **9. What is required to use using remote connectivity for maintenance tasks?**

Conducting maintenance tasks, such as inspections or tests or supervising maintenance, preventive maintenance or alteration tasks must be accomplished in the same manner and with the same oversight as if the task was conducted in-person-on-premise.

As with any other regulatory compliance task, if the technology, tool or equipment cannot provide the same viability as if the task was being conducted in-person-on-premise, it cannot be approved for return to service. Therefore, the validation of the article must be accomplished and recorded in the maintenance record, along with a description of the work performed, the person performing the actual steps and, if appropriate, the person supervising or overseeing the task or activity.

Maintenance providers must ensure the technology and associated tools and equipment are appropriate for each task and that they are in proper working order.

Under 14 CFR part 145, the process, procedures and training in the use of the tools and equipment may be explained in a repair station and/or quality manual to the same extent as needed for any other methodology used to accomplish the activity or task in-person-on-premise.

#### **10. What is required to use using remote connectivity for oversight tasks?**

Oversight by the FAA or a certificate holder must be accomplished in such a manner as to ensure the task or oversight element can be verified. If correction action must be taken, the method by which it is viewed or accomplished must be the same as if the oversight was in-person. A description of what is being overseen, the method of ensuring the oversight is adequate and any required record of the actions must be made.

#### **11. What is required to use using remote connectivity for training?**

Training must be provided in such a manner as to ensure the knowledge is imparted. The delivery method must be documented and validated by the person taking the training.