NOTICE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

N 8900.527

National Policy

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11/1/19

Cancellation Date:
11/1/20

SUBJ: Monitor and Inspect a Part 135 UAS Operator's Aircraft, Facilities, and Procedures

1. Purpose of This Notice. This notice provides insight to the aviation safety inspector (ASI) on Unmanned Aircraft System (UAS) inspection items that may be different than those for manned aircraft operations, items unique to UAS operations, and items that must be reviewed or evaluated as part of the ASI's preparation and conduct for continued operational safety surveillance. Manned aircraft operations and unmanned aircraft (UA) operations have many common surveillance items that can be conducted in the same manner. This notice supports a deviation memorandum, Air Carrier Certification with Unmanned Aircraft Systems (UAS) Operations, issued by the Deputy Director of the Office of Safety Standards, dated September 25, 2018.

2. Audience. The primary audience for this notice is Flight Standards Service (FS) Office of General Aviation Safety Assurance personnel planning and conducting surveillance of Title 14 of the Code of Federal Regulations (14 CFR) part 135 UAS operations and the personnel in the Safety Analysis and Promotion Division who will assist them. The secondary audience includes other Federal Aviation Administration (FAA) management, operational, and administrative employees, as appropriate.

3. Where You Can Find This Notice. You can find this notice on the MyFAA employee website at https://employees.faa.gov/tools_resources/orders_notices. Inspectors can access this notice through the Flight Standards Information Management System (FSIMS) at http://fsims.avs.faa.gov. Operators can find this notice on the FAA's website at http://fsims.faa.gov. This notice is available to the public at http://www.faa.gov/regulations_policies/orders_notices.

4. Applicability. The guidance in this notice defines new policy and must be implemented into principal inspectors' (PI) work plans that have oversight of part 135 certificate holders authorized to conduct operations with UAS. This is applicable to all Flight Standards District Offices (FSDO) and/or all FS employees involved in part 135 UAS certification or oversight activities.

5. Distribution. This notice will be distributed to FS policy offices located at FAA headquarters in Washington, DC; General Aviation Safety Assurance offices; and all FSDOs.

6. Background.

a. The use of UAS in part 135 operations is a pioneering achievement, and with it comes complexities, such as new technologies associated with UAS and additional operational considerations that are required to safely integrate these aircraft into the current National Airspace System (NAS). In April 2019, certification of the first part 135 UAS operator was completed. In conjunction with that certification, it was determined that, at this time, the Safety Assurance System (SAS) would not adequately support the recording of surveillance activities for part 135 UAS operations.

b. It was also determined that as more UAS operators are certificated and this industry matures, the FAA will refine the surveillance requirements and incorporate part 135 UAS oversight reporting into SAS. Until that transition is completed, all part 135 UAS oversight will be documented in the Enhanced Flight Standards Automation System (eFSAS) using the Program Tracking and Reporting Subsystem (PTRS).

7. General. This notice contains supplemental direction and guidance to be used by ASIs for part 135 UAS inspections. A UAS inspection is conducted for part 135 certificate holders that utilize UAS in their operations. For those part 135 certificate holders that utilize both manned aircraft and UAS in their operations, this inspection may be conducted concurrently with the SAS required inspections. The Principal Maintenance Inspector (PMI) and the Principal Avionics Inspector (PAI) are required to document UAS surveillance in eFSAS, using the PTRS, and manned aviation surveillance in SAS. As with manned aircraft operations, certificate holders must meet the same minimum requirements during a UAS inspection as they did for the original certification. Information for inspectors and inspections are contained in the following:

- Airworthiness information in Appendix A; and
- Operations information in Appendix B.

8. Reference Documents (current editions):

- For guidance on conducting UAS ground deicing/anti-icing inspections, refer to FAA Order 8900.1, Volume 6, Chapter 2, Section 15, Safety Assurance System: Ground Deicing/Anti-Icing Inspections for Parts 121, 125, and 135.
- For guidance on conducting UAS facility inspections, refer to Order 8900.1, Volume 6, Chapter 2, Section 26, Safety Assurance System: Inspect Program Manager/Operator's Maintenance Facility for Parts 91K, 121, and 135.
- For guidance on conducting UAS Airworthiness Directive (AD) compliance and manual/procedures inspections, refer to Order 8900.1, Volume 6, Chapter 2, Section 32, Safety Assurance System: Inspect a Part 91K Program Manager or Part 135 (Nine or Less) Certificate Holder.
- For guidance on conducting UAS recordkeeping inspections, refer to Order 8900.1, Volume 6, Chapter 2, Section 35, Safety Assurance System: Inspect Section 135.411(a)(1) (Nine or Less) Certificate Holder's Maintenance Records.
- For guidance on conducting UAS fueling procedures inspections, refer to Order 8900.1, Volume 6, Chapter 11, Section 21, Monitor Air Carrier's or Operator's Refueling Procedures (Parts 121, 125, and 135).

9. Action. FS personnel who support airworthiness and operations surveillance of UAS operating under part 135 must follow the required surveillance work activities contained in the appendix applicable to their specialty. Additionally, PIs with oversight responsibility of part 135 certificate holders authorized to use UAS must add the PTRS surveillance codes listed in the applicable appendix to their work programs and ensure that these surveillance items are completed as part of their fiscal year (FY) work program.

10. PTRS Recording. When reporting these part 135 UAS surveillance activities, it is extremely important for analysis purposes to properly record the type of operation that was observed. The PTRS records should contain the appropriate 14 CFR parts being used, airman name(s), related certificates, waivers or exemptions held, a clear description of the action taken (to include location and start and end times of the surveillance), and the related enforcement investigative report (EIR) number, when applicable.

a. The "14 CFR" Field. Certificated operations should be coded with the correct regulation (e.g., 14 CFR part 135).

b. The "National Use" Field. Enter the term "required" in the "National Use" field.

c. The "Local Use" Field. Enter the term "UAS" in the "Local Use" field.

11. Deviations to This Notice. It is necessary to adhere to procedures in this notice to achieve uniform administration of this directive material. The Air Transportation Division must approve any deviations to this notice.

12. Suggestions or Comments. The Air Transportation Division welcomes and considers all suggestions or comments regarding this notice. For your convenience, use FAA Form 1320-19, Directive Feedback Information, which is located at https://employees.faa.gov/tools_resources/forms/. Please use the "Other comments" block on FAA Form 1320-19 to provide a complete explanation of why the suggested change is necessary. You may correct a copy of the pertinent information as necessary, or provide a handwritten note for consideration. Send your suggestions or comments to 9-AFS-200-Correspondence@faa.gov where they will be reviewed and sent to the respective policy holder(s).

13. Disposition. We will incorporate the information in this notice into Order 8900.1 before this notice expires. Direct questions concerning the information in this notice to the Air Transportation Division via email at 9-AFS-200-Correspondence@faa.gov.

Robert C. Carty
Deputy Executive Director, Flight Standards Service

Appendix A. Airworthiness

Required Surveillance Work Activities

Activity Codes: 3619, 3626, 3627, 3634, 3637, 3649, 5619, 5626, 5627, 5634, 5637, and 5649, as applicable.

The scope of Unmanned Aircraft System (UAS) inspections can be affected significantly due to the size, complexity, and approved operator exclusion from any of the following procedures. Because certificate holders conduct business in a variety of ways, some areas of inspection may not be applicable, such as an Operations Manual for a single-pilot operation; therefore, it is imperative that the inspector become familiar with a certificate holder's operation and scale the inspection items accordingly. In support of determining regulatory and any provisional compliance, the objectives of an aviation safety inspector (ASI) conducting UAS inspections include, but are not limited to, the following:

A. 3619/5619—SURVL/OPER/FACILITY INSPECTION. Refer to Federal Aviation Administration (FAA) Order 8900.1, Volume 6, Chapter 2, Section 26, Safety Assurance System: Inspect Program Manager/Operator's Maintenance Facility for Parts 91K, 121, and 135; Volume 6, Chapter 2, Section 15, Safety Assurance System: Ground Deicing/Anti-Icing Inspections for Parts 121, 125, and 135; and Volume 6, Chapter 11, Section 21, Safety Assurance System: Monitor Air Carrier's or Operator's Refueling Procedures (Parts 121, 125, and 135), to augment a UAS air operator facility inspection.

1) Review Operator's Data. The ASI must review the operator's exemptions from Title 14 of the Code of Federal Regulations (14 CFR) parts/sections to determine applicable regulatory compliance before initiating surveillance. At a minimum, inspectors should examine, as applicable, the following items:

a) Air operator certificate – matches office copy. If unavailable, reschedule a time to review the certificate.

b) Operations specifications (OpSpecs) – matches office copy, maintenance-related requirements and authorizations.

c) Previous inspection reports – for deficiencies/compliance history.

d) Training requirements – The ASI should review the certificate holder's manual and the exemption conditions and limitations to become familiar with any training requirements. Although some certificate holders are not required by 14 CFR to have a training program, exemption conditions and limitations may require certain personnel to receive training. The completion of any required training should be documented by the certificate holder.

2) Inspect the Maintenance Organization.

a) Verify if staffing meets maintenance needs based on operational complexity.

b) Verify if responsibilities are separated between inspection and maintenance sections.

3) Inspect the Inspection Department. Verify if designated staffing is adequate, to include having Required Inspection Item (RII) inspectors available for the complexity of the operation.

4) Inspect Operator's Maintenance Facility.

a) For parts and storage areas, verify if personnel are adequately trained.

b) Adequate spare parts exist to support the operation.

c) Receiving inspections are in accordance with the operator's manual.

d) Shelf life limits are established and adhered to in accordance with the manufacturer's and operator's manuals.

e) Parts are protectively identified and stored/segregated by serviceability classification (serviceable and unserviceable).

f) Operator maintaining traceability of parts subject to installation on type-certificated (TC) products.

g) Serviceability and calibration of special tools and equipment in accordance with a standards institute and the operator's manual.

h) Fuel/oil storage and dispensing facilities if operated/maintained by the operator (refer to Order 8900.1, Volume 6, Chapter 2, Section 15 and Volume 6, Chapter 11, Section 21 for correlating UAS applicability).

i) Hangar facilities. Verify, if applicable:

- Facilities are adequate for the work being performed;
- Staffing reflects the complexity of work being performed;
- Personnel are properly trained, qualified, and authorized;
- Procedures for shift turnover are in place and properly used;
- Special equipment and tooling are available, serviceable, and calibrated, if applicable;
- Safety procedures are established and adhered to;
- Procedures direct the flow and control of all maintenance and inspection records;
- Lighting, ventilation, and general housekeeping are adequate; and
- Hangar ground support equipment is serviceable and appropriate for the work being performed.

5) Inspect Operator's Technical Library. Validate that all required technical data is available and current. If the data is on microfiche, verify if readers are available and serviceable.

If the operator uses electronic publications, ensure that adequate procedures and controls exist for their generation and use (refer to Advisory Circular (AC) 120-78, Electronic Signatures, Electronic Recordkeeping, and Electronic Manuals). The data includes the following, as applicable:

a) OpSpecs/management specifications (MSpecs);

b) Program manager/operator's General Maintenance Manual (GMM);

c) Aircraft manufacturers' manuals;

d) Propeller, appliance, engine, and emergency equipment manufacturer's manuals;

e) Manufacturer's and vendor's Service Bulletins (SB)/Service Letters (SL);

f) Applicable 14 CFR sections;

g) Applicable Airworthiness Directives (AD);

h) Applicable Type Certificate Data Sheets (TCDS)/Supplemental Type Certificates (STC); and

i) Aircraft Flight Manual (AFM).

6) Inspect the Aircraft Maintenance Record System.

a) Verify records of periodic and unscheduled inspections, maintenance, preventive maintenance, repairs, and alterations performed on the UAS are recorded and retained in the form of a logbook for recordkeeping. This includes records for all systems and components of the UAS, including: unmanned aircraft (UA), control station (CS), launch and recovery equipment, Command and Control (C2) link equipment, payload, and any other components required to safely operate the UAS.

b) Verify individual UAS components, such as the CS and UA, are identified by associated serial number or other form of unique identifier.

c) Inspectors should be mindful that logbooks may be paper or electronic records but must be retrievable and capable of verification and inspection.

7) Inspect the UAS. Coordinate with the operator the selection and availability of appropriate in-service UA and associated system equipment for inspection.

a) UAS General Condition for Safe Operation. UAS inspections, in addition to the list below, must include an examination UA registration, Airworthiness Certificate, and maintenance logbook.

1. Airframe Inspection Items:

- Airframe structure (including undercarriage), all flight control surfaces, and linkages visually inspected for general condition, impaired functionality, loose/missing parts and fasteners, security of attachment, improper installation, fluid leaks, and proper display/legibility of markings.
- All antennas shall be visually inspected for damage or degradation.
- Secure attachment of external mounted equipment, such as a camera.
- Integrity of cargo latching mechanisms.
- Airframe shall be inspected for defects resulting from collision with foreign objects, corrosion, transportation damage, chafing, or general wear and tear.
- If applicable, any hydraulic system(s) shall be visually inspected to detect any fluid leaks, contamination, and proper quantity.
- Battery condition and system indicators shall be verified to give an accurate indication of stored electrical capacity.

2. Powerplant Inspection Items:

- If equipped with an internal combustion engine, the fuel shall be verified for correct grade and checked for contamination and degradation. The fuel quantity shall be verified to be adequate for the planned mission.
- The propeller/rotor components shall be inspected for degradation and/or damage that negatively impacts flight performance of the UAS. Clearance of blades from adjacent structure and/or components as it rotates through its full motion shall be ensured.
- The powerplant system controller(s), components, and connections shall be inspected and/or tested to ensure proper functionality and condition.
- The powerplant system areas shall be inspected for extraneous materials and debris.
- All components related to power source(s) shall be determined to be in condition for safe operation.

3. Critical System Inspection Items:

- Launch and recovery systems (e.g., catapult) shall be inspected for potential damage, degradation, and proper operation.
- The CS shall be visually inspected for structural integrity and degradation.
- The software and firmware loads for the CS, UAS, and all other components with individual software loads shall be verified for proper configuration and compatibility.

*To complete the inspection activity for **3619** or **5619**, see paragraph G, Debrief the Operator, Personnel, or Flightcrew; paragraph H, Analyze Findings; and paragraph I, PTRS Report, of this appendix.*

B. 3626/5626—SURVL/OPER/INSP MAN/PROCEDURS. Refer to Order 8900.1, Volume 3, Chapter 32, Manuals, Procedures, and Checklists for 14 CFR Parts 91K, 121, and 135; and Volume 6, Chapter 2, Parts 121, 135 and 91 Subpart K Inspections, for guidance to augment a UAS air operator manuals and procedures inspection.

1) Definitions.

a) Manual. A collection of the information, policies, procedures, and guidance prepared by an operator to instruct company employees in the performance of their assigned duties.

b) Procedure. A logical progression of actions and/or decisions in a fixed sequence that an operator prescribes to achieve a specified objective. In short, a procedure is step-by-step guidance on how to do something.

2) Requirements of the Operator. Title 14 CFR requires operators to prepare and keep current various manuals and checklists that flight and ground personnel can use as direction and guidance when they conduct flight operations and maintenance. The operator must ensure procedures prescribed within the manuals required are followed.

3) Objective and Role of the ASI. The inspector should review all of the certificate holder's copies of required manuals and ensure they are complete, up to date, and meet, as applicable, with emphasis on but not limited to, the requirements of part 135, §§ 135.21, 135.23, and 135.427.

4) Review of Manual(s).

a) ASIs inspecting a UAS part 135 operator should verify that any and all required manuals contain adequate content and comply with applicable regulations, safe operating practices, and the operator's OpSpecs.

b) The ASI should review a sampling of personnel required to have available a copy of the manual to ensure that they are able to locate the manual and are using a copy that is complete and up to date.

c) If the operator has either partial or full manuals that provide guidance for flight and/or ground personnel, the inspector should complete an inspection of the manuals.

d) When the certificate holder does not have a manual, or when there is only a part of a manual, the inspector should determine whether or not the certificate holder has been granted any required deviation authority and it is listed in their OpSpecs.

e) Validate if the operator is in compliance with the procedures described in their manual(s), the requirements of 14 CFR, and with the issued OpSpecs. The inspector should determine whether or not manual procedures are being followed by observing and/or interviewing operator personnel in the performance of their duties.

f) Single-pilot operators are not required to have a manual, although some may elect to have one.

g) A basic part 135 operator may not have all the required parts of a manual if the certificate holder has been granted a deviation.

h) A review of the compliance statement may be required for those certificate holders without a manual so that the ASI understands the certificate holder's procedures for compliance with applicable regulations.

5) General Considerations. ASIs should also consider the following items when reviewing procedures in a manual:

a) A procedure may be an acceptable method for accomplishing an intended objective.

b) Each step of a procedure may clearly identify the individual responsible.

c) The acceptable standards of performance for a procedure are to be stated if those standards are not commonly understood or obvious.

d) Since procedures involve a variety of users with differing degrees of expertise, a manual may provide adequate information concerning the accomplishment of a procedure for the least experienced user. A procedure may be described very briefly and concisely when the user can achieve the objective without extensive direction or detail, but when the user has limited training or experience, a procedure can be described in enough detail for the user to correctly accomplish it. When the user has limited access to other sources of information and guidance while performing a procedure, the manual should provide enough detail so that he or she does not have to rely on other sources of information.

e) When a form, checklist, or tool is necessary to accomplish a procedure, the procedure may indicate the location of that item.

*To complete the inspection activity for **3626** or **5626**, see paragraph G, Debrief the Operator, Personnel, or Flightcrew; paragraph H, Analyze Findings; and paragraph I, PTRS Report, of this appendix.*

C. 3627/5627—SURVL/OPER/INSP RAMP CHECK.

1) Review Operator's Office File. Ensure familiarity with the type of UAS to be inspected. Prepare for the ramp inspection. Review OpSpecs, current airworthiness requirements, revisions, previous inspection reports, bulletins, and exemptions/deviations as applicable to the UAS.

2) Coordinate Inspection. Schedule and determine the type of equipment and ground time needed.

3) Maintenance Records. Inspect UAS maintenance records and minimum equipment list (MEL)-deferred maintenance entries (if applicable). Note any maintenance trends.

4) Inspect UAS Documents and Exterior Condition. Conduct an exterior inspection, as applicable. Perform this inspection in accordance with Figure 1, Exterior Inspection, below.

5) Examine Discrepancies. Examine maintenance record entries of noted discrepancies. Monitor/evaluate the operator's corrective actions and return-to-service entries, if time permits.

*To complete the inspection activity for **3627** or **5627**, see paragraph G, Debrief the Operator, Personnel, or Flightcrew; paragraph H, Analyze Findings; and paragraph I, PTRS Report, of this appendix.*

D. 3634/5634—SURVL/OPER/INSP ACFT RECORDS. Refer to Order 8900.1, Volume 6, Chapter 2, Section 35, Safety Assurance System: Inspect Section 135.411(a)(1) (Nine or Less) Certificate Holder's Maintenance Records, and Section 36, Safety Assurance System: Inspect Parts 91K and 121/135 (10 or More) Operator's Maintenance Records, guidance to augment a UAS air operator records and recordkeeping system inspection.

1) Review Operator's Office File. The ASI should be familiar with the certificate holder's manual and operating procedures. Prepare by reviewing OpSpecs, the maintenance and inspection program, previous inspection reports for deficiencies/compliance history, and exemptions/deviations as applicable to UAS utilized by the operator.

2) Determine Requirements. Determine the UAS maintenance record requirements based on the type of maintenance and inspection program authorized.

3) Inspection Program. For operators operating under an inspection program, ensure maintenance records contain the following:

a) A description of the work performed (data acceptable to Administrator).

b) The date of completion of work performed.

c) The signature and certificate number of the person approving for return to service.

4) Inspect Total Time-In-Service Records. Ensure the operator maintains current and complete records for each airframe, engine, propeller, rotor, and appliance, as required.

5) Inspect Life-Limited Parts Records. Ensure the operator maintains current and complete records for each airframe, engine, propeller, rotor, and appliance, as required.

6) Manufacturer's Requirements. Verify compliance with the manufacturer's maintenance requirements for each airframe, engine, propeller, rotor, and appliance, as required.

7) Inspect Overhauled Items. Determine if overhauls are being accomplished within authorized times and compare manual procedures to actual overhaul record content.

8) Inspection Record Status. Review for completeness, currency, and compliance with the operator's manual procedures. Review inspection records for the following:

a) Time since the last inspection required by the inspection program.

b) Schedule, time, and type of the next inspection.

9) AD Status. Review the current status of all applicable ADs for method of compliance and accomplishment with required time periods. In addition, perform the following:

a) Conduct surveillance of ADs in all work programs where the operator performs maintenance, ensure the AD is properly complied with, and review paperwork.

b) Accomplish physical verification of previous ADs.

10) Review Major Alteration Records. Inspect the UAS and compare the manual procedures with actual work records to ensure compliance with approved procedures.

11) Unscheduled Maintenance. Verify procedures for unscheduled maintenance are being performed in accordance with the operator's manual. Refer to §§ 135.23 and 135.65.

12) Inspect Record System. Ensure the operator's records are maintained in accordance with an approved/accepted recordkeeping system.

13) Repair Stations. Verify the operator has procedures for retaining repair station work orders.

*To complete the inspection activity for **3634** or **5634**, see paragraph G, Debrief the Operator, Personnel, or Flightcrew; paragraph H, Analyze Findings; and paragraph I, PTRS Report, of this appendix.*

E. 3637/5637—SURVL/OPER/INSP INSPECTIN PRGM. Refer to Order 8900.1, Volume 6, Chapter 2, Section 32, Safety Assurance System: Inspect a Part 91K Program Manager or Part 135 (Nine or Less) Certificate Holder, guidance to augment a UAS air operator inspection program inspection.

1) Review Operator's Office File. Prepare by reviewing the operator's files for trends and issues of special emphasis, at a minimum, to include the following:

a) OpSpecs – Parts D and E.

b) Previous inspection reports – for deficiencies/compliance history.

c) Exemptions/deviations – The ASI must review the operator's exemptions/deviations from 14 CFR parts/sections before initiating surveillance.

d) Certificate holder's manual – The ASI should review the certificate holder's manual to become familiar with the operator's procedures.

2) Determine Requirements. Determine the UAS maintenance record requirements based on the type of maintenance and inspection program authorized.

a) Manufacturer Maintenance Requirements/FAA Program. An operator may use either the manufacturer's recommended maintenance requirements or a program developed by the operator and approved by the Administrator. Any change to a program developed by an operator requires FAA approval.

b) Revising Time Limitations. Revisions of inspection and overhaul time limitations for powerplants (motors), propellers, and rotors based on service life tracking are based on experience from the Original Equipment Manufacturer (OEM). The operator may request authorization for a time increase (escalation) if the request is accompanied by supporting data from the OEM. The supporting data must substantiate that the increase will not adversely affect the airworthiness of the aircraft (UAS).

3) Inspect. Review the operator's maintenance manual procedures, when applicable, for conducting inspections, return to service after inspections, and compliance with regulatory recordkeeping requirements.

4) Perform an Onsite Inspection.

a) Inspect the UAS maintenance records for compliance with the requirements of 14 CFR part 91, § 91.417 and § 135.439.

b) Inspect the UAS to ensure it meets the type design (if applicable), is properly registered and certificated, and is in a condition for safe operation. Use Figure 1.

c) Inspect the facilities to ensure aircraft are being maintained in compliance with the operator's approved maintenance program and ensure that the certificate holder can safely maintain its UAS.

d) Review the operator's UAS maintenance program for currency and availability to maintenance personnel. A description of work performed or reference to acceptable data, and the signature and certificate number of the person approving the return to service.

e) Review records for compliance with approved Weight and Balance (W&B) procedures.

*To complete the inspection activity for **3637** or **5637**, see paragraph G, Debrief the Operator, Personnel, or Flightcrew; paragraph H, Analyze Findings; and paragraph I, PTRS Report, of this appendix.*

F. 3649/5649—SURVL/OPER/AD COMPLY INSP. Refer to Order 8900.1, Volume 6, Chapter 2, Sections 35 and 36, as required, and Volume 3, Chapter 59, Section 1, Safety Assurance System: Evaluating an Airworthiness Directives Management Process, guidance to augment a UAS air operator AD compliance inspection.

NOTE: When developing an AD management process, operators should consider their size, capabilities, resources, and equipment. It is the ASI's responsibility to evaluate the operator's process and determine if all pertinent elements of an AD management process are defined. When deficiencies are detected, an ASI should address these matters with the operator.

1) Review Operator's Office File. Prepare by reviewing the operator's files for trends and issues concerning ADs.

2) Determine Requirements. Determine the current AD record requirements applicable (if any) to the operator's UAS, ground CSs, and other equipment.

3) Current ADs. In order to perform adequate oversight, ASIs should remain aware of new ADs. This may be done by subscribing to the links listed below. ADs are posted in the Federal Register (FR) both as a notice of proposed rulemaking (NPRM) and as a final rule. These documents are readily available via the following links:

a) The FAA website at http://www.faa.gov/regulations_policies/airworthiness_directives.

b) The Flight Standards Information Management System (FSIMS) at http://fsims.avs.faa.gov (refer to the link to the Regulatory and Guidance Library (RGL) (http://rgl.faa.gov)).

NOTE: Each website provides a subscription service, which will generate an email notification.

4) Operator's Maintenance Manual. Review the following, when use of the manual is applicable:

a) Procedures for approving a UAS aircraft for return to service after inspections and nonroutine maintenance.

b) Procedures for conducting inspections, and AD compliance.

c) Procedures to ensure proper AD recordkeeping requirements are met.

5) Current AD Status. The owner must keep a record showing the current status of applicable ADs.

a) This record must include the following:

- Since the requirements of §§ 91.417 and 135.439 are slightly different, ensure there is a current tracking status of ADs that are applicable to the aircraft (UAS), including a method of tracking applicable items and revision date;
- The operator's method of compliance for the ADs; and
- The time in service, operating life, and/or the date when the next action is required for a recurring AD.

b) An acceptable method of compliance should include a reference to either a specific portion of the AD or a manufacturer's SB, if the SB is referenced in the AD.

c) The document that contains the current status of ADs/method of compliance may be the same as the record of AD accomplishment. The record of nonrecurring ADs must be retained with the aircraft (UAS) indefinitely. If selling the aircraft, the records must be transferred to the new operator.

*To complete the inspection activity for **3649** or **5649**, see paragraph G, Debrief the Operator, Personnel, or Flightcrew; paragraph H, Analyze Findings; and paragraph I, PTRS Report, of this appendix.*

G. Debrief the Operator, Personnel, or Flightcrew. For the respective Program Tracking and Reporting Subsystem (PTRS) accomplished, inform the flightcrew or appropriate personnel that the respective inspection(s) has/have been completed. Discuss any discrepancies brought to the operator's attention during the site visit and any best practices the inspector observed. Inform the operator of all discrepancies in writing.

H. Analyze Findings. For the respective PTRS accomplished, analyze each finding to determine if the discrepancies are the result of improper training, maintenance, and/or missing or inadequate operational procedures. Document the respective task upon completion of inspection, record all deficiencies noted, and determine the appropriate corrective action(s) to be taken. Follow PTRS guidance for recording this inspection event.

I. PTRS Report. See paragraph 10, PTRS Recording, in the notice body and Order 8900.1, Volume 16, Chapter 1, Section 4, Flight Standards Divisions/ASI Interface, Tasks/Flows, and PTRS, Paragraph 16-1-4-5, Program Tracking and Reporting Subsystem (PTRS), for more information about completing a PTRS for UAS activities.

Figure 1. Exterior Inspection

A. Examine UAS Documentation.

1. **Documentation:** Notate UAS type, manufacturer, registration number, and serial number; control station (CS) type and CS serial number; remote pilot in command (PIC) name and remote PIC certificate number; and operator name and operator certificate number.

B. Exterior UAS Inspection. Airframe structure (including undercarriage), all flight control surfaces, and linkages visually inspected for general condition, impaired functionality, loose/missing parts and fasteners, security of attachment, improper installation, fluid leaks, and proper display/legibility of markings.

1. **Airframe:** Shall be inspected for defects resulting from collision with foreign objects, corrosion, transportation damage, chafing, or general wear and tear;
2. **Landing Gear Accessories:** Security, cracks, mounting hardware security, and placement;
3. **UAS Motors and Arms:** Security, cracks, mounting hardware security, placards, and anticollision lights operation;
4. **Rotors/Propellers:** Security, cracks, mounting hardware security, and placement;
5. **Rotor/Propeller Guards:** Security and mounting;
6. **Batteries:** Security, health level, software status. If a powerplant other than electrical: verify fuel quantity for mission and check correct grade, contamination, and leaks;
7. **Integrity of Cargo Latching Mechanism(s):** If applicable;
8. **Approved External Obstacle Sensors:** Check for proper operation, if applicable;
9. **Approved External Cameras:** Security and mounting, if applicable;
10. **All Antennas:** Shall be visually inspected for security, mounting, cracks, placement, and operating frequency;
11. **UAS Ship Firmware/Software:** Check UAS for proper firmware/software and any presence of unapproved "jailbroken" software;
12. **Plug-and-Play Equipment:** Check for security and proper operation, if applicable;
13. **Placards on the UAS or Controller:** Present and legible;
14. **Launch and Recovery Systems (e.g., catapult):** Shall be inspected for potential damage, degradation, and proper operation, if applicable; and
15. **Inspection for Any Unapproved Parts and Parts Affecting the Airworthiness of the UAS.**

C. Control Station (CS).

1. **CS:** Shall be visually inspected for structural integrity and degradation;
2. **CS Firmware/Software:** Check for proper firmware/software, configuration, and any presence of unapproved "jailbroken" software;
3. **CS Plug-and-Play Equipment:** Operating normally, if applicable; and
4. **Generic Computer CS Equipment (e.g., monitor, keyboard, mouse, joystick):** Operating normally, if applicable.

Appendix B. Operations

Required Surveillance Work Activities

Activity Codes: 1620, 1621, 1623, 1626, 1627, 1628, and 1636, as applicable.

Operations Action. This appendix pertains to Operations inspectors assigned to conduct/perform surveillance oversight activities for Title 14 of the Code of Federal Regulations (14 CFR) part 135 certificate holders that utilize Unmanned Aircraft Systems (UAS).

Each Principal Operations Inspector (POI) will add the following required surveillance work activities (1620, 1621, 1623, 1626, 1627, 1628, and 1636, as applicable) to their annual work program. The POI will enter these Program Tracking and Reporting Subsystem (PTRS) codes in this fashion until either the surveillance action is available in the Safety Assurance System (SAS), or Federal Aviation Administration (FAA) Order 1800.56, National Flight Standards Work Program Guidelines, lists and assigns R-items for part 135 UAS surveillance.

A. Reporting System(s). Program Tracking and Reporting Subsystem (PTRS) activity codes:

- Pilot Records Improvement Act of 1996 (PRIA): 1620.
- Manual procedures: 1621.
- UAS site: 1623.
- Training program: 1626.
- Crew records: 1627.
- Trip records: 1628.
- Flight locating: 1636.

B. Definition. A UAS inspection is an important surveillance function that provides the FAA with a comprehensive review of all of a certificate holder's activities. It can encompass, in a single inspection, some or all of the specific inspection areas that are described in FAA Order 8900.1, Volume 6, Chapter 2, Parts 121, 135 and 91 Subpart K Inspections.

C. Location of Inspection. Due to UAS operational characteristics, a UAS inspection could require inspections at the principal base of operations, as well as at numerous remotely sited locations (nests) where operations are conducted. Additionally, certificate holders may be authorized to retain selected records at different locations, such as at a nest, an office located in a residence, an office building, or in portable files. The aviation safety inspector (ASI) should ensure that they know where the required records to be examined are maintained.

D. Planning a UAS Inspection. The method used to conduct a UAS inspection depends on the organizational structure of the certificate holder, to include the specific location(s) where flights are originated. This information can be contained in the enhanced Vital Information Database (eVID) or in the environmental file, the issued operations specifications (OpSpecs), or the certificate holder's manual.

1) Surveillance Activities. The size and complexity of the operations at a particular location will dictate which surveillance items can be examined during a UAS inspection. A UAS inspection may be completed in a single visit or may require multiple visits to complete. These inspections may also require assistance from other responsible ASIs for the area. When possible, Airworthiness and Operations inspectors should jointly conduct UAS inspections.

2) Frequency. The frequency of UAS inspections is determined by the level of risk for that certificate holder. The level of risk can be influenced by numerous factors, such as the number of aircraft and personnel employed; the complexity of the operation; accident, incident, and enforcement history; and prior surveillance results.

a) Until a UAS is surveilled and recorded in SAS, UAS inspections will be conducted as part of the annual work program.

b) Additional inspections may also be initiated as required by the Certificate Management Team (CMT).

E. Inspection Preparation. Prior to conducting a UAS inspection, the inspector should review the following:

- The certificate holder's office file,
- eVID,
- PTRS,
- Safety Performance Analysis System (SPAS), and
- SAS (joint manned and unmanned certificate holders only).

1) Review. The review should ensure that the inspector is familiar with the following information:

a) Current and appropriate air carrier or operating certificate.

b) Current and appropriate OpSpecs.

c) Due to the nature of UAS operations, ensure the review includes:

1. A review of any nonstandard text contained in the issued OpSpecs;

2. A review of OpSpec A005, Exemptions and Deviations;

3. A review of which person(s) are authorized to exercise operational control;

4. A review of OpSpec A010, Aviation Weather Information; and

5. A review of OpSpec B050, Authorized Areas of En Route Operations, Limitations, and Provisions.

2) Exemption Conditions and Limitations. A UAS air operator certificate holder will generally have a greater number of regulations that have been granted exemptions and a greater

number of conditions and limitations associated with those exemptions. Ensure that a review of the conditions and limitations is conducted, as it affects how the certificate holder is supposed to conduct operations, including items such as:

a) UAS airworthiness and equipment requirements;

b) Other supporting equipment requirements (i.e., Global Positioning System (GPS), communication equipment, etc.);

c) Operational requirements, including the operational control system, required crew briefings, and limitations, including weather and route;

d) Training requirements; and

e) Recordkeeping requirements.

3) Waivers or Certificate of Authorization (CoA). Any issued waivers or CoAs should be reviewed for additional conditions and limitations.

4) Any Applicable Manuals.

a) Single-pilot operators are not required to have a manual, although some may elect to have one.

b) A basic part 135 operator may not have all the required parts of a manual if the certificate holder has been granted a deviation.

c) A review of the compliance statement may be required for those certificate holders without a manual so that the ASI understands the certificate holder's procedures for compliance with applicable regulations.

5) General Correspondence with the Operator. Review the following:

a) Previous inspections and competency/proficiency check records, as applicable, for possible problem areas; and

b) Accident or violation history.

F. Notification of Inspection. Although not required, the inspector should attempt to notify the certificate holder to arrange a time when the appropriate personnel and the UAS will be available for the inspection. Notification is important if the inspector plans to interview certain company personnel. If a certificate holder has been notified of the impending UAS inspection, the inspector should open a PTRS record, using PTRS activity code 1623, and record in the comments section that notification has been made.

G. Conduct of Inspection. The strategy used by an inspector for accomplishing a UAS inspection depends on the size and complexity of the certificate holder. Because certificate holders conduct business in a variety of ways, some areas of inspection may not be applicable,

such as an Operations Manual for a single-pilot operation; therefore, it is imperative that the ASI become familiar with a certificate holder's operation and tailor the inspection items accordingly. To complete a UAS inspection, inspectors should examine, as applicable, the items that follow:

1) Air Operator Certificate. The inspector should examine the operator's original air operator certificate, particularly the date and certificate number, and determine whether or not it matches the office copy. If the original air operator certificate is not available, the inspector should determine its location and schedule a time to inspect it.

2) OpSpecs. The inspector should review the certificate holder's current OpSpecs and ensure that they are complete and that the issue date is the same as that of the responsible Flight Standards office's copy. Additionally, the inspector should review a sampling of available personnel required to have available a copy of the OpSpecs to ensure that they are complete and up to date. The ASI should verify that the personnel they view exercising operational control are listed in the appropriate OpSpec or other authorized location.

3) Operations Manual. If the operator has either partial or full manuals that provide guidance for flight and/or ground personnel, the inspector should complete an inspection of the manuals.

a) When the certificate holder does not have a manual, or when there is only a part of a manual, the inspector should determine whether or not the certificate holder has been granted any required deviation authority and it is listed in their OpSpecs.

b) The inspector should review the certificate holder's copy of the manual and ensure that it is complete and up to date. Additionally, the inspector should review a sampling of personnel required to have available a copy of the manual to ensure that they are able to locate the manual and are using a copy that is complete and up to date.

c) The inspector should determine whether or not manual procedures are being followed by observing and/or interviewing operator personnel in the performance of their duties.

4) Records. The inspector should review any exemption(s) issued to the certificate holder to determine if there are any changes to the type of records required by part 135 that the certificate holder must maintain. Conduct the following records inspections by using the applicable guidance provided in Order 8900.1 as a baseline for those inspections:

a) Trip records (Order 8900.1, Volume 6, Chapter 2, Section 10, Safety Assurance System: Operator Trip Records Inspections).

b) Crew records (Order 8900.1, Volume 6, Chapter 2, Section 14, Safety Assurance System: Crewmember and Dispatcher Records Inspections for Parts 121 and 135).

c) PRIA records (FAA Order 8000.88, PRIA Guidance for FAA Inspectors)/Pilot Records Database (PRD), as applicable.

d) Any additional records required by an exemption, waiver, or CoA.

5) UAS. If practical, the inspector should examine, during the inspection, the UAS used by the operator. In addition to inspecting the aircraft to determine whether or not it is in airworthy condition, the inspector should examine the following items for compliance:

a) Required components of the UAS, including the unmanned aircraft (UA) control station (CS), required displays, and communication equipment. (Review exemption(s), UAS Aircraft Flight Manual (AFM), and Company Flight Manual (CFM) to determine the equipment required for operation.)

b) Airworthiness certificate or Title 49 of the United States Code (49 U.S.C.) § 44807 exemption.

c) Registration.

d) Aircraft checklist.

e) Approved AFM or CFM available (as required by exemption).

f) Empty weight and center of gravity (CG) calculated (if applicable, check exemption(s)).

NOTE: Multiengine aircraft that are operated under part 135 must be weighed every 36 months (if applicable, check exemption(s)).

g) The approved minimum equipment list (MEL) and its use as authorized by the OpSpecs (if applicable).

h) UAS records available for inspection. (Review exemption(s) for any additional recordkeeping requirements.)

NOTE: Some certificate holders may elect to retain aircraft maintenance records at the location where maintenance is performed; this location may differ from the operator’s main base of operations.

6) Operations. The inspector should observe the certificate holder conducting operations to ensure compliance with the regulations, the conditions and limitations of any exemptions, waivers, or CoAs, and their issued OpSpecs. Depending on how a certificate holder conducts operations, this may require more than one ASI, so that all elements of the operation can be observed simultaneously. Elements that should be included in an operations observation include:

a) Takeoff and landing locations. UAS typically do not operate from traditional airports used by manned aircraft, and these nest locations should have been evaluated by the FAA prior to their use, so ensure the location(s) used for takeoff and landing remain adequate as required by part 135, § 135.229(a).

b) Required crewmember certificates, including any required pilot and medical certificates. Review the exemption conditions and limitations to determine which personnel and what type of certification is required.

c) Management and personnel with the authority for operational control should be inspected for their effectiveness. Inspectors should ensure the certificate holder's operational control procedures are effective for flight release and comply with their manual, the requirements of 14 CFR, and with the issued OpSpecs. Personnel assigned support duties for the control of a flight should be observed and/or interviewed to determine effectiveness and compliance with company procedures. When flights are released at locations other than a certificate holder's principal base of operations, the ASI should ensure that the certificate holder's operational control procedures are being followed and that they are effective.

d) Preflight preparation. This should also include ensuring the certificate holder is using the approved sources of aviation weather information, as well as conducting any required briefings for crewmembers. Review OpSpec A010 for approved sources of weather information, the certificate holder's manual, and the exemption conditions and limitations to determine what briefings are required, which personnel are required to attend, and the required content of the briefings.

e) Flight operations. The ASI should ensure that all personnel associated with the flight operation conform to 14 CFR, all pertinent conditions and limitations of granted exemption(s), waiver(s), or CoA(s), and the certificate holder's accepted procedures. Additionally, the ASI should observe the certificate holder's flight locating procedures. The certificate holder's manual and the conditions and limitations of the exemption(s) should be reviewed for flight locating procedures and other requirements, such as the certificate holder's procedures and requirements for the servicing and handling of its aircraft.

f) Postflight. The ASI should ensure that all personnel follow the certificate holder's postflight procedures.

H. Training Program. The ASI should review the certificate holder's manual and the exemption conditions and limitations to become familiar with any training requirements. Although some certificate holders are not required by 14 CFR to have a training program, exemption conditions and limitations may require certain personnel to receive training. The completion of any required training should be documented by the certificate holder.

I. PTRS Input. The inspector should record the results of the UAS inspection in the PTRS by using the following activity codes (as applicable):

- PRIA: 1620.
- Manual procedures: 1621.
- UAS site: 1623 (ASIs use this PTRS code to record a UAS facility inspection for the items not captured by the other listed PTRS codes).
- Training program: 1626.
- Crew records: 1627.

- Trip records: 1628.
- Flight locating: 1636.

1) The entry should include, in the comments section (section IV), any discrepancies, significant findings, corrective action taken by the operator, and information that may be useful for the inspector to review before conducting the certificate holder's next UAS inspection.

2) Additionally, the information entered into the comments section of the PTRS should contain enough detail so any future readers of the PTRS can determine the details and intent of the message, and, if required, plan for any possible followup actions.

NOTE: When recording any UAS inspection in the Enhanced Flight Standards Automation System (eFSAS), the term "UAS" must be input into the "Local Use" field.

J. Future Activities. By conducting UAS inspections, the FAA is able to maintain a comprehensive review of a certificate holder's business conduct and its compliance with 14 CFR, any granted exemptions, and waivers or CoAs. These inspections can result in findings that generate followup action. If the findings warrant such action, the inspector should implement the following corrective measures:

1) Plan additional surveillance;

2) Apply the Compliance Program principles to bring the certificate holder into compliance; or

3) Initiate an enforcement investigative report (EIR), if applicable.