

UNMANNED AIRCRAFT SYSTEMS FOR THE RAIL INDUSTRY

Legal and Regulatory Considerations

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KAPLAN KIRSCH ROCKWELL

Overview

- Background
- FAA Modernization and Reform Act
- Regulatory Requirements
 - Section 333
 - Certificate of Waiver or Authorization (COA)
 - Pilot Requirements
 - Registration
- State and Local Regulations
- Liability and Risk Management
- Upcoming Issues

What is an aircraft?

“[A]ny contrivance invented, used, or designed to navigate, or fly in, the air.”

49 U.S.C. § 40102(6).

FAA's Regulatory Authority

“The Administrator of the Federal Aviation Administration shall develop plans and policy for the use of the navigable airspace and assign by regulation or order the use of the airspace necessary to ensure the safety of aircraft and the efficient use of airspace.”

49 U.S.C. § 40103(b)(1).

FAA's Regulatory Authority

The Administrator shall prescribe air traffic regulations on the flight of aircraft (including regulations on safe altitudes) for—

- (A) navigating, protecting, and identifying aircraft;
- (B) protecting individuals and property on the ground;
- (C) using the navigable airspace efficiently; and
- (D) preventing collision between aircraft, between aircraft and land or water vehicles, and between aircraft and airborne objects.

49 U.S.C. § 40103(b)(2).

FAA's Regulatory Authority

“[A] person may operate an aircraft only when the aircraft is registered under section 44103 of this title.”

49 U.S.C. § 44101(a).

FAA's Regulatory Authority

“The registered owner of an aircraft may apply to the Administrator for an airworthiness certificate for the aircraft. The Administrator shall issue an airworthiness certificate when the Administrator finds that the aircraft conforms to its type certificate and, after inspection, is in condition for safe operation. The Administrator shall register each airworthiness certificate and may include appropriate information in the certificate. The certificate number or other individual designation the Administrator requires shall be displayed on the aircraft. The Administrator may include in an airworthiness certificate terms required in the interest of safety.”

49 U.S.C. § 44704(d)(1).

FAA's Regulatory Authority

Prohibitions. A person may not—

(1) operate a civil aircraft in air commerce without an airworthiness certificate in effect or in violation of a term of the certificate;

(2) serve in any capacity as an airman with respect to a civil aircraft, aircraft engine, propeller, or appliance used, or intended for use, in air commerce— (A) without an airman certificate authorizing the airman to serve in the capacity for which the certificate was issued

49 U.S.C. § 44711(a).

FAA's Regulatory Authority

“The United States Government has exclusive sovereignty of airspace of the United States.” 49 U.S.C. § 40103(a)(1).

FAA Modernization and Reform Act

Directed the FAA to “develop a comprehensive plan to safely accelerate the integration of civil unmanned aircraft systems in the national airspace system” and issue rules by September 30, 2015.
Pub. L. No. 112-95 § 332 (Feb. 14, 2012).

Notice of Proposed Rulemaking: Operation and Certification of Small Unmanned Aircraft Systems (sUAS),
80 Fed. Reg. 9,544 (Feb. 23, 2015)

FAA Modernization and Reform Act

Provided for FAA authority to consider whether “certain unmanned aircraft systems may operate safely in the national airspace system before completion of the plan and rulemaking.”

Pub. L. No. 112-95 § 333 (Feb. 14, 2012).

FAA Modernization and Reform Act

Although authorizing FAA to develop rules for the integration of civil UAS, Congress also prohibited FAA from “promulgat[ing] any rule or regulation regarding a model aircraft, or an aircraft being developed as a model aircraft,” so long as it is operated in accordance with community-based standards and within certain statutory criteria.

Pub. L. No. 112-95 § 336 (Feb. 14, 2012).

Current “Regulatory” Requirements

- Commercial (Civil) UAS Operations
 - Section 333 Exemption (or Type Certificate)
 - Certificate of Waiver or Authorization (COA)
 - Aircraft Registration
 - Certificated Pilot

Current “Regulatory” Requirements

- Public UAS Operations

- Public Aircraft:

- An aircraft owned and operated by the government of a State, the District of Columbia, or a territory or possession of the United States or a political subdivision of one of these governments.
- An aircraft exclusively leased for at least 90 continuous days by the government of a State, the District of Columbia, or a territory or possession of the United States or a political subdivision of one of these governments.

- BUT:

- An aircraft does not qualify as a public aircraft when the aircraft is used for commercial purposes.

- Public Aircraft Operations, FAA Advisory Circular (AC) 00.1.1A (Feb. 12, 2014), http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_00-1_1A.pdf

Section 333 Exemptions

- First 6 Section 333 Exemptions in September 2014
- 33 Section 333 Exemptions by March 2015
- “Summary Grant” Procedures Introduced April 2016
- Today: 4,505 Section 333 Exemptions

Section 333 Exemptions

- General Exemption Guidance
 - <http://aes.faa.gov/Petition/>
- UAS Integration Office Guidance
 - Operator name and address
 - Specific regulations from which relief is requested
 - How operator will maintain an equivalent level of safety or no adverse impact to safety
 - How granting the exemption would be in the public interest
 - The proposed operations
 - The make and model of the aircraft proposed for the operation

Section 333 Exemptions

To Find Previously Granted Exemptions:

1. Find exemption and note docket number:
https://www.faa.gov/uas/legislative_programs/section_333/333_authorizations/
2. Go to <http://www.regulations.gov> and search for the docket number.
3. Click “Open Docket Folder” on results.

Section 333 Exemptions

Typical Section 333 Exemption Conditions:

- Maintain 500 feet separation from non-participants.
- Operate below 100mph.
- Visual Line of Sight (VLOS)
- Exemption for all Approved UAS under 55lbs
- Daytime Visual Flight Rules (VFR)

Section 333 Exemptions

- Confidentiality of Petitions
 - 14 C.F.R §11.36(b)
 - 49 C.F.R. part 7
- Timeframe – Approximately 120 days
- Term – Two Years

Certificate of Waiver or Authorization (COA)

- Authorization from the FAA Air Traffic Organization (ATO) to access the NAS for a particular UAS activity.
- Blanket COA
- Full COA

Blanket COA

FAA FORM 7711-1 UAS COA Page 1 of 7
Blanket COA for any Operator issued a valid Section 333 Grant of Exemption

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION CERTIFICATE OF WAIVER OR AUTHORIZATION
ISSUED TO Any Operator with a valid Section 333 Grant of Exemption
This certificate is issued for the operations specifically described hereinafter. No person shall conduct any operation pursuant to the authority of this certificate except in accordance with the standard and special provisions contained in this certificate and such other requirements of the Federal Aviation Regulations not specifically waived by this certificate.
OPERATIONS AUTHORIZED Operation of Unmanned Aircraft Systems in accordance with the operators' Section 333 Grant of Exemption at or below 400 feet Above Ground Level (AGL) in the National Airspace System (NAS).
LIST OF WAIVED REGULATIONS BY SECTION AND TITLE N/A
STANDARD PROVISIONS

Blanket COA

A. Safety of Flight

- Remain clear and give way to manned ops
- Visual Observer (VO)
- Compliance with Temporary Flight Restrictions (TFR), Prohibited Areas, Special Flight Rule Areas (SFRA), and Notices to Airman (NOTAM)

Blanket COA

B. Reporting Requirements

- Monthly:
 - Name of operator, exemption number and aircraft registration number
 - UAS type and model
 - All operating locations (latitude / longitude)
 - Number of flights, per location, per aircraft
 - Total aircraft operational hours
 - Takeoff or landing damage
 - Equipment malfunctions
 - Lost link events

Blanket COA

B. Reporting Requirements

- Accident / Incident / Mishap Reporting (Within 24 Hours):
 - Fatal injuries (resulting in a death within 30 days)
 - Serious injuries
 - Hospitalization for 48+ hours within 7 days of injury
 - Fracture of a bone other than simple finger, toes or nose fractures
 - Hemorrhages, nerve, muscle or tendon damage
 - Internal organ damage
 - Second or third degree burns, or affecting more than 5 percent of body
 - Total aircraft loss
 - Substantial damage to aircraft (requires repair before next flight)
 - Damage to property other than the unmanned aircraft

Blanket COA

B. Reporting Requirements

- Accident / Incident / Mishap Reporting (Within 24 Hours):
 - Unsafe or Abnormal Operations
 - Malfunction of flight control system (including navigation)
 - Malfunction of ground control system (other than loss of control)
 - Power failure or malfunction
 - In-flight fire
 - Aircraft collision
 - In-flight electrical failure
 - Deviation from COA
 - Deviation from an ATC clearance and/or Letter of Agreement
 - Lost control link events (fly-aways and execution of lost link procedure)
- NTSB Requirements, 49 CFR part 830

Blanket COA

C. Notice to Airman (NOTAM)

- D-NOTAM
- Within 24-72 hours prior to operation
 - Name and address of pilot
 - Location, altitude, operating area
 - Time and nature of activity
 - Number of UAS flying in operating area
- Cancel when complete or not conducted

!DCA ZDC AIRSPACE UAS WITHIN AN AREA DEFINED AS 10NM RADIUS OF AML223010 (10NM SW IAD) SFC-5000FT 310251000 1310251200EST

Blanket COA

D. Air Traffic Control Coordination

- “Operators and UAS equipment must meet the requirements (communication, equipment and clearance) of the class of airspace they will operate in.”
- Follow traffic advisory practices when operating in vicinity of an airport without a control tower.

Blanket COA

E. Flight Planning Requirements

- At or below 400 feet above ground level (AGL)
- Beyond the following distances:
 - 5 nautical miles (NM) from an airport with an operational control tower
 - 3 NM from an airport with a published instrument flight procedure, but not having an operational control tower
 - 2 NM from an airport not having a published instrument flight procedure or an operational control tower
 - 2 NM from a heliport

Blanket COA

F. Lost Link / Communications Procedures

- If the UAS loses communications or loses its GPS signal, the aircraft must return to a pre-determined location within the private or controlled-access property and land.
- The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

Full COA

DoD Notifications	COA Cases	Tools	Date	Reports	Options	Help	Log Out
UAS COA Case Draft #: 796 Case Status: DRAFT Submitted: 05/29/2008		Project					
<ul style="list-style-type: none"> Proponent Information Point of Contact Information Operational Description System Description Performance Characteristics Airworthiness Procedures Avionics/Equipment Lights Spectrum Analysis Approval ATC Communications Electronic Surveillance/ Detection Capability Visual Surveillance/ Detection Capability Aircraft Performance Recording Flight Operations Area/Plan Flight Aircrew Qualifications Special Circumstances Preview Case 		Performance Characteristics Climb Rate* <input type="text" value="500"/> (Feet/Minute) Descent Rate* <input type="text" value="500"/> (Feet/Minute) Turn Rate* <input type="text" value="8"/> (Degrees/Second)					
		Cruise Speed (KIAS)*: Maximum* <input type="text" value="110"/> Minimum* <input type="text" value="56"/>		Operating Altitudes*: Maximum* MSL <input type="text" value="3000"/> FL <input type="text"/> Minimum* MSL <input type="text" value="0"/> FL <input type="text"/>			
		Approach Speed (KTS)* <input type="text" value="59"/>		Gross Takeoff Wt (Lbs)*: <input type="text" value="1950.0"/>			
		Launch/Recovery*: (1) (Attach Description, Specify type/procedure)					
<ul style="list-style-type: none"> COA Status History Case Management Status Notes History 		<div style="text-align: center;"> <input type="button" value="CLONE THIS CASE"/> <input type="button" value="PREVIEW CASE"/> <input type="button" value="SAVE AS DRAFT"/> <input type="button" value="COPY CASE"/> <input type="button" value="CANCEL DRAFT"/> <input type="button" value="PRINT"/> <input type="button" value="DOWNLOAD"/> <input type="button" value="FORM UAS COA"/> <input type="button" value="HPD 3D"/> <input type="button" value="PREVIOUS"/> <input type="button" value="NEXT"/> </div>					

Full COA

- Requires Section 333 Exemption
- Requires registered aircraft
- Can take 30-60 days to process, beyond the Section 333 review

Pilot in Command

- PIC must hold either:
 - Airline Transport Pilot (ATP)
 - Commercial
 - Private
 - Recreational
 - Sport Pilot
- Pilot must hold a current FAA medical certificate, or a valid U.S. driver's license.

Pilot in Command

- PIC must meet flight review requirements.
- FAA: no authority to exempt.
- Section 333 holder does *not* need to be a pilot or employ a pilot.

Aircraft Registration

- Online registration recently opened to commercial UAS operators
- Must register via 14 C.F.R. part 47 if:
 - Over 55 lbs.
 - Operations outside of the United States
 - Aircraft owned by a trustee
 - Owner uses a voting trust to meet citizenship requirements

Aircraft Marking

- Use engraving, permanent label, permanent marker, to display registration number.
- Number must be accessible without tools.
- If registration via 14 C.F.R. part 47, follow those marking regulations.

State and Local Regulation

Blanket COA:

“This Certificate of Waiver or Authorization does not, in itself, waive any Title 14 Code of Federal Regulations, nor any state law or local ordinance. Should the proposed operation conflict with any state law or local ordinance, or require permission of local authorities or property owners, it is the responsibility of the operator to resolve the matter.”

State and Local Regulation

- Traditional role for state and local regulation
 - Siting of airports
 - Part 77, obstruction evaluation
- State and Local Regulation of Unmanned Aircraft Systems (UAS) Fact Sheet, FAA Office of Chief Counsel (Dec. 17, 2015)
- 2015: 45 states considered 168 bills related to UAS.

Liability and Risk Management

- Potential Liability Risks
 - Damage to the aircraft (malfunction and crashes)
 - Damage to business property
 - Personal injury to employees and agents
 - Third-party property damage and personal injury
 - Negligent hiring, training, supervision
 - Cybersecurity
 - Invasion of privacy
 - War perils

Liability and Risk Management

- Own and operate UAS, or lease services?
- Additional insurance required?
 - Many Commercial General Liability and Property / Inland Marine policies will not cover UAS.
 - Some UAS endorsements available
 - Increase insurance market, but limited by experience.
 - FAA is not proposing to require insurance.
 - Owner / non-owner policies.

What's Next?

Notice of Proposed Rulemaking: Operation and Certification of Small Unmanned Aircraft Systems (sUAS), 80 Fed. Reg. 9,544 (Feb. 23, 2015) (14 C.F.R. part 107)

- Operational Limitations:
 - Less than 55lbs
 - VLOS only, visual observer optional
 - FPV may be used, but does not satisfy “see and avoid”
 - No operations over non-participating persons
 - Daylight VFR operations only
 - Maximum 500 feet AGL
 - Maximum airspeed 100 mph

What's Next?

Notice of Proposed Rulemaking: Operation and Certification of Small Unmanned Aircraft Systems (sUAS), 80 Fed. Reg. 9,544 (Feb. 23, 2015) (14 C.F.R. part 107)

- Operator Certification:
 - Initial aeronautical knowledge test
 - TSA vetting
 - Unmanned aircraft operator certificate
 - Recurrent aeronautical knowledge test every 24 months

What's Next?

Notice of Proposed Rulemaking: Operation and Certification of Small Unmanned Aircraft Systems (sUAS), 80 Fed. Reg. 9,544 (Feb. 23, 2015) (14 C.F.R. part 107)

- Aircraft Requirements:
 - No airworthiness certification required, but must maintain UAS in condition for safe operation and must ensure that it is in safe condition before operation.
 - Registration and marking.
- 4,694 public comments received

What's Next?

- Micro Unmanned Aircraft Systems Aviation Rulemaking Committee, Recommendations and Final Report (April 1, 2016)
 - Category 1 (250 grams or less)
 - Category 2 (Less than 1% risk ~ 4 to 6 pounds)
 - 20 feet above, 10 feet laterally
 - Category 3 (Less than 30% risk)
 - Closed- or restricted-access work site with permission
 - Transient or incidental overflight
 - Category 4 (Less than 30% risk)
 - Documented risk mitigation plan

What's Next?



Thank You!

Steven L. Osit
Kaplan Kirsch & Rockwell LLP

202.955.5600

sosit@kaplankirsch.com