

CLIENT ALERT

FAA and Drones: Mining the Regulatory Gap

Fall 2014

The drones are coming, albeit at the pace of government. For many years now, so-called unmanned aircraft systems (UAS or drones) have been used by governmental agencies to support law enforcement activities, search and rescue operations, border patrol missions, humanitarian aid efforts, and a host of other critical public functions. And although UAS have generally not been permitted to be used for commercial purposes in the United States, it is a near certainty that in the not-so-distant future UAS will be widely used by private American firms to support countless commercial activities, including 3-D mapping, aerial surveys, facility inspection, precision agriculture, security, small package delivery, and film production. UAS will be in high demand across a diverse array of industries due to their unique ability to increase human potential and productivity, allowing dangerous, dull or difficult tasks to be performed more safely and efficiently than with manned aircraft – or no aircraft at all.

There are few industries better suited to unlock the vast commercial potential of UAS than the mining industry, where firms are constantly evolving and innovating to maximize output while balancing extraordinarily complex safety challenges. Because UAS offer the potential to dramatically increase productivity while mitigating safety hazards, mining companies stand to benefit tremendously from integrating UAS into their operations.

Indeed, the industry is already leveraging this technology abroad, in countries like Australia and Switzerland. Some companies are using high-definition cameras mounted on UAS to create 3-D maps of mines to help calculate the volume of material that has been removed, allowing for more accurate production estimates; others are using UAS to measure gravel pits, quarries and landfills, to assist with reporting of stockpile inventories, to conduct pre- and post-mining imagery of land disturbance, and to eliminate the need for personnel to access particularly hazardous pit areas. Earlier this year, the Australian Civil Aviation Authority awarded Territory Iron an operating certificate to use UAS at its Frances Creek mining operation, an action that has reportedly already paid significant dividends for that company.

UAS can also offer extraordinary promise in regions once deemed too dangerous or remote for mining activities, with their potential to shorten supply chains and enhance the ability to monitor, track, and manage other key aspects of the business. Paradoxically, the remoteness of mining sites may actually give the industry an advantage over others with respect to securing regulatory approvals, inasmuch as the airspace and population centers around such sites are less congested and, as a result, less likely to pose a potential risk to civil aviation.

There is no denying the economic boon that UAS will bring once their potential can be fully realized. Integrating UAS into the national airspace system (NAS) is expected to create tens of thousands of jobs and generate billions of dollars in economic

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activity. A study conducted by the Association for Unmanned Vehicle Systems International found that the UAS industry will create more than 70,000 new jobs in the first three years after they are allowed to fly in U.S. airspace, and over 100,000 new jobs by 2025. The resultant economic impact will total over \$13.6 billion in the first three years and is predicted to grow to over \$82.1 billion by 2025.

So what are we waiting for? In a word, government. But there is hope that change is coming.

Nudging the Federal Aviation Administration to Act

As the federal agency responsible for ensuring the safety and efficiency of the NAS and protecting people and property on the ground, the Federal Aviation Administration (FAA) asserts that UAS operations are within the scope of its regulatory and enforcement authority. While there are no FAA regulations that specifically address UAS, the FAA's view is that UAS are "aircraft" and UAS operators are "pilots" under the agency's regulations.

In 2007, the FAA issued a policy statement declaring that "no person may operate a UAS in the National Airspace System without specific authority" and that such policy would apply to both public and private UAS. Until recently, there were only two primary ways to obtain specific FAA authority to operate UAS. The first was to obtain a special airworthiness certificate in the experimental category (SAC-EC) for private sector (civil) aircraft. SAC-ECs are available to private entities that want to fly a UAS for research and development, sales demonstrations, and pilot training, but they preclude operations for compensation or hire. The second was to obtain a Certificate of Waiver or Authorization (COA) for public aircraft. A public aircraft is one that is operated by federal, state, or local agencies for law enforcement or other public safety purposes, or by a qualifying state university for conducting research. But neither of these mechanisms allowed UAS to be operated for commercial purposes.

In 2012, Congress took steps to change the status quo in the FAA Modernization and Reform Act of 2012 (FMRA). Three aspects of that statute are relevant to the development of commercial UAS applications.

First, Congress required the FAA to establish permanent Arctic areas where small UAS (*i.e.*, those weighing less than 55 pounds) previously used by the military could be operated for research and commercial purposes. Thus, in July 2013, the FAA granted expedited "Restricted Category" certifications for the Institue ScanEagle and Aerovironment PUMA UAS – permitting their use for commercial aerial surveillance purposes. The ScanEagle was authorized for use by ConocoPhillips to perform marine mammal and ice surveys necessary to meet environmental and safety rules before drilling on the sea floor; the PUMA was approved to support BP's emergency response crews for oil spill monitoring and wildlife surveillance over the Beaufort Sea. And in June 2014, the FAA modified the PUMA's restricted category type certificate to allow aerial surveys of BP pipelines, roads and equipment at a Prudhoe Bay, Alaska oilfield – the first time the FAA authorized a commercial UAS operation over land.

Second, the FMRA required the FAA to accomplish several milestones and rulemaking actions over the next few years, including: (i) streamlining and accelerating the operation of UAS in the NAS by both public entities and commercial operators; (ii) issuing regulations for the operation of small UAS by August 2014; (iii) creating and implementing a plan to begin the integration of all civil UAS into the NAS by September 30, 2015; (iv) disseminating a U.S.-government wide comprehensive plan to safely accelerate the integration of civil UAS into the NAS by November 2012; (v) creating a roadmap outlining the

actions and considerations needed to enable such integration by February 2013; and (vi) establishing six geographically diverse test sites for UAS testing and development.

Finally, as a stop-gap measure, in Section 333 of the FMRA, Congress directed the Secretary of Transportation to authorize (by way of the FAA exemption process) certain safe, low-risk UAS operations prior to completion of the various UAS rulemakings required by the FMRA.

To date, the FAA is woefully behind on its UAS rulemaking. But the Section 333 exemption process offers hope in the interim.

In what was the first concrete step towards mainstream commercial application of UAS technology in the United States, on September 25, 2014, the FAA granted regulatory exemptions to six aerial photo and video production companies (and to a seventh shortly thereafter) belonging to the Motion Picture Association of America, allowing UAS to be used in scripted, closed-set film production. And the agency granted five more exemptions on December 10, 2014 – to companies looking to operate UAS for aerial surveying, construction site monitoring and oil rig flare stack inspections. As of this writing, more than 150 such exemption applications from a broader array of industries remain pending. Until the FAA completes its small UAS rulemaking, Section 333 exemptions will be the only way to operate a UAS for commercial purposes in the United States.

Small UAS Rulemaking – Worth the Wait?

As for the FMRA's directive to the FAA to issue final rules governing the commercial use of a wide range of small UAS by August 2014, and to integrate UAS generally into the NAS by September 2015, the small UAS rulemaking is unlikely to be finalized until early 2016, and the September 2015 integration date is aspirational at best. Indeed, the FAA has yet to publicly outline, much less schedule, a proposed rulemaking to implement the recommendations of the UAS comprehensive plan.

As this edition of the Mining Law Monitor goes to print, a Notice of Proposed Rulemaking addressing small UAS classification, pilot certification and visual observers, registration, approval of operations, and operational limits is imminent – the FAA was aiming for December 22, 2014. Further delays to both the small UAS rulemaking and the September 30, 2015 integration goal are likely, however, and the agency's ability to quickly finalize any rulemaking is in serious doubt. Indeed, a June 2014 Department of Transportation Inspector General's audit report revealed that the FAA has missed statutorily prescribed rulemaking deadlines for the majority of the FMRA's 17 UAS-related provisions, and concluded that such delays will prevent the FAA from meeting Congress's deadline for achieving safe UAS integration. The report also found that the FAA has not reached consensus on standards for technology that would enable UAS to detect and avoid other aircraft and ensure reliable data links between ground stations and the UAS they control. Nor has the agency established a regulatory framework for UAS integration, such as aircraft certification requirements, standard air traffic procedures or an adequate controller training program.

Assuming it eventually gets rolled out, the FAA's small UAS rulemaking is expected to, among other things: (i) be limited to visual line of sight operations under 400 feet above ground level (AGL) in Class G airspace; (ii) establish small UAS pilot qualification requirements; (iii) require the small UAS to be registered on the FAA Registry; and (iv) require the use of an observer. The small UAS rulemaking will also likely garner tens of thousands of public comments – covering an unprecedented range of constituencies – that the FAA must consider and address before making it final. The only thing that is clear about how the agency will balance the interests of airlines, hobbyists, pilots, manufacturers, technology companies and privacy

advocates is that it will not do so quickly. It is noted that what can fairly be characterized as legitimate, but misdirected, privacy concerns derailed the FAA's UAS test site selection process by several months. Regardless of how long it may take to finalize, however, the small UAS rule is unlikely to authorize anything beyond the current Section 333 exemptions – and may even be more restrictive to the extent it provides for any type of blanket authorization.

Because the small UAS rule is unlikely to be finalized for what may be as long as another 18 to 24 months, Section 333 will be the only way to operate a UAS for commercial purposes in the United States for some time. It is also unclear whether – or how – the small UAS rule will provide a mechanism by which commercial operations can begin immediately. Accordingly, the FAA's interim authority under Section 333 will especially benefit operators who wish to gain a competitive advantage using UAS. Fortunately, Congress intended Section 333 authorization to cover the period during which the FAA completes additional regulatory steps beyond the small UAS final rule.

Section 333 Exemptions: A Fast Track for Commercial Small UAS

Section 333 of the FMRA, combined with the FAA's general authority to issue exemptions from its own regulations, presents an immediate opportunity for companies that are committed to operating UAS and want to avoid the frustration of waiting for the FAA to promulgate the small UAS rule. Section 333 empowers the FAA (through the Secretary of Transportation) to determine: (i) if a particular UAS operation does not create a hazard to users of the NAS or the public or pose a threat to national security; and (ii) whether a COA or airworthiness certification is required for the operation of such UAS.

But since Section 333 does not provide an independent basis for UAS operating authority, the FAA has taken the position that prospective UAS operators seeking Section 333 relief must do so through the agency's standard exemption process. The FAA narrowly interprets Section 333 as providing some statutory flexibility with respect to airworthiness certification for the UAS itself, but maintains that the statute does not provide any such flexibility relative to other statutory or regulatory requirements concerning the operation of aircraft (*e.g.*, those pertaining to aircraft registration, airman certificates, maintenance, etc.). To obtain a Section 333 exemption, an applicant must generally show that its UAS operations will not adversely affect safety, or provide at least an equal level of safety to the rules from which they seek exemption, and why granting the exemption would be in the public interest. The FAA has also clarified that its Section 333 determination requires the petitioner to, among other things, describe: (i) how the proposed UAS operation will be safely conducted to minimize risk to the NAS or to persons and property on the ground; (ii) any procedures they would implement to ensure that the UAS is in a condition for safe flight; (iii) UAS pilot qualifications; and (iv) the nature, characteristics and geographic scope of the intended UAS operations.

Although issued to just a handful of companies, most of which are engaged in film production, the first Section 333 exemptions will serve as a template for any commercial small UAS operations. Operators will need to be prepared to demonstrate similar safeguards, risk-mitigation procedures, and operational limitations, albeit tailored to their proposed use. While the FAA may modify these conditions as the Section 333 exemption process becomes normalized, they are expected to maintain the following basic measures:

- Flights are operated during daylight hours at an altitude of no more than 400 AGL;

- Crew consists of a pilot in command (PIC) and visual observer;
- PIC is an FAA-licensed private pilot with a third class medical certificate;
- Flights are operated within line of sight of the PIC and/or observer(s);
- PIC and observer must be able to communicate verbally at all times;
- UAS is registered on the FAA Registry and display N-number (*i.e.*, like any other aircraft);
- Operations are limited to Class G airspace (uncontrolled) and in a confined operating area with physical security measures;
- Maximum operating time is equivalent to 25 percent of battery life remaining;
- Operators are trained in specific details of the small UAS being operated;
- Operator conducts a mandatory daily pre-operational briefing;
- Operator conducts pre-flight inspection/maintenance;
- Operator obtains an FAA certificate of waiver or authorization to operate in a specific operating area; and
- Operator complies with an FAA-approved UAS operations manual detailing the standard operating procedures and safeguards (may be submitted confidentially).

To date, over 150 Section 333 petitions have been filed by companies seeking to operate small UAS of varying sizes and capabilities in contexts ranging from aerial mapping and surveys, to agriculture and real estate, to filmmaking. This includes at least one mining consulting company – EnviroMINE – that is seeking to operate 1.7-pound eBee small UAS over certain areas in California and Arizona suitable for (or in use by) surface mining for the purpose of collecting aerial photographs to create surface maps and updated imagery for use by biologists, archaeologists, mine operators and the agencies that regulate these operations. While the FAA took just over four months to process the first round of Section 333 exemption applications (and several weeks longer for the second round), its processing time is expected to slow as the number of pending applications increase. Because the agency considers each application individually and generally in the order that it was received, interested operators who are still waiting to apply do so at their peril.

Conclusion

Mining companies looking to stay ahead of the technological curve by employing UAS in their U.S. operations do not need to wait – what may be years – for the FAA to promulgate a rule covering the use of small UAS for commercial purposes. A Section 333 exemption would offer an immediate and tangible opportunity to start leveraging UAS technology much more quickly. Doing so will also put those mine operators with established UAS programs at a competitive advantage when formal

rules allowing broader operations are eventually issued. Although the Section 333 exemption process may require an upfront investment of time and resources, those costs could easily be outweighed by the risks associated with waiting on an FAA rulemaking process wrought with uncertainty.

For more information, please contact the professional(s) listed below, or your regular Crowell & Moring contact.