GIBSON DUNN

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AEROSPACE AND RELATED TECHNOLOGIES – KEY DEVELOPMENTS IN 2017 AND EARLY 2018

To Our Clients and Friends:

This March 2018 edition of Gibson Dunn's Aerospace and Related Technologies Update discusses newsworthy developments, trends, and key decisions from 2017 and early 2018 that are of interest to aerospace and defense, satellite, and drone companies; and new market entrants in the commercial space and related technology sectors, including the private equity and other financial institutions that support and enable their growth.

Specifically, this update covers the following areas: (1) commercial unmanned aircraft systems ("UAS"), or drones; (2) government contracts litigation involving companies in the aerospace and defense industry; (3) the commercial space sector; and (4) cybersecurity and privacy issues related to the national airspace. We discuss each of these areas in turn below.

I. COMMERCIAL UNMANNED AIRCRAFT SYSTEMS

The commercial drone industry has continued to mature through advancements in technology, government relations, and public perception. Commercial drones are being used for various sensory data collection, building inspections, utility inspections, agriculture monitoring and treatment, railway inspections, pipeline inspections, mapping of mines, and photography. New drone applications are being created on a regular basis. For example, the concept of flying drone taxis was validated in Dubai in September 2017 when an uncrewed two-seater drone successfully conducted its first test flight.

Around a year and a half ago, United States regulations governing non-recreational drone operations were finalized. Since then, the Federal Aviation Administration ("FAA") has issued over 60,000 remote pilot certificates. The FAA has and continues to make efforts to advance its technology, and it recently released a prototype application to provide operators with automatic approval of specific airspace authorizations. The national beta test of this system will launch in 2018, and we will be sure to report back with the results.

One of the biggest boons for the industry over the past 15 months was the positive public perception stemming from Hurricane Harvey relief efforts. In the days following the disaster, drones worked in concert with government agencies to support search and rescue missions, inspect roads and railroads, and assess water plants, oil refineries, cell towers, and power lines. Further, major insurance companies used drones to assess claims in a safer, faster, and more efficient manner. The aftermath of this disaster demonstrated the value of drone technology and increasingly has driven a positive public perception of the industry. Indeed, even aside from the disaster relief efforts, media sources continue to carry positive

drone stories. For example, in January 2018, Australian lifeguards were testing a drone with the ability to release an inflatable rescue pod; during its testing, the drone was called into action, and rescued two teenagers from drowning.

The future is bright, but there are still many obstacles for the industry to overcome before it fully matures, such as clarity around low altitude airspace, privacy concerns, and the risk to people, property, and other aircraft.

To get you caught up on 2017 and early 2018 drone developments, we have briefly summarized below: (A) highlights of drone litigation impacting airspace, including highlights from previous years for context; (B) drone registration; (C) privacy issues related to drones; (D) the United States government's expanded use of drones; (E) drone countermeasures; (F) drone safety studies; and (G) the UAS airspace integration pilot program.

A. Litigation Highlights Regarding Airspace

Huerta v. Haughwout, No. 3:16-cv-358, Dkt. No. 30 (D. Conn. Jul. 18, 2016)

The latter half of 2016 featured an important decision regarding the FAA's authority over low-level airspace. The 2016 decision, *Huerta v. Haughwout*—also known as "the flamethrower drone case," involved two YouTube videos posted by the Haughwouts. One video featured a drone firing an attached handgun, while a second video showed a drone using an attached flamethrower to scorch a turkey. After the videos were publicly uploaded, the FAA served the Haughwouts with an administrative subpoena to acquire further information about the activities featured in the videos. The Haughwouts refused to comply with the FAA's subpoenas, asserting that their activities were not subject to investigation by the FAA. In response, the FAA sought enforcement of the subpoenas in the District of Connecticut.[1]

Judge Jeffrey Meyer found the administrative subpoenas to be valid. Most importantly, however, his order included dicta casting doubt on the FAA's claim to control all airspace from the ground up: "The FAA believes it has regulatory sovereignty over every inch of outdoor air in the United States…. [T]hat ambition may be difficult to reconcile with the terms of the FAA's statute that refer to 'navigable airspace.'" While this dicta addressed the question of where the FAA's authority begins, Judge Meyer also noted that "the case does not yet require an answer to that question."[2] Judge Meyer further stated:

> Congress surely understands that state and local authorities are (usually) well positioned to regulate what people do in their own backyards. The Constitution creates a limited national government in recognition of the traditional police power of state and local government. No clause in the Constitution vests the federal government with a general police power over all of the air or all objects that leave the ground. Although the Commerce Clause allows for broad federal authority over interstate and foreign commerce, it is far from clear that Congress intends–or could constitutionally intend–to regulate all that is airborne on one's own property and that poses no plausible threat to or substantial effect on air transport or interstate commerce in general.[3]

2017 featured the resolution of another lawsuit where the plaintiff attempted to extend the significance of *Haughwout* in an effort to get the courts to address the question of what "navigable airspace" means in the context of drones (*see* discussion of *Singer v. City of Newton*, *infra*).

Boggs v. Merideth, No. 3:16-cv-00006 (W.D. Ky. Jan. 4, 2016)

In *Boggs v. Merideth*—better known as "the Drone Slayer case"—a landowner shot down an operator's drone with a shotgun in the Western District of Kentucky.[4] The plaintiff flew his drone roughly 200 feet above the defendant's property, causing the defendant—the self-anointed "Drone Slayer"—to claim the drone was trespassing and invading his privacy and shoot it down. The plaintiff believed the airspace 200 feet above the ground was federal airspace and therefore the defendant could not claim the drone was trespassing.

Following a state judge's finding that the defendant acted "within his rights," the drone operator filed a complaint in federal court for declaratory judgment to "define clearly the rights of aircraft operators and property owners."[5] The case had the potential to be a key decision on the scope of federal authority over the use of airspace. Rather than claiming defense of property, however, the defendant moved to dismiss the complaint on jurisdictional grounds. The plaintiff unsuccessfully attempted to rely on the decision in *Huerta v. Haughwout* for the proposition that all cases involving the regulation of drone flight should be resolved by federal courts. The court rejected the plaintiff's argument, noting that *Haughwout* only concerned the FAA's ability to exercise subpoena power and enforce subpoenas in federal court. In fact, the district court noted, the court in *Haughwout* "expressed serious skepticism as to whether all unmanned aircrafts are subject to FAA regulation."[6] In his March 2017 order, Senior District Court Judge Thomas B. Russell granted the defendant's motion to dismiss for lack of federal jurisdiction, stating that the issue of whether or not the drone was in protected airspace only arises on the presumption that the defendant would raise the defense that he was defending his property.[7] Consequently, there was no federal question jurisdiction and the case was thrown out without ever reaching its merits.

While the answer to what exactly constitutes "navigable airspace" in the drone context remained unanswered in 2017, the year did mark the beginning of federal courts addressing the overlap between conflicting state, local, and federal drone laws.

Singer v. City of Newton No. 1:17-cv-10071 (D. Mass. Jan. 17, 2017)

On September 21, 2017, a federal judge in the District of Massachusetts held that portions of the City of Newton, Massachusetts's ("Newton") ordinance attempting to regulate unmanned aircraft operations within the city were invalid.[8] The case, *Singer v. City of Newton*, marks the first time a federal court has struck down a local ordinance attempting to regulate drones. The court held the following four city ordinance provisions to be unenforceable: (1) a requirement that all owners register their drones with the city; (2) a ban on all drone operations under 400 feet that are over private property unless done with express permission of the property owner; (3) a ban on all drone operations over public property, regardless of altitude, unless done with the express permission of the city; and (4) a requirement that no

drone be operated beyond the visual line of sight of its operator.[9] All four of these provisions of the Newton ordinance were found to be preempted by federal regulations promulgated by the FAA.

In the course of holding that the four sections of Newton's ordinance were each preempted, the court identified the congressional objectives each section inhibited. One relevant congressional objective is to make the FAA the exclusive regulatory authority for registration of drones. The Newton ordinance required the registration of drones with the City of Newton, which impeded Congress's objective; thus, the court found that section to be preempted.[10]

The court also identified a congressional objective for the FAA to develop a comprehensive plan to safely accelerate the integration of drones into the national airspace system. The two sections of the Newton ordinance requiring prior permission to fly above both public and private property within the city effectively eliminated any drone activity without prior permission; thus those sections were held to interfere with the federal objective and were invalidated.[11]

Lastly, the court found that the Newton ordinance's provision barring drone usage beyond the visual line of sight of the operator conflicted with a less restrictive FAA rule allowing such usage if a waiver is obtained or if a separate visual observer can see the drone throughout its flight and assist the operator.[12]

The *Singer* ruling marked the long-anticipated beginning of federal courts addressing overlapping state, local, and federal drone laws. While the ruling is significant for invalidating sections of a local ordinance and thus establishing a framework that federal courts may follow to invalidate state and local drone laws elsewhere, it is important not to overstate the case's current significance. The court in *Singer* declined to hold that law relating to airspace was expressly preempted or field preempted, but rather decided it was conflict preempted. Consequently, the case does not provide support for the assertion that all state and local drone laws related to airspace will be preempted by FAA regulations. Further, the court did not opine on the lower limits of the National Airspace and whether it goes to the ground, an issue likely to come up in future litigation.

The unchallenged portions of the Newton ordinance still stand, and the closing lines in the opinion recognize that Newton is free to redraft the invalidated portions to avoid direct conflict with FAA regulations. Thus it remains possible, even in the District of Massachusetts, for federal law to coexist with state and local laws in this field. In order to successfully avoid invalidation in the courts, however, state and local lawmakers must draft legislation that allows for compliance with federal regulations, and which does not interfere with any federal objectives.

The year 2017 left much to still be determined by the courts. While *Newton* demonstrated that preemption concerns do and will continue to exist, the case did not address the boundary of the National Airspace. *Haughwout* did address the boundary—though only through dicta—and suggested that, when the issue is decided, the boundary will likely not extend to the ground. Thus, as was the case at the start of 2017, where the boundary will be drawn remains to be seen.

B. Drone Registration: From Mandatory to Optional and Back to Mandatory

In December 2015, days before tens of thousands of drones were gifted for the holidays, the FAA adopted rules requiring the registration of drones weighing more than 0.55 pounds prior to operation. This registration requirement only impacted recreational users, as commercial users are required to register under Part 107. This rule was challenged in *Taylor v. Huerta*, and on May 19, 2017, the U.S. Court of Appeals for the D.C. Circuit vacated the rule.[13] The FAA instituted a program to issue refunds, and recreational pilots enjoyed the freedom of flying unregistered drones for the next seven months.

The Circuit Court struck down the rule because the FAA lacked statutory authority to issue such a rule for recreational pilots. Section 336 of the FAA Modernization and Reform Act of 2012 states that the "Administrator of the Federal Aviation Administration may not promulgate any rule or regulation regarding a model aircraft."[14] The Court held that the FAA's registration rule "directly violates that clear statutory prohibition" and vacated the rule to the extent it applied to model aircraft.[15] The FAA responded by offering $5 registration fee refunds and the option to have one's information removed from the federal database, but encouraging recreational operators to voluntarily register their drones.

However, in a turn of events, on December 12, 2017, the President signed the National Defense Authorization Act of 2018, which included a provision reinstating the rule:

> Restoration Of Rules For Registration And Marking Of Unmanned Aircraft.—The rules adopted by the Administrator of the Federal Aviation Administration in the matter of registration and marking requirements for small unmanned aircraft (FAA-2015-7396; published on December 16, 2015) that were vacated by the United States Court of Appeals for the District of Columbia Circuit in Taylor v. Huerta (No. 15-1495; decided on May 19, 2017) shall be restored to effect on the date of enactment of this Act.[16]

As a result of the Act, both recreational and commercial pilots are now required to register their drones, and one can do so on the FAA's website.

C. UAS and Privacy

1. Voluntary Best Practices Remain Intact

A 2015 Presidential Memorandum issued by then President Obama ordered the National Telecommunications and Information Administration ("NTIA") of the U.S. Department of Commerce to create a private-sector engagement process to help develop voluntary best practices for privacy and transparency issues regarding commercial and private drone use.[17] Since Part 107 of Title 14 of the Code of Federal Regulations ("Part 107")[18] does not address privacy, privacy advocates hoped that the NTIA would force the FAA to promulgate privacy regulations.[19] Prior attempts to petition the FAA to consider privacy concerns in its Notice of Proposed Rulemaking ("NPRM") for Part 107 were unsuccessful.[20]

The NTIA issued its voluntary best privacy practices for drones on May 19, 2016.[21] While the final best practices found support from some privacy organizations and most of the commercial drone

industry, other privacy groups raised concerns that the best practices neither established nor encouraged binding legal standards.[22] Nonetheless, the best practices offer useful guidelines for companies testing and/or actively conducting drone operations.

2. Litigation Regarding the FAA's Role in Addressing Privacy

As we discussed in an earlier update, the Electronic Privacy Information Center ("EPIC") challenged the FAA's decision to exclude privacy regulations from Part 107 in an August 2016 petition for review.[23] In 2012, EPIC petitioned the FAA to promulgate privacy regulations applicable to drone use, which the FAA denied in February 2014.[24] EPIC argued that the FAA Modernization and Reform Act of 2012 required the FAA to consider privacy issues in its NPRM.[25] The FAA argued that while the Act directed the FAA to develop a comprehensive plan to safely integrate drones into the national airspace system, privacy considerations went "beyond the scope" of that plan.[26] The D.C. Circuit dismissed EPIC's petition for review on two grounds.[27] First, the Court deemed EPIC's petition for review "time-barred" because EPIC filed 65 days past the time allotted under 49 U.S.C. § 46110(a).[28] Second, the Court held that the FAA's "conclusion that privacy is beyond the scope of the NPRM" was not a final agency determination subject to judicial review.[29]

After the rule became final, EPIC filed a new petition for review asking the court to vacate Part 107 and remand it to the FAA for further proceedings.[30] Consolidated with a related case, *Taylor v. FAA*, No. 16-1302 (D.C. Cir. filed August 29, 2016), EPIC argues that the FAA violated the Act by: (1) refusing to consider "privacy hazards," and (2) refusing to "conduct comprehensive drone rulemaking," which necessarily includes issues related to privacy.[31] The FAA argues: (1) EPIC lacks standing, (2) the FAA reasonably decided not to address privacy concerns, and (3) even if EPIC has standing, Section 333 of the Act does not require the FAA to promulgate privacy regulations.[32] Judge Merrick Garland, Judge David Sentelle, and Judge A. Raymond Randolph heard oral arguments in the consolidated cases on January 25, 2018.[33] All eyes thus remain on the D.C. Circuit to determine whether the FAA must issue regulations covering privacy concerns raised by increased drone use.

D. The United States Government Expands Its Use of Drones

Four years after the U.S. Department of Defense ("DoD") issued its 25-year "vision and strategy for the continued development, production, test, training, operation, and sustainment of unmanned [aircraft] systems technology,"[34] the drone defense industry continues to experience rapid growth. A recent market report estimated that commercial and government drone sales will surpass $12 billion by 2021.[35] However, that estimate is likely conservative when considering that the DoD allocated almost $5.7 billion to drone acquisition and research in 2017 alone.[36] Likewise, the DoD allocates almost $7 billion to drone technology in its 2018 fiscal year Defense Budget.[37] Additionally, Goldman Sachs forecasted a $70 billion market opportunity for military drones by 2020.[38] According to Goldman Sachs: "Current drone technology has already surpassed manned aircraft in endurance, range, safety and cost efficiency — but research and development is far from over. The next generation of drones will widen the gap between manned and unmanned flight even further, adding greater stealth, sensory, payload, range, autonomous, and communications capabilities."[39] It should thus come as no surprise

that organizations developing defense-specific drones will expect increased demand for complete systems and parts in the coming years.

1. United States Government's Domestic Use Drones

The U.S. government mostly acquires drones for overseas military operations, a trend dating back to the deployment of the Predator drone in post-9/11 conflict territories.[40] Domestic use of DoD-owned drones remains subject to strict governmental approval, and armed drones are prohibited on U.S. soil.[41] In February 2015, the Deputy Secretary of Defense issued Policy Memorandum 15-002 entitled "Guidance for the Domestic Use of Unmanned Aircraft Systems."[42] Under the policy, the Secretary of Defense must approve all domestic use of DoD-owned UAVs, with one exception—domestic search and rescue missions overseen by the Air Force Rescue Coordination Center.[43] However, DoD personnel may use drones to surveil U.S. persons where permitted by law and where approved by the Secretary.[44] The policy expired on February 17, 2018,[45] and it remains to be seen how the Trump administration will handle domestic use of DoD-owned drones and the integration of UAVs into day-to-day civilian operations.

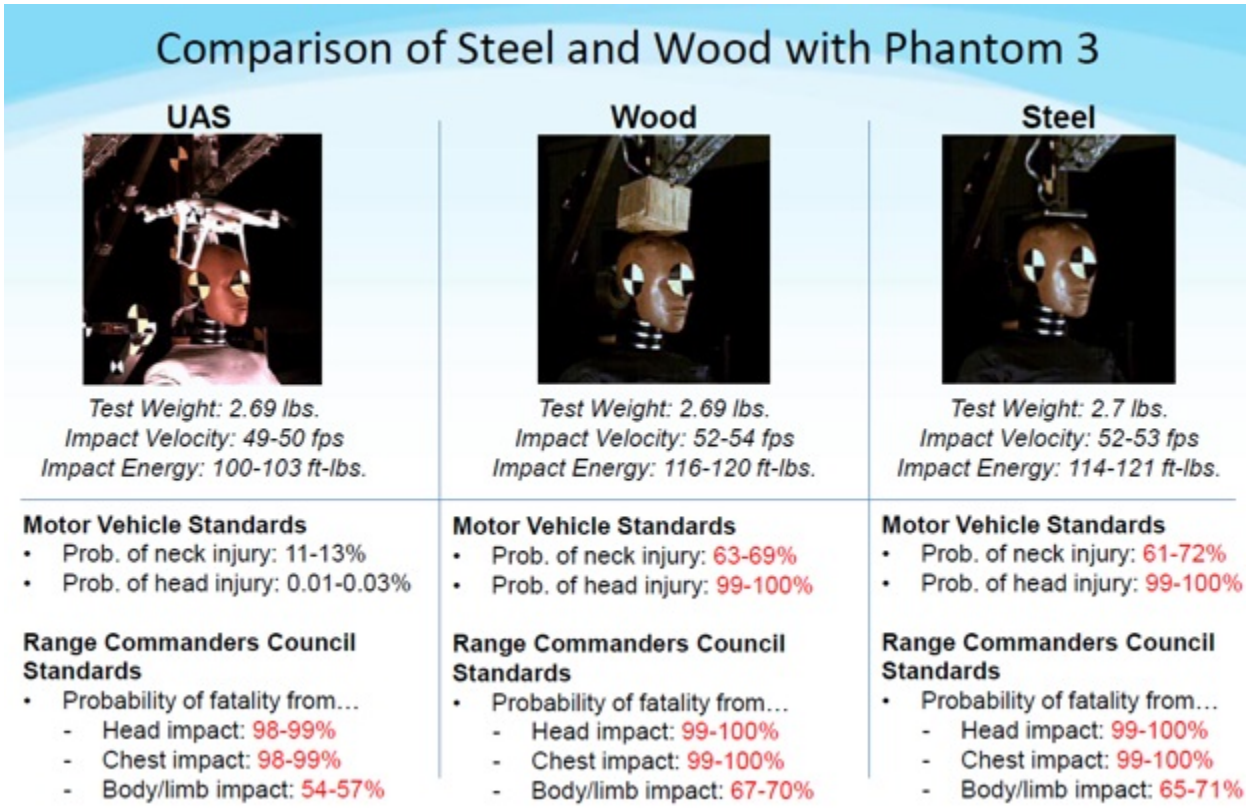
E. Drone Countermeasures

In response to the rapid growth of militarized consumer drones, particularly in ISIS-controlled territories,[48] 2017 saw an increased offering of anti-drone technologies in the U.S.[49] In April 2017, the U.S. Army's Rapid Equipment Force purchased 50 of Radio Hill Technologies' "Dronebuster" radar guns.[50] The Dronebuster uses radio frequency technology to interrupt the control of drones by effectively jamming the control frequency or the GPS signal.[51] The end-user can overwhelm the drone and deprive its operator of control or cause the drone to "fall out of the sky."[52] Handheld radar-type guns like the Dronebuster weigh about five pounds and cost an average of $30,000.[53] The U.S. military also experimented with the Mobile High-Energy Laser-equipped Stryker vehicle.[54] Similar to the Dronebuster, the 5 to 10kW laser overwhelms target drones' control systems with high bursts of energy.[55] It can shoot down drones 600 meters away, all without making a sound.[56]

F. Drone Safety Studies

Making UAS operations commonplace in urban airspace will be a big step in the technological and economic advancement of the U.S.; however, there are obstacles to overcome in ensuring the safe operation of drones in urban areas. On April 28, 2017, the Alliance for System Safety of UAS through Research Excellence ("ASSURE") released the results of a study that explored the severity of a UAS collision with people and property on the ground.[57] First, ASSURE determined the most likely impact scenarios by reviewing various operating environments for UAS and determining their likely exposure to people and other manned aircraft.[58] Then the team conducted crash tests and analyzed crash dynamics by measuring kinetic energy transfer.[59] The results revealed that earlier measurements of the danger of collision grossly overestimate the risk of injury from a drone.[60] ASSURE concluded that the DJI Phantom 3 drone has a 0.03% chance of causing a head injury if it falls on a person's head.[61] This is a very low probability considering blocks of steel or wood of the same weight have a 99% risk of causing a head injury in the same scenario.[62] The disparity in probability of head injury

is largely due to the fact that the DJI Phantom 3 drone absorbs most of the energy resulting from a collision, and therefore less energy is transferred on impact from the drone than from a block of steel or wood in the same collision.[63]



In fact there are numerous steps that drone designers and manufacturers can take to reduce the likelihood of injury in the event of a collision.[64] Projectile mass and velocity, as well as stiffness of the UAS, are the primary drivers of impact damage.[65] As such, multi-rotor drones tend to be safer because they fall more slowly due to the drag of the rotors as the drones fall through the air.[66] The study made clear that blade guards should be a design requirement for drones used in close proximity to people in order to minimize the lacerations that can result from a collision.[67] Moreover, ASSURE found that the more flexible the structure of the drone, the more energy the drone retains during impact, causing less harm to the impacted object of the collision.[68]

Regarding crashes with other manned aircraft, however, the study revealed that the impact of a drone can be much more severe than the impact of a bird of equivalent size and speed.[69] As such, the structural components of a commercial aircraft that allows it to withstand bird strikes from birds up to eight pounds are not an appropriate guideline for preventing damage from a UAS strike.[70] The study also examined the dangers associated with lithium batteries, which are used to power most drones, in collisions.[71] The major concern is the risk of a battery fire.[72] The study found that typical high-speed impacts cause complete destruction of the battery, eliminating any concerns about battery

fires.[73] However, the lower impact crashes, which are mainly associated with take-off and landing, left parts of the battery intact, posing a risk of battery fire.[74]

While the ASSURE study is the first of its kind, it certainly marks the need for more studies that analyze the practical aspects of collisions and how to reduce risk to minimize harm. The hazards associated with commonplace drone operation are many.[75] Analysis of the physical impact of a collision is one aspect of minimizing UAS risks. There is still much work to be done in order to minimize other collateral risks, such as the risk of technology failures, which range from UAS platform failures, to failures of hardware or communication links controlling the UAS.[76] Environmental hazards, such as the effect of rain, lightning, and other types of weather remains to be studied.[77] Ways to safeguard against human error or intentional interference is another aspect of UAS safety that has yet to be studied in detail.[78] Data link spoofing, jamming, or hijacking poses significant safety hazards, particularly as incidents of data breaches become more and more common.[79] Before the integration of UAS into national airspace can be fully implemented, industry stakeholders must collaborate to conduct studies that will help inform legislators about what kind of technological requirements and operational regulations are necessary.

G. UAS Airspace Integration Pilot Program

In October 2017, the U.S. Department of Transportation ("DOT") announced that it was launching the Unmanned Aircraft Systems Integration Pilot Program.[80] The program, which was established in response to a presidential directive, is meant to accelerate the integration of UAS into the national airspace through the creation of public-private partnerships between UAS operators, governmental entities, and other private stakeholders.[81] The program is designed to establish greater regulatory certainty and stability regarding drone use.[82] After reviewing the applications, DOT will select a minimum of five partnerships with the goal of collaborating with the selected industry stakeholder in order to evaluate certain advanced UAS operational concepts, such as night operations, flights beyond the pilot's line of sight, detect-and-avoid technologies, flights over people, counter-UAS security operations, package delivery, the integrity and dependability of data links between pilot and aircraft, and cooperation between local authorities and the FAA in overseeing UAS operations.[83]

One such application was made by the City of Palo Alto, in partnership with the Stanford Blood Center, Stanford hospital, and Matternet, a private drone company.[84] The City of Palo Alto has proposed the use of drones to deliver units of blood from the Stanford Blood Center to Stanford hospital, which would involve establishing an approved flight path for drones to transfer the units of blood in urgent situations.[85] Matternet has already tested its drones' capacity for transporting blood and other medical samples in Switzerland.[86] A second project proposed by the City of Palo Alto involves the use of drones in order to monitor the perimeter of the Palo Alto Airport.[87] This project involves a partnership between the city and a company called Multirotor, a German drone company that has experience working with the German army and the Berlin Police Department to integrate UAS as tools for law enforcement activities.[88]

The creation of the pilot program has given stakeholders the sense that the current administration is supportive of integrating drones into the national airspace. The support of the government has created the potential for unprecedented growth in an industry that could bring lucrative returns to its

stakeholders. The DOT has already received over 2,800 interested party applications.[89] The majority of these applications have come from commercial drone companies, as well as various other stakeholders including energy companies, law enforcement agencies, and insurance providers.[90] The UAS Pilot Program is to last for three years.[91] The projected economic benefit of integrated UAS is estimated to equal $82 billion, creating up to 100,000 jobs.[92] Industries that could see immediate returns from the program include precision agriculture, infrastructure inspection and monitoring, photography, commerce, and crisis management.[93] The advent of established, government-sanctioned rules for the operation of UAS will motivate industry stakeholders both in the public and private sectors to push forward with new and innovative ways to use drones.

II. GOVERNMENT CONTRACTS LITIGATION IN THE AEROSPACE AND DEFENSE INDUSTRY

Gibson Dunn's 2017 Year-End Government Contracts Litigation Update and 2017 Mid-Year Government Contracts Litigation Update cover the waterfront of the most important opinions issued by the U.S. Court of Appeals for the Federal Circuit, U.S. Court of Federal Claims, Armed Services Board of Contract Appeals ("ASBCA"), and Civilian Board of Contract Appeals among other tribunals. We invite you to review those publications for a full report on case law developments in the government contracts arena.

In this update, we (A) summarize key court decisions related to government contracting from 2017 that involve players in the aerospace and defense industry. The cases discussed herein, and in the Government Contracts Litigation Updates referenced above, address a wide range of issues with which government contractors in the aerospace and defense industry are likely familiar.

A. Select Decisions Related to Government Contractors in the Aerospace and Defense Industry

Technology Systems, Inc., ASBCA No. 59577 (Jan. 12, 2017)

TSI held four cost-plus-fixed-fee contracts with the Navy for research and development. Several years into the contracts, the government disallowed expenses that had not been questioned in prior years. TSI appealed to the ASBCA, arguing that it relied to its detriment on the government's failure to challenge those same expenses in prior years.

The Board (Prouty, A.J.) held that the challenged costs were "largely not allowable" and that "the principle of retroactive disallowance," which it deemed "a theory for challenging audits whose heyday has come and gone," did not apply because the same costs had simply not come up in the prior audits. The theory of retroactive disallowance, first articulated in a Court of Claims case in 1971, prevents the government from challenging costs already incurred when the cost previously had been accepted following final audit of historical costs; the contractor reasonably believed that it would continue to be approved; and it detrimentally relied on the prior acceptance. Tracing the precedent discussing the principle, the Board cited the Federal Circuit's decision in *Rumsfeld v. United Technologies Corp.*, 315 F.3d 1361 (Fed. Cir. 2003), which stated that "affirmative misconduct" on the part of the government would be required for the principle of retroactive disallowance to apply because

it is a form of estoppel against the government. The Board "sum[med] up: there is no way to read our recent precedent or the Federal Circuit's except to include an affirmative misconduct requirement amongst the elements of retroactive disallowance. Period." Further, the Board held that the government's failure to challenge the same costs in prior years did not constitute a "course of conduct precluding the government from disallowing the costs in subsequent audits."

Delfasco LLC, ASBCA No. 59153 (Feb. 14, 2017)

Delfasco had a contract with the Army for the manufacture and delivery of a specified number of munition suspension lugs. The Army thereafter exercised an option to double the number of lugs required. When Delfasco stopped making deliveries due to an inability to pay its subcontractor, the Army terminated the contract for default. Delfasco appealed to the ASBCA, asserting that the government had waived its right to terminate for untimely performance by allegedly stringing Delfasco along even after the notice of termination.

The Board (Prouty, A.J.) set out the test for waiver in a case involving termination for default due to late delivery as follows: "(1) failure to terminate within a reasonable time after the default under circumstances indicating forbearance, and (2) reliance by the contractor on the failure to terminate and continued performance by him under the contract with the Government's knowledge and implied or express consent." The Board held that Delfasco failed to satisfy the first prong because the government's show cause letter placed Delfasco on notice that any continued performance would only be for the purpose of mitigating damages. Moreover, Delfasco failed to satisfy the second prong because Delfasco's payment to its subcontractor after the show cause letter would have been owed regardless, and was not paid in reliance upon the government's failure to terminate. Therefore, the Board found that the government had not waived its right to terminate, and denied the appeal.

Raytheon Co., ASBCA Nos. 57743 *et al.* (Apr. 17, 2017)

Raytheon appealed from three final decisions determining that an assortment of costs—including those associated with consultants, lobbyists, a corporate development database, and executive aircraft—were expressly unallowable and thus subject to penalties. After a two-week trial, the Board (Scott, A.J.) sided largely with Raytheon in a wide-ranging decision that covers a number of important cost principles issues.

First, the Board rejected the government's argument that the consultant costs were expressly unallowable simply because the government was dissatisfied with the level of written detail of the work product submitted to support the costs. Judge Scott noted that *written* work product is not a requirement to support a consultant's services under FAR 31.205-33(f), particularly not where, as here, much of the consultants' work was delivered orally due to the classified nature of the work performed. The Board found that not only were the consultant costs not expressly unallowable, but indeed were allowable. This is a significant ruling because the documentation of consultant costs is a recurring issue as government auditors frequently make demands concerning the amount of documentation required to support these costs during audits.

Second, the government sought to impose penalties for costs that inadvertently were not withdrawn in accordance with an advance agreement between Raytheon and the government concerning two executive aircraft. Raytheon agreed that the costs should have been withdrawn and agreed to withdraw them when the error was brought to its attention, but asserted that the costs were not expressly unallowable and subject to penalty. The Board agreed, holding that the advance agreements did not themselves clearly name and state the costs to be unallowable, and further that advance agreements do not have the ability to create penalties because a cost must be named and stated to be unallowable in a cost principle (not an advance agreement) to be subject to penalties. This ruling could have significance for future disputes arising out of advance agreements.

Third, the government alleged that costs associated with the design and development of a database to support the operations of Raytheon's Corporate Development office were expressly unallowable organizational costs under FAR 31.205-27. The Board disagreed, validating Raytheon's argument that a significant purpose of the Corporate Development office was allowable generalized long-range management planning under FAR 31.205-12, thus rendering the costs allowable (not expressly unallowable).

The only cost for which the Board denied Raytheon's appeals concerned the salary costs of government relations personnel engaged in lobbying activities. Raytheon presented evidence that it had a robust process for withdrawing these costs as unallowable under FAR 31.205-22, but inadvertently missed certain costs in this instance due to, among other things, "spreadsheet errors." Raytheon agreed that the costs were unallowable and should be withdrawn, but disputed that the costs of employee compensation (a generally allowable cost) were expressly unallowable and further argued that the contracting officer should have waived penalties under FAR 42.709-5(c) based on expert evidence that Raytheon's control systems for excluding unallowable costs were "best in class." The Board found that salary costs associated with unallowable lobbying activities are expressly unallowable and that the contracting officer did not abuse his discretion in denying the penalty waiver.

L-3 Comms. Integrated Sys. L.P. v. United States, No. 16-1265C (Fed. Cl. May 31, 2017)

L-3 entered an "undefinitized contractual action" ("UCA") with the Air Force in which it agreed to provide certain training services while still negotiating the terms of the contract. After the parties failed to reach agreement on the prices for two line items in the UCA, the Air Force issued a unilateral contract modification, setting prices for those line items and definitizing the contract. L-3 argued that the Air Force's price determination was unreasonable, arbitrary and capricious, and in violation of the FAR, and filed suit seeking damages. The government moved to dismiss for lack of subject matter jurisdiction.

The Court of Federal Claims (Kaplan, J.) dismissed L-3's complaint, concurring with the government that L-3 had never presented a certified claim to the contracting officer for payment "of a sum certain to cover the losses it allegedly suffered." The court found that the proposals L-3 had presented to the Air Force were not "claims," but rather proposals made during contract negotiations that did not contain the requisite claim certification language.

Innoventor, Inc., ASBCA No. 59903 (July 11, 2017)

In 2011, the government entered into a fixed-price contract with Innoventor for the design and manufacture of a dynamic brake test stand. As part of the contract's purchase specifications, the new design had to undergo and pass certain testing. After problems arose in the testing process, Innoventor submitted a proposal to modify certain design components and applied for an equitable adjustment due to "instability of expectations." The contracting officer denied Innoventor's request for an equitable adjustment, stating that the government had not issued a modification directing a change that would give rise to such an adjustment. Innoventor submitted a claim, which the contracting officer denied, and Innoventor appealed.

The Board (Sweet, A.J.) held that the government was entitled to judgment as a matter of law because there was no evidence that the government changed Innoventor's performance requirements, let alone that anyone with authority directed any constructive changes. Here, the contract was clear that Innoventor's design had to pass certain tests, and because it failed some of them, and did not perform pursuant to the contract terms, there was no change in the original contract terms that would give rise to a constructive change. The Board also found that there was no evidence that any person beyond the contracting officer had authority to direct a change because the contract expressly provided that only the contracting officer has authority to change a contract. Accordingly, the Board denied Innoventor's appeal.

L-3 Commc'ns Integrated Sys., L.P., ASBCA Nos. 60713 *et al.* (Sept. 27, 2017)

L-3 appealed from multiple final decisions asserting government claims for the recovery of purportedly unallowable airfare costs. Rather than audit and challenge specific airfare costs, the Defense Contract Audit Agency simply applied a 79% "decrement factor" to all of L-3's international airfare costs over a specified dollar amount, claiming that this was justified based on prior-year audits. After filing the appeals, L-3 moved to dismiss for lack of jurisdiction on the grounds that the government had failed to provide adequate notice of its claims by failing to identify which specific airfare costs were alleged to be unallowable, as well as the basis for those allegations.

The Board (D'Alessandris, A.J.) denied the motion to dismiss, holding that the contracting officer's final decisions sufficiently stated a claim in that they set forth a sum certain and a basis for such a claim. The Board held that L-3 had enough information to understand how the government reached its claim, and its contention that this was not a valid basis for the disallowance of costs for the year in dispute went to the merits and not the sufficiency of the final decisions.

Scott v. United States, No. 17-471 (Fed. Cl. Oct. 24, 2017)

Brian X. Scott brought a *pro se* claim in the Court of Federal Claims seeking monetary and injunctive relief for alleged harms arising from the Air Force's handling of his unsolicited proposal for contractual work. Scott was an Air Force employee who submitted a proposal for countering the threat of a drone strike at the base where he was stationed. The proposal was rejected, but Scott alleged that portions of the proposal were later partially implemented. Scott sued, claiming that the Air Force failed properly to review his proposal and that his intellectual property was being misappropriated. Scott argued that

jurisdiction was proper under the Tucker Act because an implied-in-fact contract arose that prohibited the Air Force from using any data, concept, or idea from his proposal, which was submitted to a contracting officer with a restrictive legend consistent with FAR § 15.608.

The Court of Federal Claims (Lettow, J.) found that it had jurisdiction under the Tucker Act because an implied-in-fact contract was formed when the Air Force became obligated to follow the FAR's regulatory constraints with regard to Scott's proposal. Nevertheless, the Court granted the government's motion to dismiss because Scott's factual allegations, even taken in the light most favorable to him, did not plausibly establish that the government acted unreasonably or failed to properly evaluate his unsolicited proposal by using concepts from the proposal where Scott's proposal addressed a previously published agency requirement.

III. COMMERCIAL SPACE SECTOR

A. Overview of Private Space Launches and Significant Milestones

Space exploration is always fascinating—2017 and early 2018 was no exception. Starting off in February 2017, India's Polar Satellite Launch Vehicle launched 104 satellites, setting a record for the number of satellites launched from a single rocket.[101] In June, NASA finally unveiled its 12 chosen candidates for its astronaut program out of a pool of over 18,000 applicants, which was a record-breaking number.[102] A few months later, NASA's Cassini spacecraft was intentionally plunged into Saturn, ending over a decade's worth of service.[103] President Donald Trump also signed Space Policy Directive 1, which instructs NASA to send astronauts back to the moon, which President Trump noted would help establish a foundation for an eventual mission to Mars.[104]

In what was widely expected to be a record year for private space launches, SpaceX and other private space companies clearly delivered. In 2017, SpaceX, the company founded and run by Elon Musk, flew a record 18 missions utilizing the Falcon 9 rocket.[105] Blue Origin, the company founded by Jeff Bezos, also made significant progress. It was able to launch a new version of its New Shepard vehicle on its first flight, which Bezos hopes will lay the foundation for potential crewed missions.[106] Then, in late December, California startup Made in Space sent a machine designed to make exotic ZBLAN optical fiber to the International Space Station.[107] Without a doubt, 2017 played witness to many significant milestones in space exploration.

Additional milestones have already been surpassed in early 2018. February 6, 2018 was a historic date for Space technology and exploration—SpaceX's Falcon Heavy had its maiden launch. The Falcon Heavy can carry payloads larger than any available commercial rocket, and it has the potential to launch payloads outside of Earth's orbit. In fact, the Falcon Heavy did just that by launching a Tesla Roadster, driven by "Starman" into interplanetary space. Starman will likely continue driving its orbit for millions of years. It is only a matter of time until Starman is replaced with astronauts and the destination becomes Mars—SpaceX plans to launch such a mission in 2024.

B. Update on Outer Space Treaty and Surrounding Debate

The *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, otherwise known as the Outer Space Treaty, recently celebrated its 50th anniversary. Signed in 1967 and designed to prevent a new form of colonial competition, the Treaty was lauded for its principal framework on international space law. Indeed, shortly after the Treaty was entered into force, the United States and the Soviet Union successfully collaborated on many space missions and exercises.[108]

The Treaty is not complex. Consisting of 17 short articles, the Treaty obligates its signatories to perform space exploration "for the benefit and interest of all countries" and to not "place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction."[109] Having been in force for over 50 years, there have recently been discussions regarding whether the Treaty is ripe for an update. Only as far back as half a decade ago, experts met in Australia to discuss moon-mining of anything from water and fuel to rare minerals in what was then a world's first "Off-Earth Mining Forum."[110] Discussion surrounded the legality of such mining under the Treaty. Then in 2014, NASA accepted applications from companies that desired to mine rare moon minerals in a program called "Lunar Cargo Transportation and Landing by Soft Touchdown."[111] This once again sparked a debate on the legality of such actions, specifically lunar property rights.

In 2017, the focus turned toward private and commercial space flight, and spurred conversation as to whether the 50-year-old treaty needed an update. For one, the Treaty was designed, and has been entirely focused, on only individual countries. Thus, there is an argument that the Treaty does not apply to private appropriation of celestial territory. Second, the quaint nature of the Treaty has spawned efforts at tackling the private appropriation issues. For instance, the United States passed the Space Act of 2015, which provides for private commercial "exploration and exploitation of space resources."[112] The Act has incited further debate on the various legal loopholes that inherently afflict the Treaty and its ban on countries owning celestial territory.

Meanwhile, the U.S. government has continued to find methods of regulation, specifically those involving the FAA and the Federal Communications Commission ("FCC"), among others.[113] Now, lawmakers are purportedly discussing legislation that would provide a regulatory framework for private commercial space travel to adhere to the Treaty, as there currently does not exist a framework for the U.S. government to oversee the launch of private space stations.[114]

Moreover, Senator Ted Cruz (R-TX) has been leading the charge on updating the Treaty to address issues related to modern spaceflight, where private commercial entities are playing an ever-increasing role.[115] In May, Senator Cruz, the chairman of the Subcommittee on Space, Science, and Competitiveness, convened a hearing to "examine U.S. government obligations under the [Treaty]" and to also "explore the Treaty's potential impacts on expansion of our nation's commerce and settlement in space."[116] Featuring a panel of legal experts and a panel of commercial space business leaders, the hearing raised a number of different viewpoints with one apparently unifying message: the Treaty should not be amended. One of the panel members, Peter Marquez, while acknowledging that the Treaty is not

perfect, expressed concern that opening up the Treaty to modifications would leave the space industry worse off, and would be a detriment to national and international security.[117]

One area of particular interest was Article VI of the Treaty, which provides that nations authorize and supervise space activities performed by non-governmental entities, such as a private commercial space company. The CEO of Moon Express, Bob Richards, noted that while the Treaty should remain unchanged, the U.S. should adopt a streamlined regulatory procedure and process to make approvals for space activities more efficient and clear.[118] One of the legal experts sitting on the panel, Laura Montgomery, expressed her belief that the U.S. need not further regulate new commercial space because a close reading of the Treaty would indicate that mining and other similar activities do not require such governmental approvals.[119]

While the ultimate general consensus appeared to be that no change to the Treaty was necessary to accomplish the goals of private commercial space enterprises, the hearing did bring to light the issues that currently confront modern space protocols.

C. The American Space Commerce Free Enterprise Act of 2017, Which Seeks to Overhaul U.S. Commercial Space Licensing Regime, Passes Committee but Stalls in House

On June 7, 2017, House members led by Rep. Lamar Smith (R-TX), Chairman of the U.S. House Science, Space, and Technology Committee, introduced H.R. 2809—the American Space, Commerce, and Free Enterprise Act of 2017 ("ASCFEA").[120] The bill, if adopted, would amend Title 51 of the United States Code to liberalize licensing requirements to conduct a variety of commercial space activities, while consolidating the licensing approval process for such activities under the authority of the U.S. Department of Commerce ("DOC").[121]

The regulation of commercial space activities historically has been distributed among a variety of agencies—with the National Oceanic and Atmospheric Administration ("NOAA") governing remote sensing, the FCC governing communications satellites,[122] and the FAA/AST regulating launch, reentry, and some other non-traditional activities.[123] But with that patchwork of authority, proponents of the Act believe there exists a regulatory gap for overseeing and authorizing new and innovative space activities.[124] A primary goal of the Act is to address this perceived uncertainty, and in so doing, resolve long-standing questions associated with the United States' responsibility to regulate commercial space activities under the Outer Space Treaty,[125] which the bill's text references extensively.

In its current form, the bill would grant the Office of Space Commerce (within the DOC) "the authority to issue certifications to U.S. nationals and nongovernmental entities for the operation of: (1) specified human-made objects manufactured or assembled in outer space . . . and (2) all items carried on such objects that are intended for use in outer space."[126] The bill further eliminates the Commercial Remote Sensing Regulatory Affairs Office of the NOAA, and vests authority to issue permits for remote sensing systems, again, in the DOC.[127] The bill also creates a certification process for other "commercial payloads not otherwise licensed by the government," thereby providing fallback legislation for "non-traditional applications like satellite servicing, commercial space stations and lunar landers."[128] The DOC hence would occupy all the regulatory authority for commercial space

activities, except for the FCC and FAA/AST's current authority, which those agencies would maintain.[129]

The commercial space industry supports the bill, and in particular the bill's apparent presumption in favor of regulatory approval.[130] Industry also supports the bill's overhaul of the regulation of remote sensing—for example, the bill requires the DOC to issue a certification decision within just 60 days (or else the application is granted),[131] provide an explanation for any rejections, and grant every application that seeks authorization for activities involving "the same or substantially similar capabilities, derived data, products, or services are already commercially available or reasonably expected to be made available in the next 3 years in the international or domestic marketplace."[132]

Some opponents of the bill contend that the consolidation of regulatory approval will limit interagency review, which is important because the DoD, State Department, and the intelligence community currently play some regulatory role in the review of aspects of new commercial space activities that are perceived to potentially pose a threat to national security.[133] Others contend that the Office of Space Commerce has inadequate resources and experience to handle the regulatory approvals. The bill seeks to ameliorate these concerns by authorizing $5 million in funding for the Office in 2018.[134] The Department of Justice also has voiced some constitutional concerns.[135]

The House referred the bill to the House Committee on Science, Space, and Technology,[136] which on June 8, 2017 passed three amendments by voice vote.[137] Since being marked up in committee, the bill has seen no further action by the House.[138] The DOC currently is seeking public input on possible changes to commercial space operations licensing more broadly.[139]

D. Industry and Government Regulators Call for Changes to NOAA's Licensing of Remote Sensing Technology

ASCFEA's effort to strip NOAA of its authority to regulate remote sensing technology coincides with a growing number of complaints from the remote sensing industry and government regulators concerning NOAA's ability to handle an increased number of licensing applications.[140]

The Land Remote Sensing Policy Act of 1992 authorized the Secretary of Commerce to "license private sector parties to operate private remote sensing space systems."[141] But despite a sea change in remote sensing technology and activities since 1992, that law remains the main source of authority for remote sensing licensing, and Congress has made few modifications to the law since its inception.[142] Given the speed of technological change, and increased industry competition, remote sensing companies are advocating for NOAA to adopt a "permissive" approach to licensing, akin to the language proposed in the ASCFEA.[143]

NOAA's issues have been exacerbated by the fact that license applications are now more varied and complex than they were previously.[144] Representatives from NOAA describe how prior to 2011, it took an average of 51 days to review license applications, since many applications sought permission for similar concepts for satellite systems.[145] Even though the Land Remote Sensing Policy Act of 1992 calls for a 120-day approval window, in practice, applications now extend far longer than that—and further, NOAA sometimes provides little to no explanation about why it rejects particular

applications.[146] Under the ASCFEA, the DOC would be required to approve applications using the "same or substantially similar capabilities, derived data, products, or services as are already commercially available or reasonably expected to be made available in the next 3 years in the international or domestic marketplace."[147]

Another complexity is that many companies develop technology that do not solely or traditionally perform remote sensing functions, but have remote sensing capabilities.[148] The ASCFEA addresses this problem by offering exceptions for "De Minimis" uses of remote sensing technology.[150]

E. Commercial Space Policy in the Trump Era

On December 11, 2017, President Trump signed White House Space Policy Directive 1, entitled "Reinvigorating America's Human Space Exploration Program."[151] As the subject suggests, the Directive's goal is to bring a renewed focus on human space flight at a time when the United States lacks an organic capability to send American astronauts into low-Earth orbit, let alone beyond.[152] Fittingly, President Trump signed the directive on the forty-fifth anniversary of the lunar landing of Apollo 17, with Apollo 17 astronaut Senator Harrison Schmitt present at the ceremony.[153]

According to the Directive, the United States will "[l]ead an innovative and sustainable program of exploration with commercial and international partners to enable human expansion across the solar system…."[154] The directive calls for missions beyond low-Earth orbit, with the United States "lead[ing] the return of humans to the Moon for long-term exploration and utilization, followed by human missions to Mars and other destinations."[155]

NASA is already working with several commercial entities to develop transportation to and from low-Earth orbit, as well as to the International Space Station.[156] And a call for a return to the moon for use as a stepping-stone to other destinations is not new with President Trump; previous administrations have expressed a similar desire.[157] What remains to be seen is how this "long-term exploration" will be funded, with a good indicator being what "will be reflected in NASA's FISCAL Year 2019 budget request."[158] Until then, "No bucks, no Buck Rogers."[159]

F. Updates on Space Law in Luxembourg, India, and Australia

Luxembourg Continues its Push for Commercial Space Prominence

The small country of Luxembourg, a signatory to the Outer Space Treaty,[160] has major commercial space ambitions. In 2016, Luxembourg passed a law to set aside €200 million to fund commercial space mining activities, and also offered to help interested companies obtain private financing.[161] On July 13, 2017, following the United States' lead,[162] Luxembourg passed a law that gives qualifying companies the right to own any space resources they extract from celestial bodies including asteroids.[163] The law further outlines a regulatory framework for "the government to authorize and supervise resource extraction and other space activities," except for communications satellites, which a different Luxembourg agency regulates.[164] To qualify for a space mining license, companies must be centrally administered and own a registered office in Luxembourg, and also must obtain regulatory approval.[165] It is as of now unclear whether the Luxembourg law (as well as the U.S.'s analogous

law) violate the Outer Space Treaty, which prohibits companies from claiming territory on celestial bodies, but does not clarify whether that prohibition extends to materials extracted from those celestial bodies.[166]

India Unveils Draft of New Commercial Space Law; Sets Satellite Launch Record

In November 2017, the India Department of Space released and sought comments for the "Space Activities Act, 2017."[167] The stated goal of the bill is to "encourage enhanced participation of non-governmental/private sector agencies in space activities in India."[168] The bill as currently drafted vests authority in the Indian Government to formulate a licensing scheme for any and all "Commercial Space Activity," and states that licenses may be granted if the sought activity does not jeopardize public health or safety, and does not violate India's international treaty obligations, such as the Outer Space Treaty, to which India is a signatory.[169]

India's space agency also made headlines this year when it sent 104 satellites into space in 18 minutes—purportedly tripling the prior record for single-day satellite launches.[170] The New York Times reports that satellite and other orbital companies closely scrutinized the launch, since India's space agency is cheaper to employ for satellite launches than its European and North American counterparts.[171]

Australia Announced that It Will Create a Space Agency; Details Pending

In September 2017, Australia's Acting Minister for Industry, Innovation and Science announced that Australia will create a national space agency.[172] While details are still pending, Australia's goal purportedly is to take advantage of the $300-$400 billion space economy, while creating Australian jobs in the process.[173]

IV. CYBERSECURITY AND PRIVACY ISSUES IN THE NATIONAL AIRSPACE

A. Cybersecurity Issues

The Federal Aviation Administration (FAA) has lagged behind other sectors in establishing robust cybersecurity and privacy safeguards in the national airspace, although federal policy identifies the transportation sector (which includes the aviation industry) as one of the 16 "critical infrastructure" sectors that have the ability to impact significantly the nation's security, economy, and public health and safety.[174] The need for the FAA to establish robust safeguards is obvious, as the catastrophic impact of a cyber attack on the national airspace is not hard to imagine post-9/11. Recently, one hacker claimed he compromised the cabin-based in-flight entertainment system to control a commercial airline engine in flight.

One development of note is the reintroduction of the Cybersecurity Standards for Aircraft to Improve Resilience Act of 2017 by U.S. Senators Edward Markey and Richard Blumenthal.[175] Senator Markey first introduced legislation aimed at improving aircraft cyber security protection in April 2016, following a 2015 survey of U.S. airline CEOs to discover standard cybersecurity protocols used by the aviation industry. If signed into law, the bill would require the U.S. Department of Transportation to work with DoD, Homeland Security, the Director of National Intelligence, and the FCC to incorporate requirements

relating to cybersecurity into the requirements for certification. Additionally, the bill would establish standard protections for all "entry points" to the electronic systems of aircraft operating in the U.S. This would include the use of isolation measures to separate critical software systems from noncritical software systems.

B. UAS Privacy Concerns

UAS are equipped with highly sophisticated surveillance technology with the ability to collect personal information, including physical location. Senator Ayotte, Chair of the Subcommittee on Aviation Operations, Safety, and Security, summarized the privacy concerns drones pose as follows: "Unlimited surveillance by government or private actors is not something that our society is ready or willing or should accept. Because [drones] can significantly lower the threshold for observation, the risk of abuse and the risk of abusive surveillance increases." We describe below several recent federal and state efforts to address this issue.

1. State Legislation Addressing Privacy Concerns

At least five out of the twenty-one states that either passed legislation or adopted resolutions related to UAS in 2017 specifically addressed privacy concerns.[176]

Colorado HB 1070 requires the center of excellence within the department of public safety to perform a study that identifies ways to integrate UAS within local and state government functions relating to firefighting, search and rescue, accident reconstruction, crime scene documentation, emergency management, and emergencies involving significant property loss, injury or death. The study must consider privacy concerns, in addition to costs and timeliness of deployment, for each of these uses.

New Jersey SB 3370 allows UAS operation that is consistent with federal law, but also creates criminal offenses for certain UAS surveillance and privacy violations. For example, using a UAS to conduct surveillance of a correction facility is a third degree crime. Additionally, the law also applies the operation of UAS to limitations within restraining orders and specifies that convictions under the law are separate from other convictions such as harassment, stalking, and invasion of privacy.

South Dakota SB 22 also prohibits operation of drones over the grounds of correctional and military facilities, making such operation a class 1 misdemeanor. Further, the law modifies the crime of unlawful surveillance to include intentional use of a drone to observe, photograph or record someone in a private place with a reasonable expectation of privacy, and landing a drone on the property of an individual without that person's consent. Such purportedly unlawful surveillance is a class 1 misdemeanor unless the individual is operating the drone for commercial or agricultural purposes, or the individual is acting within his or her capacity as an emergency management worker.

Utah HB 217 modifies criminal trespass to include drones entering and remaining unlawfully over property with specified intent. Depending on the intent, a violation is either a class B misdemeanor, a class A misdemeanor, or an infraction, unless the person is operating a UAS for legitimate commercial or educational purposes consistent with FAA regulations. Utah HB 217 also modifies the offense of

voyeurism, a class B misdemeanor, to include the use of any type of technology, including UAS, to secretly record video of a person in certain instances.

Virginia HB 2350 makes it a Class 1 misdemeanor to use UAS to trespass upon the property of another for the purpose of secretly or furtively peeping, spying, or attempting to peep or spy into a dwelling or occupied building located on such property.

2. UAS Identification and Tracking Report

The FAA chartered an Aviation Rulemaking Committee ("ARC") in June 2017 to provide recommendations on the technologies available for remote identification and tracking of UAS, and how remote identification may be implemented.[177] However, the ARC's 213 page final report, dated September 30, 2017, notes that the ARC lacked sufficient time to fully address privacy and data protection concerns, and that therefore those topics were not addressed:

[T]he ARC also lacks sufficient time to perform an exhaustive analysis of all the privacy implications of remote ID, tracking, or UTM, and did not specifically engage with privacy experts, from industry or otherwise, during this ARC. These members agree, however, that it is fundamentally important that privacy be fully considered and that appropriate privacy protections are in place before data collection and sharing by any party (either through remote ID and/or UTM) is required for operations. A non-exhaustive list of important privacy considerations include, amongst other issues, any data collection, retention, sharing, use and access. Privacy must be considered with regard to both PII and historical tracking information. The privacy of all individuals (including operators and customers) should be addressed, and privacy should be a consideration during the rulemaking for remote ID and tracking.

Accordingly, the ARC recognizes the fundamental importance of fully addressing privacy and data protection concerns, and we anticipate that future rulemaking will address these issues.

IV. CONCLUSION

We will continue to keep you informed on these and other related issues as they develop.

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[1] *See Huerta*, No. 3:16-cv-358, Dkt. No. 30.

[2] *Id.*

[3] *Id.*

[4] *See Boggs*, No. 3:16-cv-00006, Dkt. No. 1 (W.D. Ky. Jan. 4, 2016).

[5] *See id.*

[6] *See Boggs*, No. 3:16-cv-00006, Dkt. No. 20 (W.D. Ky. Jan. 4, 2016).

[7] *See id.*

[8] *See Singer*, No. 1:17-cv-10071, Dkt. N. 63 (D. Mass. Jan. 17, 2017).

[9] *See id.*

[10] *See id.*

[11] *See id.*

[12] *See id.*

[13] *See Taylor v. Huerta*, 856 F.3d 1089 (D.C. Cir. 2017).

[14] *See* Pub. L. No. 112–95, § 336(a), 126 Stat. 11, 77 (2012) (codified at 49 U.S.C. § 40101 note).

[15] *See Taylor*, 856 F.3d at 1090.

[16] *See* Pub. L. No. 115–91, § 3 1092(d), (2017).

[17] The White House, Office of the Press Secretary, *Presidential Memorandum: Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems*, Feb. 15, 2015, available at https://obamawhitehouse.archives.gov/the-press-office/2015/02/15/presidential-memorandum-promoting-economic-competitiveness-while-safegua.

[18] Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42064 (June 28, 2016).

[19] Electronic Privacy Information Center ("EPIC"), *EPIC v. FAA: Challenging the FAA's Failure to Establish Drone Privacy Rules*, https://epic.org/privacy/litigation/apa/faa/drones/ (last visited Jan. 18, 2018).

[20] *See generally Electronic Privacy Information Center v. FAA (EPIC I)*, 821 F.3d 39, 41-42 (D.C. Cir. 2016) (noting that FAA denied EPIC's petition for rulemaking requesting that the FAA consider privacy concerns).

[21] *Voluntary Best Practices for UAS Privacy, Transparency, and Accountability, NTIA-Convened Multistakeholder Process* (May 18, 2016), https://www.ntia.doc.gov/files/ntia/publications/uas_privacy_best_practices_6-21-16.pdf.

[22] *EPIC*, *supra*, note xix.

[23] *EPIC I*, *supra*, note xx, at 41.

[24] *Id*. 41-42.

[25] *Id*.

[26] *Id*.

[27] *Id*. at 42-43.

[28] *Id.* at 42.

[29] *Id*. at 43.

[30] Pet. For Review, Electronic Privacy Information Center v. FAA (*EPIC II*), Nos. 16-1297, 16-1302 (Filed Aug. 22, 2016), https://epic.org/privacy/litigation/apa/faa/drones/EPIC-Petition-08222016.pdf.

[31] Appellant Opening Br., *EPIC II*, Nos. 16-1297, 16-1302 (Filed Feb. 28, 2017), https://epic.org/privacy/litigation/apa/faa/drones/1663292-EPIC-Brief.pdf.

[32] Appellee Reply Br., *EPIC II*, Nos. 16-1297, 16-1302 (Filed April 27, 2017), https://epic.org/privacy/litigation/apa/faa/drones/1673002-FAA-Reply-Brief.pdf.

[33] United States Court of Appeals District of Columbia Circuit, *Oral Argument Calendar*, https://www.cadc.uscourts.gov/internet/sixtyday.nsf/fullcalendar?OpenView&count=1000 (last visited Jan. 18, 2018).

[34] United States Department of Defense, *Unmanned Systems Integrated Roadmap* (2013), https://www.defense.gov/Portals/1/Documents/pubs/DOD-USRM-2013.pdf.

[35] Andrew Meola, *Drone Marker Shows Positive Outlook with Strong Industry Growth and Trends*, Business Insider, July 13, 2017, available at http://www.businessinsider.com/drone-industry-analysis-market-trends-growth-forecasts-2017-7.

[36] Office of the Under Secretary of Defense, *U.S. Department of Defense Fiscal Year 2017 Budget Request* (Feb. 2016).

[37] Office of the Under Secretary of Defense, *U.S. Department of Defense Fiscal Year 2018 Budget Request* (May 2017).

[38] Goldman Sachs, *Drones: Reporting for Work*, http://www.goldmansachs.com/our-thinking/technology-driving-innovation/drones/ (last visited Jan. 18, 2017).

[39] *Id*.

[40] Chris Woods, *The Story of America's Very First Drone Strike*, The Atlantic, May 30, 2016, available at https://www.theatlantic.com/international/archive/2015/05/america-first-drone-strike-afghanistan/394463/.

[41] Deputy Secretary of Defense, *Policy Memorandum 15-002, "Guidance for the Domestic Use of Unmanned Aircraft Systems"* (Feb. 17, 2015), https://www.defense.gov/Portals/1/Documents/Policy%20Memorandum%2015-002%20_Guidance%20for%20the%20Domestic%20Use%20of%20Unmanned%20Aircraft%20Systems_.pdf.

[42] *Id.*

[43] *Id.*

[44] *Id.*

[45] *Id.*

[47] *Id.*

[48] Eric Schmitt, *Pentagon Tests Lasers and Nets to Combat Vexing Foe: ISIS Drones*, N.Y. Times, Sept. 23, 2017, available at https://www.nytimes.com/2017/09/23/world/middleeast/isis-drones-pentagon-experiments.html.

[49] *Id.*

[50] Christopher Woody, *The Pentagon is Getting Better at Stopping Enemy Drones—and Testing Its Own for Delivering Gear to the Battlefield*, Business Insider, Apr. 24, 2017, available at https://www.businessinsider.com/military-adding-drones-and-drone-defense-to-its-arensal-2017-4.

[51] *Id.*

[52] Radio Hill Technology, *Birth of the Dronebuster*, http://www.radiohill.com/product/ (last visited Jan. 18, 2018).

[53] *Id.*

[54] Kyle Mizokami, The Army's Drone-Killing Lasers are Getting a Tenfold Power Boost, Popular Mechanics, July 18, 2017, available at http://www.popularmechanics.com/military/research/news/a27381/us-army-drone-killing-laser-power/.

[55] Sydney J. Freedberg Jr., *Drone Killing Laser Stars in Army Field Test*, Breaking Defense, May 11, 2017, available at https://breakingdefense.com/2017/05/drone-killing-laser-stars-in-army-field-test/.

[56] Mizokami, *supra*, note lv.

[57] ASSURE, UAS Ground Collision Severity Evaluation Final Report, United States (2017), available at http://www.assureuas.org/projects/deliverables/sUASGroundCollisionReport.php?Code=230 (ASSURE Study).

[58] *Id.*

[59] *Id*.

[60] *Id*.

[61] DJI, *DJI Welcomes FAA-Commissioned Report Analyzing Drone Safety Near People*, Newsroom News, Apr. 28, 2017, available at https://www.dji.com/newsroom/news/dji-welcomes-faa-commissioned-report-analyzing-drone-safety-near-people.

[62] *Id*.

[63] *Id*.

[64] ASSURE Study, *supra* note lviii.

[65] *Id*.

[66] *Id*.

[67] *Id*.

[68] *Id*.

[69] ASSURE, *FAA and Assure Announce Results of Air-to-Air Collision Study*, ASSURE: Alliance for System Safety of UAS through Research Excellence, Nov. 27, 2017, available at https://pr.cirlot.com/faa-and-assure-announce-results-of-air-to-air-collision-study/.

[70] *Id*.

[71] ASSURE Study, *supra* note lviii.

[72] *Id*.

[73] *Id*.

[74] *Id*.

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standards for identifying operators and UAS owners. The final report identifies the following as the ARC's stated objectives:

The stated objectives of the ARC charter were: to identify, categorize and recommend available and emerging technology for the remote identification and tracking of UAS; to identify the requirements for meeting the security and public safety needs of the law enforcement, homeland defense, and national security communities for the remote identification and tracking of UAS; and to evaluate the feasibility and affordability of available technical solutions, and determine how well those technologies address the needs of the law enforcement and air traffic control communities.

The final ARC report is available at: https://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/UAS%20ID%20ARC%20Final%20Report%20with%20Appendices.pdf.

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