

An Analysis of the FAA's March 2016 UAS Sightings

While drone sales are soaring, sightings appear to be on the decline. New data continues to show very few near misses, objects other than drones and people possibly flying responsibly.

Executive Summary

On March 25, 2016, the Federal Aviation Administration (FAA) released a new list of 582 “drone sightings” covering the period August 21, 2015 through January 31, 2016 (“March 2016 data”). This new data follows the release of 764 records in August 2015 covering the period from November 13, 2014 to August 20, 2015 (“August 2015 data”).

The Academy of Model Aeronautics (AMA) is pleased to see the FAA more accurately characterize its recent drone data as “sightings” and “reports” rather than the more inflammatory terminology that was used last summer. When the agency previously released this data in August 2015, AMA completed a detailed analysis of these reports. We found a more complex picture of U.S. drone activity than the agency and news reports initially suggested. Only a small number of sightings were legitimately reported as “near misses,” the most serious reports involved government-sponsored military drones and some reports appeared to involve people flying responsibly. Meanwhile, the FAA’s drone data last August contained reports of many things in the air that were not drones, including balloons, birds, model rockets, mini blimps, something that “resembled a dog” and even a UFO.

In a continued effort to better understand what’s occurring, and what role AMA could play to help advance safe flying, AMA analyzed the 582 new records released by the FAA on March 25, 2016. In addition, we looked at trends in all of the 1,364 reports made between November 2014 and January 2016.

AMA’s updated analysis of the new 582 FAA records continues to show that the number of “near misses” and “close calls” is a small percentage of the overall data set. Some of the key takeaways include:

- In keeping with AMA’s previous analysis, the number of reported near misses and close calls in the March 2016 data is very small – just 3.3%. The vast majority of the reports are sightings, which even the FAA’s language acknowledges.
- Despite estimates that as many as one million drones were sold during the 2015 holiday season, the number of sightings has not increased as one might expect. In fact, the number of sightings appears to be declining after peaking in August 2015.
- In line with what AMA found in the August 2015 data, a number of sightings may involve people flying responsibly and within the FAA’s current guidelines. In the

March 2016 data the AMA identified 38 reports of drones flying at or below 400 feet.

- Like the August 2015 data, the March 2016 data contains reports of several objects other than drones, including balloons, birds, a rocket and even a jet pack. The FAA's drone data continues to be a "catch all" for any object spotted in the sky.
- Despite the FAA's intent to find and punish careless and reckless operators, law enforcement notifications appear to be on the decline. In the August 2015 data, nearly 20% of reports were not referred to local law enforcement or law enforcement notification was unknown. In the March 2016 data the number of sightings not referred to law enforcement is up to 29%.

Near Misses and Close Calls Still a Small Fraction of Reports

In AMA's previous analysis of the August 2015 FAA data, we found that, contrary to the characterization of all 764 records as "close calls," only 27 records – or 3.5% – had explicit notations of "NMAC" (near mid air collision), "near miss" or "near collision."

AMA conducted the same analysis on each of the 582 records released in March 2016 and found that roughly the same proportions were present in the new data. **Of the 582 records released in March 2016, only 19 records – or 3.3% – contained explicit notations indicating a near miss or close call.**

	August 2015 Data	March 2016 Data
Number of Total Sightings	764	582
Number of Near Misses or Close Calls	27	19
Percent of Dataset	3.5%	3.3%

Most of the 19 records AMA identified as near misses in the March 2016 data contain affirmative pilot reports of a "near miss" or "NMAC" to air traffic control. A few records use language that would indicate a potential near miss or close call, such as "was nearly struck," "got really close to acft," "a fairly close encounter." While these reports did not contain the explicit notations of "near miss" or "NMAC," we included these in the 19 near misses/close calls as well.

In AMA's analysis of the August 2015 data, we found only 10 instances where a pilot reported taking evasive action in response to an unmanned aircraft system (UAS), which accounted for 1.3% of the 764 reports. In the March 2016 data:

- Pilots took evasive action in 14 instances, or 2.4% of the reports.
- No evasive action was taken in 403 of the reports, or 69.2% of the time.
- Evasive action was unknown, not specified or not applicable in the remaining 165 records (28.4% of reports)

Evasive action taken?	Number of records	Percent of total reports
No evasive action taken	403	69.2%
Evasive action unknown or not applicable	165	28.4%
Evasive action taken	14	2.4%

Other analyses of the FAA's drone data have yielded higher near miss or close call numbers. For example, Bard College's Center for the Study of the Drone released a report in December 2015 that examined 921 reports from December 2013 to September 2015.¹ Bard's analysis found that 327 reports – or 35.5% – were “close encounters” while 594 reports – or 64.5% – were “sightings” that did not pose an immediate danger of collision.

The difference in the findings is explained by the lack of an objective standard for evaluating these reports. The FAA is on-the-record stating that there is no regulatory definition of a “close call.” While there is a regulatory definition of a “near miss,” a report cannot be confirmed as a “near miss” unless it is recorded on radar; UAS flights are often not visible on radar. There is also no specific regulatory definition for a “near miss” involving encounters between full-scale manned aircraft and small unmanned aircraft systems (sUAS or drones), and there are no published studies that validate the dynamics of such an encounter.

In response to AMA's previous analysis of the August 2015 data, an FAA spokesman had this to offer: “Since the majority of the pilot reports can't be verified — the drones typically don't show up on radar nor is the operator identified — we can't say for

¹ <http://dronecenter.bard.edu/press-drone-sightings-and-close-encounters-report/>

certain what the actual separation distance was. The use of the phrase 'close calls' is simply part of a news headline; there is no regulatory definition of 'close call,' as such."²

In the absence of an objective standard, Bard created its own criteria for defining an incident as a close encounter or a sighting, based on a variety of subjective factors. AMA's methodology relies on the explicit words and reports of pilots to determine if a possible near miss was perceived; we did not apply our own criteria to the data.

Whatever the number of near misses, close calls or close encounters is, more needs to be done to understand and address the actual safety concerns. AMA has previously called on the FAA to release not just its preliminary reports, but also all investigative findings so that we can assess the true extent of the problem and what can be done to address it. Meanwhile, whether one relies on AMA's analysis or the Bard analysis, both confirm that the majority of drone reports are "sightings" and not near misses, close calls or close encounters.

"Since the majority of the pilot reports can't be verified — the drones typically don't show up on radar nor is the operator identified — we can't say for certain what the actual separation distance was. The use of the phrase 'close calls' is simply part of a news headline; there is no regulatory definition of 'close call,' as such."

*FAA Spokesman Les Dorr
August 30, 2015*

While Drones Sales Are Up, Sightings Appear to Be Declining

In September 2015, FAA Assistant Administrator Rich Swayze said one million drones could be sold during the 2015 holiday season.³ The Consumer Technology Association (CTA) made similar predictions in 2015, estimating that unit sales in 2015 would approach 700,000, a 63% increase over the prior year.⁴

With an influx of nearly 700,000 to one million new devices sold last year, it would not be surprising to see the number of UAS sightings steadily increase over time as more people take to the skies. However, a month-by-month analysis of all UAS sightings going back to November 2014 reveals that sightings appear to be on the decline after peaking in August 2015.

And even as drone sales climbed, the number of reported monthly sightings around the 2015 holiday season was lower than every one of the 2015 summer months.

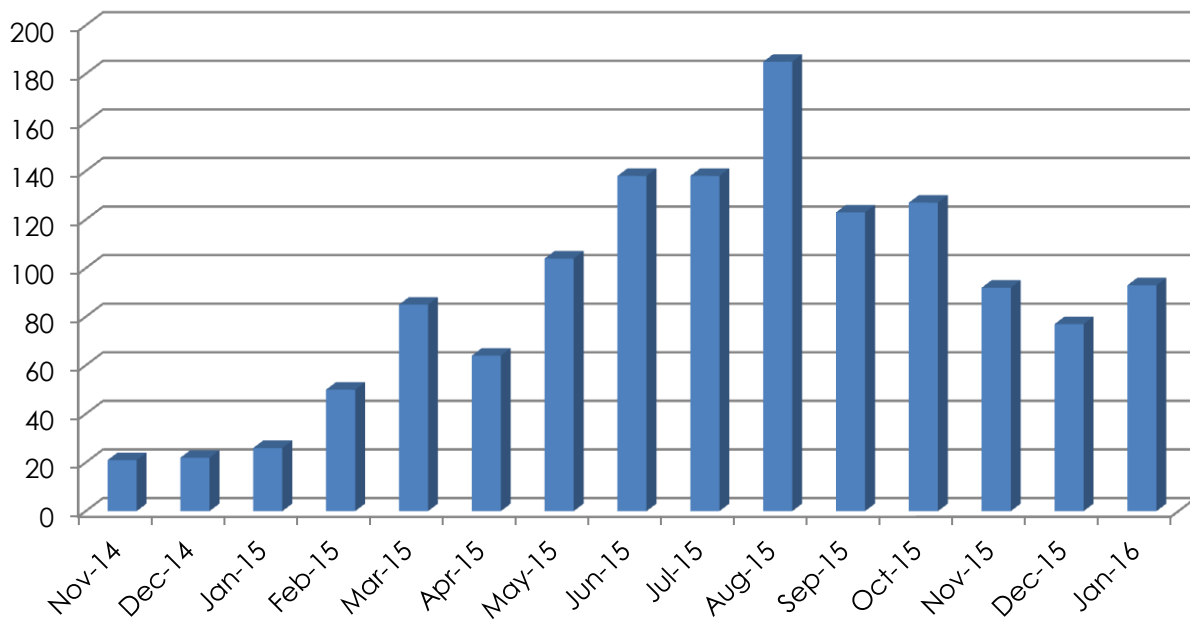
² http://www.journalnow.com/news/local/cloudy-faa-data-skews-drone-threat/article_80e10858-3fbb-51ba-827c-e5fb55a26534.html

³ <http://fortune.com/2015/09/29/drones-holiday-sales/>

⁴ <http://www.cta.tech/News/News-Releases/Press-Releases/2015-Press-Releases/New-Tech-to-Drive-CE-Industry-Growth-in-2015,-Proj.aspx>

Interestingly, in at least two instances, sightings are reported by witnesses describing what they viewed in videos posted to the social platform YouTube. While this is not a high enough number of such reports to call it a trend, they are instances unique to the March 2016 data set regarding sightings.

Number of UAS Sightings Month-by-Month



The apparent decline in sightings is likely due to a number of factors:

- Ongoing education campaigns, including “Know Before You Fly,” AMA’s partnership with retailer Best Buy, and the FAA’s “No Drone Zone” initiative are reaching new flyers with safety information and guidance.
- Public acceptance and awareness of drone platforms could be increasing, reducing the number of citizen reports.
- There were no military UAS sightings in the March 2016 data, or perhaps records involving military UAS were removed from the dataset. By comparison, AMA’s previous analysis of the August 2015 data found a dozen reports that involved military drones, including two actual crashes.

AMA is a founding member of “Know Before You Fly” (KBYF), which was created in 2014 to educate newcomers to model aviation and drone technology about where they should and shouldn’t fly. Since its inception, www.knowbeforeyoufly.org has received over 500,000 unique visitors – 81% of which are first time visitors. In total, the website has had over 1.2 million page views since the campaign launch. The robust traffic to the

KBYF website is evidence that the safety campaign is potentially reaching the majority of new recreational flyers in the United States.

In addition to the campaign's online efforts, AMA and its partners continue to work with manufacturers, distributors and retailers to include safety brochures in product packaging and at the point of sale. To date, 28 manufacturers, distributors and retailers – including, Amazon, Castle, DJI, Hobbico, Horizon, Walmart, Yuneec and UAV Experts – have agreed to include KBYF brochures in their products and even more supporters in the manned and unmanned aviation communities join each month. All of whom have added to the voice of the Know Before You Fly campaign and have helped to get the message out about safe and responsible drone flying. Hobby People, a brick and mortar retailer, is displaying the KBYF materials at the point of sale in all 18 of their stores. DJI, which manufactures the popular Phantom quadcopter, has also asked its sales dealers to distribute KBYF brochures with drone equipment sales, and has implemented altitude limitations and GPS-based warnings and limitations into its products.

In 2015, AMA announced a partnership with retailer Best Buy to further educate new drone users. Best Buy locations are displaying brochures with AMA safety guidelines on store shelves and also featuring regulation and safety information on the store receipts of drone purchases.

Most recently, AMA clubs in the Washington, D.C., Maryland and Virginia (DMV) region organized D.C. Drone Day - a celebration of International Drone Day on May 7, 2016. Nineteen local AMA clubs hosted free events available to the general public and provided basic safety information to thousands of people in the region.

Some drone sightings may be of people following proper guidelines.

In AMA's previous analysis of the FAA's August 2015 data, we found at least a dozen reports that could have been people flying within the proper FAA or community-based guidelines.

Similarly, the FAA's March 2016 data on UAS sightings also contains several dozen reports – 38 to be exact – of drone sightings below 400 feet.

A good number of these sightings occur within five miles of airports, but the records often do not indicate whether the drone operator provided prior notification to air traffic control or the airport manager.

In absence of this information, we are unable to say conclusively whether these flights were proper or improper. However, the current trends indicate that the number of drone sightings are declining while a growing number of individuals are being educated on the safety aspects related to drone operations. Meanwhile, the lack of definitive information underscores the need for the FAA to release not just preliminary reports, but also investigative findings, which may shed further light on whether these flights followed the proper guidelines.

A few examples include:

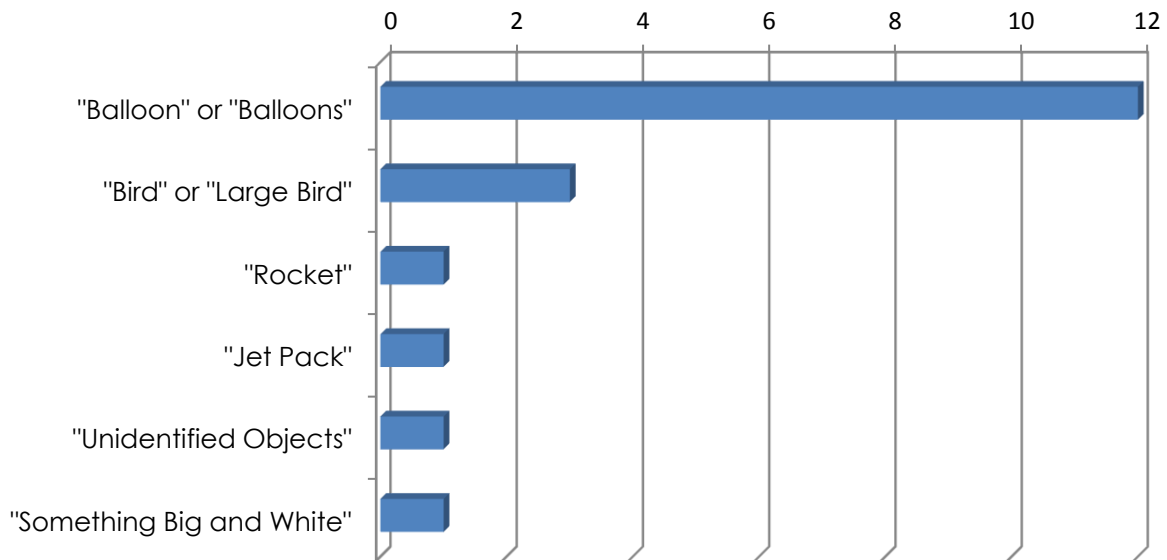
September 5, 2015	At approximately 12 noon, a citizen provided information on a drone flying approximately 50 feet above the back yard of his home. Citizen's residence is southeast of San Diego State University, just outside Montgomery Field (MYF) Air Traffic Control Tower (ATCT) class Delta airspace. The drone operation had no impact on aircraft operating in/out of MYF ATCT. notified local San Diego law enforcement.
October 2, 2015	SYRACUSE HANCOCK INT'L ARPT, NY/UAS INCIDENT/1030E/AEA ROC REPORTED A UAS OPERATING OVER LOCKHEED MARTIN AT 200 FEET. NO DESCRIPTION OF UAS WAS GIVEN. NO IMPACT TO SYRACUSE ARPT OPERATION. NO LEOS WERE NOTIFIED.
December 27, 2015	UAS OPERATIONS AT HOLLINS UNIVERSITY E OF KROA (WITHIN 5NM OF KROA), 200FT AGL AND BELOW UFA.
January 27, 2016	CARLSBAD, NM/UAS INCIDENT/1755M/CARLSBAD ATCT RECEIVED A CALL FROM A CITIZEN THAT REPORTED 2 LARGE UAS AT 200 FEET 2 NE CARLSBAD ARPT. CARLSBAD POLICE NOTIFIED.
January 27, 2016	Public Safety Non-Emergency Response reported a male and female flying a drone approximately 400ft on Marine DR near Kelly Park. Cautionary advisories were given to ac on final thereafter for 15-20 min. No reports by aircraft.
January 30, 2016	MIAMI, FL/UAS INCIDENT/2235E/MIA APPROACH ADVISED HELICOPTER, FLYING AT 500 FEET REPORTED A UAS 100 FEET BELOW AND .5 MILE FROM ACFT POSITION 5 SE MIA. NO EVASIVE ACTION TAKE. NO DESCRIPTION GIVEN. MIA DADE CO PD.

Other objects, especially balloons, are reported as drone sightings

In AMA's previous analysis of the August 2015 data, we found that a number of references to objects other than drones, including balloons, a UFO, a mini-blimp, a model rocket and an object that "resembled a dog."

Likewise, the March 2016 data contains more than a dozen references to objects other than UAS or drones. Balloons, in particular, are widely referenced in the March 2016 data with 12 explicit sightings of balloons or potential balloons – many more than in the August 2015 data.

References to Objects Other than UAS/Drones



SOURCE: FAA's March 2016 Dataset of 582 UAS Sightings

A few examples of these reports include:

November 14, 2015	A C172 REPORTED SIGHTING A ROCKET ON A 5 MILE, BETWEEN HIM AND THE AIRPORT, WHICH TERMINATED AT HIS ALTITUDE.
September 17, 2015	A HELO INBOUND MERCY HOSPITAL, REPORTED SOMEONE USING A JET PACK (POSSIBLY A LARGE DRONE) PASSED IN CLOSE PROXIMITY TO HIM AS HE APPROACHED MERCY. HE WAS 5 MILES NORTHEAST OF PWA AT 2000 FEET WHEN THE INCIDENT OCCURED. THE OBJECT, JET PACK OR DRONE, CAME WITHIN 200' ABOVE AND 1/4 MILE OF HELO AND WAS MOVING WESTBOUND.
September 24, 2015	B06/G, ON A PRACTICE APPROACH TO RWY 8, REPORTED TO PNS TOWER THEY SAW A TETHERED BALLOON ON A 2MILE FINAL AT APPROX 600FT. AT 2305Z ON DEPARTURE, THE PILOT REPORTED TO APPROACH (P31) THAT THE BALLOON REPORTED TO TOWER WAS A POSSIBLE DRONE. AT 2306Z P31 PASSED THE UPDATED INFORMATION TO THE TOWER. THE PENSACOLA POLICE DEPT WAS NOTIFIED.
December 6, 2015	HOUSTON, TX/UAS INCIDENT/1338C/HOUSTON ATCT ADVISED UNITED 1191, A320, IAH - DCA, REPORTED 2 UNIDENTIFIED OBJECTS ON THE LEFT SIDE OF THE ACFT WHILE NORTHEAST BOUND AT 4,500 FEET 10 ENE IAH. NO EVASIVE ACTION TAKEN. HOUSTON FBI NOTIFIED.

In many cases when other objects are referenced, pilots are unsure what they are seeing, allowing for the possibility that an object could be a UAS/drone or it could be something else. In at least two events, pilots reported seeing a drone, but passengers or airport personnel saw balloons. A sampling of these records is included below:

August 28, 2015	DAL1086 MD90 REPORTED A LARGE BIRD OR DRONE 2 MILES EAST OF LGA, SUBSEQUENT QUERYS FOR PIREPS WERE NEGATIVE TO EITHER.
September 18, 2015	PILOT AT 8000 FEET ON VECTORS TO THE IAG SCENIC FALLS REPORTED AN UAS SIGHTING 400 FEET OF HIS RIGHT AT THE SAME ALTITUDE (8000), AFTER FURTHER DISCUSSION WITH THE PILOT, THE PASSENGER IN THE AIRCRAFT REPORTS THAT THEY MAY HAVE BEEN A LARGE GROUP OF BALLOONS.
September 25, 2015	FLG4138 A CRJ2 OUT OF ROC FOR LGA WA 5 MILES SE OF HPN DESCENDING OUT OF 5,000 FEET. PILOT REPORTED SOMETHING BIG AND WHITE SAME ALTITUDE THAT HE THOUGHT MIGHT BE A DRONE. THE OBJECT PASSED BY THE RIGHT SIDE OF THE AIRCRAFT AT THE SAME ALTITUDE, BUT HAPPENED SO FAST NEITHER PILOTS COULD BE SURE WHAT IT WAS. NO OTHER AIRCRAFT IN THE VICINITY. NEW YORK STATE POLICE NOTIFIED. DEN NOTIFIED. ROC NOTIFIED. FBI NOTIFIED. SECRET SERVICE NOTIFIED. THE OBJECT DID NOT MAKE ANY MOVE TOWARD THE AIRCRAFT AND THE PILOT DID NOT HAVE TO MAKE ANY MOVE AWAY FROM IT. FLG4138 CONTINUED ON TO LGA AND LANDED WITHOUT INCIDENT.
October 6, 2015	CHICAGO, IL/UAS INCIDENT/0917C/CHICAGO ARTCC REPORTED DELTA 1545, A319, ATL-MDW, ENCOUNTERED UAS OR LARGE BIRD WHILE NW BOUND AT 13,000 FEET. NO EVASIVE ACTION REPORTED. LEOS NOT NOTIFIED.
October 14, 2015	JIA5074, CRJ2, OBSERVED A POSSIBLE "DRONE/BALLOON TYPE OBJECT" 10 MILES SOUTH OF CLT AT 5000 FT. DEN ADVISED AT 0105Z
November 7, 2015	UAL325 REPORTED SEEING SOMETHING FLY JUST ABOVE THEM AT 14,500 CLIMBING OUT OF TPA. THE PILOT SAID HE SAW IT AT THE LAST MINUTE AND COULD NOT DISCERN WHETHER IT WAS A BIRD OR DRONE ONLY THAT IT WAS A WHITE OBJECT. NO EVASIVE ACTION WAS NECESSARY BY THE AIRCREW.
November 26, 2015	A P28A, REPORTED WHAT IT LOOKED LIKE TO BE A RED BALLOON OR DRONE AT 2,500 FT 5NM NORTH OF PUT VOR, NO EVASIVE ACTIONS WERE TAKEN, JUST A REPORT OF WHAT HE SAW. HE WAS UNSURE OF WHAT IT WAS. THE PILOT REQUESTED TO CANCEL IFR AND SWITCH TO ADVISORY FREQUENCY, WE DID NOT HAVE TIME TO GET CONTACT INFO.
December 15, 2015	IAD/UAS INCIDENT/0902E/MESA 3802, REPORTED A UAS TRAVELING SOUTHEAST BOUND AT 50 FEET OVER RUNWAY 30. IAD AIRPORT OPERATIONS REPORTED THE UAS APPEARED TO BE A MYLAR BALLOON.
January 1, 2016	PRELIM INFO FROM FAA OPS: PHOENIX, AZ/UAS INCIDENT/0119M/HELICOPTER, REPORTED SEEING A UAS OR SMALL BALLOON AT 1,800 FEET 6 W PHOENIX. NO EVASIVE ACTION TAKEN. UNKN IF LEO WAS NOTIFIED.

January 1, 2016

RECEIVED A REPORT FROM AZU8730 (A332) ABOUT A **BALLOON OR POSSIBLE DRONE ON 4 MILE FINAL RWY 17L, . PILOT STATED HE WAS UNSURE WHAT HE SAW.** HAD SUBSEQUENT ARRIVALS REPORT ANY ACTIVITY IN THE REPORTED AREA AND RECEIVED NEGATIVE REPORTS. CANNOT CONFIRM DRONE ACTIVITY IN AREA REPORTED.

January 15, 2016

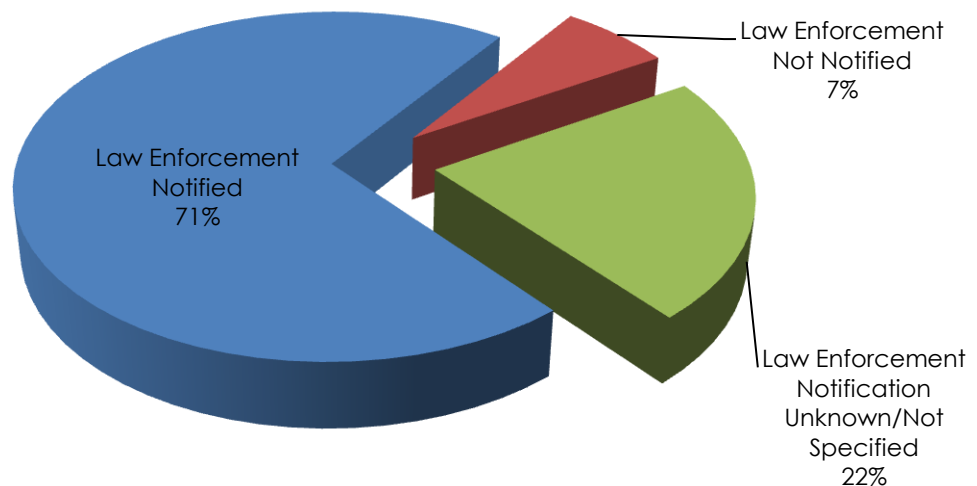
CL60/L, KDAL./MYEH, climbing through 15,000 ft on departure **reported a drone or balloon, pilot was unsure, approximately 2,000 feet below** the aircraft just north of LNC. No evasive action taken. Notified Lancaster, TX PD. ATM, DEN, ROC notified.

Law Enforcement Notifications Declining

In AMA's analysis of the first 764 UAS sightings from August 2015, we found almost 20% of the reports – 142 in total – either were not referred to local law enforcement or it is unknown whether a report had been referred to local law enforcement. This was surprising given the FAA's public statements about working closely with local law enforcement to identify and investigate reports of unauthorized operations.

Our analysis of the 582 UAS sightings released in March 2016 finds that law enforcement notification has dropped from the previous dataset. In the March 2016 data, nearly 29% of reports – 169 reports in total – either were not referred to law enforcement or law enforcement notification is unknown or unspecified.

Law Enforcement Notified?



SOURCE: FAA's March 2016 Dataset of 582 UAS Sightings

As noted in our previous analysis, while not every report or sighting is a serious safety risk, or even someone behaving irresponsibly, the only way to identify the truly careless and reckless operators, and to learn the facts about what happened, is better communication and coordination with local law enforcement.

Conclusion

Overall, the FAA's March 2016 data on drone sightings paints a similar picture to the previous data released in August 2015. In both data sets, only a small fraction of reports are near misses, there continue to be objects other than drones included in the data and a sizeable number of reports aren't referred to law enforcement despite the FAA's stated intent to find careless and reckless operators.

Perhaps most interesting is the fact that month-by-month sightings appear to be on the decline from their peak in August 2015, even as drone sales continue to soar. As noted in this analysis, this is likely due to a variety of factors including increasing public acceptance of drones, the efficacy of ongoing education initiatives and/or changes to the data, such as removing events involving military UAS.

AMA is pleased to see the FAA more accurately characterize its recent drone data as "sightings" and "reports" rather than the more inflammatory terminology that was used last summer. While this is a step in the right direction, more can be done to truly understand the nature, scope and impact of these reports.

In this regard, AMA wishes to reiterate the recommendations from its previous analysis, which include:

- **FAA should analyze all future drone data.** AMA believes the FAA needs to conduct an analysis of all future data releases in order to more accurately portray what is happening. Moreover, AMA recommends that these sightings be better categorized going forward to highlight the most serious safety risks so that all stakeholders can work together to address them.
- **Release not just preliminary reports, but also investigative findings.** The problem with preliminary reports is just that – they are preliminary. And, as was seen in 2015, the release of inexact data leads to speculation, misinterpretations and mischaracterizations of the reported sightings, and unfortunately, specious public perception. Once investigated, the reports may turn out to be accurate or they may not. In the August 2015 data there was at least one report of a drone striking a commercial airliner, which later turned out to be a bird. This incorrect report is a good example of why preliminary reports cannot be relied upon to draw conclusions that might influence policy decisions. More recently, an incident in the U.K. involving a British Airways aircraft was declared to be a "drone strike," while later the British government determined it was more likely a floating plastic bag that hit the airliner.

About AMA

The Academy of Model Aeronautics (AMA) is the premier community-based organization in the United States for model aviation enthusiasts. Founded in 1936, the AMA is dedicated to promoting and preserving the fun and educational hobby of flying model aircraft. The Academy serves as the nation's collective voice for approximately 188,000 modelers in 2,400 clubs in the United States and Puerto Rico. AMA provides leadership, organization, competition, protection, representation, education and scientific/technical development to the model aviation community.