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Drone Dashing Through The Snow — But Not In US

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This week in holiday-themed drone stunts, YouTube personality Casey Neistat released a **video** of himself being towed on a snowboard through a wintry village and a series of ski slopes by a massive unmanned aircraft system.

The aircraft, a 165-pound, 10-foot hexadecopter custom built by Neistat's team and ornamented with red and green lights, not only tows Neistat on the ground in the video, but also lifts him into the air and even carries him over buildings.

The video appears to have been shot entirely in Finland and therefore well outside the Federal Aviation Administration's jurisdiction. Still, we can't help but observe the myriad reasons why it would be virtually impossible to make a similar video in the U.S. under the FAA's Part 107 rules governing commercial UAS operation. Thus, in the spirit of the holidays, we bring you:

The 12 Ways This Would Have Violated Part 107

1. The Size of the Aircraft

At 165 pounds, Neistat's hexadecopter is well above the 55-pound weight limit for small unmanned aircraft. Accordingly, the aircraft couldn't be operated under Part 107 at all and would require an FAA exemption to be operated in the United States.

2. The Size of the Payload

Although Part 107 does not expressly ban the carriage of persons using UAS, the 55-pound weight limit for small UAS includes the

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payload. In a supplementary **video**, Neistat noted that the aircraft weighed 365 pounds including Neistat, his snowboard and other equipment. Thus, even if the aircraft had been within the weight limit, the human payload moves the operation outside of what can be conducted under Part 107 and would require an FAA exemption.

3. Flight Over the Payload

Part 107 expressly bans operations over human beings other than those directly participating in the operation of the UAS (the pilot and any visual observers). Thus, even though Neistat was voluntarily participating in the purpose of the operations (gathering footage of a UAS hauling a snowboarder), the team would not have been authorized to fly the UAS directly over him without a waiver.

4. Flight Over the Spectators

In addition to flying over Neistat, the UAS is shown flying over nonparticipating persons, including spectators in the village and other snowboarders on the ski slope. This would require a Part 107 waiver.

5. Carriage of Hazardous Materials

Toward the end of the video, Neistat is shown being lifted by the UAS as his snowboard emits red smoke. In a behind-the-scenes **video**, Neistat describes the snowboard as outfitted with “explosives” for this scene. It’s not clear exactly what is producing the smoke, but there’s a reasonable chance it violates Part 107’s prohibition on the carriage of hazardous materials.

6. Time of Day of Operations

At several points in the video the UAS is operating at night. This is expressly precluded by Part 107 without a waiver.

7. Visibility

Under Part 107, unless the operator has a waiver, the minimum flight visibility must be no less than three statute miles. Throughout the video, the sky is overcast, and in some scenes it even appears to be snowing, likely violating this provision.

8. Operation From a Moving Vehicle

At one point in the behind-the-scenes video, the crew is shown filming from a moving truck as the UAS tows Neistat up a village street. It is unclear whether the UAS pilot was in the truck with the team, but to the extent he was, operation from a moving vehicle is prohibited by Part 107 unless the operator has a waiver.

9. Simultaneous Operation of Multiple UAS

The behind-the-scenes video shows that the crew used other UAS to film the UAS towing Neistat. To the extent they were operated by the same pilot simultaneously, this would be prohibited by Part 107 unless the operator has a waiver.

10. Operation Near Aircraft

Part 107 prohibits operating a small unmanned aircraft “so close to another aircraft as to create a collision hazard.” It’s unclear whether there was a violation of this rule, but the UAS used filming the event are showing flying very close to the hexadecacopter.

11. Pilot Certification and Aircraft Registration

Part 107 requires UAS pilots to hold a remote pilot certificate and requires operators to register their UAS with the FAA. Neistat’s team would need to go through these processes before undertaking operations in the U.S.

12. Hazardous Operation

As a general matter, Part 107 operators are prohibited from (1) operating a UAS in a careless or reckless manner so as to endanger the life or property; and (2) allowing an object to be dropped from a UAS in a manner that creates an undue hazard to persons or property. It’s unclear whether the FAA would have considered Neistat’s operations hazardous, but there’s a good chance this would be the case given the aircraft’s extremely close proximity to people, buildings and structures at several points in the video, coupled with its carriage of a person.

Conclusion

Although Finland’s UAS regulations are far more lenient than Part 107, it seems that even there the team’s operations may have been prohibited, or at least would have needed special government approval. The Finnish regulations provide that flying a UAS “over an open-air assembly of persons or over a densely populated area” is permitted only if the maximum take-off mass of the aircraft is below 7 kilograms (15.4 pounds). Even if the crowds in Neistat’s video were too small to reach this threshold, UAS flown in less crowded areas that aren’t specially designated for UAS flight must weigh less than 25 kilograms (55.1 pounds) unless the Finnish Transport Safety Agency has granted an exemption. A Finnish police officer shown in the behind-the-scenes video did not seem concerned with Neistat’s operations, suggesting his team was able to secure whatever permits were required.

With the FAA’s “Flights Over People” notice of proposed rulemaking expected to be released early next year, the FAA is considering how to move forward to permit a broader range of UAS operations. Perhaps this time next year, Neistat will be home for the holidays trying out his UAS on some U.S. slopes.