



April 24, 2015

Via www.regulations.gov

Mr. Michael P. Huerta
Administrator
Federal Aviation Administration
U.S. Department of Transportation
800 Independence Avenue, S.W.
Washington, D.C. 20591

Re: Operation and Certification of Small Unmanned Aircraft Systems, Docket No. FAA-2015-0150 (February 23, 2015).

Dear Mr. Huerta:

The Interstate Natural Gas Association of America (INGAA), a trade association that advocates regulatory and legislative positions of importance to the interstate natural gas transmission pipeline industry in North America, respectfully submits these comments in response to the Federal Aviation Administration (FAA)'s "Operation and Certification of Small Unmanned Aircraft Systems" proposed rule (Proposed Rule).¹

In the Proposed Rule, FAA proposes requirements for small unmanned aircraft systems (UAS) operated for non-hobby or non-recreational purposes. The FAA's proposed list of acceptable activities for UAS includes pipeline inspections in hilly or mountainous terrain. INGAA agrees that pipeline inspections present a productive and beneficial use for UAS; however, INGAA cautions that FAA should reconsider the line-of-sight requirement for pipeline safety construction, operation, and maintenance activities conducted within a defined area including the prescribed right of way and limit the proximity of UAS flyovers near natural gas compressor and meter stations so as not to create a hazardous situation.

I. The line-of-sight requirement is overly restrictive and will preclude operators from using small UAS to conduct pipeline safety inspections.

In the Proposed Rule, FAA includes a requirement that operators can only use a UAS if they are within the line of sight of the aircraft. INGAA submits that this requirement is overly restrictive and inadvertently precludes pipeline operators from using UAS for operation, maintenance and construction monitoring activities. In terms of operation activities, UAS are useful to examine the integrity of the pipeline, particularly following environmental events such as flooding and

¹ "Operation and Certification of Small Unmanned Aircraft Systems," 80 Fed. Reg. 9544 (February 23, 2015).

landslides, and conduct leak patrols. For decades, the Pipeline and Hazardous Materials Safety Administration (PHMSA) has required interstate natural gas pipeline operators to observe surface conditions on and adjacent to the transmission pipeline's right of way for indications of leaks, construction activity, growth of vegetation, and other factors that may affect safe operation.² PHMSA permits operators to conduct these patrols by walking, driving, flying or "other appropriate means of traversing the right-of-way."³ Pipeline operators would like to take advantage of technology improvements and conduct these patrols using a UAS. However, the line-of-sight requirement prevents any practical use of a UAS. A typical manned flyover for pipeline inspections and patrols can consist of approximately 100 miles. INGAA members have 182,270 linear miles of pipeline that are inspected aurally at different frequencies for a total of over two million miles of aurally inspection per year. If an operator must cease operations every time the aircraft leaves the individual's field of vision, there would be no incentive to use a UAS. Rather, pipeline operators would continue with manned flyovers. The proposed line-of-sight requirement would effectively preclude an operator from using a UAS to monitor its right of way.

Similar to inspection patrols, INGAA members would also like to use UAS to conduct oversight of pipeline construction activities within the pipeline corridor. The typical steps involved in the pipeline construction process include (1) clearing, grading, and trenching, (2) stringing and welding pipe segments together, (3) placing the pipeline, backfilling, and testing, and (4) restoration.⁴ Pipeline operators have an obligation to monitor the construction activities for safety and quality control under PHMSA regulations and the use of UAS would prove beneficial.

INGAA recommends that FAA remove the line-of-sight requirement for pipeline operators using a UAS within the defined pipeline corridor.⁵ First, pipeline companies would operate the UAS in a defined corridor established through the existing pipeline company-landowner easement agreements.⁶ Pipeline operators conduct patrols, whether by foot, vehicle, or air, along their right of way pursuant to an easement agreement with the landowner. Pipeline operators do not need permission every time they conduct a patrol as long as they have permission for these activities under their easement agreement. Second, the defined corridor is fairly wide which increases the implied safety buffer. The average pipeline right-of-way for a single pipeline is 75 feet wide (on average) and larger for those rights-of-way that contain multiple pipelines. Finally, INGAA suggests that FAA's concerns over "see and avoid" could be met if pipeline operators used a UAS equipped with geofencing, location and altitude determination technology, and a forward looking camera to assist the human operator with "see and avoid".

INGAA asserts that by using geofencing, a technology programmed into a UAS that establishes a pre-defined controlled zone such as a pipeline corridor, combined with location, altitude and a forward looking camera, pipeline operators would provide an equivalent level of safety in comparison to the proposed line-of-sight requirements. Using location and altitude determination technology would alleviate concerns over losing a UAS. The use of this

² 49 C.F.R. § 192.705.

³ *Id.*

⁴ See <http://www.ingaa.org/Topics/Pipelines101/65.aspx> for additional information on the pipeline construction process.

⁵ Pipeline corridors are usually defined as a permanent or temporary right-of-way easement.

⁶ These agreements can be permanent or temporary and cover construction, operation and maintenance activities.

technology in conjunction with a forward looking camera would help address the “see and avoid” concerns. A UAS operator could maintain complete control of the aircraft, follow the predetermined route, and observe any other UAS or other object in the UAS’ forward field of vision. This recommendation would resolve the “see and avoid” concerns while still allowing pipeline operators to use UAS for pipeline inspections and patrols, a productive and beneficial use of UAS.

Pipeline operators have used UAS technology outside of the United States to verify pipeline integrity when it was too risky to send personnel to the site. For example, pipeline companies have successfully used a UAS to verify pipeline integrity after a landslide when it was too dangerous to send personnel immediately to the location. Pipeline operators have also used UAS to assess flooding damage prior to the conclusion of the weather event when inspections by land or water were not possible. Pipelines are often located in terrain where the use of UAS would protect the safety of company personnel. Pipeline operators could conduct necessary patrols and inspections without endangering the safety of their workers.

INGAA urges FAA to eliminate the line-of-sight requirement for pipeline operators as long as the UAS activities are conducted (1) within the pipeline corridor, (2) pursuant to the landowner easement agreement, and (3) using a UAS equipped with a forward looking camera and utilized geofencing, location and altitude sensing technology.

II. FAA should exempt natural gas compressor and meter stations from UAS flyovers for safety reasons.

FAA should consider exempting certain facilities from UAS flyovers where a UAS flown within close proximity of the facility could create a hazardous situation. There are approximately 750 interstate natural gas transmission compressor stations across the United States with an average footprint of 4 acres per facility. Natural gas compressor stations have safety venting systems located on the exterior of buildings and within open areas of the station property that periodically emit unburned natural gas on an unscheduled basis. Natural gas is a gaseous mixture that can ignite within certain fuel and air ratios. Natural gas is also lighter than air and rises above the compressor station. Inherently, at some location above these station piping vents, there is a possibility that a combustible mixture could temporarily exist. The presence of an electrical spark (from any device including a UAS) at that mixture location could cause an ignition. Eventually, the combustion would retreat to the venting source and cause additional thermal damage to the piping, possibly endangering operating personnel. Flying an electrical-powered UAS at elevation levels envisioned in this proposal above a natural gas compressor station, where there is a possible mixture of natural gas and air that could ignite, can present a hazardous condition for human safety and property damage. There are documented incidents, although rare, in which stray electric arcs (including lightning strikes) have ignited natural gas air mixtures at compressor stations.

The same concern applies to natural gas transmission pipeline meter stations. There are approximately 5000 large high pressure natural gas transmission meters in the United States with an average footprint of a 1/2 acre per meter station. UAS flyovers near meter stations present the same accidental ignition concerns discussed above for compressor stations.

Pipeline companies have taken extreme caution to design⁷ all electrical components at natural gas transmission compressor stations to prevent accidental ignition and those restrictions are codified in the pipeline safety regulations promulgated by PHMSA.⁸ However, the flyover of a UAS within close proximity to venting was not contemplated when these compressor stations were designed and constructed. Such flyovers could create a hazardous situation and endanger personnel.

FAA should create a no fly-over list for certain facilities and include natural gas compressor stations, meter stations, and any other station where overpressure protection devices such as relief valves could emit natural gas at unscheduled times and create a potential ignitable natural gas cloud. FAA could address this issue by mandating the UAS operator to seek landowner permission for the flyover. In response, if the landowner references a type of facility on the hazardous facility list defined by FAA, the UAS operator could not fly over that facility.

In addition to compressor and meter stations, FAA should consider other facilities on this hazardous condition list. The footprint of a pipeline compressor station generally includes other facilities such as communication towers located adjacent to the compressor station. A UAS could damage these towers if it inadvertently flew into these facilities. FAA should strongly consider a list of facilities where UAS flyovers could create a hazardous condition.

INGAA appreciates your consideration of these comments.

Sincerely,



Terry Boss
Senior Vice President for Environment, Operations,
and Safety
20 F Street, N.W., Suite 450
Washington, DC 20001
(202) 216-5900

⁷ See National Electrical Code Standards-hazardous atmosphere classification

⁸ See 49 C.F.R. § 192.163(e).