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The Honorable Elaine L. Chao
Secretary, U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, D.C. 20590

The Honorable Daniel K. Elwell
Acting Administrator, Federal Aviation Administration
800 Independence Avenue, SW
Washington, D.C. 20591

Re: Comments of the American Fuel & Petrochemical Manufacturers on the Advanced Notice of Proposed Rulemaking regarding the Safe and Secure Operations of Small Unmanned Aircraft Systems (**Docket No. FAA-2018-1086-0001**)

I. INTRODUCTION

The American Fuel & Petrochemical Manufacturers (“AFPM”) welcomes the opportunity to comment on the Federal Aviation Administration’s (“FAA”) Advance Notice of Proposed Rulemaking (“ANPRM”) entitled, “Safe and Secure Operations of Small Unmanned Aircraft Systems.”¹ The FAA issued the ANPRM seeking public input for operational limitations, airspace restrictions, hardware requirements, and associated identification or tracking technologies for Unmanned Aircraft Systems (“UAS”).

AFPM is a national trade association representing nearly all U.S. refining and petrochemical manufacturing capacity. AFPM’s member companies produce the gasoline, diesel, and jet fuel that drive the modern economy, as well as the chemical building blocks that are used to make the millions of products that make modern life possible—from clothing to life-saving medical equipment and smartphones. AFPM believes that UAS provide significant benefits to its member companies, its customers, and the broader general public. Our members look forward to the future benefits of drone technology. However, while the industry has much to gain from using UAS, there is also reason for concern. The use of UAS by unauthorized operators or for unauthorized operations presents critical safety, privacy, and security risks to the refinery and petrochemical communities.

¹ See Docket No. FAA-2018-1086, “Safe and Secure Operations of Small Unmanned Aircraft Systems,” 84 Fed. Reg. 3732, proposed February 13, 2019, <https://www.regulations.gov/docket?D=FAA-2018-1086>.



In today's fast changing world, the nation's critical energy infrastructure continues to face new threats and challenges, as new vulnerabilities and pathways develop over time. AFPM members are committed to protecting the health and safety of their workers, contractors, customers, and the communities where they operate. AFPM member companies recognize the National Airspace System ("NAS") is a highly integrated and complex network designed to provide safe and reliable air transportation throughout the United States. UAS must be integrated into the NAS while maintaining safety and without introducing excessive risk to airspace users or persons and property on the ground. While significant UAS integration progress has been made, there is still work to do. We are committed to striking the appropriate regulatory and oversight balance to ensure that American innovation can thrive without compromising the security of the nation's critical infrastructure.

II. RELATED AGENCY ACTIONS

A. Operation of Small Unmanned Aircraft Systems Over People NPRM

As a general matter, we support the Commercial Drone Alliance's comments on the Operation of Small Unmanned Aircraft Systems over People NPRM. We are encouraged by the Administration's recent actions in releasing a proposed rule and agree that the federal government must balance innovation with safety and security to create a technology-neutral, performance-based requirement to enable the United States' global leadership in innovation.

B. Remote Identification and Section 2209 Implementation

Small UAS have become one of the most pressing security issues for critical infrastructure owners and operators. Finding reliable and scientifically valid methods to identify and interrupt intruding drones is vitally important. In that regard, establishing remote identification standards for all UAS operators and requiring they register with the FAA will help enhance the safety and security of the NAS and critical infrastructure facilities.

We remain concerned that FAA has not yet acted on its statutory mandate in the FAA Extension, Safety, and Security Act of 2016² to allow critical infrastructure operators to apply for designation to prohibit or restrict the operation of UAS in close proximity to a fixed site facility. Understanding that remote identification is an integral step in detection and deterrence, we are pleased to see that the FAA does not intend to promulgate a final rule in the Operation of Small UAS over People NPRM until a regulation finalizes the requirements regarding remote identification of small UAS. We strongly urge FAA to work expeditiously in finalizing the remote identification rule and look forward to working with FAA on remote identification and section 2209 implementation.

² See FAA Extension, Safety, and Security Act of 2016, Pub. L. No. 114-190 Stat. 2209 (2016).



C. Local Law Enforcement Capabilities

Section 366 of the FAA Reauthorization Act of 2018 instructs the Administrator to develop a comprehensive state and local government outreach strategy and to provide guidance for local law enforcement agencies and first responders with respect to public threats posed by UAS. Section 372 of the Act directs the Administrator to establish a pilot program to utilize available remote detection or identification technologies for safety oversight including enforcement actions against operators of unmanned aircraft systems that are not in compliance with applicable Federal aviation laws and regulations. As a part of this pilot program the Administrator must establish and publicize a mechanism for the public and federal, state, and local law enforcement to report suspected operation of unmanned aircraft in violation of applicable Federal laws and regulations.³ We fully support local law enforcement's involvement in counter UAS enforcement actions. Short of delegating enforcement authority to our members, local law enforcement will have the shortest response time to interdict a rogue drone, potentially averting a major incident. We urge FAA to delegate enforcement authority to local law enforcement as quickly as possible.

III. AFPM's COMMENTS ON FAA's ANPRM

FAA requests comments on a series of questions regarding the balance of needs between UAS operators and the law enforcement and national defense communities, we provide comments where we believe FAA should focus their efforts.

A. Standoff Distances

To understand some of the threats UAS pose to refineries and petrochemical manufacturing facilities, it is crucial to understand their complexities. What differentiates one refinery from another includes capacities and the types of processing units used to produce petroleum products. Many different types of refineries exist across the country with no one facility exactly like another, with the U.S. having some of the world's most sophisticated refineries.⁴

One concern with standoff distances stems from UAS platform's potential to monitor and record information about critical infrastructure. As stated above, each refinery and petrochemical manufacturing facility is unique, employing various methodologies and equipment related to its control technologies, environmental compliance and monitoring, security systems

³ See FAA Reauthorization Act of 2018. Pub. L. No. 115-254, <https://www.congress.gov/bill/115th-congress/house-bill/302?q=%7B%22search%22%3A%5B%22faa+reauthorization+of+2018%22%5D%7D&s=3&r=3>.

⁴ U.S. Energy Information Administration - EIA - Independent Statistics and Analysis. Retrieved March 13, 2019, from <https://www.eia.gov/todayinenergy/detail.php?id=8330>.



and practices, project design and construction execution, and operational processes. Aerial surveillance is no longer the bastion of a select group of trained pilots, with the availability of highly automated UAS hobby platforms anyone can purchase a relatively sophisticated aerial monitoring platform with high-resolution video recording capability. UAS automation allows operators to conduct illicit monitoring activities at a sizable standoff distance, effectively preserving their anonymity from potential criminal investigation.⁵ Such illicit monitoring actions allow criminals or terrorists to assess vulnerabilities in critical infrastructure, government sites, businesses, and private citizens. The threat of intellectual property theft and the ability of nefarious actors to avoid detection by enforcement authorities necessitates the rapid implementation of both remote identification and standoff distances sufficient to exceed the range of available optics on commercial UAS platforms.

Another area of concern for critical infrastructure operators is UAS use as a kinetic threat, including kamikaze, payload, and other weaponized threats. Even without armaments, a drone can cause damage or injure people or property on the ground or in the air. Refineries use extreme heat and pressures to produce their products, a potentially dangerous combination in the presence of rogue UAS. There are already anecdotal reports of UAS attacks at refineries in the Middle East causing damage.⁶ However, the most worrisome threat involves the deliberate construction or modification of UAS systems to carry and deploy weapons. This application of UAS platforms has received significant speculation and is well-justified considering the relative ease in which a UAS platform can be weaponized to produce devastating results. The U.S. Department of Homeland Security (“DHS”), in conjunction with the Federal Bureau of Investigation (“FBI”) has already produced a “Bomb Threat Standoff Chart,”⁷ providing evacuation distances for improvised explosive devices based on explosive capacity. It is important to note that the distances provided in the chart do not guarantee safety but are estimates based on test data and the area near and around the evacuation distances can still be potentially dangerous. Based on their joint findings, an improvised explosive device weighing just five pounds requires an outdoor evacuation distance of 1,200 feet. Moreover, there are several UAS platforms that can carry payloads far greater than five pounds.⁸ This increased payload only extends the outdoor evacuation distance out to and beyond 1,700 feet. The greater threat, however, is not the direct impact of the drone itself, but rather targeting the drone to sensitive pieces of equipment that if disrupted could create major off-site consequences.

⁵ Police seek owner of drone flying over Linden refinery. (2015, November 18). Retrieved March 14, 2019, from <http://newjersey.news12.com/story/34873210/police-seek-owner-of-drone-flying-over-linden-refinery>.

⁶ Nehme, D., & El Gamal, R. (2018, July 18). Yemen's Houthis say they attacked Aramco refinery in Riyadh with drone. Retrieved March 14, 2019, from <https://www.reuters.com/article/us-yemen-security-aramco/yemens-houthis-say-they-attacked-aramco-refinery-in-riyadh-with-drone-idUSKBN1K8262>.

⁷ U.S. Department of Homeland Security, Bomb Threat Stand-off Chart. Retrieved March 13, 2019, from <http://regulationspolicies.usf.edu/policies-and-procedures/pdfs/policy-6-002-bomb-threat-stand-off-chart-a.pdf>.

⁸ F. Justin, J. (2019, February 21). 5 Best Heavy Lift Drones [New for 2019]-Large Drones That Have High Lift Capacity. Retrieved from <https://www.dronethusiast.com/heavy-lift-drones/>.



Any prescriptive standoff distance set by FAA must account for the very real threats posed by kinetic action and intellectual property theft to critical infrastructure operators.

B. Unmanned Traffic Management Operations

Innovative applications for UAS are being introduced almost daily by companies around the world. Much of this growth is expected to come from commercial applications, as companies innovate ways to gather information, improve logistics, and move goods using drone technology. With this growth comes tremendous responsibility to put a globally coordinated traffic management system in place. A successful unmanned traffic management (“UTM”) system will facilitate growth in the market, streamline operations, and ensure public safety and security. A UTM system would essentially establish “highways in the sky,” which would limit drone flights to certain NAS pathways. While risks can never be eliminated, a fully integrated UTM would also significantly reduce risks to critical infrastructure operators from careless and untrained operators of UAS.

An ideal UTM solution will have the capability to coordinate the launching of UAS from different launch sites and determine their trajectories to avoid conflicts while considering several other constraints such as arrival deadline, minimum flight energy, and availability of communication resources. One potential solution may be a collection of subsystems that will work together to offer an end-to-end service that includes oversight, standards, and protocols common to all operators. Every stakeholder has a responsibility to participate in the conversation and play a role in its deployment and ongoing operation.

AFPM members believe that with the proliferation of UAS there is a need for additional airspace coordination and management to ensure operations do not pose a risk to public safety or national security. We strongly support FAA and the National Aeronautics and Space Administration’s (“NASA”) efforts in UTM pilot program and urge expedient national implementation.

IV. CONCLUSION

AFPM members support safe and responsible UAS technology development and use both commercially and recreationally. The potential benefits of UAS operations for refineries, petrochemical manufacturers, and their customers are significant. Among other activities, UAS can be used to inspect and monitor equipment and facilities, or to access and evaluate emergency situations from different perspectives. By utilizing UAS, the need for human personnel to directly undertake such potentially hazardous activities is greatly reduced, if not eliminated.

However, while the industry has much to gain from using UAS, there is reason for concern. The use of UAS by unauthorized operators or for unauthorized operations presents critical safety, privacy, and security risks to the refinery and petrochemical communities. Many



of our members' sites handle chemicals that are regulated by the Department of Homeland Security ("DHS") through the Maritime Transportation Security Act and the Chemical Facility Anti-Terrorism Standards. DHS, through these security regimes, has already defined our refineries and petrochemical facilities as critical infrastructure and require these facilities to conduct vulnerability assessments and develop security plans. DHS has deemed these facilities critical to our national security and we must strive to protect them against any threat, including those posed by UAS. As such, we want to continue to work with the FAA to ensure that nefarious actors do not have access to our members' critical infrastructure sites, and we look forward to working with government and other interested parties to ensure the safety and security needs of our industry are met.

We look forward to the opportunity to work together on this. Please contact me at jgunnfulsen@afpm.org if you wish to discuss these issues further.

Sincerely,

Jeff Gunnulfson
Senior Director, Security and Risk Management