[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation

AGENCY: Federal Aviation Administration (FAA)

ACTIONS: Finding of No Significant Impact (FONSI) and Record of Decision (ROD)

SUMMARY: The U.S. Air Force (USAF) acted as the lead agency, and the FAA was a cooperating agency, in the preparation of the March 2014 *Environmental Assessment for Crew Dragon Pad Abort Test at LC-40, Cape Canaveral Air Force Station, Florida* (EA), in accordance with the National Environmental Policy Act of 1969 (NEPA), 42 United States Code (U.S.C.) §§ 4321–4347 (as amended), Council on Environmental Quality NEPA implementing regulations, 40 Code of Federal Regulations (CFR) §§ 1500-1508, FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures,* and USAF Environmental Impact Analysis Process, 32 CFR Part 989, Department of Defense Directive 6050, to analyze the potential environmental impacts of Space Exploration Technologies Corp. (SpaceX) conducting a Crew Dragon pad abort test from Launch Complex (LC)-40 at Cape Canaveral Air Force Station (CCAFS), Florida. The National Aeronautics and Space Administration (NASA) also participated as a cooperating agency on the EA. The EA tiers from the 2007 USAF *Environmental Assessment for the Operation and Launch of the Falcon 1 and Falcon 9 Space Vehicles at Cape Canaveral Air Force Station, Florida* (2007 EA). The FAA also participated as a cooperating agency with USAF in the preparation of the 2007 EA. USAF issued a FONSI based on the 2007 EA in December 2007, and the FAA issued its own FONSI in January 2009.

The 2007 EA analyzed the potential environmental impacts of operating the Falcon 1 and Falcon 9 (Block 1) launch vehicles, payloads, and Dragon capsule at LC-40. The 2007 EA analyzed the USAF leasing land and facilities to SpaceX, as well as cooperating agency actions—the FAA issuance of launch or reentry licenses, and NASA as a potential customer for SpaceX launch services. Although the 2007 EA analyzed the potential environmental impacts of a Cargo

Dragon capsule reentry and recovery, it did not assess the potential environmental impacts of a Crew Dragon pad abort test from LC-40. This EA tiers off of the 2007 EA and focuses on the potential environmental impacts from a Crew Dragon pad abort test at LC-40.

As the Proposed Action would require Federal actions (as defined in 40 CFR § 1508.18) involving both USAF and the FAA, the EA was prepared to satisfy the NEPA obligations of both agencies. The FAA's Federal action in this matter pertains to its role in issuing licenses and/or permits for the operation of commercial launch and reentry vehicles at launch sites. USAF issued a FONSI on March 3, 2014, which stated that the potential environmental impacts associated with the Proposed Action would not individually or cumulatively have a significant impact on the quality of the human environment, and therefore the preparation of an Environmental Impact Statement (EIS) was not required.

SpaceX is required to obtain a launch license from the FAA to conduct the Crew Dragon pad abort test at CCAFS. Based on its independent review and consideration of the EA, the FAA issues this FONSI/ROD concurring with the analysis of impacts and findings in the EA and formally adopts the EA to support the issuance of a launch license to SpaceX for the Crew Dragon pad abort test at CCAFS. If changes to the Proposed Action fall outside the scope of the EA, additional environmental analysis will be required prior to the FAA issuing a license.

After reviewing and analyzing available data and information on existing conditions and potential impacts, including the EA, the FAA has determined that issuance of a launch license to SpaceX to conduct the Crew Dragon pad abort test at CCAFS would not significantly affect the quality of the human environment within the meaning of NEPA. Therefore, the preparation of an EIS is not required, and the FAA is issuing this FONSI/ROD. The FAA made this determination in accordance with all applicable environmental laws and FAA regulations. The EA is incorporated by reference into this FONSI/ROD.

FOR A COPY OF THE ENVIRONMENTAL ASSESSMENT: Visit the following internet address:
http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/launch/
or contact Daniel Czelusniak, Environmental Specialist, Federal Aviation Administration, 800

Independence Ave., SW, Suite 325, Washington, DC 20591; e-mail Daniel.Czelusniak@faa.gov; or phone (202) 267-5924.

PURPOSE AND NEED: NASA has awarded SpaceX a contract to develop and demonstrate a human-rated Dragon capsule as part of its Commercial Crew Development program to transport crew to the International Space Station (ISS). SpaceX continues to be contracted by NASA to support commercial and NASA customers desiring launch capabilities to easterly and ISS inclinations to, among other tasks, resupply the ISS since the Shuttle has been retired and launch other commercial satellites. SpaceX entered a license agreement with the USAF to use LC-40 for the construction and operation of a rocket launch program. The purpose of SpaceX's proposal is to demonstrate the effectiveness of the Crew Dragon abort system and the data acquisition systems. The purpose also includes reducing the risk for a future planned in-flight abort test in order to operate and launch the Falcon vehicles with the Crew Dragon capsule version from the LC-40 launch site at CCAFS. This continues to fulfill the United States' expectation that space transportation costs be reduced in order to make continued exploration, development, and use of space more affordable. The Space Transportation section of the National Space Transportation Policy of 1994 addressed the commercial launch sector, stating that "assuring reliable and affordable access to space through U.S. space transportation capabilities is fundamental to achieving National Space Policy goals."

The purpose of FAA's Proposed Action is to fulfill the FAA's responsibilities as authorized by Executive Order 12465, *Commercial Expendable Launch Vehicle Activities* (49 *FR* 7099, 3 CFR, 1984 Comp., p. 163) and the Commercial Space Launch Act (51 U.S.C. Subtitle V, ch. 509, §§ 50901-50923) for oversight of commercial space launch activities, including licensing launch activities. The need for FAA's Proposed Action results from the statutory direction from Congress under the Commercial Space Launch Act to protect the public health and safety, safety of property, and national security and foreign policy interests of the U.S. and to encourage, facilitate, and promote commercial space launch and reentry activities by the private sector in order to strengthen and expand U.S. space transportation infrastructure.

PROPOSED ACTION: The FAA's Proposed Action is to issue a launch license to SpaceX for the Crew Dragon pad abort test at LC-40 at CCAFS. The Proposed Action analyzed in the EA

consists of SpaceX conducting the Crew Dragon pad abort test from LC-40 at CCAFS. LC-40 is currently the site used for Cargo Dragon launches to the ISS. The unmanned test capsule consists of the Dragon capsule (the Crew Dragon) sitting on top of a trunk structure and stand in the center of the launch pad. The Crew Dragon pad abort test would prepare for and initiate the Crew Dragon capsule SuperDraco engine system startup sequence, firing all eight engines. The capsule and trunk would separate from the test stand and follow a propulsive trajectory away from LC-40 toward the Atlantic Ocean, maximizing downrange offshore distance and meeting minimum altitude requirements to successfully deploy the parachutes. Two drogue parachutes would be deployed, and the trunk would separate from the capsule. The three main parachutes would then be deployed, and the Crew Dragon capsule would descend back to Earth for a water landing.

Once the capsule lands in the water, a pre-positioned recovery boat would collect the capsule and parachutes. The trunk would not be recovered. The capsule and parachutes would be returned to the Port of Canaveral where they would be loaded onto a truck for immediate transport to the SpaceX processing facility in McGregor, Texas. The pad abort test would occur only once, presuming a successful test. The event would be repeated if the first attempt was not successful.

ALTERNATIVES CONSIDERED: Alternatives analyzed as part of this FONSI/ROD include (1) the Proposed Action and (2) No Action Alternative. Under the No Action Alternative, the FAA would not issue a launch license to SpaceX for the Crew Dragon pad abort test at CCAFS. The No Action Alternative would not meet the purpose and need for the action. The EA also considered alternative locations to conduct the Crew Dragon pad abort test, including Vandenberg Air Force Base in California and a SpaceX facility in Texas. However, the consideration process revealed several reasons why those locations were not appropriate, including the inability to guarantee a water landing and the lack of specific hypergol loading and safety provisions at either alternative location. Additionally, because LC-40 is the intended launch site for crew servicing missions to the ISS, it therefore provides the best opportunity to "test as you fly" for the abort tests. Therefore, these two potential alternative sites were eliminated from further consideration.

ENVIRONMENTAL IMPACTS

The following presents a brief summary of the potential environmental impacts considered in the EA. This FONSI/ROD incorporates the EA by reference and is based on the potential impacts discussed in the EA. The FAA has determined the analysis of impacts presented in the EA represents the best available information regarding the potential impacts associated with the FAA's regulatory responsibilities described in this FONSI/ROD. Although not required by FAA Order 1050.1E, this FONSI/ROD includes the following additional impact categories because they are addressed in the EA by the lead agency, USAF: geology and soils, health and safety, and transportation.

Many of the impact summaries below compare the impacts of the Proposed Action to the impacts of the Falcon 9 launch vehicle analyzed in the 2007 EA, as well as to impacts of other rockets. The Falcon 9 is a much larger vehicle than the Crew Dragon and produces more thrust and burns more fuel, thus generating more noise and emitting more air emissions. Where the impacts of the Falcon 9 or other larger vehicle were determined in the 2007 EA not to be significant, and the impacts of the Crew Dragon would be less than those of the Falcon 9, the reasonable assumption is made that the impacts of the Crew Dragon also would not be significant.

Air Quality

CCAFS and Brevard County are classified as attainment areas with respect to the National Ambient Air Quality Standards (NAAQS) and Florida Ambient Air Quality Standards (FAAQS). Activities associated with the Proposed Action would not require the construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece); therefore, there would be negligible construction-related air pollutant emissions. During operation of the Crew Dragon pad abort test program, emissions from ground support operations and Crew Dragon tests would not be enough to lead to an exceedance of the NAAQS or FAAQS. Though emissions from the Proposed Action would increase the yearly levels of greenhouse gases (GHGs) at CCAFS, they would still be well below the EPA mandatory reporting threshold for stationary sources of 25,000 metric tons of carbon dioxide equivalent, and would represent a negligible fraction of GHG emissions from CCAFS, the United States, or the world. Therefore,

the Proposed Action would not be expected to result in significant air quality impacts [EA 4.5 at 4-11].

Biological Resources (Fish, Wildlife, and Plants)

Activities associated with the Proposed Action would not require the construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece); therefore, there would be negligible, if any, construction-related impacts. The combined total thrust for the Crew Dragon capsule is approximately 131,000 lbf, or less than 13 percent of the thrust of the Falcon 9 Block 1. This thrust level would not be funneled through the exhaust tunnel, but would be directed away from the capsule in four quadrants, effectively reducing the energy of the thrust in any one direction by a factor of four. This reduced thrust energy would also be further suppressed at launch time by a water deluge system. Because of the great reduction in thrust energy compared to the Falcon 9 Block 1, the impact of the Crew Dragon on plants and wildlife would be similarly reduced. The Crew Dragon pad abort test may only slightly affect (e.g., minor vegetation scorching) a small area within the fence line of LC-40 [EA 4.3 at 4-5].

While species protected by the Endangered Species Act (ESA) are located at CCAFS, such as gopher tortoises, southeastern beach mice, Florida scrub jays, and sea turtles, none are known to be present at LC-40. The behavior of scrub jays in the vicinity of LC-40 observed after Delta, Atlas, and Titan launches has been normal, indicating no noise-related effects. Since noise and energy levels for the Crew Dragon would be significantly less than the Titan IV and Falcon 9 Block 1, behaviors of those animals are also expected to be normal following the single Crew Dragon pad abort test. Since the Crew Dragon vehicle would not reach supersonic speeds, a sonic boom would not occur during the pad abort test.

Sea turtles can be adversely affected by artificial facility lighting, especially during beach nesting and turtle hatching time periods. The Proposed Action would not modify current facility lighting. SpaceX maintains a light management plan that has been approved by CCAFS and would continue its implementation to ensure sea turtles are not affected. Based on this information, and previous informal consultation with the USFWS, the USAF has determined that the Proposed Action would have no effect on species protected by the ESA [EA 4.3 at 4-7].

Birds, reptiles, and small mammals would be at risk from impacts due to a launch accident. Potential fires could result in temporary loss of habitat and mortality for species that do not leave the area. An accident on the launch pad would frighten nearby sensitive animal species that use the Indian and Banana Rivers (such as birds in rookeries and neo-tropical land birds). In the rare case of a launch accident, threatened and endangered species, such as manatees, sea turtles, and other aquatic species would not be expected to be adversely affected by a launch accident. [EA 4.3 at 4-7].

During a planned single nominal launch, the Crew Dragon capsule and trunk would separate from the stand and follow a propulsive trajectory away from LC-40 toward the Atlantic Ocean. The capsule would float to a relatively gentle water landing under the canopies of three main parachutes. The hollow, tube-shaped trunk would not contain fuel or other hazardous material and would free-fall into the ocean and sink. . Chances that it would strike sea life are extremely unlikely. The trunk would be expected to become a possible fish shelter over time. Other than the small parachute cover, no other equipment is designed to be ejected into the ocean. The USAF conducted informal consultation with the National Marine Fisheries Service (NMFS) regarding potential impacts on ESA-listed species under NMFS jurisdiction, namely sea turtles, smalltooth sawfish, and North Atlantic right whales (including critical habitat). NMFS determined that potential impacts from a Crew Dragon pad abort test on these species and critical habitat would be discountable and insignificant (EA 4.3 at 4-7 and Appendix A).

Geology and Soils

Activities associated with the Proposed Action would not require the construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece), and new excavation would not be necessary. Thus, the Proposed Action would not affect geology or soils [EA 4.8 at 4-14].

Hazardous Materials, Pollution Prevention, and Solid Waste

Activities associated with the Proposed Action would not require the construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece); therefore, there would be little or no construction-related hazardous material used and

little or no construction-related pollution or solid waste generated. All hazardous materials would continue to be handled and disposed of per the requirements established by Occupational Safety and Health Administration (OSHA) and per the Hazardous Materials Contingency Plan developed for the Falcon Launch Vehicle Program. SpaceX has implemented proper handling procedures for payloads containing hypergolic fuels. Since all applicable federal, state, county, and USAF rules and regulations would continue to be followed for the proper storage, handling, and usage of hazardous materials under the Falcon Launch Vehicle Program, no significant impacts on hazardous materials management would be expected under the Proposed Action.

Materials that would be used during processing and preparing the Crew Dragon capsule for the pad abort test would be the same as for a routine payload spacecraft for the Falcon 9 Block 1. Facilities at LC- 40 that process hypergolic propellants would continue to operate under existing requirements for hypergolic propellants and waste products. The Crew Dragon capsule would be fueled with a combined weight of approximately 3,060 pounds of nitrogen tetroxide (NTO) and monomethylhydrazine (MMH) (hypergolic fuels). Launch deluge wastewater generated by the Proposed Action would be substantially less than for a Falcon vehicle launch but would similarly be categorized as industrial wastewater. This wastewater would be characterized to ensure that it would not be considered a hazardous waste. If determined to be a hazardous waste, it would be properly handled and disposed of, typically pumped to the CCAFS waste water treatment plan from the deluge water holding area on-site under a locally prepared authorization request and permit process. Thus, the Proposed Action would not be expected to result in significant impacts related to hazardous materials, pollution prevention, or solid waste [EA 4.6 at 4-12].

Historical, Architectural, Archeological, and Cultural Resources

Activities associated with the Proposed Action would use existing facilities for ground support and launch operations. Since the Proposed Action would not require construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece), and since there are no historic properties or known archeological sites at or within the region of influence of LC-40, the Proposed Action would not affect historical, architectural, archeological, or cultural resources [EA 4.4 at 4-8].

Health and Safety

CCAFS range safety regulations ensure that the general public, launch area personnel, and land masses are provided an acceptable level of safety and that all aspects of pre-launch and launch operations adhere to public laws. Activities associated with the Proposed Action would not require the construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece); therefore, there would be minimal construction-related health and safety concerns. Processing of the Crew Dragon vehicle would involve the handling of toxic and hazardous propellants including MMH and NTO. Health and safety impacts to personnel involved in the propellant loading operations in the payload processing facilities would be minimized by adherence to OSHA and USAF Occupational Safety and Health regulations. Additionally, prior to being issued a launch license, SpaceX's proposal must meet all FAA public safety and financial responsibility requirements set forth in 14 CFR Part 400. All current and standard federal, state, and local health and safety procedures would be followed during operations and launches. Thus, the Proposed Action would not be expected to result in significant impacts related to health and safety [EA 4.11 at 4-17].

Land Use (Including Farmlands and Coastal Resources)

The Proposed Action would not change land use or affect land use planning at CCAFS. The Proposed Action would occur primarily at LC-40, which is designated for space launch activities. Operations for the pad abort test would be consistent with the Base General Plan, the USAF mission at CCAFS, and current LC-40 operations. Activities associated with the Proposed Action would not require the construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece); therefore, the Proposed Action would not convert prime agricultural land to other uses, result in a decrease in the land's productivity, or conflict with existing uses or values of the project area or other base properties. No adverse effects to the coastal zone, as defined by the Coastal Zone Management Act, are anticipated. The Florida Department of Environmental Protection determined the Proposed Action is consistent with the Florida Coastal Management Program. Thus, the Proposed Action would not result in significant impacts related to land use and coastal resources [EA 4.1 at 4-2].

Light Emissions and Visual Impacts

Visual impacts associated with the Proposed Action would be infrequent and temporary. Activities associated with the Proposed Action would not require the construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece); therefore, there would be minimal construction-related light emissions or visual impacts. Although the SpaceX facilities and the Crew Dragon pad abort test would not be visible to the public, the Dragon capsule launch and associated exhaust contrail may be visible in the sky. The contrail would be similar in visual impact (though smaller in size) to trails from past and current operations at CCAFS and would dissipate quickly as wind and air turbulence affect the trail. Launch operations would not substantially degrade the existing visual character or quality of the site and its surroundings. Thus, the Proposed Action would not have significant impacts related to light emissions and visual resources [EA 4.1 at 4-2].

Natural Resources and Energy Supply

Current potable and non-potable water supply to LC- 40 was designed to support the Titan IV launch vehicle program. Because the Proposed Action would consist of the launch of one vehicle with much less thrust, significantly less deluge water would be used. Water needed for typical ground support operations at the processing facility would be supplied by the existing water distribution systems at CCAFS and would have a negligible impact on system capacity. Wastewater would continue to be processed through the existing wastewater handling and treatment systems at CCAFS and would have a negligible impact on system capacity. Similarly, the electrical power capabilities for operation at LC- 40 were designed to support the Titan IV. The electrical power needs of the Crew Dragon pad abort test are significantly less than those of the Titan IV and would have a negligible impact on the electrical capacity at CCAFS. The Proposed Action is expected to generate less solid waste than a launch of the Falcon 9 Block 1. Therefore, the Proposed Action's reliance on the water supply, wastewater treatment, electrical power, and solid waste disposal systems would be small relative to the capacities of these utilities, and no significant impact would be expected to these utilities [EA 4.10 at 4-15, 4-16].

Noise

Activities associated with the Proposed Action would not require the construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece); therefore, there would be little or no construction-related noise impacts. Noise associated with ground support operations would be intermittent and within the scope of normal and routine activities at CCAFS. Noise modeling performed for the launches of the Falcon 9 Block 1 rocket provides context for the potential impact of the much smaller Crew Dragon capsule. Because the approved models identified in FAA Order 1050.1E, Appendix A, Section 14.2b for modeling noise levels of proposed actions are not suitable for predicting rocket launch noise, USAF implemented a non-standard noise methodology to predict noise levels of Falcon 9 Block 1 launches. On February 27, 2014, the FAA Office of Environment and Energy determined the methodology was appropriate and provided its approval of the methodology, as required by FAA Order 1050.1E, Appendix A, Section 14.2b.

Falcon 9 Block 1 launch noise would not exceed the FAA day-night average sound level (DNL) threshold of 65 A-weighted decibels (dBA) at the closest residential areas to CCAFS. Noise levels at the launch site are directly correlated to the thrust of the space launch vehicle at lift-off. The thrust for the Falcon 9 Block 1 is approximately 1.01 million pounds force (lbf). The combined total thrust for the Crew Dragon capsule is approximately 131,000 lbf, or less than 13 percent of the thrust of the Falcon 9 Block 1. Because of its much lower thrust, the Crew Dragon launch is expected to generate much less noise than the Falcon 9 Block 1. Based on the existing baseline noise levels at CCAFS from current launches and the modeled launch noise for the Falcon 9 Block 1, it is anticipated that noise levels under the Proposed Action would not exceed the FAA's noise significance threshold; that is, the Proposed Action would not result in an increase in noise of DNL 1.5 dBA or more at or above DNL 65 dBA noise exposure for the closest noise sensitive areas, which are the residential areas of Cape Canaveral. The Crew Dragon is not expected to achieve supersonic speed and accordingly there would be no sonic boom. Thus, the Proposed Action is not expected to result in significant impacts related to noise [EA 4.2 at 4-5].

Section 4(f) Properties

No designated Section 4(f) properties, including public parks, recreation areas, or wildlife refuges, exist within the boundaries of CCAFS; therefore, no physical use or temporary occupancy of a Section 4(f) property would occur. Several public parks, recreation areas, and wildlife refuges are located outside of CCAFS, including Merritt Island National Wildlife Refuge and Canaveral National Seashore. Due to their proximity to LC-40, these properties may experience noise from proposed Crew Dragon pad abort test. Noise levels at these 4(f) properties may increase slightly and temporarily during a Crew Dragon pad abort test, but any impact would only last a few seconds and is expected to occur only once, presuming a successful test, under the Proposed Action.

For decades, the 4(f) properties have been experiencing increased noise levels during launches taking place at CCAFS and adjacent Kennedy Space Center (KSC). Some of the launch vehicles (e.g., Space Shuttle and Titan IV) that have launched from CCAFS and KSC produced more thrust and thus generally louder noise than would occur under the Proposed Action. Due to the long history of these Section 4(f) properties experiencing noise from launches at CCAFS and KSC, and because there is only one planned Crew Dragon pad abort test, the FAA has determined the Proposed Action would not substantially diminish the protected activities, features, or attributes of any of the Section 4(f) properties identified and thus, would not result in substantial impairment of the properties. Therefore, the Proposed Action would not be considered a constructive use of these Section 4(f) properties and would not invoke Section 4(f) of the Department of Transportation Act [EA 4.14 at 4-20].

Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety

Activities associated with the Proposed Action would not require the construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece); therefore, there would be no construction-related socioeconomic, environmental justice, or children's environmental health and safety impacts. Local SpaceX operations employ approximately 50 full-time employees and 50 contract employees at LC-40 and other locations at CCAFS. During the Crew Dragon pad abort test period, approximately 50 additional people would be at CCAFS to support the launch over approximately two weeks. The added economic

activity from the temporary workers would result in a small positive impact to the local economy. The local population growth trends, unemployment rates, housing markets, and vacancy rates would not be substantially affected, and no new social services or support facilities would be required. Because operations would occur within CCAFS boundaries, and because most of the potential environmental impacts would occur at and within the vicinity of LC-40, the Proposed Action would not affect low-income or minority populations within the region. Similarly, the Proposed Action would have no high and disproportionate effects on children. Thus, the Proposed Action would not be expected to result in significant impacts related to socioeconomics, environmental justice, or children's environmental health and safety [EA 4.12 at 4-18; EA 4.13 at 4-19].

Transportation

Following assembly in Hawthorne, California, the Crew Dragon capsule and trunk would be transported on a single truck via the U.S. highway system to CCAFS. After the Crew Dragon pad abort test, the recovered capsule and parachutes would be transported on a single truck to a SpaceX processing facility in McGregor, Texas. Both transportation events would occur only once and would be conducted in compliance with U.S. Department of Transportation regulations. Therefore, these activities would not significantly impact traffic. No waterborne transportation would be affected. Worker trips for the Proposed Action would be expected to be the same or less than for Falcon 9 Block 1 and less than existed for a Titan IV launch. Increased launch viewing traffic from visitors or public observers would not cause a significant traffic impact at CCAFS. Traffic volume increases for Falcon 9 Block 1 launches were less than those of a NASA Space Shuttle launch, and the same or lesser increases than for Falcon 9 launches are expected for the Crew Dragon pad abort test. No new access would be required under the Proposed Action, no unsafe roadways conditions are anticipated, and increased traffic would not cause the traffic or structural capacity of any roadway to be exceeded. Thus, the Proposed Action would not be expected to result in significant impacts related to transportation [EA 4.9 at 4-15].

Water Resources (Including Wetlands, Floodplains, Water Quality, and Wild and Scenic Rivers)

There are no wetlands within the LC-40 boundary. Though wetlands are present at approximately 300 feet beyond the LC-40 boundary, the Crew Dragon pad abort test would not affect wetlands [EA 4.7 at 4-13]. Activities associated with the Proposed Action would not require the construction of permanent facilities or infrastructure (only a temporary support stand would be trucked to the pad in a single piece); therefore, there would be no construction-related impacts. LC-40 is not located within a 100-year floodplain. There are no wild or scenic rivers present at or near CCAFS. Thus, the Proposed Action would not result in significant impacts to these resources [EA 4.7 at 4-13, 4-14].

Under the Proposed Action, launch deluge wastewater generated by a Crew Dragon pad abort test would be contained in the deluge (impermeable concrete) basin, tested, and removed and hauled to an approved off-base disposal facility, similar to what has occurred during Falcon 9 Block 1 launches.

Drainage from LC-40 could be affected by the exhaust cloud that would form near the launch pad at liftoff as a result of the exhaust plume and evaporation and subsequent condensation of deluge water. However, the amount of fuel expended would be only a small fraction of what is normally consumed during a Falcon 9 Block 1 launch, and the resultant exhaust cloud would consist mostly of steam and would not consist of any significant amounts of hazardous materials. As the volume of water condensing from the exhaust cloud is expected to be minimal and temporary, the exhaust cloud from the Proposed Action would generate less than significant impacts on surface water quality at LC-40. Water needed for typical ground support operations at the processing facility, as well as wastewater generated by these operations, would have a negligible impact on surface and groundwater resources. In summary, the Proposed Action would not be expected to have a significant impact on water resources [EA 4.7 at 4-13, 4-14].

Secondary (Induced) Impacts

FAA Order 1050.1E requires the FAA to identify any induced impacts to surrounding communities which may result from a Proposed Action. Examples of induced impacts, as

defined by the Order, include shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity to the extent influenced by the Proposed Action. As noted under the socioeconomics summary above, the added economic activity from the temporary workers would result in a small but positive impact to the local economy, and any shifts in development patterns and other secondary factors associated with the Proposed Action would be anticipated to be negligible. Because no significant impacts are expected for any of the impact categories included above, no significant induced impacts would be expected to result from the Proposed Action.

CUMULATIVE IMPACTS

This FONSI/ROD incorporates by reference the EA, which addresses the potential impacts of past, present, and reasonably foreseeable future activities at and within the vicinity of CCAFS that would affect the resources impacted by the Proposed Action. Due to the nature of the Proposed Action and its location on the coast within CCAFS, only launch-related actions occurring at CCAFS would meaningfully interact in time and space with the Proposed Action such that potential cumulative impacts could result. Past launch vehicle activities at CCAFS include those of the Space Shuttle, Delta II, Delta IV, Atlas V, and Falcon 9. Future planned launch vehicle activities at CCAFS include Delta IV, Atlas V, Falcon 9, and Falcon Heavy. This section presents a brief summary of the potential cumulative environmental impacts considered in the EA, focusing on those resources with the greatest likelihood of experiencing adverse effects: air quality; biological resources (fish, wildlife, and plants); hazardous materials, pollution prevention, and solid waste; land use (including farmlands and coastal resources); light emissions and visual impacts; and noise.

Air Quality

The cumulative emissions from the Proposed Action and past, present, and reasonably foreseeable future projects at CCAFS would not exceed any thresholds established under the Clean Air Act or jeopardize the attainment status of the region. All government and commercial launches at CCAFS occur individually, i.e., no flights overlaps in time or space with another flight. This avoids the potential for simultaneously combining impacts associated with exhaust plumes from multiple vehicles. Individuals at and around the launch sites are unlikely to be exposed to

concentrations of any launch vehicle emission that exceeds the allowable public exposure limits adopted by the range safety organizations. Also, USAF's compliance with Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, for activities taking place at CCAFS helps minimize emissions of GHGs. Therefore, no significant cumulative impacts to the region's air quality would be expected to occur [EA 5.2 at 5-4].

Biological Resources (Fish, Wildlife, and Plants)

Potential cumulative impacts on biological resources from the Proposed Action and other past, present, and reasonably foreseeable future projects at CCAFS include those types of direct and indirect impacts discussed above. NASA studies have mapped the effects of 14 Delta, 20 Atlas, and 8 Titan vehicle launches on local vegetation at CCAFS; the study found limited scorching to small areas, minimal acid deposition, and slightly more widespread particulate deposition. However, these impacts are considered minor and less than significant. Potential cumulative impacts on biological resources would be minimized with implementation of measures identified during consultation with the USFWS and NMFS (as applicable for the Proposed Action); measures identified in environmental documents completed for other projects; measures to be incorporated in environmental documents currently under development for future actions; and measures identified in the USAF's Integrated Natural Resources Management Plan for CCAFS. Therefore, no significant cumulative impacts to biological resources would be expected to occur [EA 5.2 at 5-3].

Hazardous Materials, Pollution Prevention, and Solid Waste

Launch operations and other activities conducted at CCAFS use products containing hazardous materials; however, implementation of existing handling and management procedures for hazardous materials, hazardous waste, and solid wastes limits the potential for impacts. Each organization or entity conducting activities at CCAFS is responsible for compliance with applicable regulatory requirements (e.g., Resource Conservation and Recovery Act; Executive Order 12088, *Federal Compliance with Pollution Control Standards*). Therefore, significant cumulative impacts related to hazardous materials, pollution prevention, and solid waste would not be expected to occur [EA 5.2 at 5-4].

Land Use (Including Farmlands and Coastal Resources)

The Proposed Action would not result in any significant impacts to land use compatibility because CCAFS and LC-40 current use includes launching space vehicles. The Proposed Action and other past, present, and reasonably foreseeable future projects are consistent with existing land use, the Base General Plan, and the USAF mission at CCAFS. Additionally, the Proposed Action and other past, present, and future projects would not convert prime agricultural land to other uses. Thus, significant cumulative impacts to land use would not be expected to occur [EA 5.2 at 5-2].

Light Emissions and Visual Impacts

The visual presence of the infrastructure associated with launches and other activities conducted at CCAFS is well established and considered part of the local landscape. Light emissions and impacts related to visual resources from launches conducted at CCAFS include fire created during engine ignition and visual contrails in the sky. These impacts would be short-term and temporary, and would not overlap in time or space. Therefore, significant cumulative impacts related to light emissions and visual resources would not be expected to occur [EA 5.2 at 5-2].

Noise

When combined with other past, present, and reasonably foreseeable future projects at CCAFS, short-term increases in noise levels in the area surrounding CCAFS from the Proposed Action are not anticipated to be significant. Long-term cumulative noise levels would not be expected to exceed the FAA's noise significance threshold. Because the Crew Dragon capsule would not achieve supersonic speeds, a sonic boom would not occur, so there would be no cumulative impacts from sonic booms. Each flight would or has occurred separately, avoiding combined noise impacts from more than one flight at a time. Thus, significant cumulative impacts related to noise would not be expected to occur [EA 5.2 at 5-3].

AGENCY FINDINGS: In accordance with applicable law, the FAA makes the following finding/determination based on the appropriate information and data contained in the EA:

- No significant environmental impacts would be incurred as a result of the FAA's Federal action.

DECISION AND ORDER: The FAA is herein adopting the EA. In so doing, the FAA has independently evaluated the information contained in the EA and takes full responsibility for the scope and content to the extent that it addresses FAA actions therein. As a cooperating agency, the FAA participated in the preparation of the EA. The FAA decision in this FONSI/ROD is based on a comparative examination of environmental impacts for each of the alternatives studied during the environmental review process. The EA discloses the potential environmental impacts for each of the alternatives and provides a full and fair discussion of those impacts. There would be no significant impacts, including no significant cumulative impacts, to the natural environment or surrounding population as a result of the FAA's Proposed Action.

The FAA believes the selected alternative best fulfills the purpose and need identified in the EA. In contrast, the No Action Alternative fails to meet the purpose and need identified in the EA. For reasons summarized earlier in this FONSI/ROD, and supported by disclosures and analysis detailed in the EA, the FAA has determined that the Proposed Action is a reasonable, feasible, practicable, and prudent alternative for a Federal decision in light of the established goals and objectives. An FAA decision to take the required actions and approvals is consistent with its statutory mission and policies supported by the findings and conclusions reflected in the environmental documentation and this FONSI/ROD.

After reviewing the EA and all its related materials, I have carefully considered the FAA's goals and objectives in relation to various aspects of the launch activities described in the EA, including the purpose and need to be met, the alternative means of achieving them, the environmental impacts of these alternatives, the mitigation necessary to preserve and enhance the environment, and the costs and benefits of achieving the stated purpose and need.

After careful and thorough consideration of the facts contained herein, I find that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in Section 101 of NEPA and other applicable environmental requirements and will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 102(2)(c) of NEPA.

This FONSI/ROD represents the FAA's final decision and approvals for the actions identified, including those taken under the provisions of Title 49 of the United States Code, Subtitle VII,

Parts A and B. These actions constitute a final order of the Administrator subject to review by the Court of Appeals of the United States in accordance with the provisions of 49 U.S.C. § 46110.

Issued in Washington, DC on: March 5, 2014

Dr. George C. Nield
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